AFX8010 Combine

Axial Flow Monitor Firmware Version 31.2.0.0

Operator's Manual

CE

87052356

CASE IH

CNH Belgium N.V.
Leon Claeysstraat, 3a
8210 Zedelgem
Belgium

Printed in Belgium

TO THE OWNER

This manual contains information concerning the adjustment and maintenance of your Case IH Model AFX 8010 combine. You have purchased a dependable machine, but only by proper care and operation can you expect to receive the performance and long service built into this combine. Please have all operators read this manual carefully and keep it available for ready reference.

The AFX combines are designed as self propelled units, powered by an onboard diesel engine. The machines are intended to be used for agricultural purposes on cultivated land to harvest cereal crops, small seed crops, corn, soy beans, etc., by cutting or picking up from swath, threshing and separating the grain from the straw temporarily storing it until it is unloaded into vehicles for transport.

Your Case IH dealer will instruct you in the general operation of your combine. (Refer to the “Delivery Report” at the back of this manual.) Your dealer’s staff of factory-trained service technicians will be glad to answer any questions that may arise regarding the operation of your combine.

Your Case IH dealer carries a complete line of genuine Case IH service parts. These parts are manufactured and carefully inspected to insure high quality and accurate fitting of any necessary replacement parts. Be prepared to give your dealer the model and product identification number of the engine and combine, when ordering parts. Locate these numbers now and record them below. Refer to the “General Information” section of this manual for the location of the model and product identification numbers of your combine.

Model _____ Engine Model _____

Product Identification Number _____ Engine Product Identification Number _____

DANGER

Fasten seat belt before starting engine.

CAUTION

This safety alert symbol indicates important safety messages in this manual. When you see this symbol, carefully read the message that follows and be alert to the possibility of personal injury or death.

CAUTION

Pictures in this manual may show protective shielding open or removed to better illustrate a particular feature or adjustment.

Be certain, however, to close or replace all shielding before operating the machine.

IMPROVEMENTS

CNH America LLC is continually striving to improve its products. We reserve the right to make improvements or changes when it becomes practical and possible to do so, without incurring any obligation to make changes or additions to the equipment sold previously.

CONTENTS

PRECAUTIONARY STATEMENTS

PERSONAL SAFETY

Throughout this manual and on machine decals, you will find precautionary statements ("**DANGER**", "**WARNING**", and "**CAUTION**") followed by specific instructions. These precautions are intended for the personal safety of you and those working with you. Please take the time to read them.

⚠ DANGER ⚠

This word "DANGER" indicates an immediate hazardous situation that, if not avoided, will result in death or serious injury. The color associated with Danger is RED.

⚠ WARNING ⚠

This word "WARNING" indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury. The color associated with Warning is ORANGE.

⚠ CAUTION ⚠

This word "CAUTION" indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. The color associated with Caution is YELLOW.

FAILURE TO FOLLOW THE "DANGER", "WARNING", AND "CAUTION" INSTRUCTIONS MAY RESULT IN SERIOUS BODILY INJURY OR DEATH.

MACHINE SAFETY

The precautionary statement ("**IMPORTANT**") is followed by specific instructions. This statement is intended for machine safety.

IMPORTANT: *The word "IMPORTANT" is used to inform the reader of something he needs to know to prevent minor machine damage if a certain procedure is not followed.*

INFORMATION

NOTE: *Instructions used to identify and present supplementary information.*

LEGAL OBLIGATIONS

Your machine may be equipped with special guarding or other devices in compliance with local legislation. Some of these require active use by the operator.

Therefore, check local legislation on the usage of this machine.

AIRBORNE NOISE EMISSION

In line with the European directive (EEC/86/188) and national legislation, listed below are the noise levels at the operator's ear measured in dBa, according to the ISO 5131 standard.

The noise is measured with the engine and all mechanisms engaged and running at normal operating speed for the specified use of the product and without crop flow through the machine. For machines with a cabin, the noise is measured with all windows and doors closed and also in the open position.

It should be noted that the noise level may exceed 85 dBa if the machine is operating with doors and/or windows open.

In this case, the use of ear protection equipment is recommended. In several countries this is mandatory, so check local legislation.

Machine model	Engine model	Noise level (dBa) Cabin doors and windows closed
AFX8010	F3A	75.7

ELECTROMAGNETIC COMPATIBILITY (EMC)

This product complies with the EEC directive 89/336 on Electromagnetic Interferences on electronic equipment if it is used in conjunction with equipment which bears the CE mark.

Case IH will take no liability for any problem arising as a result of its product working in an environment of other equipment which does not comply with the EEC directive.

Disturbances remain possible if added equipment does not meet the standards. As these interferences may result in serious malfunction of the machine and/or create unsafe situations the following instructions must be observed:

Each element of non Case IH equipment added to this Case IH product must bear a CE mark.

The maximum power of emission equipment (radio, telephones, etc.) must not exceed the limits imposed by the national authorities of the country of usage of the machine.

The electromagnetic field generated by the added system must not exceed 24 V/m at any moment and at any location in the proximity of electronic components and the network between them over the entire machine.

VIBRATION LEVEL INFORMATION

The vibration level for the arms to which the operator of this machine is exposed under normal operating conditions is below the 2.5 m/sec^2 weighted root mean square (RMS) value. The vibration level for the whole body is below the 0.5 m/sec^2 RMS value.

This information and measuring methods are in line with the European Machinery Directive 89/392 EEC paragraph 3.6.3.

SAFETY

SAFETY REQUIREMENTS FOR FLUID POWER SYSTEMS AND COMPONENTS – HYDRAULICS (EUROPEAN STANDARD PR EM 982)

Flexible hose assemblies must not be constructed from hoses which have been previously used as part of a hose assembly.

Do not weld hydraulic piping.

When flexible hoses or piping are damaged, replace them immediately.

It is forbidden to modify a hydraulic accumulator by machining, welding or any other means.

Before removing hydraulic accumulators for servicing, the liquid pressure in the accumulator must be reduced to zero.

Pressure check on hydraulic accumulators shall be carried out by method recommended by the accumulator manufacturer.

Care must be taken not to exceed the maximum allowable pressure of the accumulator. After any check of adjustment there must be no leakage of gas.

SAFETY PRECAUTIONS

Farm accidents can be prevented with your help

No accident prevention program can be successful without the wholehearted cooperation of the person who is directly responsible for the operation of the equipment.

To read accident reports from all over the country is to be convinced that a large number of accidents can be prevented only by the operator anticipating the result before the accident is caused and doing something about it.

It is said that “The best kind of safety device is a careful operator who with care and mature consideration can save more lives and limbs than any accident prevention program which is not adhered to”.

Further in this chapter you will find a list of the most important safety precautions.

Take time to read and follow the instructions and furthermore, be careful!

Some pictures in this manual may show the safety guarding open or removed to better illustrate a particular feature or adjustment.

Ensure to close or replace all guards before operating the machine.

General and Operating Safety

Most farm machinery accidents can be avoided by the observance of a few simple safety precautions.

1. The machine must only be used by a skilled operator familiar with all the controls and harvesting techniques on cultivated land with slopes up to maximum 26% (15°) uphill and downhill.
   In the listed below you can find the “MAXIMUM %” sideways driving that is permitted [provided good even ground and sufficient tyre adherence conditions exist] .

Drive Tire	Overall Width	Side Slope
650/75R32	3.5m	35% (19°)
650/75R32	3.75m	40% (22°)
710/70R38	3.5m	35% (19°)
710/70R38	3.75m	40% (22°)
800/65R32	3.75m	40% (22°)
800/65R32	4.0m	40% (22°)
900/60R32	4.1m	40% (22°)
1050/50R32	4.3m	40% (22°)

2. Do not permit anyone other than the operator to ride on the combine.
3. Before starting the engine, ensure everyone is clear of the combine.

   Warn bystanders by sounding the horn several times.
4. Keep children away from and off the combine at all times.
5. No-one should be standing on the ladders when the machine is moving.
6. When driving on public roads, observe traffic regulations, adapt your speed to road and traffic conditions and ensure that all lights and other safety mechanisms on the machine (if they are required) are fitted and work properly.

   The grain tank must be empty when driving on the road. Ensure that the unloading tube is locked in its closed position.
7. Ensure that both brake pedals are locked together when travelling on public roads.

8. Ensure the hazard warning signs provided are installed at the front and the rear of the combine and use the rotating amber traffic warning beacon(s) (if equipped) when driving on public roads to indicate the vehicle is of abnormal size and is slow-moving.
9. Do not brake abruptly to avoid tipping of the machine.
10. Do not exceed 20 km/h (12.5 mph) when driving downhill. If necessary, change into a lower gear before starting the descent.
11. Never travel at high speed in crowded areas.
12. Avoid making turns at high speed.
13. When driving on public roads, either with the grain header loaded on a trailer and attached to the rear of the combine, or with the grain header still attached to the combine (provided local legislation allows), always be aware and conscious of its size.
14. Before operating the combine ensure that all safety guards are installed.
15. Check the wheel nuts torque as described in Section 4 – LUBRICATION AND MAINTENANCE.
16. Do not enter the grain tank while the combine engine is running. With engine stopped, use a wooden clearing club should the grain tank unloading auger become bridged. Take utmost care not to be pulled into the grain tank in case unbridging is required.
17. Do not attempt to clean, lubricate or carry out any adjustments on the combine while it is in motion or while the engine is running.
18. For safety's sake never leave the operator's platform without first disengaging the combine drive mechanism, lowering the header, stopping the engine, applying the park brake and removing the ignition key.
19. Do not work under the combine header unless it is securely blocked and/or the header safety latch is engaged.
20. Do not work around the combine in loose clothing that might catch in any of the moving parts.
21. Keep hands away from moving parts of the combine.
22. Keep the fire extinguisher within easy reach of the operator. Ensure to replace it by a similar type of extinguisher or have it checked or refilled after every usage and/or date of expiry.
23. Do not step on the grain tank extensions, covers, or the cab roof.
24. Combine dust can cause "farmer's lung" disease. It may also contain nocive spraying residues. Keep the cab door and window closed during operation. Wear a dust mask when cleaning the air filters or accumulated dust in the combine.
25. Danger of death by electrocution!

    Pay special attention to the overhead power lines. Make sure the machine has sufficient clearance to pass in all directions (also with raised or opened machine components). Also think of the radio aerial(s) or any other factory–fitted accessory or parts which may have been added afterwards.

    Should a contact between the machine and an electric power line occur, then the following precautions must be taken: Stop the machine movement immediately, stop the engine and apply the handbrake.

    Check if you can safely leave the cab or your actual position without direct contact with electric wires. If not, stay in your position and call for help. If you can leave your position without touching the lines, jump off the last step or support position to ensure that there is no contact between any part of your body and the ground at any time. Do not touch the machine afterwards until power to the lines has been shut off. When people approach the machine, warn them not to touch the machine but to ask the electric power supply company to shut off the power to the lines.

Engine safety

1. Keep the engine area clean of dust, chaff and straw to prevent the possibility of fires.
2. Never idle the engine in an enclosed area as harmful exhaust gases may build up.
3. Wear a suitable hearing protective device, such as ear muffs or ear plugs, if you are exposed to noise which you feel is uncomfortable.
4. The cooling system operates under pressure which is controlled by the radiator cap. It is dangerous to remove the cap while the engine is hot.
   - Switch off the engine and wait until it has cooled. Even then use extreme care when removing the cap. Cover the cap with a rag and turn it slowly to the first stop to allow the pressure to escape before removing the cap completely. Stand clear of the radiator opening as hot coolant may splash out.
   - Never add cold water to a hot radiator.

   Failure to follow these instructions may result in serious personal injury from hot coolant or steam blowout and/or damage to the cooling system or engine.

5. Antifreeze contains monoethylene glycol and other chemicals which are toxic if taken internally and can be absorbed in toxic amounts through repeated or prolonged skin contact. Follow these precautions when working with antifreeze:
   - Do not take antifreeze internally. If antifreeze is swallowed accidentally, obtain medical attention immediately.
   - Keep antifreeze in sealed containers out of reach of children, livestock or pets.
6. The fuel oil in the injection system is under high pressure and can penetrate the skin. Unqualified persons should not remove or attempt to adjust a fuel injection pump, injector, nozzle or any other part of the fuel injection system. Failure to follow these instructions may result in serious injury.
   If fuel is injected through the skin, medical assistance should be obtained.
7. Be very careful to avoid contact with hot engine oil. If the engine oil is extremely hot, allow the oil to cool to a moderately warm temperature for safe removal.
8. Do not handle a hot oil filter with bare hands.
9. Continuous and prolonged contact with used engine oil may cause skin cancer. Protect your skin by wearing heavy plastic gloves. If oil gets onto the skin, wash promptly with soap and water.

Diesel fuel safety

1. Under no circumstances should gasoline, alcohol or blended fuels be added to diesel fuel. These combinations can create an increased fire or explosive hazard. In a closed container, such as a fuel tank, such blends are more explosive than pure gasoline. **Do not use these blends.**
2. Never remove the fuel tank cap or refuel with the engine running or hot.
   Refuel the combine fuel tank only when the engine has been turned off.
   Do not smoke or use a naked flame when refuelling or when standing near fuel tanks.
3. Maintain control of the fuel filler pipe nozzle when filling the tank.
4. Do not fill the fuel tank to capacity. Allow room for expansion.
5. Wipe up spilled fuel immediately.
6. Always tighten the fuel tank cap securely.
7. If the original fuel tank cap is lost, replace it with an approved cap. A nonapproved, proprietary cap may not be safe.
8. Keep equipment clean and properly maintained.
9. Do not drive equipment near open fires.
10. Never use fuel for cleaning purposes.

Battery warning

CAUTION

The battery contains a sulphuric acid electrolyte which may cause severe burns and produce explosive gases. Avoid contact with the skin, eyes or clothing. Do not take internally.
The essential precautions listed below must be observed:

- *Do not use an open flame to check the electrolyte level. Keep sparks, flames and lighted tobacco away.*
- *Do not produce sparks with cable clamps when charging the battery or starting the engine with a slave battery.*
- *Wear eye protection when working near batteries.*
- *Provide ventilation when charging or using in an enclosed space.*
- *Ensure the vent plugs are correctly installed and tight.*

If the electrolyte comes into contact with the skin, eyes or is taken internally, treat as follows:

Skin:	Flush with cold water.
Eyes:	Flush with cold water for 10 minutes and get prompt medical attention.
Internal:	Call a doctor immediately.

WHEELS AND TIRES

The life and performance of the tires depends largely upon maintaining the correct pressure. Keep the tires inflated to the pressures given in Section 8 – SPECIFICATIONS.

Check the wheel nuts torque daily during the first week of operation and thereafter on a weekly basis.

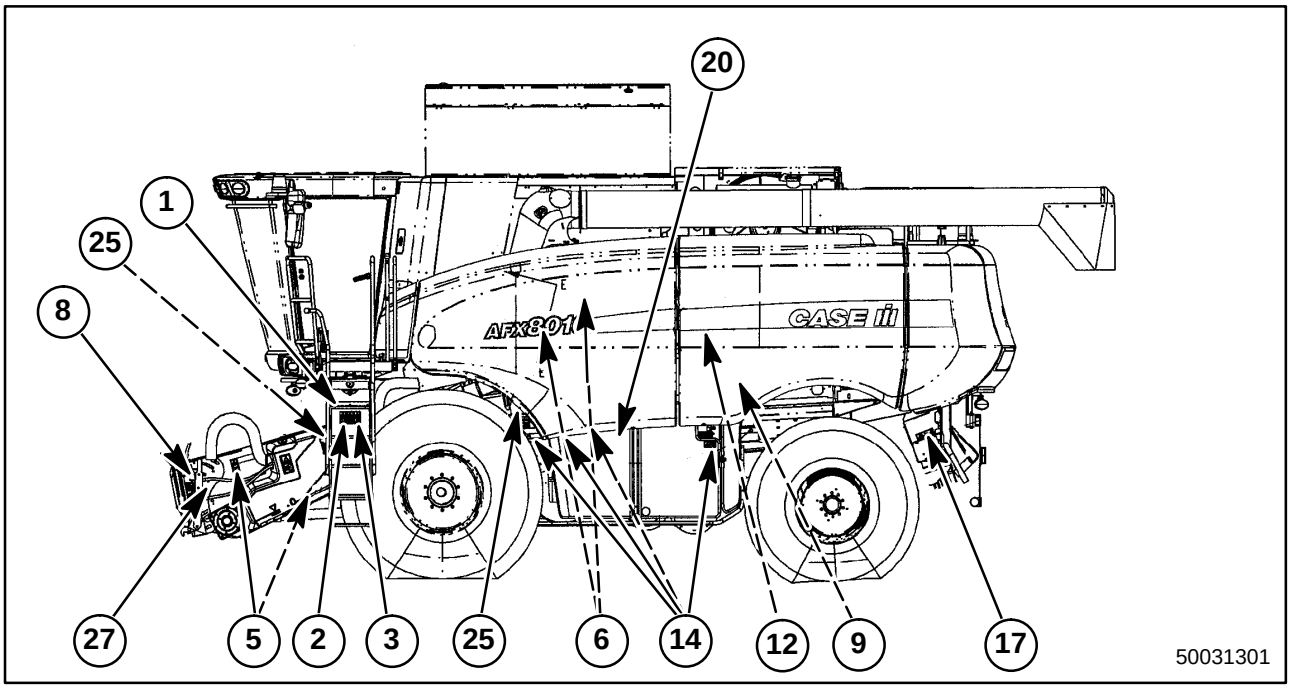
The wheel nuts torques are given in Section 8 – SPECIFICATIONS.

Whenever preparing to jack-up the combine, park on a level, firm surface and securely block the drive tire opposite the side to be lifted, both in front and rear.

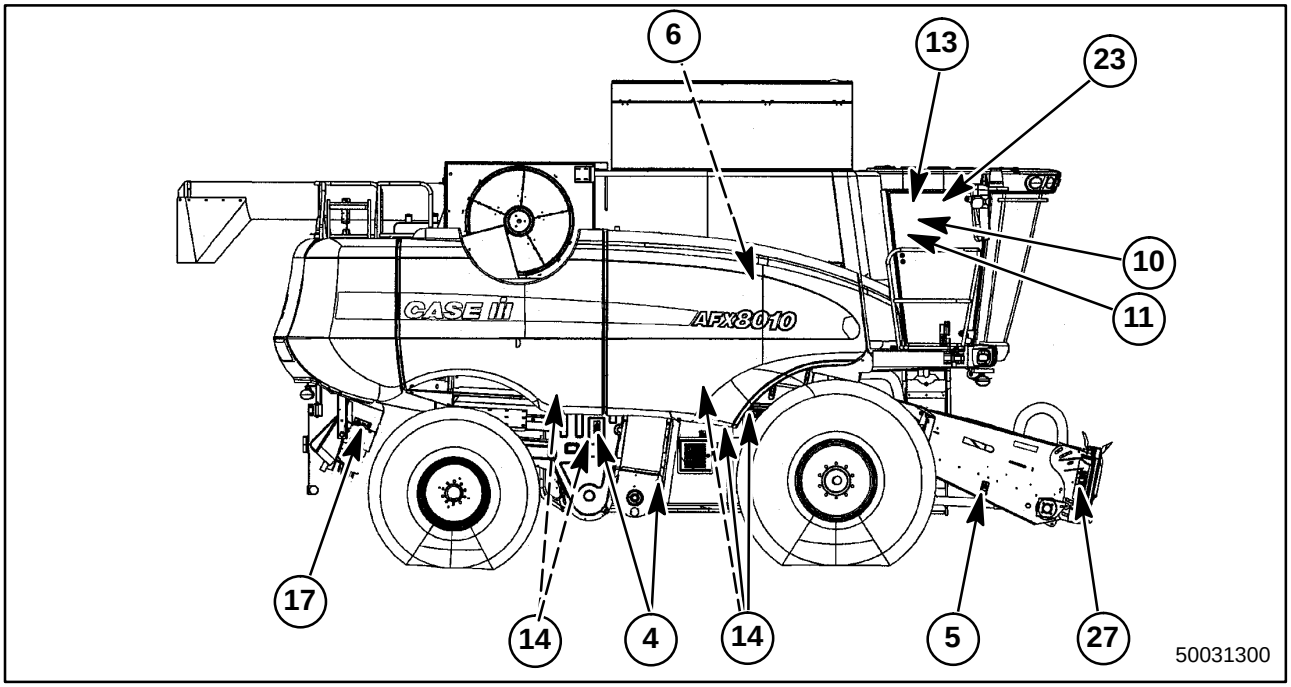
SAFETY DECALS

The following safety decals have been placed on your machine in the areas indicated. They are intended for your personal safety and for those working with you.

Please take this manual and walk around your machine, noting the location of the decals and their significance.



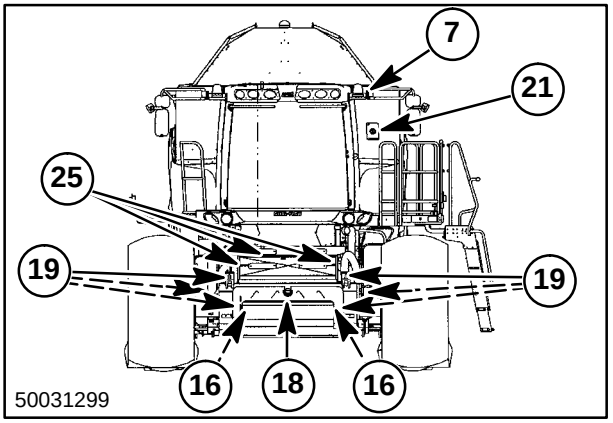
1



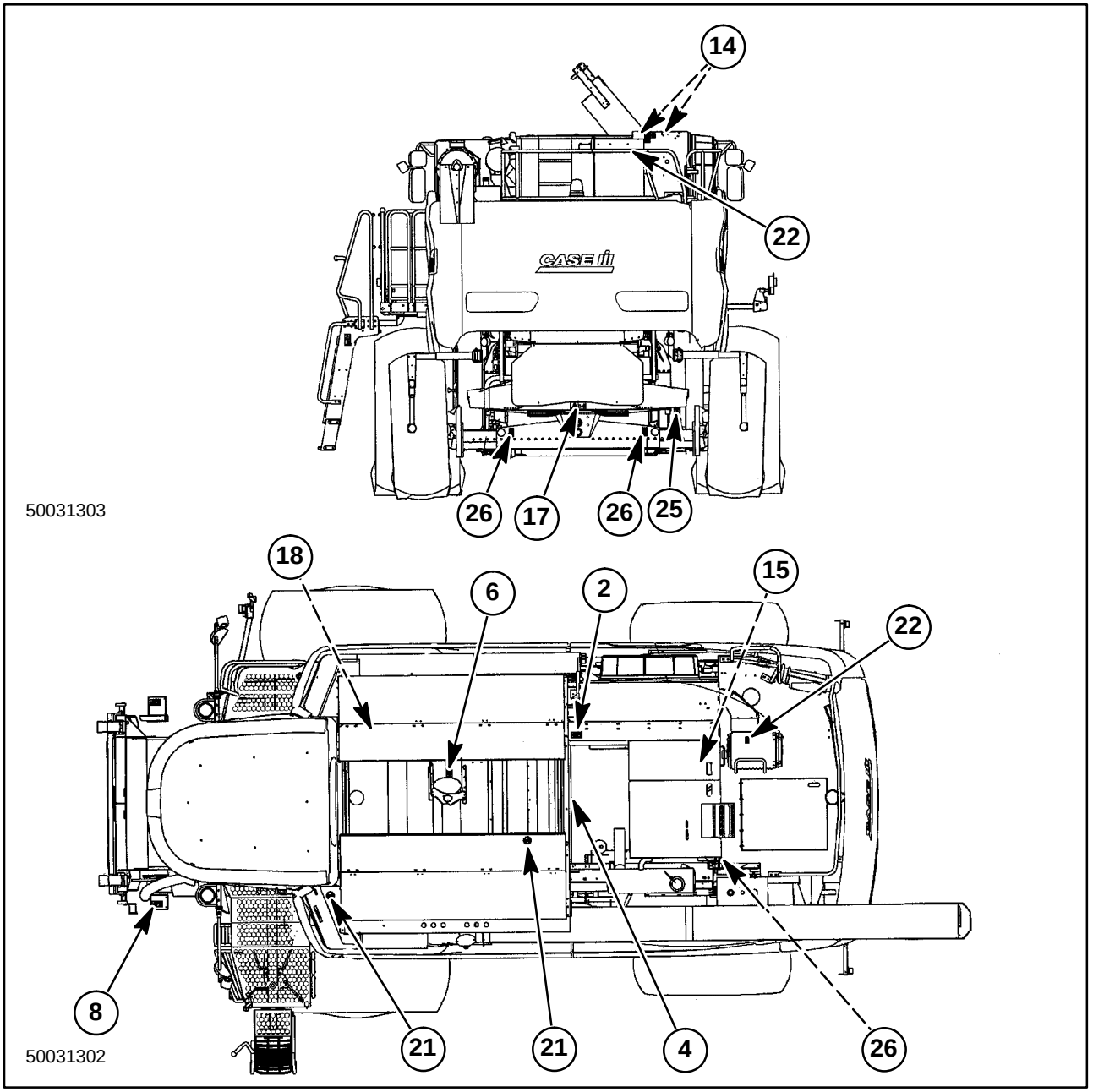
2

Review these decals and the operating instructions detailed in this Manual with the machine operators.

Keep the decals clean and legible. If they become damaged or illegible, obtain replacements from your Case IH dealer.



3



4

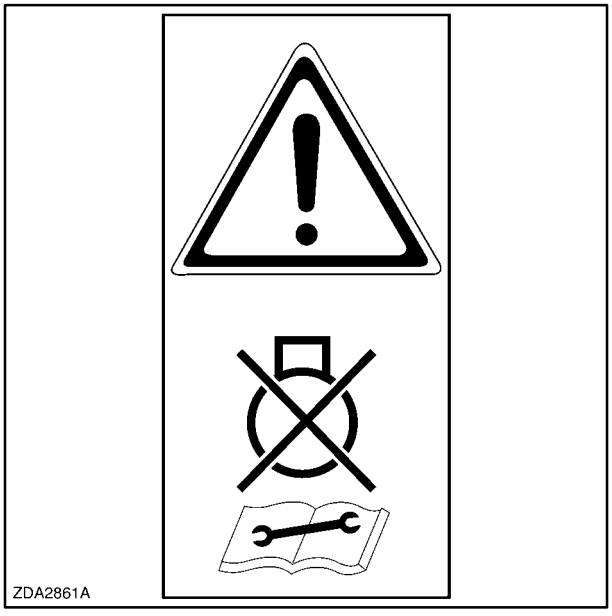
Decal 1

84004731
Carefully read the Operator's Manual before operating the machine. Observe instructions and safety rules when operating.

Decal 2

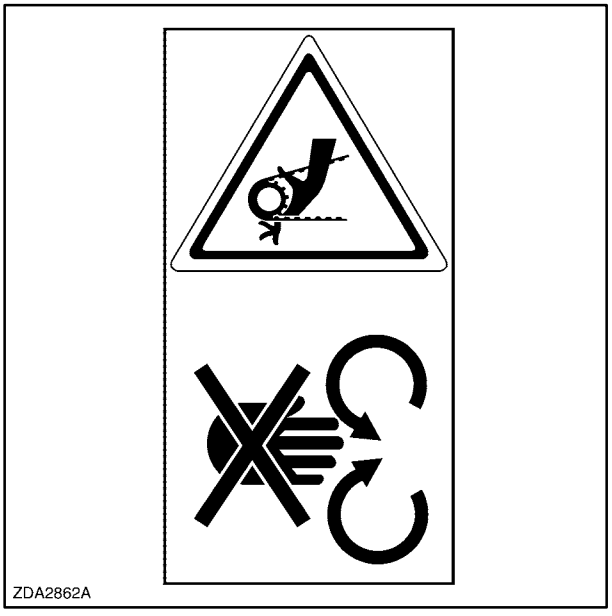
84008732
Do not ride on platform or ladder.

Decal 3



84008733
Disengage all drives, stop the engine and wait until moving parts have stopped before cleaning or servicing the machine.

Decal 4

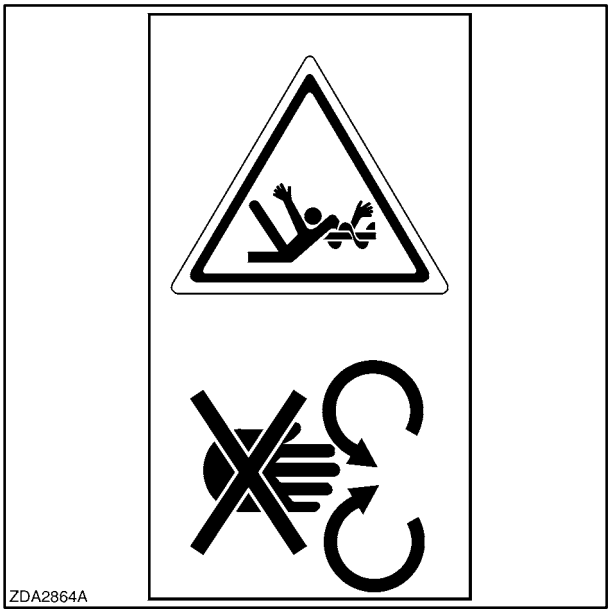


84008734
Do not open or remove safety shields while engine is running.

Decal 5

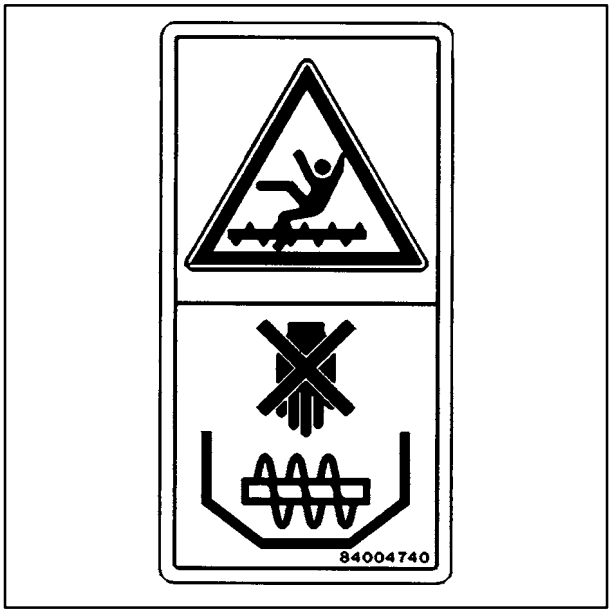
84008735
Secure lift cylinder locking device before getting in dangerous area.

Decal 6



84008736
Never reach into rotating auger.

Decal 7

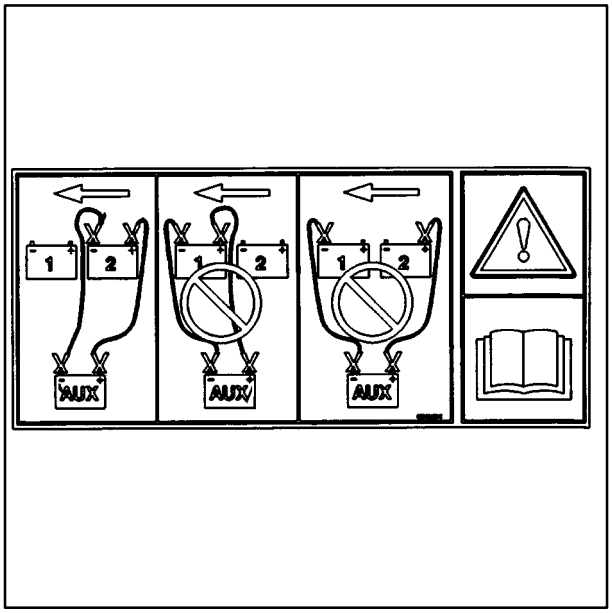


84004740
Never reach or climb into grain tank while engine is running.

Decal 8

84004742
Stay clear of hot surface.

Decal 9



86640426
Boost only to rear battery.

Decal 10

84012893
Shut off engine and remove ignition key before performing maintenance or repair work.

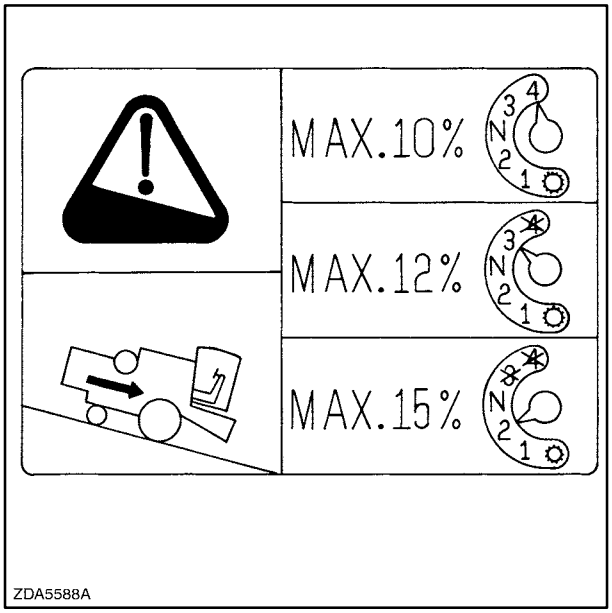
Decal 11

84012892
Sound the horn 3 times before starting the engine.

Decal 12

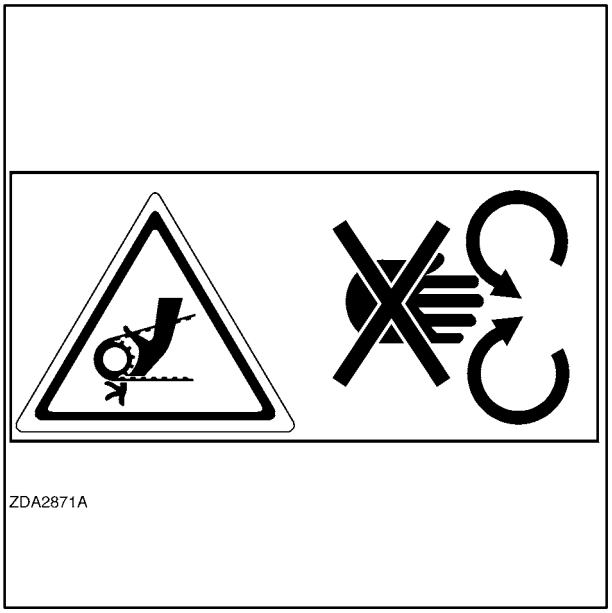
84005363
Hydraulic accumulators contain gas and oil under pressure. For removal and repair, contact your local Case IH dealer.

Decal 13



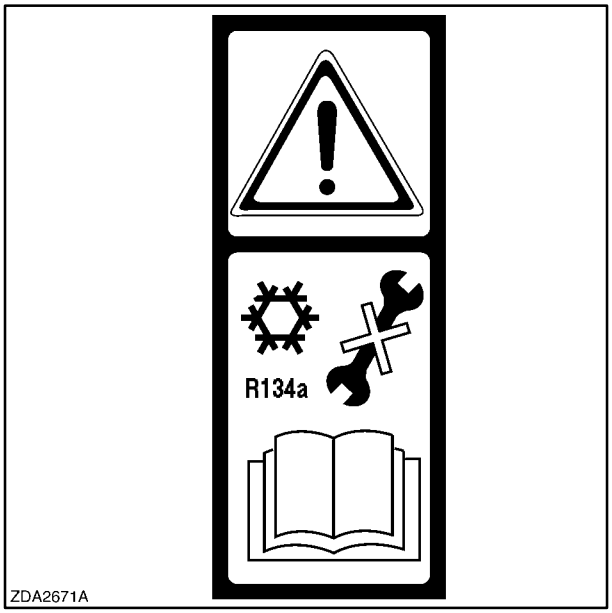
84439462
To prevent runaway of the combine (i.e. when the ground speed increases during downhill driving and it is impossible to reduce speed with the ground speed control lever), it is necessary to shift into a lower gear appropriate to the steepness of the hill before starting the descent.

Decal 14



84011345
Do not open or remove safety guard while engine is running.

Decal 15

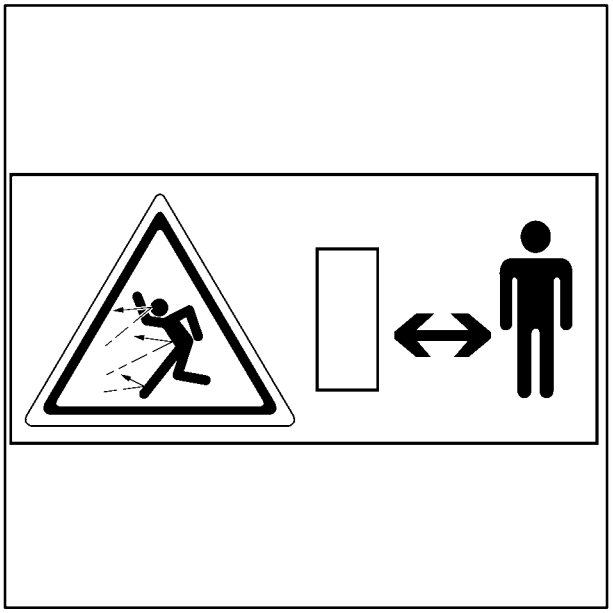


84012596
R 134a cooling gas. For removal and repair contact your local Case IH dealer.

Decal 16

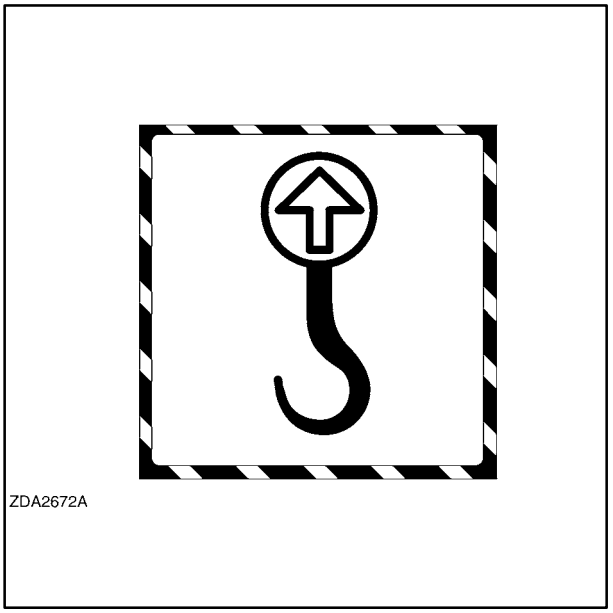
84078384
Jack up point.

Decal 17



84004739
DANGER:
Stay clear while engine is running.

Decal 18



449973
Lifting eye / pulling eye.

Decal 19

84100296
Tie-down eye.

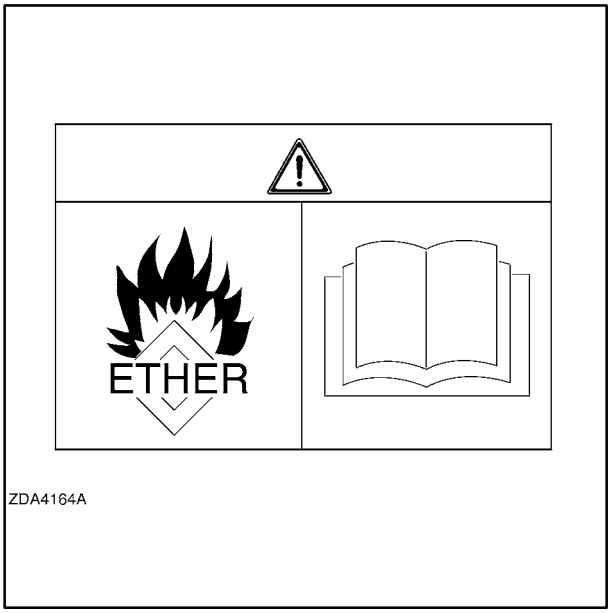
Decal 20

84432906
Only operate when approved fire extinguisher is installed.

Decal 21

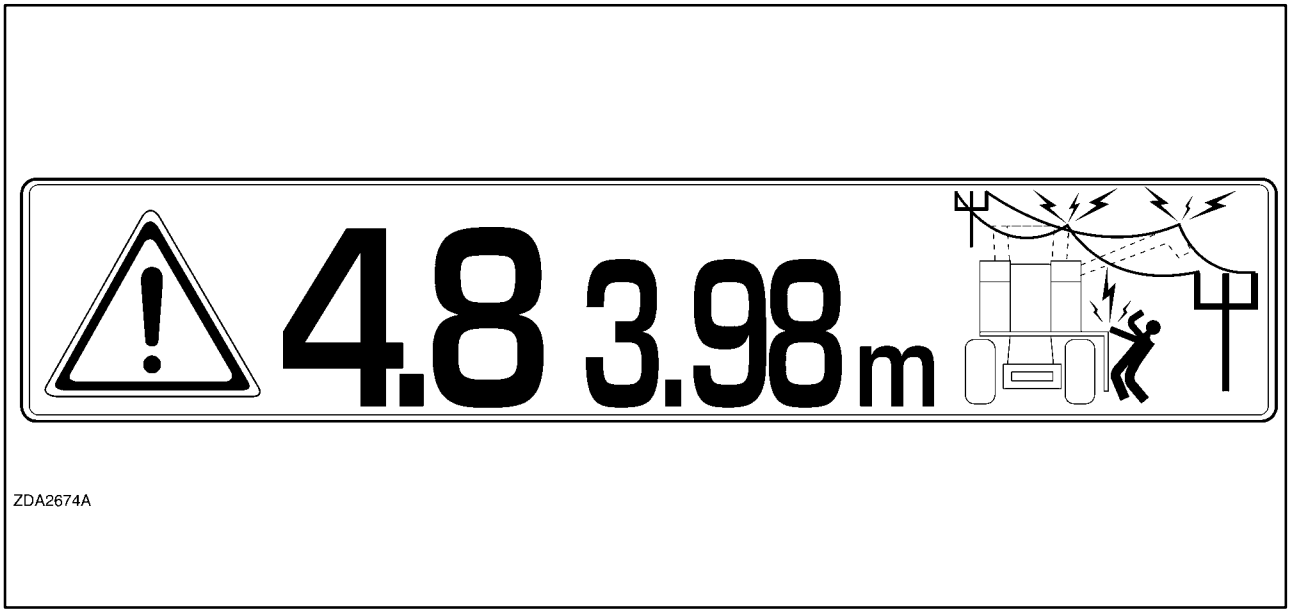
84432904
Don’t place foot.

Decal 22



87802167
Ether warning.

Decal 23

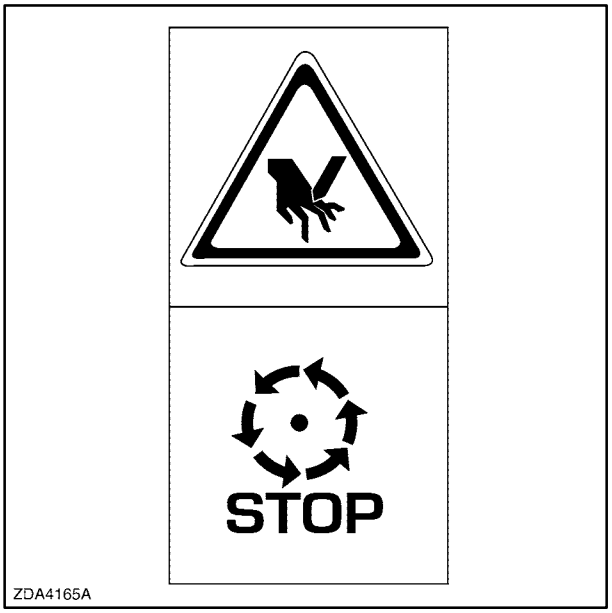


84432862
Overhead power lines + height indication.

Decal 24

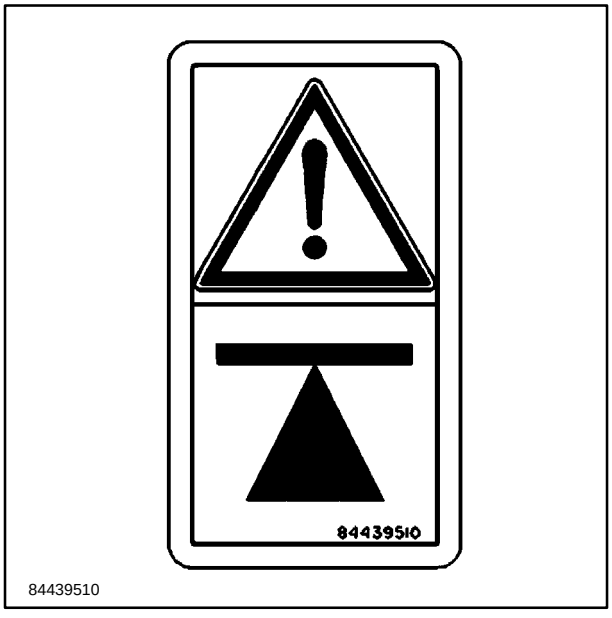
84432981
Hot coolant.

Decal 25



84014117
Wait until all machine components have stopped completely before touching them.

Decal 26

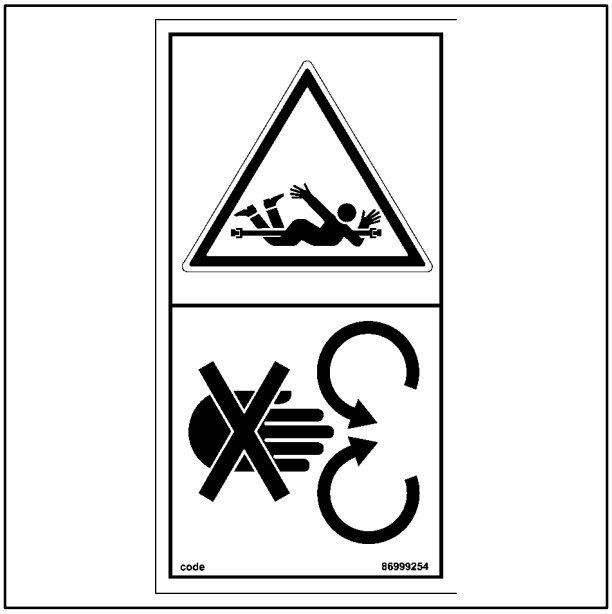


84439510
Jack up point.

Decal 27

87413244
Avoid pinch point areas. Keep clear of moving parts. Failure to comply will result in death or serious injury.

Decal 28



86999254
Do not operate with driveline shields removed. Maintain all shields in good working order and installed properly. Failure to comply will result in death or serious jury.

COMBINE INTERNATIONAL SYMBOLS

As a guide to the operation of your combine, various universal symbols have been utilized on the instruments, controls, switches, and fuse box. The symbols are shown below with an indication of their meaning.


Warning


Park brake


Upper Sieve


Lower Sieve


Vertical Knives


Header Auger


Header Height


Field/Road Mode


Rotor Speed


Power Rear Axle


Fast


Slow


Concave position


Cleaning fan


Reel RPM


Unloading


Engine heater


Header


Header height


Engine coolant temp


Fuel


Electric


Headlights


Headlights dimmed


Work lights fore


Work lights rear


Turn left

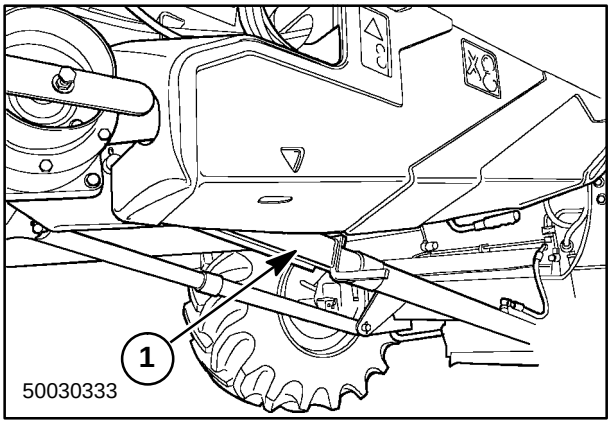

Turn right


Hazard light

PROTECTIVE DEVICES

Header standard safety stop
The left-hand cylinder is standard fitted with a safety stop which must be lowered onto the cylinder rod to prevent accidental lowering of the header.

Whenever work is carried out underneath the header or feeder, the stop must be lowered onto the cylinder rod as shown at 1.



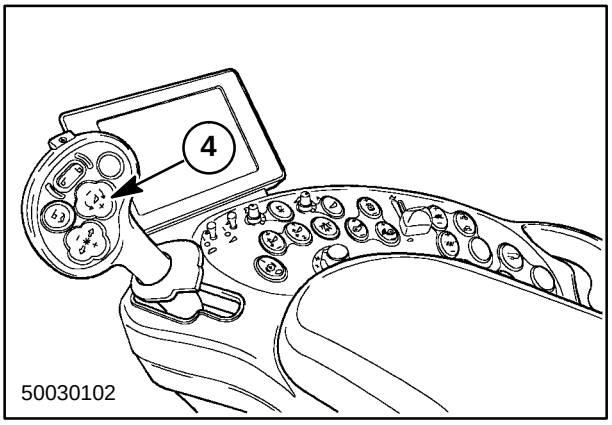
5

To engage or disengage the header safety latch it is necessary to lift the feeder to its maximum height.

To do this job, proceed as follows:

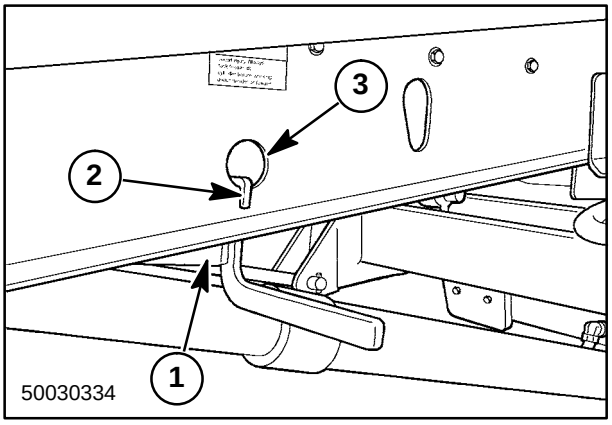
1. Move the feeder up by pressing the header height rocker switch, 4, on the multifunction handle until the header stops near its maximum height.
2. Place the header safety latch over the cylinder rod.

NOTE: *Do not use header safety stop, 1, as a support for the header when travelling along public roads otherwise damage may occur to the cylinder.*



6

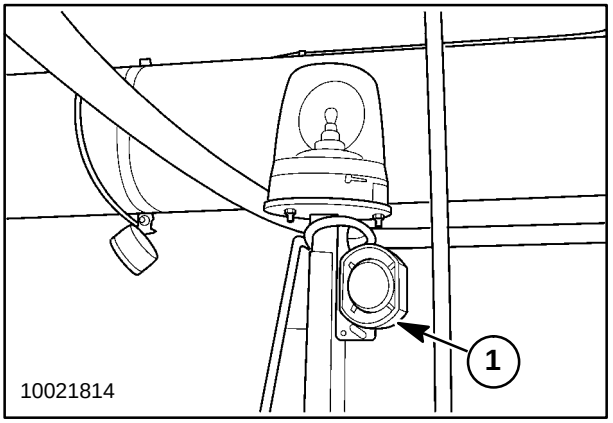
When not in use, header safety stop, 1, must be stored with stop latch, 2, secured in storage hole, 3.



7

Buzzer

On the top of the straw hood a buzzer is installed to inform people that there will follow an action with the combine. When the ignition key is in “contact” position the buzzer sounds once. When the combine is placed in reverse, the buzzer, 1, sounds intermittently.



8

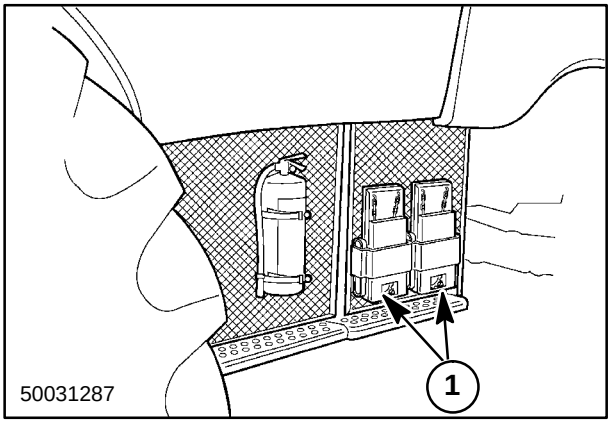
Straw elevator additional support

For certain countries there is a legal obligation to have an additional support installed on the side of the straw elevator. This support must be installed whenever the machine is driven on public roads.

When not in use, the support can be stored latched to the feeder frame.

Wheel chock

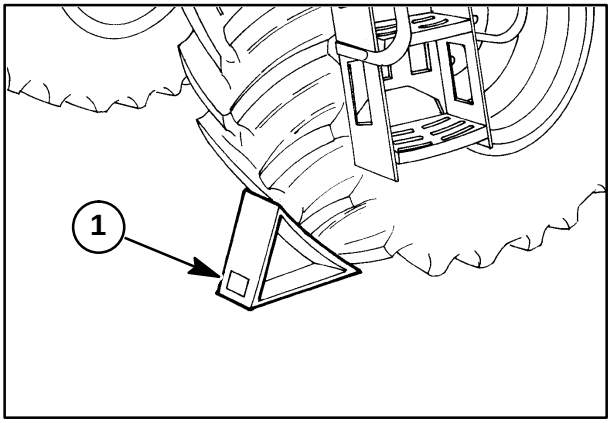
For some countries metal wedges are stored at the side of the combine, 1.



9

When the machine is parked on a nonlevel surface, wedge 1 has to be placed at the lowest side, against the traction wheel.

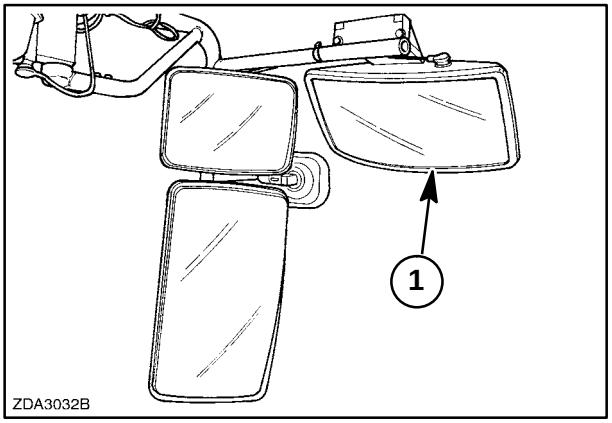
NOTE: *Do not place the wedges against the steering wheels.*



10

Additional mirror for Germany

An additional mirror, 1, is required for Germany.



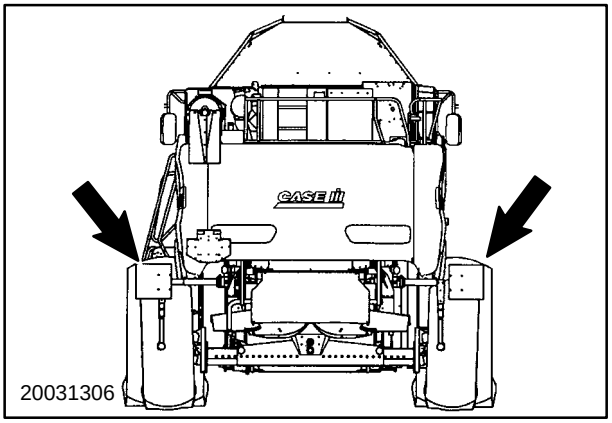
11

Safety railing for straw elevator

For some countries a safety railing must be installed for road transport and secured to the front of the straw elevator.

Signal plates

For some countries, signal plates must be installed for road transport.



12

Fire extinguisher

The fire extinguisher is located on the left side of the combine, 1.

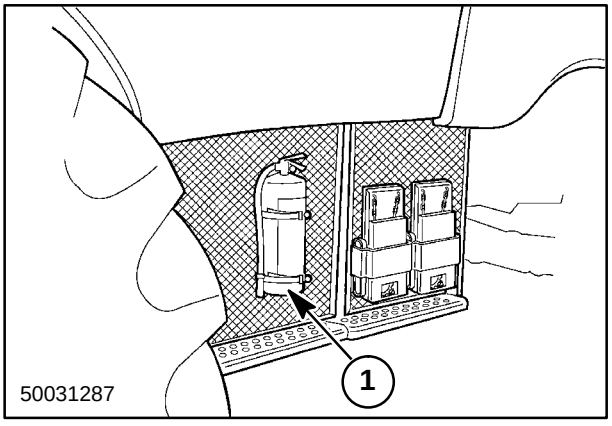
Check the extinguisher pressure at least once a year before the start of the season.

To check if the extinguisher is still under pressure, proceed as follows:

1. Unscrew the pressure gauge from the valve.
2. The needle will go from the green area to “0” in the red area.
3. Rescrew the pressure gauge on the valve. The needle will go from ”0” in the red field to the green field.

If the needle remains in the ”0” of the red field, the extinguisher has a leakage. The extinguisher has to be repaired by a recognised extinguisher dealer.

Once the extinguisher is discharged, no matter for how long, it must be recharged.



13

The decal on the fire extinguisher is explained below:

- The extinguisher can be used and has been tested at temperatures of –20° C (–68° F) and +60° C (+140° F).

- The type of the extinguisher “PKD 6”, this means: Dry chemical powder and the capacity is 6 kg (13.2 lbs).

1. Remove the safety pin.

2. Aim nozzle at base of fire.

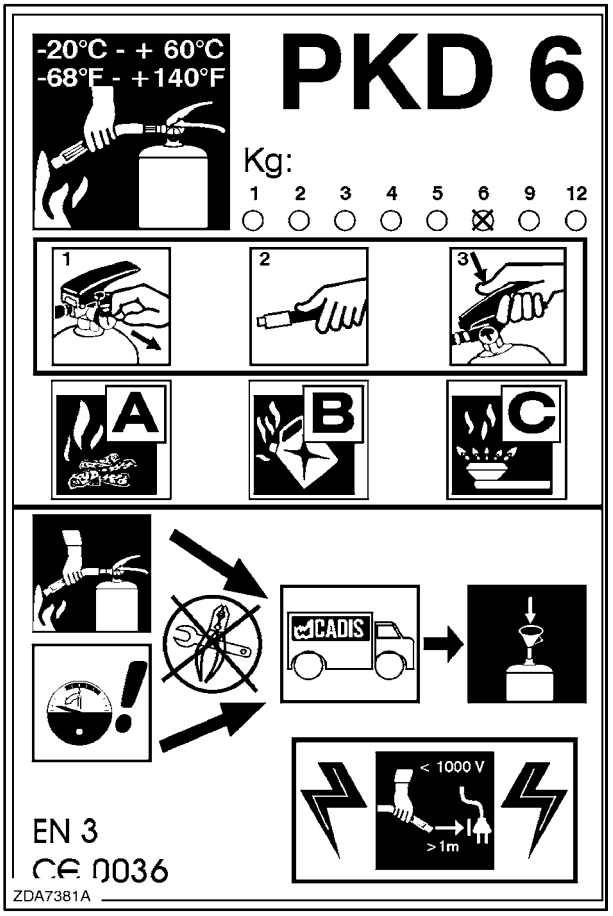
3. Press on the handle.

The extinguisher can be used on
“**A**” class fires = dry fires
“**B**” class fires = liquid fires
“**C**” class fires = gas fires

- After use of the extinguisher on a fire, the pressure gauge needle will go to zero pressure.

- Do not try to repair or refill the extinguisher yourself. Bring the used or leaking extinguisher to a recognised extinguisher dealer.

- Do not use the extinguisher on objects under electrical tension of more than 1000 Volt and at less than one meter (3,3 ft) distance.



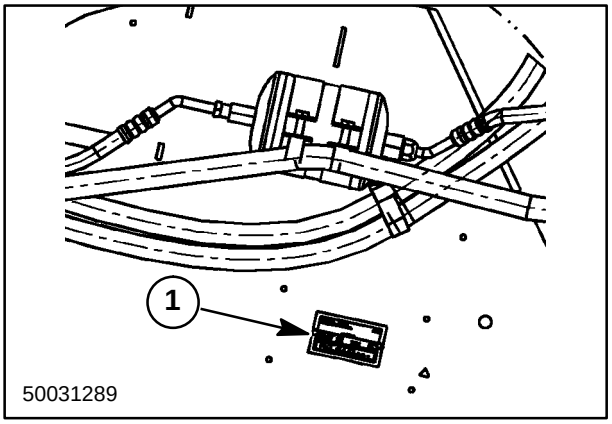
14

SECTION 1
GENERAL INFORMATION

PRODUCT IDENTIFICATION

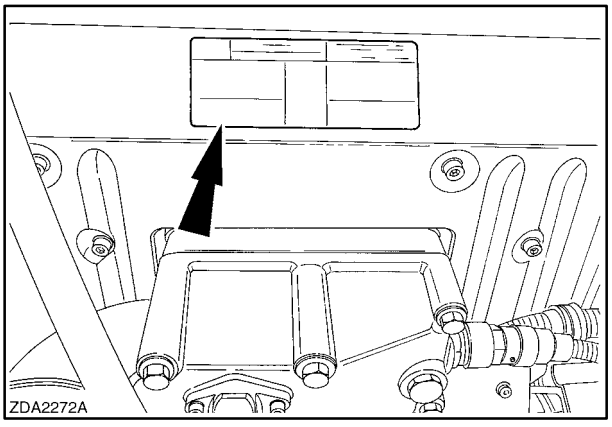
The product identification number of the combine, the engine and the attachments (heads) can be found at the following locations:

Base Unit
The combine P.I.N. plate, 1, is located below the right side platform, on the side of the platform support.



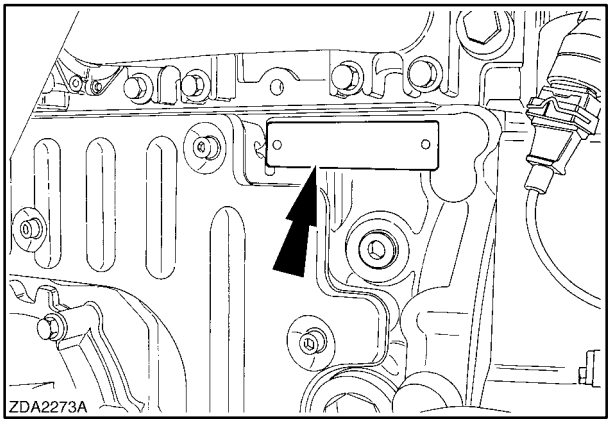
1

Engine–10.3L
On a plate positioned on top of the rocker cover.



2

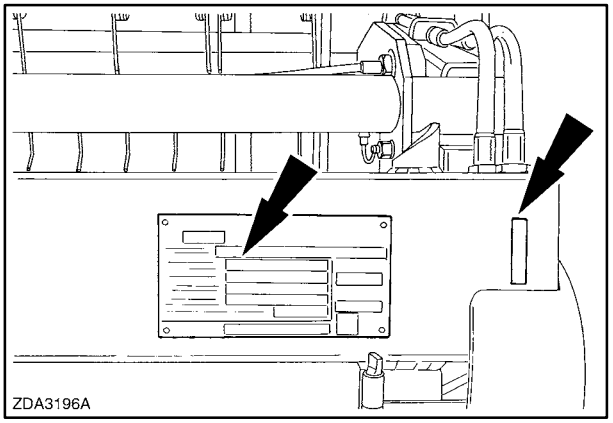
On a plate located on the side of the engine block.



3

Grain header

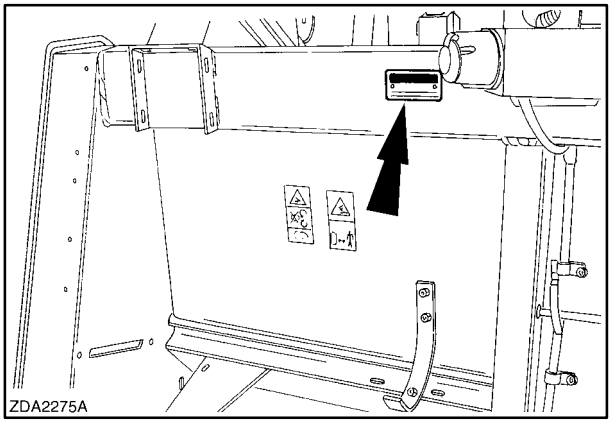
In the right-hand upper corner of the header, and also on a plate.



4

Maize header

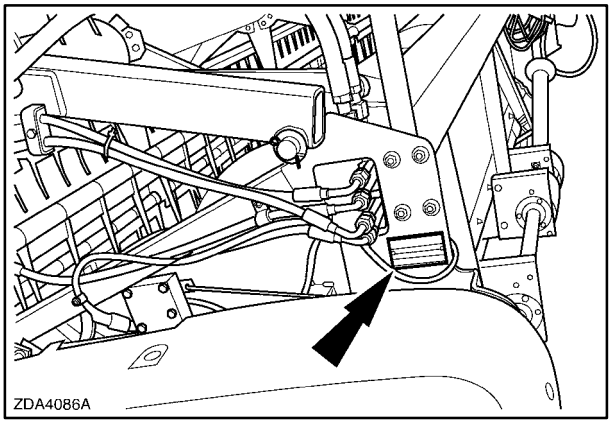
On a plate positioned on the left-hand upper corner.



5

Flex header

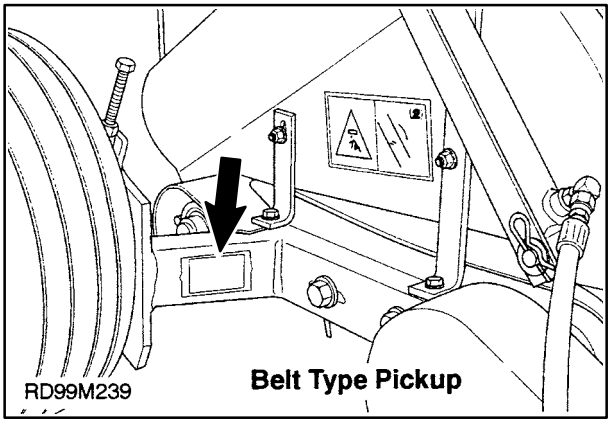
On the left rear corner of the main frame.



6

Pick-Up Header (2016)

On the left side of the pick-up frame.



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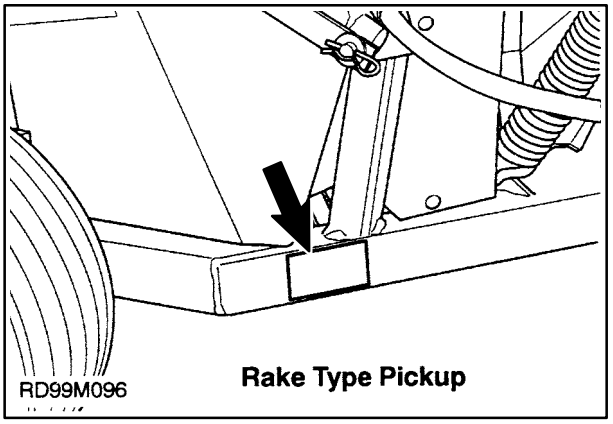
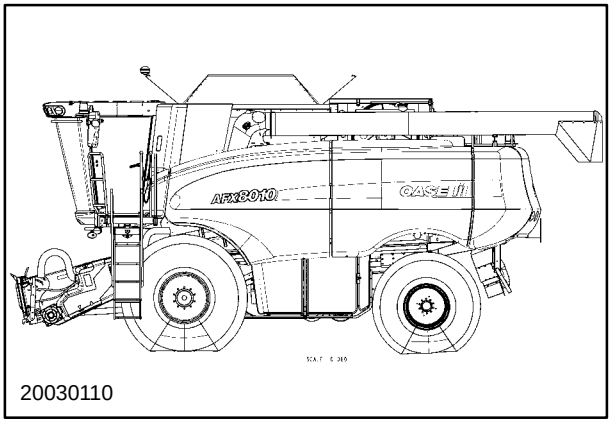


8

ACCESS TO MACHINE COMPONENTS



9

Operator's Platform

1. Access to operator's platform

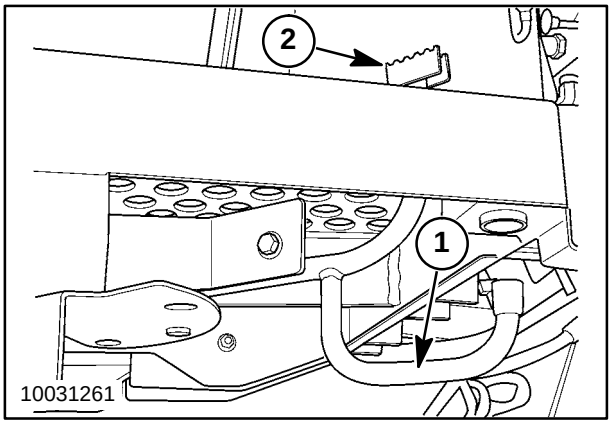
⚠ DANGER ⚠

Never allow anyone to stand or hang on the combine access areas while the combine is in motion. These access areas are provided only for entering and servicing the (stopped) combine in a safe manner.

⚠ CAUTION ⚠

Always enter and exit the combine in a safe manner. Use the steps and guard rails provided while maintaining a 3-point contact at all times.

2. To turn the ladder in front of the wheel for road transport:
   - Pull down on the ladder latch handle, 1, from the ground or press down on the upper pedal, 2, from the upper platform and swing the ladder forward. Release the latch and swing the ladder until latched in the forward position.
   - To return the ladder to the side position, release the latch and swing the ladder to the side. Be sure the latch is securely engaged before stepping onto the ladder.



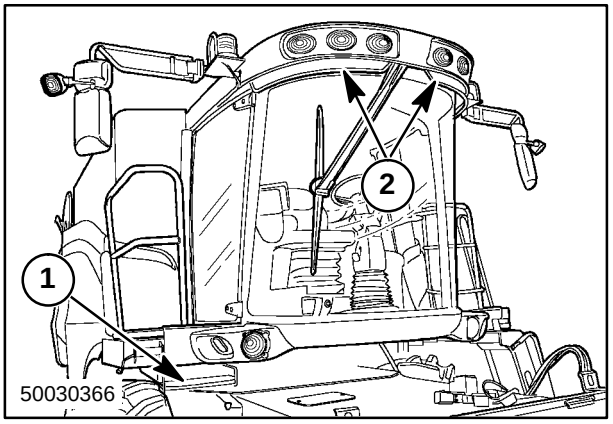
10

3. Access to the feeder house to enable cleaning of the cab windshield:

⚠ WARNING ⚠

Header safety stop must be engaged and locked, before stepping onto the feeder house. Serious injury may result if feeder house and header are not secured.

   - Raise the feeder house to its highest position and engage the header safety stop on the left cylinder. Step from the right side platform to the step, 1, onto the feeder house (equipped with anti-skid strips) while keeping a firm hold on the rail, 2, on top of the cab.



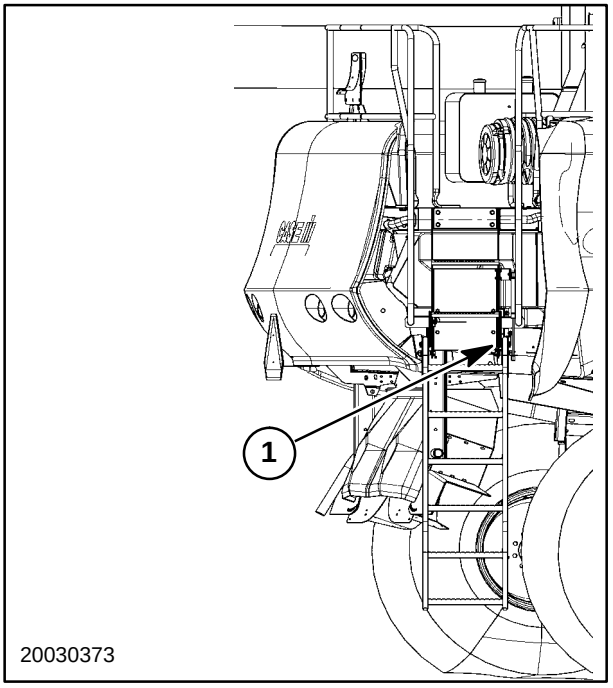
11

Engine, Grain Tank, Rear Platform

1. Release the safety latch, 1, and pull the rear ladder down to gain access to the engine compartment and fuel filler cap.
   - Lowering the rear ladder while the threshing mechanism and/or unloading system is engaged will cause these functions to stop. It is not possible to start the threshing mechanism and/or the unloading system while the ladder is in the lowered position.

⚠ CAUTION ⚠

Rear ladder must be in the raised position during travel on public roads. Severe equipment damage could result if ladder is left in the lowered position during travel.



12

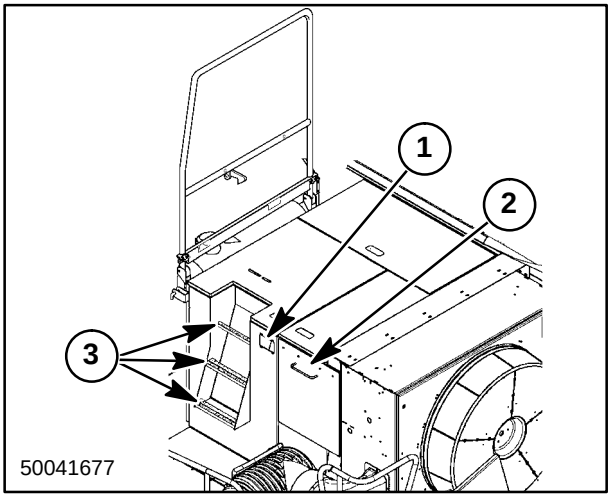
2. Access to the engine from the rear ladder.
   - The engine is accessible by opening the rear access door, 1. Further access is available by removing the second panel, 2. The steps, 3, on the access door are used to access the top engine covers to access the grain tank.

⚠ CAUTION ⚠

Be sure door, 1, is securely latched in the closed position before using steps, 3.

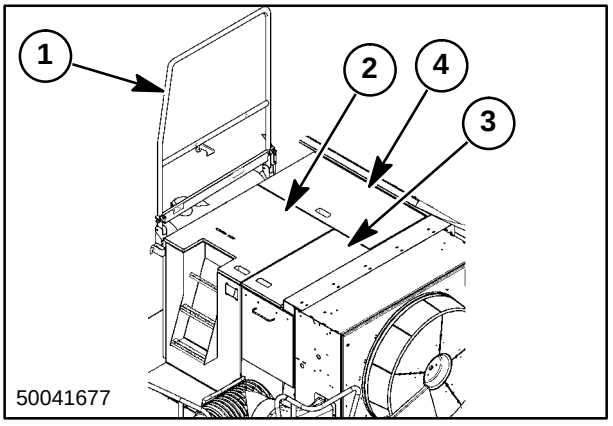
⚠ CAUTION ⚠

Engine surfaces inside covers may be hot if the engine has been operated recently. Be careful not to touch hot surfaces when servicing engine.



13

- Engine access is also available by opening the top three engine covers. The safety rail, 1, must be raised and latched before opening the three engine covers. With the safety rail, 1, in the raised position, be sure that the latch, is securely engaged.
- Open the left top cover, 2, and secure the latch.
- Open the right top cover, 3, and rest on top of cooler box.
- Open the front top cover, 4, and secure the latch.



14

3. Access to the grain tank from the rear platform.

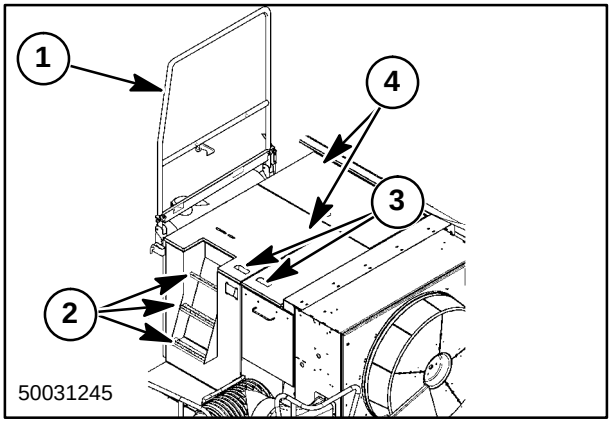
⚠ WARNING ⚠

Shut off engine and remove ignition key before entering the grain tank.

⚠ WARNING ⚠

Never enter the grain tank from the front of the combine. Always use the provided access steps and anti-skid covers, to access the grain tank from the rear of the combine.

- The grain tank is accessible with the grain tank extensions open or closed. Raise safety rail, 1. Use the steps, 2, on the engine door and hand holds, 3, to access the closed, engine covers, 4. Step across the engine covers to the step, located inside the grain tank.

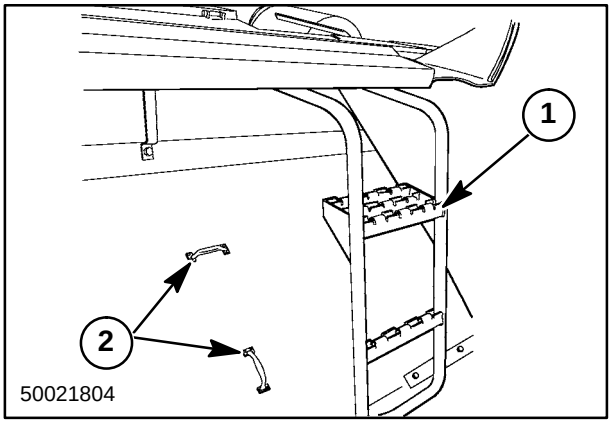


15

⚠ WARNING ⚠

Never enter the grain tank from the front of the combine. Always use the provided access steps and anti-skid covers, to access the grain tank from the rear of the combine.

- Carefully step over the grain tank extensions, using handrail when extensions are open, and place foot on the step, 1, inside the grain tank.
- Once inside the grain tank, remove the cover, 2, to access the back of the engine compartment.



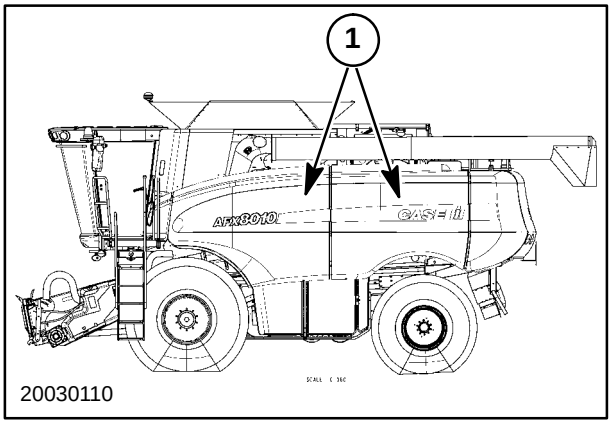
16

Combine Side Door Panels

1. All of the five side panels, 1, (three right side, two left side) on the combine use similar types of latch mechanisms. The panels that open outward and up have a single latch, whereas the others that open out and to one side have dual latches (located at the top and bottom of panel).

⚠ CAUTION ⚠

Use caution when opening the right and left center panels when winds are in excess of 30 mph. Panels and/or attachments may be damaged due to excessive wind loads.

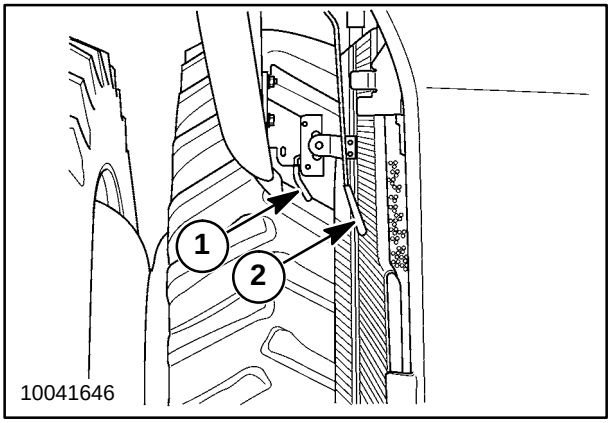


17

- To open the five side panels on the combine:

  Panels that open outward and up. Pull the latch handle, 1, to release the latch.

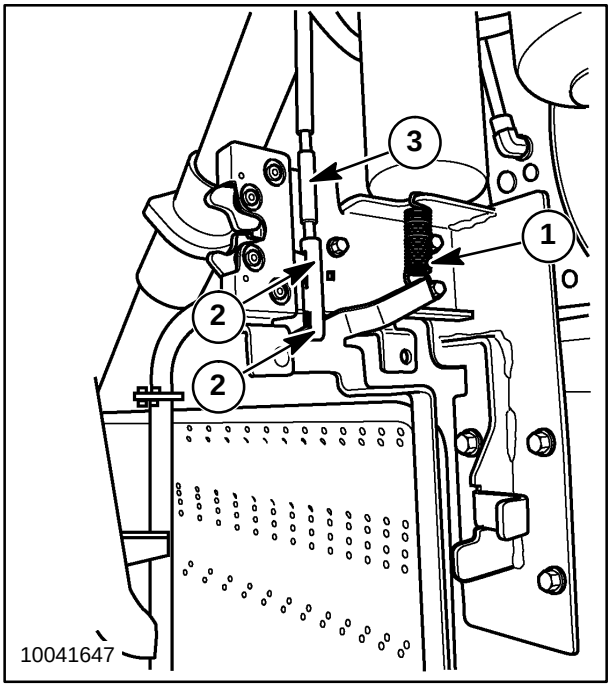
  Panels that open out and to one side. Pull the latch handle, 2, to release the dual latch system. An integrated door prop is provided which engages as the door is opened.



18

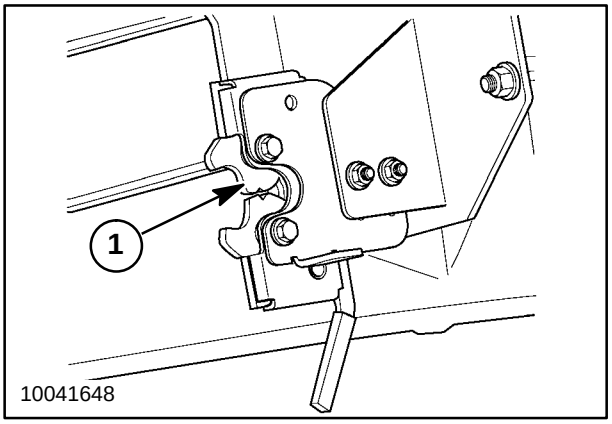
If the upper and lower latches of the dual latch system do not operate in tandem, adjust the connecting linkage as follows:

Remove spring, 1, and the two retaining pins, 2, from the lower latch. Turn clevis, 3, counter clockwise a few turns – if the upper latch is opening first, or clockwise a few turns – if lower latch is opening first. Reinstall retaining pins and check operation. Repeat procedure until both latches open at the same time. Reinstall spring.



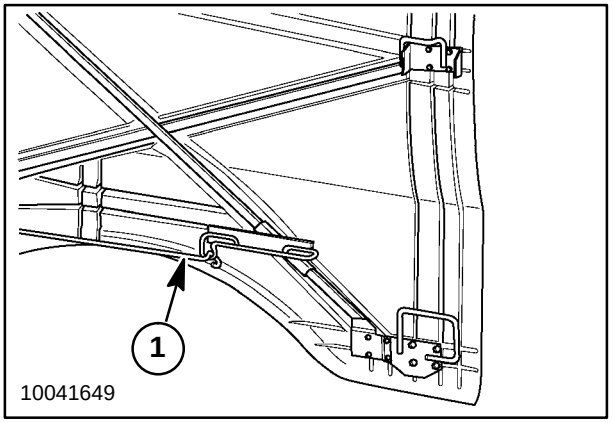
19

- To close the panels on the combine that open outward and up, push the door closed until the latch, 1, engages securely.



20

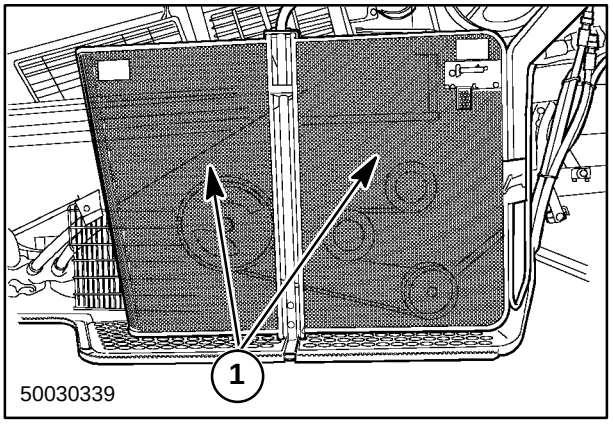
- To close the panels that open out and to one side, lift prop rod end, 1, up, then push door closed until both latches engage securely.



21

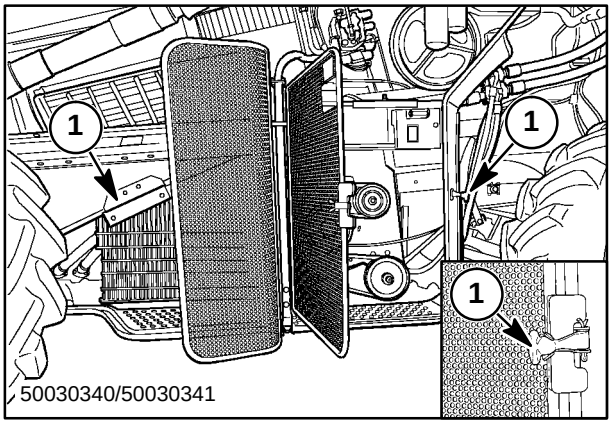
Service Platforms and Shielding

1. Two service shields, 1, are located on the left side of the combine, accessible with the side panels open.



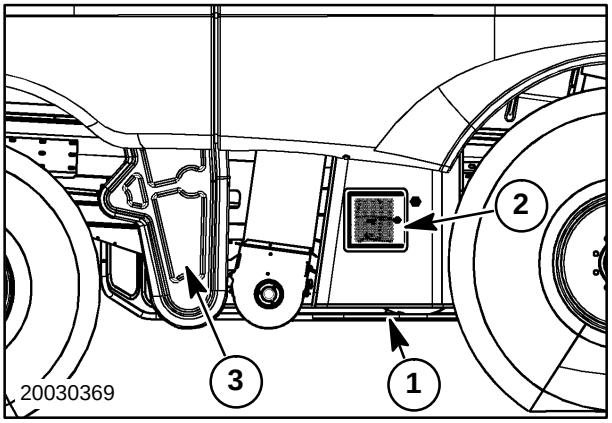
22

2. Unhook the rubber catch, 1, from the left and right door. Swing doors open towards center.
3. With service shields open, service steps can be used to check rotor modules and other systems on the left side of the combine.



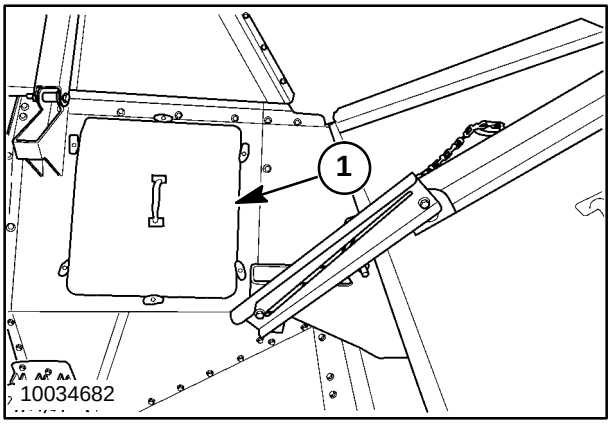
23

4. A service step, 1, is also located on the right side of the combine. The service step can be used to check rotor modules and other systems on the right side of the combine.
5. A service door, 2, is located on the right side of the combine, accessible with the side doors open.
6. The returns system shield, 3, is removable to access the returns system.



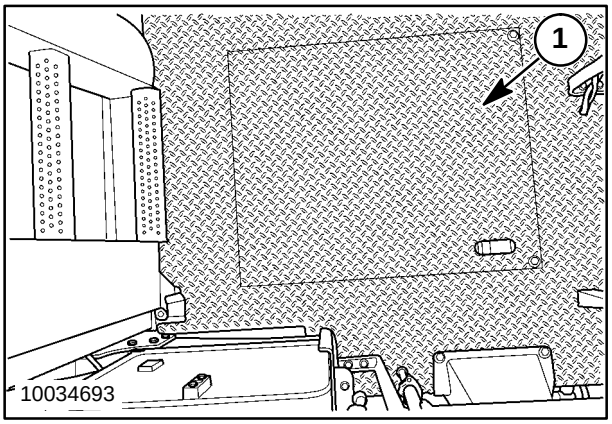
24

7. A service door, 1, is located in the right rear corner of the grain tank to access the clean grain elevator slip clutch.



25

8. A service door, 1, is located on the rear deck to ease cleaning of chaff from below the rear deck.



26

TOWING THE COMBINE

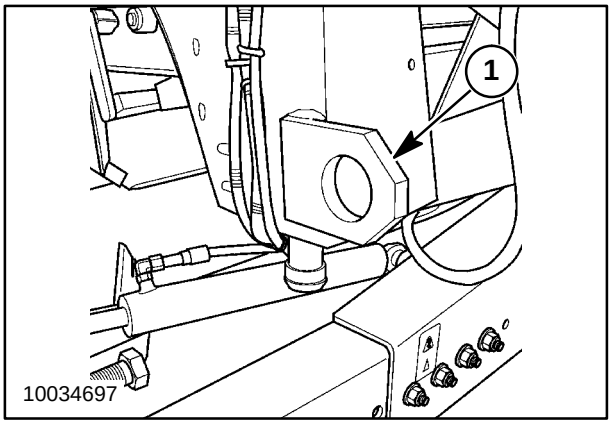
Towing the combine is not recommended, but if it must be towed, the following steps must be taken:

IMPORTANT: *If combine is towed with a gear selected (i.e. other than neutral), irreparable hydro damage will occur.*

1. Move the multi function handle into the neutral position and switch off the rear-wheel drive.
2. Select “NEUTRAL” gear. If not possible with the remote gear shifting, refer to Section 3 – “FIELD OPERATION”.
3. Release the parking brake. If not possible with the remote parking brake switch, refer to Section 5 – “FAULT FINDING”.
4. Tow at a maximum speed of 16 km/h (10 mph).
5. Provide adequate warning signals to make other road users aware that the combine is being towed.

IMPORTANT: *Unload grain tank before towing or pulling the combine.*

6. Should the combine become stuck in the mud, always tow the combine with a cable or chain attached to the front traction axle or at the rear, lower frame hooks, 1. DO NOT tow the combine with a cable or chain, attached to the steering axle.



27

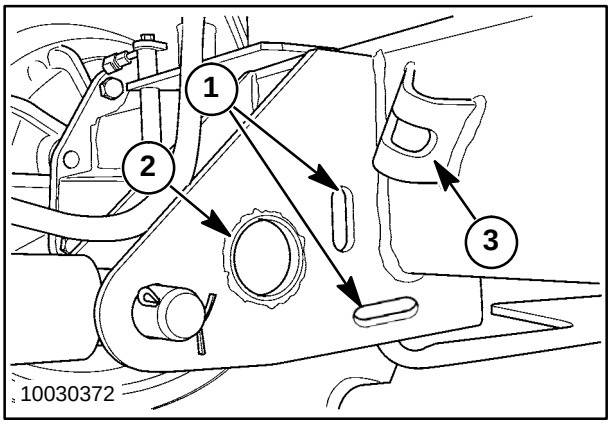
TIE DOWNS FOR SHIPPING

To tie down the combine for shipping, proceed as follows:

1. Place the combine on a trailer and support the front and rear axles with wood blocks, as wide and as low as possible. Use suitable chains and equipment at the following locations to secure the combine to the trailer.

At the front:

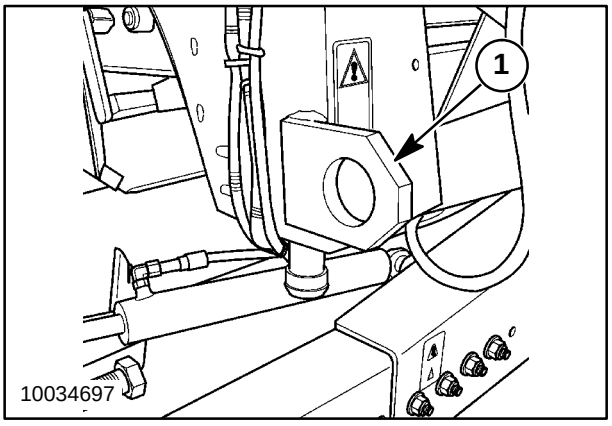
2. Use the slots, 1, and/or the tube, 2, on the left and right feeder house lift cylinder mount.
3. Use the hooks, 3, on the front axle if necessary.



28

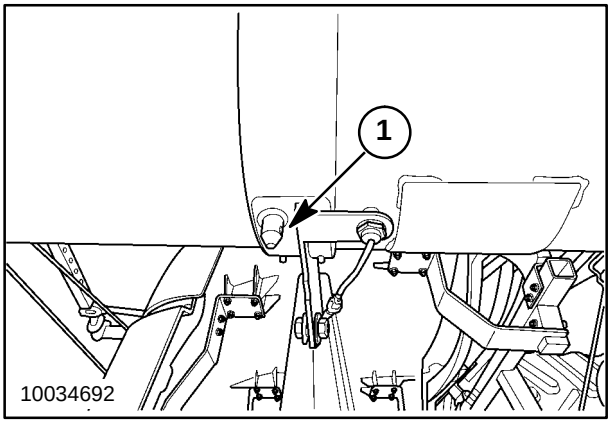
At the rear:

4. Use the tie down tabs, 1, at the rear of the lower frame.



29

5. Secure the unloading auger with a pin through hole, 1.



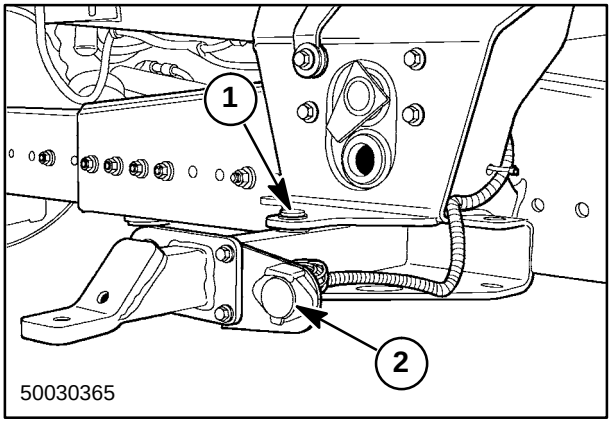
30

ATTACHING A TRAILER

A swing-away hitch is available on the AFX combines.

When not in use, the hitch can be swung to the side by removing pin, 1, positioning the hitch against the axle and reinserting the pin in the available hole.

A light plug socket, 2, is available for trailer electrical connections.



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SECTION 2

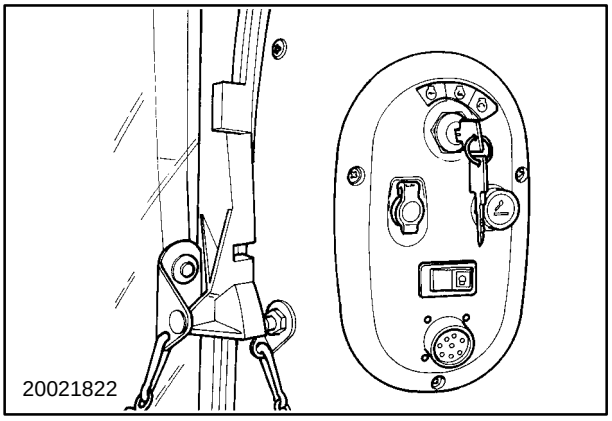
CONTROLS, INSTRUMENTS AND OPERATION

CAB AND CONTROLS

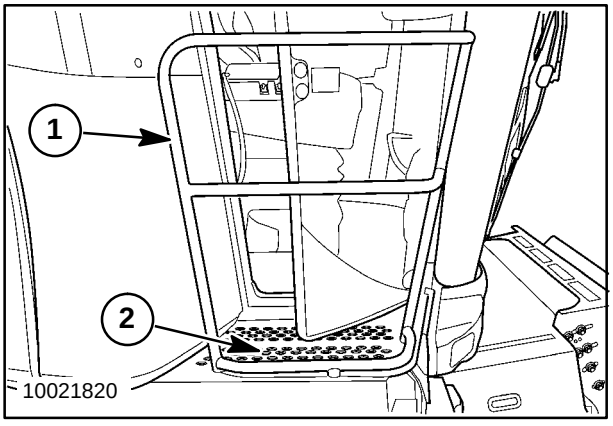
Emergency Exit
The emergency exit is to be found on the right-hand side of the operator's seat, opposite to the door that gives access to the cab.

To escape from the cab through the emergency exit, proceed as follows:

- Unlock the emergency exit door handle in three steps.
  1. Flip down the handle until it is in horizontal position.
  2. Push the door slightly open until the metal pin that is attached to the cab frame is visible through the notch in the handle.
  3. Flip up the handle in order to release the handle from the pin.
- Open the emergency exit door completely (is secured with a chain).
- Step over the right hand console and leave the cab.
- Use handrail, 1, as handholds, step on step, 2.

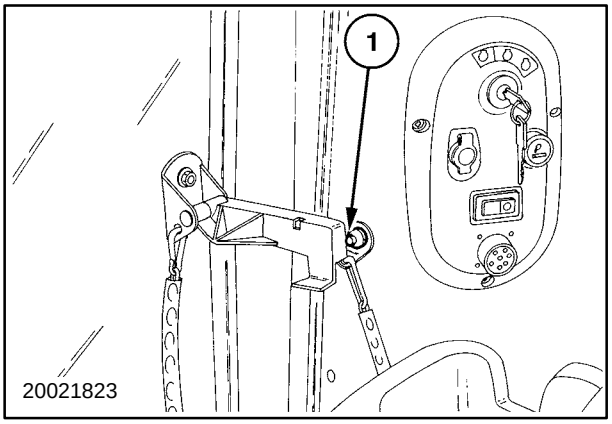


1



2

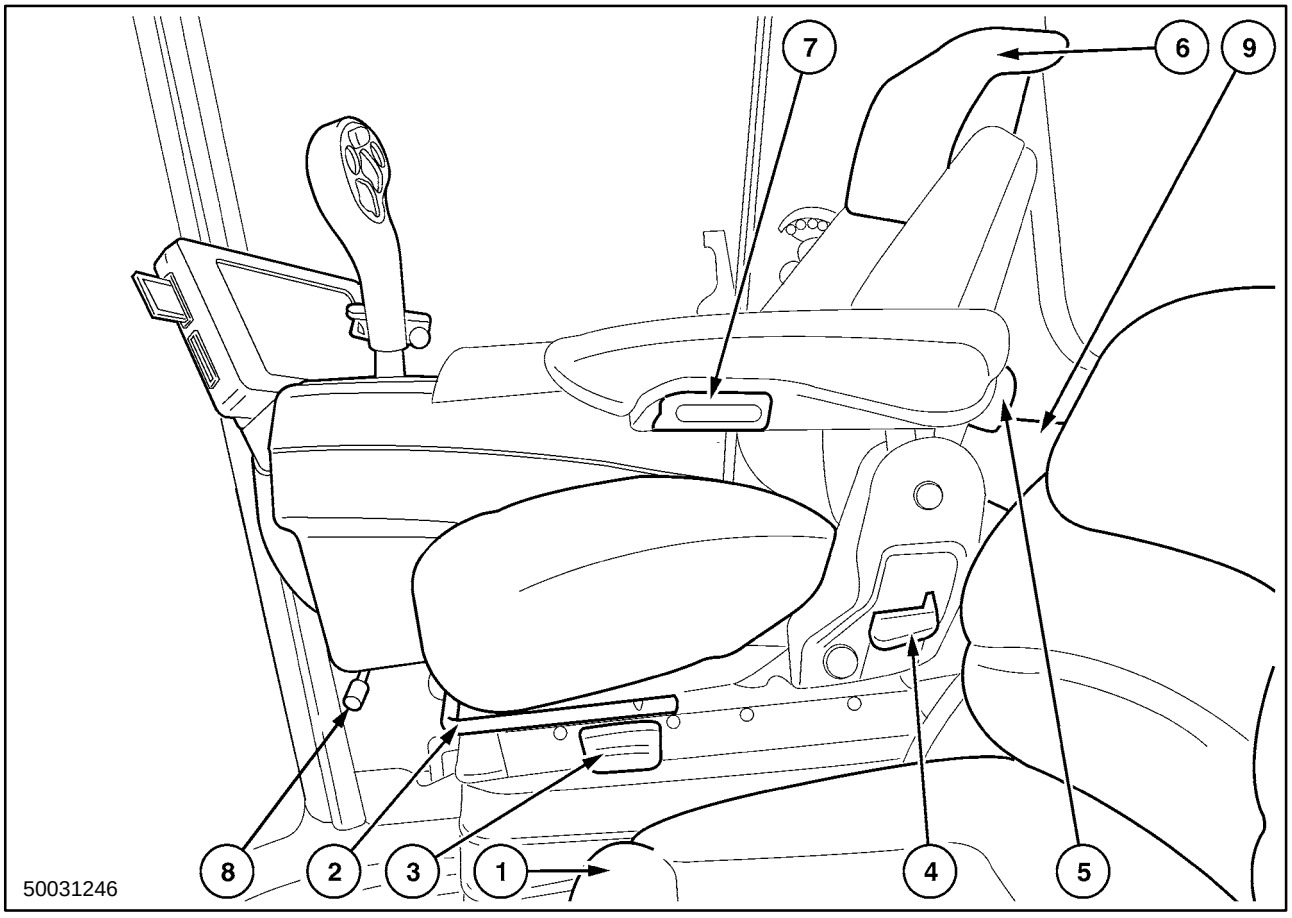
An additional notch, 1, is provided in the emergency exit door handle to set the door in a fixed open position.



3

Operator's seat and Surroundings

1. Air-suspended seat



4

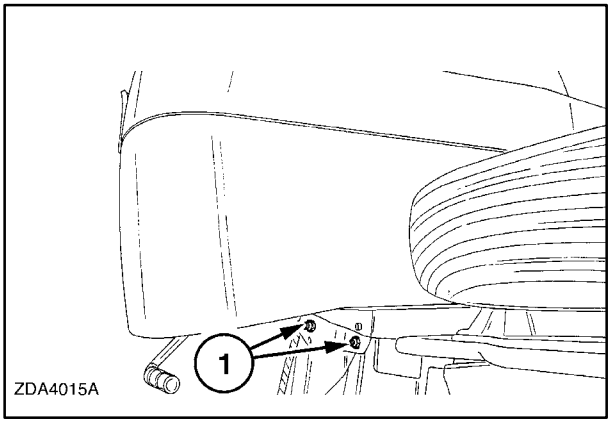
1. Instructional seat, with seat belt.
2. Operator seat fore and after adjustment.
3. Weight and seat height adjustment. (air suspension)

Lift the lever briefly and the seat will automatically be adjusted to the operator's weight. (hold the lever to override the automatic mode)

Moving the lever up and down will adjust the height of the seat until the lever is released.

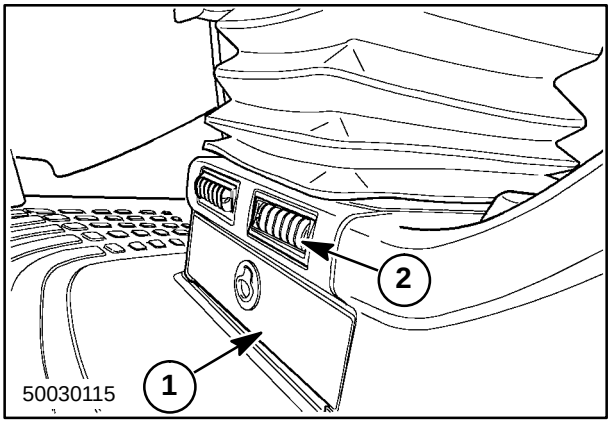
4. Seat back rest inclination adjustment.
5. Lumbar adjustment.
6. Seat upper back height adjustment.
7. Arm rest adjustment. (left-hand side)
8. Right-hand console fore and after adjustment.
9. Cover of storage box behind the seat.

- The right-hand console can be vertically adjusted by loosening four bolts, 1.



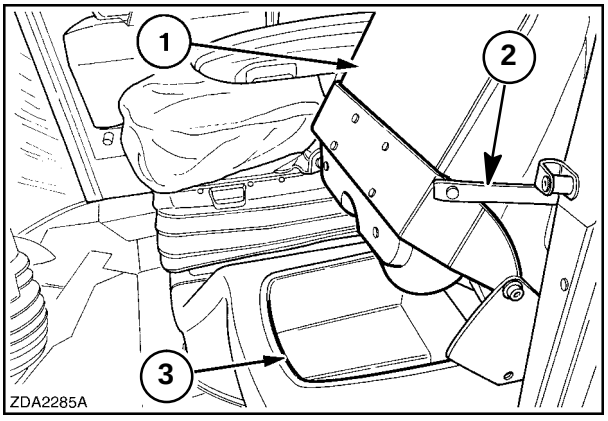
5

- Storage drawer, 1, located under the operator's seat.
- Adjustable air vents, 2.



6

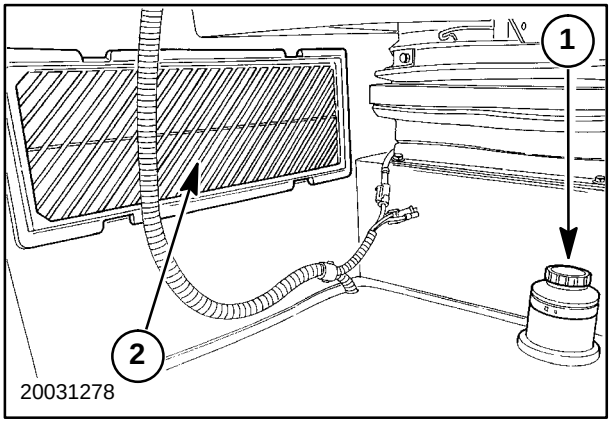
- Instructional seat, 1.
- The seat can be flipped-up and held in place by strap, 2, to give access to storage place, 3, for small items.



7

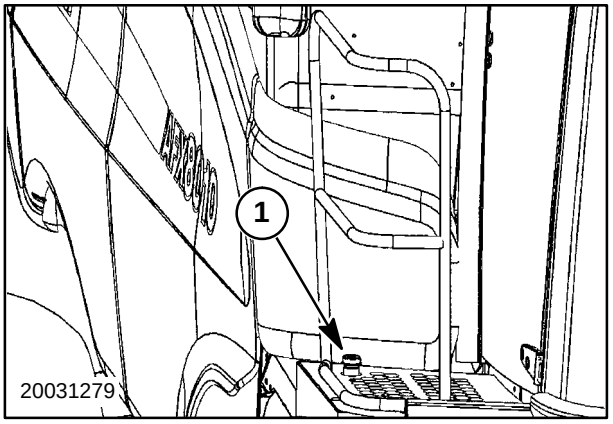
- Brake fluid reservoir, 1.
- Recirculation filter, 2.

NOTE: *The area behind the seat must not be used for storage. If the recirculation air filter is blocked, it will degrade HVAC performance.*



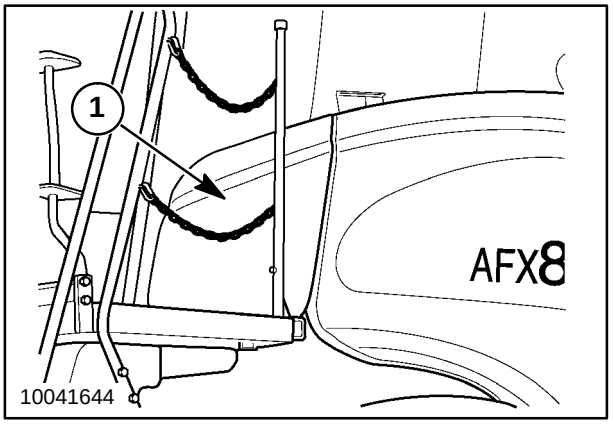
8

- Windshield washer reservoir, 1. (if equipped) (Prior to PIN 105700)



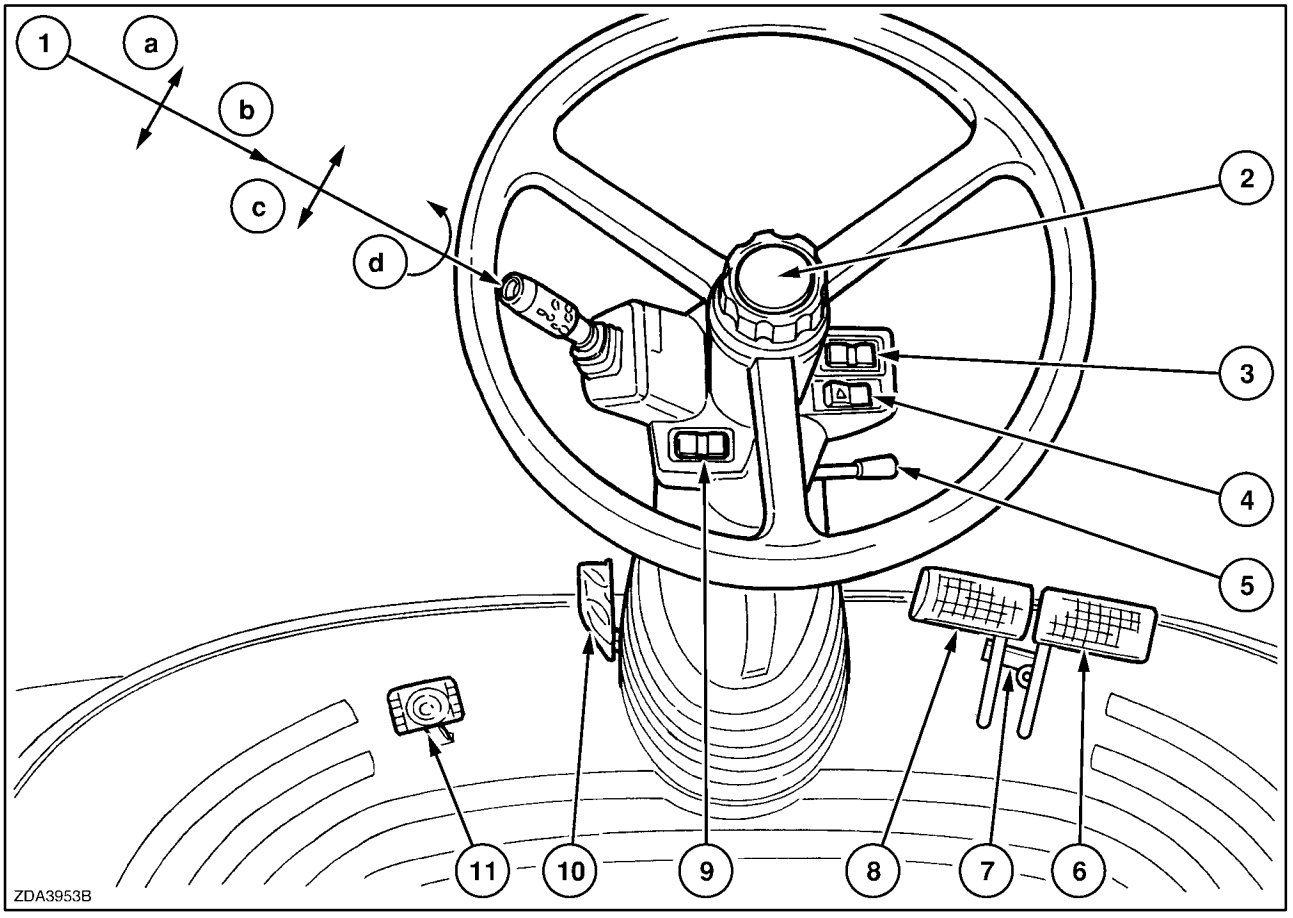
9

- Windshield washer reservoir (if equipped), located behind the left hand front trim panel, 1. (After PIN 105700)



10

Steering column and Control pedals



11

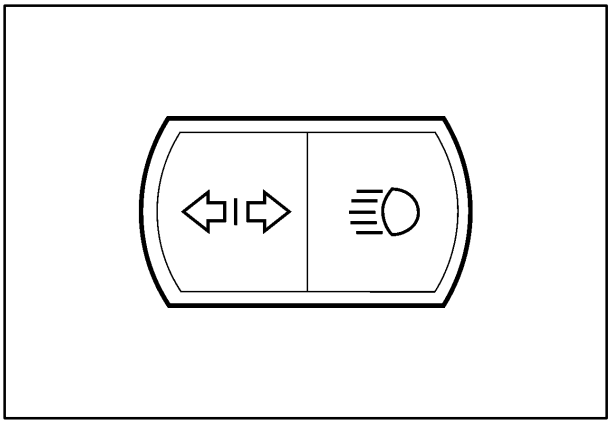
1. a. Direction indicator lever (left and right)
b. Horn (push)
c. High and low beam
d. Tail light control. The tail lights can be operated independently with this control. The tail lights come on with the hazard switch or the road mode switch, and are not normally operated from this switch. It is important to note that if the tail lights are turned on with this switch, they will stay on even with the key switch in the ”off” position and can drain down the battery.

2. Steering wheel height control knob
Loosen this knob and lower or raise the steering wheel to the desired position.

3. Right:
High beam headlight warning light (Europe only)
When the high beam headlight is switched ON, this light is illuminated.

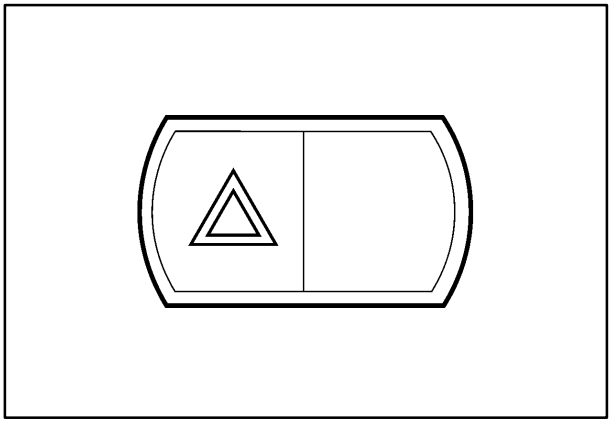
NOTE: *On North American machines this will illuminate when the switch is placed in the high beam position even though high beams are not operational.*

Left:
Trailer direction indicator warning light
When a trailer is hooked up and the wires are properly connected, both DIRECTION INDICATOR WARNING LIGHT and TRAILER DIRECTION INDICATOR WARNING LIGHT will flash.



12

4. Hazard warning lights rocker switch
When this switch is switched on, the four direction indicator lights will start flashing.



13

5. Steering wheel upper tilt control lever
Lift this lever and bring the steering wheel to a comfortable angle.

6. Foot brake pedal right.

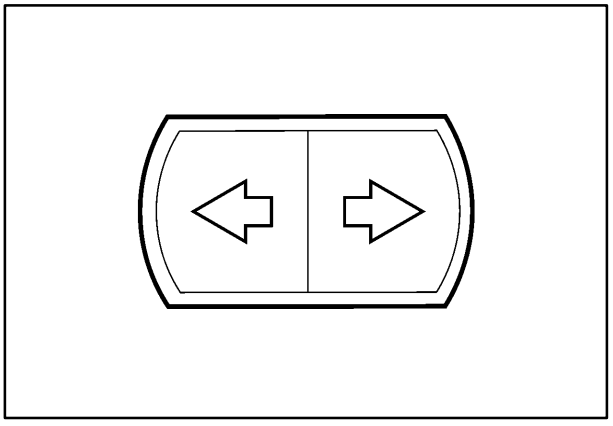
7. Brake pedal coupler.

8. Foot brake pedal left.

⚠ CAUTION ⚠

For safety reasons, always couple the brake pedals by means of the brake pedal coupler when driving on public roads. This ensures the brakes are actuated together.

9. Direction indicator warning lights, left and right



14

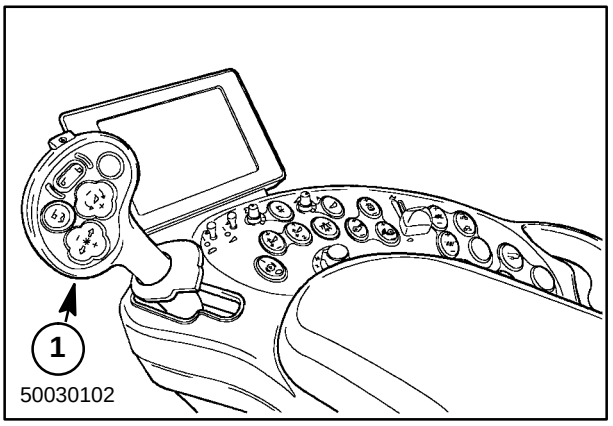
10. Steering column lower tilt control push pedal
Push this pedal and tilt the steering column to a comfortable angle. (Later models will have the push pedal at the rear of the steering column)

11. Differential lock pedal (If installed).

RIGHT-HAND CONSOLE

Propulsion Control Lever

The propulsion control lever, 1, is used to control the direction of travel and the ground speed of the combine.



15

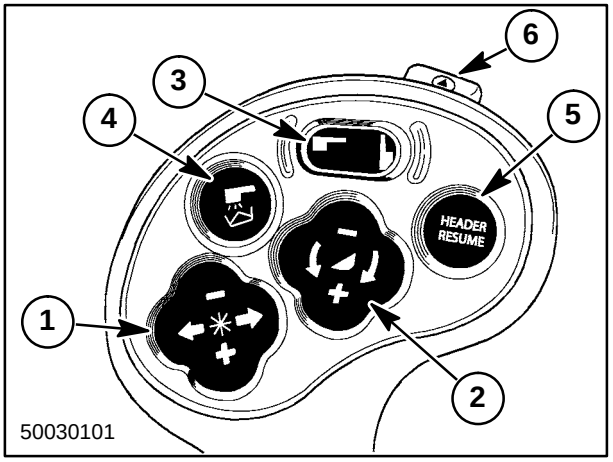
NEUTRAL POSITION – The neutral position is located in the center of the propulsion control lever slot. Moving the propulsion control lever toward the neutral position decreases the ground travel speed. Moving the propulsion control lever into the neutral position will stop all ground travel. The propulsion control lever must also be in the NEUTRAL position to start the engine.

FORWARD TRAVEL – Move the propulsion control lever forward from the NEUTRAL position to start forward ground travel. Moving the propulsion control lever farther forward in the slot increases the forward travel speed.

REVERSE TRAVEL – Move the propulsion control lever toward the right and then rearward from the neutral position to start reverse ground travel. Moving the propulsion lever farther rearward in the slot increases the reverse travel speed.

NOTE: *Moving the propulsion control handle when the parking brake is on will not activate the ground drive system. A prompt will appear on the display to turn off parking brake.*

NOTE: *To warn other people, an audible alarm is available that will sound as long as the combine is in reverse driving mode.*



16

REEL POSITION SWITCH, 1 – This is a four position switch which operates as follows:

Raise – Push the bottom of the switch to raise the reel.

Lower – Push the top of the switch to lower the reel.

Forward – Push the switch to the left to move the reel forward .

Aft – Push the switch to the right to move the reel to the rear. See “Sect 3” Header Control for additional information.

HEADER CONTROL SWITCH, 2 – This is a four position switch which operates as follows:

Raise – Press the (+) on the switch to raise the header.

Lower – Press the (–) on the switch to lower the header.

Tilt Left – Press the switch to the left to tilt the header counterclockwise (Lateral Tilt).

Tilt Right – Press the switch to the right to tilt the header clockwise (Lateral Tilt).

GRAIN TANK UNLOADER TUBE SWITCH, 3 – Push the left side of the switch to swing the unloader tube out. Push the right side of the switch to swing the unloader tube in. The middle position of the switch is the NEUTRAL position. The switch operates in two modes dependent on unloading auger engagement.

When the auger is engaged, the switch operates as a momentary switch. The switch must be depressed for any unloader tube movement in either direction. When the switch is released, movement will stop. This allows control while topping off a truck.

When the auger is not engaged the switch operates as a latching switch. When the switch is depressed in either direction and released, the unloading tube will continue to move to the end of travel, or stop when the switch is depressed a second time.

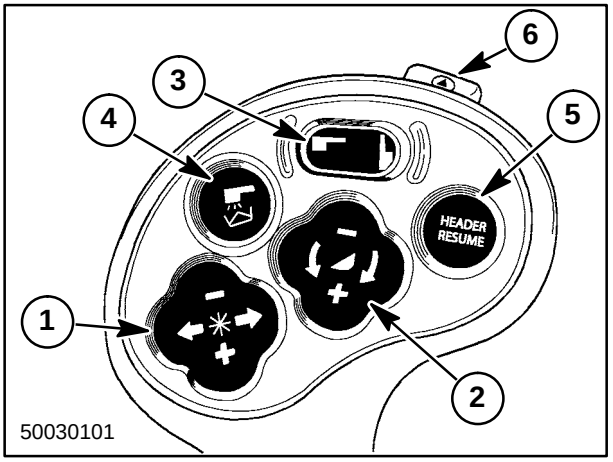
If the operator engages the auger while in the extending latch mode, the tube will continue to swing out. Pressing the switch will cause the switch to change to the momentary mode.

If the operator attempts to engage the auger while in the retracting latch mode, the auger will not engage and the tube will continue to move until it reaches the cradle or one of the tube switches is pressed. The operator will be prompted via the display that the unloader auger will not engage because the system is in the latched retract mode.

GRAIN TANK UNLOADER DRIVE SWITCH, 4 – To start the unloader, press the switch and then release it. To stop the unloader press the switch.

HEADER RESUME, 5 – While the height system is in the Manual state and the feeder is engaged, if the operator momentarily presses the RESUME switch, 1, the height system will lower or raise the header to the working setting specified in Settings #1 or Settings #2 for the appropriate header type. The Settings selected is the last one operated in. If there was no prior settings used, the default is Setting #1. While in the Auto state, momentarily actuating the RESUME switch will toggle between the Settings and the header will be raised or lowered to the working setting and mode specified in the new setting.

See “Sect 3” Header Control for additional information.



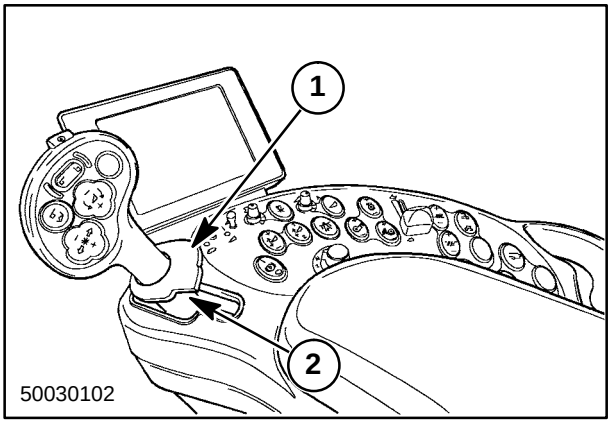
17

QUICK STOP BUTTON, 6

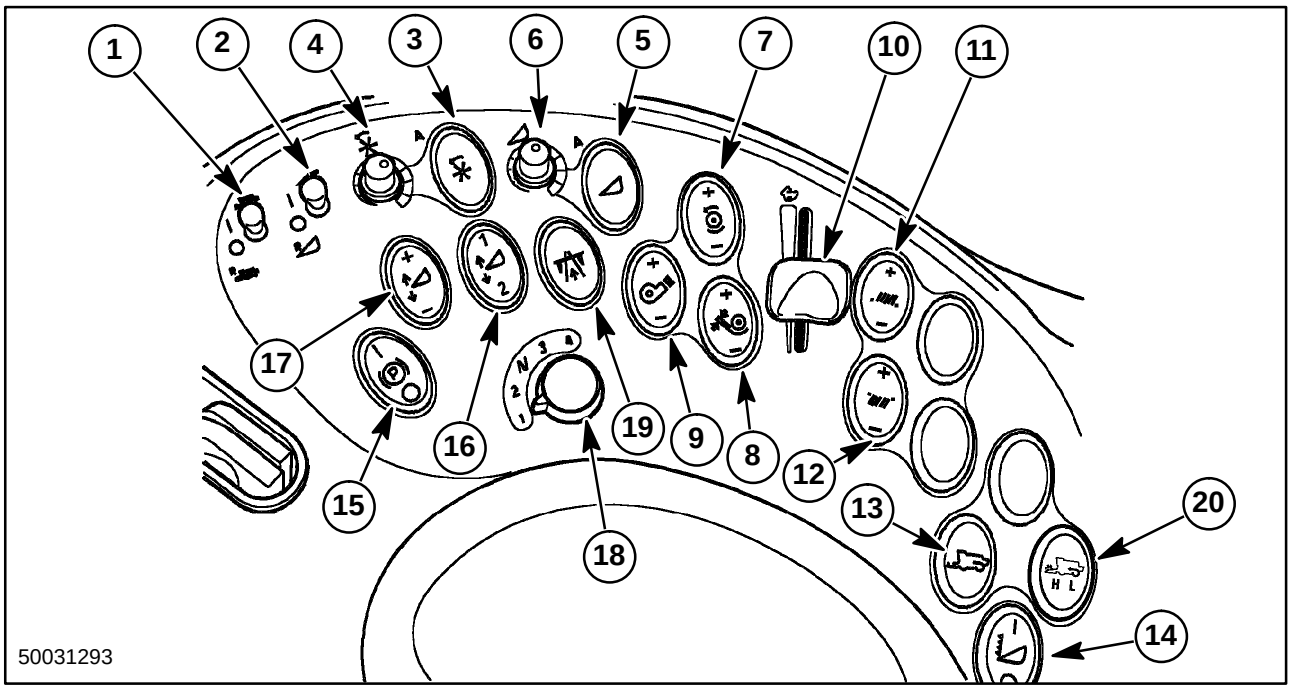
One pulse on the yellow quick stop button will stop the feeder / header drive and unloading auger.

OPERATOR HAND REST, 1

HAND REST ADJUSTING KNOB, 2 – The operators hand rest can be adjusted using the adjusting knob. To loosen the adjusting knob turn it counterclockwise. Adjust the hand rest and retighten the adjusting knob.



18



19

1. **Separator Switch**

   This is a three position switch. Lifting and pushing the switch forward to ON engages the separator drive. Placing the switch in the middle position to OFF disengages the separator drive. Lifting and pulling the switch rearward then to the ON position engages the rotor deslug mode. See “Sect 3” Threshing Control for additional information.

NOTE: *To engage separator, the operator must be seated and the rear ladder must be in the up position.*

NOTE: *The operators seat on the combine is equipped with a switch that permits engagement of the separator clutch switch only when the operator is seated.*

2. **Feeder Switch**

   This is a three position switch, to engage the feeder, header drive, the feeder speed must be <50 RPM and the operator must be seated and the SEPARATOR must be engaged. Lift and push the feeder clutch switch forward to the ON position to engage the feeder, header drives and reel drive.

   If the feeder clutch switch is left “ON” and the operator is seated, engaging the SEPARATOR will also engage the feeder and other functions as stated above.

   The feeder may also be operated in reverse by placing the switch in the rear momentary position.

NOTE: *The operators seat on the combine is equipped with a switch that permits operation of the feeder and header drive only when the operator is seated. The feeder, header drive and the automatic header controls will disengage five (5) seconds after the operator leaves the seat and will remain disengaged until reset. To reset, turn the FEEDER SWITCH off until the feeder stops, then ON while the operator is seated.*

3. **Auto Reel speed selector switch**

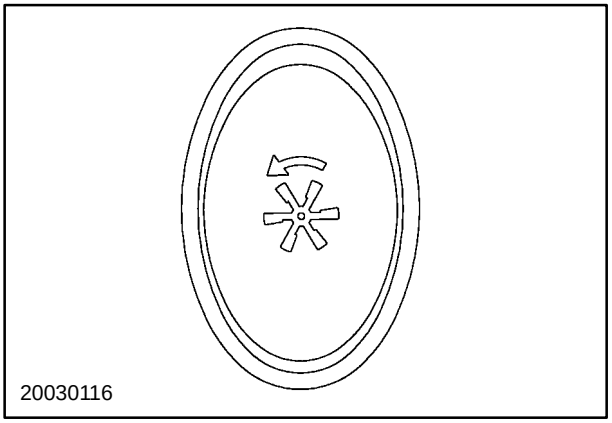
   Press the top of switch for the ON position.

   The reel speed will automatically increase or decrease with the combine ground speed. The Indicator light will remain illuminated while Auto Reel speed is engaged.

   Press the bottom of switch for the OFF position.

   The reel speed is controlled manually, using the potentiometer control.

   See “Sect 3” Header Control for additional information.



20

4. **Reel speed potentiometer control**

   The Potentiometer allows the operator to set the Reel speed in manual mode or varies the reel offset speed in auto mode. Turn the control clockwise to increase the offset speed or turn the control counterclockwise to decrease the offset speed ratio. The ratio of reel speed to ground speed is about one to one, regardless of the offset speed. The offset speed defines an additional reel constant speed above the reel speed that is proportional to ground speed.

   See “Sect 3” Header Control for additional information.

5. **Auto/Man header/feeder drive switch**

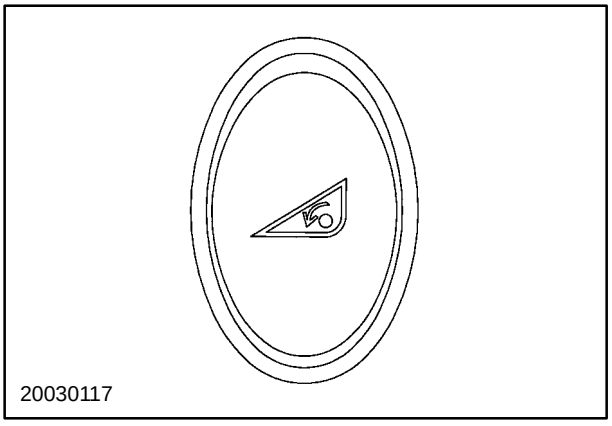
   Press the switch for the ON position.

   The header speed will automatically increase or decrease with the combine ground speed. The Indicator light will remain illuminated while the Auto/Man header/feeder drive is engaged.

   Press the switch again for the OFF position.

   In manual mode the header speed will not be affected by the ground speed control.

   See “Sect 3” Header Control for additional information.



21

6. **Header speed potentiometer control**

   The Potentiometer allows for speeding up or slowing down the header/feeder drive in both manual and auto modes.

   See “Sect 3” Header Control for additional information.

7. **Rotor speed control switch**

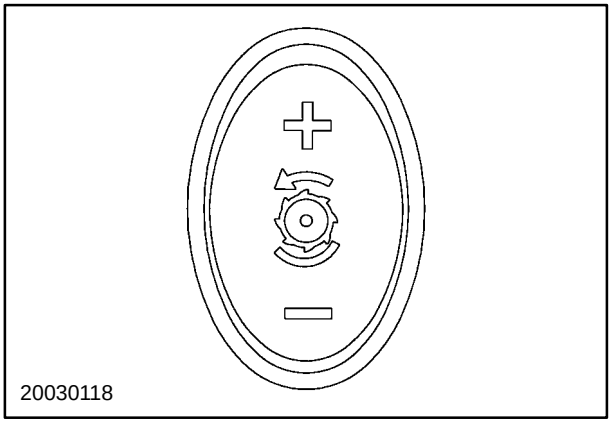
   During normal operation, this rocker switch operates as follows:

   Increase – Press the + portion of switch to increase the speed of the rotor.

   Decrease – Press the – portion of switch to decrease the speed of the rotor.

   Pressing the switch in either direction will cause the rotor set speed to be displayed on the Display RUN>HARV* Screen in the top Right of the display. Rotor set speeds will be displayed for 4 seconds after the switch is released, then the display will return to what was previously displayed. The setpoint is the rotor command speed. Actual rotor speed is displayed as “rotor RPM”.

   During rotor de-slug operation, pressing the + portion of the switch will rotate the rotor clockwise. Pressing the – portion of the switch will rotate the rotor counter-clockwise.



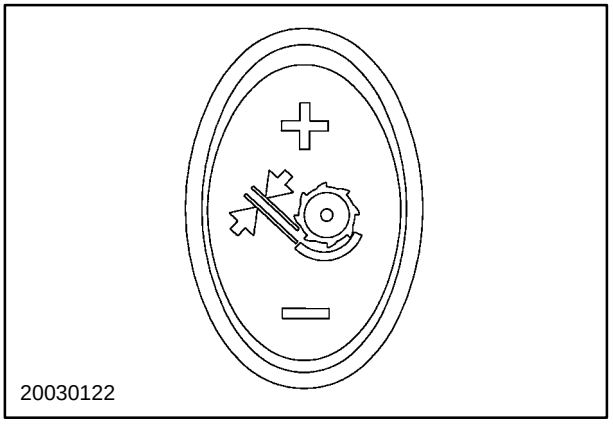
22

8. **Concave position control switch**

   Increase – Press the + portion of switch to increase concave clearance.

   Decrease – Press the – portion of switch to decrease concave clearance

   The clearance of the Concave will be shown in the top right-hand cell of the Universal display RUN>HARV* Screens during adjustment.



23

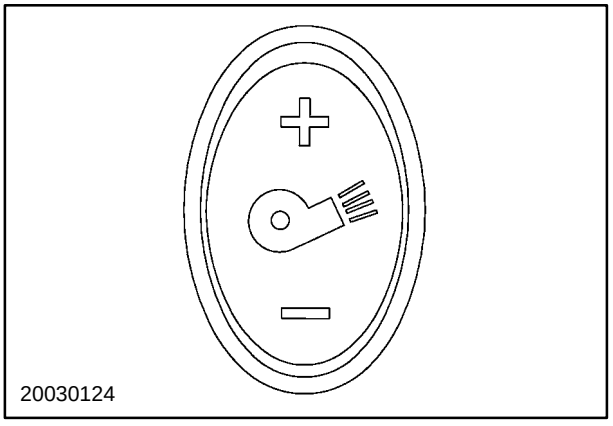
9. **Cleaning fan speed control switch**

   This is a rocker switch which operates as follows:

   Increase – Press the + portion of switch to increase the speed of the cleaning fan.

   Decrease – Press the – portion of switch to decrease the speed of the cleaning fan.

   The speed of the Cleaning Fan will be shown in the top right-hand cell of Universal display RUN>HARV* Screens during adjustment.



24

10. **Throttle control lever**

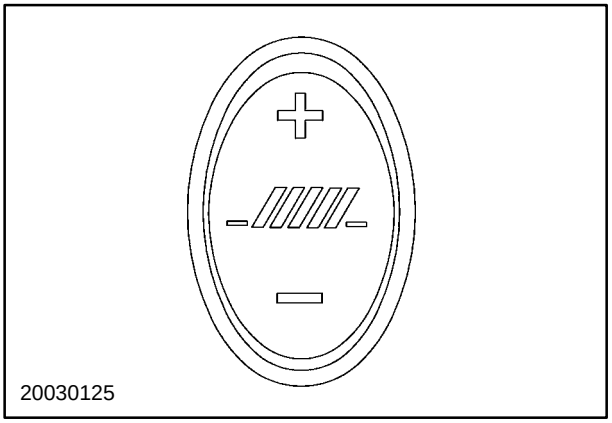
    Used to control the speed of the engine. To increase engine speed move the lever forward. To decrease engine speed move the lever to the rear.

11. **Upper sieve control rocker switch**

Increase – Press the + portion of switch to increase the opening of the sieve.

Decrease – Press the – portion of switch to decrease the opening of the sieve.

When touching this switch, the upper sieve setting is shown in the top right-hand cell of Display RUN>HARV* Screens during adjustment.



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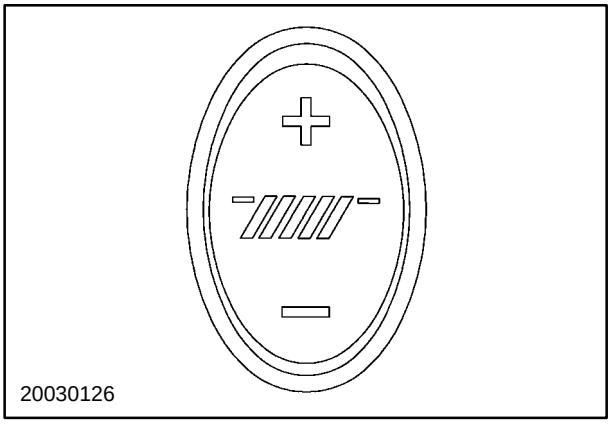
12. **Lower sieve control rocker switch**

Increase – Press the + portion of switch to increase the opening of the sieve.

Decrease – Press the – portion of switch to decrease the opening of the sieve.

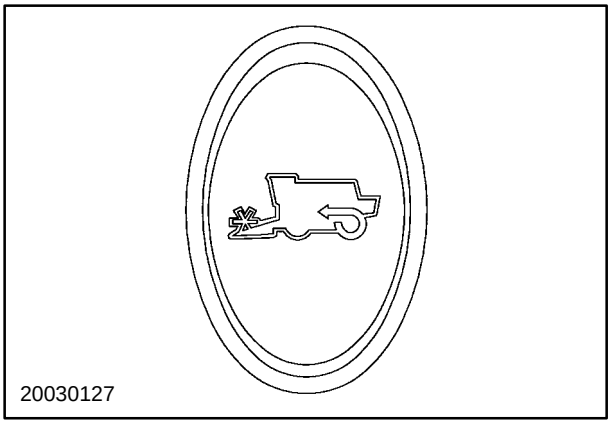
When touching this switch, the lower sieve setting is shown in the top right-hand cell of Display RUN>HARV* Screens during adjustment.



26

13. **Power guide axle switch**

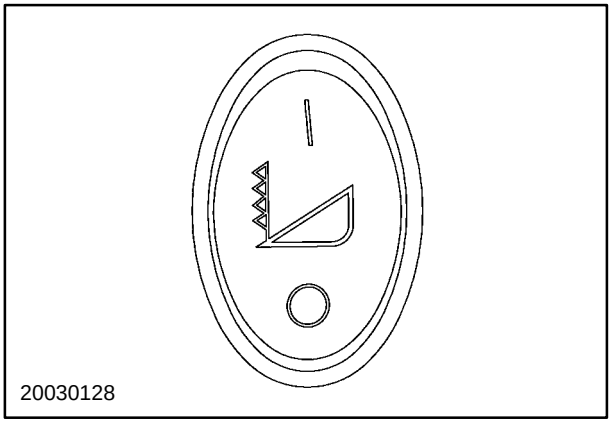
- Press the switch to Engage the power guide axle. The Indicator light will remain illuminated while the Power guide axle is engaged.
- Press the switch again to Disengage the power guide axle.



27

14. **Vertical Knife switch**
(if installed, Europe only)

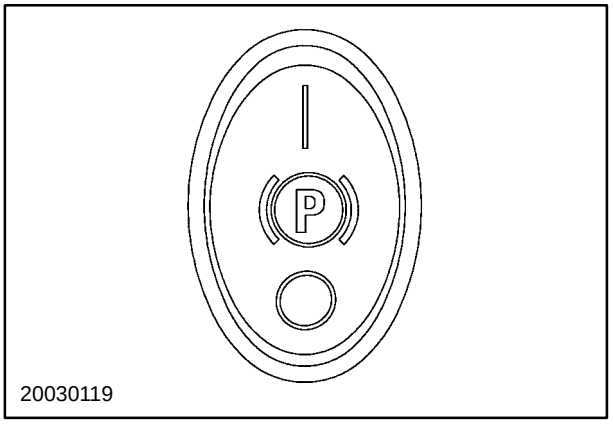
- Press the top of the switch once to engage the right-hand knife. The top indicator light will illuminate while the Vertical knife is engaged.
- Press the top of the switch twice to engage both knifes. Both indicator lights will illuminate while both knives are engaged.
- Press the bottom of the switch to disengage knives.



28

15. **Parking brake switch**

- Press the top of switch to Engage the parking brake.
- Press the bottom of switch to Disengage the parking brake.



29

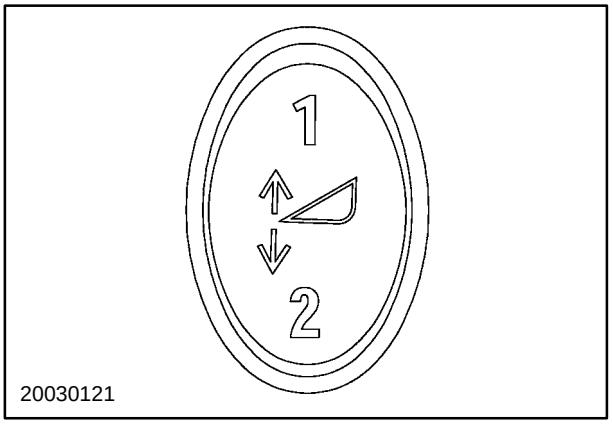
16. **Auto Header Height Set control**

- Press switch (1) to set height Setting 1.
- Press switch (2) to set height Setting 2.

The appropriate Indicator light will remain illuminated while the Auto Header Height Set is engaged.

The height mode will be shown in the upper right window of the Display RUN>HARV* Screen.

See Section 3 “Header Control” for additional information.



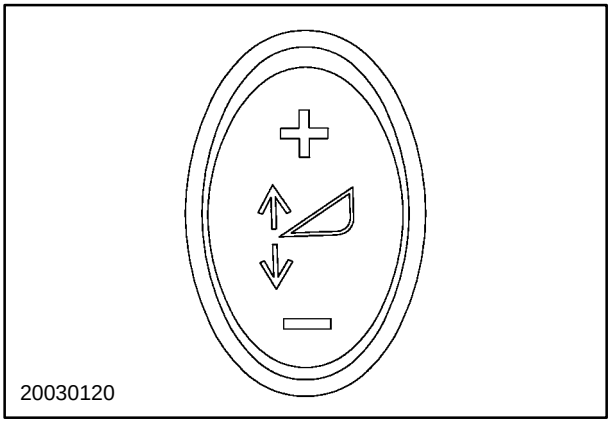
30

17. **Auto Header Height Fine Adjustment control**

- **Increase** – Press (+) switch to increase header height during operation.
- **Decrease** – Press (–) switch to decrease header height during operation.

"See Section 3 Header, Auto Header Height Control" for operating additional information.

NOTE: *If the circuit for the manual controls for RAISE and LOWER are detected faulted, the controls for the fine adjustment can be used for manually raising and lowering the header. Auto control will be disabled.*



31

18. **Gearshift selector switch (1–2–N–3–4)**

Shifting gears is only possible with the multi-function lever is in neutral position, and the combine stopped.

Turn the switch to select a gear. The parking brake will automatically engage and the hydrostatic system will be disabled.

When changing gears the current- gear is shown in the top right-hand cell of Display RUN>HARV* Screens during adjustment.

19. **Field/Road mode switch– Safety**

Press the switch for ROAD MODE ON

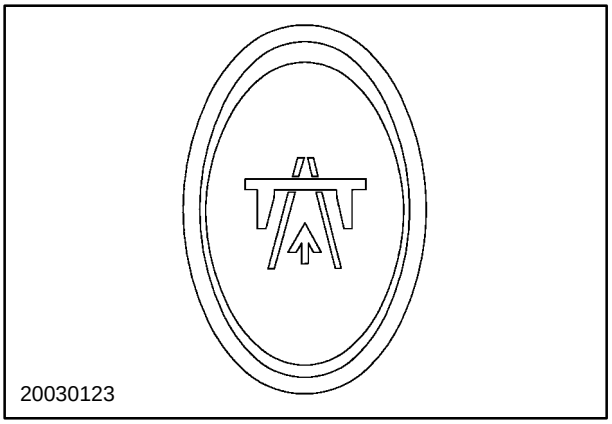
position. With the road mode switch engaged the following functions may be disabled dependent on local regulations.

- Header control and reel speed
- Unloading auger swing and engagement
- Feeder and threshing engage
- Side and rear work lights
- Grain tank covers

If the combine is equipped with ride control and a header is attached, ride control will be activated.

Press the switch again for the FIELD MODE ON position (Road Mode is now OFF).

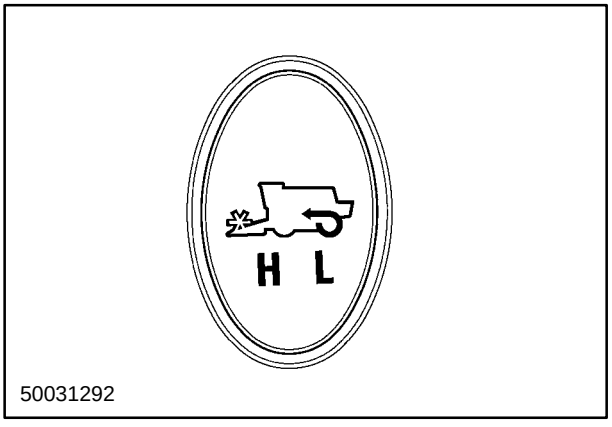
The Indicator light will illuminate when the Road mode is engaged.



32

20. **Power guide two speed axle**

- Press the switch to toggle between high and low speed powered rear axle. (if equipped)



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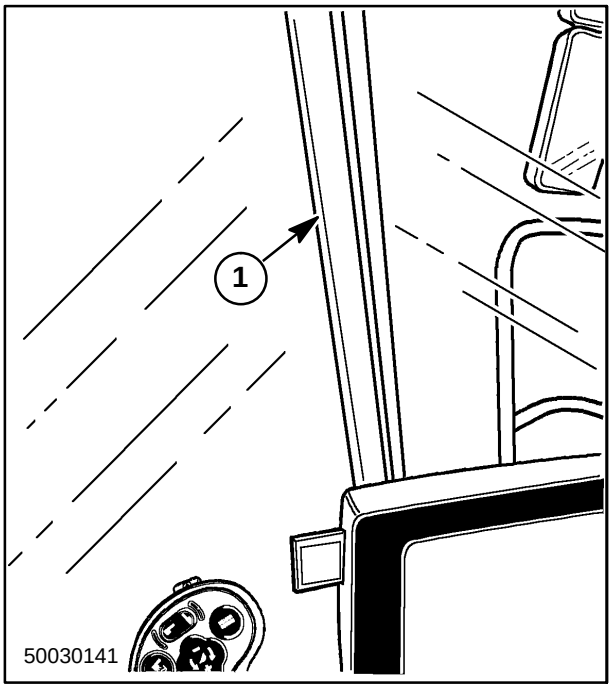
Shaft Speed Monitor (SSM)
The Shaft Speed Monitor (SSM), 1, is located to the front and to the right of the operator, integrated in the cab frame.

The SSM features low speed warning alarms accompanied by an audible alarm for several shaft speeds.

When the ignition switch is rotated to the “contact” position, the SSM shows a lamp test.

The SSM will continuously show fuel level and engine coolant temperature on its two digital bar graphs.

These gauges also include alarm and warning lights.



34

1. 

Residue low speed warning light for spreaders and, if equipped, chopper

2. 

Rotor low speed warning light

3. 

Grain elevator low speed warning light

4. 

Return(s) low speed warning light

5. 

Cleaning fan low speed warning light

6. 

Header/Feeder low speed warning light

7. 

Parking brake on

On: Park brake engaged

Blinking: when MFH is not in neutral with engine running and park engage or brake pad worn or an error with the park brake pressure sensor.

8. 

Grain tank covers open (if installed)

On: when open and separator is off

Off: when separator is engaged

9. 

Unloading tube open

On: when unloading auger extended

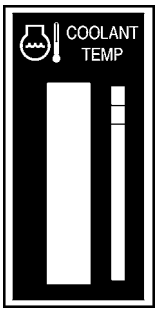
Blinking: when unloading auger is engaged

10. 

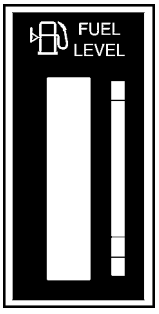
Grain tank full

On: when grain tank is 75% full

Blinking: when grain tank is 100% full (Linked up with buzzer)

11. 

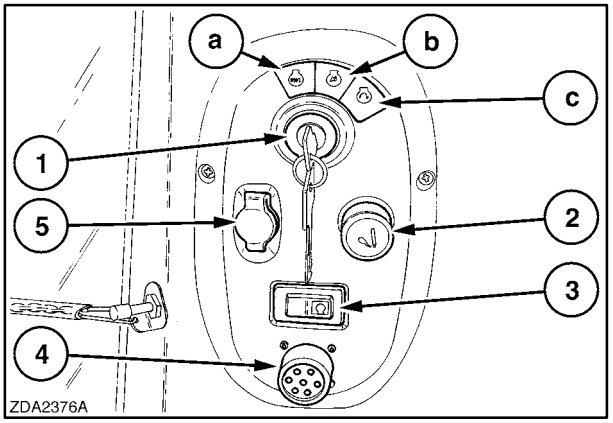
Coolant temperature

12. 

Fuel level

Start console

The start console is located to the right and to the back of the operator's seat.



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1. The ignition switch has three positions:

- a Off
- b Contact/On
- c Engine starter motor

2. Cigarette lighter

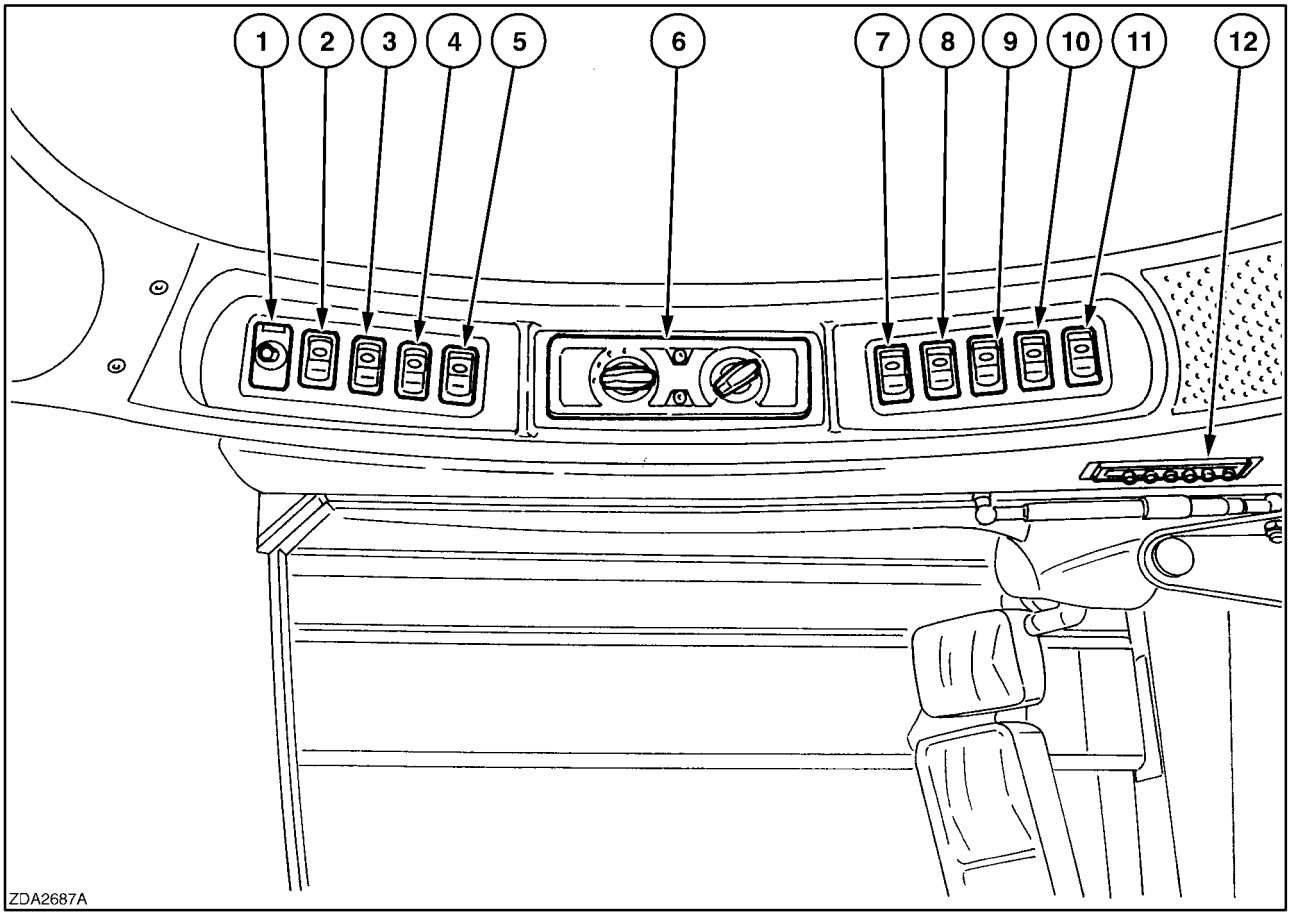
3. Indicator light for cold start preheater.

4. Diagnostics port for off-board diagnose and software download.

5. 12 volts DC socket (only current with ignition switch in contact position)

NOTE: *When the ignition switch is moved to the "contact" position, the backup alarm will sound for one second and the beacon lights (if equipped) will be activated for 2.5 seconds.*

Cab Roof Controls



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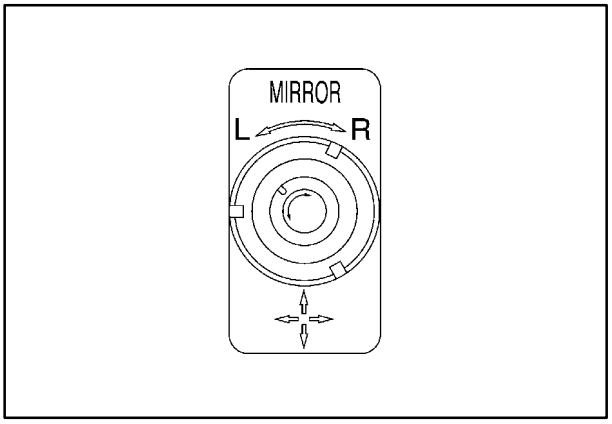
1. Mirror adjustment switch
   - Arrow to the left: left-hand mirror
   - Arrow to the right: right-hand mirror



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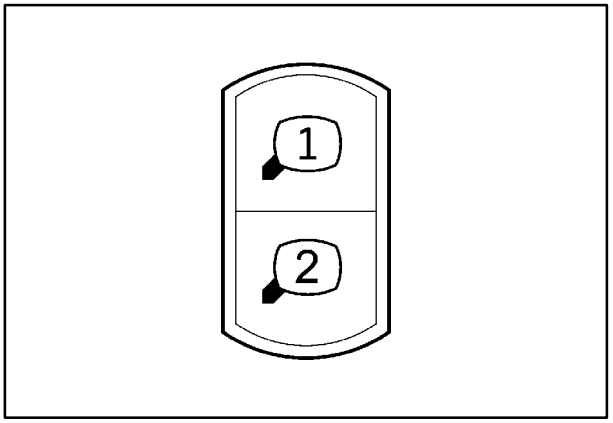
2. Mirror select rocker switch (if installed)
   - Main mirror adjustment
   - Additional mirror adjustment (Germany only)



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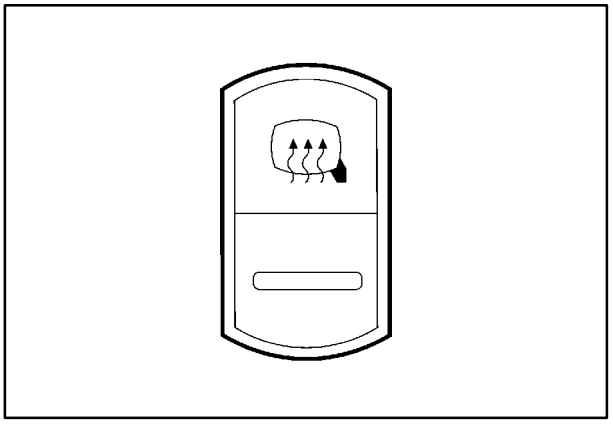
3. Mirror heating rocker switch
   - ON
   - OFF



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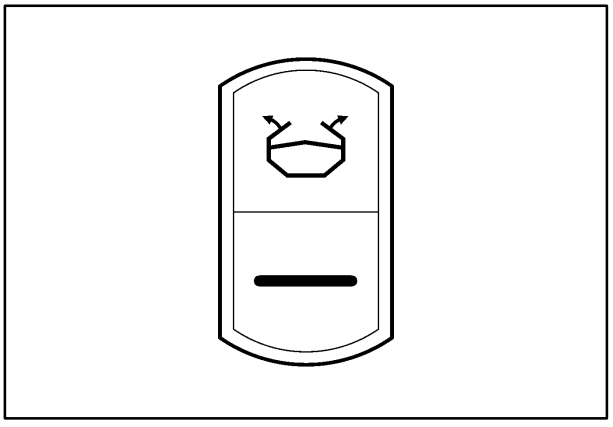
4. Spare

5. Grain tank covers open/ close rocker switch(if installed) (Europe only)
   - Open
   - Closed



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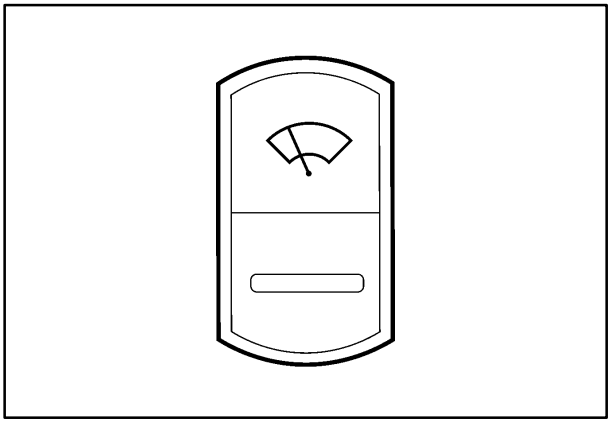
6. Climate control module (see further in this section)
   - Manual controller (Standard)
   - Automatic Temperature Controller (ATC) (If installed)

7. Windscreen wiper rocker switch
   - Wiper ON (continuous)
   - Wiper OFF

NOTE: *The wiper blade will stop immediately when the switch is turned off. This allows parking of the wiper to either side.*



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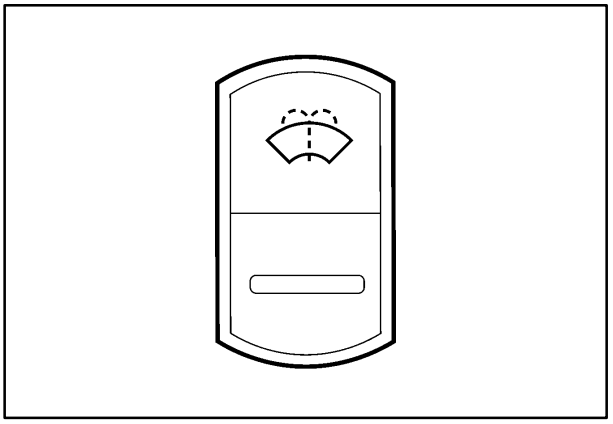
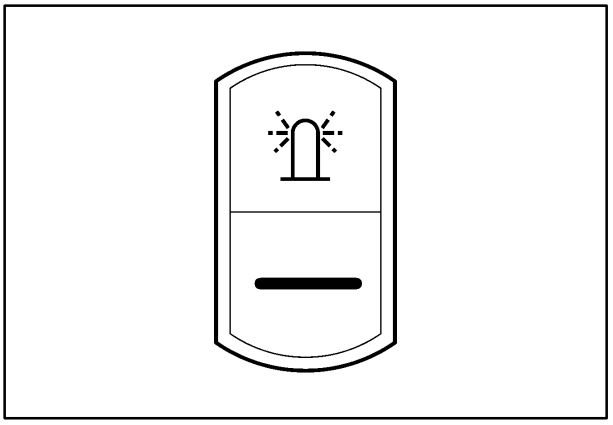
8. Windscreen washer rocker switch
   - ON
   - OFF



42

9. Warning beacons switch (if installed)
   - ON
   - OFF



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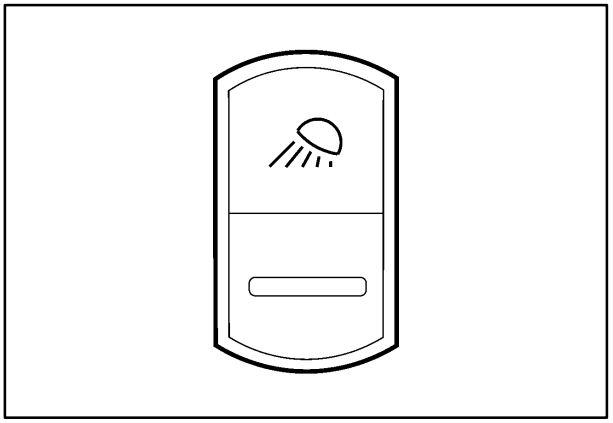
10. Rear worklights rocker switch
    - ON
    - OFF



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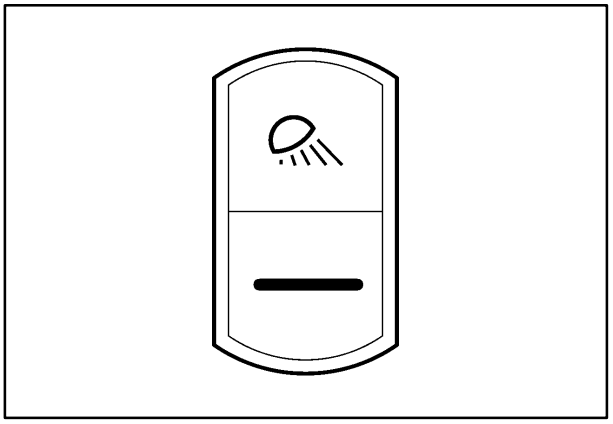
11. Front lights rocker switch
    - ON (position 3): same as position 2 with addition of optional HID distance light in field mode.
    - ON (position 2): inner (high beam) mid and outer cab roof lights, stubble lights

      When road mode is engaged inner (low beam), outer cab and tail lights.
    - OFF



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12. Adjustable air vent

Operating **Front work lights** rocker switch summary: (position 1 or 2)

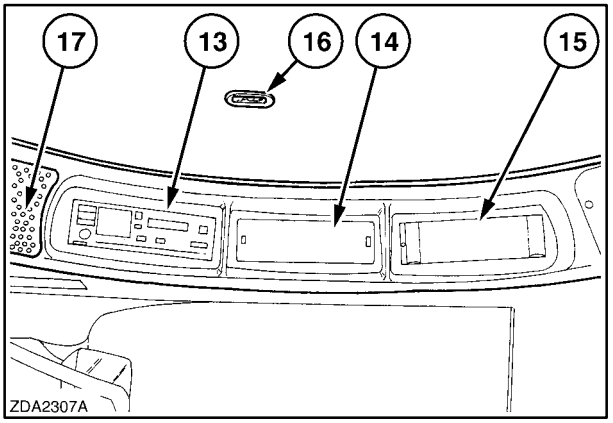
(only with ignition switch on)	Conditions
Unload tube light	– Field mode selected – Front or Rear worklights ON – By pressing unloading tube swing rocker button open (after 3 seconds) – Hazard lights off (North American only)
Rear work lights (Rocker switch 10: OFF position)	– Field mode selected – Front worklights ON – Reverse driving – Hazard lights off (North American only)
Side lights	– Field mode selected – Front worklights ON and – Direction indicator (left or right) or – Header above Header set height and – Hazard lights off (North American only)

13. Radio location with
    - 12 Volts DC connection
    - Loudspeaker connection
    - Antenna connection: AM / FM antenna (cable pre installed)
14. Blank
15. Blank
16. Spotlight

    This spotlight illuminates the right-hand Console. The spotlight operates together with the parking lights and worklights.
17. Speakers (front), (if installed)

    2 speakers (mid and high range)
18. Speakers (rear)

    2 speakers (low range)
19. Hook for clothes



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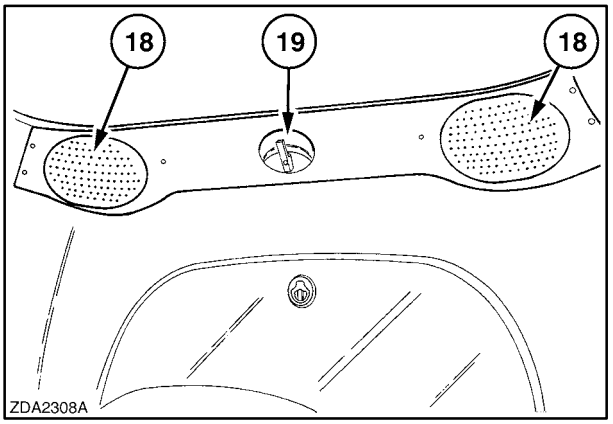

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20. Sunshade

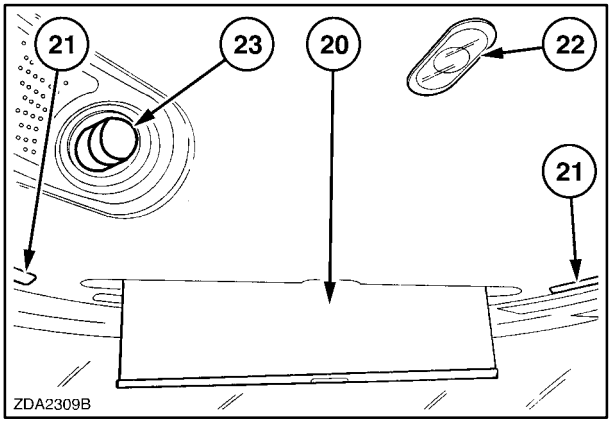
21. Adjustable air vents

22. Cab interior light

    There are three positions:

    - OFF
    - MIDDLE: The light illuminates when the cab door is open.
    - ON

23. Adjustable air vent



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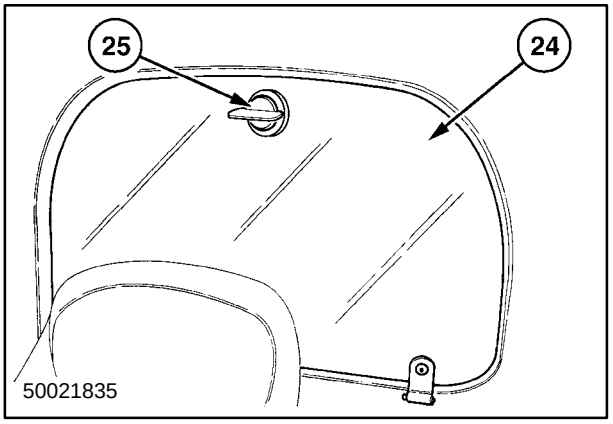
24. Grain tank window

25. Grain tank window latch

    Open the grain tank window with the latch to clean the area between the grain tank and the cab.



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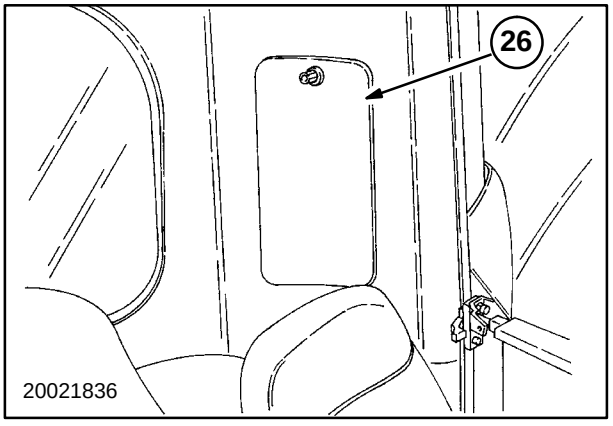
26. Fuse and relay panel cover

    To open, rotate knob counter clockwise until the latch clears the liner edge and the cover tilts freely outward, lift cover off bottom flange.

    To close, insert bottom flange of cover behind the liner lower opening and tilt the top of cover inward to engage latch behind liner top edge. Rotate knob clockwise until latched.

    The fuse and relay panel is behind this cover in the back left corner of the cab.

    Install panel layout picture from this manual in the plastic pocket on the backside of this cover.

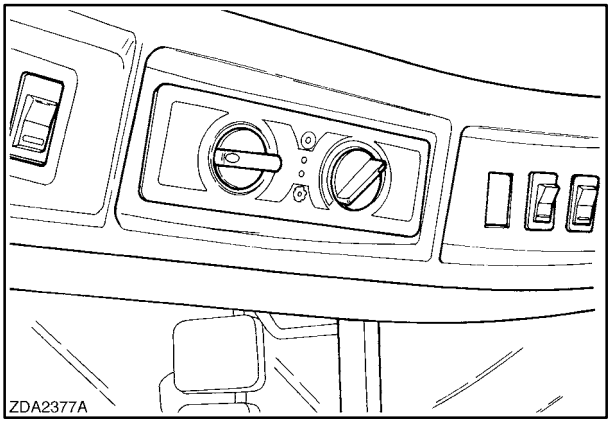


50

Climate control
There are two types of control panels:

The panel is located in the headliner at the left side above the operator's seat.

1. Control panel of the manual controller. (Standard)



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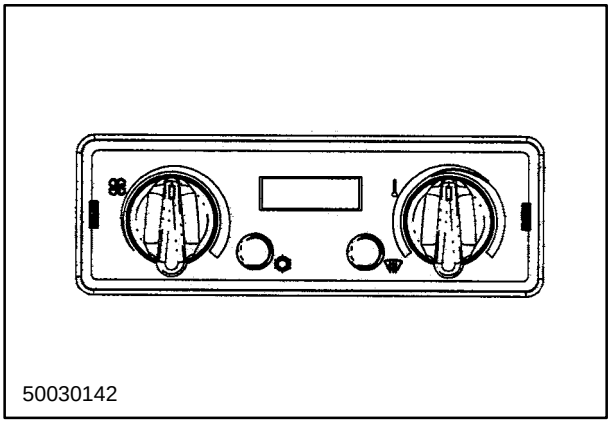
2. Control panel of the Automatic Temperature Control (ATC). (If installed)



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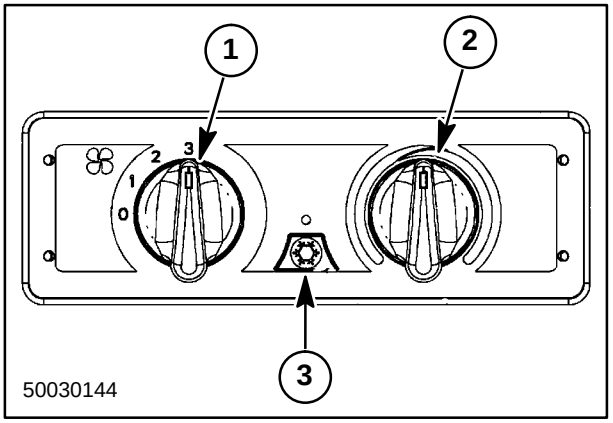
Control Panel of the Manual Controller



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Fan switch, 1:

- The switch has four positions:
  0: OFF
  1: Low fan speed
  2: Medium fan speed
  3: High fan speed

- The knob is rotated in the clockwise direction to increase the blower speed and rotated in the counter clockwise direction to decrease the blower speed.

- In the OFF position the fresh air dust separator blower will also be turned off. Combine operation is not recommended in the off position, as poor cab air quality will result.

Temperature control, 2:

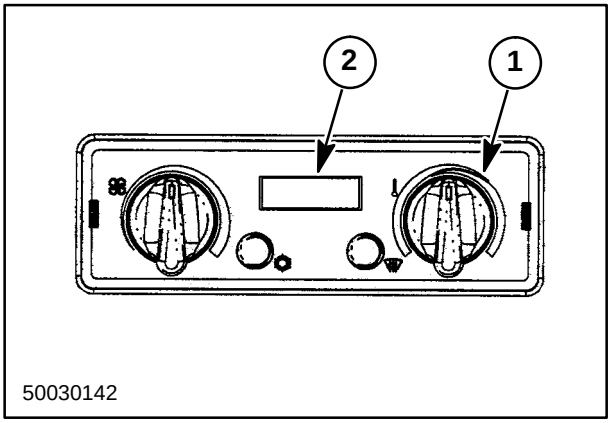
- The system will be at maximum cooling when the knob is rotated the maximum amount in the counter clockwise direction.

- The system will be at maximum heating when the knob is rotated the maximum amount in the clockwise direction.

A/C switch, 3:

- This switch turns the air conditioner either on or off. (there is no visual indication)

AUTOMATIC TEMPERATURE CONTROL (ATC)



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Temperature Control, 1

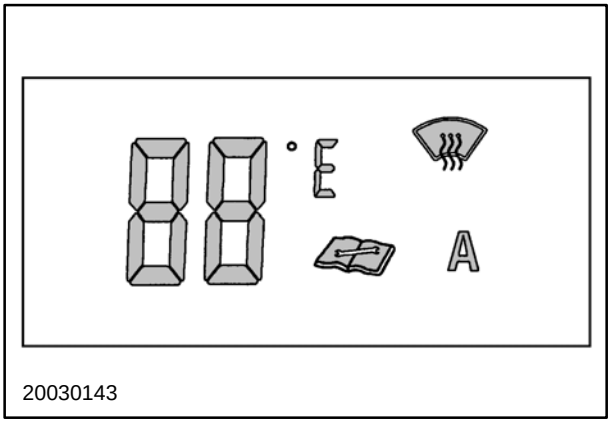
The temperature control gives the operator control over the cab interior temperature. Turning the control clockwise will increase the temperature of the air and turning the control counter-clockwise will lower the temperature of the air.

Display Unit, 2

The display provides the operator with information about the systems performance.

- It provides the desired cab temperature reading selected by the operator. The display reading may be in Fahrenheit or Celsius. To make the changed between reading there is a ground wire located under the left rear corner of the cab at the main ground boss. Attaching the wire to the ground provides for Celsius readings.
- It illuminates an icon “A”, when the system is operating in the automatic climate mode.
- When the “A” is not illuminated the blower motor speed MUST be manually controlled and “Auto” mode will only control the water valve and compressor, while trying to maintain the set temperature.
- It illuminates an icon of a windshield when the system is in the Defog mode.
- It illuminates an icon of a book when the system is not operating correctly. Along with the book icon a fault code will also be displayed to assist the technician making the correct repairs.

The range for ATC is from a setpoint of 16°C (61°F) to 30°C (89°F). The setpoint of 16°C (60°F) or 32°C (90°F) will be displayed and the “A” icon on the display will be off when the system is in maximum mode.



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Blower Speed Control, 3

The blower speed control gives the operator control over the speed of the blower motor. Turning the blower control clockwise will increase the speed of the blower, producing more airflow out of the cab vents, turning the control counter clockwise will reduce the air flow.

If the ATC control button has been pressed, the blower speed control position will have NO effect over the blower's speed. The ATC controller will increase or decrease the blower motor speed as needed to maintain the desired cab temperature. If the blower motor control is adjusted, the controller will release the automatic control over the blower motor speed. The blower motor will only operate in the manual mode if the "A" is NOT displayed. The ATC control button must be toggled **OFF** and back **ON** to reset the automatic blower motor operating mode. The automatic temperature control will always be operating whether the "A" is displayed or not. The blower control is a potentiometer rated at 10K 10% ohms.

When operating in the Auto Climate or Defog mode, the blower will make a speed increase for every 2°F difference there is between the temperature set point and the actual cab temperature sensed by the cab temperature sensor.

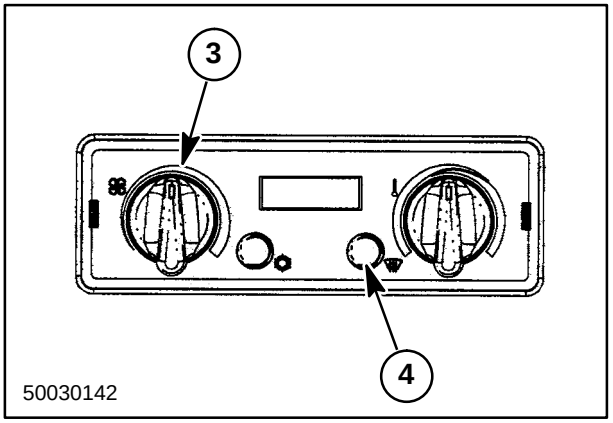
If the evaporator sensor senses that the evaporator temperature is below 80°F (26°C), and system is calling for heat the blower speed will not be increased until the evaporator temperature has increase.

Mode Control, 4

Once the operator has activated the ATC control, the mode button is pressed to toggle between AUTO and DEFOG. The digital display window will be illuminated with the symbol  displayed. The button toggles between two modes:

"A" = Auto, the system will warm or cool the air as needed to maintain the cab temp and the display will be illuminated.

 = Defog, the system will run the A/C compressor full time and warm the air to defog the windows and the display will be illuminated.



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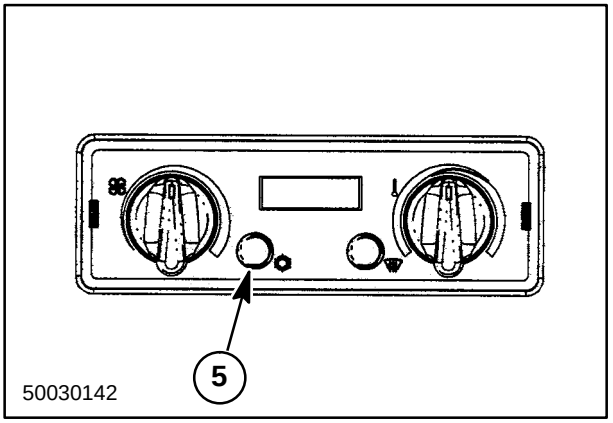
ATC Control, 5

The operator selects ATC Control by pressing the left hand button one time, the digital display window will be illuminated. When illuminated the mode of operation will be displayed along with the desired temperature. The button toggles between two modes:

- “O” = OFF, the cab blower motor may be run, but the air will not be conditioned and the display will NOT be illuminated.
- “A” = Auto, the system will warm or cool the air as needed to maintain the cab temp and the display will be illuminated.



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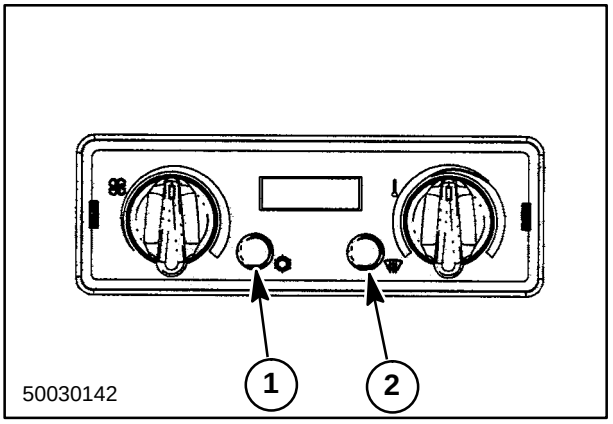
Defog Control Operation

Defog is used to clear off the windows by using the A/C to lower the humidity in the air and using the heater to warm the air enough to dry the windows. The ATC control button, 1, must be pressed to activate the AUTO controls and the Mode button, 2, toggled to DEFOG and the windshield icon will be displayed in the digital display. The temperature control knob may be adjusted to any setting. If the cab vent temperature is too cold the temperature control may be rotated clockwise to provide some additional heating of the air. The cab temperature will be monitored by the re-circulation air sensor, and be maintained at the temperature control setting by cycling the heater valve. While operating in the defog operation the compressor will run continuously, unless the evaporator sensor determines the evaporator is too cold and could start to freeze up.



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The ATC controller will automatically control the blower motor speed as required to maintain the temperature desired. It will be normal for the vent temperature to be cold during early morning start up, due to low engine temperature. If the operator reduces the blower speed until the engine warms up, the ATC controller will disengage the auto mode of the blower speed. To re-activate the auto mode for the blower motor speed, the ATC control button MUST be toggled to reactivate the auto position.

Troubleshooting the Temperature Control System

Code “01” displayed instead of temperature setting – High pressure lockout, press the Climate Control Switch (6) to the center OFF position, then to the forward automatic position or rearward to the defog position as required. Digital temperature display should reappear. If code “01” reappears, system requires service.

Code “02” displayed instead of temperature setting – Low pressure lockout, press the Climate Control Switch to the OFF position, then to the automatic position. Digital temperature display will reappear. If code “02” reappears, system requires service.

Code “04” Alternating with temperature setting – possible faulty blower control potentiometer, blower defaults to maximum speed. System requires service.

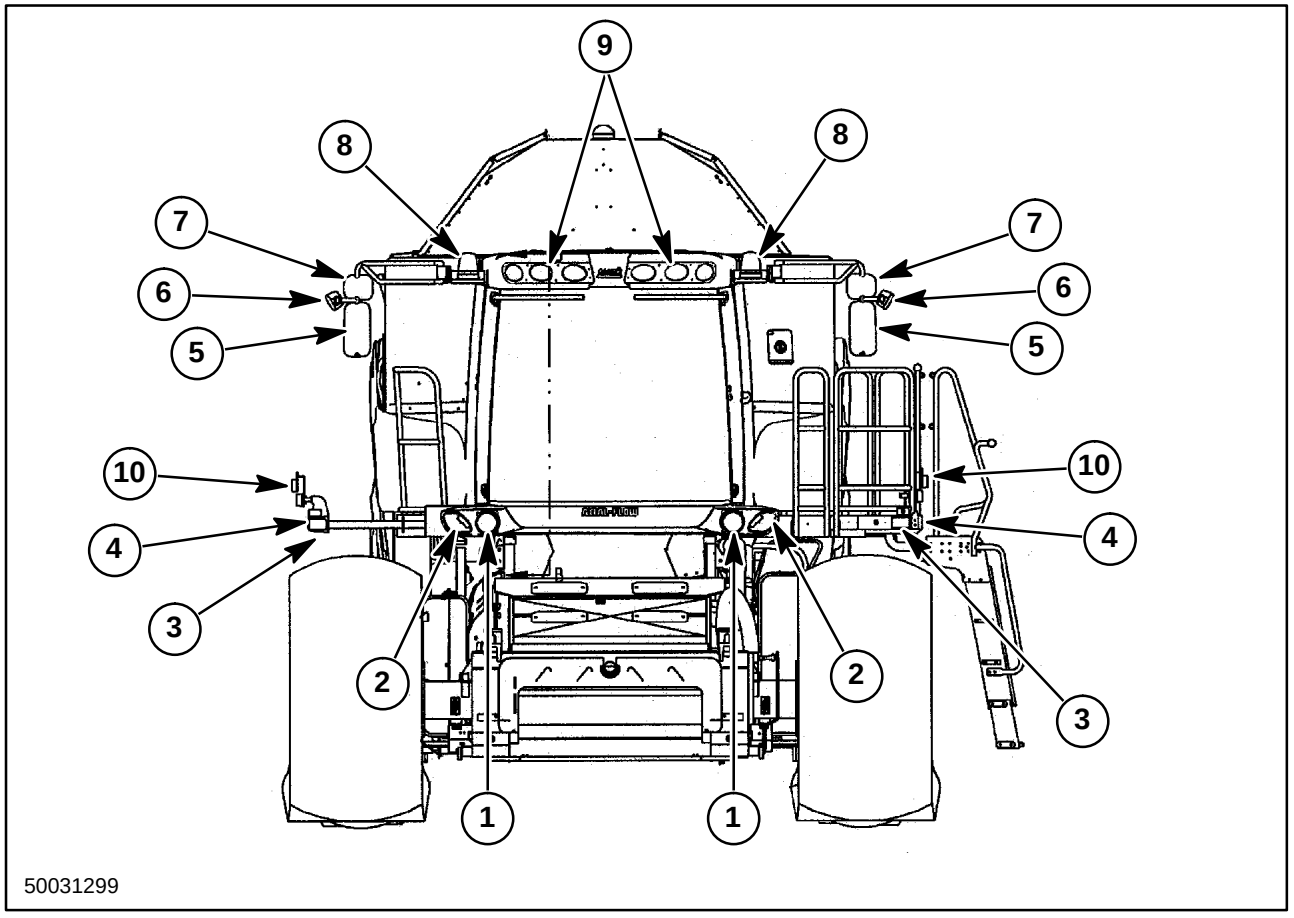
Code “05” Alternating with temperature setting – possible faulty temperature control potentiometer, system defaults to 68° F (20° C). System requires service.

Code “08” Alternating with temperature setting – possible faulty cab temperature sensor or cab temperature is below –2° F (– 19° C). Adjust temperature control above 74° F (23° C). If error code does not clear after cab temperature rises above –2° F (– 19° C), system requires service. In order to continue operation, temperature control must be set above 70° F (21° C) or below 66° F (19° C).

Code “10” Alternating with temperature setting – possible faulty evaporator sensor or cab temperature is below –19° C (– 2° F). Compressor does not run. If error code does not clear after cab temperature rises above –2° F (– 19° C), system requires service.

Code “11” Alternating with temperature setting – possible faulty evaporator sensor or core temperature has exceeded 180° F (82° C). Compressor does not run. If error code does not clear, system requires service.

Lighting and Mirrors



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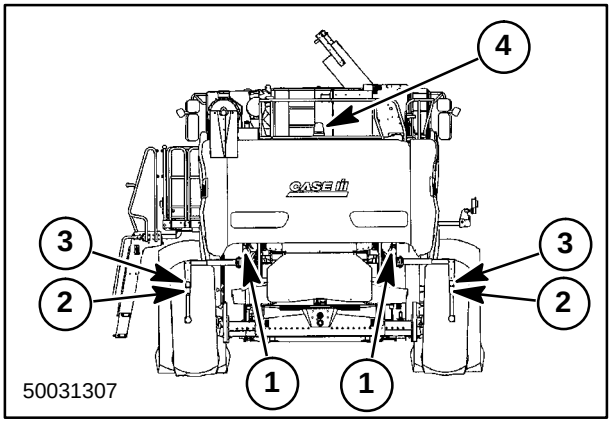
1. Headlights
2. Stubble lights
3. Parking lights
4. Directional Indicator
5. Main electrically adjustable and heated mirrors
6. Side operating lights
7. Manually adjustable wide angle mirror (if equipped)
8. Beacon lights (if equipped)
9. Roof lights
10. Side lights

NOTE: *Side operation lights are turned on for two minutes whenever the left hand door is opened or closed when the key is in the off position. When "Road–field mode rocker switch" is in the field mode, the end of row lights can also be manually turned on when the key is on by turning on the direction indicator or by raising the header above the header stop height.*

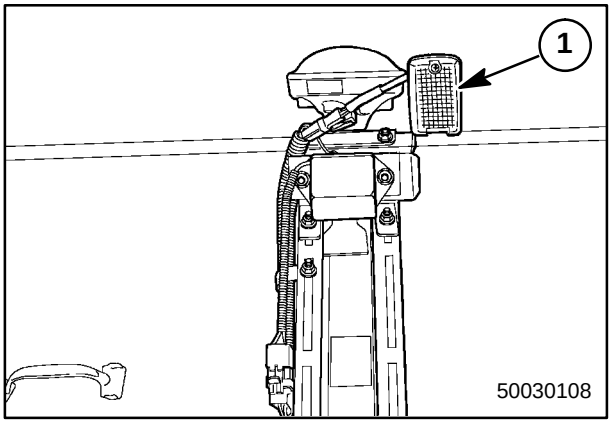
- Rear work lights, 1.
- Direction indicator, 2.
- Brake lights, 3.
- Rear Beacon light, 4.

NOTE: *2 and 3 must be adjusted symmetrically about the center line of the machine and be within 400mm of the widest component of the machine.*



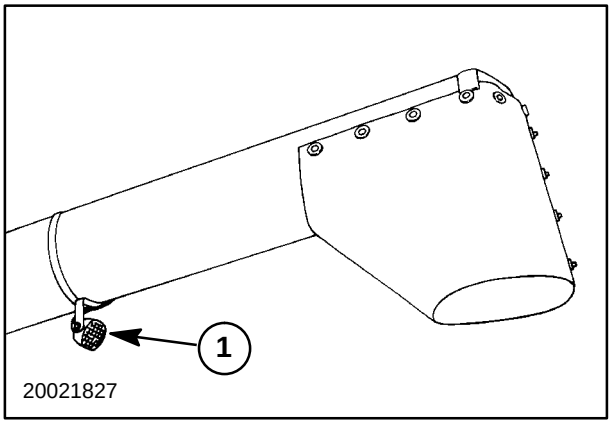
60

- Grain tank light, 1.



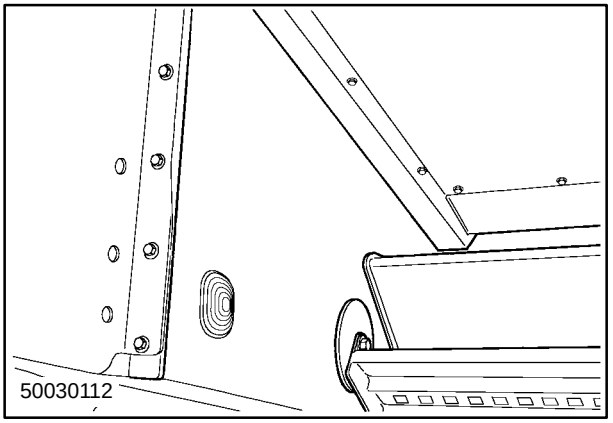
61

- Unload tube light, 1.



62

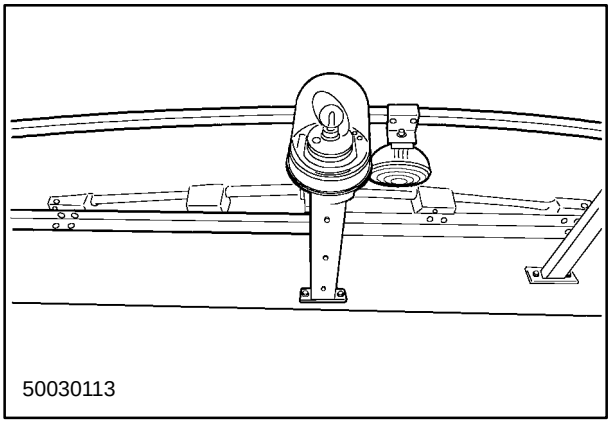
- Cleaning shoe light.



63

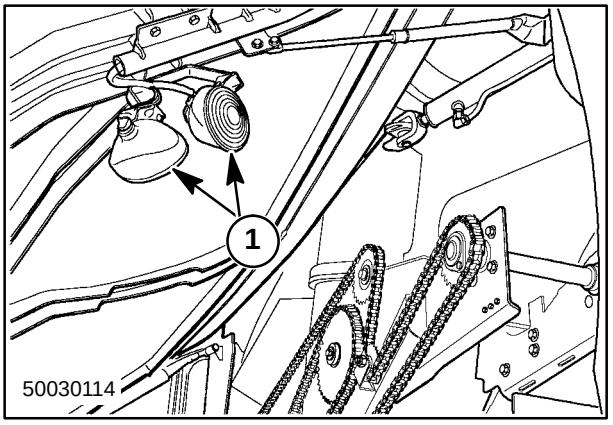
- Rear beacon light (if installed).

NOTE: *Check with local and regional authorities to determine if beacon light use is required or prohibited for road use.*



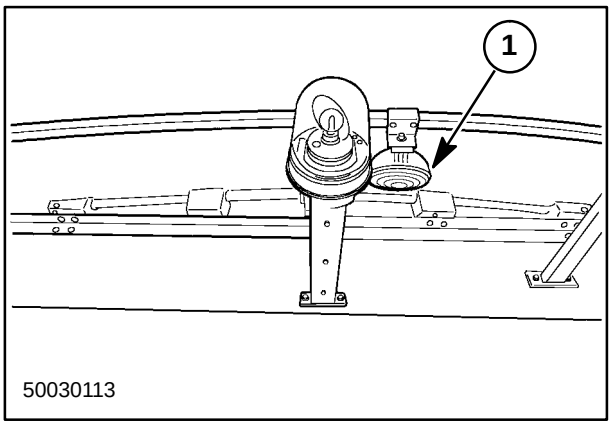
64

- Under shield lighting, 1, (right side shown) (if installed).



65

- Engine compartment light, 1, (if installed).

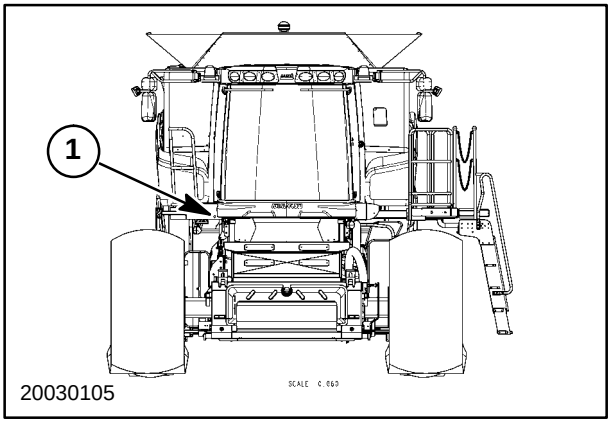


66

OTHER COMPONENTS

- 12-Volt DC socket, 1, (right operator platform)

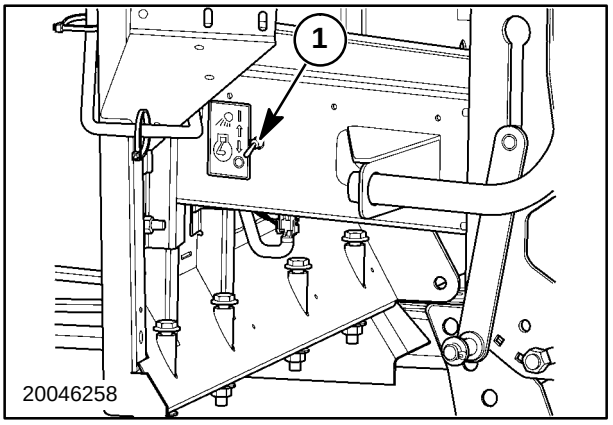
Live at all times.



67

Engine compartment light switch, 1.

Live at all times.

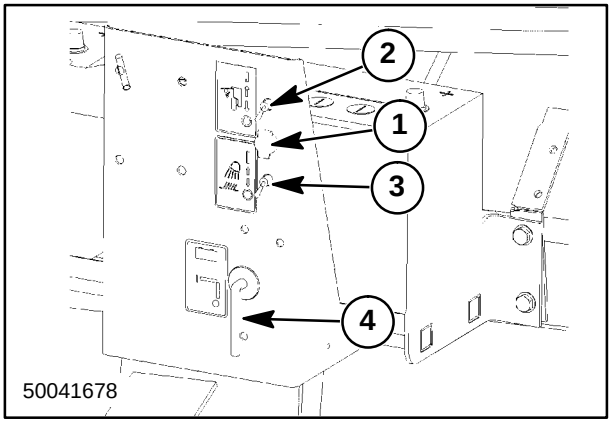


68

- Right-hand and Left-hand undershield lights rocker switch, 2.
- 12-Volt DC socket, 1.
- Cleaning shoe light rocker switch, 3.

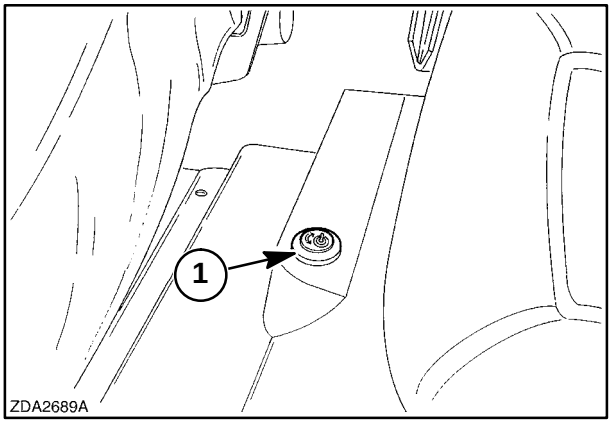
Live at all times.

- Battery key, 4.



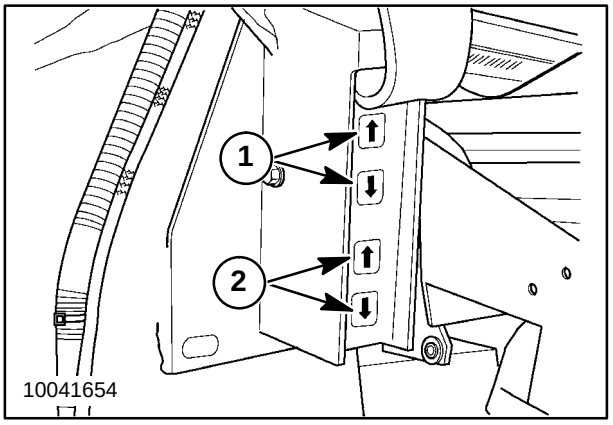
69

- Mobile phone plug, 1, (12 Volt DC socket), located between the operator's seat and the instructional seat.



70

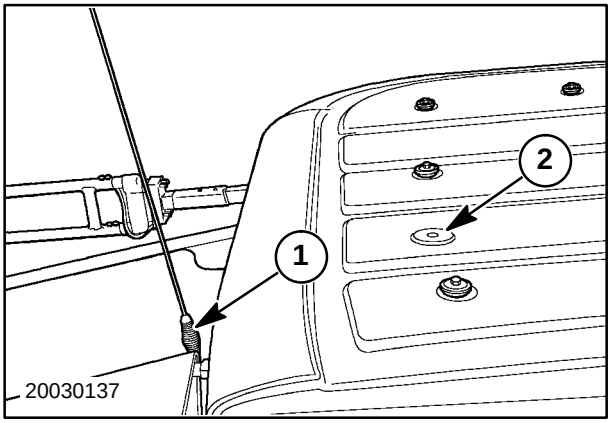
- Two rocker switches are located adjacent to the straw hood (left-hand side) to adjust the upper, 1, and lower, 2, sieve.



71

- Radio antenna, 1 (AM/FM)

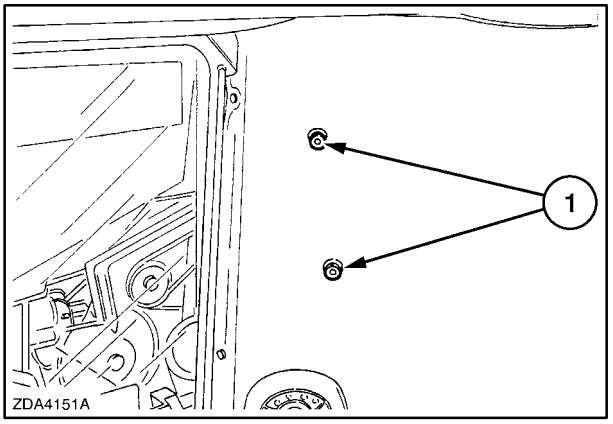
- CB antenna, 2, or Business Band antenna (if installed)



72

- Two extra bolts, 1, are provided (above the start console) to mount extra Communication / radio equipment mounting.

  See “Section 4 – Installing additional communications equipment” for additional information.



73

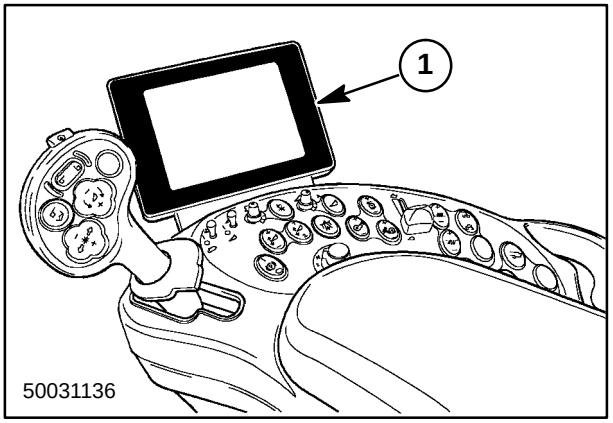
UNIVERSAL DISPLAY PLUS

GENERAL INFORMATION

The Universal Display Plus, 1, is located on the front of the right hand console (RHC) in the front right of the cab.

This touch screen display is used to control several parameters and settings of the combine. The display will also inform the operator continuously about the combining process and possible warnings or alarms.

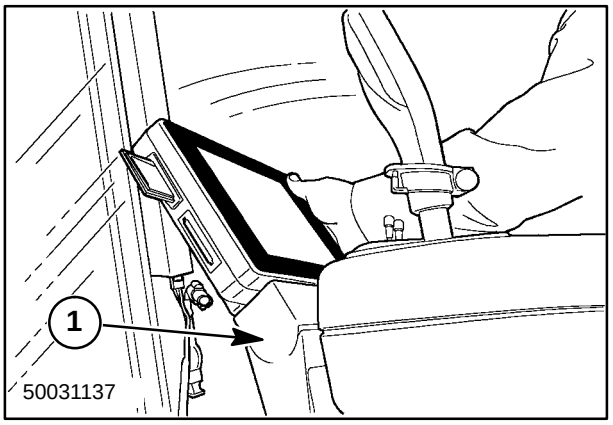
The screen area of the monitor should only be cleaned with a soft nonabrasive cloth and window cleaner. Do not use solvent type cleaners.



74

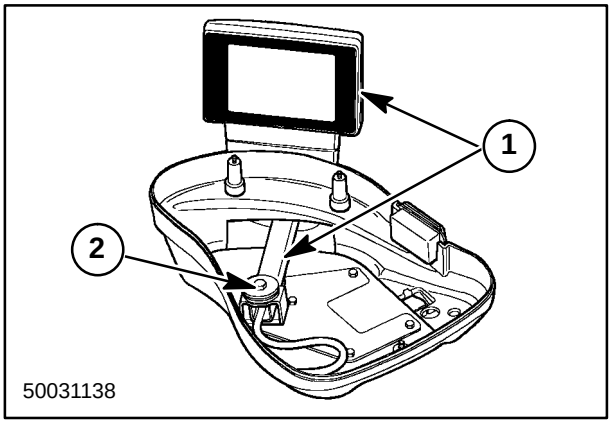
A friction slip mechanism will keep the display exactly in place where you want it for optimal viewing comfort.

To position the display grasp the monitor case firmly and rotate the display forward or rearward around pivot, 1.



75

The display can also be swung to the front or side by rotating the monitor and support, 1, around pivot, 2.

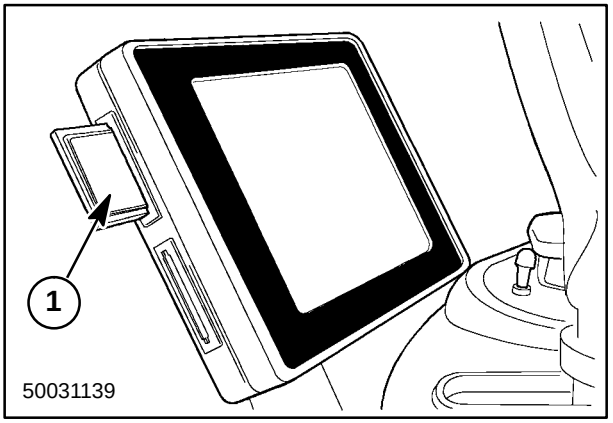


76

The display also houses the datacard slot. The data card is an ATA Flash card used to store yield data for the harvesting operation.

NOTE: *The ATA Flash card is only supplied when the Yield Monitor option is purchased. ATA Flash cards are the only type compatible with the Universal Display +. Case IH supplied data cards are pre-formatted. If any non Case IH supplied ATA Flash cards will be used, they must be formatted using a desktop PC prior to use.*

The Data Card, 1, is inserted in the top slot on the left hand side of the display. The data card must be inserted in the card slot before applying power to the monitor. Do not remove data card from monitor while harvesting. Power down the system and wait until the display is blank before removing the data card, or information may be lost. Avoid card exposure to direct sunlight, high temperatures, bending, strong shocks, touching connectors, fire and moisture.



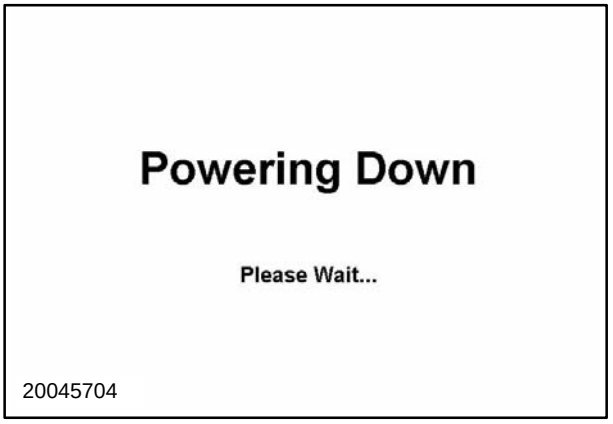
77

The monitor will switch on when the ignition switch is switched on, the Case IH logo will display during start-up. Start-up takes approximately 30 seconds.

78

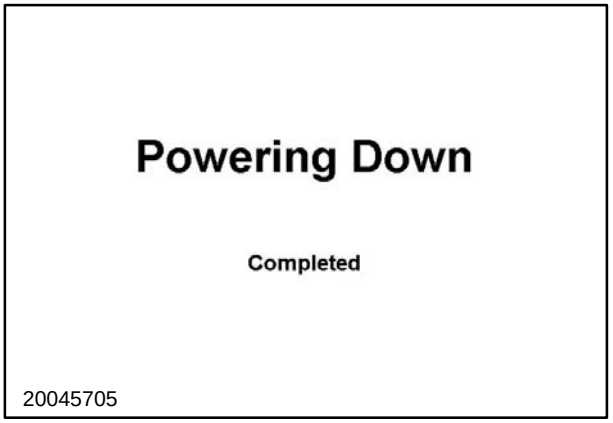
POWERING DOWN THE SYSTEM

The system is designed to automatically back up the summary data onto the display when the system is powered down. To minimize the possibilities of corrupting or losing data, it is critical to allow the system to complete the shutdown process. When the ignition key is placed in the off position, there will be a five second delay until the shutdown procedure begins. A status screen, will appear indicating the data is being backed up and that data is being written to the PC data card, if data card is present.



79

A message will be displayed when it is safe to remove the PC data card, if data card is present. Three audible beeps will also be heard indicating that it is safe to remove the PC data card. The display will then clear. The shutdown operation takes approximately 40 seconds.



80

Keypress Areas

Latch

The Latch type button, 1, is identified by the double outer border. The selection will latch (stay on) when pushed and will blacken and remain active until unlatched. This is used like a toggle switch. It allows the operator to turn a function ON or OFF.

Selector

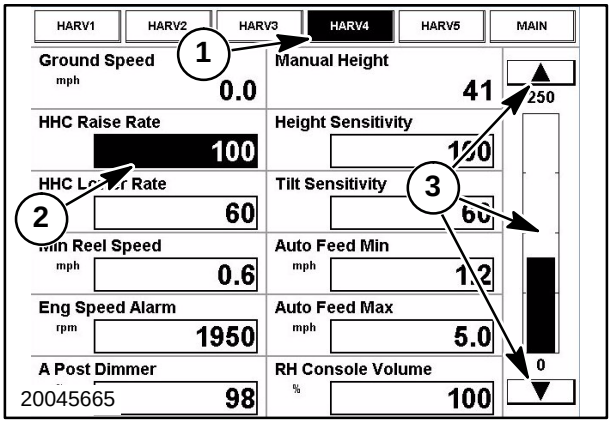
The selector keypress is identified by the single black border with black text, 2. When pressed the selector can be edited. These selector boxes have a single line border around them. When darkened (inverted), the value or text can be edited by the operator using either the action buttons or the edit button.

Example: On the HARV>HARV4 screen, pressing the HHC Raise Rate activates the arrows and bar graph allowing the operator to change the alarm setting.

Action

The Action Button, 3, type keypress appears as a three dimensional button. This button is a momentary button which highlights when pressed and causes a function to be performed.

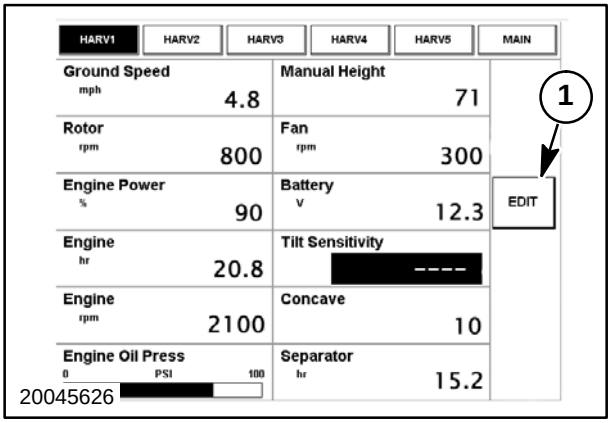
Example: On the HARV>HARV4 screen, pressing bar graph will coarse adjust the HHC raise rate. Pressing the arrow buttons allows fine adjustment of the HHC raise rate setting.



81

Edit

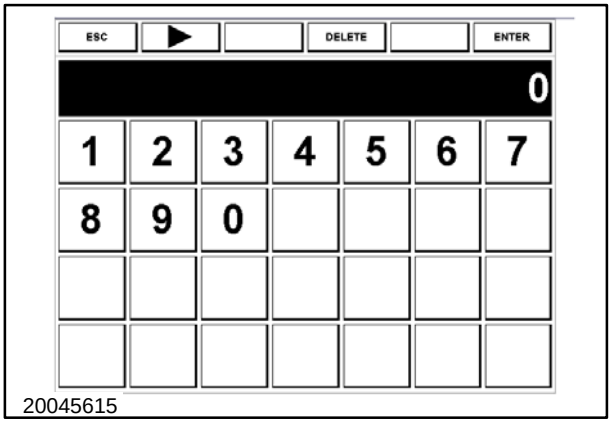
The Edit button, 1, appears when certain fields are selected, Pressing this button enables the keyboard screen.



82

Edit Keyboard Operation

The edit keyboard provides the operator a means to quickly change or label information in selectable fields within the system. The keyboard operates in the same manner, regardless of the item being edited. The keyboard will appear as either alpha characters or numbers depending upon the field selected. Enter the information required, then press the ENTER key to return to the original screen.



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83

Complete Title Line Information Replacement:

Upon entry into the keyboard screen, the title line will be highlighted by default. When the title line is highlighted, all the information can be replaced with a single press of any key on the keyboard. The << characters at the end of the title line represent the location of the cursor. Pressing any area in the title line will toggle the line from highlighted to non-highlighted. In most cases it will be simpler to enter the keyboard and with the title line highlighted, enter the information required, and then press enter to return to the original screen. This will overwrite all existing information in the selected field.

Title Line Edit:

In some cases it may be more desirable to edit or append the existing information in the title line for the selected field. The operator may not want to re–enter all the existing information. In this case, press the highlighted title line. The background area will toggle from highlighted to non-highlighted. The << characters represent the position of the cursor. The title line can now be added to or edited at the point of the cursor. Pressing the backspace key will move the cursor to the left and delete the existing character. Pressing any key will insert the selection at the point of the cursor.

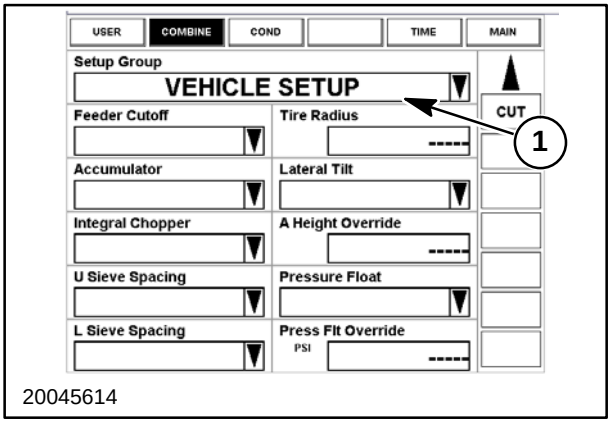
Pressing the escape (ESC) button will return you to the original screen without changing the original information.

List

The list selection box, 1, is identified by the black box around it and the down arrow on the right hand side. A list box contains a selection of predefined, non-editable items. Each press of the list box will scroll to the next available list item.

Example: On the SETUP> COMBINE screen,

pressing the Setup Group button will change the selection from VEHICLE SETUP to HEADER SETUP to AFS SETUP to CROP SETUP then back to VEHICLE SETUP.



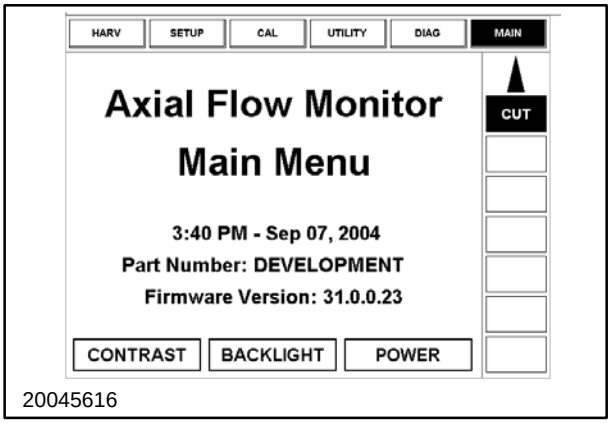
84

Main Screen

The MAIN screen displays the main menu bar and the current software levels of each of the control systems in the combine.

In this manual screens are referred to by the menus chosen, starting from the MAIN screen, to navigate to the screen.

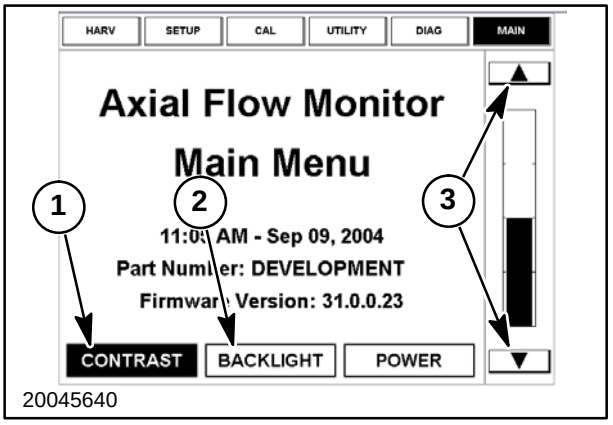
For Example: SETUP>COMBINE is the screen accessed by pressing the combine latch button in the setup menu while CAL>COMBINE is the screen accessed by pressing the combine latch button in the calibration menu. Some screens are accessed by further choosing from a list box. In this case SETUP>COMBINE — VEHICLE would indicate that the vehicle selection in the list box of the SETUP>COMBINE screen was selected.



85

Display Adjustment

From the Main Screen, select the CONTRAST, 1, or BACKLIGHT, 2, button, then adjust the display using the UP or DOWN action buttons, 3.



86

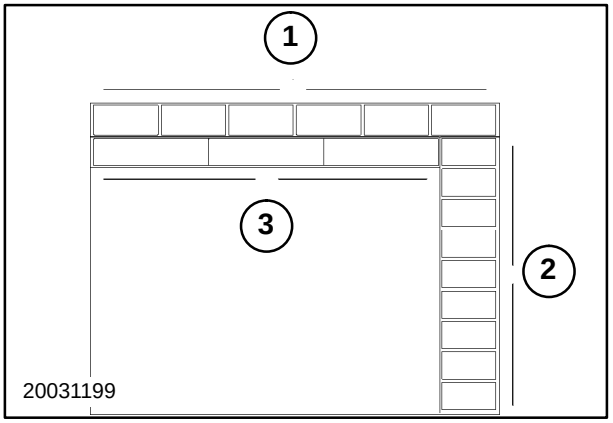
Common Display Areas

The display is divided into three main fields:

Menu Bar, 1 — The upper menu bar contains the latch type navigation buttons. Press the required navigation button to enter the sub-screens in the selected category.

Status Bar, 2 — The status bar contains status indictors warning indicators and momentary selection boxes when an interactive on screen function is selected.

Screen Display, 3 — The remaining screen area is the user interface and data display area.



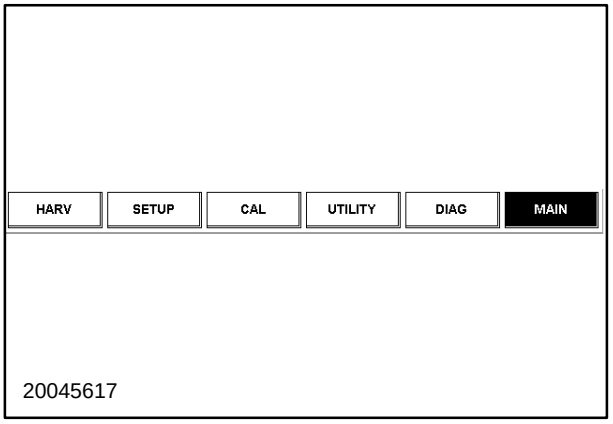
87

Menu Bars

The latch type buttons in the menu bars serve as the primary navigation device for the display.

The right latch button of the menu bar is always MAIN.

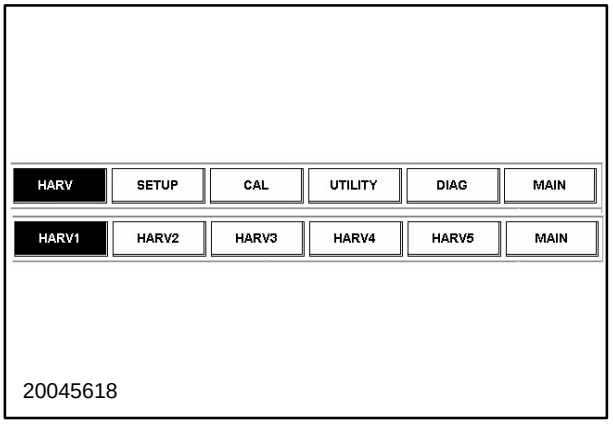
Selecting this button will display the MAIN screen which is used as the starting point for navigating through the screens. Each latch button on the main screen represents one of the five groups of sub-screens.



88

HARV: Contains screens utilized by the operator during the harvest operation.

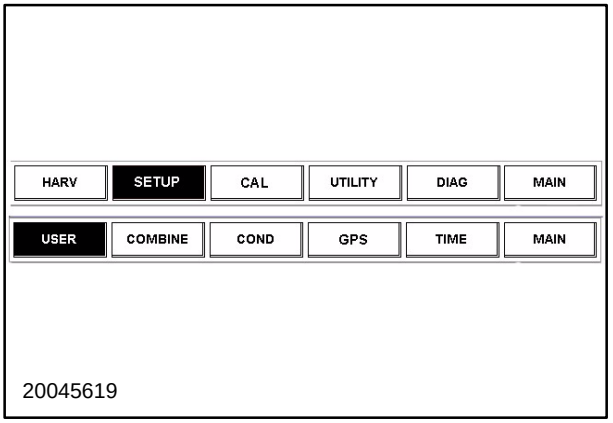
Harvest 1
Harvest 2
Harvest 3
Harvest 4
Harvest 5



89

SETUP: Contains the screens utilized by the operator during the setup of the combine.

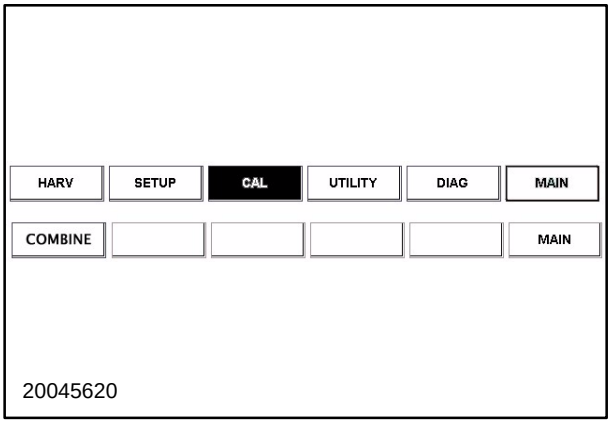
User
Combine
Cond
GPS
Time



90

CAL: Contains the screens utilized by the operator for the calibration of the system.

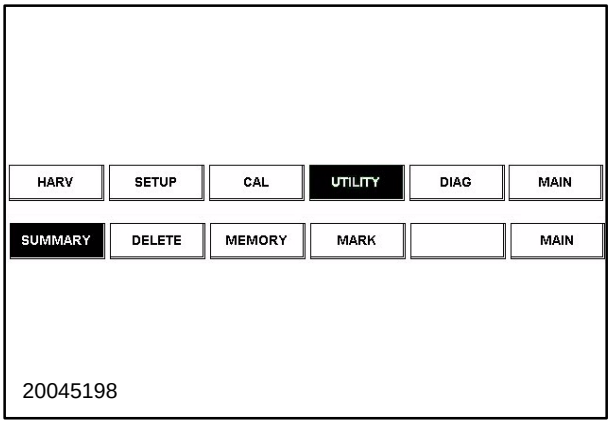
Combine



91

UTILITY: Contains the screens utilized by the operator for viewing

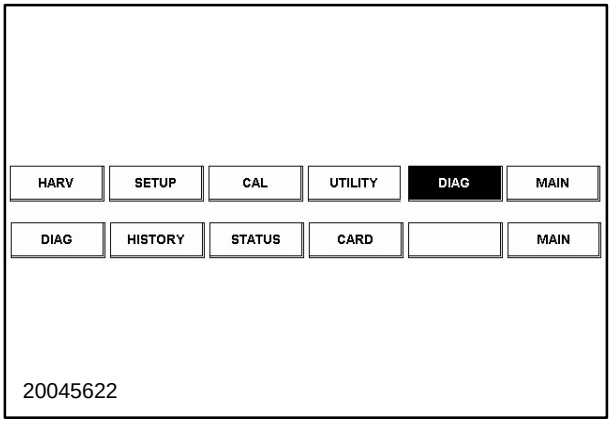
Memory



92

DIAG: Contains the screens used for diagnosing service items.

Diag
History
Status
Card



93

Status/Warning Bar

The right hand side of each RUN screen contains a Status/ Warning Indicator bar 1.The indicators are only displayed when activate. When an adjustable selection box is selected the indicators are momentarily replaced by up and/ or down action box arrows and bar graph allowing adjustment of the selected value.

The Status/ Warning bar monitors the following:

Status Indicators give the operator a visual indication that a particular function or condition is present. There is no audible alarm to alert the operator that a condition has changed.

The status indicators are as follows:

ALARM –– (Black) Indicates that an annunciation type alarm is active.

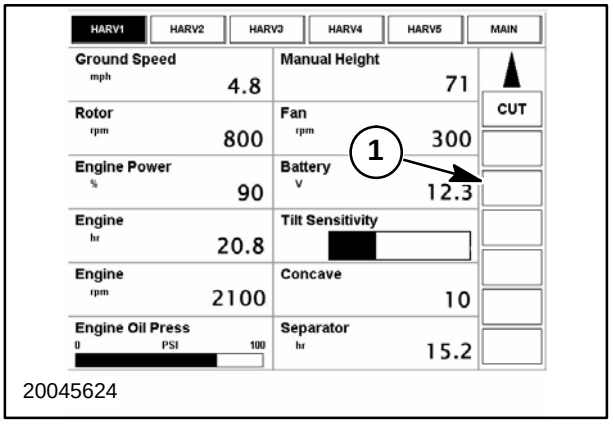
CARD –– (Black) = Indicates that a valid card with a valid file is inserted into the display.

H F/A –– (Black) Indicates that the Fore / Aft Control (found on the HARV> HARV* Screen) is set to Header.

HEAD –– (Black) = Indicates that the header is in the lowered position and accumulating area as determined by the Header Set Height (SETUP>COMBINE — HEADER).

REC –– (Black) = Indicates harvest summary data and GPS data (if equipped) is being recorded. The system must detect ground speed, elevator speed, PC data card and header height below the set point to activate. If the REC indicator is not darkened, data is not being written to the PC data card.

RIDE –– (Black) Indicates that the Ride Control is engaged



94

%M –– (Black) Indicates that the manual moisture override (found on the HARV> HARV* Screen) has been turned on.

Warning Indicators alert the operator by flashing the window and providing a periodic audible alarm that a critical setting or signal status has changed. The warning indicators flash at two different speeds. This provides the operator with a quick visual indication as to the severity of the warning. Items which the operator can manually activate, or adjust, will flash once per second.

Items which relate to system performance flash at a faster rate. since these items are critical to the operation of the system. They will be displayed at the top of the status/ warning box, when active.

Warning Indicators

ALARM –– (Flashing Black, slow rate) Indicates that a alarm type alarm is active.

AREA –– (Flashing Black, slow rate) = Indicates that area control has been turned OFF (HARV> HARV*).

CARD –– (Flashing Black, fast rate) Indicates that a valid card with a valid file is not inserted into the display.

CUT –– (Flashing Black, slowrate) = Indicates that the cutting width/ rows are manually set less than or greater than the default setting on the SETUP> COMBINE — HEADER screen.

ERROR –– (Flashing Black, slow rate) Indicates that a error type alarm is active.

GPS –– (If Equipped) (Flashing Black, fast rate) — Indicates that full GPS/DGPS signal is NOT present.

HEAD –– (Flashing Black, fast rate) Indicates that crop flow has been detected without all conditions for .REC. being met.

LOAD –– (Flashing Black, slow rate) Indicates that a load has not been created for the current field and machine operation is detected.

MARK –– (Flashing Black, slow rate) = Indicates that at least one field marker has been set and is still active .MARK. will flash and provide an audible warning every 10 seconds until all markers are turned off.

STOP –– (Flashing Black, fast rate) = Indicates that a shutdown alarm type alarm is active.

YMIU –– (Flashing Black, fast rate) = Indicates that the display cannot detect the appropriate communication from the YMIU.

Display Area

The list type buttons on the top of the display area serve as the secondary navigation device for the display.

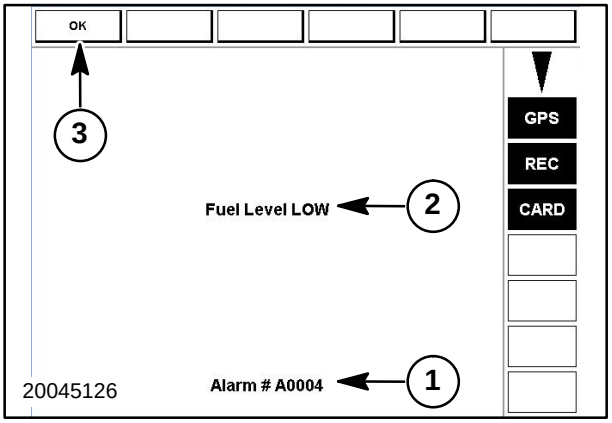
Once a selection has been made from the list a third level of navigation maybe available by choosing from selector boxes.

The following table summarizes the available choices.

HARV								
	HARV 1							
	HARV 2							
	HARV 3							
	HARV 4							
	HARV 5							
SETUP								
	USER							
		SUMMARY	HARV 1	HARV 2	HARV 3	HARV 4	HARV 5	
	COMBINE							
		AFS SETUP	CROP SETUP	VEHICLE SETUP	HEADER SETUP			
	COND							
	GPS							
	TIME							
CAL								
	COMBINE							
	LOAD							
		YIELD	MOISTURE					
	CROP							
	AREA							
UTILITY								
	SUMMARY							
	DELETE							
		DELETE FARM	DELETE FIELD	DELETE LOAD	DELETE GPS RECORDS			
	MEMORY							
		APPLY CAL VALUES	IMPORT VALUES					
	MARK							
DIAG								
	DIAG							
	HISTORY							
	STATUS							
	CARD							
		CCM 1	CCM 2	CCM 3	RHM	SSM	YMIU	GPS

ALARM SCREENS

The alarm screens alert the operator of operating conditions requiring operator notification or an alarm. An alarm screen will hide the current operating screen when displayed. The alarm number displays at the bottom of the screen, 1, and a short description of the fault is shown in the middle of the screen, 2. The acknowledgment action box, 3, is located at the top of the screen.



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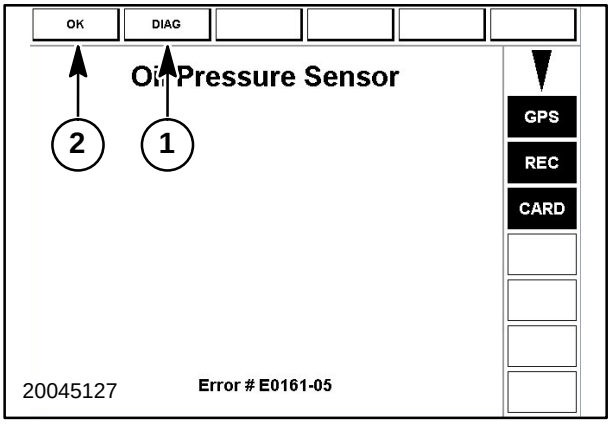
Some alarms will also have a diagnostic action button, 1. When the diagnose button is displayed, pressing it will display the DIAG>DIAG screen for the component causing the error.



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An active alarm is displayed to the operator based on the alarm priority, reappearance requirements, acknowledgment, and other active alarms & errors.

Alarms are displayed to the operator for a minimum of four seconds unless hidden by pressing .OK. or an other alarm and/or error with a higher priority.

The operator can acknowledge messages and remove them from view, by pressing the OK button, 2. Acknowledgement of a message does not override any action associated with the message. Acknowledgement of a message will only temporarily remove a message from view, subject to the reappearance requirement. Trigger conditions that clear and then reoccur will require the operator to re–acknowledge the message.

Higher priority alarms will hide lower priority alarms and errors. If a lower priority alarm or error is being displayed and a higher priority alarm becomes active, then the higher priority alarm will be displayed.

If a higher priority alarm or error is being displayed and a lower priority alarm becomes active it will be hidden until the higher priority alarm or error is acknowledged or cleared.

If multiple alarms and errors of the same priority are active at the same time then the system will sequentially display each for four seconds.

For alarms that have both audio and visual content, the audio request and visual presentation shall start at the same time, based on when it appears on the display.

There are five types of alarm messages, with different reappearance requirements and audio tones, they are:

Shutdown Alarm – Critical condition requiring immediate operator action to prevent damage (Engine Coolant Temperature HIGH, Engine Oil Pressure Low)

— Audio alarm sounds until condition corrected, annoying sound

— Message persists until acknowledged or condition corrected, STOP indicated

— Reappearance every 30 seconds

(Reappearance shall always be enabled for level 3)

Alarm – Indicates an abnormal condition requiring operator action (e.g. Fan Speed LOW, Control Pressure LOW) Audio alarm sounds momentarily, urgent sound

— Message persists until acknowledged or condition corrected

— Reappearance every 2 minutes

(Reappearance shall be enabled/disabled on a per alarm basis)

Prompt – Indicates an illegal condition set by the operator and results in interlock preventing an operation (e.g. Attempting to engage the unloader auger when cradled). The prompt text should indicate what action the operator needs to do to correct the situation. Audio alarm sounds momentarily, urgent sound

— Message persists until acknowledged or condition corrected

— Reappearance every 2 minutes

(Reappearance shall be enabled/disabled on a per alarm basis)

Error – Indicates a condition where something is actually broken (e.g. Hydrostat driver failure). Error text shall be limited to what has failed and not how it has failed. Audio alarm sounds momentarily, urgent sound

— Message persists until acknowledged or condition corrected

— Reappearance every 2 minutes

(Reappearance shall be enabled/disabled on a per alarm basis)

Annunciation – Indicates a normal machine operation state, no immediate action required of operator (e.g. Windrow Mode, Power Boost End PENDING, Fuel Level Low) Audio alarm sounds momentarily, pleasant sound

— Message clears after 4 seconds

— Reappearance every 8 minutes

(Reappearance shall be enabled/disabled on a per alarm basis)

Boot Alarm – Indicates a problem with the Universal Display Plus during startup (booting). Contact your dealer for service.

AFX ALARMS

Priority	Alarm #	AF Display Text	Interlock	Trigger Condition Prompt Operator when:	Reappear
Shutdown Alarm	A0000	Engine Coolant Temperature HIGH Max Engine Power Limited	–		–
Alarm	A0000	Engine Coolant Temperature HIGH Max Engine Power Limited			Yes
Shutdown Alarm	A0001	Engine Oil Temperature HIGH	–		–
Alarm	A0001	Engine Oil Temperature HIGH			Yes
Shutdown Alarm	A0002	Engine Oil Pressure LOW	–		–
Alarm	A0002	Engine Oil Pressure LOW			Yes
Alarm	A0003	Battery Voltage LOW	–		No
Alarm	A0004	Fuel Level LOW	–	Alarm below 20 liters	No
Annunciation	A004	Fuel Level LOW		Between 60 & 20 liters	No
Annunciation	A0005	Air Filter RESTRICTION	–		Yes
Shutdown Alarm	A0006	PTO Temperature HIGH	–	> 95°C	
Alarm	A0006	PTO Temperature HIGH		> 90°C	Yes
Alarm	A0007	Hydraulic Reservoir Temperature HIGH	–	set if > 90°C for 10 sec reset if < 85°C for 3 sec	Yes
Shutdown Alarm	A0008	Hydraulic Motor Temperature HIGH		Alarm at 105°C	Yes
Alarm	A0009	Hydraulic Reservoir Filter RESTRICTION	–		No
Alarm	A0010	PTO Oil Filter RESTRICTION	–		No
Alarm	A0011	Hydraulic Reservoir Level LOW	–		Yes
Shutdown Alarm	A0012	Control Pressure LOW, Increase engine speed	regulated pressure sensor	pressure < 1724 kPa.	
Alarm	A0012	Control Pressure LOW, Increase engine speed	regulated pressure sensor	pressure < 1827 kPa	Yes
Prompt	A0015	Sit Down to Allow Engagement	Seat Switch	Operator not in seat when attempting to actuate any Controlled System	No
			Seat Switch	Operator out of seat for more than 5 seconds after Feeder is on	
Annunciation	A0016	Engine Speed LOW		With separator on and Engine speed > 1800 rpm but lower than low speed setpoint	No
Alarm	A0017	Engine Oil Filter RESTRICTION	–		No
Annunciation	A0018	Lateral Inclination HIGH	–		No
Annunciation	A0019	Longitudinal Inclination HIGH	–		No
Shutdown Alarm	A0020	Turn ON Parking Brake When Leaving Seat	Seat Switch	Operator not in seat <and> [Propulsion handle in neutral <or> Gear Selector in N] <and> Parking brake released	–
Prompt	A0021	Raise Rear Ladder	Rear Ladder Switch	Rear Ladder is down <and> when attempting to actuate any Controlled System	No
Alarm	A0023	Engine Coolant Level LOW	–		No

Priority	Alarm #	AF Display Text	Interlock	Trigger Condition Prompt Operator when:	Reappear
Shutdown Alarm	A0024	Engine Shut Down PENDING	–	Governor signaling that the engine is being shut down.	–
Shutdown Alarm	A0025	Intake Manifold Temperature HIGH Max Engine Power Limited	–	GOV SPN	–
Alarm	A0025	Intake Manifold Temperature HIGH Max Engine Power Limited	–	GOV SPN	Yes
Annunciation	A0026	Engine Power Boost End PENDING	–	Governor signaling the end of the power boost period.	No
Annunciation	A0027	Water In Fuel	–	GOV SPN	No
Prompt	A0028	Close Grain Tank	Grain Tank Covers or Extensions	Road Mode selected when Grain Tank Covers or Extensions open	No
Prompt	A0033	Turn OFF Parking Brake	Parking Brake Switch	Parking Brake is On when attempting to move propulsion handle out of neutral	Yes
Alarm	A0045	Sieve Shaker Speed LOW	–	< 80% of expected	Yes
Alarm	A0047	Check brake pads and brake fluid level	Brake Pad Sensor	Any Brake Sensor indicates wear or brake fluid level	No
Prompt	A0051	Operation Not Allowed in Road Mode	Road Mode Switch	Road Mode Switch ON <and> when attempting to actuate any Controlled System	Yes
Alarm	A0053	Parking Brake NOT Engaging	Parking Brake Pressure Sensor	Parking Brake Pressure High <and> Park Brake Disengage output OFF	Yes
Alarm	A0054	Moisture bypass auger not activating	Bypass Unit Full	Activation ratio is less than once per 120 seconds, grain losses > 0.1% (delayed with 60 seconds) and thresher engaged	Yes
Alarm	A0055	Moisture bypass not cycling	Bypass Unit Full	Bypass motor is activated and the state of the “bypass unit full sensor” is not changing within 30 seconds, with thresher engaged.	Yes
Alarm	A0057	Battery Voltage HIGH	–		Yes
Prompt	A0059	Shift Rotor Transmission UP	Rotor Speed	Commanded rotor speed above current Rotor Gear	No
Prompt	A0060	Shift Rotor Transmission Down	Rotor Speed	Commanded rotor speed below current Rotor Gear	No
Alarm Annunciation	A0077	Self Leveling Shoe NOT Level	–	(priority 2 if threshing and sensors working but not level, priority 1 if threshing and sensors not working)	Yes
Prompt	A0079	Open Grain Tank	Grain Tank Covers or Extensions	Grain Tank Covers/Extensions Closed when attempting to engage Separator	No
			Grain Tank Covers or Extensions	Grain Tank Covers/Extensions not open when Separator is engaged	
Prompt	A0080	Gearshift NOT SUCCESSFUL => Return to previous gear	Gear Position	Current gear fails to match gear on operator control after 10 seconds	Yes
Annunciation	A0082	Auto Header Height DISABLED	–	All ground height sensors previously detected are no longer detected	No
Annunciation	A0083	Hydro Speed Limitation Due To High Hydraulic Motor Temperature	Hydraulic Oil Temp	level 1 alarm at 100°C	No
Annunciation	A0084	Windrow Mode	Straw Hood Position Sensor	Straw Hood Position Sensor in Windrow position	No
Prompt	A0085	Swing in Unloader	Road Mode Switch	Road Mode Switch on <and> Unloader Extended (not in – cradled switch off)	No
			Transmission Position	Unloader extended <and> Ground speed >15 kph	

Priority	Alarm #	AF Display Text	Interlock	Trigger Condition Prompt Operator when:	Reappear
Alarm	A0087	Parking Brake NOT Disengaging	Parking Brake Pressure Sensor	Parking Brake Pressure LOW <and> Park Brake Disengage output ON	Yes
Prompt	A0088	Turn ON Parking Brake	Parking Brake enable mode latch	Parking Brake enabled mode latched <and> Parking Brake Switch OFF	Yes
Prompt	A0089	Emergency Stop	Feeder emergency stop switch	Emergency Stop Switch Pressed	Yes
Prompt	A0092	Calibrate Rotor	Rotor not calibrated flag	At power up <and> rotor not calibrated	Yes
Annunciation	A0093	Feeder Cutoff DISABLED	Automatic Feeder Cutout disabled	Engaging feeder <and> Automatic Feeder Cutout disabled	No
Prompt	A0094	Calibrate Feeder	Feeder not calibrated flag	At power up <and> feeder not calibrated	Yes
Prompt	A0095	Turn Off Feeder	Feeder disable mode latch	Feeder disable mode latched <and> Feeder Switch is ON	Yes
Prompt	A0097	Stop Before Shifting Gears	Ground Speed	Attempting to shift transmission when Ground Speed is not 0	Yes
Prompt	A0098	Move Propulsion Handle to Neutral	Ground Drive disable mode latch	Ground Drive disable mode latched <and> Propulsion Handle not in Neutral	Yes
			Propulsion Handle Neutral Switch	Propulsion Handle Out of Neutral <and> when attempting to start engine	
			Propulsion Handle Position	Propulsion Handle Out of Neutral <and> Attempting to shift transmission	
			Propulsion Handle Position	Propulsion handle is not in neutral when attempting to engage Parking Brake.	
			Ground Drive disable mode latch	Propulsion handle position NOT AVAILABLE from RHM	
Prompt	A0099	Engage Separator Before Engaging Feeder	Rotor Speed <and> Separator switch off	Attempting to engage **forward** Feeder when the Separator switch is OFF	Yes
Prompt	A0100	Turn Off Separator	Separator disable mode latch	Separator disable mode latched <and> Separator Switch ON	Yes
Prompt	A0101	Clean out rotor	Rotor Motor over–speed	Rotor Motor speed > 5000 rpm for 0.5 sec	Yes
Prompt	A0104	Power Guide Axle not available in this gear. Shift to Gear 1, 2 or 3	Gear Position	Attempting to engage rear wheel assist in gear4 or in gear3 if Dual Range is on.	No
Annunciation	A0107	Auto Header Tilt Disabled	Header Height/Tilt Sensor	A single Header Height/tilt Sensor failed when engaging Auto Header Height	No
Prompt	A0108	Check Seat Switch	Seat Switch	CCM2 has not seen the operator out of the seat in the last 25 engine hours	No
Annunciation	A0109	Unloader cradled detection DISABLED	Unload Tube Cradle Switch disabled	Engaging unloader drive when tube cradle switch is disabled	Yes
Prompt	A0111	Swing out Unloader	Unload Tube Cradle Switch	Trying to engage unloader drive when tube is cradled	No
			Unloader Tube Swing Latched Retract Mode	Trying to engage unloader drive when unloader tube swing is in latched retract mode	
Alarm	A0112	Feeder shutdown due to low speed	Feeder Speed	Feeder Switch ON <and> Automatic Feeder Cutout enabled <and> Feeder Speed < 80 rpm	No
Alarm	A0113	Control Pressure HIGH	Regulated pressure	regulated pressure exceeds 350 psi for 5 seconds	Yes
Shutdown Alarm	A0114	Engine Oil Pressure LOW Max Engine Power Limited		GOV SPN	–

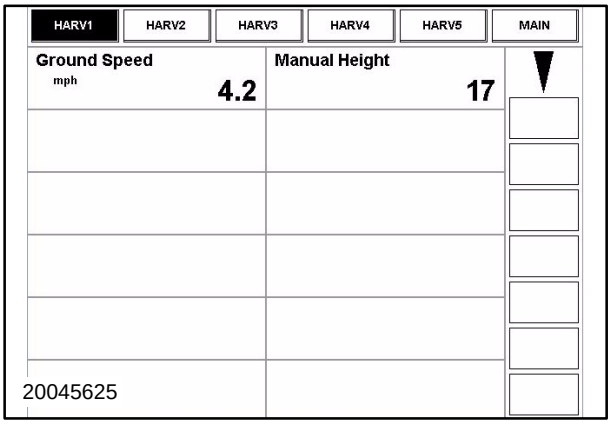
Priority	Alarm #	AF Display Text	Interlock	Trigger Condition Prompt Operator when:	Reappear
Alarm	A0114	Engine Oil Pressure LOW Max Engine Power Limited		GOV SPN	Yes
Alarm	A0115	Engine Speed HIGH		GOV SPN	Yes
Shutdown Alarm	A0116	STOP ENGINE		GOV SPN	–
Prompt	A0117	Header Needs to be Defined		New header to system has been detected	No
Annunciation	A0118	No Other Default Headers Defined.		Attempting to change to another default header when only one default is defined.	No
Prompt	A0119	DESLUG ENABLED – Turn On Separator – Engage Feeder in Reverse – Use Rotor +/– Switch to Jog Direction	Separator switch	Rotor deslug mode armed <and> Separator switch not ON	No
Alarm	A0120	Upper Sieve not in commanded position	–	For Upper Sieve if motor off and not positioned out off CL range by remote switch, set if current position – sp position <> 1 OR if in CLCL and position not reached	No
Prompt	A0122	Calibrate Header Ground Height Sensors	Header Height not calibrated flag	New header detected or configured (and) sensors not calibrated	Yes
Prompt	A0123	Road Mode Not Allowed when Harvesting	Unloader drive, Unloader Swing out, Feeder, Separator, Grain Tank Covers Extend, Concave, Powered Rear Axle	Attempting to enable Road Mode while harvesting functions are active	No
Alarm	A0124	Lower Sieve not in commanded position	–	For Lower Sieve if motor off and not positioned out off CL range by remote switch, set if current position – sp position <> 1 OR if in CLCL and position not reached	No
Annunciation	A0125	Upper Sieve Calibration Required	–	— set when Upper Sieve configuration is changed —reset when Upper Sieve calibration is successful	No
Annunciation	A0126	Lower Sieve Calibration Required	–	— set when Lower Sieve configuration is changed —reset when Lower Sieve calibration is successful	No
Annunciation	Internal to Display	Tailings Volume HIGH		Tailings volume above an operator adjustable level	Yes
Shutdown Alarm	A0128	PTO Lube Pressure low	–	Pressure <25 psi for 5 seconds	–

Message	ICON	Text (English Only)	When Shown
BL001		No Valid User Software Installed See Dealer for Service	Status. No user software is loaded in display memory. See Dealer for Service.
BL003		Invalid Boot Loader	Fault. Bootloader software is defective. See Dealer for Service.
BL004		Invalid App Loader	Fault. App Loader software is defective. See Dealer for Service.
		<none>	Status. Display is booting.

HARV SCREENS

HARV>HARV*

The following section will describe the Harvest screens. There are five identical screens to provide maximum flexibility. Some fields are interactive and allow function changes while others just display information. Each HARV>HARV1, HARV2, HARV3, HARV4, HARV5 screen is comprised of the menu bar, status bar, and twelve rectangular sub–windows, in two columns of six rows. The first sub-window of the left-hand column displays ground speed. The first sub-window of the right-hand column displays information relating to functions currently being changed or header information depending on header mode selected. The remaining ten sub-windows are user defined. The content of the sub-window, either singularly or in-groups, may be user selected from a pick list and will be explained further in SETUP>HARV# Screens.



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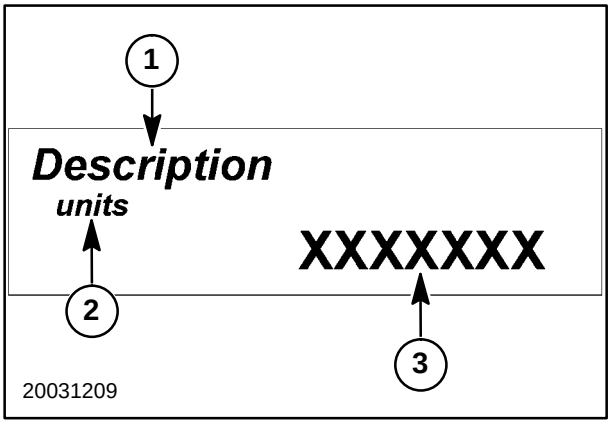
The five types of user defined displays are:

- Numeric Readouts
- Bar Graphs
- Bi–directional Bar Graphs
- Loss Meter
- Adjust Readouts

Numeric Readouts display a description of the function being monitored, 1, the units of measure, 2, and a numeric value, 3.



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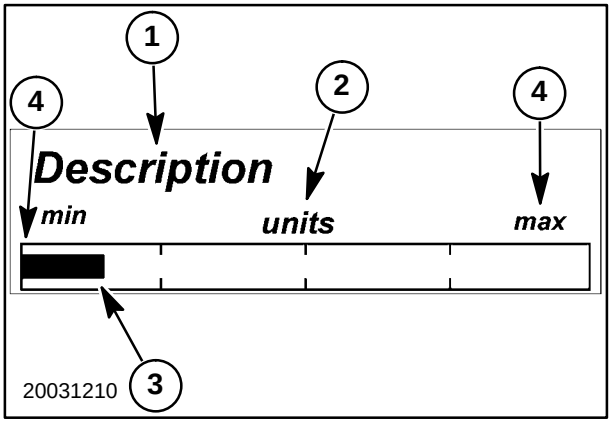
Bar Graphs display a description of the function being monitored, 1, the units of measure, 2, and a line representation of the measurement, 3, between minimum and maximum numeric endpoints, 4.



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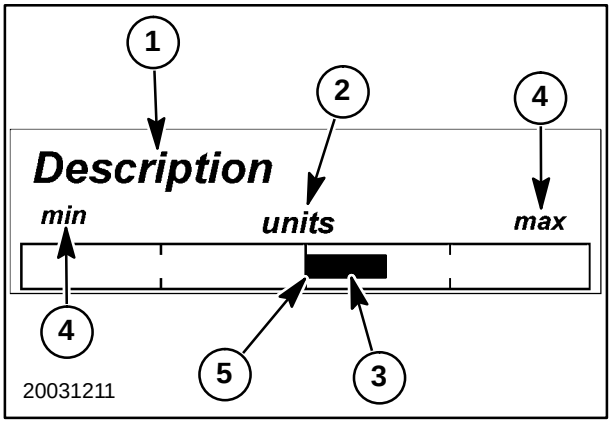
Bi-Directional Bar Graphs display a description of the function being monitored, 1, the units of measure, 2 and a line representation of the measurement, 3, between minimum and maximum numeric end-points, 4, and a zero mid-point, 5.



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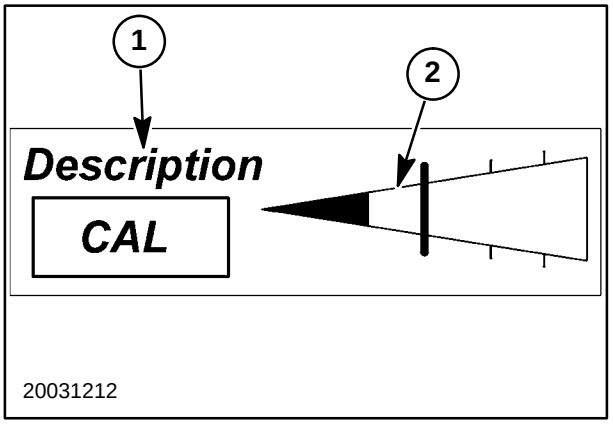
Loss Meters display a description of the function being monitored, 1, and the percentage as the area of the triangular bar graph, 2.



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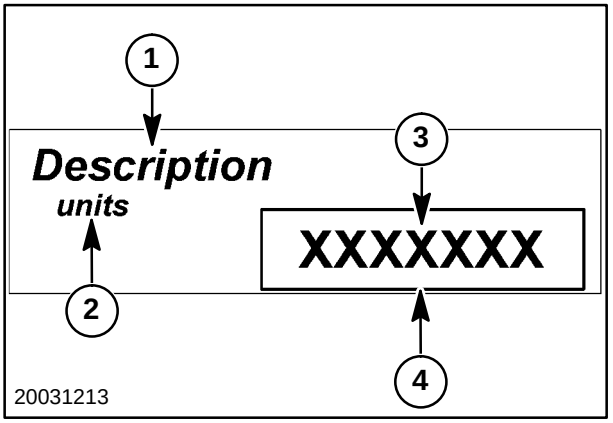
Adjustable Readouts display a description of the function being monitored, 1, the units of measure, 2, and a numeric value, 3, similar to the numeric display. In addition, the single black border, 4, around the numeric display, identifies the selector key press.



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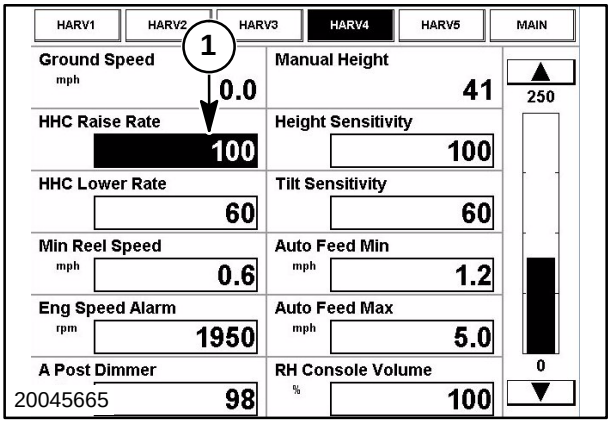
When pressed, the selector area, 1, inverts and, depending on the field sleeted, either actions buttons, 2, or an edit button is displayed. The value can be adjusted as described earlier.



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SETUP SCREENS

The following section will describe setup procedures that can be done prior to harvesting. Install the ATA Flash data card, if equipped, prior to powering the system and performing any setup functions.

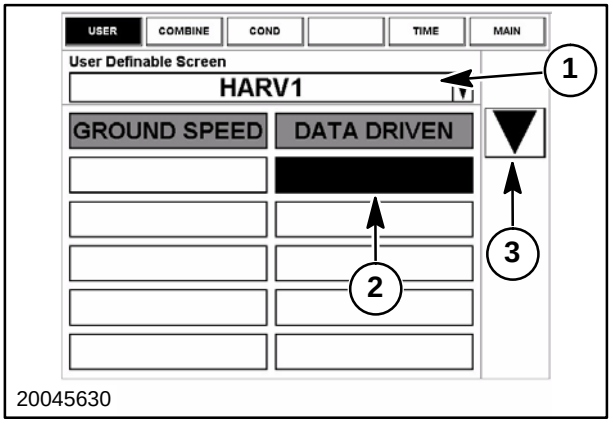
The system is designed to provide maximum flexibility to the user for the information they would like to see displayed, and the location in which to display the selected information on the HARV>HARV1,2,3,4,5 screens.

SETUP>USER SCREEN

Changing a Value to be Displayed on the HARV Screen

From the MAIN screen, press the SETUP navigation button. From the SETUP screen press the USER navigation button.

1. Select the screen to be configured by pressing the list selection box, 1, until the desired screen name appears.
2. Select the .cell., 2, to change. The cell will darken when selected and a down arrow, 3, will appear on the right side of the screen.
3. Press the down arrow to get the pick list of available selections.



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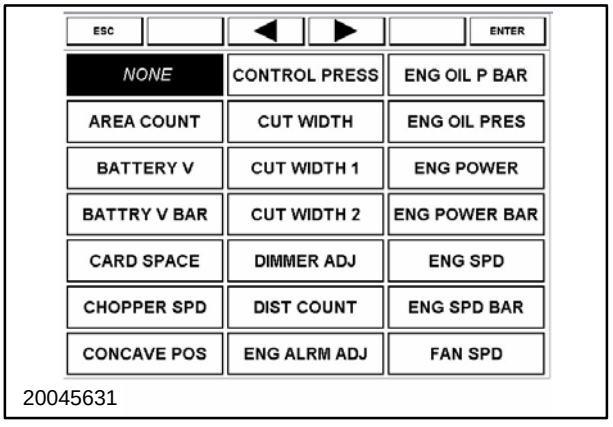
4. The pick list will display in alphabetic order. Press the right or left action arrow to navigate through the list.
5. Press the item to display and it will invert.
6. Press enter to return to the SETUP> USER screen.
7. Repeat this process until the desired configuration is obtained. The screen settings will be saved automatically when the system powers down.



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HARV Screen Selections

The following is a listing of the selections available to the user which can be viewed during operation on the HARV screens:

NONE — Allows the selection of a .blank. field. Allows the data fields to be spaced apart for easier viewing of key information.

AREA COUNT — Displays an area counter that is independent of the current load value. Counter can be used for in– field data management activities. (Area/ truck, area for the day, test plot area, etc.). Selection can be reset from the HARV* screen.

BATTERY V — Displays the current battery voltage.

BATTERY V BAR — Displays a bar graph of the current battery voltage.

CARD SPACE — Displays the free space available on the card.

CHOPPER SPD — Displays speed of the chopper shaft in rpm.

CONCAVE POS — Displays the relative position of the concave.

CONTROL PRESS — Displays regulated hydraulic control pressure in bar or psi

CUT WIDTH — Displays an interactive digital value for the current cut width. Can be edited from the HARV* screen. (Metric or Standard units).

CUT WIDTH 1 — Displays an interactive digital value for the current cut width. Can be edited from the HARV* screen. (Metric or Standard units).

CUT WIDTH 2 — Displays an interactive digital value for the current cut width. Can be edited from the HARV* screen. (Metric or Standard units).

DIMMER ADJ — Display and adjust SSM backlight brightness.

DIST COUNT — Displays a distance counter that is independent of the current load value. Counter can be used for in– field data management activities (distance/ pass, test plot distance, etc.). Selection can be reset form the HARV* screen. (Units in terms of feet or meters).

ENG OIL P BAR — Displays a bar graph of the engine oil pressure in psi or bar.

ENG OIL PRES — Displays the current engine oil pressure in psi or bar.

ENG POWER – Displays % Engine Power relative to the maximum engine torque at the rated engine speed of 2100 rpm.

ENG POWER BAR — Displays a bar graph showing the % Engine Power relative to the maximum engine torque at the rated engine speed of 2100 rpm.

ENG SPD — Displays the current engine speed in rpm.

ENG SPD BAR — Displays a bar graph representation, of the engine speed in rpm.

FAN SPD — Displays the current cleaning fan speed in rpm.

FEED MAX ADJ — Display and adjust auto feeder maximum ground speed.

FEED MIN ADJ — Display and adjust auto feeder minimum ground speed.

H HGT SNS ADJ — An operator control to set the gain of the raise and lower signals in Auto Height mode and Pressure Float mode. The control range is from 0, least sensitive, to 250, most sensitive by steps of 10.

H LIFT PRES — A numeric displaying how much pressure is in the hydraulic header lift circuit in psi or bar.

H LOWER RATE — An operator control to set the maximum speed that the height system lowers the header. The control range is from 0, slowest, to 250, fastest by steps of 10.

H RAISE RATE — An operator control to set the maximum speed that the height system raises the header. The control range is from 0, slowest, to 250, fastest by steps of 10.

HARVEST CONDITION — Display and permit selection of the active harvest condition.

HOURS ENG — Displays the amount of hours the engine has operated.

HOURS SEPAR — Displays the amount of hours the separator has operated.

HYD MOTOR TEMP . Displays the temperature of the hydrostatic propulsion motor in °F or °C.

HYD OIL T BAR — A bar graph showing the temperature of the engine oil in °F or °C.

HYD OIL TEMP — Displays the temperature of the engine oil in °F or °C.

INTAKE TEMP . Displays the temperature of the intake manifold on the engine in °F or °C.

INTK TEMP BAR . A bar graph showing the temperature of the intake manifold on the engine in °F or °C.

LUBE PRESS . Displays PTO lube pressure in psi or bar.

RATE–I . Displays the instantaneous harvest rate for the current active load (A/ hr or Ha/ hr).

REEL MIN ADJ . Display and adjust minimum reel speed.

ROTOR SPD . Displays the current rotor speed in rpm.

ROTR SPD BAR . Displays a bar graph representation, of the rotor speed in rpm.

SCAN R ADJ . Display and adjust rotor loss sensor.

SCAN ROTOR . Display rotor loss meter.

SCAN S ADJ . Display and adjust sieve loss sensor.

SCAN SIEVE . Display sieve loss meter.

SIEVE ANGLE . Display sieve angle in degrees

SPREADR SPD . Displays the current spreader speed in rpm.

TAIL VOL ALARM . Display and adjust tailings volume alarm threshold.

TAIL VOL BAR .Displays a bar graph representation of the tailings volume and alarm threshold.

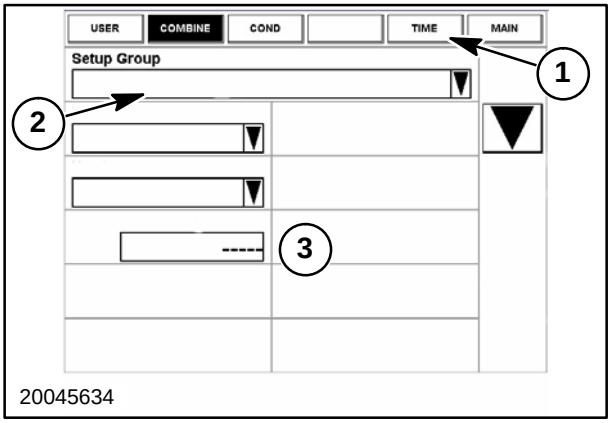
VOLUME ADJ . Display and adjust the right hand console audible alarm volume.

SETUP>COMBINE Screens

The combine configuration screen consists of the menu bar, 1, setup group listbox, 2, and configuration area, 3.

The setup group listbox supports four items:

AFS, Crop, Vehicle, and Header Setup.



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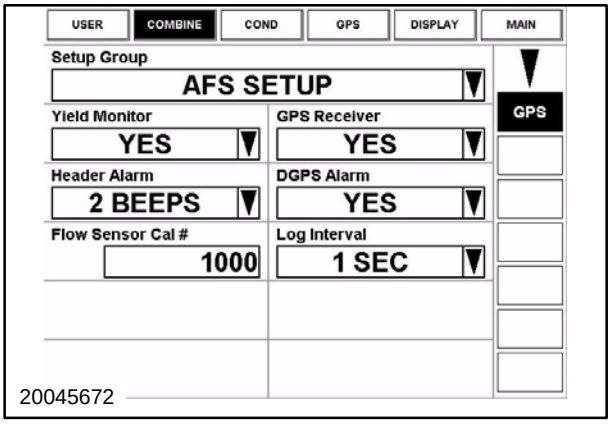
AFS Setup



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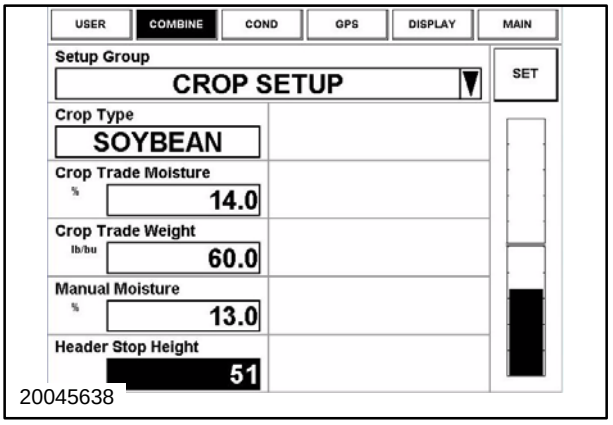
Crop Setup



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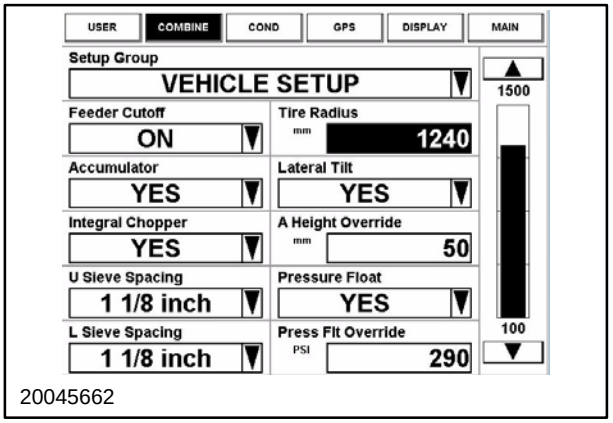
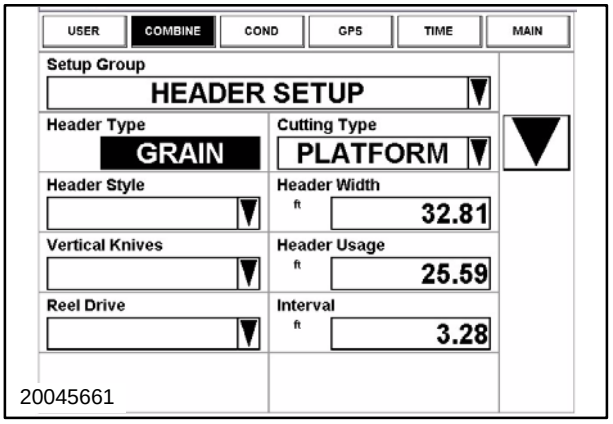
Vehicle Setup



109

Header Setup

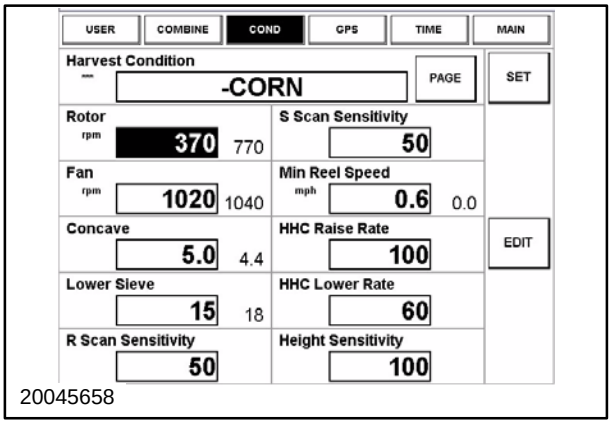


110

SETUP>COND Screens

The operator can choose an exiting harvest condition and the combine will change the settings to the selected set or the operator can save the current combine settings for reuse at a future time.

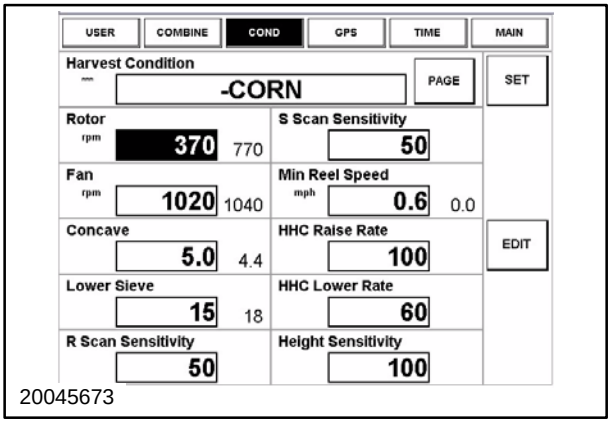
See “Section 3, Field Operation, Harvest Conditions” for additional information.



111

SETUP>GPS Screen

This display screen is a remote display for the AFS Receiver. Refer to the GPS Receiver User's Guide for information concerning navigation of menus and submenus as well as editing of values.

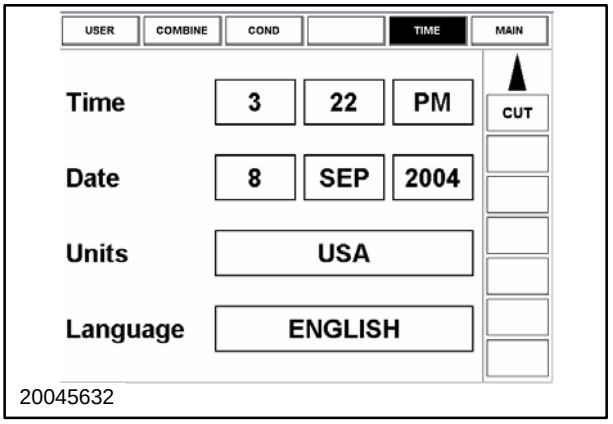


112

SETUP>TIME Screen

The TIME screen is made up of four specific windows:

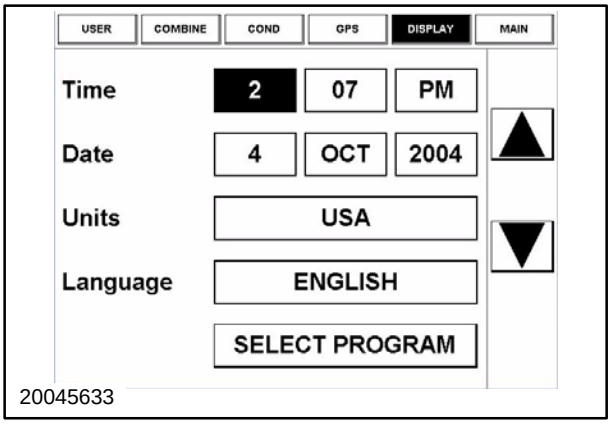
- Time Selection Boxes
- Date Selection Boxes
- Measurement Units Selection Box
- Language Selection Box



113

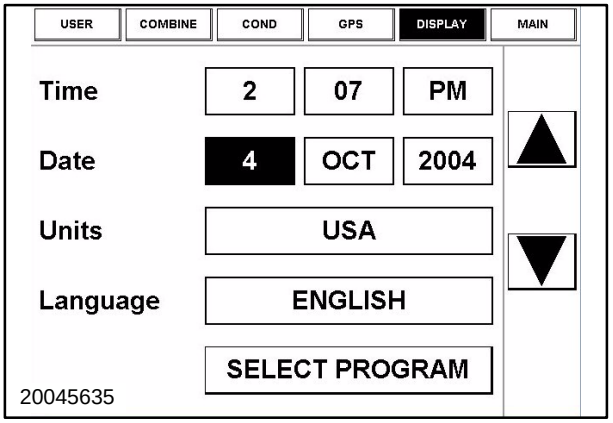
Time: Press and blacken the Time selection box to be changed. This will activate an UP and DOWN arrow. Press the UP or DOWN arrow until the correct setting is achieved. Settings are hours, minutes and AM, PM or 24 hour time.

NOTE: *A .—. will be displayed in the AM/PM box when set to a 24 hour clock.*



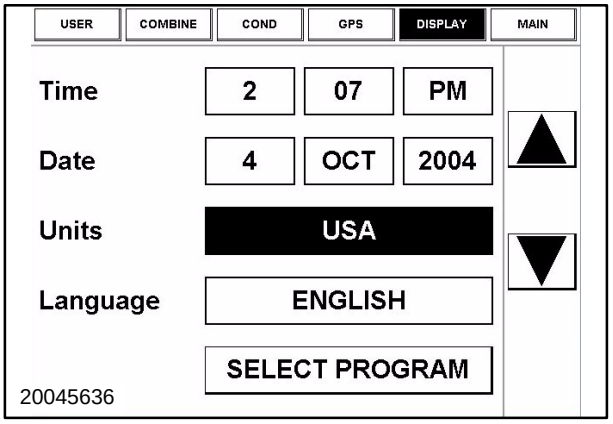
114

Date: Press and blacken the Date selection box to be changed. This will activate an UP and DOWN arrow. Press the UP or DOWN arrow until the correct setting is achieved. Settings are month, day and year.



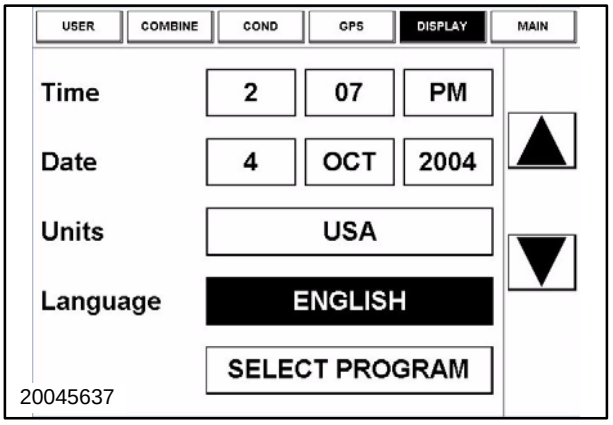
115

Units: Press and blacken the Units selection box. This will activate an UP and DOWN arrow. Press the UP or DOWN arrow to toggle between Standard (Imperial) or Metric units of measure.



116

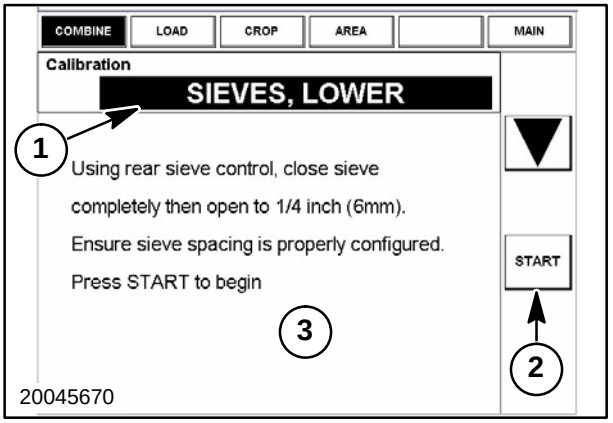
Language: Press and blacken the Language selection box. This will activate an UP and DOWN arrow. Press the UP or DOWN arrow to toggle between languages. A warning screen Message will be displayed indicating that the language is about to change. Press the Language button to complete the conversion. The system will reboot in the selected language.



117

CALIBRATION SCREENS

The combine calibration display includes the menu and system bars.



118

Calibration Select Window

After turning on the ignition key, the calibration picklist window, 1, will initially show the previous calibration selection.

When the calibration select window is touched, a picklist screen is displayed. The picklist list will display in alphabetic order. Press the right or left action arrow to navigate through the list. Press the item to calibrate and it will invert. Press enter to return to the calibration screen.

Start Window

The start window is displayed in the action section, 2, when the required conditions are meet and calibration can be started. Press the Start window to begin calibration.

Stop Window

The stop window is displayed in the action section, 2, when the calibration is in-progress. Press the Stop window to halt calibration.

Enter Window

The enter window is displayed in the action section, 2, when operator input is required after calibration is started. Press the enter window to continue calibration.

Message Window

The message window, 3, displays information to the operator before, during, and after a calibration. The message window notifies the operator of required conditions that must be meet before calibration can start, required actions during calibration as well as additional information.

NOTE: *See .Section 3, Field Operation. for additional calibration information for each function.*

UTILITY SCREENS

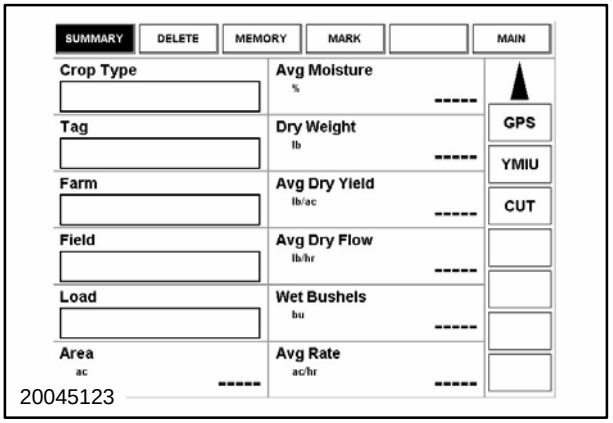
UTILITY>SUMMARY Screen

The Summary Screen allows the operator to review summary information for the entire season, for a particular field, for a particular crop in a field, or for a particular load.

UTILITY>SUMMARY screen is available only when the combine is equipped with the Advanced Farming System.

See .Section 3, Field Operation, Advanced Farming

System. for additional information.

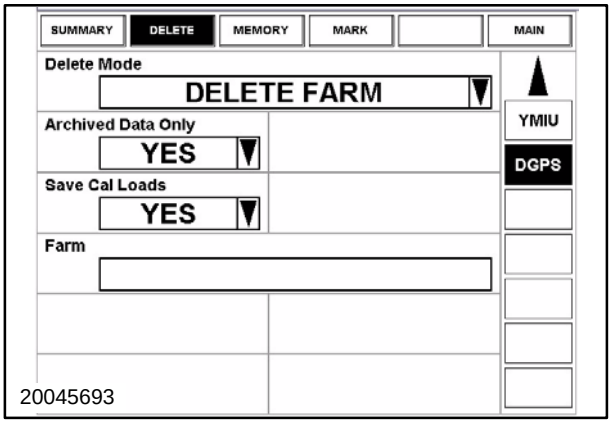


119

UTILITY>DELETE Screen

The delete screen will allow the operator to remove stored data from memory. Click the list selection box to select:

- Delete Farm
- Delete Field
- Delete Load
- Delete GPS Records



120

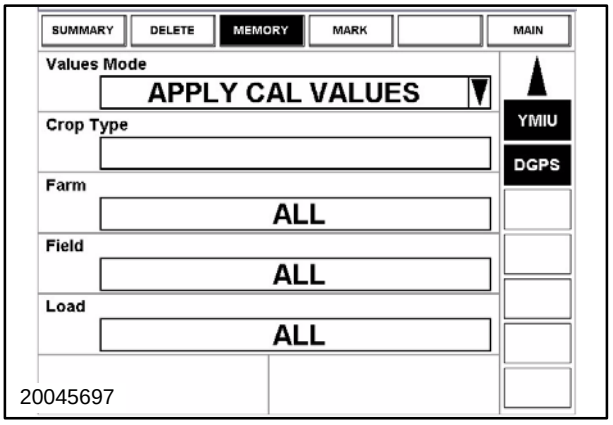
UTILITY>MEMORY Screen

The Memory Screen is used to access data stored on the card, including:

- viewing the available memory on the card
- deleting farms, fields, and loads from the card
- deleting GPS records from the card
- applying current calibration values to old loads
- copying setup information from another combine

The UTILITY>MEMORY screen is available only when the combine is equipped with the Advanced Farming System.

See .Section 3, Field Operation, Advanced Farming System. for additional information.

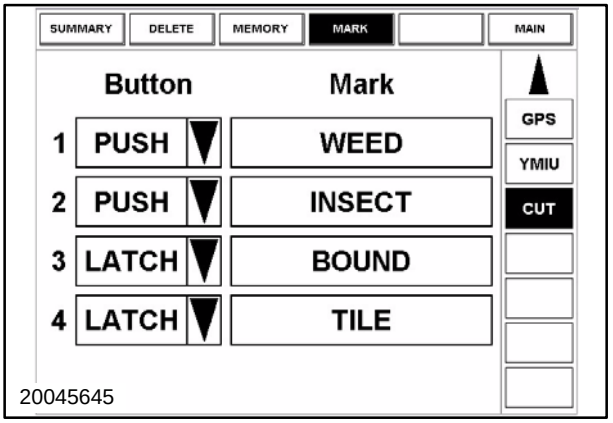


121

UTILITY>MARKER Screen

The operator uses the marker screen to define whether each of the four marker buttons is momentary or latching, to assign four markers from the available marker list to the marker buttons, and to edit the names and symbols of the selected markers. The UTILITY>MARKER screen is available only when the combine is equipped with the Advanced Farming and GPS systems.

See .Section 3, Field Operation, Advanced Farming System. for additional information.

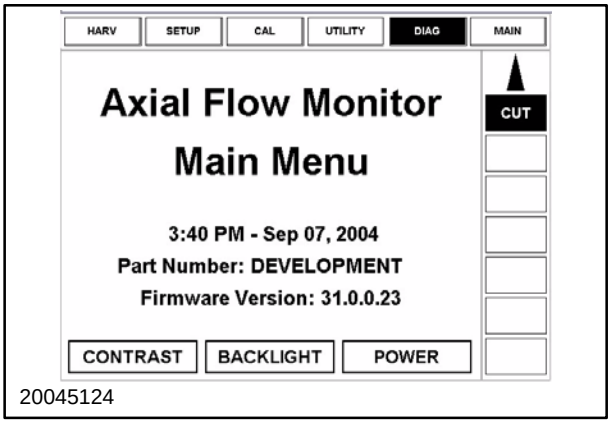


122

DIAGNOSIS SCREEN

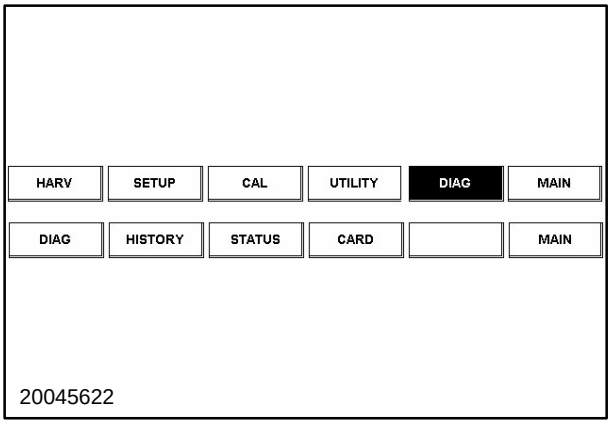
Introduction

The AFX series combine provides two different menus to assist in troubleshooting the electrical system, .DIAG. or .ERROR.. To access the two menus, touch the .DIAG. button, 1, found at the top of the main screen.



123

Once the DIAG menu is chosen, DIAG, HISTORY, STATUS, and CARD can be found on the menu bar at the top of the page.



124

DIAG>DIAG Screen

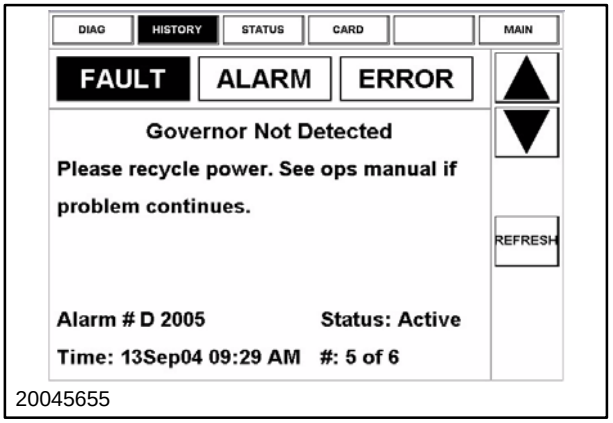
The DIAG>DIAG screen allows viewing of electrical measurements at various locations in the electrical and electronic systems to aid in troubleshooting. Refer to the following table for the available parameters:

SYSTEM	**Parameters**			
AFS	Bypass Full SW	Bypass Mtr		
BRAKES	Brake Limit Vlv	Brake LT	Pad Wear SW	Park Off SW
	Park On SW	Park Press Sen	Park Vlv	Service Press SW
CLEANING	Beat/Chop ISense	Beat/Chop Vlv	Beat/Chop Volt	Fan Spd Dec SW
	Fan Spd Inc SW	Fan Spd Sen	Fan Vlv	Lateral Tilt Sen
	Leveling Sieve	Shaker Spd Sen	Sieve Ang ISense	Sieve Ang Sen
	Sieve Scan Sen	Tailings Spd Sen	Tailings Vol Sen	
ENGINE	Air Filter Sen	Coolant Level SW	Coolant Temp Sen	Fuel Level Sen
	Grid Heater	Oil Press Sen	Oil temp Sen	Spd Sen
	Throttle Control	Throttle ISense		
FEEDER	CVT Pmp Volt	CVT Pump Vlv	ETR Ctch ISense	ETR Ctch Vlv
	ETR Ctch Volt	Reverser SW	RTF Ctch Vlv	Seat SW
	Spd Sen			
GRAIN HANDLING	Beacon LT	Cover Concave Rly	Covers ISense	Covers Mtr
	Covers Open Sen	Covers SW	Elevator Spd Sen	Jammer Vlv
	Rear Ladder Sen	Tank Full Sen		
GROUND DRIVE	2–Spd F Hyd Vlv	2–Spd F Hydro Sw	2–Spd PRA SW	2–Spd PRA Vlv
	Backup Alarm	Ground Spd Sen	Hydro	Hydro ISense
	Hydro Volt	MFH Pos	MTR Temp Sen	Press Release Vlv
	Road Mode SW			
HDR HEIGHT/TILT	Accumulator Vlv	Adj Dec SW	Adj Inc SW	Feeder Pos Sen
	HHC Resume SW	Left Sen	Left Center Sen	Lift Press Sen
	Lower SW	Lower Vlv	Raise SW	Raise Vlv
	Raise Low ISense	Right Sen	Rt Center Sen	Set Height #1 SW
	Set Height #2 SW	Tilt Angle Sen	Tilt CCW SW	Tilt CCW Vlv
	Tilt CW SW	Tilt CW Vlv	Tilt ISense	Type Sen
HEADER	Jammer Vlv	Reel Aft SW	Reel Aft Vlv	Reel Drive Vlv
	Reel Fore SW	Reel Fore Vlv	Reel Lower SW	Reel Lower Vlv
	Reel Raise SW	Reel Raise Vlv	Reel Spd Auto SW	Reel Spd Control
	Reel Spd ISense	Reel Spd Mtr	Reel Spd Sen	Spd Auto SW
	Spd Control	Type Sen	V Knife Left	V Knife Off SW
	V Knife On SW	V Knife Right		

SYSTEM	**Parameters**			
HYDRAULIC	Cntl Press Sen	Mtr Temp Sen	PTO Filter SW	PTO Lube Press
	Res Filter SW	Res Level SW	Res Temp Sen	
LIGHTS	Backlight	Beacon Lt	Beacon SW	Brake Lt
	Field Lt	Front Work Lt	Front Work SW	Hazards SW
	ISO/NASO Select	Rear Work Lt	Rear Work SW	Road SW
	Side Work Lt	Turn Left SW	Turn Right SW	Unload Tube Lt
OPERATOR CONTROL	E–Stop SW	Hdr Pos SW Com	Reel/E–Stop Com	Speaker Output
RESIDUE	Beat/Chop ISense	Beat/Chop Vlv	Beat/Chop Volt	Chaff Spread Vlv
	Chopper Spd Sen	Spreader Spd Sen	Windrow Pos Sen	
RHM LAMP	2–Spd F Hydro	2–Spd PRA	Auto Height #1	Auto Height #2
	Header Spd Auto	Reel Spd Auto	Road Mode	
SIEVE	Low Dec SW	Low Inc SW	Low ISense	Low Mtr
	Low Pos Sen	Low Rear Dec SW	Low Rear Inc SW	Up Dec SW
	Up Inc SW	Up ISense	Up Mtr	Up Pos Sen
	Up Rear Dec SW	Up Rear Inc SW	Up/Low Rly	
THRESHING	Concave Dec SW	Concave Inc SW	Concave ISense	Concave Mtr
	Concave Pos Sen	Cover Concave Rly	Rear Ladder Sen	Rotor Scan L Sen
	Rotor Scan R Sen	Seat SW		
THRESHING ROTOR	Clean Out SW	CVT Pmp ISense	CVT Pmp Vlv	CVT Pmp Volt
	ETR Ctch ISense	ETR Ctch Vlv	ETR Ctch Volt	Mtr Spd Sen
	RTF Ctch Vlv	Spd Dec SW	Spd Inc SW	Spd Sen
TRANSMISSION	Gear Shift Cntl	Pos 1 Sen	Pos 2 Sen	Pos 3 Sen
	Pos 4 Sen	Pos N Sen	Press Release Vlv	Shift ISense
	Shift Mtr			
UNLOADING	Swing In SW	Swing Out SW	Tube Cradled Sen	Tube In Vlv
	Tube Out Vlv	Unload Tube LT	Unloader ISense	Unloader SW
	Unloader SW Com	Unloader Vlv		
VOLTAGE	CCM1 8V Ref	CCM 1 Bat	CCM1 J2 5V Ref	CCM1 J3 5V Ref
	CCM1 Key SW	CCM2 8V Ref	CCM 2 Bat	CCM2 J2 5V Ref
	CCM2 J3 5V Ref	CCM2 Key SW	CCM3 8V Ref	CCM 3 Bat
	CCM3 J2 5V Ref	CCM3 J3 5V Ref	CCM3 Key SW	Key SW Start Pos
	RHM 5V ref	RHM Bat	RHM Key SW	

DIAG>HISTORY Screen

The DIAG>HISTORY screens display a history of all faults, alarms and errors. These screen are to be used to aid in troubleshooting intermittent problems.

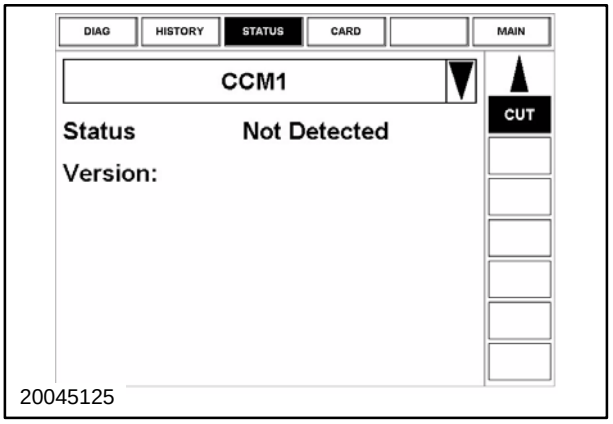


125

DIAG>STATUS

The DIAG>STATUS screens display the current status of the following components:

- CCM1
- CCM2
- CCM3
- RHM
- SSM
- YMIU
- GPS



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SECTION 3
FIELD OPERATION

GENERAL

BEFORE DRIVING THE COMBINE

1. Read this Operator's Manual carefully; especially the paragraphs headed "safety precautions" and "starting the engine".
2. Check all chain and belt tensions (refer to section 4 – "LUBRICATION AND MAINTENANCE".
3. Check all the pressures daily. Keep the tires inflated to the pressures given in section 8 – "SPECIFICATIONS".
4. Check the wheel nuts torque daily during the first week of operation and thereafter on a weekly basis.
5. Check the coolant level (ensure the machine is standing on level ground). Refer to section 4 – "LUBRICATION AND MAINTENANCE" .
6. Check the hydraulic and hydrostatic oil reservoir level with all hydraulic cylinders retracted and the header lowered to the ground (machine standing on level ground). Add oil if necessary. Refer to section 4 – "LUBRICATION AND MAINTENANCE".
7. Lubricate the combine completely as described in section 4 – "LUBRICATION AND MAINTENANCE".
8. Sit down on the operator's seat and adjust it according to your weight and size.
9. Adjust the steering wheel to the desired position. Adjust the rear-view mirrors, if necessary.
10. Start the engine. Refer to the next paragraph headed "Starting the engine".
11. Turn the ladder of the operator platform in front of the traction wheel when driving on public roads.
12. Raise the ladder of the engine compartment.
13. Ensure the unloading tube is in the closed position.
14. Disengage the parking brake.
15. Move the throttle into the maximum speed.
16. Raise the feeder to its highest position.
17. Before driving on public roads, select road mode on right-hand console.

IMPORTANT: *To prevent the hydraulic oil from overheating, do not hold the header height control switch in the operating position longer than is necessary. The same applies to the hydraulic controls for the reel height, and the reel fore and after adjustment.*

STARTING THE ENGINE

Ensure you are thoroughly familiar with the instruments and controls before starting the engine for the first time.

To start the engine safely, follow the points as outlined below.

⚠ CAUTION ⚠

Before starting the engine, ensure there is enough ventilation and everyone is standing clear of the combine.

DAILY START-UP PROCEDURE

Proceed as follows:

1. Carry out the routine engine service, i.e. check coolant, oil and fuel tank levels (refer to section 4 – “LUBRICATION AND MAINTENANCE”).
2. Make sure the Multi function handle is in neutral position.
3. Check that the both brake pedals are coupled together.
4. Insert the ignition key into the ignition-and-stop switch and turn the ignition key to the “contact” position, check for any alarm or fault messages on the universal display.
5. Before starting the engine, warn bystanders by sounding the horn several times.
6. Start the engine when Pre-Heat lamp below Ignition key starts to flash. Turn the ignition key clockwise to engage the starter motor. (If the engine fails to start after 30 seconds, release the ignition key for about 1 minute before re-engaging the starter motor).
7. As soon as the engine starts, release the ignition key.
8. Check for any engine Alarm/fault messages.

IMPORTANT: *Allow the engine to run for one minute at low idle before moving off, to ensure adequate lubrication of the turbocharger bearings.*

STOPPING THE ENGINE

Proceed as follows:

1. Move the engine throttle to its slow position and let the engine run at idling speed for one minute.
2. Turn the ignition key counter-clockwise to stop the engine.
3. Remove the key from the ignition-and-stop switch.

DRIVING THE COMBINE

⚠ CAUTION ⚠

The combine rear end swings out when changing direction. Take care when turning.

Proceed as follows:

1. Ensure that the ground speed control lever is in the neutral position.
2. Select a gear by turning the gear select switch in the desired position. Check selected gear on the display for proper engagement. (this can take a few seconds).
   - For field operation, use first, second or third gear, depending upon the circumstances.
   - For maneuvering in confined spaces, use first gear.
   - For road transport, use third or fourth gear.
3. Release parking brake (switch in OFF position).
4. Push Multifunction handle gently forward to drive forward and pull handle gently backwards for reverse driving.

NOTE: *When reversing the combine, an audible alarm will automatically warn bystanders.*

5. Familiarize yourself with the different steering and driving characteristics.

⚠ WARNING ⚠

To prevent runaway of the combine (i.e. when the ground speed increases during downhill driving and it is impossible to reduce the speed with the ground speed control lever), it is necessary to shift into a lower gear appropriate to the steepness of the hill.

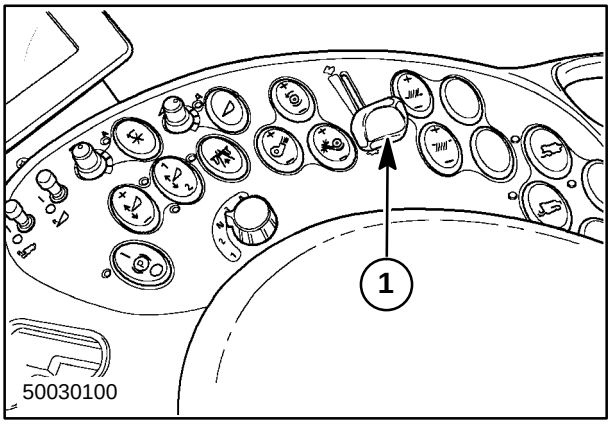
⚠ CAUTION ⚠

Never drive on public roads with any of the mechanisms engaged (select road mode with the road mode selector switch).

ENGINE

THROTTLE

An operator control to select the engine speed. The throttle can be adjusted from low idle, 1000 rpm, to high idle, 2100 rpm. This control is located on the RHC, 1.



1

ENGINE SPEED LOW ALARM SET POINT

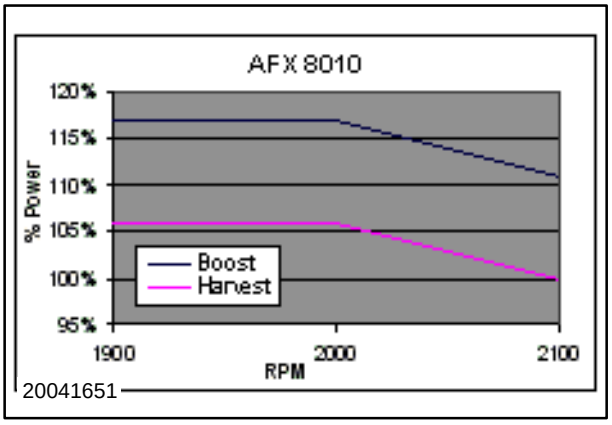
A set point selected by the operator sounds an alarm when the engine speed reaches the selected set point. To be able to set an alarm or change the alarm point, this control needs to be selected and placed on one of the operator configurable screens; HARV>HARV*.

The alarm setting comes from the factory at 2000 rpm. The control range is 1800 rpm to 2050 rpm. Since this alarm is only active when the engine speed is greater than 1800 rpm, setting the alarm at 1800 in effect disables the alarm.

% Power and Power Boost

When the unloader is engaged, the engine provides additional power for unloading on the go. The following graph shows the engine power curve for normal harvesting and unloading on the go versus engine speed.

NOTE: *This graph is an example only and should not be used for diagnostic purposes. Actual values will vary between machines.*



2

GROUND DRIVE

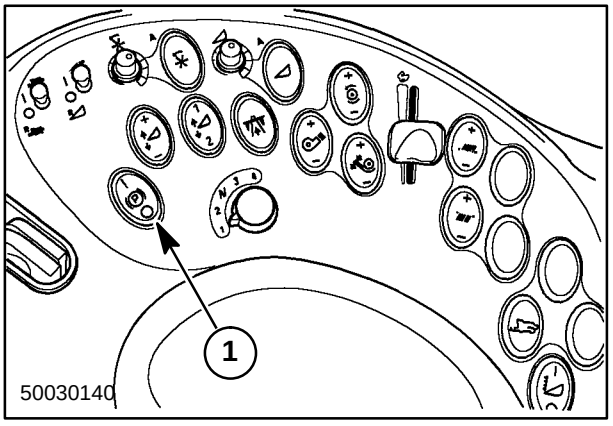
PARKING BRAKE

The parking brake is operated by pressing switch, 1.

Press the top portion of the switch to engage, or the bottom to disengage.

NOTE: *When selecting another gear, the parking brake is automatically activated.*

NOTE: *Each time the engine is started, the parking brake will be activated.*



3

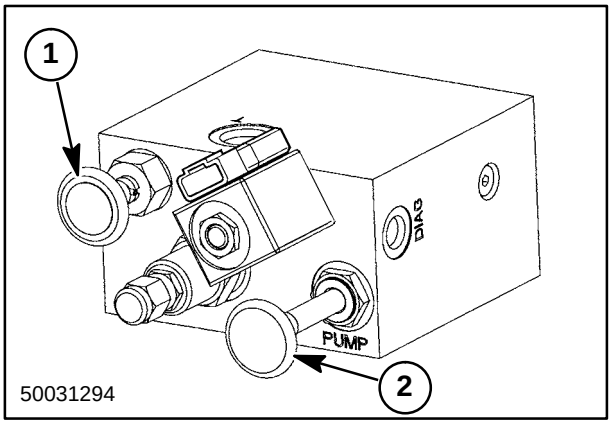
Tow Valve

A tow valve is located behind the trim panel between the front ladder deck and the grain tank. This valve allows manual release of the park brake.

Block combine tires front and rear. Turn key switch to on position. Turn park brake to off position. Alarm will come on saying park brake is not engaging.

To operate, turn knob, 1, to the detent position. Use hand pump, 2, to release park brake (approximately 60 pumps). Return valve, 1, to the detent out position to set the park brake and for normal operation.

Park brake is fully released when park brake lamp on shaft speed monitor goes off.



4

GEARSHIFTING SYSTEM

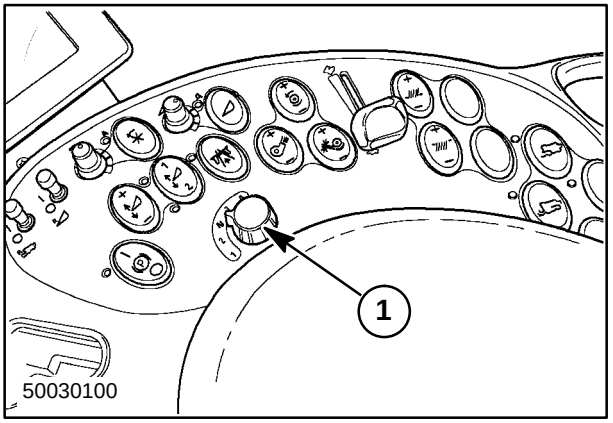
A selector switch, 1, (1–2–N–3–4) indicates the selected gear.

Selecting a gear is only possible with the multifunction handle in neutral position and machine stopped.

Turn the button to select a gear. The parking brake is automatically engaged and the hydrostatic system will be disabled.

The monitor shows the selected gear on top right of the screen when the gearshifting is completed. The parking brake will reset to its previous state and the operator can take over the hydrostatic control.

NOTE: *When selecting another gear during driving, the system will wait until the multifunction handle is in the neutral position and the combine is stopped completely.*



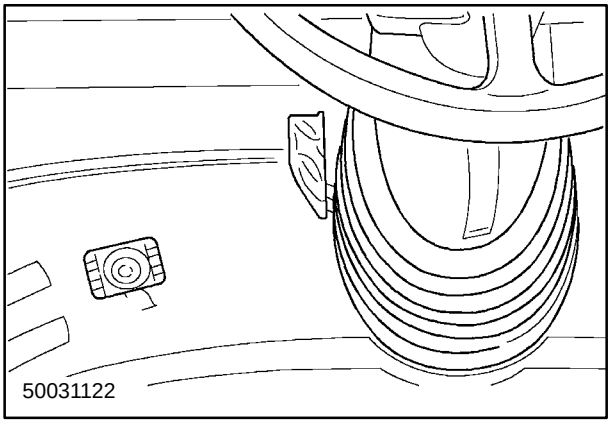
5

DIFFERENTIAL LOCK (if equipped)

When operating in slippery or muddy ground conditions the differential lock may be engaged to provide better traction.

If one of the traction wheels start spinning, immediately depress the differential lock pedal. Now both traction wheels will turn at the same speed. Keep the pedal depressed until the machine has passed the obstacle.

Release the pedal to disengage the differential lock.



6

IMPORTANT:

- *Do not make turns with differential lock pedal depressed.*
- *It may be necessary to slow down the combine to allow engagement of the differential lock.*

HARVESTING

INTRODUCTION

The combine harvester performs six basic functions: Cutting, Feeding, Threshing and Separating, Grain Cleaning, Grain storage and Unloading and Residue Handling.

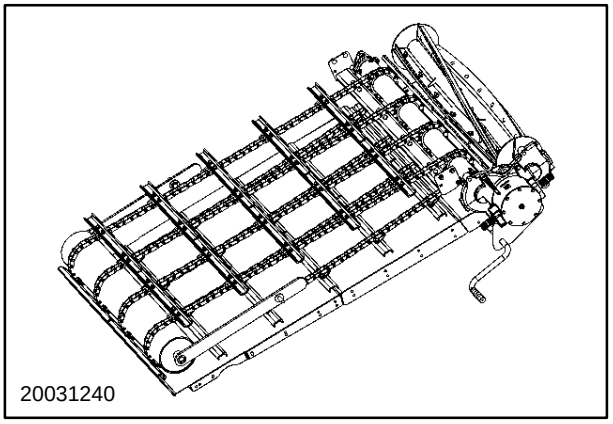
Cutting

The function of the header is to cut the crop, gather it and feed it to the feeder in the most efficient manner.

Feeding

Once the header has cut and gathered the material, it is delivered to the feeder house for transporting to the transition cone. The function of the feeder house is two fold:

1. First to control the position of the header in relationship to the ground. This permits the header to remain in the most optimal position for harvesting.
2. Secondly to deliver a uniform mat of material to the transition cone of the combine. The uniformity of the mat being delivered starts with a properly operated header. Different options and adjustments can change the control of the mat in the feeder house.

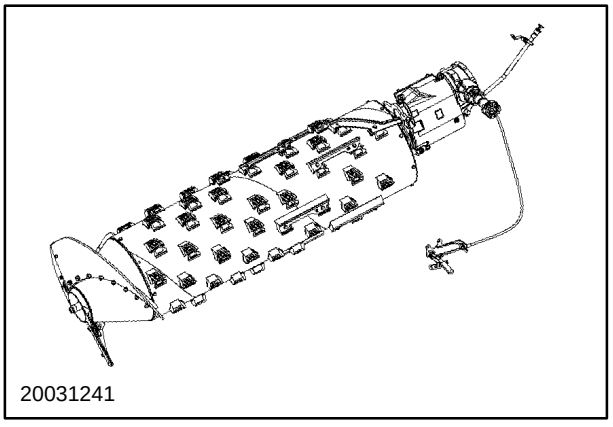


7

Threshing and Separating

The threshing and separating functions of Axial Flow® combines are performed in the rotor cage area. Material is fed from the feeder to the impeller area of the rotor and flows rearward through the machine. The two most important components in the threshing and separating processes are the rotor and the rotor modules.

The rotor threshes the grain and assists in the rearward travel of the material through the machine. The sooner the grain is threshed out of the heads, the more opportunity the grain has to separate from the material.



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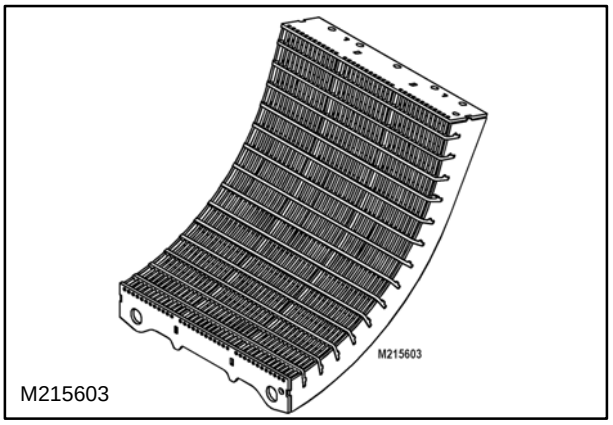
The function of the rotor modules is twofold. First, the concaves must hold the material long enough to insure complete threshing. Second, the rotor modules must have enough open area to permit the grain to separate into the cleaning system once the grain has been threshed. Modules with excessive open area for the given crop will result in too much residue being dropped onto the cleaning system.



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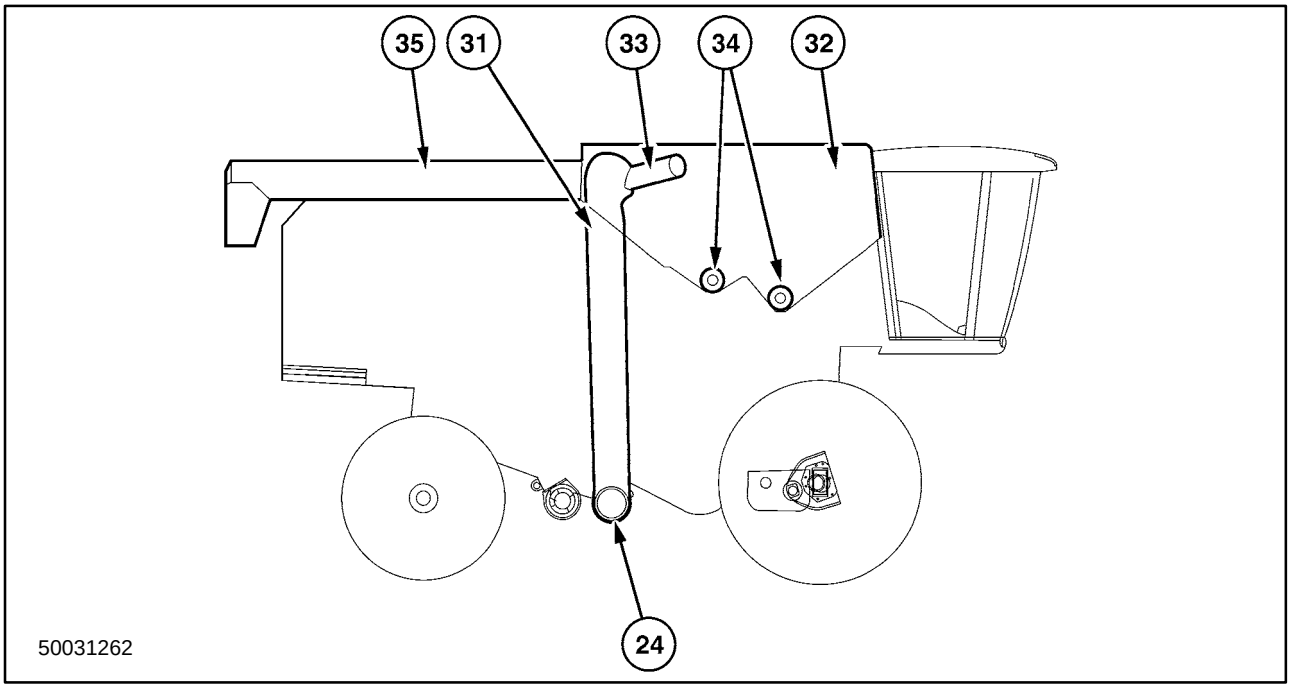
Threshing area adjustments properly made will assist you in obtaining maximum combine performance. Rotor speeds and concave clearances must be matched to the crop and field conditions for the most efficient and productive operation. One common mistake is running the rotor to slow and the concave set too open for the crop. This results in slow movement of the material, inefficient threshing and separation and a loss in machine capacity.

With the Axial Flow® concept, kernel damage is greatly decreased and is not affected by rotor speed and concave settings nearly as much as conventional combines are by cylinder speed and concave adjustment. Axial Flow combines give you a broader range of settings. AFX combines can thresh very well with wider concave clearance than previous models, due to increased concave wrap.

Grain Cleaning

The cleaning activity of the Axial Flow® combine is the final separation of the grain from the material that has been distributed through the rotor modules. Material is separated by the upper and lower sieves to remove unwanted foreign material. Chaff and other unwanted material is suspended by air and discharged out of the rear of the combine. Adjustments required for this function are the RPM of the cleaning fan (controlling air velocity) and the adjustments of both the upper and lower sieves. Too much air movement over light crops will contribute to cleaning system losses.

Only through experimentation will an operator find the correct combination of upper and lower sieve settings that yield the maximum grain savings, clean grain tank sample and reduced tailings return.



10

Grain storage and unloading

The clean grain is channelled into the grain tank, 32 by the clean grain cross auger, 24, grain elevator, 31 and bubble-up auger, 33.

The grain tank is emptied by the grain tank unloading augers, 34, and the unloading tube auger, 35.

Residue Handling

The residue handling system consists of a discharge beater or optional straw chopper to either discharge the straw from the combine or chop and discharge the straw.

The straw can then be either windrowed or spread using the spreader. In addition to spreading the straw the spreader can also spread the chaff being discharged from the upper sieve.

AFX COMBINE – INITIAL CROP SETTINGS

Rotor

Crop	Rotor		Rotor Modules		
	Speed (RPM)	Gear Range	Front		Rear
			Cab Ind.	Type	Type
Barley	600–750	2	2.5	Large Wire	Large Skip Wire
Corn – Dry	350–380	1	5	Large Wire	Large Skip Wire
Corn – High Moist.	370–400	1	4 – 5	Large Wire	Large Skip Wire
Soybeans	670–720	2	5	Large Wire	Large Skip Wire
Wheat	750–1050	3	1 – 2	Small Wire	Large Skip Wire
Rapeseed/Canola	430–470	2	6	Small Wire	Slotted
Rice	650–1000	3	5 w/spikes	Large Wire	Large Skip Wire
Maize/Milo	400–600	2	4	Large Wire	Large Skip Wire
Lentil Beans	300–330	1	3	Large Wire	Large Skip Wire
Pinto Beans (edible beans)	300–330	1	5	Large Wire	Large Skip Wire
Rye	700–750	2	3	Large Wire	Large Skip Wire
Oats	670–800	2	4	Large Wire	Large Skip Wire
Popcorn	350–400	1	4 – 5	Large Wire	Large Skip Wire
Rye Grass	680	2	3	Small Wire	Large Skip Wire
Bent Grass	950	3	0	Small Wire	Large Skip Wire
Blue Grass	530	2	2	Small Wire	Large Skip Wire
Brome Grass	500	2	5	Small Wire	Large Skip Wire
Crested Wheat	700	2	3	Small Wire	Large Skip Wire
White Clover	950–980	3	0	Small Wire	Slotted
Sunflower	300	1	7	Large Wire	Slotted/Solid
Alfalfa	600–650	2	1	Small Wire	Slotted
Flax	800–900	3	1	Small Wire	Large Wire #3, Slotted #4
Mustard	300	1	6	Small Wire	Slotted
Peas – Black eye	300	1	3	Small Wire	Slotted
Wild Rice	500	2	2	Small Wire	Large Skip Wire
Safflower	380–410	1	7	Large Wire	Large Skip Wire

Rotor Range 1 = 220 – 450 RPM
2 = 420 – 780 RPM
3 = 730 – 1180 RPM

Cleaning

Crop	Sieve Settings							Fan Speed (RPM)
	Pre-Sieve (Inch)	Upper			Lower			
		Type	Cab ind.	(Inch)	Type	Cab ind.	(Inch)	
Barley	3/8	1-1/8	16	3/8	1-1/8	3	1/4	850–950
Corn – Dry	5/8	1-5/8 Corn, 1-5/8 Closz	17	5/8	1-5/8 Closz	15	5/8	900–1050
Corn – High Moist.	5/8	1-5/8 Corn, 1-5/8 Closz	18	3/4	1-5/8 Closz	15	5/8	980–1150
Soybeans	5/8	1-5/8 Closz, 1-5/8 Corn, 1-1/8	16	5/8	1-1/8, 1-5/8 Closz	12	5/8	900–1000
Wheat	3/8	1-1/8, 1-5/8 Closz	14	1/2	1-1/8	9	1/4	900–1050
Rapeseed/Canola	1/4	1-1/8	6	3/8	1-1/8	6	1/8	600
Rice	3/8	1-5/8 Closz, 1-1/8	15	1/2	1-1/8	12	1/4	850–950
Maize/Milo	3/8	1-5/8 Closz, 1-1/8	13	1/2	1-1/8	7	1/4	950–1000
Lentil Beans	3/8	1-1/8	13	1/2	1-1/8	4	3/16	850–900
Pinto Beans (edible beans)	3/8	1-1/8	13	1/2	1-1/8	10	3/8	850–900
Rye	3/8	1-1/8	12	1/2	1-1/8	10	3/8	450
Oats	3/8	1-1/8	12	1/2	1-1/8	7	1/4	850–900
Popcorn	3/8	1-1/8	10	3/8	1-1/8	6	1/4	900
Rye Grass	3/8	1-1/8	12	1/2	1-1/8	6	1/4	400
Bent Grass	3/8	1-1/8	10	3/8	1-1/8	2	1/8	420
Blue Grass	3/8	1-1/8	6	1/4	1-1/8	3	1/8	450
Brome Grass	3/8	1-1/8	17	3/4	1-1/8	8	3/8	620
Crested Wheat	3/8	1-1/8	10	3/8	1-1/8	5	1/4	480
White Clover	3/8	1-1/8	11	3/8	1-1/8	2	1/16	480
Sunflower	3/8	1-1/8	13	1/2	1-1/8	11	1/2	800
Alfalfa	0	1-1/8	8	1/4	1-1/8	0	0	480
Flax	0	1-1/8	8	1/8	Petersen	6	1/4	750
Mustard	0	1-1/8	11	1/2	1-1/8	0	0	780
Peas – Black eye	1/2	1-1/8	12	1/2	1-1/8	10	3/8	880
Wild Rice	3/8	1-1/8	10	3/8	1-1/8	8	3/8	850
Safflower	1/2	1-1/8	12	1/2	1-1/8	8	3/8	800

NOTES:

Multiple sieve listings indicates suitable performance with either type. Chose based upon your crop mix

1-1/8 Petersen top sieves can be used for grasses, various small seeds or for harvesting hybrid seed which require an exceptionally clean sample.

2.5 mm round hole bottom sieves can be used for speciality crops such as alfalfa.

5 mm round hole bottom sieves can be used in larger clover type seeds and rape seed.

10 mm round hole bottom sieves can be used for milo/maize/sorghum and some small beans.

16 mm round hole bottom sieves can be used for soybeans, milo, popcorn and other similar sized seeds.

8 mm round hole bottom sieves can be used for large beans and some commercial corn.

HARVEST CONDITION

Harvest Condition saves seven factory set and 11 operator configurable crop preset groups for the remotely adjustable combine settings.

The possible controlled settings are; (dependent on available combine options)

Rotor Speed
Fan Speed
Concave Clearance
Upper Sieve
Lower Sieve
Rotor Loss Sensitivity
Sieve Loss Sensitivity
Tailings Offset
Minimum Reel Speed
Raise Rate
Lower Rate
Height Sensitivity
Tilt Sensitivity
Auto Feeder Minimum Speed
Auto Feeder Maximum Speed

The operator can choose an exiting harvest condition and the combine will change the settings to the selected set or the operator can save the current combine settings for reuse at a future time.

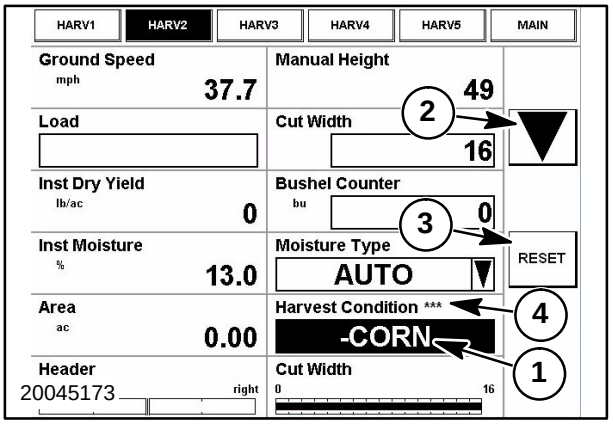
To adjust the combine to a defined harvest condition, select the harvest condition window to display on one of the HARV>HARV screens.

This window displays and permits selection of the active harvest condition.

The data field, 1, shows the active harvest condition from the list of harvest conditions. Touching the data field will highlight the data field and bring up a down arrow, 2, and a reset button, 3, in the status bar area. The reset button will be shown only if active settings are different from current presets. An asterisk, 4, will show if the active presets are different from current settings. Touching the data field a second time will show the data field in normal video & clear the down arrow and reset button.

Touching the down arrow will display a pick list screen with all available harvest conditions. The active harvest condition will be in italicized font and be initially highlighted in the picklist (except when no harvest condition is active, then the first harvest condition will be highlighted). Selecting a harvest condition will cause the selected harvest condition presets to be applied.

Touching the reset button will cause the active harvest condition presets to be applied.



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Harvest Condition Setup Screen

Select the SETUP>COND screen.

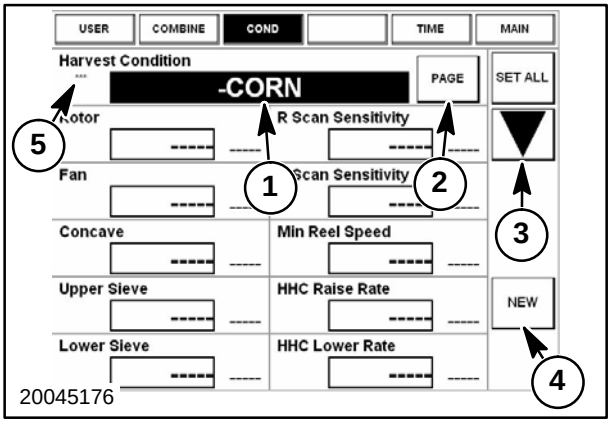
The current harvest condition name will be shown in selection box, 1, followed by the first page of preset data for the current harvest condition.

Pressing the PAGE button, 2, will take you to the next page or preset data.

To select a different harvest condition, highlight selection box, 1, then press the down arrow, 3. Select the harvest condition, and press ENTER to return to this screen.

To create a new harvest condition, press the NEW button, 4. The NEW button will not appear if all eighteen conditions are full.

An asterisk, 5, will be displayed if the displayed presets are different from the current values.



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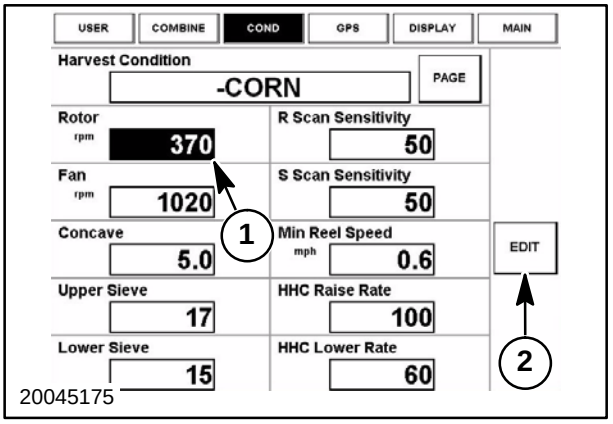
The preset selector boxes, 1, displays the harvest condition preset value.. Press the box to highlight it and display an EDIT button, 2.

If the EDIT, 2, button is pressed for a factory set harvest condition, the alarm “Preset value is not changeable for this Harvest Condition” will be displayed. When the alarm terminates, the display will return to the SETUP>COND screen.

If the EDIT button, 2, is pressed for an operator set harvest condition, a numeric keypad will be displayed to change the preset value. If the keypad entry is aborted, the preset value will not be modified. If new preset data is entered it will be saved.



13

COMBINE SETTING

Kill Stall

A way to accurately check the performance of the combine is to complete a “kill-stall”.

1. Operate the combine in a section of the field that best represents the overall crop. Be sure the combine is at least 100 m (328 ft) into the crop and travelling at the normal operating ground speed.
2. Simultaneously, pull throttle to low idle, push propulsion handle forward, step on both brakes until combine stalls. This will leave most crop material distributed as it was during actual harvesting.
3. Disengage the threshing and header engagement system clutch, move the multi function handle to neutral, and restart the engine. This prevents the engine from overheating and from being damaged. Run the engine on low idle for five minutes before stopping the engine.

NOTE: *The key switch must be in the off position for 5 seconds before restarting the engine.*

4. Check the grain tank sample for complete threshing, cleanliness and damage.
5. Walk out in the front of the header and check the crop loss before the header has contacted the crop (preharvest loss).
6. Check the crop loss in an area where only the header has travelled (header loss).
7. Check the distribution of material on the grain pan.
8. Check the type, amount and distribution of material on the sieves.
9. Check the type and amount of returns.
10. Check the total loss in a 60 cm (24″) wide area across the width of the cleaning shoe. Subtract preharvest and header losses to determine the machine loss. Use a drop screen to check the machine loss directly.
11. With all previous factors considered, readjust the combine.

NOTE: *Make only one adjustment at a time so that any change in combine performance can be attributed to that particular adjustment.*

12. Restart combine and engage threshing clutch.

Performance Indicators

There are four indicators, which will tell you how well the combine is performing. These four indicators are:

- Grain tank sample
- Distribution of material on the grain pan and upper sieve
- Type and amount of returns
- Losses

By correctly reading these indicators and being familiar with the combine, you can make the necessary adjustments to correct any problem and improve the overall combine performance.

Grain Tank Sample

A large amount of trash in the grain tank indicates the crop is being overthreshed and/or the cleaning fan speed is too slow. The first step to correct this problem is to increase the concave clearance and/ or reduce the rotor speed. This reduces or eliminates the material break-up caused by overthreshing. Then increase the cleaning fan speed if the trash is heavier than the grain or close the upper sieve if the trash is larger than the grain.

Cracked or damaged grain can be caused by a concave setting that is too close to the rotor. Increase the concave clearance and then reduce the rotor speed to correct the problem.

Bunch feeding can cause grain damage in the feeder house. An incorrect feeder chain tension can also cause grain damage.

Excessive returns will contribute to grain damage due to the additional pass(es) the grain must take through the returns system. Plugged concaves can cause grain damage because the free grain cannot get out of the concave area.

Loose elevator chains can also cause grain damage. It is important to maintain the proper tension on these chains.

Unthreshed material in the grain tank can be caused by underthreshing or the lower sieve that is opened too wide. Increase the rotor speed and reduce the concave clearance as needed to correct the problem. Reduce also the lower sieve opening slightly to obtain a cleaner grain tank sample.

Grain Pan/ Upper Sieve Distribution

The distribution of material on the grain pan affects the distribution of material on the sieve. The distribution on the grain pan should be level to slightly higher directly under the rotor and taper slightly towards both sides.

On AFX models in conditions of moderate to high crop throughputs, the presieve will appear submerged in grain and chaff. This mat of material will progressively reduce, the further rearward on the sieve one looks.

Presence of chaff with entrained grain on one portion (side-to-side) of the chaffer while the other side is clean indicates an imbalance in rotor distribution. This is cured by:

1. moving concave hanger frame left or right. The correct direction being shifting the concaves in the direction of the side that has the pile of material.

   – or –

2. replacing concave modules on the heavy distribution side with modules that have less open area.

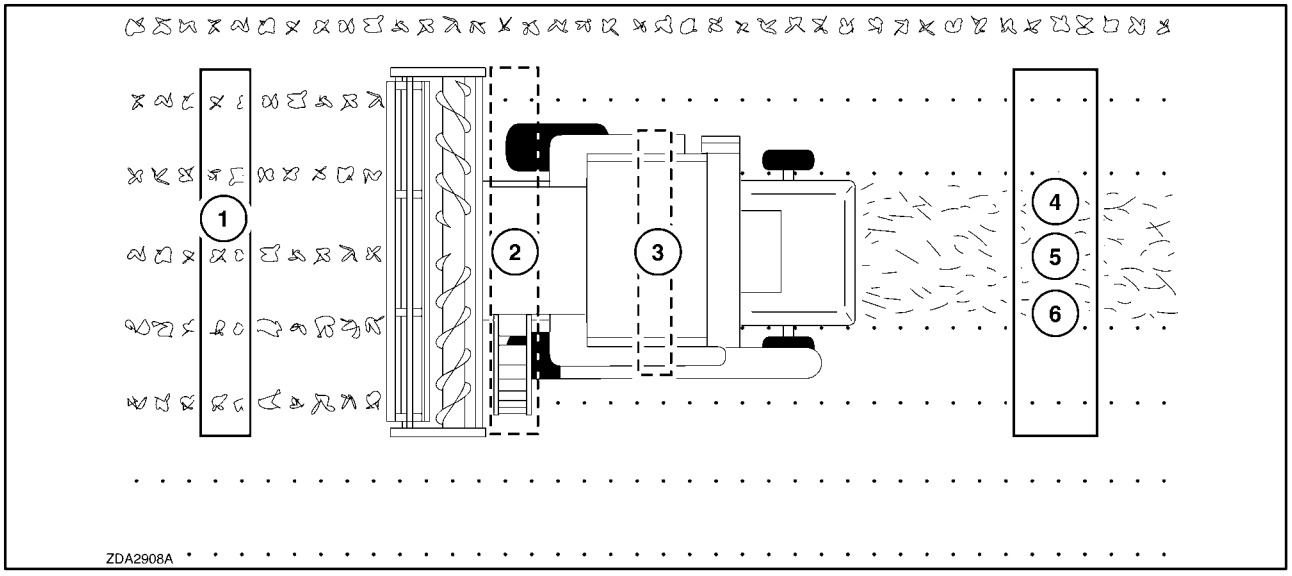
If there is some grain on the rear third of the upper sieve, returns will be increased and there is a possibility that grain will ride out the back of the combine. Open the upper sieve to allow more of the grain to fall onto the lower sieve.

If the material on the upper sieve is broken into small pieces, the crop is being overthreshed. This can plug the upper sieve and cause high losses. Increase the concave clearance and/ or reduce rotor speed to decrease the threshing action.

Unthreshed heads indicate the rotor speed should be increased and/ or the concave clearance should be reduced. Unthreshed heads can also be caused by worn rasp bars and worn concaves.

Return Sample

If the return sample contains a large quantity of threshed grain, the cleaning fan speed should be reduced and/ or the lower sieve should be opened more.



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Losses

The area of loss is determined by the location of the grain in relation to the combine. Each of these areas must be checked to accurately determine which combine adjustments (if any) can be made to reduce the loss.

Grain on the ground in front of the combine head, 1, is defined as preharvest loss and is usually caused by the weather. Determine the amount of this loss before taking the combine into the field.

Grain found behind the head, but to the outside of the drive tires, 2, is considered loss from the head. These losses can be caused by improper head adjustments or improper combine ground speed.

Grain on the ground directly beneath the combine is leakage. Holes in the auger bottoms and damaged seals can result in large losses which are often mistaken for shoe and rotor losses.

Grain on the ground directly behind the combine, 4, the width of the shoe, is caused by incorrect combine adjustment(s) or too high a ground speed.

Shoe losses, 5, can be caused by a build-up of material on the top sieve which allows the grain to ride out the back of the combine. This can be due to the sieve opening being closed or opened too much, the rear of the sieve raised too high (sieve angle too extreme)), or by a too low cleaning fan speed.

Losses can also be caused by a cleaning fan, 6, speed that is too high. The grain is then blown out of the back of the combine.

An uneven loading of material on the top sieve can also cause losses.

⚠ CAUTION ⚠

The spreader drive must be disconnected when checking loss.

Combine threshing losses can be determined by using a drop screen. Make a wood or metal frame 610 mm x 1524 mm (24″ x 60″). Fasten a door/window screen to the frame.

Walk beside the combine and throw the drop screen under the center of the shoe. Let the combine pass over the screen, then separate the straw/chaff and the count the number of gains on the screen.

Refer to the loss chart.

To isolate the cleaning system loss for a loss check:
Keep the spreaders down and straw hood door down to direct rotor discharge into the spreader. Lower the chaff pan so material that passes over the upper sieve will drop to the ground immediately behind the combine. This will spread most of the rotor loss and isolate the cleaning loss behind the combine.

To isolate the rotor loss for a loss check:
Keep the spreaders in the down position and ensure the chaff pan is raised to direct sieve discharge into the spreaders. Place the straw hood door in the open position to direct rotor discharge into a windrow behind the combine (spread chaff and windrow straw mode). This will spread most of the cleaning system loss and isolate the rotor loss behind the combine.

If the spreader assembly is raised and the chaff pan lowered (windrow straw and chaff mode), cleaning system performance may be impacted by the more open area behind the combine and give an erroneous loss indication. When operating in this mode fan speed may need to be decreased to control cleaning system loss.

LOSS CHART - GENERAL

This chart lists the number of seeds per square foot, spread over an entire field, to equal one bushel per acre loss.

The number of seeds per bushel is also listed because it may vary with different varieties of the same crop.

Crop	lbs./bu.	Seeds/Bushel	Seeds/Square Foot for 1 bu/A Loss
Barley	48	653,400	15
Corn	56	87,120	2
Flax	56	4,521,528	104
Oats	32	435,600	10
Rice	45	1,306,800	30
Rye	56	1,001,880	23
Sorghum	56	1,219,680	28
Soybeans	60	162,000	4
Wheat	60	914,760	21

LOSS CHART - SMALL GRAINS

This chart lists the number of seeds in a drop screen to equal one bushel per acre loss. These figures are approximate and could vary with the seed variety. Be sure the drop screen is the width of the cleaning shoe by 2′. The loss depends upon the width of the head, so be sure to read the proper column.

	Head Width			
CROP	**20′**	**25′**	**30′**	**36′**
Barley	600	750	900	1,080
Flax	4152	5,190	6228	7,474
Oats	400	500	600	720
Rice	1,200	1,500	1,800	2,160
Rye	920	1,150	1,380	1,656
Sorghum	1,120	1,400	1,680	2,016
Soybeans	148	185	222	266
Wheat	840	1,050	1,260	1,512

NOTE: *If a drop screen is not used, divide the numbers listed in the chart by 10.33. This converts the total number of kernels in the drop screen to kernels per square foot directly behind the combine.*

LOSS CHART - CORN

This chart lists the number of seeds in a drop screen for a one bushel per acre loss. These figures are approximate and could vary with the seed variety. Be sure the drop screen is the width of the cleaning shoe and 2′ wide. The loss depends upon the number of rows and the spacing, so be sure to read the proper column.

	Row Spacing						
Number of Rows	**20″**	**22″**	**28″**	**30″**	**36″**	**38″**	**40″**
6	--	--	56	60	72	76	80
8	53	58	75	80	96	--	--
12	80	88	110	120	--	--	--

NOTE: *If a drop screen is not used, divide the numbers listed in the chart by 10.33. This converts the total number of kernels in the drop screen to kernels per square foot directly behind the combine.*

To determine loss for a crop not listed:

1. Find out the weight of the crop in pounds per bushel and the number of seeds in a pound. This will allow you to figure the total number of seeds in a bushel (by multiplying the two previous figures together.)
2. Divide this number by 43,560 (number of square feet in an acre) to determine the number of seeds per square foot if the bushel of seed were spread evenly over one acre.
3. Take this number and multiply it by the width of the head in feet and then check the width of the drop screen (usually 2′.) This will give you the number of kernels that will be in the drop screen for a one bushel per acre loss.
4. To figure the percent loss, divide the loss in bushels per acre by the yield per acre and multiply by 100.

Example:

The weight of a particular variety of wheat is 60 lbs. per bushel and contains 15,246 seeds per pound. This is equal to 914,760 seeds per bushel. Dividing this by 43,560 equals 21. This is the number of seeds per square foot if the grain were spread evenly over an entire acre. Multiply this number by the width of the head (20′ for this example) and the distance the combine travels over the drop screen (2′). The final number is 840. This is the number of kernels that will be in the drop screen for a one bushel per acre loss. If the yield is 50 bushels, the loss is 2 percent. Combine losses of less than 3 percent of total yield in most crops are considered acceptable.

LOSS CHART - GENERAL

This chart lists the number of seeds per square foot, spread over an entire field, to equal one bushel per acre loss.

The number of seeds per bushel is also listed because it may vary with different varieties of the same crop.

Crop	lbs./bu.	Seeds/Bushel	Seeds/Square Foot for 1 bu/A Loss
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Corn	56	87,120	2
Flax	56	4,521,528	104
Oats	32	435,600	10
Rice	45	1,306,800	30
Rye	56	1,001,880	23
Sorghum	56	1,219,680	28
Soybeans	60	162,000	4
Wheat	60	914,760	21

LOSS CHART - SMALL GRAINS

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	Head Width			
CROP	**20′**	**25′**	**30′**	**36′**
Barley	600	750	900	1,080
Flax	4152	5,190	6228	7,474
Oats	400	500	600	720
Rice	1,200	1,500	1,800	2,160
Rye	920	1,150	1,380	1,656
Sorghum	1,120	1,400	1,680	2,016
Soybeans	148	185	222	266
Wheat	840	1,050	1,260	1,512

NOTE: *If a drop screen is not used, divide the numbers listed in the chart by 10.33. This converts the total number of kernels in the drop screen to kernels per square foot directly behind the combine.*

LOSS CHART - CORN

This chart lists the number of seeds in a drop screen for a one bushel per acre loss. These figures are approximate and could vary with the seed variety. Be sure the drop screen is the width of the cleaning shoe and 2′ wide. The loss depends upon the number of rows and the spacing, so be sure to read the proper column.

	Row Spacing						
Number of Rows	**20″**	**22″**	**28″**	**30″**	**36″**	**38″**	**40″**
6	--	--	56	60	72	76	80
8	53	58	75	80	96	--	--
12	80	88	110	120	--	--	--

NOTE: *If a drop screen is not used, divide the numbers listed in the chart by 10.33. This converts the total number of kernels in the drop screen to kernels per square foot directly behind the combine.*

To determine loss for a crop not listed:

1. Find out the weight of the crop in pounds per bushel and the number of seeds in a pound. This will allow you to figure the total number of seeds in a bushel (by multiplying the two previous figures together.)
2. Divide this number by 43,560 (number of square feet in an acre) to determine the number of seeds per square foot if the bushel of seed were spread evenly over one acre.
3. Take this number and multiply it by the width of the head in feet and then check the width of the drop screen (usually 2′.) This will give you the number of kernels that will be in the drop screen for a one bushel per acre loss.
4. To figure the percent loss, divide the loss in bushels per acre by the yield per acre and multiply by 100.

Example:

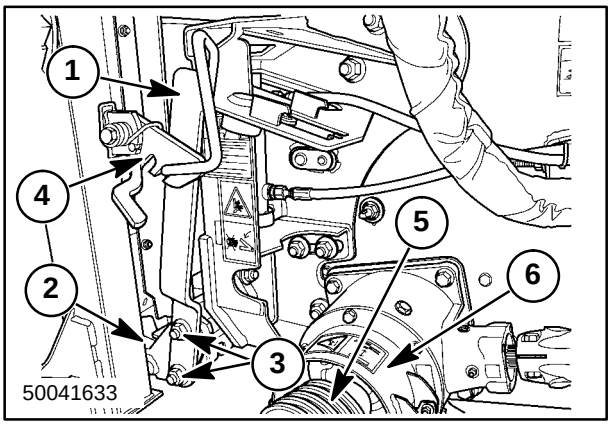
The weight of a particular variety of wheat is 60 lbs. per bushel and contains 15,246 seeds per pound. This is equal to 914,760 seeds per bushel. Dividing this by 43,560 equals 21. This is the number of seeds per square foot if the grain were spread evenly over an entire acre. Multiply this number by the width of the head (20′ for this example) and the distance the combine travels over the drop screen (2′). The final number is 840. This is the number of kernels that will be in the drop screen for a one bushel per acre loss. If the yield is 50 bushels, the loss is 2 percent. Combine losses of less than 3 percent of total yield in most crops are considered acceptable.

HEADER

ATTACHING THE HEADER TO THE COMBINE

To attach the header to the combine, proceed as follows:

1. Make sure that the top of the feeder house cradle where the header will sit, is clean.
2. Position the combine to align the feeder with the header aperture.
3. Move the combine in first gear to position the feeder. Hook on the header, and raise the feeder house and header.
4. Engage header safety stop.
5. Attach quick-attach lever, 1, so that the hooks, 2, are in full contact with pins. If not, adjust lever, 1, with bolts, 3, so that some resistance is felt when engaged latch, 4, is over lever, 1. Connect header drive coupling, 5. Close cover, 6, to protect header drive coupling.
6. To connect the quick-release hydraulic coupler, open cover 1, bring hydraulic block, 2 to 3, and turn down handle, 4, until lock, 5, jumps into its security groove.
7. Connect electrical plug, 6.



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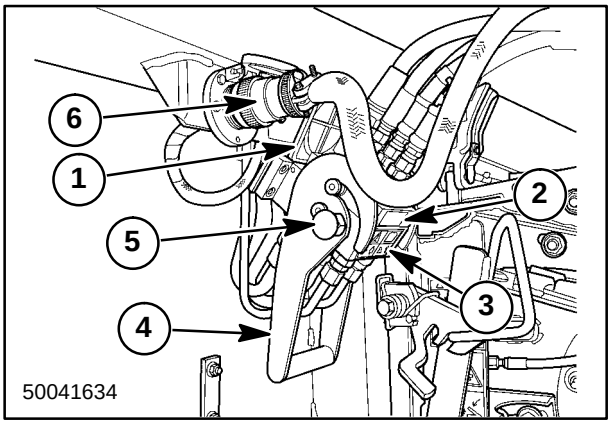

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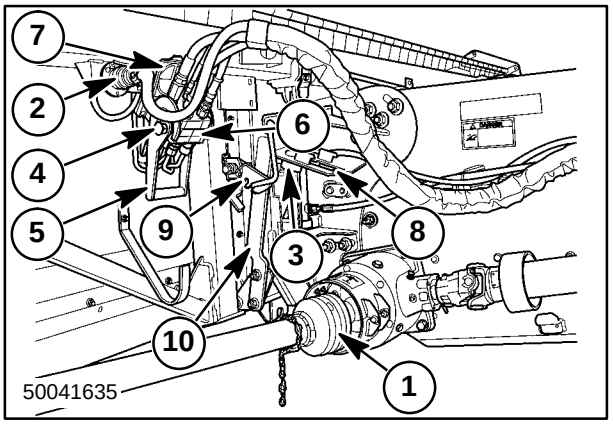
DETACHING THE HEADER FROM THE COMBINE

To detach the header proceed as follows:

1. Set the reel in its lowest and rearmost position.
2. Disconnect the following parts:
   - Header drive coupling(s), 1.
   - Electrical connection, 2, reattach to holder, 3.
   - Quick-release hydraulic coupler: Push lock, 4, and lift handle, 5. Take out hydraulic block, 6. Close cover, 7, and hook hydraulic block, 6, onto plate, 8.
3. Release the quick-attach lever latch, 9, and pull back on lever, 10.
4. Position the header on level ground or on a trailer.
5. With the engine running at idle speed, lower the feeder house to release it from the header, then move the combine rearwards.

NOTE: *Refer to the separate Operator's manual for the header type attached to your combine.*



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HEADER SETUP

Header Configuration

The combine can save up to four different header types and the configuration as defined by the operator for each header type. The header types are corn, grain, draper and pick-up. If the header has a header type sensor when the header is connected, the system will determine if that header type has been connected before and use the configuration previously defined. If the header has not been connected before, the operator will get the momentary warning alarm, “Header Needs to be Defined”, on the display.

If a connected header does not have a header type sensor or the sensor is faulted, a Default header can be defined by the operator through the display. Until the operator defines a Default header, the last defined header configuration will be used. The operator can define a Default header as corn, grain, pick-up or draper. If so desired by the operator, all four header types can be defined as Default and further defined as all different or all the same such as all corn or a mixture such as two grain, and two corn.

NOTE: *If a header with a type sensor not previously defined is attached and all four are defined (whether Default or from headers with a type sensor), the least current header definition will be replaced. Then the operator will get the momentary warning alarm, “Header Needs to be Defined”, on the display.*

Defining Headers

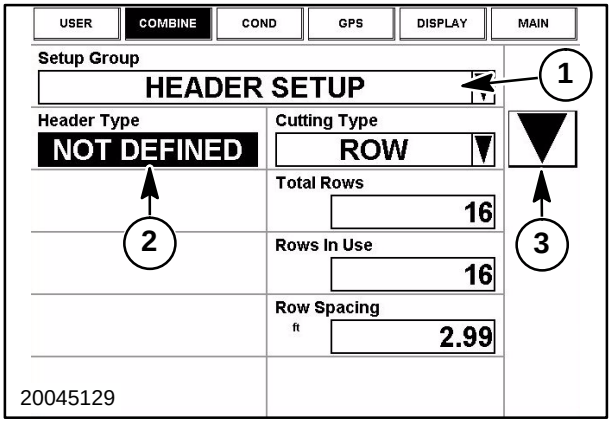
If the header does not have a header type sensor and this header has never been on this combine, the operator needs to tell the combine the type of header.

To define a Default header, select the SETUP >

COMBINE then select HEADER SETUP, 1, from the Setup Group select box.

Select the type action box, 2, then use the arrow, 3, to choose Corn, Grain, Pickup, or Draper.

Finish by checking and correcting any of the other configuration items. See “Configuring Header” section for details.



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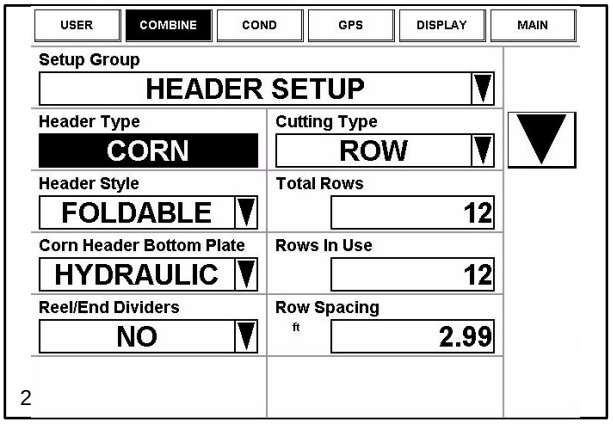
Configuring Headers

The operator needs to configure the style of the header. On the display, select SETUP>COMBINE – Header Setup. For each header type, there are various items that describe the header and various options that can be installed on the header. Select the item(s) and use the up arrow or down arrow to select the configuration items of the header. Press the highlighted box to confirm the choice.

–– Corn Headers



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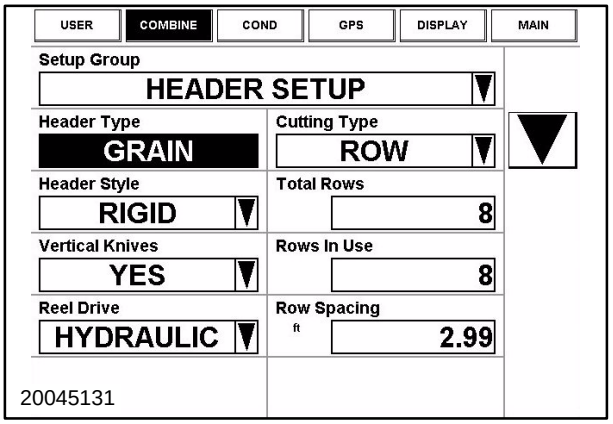
–– Grain Headers



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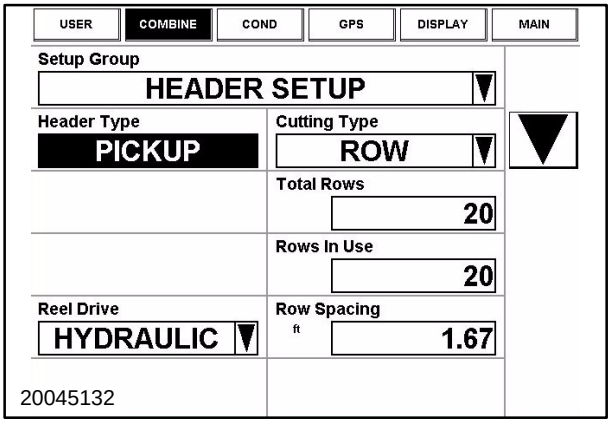
–– Pick-up Headers



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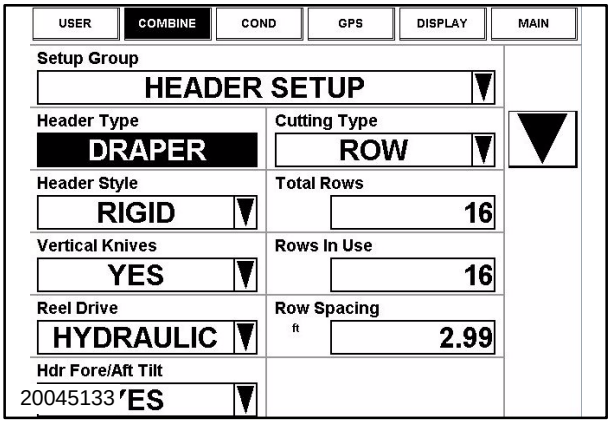
––Draper Headers



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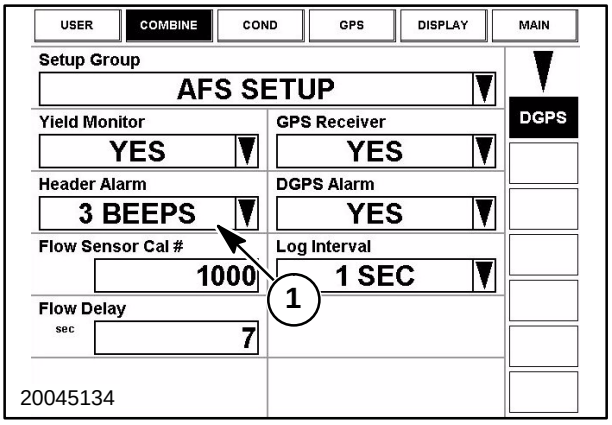
Header Alarm Enable

This is used to control the alarm which alerts the operator that the header height is above the stop height. On the display, select SETUP>COMBINE – AFS Setup. Press the Header Alarm selection box, 1, to select the number of beeps.

NOTE: *The number of beeps can be set to OFF or adjusted between 1 and 5.*

NOTE*: When the Header Alarm is enabled and the header height transitions above the stop height, the monitor will beep providing an audible signal to the operator that area is not being counted and data logging has stopped. The operator should listen for the monitor to start beeping when the header is raised above the stop height, and beep again when the header is lowered below that point. A long continuous beep will be heard as the header is lowered below the set point. This indicates that area counting and data logging have resumed.*



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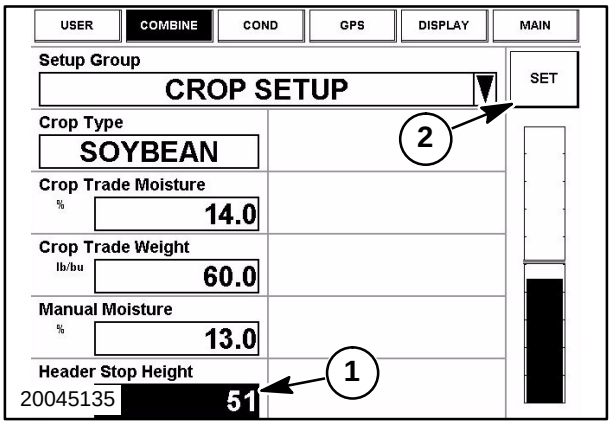
Set Header Stop Height

This is used to set the header stop height position. Above this point, area counting will stop and the audible alarm (if selected) will sound.

NOTE: *Header Stop Height must be set for each crop type to be harvested.*

On the display, select SETUP>COMBINE – Crop Setup. Press the Header Stop Height box, 1, to highlight it. Raise the header to the height where you want harvesting and yield calculations to stop and press the Set button, 2. You will hear a long beep to indicate that the stop height has been programmed. To reset the stop height, move the header to the new height required and press the Set button. When a new Set Height has been set that is higher than the previous stop height, you will hear a long beep to indicate that the new stop height has been programmed. When a new Stop Height has been set that is lower than the previous stop height, a series of short audible beeps will be heard.



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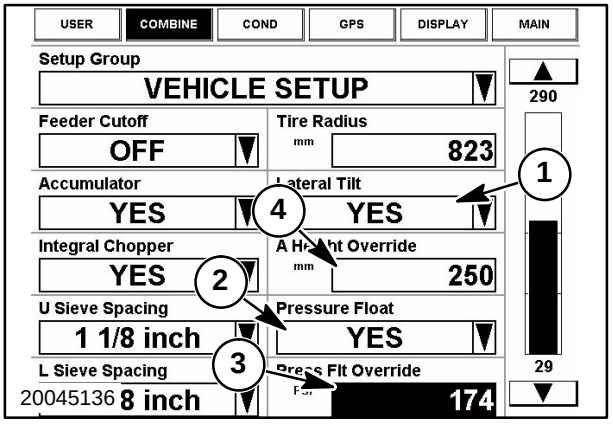
IMPORTANT: *Stop height should be set high enough to a allow normal header adjustment up or down when harvesting in unlevel field conditions – but low enough as to not count area when raising the header for turns or other obstructions. The system will not record data if the Header Stop Height has not been set.*

Miscellaneous Header Settings

Additional combine configuration and settings that affect header operation are located on the SETUP>COMBINE – Vehicle Setup screen. If the combine is equipped with a tilt cylinder, select YES, 1. If the combine is equipped with a float pressure sensor, select YES, 2. For grain heads only, “Press F/t Override”, 3, sets how much ground pressure is exerted on the header before Pressure Float is enabled, and raises the header to maintain that setting, when operating in Auto Height or Return to Cut. To adjust, press the selector box, 3, then use the bar graph action button or the up arrow or down arrow.



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.A Height Override., 4, sets where the ground height sensors are raised by the ground before Auto Height is enabled, and raises the header to maintain that setting, when operating in RTC. To adjust press the selector box, 4, then use the bar graph action button or the up arrow or down arrow.

HEADER CALIBRATION

Header Height Calibration

Calibration is done at the factory and should only be needed if the CCM1, Feeder Position Angle Sensor, Raise Solenoid, Lower Solenoid or the Feeder Lift Valve is changed. The control is located on the screen CAL >COMBINE, then HEADER HEIGHT.

⚠ DANGER ⚠

The header calibration is an automatic process. No one should be in the area of the header while calibrating.

The height system will only run in Calibration, if the feeder drive is off, the combine is not moving and the display requests calibration. During calibration, the feeder position sensor limits and raise and lower solenoid threshold currents are measured.

NOTE: *The full range of feeder travel needs to be measured. Since the feeder range goes below ground level, the combine must be positioned over a depression at least 300 mm (11.8 in) lower than the tire ground level. The combine can also be driven up ramps so that the feeder can travel below the tire ground level.*

NOTE: *It is strongly recommended that calibration occur without a header attached.*

The operator is directed to “Ensure the header is removed & feeder can be lowered below ground level. Press START to begin.

NOTE: *The feeder will automatically move during this procedure.*

The operator will be asked to initiate a momentary RAISE command to start calibration. When the height system receives this command, the feeder will automatically lower (slow controlled lower if not already fully down) to the full down position and save this feeder position sensor value. Then the feeder will be raised a few inches, then raised slightly to calculate the raise current threshold and save this value.

The operator will again be asked to initiate a momentary RAISE command to continue calibration. When the height system receives this command, the feeder will automatically raise (slow controlled raise) to the full up position and save this feeder position sensor value. Then the feeder will be lowered a few inches, then lowered slightly to calculate the lower current threshold and save this value. This completes the calibration.

If a RAISE, LOWER, LEFT TILT or RIGHT TILT command occurs during any time the height system is automatically raising or lowering the feeder, the height system stops any feeder movement and exits Calibration state immediately.

Ground Calibration

If the combine is stopped and the feeder drive is not on, the operator can zero the feeder position display relative to the header type. If the operator continues to actuate the LOWER switch for 2 seconds after the header reaches the ground, the feeder position for zeroing the display will be measured.

If ground height sensors are on the header, the ground height sensors fully on the ground limits will be measured. The feeder position and ground height sensors fully on the ground limits are saved relative to the header type.

If ground height sensors are on the header and if the operator zeroed the feeder position display, the header needs to be raised to complete the ground calibration. Press the raise switch until the header is momentarily stopped partway from the top for ~1.5 seconds. The ground height sensors off the ground limits will be measured and saved relative to the type of header.

NOTE: *If a new header type is detected or a new default header is defined (see HEADER CONFIGURATION), the operator will get a momentary warning alarm “Calibrate Header Ground Height Sensors”.*

Pressure Float Calibration

If configured for pressure float and a grain header is attached and if the lift pressure of the header has not been measured, the header will be stopped near the top of travel for 1 second. The lift pressure will be measured and saved.

Tilt System Calibration

DANGER

The header calibration is an automatic process. No one should be in the area of the header while calibrating.

The tilt system will only run in Calibration, if the feeder drive is off, the combine is not moving and the display requests calibration. During calibration, the feeder faceplate level position, the feeder faceplate sensor limits and tilt left and tilt right solenoid threshold currents are measured.

NOTE: *The combine must be parked on level ground. A level may be required. If a header is attached, the feeder must be raised high enough so that the full tilt range of the feeder faceplate can be measured.*

NOTE: *It is strongly recommended that calibration occur without a header attached. It may be easier to check the level with a header attached then remove the header before starting calibration.*

The operator is directed to “Ensure faceplate is level, header is removed & feeder is off ground. Press Start to begin.

NOTE: *The feeder faceplate and header if attached will automatically move during this procedure.*

The operator will be asked to initiate a momentary RAISE command to start calibration. When the tilt system receives this command, the feeder faceplate sensor position will be measured and saved. Next, the feeder faceplate will automatically tilt to the left (slow controlled counterclockwise tilt) to the full tilted left position and save this feeder faceplate sensor position value. Then the feeder will be tilted right slightly to calculate the tilt right current threshold and save this value.

The operator will again be asked to initiate a momentary RAISE command to continue calibration. When the tilt system receives this command the feeder will automatically tilt to the right (slow controlled clockwise tilt) to the full tilted right position and save this feeder faceplate sensor position value. Then the feeder will be tilted left slightly to calculate the tilt left current threshold and save this value.

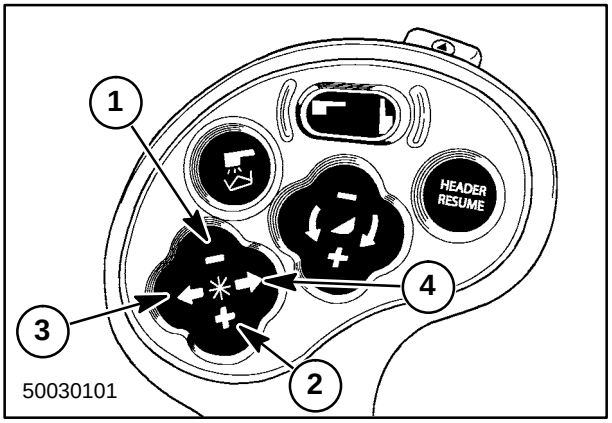
If a RAISE, LOWER, LEFT TILT or RIGHT TILT command occurs during any time the tilt system is automatically tilting the feeder faceplate left or right, the tilt system will stop any tilt movement and exit Tilt Calibrate immediately.

HEADER CONTROLS

Reel Position Switch

This is a four position switch which operates grain heads as follows:

- **Lower, 1** – Press the (–) symbol on the switch to lower the reel.
- **Raise, 2** – Press the (+) symbol on the switch to raise the reel.
- **Forward, 3** – Press the (←) symbol on the switch to move the reel forward (if equipped with the reel fore/aft option).
- **Aft, 4** – Press the (→) symbol on the switch to move the reel to the rear.



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NOTE: *For corn heads equipped with hydraulic stripper(deck) plates: Press Reel Aft to decrease the stripper plate opening. Press Reel Fore to increase the stripper plate opening.*

NOTE: *For foldable corn heads: Press the Reel Down switch to unfold the corn head and press the Reel Up switch to fold the cornhead head.*

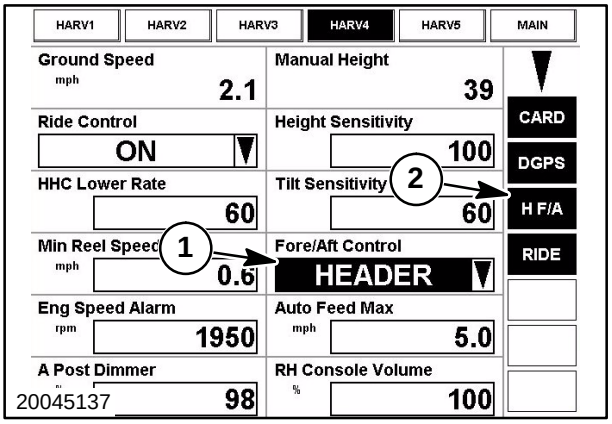
NOTE: *For pickup heads equipped with a hydraulic windguard hold-down, the height can be changed by using the reel up and down switches.*

NOTE: *For draper headers equipped with Fore/Aft Tilt the reel fore and aft switches also control Fore/Aft Tilt.*

To be able to swap between using the Reel Fore / Aft switches to position the reel or header fore and aft, the Fore / AFT CNTL, 1, needs to be selected and placed on one of the operator configurable screens; HARV1, HARV2, HARV3 or ADJUST under the RUN menu.

If “Header” is selected with the Fore / Aft Control, press the reel aft switch, on the propulsion handle, to tilt the header rearward. or press the reel fore switch, on the propulsion handle, to tilt the header forward.

H F/A, 2, is displayed on the status bar on the right side of the operator configurable screens when “Header” is selected with the Fore / Aft Control.



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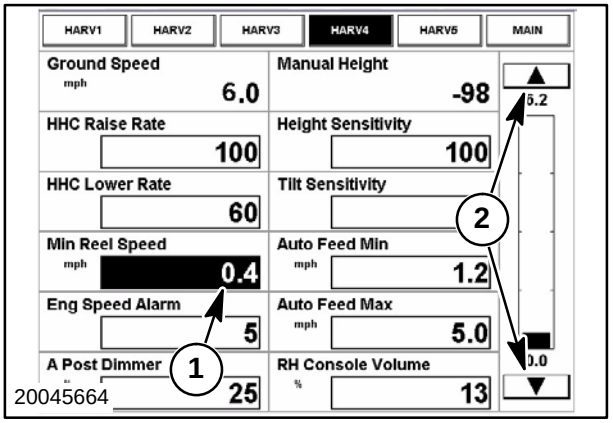
Reel Speed Operation

There are two states for controlling the header reel speed: Manual and Auto. In Auto, the minimum reel speed is set on the display unit. Press the selector box, 1, then and use the up arrow or down arrow, 2, to adjust the value.



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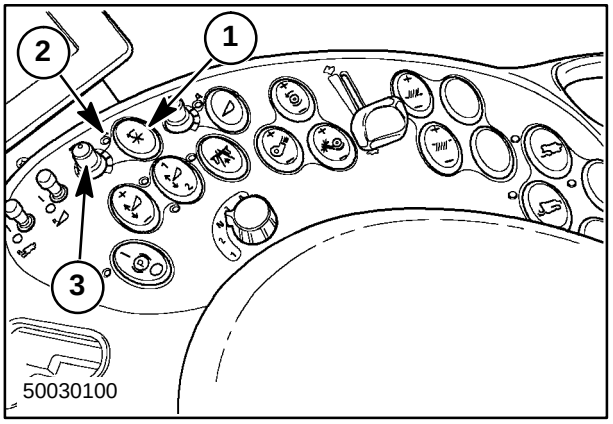
– **Manual**

To select manual press the rear of switch, 1, Lamp, 2, next to the switch is turned off. With separator and feeder engaged, reel speed is controlled by rotating switch, 3, clockwise to increase reel speed or counterclockwise to decrease speed. Reel speed range is 0–80 RPM.



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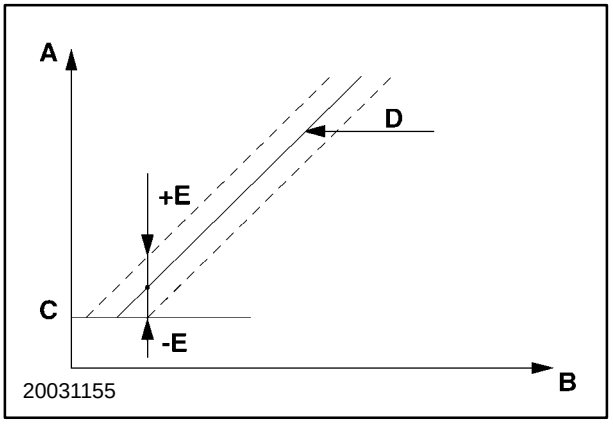
– **Automatic**

The reel to ground speed synchronization system is an automatic system which, if switched on with the reel speed synchronization engagement switch, 1, creates a linear relationship of the reel speed with the ground speed. Lamp, 2, next to the switch is turned on. The amount of speed offset between the reel and the ground speed (auto reel speed offset) can be increased or decreased with the reel speed control, 3. The relationship of reel rotational speed to linear speed, neglecting the offset, is approximately 5 RPM/kph (8 RPM/mph). As with manual control, the separator and feeder must also be engaged prior to reel operation.

This graph shows the relationship of the various setting.

A= Reel speed (km/h or mph)
B= Ground speed (km/h or mph)
C= Minimum reel speed (setting with Universal Display +)
D= Auto reel speed slope, change in reel speed to a corresponding change in ground speed, factory set to 1.1).
E= Auto reel speed offset



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For example:

If the Auto reel speed offset (E) = 0 mph and the ground speed (B) = 4 mph: This means that the tip speed of the reel= 1.1 x 4 mph (about 32.3 RPM).

NOTE: *The higher the auto reel speed offset setpoint, the higher the tip speed of the reel in relation with the ground speed.*

To obtain a proper reel synchro control, proceed as follows:

1. Using the Display, enable the reel min adjustment bar.
2. Access this adjustment bar through “HARV>HARV1, 2, 3 or 4”.
3. Modify the reel min by pressing the bar, then using the up and down arrows. Press the bar again to enter the value.
4. Set the reel offset to minimum (full CCW).
5. Engage the separator and feeder.
6. Engage the reel automatic mode with the respective rocker switch.
7. Adjust the reel offset as desired.
8. Increase ground speed and observe the reel speed vary as a function of ground speed within the reel min speed value. Modify the reel speed limit as desired.

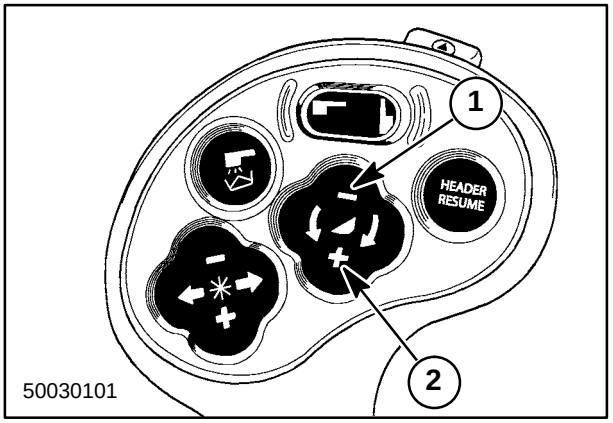
Header Height Operation

There are two states for controlling the header height: Manual and Auto. In Auto, there are three modes: RTC, Auto Height and Pressure Float. Header height control is only possible if the engine is running. In Europe, if the operator has selected Road operation (Field/Road mode switch), Header height control is disabled.

Manual Header Height Control

In Manual, when the lower switch, 1 is pressed the header lower solenoid is energized until the lower switch is released. The speed the header lowers is limited with the lower rate setting, controlled on the Display. The lower rate is adjustable from ~3.5 to 4.5 seconds fastest to ~9 to 11 seconds for a full up to full down travel.

Likewise, when raise switch, 2 is pressed the header raise solenoid is energized until the raise switch is released.



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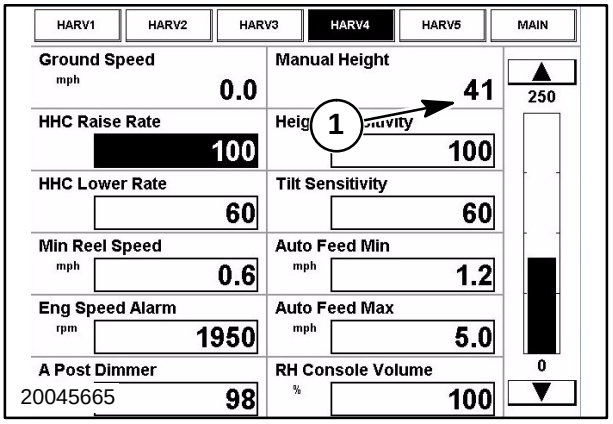
The speed the header raises is limited with the raise rate setting. The raise rate setting range is adjustable from ~4 to 5 seconds fastest to ~9 to 11 seconds for a full down to full up travel. This setting is adjustable using the adjustable readout display on the Display (location on the HARV>HARV* screen). The control's range is from 0, slowest, to 250, fastest by steps of 10. The header lower rate is similarly controlled.

When the feeder gets close to the top, the speed the header raises starts to slow down. The closer the header gets to the top, the slower the speed of the header.

The actual position of the feeder, 1, is shown on the display as a numeric relative to the zeroed feeder position.



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Auto Header Height Control

In auto control, the operator can work in one of three modes.

– **Return to Cut (RTC)**

The height system will maintain the header height relative to the feeder position as specified by the working setting.

When in RTC, if the ground height sensors detect the ground, the height system will override RTC and go into Auto-height mode temporarily.

When in RTC and no ground height sensors are present, if the pressure sensor detects the ground, the height system shall override RTC and go into Pressure Float mode temporarily (not functional on 2004 machines).

– **Auto Height**

The height system will maintain the header height relative to the ground height as specified by the working setting. To operate in auto-height the header must be equipped with ground height sensors. If the header does not have ground height sensors, the mode will be RTC, unless the header is on the ground, then the mode will be Pressure Float. If the header does not have ground height sensors and the height system does not have a pressure sensor, then the mode will be RTC.

– **Pressure Float Mode**

The height system will maintain the header height relative to ground pressure as specified by the working setting.

NOTE: *The height system will only run in the Auto state, if the feeder drive is on and the operator actuates the RESUME or SET #1 or SET #2 switch.*

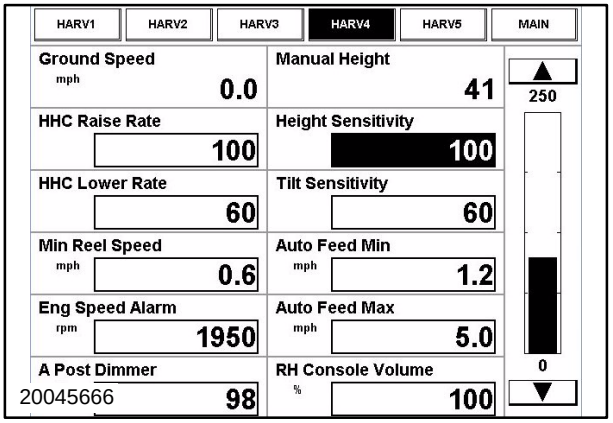
NOTE: *The feeder drive must be engaged to allow auto control. If the feeder is disengaged, auto control will stop immediately.*

NOTE: *If the operator actuates the RAISE or LOWER switch, the system will go into Manual mode. To return to Auto mode, the operator momentarily presses the RESUME switch.*

NOTE: *When a circuit fault is detected that affects the engaged auto mode, the height system will go into Manual mode.*

– **Height and Tilt Sensitivity**

In addition to setting the header raise and lower rates as previously described in this section, the operator can adjust how sensitive the header is when maintaining ground height in Auto Height mode or ground pressure in Pressure Float mode and ground height in Auto Tilt mode. These settings are adjustable using the adjustable readout display on the display (location on the HARV>HARV* screen). The control's range is from 0, least sensitive, to 250, most sensitive by steps of 10.



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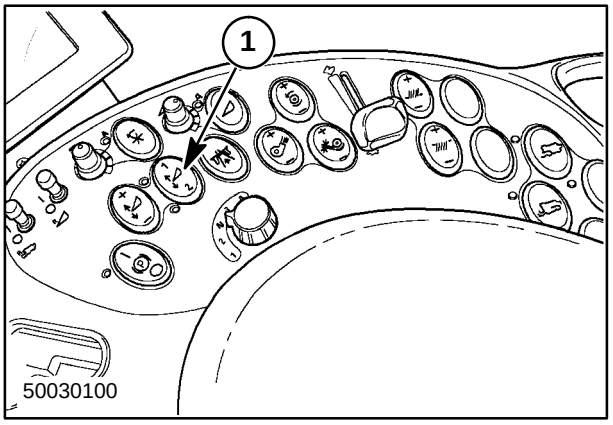
– **Setting the working setting and operating mode**

To set the working setting and operating mode, with the feeder running, the operator manually raises or lowers the header to the cutting height wanted. Once at the cutting height wanted, the operator actuates the SET #1 switch, 1.

The system determines the mode by the position of the header. If the ground height sensors are off the ground, the mode will be RTC and the working setting will be the feeder position. If the ground height sensors are in contact with the ground but the header is still off the ground, the mode will be Auto Height and the working setting will be the ground height. If the header is on the ground and the header is a grain head, the mode will be Pressure Float and the working setting will be the ground pressure. The mode, the feeder position and the working setting will be saved relative to the header type.



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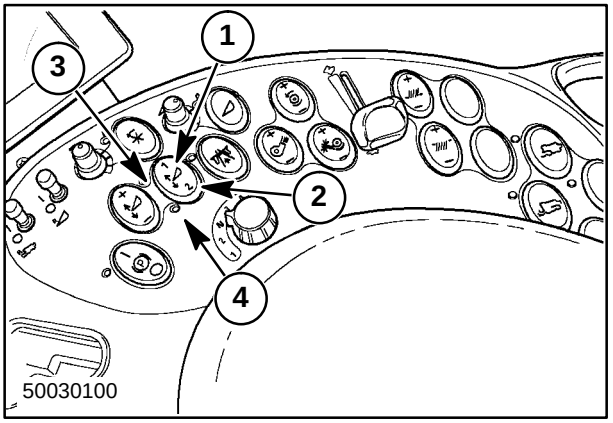
NOTE: *If the grain head is a flex header, the auto height and pressure float modes occupy the same effective range on the header. Therefore, to set pressure float, the operator needs to lower the header all the way to the ground, then actuate the SET #1 or SET #2 switch. See pressure float mode for adjusting the working setting.*

The mode, the feeder position and the working setting will be saved to Settings #1 relative to the header type If the operator has selected the SET #1, 1, switch. If the operator has selected the SET #2 switch, 2, instead of the SET #1 switch, then the mode, the feeder position and the working setting will be saved to Settings #2 relative to the header type. SET #2 switch otherwise operates the same as the SET #1 switch.

When the system is using Settings #1, the Header Height Mode Lamp, 3, next to the SET #1 switch is turned on. Likewise, when the system is using Settings #2, the Header Height Mode Lamp, 4, next to the SET #2 switch is turned on.

Each header type can have two different settings (Settings #1 and Settings #2). four different header types are accommodated.

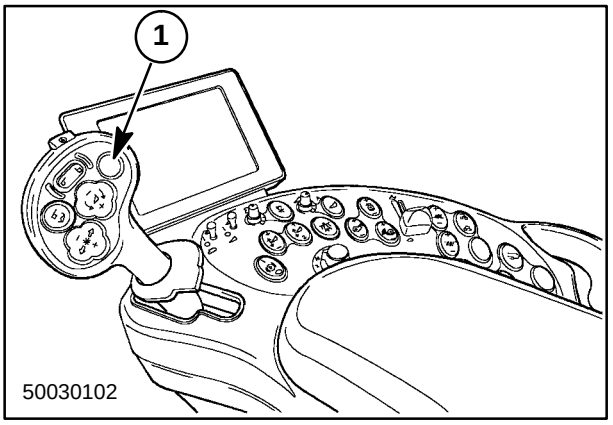


35

NOTE: *If the header is near or at the top of travel and the operator actuates one of the SET switches, the mode saved to the settings will be Manual. This effectively disables this Settings and toggle capability of the RESUME switch (see RESUME below). If both SET switches are actuated when the header is at or near the top of travel, this effectively disables the RESUME switch functionality in the Auto state.*

– **Resume**

While the height system is in the Manual state and the feeder is engaged, if the operator momentarily presses the RESUME switch, 1, the height system will lower or raise the header to the working setting and mode specified in Settings #1 or Settings #2 for the appropriate header type. The Settings selected is the last one operated in. If there was no prior settings used, the default is Setting #1. While in the Auto state, momentarily actuating the RESUME switch will toggle between the Settings and the header will be raised or lowered to the working setting and mode specified in the new setting.



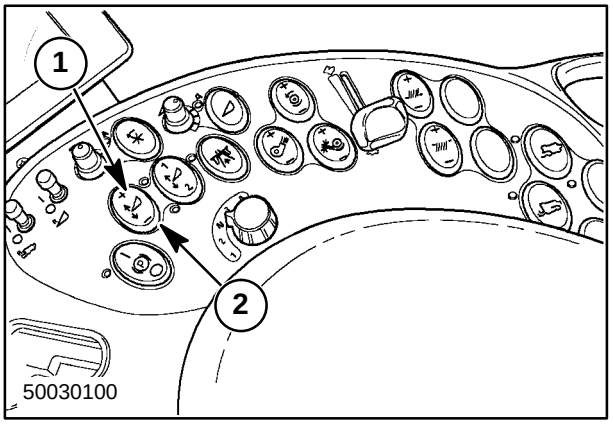
36

NOTE: *If height system is in Auto State and if auto tilt is available but tilt is in manual mode, momentary actuation of the RESUME switch will enable auto tilt. An additional momentary actuation of the RESUME switch will then toggle between the Settings.*

– **Return to Cut Mode**

If the Settings call for RTC mode, RTC mode will be enabled when the RESUME or SET #1 or SET #2 switch is momentarily actuated. The height system raises or lowers the feeder to maintain the feeder position at the working setting. The speed the header raises or lowers, is limited by the RAISE RATE and LOWER RATE settings respectively.

The operator can fine adjust the working setting with the INCREASE, 1, and DECREASE, 2, switches. When the operator actuates the INCREASE, 1, switch, the feeder is raised. The feeder position becomes the new working setting. The new working setting is saved to the Setting being used, Setting #1 or Setting #2 with the appropriate header type. When the operator actuates the DECREASE, 2, switch, the feeder is lowered. The feeder position becomes the new working setting. The new working setting is saved to the Setting being used, Setting #1 or Setting #2 with the appropriate header type.



37

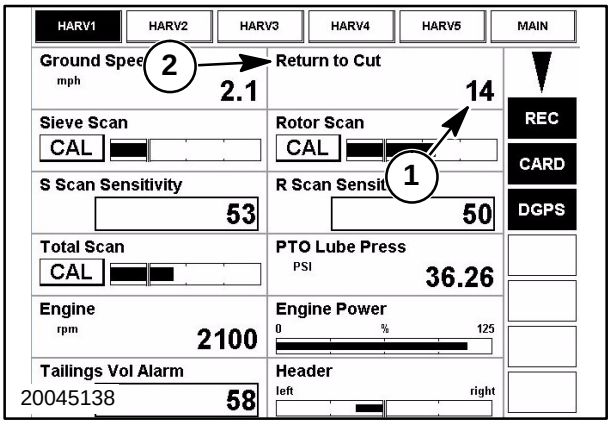
The working setting can be adjusted throughout the feeder's travel up to near the top; however, if Auto Height or Pressure Float modes are available, the lower range will be limited by the override feature when Auto Height mode or Pressure Float mode takes over.

If the header has ground height sensors and these sensors come in contact with the ground and are raised more than the Auto Height Override setting, the height system will go into Auto Height mode. The height system will raise or lower the header to maintain the Auto Height Override setting as long as the sensors are in contact with the ground. Once the height sensors are no longer in contact with the ground, the height system will return to RTC mode and the feeder position to the working setting. The feeder will not lower below the RTC working setting while in Auto Height override. See Auto Height mode for more details.

If the combine has a float pressure sensor with a grain header that does not have ground height sensors and the header comes in contact with the ground and the ground supports more than the PRESSURE FLOAT OVERRIDE setting, the height system will go into Pressure Float mode. The height system will raise or lower the header to maintain the PRESSURE FLOAT OVERRIDE setting as long as the header is in contact with the ground. Once the header is no longer in contact with the ground, the height system will return to RTC mode and the feeder position to the working setting. The feeder will not lower below the RTC working setting while in Pressure Float override. See Pressure Float mode for more details. (Pressure float override is not functional on 2004 machines.)

The actual position of the feeder is shown on the display, 1, as a numeric relative to the zeroed feeder position. Along with the feeder position, “Return to Cut”, 2, is displayed.

If the operator actuates the RAISE or LOWER switch, the system will go into Manual mode. To return to RTC mode, the operator momentarily selects the RESUME switch.



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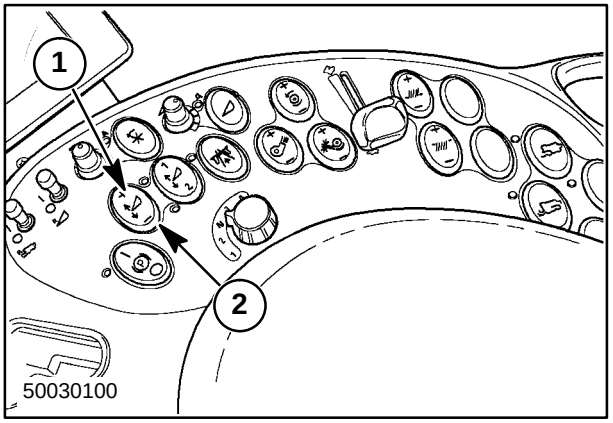
– **Auto Height Mode**

Before Auto Height can be enabled, the correct header type identified via the display and a ground calibration must have been performed for that header. See Ground Height Calibration and Header Configuration for details.

When the RESUME switch is momentarily actuated, the header is raised or lowered to the working setting. The height system raises or lowers the feeder to maintain the header ground height at the working setting. If the ground height decreases, the feeder is raised to lift the header to maintain the ground height at the working setting. If the ground height increases, the feeder is lowered to lower the header to maintain the ground height at the working setting.

The operator can fine adjust the working setting with the INCREASE, 1, and DECREASE, 2, switches. When the operator actuates the INCREASE switch, the working setting is increased and the feeder is raised until the header reaches the new working setting. The new working setting is saved to the Setting being used, with the appropriate header type. When the operator actuates the DECREASE switch, the working setting is decreased and the feeder is lowered until the header reaches the new working setting. The new working setting is saved to the Setting being used, Setting#1 or Setting#2 with the appropriate header type. The working setting can be set between ~93%, highest, to ~13%, lowest, of the ground height sensor or sensors range.



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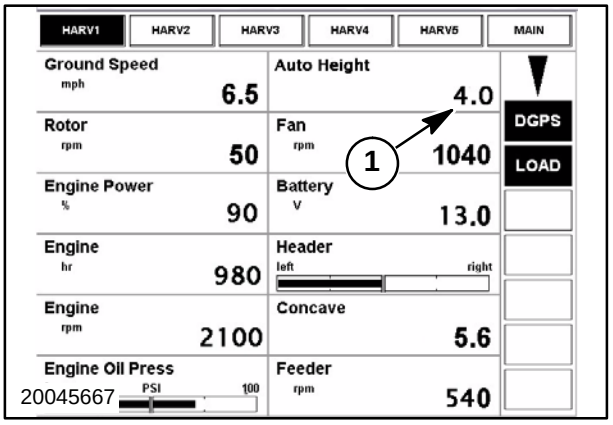
The Height Sensitivity control sets the gain of the raise and lower signals. For a given correction between the ground height sensors and the working setting, the higher the sensitivity setting, the quicker the raise or lower speed will reach maximum. See “Height Sensitivity” for setting information.

The actual ground height position is shown on the display, 1, as a numeric relative to the zeroed feeder position (header fully on the ground).

If the operator actuates the RAISE or LOWER switch, the system will go into Manual mode. To return to Auto Height mode, the operator momentarily selects the RESUME switch.

If ground height sensor or sensors are detected on the header and then no ground height sensors are detected, the operator will get the momentary warning alarm, “Auto Header Height Disabled”, on the display.

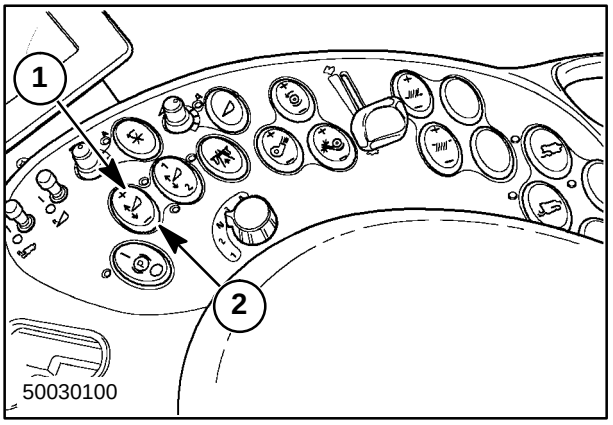


40

– **Pressure Float Mode**

If the header is a grain header and the Setting calls for Pressure Float mode, when the RESUME switch is momentarily actuated, the header is raised or lowered to the working setting. The height system raises or lowers the feeder to maintain the header lift pressure at the working setting. If the ground height increases the pressure on the header, the lift pressure is decreased. The feeder is raised to support more of the header weight to increase the lift pressure back to the working setting. If the ground height decreases the pressure on the header, the lift pressure is increased. The feeder is lowered so that the ground supports more of the header weight to decrease the lift pressure back to the working setting.

The operator can fine adjust the working setting with the INCREASE, 1 and DE-CREASE, 2 switches. When the operator actuates the INCREASE switch, the working setting is increased and the feeder is raised until the header reaches the new working setting. The new working setting is saved to the Setting being used, with the appropriate header type. When the operator actuates the DECREASE switch, the working setting is decreased and the feeder is lowered until the header reaches the new working setting. The new working setting is saved to the Setting being used, with the appropriate header type.



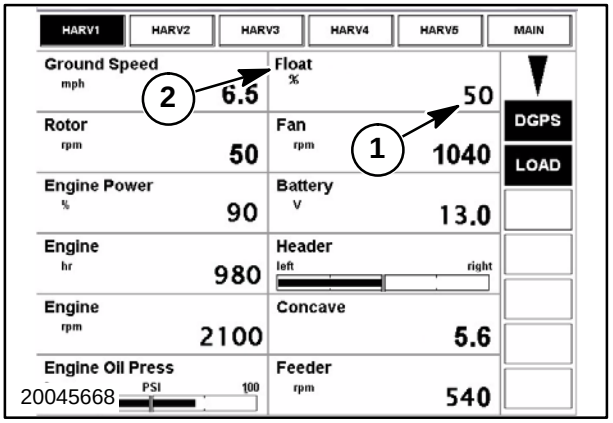
41

The working setting can be set between ~79% of the lift pressure as measured near the feeder upper limit to ~59% of this measured value. The lift pressure when measured near the top only occurs once after start up and if the header is a grain head. Until a measurement is taken, the last reading from the last operation will be used.

The SENSITIVITY control sets the gain of the raise and lower signals. For a given correction between the float pressure sensor and the working setting, the higher the sensitivity setting, the quicker the raise or lower speed will reach maximum.

A percent ground pressure, 1, is shown on the display. The percent ground pressure range is 0% to 100%. 0% represents the minimum load the header exerts on the ground. 100% represents the maximum load the header exerts on the ground. Along with the percent ground pressure, “Float”, 2 is shown.

If the operator actuates the RAISE or LOWER, the system will go into Manual mode. To return to Pressure Float mode, the operator momentarily selects the RESUME switch.



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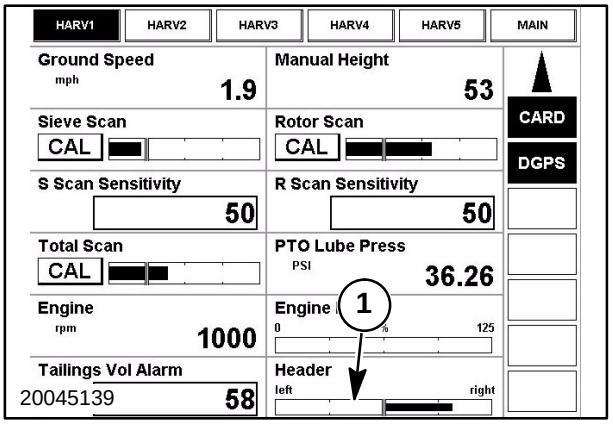
Header Tilt Operation

There are three modes for controlling the header tilt: Manual, Auto and Center.

Header tilt control is only possible if the combine is equipped with a lateral tilt system and the engine is running. In some markets (Europe), if the operator has selected Road operation (ON THE ROAD or “Road” mode switch), Header tilt control is disabled.

The actual tilt of the header can be viewed on the display as a bar graph, 1.



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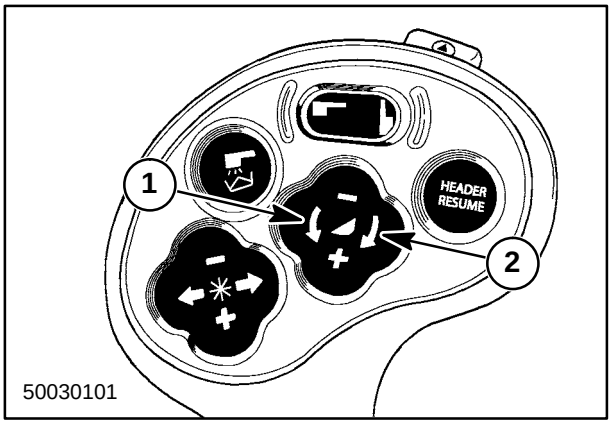
– **Manual Mode**

In Manual Mode, when the operator actuates the LEFT TILT switch, 1, the header Tilt Left solenoid is energized until the switch is released. Likewise, when the operator actuates the RIGHT TILT switch, 2, the header Tilt Right solenoid is energized until the switch is released. The speed the header tilts is ~3° to 4° per second.



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– **Auto Tilt Mode**

The tilt system will only operate in the Auto Tilt mode, if the feeder drive is on, the height system is in Auto Height or Pressure Float mode and there are left and right ground height sensors.

The tilt system tilts the header to maintain the header parallel to the ground. If the ground gets closer on the left side of the header or the ground falls away from the right side of the header, the tilt system will tilt the header to the right (clockwise) to maintain the header parallel to the ground. If the ground gets closer on the right side of the header or the ground falls away from the left side of the header, the tilt system will tilt the header to the left (counterclockwise) to maintain the header parallel to the ground.

If the operator actuates the LEFT TILT or RIGHT TILT switch, the system will go into Manual mode. To return to Auto Tilt mode, the operator momentarily presses the RESUME switch.

NOTE: *If both left and right height tilt sensors are detected on the header and then one or both of these height sensors is not detected, the operator will get the momentary warning alarm, "Auto Header Tilt DISABLED", on the display when auto height is enabled.*

– **Tilt Center Mode**

The tilt system will only run in the Tilt Center mode, if the height system was just previously in the Auto Tilt mode and Auto Height mode or Pressure Float mode and a manual raise is occurring or actuating the RESUME switch transitions to RTC mode. During the raise the header is tilted in the appropriate direction to center the header relative to the combine.

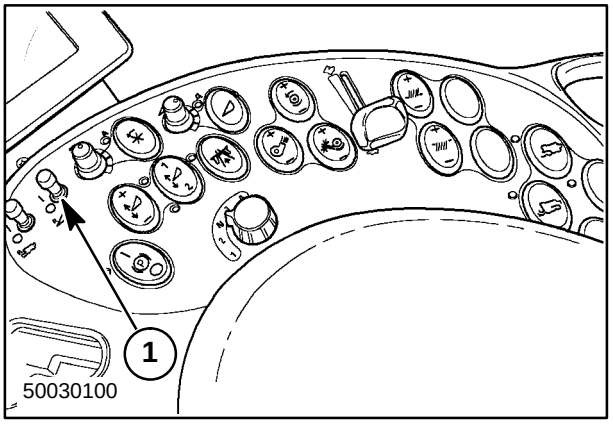
FEEDING / FEEDER

The feeder drive has very specific operating requirements and must operate in one of five modes at all times.

MODES OF OPERATION

Off

Place the feeder control switch, 1, into the center-detented position, the feeder should not be powered and should be at rest.



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Feeder Engagement

The feeder may be engaged at any time once the separator is operating and the feeder speed is below 50 RPM.

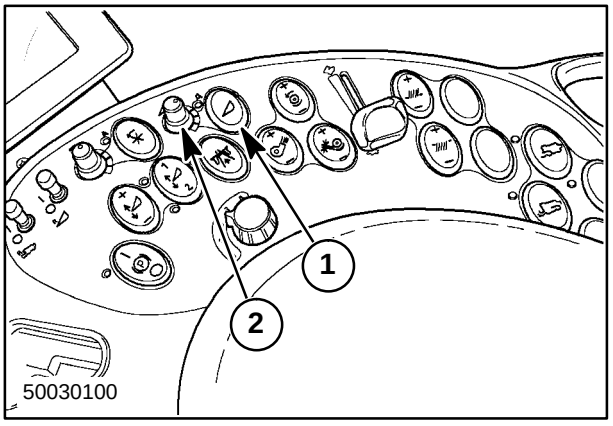
The rear ladder must be in the up position and the operator must be seated.

Place the feeder control switch, 1, into the forward, detented position. If the machine is equipped with the fixed speed feeder, the feeder will operate at approximately 270 rpm at slow engine idle speed and 570 rpm at high engine idle. If the machine is equipped with the variable speed feeder, the feeder will achieve the requested rpm within 5 seconds.

Feeder Operating

The feeder speed will be maintained per two different modes:

Manual Operation; With the auto speed switch, 1, in the off position. The feeder speed is set by the operator to a specific speed by rotating knob, 2, clockwise to increase speed or counter-clockwise to decrease speed. The speed may vary due to engine speed.



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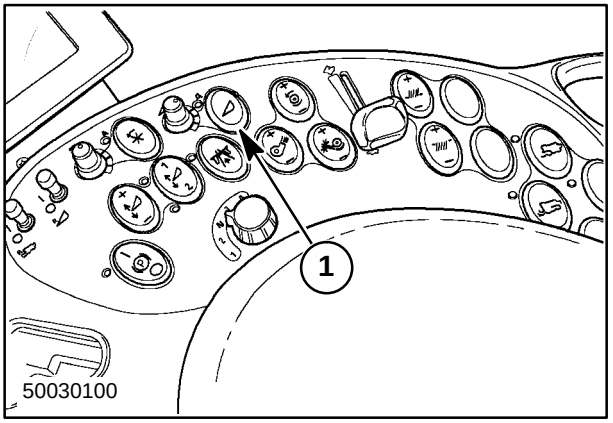
Auto Operation

Auto Operation matches feeder and header speed to ground speed. The feeder ratio to ground speed is set by the operator to a specific ratio.

Select the minimum and maximum feeder speed that will be used during harvesting by displaying the Feed Min Adj and Feed Max Adj displays on one of the HARV screens. Press the display action box and the adjust buttons will appear in the status bar. Set to the desired settings. This will automatically create the working range of the feeder drive in ratio to the ground speed. If ground speed falls out side of the previously selected range the feeder will be operated at its minimum or maximum speed respectively.

To operate in auto mode press the top of the speed switch, 1, the indicator light to the right of the switch will light.



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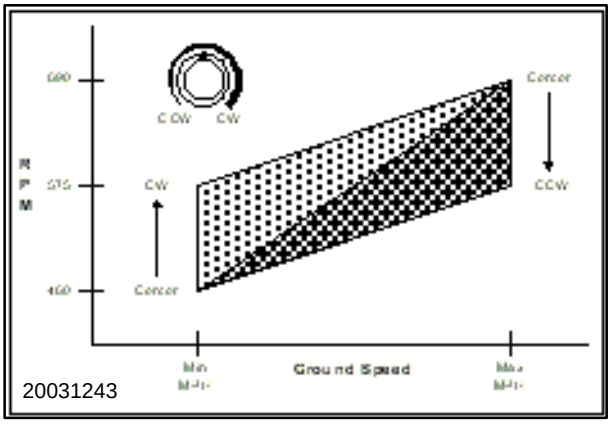
Rotate the speed adjustment knob clockwise to increase the speed ratio or counter-clockwise to reduce the speed ratio.



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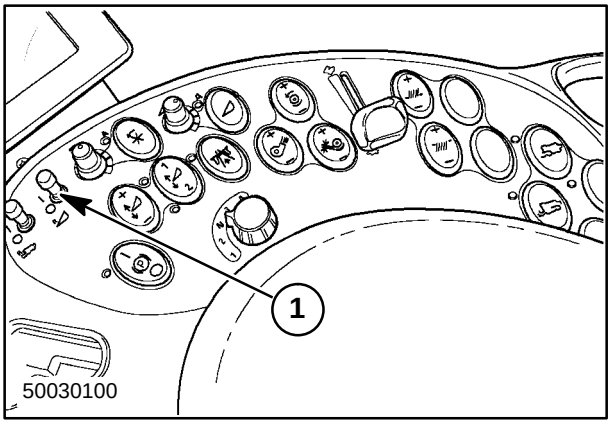
FEEDER REVERSER

The feeder reverser permits the operator to rotate the feeder and header in reverse to free a stalled feeder chain or header. The feeder drive motor provides all driving force. Hold the feeder engagement switch, 1, in the reverse position, (rearward momentary position). When the feeder is cleared release the switch, and the switch will return to the OFF position, (center detented position).



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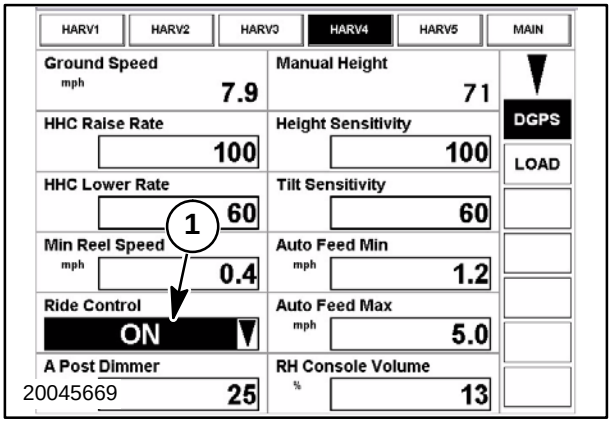
FEEDER CUTOFF

The feeder will automatically stop if the feeder speed is <80 RPM when feeder cutoff is enabled. Feeder cutoff can be enabled or disabled on the SETUP>COMBINE>VEHICLE>FEEDER screen.

Ride Control

Ride control is an optional hydraulic accumulator system on the header/feeder lift hydraulics that cushions the bouncing motion of the header when driving over rough terrain or during road operation.

Ride control (if equipped) will be activated when the road mode switch is on and a header is attached and sensed by the combine. It can also be turned on or off for field operation by displaying the ride control adjust display, 1, and pressing the action button. It is recommended that ride control is turned off when using auto header height control.



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Calibration

WARNING

The feeder and drives will move during calibration. Be sure the area around the feeder is clear before starting calibration.

The calibration mode provides the ability for the electronics to learn clutch fill times and current required to activate the feeder drive pump and clutch solenoids. The mode is activated through the display unit. To activate calibration from the CAL>COMBINE screen press the calibration selector box. Select CVT Feeder from the pick list and press enter to return to the CAL>COMBINE screen.

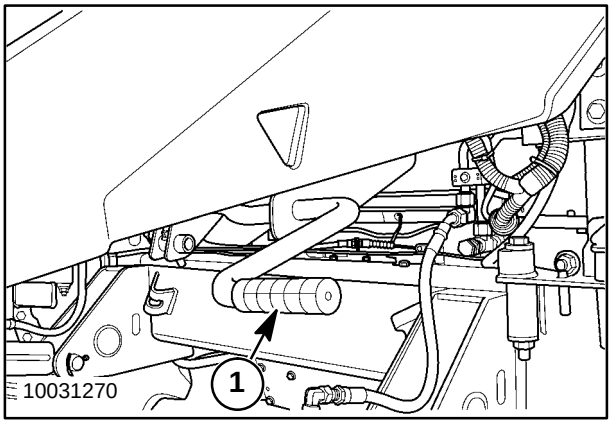
NOTE: *The feeder should be re-calibrated at least once each harvest season.*

The engine speed must be above 1300 rpm, the combine must not be moving, the separator and feeder switches must be in the off position and no header can be attached to the feeder.

Press the start button to begin calibration. When completed a calibration completed message will show on the monitor.

Rock Trap

An optional rock trap is available. To empty the trap rotate the handle, 1, on the left side at the bottom rear of the feeder down and rearward. Even if the rock trap has no rocks in it, empty it daily for best rock trapping performance. Once emptied, close and relatch the trap by rotating the handle up and forward.



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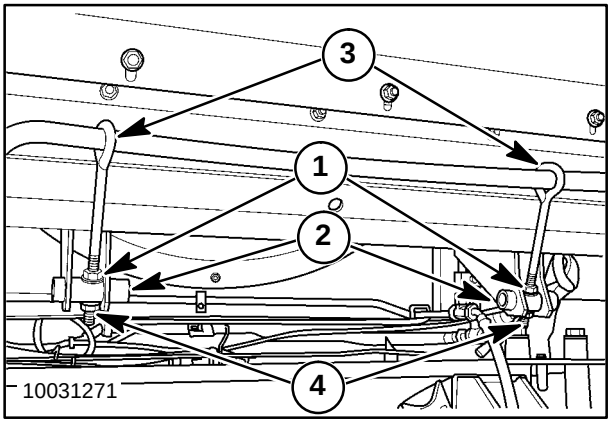
Rock Trap Adjustment

With the door in the closed position, position the upper nuts, 1, against the pivot tubes, 2, with the eye of the bolt contacting the handle cross tube, 3. Loosen the nuts against the pivot tubes 12 turns or approximately 20mm (3/4″). Tighten nuts, 4, and torque to 80–90 N·m (59 – 66 ft. lb.). Check that the force required to close the door is between 200–270 N (45 – 60 lb.) and that the minimum force to open the door is 120 N (27 lb.). Adjust the nut positions if the handle force is not within the specified range.



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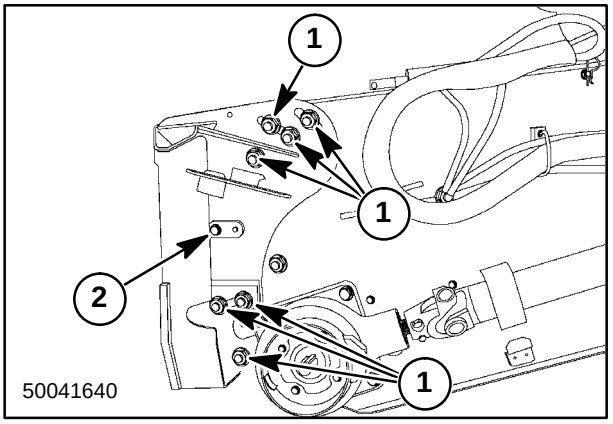
Feeder Cradle Adjustment

The angle of the front cradle can be adjusted to maintain proper header attachment angle for different tire sizes.

Loosen the seven nuts, 1, on each side of the feeder.

Rotate the cradle around pins, 2.



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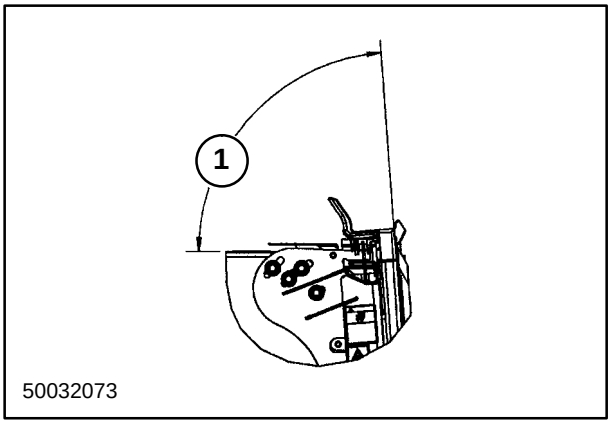
The adapter angle, 1, should be adjusted as follows:

Tire Size	Adapter Angle
650/75R32 172A8 R1W	85.8
710/70R38 171A8 R1w	84.7
800/65R32 172A8 R1W	85.8
900/60R32 176A8 R1W	85.8
1050/50R32 178A8 HF3	84.7



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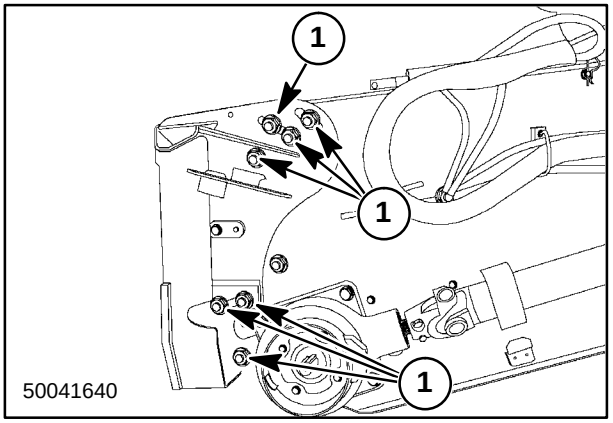
Tighten and torque the seven nuts, 1, on each side of the feeder to 555 – 620 N·m (408 – 460 ft. lb.)



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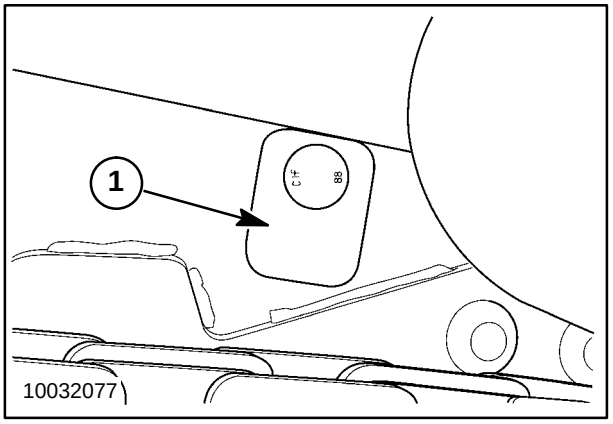
Conveyor Drum Lower Stop Adjustment

The feeder front roller can be placed in three different heights. In the low position (shown) the stops, 1, located inside the feeder, are rotated to the short side closest to the bolt. Mid position is achieved by rotating the stops to either of the long sides. Rotating to the short side further from the bolts sets high position.



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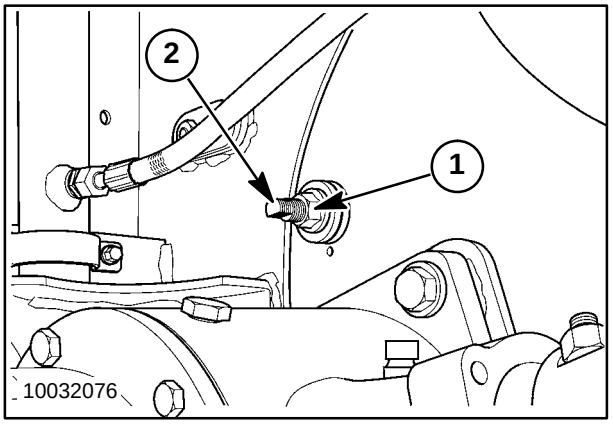
To rotate the stops, loosen nuts, 1, approximately one turn. Rotate the carriage bolts, 2, and stop to the desired position on both sides of the feeder.

NOTE: *Raising the front drum using a pry bar before rotating the bolts will lessen the torque required to rotate the bolt and stop.*

Tighten and torque the nuts to 200 – 220 N·m (149 161 ft. lb.).



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THRESHING AND SEPARATING

ROTOR

The rotor is the primary part of the threshing and separating system. It is located inside the rotor cage and is supported by a large bearing in the front, and the rotor drive gearbox at the rear. The rotor gearbox through which the rotor is driven has three speed ranges to provide for optimum driving torque. The rotor gearbox is driven by a Power Plus drive which provides for a variable speed adjustments within a working range. The Power Plus drive is driven from the main PTO gearbox.

The rotor drive gearbox provides for three different speed ranges and neutral. The ranges are shifted by means of a shift lever that is mounted below and forward of the PTO gearbox. The ranges are changed by means of shift collars inside the transmission, so the rotor MUST be at rest when changing ranges. The gearbox is powered from the Power Plus drive unit.

IMPORTANT: *Rotor must be stopped before attempting to shift rotor gearbox range.*

The rotor drive will be the most efficient when operated around the mid-point of the RPM range. This will provide as close to a direct drive from the engine to the rotor gearbox as possible.

- Range 1 220–450 RPM
- Range 2 420–780 RPM
- Range 3 730–1180 RPM

The rotor is one solid unit that has three distinct areas:

- The impeller section
- The threshing section
- The separation section

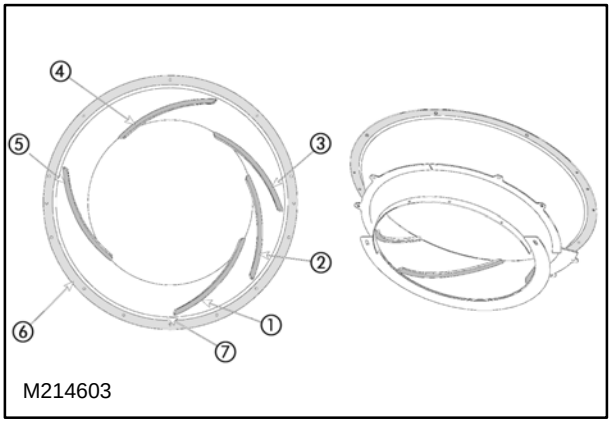
The rotor is available in two different configurations to handle different crops and conditions.

AFX Rotor Configuration:

- Grain and corn configuration, regular rasp bars, and eight spiked separator rasp bars.
- Rice configuration, spike rasp bar full length.

TRANSITION CONE

1. Vane #1
2. Vane #2
3. Vane #3
4. Vane #4
5. Vane #5
6. Mounting Face
7. Crop Entry



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The transition cone is located directly behind the feeder house or rock trap, and in front of the rotor cage. It is a circular cone shaped metal piece that is about 2 feet deep and 12.5 feet in circumference at its largest point. It acts as a distribution area for the crop as it starts to rotate. The cone contains fixed directional vanes that work in conjunction with the impeller blades to perform three important functions.

1. The crop mat is divided into smaller, thinner mat.
2. The crop mat is started moving in a rotating, rearward motion.
3. The crop mat is accelerated to threshing speed.

The cone is constructed of a single piece spun into the cone shape and is very resistant to the abrasive action crops. There are five vanes wielded inside the cone to provide additional crop flow. The crop flow through the cone is primarily provided by the shape of the impeller blades attached to the front of the rotor. The five vanes help guide the crop rearward. If a vane is worn out or missing a new one would be welded in front of and next to the old vane.

NOTE: *Cone is abrasion resistant steel. May require special welding rod to weld.*

Vanes 2, 3, and 4 have vane extensions extending into the rotor cage.

FEEDING

AFX Impellers

The AFX rotor uses two-piece graduated pitch impellers (non-adjustable), for increased feeding. The design allows the crop material to flow more smoothly into the cage, resulting in less cone and impeller wear. The combination of the graduated impeller flighting design and rasp bar mounting locations promote improved material flow through the rotor cage in difficult to thresh crops (such as rice, green stem soybeans).

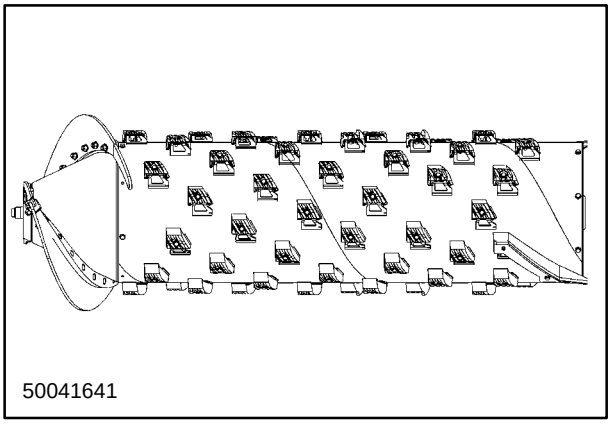
The front wear blade should be replaced when signs of wear are present. As they wear, feeding will deteriorate. The rear blade will probably out last the front wear blade 2–1.

A side benefit of the impeller blades is their ability to pull in air along with the crop material. This suction draws dust and light material into the feeder house making for a much cleaner feeder area than on conventional combine. Visibility is much better, especially at dusk and at night.

ROTOR CONFIGURATIONS

The standard rotor uses non-spike rasp bars and eight spiked bars. The Rice Rotor may use spike rasp bars the full length of it.

The rotor has four main components that allow it to be setup for use in a variety of crops and conditions. The rasp bars are positioned in a helical pattern around the entire rotor. This forces the material to move through the machine aggressively. This is ideal for tough, wet conditions. Each type of rotor component works differently.



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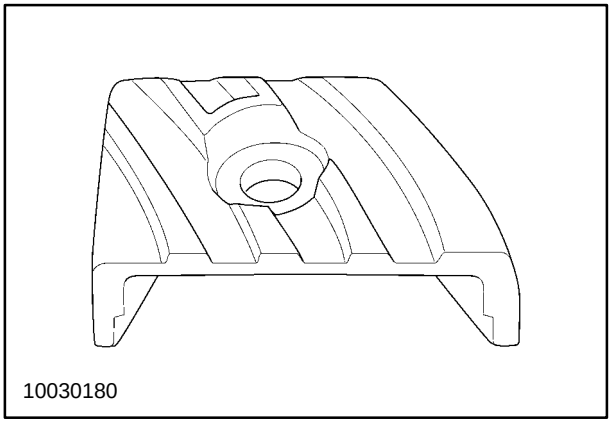
59

Non-spiked rasp bar

This part is used as a primary threshing element. The non-spiked rasp bar is used to thresh the crop. It is also used as a secondary separating element and provides positive crop movement. These can be interchanged with straight separator bars or spiked rasp bars on the rear of the rotor.

Non-spiked rasp bars come in two versions: standard and extended wear. The extended wear rasp bars are made out of Chrome Alloyed metal.

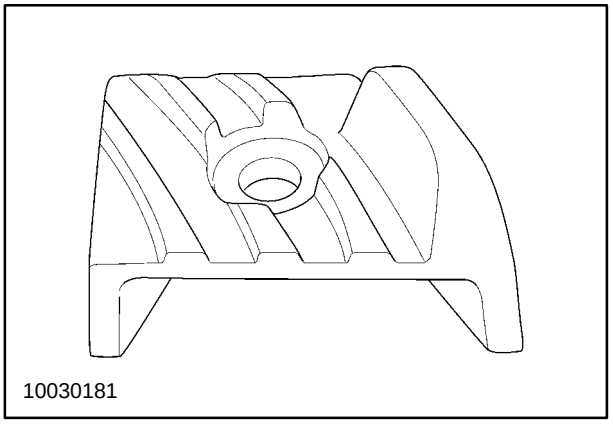


60

Spiked Rasp Bar

This part is used as a primary material mover. The spiked rasp bar is used to move the crop through the combine. It will also chop the crop up to prevent the crop from roping. These bars may be bolted on the rear half of the rotor. It is found as standard equipment on rice rotors, but can be interchanged with straight separator bars and non-spiked rasp bars. Like all rasp bars, spiked rasp bars must be installed in pairs 180° apart to ensure proper rotor balance. The spiked rasp bar provides effective separation, insuring that all crop material is torn apart as well as positively moved through the separation area.

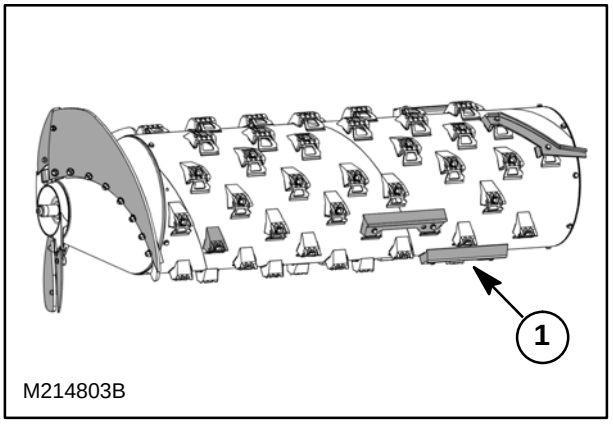
Spiked rasp bars are only available in extended wear. The extended wear rasp bars are made out of Chrome Alloyed metal.



61

Straight Separator Bar (service part only)

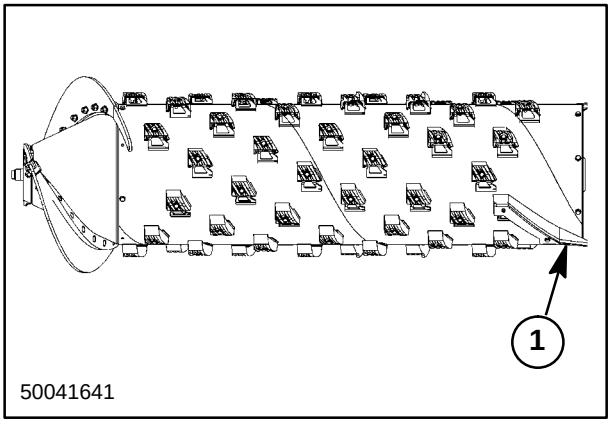
This Straight Separator Bar, 1, is used as a primary separating element. The straight separator bar is used to separate the grain from the crop. This bar requires two rasp bar mounting pads in order to install it on the rotor. It causes the crop mat to be thinned allowing the seeds to separate from the residue easier. It is primarily used in high yielding corn to increase separation. The separator bars must be installed in pairs 180° apart to maintain rotor balance. They are not recommended for very green crops. Straight separator bars may be removed and replaced with rasp bars if the rotor is consuming excessive power.



62

Helical Kicker Bar

This Helical Kicker Bar, 1, is used as a primary moving element. This element is used at the very rear of the rotor to flail the material being discharged. The kicker conforms to the helical pattern of the rasp bar locations and requires two rasp bar mounting pads in order to install it on the rotor. Two kickers in rear should be used on all rotor configurations and should never be removed. An additional set of helical kicker can be mounted over the front and center grates when additional separation is not required, such as sunflowers and some grass seeds (see Figure 64).

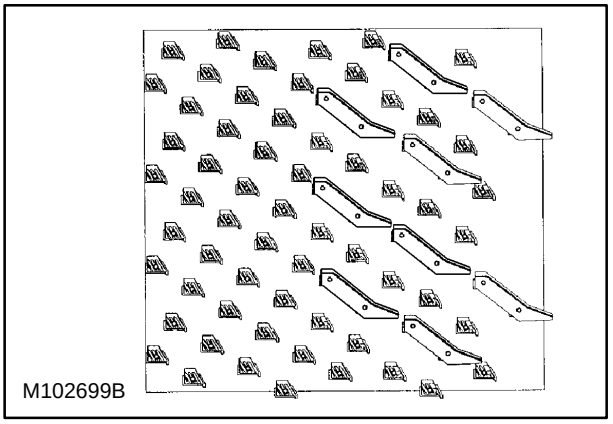


63

Suggested Set-Up

1. Spiked separator bars may be needed for harvesting corn yielding more than 150 bu/acre (9400 kg/ha).
2. If installed, straight separator bars should be removed for harvesting rice and edible beans and similar viney crops, or if rotor is consuming excessive power.
3. Rice rotor is equipped with all spiked rasp bars.
4. Use of non-spiked rasp bars in all positions is recommended for most grass seed harvest conditions. Spiked bars may be helpful in extremely damp crops.

In easily separated crops additional kickers may be added to move the crop residue out as fast as possible to prevent overloading the cleaning system.



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SUGGESTED START-UP CONFIGURATIONS FOR MAJOR CROPS

Corn/Soybeans

Start with vanes in the fast position and only move if loss is a problem. If congestion continues, remove the straight separator bars and reinstall two spiked rasp bars for each straight bar removed. After this change, monitor the result. The rumbling associated with congestion should go away. Watch for potential rotor losses in high yielding corn (150 bu/acre and up). If this is occurring and the combine is set as suggested, try a different ground speed. If cleaning system loss is high, add wires to rear rotor modules.

Edible Beans/Corn

Start with all non-spiked rasp bars, and add straight separator bars to the grate area if rotor loss becomes a problem in corn. Use the vanes in the grate area to speed or slow the material as needed.

Sunflowers

In sunflowers, adding four more kickers (one in front of the factory installed units) will increase the speed at which the unwanted refuse will be discharged from the back of the rotor. This will prevent this material from overloading the sieves.

Small Grain

Use all non-spiked rasp bars and straight separator bars over the number 5–6 and 7–8 rotor modules. Set the vanes in the middle position over the concaves and middle position over the grates. Use the proper rotor speed and concave clearance to thresh and separate the crop. Watch for over threshing and cleaning system overload in dry material. If this is happening, use the vanes to speed the exit of the threshed straw. Helical kickers should be mounted at the back of the rotor.

If excessive rotor power is suspected, remove the straight separator bars and replace with rasp bars.

Very Green Crops

If the crop is very wet and viney, use non-spiked rasp bars in the concave area, and spiked rasp bars in the grate area. In extreme conditions, spiked rasp bars can be placed in the concave area as well, however; the **concave stop bolts must be readjusted** since the spiked rasp bars will contact the rotor at an earlier point. If the stop bolts are readjusted the concave sensor will require re-calibrating. Helical kickers should be mounted to the back of the rotor.

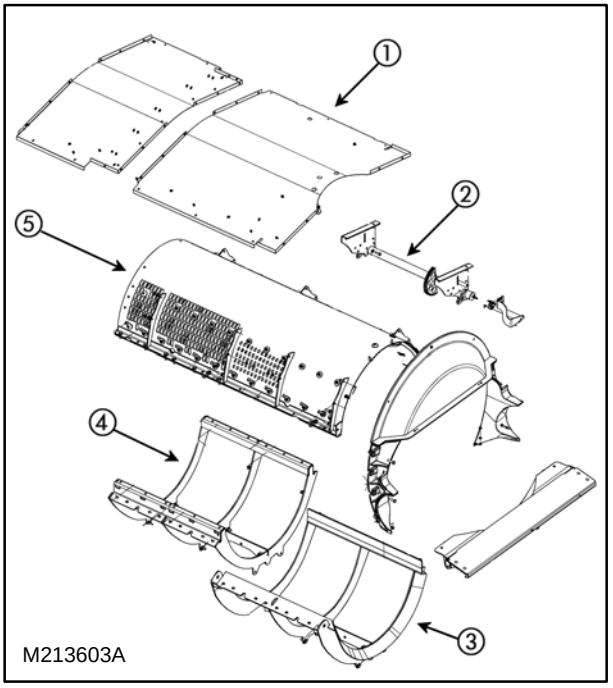
IMPORTANT: *When adjusting the combine to suit crop conditions, remember to do the easy items first.*

1. Adjust the rotor speed or concave clearance before making any configuration changes to the rotor. When making rotor speed changes, use increments of 10 and 20 rpm only, then check the results. If nothing noticeable occurred, try 10 or 20 more rpm until a change occurs. Damp crops will take less speed adjustment than dry material. A damp crop has more traction against the rotor.
2. Adjust the vanes before making rotor configuration changes.

ROTOR MODULES

Modules

1. Top Cover
2. Module Clearance Adjusting Bar
3. Concave Module Carrier
4. Separating Module Carrier
5. Upper Cage



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After the crop material leaves the transition cone, it enters the front portion of the rotor cage area. The cage contains eight rotor modules, four which are movable to change the clearance between the rotor and the module, and four fixed position units. The modules are designated as right and left side modules that wrap around the rotor approximately 90° each, providing a total module wrap of approximately 180°. Any module may be placed in any location with respect to the side it is designed to fit. The modules are attached to module carriers. The front carrier SHOULD contain two left and two right threshing modules, and the rear carrier MAY contain a combination of two left and two right threshing and/or separating modules.

The modules are used to hold the crop material in the rotor cage long enough to be thoroughly threshed. The modules must also have enough capacity to allow the threshed grain to separate from the trash. Different types of modules are available to change how long the material is held in the cage.

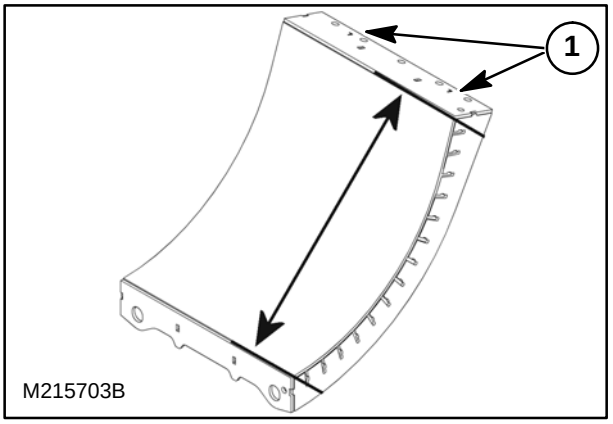
As a general rule, 100% of the threshing and 90% of the separation should be completed in the front half of the cage area. This can be fine tuned by running different combinations of modules on the same machine. It is essential that the proper set or combination of modules be used for the crop being harvested.

Module Location Identification

The modules are identified by their position. The front right side will be #1R, front left side #1L, etc. left rear will be #4L.

Measure the module from the two outside bars.

Left hand = 21-3/4″, marked with “L” at 1.
Right hand = 22-1/2″, marked with “R” at 1.



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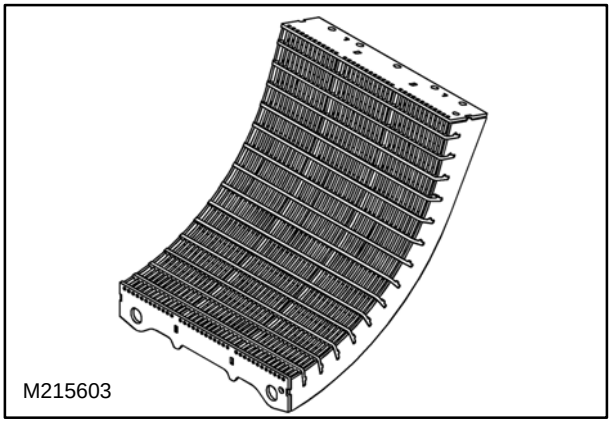
MODULE TYPES

Small Wire

Small Wire – 3/16 inch wire thickness with approximately 3/16 inch spacing between the wires. This is most commonly used in small grain type crops.



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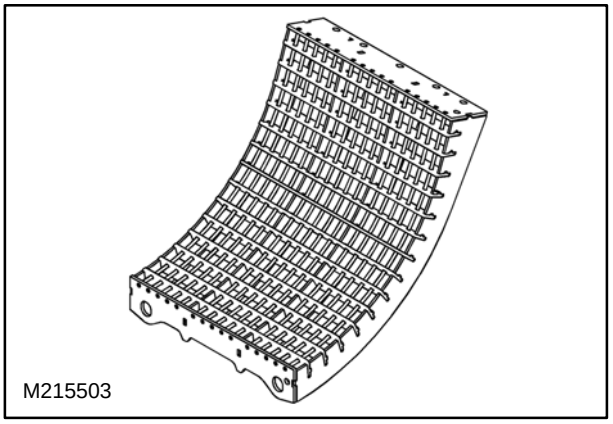
Large Wire

Large Wire – 1/4 inch wire thickness with approximately 1/2 inch spacing between the wires. This is most commonly used in corn, soybeans, and rice.



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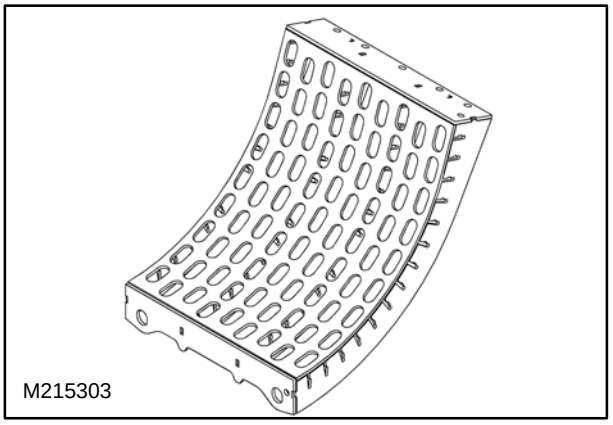
Slotted

Slotted Modules – has slots rather then wires. Slot size is approx. 1″ X 1.5″ and are mainly used in edible beans / sunflowers.



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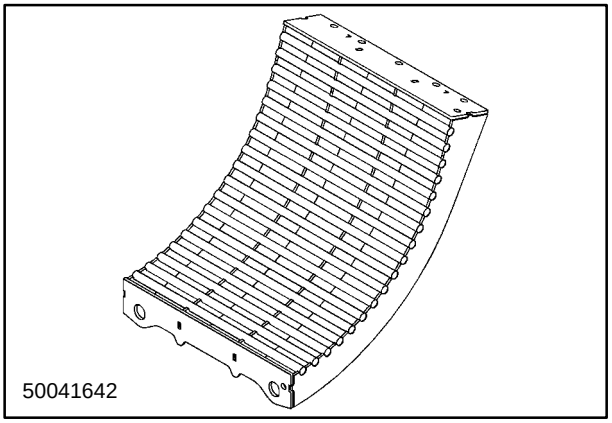
Round Bar

Round Bar – 16mm Round bars with 16mm spacing. Round bar modules have proven beneficial in reducing hairpinning of crops that plug large wire modules, such as high moisture corn.



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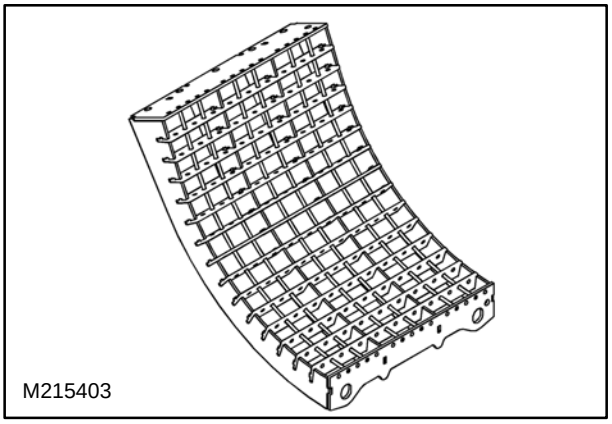
Large Skip Wire

Large Skip Wire Modules – has every other wire removed from the standard large wire module and mainly used in the separating area. All wires may be removed to create a Key Stock Module. No fewer than every other wire should be installed when harvesting corn to prevent cobbs from being thrown thru the module and damaging the upper sieve. Similarly, additional wires can be added to create a large wire module.



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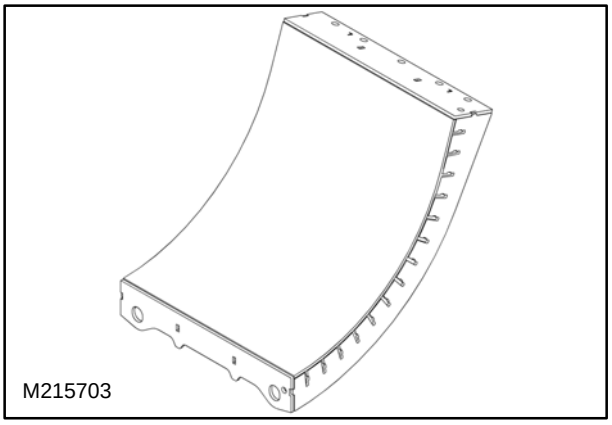
Solid Module

Solid Modules – May be used in very easy threshing and separating crop to prevent excess trash from over loading the cleaning system.



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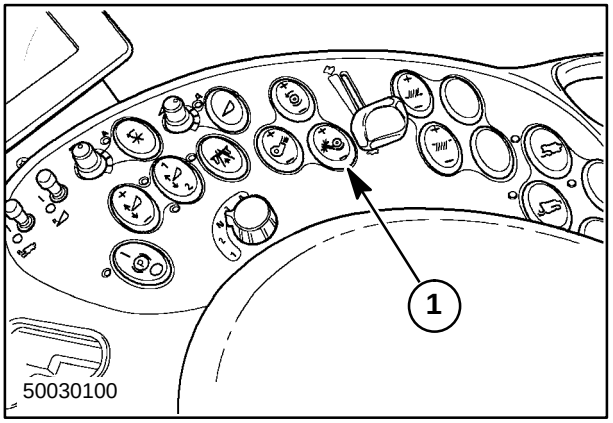
Concave Adjustments

The Concave position may be changed by pressing the clearance-adjusting switch, 1, on the right hand console in the cab. The module location will automatically be displayed in the upper right hand display cell while adjustments are being made.



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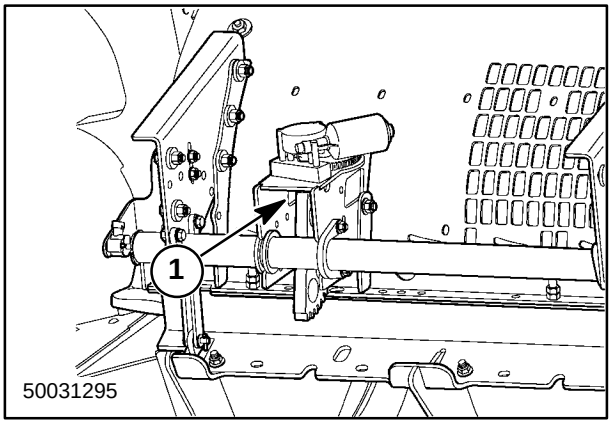
The module INCREASE/DECREASE button is used to set the clearance gap between the rotor and modules. The multiple pass threshing allows for a more relaxed setting than a conventional combine. There is no need to be continually adjusting the module on an Axial-Flow Combine. The four module sections allow the operator to fine-tune the threshing capabilities of the combine by running different combinations of modules on the same machine. It is essential that the proper set or combination of modules be used for the crop being harvested.

The concaves can be manually moved if the electric control system fails.

1. Motor support, 1, bolts can be accessed from bottom side of supporting bracket.



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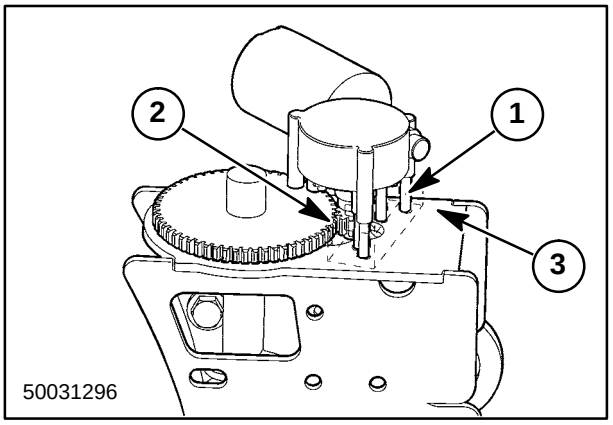
2. Normal operation motor and spacer position, 1.
3. Gears fully meshed, 2.
4. A single hole, 3, should be exposed in top plate w/ motor and spacer in operating position.



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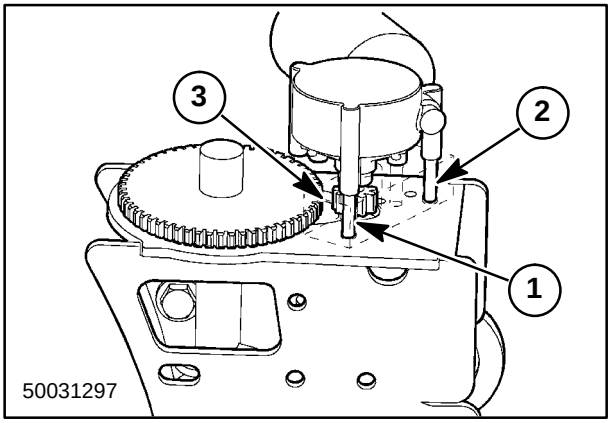
5. Loosen bolt, 1.
6. Remove middle (2) bolts, 2, and insert outer mounting bolt to this “storage” location. Gear mesh is “separated” when motor is in this position, 3.
7. Manually raise and/or lower concaves using an 18mm wrench on bottom of worm gear shaft.
8. Motor must be moved back to operating position for concaves to remain in desired location.



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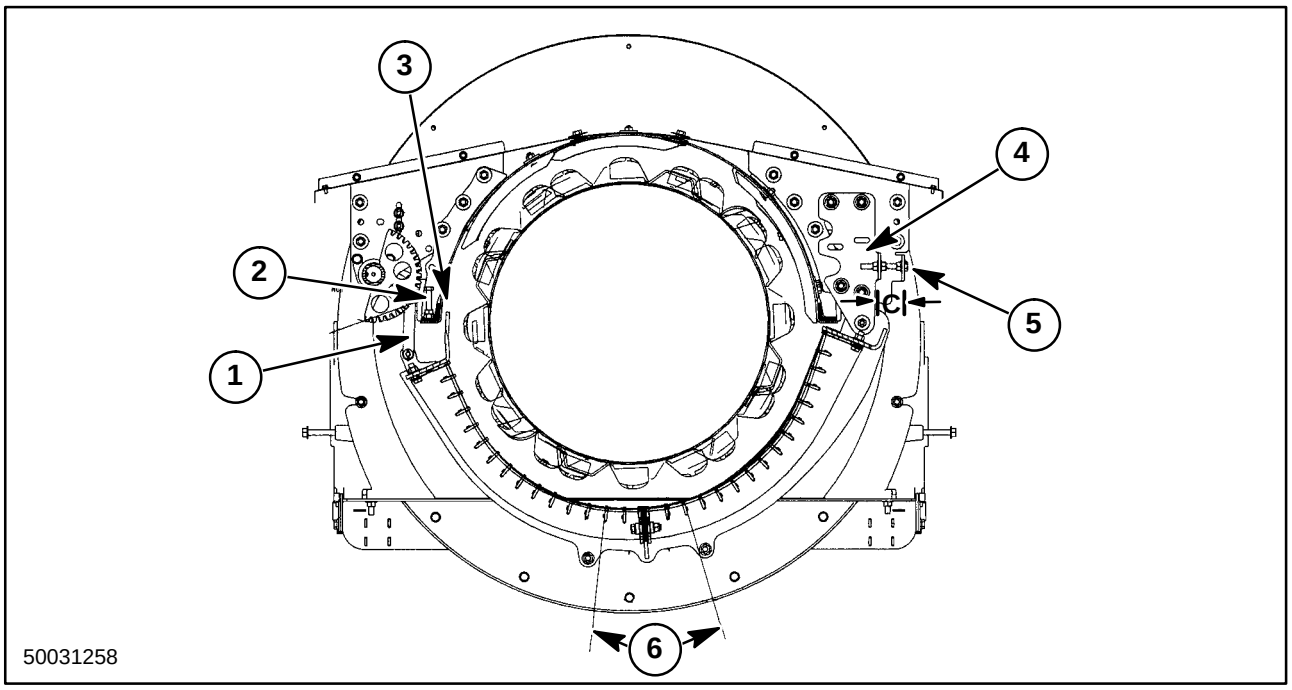
The placement of the concaves in relationship to the rotor is critical. The concaves have three major adjustments that must be check during pre-season inspections.

1. Concave Levelness, the concave assembly must be setting parallel to the rotor. If the concaves are not level, most threshing will occur at the closest concave. Check clearance at front of #1 and rear of #3, clearance should be the same.
2. Concave Position, (pinch point), the rotor to concave minimum clearance should initially be at the center, between the two modules. The pinch point effects the way the grain and chaff lay on the cleaning system.
3. Concave Zero, the rotor should be as close to the concaves as possible with out making contact.

The concaves are supported at the center on dowel bolts and on top by two bolts that connect to an adjustable frame. The modules are easily removed, by removing the bolts at the adjustable frame and pulling the modules out.



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Leveling The Threshing Modules

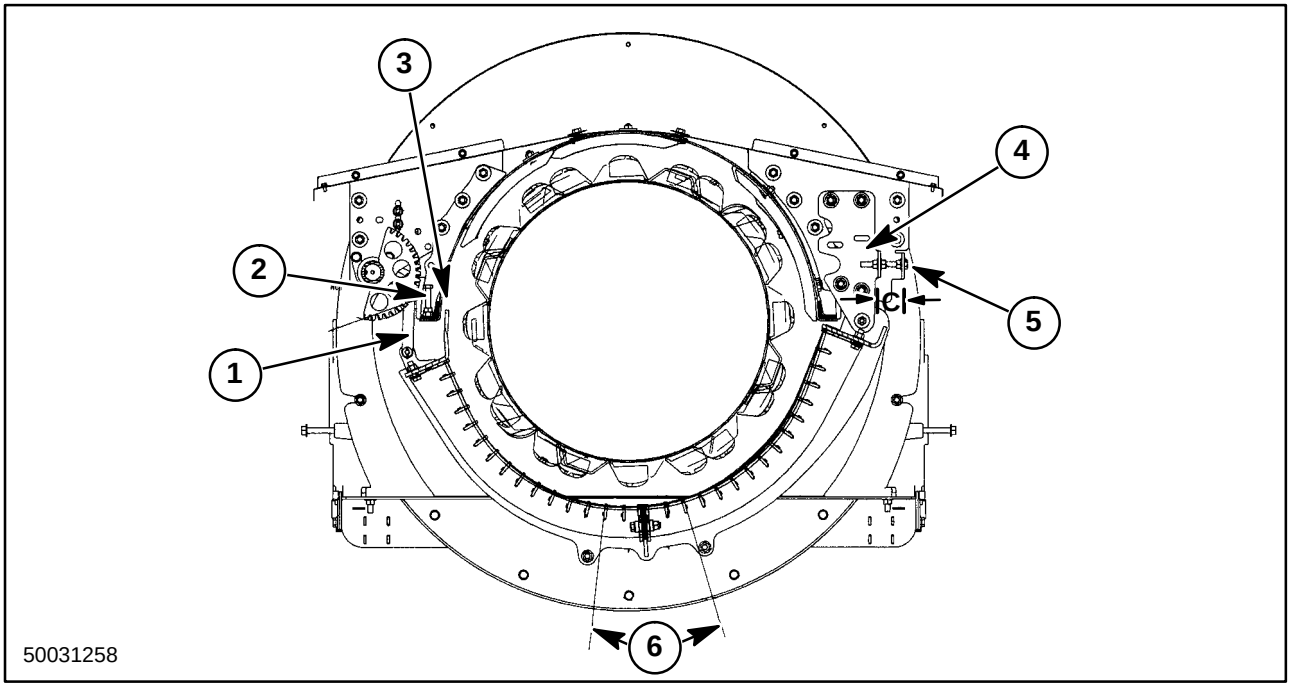
To insure proper threshing in all crops, it is recommended that the module carrier be leveled and zero clearance set during pre-delivery and/or once a season. Perform the following:

1. Shift the rotor gearcase to the neutral position.
2. Remove the left hand and right hand rotor access panels.
3. Loosen the locking nuts and back off the module carrier stop bolts, 2, on the left side of the machine.
4. Make a feeler gauge to check the point at which the module clearance to rotor is the least. The closest point will be the pinch point, 6. Use the gauge to hook over the module bars, (not the wires). The thickness of the tool is not relevant, your just comparing the front against the back not an actual measurement.
5. Spin the rotor by hand and raise the module carrier from button in cab until it just contacts the rotor. Raise or lower the module carrier front turnbuckle, 1, until both the front and rear portion of the threshing assembly (front of #1 and rear of #3) contacts the rotor within the same revolution of the rotor. This will level the threshing assembly from front to rear.

NOTE: *One of the pins in the turnbuckle will have to be removed. Concave frame will have to be supported when pin is removed.*

IMPORTANT: *Only complete steps 6–9 if the pinch point is NOT to be checked, otherwise skip step 6–9 and perform the pinch point adjustments.*

6. Lower the threshing module carrier 3/8 to 1/2 turn so that the modules drop away from the rotor. Position the stop bolts to contact the carrier and lock the stop bolts in place. Rotate the rotor by hand to insure the rotor does not hit the modules or carrier with the stop bolts set and the modules in their closed position.
7. Install the left-hand access panel.
8. Perform the CONCAVE calibration procedure to let the system learn the working range of the concave position sensor.
9. Complete re-assembly and put the rotor gear-case into gear.



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Repositioning The Concave Pinch Point

This adjustment may provide improved threshing capabilities and more uniform distribution of threshed material in wheat and similar sized seeds. It will also aid in keeping the threshing modules cleaner when damp material is encountered.

IMPORTANT: *Only perform the Pinch point adjustments after the concaves have been leveled.*

1. Loosen the four retaining bolts on both the front and rear of the module carrier supports, 4, on the right side of machine.
2. Adjust the draw bolts, 5, to change the pinch point between the rotor and modules. Moving the module carrier to the left (extending the draw bolt) will cause the pinch point to move right. Moving the module carrier to the right (retracting the draw bolt) will cause the pinch point to move left. One full turn of the draw- bolt nut will move the carrier approximately the distance of one module bar. The rotor should contact the modules in area, 6, as shown in the diagram.

The initial distance between the inner surfaces of the support carrier and the support that holds the draw bolt, C, equals 50 mm (1-15/16″).

3. Tighten the lock nuts on the draw bolts
4. Tighten the five retaining bolts on each end of the module carrier. These bolts must be very tight to hold the assembly in place.
5. Lower the threshing module carrier 3/8 to 1/2 turn so that the modules drop away from the rotor. Position the stop bolts to contact the carrier and lock the stop bolts in place. Rotate the rotor by hand to insure the rotor does not hit the modules or carrier with the stop bolts set and the modules in their closed position.
6. Install the left-hand access panel.
7. Perform the CONCAVE calibration procedure to let the system learn the working range of the concave position sensor.
8. Complete re-assembly and put the rotor gear-case into gear.

SEPARATION

Once the grain has been threshed, it must be separated from the trash that came into the combine with it. This function begins to occur as soon as the crop enters the rotor cage. About 90% of the grain will be separated in the threshing area of the rotor cage. This is a secondary function of the threshing section. The more that can be separated here, the more material the machine can handle. Separation in an Axial Flow occurs due to the centrifugal force created by the spinning rotor. The heavy particles (grain) will be thrown out of the rotor cage openings onto the shaker pan, which lies under the rotor.

Separator Modules

Grain that does not separate in the threshing area will be separated in the rear half of the rotor cage. This is the separation area. The modules provide agitation and relatively large openings for any grain left in the crop material. They are in a set of four, (same units as described in the threshing section), and are rigidly bolted into place. The modules may be removed by removing the bolts on the outside, (right or left), and pulled off the center support. The grates are nonadjustable and are normally associated with the Skip Wire, Slotted, Solid and Round bar modules.

CROP SPEED CONTROL

One of the most important aspects of running an Axial Flow correctly is to have the proper control of the crop speed through the machine. Crop speed is controlled completely by the rotor and rotor cage assemblies. As a general rule, the crop material will travel through the machine at about half the rotor speed.

Four basic adjustments for crop speed control are available to the operator once the machine is **properly equipped** for the crop to be harvested.

1. Rotor Speed
2. Concave Clearance
3. Cage Vane Position
4. Number of straight separator bars.

The most common mistake is running the rotor speed too slow. The rotor in an Axial Flow can be run faster than a conventional cylinder for the following reasons:

1. Multiple passes over the modules allow for a more relaxed and/or less sensitive module setting. This is greatly aided by the deep relief area between rasp bars which gives crop to crop threshing.
2. The relaxed setting allows for faster rotor speed with lower risk to grain damage as compared to a conventional cylinder with tight, critical concave setting.
3. The relaxed clearance and high rotor speed with lower risk to damage, allows for more capacity. Keeping the combine at full capacity minimizes loss and damage because of the crop to crop threshing effect.
4. Prior conventional combine owners tend to be conservative on rotor speed when operating their Axial Flow because of prior experiences. Slower rotor speeds will effect damage, slow ground travel, and reduce capacity. This occurs because the material is staying in the cage too long. The crop flow is reduced and rolling or roping of the crop can occur. This is signaled by a rumbling noise. The horsepower required to run the machine is also increased when this occurs. A faster rotor speed will require less horsepower because the rotor momentum helps move the crop. Separation is also increased because centrifugal force is increased.

Change Rotor Speed

The single easiest way to increase or decrease crop speed is by changing the rotor speed. This is accomplished by pushing the rotor INCREASE/DECREASE switch in the RHC. This adjustment can be made on the go. When adjusting this, use increments of 20–30 RPM at a time until the desired result is accomplished. This will prevent missing the correct operating speed for the crop condition. If the grain scan monitor is set properly, the effect of the rotor speed change can be observed on the monitor. If uncertainty exists, or the machine does not have a grain scan monitor, stop and check the ground. **Rotor Speed provides for machine capacity and separation.**

Change Module Clearance

A second way to change crop speed is to adjust the module clearance. The more relaxed, or open the modules are, the slower the material will flow through the machine. This occurs because the rotor does not have as much traction against the material. The crop mat will become thicker. A closed module setting produces faster crop movement and a thinner mat of material. The extreme ends of module adjustment for a given crop will produce similar results. Usually, over threshing, cleaning system overload, excessive power requirements, and grain damage occur. The acceptable module clearance range will be somewhere between these extremes, and compared to a conventional machine, the range is very wide. **Module clearance provides for threshing ability, keeping the modules clean and controlling the material.**

Change Transport Vanes

A third way to control crop speed is with the cage vanes. Vanes line the right side of the inner skin of the rotor upper cage. These vanes act like threads in a nut. As the rotor spins the crop, the vanes direct it rearward. All vanes can be pitched forward or rearward by moving them within slotted holes. The three vane positions are:

– Mid – position

  This position can be identified by aligning a hole in the cage with a hole in the vane itself.

– Rear tilt (Fast)

  By loosening two bolts and moving the bottom of the vane rearward, the crop material will move through the cage at a faster rate of speed. This can be useful in situations where the grain is separating very early within the machine. The trash can be expelled from the combine faster since the grain is gone. The vanes allow for adjustments of speed in individual areas of the cage since they don't have to be moved as complete sets. In general, vanes should be in this position unless rotor losses are high.

– Forward tilt (Slow)

  By loosening two bolts and moving the bottom of the vane forward, the crop material will move through the cage at a slower rate of speed. This position can be useful if additional threshing or separation time is needed.

Guidelines For Optimizing Straw Quality

Due to the threshing and separating nature of the Axial-Flow Combine, machine settings, and operating conditions can affect the quality of straw for baling. The following guidelines are to help you obtain the best straw possible from your Axial-Flow Combine. Each field condition must be looked at closely to identify which options will give you satisfactory results.

RECOMMENDED COMBINE CONFIGURATIONS TO IMPROVE STRAW QUALITY

Standard Rotor

- Do not use spiked rasp bars, except in some hard threshing conditions.

Other Equipment

- Use small wire module or at least one at the No. 1L and 1R position.
- Solid grates in the No. 2 and 3 positions may be used if seed loss is not an issue.
- If possible, use a combine equipped with a discharge beater instead of a straw chopper.

Operating Conditions

- Harvest during damp, tough conditions such as early morning or late evening.
- Cut more of the stem than usual.

Combine Settings

- Use slower than normal rotor speeds.
- Relax the concave setting while maintaining threshing and separating.
- Lower beater/chopper pan.
- Adjust the vanes over the grates to the fast or forward position.
- Adjust the vanes over the concaves between the mid to fast position.
- Retract the straw chopper stationary knives and shift chopper to slow speed.

IMPORTANT: Care should be exercised to avoid compromising acceptable grain loss and combine performance.

SYSTEMS OPERATION

The entire rotor drive system consists of a PTO and 3 speed rotor gearbox, Power Plus drive, hydraulic pump and hydraulic motor.

A rotor calibration process will let the controller learn the amount of current required to activate the RTF clutch, ETR clutch and pump solenoids. The automatic calibration process will be initiated by the operator using the ICDU and **MUST** be done once a season.

How should the rotor drive system operate?

The rotor drive has very specific operating requirements and must operate in one of five modes at all times. The system is in control of all rotor operations, maintaining RPM, monitoring, trouble-shooting and warnings.

MODES OF OPERATION

Off

The operator will have placed the separator control switch into the OFF (center detented) position, the rotor should not be powered and should be at rest.

Rotor Engagement

When the operator places the separator control switch into the forward detented position, the rotor will be started by activating an acceleration mode to start and bring the rotor up to the requested speed.

Rotor Operating

The rotor speed will be maintained in a ratio to the engine speed, it will not be maintained at the requested speed.

Rotor De-Slug

The rotor de-slug is used by the operator to rotate the rotor in forward and reverse to free a stalled rotor. All driving force is provided by the rotor drive motor.

Take the following steps to deslug the rotor:

– Lower the Front Rotor Module (Concave) to the fully open position (see Concave Adjustments)

– Engage the feeder reverser for 2 to 3 seconds to move material away from the front of the rotor

– Place the separator engagement switch momentarily in the Reverse position (rearward) to initiate the De-slug mode.

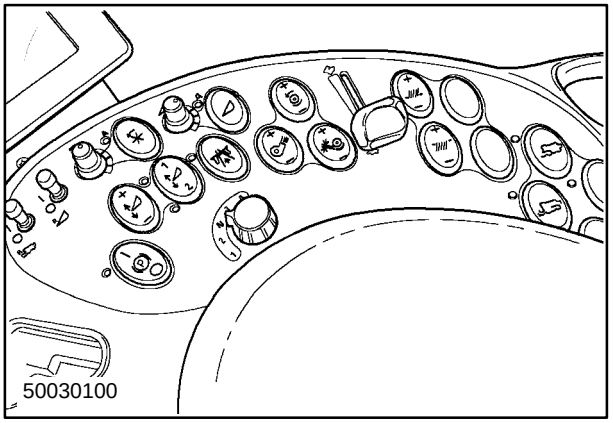
– Place the separator engagement switch in the forward On position to start the separator except for the rotor.

– Press the rotor speed decrease switch (–) to rotate the rotor in reverse, and then the rotor speed increase switch (+) to rotate the rotor forward. Repeat as necessary to clear the slug. If the rotor will not move, shift the rotor drive gearbox into Range 1 to increase torque, and repeat.

– When the rotor is cleared, return the separator engagement switch to the Off position (center detent position) to exit the De-slug mode.

– Raise the Front Rotor Module (Concave) back to the normal operating position.

IMPORTANT: If the operator is in doubt that the slug has been cleared and the rotor drive is in 3rd gear, the rotor drive should be down shifted before attempting to re-engage the rotor.



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CALIBRATION

WARNING

When calibrating the concave or rotor, Do Not allow anyone near the machine. Threshing component may move during calibration. Serious injury or death may occur.

NOTE: *The rotor* ***MUST*** *be re-calibrated at least once each harvest season.*

Concave

From the Calibration picklist choose Concave and press start to begin calibration. A message will appear when Concave calibration is completed.

Rotor

From the Calibration picklist choose CVT Rotor and press start to begin calibration

Necessary Conditions:

- Engine Speed greater than 1300 rpm
- Ground Speed equal to 0 km/h
- Rotary Separator OFF
- Separator Clutch Switch OFF
- Rotor stopped

A message will appear when Rotor calibration is completed.

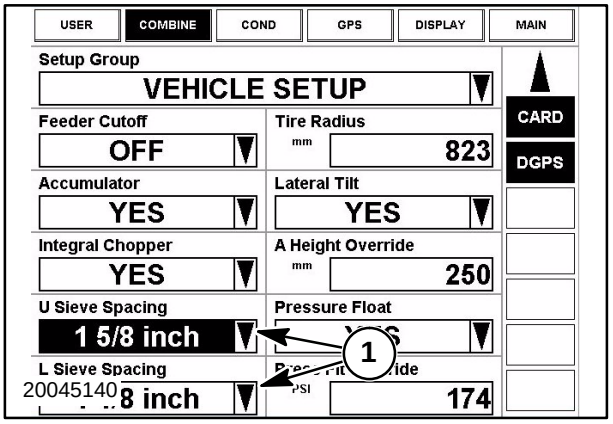
CLEANING SYSTEM

SETUP

Settings that affect operation are located on the SETUP>COMBINE screen. Select VEHICLE SET-UP in the list box.

Sieve Spacing

This is used to set the Upper and Lower Sieve Spacing, required for electric sieve adjust. The two choices for upper and lower 1-1/8 and 1-5/8 inch. Press the selector box, 1, to toggle between the two choices.



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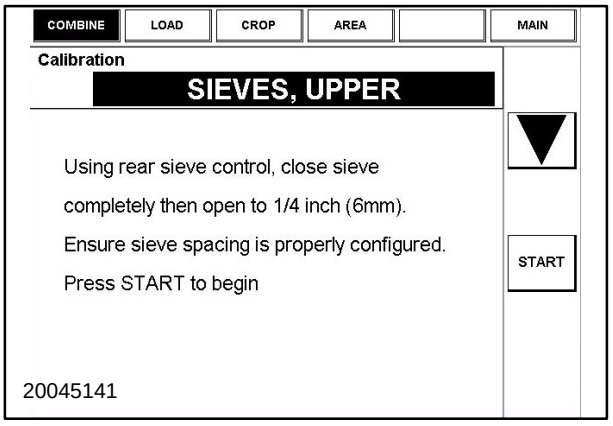
CALIBRATION OF ELECTRIC SIEVE ADJUST (If Equipped)

Upper sieve

To calibrate the upper sieve, proceed as follows:

1. Check first if the item “Remote upper sieve” is installed, already configured from the factory.
2. Select the “Upper Sieve” calibration window. Message: “Using rear sieve control, close sieve completely then open to 1/4″ ⟨6 mm). Press START to begin”.
3. After choosing the “Upper Sieve” calibration window, walk to the back of the combine and proceed to step 4.

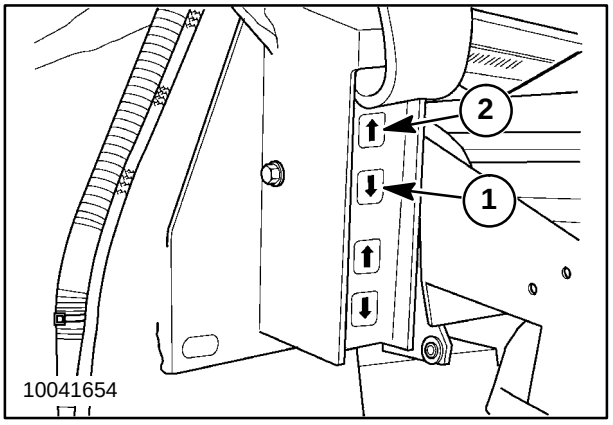


81

4. Close the upper sieve completely using the upper sieve rocker switch, 1.

IMPORTANT: *Check if the upper sieve is clean before closing.*

5. Open the upper sieve using switch, 2, until the physical distance measure 6 mm (1/4″).
6. Proceed back to the cab.
7. Press “START” to continue.



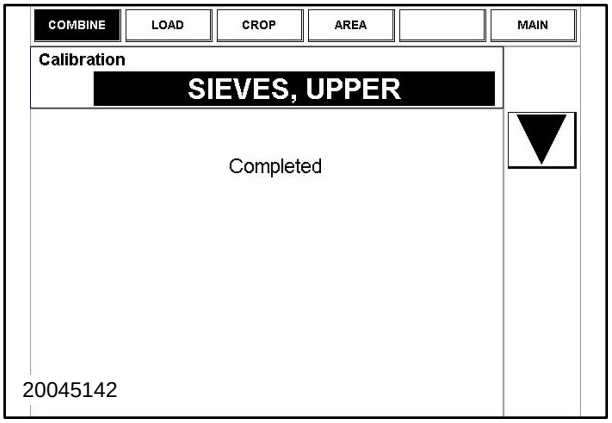
82

Message: “Completed”

8. The calibration is done.
9. Press “MAIN” to close the calibration window.

NOTE: *If an error occurs while calibrating the upper sieve, the calibration procedure will be aborted and an error code will appear on the screen.*

Error	Possible Cause	Remedy
40	Upper sieve position sensor giving wrong signal	Signal must be minimum 0.25V, maximum 5V
43	Upper sieve opening not 6 mm (1/4”) within limits	Open sieve to 6 mm (1/4”)



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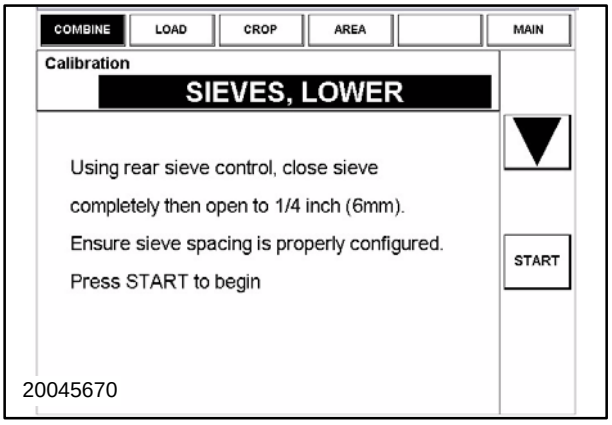
Lower sieve

To calibrate the lower sieve, proceed as follows:

1. Select the “Lower Sieve” calibration window. Message: “Using rear sieve control, close sieve completely then open to 1/4″ ⟨6 mm). Press START to begin”.
2. After choosing the “Lower Sieve” calibration window, walk to the back of the combine and proceed to step 3.

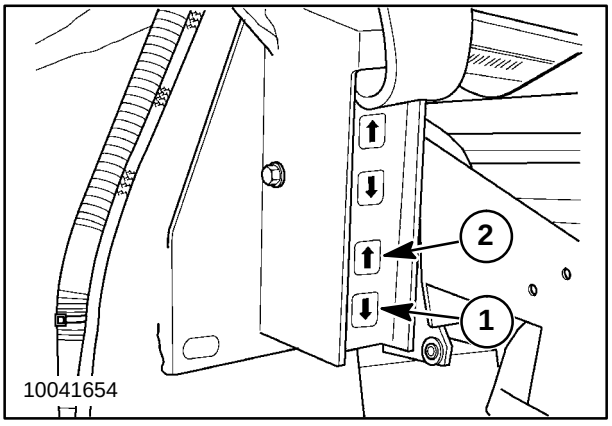


84

3. Close the lower sieve completely using the lower sieve rocker switch, 1.

IMPORTANT: *Check if the lower sieve is clean before closing.*

4. Open the lower sieve using switch, 2, until the physical distance measure 6 mm (1/4″). Proceed back to the cab.
5. Press “START” to continue.



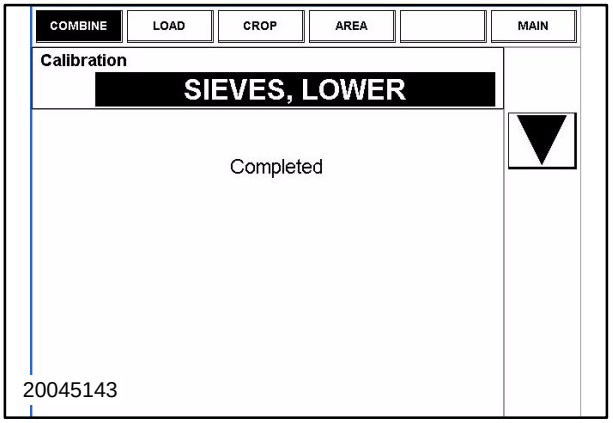
85

Message: “Completed”

6. The calibration is done.
7. Press “MAIN” to close the calibration window.

NOTE: *If an error occurs while calibrating the lower sieve, the calibration procedure will be aborted and an error code will appear on the screen.*

Error	Possible Cause	Remedy
41	Signal must be minimum 0.25V, maximum 5V	Signal must be minimum 0.25V, maximum 5V
44	Lower sieve opening not 6 mm (1/4”) within limits	Open sieve to 6 mm (1/4”)



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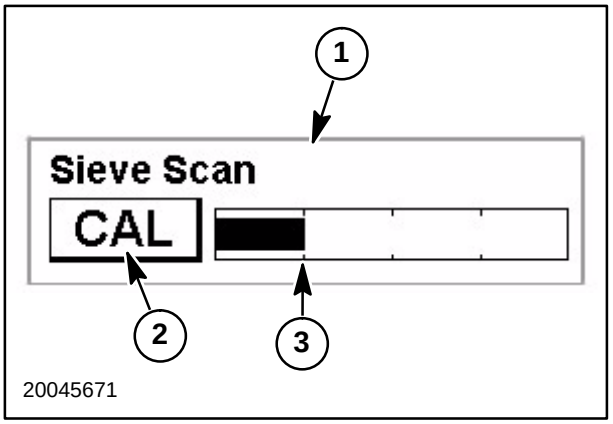
Sieve Scan Calibration

To calibrate the sieve scan, proceed as follows:

1. Set the combine to current conditions and ground speed to achieve desired performance and loss.
2. While operating in above condition, display the HARV>HARV* screen with Sieve Scan, 1, displayed.
3. Press CAL box, 2.
4. The system will set the current loss level to display the graph to the 25% line, 3, as shown.



87

Total Scan Calibration

The total scan calibration is the same as the sieve scan procedure, using the total scan display cell. The total scan graph combines the sieve scan and rotor scan data. The sieve loss is displayed in dark grey and the rotor loss is displayed in light grey.

SIEVES

IMPORTANT: *To adjust the sieves to the desired clearance, always move the lever(s) (or if electrical by using the switch from the cab) from the closed position to the desired opening.*

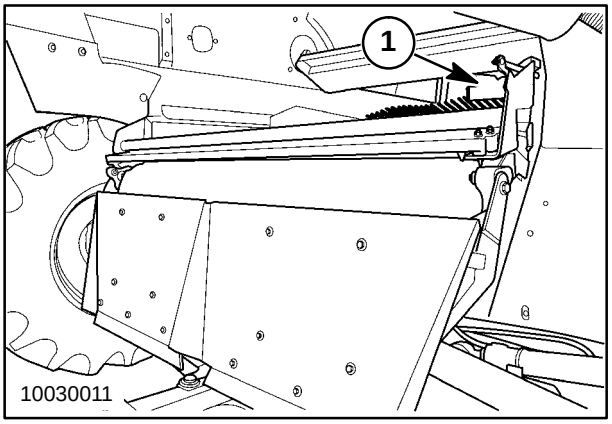
Presieve

Adjust the opening of the presieve, according to the grain size, with the lever, 1, on the right-hand side at the back of the shaker shoe.

An 8 mm (3/8″) opening is the recommended position for most cereal crops and sunflower (1-1/8″).

A 16 mm (5/8″) opening is the recommended position for corn/soybeans.

NOTE: *Adjusting the presieve is always manual.*



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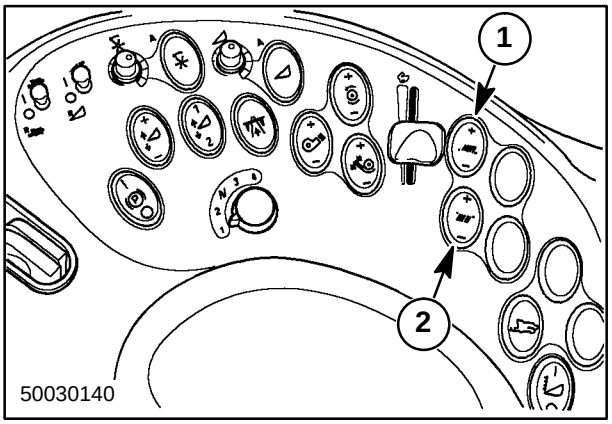
Remote Adjust Upper and Lower Sieve

Adjust the openings of the upper and lower sieve, according to the grain size, with the levers at the rear of the sieves or with electrical switches (if installed), 1 or 2, from the right hand console.

The upper right hand cell of the display will show the sieve setting during adjustment.



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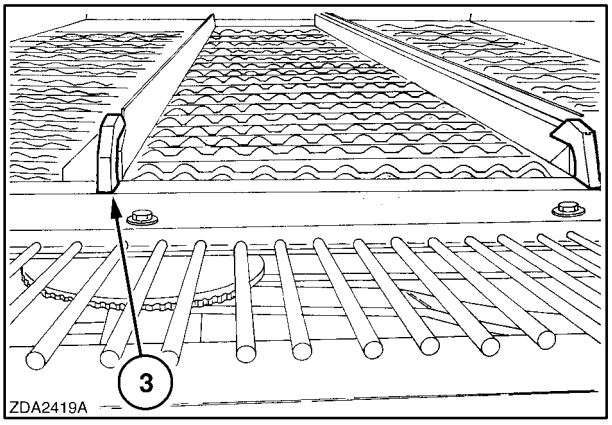
The upper and lower sieve(s) are equipped with a sieve opening indicator, 3.

The rear part (extension) of the upper sieve (1-1/8″) can be adjusted separately. It may be necessary for the rear part to be opened a few millimeters more than the sieve opening to prevent loss of the returns, particularly when harvesting wheat.

When harvesting maize/corn, keep the upper sieve (1-5/8″) closed as much as possible to sieve all the grain and to prevent the maize/corn cobs from passing through the sieve and entering the grain tank.



90

Sieve Position

Only the upper sieve can be installed at the rear in two positions, the upper position and the lower position.

The upper sieve is normally fitted in the lower position.

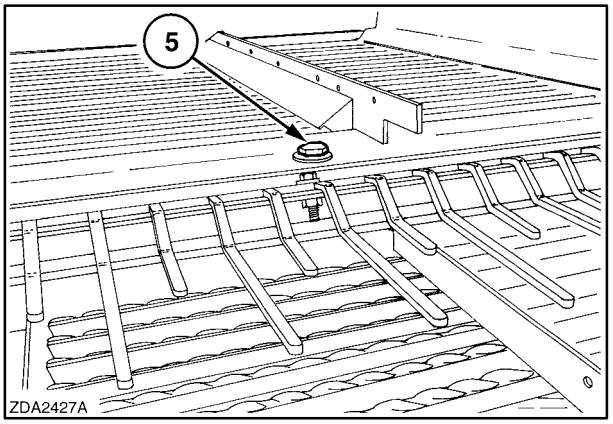
For wheat and maize/corn (if necessary) the same lower sieve (1-1/8″) can be used.

SIEVE REMOVAL

Proceed as follows:

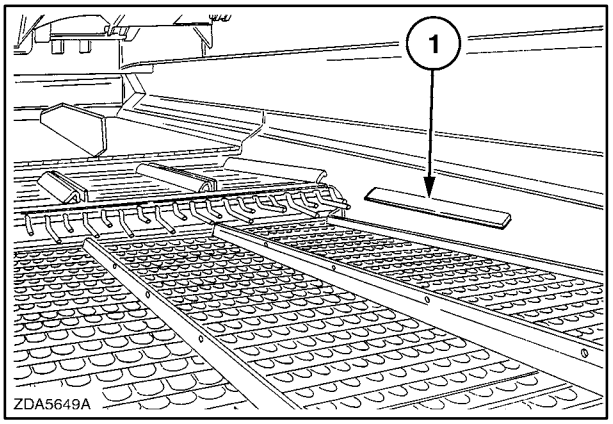
Presieve

1. Remove two bolts, 5.



91

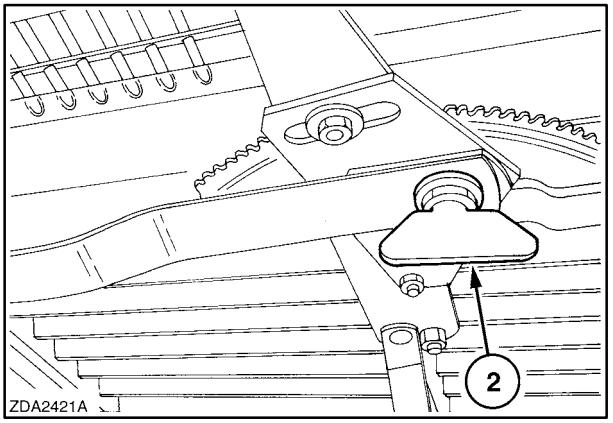
2. Pull out the presieve, using supports, 1.



92

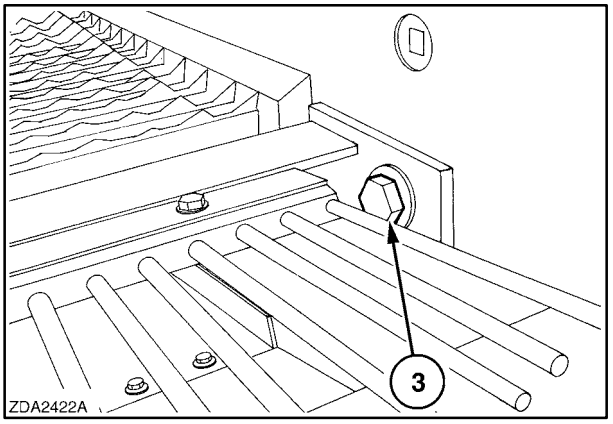
Upper Sieve

1. Disconnect bracket(s), 2, in case remote sieve control is installed.



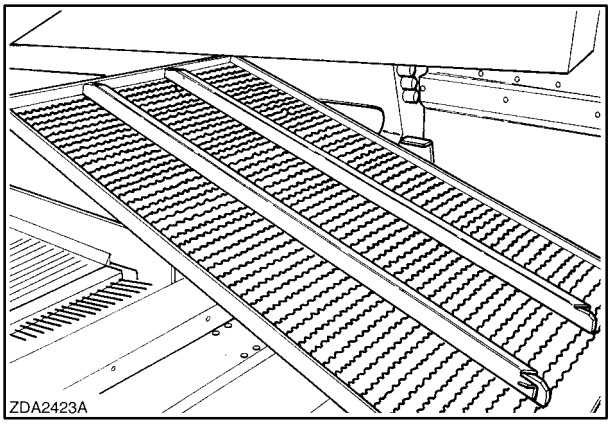
93

2. Remove bolts, 3, on both sides and the center bolt.



94

3. Remove the upper sieves.

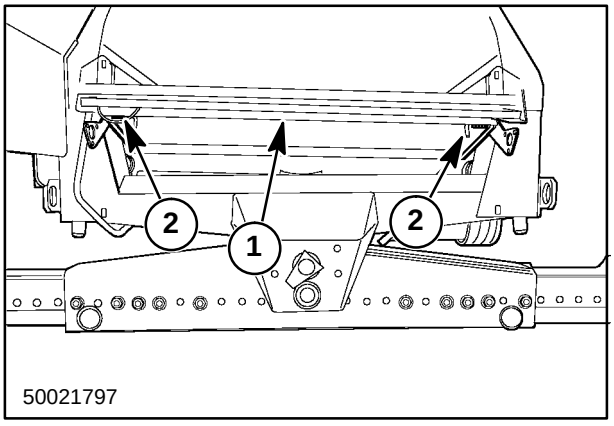


95

Lower Sieve

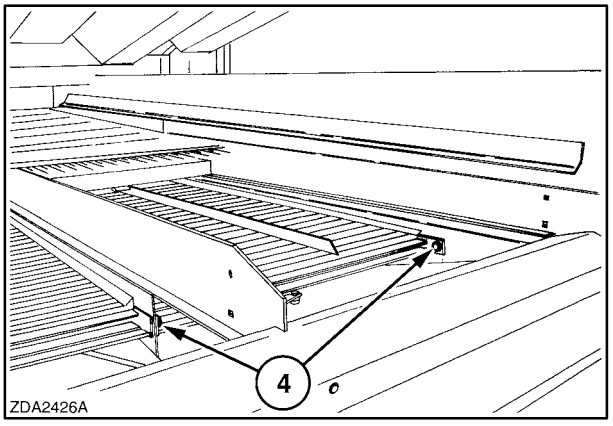
NOTE: *The removal of the chaff board may be necessary for the removal of the lower sieve.*

1. Open lower access plate, 1, by retracting latch pins, 2.
2. Disconnect bracket in case electrical sieve control is installed as described in upper sieve.



96

3. Remove bolts, 4, on both sides and remove the lower sieve. Adjust the shaker shoe position by hand if the grain loss sensor prevents the removal of the sieve.



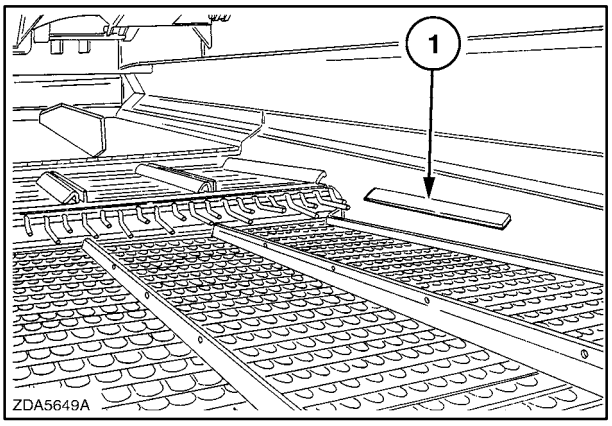
97

SIEVE INSTALLATION

Presieve

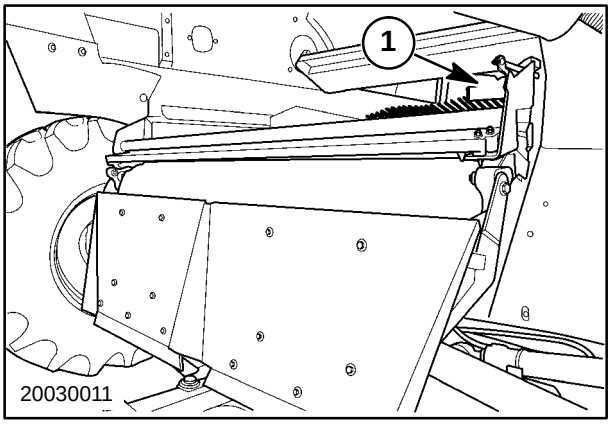
Proceed as follows:

1. Place the presieve on supports, 1, on both sides of the shaker shoe and slide the presieve completely into its place.



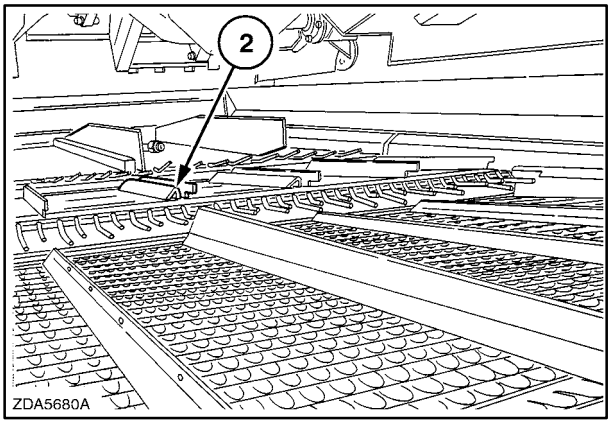
98

2. Adjust lever, 1, at the back of the shaker shoe in the open position (upper position).



99

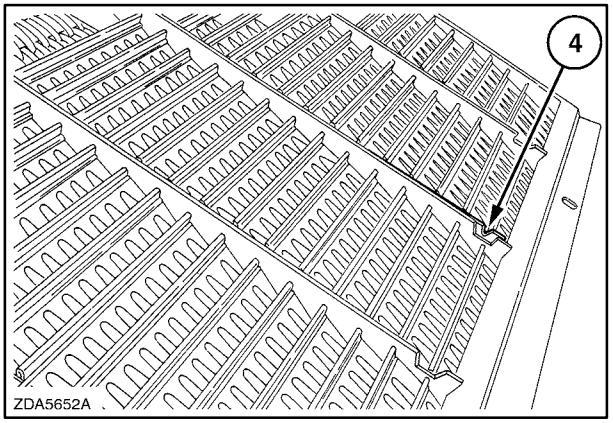
3. Open the presieve completely by using handle, 2, (upwards).



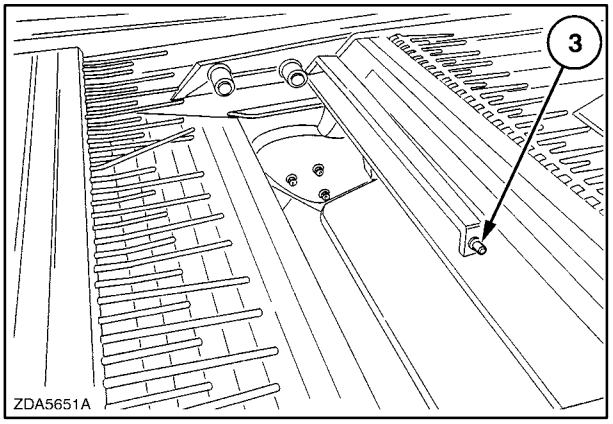
100

4. Check if notch, 4, on the presieve is connected with the presieve adjustment shaft, 3, Figure 102, of the shaker shoe, by moving slowly lever, 1, Figure 99, at the back of the shaker shoe.

NOTE: *Moving lever, 1, Figure 99, will cause the presieve to open or close.*

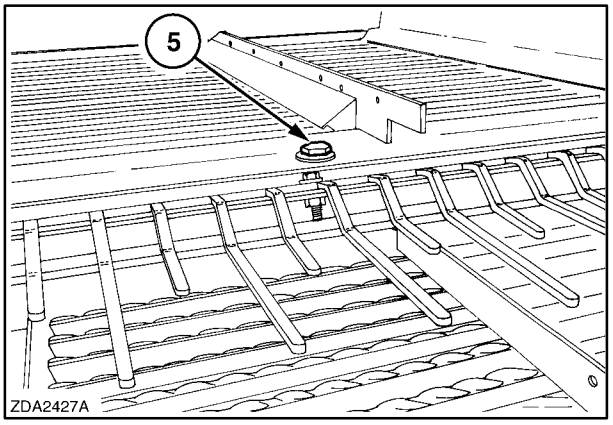


101



102

5. If ok, insert and tighten two bolts, 5, on both sides of the presieve and check again.



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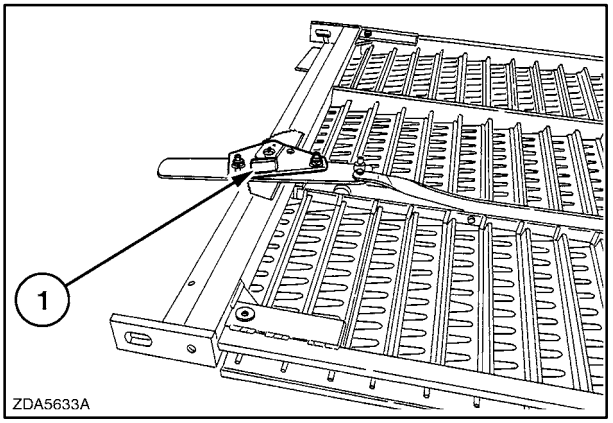
Lower and Upper Sieve

NOTE: *The lower and upper sieve consists of two sieve halves, and if the sieves are equipped with remote control it is not possible to exchange the left-hand with the right-hand side sieve half, because the left-hand side sieve is equipped with a welded support 1.*



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To install the sieves, proceed in reverse order.

Types of Sieves Available

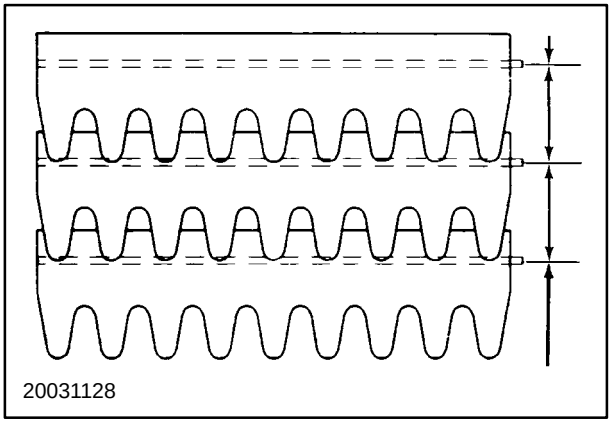
Sieves	Type	Crops	Opening
Presieve	1-5/8″	Cereals Corn/Maize	Adjustable
	1-1/8″	Cereals Corn/Maize	Adjustable
Upper sieve	1-1/8″	Cereals	Adjustable[1]
	1-5/8″	Corn/Beans/Rice	Adjustable[1]
	Corn slat 1-5/8″	Corn/Maize	Adjustable
	Petersen sieve 1-1/8″	Oil seed rape	Adjustable
Lower sieve	1-1/8″	Cereals	Adjustable[1]
	1-5/8″	Corn/Maize	Adjustable[1]
	Round hole sieve 2.5 mm diameter	alfalfa and grass seed	Fixed
	Round hole sieve 10 mm diameter	milo, small beans	Fixed
	Round hole sieve 16 mm diameter	Corn/Maize	Fixed
	Round hole sieve 18 mm diameter	Large Beans, Corn/Maize	Fixed

(1) mechanical or electrical (remote control) sieve adjustable.

Sieve Types

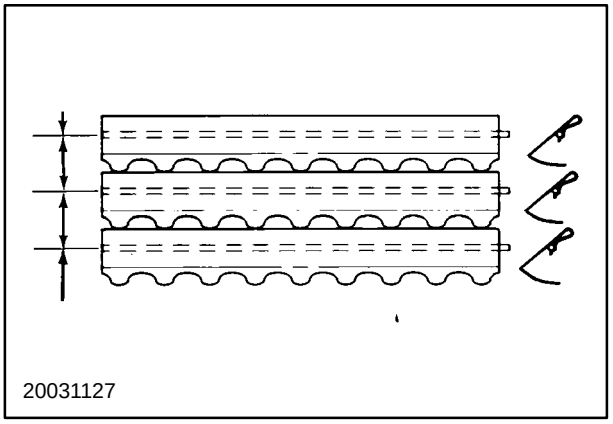
1-1/8″ CLOSZ SLAT – This sieve is recommended for small grains, rice, flax or small seed. The sieve opening can be adjusted for cleaning in low volume small crops and trashy conditions. Because of the smaller total opening, this sieve has a lower capacity than other sieves.

1-5/8″ CLOSZ SLAT – This sieve is recommended for rice and beans. Use of this sieve requires more opening and less air than the corn slat but the capacity is greater than the 1-1/8″ closz slat.



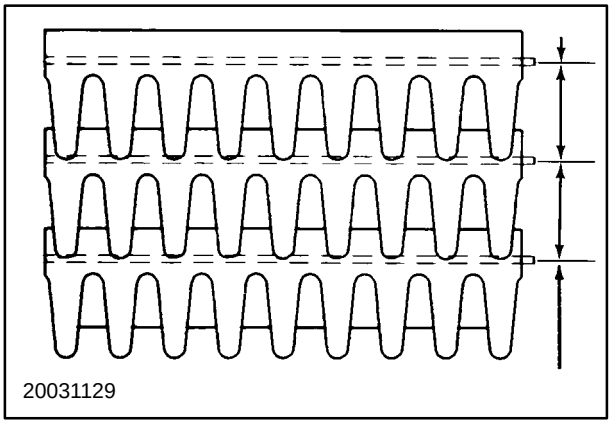
105

1-1/8″ PETERSON SLAT – This sieve is recommended for grasses and various small seeds. The sieve uses a fin and hole design for air draft control. The sieve helps to remove straw and stems.



106

1-5/8″ CORN SLAT – This sieve is recommended for corn and most other large seed crops. The sieve uses more air and has a greater opening, even when closed, than other sieves for increased capacity. Because of the increased opening, the sieve opening does not have to be adjusted as wide as on other sieves. Less plugging with cobs and trash will occur with this sieve. To clear the sieve, move the adjusting lever to the full open position, then back to the adjustment setting.

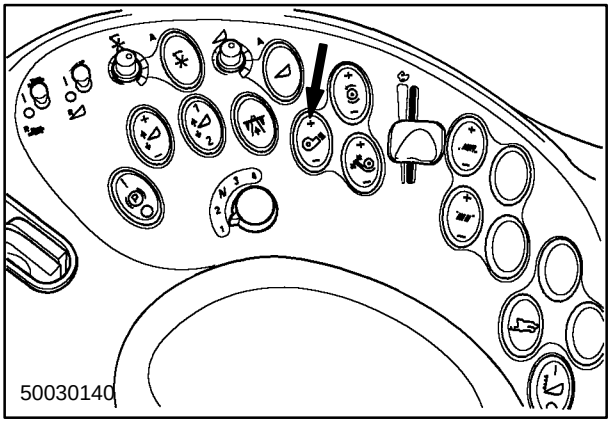


107

Cleaning fan

The cleaning fan speed can be adjusted electrically from the right hand console and can be read from the display monitor.

It's only possible to change the fan rpm when the threshing mechanism is engaged.



108

Adjust it to suit the nature of the crop, chaff load and moisture content. An insufficient air blast will reduce the "clean area" of the top sieve causing a dirty sample or grain loss (grain will shake over the end of the shaker shoe).

The best way to check whether the volume of air is satisfactory is to complete a "kill-stall", i.e. stopping the engine with the threshing mechanism engaged and checking the sieve coverage pattern.

If this method of checking is used:

- The two rakes must be clean while the sieves must be evenly loaded. Little or no grain should be found on the rear part of the upper sieve.
- If the whole sieve is clear of grain and chaff, the volume of air is too high. The grain will be blown out of the machine and clean grain will be transported over the lower sieve into the returns cross auger.
- If the upper sieve is full of grain, the volume of air is too low, so that the wind does not blow through the chaff. Therefore grain will be shaken off the sieve together with the chaff.

Sieve operation can also be checked by collecting material coming from the rear of the cleaning shoe and checking the sample for grain loss.

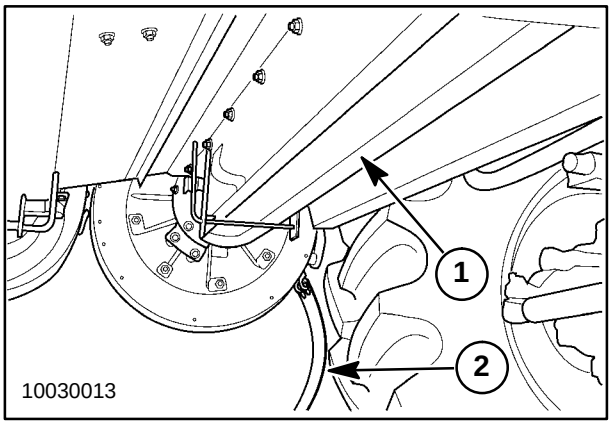
IMPORTANT: *Do not remove or modify the cleaning fan guards as changes may influence the airflow in an unfavorable way.*

RETURNS SYSTEM

The returns cross auger can be cleaned by removing cover, 1.

Should the impellor become blocked, they can be unblocked and cleaned through opening, 2.

For maximum efficiency it is important to keep the amount of material in the tri-sweep tailings processor to the absolute minimum.



109

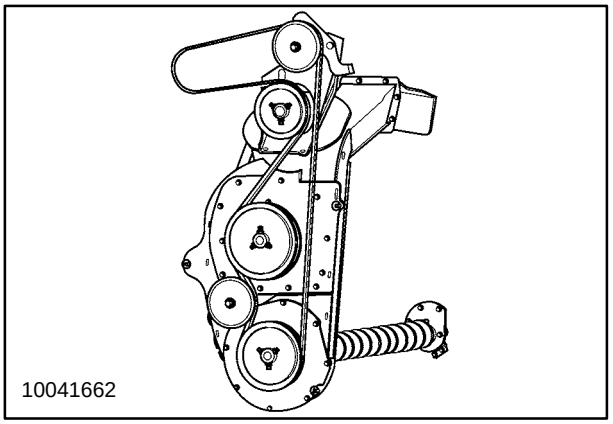
Excessive returns will:

1. Increase the risk of grain damage.
2. Produce grain loss through sieve overload.
3. Increase the risk of blocking the returns components.

The quantity of returns can be limited by:

1. Opening the lower sieve as wide as possible, consistent with producing a clean grain sample.
2. Not opening the presieve and the upper sieve too wide (this will stop excessive chaff from getting onto the bottom sieve)
3. Keeping the cleaning fan rpm high enough to blow the chaff out of the machine.
4. Avoiding excessive cleaning fan rpm, so that clean grain is not blown over the lower sieve into the returns cross auger.

The tri-sweep tailings processor consists of three impellors.



110

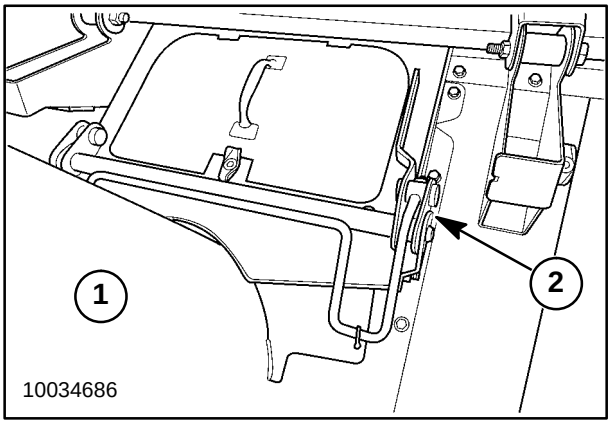
Slip clutch
The audible slip clutch on the chopper/beater shaft protects the returns drive line.

This slip clutch is factory-set and does not need any adjustment.

GRAIN STORAGE

Grain Tank Tube Positions

The bubble-up tube, 1, must be raised to the up position for field use and latched as shown, 2.

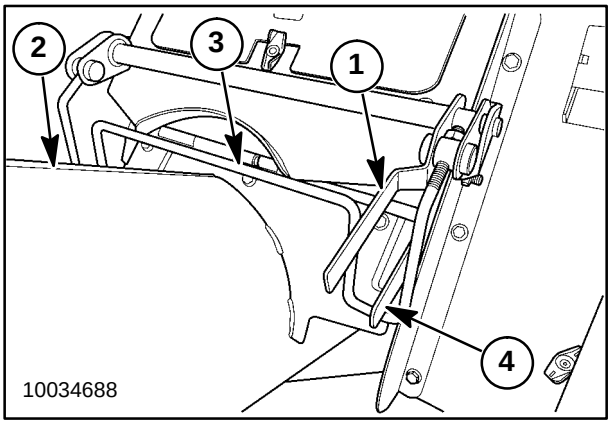


111

The bubble-up tube should be lowered to the down position for road use and clearance issues.

To lower tube unlatch handle, 1, as shown. Raise tube, 2, and move latch, 3, toward the center of the combine to disengage hooks, 4, allowing tube to be lowered.

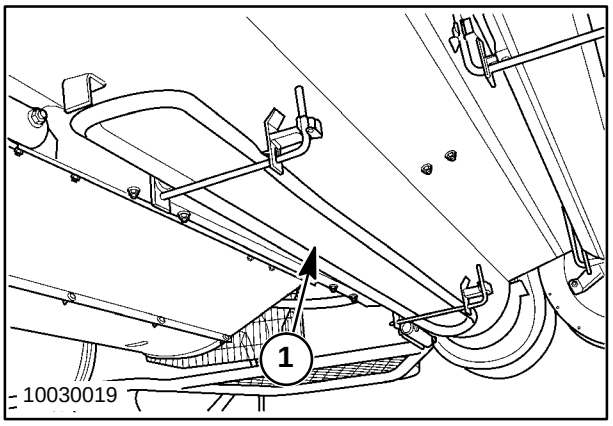
NOTE: *The tube is counter balanced with a spring to ease lifting of tube.*



112

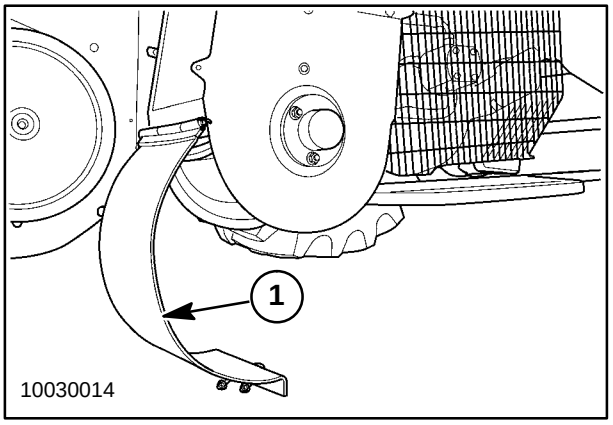
GRAIN TANK FILLING SYSTEM

- The clean grain auger can be cleaned by removing cover, 1.



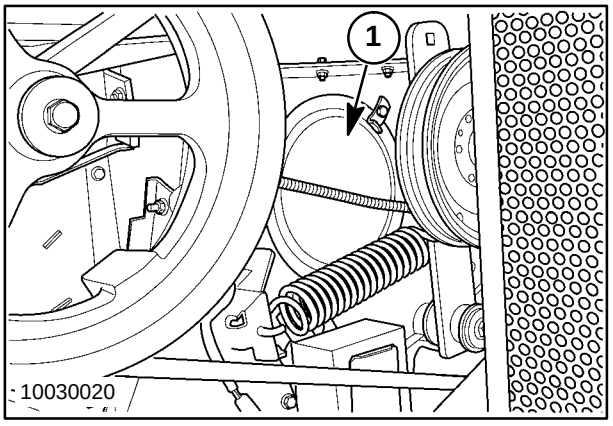
113

- The clean grain elevator bottom side can be cleaned by removing cover, 1.



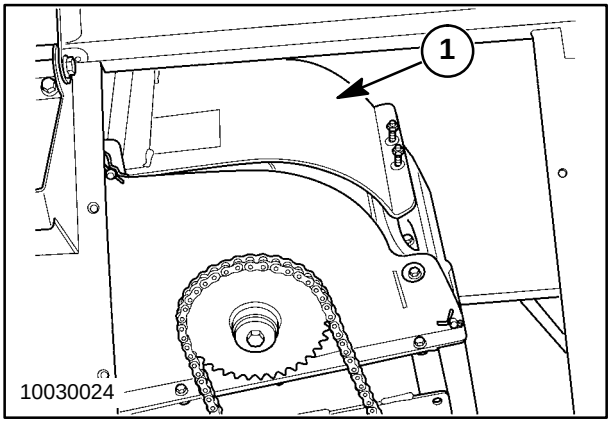
114

- Open the cover, 1, to check the clean grain auger.



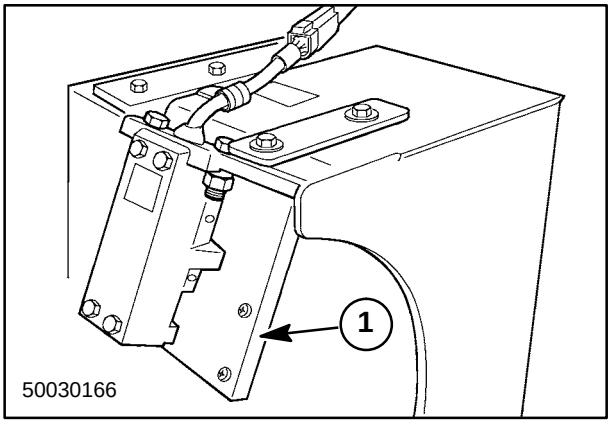
115

- The grain elevator top side can be cleaned by removing cover, 1, through the grain tank.



116

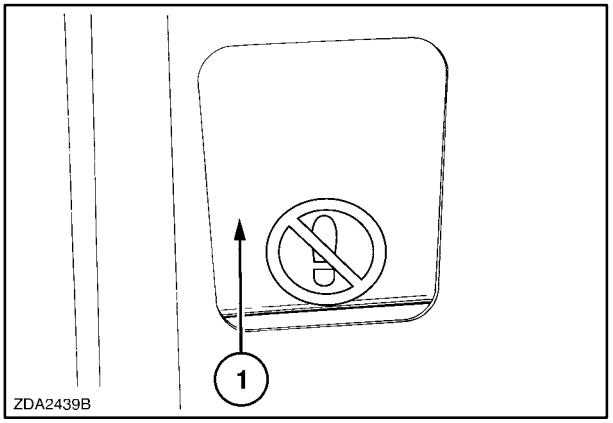
- In damp crop conditions (e.g. wet maize/corn, wet soybeans), it may be necessary to regularly clean the passage between the grain elevator and the grain tank bubble-up auger, including the grain flow sensor, 1.



117

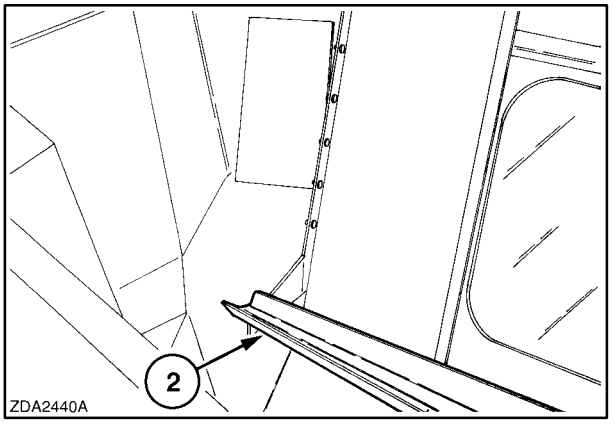
GRAIN SAMPLE ACCESS

The grain tank is provided with an inspection door, 1, where a grain sample can be taken when starting off in the field.



118

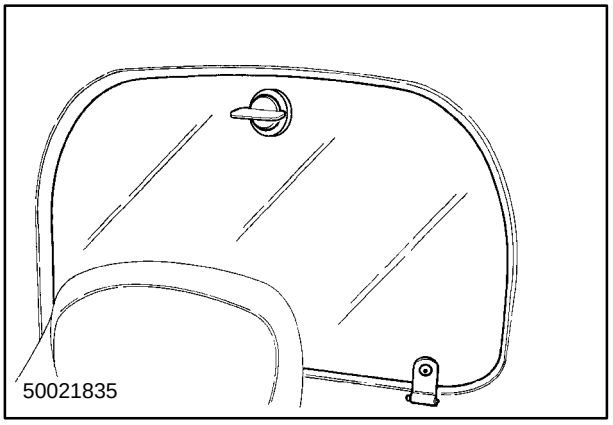
A channel section, 2, in the grain tank brings the grain to the inspection door.



119

GRAIN TANK WINDOW

Open the grain tank window in the cab to clean the area between the cab and the grain tank.



120

GRAIN TANK COVERS

The grain tank with covers can be opened electrically (with actuator) from the cab if the field mode is selected and if the threshing mechanism is not engaged.

At the same time, the bubble-up tube opens.

To prevent damage of the bubble-up tube it is not possible to engage the threshing mechanism during moving the grain tank covers.

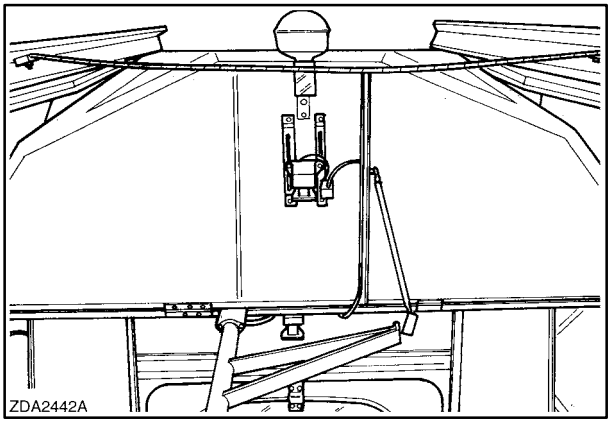
NOTE: *Do not close or open the grain tank extensions with a full grain tank.*

⚠ WARNING ⚠

Be careful: excessive height with open grain tank covers: 4.8 m (15.75 ft)

NOTE: *The only actions to stop moving the grain tank covers are:*

- Depress the emergency stop button.
- Turn the keyswitch off.
- If the covers motor (actuator) needs more than 18 Ampere to work.



121

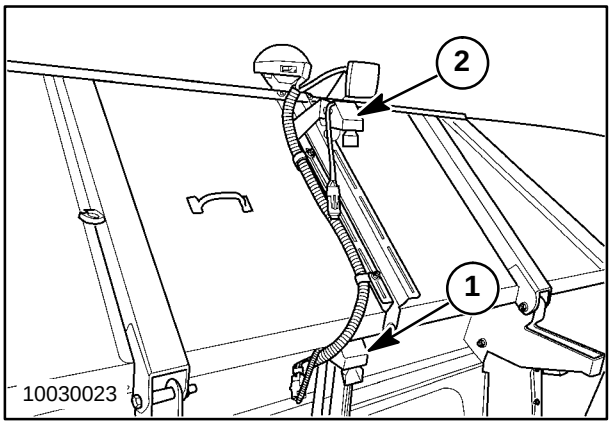
GRAIN TANK LEVEL SENSOR

There are two grain tank level sensors shown.

- Lower level sensor, 1, can be adjusted to indicate when grain tank is 50% full for up and back harvesting.

When the grain reaches this level sensor, the following can be observed:

- The grain tank level warning light will illuminate (SSM).
- The beacon lights will be switched on: (If threshing engaged)
  - Continuously, if the work lights are switched off.
  - For 10 seconds, if the work lights are switched on.



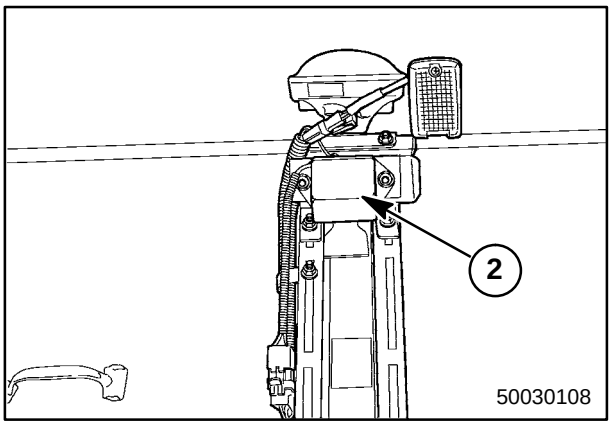
122

- Upper level sensor, 2:

Adjust this sensor, according to the condition of the crop.

When the grain reaches level sensor, 2:

- The grain tank level warning light will blink (SSM).
- A message of full grain tank appears on the monitor.



123

- An audible alarm sounds (only if thresher engaged).
- The beacon lights will be switched on: (If threshing engaged)
  - For 10 seconds, if the work lights are switched on.

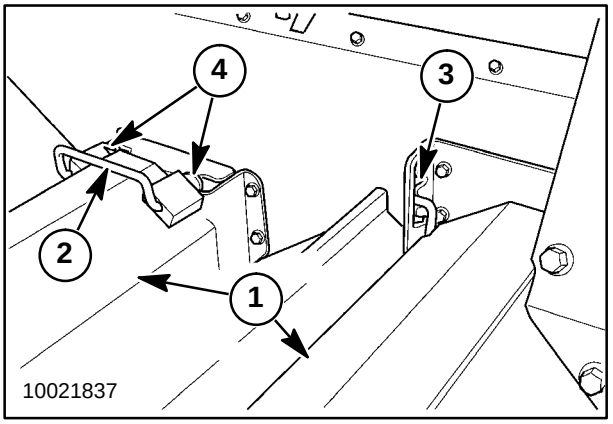
UNLOADING

GRAIN TANK CROSS AUGERS

Cover plates, 1, are fitted over both grain tank unloading augers. These covers can be adjusted to regulate the unloading rate according to the nature and moisture content of the grain being handled.

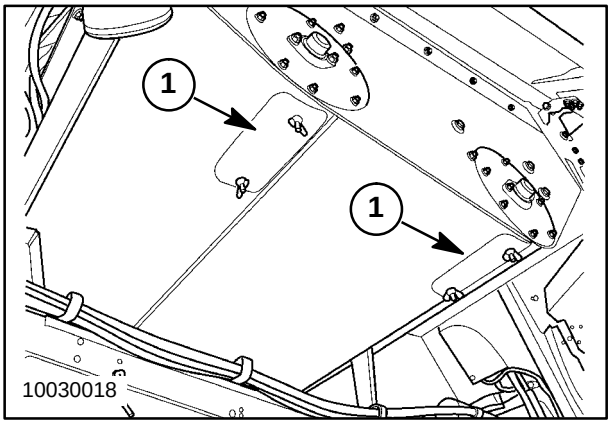
To adjust, pull handle, 2, toward the center of the grain tank and lift.

This will disengage the cover from the support, 4. Position the other end of the cover in the desired slot, 3. Re-engage handle, 2, in the desired support holes, 4.



124

To clean the grain tank open both unloading auger covers, 1, both left and right sides.

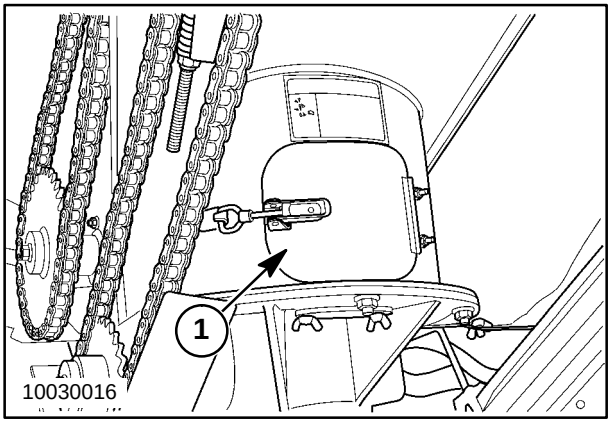


125

⚠ WARNING ⚠

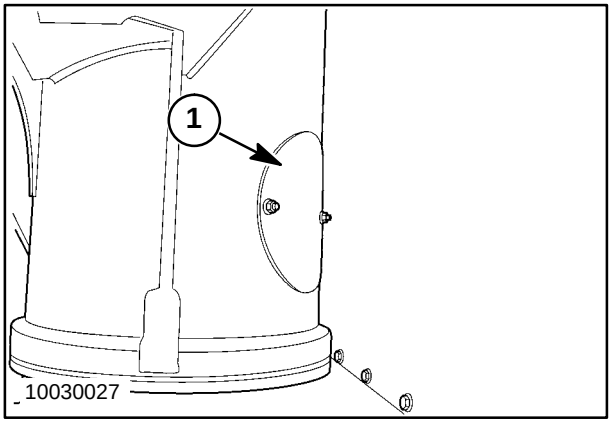
Always disengage the unloading auger drive, turn off the engine and remove the ignition key, before removing auger access cover.

To clean the vertical auger of the unloading tube open cover, 1.



126

To check or clean the vertical auger of the unloading tube open the inspection cover, 1.



127

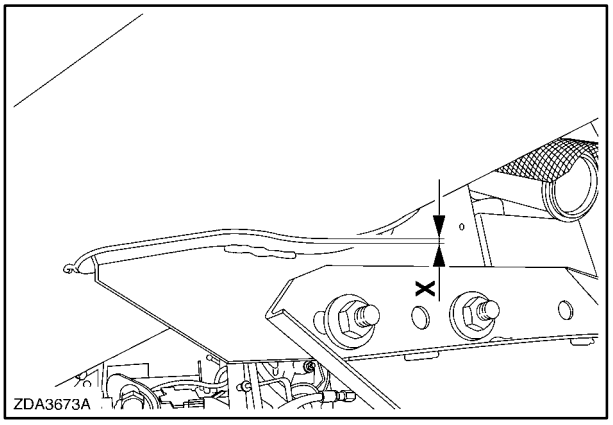
UNLOADING TUBE SWING

A warning light is provided in the cab (SSM) to warn the operator when the unloading tube is not in the fully closed position as this may be an operating hazard in fields with trees, high tension wire pylons, telephone poles, etc.

NOTE: *Wait 5 seconds to swing out the unloading tube, after starting up the engine.*

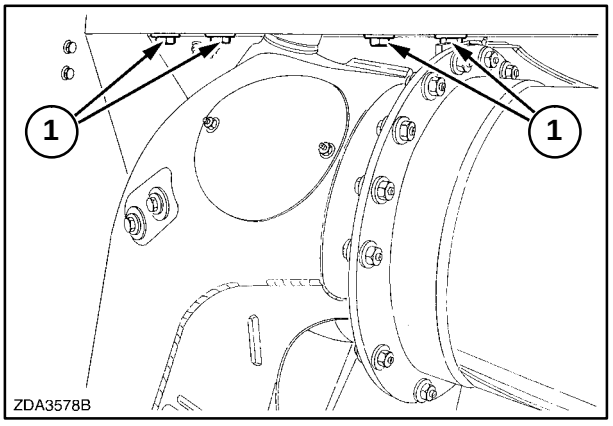
Unloading Tube Adjustment

1. If the unloading tube does not swing cleanly out of and/or in to the saddle, check the gap x between the unloading tube and the support saddle to be 0 – 1 mm (0 – 3/64″).



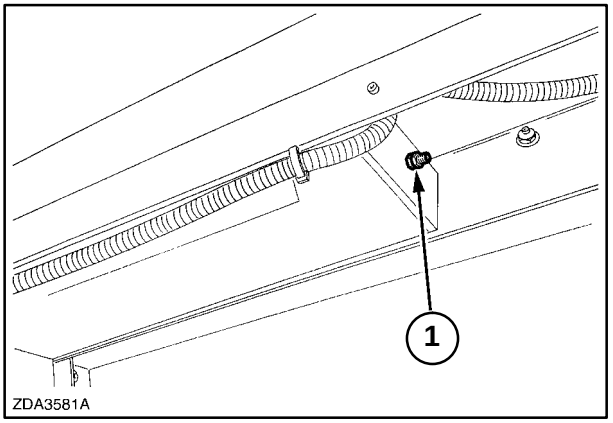
128

2. Loosen four bolts, 1.



129

3. Loosen jam nut, 1, and adjust distance x with the second nut (located inside the grain tank).
4. When distance x equals 0 – 1 mm (0 – 3/64″), tighten jam nut, 1, and four bolts, 1, Figure 129. Torque the four bolts to 290 – 375 N·m (215 – 275 ft. lbs.).



130

UNLOADING MECHANISM

To engage the unloading mechanism press the unload engagement button (first time) on the multi function handle.

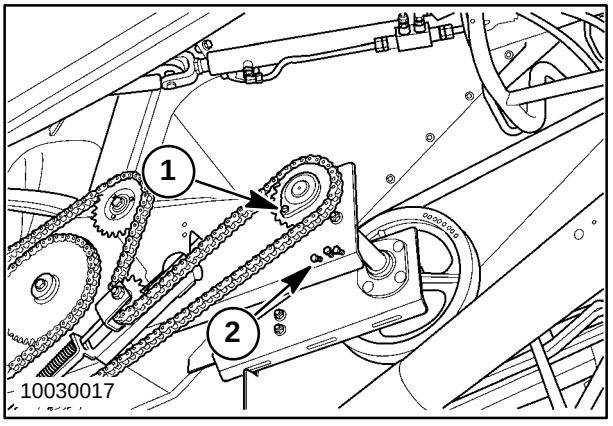
To disengage press again the unload button (second time) or:

- Depress the emergency stop button.
- Select the road mode with the road mode selector switch.

The unloading system drive is protected by a shearbolt, 1.

Spare shearbolts, 2, are located below the sprocket.

NOTE: *If repetitive failures occur, adjust cross auger covers down.*



131

RESIDUE HANDLING

GENERAL INFORMATION

The residue handling system can be configured in three different modes:

- Standard mode – spreads all residue (chaff and straw)
- Windrow straw and spread chaff
- Windrow all residue (chaff and straw)

The discharge beater or optional straw chopper operate whenever the separator clutch is engaged. The spreader also engages with the separator clutch when in the spreading position.

⚠ WARNING ⚠

Always stop the engine and wait until the chopper rotor and straw spreader have come to a complete standstill before working on the residue handling components or changing modes.

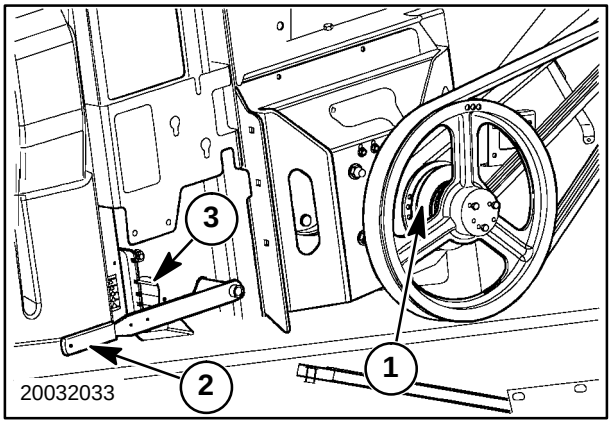
An optional integral straw chopper is available in either a coarse cut (single blade) or fine cut (double blade) configuration.

⚠ WARNING ⚠

Straw chopper speed change plates may be hot. Use insulated gloves or mittens when working with hot parts.

The straw chopper can be operated in two speeds. Squeeze the plates, 1, together to allow the collar to slide. Slide out for low speed and slide in for high speed. Make sure collar is locked in place (uses detent balls). The chopper must be placed in low speed in low speed in corn.

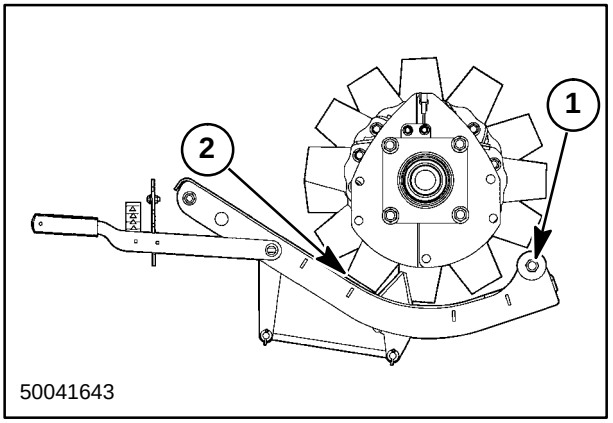
Stationary knives are available to further assist in the chopping process. The stationary knife adjust handle, 2, can be adjusted to vary the height of the stationary knives. With the handle down, the knives are fully engaged. With the handle up, the knives are removed. Make sure the handle is locked into one of the adjustment notches, 3. Adjust as needed to get desired cutting of the straw. The knives must be removed (handle up) in corn.



132

Use the concave adjusting bolts, 1, to set a clearance, 2, of 2 to 6mm between the concave and the tip of the rotor blade.

IMPORTANT: *After adjustment, verify that rotor rotates freely.*



133

⚠ WARNING ⚠

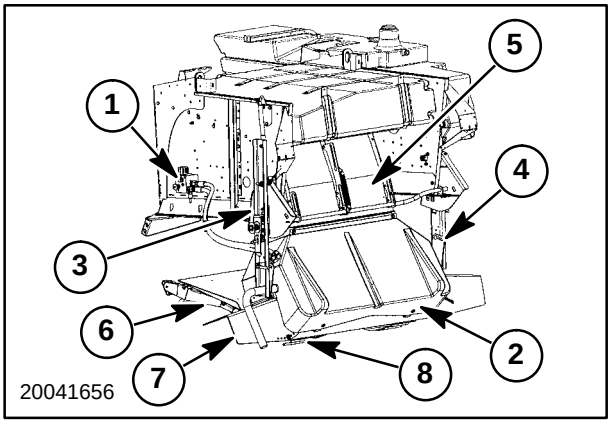
Keep yourself and other people away from the rear of the combine when the spreader is engaged and operating

The spreader speed valve, 1, should only be adjusted with the combine shut down. It should be set at it slowest speed for corn. For other crops, vary the speed to achieve the desired width and even distribution.

Standard mode – spreads all residue

As shown, the spreader is in the standard mode to spread all residue (chaff and straw). The spreader, 2, is down in the lower position, 3, the top of the spreader is tilted rearward in the slots, 4, the door, 5, is closed against the back of the spreader, and the chaff pan, 6, is raised.

The spread deflectors, 7, can be adjusted by removing the wing nuts and positioning in the correct hole for spread width desired. The fingers, 8, may also be bent to vary the spread distribution.

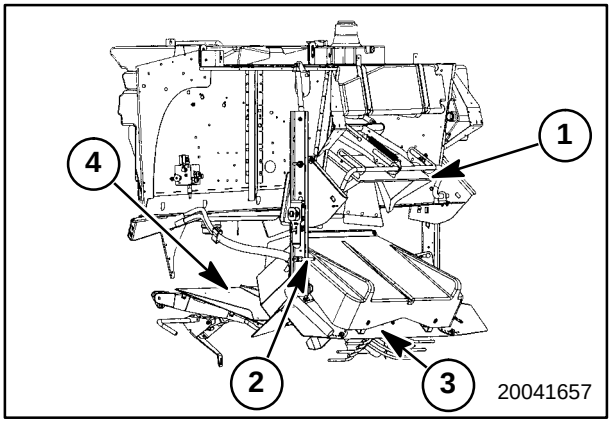


134

Windrow straw and spread chaff

Use this position to spread the chaff and windrow the straw.

1. Open the door, 1.
2. Loosen the handles 2, and tilt the spreader, 3, forward.
3. The chaff pan, 4, should remain in the raised position.

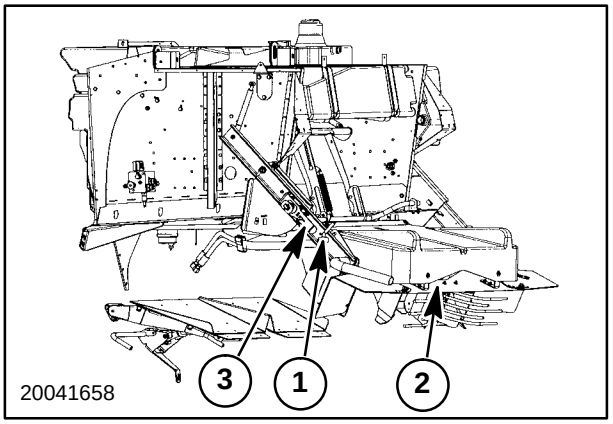


135

Windrow chaff and straw

Use this position to place both the straw and the chaff in windrows.

1. Loosen the handles, 1, and tilt the spreader, 2, rearward. Tighten handles.
2. Pull out on the lock pins handles, 3, on both sides, and rotate the spreader, 2, to the rearward position. Lock in place.



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AFS SETUP

GPS RECEIVER

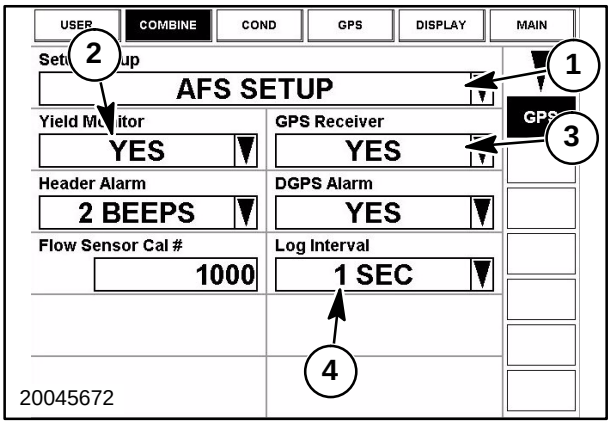
From the SETUP>COMBINE screen, press the selection list box until AFS SETUP, 1, is shown.

Press the Yield Monitor selection list, 2, to toggle between YES and NO.

The GPS selection allows the user to define whether or not the combine is equipped with a GPS/DGPS Receiver. Press the GPS Receiver selection list, 3, to toggle between YES and NO.

The Log Interval selection list, 4, will only be visible when the GPS Receiver selection is set to YES. Press the Log Interval selection list to toggle between 1, 2 or 3 seconds.

NOTE: *The recommended setting for GPS Logging Interval is 2 seconds.*



137

GPS SCREEN

Select the SETUP>GPS screen. The GPS selection allows the user to view and adjust the GPS signal information.

The following information is displayed on the home screen:

Differential signal type, 1

Signal Quality, 2

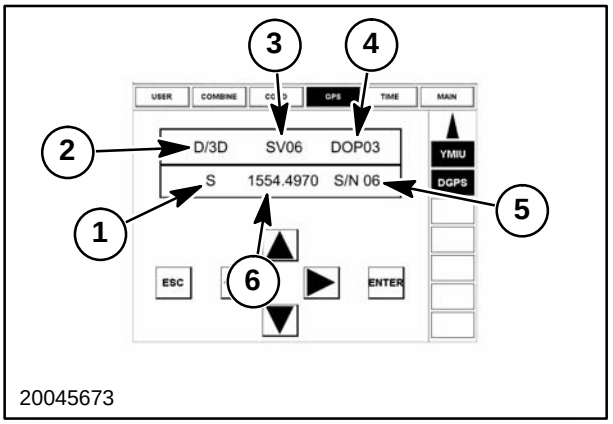
Number of GPS satellites, 3

Position quality, 4

Differential signal noise, 5

Differential signal frequency, 6

This display screen is a remote display for the AFS Receiver. Refer to the GPS Receiver User's Guide for information concerning navigation of menus and submenus as well as editing of values.

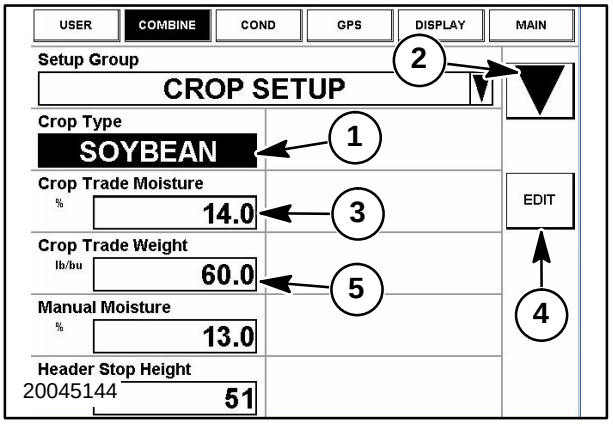


138

CROP SETUP

On the SETUP>COMBINE screen, press the Setup Group button until CROP SETUP is shown.

The main function of the Crop Setup screen is to provide the operator with the ability to adjust crop specific values. These values include crop trade moisture, and crop trade weight.



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Crop Type

Press the Crop Type selection box, 1, to highlight it; the Down Arrow Button, 2, will appear. Press the Down Arrow Button to activate the crop picklist screen. Press the desired crop type to be set up and press enter to return to the CROP setup screen.

Crop Trade Moisture

NOTE: *The Crop Trade Moisture must be set for each crop type being harvested or the default values will be used. Make sure the appropriate crop type is displayed before entering the information. This is a global setting for each crop type. Changing this value will affect all records from the current load and beyond, containing data with that crop type.*

Press the Crop Trade Moisture % selection box, 3, to highlight it; the Edit Button, 4, will appear. Press the Edit Button to activate the numeric keyboard. Enter the desired percent of crop trade moisture value and press enter to return to the CROP setup screen.

NOTE: *The desired percent of moisture value will typically be the trading value used by your local grain elevator. Settings can be made in the range of 8 to 20 percent.*

Crop Trade Weight

This is the value used in calculating the volume harvested.

If you wish to change the default crop trade weights, press the Crop Trade Weight selection box, 5, to activate the Edit Button. Press the Edit Button to bring up the numeric keyboard. Enter the desired crop trade weight value and press enter to return to the CROP setup screen.

NOTE: *The crop trade weight feature only applies to systems operating with non-metric (standard) units.*

NOTE: *Refer to the Apply Cal values section of this manual to apply settings to previously harvested data.*

Crop Trade Moisture and Crop Trade Weight Default Values

The default percent moisture values for all crops is 14%.

Crop Trade Weight Default Values (Standard Units Only)

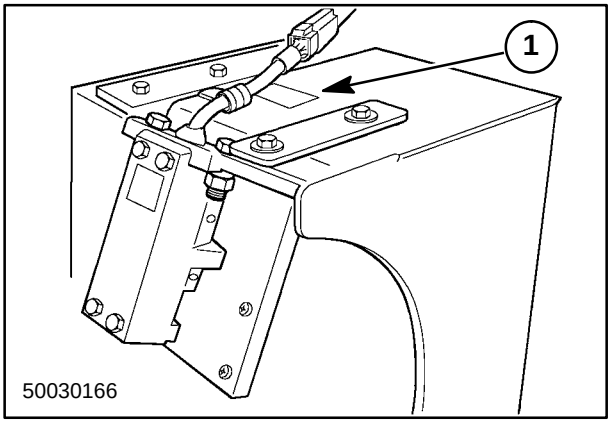
	lbs/bu	% m
Soybean	60	14
Corn	56	14
Wheat	60	14
Oats	32	14
Rye	56	14
Barley	48	14
Sorghum	56	14
Popcorn	100	14
Edible Bean	60	14
Corn2	56	14
Canola	60	14
Rice	45	14
Sunflower	100	14
Corn3	56	14
Corn4	56	14
Opt8	40	14

SENSOR CALIBRATION SCREEN

From the Main screen, press the “CAL” navigation button and then press the “COMBINE” navigation button.

Grain Sensor Calibration

In order for the system to obtain the initial level of harvest accuracy, the grain sensor calibration number must be entered. This number is unique to each grain flow sensor. This number is found on the identification plate of the grain flow sensor which is located on top of the clean grain elevator housing, 1.



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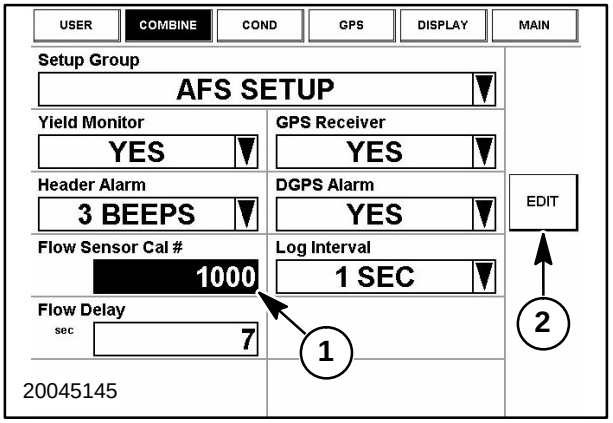
1. On the SETUP>COMBINE screen, press the Setup Group button until AFS SETUP is shown.
2. Press the Flow Sensor Cal # selection box, 1, to activate the Edit button, 2. Press the Edit button to reach the numeric keyboard screen. Enter the Grain Flow Sensor Calibration number.
3. Press enter to return to the AFS SETUP screen.

The valid range of entries is 200 to 2000.



141

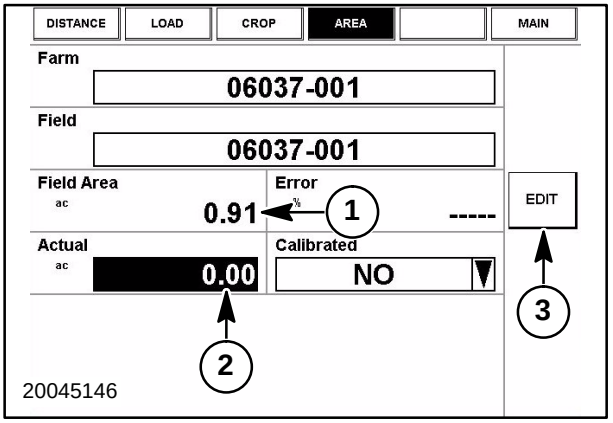
Area Calibration

Even when Distance, Header Type, and Header Stop Height are set properly, the monitor will count a few extra feet when leaving and entering the field. This is due to the distance it takes to raise the header when leaving the cut and the distance it takes to lower the header when entering the cut. The area calibration can be used to compensate for the characteristics of the operation per field.

1. Go the the CAL>AREA screen and select a field to be harvested that has a known area measurement. Return to the RUN screen and proceed to harvest the selected field.
2. When harvest has been completed in the selected field, return to the CAL>AREA screen. The monitor will register a field area value, 1, for the total field.
3. Press the Actual selection box, 2, to activate the Edit button, 3. Press the Edit button to reach the numeric keyboard screen. Enter the actual known area for the field and press Enter to return to the AREA screen. Area calibration is now complete.

NOTE: *If there is no value in the field area field, make sure the Area Count in the HARV* screen has HARVEST selected. HARVEST is the system default setting.*

NOTE: *The area calibration affects only the current field selected. It does not make changes to any existing data in other fields.*



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SYSTEM CALIBRATION

In order for the yield monitor system to be highly accurate, the system must learn the characteristics of the machine and crop. This is accomplished through the calibration process. Each sensor contributes by measuring crop information characteristics. This includes moisture and crop weight (flow sensor). Each of these inputs requires an independent calibration.

NOTE: *All calibration changes only affect the selected calibration loads and any new harvest data. To update the current load and any prior harvest data, refer to APPLY CAL VALUES section of this manual.*

NOTE: *Moisture must be calibrated prior to calibrating crop weight.*

CAL>CROP SCREEN

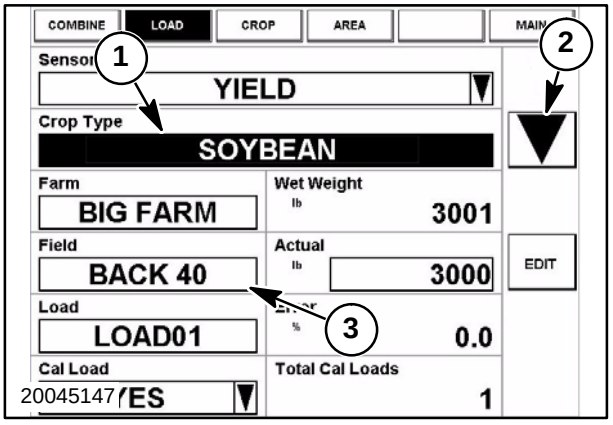
The Crop Calibration Screen allows the operator to perform a weight and moisture calibration for a crop. Specifically, the screen allows the operator to:

- select a crop to calibrate
- select a specific farm, field and load
- enter an actual weight/moisture for specific loads
- tag specific loads as “calibration loads”
- trigger the generation of calibration values for the selected crop based on its “calibration loads”

Crop Selection

To select the Calibration Crop Type, press the crop selector box, 1, to highlight it; the Down Arrow Button, 2, will appear. Press the Down Arrow Button to activate the crop picklist screen. Press the desired crop and press enter to return to the CAL>CROP screen.

On initial entry to the screen, the Crop Type is set to the crop type of the Active Load. The Crop Type is retained on screen exit and re-entry, but is not retained after powering down the system.



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Field Selection

The field selector is used to aid the operator in finding a particular load. To select the Calibration Field, press the field selector box, 3, to highlight it; the Down Arrow Button, 2, will appear. Press the Down Arrow Button to activate a pick list of the valid fields for the crop type, displaying the Field Name of each field in alphabetical order. The valid fields for the crop type have at least one load where Load Crop Type = Calibration Crop Type and Measured Weight > 0. Press the desired field and press enter to return to the CAL>CROP screen.

NOTE: *If at least one valid field does not exist for the Calibration Crop Type, the field selector displays “——”,.and may not be highlighted by the operator.*

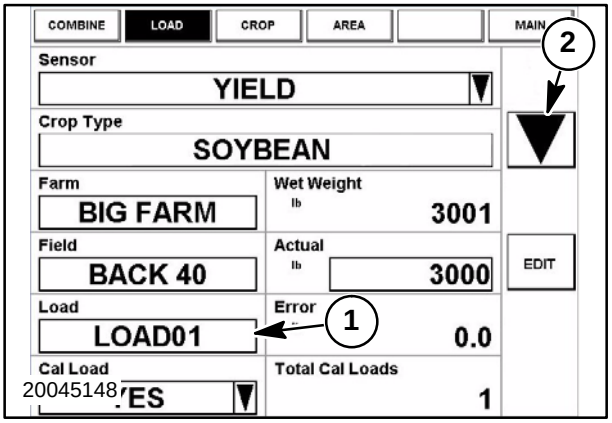
Whenever a new Calibration Crop Type is chosen (and on initial entry to the screen), the Field is set to the first valid field (alphabetically) for the crop (based on filter used for pick list screen described above). The Calibration Field is retained on screen exit and re-entry, but is not retained on power down.

Load Selection

To select the *Calibration Load*, press the load selector box, 1, to highlight it; the Down Arrow Button, 2, will appear. Press the Down Arrow Button to activate a pick list of the valid loads for the Calibration Field displaying the Load Name of each load in alphabetical order. The valid loads are all loads where Load Field = Calibration Field, *Load Crop Type* = *Calibration Crop Type*, and *Measured Weight* > 0.

If at least one valid load does not exist for the *Calibration Field*, the load selector displays "——", and may not be highlighted by the operator.

Whenever a new *Calibration Field* is chosen (and on initial entry to the screen), the *Calibration Load* is set to the first valid load (alphabetically) for the field (based on filter used for pick list screen described above). The *Calibration Load* is retained on screen exit and re-entry, but is not retained on power down.



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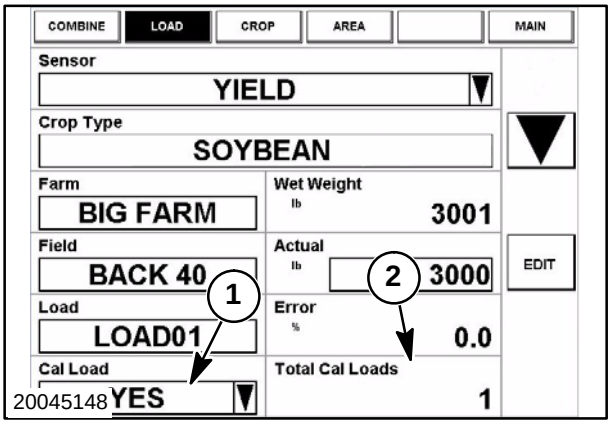
Calibration Load Tag

The operator can choose to use the Calibration Load in the crop calibration by "tagging" it. All loads where Load Tagged = YES for the Calibration Crop Type are factored into the crop calibration when it is performed. A list box with the values YES and NO are used to indicate whether the load is "tagged". The operator can toggle between YES and NO for a particular load by pressing the list box, 1. Up to 10 loads can be "tagged" for a particular crop.

The list box is not touchable if the load is not tagged and 10 loads are already tagged, or if the Actual Weight for the load is zero.



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Calibration Loads

The total calibration loads, 2, indicates the total number of "tagged" loads for the Calibration Crop Type. Valid values are 0 to 10.

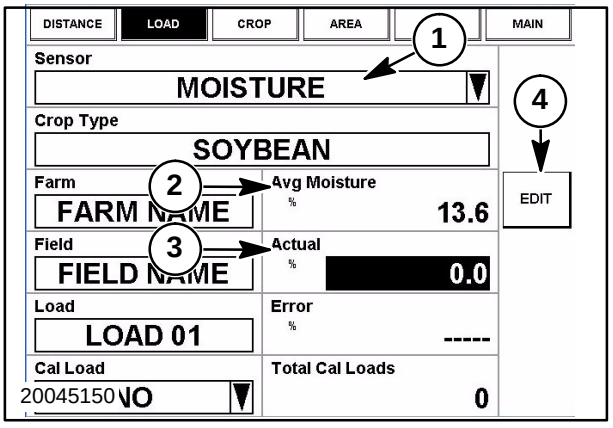
Moisture Calibration

NOTE: *Moisture Calibration must be done for each crop type harvested.*

NOTE: *Moisture measurements involve two different modes: Automatic and Manual. When the monitor is powered up, it defaults to the Automatic mode. For some crop conditions the automatic moisture readings may be excessively high due to buildup on the moisture sensor. Changing to Manual mode is accomplished via the HARV screens.*

Harvest a representative sample of the crop type. Using a reference moisture tester, measure the actual percent of moisture from several samples of the crop just harvested. Obtain the average percent of moisture from these samples. An average of five readings is recommended.

On the CAL>LOAD screen, select moisture in the sensor list box, 1.



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Average Load Moisture

The Average Load Moisture, 2, is displayed for the Calibration Load. Values below 0 or above 999999 are displayed as "———".

Actual Load Moisture

The Actual Load Moisture, 3, is displayed for the Calibration Load, and may be edited by the operator. Values below 0 or above 999999 are displayed as "———".

To edit the value, press the actual moisture selector box, 3, to highlight it; the Edit Button, 4, will appear. Press the Edit Button to activate the numeric keyboard. Enter the actual load weight and press enter to return to the CAL>LOAD screen.

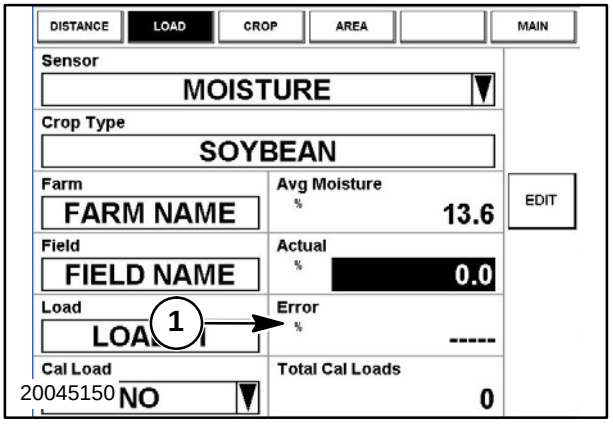
Load Error

The Load Error, 1, is displayed for the Calibration Load. The value is displayed using an XXX.X format, in units of %.

The *Load Error* is derived from the Average moisture and Actual Moisture of the Calibration Load as follows:

Load Error (%) = [(Average Moisture – Actual Moisture) / (Actual Moisture)] * 100

The value is updated any time Average Moisture or Actual Moisture for the Calibration Load changes, or if a new *Calibration Load* is selected.



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Moisture Offset Values Table

Corn	+3.5
Wheat	+2.0
Soybeans	+4.7

NOTE: *Limits can only be adjusted +8 or -5% from the measured value. If the "Actual" is outside of this range, it will be necessary to repeat the calibration process.*

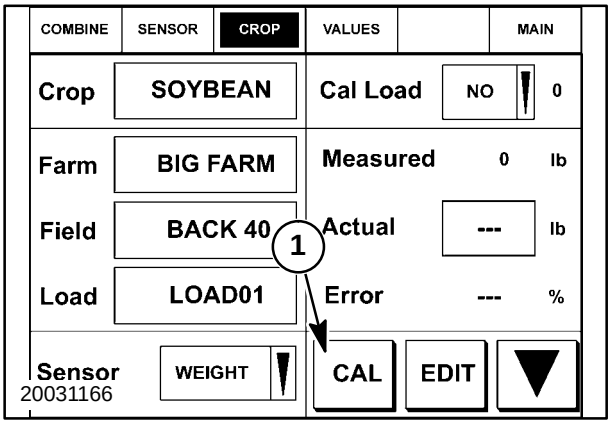
NOTE: *If the Moisture% is more than 8% from the expected, it will be necessary to go to the Manual Mode in the HARV screen and enter the actual percent of moisture.*

NOTE: *Moisture Calibration MUST be performed for each crop type being harvested. A temperature calibration is not required.*

Perform Crop Calibration Button

The operator triggers a calibration of Calibration Crop Type by pressing the "cal" button, 1. When pressed, a Crop Calibration Warning is popped-up, prompting the operator on whether or not to perform the calibration. If the operator selects YES, the crop calibration procedure is performed for the crop. If the operator selects NO, the operation is cancelled.

If at least one load has not been "tagged" for calibration for the crop, the calibration button is not available.



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Crop Calibration Procedure

The calibration procedure is broken down into two steps – fast calibration and full calibration. The total number of loads decides whether a fast or full calibration is performed. If the number of calibration loads is less than 4 then a fast calibration is done while a full calibration is carried out when the total number of loads is between 4 and 10.

Fast Calibration Routine

This process resets the cal numbers to the default values and then scales these numbers. A linear calibration curve is obtained as a result.

Crop Weight Calibration (Flow Sensor)

A crop weight calibration needs to be performed in order for the machine to accurately learn the relationship between crop hitting the flow sensor and converting that information into crop weight. This is accomplished by harvesting several samples and then physically weighing the samples (at a grain elevator or with a grain cart with scales) to get the actual weight for each sample. The actual weights are then entered into the appropriate load and the system adjusts to the correct weight. These are referred to as calibration loads. When correctly performed, the system is capable of accuracy levels between 1 to 3 percent. The following is the recommended process for obtaining calibration loads and performing the weight calibration:

- Moisture sensor calibration is performed before harvesting the calibration loads.
- Start a new load to ensure there is currently no harvest data in the load (HARV*).
- Harvest the calibration loads. One is the minimum, four is recommended, and ten is the maximum number of loads that can be used. If only one load is to be used, ensure that the sample is collected at what is expected to be the "normal" crop flow rate (bu/hr). When multiple loads are used, each load must be harvested at a different flow rate ranging from the maximum rate expected down to 30 percent of maximum. Try to maintain the target flow rate while harvesting each load. Use the "FLOW–D" value as a guide for obtaining the calibration loads. Either vary machine ground speed, or reduced swath width in order to vary the harvest rate.
- Ensure the vehicle to be used to haul or measure the loads is empty at the start of each load, prior to unloading into the vehicle.
- Ensure a new load is immediately selected on the display after unloading into the weigh vehicle, prior to collecting any additional harvest information.
- A calibration load does not have to be a single tank, wagon or truck load. It can be part of, or several of, any of these.
- Calibration load should be large enough to obtain accurate weight readings by the scale system being used. The minimum sample size should be 1359 kg (3000 lbs.) and the recommended sample size is 4536 kg (10,000 lbs.).
- The key is to have all the calibration loads be equal size ± 5 %.
- Harvest calibration loads in a condition that is consistent with field operation. Try to avoid using headlands, or areas which have a lot of stop and go operation, as calibration loads.
- Enter the actual weight (obtained by weighing the load) in the monitor for the correct corresponding load. (CAL>LOAD — YIELD).
- Select loads to be used for calibration that have an initial error of less than ten percent. If collected loads are slightly higher but are consistent or grouped, the data can still be used.
- Select loads that have % errors that appear to be grouped. Avoid outlying loads having % higher or lower than the majority of the other loads.

  Example 1: Four loads were collected. Error % was –2.3, 2.5, 3.8, 9.7. Avoid using the 9.7% value or rerun that load for data verification.

  Example 2: Four loads were collected. Error% was 8.5, 9.7, 11.2, 10.3. All data can be used as the values are tightly grouped.

NOTE: *Additional calibration loads can be added during the harvest season. This will allow the system to learn if crop condition changes.*

Measured Load Weight

The Measured Load Weight, 1, is displayed for the Calibration Load. Values below 0 or above 999999 are displayed as "———".

Actual Load Weight

The Actual Load Weight, 2, is displayed for the Calibration Load, and may be edited by the operator. Values below 0 or above 999999 are displayed as "———".

To edit the value, press the actual weight selector box, 2, to highlight it; the Edit Button, 3, will appear. Press the Edit Button to activate the numeric keyboard. Enter the actual load weight and press enter to return to the CAL>LOAD screen.

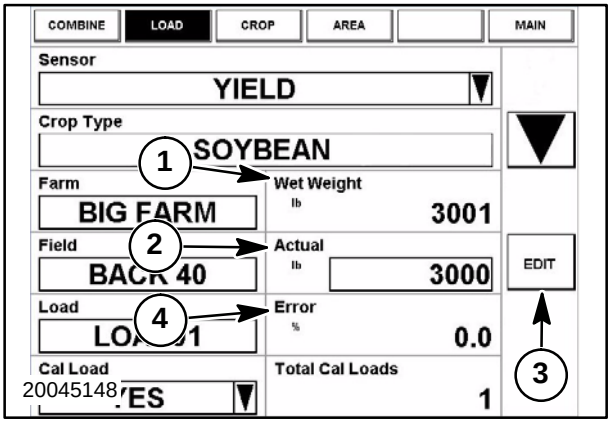
Load Error

The Load Error, 4, is displayed for the Calibration Load. The value is displayed using an XXX.X format, in units of %. If Actual Weight = 0, the value will be displayed as "———".

The *Load Error* is derived from the Measured Weight and Actual Weight of the Calibration Load as follows:

Load Error (%) = [(Measured Weight – Actual Weight) / (Actual Weight)] * 100

The value is updated any time Measured Weight or Actual Weight for the Calibration Load changes, or if a new *Calibration Load* is selected.



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Troubleshooting High Calibration Errors

Any load that has a % Error above the recommended guidelines must be examined.

- Display the load and verify that the crop type is correct.
- Check the moisture reading and determine if it is reasonable for the crop type and field.
- Check the yield measurements and determine if the values are in the expected range.
- Check the actual weight for the load and make sure it is correct.
- Check that harvest data was not added to the load after the initial sample was unloaded into a weight vehicle.
- Check that the acres for the load correspond to the weight that was weighed.
- Determine if system weight or system yield (volume) is the issue.

If any errors are found, correct the errors and repeat the calibration process.

If no errors are found, eliminate the load with the highest error from the calibration by using the following procedure:

1. Display the calibration load that has the highest% error above 10%.
2. Press the Cal Load selection list box until “NO” is displayed. This will eliminate the load from the calibration.
3. Press the “CAL” button to run the calibration.

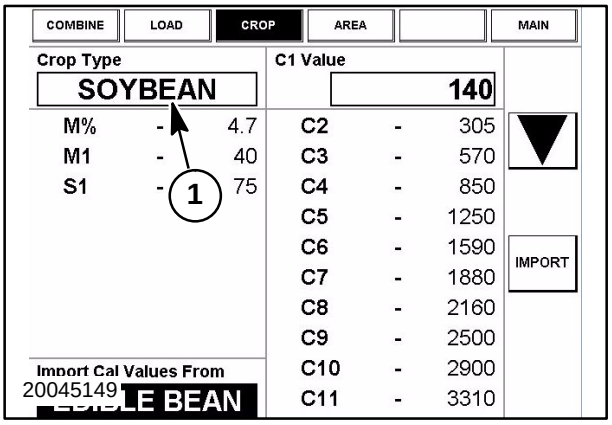
If your maximum error is still not less than ± 10%, repeat the above steps with the load with the next highest % error.

VALUES CALIBRATION SCREEN

From the ***Main*** screen, press the “CAL” navigation button and then press the “CROP” navigation button.

View Crop Calibration Numbers

Calibration values are required to calculate yield values for each crop type. To select the crop, press the crop selection box, 1, to display the crop pick list screen. Press the desired crop and press enter to return to the CAL>CROP screen. These calibration numbers determine the actual data that the monitor calculates from the data it records during harvest.



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The calibration numbers can be viewed for the following:

C1 – Flow sensor sensitivity (Editable)

C2 – C11– Constants used for weight determination (calculated)

M1 – Moisture sensor constant (fixed)

S1 – Moisture sensor sensitivity (fixed)

M% – Moisture sensor offset (calculated) (range –5 to +8%)

The main purpose of displaying the calibration information is for troubleshooting the calibration process. If the calibration process was performed correctly, the numbers should be close to the values shown in the calibration chart.

The C1 value is the only editable number on this screen. This number controls the sensitivity of the flow sensor. For most applications this number should not be changed from the default value of 110. The exception would be for harvesting low flow crops, i.e. grass, alfalfa, etc.

In these conditions, it may be necessary to increase the sensitivity. Lowering the number increases the sensitivity. Increasing the number lowers the sensitivity.

Care must be taken when adjusting this number that the sensor is not measuring machine vibration instead of crop impact. If this number must be changed, follow these recommendations:

- Edit the C1 number to a lower number (recommended increments of 10. example – set to 140).
- Go to the SETUP > USER–HARV1 screen and select FLOW–A–D as the item to view. Then return to HARV > HARV1.
- Engage the machine, both separator and header, lower the head and drive the machine to simulate machine operation. DO NOT HARVEST CROP.
- With no crop flow into the machine, check the FLOW–A–D value. If no value is present, continue to lower the C1 number until a rate is detected. This is the point at which the sensor is measuring machine vibration.
- Increase the C1 value until no flow rate is detected. This will be the point in which the flow sensor is the most sensitive. (Typically 110)
- Delete the data in the current load to remove the false information.

Calibration Chart

	Peas Soybeans and Edibl. Beans	Corn Corn 2 Corn 3 Corn 4	Triticale Wheat Popcorn and OpGrain	All Other Grains
C1	140	140	140	140
C2	305	550	305	305
C3	570	1100	570	570
C4	850	1700	850	850
C5	1250	2250	1250	1250
C6	1590	3050	1590	1590
C7	1880	3700	1880	1880
C8	2160	4400	2160	2160
C9	2500	5200	2500	2500
C10	2900	6000	2900	2900
C11	3310	6700	3310	3310
S1	75	50	75	75
M1	400	650	705	705
% Off	+4.7	+3.5	+2.0	+2.0

IMPORTANT: *The C2 through C11 values will be changed automatically by the monitor after grain weight calibrations have been done.*

Import Calibration Numbers

This feature allows you to import calibration data from one crop to another within similar crop type groups, thus reducing or eliminating start–up calibration time. An example of this would be starting your harvest season in wheat, following all of the calibration steps as laid out in the preceding steps, then switching to oats and barley. You would only need to follow the calibration process for wheat. For oats and barley, you could simply copy the calibration data from wheat to the other two grains, saving valuable time.

Grain types fall into three groups, depending on the M1 value assigned to them, as shown on the Calibration Chart:

Bean Grain Types — with M1 value of 400

Corn Grain Types — with M1 value of 650

Wheat and Other Small Grain Types — with M1 value of 705

The monitor will not allow the selection of a grain type that does not have a similar M1 value when copying calibration values.

Additional calibrations may be added for a grain at a later time to improve the accuracy of the yield monitor system.

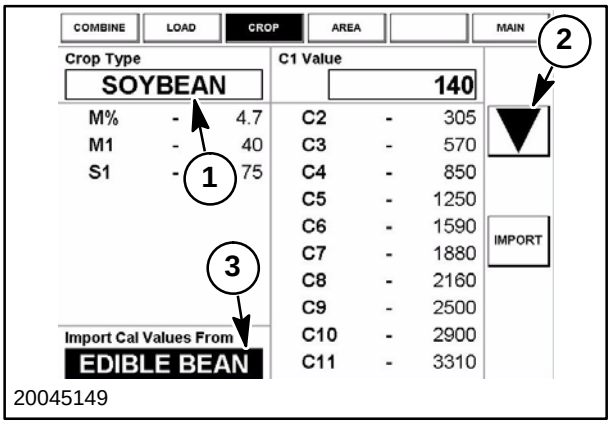
1. Press the Crop Type selection box, 1, and then press the Down arrow, 2, to reach the Crop selection screen. Press the desired crop to copy the calibration numbers to and press enter.
2. Press the Import Cal Values From selection box, 1, and then press the Down arrow, 2, to reach the Crop selection screen. Press the desired crop to copy the calibration numbers from and press enter.

NOTE: *Only grain types with similar .M1. values will be displayed on the crop selection screen.*

3. Press the IMPORT button, 4.
4. The message IMPORT CALIBRATION NUMBERS will appear. Press YES to continue or NO to abort. Calibration is now complete.

NOTE: *The import function can also be used in the event the default values need to be restored to a calibrated crop. Select an uncalibrated crop of similar type as the crop to be reset. Import the calibration information to the crop. The default C2 – C11 numbers will be restored.*

NOTE: *Calibration values get applied to the current point in time. To apply the calibration data, refer to the APPLY CAL VALUES Section of this manual.*



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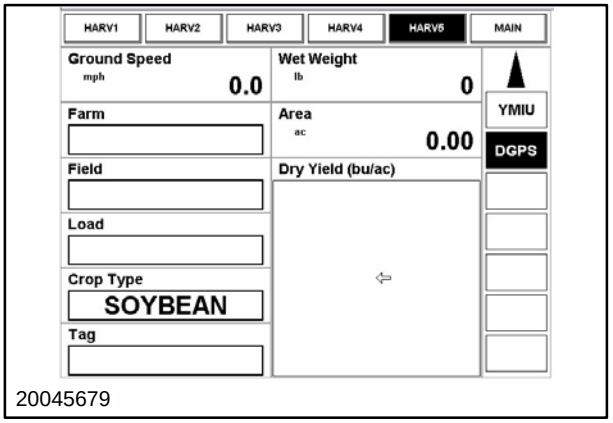
HARV>HARV* SCREEN

The HARV>HARV* Screen is used by the operator to select the active farm, field and load (harvesting data will be recorded against the active load). The screen is made up of these specific selector windows:



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Farm — user assigned identification for the farm being harvested. Limit of 12 characters. Use this window to select the active farm, create a new farm, or change the name of a farm.

Field — user assigned identification for the field being harvested. Limit of 12 characters. Use this window to select the active field, create a new field, or change the name of a field.

Load — user assigned identification for a sub identifier of a field. Limit of 12 characters. Use this window to select the active load, create a new load, or change the name of a load.

Crop — 16 available, non–editable crop types. Use this window to select a crop type for the active load.

Tag — user assigned description for attaching an additional means of identification to any load being harvested. Limit of 12 characters. Use this window to select a tag for the active load, create a new tag, or change the name of a tag.

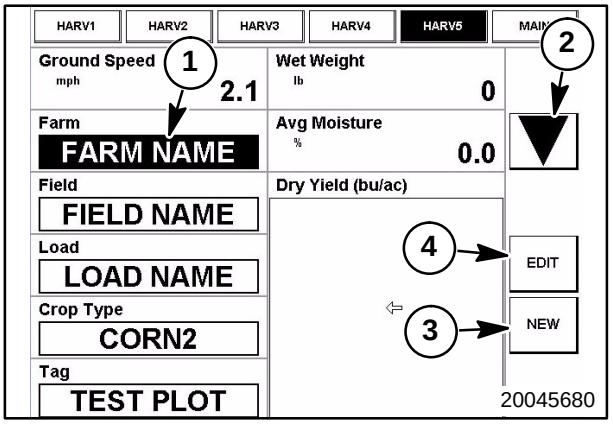
Creating and Naming Farms and Fields

Farm names and field names can be created before harvest. In order to best organize your data, it is recommended that you name your farms and fields prior to harvest and use a consistent naming convention. A maximum of 12 characters are allowed.

Naming Your Farms, Fields and Loads

Press and blacken the Farm selection box, 1. A Down Arrow, 2, New, 3, and Edit button, 4, will appear on the right side of the screen. Press the New button. By default, the farm will automatically be named. The name will look like: 06FYQ — 007 with the digits and characters before the dash being the combine ID and the digits and characters being a sequence number.

Press the edit button to change the default name. Type in a desired name between 1 to 12 characters and press enter.



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NOTE: *The system will allow a maximum number for the following:*

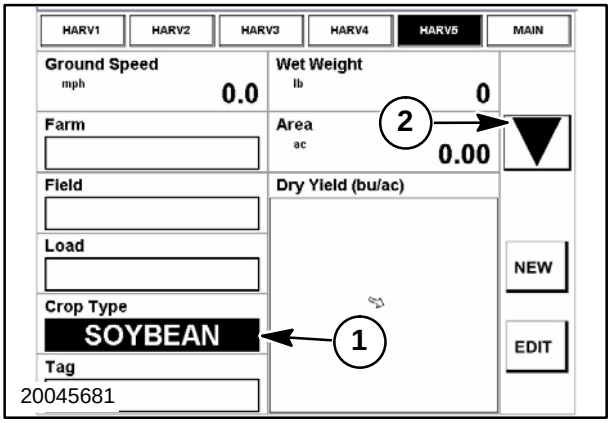
Farms – 50
Fields – 350
Loads – 1200

Select Your Crop

Press the Crop Type selection box, 1, to blacken it. A Down Arrow button, 2, will appear on the right side of the screen. Press the Down Arrow which will bring you to the Crop picklist screen.

Press and blacken the desired crop and then press Enter. This will assign the chosen crop to the selected field/ load.

NOTE: *Crop Type is linked at a load level. Multiple crop types can be harvested to the same field name by creating new loads and selecting the proper crop type.*



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Creating and Naming Additional Farms, Fields or Loads

For any additional farms, fields or loads that you want to create, press and blacken the required selection box and then press the New button. A new field will be created with a monitor– assigned name. Press the Edit button which will bring up the keyboard screens. Type in a desired name between 1 to 12 characters and press enter.

NOTE: *Creation of a new Farm will require the creation of a new Field. Creation of a new Field will require the creation of a new load. Failure to have a load created will cause the "LOAD" warning to flash.*

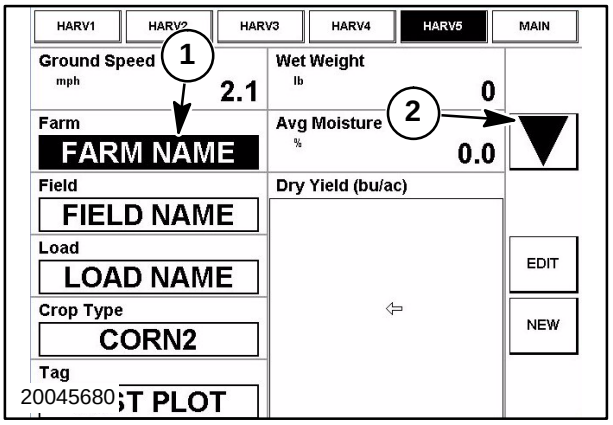
Make sure the correct Crop Type is selected for each load created. Continue this process until all farms, fields, and loads have been named. Duplicate names cannot be entered. Each time a new name is created, the auto naming counter will l advance showing the total number of names that have been created for the given selection. This internal counter can not be edited or reset.

NOTE: *If the farms, and fields were created and saved to the PC card using the desktop software, make sure to create associated loads and assign the appropriate crop type. Loads can only be created using the Universal Display.*

Changing Between Farms and Fields

When you need to change to a farm or field that is not currently displayed, press and blacken the desired selection box, 1. A Down Arrow, New and Edit button will appear on the right side of the screen. Press the Down Arrow button, 2 which will take you to the Farm or Field Name Picklist screen.

The Farm or Field Name Picklist screen shows all assigned names currently entered in the monitor in alphabetical order. Press and blacken the desired field and press enter. This will return you to the FIELD screen with the chosen name shown.



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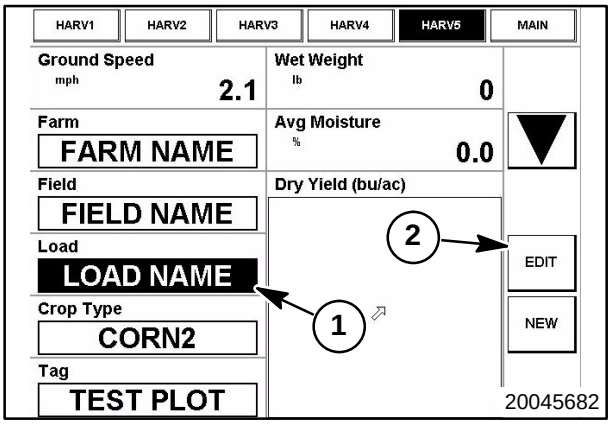
Naming Loads

Loads are a means of creating specific data sets within an associated farm and field. Naming these loads may be helpful if you are harvesting a series of test plots and choose to name each load as a separate hybrid. Make sure the correct Farm and Field is displayed before you start.

Press and blacken the Load selection box, 1. A Down Arrow, New and Edit button will appear on the right side of the screen. Press the Edit button, 2, to take you to the keyboard screens.

By default, the loads are automatically named by the display when created. Type in a load name (12 or fewer characters) and press enter.



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Creating and Naming Additional Loads

To create additional load names for the selected field, press and blacken the Load selection box. Press the New button to create a new load and then press the Edit button to take you to the keyboard screens to name that load.

Continue this process until all loads have been entered for all required farms and fields. Duplicate load names cannot be entered in the same field.

NOTE: *Crop Type is linked at a load level. Multiple crop types can be harvested to the same field name by creating new loads and selecting the proper crop type. This is the recommended method for harvesting fields with multiple crop types.*

NOTE: *The Farm, Field and Load that is displayed on the Field screen will be the location that harvest data information will be recorded to.*

NOTE: *Once harvest data has been recorded to a specific field/ load, the crop type cannot be edited. Field / load names can be edited at any time.*

Changing Between Loads

The process to change between loads is the same as changing between fields. When you need to change to a load that is not currently being displayed, press and blacken the LOAD selection box. A Down Arrow, New and Edit button will appear on the right side of the screen. Press the Down Arrow button which will take you to the Load Name Picklist screen.

The Load Name Picklist screen shows all assigned names currently entered in the monitor. Press and blacken the desired load and press enter. This will return you to the HARV screen with the chosen load and field shown.

Loads with names that appear as Italics cannot be selected. These loads have one of the following characteristics which will prevent additional harvest information from being added:

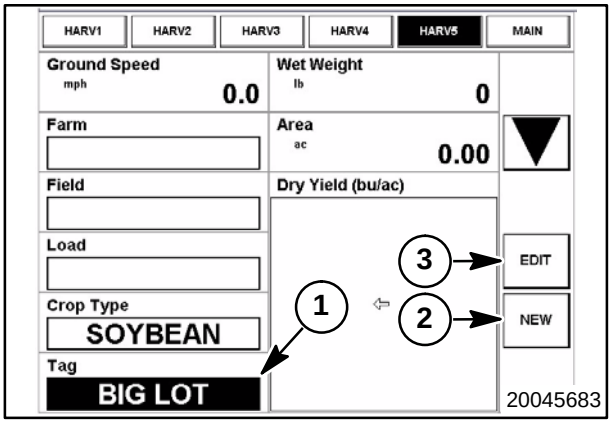
1. Calibration load: The load has been used for the calibration process.
2. Archived: The data has already been saved to the desktop software.
3. Different machine: The data is from a different combine as indicated by the YMIU identification number.

Entering Tag Names

Tags are a means of naming specific loads which may be helpful if you are harvesting a series of test plots and choose to name each load as a separate hybrid.

To create a tag name for the selected load, press and blacken the Tag selection box, 1. Press the New button, 2, to create a new tag or press the Edit button, 3. This will take you to the keyboard screens to name that tag. Type in a desired name between 1 to 12 characters and press enter.

NOTE: *Tag names are an optional means of adding additional identification that gets associated to the current load.*



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Editing Existing Farm, Field or Load Names

Farm, Field, or Load names can be edited at any time prior to archiving the data to the desktop software. Once the data has been archived, Load names can no longer be edited.

Press and blacken the selection box on the name that you desire to edit. A Down Arrow, New and Edit button will appear on the right side of the screen. Press the Edit button which will take you to the keyboard screens. Type in the new name and press enter. This will return you to the HARV screen.

Remember: *Names shown in Italics cannot be selected or edited.*

HARV SCREEN SELECTABLE PARAMETERS

There are several selectable parameters that can be displayed on the HARV* screens which allow the operator to interact and make adjustments. These adjustments can be used to improve the accuracy of the system or aid in field management. The following is a description of those functions.

Cut Width

Allows the operator to change Cut Width or numbers of Rows (as configured) for changing field conditions. This will result in a more accurate area count. The Cut Width can be adjusted in two different manners, a digital number or a visual bar graph, that will indicate the default header cut value that was entered on the SETUP>COMBINE—HEADER SETUP screen.

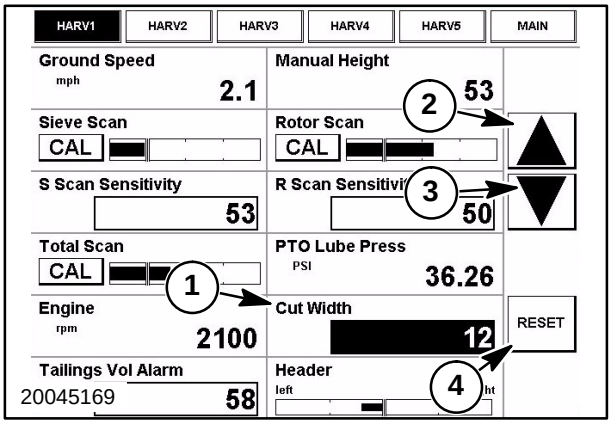
Adjusting the Numeric Cut Width

This value can be changed from the YIELD screen during harvest by pressing the field inside the Cut Width box, 1. The box will darken and the status/warning indicator will be replaced with an increase, decrease and reset button. After three seconds with no activity, the status/warning indicator will be displayed.

Pressing the up arrow, 2, will increase the cutting width by one row (row head) or by the incremental value (platform head) that was defined in the SETUP>COMBINE—HEADER SETUP field, until the maximum header size is reached.

Pressing the down arrow button, 3, will decrease the cutting width by one row (row head) or by the incremental value (platform head) that was defined in the SETUP>COMBINE—HEADER SETUP field.

Pressing the RESET button, 4, will restore the cut width value back to the default value that was defined in the SETUP>COMBINE—HEADER SETUP field.



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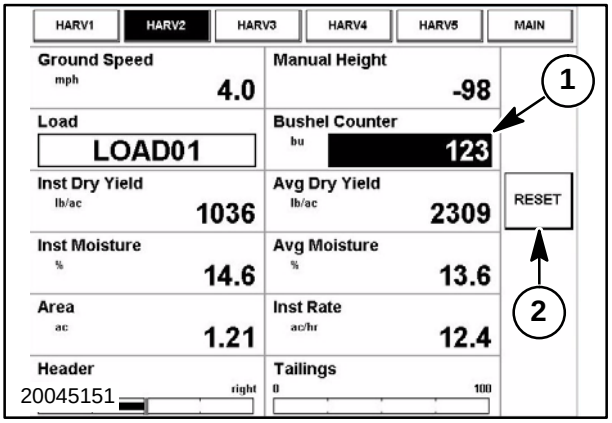
Counter Fields

The operator can display multiple counter fields that display a unit value that is independent of the current active load values. These counters will continue to be additive whenever harvest is in progress. The counter fields can be reset at anytime during harvest. All counter fields operate in the same manner. To reset the counter, press the field inside the counter box, 1, to be reset.

The box will darken and the status/warning indicators will be replaced with a RESET button, 2. Press the RESET button to reset the counter back to 0. The reset button will only zero out the selected counter.



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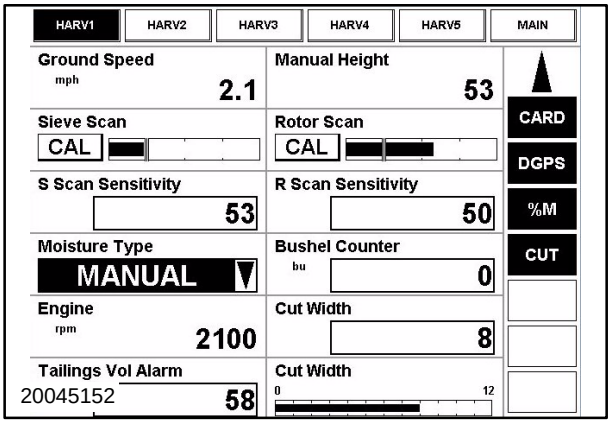
Moisture Type

The Moisture Type selection allows the operator to choose which source should be used for the crop moisture reading, automatic (moisture sensor) or manual (operator defined fixed value).

The Moisture Type field has predefined values that can be changed but not edited. To change the value, press the down arrow in the Moisture Type box, 1. The value will change from AUTO to MANUAL. Pressing the box again will change the value back to AUTO. This selection can be changed within the same load. When MANUAL is selected, the value in the Manual Moisture field will be used as the basis for the crop calculations. AUTO is the recommended setting unless sensor problems have occurred.



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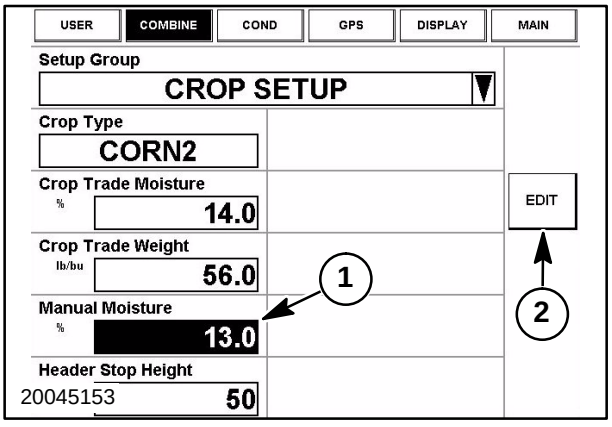
Manual Moisture

The system allows the operator to use a manually defined value for moisture for the basis of the calculations in the event a sensor problem has occurred. The manual value is only used when the Moisture Type is set to MANUAL. To edit the MANUAL moisture value, navigate to the SET-UP>COMBINE—CROP SETUP screen and press the field within the Manual Moisture box, 1. The field will darken and the status/warning indicators will be replaced with an edit button, 2. Press the edit button to display the keypad. Enter the manual moisture value and then press enter.



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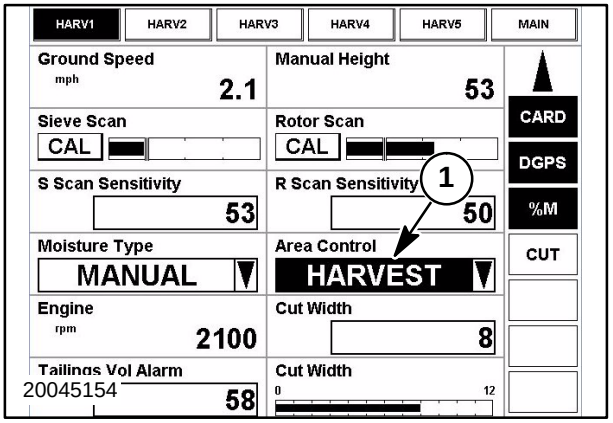
Area Control

The operator has the ability to manually control when the system counts area during operation. This allows the operator to turn ON and OFF area counting during cleanup operations to ensure a more accurate area count. The Area control selection box has three available selections (HARVEST, OFF, COVERAGE) when not harvesting and two available selections (HARVEST, OFF) while harvesting. The selection is changed by pressing the field inside the Area Control box, 1.



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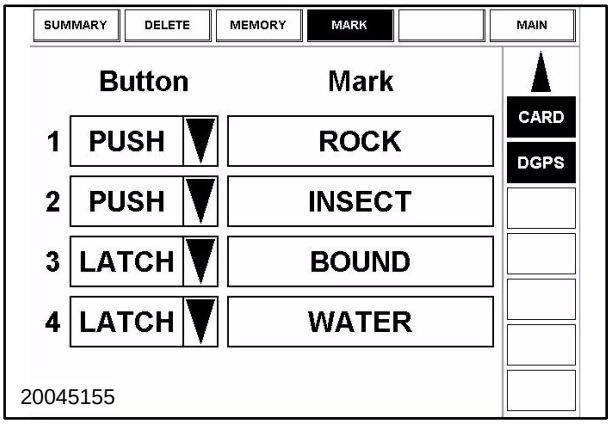
- **HARVEST -** This is the system default setting. The HARVEST setting must be selected when the combine is harvesting to ensure area is being counted. With HARVEST selected, area count will be automatically controlled by the position of the header relative to the header stop height setting.
- **OFF -** When OFF is selected, the system will not count area when the machine is harvesting. The AREA warning indicator will flash at a slow rate and a periodic alarm will be heard until the Area Control selection is changed. This allows the operator to perform small field clean–up functions without recounting area.
- **COVERAGE -** The coverage setting allows the operator to record GPS travel data without the machine harvesting crop. With COVERAGE selected, GPS position recording will be automatically controlled by the position of the header relative to the header stop height setting. Area counting will also occur. This selection will not be available once elevator speed is detected.

NOTE: *The status/warning indicators will automatically return after 3 seconds of inactivity.*

MARKERS (Requires GPS)

The HARV>HARV* screens can be configured to display the field marker buttons. Two markers will be displayed within one cell.

The markers are interactive and can have the type configured, from the UTILITY>MARK screen, as either a latch (toggle type) or a momentary type button.



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Momentary Type

The momentary type button will place a field marker indicator in the GPS record file when depressed and place an “O” indicator on the on-screen map (Requires MARK to be turned on). Once released, the marker returns to the OFF state without requiring the button to be selected again.

Latch Type

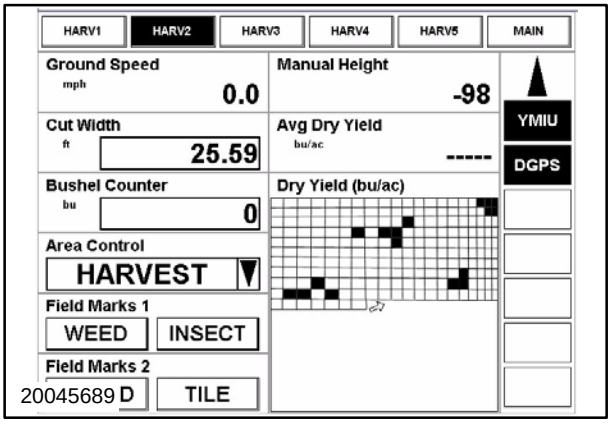
The latch type button turns the field marker ON when selected. The button will invert colors and remain ON until selected again. When in the ON position, an “O” indicator will continue to be placed on the on-screen map (Requires MARK to be turned on) until the button is deselected).

ON SCREEN MAP

NOTE: *The On Screen Map feature requires the optional GPS feature.*

The operator can select between two different map views, a half screen view or a full screen view. Either map view will display yield or moisture information. The map view can be set to display an entire field or can be zoomed-in to view yield or moisture detail while harvesting in the current active field, relative to the current GPS position.

The on-screen map area is interactive. The map area allows the operator to adjust various view functions such as zoom-out, zoom-in, AUTO, FIELD, and MARK. The map also allows the operator the ability to set the map to five different legend values. The on-screen map will display the data for the active FIELD that resides on the PC data card. Data is always viewed with the top of the screen being North.



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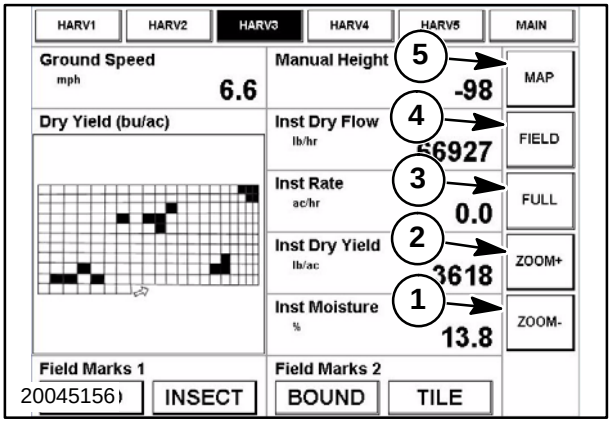
View Functions

To activate the view functions, press anywhere in the main map area (single press). This will bring up the view controls along the right side of the screen replacing the status/warning indicators. The controls will remain visible for three seconds without any interaction and then will revert back to the status/warning indicators. The controls will remain visible as long as they are activated within a three second time period.



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- **Zoom Out**, 1, – Allows the users to zoom to a higher level. Zoom-out will reduce the map resolution but displays a greater view of the field being harvested.
- **Zoom In**, 2, – Allows the user to zoom in on the current field. Zoom-in will provide increased map detail. Based upon the level of zoom selected, zoom-in will cause the map to automatically pan based upon the GPS position and heading of the machine, as the entire field may not be in total view.

NOTE: *When the map is zoomed to a detailed resolution, each data point can be seen. The data point width is determined by the header "Cut Width". Changing the "Cut Width" will change the width of the cell on the map.*

- **FULL**, 3, – Map will show the extents of the current field and the relationship to the machine when out of the current field. As the field gets larger, the map view adjusts automatically to always keep the entire field and machine in view.
- **FIELD**, 4, – Map will automatically zoom to the extents of the current field data points. As the field gets larger, the map view adjusts automatically to always keep the entire field in view. The map view will remain unchanged as the distance between the machine location and the current active field increases.
- **Map**, 5, – Allows the users to switch between displaying Dry Yield or Moisture map. This will be indicated by the map type shown just above the map. The map will default to Dry Yield at power-up.

Legend Functions

The map legends allow the operator to see the harvest detail at various gray scale levels when the map resolution is zoomed-in for appropriate resolution. The legend values are editable by the operator and can be set independently for each crop type being harvested. To adjust the legend values, double press (double click) anywhere in the main map area. The legends will temporarily appear in the status/warning indicator area.

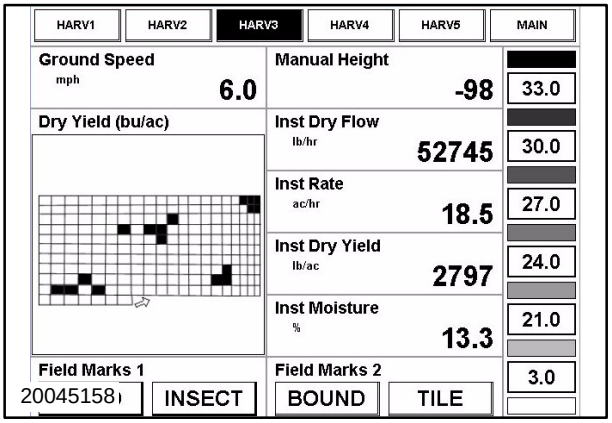
NOTE: *The status/warning indicators will automatically return after 3 seconds of inactivity.*

To change a value, highlight the legend to be edited by pressing the value field. An edit screen will be displayed. Enter the desired value and then press ENTER. This will return you to the map view with the status/warning indicators. Repeat this process until all ranges have been set.

NOTE: *Ranges can be equal to, but not overlap in values, or an error message will be displayed.*

For example: In the illustrated screen the darkest color would be applied when the yield is above 180 the next between 160–180 then 140–160 then 120–140 then 100–120 and finally less than 100.

NOTE: *The status/warning indicators will automatically return after 3 seconds of no activity.*



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STEPS FOR CORRECT HARVEST OPERATION

1. Position the combine at the beginning of the field to be harvested. Make sure the grain tank is empty if calibration loads are being harvested.
2. Select a pre-named Field and Load or create a new Field and Load using the HARV>HARV*.
3. Engage the separator (elevator speed must be between 250 – 599 RPM) and lower the header to harvesting height as you enter the field. Make sure the Area Control selection list box shown on the HARV>HARV* screen is in the HARVEST position. The REC (record) indicator should be black on any of the HARV* screens.

NOTE: *If the REC indicator is not black, this indicates that the system has not detected all the proper inputs. Harvest data will not be recorded on the PC data card. Check that the system detects a PC data card, elevator speed (250 to 599 rpm), ground speed, and header height signal below the stop height setting.*

4. When necessary, adjust “Number of Cutting Rows” or “Cutting Width” (as equipped) as field conditions require. This can be accomplished from the HARV* screen.

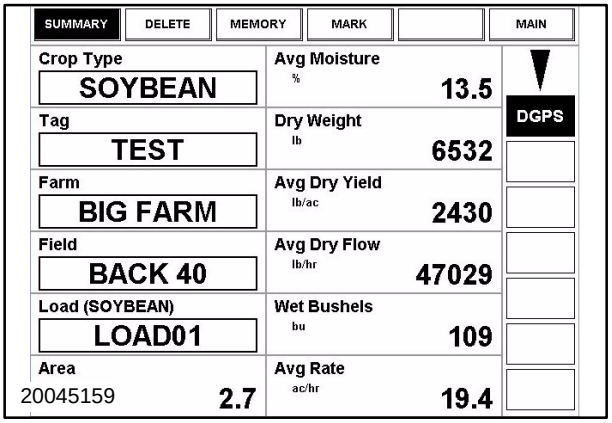
NOTE: *After completing your first load, you can perform the Calibration procedures. Refer to the In Field Calibration Section for complete procedures.*

5. Empty your load in the grain tank and change to or create a new Field and load as described in Step 2. Resume harvesting and continue changing or creating new Fields and Loads until harvesting is completed.
6. After harvesting is complete, shut the combine down. After a 5 second delay the monitor will display a message telling the operator that data is being saved to the data card. The data card MUST NOT be removed while the data is being saved. The monitor will automatically power down after the data is saved. The data card can be removed from the display after the data has been properly saved.

IMPORTANT: *Do not remove the data card until instructed to by a message on the display.*

UTILITY SUMMARY SCREEN

The summary screen provides the operator the ability to review in-field harvest performance results for previously harvested data that resides on the PC data card. The data can be reviewed for an entire crop type down to a specific load by using the summary selection fields.



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The data displayed in the first five cells of the screen can not be rearranged or reassigned. The remaining seven cells can be rearranged or reassigned to meet the operators needs.

AREA: Displays the total area corresponding to the selection criteria

BUSHEL–D: Displays the dry basis crop volume for the selected criteria. Value is crop type dependent. (Standard units only)

BUSHEL–W: Displays the wet basis crop volume for the selected criteria Value is crop type dependent. (Standard units only)

DISTANCE: Displays the distance traveled for the selected criteria (feet/meters)

FLOW–D: Displays the dry basis harvest rate for the selected criteria. Value is crop type dependent. (lb/hr, T/hr)

FLOW–D–BU: Displays the dry basis harvest rate for the selected criteria. Value is crop type dependent. (bu/hr)

FLOW–W: Displays the wet basis harvest rate for the selected criteria Value is crop type dependent. (lb/hr, T/hr)

FLOW–W–BU: Displays the wet basis harvest rate in bu/hr for the selected criteria. Value is crop type dependent.

MOISTURE: Displays the average moisture for the selected criteria. Value is crop type dependent.

RATE: Displays the average productivity of the machine for the selected criteria.

WEIGHT–D: Displays the dry basis mass for the selected criteria. Value is crop type dependent. (lb or T)

WEIGHT–W: Displays the wet basis mass for the selected criteria. Value is crop type dependent. (lb or T)

YIELD–D: Displays the dry basis yield for the selected criteria. Value is crop type dependent. (lb/ac or T/ha)

YIELD–D–BU: Displays the dry basis yield for the selected criteria. Value is crop type dependent. (bu/ac)

YIELD–W: Displays the wet basis yield for the selected criteria. Value is crop type dependent. (lb/ac or T/ha)

YIELD–W–BU: Displays the dry basis yield for the selected criteria. Value is crop type dependent. (bu/ac)

NOTE: *If "Crop" is set to ALL and there is data on the PC card for more than one crop type, only AREA, RATE and DISTANCE will return a value as this is the only information that can be calculated across different crop types. All other selections are "Crop" specific.*

Changing the Selection Criteria

The summary screen works on a stepped filtering system. The information to be reviewed can be quickly narrowed down by using the selection filters. To change the selection criteria, press and highlight the field to be changed, 1.

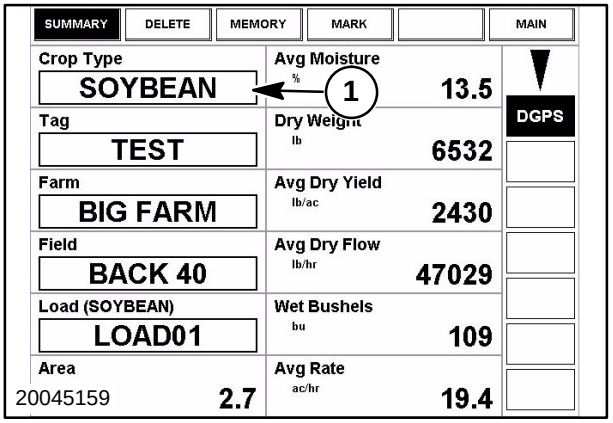
A selection list with available options will be displayed based upon the information on the PC card. Select the item of interest and then press ENTER to return to the summary screen. Repeat this process until you have the harvest information for the area of interest.

The selection filter is based upon a harvest relationship. The data detail is as follows:

Setting all selection fields to ALL will return harvest information from ALL crops, farms, fields, loads, and tags. If multiple crops have been harvested, only a value for AREA, DISTANCE, and RATE will be displayed as all other values are crop dependent. This setting will return the total area harvested for the season if all the summary information is present on the PC data card.

When a specific “Crop” is selected, the system will display all corresponding harvest information from all farms, fields and loads.

Setting the “Crop” field to corn and all other selection fields to ALL will return harvest summary information for all farms, fields and loads which have CORN harvest information. Average and total values will be displayed in the respective data fields.



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When a specific ”Crop” and ”Tag” are selected, the system will display all corresponding harvest information that match the two fields.

Setting the ”Crop” field to CORN, ”Tag” field to B–5360, and all other selection fields to ALL will return harvest summary information for all farms, fields, and loads which have harvest information for B–5360 CORN. Average and total values will be displayed in the respective data fields.

When a specific crop type and farm are selected, the system will display all corresponding harvest information for that particular “Crop” and “Farm”.

Setting the “Crop” field to CORN, “Farm” to NHHOME, and all other selection fields to ALL will return harvest summary information for all fields, loads, and tags which have corn harvest information for the NHHOME farm. Average and total values will be displayed in the respective data fields.

When a specific crop type, farm, and field are selected, the system will display all corresponding harvest information for that particular “Crop”, “Farm”, and “Field”.

Setting the “Crop” field to CORN, “Farm” field to NWHOME, “Field” to BACK40, and all other selection fields to ALL will return harvest summary information for all loads for the selected farm and field with harvest data for corn. Average and total values will be displayed in the respective data fields.

When a specific farm, field and load is selected, the system will display all corresponding harvest information for that particular selection. Crop type is not required as a load can only have one specific crop assigned to it.

When a specific farm, field and load is selected, the system will display all corresponding harvest information for that particular selection. Selecting a specific load is the lowest level of harvest detail possible.

Setting “Farm” to NWHOME, “Farm” to BACK40, and “Load” to TRIAL1 and all other selection fields to ALL, will return harvest summary information for the specific load Trial1. Average and total values will be displayed in the respective data fields.

MEMORY SCREENS

The memory screen provides functionality that allows the operator to manage the harvest information located on the PC data card while in the machine. Care must be taken when making and executing selections, as data can be deleted or altered. When used correctly, these selections provide the operator with the ability to manage PC card records at the machine.

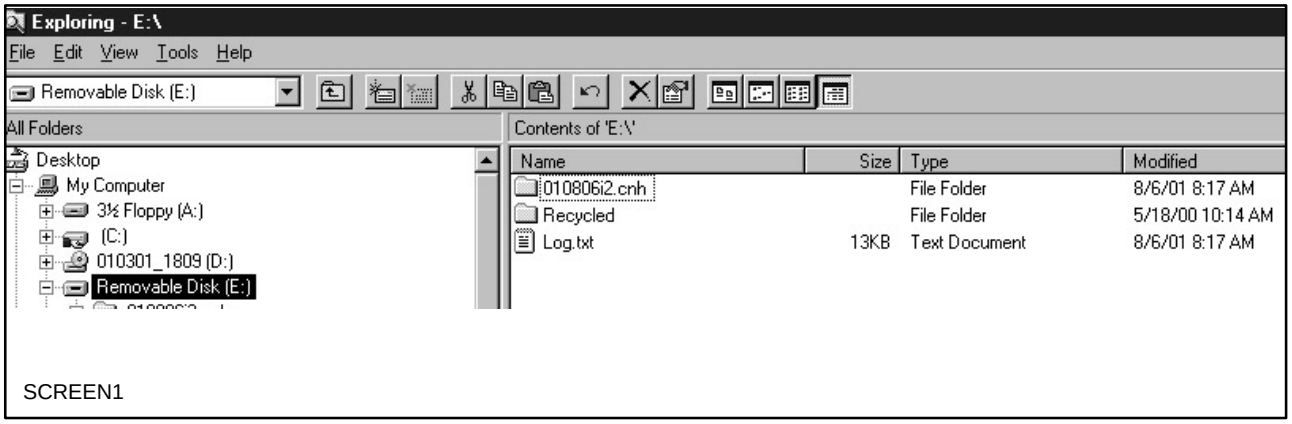
PC Data Card

The ATA Flash, PC data card is the primary storage media that also serves as the only means to transfer harvest information between the machine and the desktop computer. Ensure that the PC card is installed into the display prior to starting the machine. When the display is powered, it reads the data file on the card and makes the FARM/FIELD/LOAD information available. During harvest, summary information is logged every second (GPS related data is recorded every one, two, or three seconds). This data is temporarily stored in the AFS display and then recorded directly to the PC card once every minute. DO NOT remove the PC card during operation without first powering down the system or data will be lost. Turning the key switch to the OFF position will automatically launch the shutdown procedure. The AFS display will notify the operator when it is safe to remove the PC card.

The shutdown procedure automatically backs up your most recent FARM/FIELD/ LOAD summary data and machine calibration data to the AFS display. GPS records are not backed up on the display; they only reside on the PC data card. The backup file on the display will be overwritten each time the display is shutdown, so you will only have backup information available since the last time you harvested.

NOTE: *This backup data is not as secure as the data on your PC card; therefore, always treat your PC card as the primary storage media.*

The PC card contains the FARM/FIELD/LOAD names, calibration information, machine setup information, GPS records, and harvest information. This data is contained within a file structure on the card and is automatically created at power-up, updated while harvesting, and updated at shutdown. The file structure uses a directory hierarchy, which have folders automatically named and created by the Universal Display. If the PC data card were to be viewed in windows explorer, the highest level files on the card would appear as shown the figure below.



SCREEN1

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***.cnh**

The card will contain a single *.cnh folder, a recycled folder, and a log.txt file at its highest level. The *.cnh file is the highest level of the file structure that contains all the harvest records, calibration information, machine setup information, and would have a label similar to 010806i2.cnh.

01 08 06 i2. cnh.

- cnh. — Highest level file extension
- i2. — Time
- 06 — Day
- 08 — Month
- 01 — Year

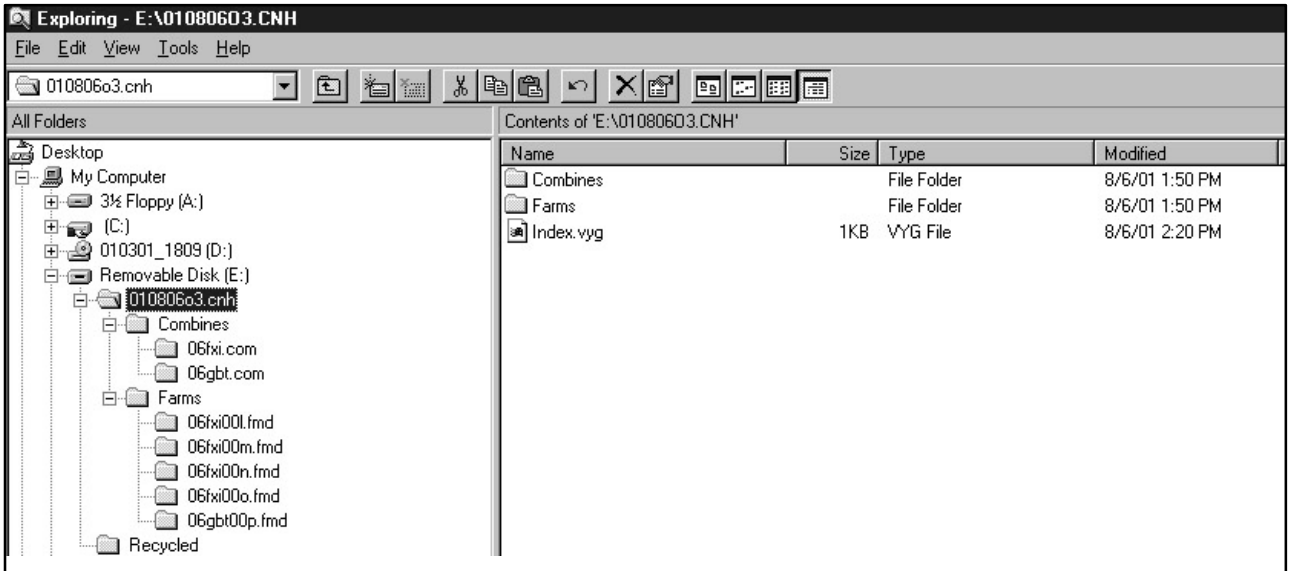
The *.cnh cnh folder name is automatically renamed (time stamped) each time the display is powered. This prevents any files from having the same name and also chronologically labels the harvest record. If required, the *.cnh cnh folder can be renamed using windows explorer at the PC desktop, if this aids in data organization.

IMPORTANT: *It is not recommended to edit any file names or change any file locations below the *.cnh level as data lost or alteration may occur. Data must be processed in sequential order of harvest by the desktop computer.*

IMPORTANT*: Only one *.cnh file can reside on the PC card at any given time.*

The *.cnh file is comprised of multiple folders of information (reference Figure 169). This file structure allows information to be shared between multiple machines. While a card and a *.cnh file are not machine specific, you may find it easier to manage the data if a single card was used with a specific combine. The figure below shows an exploded file structure of a *.cnh directory when viewed with Windows Explorer. This is being shown for reference only. Folders should NOT be relocated or renamed, as data association will be lost. This example shows a *.cnh file which has data collected from two different machines. The machine specific information is stored under the combine folder while harvest information is stored under the Farms folder. The information is machine specific and is associated when created using the unique machine ID as seen when auto-naming newly created FARM/FIELD/LOAD's. Data that is not machine specific such as FARM names, FIELD names, TAG names, MARKER names, can be shared across machines. Items such as LOAD records and calibration settings are machine specific items and can not be shared or altered by a different machine. Information that is machine specific can only be viewed or deleted. The *.fmd folders contain the harvest records.

IMPORTANT: *The Index.vyg file is required to launch the archive process using the desktop software application. DO NOT remove or alter this file.*



SCREEN2

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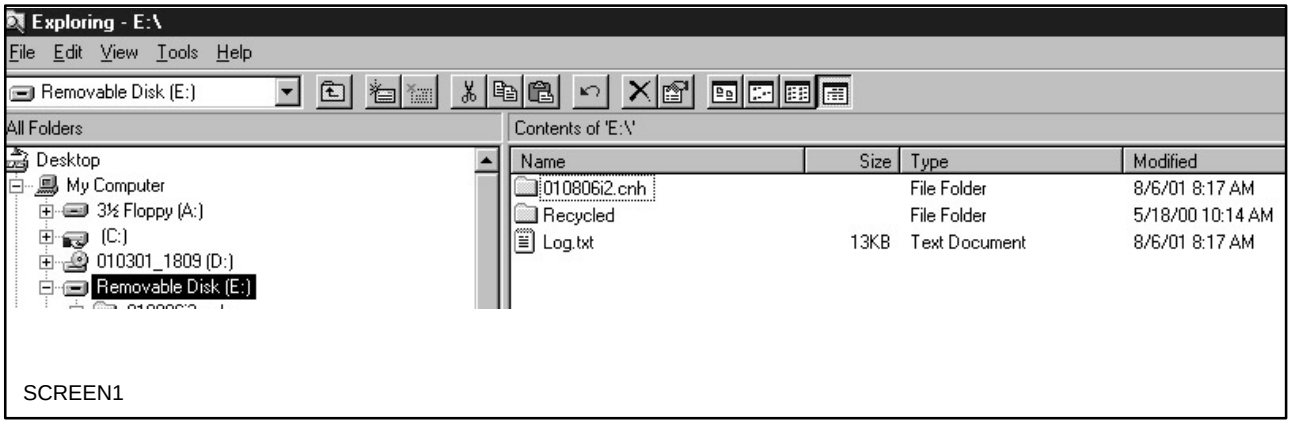
Recycle

The PC data card is typically recognized as a removable hard drive by most PC desktop computers. This causes the computer to create a recycle folder or recycle bin. Some desktop PC system will discard deleted records into the recycle folder. It may be necessary to use windows explorer to clear this deleted information from the PC card in order to recover all of the available space on the card.



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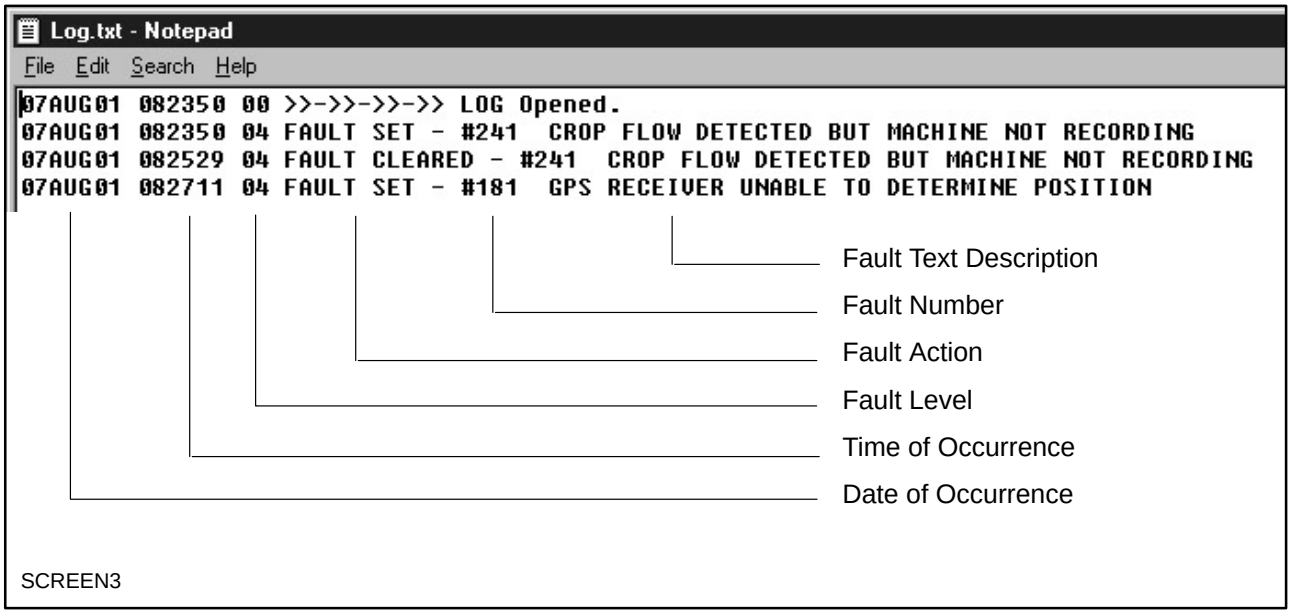
Log.txt

The AFS Universal Display will automatically create a Log.txt file when the system is powered. The main purpose of the Log.txt file is to record events that may aid in system troubleshooting. This file will be updated anytime the system recognizes an operating error and some Display actions. The event will be time stamped and labeled so that it can be used for diagnostic purposes. The Log.txt file can ONLY be accessed by using a desktop PC and reading the file by using a word editor such as Notepad, Word, etc. to view the contents of the file. These files are running files and will only get cleared when the file is deleted from the PC card using a desktop PC. Upon installing the PC card back into the display, a new Log.txt file will be created. The Figure below shows what a typical Log.txt file may look like.



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AFS Software on the Desktop

Prior to harvest you can use your desktop computer to define your grower, farms, and fields. This allows the desktop software to “associate” all of your fields with the proper farms. This information is then transferred to the AFS Universal Displays via the PC data card.

As you harvest, information is recorded to the PC data card for the chosen FARM/ FIELD/LOAD. This harvest information, along with any calibration data, is returned to your desktop PC when you process a data card following harvest.

All of your data including farm, field, and load names, calibration information, harvest data (yield, moisture, etc.), GPS records, reports and maps are stored on your desktop PC.

Memory Management Tips for a Successful Harvest

- Only have one *.CNH folder at a time on the PC data card.
- Always harvest with a PC data card in the display.
- Never remove the data card while the display is powered.
- Periodically run the Windows ScanDisk program to inspect the ATA Flash data card. Choose **Start>Programs>Accessories>System Tools>ScanDisk** and select the drive that contains your data card.
- Archive your PC data card to the desktop on a daily basis. Save a copy of the CNH folder.
- To regain PC card space it is recommended to delete GPS records using the display.
- Periodically delete the log.txt files to regain PC card space.

NOTE: *Once the data is archived to the desktop software, harvest information can not be added to an existing load. The archived Load(s) will appear in italicized text. A new or different load will need to be selected.*

Recommended Procedures for Data Card Usage

Scenario 1: Single Data Card for A Specific Combine

The Universal Display will support a PC card with a single *.cnh file being used with multiple machines. This allows the operator to setup a single card and then use that card as the “MASTER” in order to configure each machine with the same information and populate each Display with the same FARM/ FIELD/ LOAD information. Once the initial setup is complete, it is recommended to operate the AFS yield monitor system with an individual card per individual machine. This will simplify the data management aspect of the operation and reduce the confusion as to which card in which machine contains the latest harvest information.

Procedure:

If you have one or more combines with an AFS yield monitor system, label each of your ATA flash data cards with the PIN number of the combine with which it will be used. Always use the specific card with the matching combine.

1. Use the AFS desktop software application to initially setup/define the GROWER/FARM/ FIELDs. All loads need to be created at the Universal Display. LOADs can not be created using the desktop software application. Use the “create a card” function and save the information to the PC card. Install the PC card into the display and power-up the system.
2. After the initial setup, it is recommended to create any additional FARM/ FIELD/LOADs using the Universal Display RUN>FIELD screen.
3. When harvest is complete, power down the combine to save the data. Do NOT remove the card until the shutdown process is complete.
4. At the end of each day of harvesting, save the information on the data card to your desktop PC.

Scenario 2: Multiple Data Card use with a single machine

In some cases the operation may require a daily rotation of the PC card between the machine and the home office. If this is the situation, it is recommended that the card being installed into the Universal Display does not have a *.cnh file present. This will ensure that the backup data in the Universal Display is used to populate the PC card. Prior harvest summary data will be retained, and remain current with ongoing harvest operation on the machine, by following this recommendation. The *.cnh file on the card being installed would need to be deleted from the card using Windows Explorer.

NOTE: *The combine ID in desktop software is the YMIU serial number.*

NOTE: *GPS records are only written to the current PC card. Rotating cards as explained above will retain the summary records between cards but not the GPS records.*

UTILITY>DELETE SCREEN

Managing Data on the PC Card

The AFS Universal Display allows you to manage information stored on the PC data card. When removing files or data, there are two options: deleting all data types or deleting only data which has been archived to the home office desktop application.

– **Archive Data**

The system detects which records have been archived to the desktop application. If card space needs to be retained, deleting archive data would be the data to delete.

– **Deleting Data**

Deleting data erases information from the data card in its entirety; it will no longer appear in the display and cannot be recovered. Delete options are described below.

– **Delete Farm “All”**

Use this option to erase all information on the card and create a new file name after the reboot occurs (the name is assembled automatically based on the date). The data erased includes field and load names, harvest summary data, GPS records and calibration loads. You have the option of saving calibration loads.

If your PC card is getting close to its storage capacity this option can be used. This feature should only be used AFTER the PC data card has been processed on your desktop PC.

– **Delete GPS Records**

Use this option to erase all existing GPS records on the card, while retaining field and load names, harvest summary information, and calibration data.

If your PC card is getting close to its storage capacity this is the recommended way to regain space. This feature should only be used AFTER the PC card has been processed on your desktop PC. This is the recommended way to regain card space within the current harvest season.

– **Delete All Fields and Loads**

Use this option to erase all information on the card and optionally save calibration data including the field and load names.

If your PC card is getting close to its storage capacity this option can be used. This feature should only be used AFTER the PC data card has been processed on your desktop PC.

– **Delete Load**

Use this option to erase all information relative to a given load, including harvest summary data, GPS records, and the load name. The load numbering sequence will adjust by placing all remaining loads in numerical order.

Use this feature to erase a load that has been created in error.

– **Delete Field**

Use this option to erase all information relative to a given field, including all harvest summary data and GPS records. The field numbering sequence will adjust by placing all remaining fields in alphabetical and numerical order. Any loads associated with the selected field will also be deleted.

Use this feature to erase a field that has been created in error.

View Memory

Select the DIAG>CARD screen.

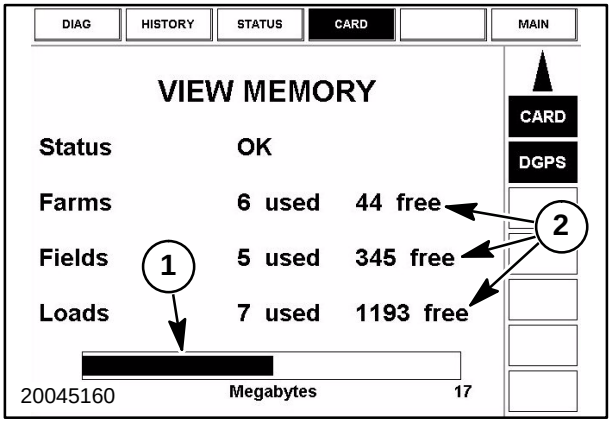
The view memory screen allows the operator to see the data card size and has a visual indicator showing the % of card space used, 1. The operator can use this indicator much like a fuel gauge. It allows the operator to see when the card is full.

The Farm/Field/Load section, 2, indicates how many records of each are detected on the PC card. It also indicates how many additional of each type can be created. The maximum number for each regardless of the combination is:

Farms – 50

Fields – 350

Loads – 1200



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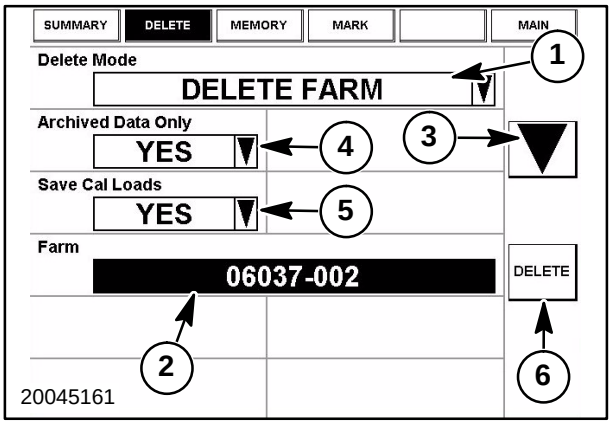
Delete Farm

Enables the operator to erase all information on the card pertaining to a specific farm. Data erased includes Farm, Field and Load Names, Harvest Summary Data and GPS records. This function is not dependent upon machine ID or whether or not the data has been archived.

From the UTILITY>DELETE screen, press the Selection List box, 1, until “DELETE FARM” is displayed.

1. To select a farm, press and blacken the farm selection box, 2. Press the down arrow, 3, that appears, which will bring up the Farm selection screen. Select the Farm to be deleted or if all farms are to be deleted, select All. Press the enter button to return to the UTILITY>DELETE screen.
2. Select whether or not to delete Archived Data Only, 4.
3. Select whether to Save Cal Loads, 5.
4. With the correct farm showing in the Farm selection box, press the Delete button, 6. A warning message will come up stating “Warning deleting data, continue”. Press the Yes button if you wish to delete the farm or the No button if you wish to cancel the delete request.



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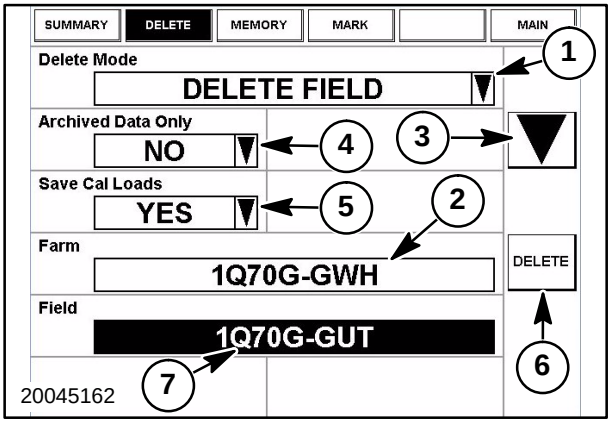
Delete Field

Enables the operator to erase all information on the card pertaining to a specific field or all fields. Data erased includes Field and Load Names, Harvest Summary Data and GPS records. This function is not dependent upon machine ID or whether or not the data has been archived.

From the UTILITY>DELETE screen, press the Selection List box, 1, until “DELETE FIELD” is displayed.

1. To select a field, press and blacken the Farm selection box, 2. Press the down arrow, 3, that appears, which will bring up the Farm selection screen. Select the Farm in which the field is located that is to be deleted, or if all fields on all farms are to be deleted, select All. Press the enter button to return to the UTILITY>DELETE screen.
2. Select whether or not to delete Archived Data Only, 4.
3. Select whether to Save Cal Loads, 5.
4. If all field and load information is to be deleted and ALL has been selected in the Farm selection box, press the Delete button, 6. A warning message will come up stating “Warning deleting data, continue”. Press the Yes button if you wish to delete all fields on all farms or the No button if you wish to cancel the delete request.
5. With the desired farm showing in the Farm selection box, press the Field selection box, 7. Press the down arrow that appears which will bring up the Field selection screen. Select the Field which you desire to delete, or if all fields for this selected farm are to be deleted, select All. Press the enter button to return to the Delete screen. With the desired field selected, press the Delete button, 6. A warning message will come up stating “Warning deleting data, continue”. Press the Yes button if you wish to delete the field or the No button if you wish to cancel the delete request.

NOTE: *If the field selection box is blank and no name can be selected, then there is no Field created for the selected Farm.*



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Delete Load

Enables the operator to erase all information on the card pertaining to a specific load. Data erased includes Load Name, Harvest Summary Data and GPS records.

The delete load function allows the operator to sort the data to be deleted based upon either machine ID or crop type or both. The selections that will be available in the “Farm” field is based upon the items selected in “Combine” and /or “Crop”.

Combine – The system will allow harvest information from a different machine to reside on the same card. In some cases the operator may choose to delete this information in order to regain card space. This harvest data can be quickly sorted by using the “Combine” field. Using this field will reduce the risk of deleting the wrong information. This selection is optional. Leaving the setting to “ALL” will provide the greatest amount of selectable records. Available selections from the list are:

All – returns data for all machines, regardless of ID.

All other – returns data for all machines except the current machine.

Current Machine – is the name in the list that has italicized text.

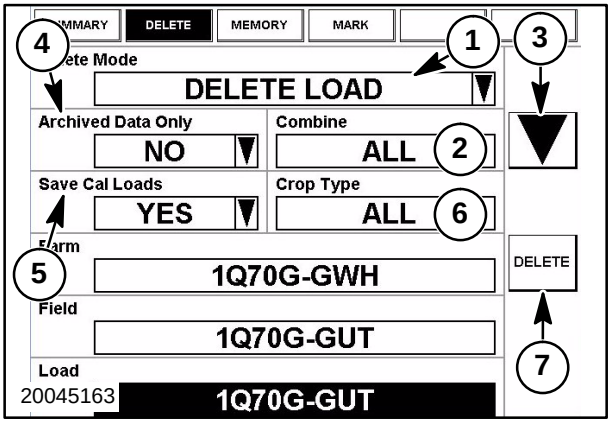
Individual machines – a list containing all available machine ids found on the PC card which can be individually selected.

Crop – The “Crop” field can be used to quickly sort selectable data on the PC data card. This can be used to quickly isolate harvest data specific to a given crop and is independent of the “Combine” filter. The selection list will display all the crop types that contain harvest information found on the current card meeting the selection criteria This field is NOT combine specific. The information selectable in the “Farm” field will be dependent upon the crop type selected, if used. This selection is optional. Leaving the setting to “ALL” will provide the greatest amount of selectable records. Using this field will reduce the risk of deleting the wrong information.

NOTE: *If a “Combine” and/or “Crop” selection is made and a “Farm” list is not available, this means there is no associated harvest information found meeting the selection criteria. Changing the selection criteria will return different selection records.*

From the UTILITY>DELETE screen, press the Selection List box, 1, until “DELETE LOAD” is displayed.

1. Press and blacken the Combine selection box, 2. Press the down arrow, 3, that appears, which will bring up the Combine selection screen. Select the Combine from which the load is located that is to be deleted. If all load records are to be deleted from the card, select All. Press the enter button to return to the Delete screen.
2. Select whether or not to delete Archived Data Only, 4.
3. Select whether to Save Cal Loads, 5.
4. If all load records are to be deleted, press the Delete button, 6. A warning message will come up stating “Warning deleting data, continue”. Press the Yes button if you wish to delete all load data or the No button if you wish to cancel the delete request. If required, go to the next step.
5. Press and blacken the Crop Type selection box, 7. Press the down arrow that appears, which will bring up the Crop selection screen. Select the Crop on which you have harvest information recorded for the required load, or if more than one crop is harvested for the desired load, select All. Press the enter button to return to the Delete screen.
6. Press the Farm selection box, 1. Press the down arrow, 2, that appears, which will bring up the Farm selection screen. Select the Farm from which the load is located that is to be deleted. Press the enter button to return to the Delete screen.
7. With the required farm showing in the Farm selection box, press the Field selection box, 3. Press the down arrow, 2, that appears, which will bring up the Field selection screen. Select the Field which you require to delete the load information, or if all load information for this selected farm are to be deleted, select All. Press the enter button to return to the Delete screen.
8. With the required field showing in the Field selection box, press the Load selection box, 4. Press the down arrow that appears which will bring up the Load selection screen. Select the load which you require to delete, or if all loads for this selected field are to be deleted, select All. Press the enter button to return to the Delete screen. With the required load selected, press the Delete button, 5. A warning message will come up stating “Warning deleting data, continue”. Press the Yes button if you wish to delete the load or the No button if you wish to cancel the delete request.



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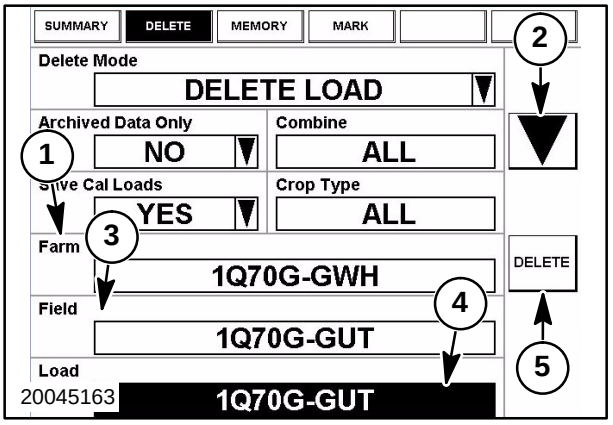

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Delete GPS Records

Enables the operator to erase all GPS records or selected GPS records on the card while retaining Farm, Field and Load Names and Harvest Summary Data.

The DELETE GPS RECORDS selection allows the operator to remove positioning records associated with the harvest information while retaining the harvest summary data. The GPS records to be deleted can be selected based upon either machine ID or crop type or both. The data that will be available in the “Farm” field is based upon the items selected in “Combine” and/or “Crop”.

Combine – The system will allow harvest information from a different machine to reside on the same PC card. In some cases the operator may choose to delete this information in order to regain card space. These GPS records can be quickly sorted by using the “Combine” field. Using this field will reduce the risk of deleting the wrong information. This selection is optional. Leaving the setting to “ALL” will provide the greatest amount of selectable records. Available selections from the list are:

All – returns data for all machines, regardless of ID.

All other – returns data for all machines except the current machine.

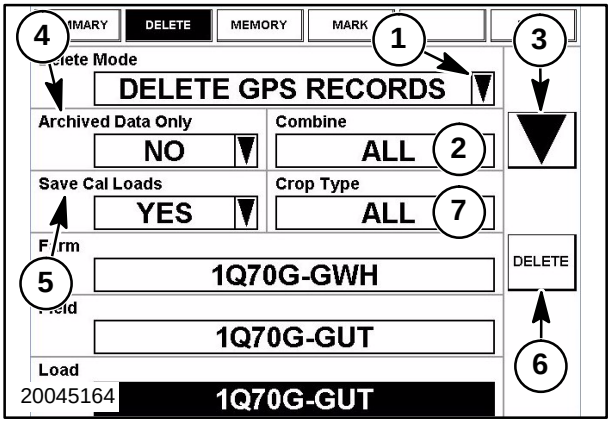
Current Machine – is the name in the list that has italicized text.

Individual machines – a list containing all available machine IDS found on the PC card which can be individually selected.

Crop – The “Crop” field can be used to quickly sort selectable data on the PC data card. This can be used to quickly isolate GPS data specific to a given crop and is independent of the “Combine” filter. The selection list will display all the crop types that contain GPS information found on the current card meeting the selection criteria This field is NOT combine specific. The information selectable in the “Farm” field will be dependent upon the crop type selected, if used. This selection is optional. Leaving the setting to “ALL” will provide the greatest amount of selectable records. Using this field will reduce the risk of deleting the wrong information.

NOTE: *If a “Combine” and/or “Crop” selection is made and a “Farm” list is not available, this means there is no associated GPS information found meeting the selection criteria. Changing the selection criteria may return different selection records.*

From the UTILITY>DELETE screen press the Selection List box, 1, until “DELETE GPS RECORDS” is displayed.



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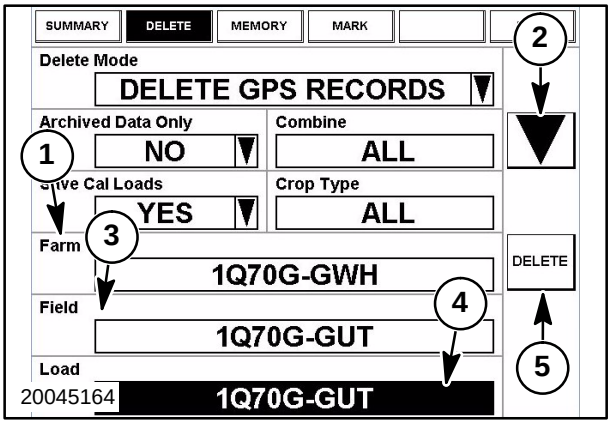
1. Press and blacken the Combine selection box, 2. Press the down arrow, 3, that appears which will bring up the Combine selection screen. Select these Combine from which the GPS records are located that are to be deleted.
2. Select whether or not to delete Archived Data Only, 4.
3. Select whether to Save Cal Loads, 5.
4. If all GPS records are to be deleted from the card, select ALL. Press the enter button to return to the Delete screen. If all GPS records are to be deleted, press the Delete button, 6. A warning message will come up stating “Warning deleting data, continue”. Press the Yes button if you wish to delete all GPS data or the No button if you wish to cancel the delete request. If required, go to the next step.
5. Press and blacken the Crop Type selection box, 7. Press the down arrow that appears, which will bring up the Crop selection screen. Select the Crop on which you have GPS information recorded for the required load, or if more than one crop is harvested with GPS information, select All. Press the enter button to return to the Delete screen.



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6. Press the Farm selection box, 1. Press the down arrow, 2, that appears, which will bring up the Farm selection screen. Select the Farm from which GPS information is recorded that is to be deleted. Press the enter button to return to the Delete screen.
7. With the desired farm showing in the Farm selection box, press the Field selection box, 3. Press the down arrow that appears, which will bring up the Field selection screen. Select the Field with GPS information that you require to delete. Press the enter button to return to the Delete screen.
8. With the desired field showing in the Field selection box, press the Load selection box, 4. Press the down arrow that appears which will bring up the Load selection screen. Select the load which you require to delete the GPS information, or if all GPS information for all loads for this selected field are to be deleted, select All. Press the enter button to return to the Delete screen. With the required load selected, press the Delete button, 5. A warning message will come up stating “Warning deleting data, continue”. Press the Yes button if you wish to delete the GPS information or the No button if you wish to cancel the delete request.

Apply CAL Values

When performing a calibration from the CAL>CROP screen, the changes will only affect the Farm/Field/Loads selected for calibration, and any data collected from that point in time forward. The current active load is NOT automatically updated. The latest CAL values must be applied to the load. The calibration information is stored with each load record. The “APPLY CAL VALUES” selection allows the operator to determine which prior harvest records they would like to have updated to the most recent calibration settings. The system allows the flexibility to update calibration settings at a crop type level, a farm level, a field level, or a single load level on harvest records from the current machine only. FARM/FIELD/LOAD information is crop dependent, meaning that a crop type must be selected prior to selecting a FARM/FIELD/LOAD combination. The recommended use of the “APPLY CAL VALUES” selections has several different scenario’s.

Example One: Generally there is harvest data in the current active load when the calibration process is performed. This active load must have the crop calibrations manually applied for the data to be updated with the most current calibration information. This is accomplished by using the UTILITY > MEMORY > APPLY CAL VALUES selection. Select the Current Crop Type, Farm, Field, and Load based upon the information in the status bar. Press the APPLY button and then press YES at the confirmation message.

Example Two: Use this function to apply calibration information back to previously harvested information: 12 loads of soybeans are harvested in Field 1 but the operator did not have access to a weigh wagon or scale at the time of harvest. At a later date, 4 additional loads are harvested into Field 2. A crop calibration is performed using 3 of the loads from Field 2. At that time, it will be necessary for the operator to use the “APPLY CAL VALUES” selection to apply the most recent calibration setting back to the previously harvested information in Field 1 and the remaining load in Field 2. This can be quickly accomplished by selecting CROP – Soybeans, FARM – ALL, FIELD–ALL, LOAD–ALL. And pressing “APPLY”. All harvest records containing soybeans will be updated with the most current calibration information.

Example Three: Use this function to apply calibration information to select harvest records after making a mechanical adjustment or replacing a sensor during harvest. The operator replaces the grain flow sensor after several weeks of harvest. A new load is created when the sensor was replaced. A crop calibration is performed on data collected with the new sensor. At that time the operator DOES NOT want to affect harvest records containing data collected with the original sensor. The operator must first go to the CAL>CROP screen and set existing calibration loads to NO. Select loads collected with the new sensor and set them to YES. Perform a calibration. Go to the APPLY CAL VALUES and select the additional FIELD/LOAD records used with the new sensor. Apply the current calibration values to these FIELD/LOAD records. From that point forward, any data collected with the new sensor will use the most current calibration information. Prior harvest records will retain the original calibration information.

From the UTILITIES>MEMORY screen, press the Values Mode box, 1, until “APPLY CAL VALUES” is displayed.

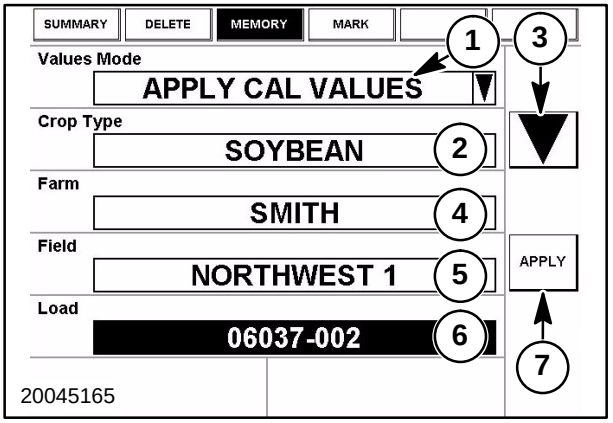
Press and darken the Crop Type box, 2, then the down arrow button, 3, and select the crop.

Press and darken the Farm box, 4, then the down arrow button, 3, and select the farm.

Press and darken the Field box, 5, then the down arrow button, 3, and select the field.

Press and darken the Load box, 6, then the down arrow button, 3, and select the load.

Press APPLY, 7, to apply the cal values.



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Import Values

The “IMPORT VALUES” selection allows the operator to copy information from a PC data card containing data, which has already been created on a second machine, and uses the information on the current machine. This eliminates the need to repeat the setup and configuration process on operations having multiple machines. Use of “IMPORT VALUES” function also ensures the machines have the same configuration and identification information.

From the UTILITIES>MEMORY screen, press the Values Mode box, 1, until “IMPORT VALUES” is displayed.

Press and darken the Combine selection box, 2. Press the Down Arrow button, 3, to go to the combine selection screen.

Press and darken the combine name that you require to copy data from. Press the Enter button to return to the Import Values screen.

Press and darken the Values selection box, 4. Press the down Arrow button to go the the values selection screen.

Press and darken the required function and press the Enter button to return to the Import Values screen.

Values that can be imported from a different machine include the following:

ALL SETUP: Selecting this option will copy (overwrite) the following information into the current machine.

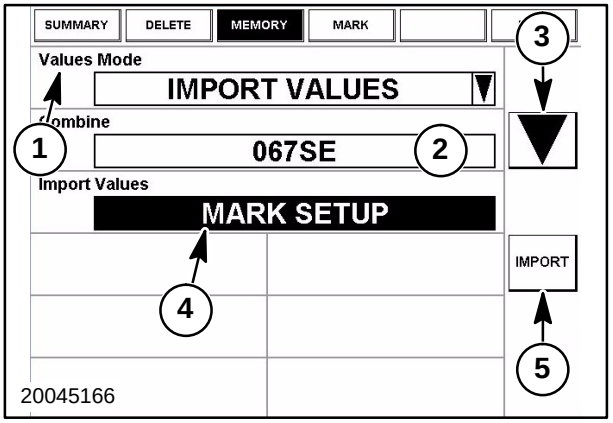
- Header alarm and stop beeps
- Combine type
- Ground speed sensor type
- GPS receiver configuration and settings
- Crop trade settings (trade weight, moisture, etc.)
- Marker button configuration and names
- TAG names
- Calibration settings (weight, distance, moisture)

This selection is recommended when initially setting up multiple machines PRIOR to performing any machine calibrations. If machine calibrations have already been performed, this selection is NOT recommended.

COMB SETUP (Combine Setup): Selecting this option will copy (overwrite) the following information into the current machine.

- Header alarm and stop beeps
- Combine type
- Ground speed sensor type
- GPS receiver configuration and settings

This selection is recommended to be used for configuring multiple machines using the initial machine information as a master.



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CROP SETUP: Selecting this option will copy (overwrite) the following information into the current machine.

Crop trade weights

Crop trade moisture(s)

This selection is recommended to be used for configuring multiple machines using the initial machine information as a master. This will ensure all crop values are the same between machines.

MARKER SETUP: Selecting this option will copy (overwrite) the following information into the current machine.

Marker names

Marker button configuration (latch/momentary)

This selection is recommended to be used for configuring multiple machines using the initial machine information as a master. This will ensure all marker names and placement are the same between machines.

TAG SETUP: Selecting this option will copy (overwrite) the following information into the current machine.

Tag names

This selection is recommended to be used for configuring multiple machines using the initial machine information as a master. This will ensure all TAG names are the same between machines so that the information can be used for data analysis at a later time.

CALIBRATION SETUP: Selecting this option will copy (overwrite) the following information into the current machine.

Machine

Crop weight calibration information (C1–C11)

Moisture calibration information

Distance calibration information

This selection is recommended only for the situation in which the YMIU was replaced on the same machine after harvest was in process. Changing the YMIU will change the machine ID. The information associated with the original YMIU should be copied back to the replacement YMIU in order to get a close starting point for resuming operation. It is recommended that a check load be harvested to verify accuracy before full harvest resumes. Depending upon the level of accuracy required, additional loads might be required in order to recalibrate the machine.

IMPORTANT: *Calibration changes only effect the loads selected for calibration and any data collected after that point in time. Prior harvest information and the current load is not automatically updated.*

NOTE: *It is not recommended to transfer calibration information between multiple machines as each machine has different operating characteristics.*

NOTE: *FARM and FIELD names will get copied between machines automatically when the Display is powered down. LOAD names can not be copied between machines, as each load requires a unique "machine ID" associated with it. LOADs can only be created and used on the current machine.*

Once the desire selection is made, press the IMPORT button, 5, to import the selected values.

UTILITY MARKER SCREEN

From the ***Main*** screen, press the UTILITY navigation button and then press the MARK button.

The purpose of the Mark screen is to allow the user to assign names to the four marker buttons that will appear on the HARV>HARV* screen. The user can pick from a list of preselected names or has the ability to create custom marker names. The user determines which four will be shown and the order in which they will be listed. This screen also allows the user to determine if the selected marker should be a momentary type marker or a latch toggle type marker.

NOTE: *Markers are only functional when used with an optional GPS Receiver.*

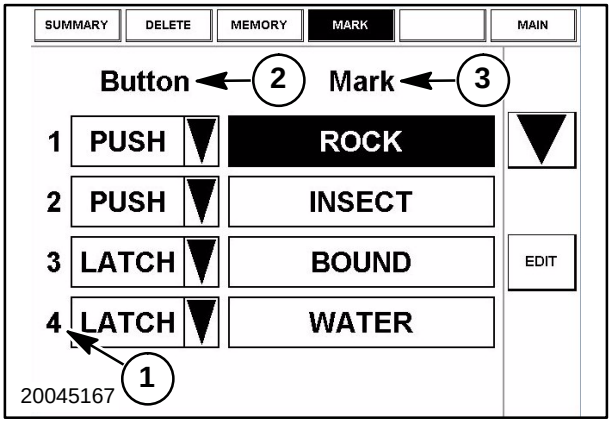
A. Marker Location, 1, – This number indicates the position in which the marker will be displayed on the HARV>HARV* screen.

B. Button Type, 2, – The markers can be individually configured to be either a PUSH or LATCH type.

   PUSH Type – Configures the marker to act as a momentary button. The marker will only activate when selected and will turn off when released. The button will look like an action button.

   LATCH Type – Configures the marker to act as an ON/OFF switch. Once selected, the marker remains activated until the marker is selected again.

C. Marker Name, 3, – Can be selected from the initial list or markers can be edited.



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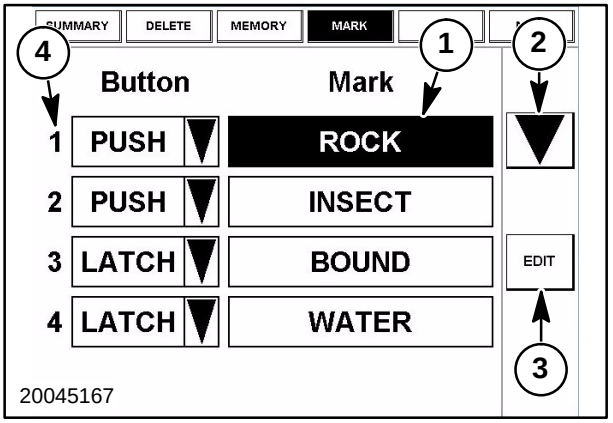
1. Determine what name is required in the number 1 marker location and press and blacken the Name selection box, 1. Press the Down Arrow Button, 2, to select from the Marker selection list or press the Edit Button, 3, to assign an operator determined name.
2. Press the Button List, 4, toggle between “PUSH” for momentary or “LATCH” for extended marker identification.
3. Repeat this procedure until all four markers have been assigned. This is the maximum number of active markers that can be displayed for any field.

Once configured, the marker configuration will be available for use on the HARV>HARV* screen.



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SECTION 4
LUBRICATION AND MAINTENANCE

LUBRICATION

Adequate lubrication and maintenance on a regular schedule is vital to maintaining your equipment. To ensure long service and efficient operation, follow the lubrication and maintenance schedules outlined in this manual. The use of proper fuels, oils, grease and filters, as well as keeping the systems clean, will also extend machine and component life.

IMPORTANT: *Always use genuine* ***Case IH*** *replacement parts, oils and filters to ensure proper operation, filtration of engine and hydraulic systems. See your* ***Case IH*** *dealer for additional oil quantities.*

⚠ CAUTION ⚠

Always stop the machine before lubricating and observe following precautions:

- Disengage all drives.
- Lower the feeder and header to the ground.
- Engage the parking brake.
- Switch off the combine engine.
- Remove the ignition key before leaving the operator's platform.

GREASE FITTINGS AND INTERVALS

Before greasing the machine always wipe any dirt from the grease fittings.

All points, except those with special notations, should be lubricated until the grease is forced out around the bearings and then the excess grease should be wiped off.

Grease specification

Use Multipurpose grease Case IH 251H EP.

Lubricant	Type and Description	Part Number	Container Size
Engine Oil	AKCELA NO. 1 SSL OIL SAE 0W–40	B505693	2.5G / 9.46L
	AKCELA NO. 1 OIL SAE 10W	407357R4	5G / 18.93L
	AKCELA NO. 1 OIL SAE 10W–30	104104A1	1QT / .946L
		139033A1	1G / 3.785L
		372253A1	2.5G / 9.46L
		104106A1	5G / 18.93L
	AKCELA NO. 1 OIL SAE 30	407352R4	1QT / .946L
		139032A1	1G / 3.785L
		143947A1	2.5G / 9.46L
		407356R4	5G / 18.93L
	AKCELA NO. 1 OIL SAE 15W–40	407410R2	1QT / .946L
		139034A1	1G / 3.785L
		143949A1	2.5G / 9.46L
		407414R2	5G / 18.93L
	AKCELA NO. 1 OIL SAE 20W–50	332390A1	5G / 18.93L
	AKCELA AUTO SUPREME SAE 5W–30	372255A1	1QT / .946L
	AKCELA AUTO SUPREME SAE 10W–30	B500401	1QT / .946L
	AKCELA LOW ASH OIL SAE 10W	407345R3	5G / 18.93L
	AKCELA LOW ASH OIL SAE 30	407340R3	1QT / .946L
		139037A1	1G / 3.785L
		407344R3	5G / 18.93L
Transmission Oil	AKCELA HY–TRAN ULTRA	139029A2	1G / 3.785L
		143945A2	2.5G / 9.46L
		372705R7	5G / 18.93L
	AKCELA HY–TRAN ULTRA SSL	B505697	2.5G / 9.46L
	AKCELA TSM BIO	B505699	2.5G / 9.46L
Hydraulic Oil	AKCELA AW46 HYD FLUID	116799A1	5G / 18.93L
	AKCELA AW68 HYD FLUID	B505690	5G / 18.93L
	AKCELA AW100 HYD FLUID	339852A1	5G / 18.93L
	AKCELA HYDRAULIC EXCAVATOR FLUID	B17639	5G / 18.93L
	AKCELA TCH FLUID	139030A1	1G / 3.785L
		B53977	5G / 18.93L
ATF Oil	TRANS. XHD	282371A1	1QT / .946L
		310233A1	2.5G / 9.46L
Gear Oil	AKCELA 135H EP GEAR LUBE SAE 80W–90	139039A1	1G / 3.785L
		139801A1	5G / 18.93L
		246666A1	16G / 60.6L
	AKCELA 135H EP GEAR LUBE SAE 85W–140	139041A1	1G / 3.785L
		407364R2	5G / 18.93L
		407538R2	16G / 60.6L
	AKCELA TRANSAXLE FLUID	B17632	5G / 18.93L
	AKCELA GEAR LUBE SSL	B505707	1QT / .946L
Grease	AKCELA 251H EP MULTI–PURPOSE GREASE	132096A1	TUBE – 14 OZ.
	AKCELA PREMIUM GREASE EP–2	B505708	TUBE – 14 OZ.
	AKCELA EP–0 GREASE	B505226	3.35 OZ
	AKCELA CORN HEAD GREASE	B95920	TUBE – 14 OZ.
	AKCELA MOLY GREASE	132095A1	TUBE – 14 OZ.
	AKCELA SSL SYNTHETIC GREASE	B505709	TUBE – 14 OZ.
	AKCELA HTO ADDITIVE	B17508	1QT / .946L
	AKCELA HTO PREMIX	298053A1	1G / 3.785L
	AKCELA LIMITED SLIP ADDITIVE	B91246	16 OZ
	AKCELA AXLE OIL ADDITIVE	402982A1	16 OZ
Brake Oil	AKCELA CRAWLER BRAKE OIL	B91244	1QT / .946L
Special Lubricants	AKCELA AG LUBRICANT	156576C91	1QT / .946L
	AKCELA DURAFIT SPINDLE GREASE	B500418	35 LB. / 15.9L
	AKCELA COTTON PICKER BAR LUBE	407515R1	35 LB. / 15.9L
	AKCELA HI–SPEED SPINDLE CLEANER	B91241V	5G / 18.93L

MAINTENANCE SCHEDULE

Procedure	Daily	Every 50 Hours	Every 100 Hours	Every 300 Hours	Every 600 Hours	Every 1200 Hours	Every 4500 Hours
Check wheel nut and bolt torques	first week	x					
Check engine oil level	x						
Check hydraulic/hydrostatic oil level	x						
Check PTO gearbox fluid level	x						
Dump rock trap (if equipped)	x						
Check chain and belt tensions		x					
Check engine coolant level		x					
Drain water from fuel system water separator		x					
Check tire pressure		x					
Lube 50 hour grease fittings		x					
Clean air conditioner drain hose		x					
Clean cab fresh air filter		x					
Check feeder conveyor adjustment		first 50 hrs	x				
Lube drive chains			x				
Lube 100 hour grease fittings			x				
Check rotor gearbox fluid level			x				
Check grain elevator conveyor adjustment			x				
Check brake fluid level				x			
Check electrolyte level in batteries				x			
Check bubble-up gearboxes oil level				x			
Change engine oil and filter				x			
Clean cab recirculation air filter				x			
Lube 300 hour grease fittings				x			
Lube unloading chain idler support				x			
Check steering ball joints, wheel spindles, tie rods and steering hydraulic components				x			
Lube pivot points				x			
Clean and check brakes				x			
Check transmission oil				x			
Check final drives oil				x			
Check unloader lower gearbox oil				x			
Check feeder gearbox oil				x			
Check header gearbox oil				x			
Check unloading tube gearbox oil					x		
Check tailings gearbox oil					x		
Lube 600 hour grease fittings					x		
Change traction gearbox oil					x		
Change final drives gearbox oil					x		
Change unloading drive gearbox oil					x		
Change bubble-up gearbox oil					x		
Change rotor gearbox oil					x		

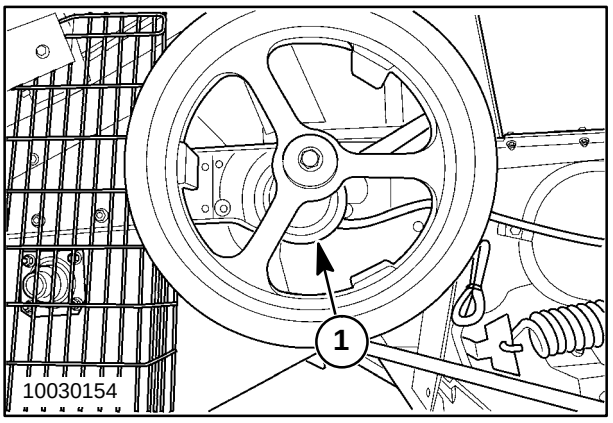
Continued on next page

Procedure	Daily	Every 50 Hours	Every 100 Hours	Every 300 Hours	Every 600 Hours	Every 1200 Hours	Every 4500 Hours
Change header gearbox fluid					x		
Change Feeder Conveyor Gearbox fluid					x		
Change PTO gearbox fluid					x		
Replace cab clean air filter					x		
Inspect self-leveling cleaning shoe pivot					x		
Engine Fuel Filter					x		
Fuel Separator Filter					x		
Change hydro pressure filter					x		
Replace air cleaner safety element *					x		
Change hydraulic fluid and filter						x	
Change PTO Lube Filter						x	
Change brake fluid						x	
Change engine coolant						x	
Clean engine fuel injector tips						x	
Replace engine crankcase filter						x	
Clean and inspect engine fuel injectors							x
Clean and inspect turbocharger							x

*Change primary filter annually or after 3 cleanings. Replace safety element when primary filter is changed.

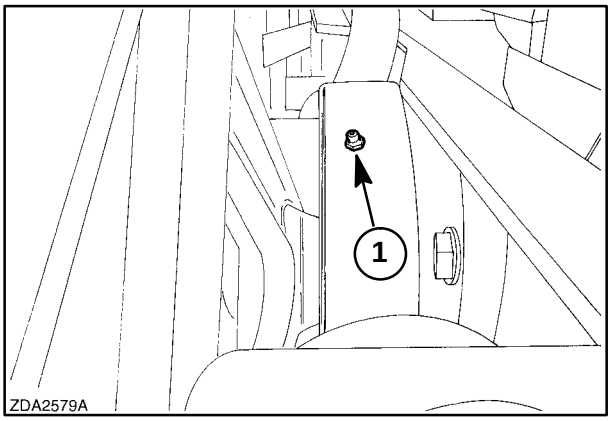
50 HOUR INTERVAL GREASE FITTINGS

1. Eccentric hub, cleaning shoe drive, RH side, 1.



1

2. Eccentric hub cleaning shoe drive, LH side, 1.



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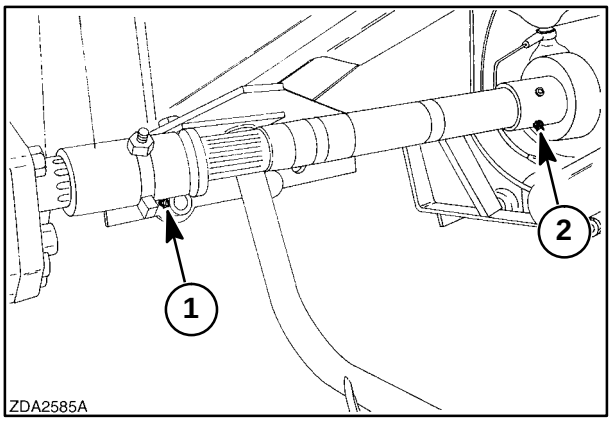
100 HOUR INTERVAL GREASE FITTINGS

1. Half shaft couplers traction, 1 and 2 (both sides).



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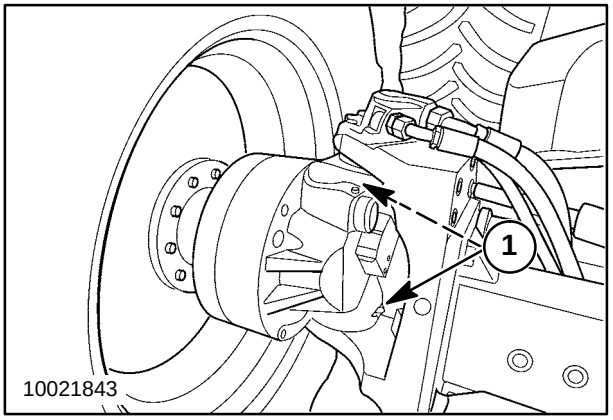
2. Left and right **powered rear axle** upper and lower king pin bushing, 1 (both sides), (if equipped).



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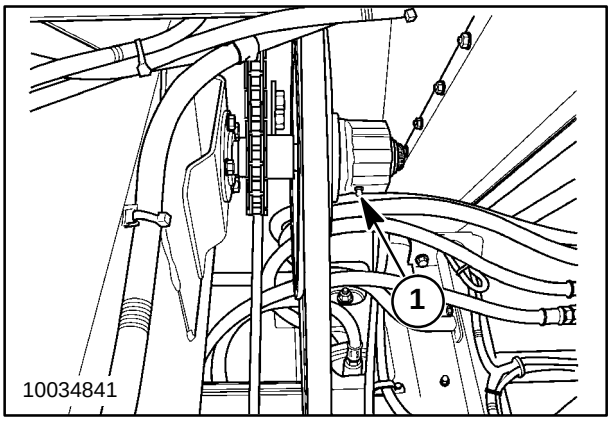
300 HOUR INTERVAL GREASE FITTINGS

1. Grain elevator safety clutch, 1.



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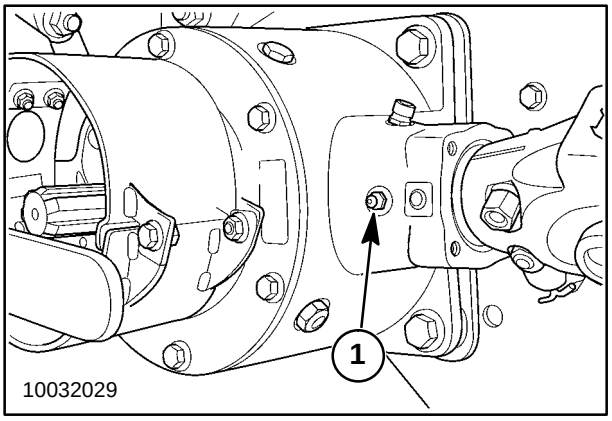
2. Header drive gearbox, 1.



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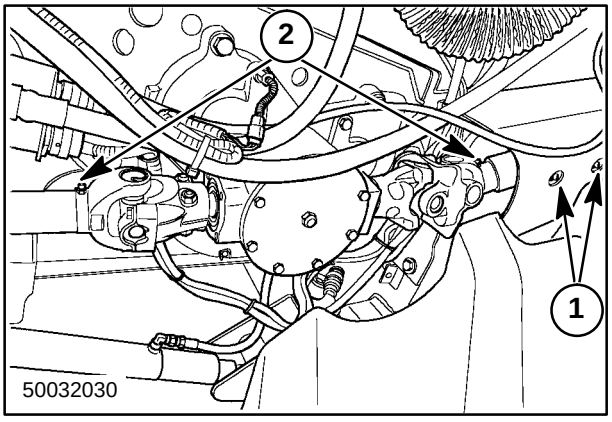
3. Header drive shaft pillow block, 1, (2 pumps).
4. Sliding shaft splines, 2.



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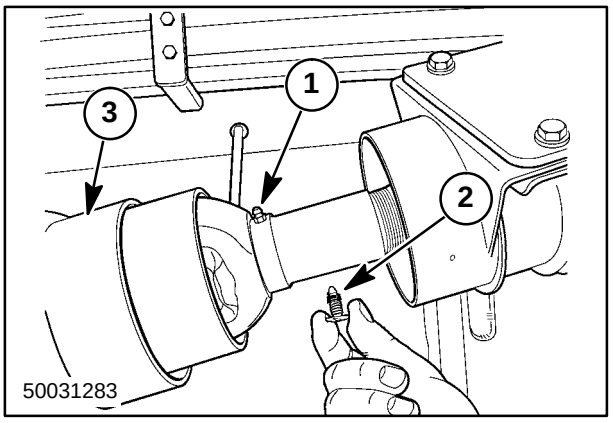
5. Header drive shaft upper spline, 1. Remove the two clips, 2, from the shield, 3, and slide shield forward to access zerk, 1. Replace shield and retaining clips.



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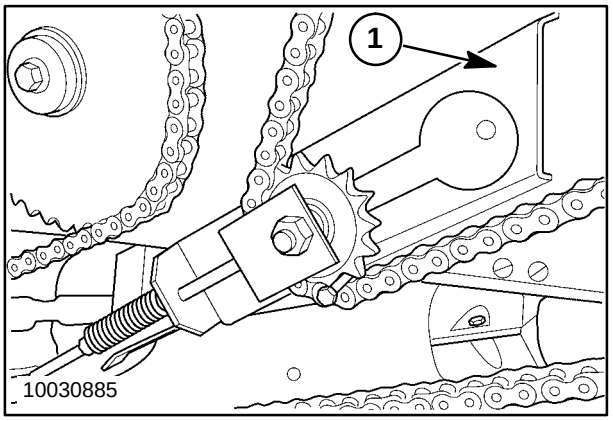
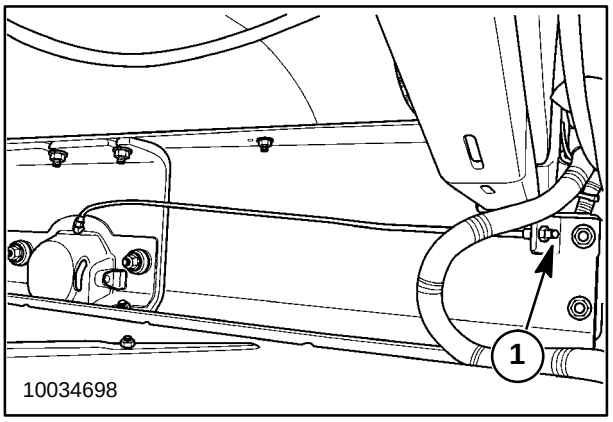
6. Grease the unloader chain idler support, 1.



9

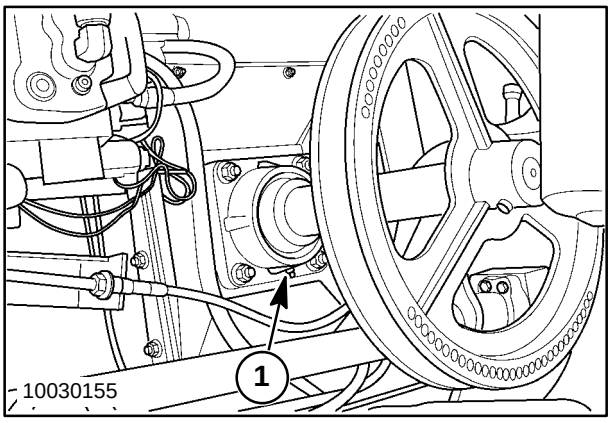
600 HOUR INTERVAL GREASE FITTINGS

1. Rotor front bearing, 1, (5 pumps).



10

2. LH side beater/chopper shaft bearing, 1, (5 pumps).



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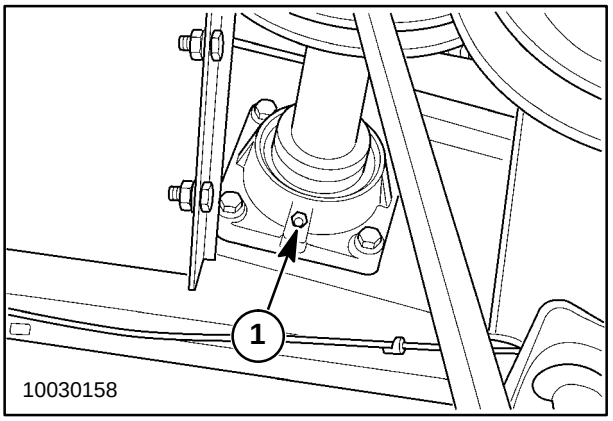
3. RH side beater/chopper shaft bearing, 1, (5 pumps).



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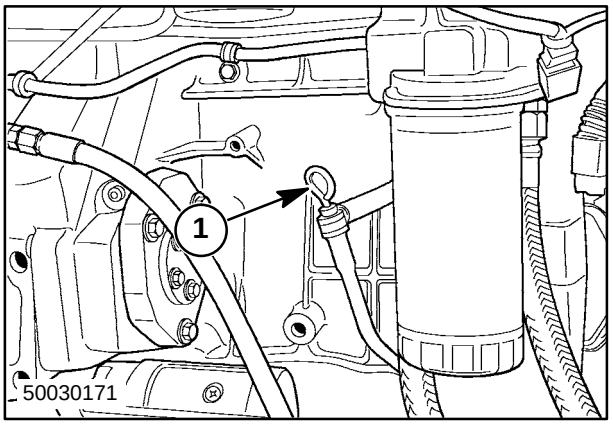
ENGINE

Oil level

Check the engine oil level daily when the combine is standing on a level surface and after the engine has been stopped for a minimum of five minutes.

1. Remove the dipstick, 1, wipe clean and re-insert fully.



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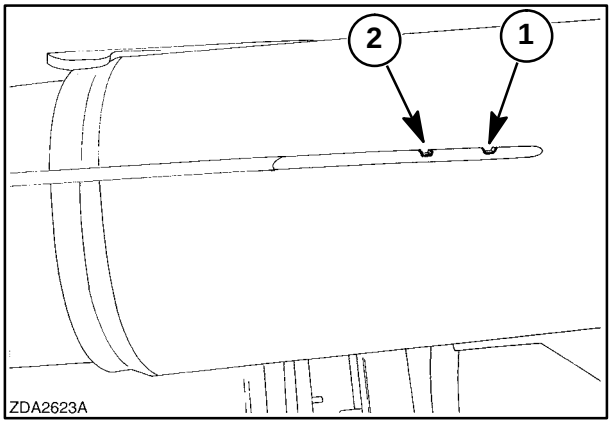
2. Pull the dipstick out again and check the oil level. The oil level should be between the minimum, 1, and the maximum mark, 2.

IMPORTANT: *At no time should the oil level be allowed to fall below the minimum level.*



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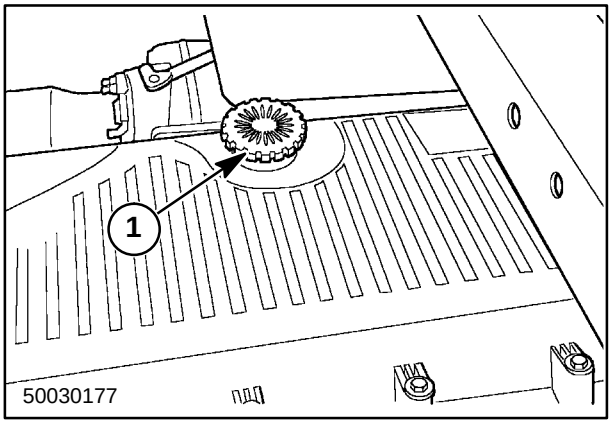
If necessary, add oil through filler hole, 1, until the oil level reaches the maximum mark on dipstick**.**

IMPORTANT: *Do not fill above upper mark on dipstick. Excess oil will burn off, create smoke and give a false impression of oil consumption.*



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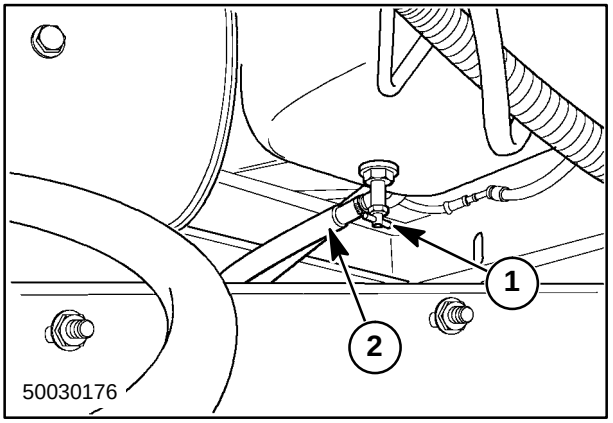
Engine oil change

Every **300** operating hours.

The engine oil filters should be changed every time the oil is changed.

To change oil and filter, proceed as follows:

1. Warm the engine to operating temperature. Stop the engine, open stopcock, 1, and drain the oil through hose, 2, and catch the oil in a suitable container.



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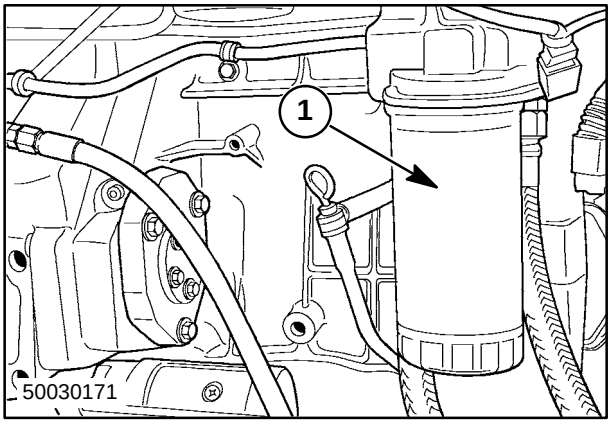
2. Clean the area around engine oil filters, 1, and remove the “spin-on” filters using a filter wrench.
3. Apply a film of oil to the seal ring of new engine filters.
4. Screw on the filters by hand. Tighten firmly but do not use tools.



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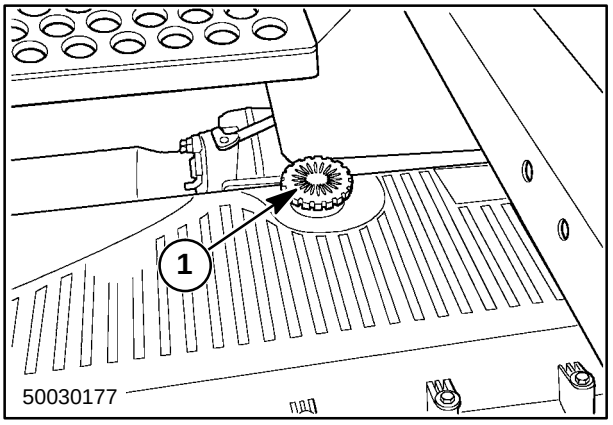
5. Close stopcock, 1, Figure 16.
6. Remove filler cap, 1, and refill the engine with clean oil. Re-install the filler cap.
7. Run the engine at low idle for a minute or so, to circulate the oil, then stop the engine. Check the oil filters for leaks.
8. Wait for a short period to allow the oil to drain back to the sump. Check the oil level on dipstick as explained in previous paragraph headed “Oil level”.



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Engine sump and filter capacity (total)

- 10.3L engine: 32 liters (8.5 US gal); two oil filters.

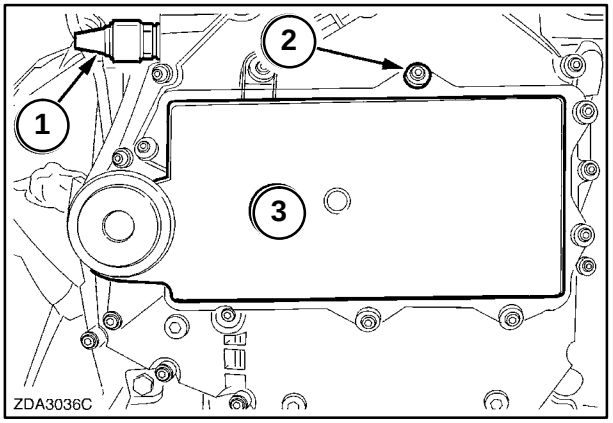
Oil specification

Use Case No. 1, SAE 15W40 engine oil or an oil meeting the following specification:

- 15W40 API CH-4

Crankcase breathing system

1. Replace the closed crankcase filter every 1200 operating hours or if sight glass, 1, shows a red pin.
2. Remove nine bolts, 2, to remove cover, 3, of the crankcase filter.



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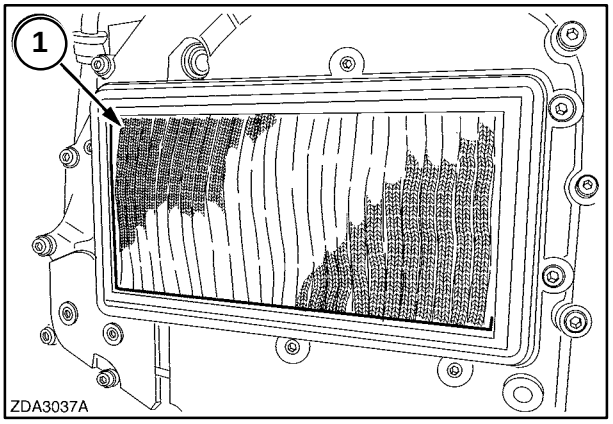
3. Replace crankcase filter, 1.



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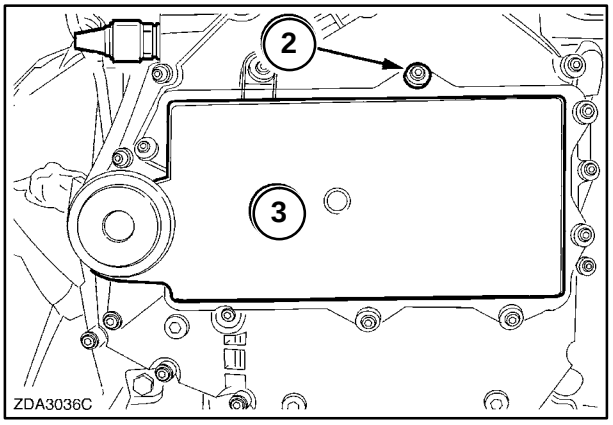
4. Install cover, 3, and tighten bolts, 2.



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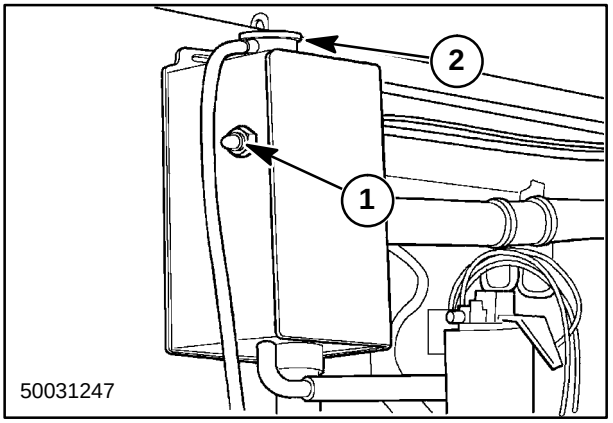
ENGINE COOLING SYSTEM



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Coolant level
Check the coolant level every 50 hours in the shunt tank when the engine is cold. The coolant should be visible in the sight glass, 1.

IMPORTANT: *Under no circumstances should the engine be started without coolant in the cooling system.*

⚠ WARNING ⚠

The cooling system operates under pressure which is controlled by pressure/filler cap, 2. Take care if removing the pressure/filler cap while the system is hot. Cover the cap using a thick cloth and open the pressure/filler cap slowly and allow the pressure to escape before removing the cap completely. Do not add cold water to a hot shunt tank.

When the coolant level is too low, proceed as follows:

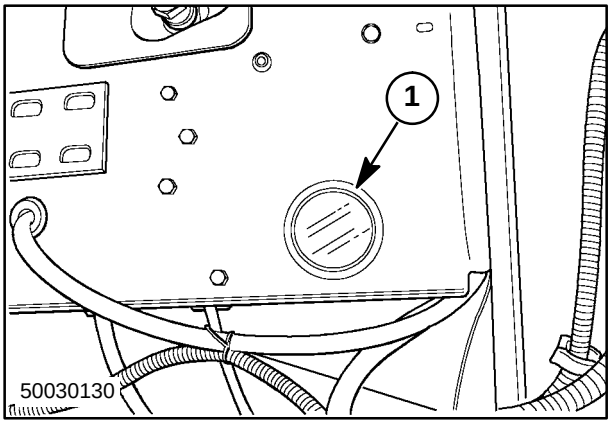
1. Run the engine at low idle.
2. Add coolant to the cooling system through shunt tank filler opening. Never fill when the engine is hot.

Coolant change
The coolant should be replaced:

- Every 1200 hrs.

When replacing the coolant proceed as follows:

1. Remove cover, 1, located on the front lower panel of the cooling box.



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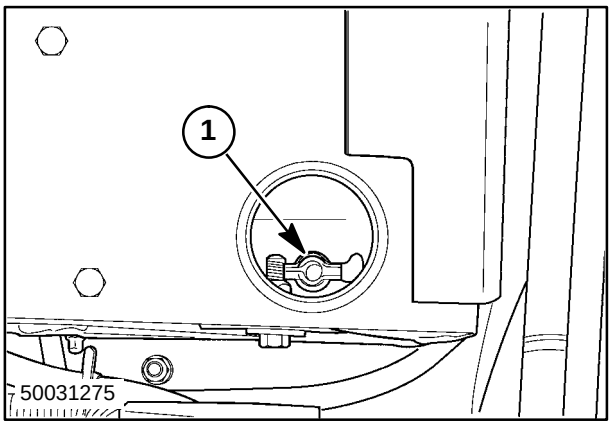
2. Install drain hose to stopcock and route to suitable container to collect coolant.
3. Drain the coolant by opening stopcock, 1, at the bottom of the radiator.
4. Flush the cooling system with clean water (steps 5 to 7).
5. Close stopcock, 1, and fill the cooling system with clean water through shunt tank filler opening, 2, Figure 22.
6. Start the engine and run it at low idle until the water temperature is at normal operating temperature.
7. Stop the engine.
8. Drain the water by opening stopcock, 1.
9. Remove hose, close stopcock and fill the cooling system with coolant as specified.
10. Install the cover.

IMPORTANT: *Always fill the cooling system with an approved fully formulated antifreeze/water mixture. Check the freezing point of the coolant after each refill.*

⚠ CAUTION ⚠

The engine is hot and so may be the shunt tank. Extreme care should be taken when filling the cooling system.

11. Start the engine and run it at 1500 rpm until the coolant temperature is at normal operating temperature.
12. Return to low idle and stop the engine after 1 minute (Turbo charger precaution).
13. Fill the shunt tank to above sight glass, 1, and install pressure/filler cap, 2.



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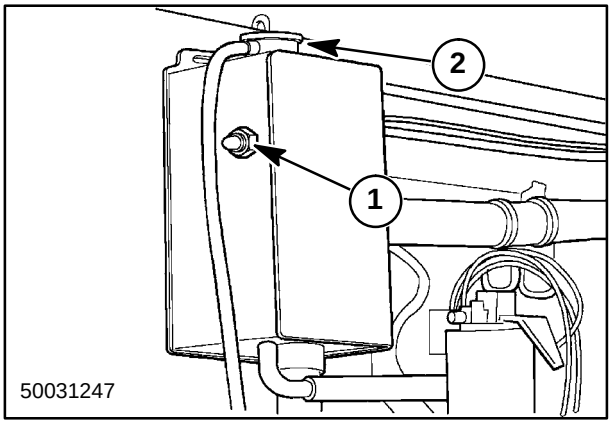

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Coolant system capacity

- 42 liters. (11.1 US gal)

Coolant specification

Use Case IH XHD antifreeze

Follow label instruction to achieve desired freeze protection:

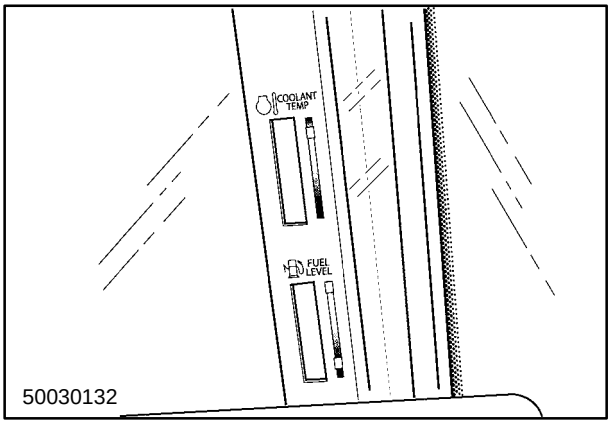
The quality of the water should not exceed following limits:

- Total hardness: 0.3%
- Chlorides: 0.1%
- Sulphates: 0.1%

FUEL SYSTEM

Fuel level

The fuel level can be checked on the bargraph indicator integrated in the shaft speed monitor.



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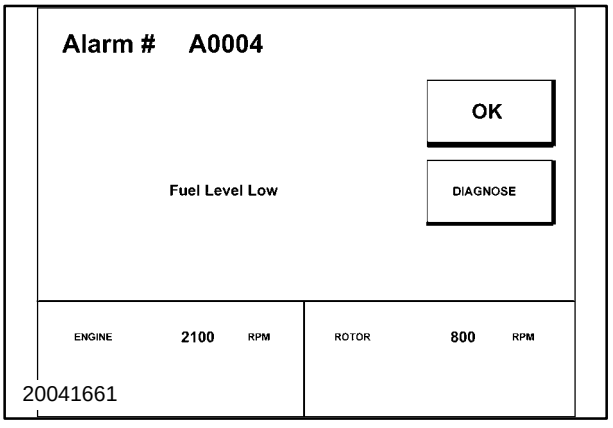
When the fuel level is low level an alarm screen appears on the monitor.



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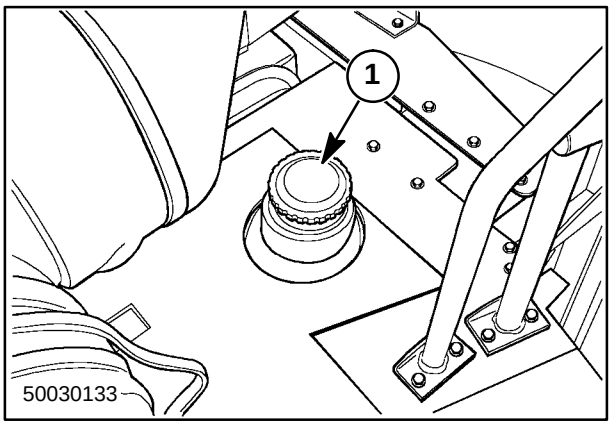
Filling the fuel tank

To fill the fuel tank, proceed as follows:

1. Stop the engine and wait until all rotating parts have come to a complete standstill.
2. Before remove the fuel filler cap, 1, clean the area around the filler cap and the filler neck to prevent dirt from entering the fuel tank and contaminating the fuel.
3. Fill the fuel into the tank always trough a fine screen filter. Don't fill the tank to capacity. Allow room for expansion.



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IMPORTANT: *The best time to fill the tank is at the end of the day to reduce overnight condensation.*

IMPORTANT: *If the original fuel tank cap is lost or a new cap is required, replace it with a genuine original vented cap.*

⚠ CAUTION ⚠

When handling diesel fuel, observe the following:

- **Smoking is strictly prohibited during filling the fuel tank.**
- **Never fill the tank when the engine is running.**
- **Wipe up spilled fuel immediately.**

Fuel tank capacity (Std.)

10.3L engine 1000 Liters (264 US gal.)

Fuel specification

The quality of fuel used is an important factor in obtaining dependable performance and satisfactory engine life.

Fuels must be clean, well-refined and non-corrosive to fuel system parts. Be sure to use fuel of a known quality from a reputable supplier.

To be sure that a fuel meets the required properties, enlist the aid of a reputable fuel oil supplier. The responsibility for clean fuel lies with the fuel supplier as well as the fuel user

Use Number 2–D fuel in temperatures above –7°C (20°F). Use of Number 2–D fuel at temperatures below –7°C (20°F) will cause the fuel to thicken, which may prevent the engine from running. (If this happens, contact your dealer.)

Use Number 1–D fuel in temperatures below –7°C (20°F).

General Fuel Classification	Final Boiling Point (max)	Cetane rating (min)	Sulphur content (max)
No. 1–D	288°C (550°F)	40*	0.3%
No. 2–D	357°C (675°F)	40*	0.5%

* When continually operating at low temperatures or high altitude, a minimum cetane rating of 45 is required.

Use fuel with a sulphur content below 0.5%. Using fuel with a sulphur content above 0.5% requires more frequent oil changes as noted in the maintenance schedule. The use of diesel fuel with a sulphur content above 1.3% is not recommended.

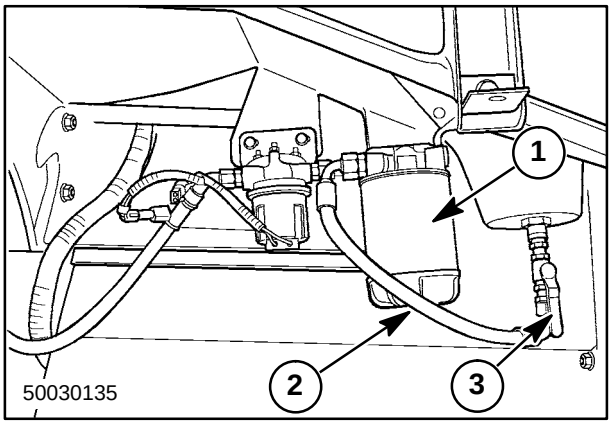
Fuel storage

Many engine difficulties can be traced to dirty fuel, therefore the importance of using clean fuel, properly stored cannot be stressed too strongly.

Fuel prefilter/water separator

Drain the water from prefilter/water separator, 1, as required, proceed as follows:

1. Loosen screw, 2, to allow the water to run out of the screw orifice.
2. Collect the water/fuel mixture and dispose according to regulations.
3. Tighten screw, 2, when fuel free of water runs out of the screw orifice.



29

The fuel prefilter/ water separator, 1, should be changed every 600 operating hours, or earlier, if a drop in engine performance is experienced.

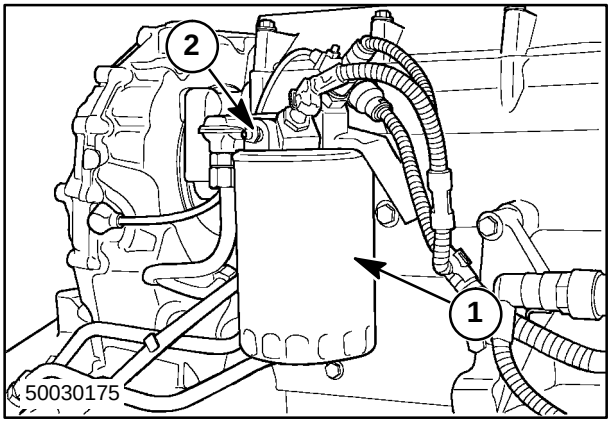
To change the prefilter/water separator, proceed as follows:

1. Wipe the top of the prefilter/water separator head clean.
2. Turn fuel valve, 3, to the closed position.
3. Unscrew the “spin-on” prefilter/water separator, using a filter wrench.
4. Fill the new prefilter/water separator with clean fuel and apply a film of fuel to the gasket.
5. Screw on the new prefilter/water separator by hand. Tighten firmly, but do not use tools.
6. Turn fuel valve, 3, to the open position.
7. Bleed the fuel system (refer to paragraph headed “Bleeding the fuel system”).

Fuel filter

The fuel filter, 1, should be changed every 600 operating hours. Proceed as follows:

1. Wipe the top of the filter head clean.
2. Unscrew the fuel filter, using a filter wrench.
3. Apply a film of fuel to the seal of the new fuel filter.
4. Screw the new filter on by hand and tighten it securely (firmly against the head and then an additional 1/4 to 1/2 turn) DO NOT USE TOOLS.
5. Bleed the fuel system, refer to next paragraph headed “Bleeding the fuel system”.



30

Bleeding the fuel system

To bleed the fuel system, proceed as follows:

1. Ensure there is fuel in the fuel tank and the valve is open.
2. Set the ignition switch in the “contact” position to engage the electrical fuel pump.
3. Loosen bleed screw, 2, to allow the air to escape.
4. Tighten the bleed screw when fuel free of air bubbles escapes.

NOTE: *To avoid possible fuel contamination, install a transparent hose onto the bleed screw, to catch the fuel in a suitable container and also to check if the fuel escaping from the bleed screw is free of air bubbles.*

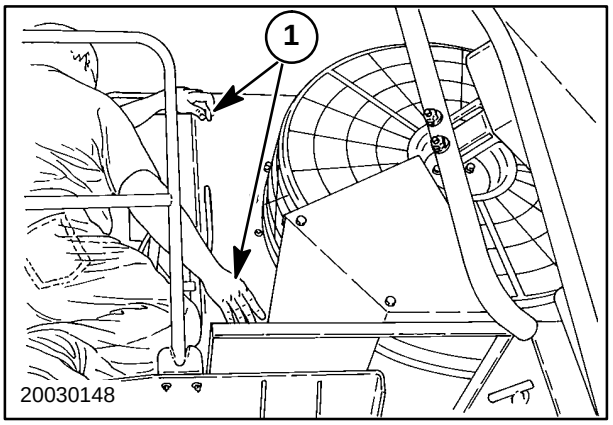
5. Start the engine.
6. Run the engine at low idle until the engine runs smoothly.

ROTARY DUST SCREEN AND COOLING SYSTEM

The AFX 8010 is equipped with a hinged rotary dust screen door.

To gain access to clean the cooling system, proceed as follows:

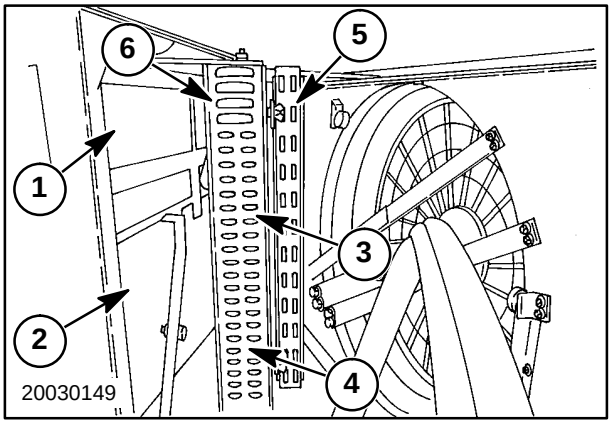
Open the rotary dust screen door with knobs, 1.



31

Clean the cooling system regularly, depending on combining conditions by removing the pins and swinging to cooler the cooler out as shown.

- Intercooler, 1
- Radiator, 2
- PTO Gearbox oil cooler, 3
- Hydraulic oil cooler, 4
- Air-conditioning condenser, 5
- Fuel cooler, 6

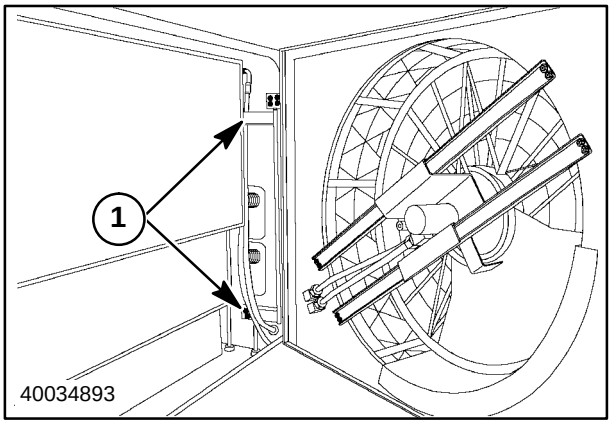


32

Service Hinge

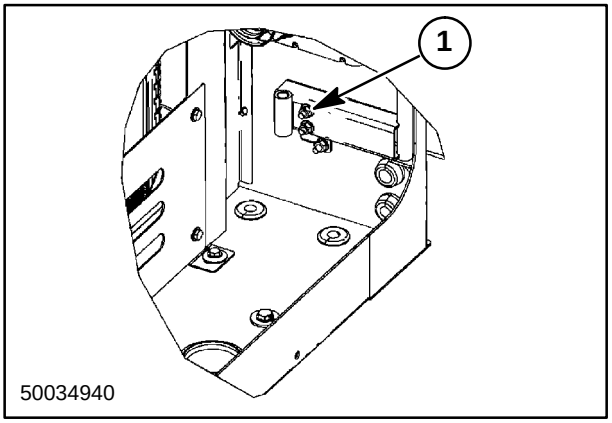
If needed the coolers may be swung further out by unbolting the service hinge as follows:

1. With the Rotary screen door open, the service hinge, 1, can be seen.



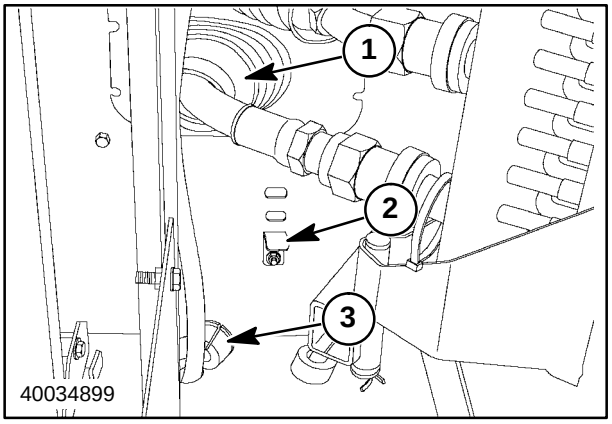
33

2. With the coolers swung out, remove the (4) bolts, (2) top and (2) bottom, 1, securing the hinge to the cooler housing.



34

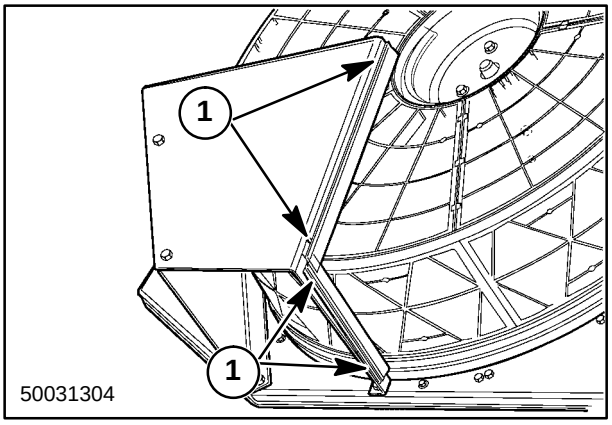
3. Remove the ties securing the boots, 1, to the hoses. Pull the coolers toward the rear to open the service hinge and disengage latch, 2.
4. Swing the cooler out slowly ensuring that the hoses are not catching on the edges of the opening.
5. When re-attaching the service hinge, be sure all grommets, 3, are in place and boots are secured to the hoses with cable ties.



35

Block Off Plate Brushes

The brushes should be adjusted to maintain light contact with the screen as they wear. Loosen screws, 1, and slide the brushes in the available slots and retighten.



36

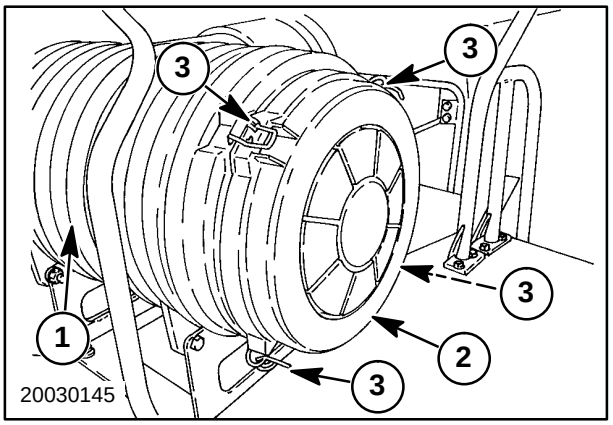
AIR INTAKE SYSTEM

The filter element, 1, should only be cleaned when there is an alarm on the Universal Display Plus™ monitor “Air filter blocked” (625 mm) (24 - 5/8″) vacuum.

To remove the air cleaner element, remove cover, 2, by loosening clamps, 3.

Remove the primary filter from housing. Do not let dirt fall on the safety filter.

IMPORTANT: *Do not remove safety element unless it is to be replaced.*



37

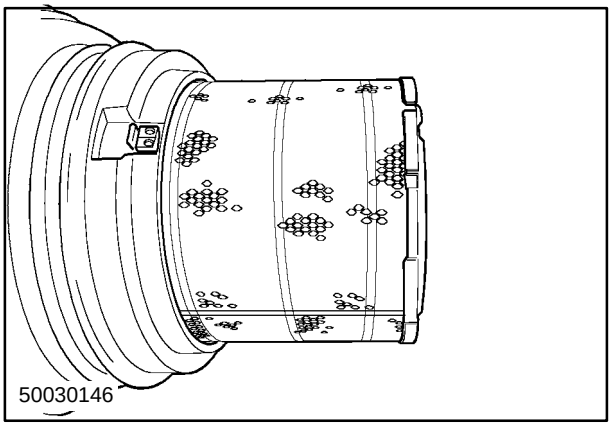
⚠ WARNING ⚠

Wear a dust mask when cleaning the air filter element.

To clean the element, hold the top and tap it against the palm of the other hand to remove the dust.

NEVER TAP IT ON A HARD SURFACE.

When tapping does not remove the dirt, direct compressed air through the element, from the inside towards the outside.



38

To prevent damage to the element when cleaning with compressed air, take the following precautions:

- Maximum air pressure must be 5 bar (72,5 psi).
- Move the nozzle up and down when rotating the element.
- Keep the nozzle at least 25 mm (1″) from the plated paper.

NOTE: *To keep the interval acceptable it is highly recommended to clean the element with compressed air.*

If the element is soiled with oil or soot, it is possible to soak it for 15 minutes in a solution of 75 grammes (0,165 lbs.) of non-sudsy detergent and 10 liters (2,6 US gal) of lukewarm water.

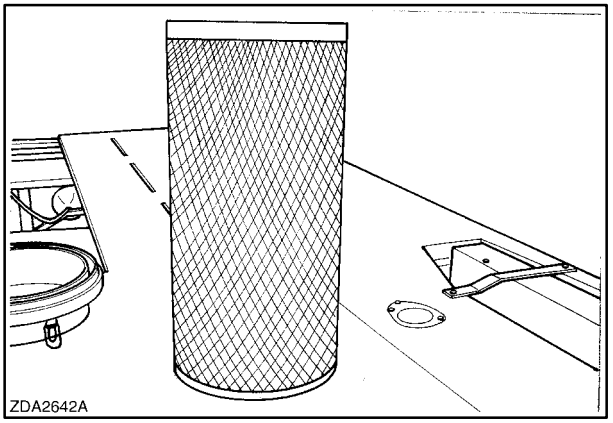
Rinse the element thoroughly in clean water until the water remains clear and leave the element to dry.

NEVER WASH THE AIR CLEANER ELEMENT IN GASOLINE OR DIESEL FUEL.

Every time the element is cleaned, it should be examined for holes and cracks by holding an electric light bulb inside the element and looking through it. If any damage is noted, discard the element and fit a new one.

Replace the element after 3 cleanings or once a year, whichever comes first.

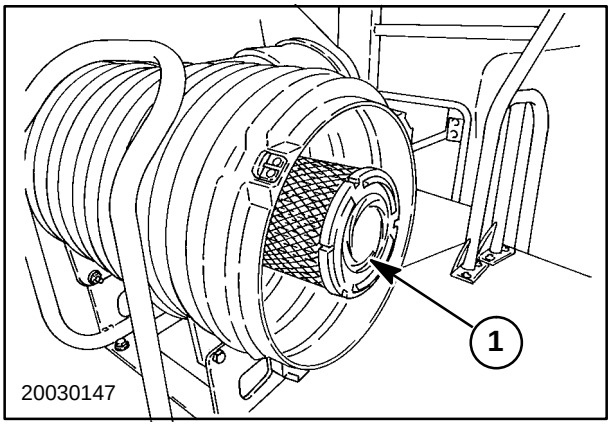
When fitting, make sure the element is seated properly and the sealing is in good condition.



39

A safety element, 1, is fitted as an additional security to prevent dust from entering the engine when replacing the standard element. The safety element should normally not be cleaned.

Replace the safety element when the primary element is changed.



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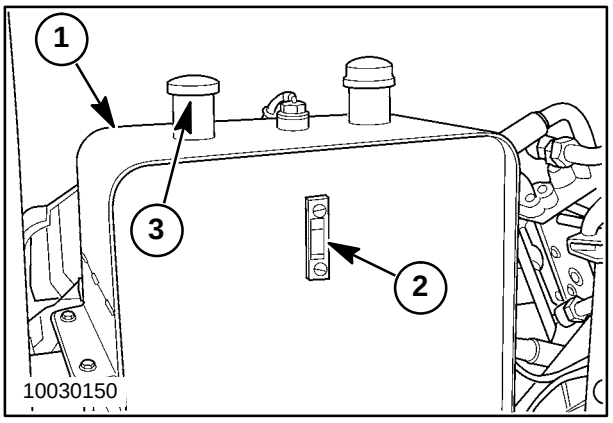
HYDRAULIC SYSTEM

Oil reservoir

An oil reservoir, 1, is fitted for the hydraulic system. This systems draw oil from it's own reservoir, and the oil goes through a separate filtering system.



41

Oil level

Ensure that all hydraulic cylinders are retracted before checking the oil level. Check the oil level daily on sight glasses, 2. The oil level should minimum reach bottom of sight glass. If necessary, add oil through filler opening, 3.

IMPORTANT: *Always clean the reservoir filler cap and the surrounding area before removing the filler cap to top-up or replace the oil.*

Oil and filter change

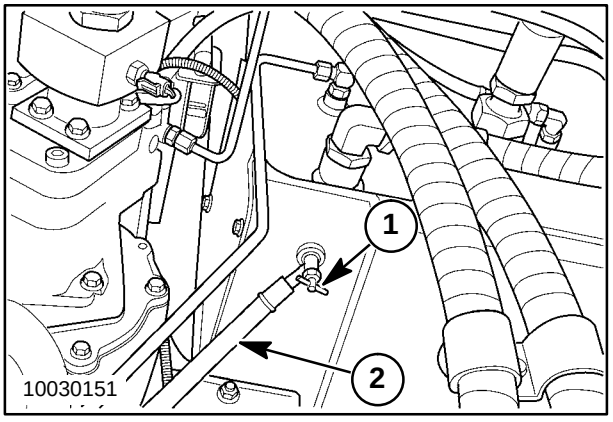
The hydraulic oil and filters should be changed:

- Every 1200 operating hours

The hydraulic return filter needs to be replaced at every oil change.

To change the oil and/or filter proceed as follows:

1. Thoroughly clean the surrounding area of the reservoir and filter (with compressed air, if possible).
2. Retract all hydraulic cylinders.
3. Drain the oil by opening stopcock, 1, at the bottom of reservoir.
4. Drain the oil from the reservoir through hose, 2, and catch the oil in a suitable container.

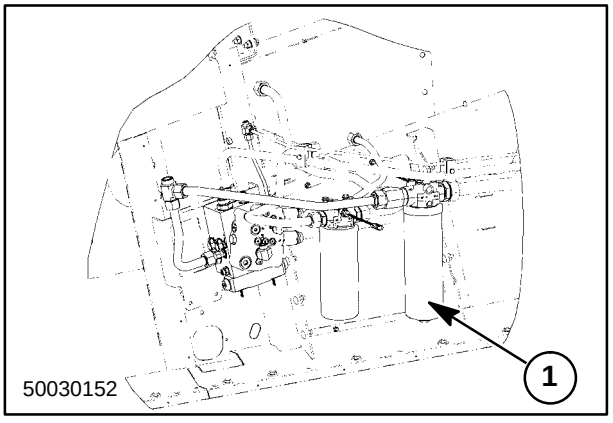


42

5. Remove the hydraulic return filter, 1.

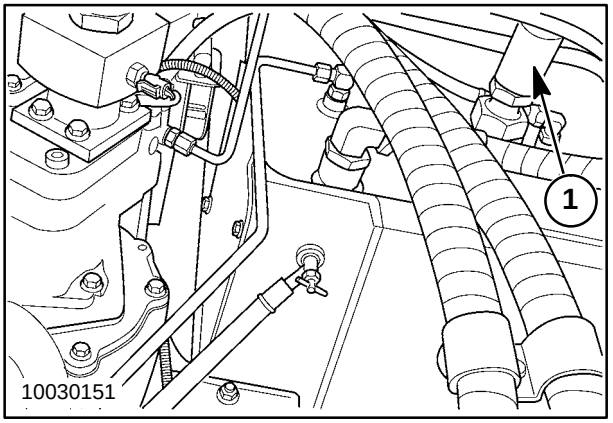
NOTE: *Anti-flowback valve allows filter to be removed with minimal oil loss without draining reservoir.*

6. Apply a film of oil to the gasket of the new filter.
7. Screw on the new filter by hand. Tighten firmly but do not use tools.



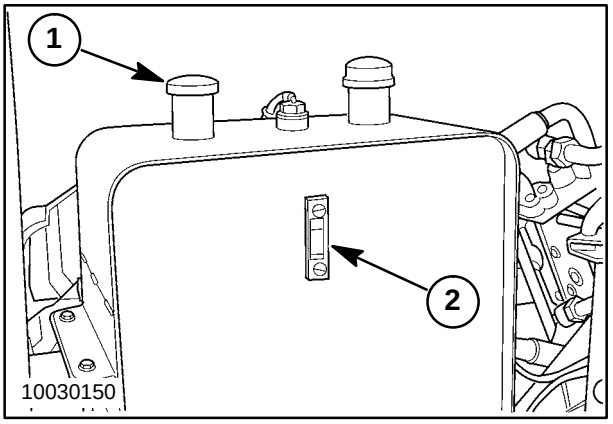
43

8. Loosen hose, 1, and remove the hydraulic hose at the oil reservoir.
9. Remove suction screen from oil reservoir.
10. Wash or clean the suction screen with compressed air.
11. Re-install the suction screen and the hydraulic hose.
12. Tighten hose, 1.



44

13. Fill the reservoir through filler hole, 1, to the maximum on the oil level gauge, 2.
14. Start the engine. Run it at idle speed for five minutes.
15. Check the oil level on the sight glasses. The oil level should be above the bottom sight glass line, 1.



45

Oil capacity

Reservoir capacity: 57 liters (15 US gallons)

Oil specification

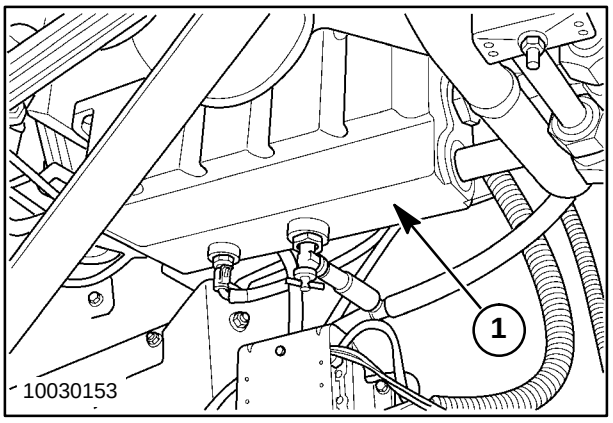
- Use Case IH AKCELA HY–TRAN ULTRA

IMPORTANT: *Oil quality and cleanliness is of utmost importance for the reliability and life of the hydraulic and hydrostatic system. Deviation from the prescribed oil specification may lead to severe damage and void warranty.*

PTO GEARBOX/HYDROSTATIC SYSTEM

Oil reservoir

The PTO gearbox serves as the oil reservoir, 1, for the hydrostatic system. This system draws oil from the gearbox, and the oil goes through a separate filtering system.



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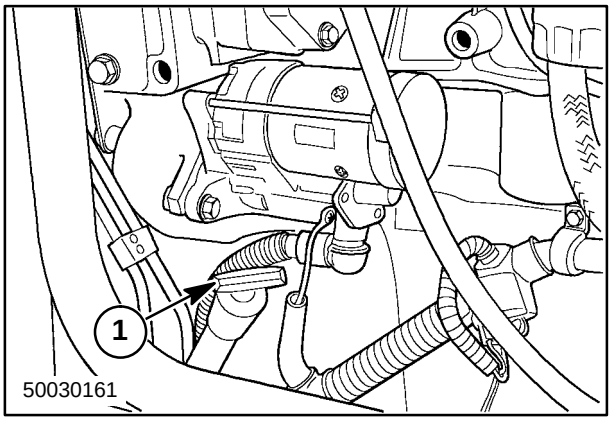
Oil level

Check PTO gearbox oil level with dipstick, 1. Oil level should be between minimum and maximum level, when the engine is off.

IMPORTANT: *Always clean the dipstick cap and the surrounding area before removing the dipstick to top-up or replace the oil.*



47

Oil and filter change

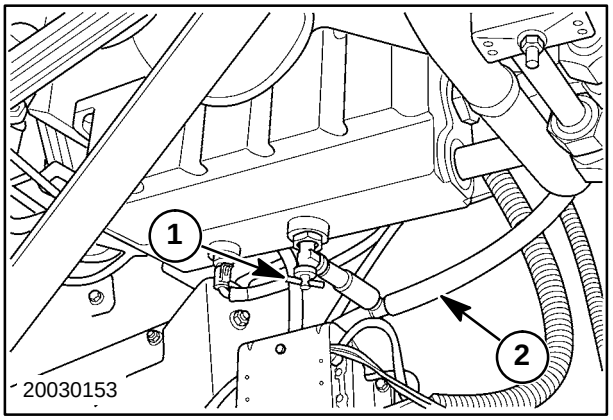
The hydraulic oil and filters should be changed:

- Oil and Hydro pressure filter every 600 hours
- Lube filter every 1200 operating hours

The hydrostatic filters needs to be replaced at every oil change.

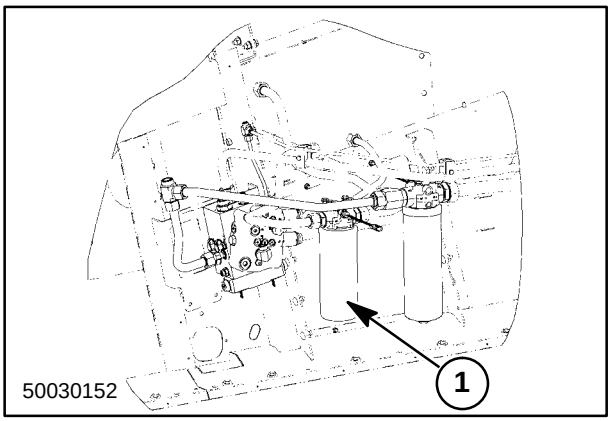
To change the oil and/or filter proceed as follows:

1. Thoroughly clean the surrounding area of the reservoir and filter (with compressed air, if possible).
2. Drain the oil by opening stopcock, 1, at the bottom of PTO Gearbox reservoir.
3. Drain the oil from the reservoir through hose, 2, and catch the oil in a suitable container.



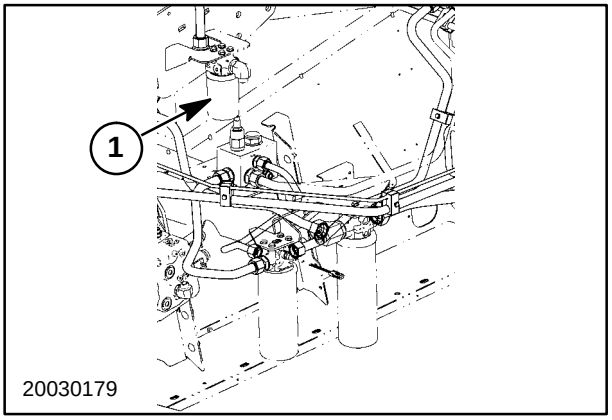
48

4. Remove the Hydro Pressure filter, 1.
5. Apply a film of oil to the gasket of the new filter.
6. Screw on the new filter by hand. Tighten firmly but do not use tools.



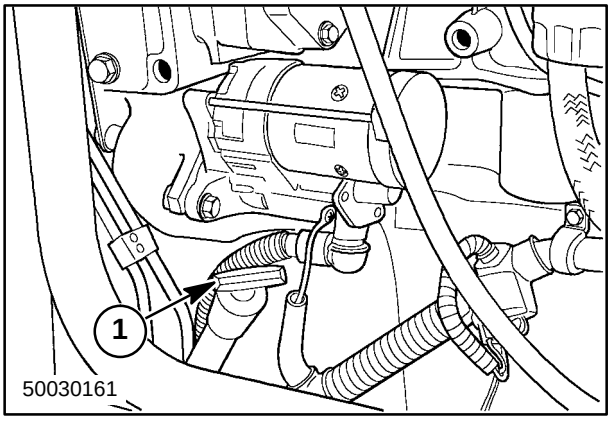
49

7. Every second oil change, remove the PTO Lube filter, 1.
8. Apply a film of oil to the gasket of the new filter.
9. Screw on the new filter by hand. Tighten firmly but do not use tools.



50

10. Fill the gearbox through filler hole, 1.
11. Start the engine. Run it at idle speed for five minutes and move the ground speed control lever slowly forward and backward with the gearshift in neutral position and the rear wheel drive (if installed) disengaged.
12. Turn the engine off.
13. Remove the dipstick, wipe clean and re-insert fully. Pull the dipstick out again and check the oil level. The oil level should be between the minimum and the maximum marks.



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Oil specification

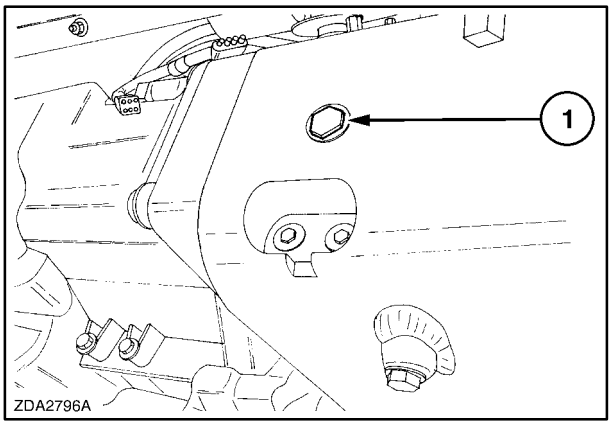
- Use Case IH AKCELA HY-TRAN ULTRA

IMPORTANT: *Oil quality and cleanliness is of utmost importance for the reliability and life of the hydraulic and hydrostatic system. Deviation from the prescribed oil specification may lead to severe damage and void warranty.*

TRACTION GEARBOX

Oil level

With the combine standing on a level surface, the oil level should reach the center of sight glass, 1.



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Oil change

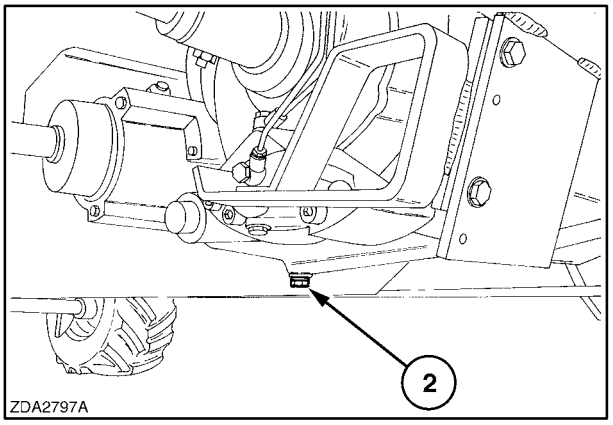
The traction gearbox oil should be changed:

- Every 600 operating hours

To change the traction gearbox oil, proceed as follows:

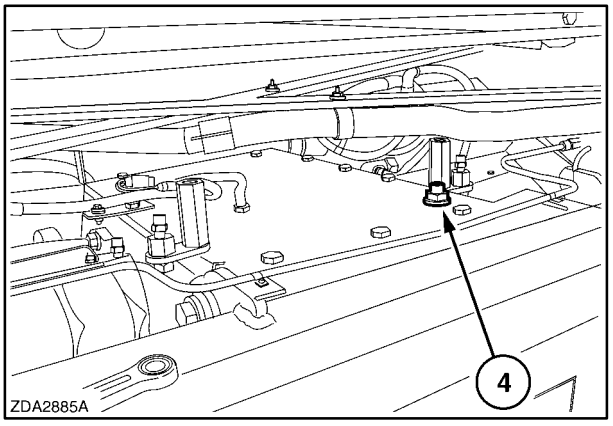
1. Drain the oil through plug, 2, and catch the oil in a suitable container.
2. Reinstall plug, 2.

IMPORTANT: *Clean magnetic plug, 2, before installation.*



53

3. Clean the area around filler/breather plug, 4, and remove the filler/breather plug.
4. Fill the traction gearbox with new oil until the oil level reaches the center of sight glass.
5. Reinstall filler/breather plug, 4.



54

Oil capacity

19 liters (5 US gallons)

Oil specification

Use Case IH AKCELA 135H EP Gear Lube SAE 80W–90 or an oil meeting the following specification:

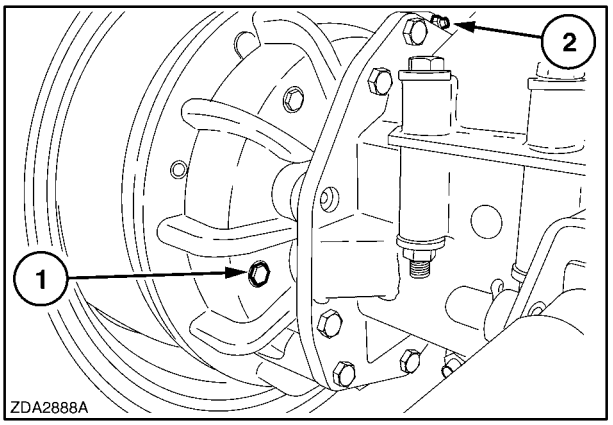
- SAE 80W90 EP API GL5

FINAL DRIVE GEARBOXES

Oil level

– Planetary final drives 1/13.09:
With the combine standing on a level surface, the oil level should reach the center of sight glass, 1.

If necessary, add oil through filler/breather plug, 2.



55

Oil change

The final drive gearbox oil should be changed:

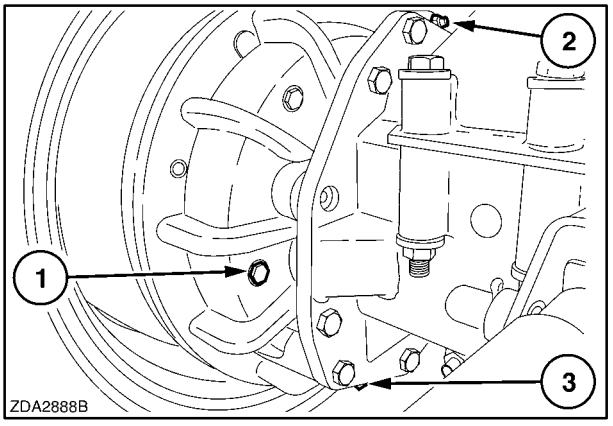
- Every 600 operating hours

To change the planetary final drive gearbox oil, proceed as follows:

1. Drain the oil through plug, 3, and catch the oil in a suitable container.
2. Reinstall plug, 3.

IMPORTANT: *Clean magnetic plug, 3, before installation.*

3. Clean the area around filler/breather plug, 2, and remove plug.
4. Fill the final drive gearbox with new oil until the oil level reaches the center of sight glass, 1.
5. Reinstall filler/breather plug, 2.



56

Oil capacity

Planetary 1/13.09 final drives : 6.7 liters (1.77 US gal)

Oil specification

Use Case IH AKCELA 135H EP Gear Lube SAE 80W–90 or an oil meeting the following specification:

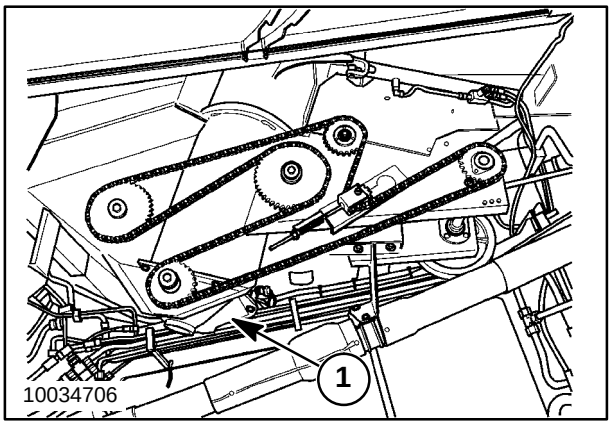
- SAE 80W90 EP API GL5

UNLOADING DRIVE GEARBOX

Oil change

The unloading drive gearbox oil, 1, should be changed:

- Every 600 operating hours.

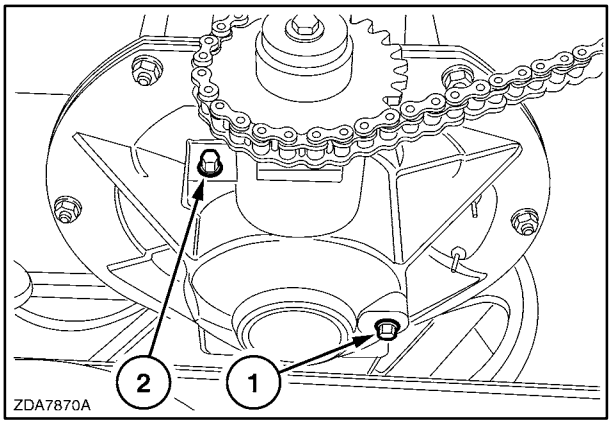


57

To change the oil, proceed as follows:

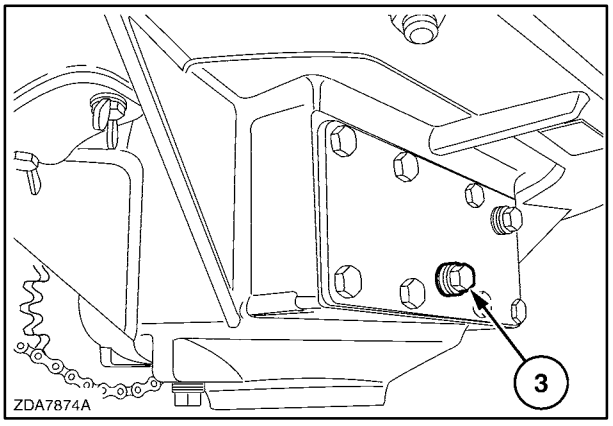
1. Drain the oil through plug, 1, and catch the oil in a suitable container.
2. Reinstall plug, 1.
3. Clean the area round filler plug, 2, level plug, 3, and remove them.

NOTE: *Shield removed for clarity.*



58

4. Fill the gearbox with new oil through plug, 2, to the level of plug, 3.
5. Reinstall level plug, 3, and filler plug, 2.



59

Oil capacity

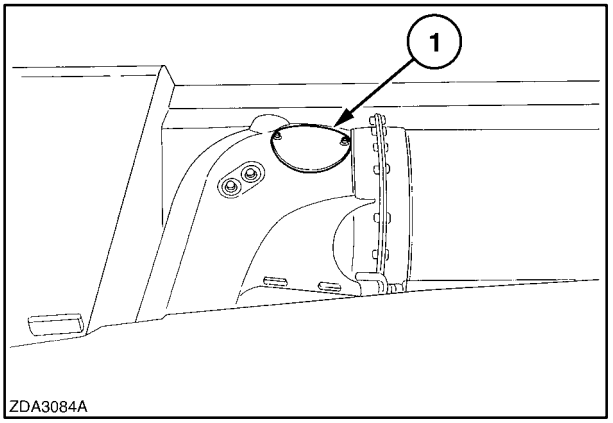
0.6 liters (0.16 US gal)

Oil specification

Use Case IH AKCELA 135H EP Gear Lube SAE 80W–90 or an oil meeting the following specification:

- SAE 80W90 EP API GL5

UNLOADING TUBE GEARBOX



60

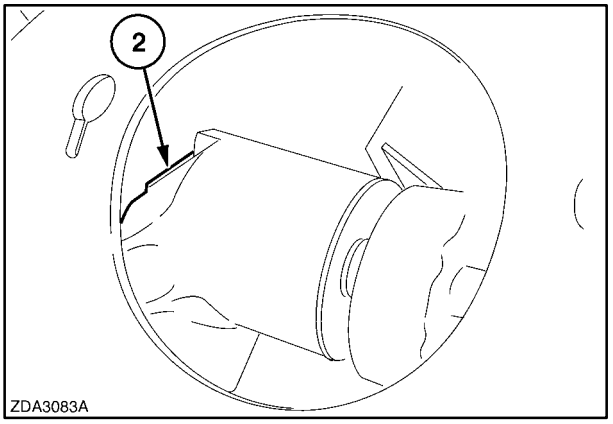
Oil check

The unloading tube gearbox oil should be checked.

- Check every 600 operating hours.
- Gearbox never needs oil changed.

To check the oil proceed as follows:

1. Place the unloading tube in the transport position.
2. Loosen the two nuts to remove cover, 1.
3. Remove the filler plug, 2, of the gearbox.



61

Oil capacity

0.43 liters (0.11 US gal)

Oil specification

Use Case IH AKCELA 135H EP Gear Lube SAE 80W–90 or an oil meeting the following specification:

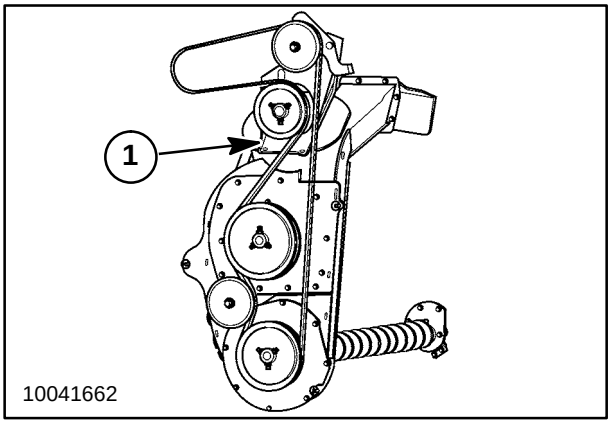
- SAE 80W90 EP API GL5

TAILINGS GEARBOX

Oil check

The tailings gearbox, 1, should be checked:

- Check every 600 operating hours.
- Gearbox never needs oil changed.



62

Oil capacity

0.25 liters (0.08 US gal)

Oil specification

Use Case IH AKCELA Hy-Tran Ultra oil.

BUBBLE-UP GEARBOX

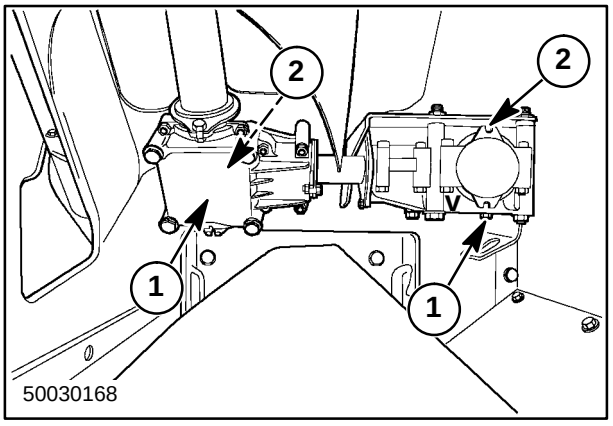
Oil check
The bubble gearboxes should be checked every 300 hours.

Oil change
The bubble-up gearbox oil should be changed:

- Every 600 operating hours.

To change the oil, proceed as follows:

1. Drain the oil through plugs, 1, and catch the oil in a suitable container.
2. Reinstall plugs, 1.
3. Clean the area around filler plugs, 2, and remove them.
4. Fill each gearbox with 0.5 liters (0.14 US gal) new oil through plugs, 2.
5. Reinstall plugs, 2.



63

Oil capacity
0.5 liters (0.14 US gal) per gearbox

Oil specification
Use Case IH AKCELA Hy-Tran Ultra oil

ROTOR GEARBOX

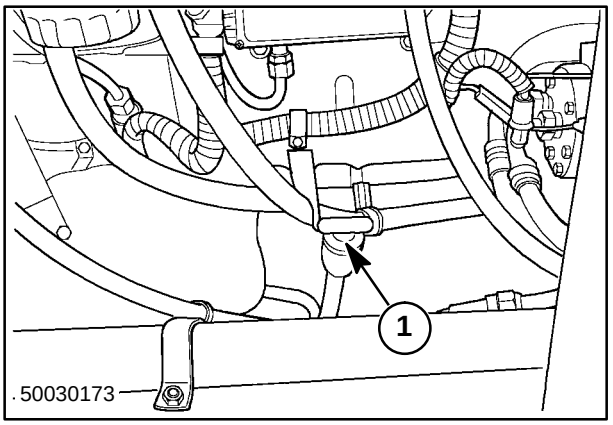
Oil level

With the combine standing on a level surface, the oil should be within the marked range of the dipstick, 1.

Oil Change

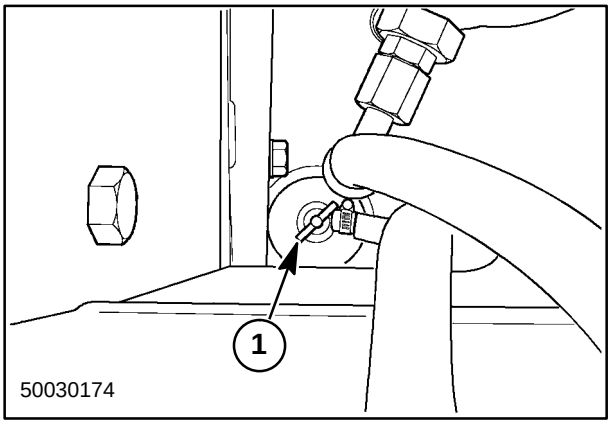
The rotor drive gearbox oil should be changed:

- Every 600 operating hours.



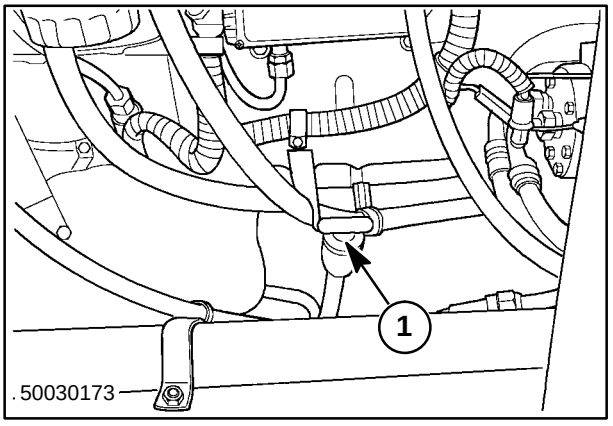
64

1. Drain the rotor gearbox oil through stopcock, 1, and catch the oil in a suitable container.
2. Clean the speed sensor and drain plug magnet on left side of gearbox at this time.
3. Close stopcock and tighten with pliers to 4 N·m (35 in.-lbs.), 1.



65

1. Clean the area around the filler/dipstick, 1, and remove the dipstick on gearbox.
2. Fill the gearbox with new oil until the oil reaches the upper half of the marked range on the dipstick.
3. Reinstall the dipstick and lock with 1/4 turn clockwise.



66

Oil capacity

Gearbox: 7.0 liters (1.85 US gallons)

Oil specification

Use Case IH AKCELA Hy-Tran Ultra oil.

FEEDER CONVEYOR GEARBOX

Oil level

With the feeder lowered, the oil should reach the center of the sight glass, 1.

Oil change

The feeder conveyor gearbox oil should be changed after every 600 operating hours.

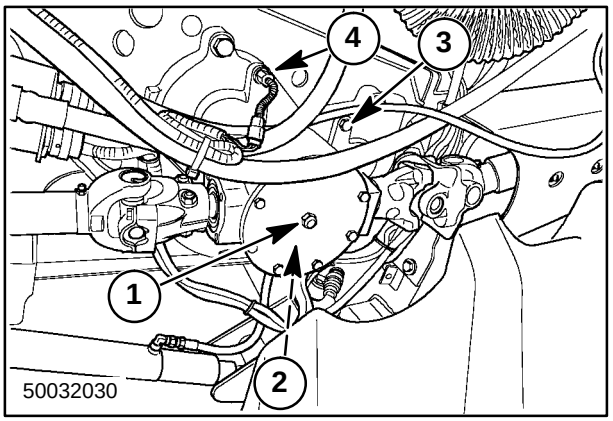
1. Remove and clean the magnetic drain plug, 2, and catch the oil in a suitable container.
2. Reinstall the plug, 2.
3. Clean the area around the filler/breather plug, 3, and remove the filler/breather plug.
4. Fill the gearbox with new oil until oil reaches the middle of the sight glass, 1.
5. Reinstall the filler/breather plug.
6. Remove and clean the speed sensor, 4, at this time. Reinstall the sensor.

Oil capacity

Gearbox capacity is 2.8 L (.75 US gal)

Oil specification

Use Case IH AKCELA Hy-Tran Ultra oil



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HEADER GEARBOX

Oil level

With the feeder lowered, the oil should reach the center of the sight glass, 1.

Oil change

The header gearbox oil should be changed after every 600 operating hours.

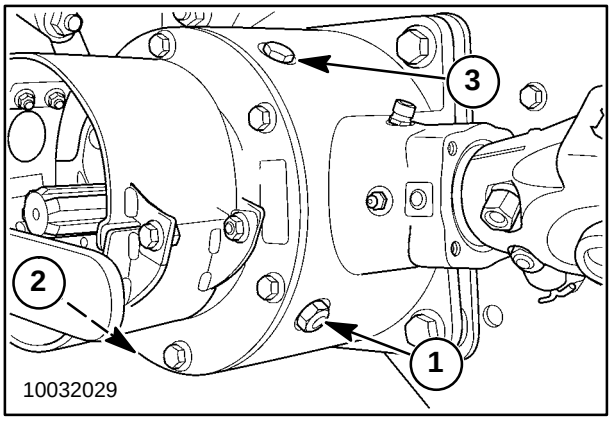
7. Remove and clean the magnetic drain plug, 2, and catch the oil in a suitable container.
8. Reinstall the plug, 2.
9. Clean the area around the fill plug, 3, and remove the fill plug.
10. Fill the gearbox with new oil until oil reaches the middle of the sight glass, 1.
11. Reinstall the fill plug.

Oil capacity

Gearbox capacity is 2.4 L (0.63 gallons)

Oil specification

Use Case IH AKCELA Hy-Tran Ultra oil



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CHAINS, THREADED RODS AND PIVOT POINTS

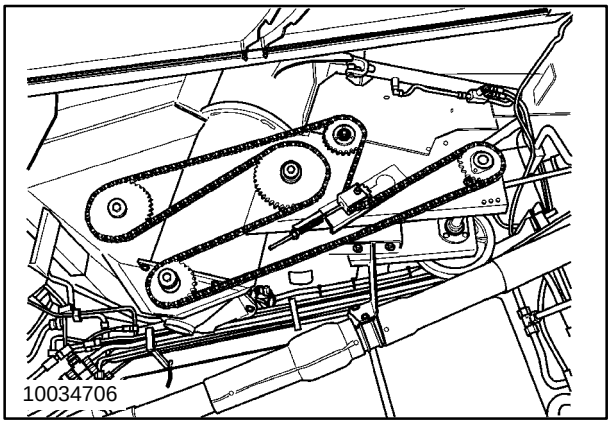
Chains

Lubricate the following chains every 300 hours.

In this way the oil will penetrate into the chains and provide excellent protection and lubrication. Use Case IH AKCELA 135H EP Gear Lube SAE 80W–90.

Unloading drive chain

- Lubricate every 50 hours



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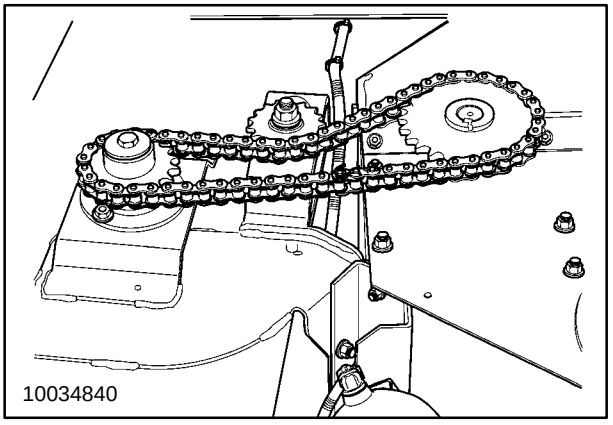
Bubble-up drive chain

- Lubricate every 50 hours



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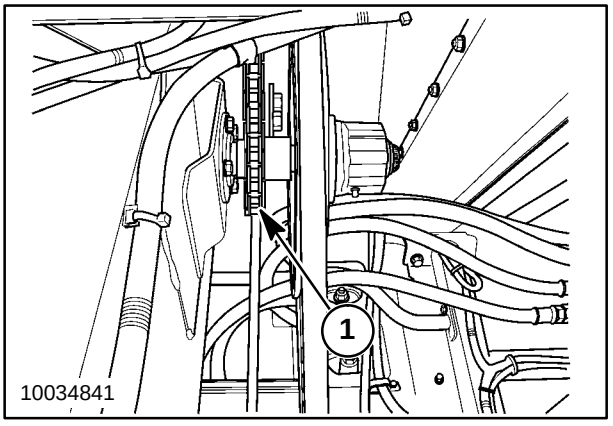
Grain elevator drive chain, 1

- Lubricate every 50 hours



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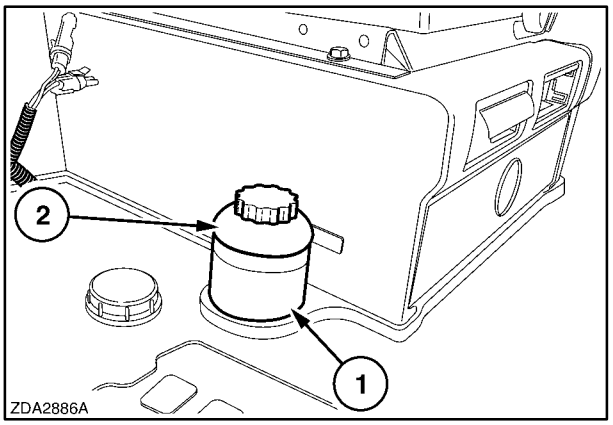
Pivot points

It is recommended to oil all pivot points (including guard pivot points) which may become stiff from corrosion or dirt every 300 operating hours.

BRAKES

Brake fluid level
A mark 2 on the reservoir 1 indicates the maximum fluid level.

If the fluid level is below minimum, the parking brake light on the SSM will blink.



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Foot brakes
Clean the brakes every 300 hours with compressed air.

Check the brake linings:

- When the brake warning light illuminates
- Every 300 hours in normal conditions
- Every 200 hours in heavy brake conditions (e.g. “spin turns” in corn, steep hills, ...).

To bleed or to replace the brake linings, contact your local dealer.

Parking brake
Every 300 operating hours:

- Clean the friction linings with compressed air.
- Check the friction lining wear. The parking brake linings have to be replaced if the remaining thickness is less than 1 mm (0.039 in). Contact your local dealer to carry out this job.

Every 600 operating hours or once a year, the parking brake clearance must be checked and adjusted as necessary. Contact your local dealer to perform this service.

⚠ CAUTION ⚠

In case of leakage or malfunction of the brake system, immediately contact your local Case IH dealer.

Fluid change

The brake fluid has to be changed every two years. When refilling the system, a special bleeding procedure will have to be followed.

Contact your local dealer to perform this service.

IMPORTANT: *Brake fluid has a tendency to absorb moisture and break down over time. Therefore it should be replaced every two years. As brake fluid contains substances which, when mixed with engine or other oils,create problems for recycling the oil, do not mix oil, but collect separately.*

Capacity

Reservoir: 0,25 liters (0,07 US gal.)

Entire brake system: 0,825 liters (0,21 US gal.)

Fluid specification

Use DOT 3 or DOT 4 Fluid, or a fluid meeting the following specification:

- DOT 3, SAE
- DOT 4, SAE

DOT 3 fluid is the factory fill fluid. DOT 4 fluid gives higher temperature stability.

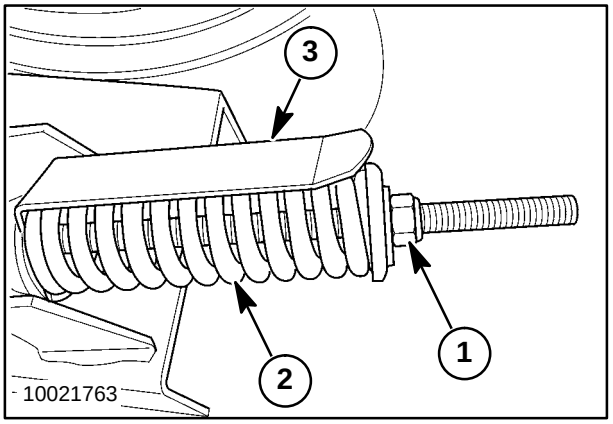
BELTS AND CHAINS

⚠ CAUTION ⚠

Always stop the engine and engage the parking brake, unless otherwise instructed, before checking and/or adjusting any drive belt or chain.

IMPORTANT: *Check all belt and chain tensions every 50 hours to ensure optimum operation.*

1. Turn nut, 1, until the end of spring, 2, is aligned with the end of the gage, 3.



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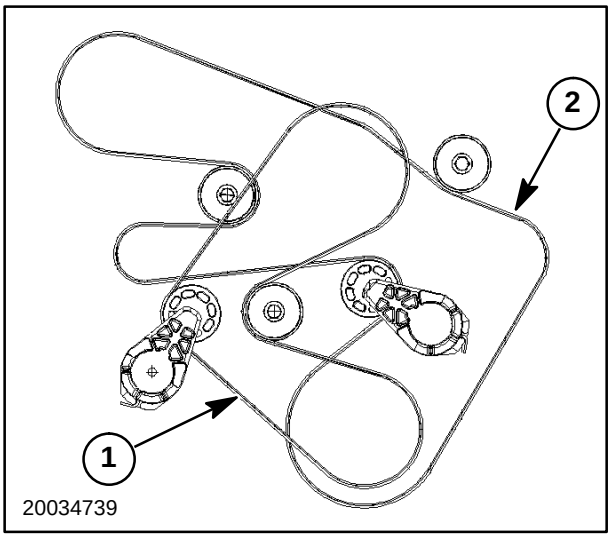
Drive Belts – Engine Compartment

Engine

1. Engine fan drive belt
2. Alternator, Water pump and Air conditioning compressor drive belt *



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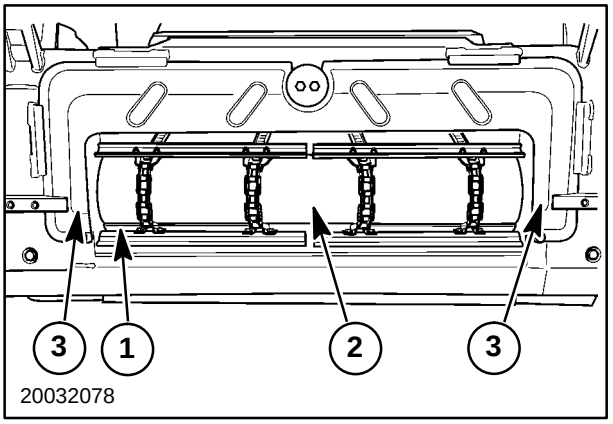
Conveyor Chain Adjustment

Rotate the chain so that a slat, 1, is aligned with the bottom of the drum, 2. If the front drum is in the low position the first slat behind the feeder drum should clear the bottom of the feeder by 0.8 – 3.2 mm (1/32 – 1/8″). If the front drum is in the mid position the second slat behind the feeder drum should clear the bottom of the feeder by 0.8 – 3.2 mm (1/32 – 1/8″). If the front drum is in the high position the first slat behind the feeder drum should clear the bottom of the feeder by 0.8 – 3.2 mm (1/32 – 1/8″).

IMPORTANT: *When adjusting the feeder chain, make sure the feeder slats do not come in contact with the front shields, 3. If so remove chain links as required.*



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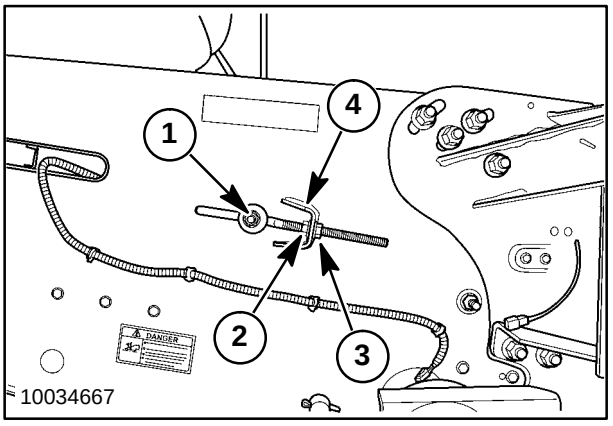
1. To tighten the chain, loosen nuts, 1, on each side of the feeder and jam nuts, 2. Turn nuts, 3, against supports, 4, evenly on each side until proper tension is obtained, then tighten jam nuts, 2 and nuts, 1.
2. To loosen the chain, loosen nuts, 1, and jam nuts, 2. Turn nuts, 3, against supports, 4, evenly on each side until proper tension is obtained, then tighten jam nuts, 2 and nuts, 1.



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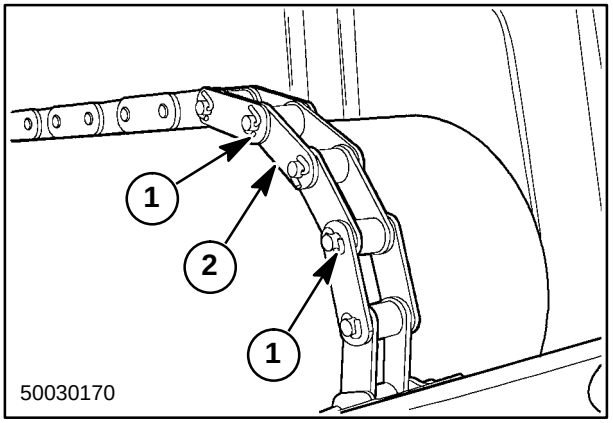
Removing links for proper tensioning

1. Turn the feeder until the connecting links of the chains are at the front opening.
2. Release the feeder chain tension.
3. Remove J-pins, 1, and take out needed chain links, 2.
4. Reassemble chains.
5. Readjust the chain tension as described in the beginning of this paragraph.



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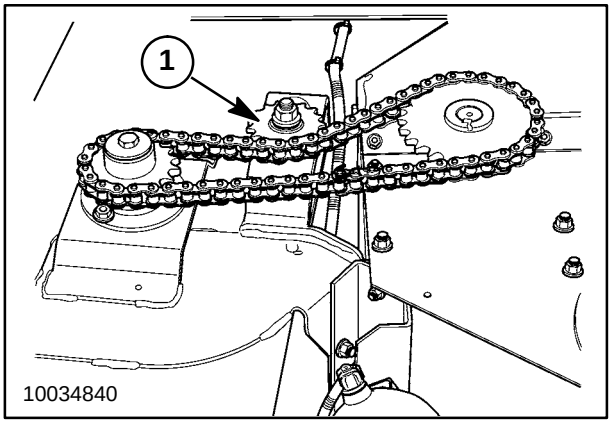
Bubble-up drive chain

The chain tension can be adjusted by adjusting idler, 1.



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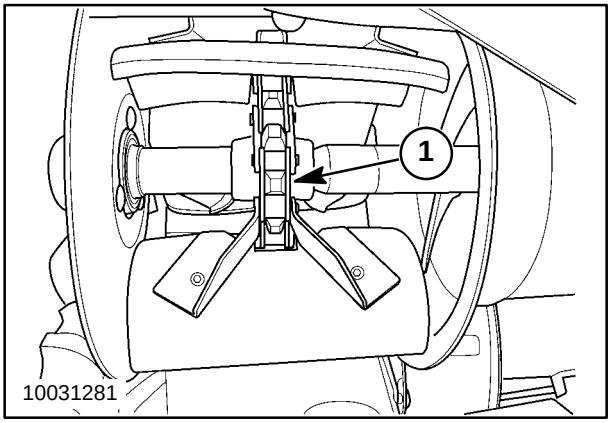
Grain Elevator Chain

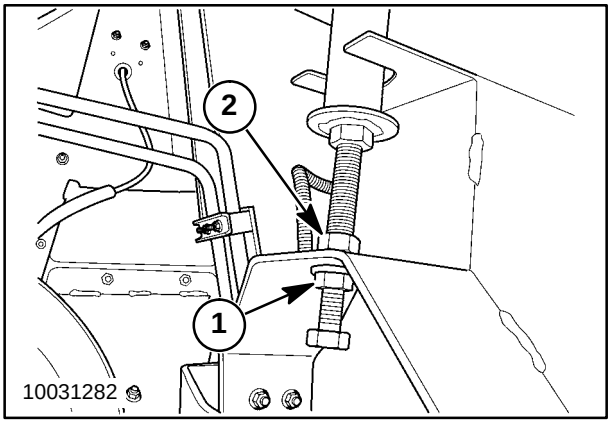
The tension of grain elevator chain, 1, is correct when it is just possible to move a link laterally across the lower sprocket by hand.



79

The tension of the grain elevator chain can be adjusted at the rear of the grain elevator:

Loosen jam nut, 1, adjust grain elevator chain tension with nut, 2. Tighten jam nut, 1.



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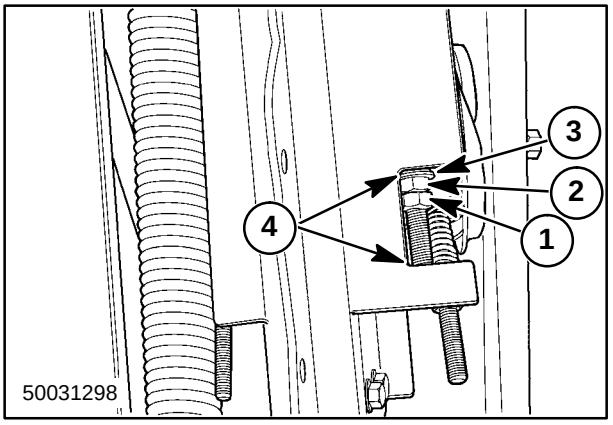
Grain Elevator Drive Chain

Adjust chain tension by loosening jam nut, 1, then adjust nut, 2, so that washer, 3, is visible through cut out, 4.



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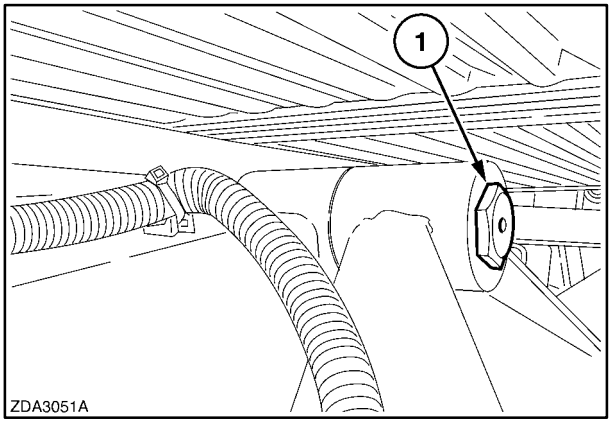
CLEANING

Pivot (self levelling cleaning shoe)
Check annually the axial space on the pivot axle, 1, between the frame and the self levelling cleaning shoe.



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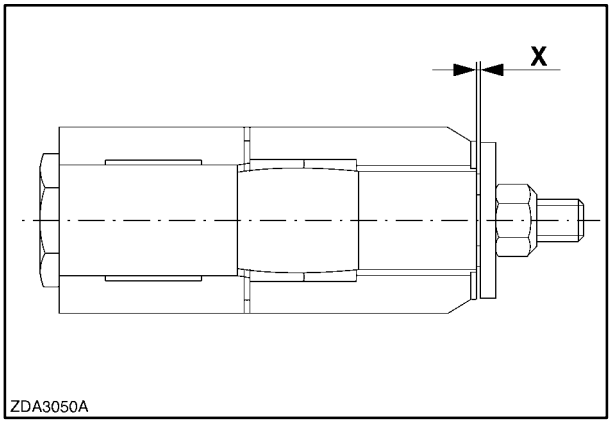
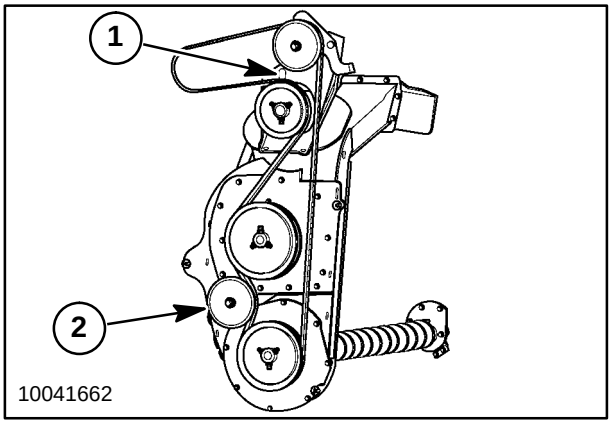
If there is more space than X=0.6 mm (.0236″), contact your local dealer.



83

Tailings Processor Drive Belt
Belt is properly tensioned when spring length matches indicator length, 1. As belt stretches, additional life may be gained by adjusting the bottom idler, 2, to take up additional belt length.



GRAIN STORAGE

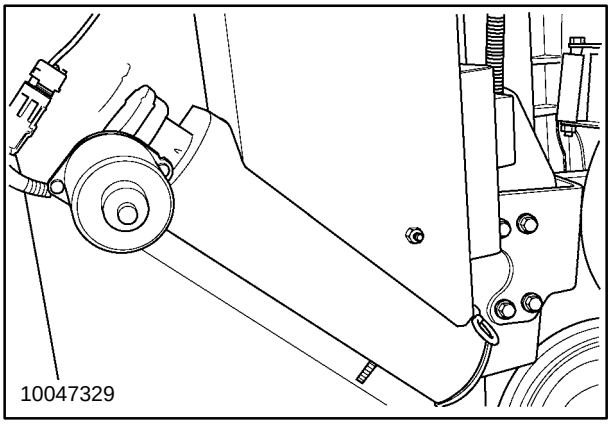
Slip clutch

To protect the clean grain drive line a slip clutch is fitted to the elevator drive jackshaft. The slip clutch is factory-set and non-adjustable.

Moisture sensor (if installed)

The moisture sensor measures grain falling out of the clean grain elevator into a small bin of the bypass unit. The moisture content of the grain in this bin is sensed by the moisture sensor at the back of the bypass unit. The level of grain in the bin is controlled by a proximity switch, which is located at the top of the bin and an auger at the bottom of the bin. In order to have a good moisture reading the moisture sensor fin must always be **clean** and **covered totally by grain**.

In other words the bin has to contain always a minimum amount of grain.



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- **The moisture sensor fin must be clean.**

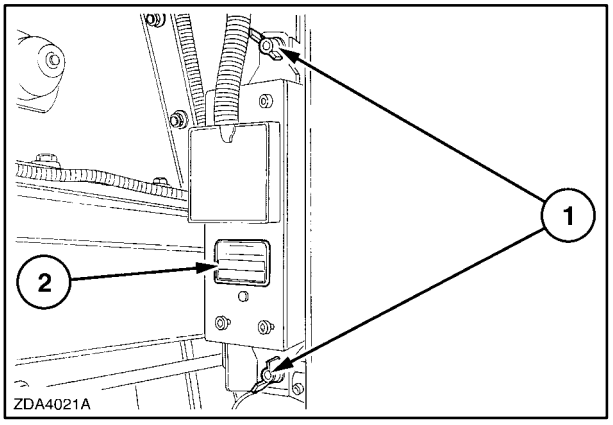
A sensor fin covered with dirt and crop residue will result in wrong moisture readings.

Therefore it is advised to clean the sensor fin when necessary. The frequency of the cleaning is dependent on the harvesting conditions.

Certainly in case of dirty, and conditions where other parts of the combine tend to build up dirt (grain pan, sieves, bubble-up auger) it is advised to check the sensor fin daily and clean it if necessary.

To clean the sensor fin proceed as follows:

1. Loosen two wing nuts, 1, to remove the moisture sensor, 2.



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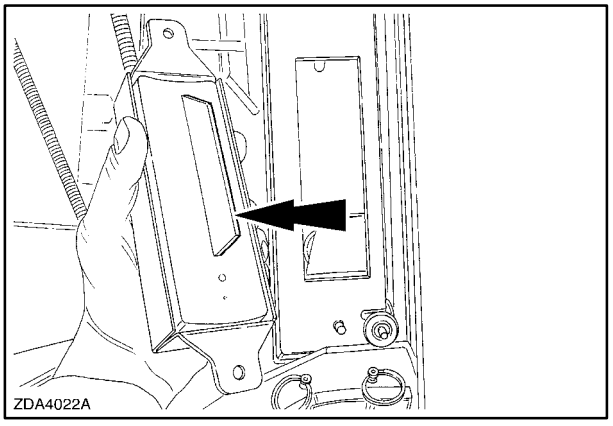
2. Clean the fin, using a cloth.

CAUTION

Do not use a screwdriver or any other sharp device to avoid scratches on the sensor fin while cleaning.

3. Install the sensor and tighten the wing nuts, 1, Figure 85.

4. To calibrate the moisture sensor, refer to Section 3 - “FIELD OPERATION”.



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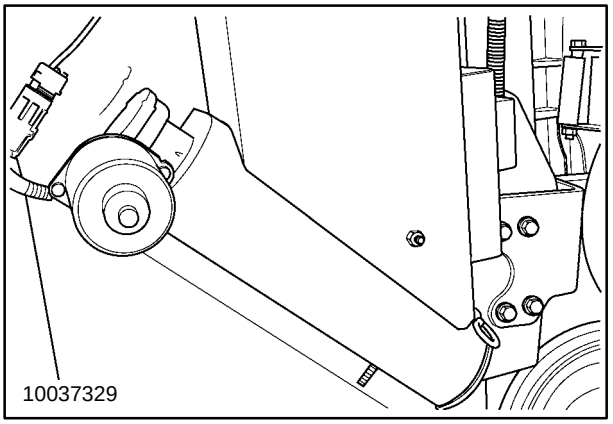
- **The level sensor must be clean. (proximity switch)**

NOTE: *It should be noted that material blockage (pieces of corn cobs) in front of the level sensor will also cause the auger to turn continuously when the threshing system is on. This situation can be recognized when the moisture readings are abnormally low or largely fluctuating. Therefore remove the moisture sensor. Then you can look into the bin. In the top of the bin a white circle (=level sensor head surface) must be visible without being covered by dirt or crop residues. If you found material accumulated in front of the level sensor, remove it.*

To check if the level sensor (proximity switch) is clean, proceed as follows:

1. Pull two pins, 1, out to remove the auger.



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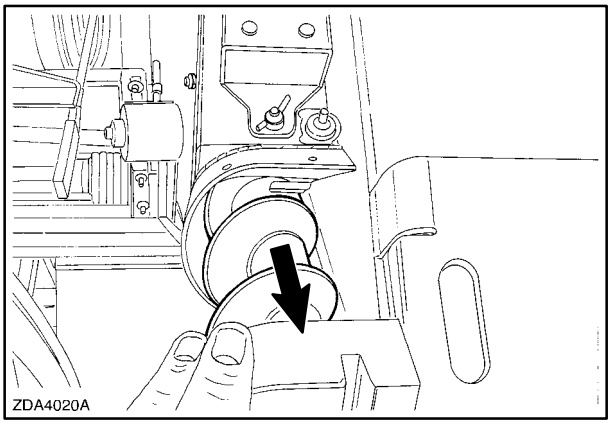
2. Remove the auger.



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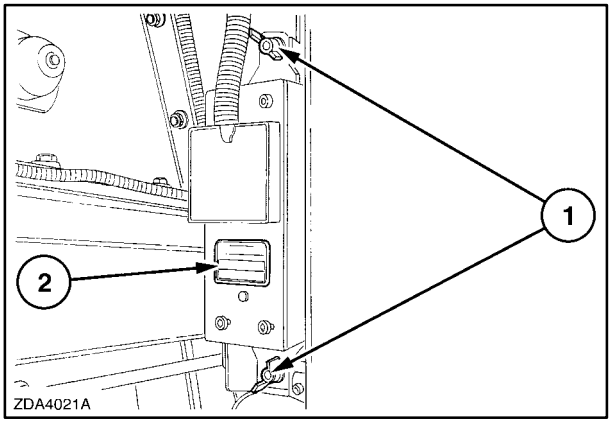
3. Loosen two wing nuts, 1, to remove the moisture sensor, 2.



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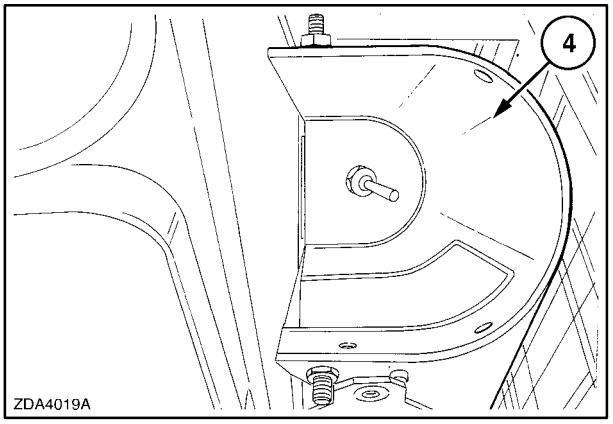
4. Remove all the grain out of auger chamber, 4.

NOTE: *No grain may be in front of the level sensor.*

5. If there is still grain or dirt in front of the level sensor, remove it.



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6. Install the auger and install the two pins.

7. Install the sensor fin and tighten the wing nuts.

NOTE: *If the moisture reading is still fluctuating or the electrical motor keeps on turning all the time when threshing is on then contact your local dealer.*

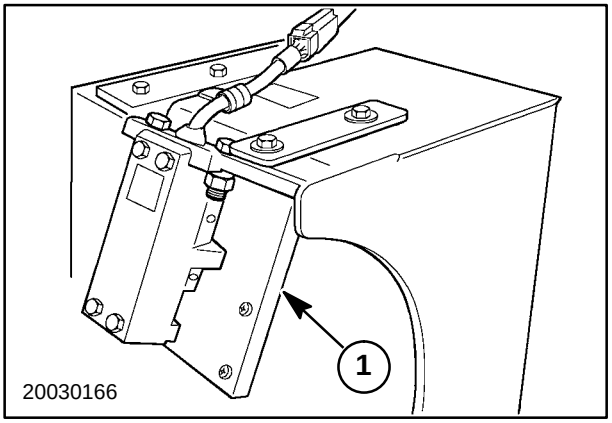
Grain flow sensor (if installed)

To have good functionality of the grain flow sensor:

- **The sensor plate must be clean**

In some harvesting conditions it can happen that material can build up on the sensor plate. These conditions can be recognized when other combine elements (sieves, bubble-up auger, grain pan) start to accumulate dirt. In case of serious material built up, the readings of the sensor will be wrong.

Therefore it is advised to check daily. Clean sensor plate, 1, whenever other combine elements in the combine needs to be cleaned for proper functioning.



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To clean proceed as follows:

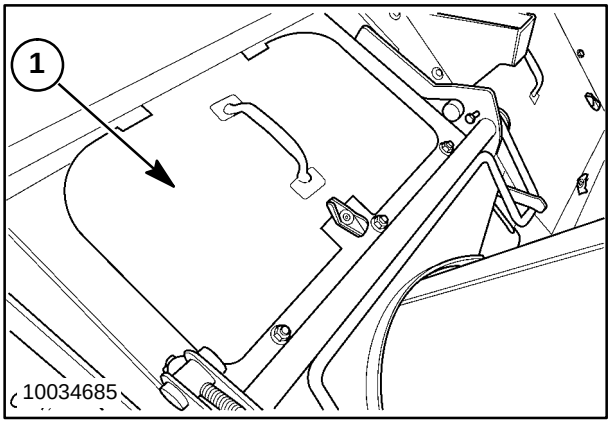
1. Open the grain tank cover (if installed)
2. Remove cover, 1.
3. Sensor plate is now visible and can be cleaned if necessary.

CAUTION

Do not use a screwdriver or any other sharp device to avoid scratches on the sensor plate.

4. Install the cover.

To calibrate the grain flow sensor, refer to Section 3 - “FIELD OPERATION”.



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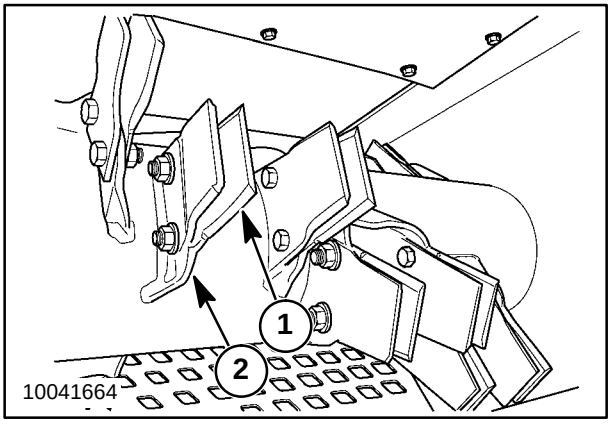
Chopper Rotor Blade Replacement

Stop the engine and remove the key from the switch to prevent anyone from starting the combine.

The straw chopper rotor blades, 1, can be reversed for increased wear. Place each blade on the original blade support, 2, when reversing the rotor blades. Position the nut against the support and tighten the bolts from the blade side to a torque of 114 to 128 N·m (85 to 94 ft. lbs.).

Replace the straw chopper rotor blades in sets of two. When replacing a straw chopper rotor blade, make sure that the straw chopper rotor blade opposite the one that is being replaced, is also replaced to maintain a balanced straw chopper rotor.

Use M12 x 30 metric hex head, Grade 10.9 bolts and flange nuts. Position the nuts against the blade and tighten the bolts from the mount side to a torque of 114 to 128 N·m (85 to 94 ft. lb.). The rotor must be balanced if too much vibration occurs after reassembly. See your dealer.



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DRIVE AXLE

Wheel Hardware Torque

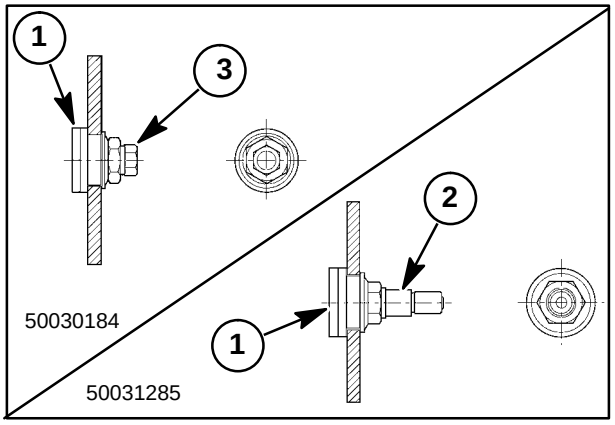
TORQUE	MINIMUM		MAXIMUM	
	N·m	Ft. lbs.	N·m	Ft. lbs.
Traction wheel hardware torque	710	525	790	580

Check wheel hardware torque after one hour of operation, then after 10 hours of operation for one week and thereafter on a weekly basis.

Drive Wheel Tire Valves

To obtain adequate clearance between tire valve and final drive, tire valve must be located on outside of wheel when wheel is mounted on combine, for 650/75R32 tire size.

Tire valve and valve hole plug have common spud base, 1,so dismounting tire from wheel is not required. If wheel is mounted on combine, raise combine until tire clears ground and block up combine as required. Deflate air from tire. Unscrew core housing, 2, from tire valve spud base, and unscrew plug, 3, from base on other side of wheel. Reinstall core housing on outside of wheel and plug on inside of wheel. Inflate tire to correct inflation pressure. Remove blocks and jack.



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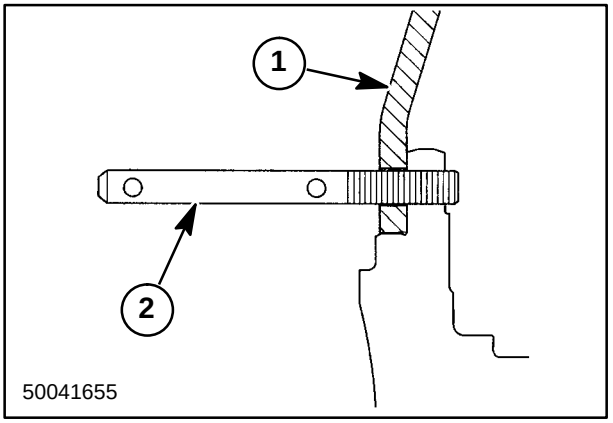
To improve access to tire valve, for the following tires, valve can also be located to outside of wheel.

710/70R38
30.5L–32 14 PR R1
800/65R32
900/60R32
900/65R32

See “Section 8 – Specifications” of this manual for charts concerning tire inflation and tread widths.

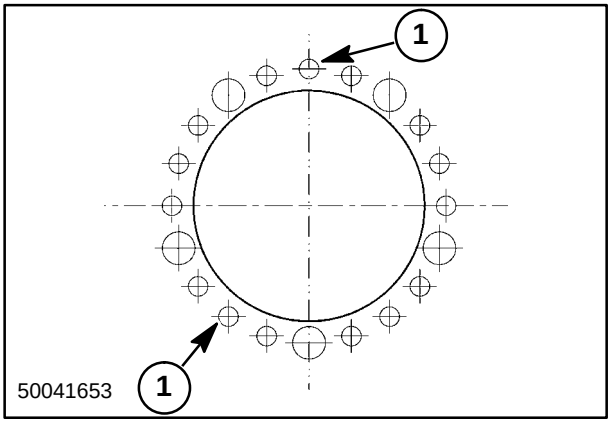
Drive Wheel Mounting

When wheels are removed or repositioned, mounting surfaces, washers and all threads must be clean. To assist in mounting drive wheels, two starter studs are supplied with dual wheel and floatation tire hardware kits. Install starter studs, 2, into final drive flange prior to installing wheels, 1.



95

Install two starter studs 144° opposite each other into the final drive flange. Align the wheel so that center small holes, 1, align with the starter studs.



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Drive Wheels

Single drive wheels can be mounted dished in or dished out. The wider treadwidth will improve combine stability. See Tire Selection Chart for recommendations.

A 102 mm (4 inch) wheel spacer is available for drive wheels. Drive wheels must be installed dished in when wheel spacers are used. See “Tire Selection Chart” for recommendations.

STEERING AXLE

Wheel Hardware Torque

TORQUE	MINIMUM		MAXIMUM	
	N·m	Ft. lbs.	N·m	Ft. lbs.
Steering wheel nut torque (HDASA)	410	302	492	363
Steering wheel bolt torque (PRA)	550	406	610	450

Check wheel hardware torque after one hour of operation, then after 10 hours of operation for one week and thereafter on a weekly basis.

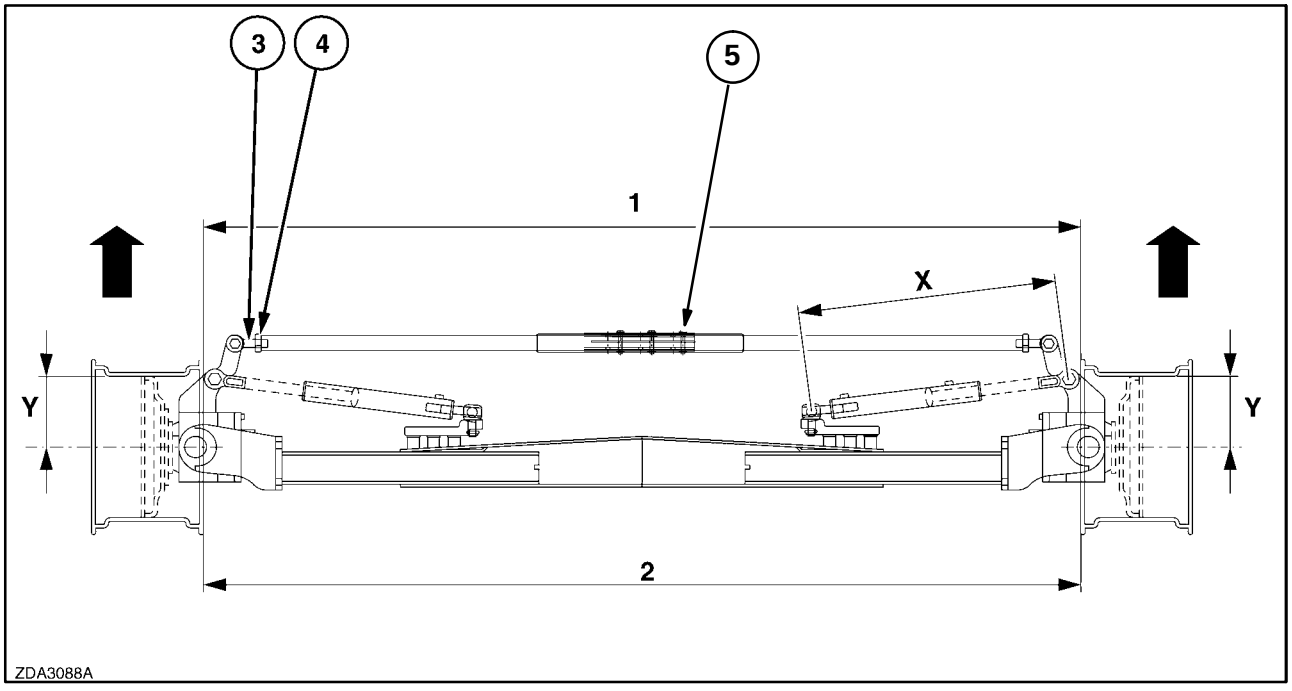
There are two types of steering axles:

- HDASA: Heavy Duty Adjustable Steering Axle
- PRA: Powered Rear Axle

Follow the following procedures for correct adjustment of the steering axle.

- Toe-in adjustment
- Steering axle position
- Axial position of the steering axle
- Height position
- Tread width position

Toe-in adjustment



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The steering wheels should have the correct amount of toe-in, otherwise premature tire wear may occur. The distance between the steering wheels must be smaller at the front than at the rear (facing the direction of travel).

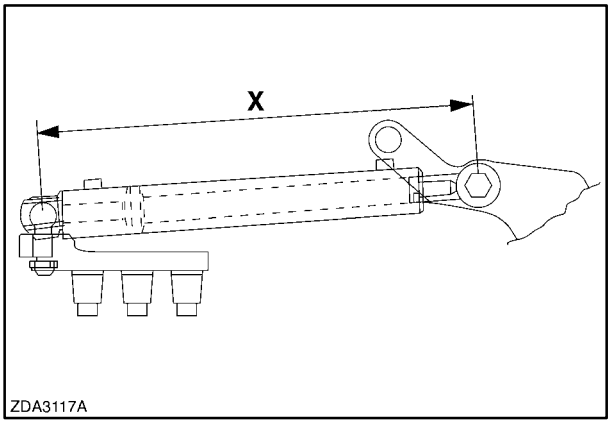
To check and adjust the toe-in, proceed as follows:

1. Apply the parking brake and support the steering axle so that the steering wheels are clear of the ground.

⚠ CAUTION ⚠

Use suitable jack stands, securely positioned underneath the rear of the machine, before adjusting the steering axle.

2. Set the steering wheels in the straight-ahead position.
3. Mark spots at Y=300 mm (11 - 13/16″) from the center on the front inside of the wheel rims at the center-of-wheel height and measure distance 1.
4. Turn the steering wheels 180° forward or rearward until the marks are at the center-of-wheel height and measure distance 2. Distance 2 must be 8 to 12 mm (5/16″ to 15/32″) larger than distance 1.
5. To adjust the toe-in, loosen jam nuts 4, remove bolts 5 from tie-rod, rotate inner and outer tie-rod to change length on ball joint stud 3, evenly on both sides. After adjustment, tighten bolts 5 to torque of 47 – 61 N·m (35 – 45 ft. lbs.), and jam nuts 4 to a torque of 290 – 310 N·m (214 – 229 ft. lbs.)
6. After adjusting the toe-in, adjust distance X of both cylinders. (Distance X = center to center of balljoint with the cylinder completely retracted) see table.



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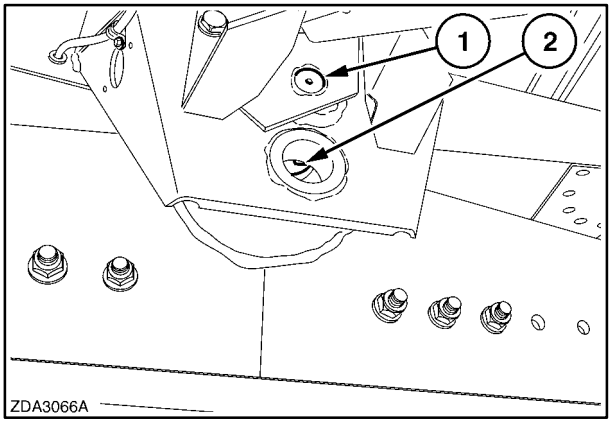
Height position	**X** (mm)	**X** (inches)
1	728	28-21/32″
2 3 4	722	28-1/2″

Steering axle position

The steering axle should always be installed in the upper hole, 1, in the frame.

The steering axle should only be installed in the lower hole, 2, in the frame when operating on tracks.

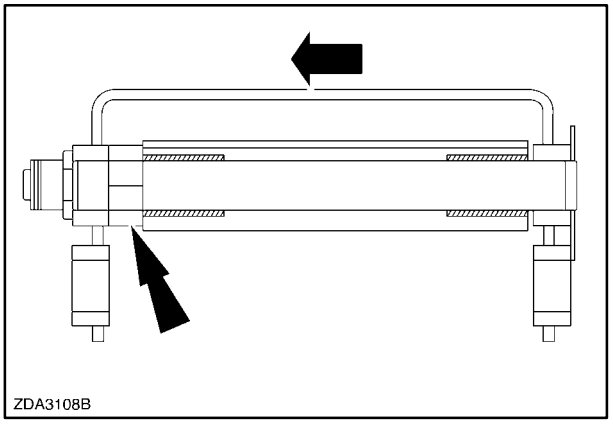
We recommend this job to be carried out by your Case IH dealer.



99

Axial position of the steering axle

All steering axles must be assembled with the axle in the rear position and bushing at front, as shown.



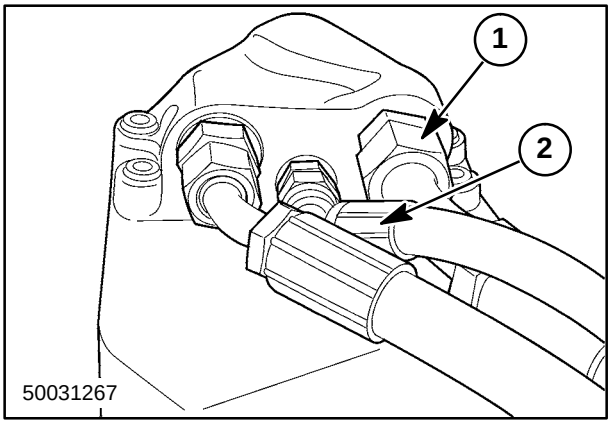
100

HOSE ROUTING

Tread Settings 5, 6, and 7

The large body of the end fitting, 1, creates an interference between itself and the drain hose crimp collar, 2, in the forward routing used in tread setting 5, 6, & 7. It is necessary, therefore, to route the hose elbow upward, over the high pressure hose ends swivels as shown in left hand and right hand diagrams.

See “Tread width position” later in this section for recommended hose guide positions.



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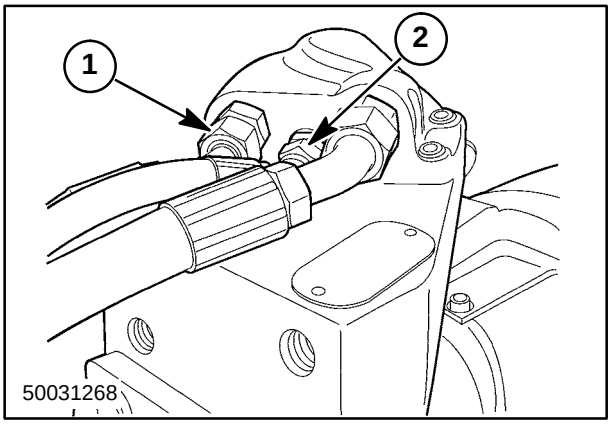

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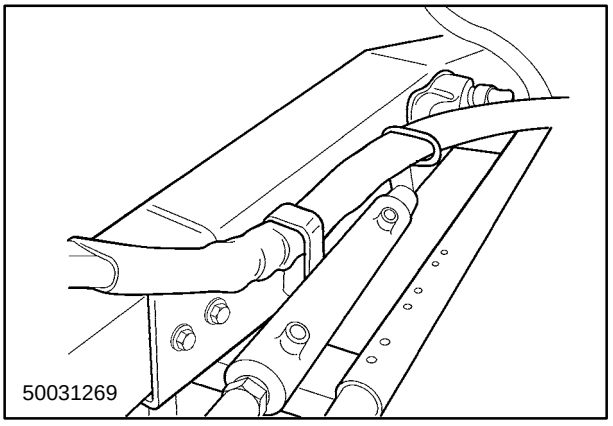
From position 5 to 7, the hose bundle will drop toward the front face of the axle through the hose guide on the outboard end of the steering anchor and then through the loop in the inner-most hole in the end of the axle extension (stub). The hoses can be bundled flat through the hose guide and then curve to the valve.

IMPORTANT: *Adjust hoses at front of axle to avoid contact with steering cylinders and tie-rod.*



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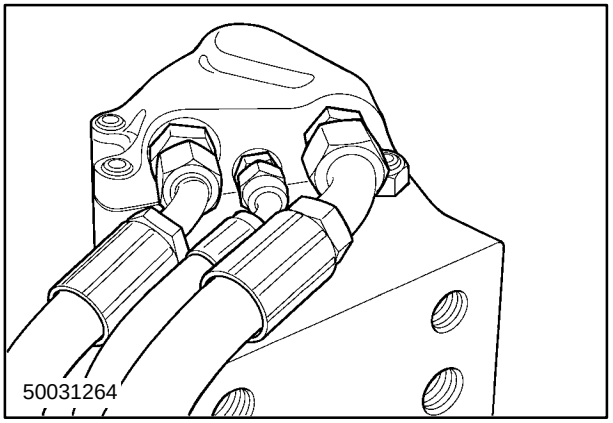
Tread Settings 1, 2, 3, and 4

The motor hoses have 45° end fittings at the wheel ends to avoid the machine chassis. The hose ends are angled towards the rear of the machine in the narrowest tread settings 1, 2, 3, and 4 as shown in left hand and right hand diagrams.

See “Tread width position” later in this section for recommended hose guide positions.



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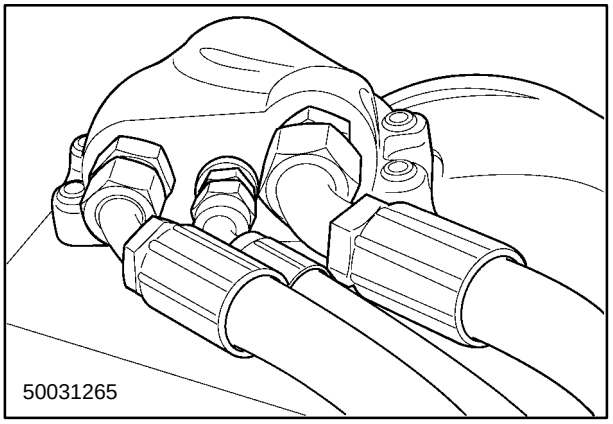

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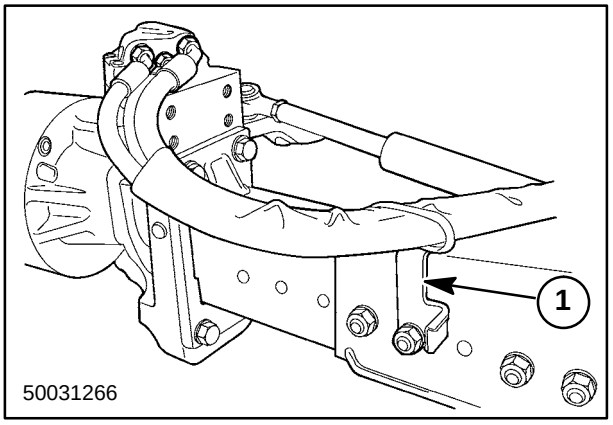
From position 1 to 4, the hose bundle will loop to the rear with the hose guide, 1, in the second hole from the end of the center section. The hoses can be bundled flat through the hose guide and to the valve.

IMPORTANT: *Be sure hoses are routed as shown to avoid contact with axle stop and lower frame when axle oscillates. Adjust hoses at front of axle to avoid contact with steering cylinders and tie-rod.*



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Height position

The wheel end (HDASA or PRA) can be repositioned on the steering axle in order to lift the machine rear end to a level combine position.

The Figures on this page show the four different positions (HDASA and PRA).

The height positions are adjusted at the factory or during dealer set-up for the original tire combination. If tire sizes are changed, height position must be adjusted as necessary.

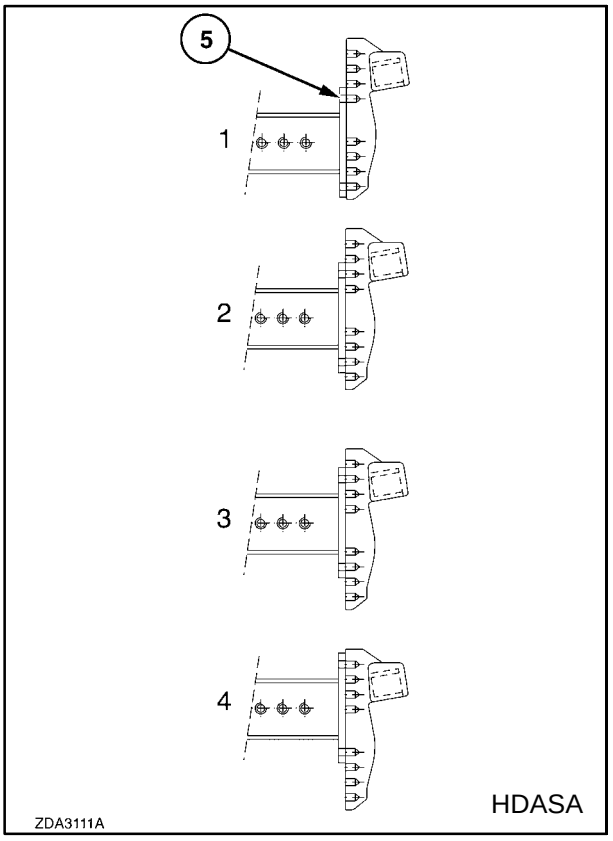
See tire selection charts in section 8 for recommended settings.

If height position is changed, steering cylinder may require adjustment. See “Steering Axle” previous in this section for recommended settings.

⚠ CAUTION ⚠

Wheel drive assemblies are heavy. Use a lifting device of adequate capacity. Reposition one side at a time

The bolts, 5, should be tightened to 780 – 790 N·m (575–583 ft. lbs.).



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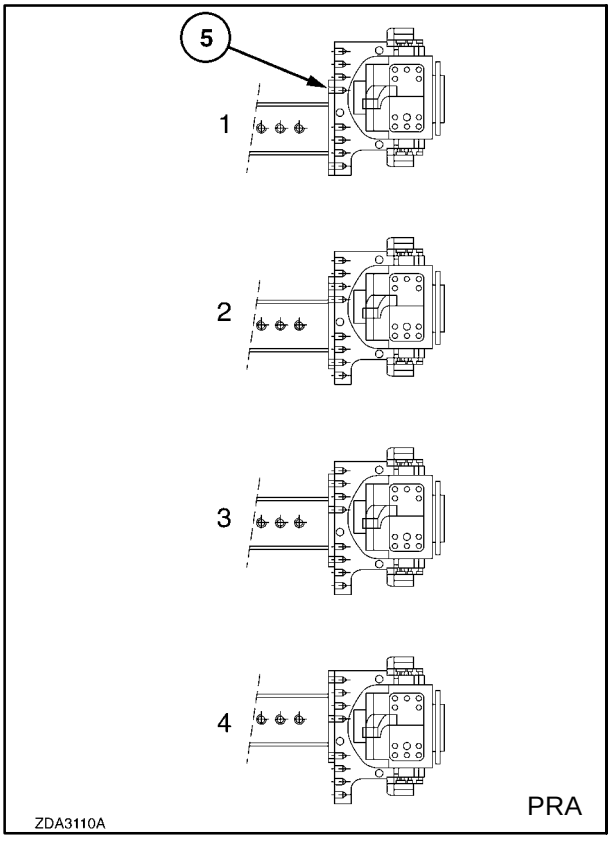

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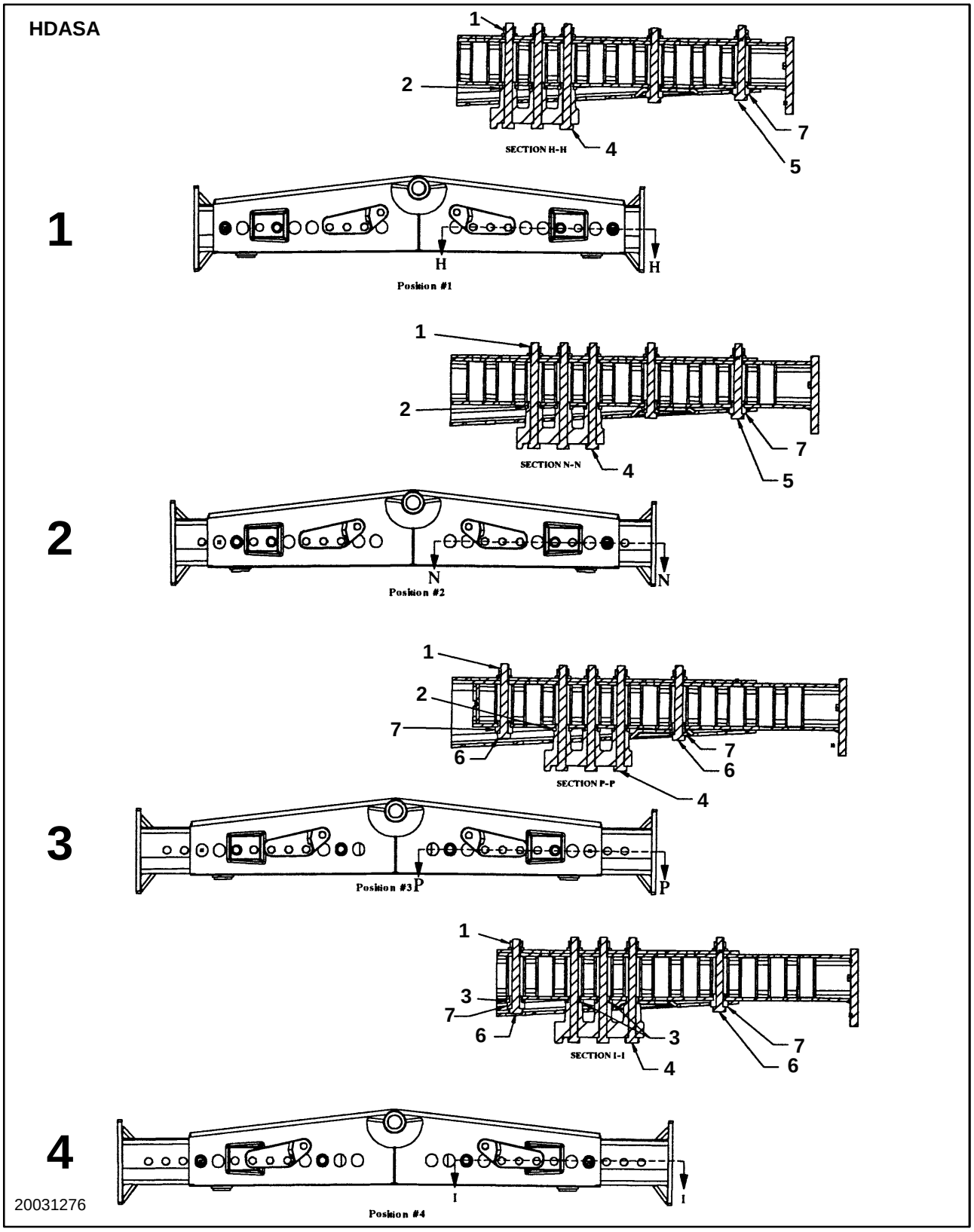
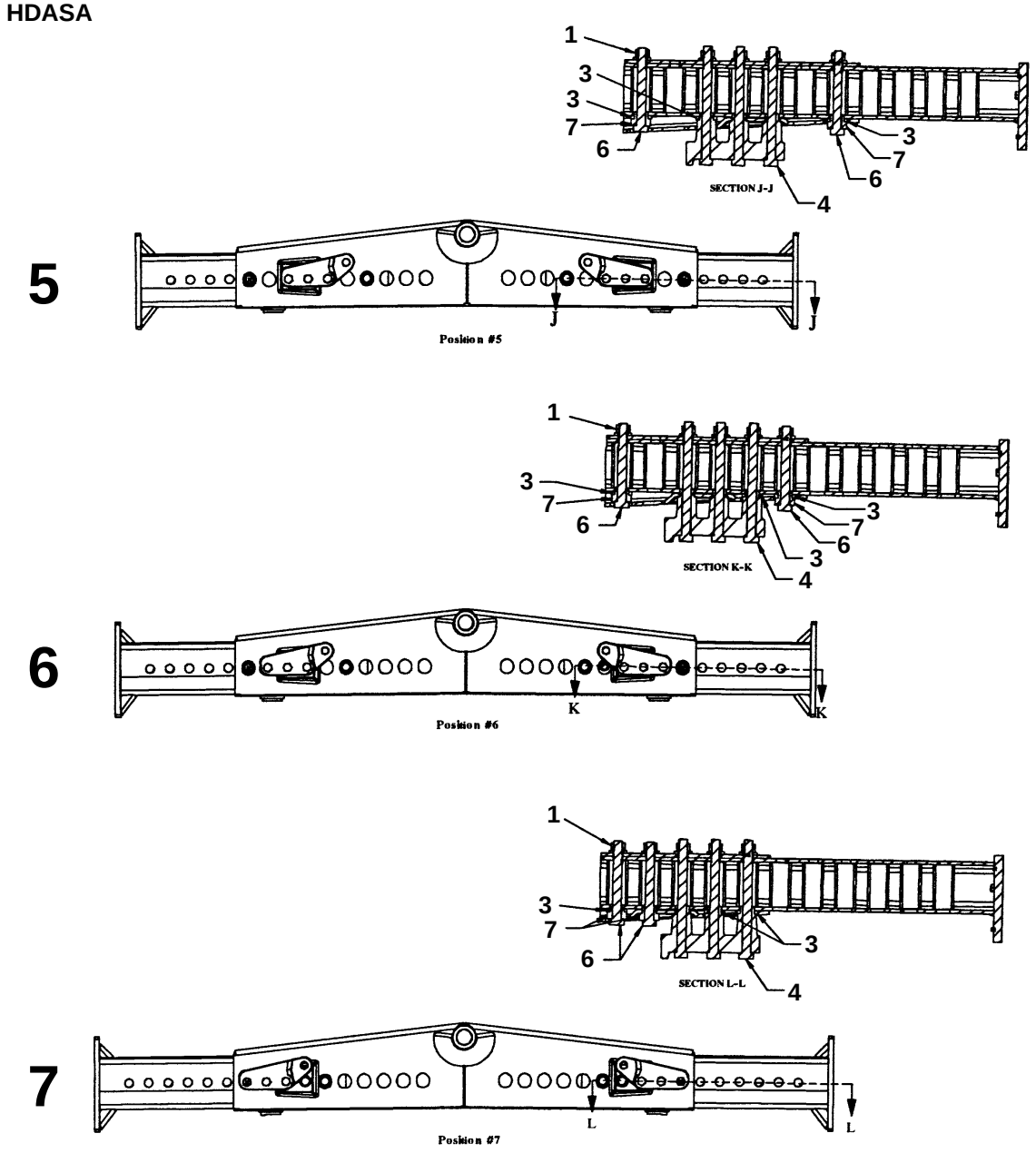
Tread width position

The steering axle has seven tread width positions. In the following tables you can find the different combinations. See “Tire Selection Charts” in section 8 for recommended settings. Toe-in and steering stop bolts must be adjusted after tread width changes.



HDASA



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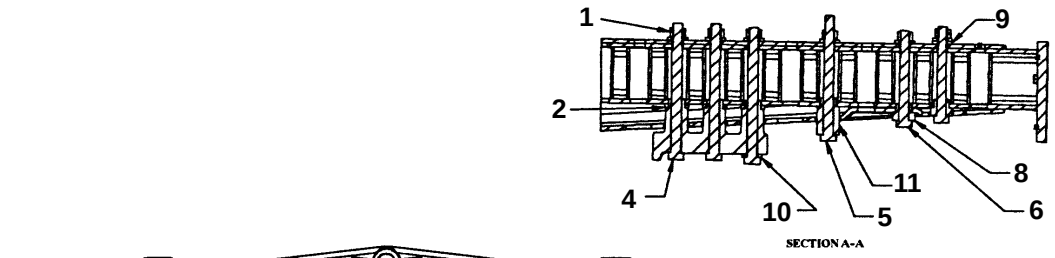
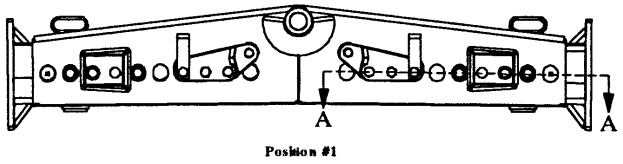
HDASA

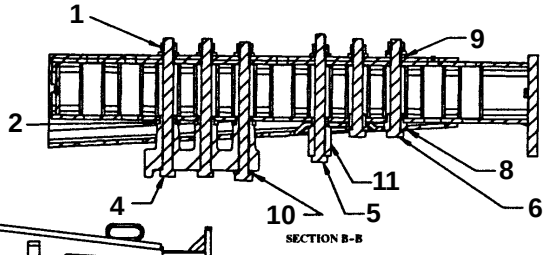
1. M20 Locknut and flat washer, five places
2. 47x33x8 Flat washer, three placed
3. 47x33x8 Flat washer
4. M20x260 Bolt, three places
5. M20x180 Bolt, two places
6. M20x180 Bolt
7. Step bushing, two places

PRA

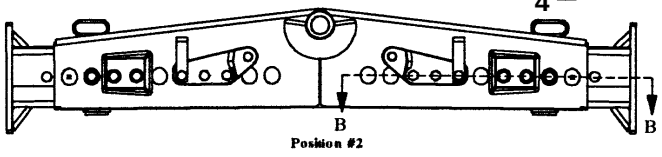


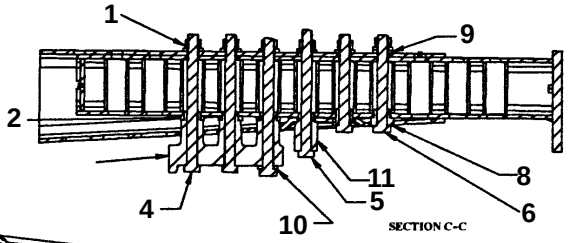
1





2





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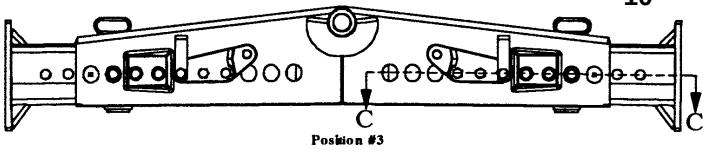
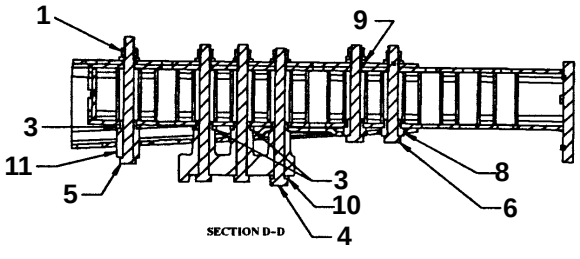
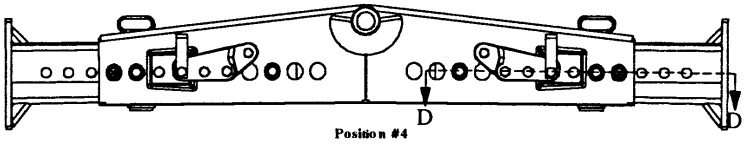




4



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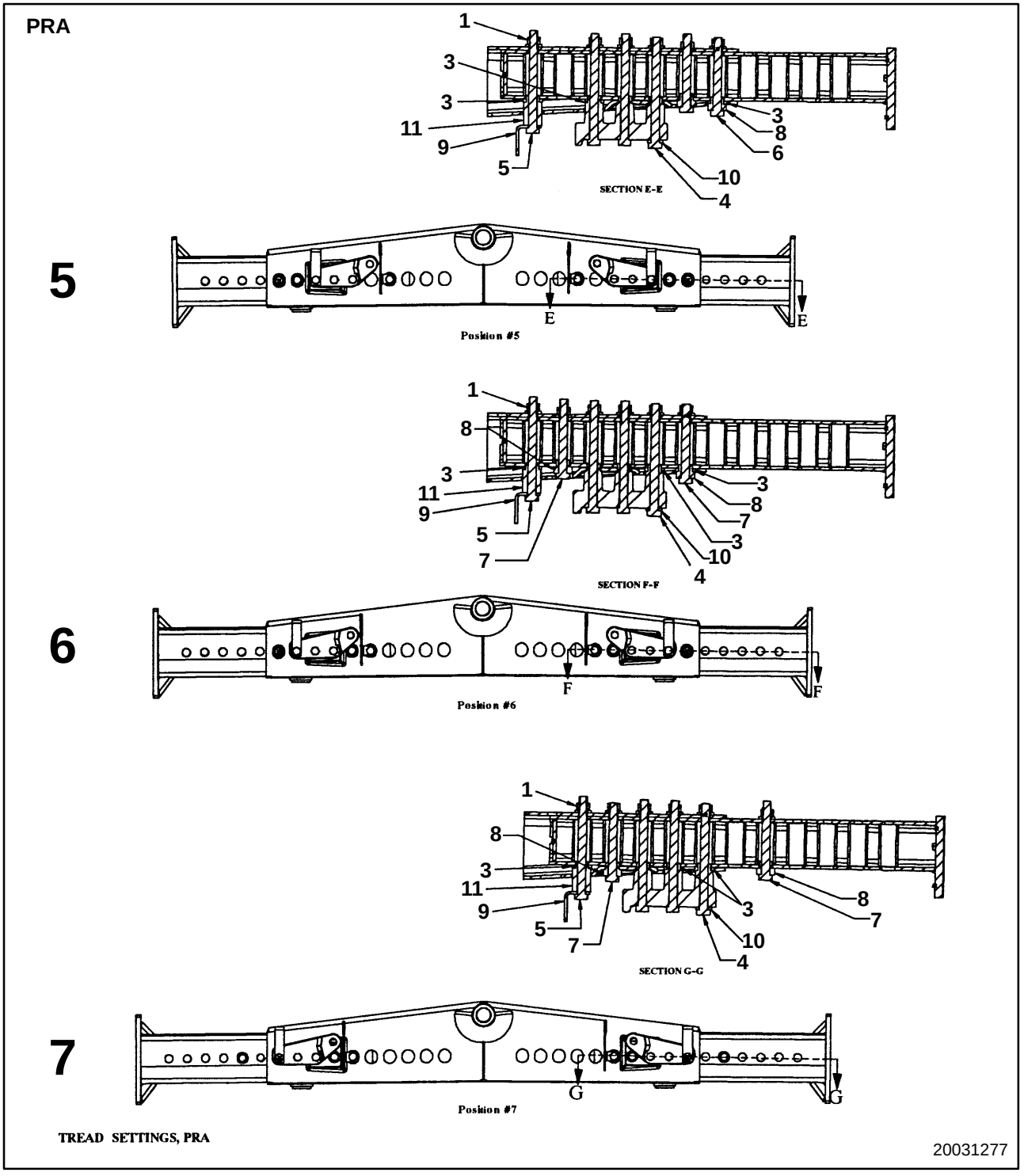

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PRA

1. M20 Locknut and flat washer, six places
2. 47x33x8 Flat washer, three placed
3. 47x33x8 Flat washer
4. M20x260 Bolt, three places
5. M20x240 Bolt
6. M20x180 Bolt, two places
7. M20x180 Bolt
8. Step bushing, two places
9. Hose guide
10. Hose guide plate
11. Bushing

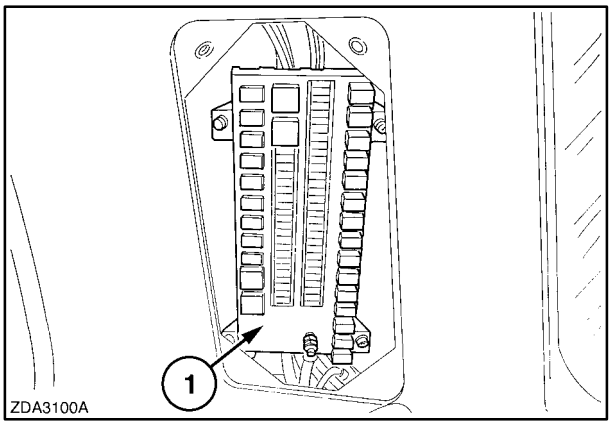
ELECTRICAL SYSTEM

Fuses and relays

All fuses and relays are situated in the back left corner of the cab.

IMPORTANT: *When replacing a fuse, make sure the new fuse has the same ampere rating as the fuse being replaced.*

Spare fuses can be stored in box, 1.



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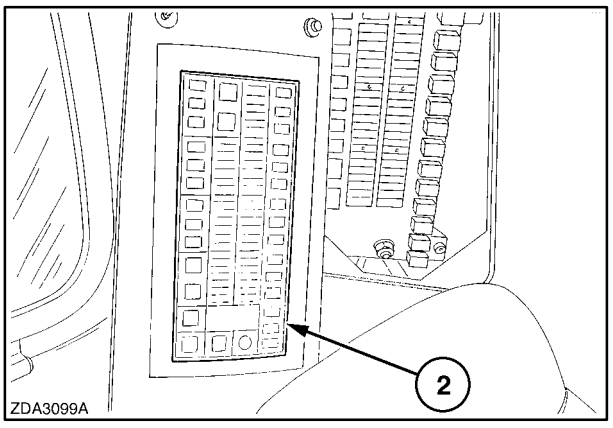
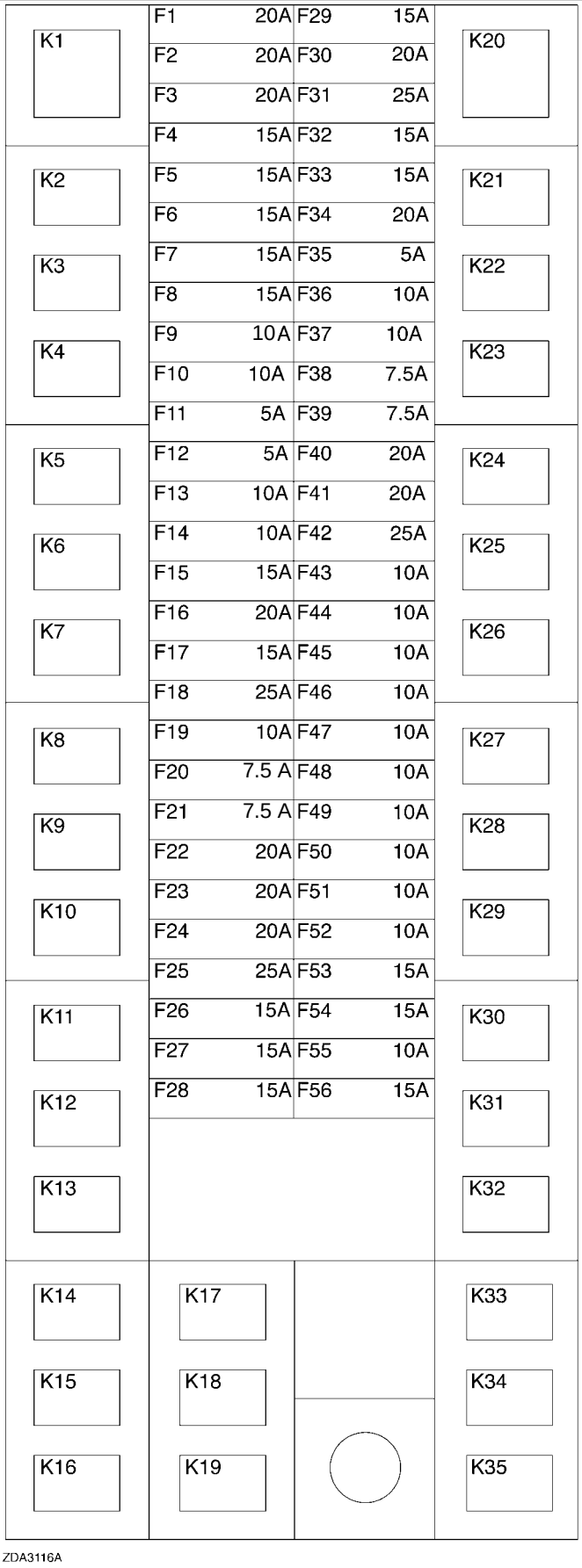
IMPORTANT: *When replacing a relay, make sure the new relay has the same ampere rating and the same structure (visible on the relay housing). Always use genuine parts.*

An overview of the fuses and relays (inside the Operator's Manual) can be installed on the inside of cover, 2.



114


F1 20A
F2 20A
F3 20A
F4 15A
F5 15A
F6 15A
F7 15A
F8 15A
F9 10A
F10 10A
F11 5A
F12 5A
F13 10A
F14 10A
F15 15A
F16 20A
F17 15A
F18 25A
F19 10A
F20 7.5 A
F21 7.5 A
F22 20A
F23 20A
F24 20A
F25 25A
F26 15A
F27 15A
F28 15A
F29 15A
F30 20A
F31 25A
F32 15A
F33 15A
F34 20A
F35 5A
F36 10A
F37 10A
F38 7.5A
F39 7.5A
F40 20A
F41 20A
F42 25A
F43 10A
F44 10A
F45 10A
F46 10A
F47 10A
F48 10A
F49 10A
F50 10A
F51 10A
F52 10A
F53 15A
F54 15A
F55 10A
F56 15A
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K34
K35

ZDA3116A

Fuse No.	Amperage	Function
F1	20A	ECU power (Electronic engines only)
F2	20A	Accessory 2
F3	20A	Accessory 1
F4	15A	Wiper
F5	15A	Cigar Lighter
F6	15A	Left-hand outer road/work lights
F7	15A	Right-hand outer road/work lights
F8	15A	Accessory Outlets
F9	10A	Washer/Mirror
F10	10A	Accessory socket
F11	5A	Radio
F12	5A	Future Options
F13	10A	Aux. Radio power
F14	10A	Service Lights
F15	15A	Service sockets
F16	20A	Seat pump
F17	15A	Separator blower
F18	25A	Main blower
F19	10A	A/C clutch
F20	7.5A	Left-hand marker/tail lights
F21	7.5A	Right-hand marker/tail lights
F22	20A	Shoe levelling actuator
F23	20A	Rotary screen brush
F24	20A	Concave/grain tank covers
F25	25A	Transmission gearshift motor
F26	15A	Starting fuse
F27	15A	Sieves
F28	15A	Fuel pump

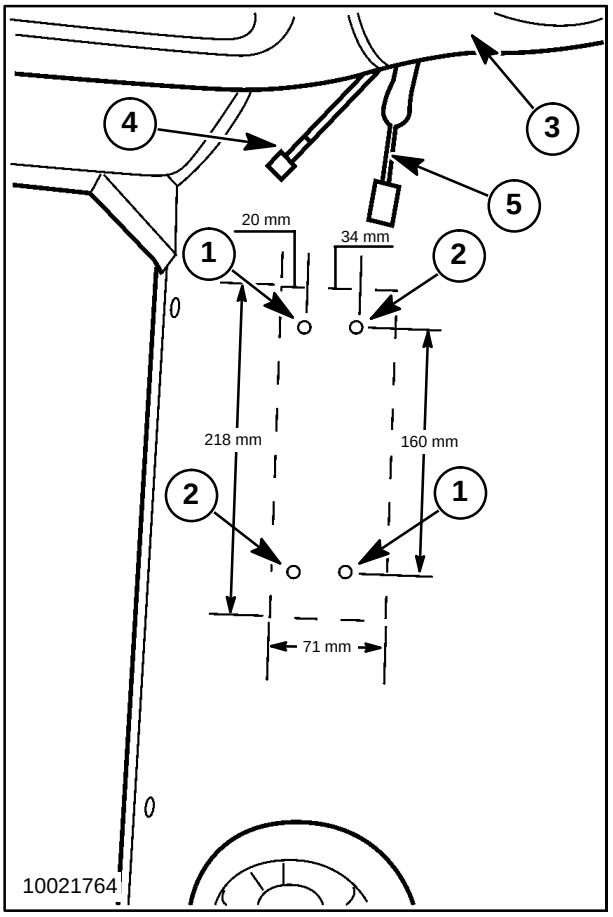
Fuse No.	Amperage	Function
F29	15A	Inner Road/work lights
F30	20A	Mid work lights
F31	25A	Outer Road/work lights
F32	15A	High beam (Europe only)
F33	15A	Low beam (Europe only)
F34	20A	Under shield lights
F35	5A	Radio memory
F36	10A	Combine Control Module 2A
F37	10A	Combine Control Module 2B
F38	7.5A	Key switch
F39	7.5A	Memory power, CCMs, RHM, display
F40	20A	Combine Control Module 1
F41	20A	Combine Control Module 2
F42	25A	Combine Control Module 3/Cab
F43	10A	Combine Control Module 1A
F44	10A	Combine Control Module 1B
F45	10A	GPS and Rotor, fan, feeder, spreader speed sensors
F46	10A	Not used
F47	10A	Combine Control Module 3 (precision farming)
F48	10A	Right-hand console
F49	10A	Cab
F50	10A	Side/Tube lights
F51	10A	Horn/Marker lights
F52	10A	Dome/Brake lights
F53	15A	Beacon lights
F54	15A	Lower work lights
F55	10A	Rear work lights
F56	15A	Hazard lights

Relay No.	Function
K1	Outer road/work lights
K2	Light Control relay
K3	Accessory 2
K4	High beam (Europe only)
K5	Low beam (Europe only)
K6	Wiper motor
K7	Fuel pump
K8	Accessory 1
K9	Separator Blower
K10	A/C Clutch
K11	A/C Main blower low (manual)
K12	A/C Main blower medium (manual)
K13	A/C Main blower high
K14	Engine Control Unit
K15	Not used
K16	Concave/covers
K17	Not used
K18	Upper/Lower sieve
K19	Feeder Disengage
K20	Time delay (Exit lighting)
K21	Work lights/Inner road light
K22	Mid work lights
K23	Neutral start
K24	Combine Control Module 1
K25	Combine Control Module 2
K26	Combine Control Module 3/Cab
K27	Inner work lights
K28	Not used
K29	Beacon lights
K30	Lower work lights
K31	Rear work lights
K32	Unload tube light
K33	Brake lights
K34	Side exit lights
K35	Side work lights
K36	Start relay
Relays below not in panel	
K38	24 Volt start relay
K39	Grid Heater
K40	Flip up low beam (Europe only)
K41	Flip up high beam (Europe only)

Extra Communications/Radio Mounting

The cab is equipped with a mounting bracket, behind the liner, for mounting of additional equipment (shown as a dotted line. Two holes in the liner,1, align with holes in the bracket suitable for 4mm self-tapping screws. Two additional holes, also suitable for 4mm self-tapping screws, in the bracket at 2, do not have preformed liner holes. 12 VDC power leads, 5, are available behind panel, 3. The power lead and antenna cable, 4, may be routed as shown.

Additional holes may be drilled as required.



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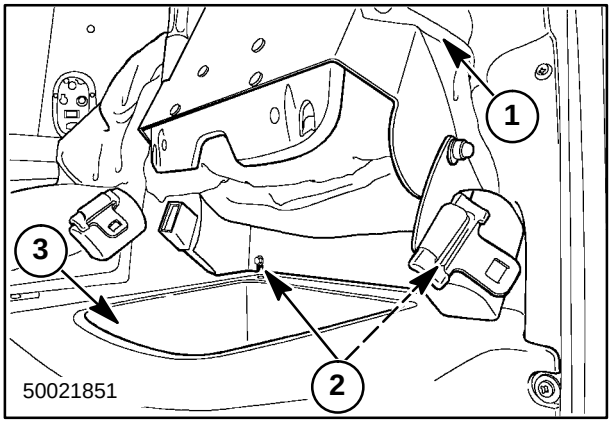
COMBINE CONTROL MODULE (CCM)

The CCM's are located under the storage box of the instructional seat.

To check this, proceed as follows:

1. Raise bottom cushion and attach strap, 1.
2. Loosen two bolts, 2, at bottom of seat back.
3. Lift seat assembly up and forward to remove from rear of cab.
4. Take out of storage box, 3.



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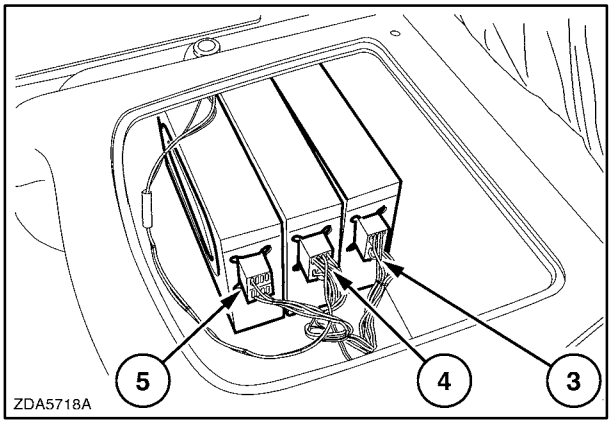
CCM 1, 3.

CCM 2, 4.

CCM 3 (If installed), 5.



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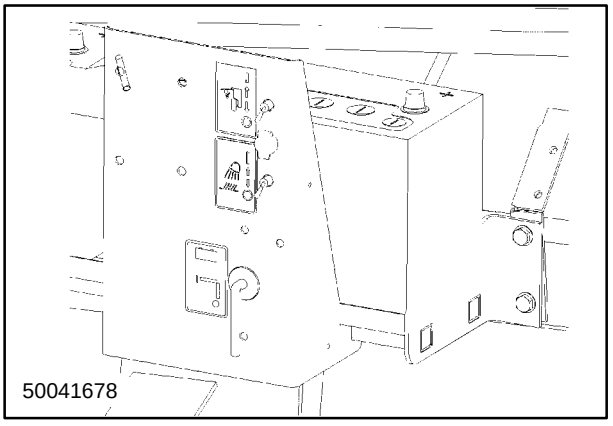
BATTERIES

The combine is equipped with two 12 Volt batteries (92 Ah). These are located at the back of the left-hand side of the combine.

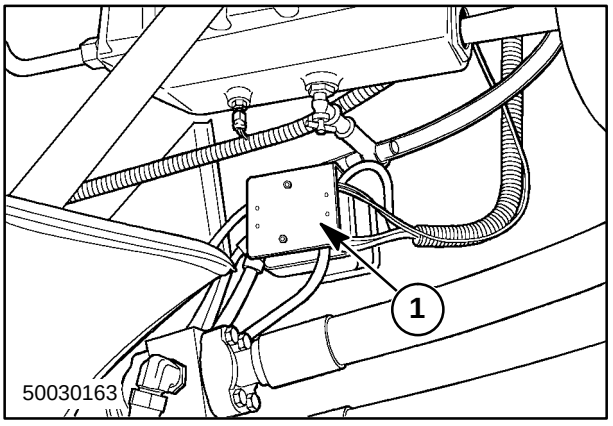
The ground cable is connected to the negative (–) battery terminals.

The batteries are low maintenance. There is no reason to remove the caps on the tops of the batteries for periodic maintenance.



119

Model AFX 8010 engine is equipped with two 12V batteries (92Ah), connected parallel, but switching to 24 V during starting, using solenoid, 1.



120

When replacing the battery make sure that the ground cable is connected to the negative (–) terminal on the battery. When connecting the battery, connect the negative (–) cable last.

NOTE: *To prevent damage to the battery do not over tighten the battery hold down bolts.*

⚠ WARNING ⚠

BATTERY ACID CAUSES SEVERE BURNS. Batteries contain sulfuric acid. Avoid contact with skin, eyes or clothing.

⚠ WARNING ⚠

BATTERIES PRODUCE EXPLOSIVE GASES. Keep spark, flame, cigars and cigarettes away. Ventilate when charging or using in enclosed area. Always wear eye protection when working near batteries. Wash hands after handling. KEEP OUT OF REACH OF CHILDREN.

Battery Cables and Terminals

The battery terminals must be kept clean and tight. A good method to clean the terminals is to use Battery Saver (Case Part Number M20831) according to instructions on the container. This cleaner needs no water. If Case Battery Saver is not available, remove all corrosion with a wire brush, then wash with a weak solution of baking soda or ammonia. Put some petroleum jelly or light grease on the terminals to prevent further corrosion.

Inspect the battery cables for damage. Replace any battery cable that has damage. To prevent hard starting, keep battery cables tight.

⚠ WARNING ⚠

When working around storage batteries, remember that all of the exposed metal parts are "live". Never lay a metal object across the terminals because a spark, short circuit, explosion or personal injury may result.

Battery Recycling

NOTE: *Discarding old batteries can cause an environmental liability. Check with your local environmental or recycling center of your dealer for correct disposal information.*

JUMP STARTING

This combine is equipped with a 24 volt starting system. Jump to the rear battery **ONLY** to prevent damage to the combine and jump vehicle system. Always connect booster battery in parallel, i.e. negative (–) to negative (–) and positive (+) to positive (+).

Important tips

1. In cold weather, add water to the batteries just before starting the engine. By doing this, the water and the electrolyte will be mixed by the charging current, thus avoiding freezing.

⚠ CAUTION ⚠

Keep sparks, lighted matches or an open flame away from the battery as battery gas can explode.

Never check the battery charge by placing a metal object across the terminals. Use a voltmeter or a hydrometer.

2. If the engine is reluctant to start, do not press the starter button for longer than 30 seconds, but try again after a few seconds.
3. The battery clamps must be cleaned regularly and covered with a layer of petroleum jelly to prevent corrosion.
4. Make sure the vents in the filler plugs are kept clean.
5. The batteries must never be disconnected while the engine is running, or damage to the alternator may result.
6. To safeguard battery life, switch off any lighting before starting the engine.
7. Under normal conditions, do not add sulphuric acid to the batteries.
8. The batteries should be stored in a fully charged condition.
9. The batteries should be charged every 6 weeks with 5 to 6 amperes current for a period of 24 hours.

⚠ CAUTION ⚠

Do not charge a frozen battery as it may explode!

ALTERNATOR

NOTE: *The engine is equipped with an alternator. Certain precautions must be observed to avoid serious damage to the alternator, batteries and wiring.*

When carrying out any maintenance work, the following instructions must be observed:

1. Disconnect the batteries by removing the negative battery cable, if any electric welding work is to be carried out on the combine.

   Secure the negative (–) terminal of the welding apparatus as close as possible to the part to be welded.

2. The positive (+) lead of the batteries is live at all times. To prevent damage, always disconnect the battery ground lead (–) first.
3. Ensure the batteries are connected properly, i.e. negative (–) lead to the negative (–) terminal and positive (+) lead to the positive (+) terminal.
4. Disconnect the batteries using the battery switch before connecting a battery charger. (Europe only)

   Ensure the battery charger is properly connected.

5. Never run the engine if the wiring between the alternator and the battery has been disconnected.
6. Clean the screen of the rear of the alternator when dirty.

CAB/CLIMATE CONTROL

Cab air filter

The cab air filter is located near the cab door on the left hand side behind the front trim panel.

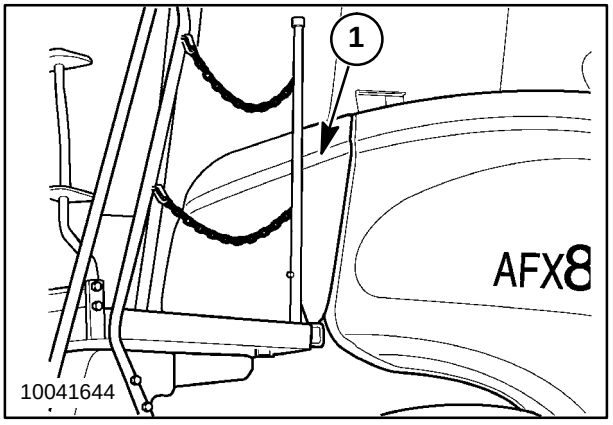
Clean the cab air filter regularly and, in extremely dusty conditions, daily.

⚠ CAUTION ⚠

Wear a suitable dust mask when cleaning the filter.

To access the cab air filter:

1. Push panel, 1, in to relieve spring retention force, then slide panel up and then out to remove.



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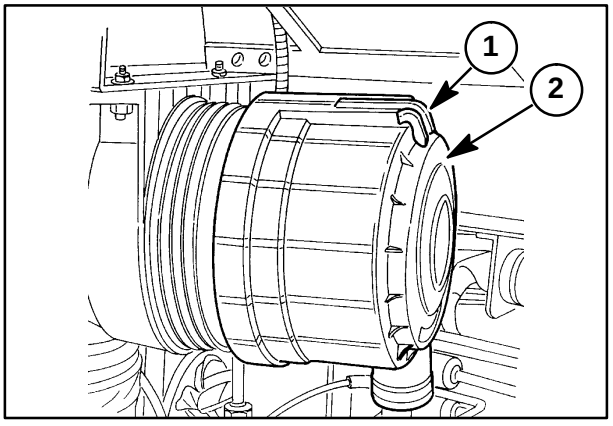
To remove the cab air filter, proceed as follows:

1. Pull yellow slider, 1.
2. Cover, 2, can be removed with a smooth twist to the left, and than pulling it towards you.
3. Remove filter element, 3.
4. Clean with compressed air blown from the inside towards the outside.

It is advisable to replace the filter elements every year.



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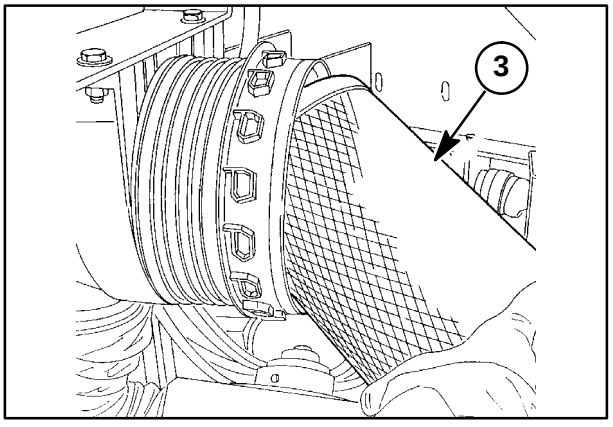
Installation:

5. Install filter element, 3, in the housing.



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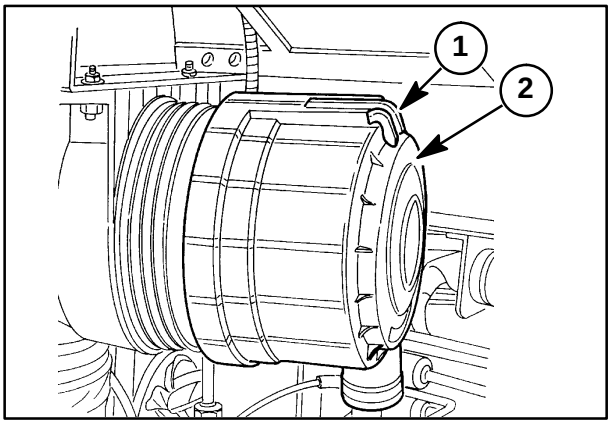
6. Install the cover. The dust outlet on the cover should be pointed down.
7. To close the housing turn cover 2 to the right till it locks.
8. Lock the cover with yellow slider 1.



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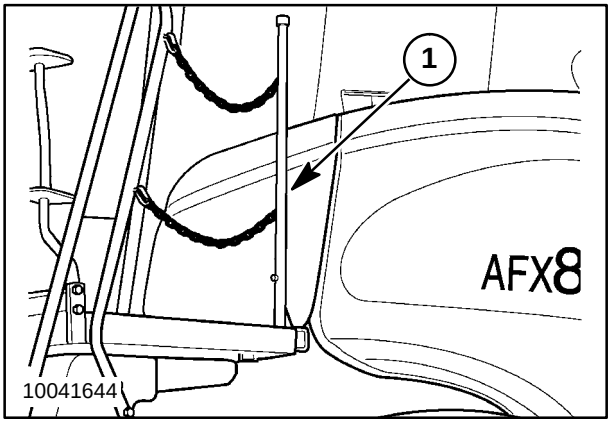
To reinstall panel:

1. Angle panel such that the bottom edge of the panel, 1, rests against the lower portion of the attachment brackets.
2. Align lower set of spring retention bolts on panel with the large openings of the lower set of keyhole slots on the attachment brackets.
3. Insert lower spring retention bolts through the keyhole slots while bringing the upper portion of the panel towards the attachment brackets.
4. Push panel in to relieve spring retention force and slide panel down.



⚠ CAUTION ⚠

Dust protection: The air filter in the cab does not protect against all substances (e.g. chemical residues on crops). Absolute protection against specific products can only be obtained when the nature of these products is known and adequate measures are purposely designed to counter the hazard created by these substances. Even the use of carbon filters cannot ensure complete protection. It goes without saying that correct filter maintenance and keeping doors and windows closed is essential.

Air conditioning

For a correct use of the air-conditioning system:

- Keep the cab doors closed.
- Use the air conditioning as much as possible.
- Control the desired temperature with the air-conditioning knob (thermostat).

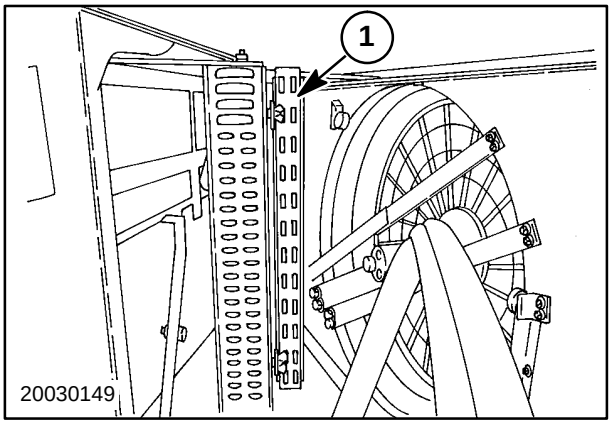
Pay regular attention to the following:

- The cleanness of the condensor, located on the engine rotary screen door.
- The cleanness of the cab fresh air filter located under the left front corner of the grain tank.
- The cleanness of the cab air recirculation filter, located on the right-hand rear cab wall beside the operator seat.
- The condensation water flowing from the drain tubes, check valves in humid conditions.

Condensor

Regularly inspect and clean the condensor, 1, with compressed air.

To gain access to clean the condensor: refer to “Rotary dust screen and cooling system” in this section.



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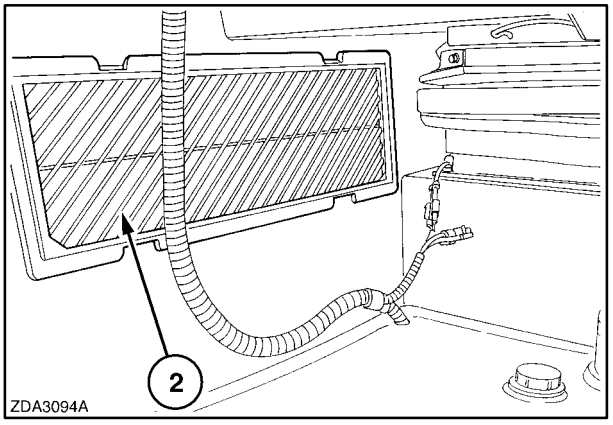
Recirculation filter

The recirculation filter, 2, is located in the cab, on the right-hand side of the operator ’s seat.

Clean the cab air filter regularly and, in extremely dusty conditions, daily.

To clean remove the recirculation grill.



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SECTION 5
FAULT FINDING

NOTE: *Feeding and operation of the combine can be difficult in the first half hour of operation in short crops as new painted parts may cause a lot of friction.*

FEEDING AREA

CONCERN	POSSIBLE CAUSE	CORRECTION
The material is backfed to the feed auger by the feeder chain.	Feeder chain badly adjusted.	Adjust chain tension.
	Rotor lugs worn or too far from feeder chain.	Replace lugs.

THRESHING AREA

CONCERN	POSSIBLE CAUSE	CORRECTION
Grain not properly threshed from heads.	Rotor speed too slow.	Increase rotor speed.
	Clearance between rotor and concave too wide.	Reduce concave clearance.
	Not enough material entering combine for proper threshing action.	Lower head and/or increase ground speed.
	Crop not ripe enough.	Wait until crop is in a fit condition to harvest.
	Difficult threshing crop.	Reinstall wire if removed. Slow cage vanes.
	Rasp bars or concave damaged, bent or worn excessively.	Inspect all rasp bars and concave for excessive wear or damage.
	Losing rpm because of sluggish or malfunctioning engine governor.	Fuel injection pump should be checked by a specialist.
Rotor blockage.	Rotor speed too slow.	Increase rotor speed.
	Irregular feeding.	Adjust head and feeder for optimum feeding.
	Crop too wet or insufficiently ripe.	Wait until crop is in a fit condition to harvest.
	Beater/chopper drive belt slipping.	Check belt tension and tighten, if necessary.

THRESHING, SEPARATION AND CLEANING

CONCERN	POSSIBLE CAUSE	CORRECTION
Excessive cracked grain in tank.	Clearance between rotor and concave too small.	Increase concave clearance.
	Rotors speed too high.	Reduce rotors speed and/or open concaves slightly.
	Not enough material entering combine.	Lower head and increase ground speed.
	Excessive tailings.	See the concern described under ‘‘Excessive tailings’’.
	Concave clogged.	Clean concave.
	Grain being cracked in elevator.	Adjust grain elevator chain tension.
	Uneven feeding, or wads entering rotors.	Adjust feeder chain. Check feed auger height and retractable finger adjustment.
Grain loss over rotor	Rotor speed too slow. Crop bunching in rotor.	Increase rotor speed.
	Incomplete threshing.	Decrease concave clearance.
	Concave blocked allowing excessive grain to be passed to separating portion of rotor.	Clean concave and separator grates thoroughly.
	Crop too wet or contains excessive green material.	Wait until crop is in a fit condition to harvest.

CONCERN	POSSIBLE CAUSE	CORRECTION
Grain is not properly cleaned.	Insufficient air blast from cleaning fan.	Increase fan speed to the point that grain is being cleaned properly, but not blown over the rear of the sieves.
	Rotor speed too high, or concave clearance too small, or a combination of both, resulting in broken straw overloading the sieves.	Readjust rotor speed and concave clearance so that threshing is carried out properly.
	Concave too tight.	Increase concave clearance.
	Presieve and/or top sieve opened too wide, allowing excessive trash to fall onto bottom sieve.	Close top sieve so that only the clean grain falls onto the bottom sieve and most of the trash moves out over the rear of the top sieve. If closed too far, threshed grain will be lost over the rear of the sieve.
	Incorrect concave or grate module type for crop or condition.	Change to more suitable module(s).
	Bottom sieve opening too wide, allowing trash to fall into the clean grain auger.	Reduce bottom sieve opening.
	Bottom sieve overloaded or blocked.	Clean the sieve thoroughly.
Grain loss over the sieves.	Too much air blast from the cleaning fan.	Reduce air blast with fan variable speed control.
	Concave too tight.	Lower Concave.
	Rotor speed too high.	Decrease rotor speed.
	Top sieve not opened wide enough or blocked.	Open the top sieve so that all the clean grain moves to the bottom sieve or clean sieve..
	Bottom sieve not opened wide enough or blocked, causing excessive grain to enter returns and be rethreshed.	Open the bottom sieve and clean if it is blocked.
	Cleaning shoe drive belt slipping.	Adjust cleaning shoe belt tension.
	Cleaning shoe not level.	Recalibrate self-leveling shoe. Check electric control. Contact your local dealer for assistance.
	Incorrect concave or grate module, especially in #1 or #2 positions.	Change to more suitable module(s).

CONCERN	POSSIBLE CAUSE	CORRECTION
Excessive tailings.	Insufficient air blast from cleaning fan.	Increase the fan speed.
	Bottom sieve closed too much, or blocked.	Open bottom sieve slightly and clean thoroughly, if blocked.
	Overthreshing.	Reduce rotor speed and/or increase concave clearance to prevent straw from being broken excessively.
	Incomplete tailings processing of unthreshed crop.	Install special tailings auger doors.
	Air blast too strong from the cleaning fan.	Reduce the fan speed.
	Cleaning shoe drive belt slipping.	Check cleaning shoe drive belt tension.
Sieves overloaded.	Insufficient air blast from the fan.	Increase fan speed.
	Overthreshing.	Reduce rotor speed and/or increase concave clearance to reduce the amount of short straw on the top sieve.
	Top sieve open too wide, or blocked.	Close sieve slightly and clean thoroughly, if blocked.
	Cleaning shoe drive belt slipping.	Check all belt drives and adjust tension, as required.
	Incorrect concave or grate module, type allowing excess separation.	Change modules to type more suitable to crop or condition.

ENGINE

CONCERN	POSSIBLE CAUSE	CORRECTION
Engine will not start.	Insufficient fuel in tank.	Fill up fuel tank.
	Battery connections dirty or disconnected.	Clean and coat the battery connections with vaseline.
	Battery partly run down.	Charge battery.
	Low voltage to ECU.	ECU requires minimum of 8V.
	Restricted fuel filters	Replace fuel filters.
	Restricted prefilter/water separator.	Replace element.
	Air in fuel system.	Bleed fuel system.
	Polluted fuel.	Drain and clean fuel tank. Refill with clean fuel.
Engine does not give full power.	Dirty air cleaner.	Clean air cleaner.
	Restricted fuel filters.	Replace fuel filters.
	Restricted exhaust pipe.	Clean or replace exhaust pipe.
	Vent hole in fuel tank filler cap clogged.	Clean vent hole.
	Polluted fuel.	Drain and clean fuel tank. Refill with clean fuel.
Engine overheats.	Insufficient coolant.	Add coolant.
	Dirty radiator.	Clean radiator.
	Fan drive belts slack or broken.	Adjust belt(s) tension, or replace belt.
	Insufficient oil in engine sump.	Add oil.
Engine starts, then stops.	Air in fuel system.	Bleed fuel system.
	Fuel filters restricted.	Replace filters.
Insufficient oil pressure.	Insufficient oil.	Add oil.
	Sender unit defective.	Replace sender unit.
Engine will not idle.	Air in fuel system.	Bleed fuel system.

RESIDUE HANDLING

CONCERN	POSSIBLE CAUSE	CORRECTION
Chopper vibrates during operation.	Rotor knife damaged, broken, or missing.	Replace damaged or broken rotor knife.
	Rotor bearing broken.	Contact your local dealer.
	Rotor out of balance.	Ensure all knives are in place, swinging freely, undamaged and equally worn. Clean rotor properly.
Poor chop quality, i.e. too long.	Damaged knife or knives on rotor and counter knives bar.	Replace damaged knives and sharpen counter knives.
	Dull rotor knives and counter knives.	Turn, or replace, rotor knives or counter knives.
	Chopper speed too low.	Set at high speed.
	Counterknives fully disengaged.	Insert counter knives.
	Drive belts slipping.	Check and adjust belt tension
Spreading pattern too wide, or too narrow.	Adjustment error.	Adjust spreader side deflectors for correct spread pattern.
		Adjust spreader lower fingers by bending up or down.
		Adjust spreader speed.
Spreader plugs.	Crop bridging.	Increase spreader speed.
	Spreaders not turning.	Hydraulic drive sustem diagnostics.
Straw chopper gets blocked.	Dull knives.	Sharpen, turn or replace counter knives. Replace, or turn, rotor knives.
	Chopper not turning.	Fully engage chopper speed shift collar.
	Belts slack.	Tension belts correctly.
Chopper will not engage.	Belts not tensioned.	Tension belts.
	Chopper speed shift collar not fully engaged.	Fully engage chopper speed shift collar.
Chopper speed plates not fully engaging.	Debris in splines.	Clean debris from spline area using compressed air.
Belts flapping.	Belt guides and/or idler incorrectly adjusted.	Adjust belt guides and idler correctly.

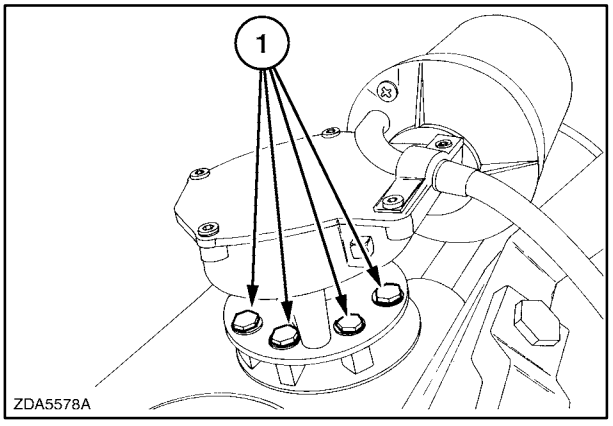
POWERED REAR AXLE

CONCERN	POSSIBLE CAUSE	CORRECTION
Performance sluggish.	Using too low a gear.	Shift into a higher gear.
	Low high pressure relief valve.	Have the system checked by your local dealer.
	Inadequate charge pressure.	Have the system checked by your local dealer.
System not functioning.	Fuse blown.	Replace fuse.
	Defective engaging switch.	Replace switch.
	Broken or disconnected wire.	Repair broken wire or reconnect.
Hazardous functioning of system.	Defective valve.	Have the valve repaired or replaced by your local dealer.

Gearshifting

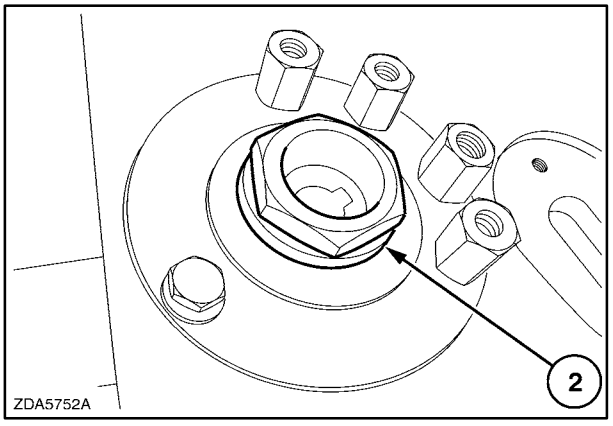
If not possible to select gears electronically (gearshift selector switch from the cab), it can be done manually, proceeding as follows:

1. Park the combine on level surface (if possible).
2. Raise the header and engage the header safety latch. Stop the engine.
3. Block the wheels adequately to prevent the combine from rolling.
4. Loosen four bolts, 1, and remove the electric motor.



1

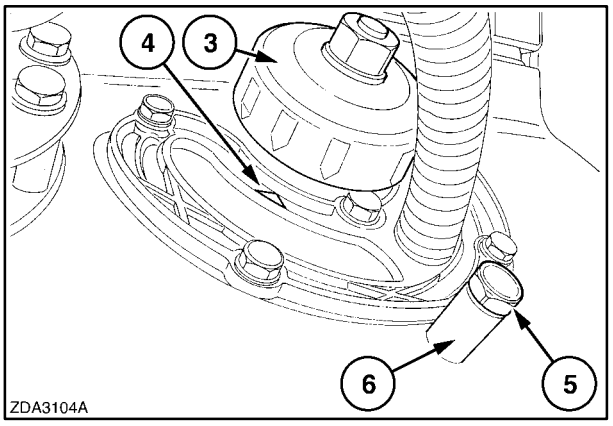
5. Turn nut, 2, underneath the electric motor.



2

6. To check if a gear is selected, gear number on indicator ring, 3, should align with arrow 4 on the gearshift sensor.
7. To block the manual selected gear, loosen bolt 5 and remove bushing, 6.
8. Install bolt, 5, (without the bushing), to block the selected gear (the bolt, 5, needs to pass through a hole in the shift cam inside the traction gearbox).

NOTE: *If the bolt is not easy to turn in the gearbox, move nut, 2, (Figure 2) until the bolt goes easy into the gearbox.*

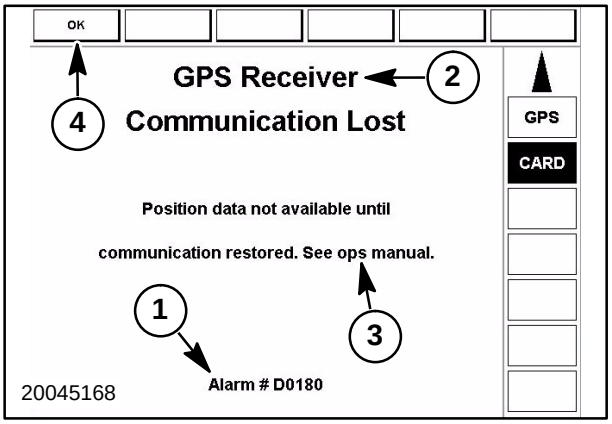


3

AFS AREA ALARM SCREENS

The following alarm screens may be displayed on the monitor to communicate possible system faults or warning messages.

The alarm number, 1, will be shown together with a description, 2, and a required action, 3. Correct the detected fault and press the OK button, 4, to continue harvesting. If the alarm concerns a function supported by the diagnostic screens, a diagnose button will appear. Press the diagnose button to advance to the diagnose screen.



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FAULT NUMBER	FAULT TEXT	EXPLANATION
D0100	YMIU NOT DETECTED	The display could not establish communication with the YMIU when the system powered up. Check that the connections into the YMIU are secure and that the LED on the YMIU is flashing green. Check the CAN connections. Recycle power.
D0101	YMIU COMMUNICATION LOST	The Display had been communicating with the YMIU and then communication was interrupted. Check wiring harness and connections into the YMIU. Check the CAN harness connections. Recycle power. Check that the LED on the YMIU is flashing green.
D0102	YMIU SERIAL NUMBER NOT FOUND	The Display could not read the identification information from the YMIU during power-up. Data recording will stop. Recycle power.
D0103	YMIU GRAIN SENSOR CALIBRATION VALUE NOT RECEIVED	Display could not read the YMIU grain sensor calibration number. Recycle power. Re-enter the calibration number on the MAIN>CAL>SENSOR screen. Check that other system calibration information is correct.
D0104	YMIU GRAIN SENSOR CALIBRATION VALUE NOT VALID	The system detected that the current grain sensor calibration value is invalid. Re-enter the calibration number on the MAIN>CAL>SENSOR screen. Recycle system power. Check that other system calibration information is correct.
D0105	ELEVATOR SPEED OUT OF RANGE	The system requires a valid elevator speed between 250 – 599 RPM. If the value is outside this range when the machine is operating, check the elevator speed circuit and sensor.

D0120	YMIU MEMORY FAULT – UNABLE TO READ VALUES FROM YMIU MEMORY.	The display cannot read the machine calibration information from the YMIU. Recycle power with a valid data card in the display. If the problem remains, use the MEMORY – import values screen to copy the calibration information from the card to the YMIU. Recycle system power. This fault message will be displayed on any system that is upgraded to display firmware V4.* from V3.* or earlier. Recycle system power to reset the YMIU memory.
D0121	YMIU MEMORY FAULT – UNABLE TO STORE VALUES IN YMIU MEMORY.	The display can not write calibration information to the YMIU. Recycle power with a valid data card in the display. If the problem remains, use the MEMORY – import values screen to copy the calibration information from the card to the YMIU. Recycle system power.
D0122	CALIBRATION AND SETUP VALUES NOT VALID – USING BACKUP VALUES	The display could not read the calibration information from the YMIU when the system was powered. The system will use the calibration data found on the display to update the YMIU. Recycle power to the system.
D0123	YMIU MEMORY VERSION NOT RECOGNIZED – UPGRADE OF DISPLAY SOFTWARE REQUIRED	The display software and the YMIU software are of versions that are not compatible. Update of software in the devices is required.
D0124	CROP SETUP VALUES NOT VALID – USING BACKUP	The system detected invalid crop setup values when powered. Check or re-enter the settings on the SETUP>CROP screen and recycle power to the system.
D0125	COMBINE SETUP VALUES NOT VALID – USING BACKUP VALUES. VERIFY VALUES IN SETUP>COMBINE AND SETUP>HEADER SCREENS.	The system detected invalid combine setup values when powered. Check or re–enter the settings on the SETUP>COMBINE and SETUP>HEADER screens and recycle power to the system.
D0126	HEADER SETUP VALUES NOT VALID – USING BACKUP VALUES. VERIFY VALUES IN SETUP>HEADER SCREEN.	The system detected invalid header setup values when powered. Check or re-enter the settings on the SETUP>HEADER screen and recycle power to the system.
D0127	COMBINE CALIBRATION VALUES NOT VALID – USING BACKUP VALUES. VERIFY VALUES IN CAL>SENSOR AND CAL>DIST SCREENS	The system detected invalid combine calibration values when powered. Check or re-enter the settings on the CAL>SENSOR and CAL>DIST screen and recycle power to the system.
D0128	CROP CALIBRATION VALUES NOT VALID – USING BACKUP VALUES. VERIFY VALUES IN CAL>VALUES SCREEN.	The system detected invalid crop calibration values when powered. Check the values on the CAL>VALUES screen and recycle power to the system. If still an issue, recycle power to the system with a know good yield file on the data card and use the MEMORY–Import value screen to copy the calibration data to the YMIU. Recycle system power.
D0129	DISPLAY SETUP VALUES NOT VALID – USING BACKUP VALUES.	The display could not read the display specific data from the YMIU when the system was powered. Check or re-enter setup information on the display and then recycle system power.

D0180	GPS RECEIVER COMMUNICATION LOST	The display could not detect communication with the GPS receiver. Check the harness connections to the GPS receiver. Check that the receiver is not blocked from receiving a GPS signal (at least 2 satellites must be detected). Check the receiver port output settings (Port A typical). The system requires a NEMA (GGA), 8–N–1 message string at 4800 baud rate. The GPS warning indicator will continue to flash until communication is restored. This time period may be dependant upon the receiver's GPS satellite acquisition time.
D0181	GPS RECEIVER UNABLE TO DETERMINE POSITION	The GPS receiver is communicating to the display but there are not enough GPS satellites detected to provide and accurate location. Check that the GPS antenna is not obstructed from view of the horizon.
D0200	DATA CARD NOT DETECTED – DATA LOGGING DISABLED. INSERT CARD AND RECYCLE POWER TO ENABLE DATA LOGGING.	The display was powered up with first installing a PC data card or the PC data card was not detected. Ensure the card being used is a good card. Insert a card and recycle power to the system.
D0201	DATA CARD REMOVED – DATA LOGGING DISABLED. INSERT CARD AND RECYCLE POWER TO ENABLE DATA LOGGING.	The system detected that the PC data card was removed while still powered. Reinstall the PC data card and recycle power to the system.
D0202	DATA CARD FILE NOT VALID – POSSIBLE LOSS OF SUMMARY DATA IN UTILITY > SUMMARY SCREEN.	The display did not detect a valid file on the PC card at power-up. A new file will be created on the card and back-up data from the display will be transferred to the new file (summary data only). Ensure only one *.cnh file resides on the card. Recycle power.
D0203	DATA CARD ACCESS FAILED – DATA LOGGING DISABLED. RECYCLE POWER TO ENABLE DATA LOGGING.	The display could not read/write data to the PC card. Recycle power to attempt again. If problem continues, check the card using a PC. Ensure card is formatted and not write protected.
D0204	DATA CARD MEMORY 90% FULL – ARCHIVE CARD AND REMOVE UNWANTED FILES IN UTILITY>MEMORY SCREEN TO REGAIN SPACE.	The PC card is nearing full capacity. Archive the data into the desktop software. Once archived, it is recommended to remove the GPS records on the card using the UTILITY>MEMORY–Delete GPS Records function to regain capacity. Card capacity is determined by the number of FARMS/FIELDS/LOADS and GPS logging interval. Typically, about 500 acres can be contained on a single card (2 second logging interval).
D0205	DATA CARD MEMORY FULL – DATA LOGGING DISABLED. REMOVE UNWANTED FILES IN UTILITY>MEMORY SCREEN TO ENABLE DATA LOGGING.	The PC card is has reached full capacity. Archive the data into the desktop software or replace card. Once archived, it is recommended to remove the GPS records on the card using the UTILITY>MEMORY–Delete GPS Records function to regain capacity. Card capacity is determined by the number of FARMS/FIELDS/LOADS and GPS logging interval. Typically, about 500 acres can be contained on a single card.
D0220	DISPLAY SOFTWARE NOT FOUND – SOFTWARE REQUIRED FOR ATTACHED SYSTEM NOT AVAILABLE.	The display does not have the software for the current product of use installed. Contact your dealer to have the latest software loaded.
D0221	DISPLAY SOFTWARE NOT VALID – SOFTWARE REQUIRED FOR ATTACHED SYSTEM NOT AVAILABLE.	The display does not have the correct software for the current product of use installed. Contact your dealer to have the latest software loaded.

D0222	DISPLAY TIME CLOCK FAULT – DISPLAY UNABLE TO ACCESS INTERNAL CLOCK DATA.	The display can not read the internal clock messages. Check the time setting on the SETUP>TIME screen and then recycle power.
D0223	DISPLAY BACKUP MEMORY NOT VALID	Backup data on the display was not detected when the system was powered-up. This fault WILL be displayed the first time a new display is powered or the first time a display has new code installed. Power down the system to write data to the backup memory.
D0240	DISTANCE CALIBRATION VALUE NOT VALID – REDO CALIBRATION	The calibration value is out of range. Check the “Actual” value used relative to the “Measured” value for the course used. Redo the distance calibration with a know distance.
D0241	CROP FLOW DETECTED BUT MACHINE NOT RECORDING – CHECK SYSTEM INPUTS	The system requires that all conditions be meet for the REC indicator to be on. If crop flow is detected but the REC indicator is not visible, a fault message is displayed. Check the following: 1. Data card is installed [CARD indicator darkened] 2. Header stop height set and current location is below the set height for the current crop type [HEAD indicator darkened]. 3. Elevator rpm is between 250 – 599. 4. Ground speed is present. 5. PC data card is not at full capacity.
D0242	LOAD SUMMARY MAXIMUM REACHED – DATA LOGGING DISABLED	Each load can store a maximum number of data points. When the maximum amount is reached, a new/ different load must be created/selected.
D0300	INPUT ERROR – VALUE IS OUT OF RANGE	The data field being edited has had a value entered that is out of limits for the selected field. Re-enter a valid value within the range.
D0301	INPUT ERROR – CHARACTER COUNT MUST BE: # TO #	The data field being edited does not contain the minimum or has exceeded the maximum number of characters allowed. Re-enter a valid number of characters for the selected field.
D0302	INPUT ERROR – NAME CANNOT BE BLANK	The data field being edited contains only blank characters or no characters. Re-enter character/values within the acceptable range.
D0303	INPUT ERROR – DUPLICATE NAME EXISTS. ENTER ANOTHER NAME	Operator has entered the same name for the selected field being edited. Enter a different name and continue.
D0304	INPUT ERROR – CANNOT CHANGE CROP TYPE AFTER GRAIN HARVESTED FOR LOAD.	The operator has attempted to change the crop type for the current load. Crop type can not be changed once harvest data has been recorded to the load. Create or change to a different load and select the correct crop type.
D0305	INPUT ERROR – CANNOT CHANGE WHILE HARVESTING IS IN PROGRESS	The operator has attempted to change/ create a new farm or fields while harvest conditions are met. Turn of the machine separator when changing/ creating FARMs and FIELDs.

D0306	INPUT ERROR – CANNOT SELECT LOAD IF LOAD IS ARCHIVED, USED FOR CALIBRATION, OR FROM DIFFERENT COMBINE.	The operator has attempted to select a load that is displayed in italicized font from the FIELD screen selection list. Italicized loads can not have additional harvest data added to them. A different or new load must be selected.
D0307	INPUT ERROR – CANNOT CREATE. MAXIMUM NUMBER REACHED.	Operator has attempted to create a new FARM, FIELD, or LOAD when the maximum allowable number has already been created. Archive the data card and then removed the necessary FARM, FIELD, or LOADs to reclaim capacity.
D0308	INPUT ERROR – CAN NOT CREATE FIELD BEFORE FARM IS SELECTED.	Operator has attempted to select or create a FIELD prior to selecting/ creating a FARM to associate the data with. Select a FARM and then proceed.
D0309	INPUT ERROR – CAN NOT CREATE LOAD BEFORE FIELD IS SELECTED.	Operator has attempted to select or create a LOAD prior to selecting/ creating a FIELD to associate the data with. Select a FARM and then proceed.
D0310	INPUT ERROR – CANNOT CHANGE WHILE MARKER IS ACTIVE.	Operator has attempted to change or edit a marker name on the UTILITY>MARKER screen while the current marker was activated on the RUN>YIELD* screen. Deactivate the marker prior to editing and/or changing.
D0311	INPUT ERROR – AREA FOR FIELD CANNOT BE CHANGED UNTIL FIELD IS COMPLETELY HARVESTED.	The operator has attempted to adjust the area of a field prior to harvesting data into the field. Complete the field harvest and then adjust the area.
D0312	INPUT ERROR – ACTIVE LOAD CANNOT BE SELECTED FOR CALIBRATION.	The operator has attempted to select the current active load as a calibration load in the CAL>CROP screen. Return to the RUN>FIELD screen and change to a different load in order to use the current load as a calibration load.
D0313	INPUT ERROR – LOAD CANNOT BE SELECTED FOR CALIBRATION. MAXIMUM NUMBER OF CALIBRATION LOADS REACHED.	The system allows a maximum of 10 loads to be selected for calibration purposes. To deselect an existing load and select a new load, go to the CAL>CROP screen.
D0314	INPUT ERROR – CANNOT CREATE. YMIU IS NOT AVAILABLE	The system requires the YMIU to be on–line in order to create unique ID's for the FARM, FIELD, and LOAD's. An error will occur when trying to create one of these values when the YMIU is not present. Check YMIU harness connections, CAN harness connections, and ensure the led in the top of the YMIU is flashing green.
D0350	WARNING – COPYING CALIBRATION VALUES – COPY CALIBRATION VALUES FROM {crop name} to {crop name}?	The system will warn the operator prior to coping crop calibration information from one crop type to another. The operator must select YES at the warning for the copy function to continue. Selecting NO will cancel the copy function and not alter the crop calibration values.
D0351	WARNING – CHANGING COMBINE CROP TYPE – CHANGING TYPE RESETS CALIBRATIONS FOR ALL CROPS. NEW CALIBRATIONS WILL BE REQUIRED. CONTINUE?	When the operator selects a different combine type (44/66 or 88) a warning message is displayed. If the operator selects YES at the warning message, ALL crop calibration values will be reset to the default values. The machine will need to be recalibrated for all crop types harvested. Selecting NO at the warning message will cancel the function and not alter any existing crop calibration values.

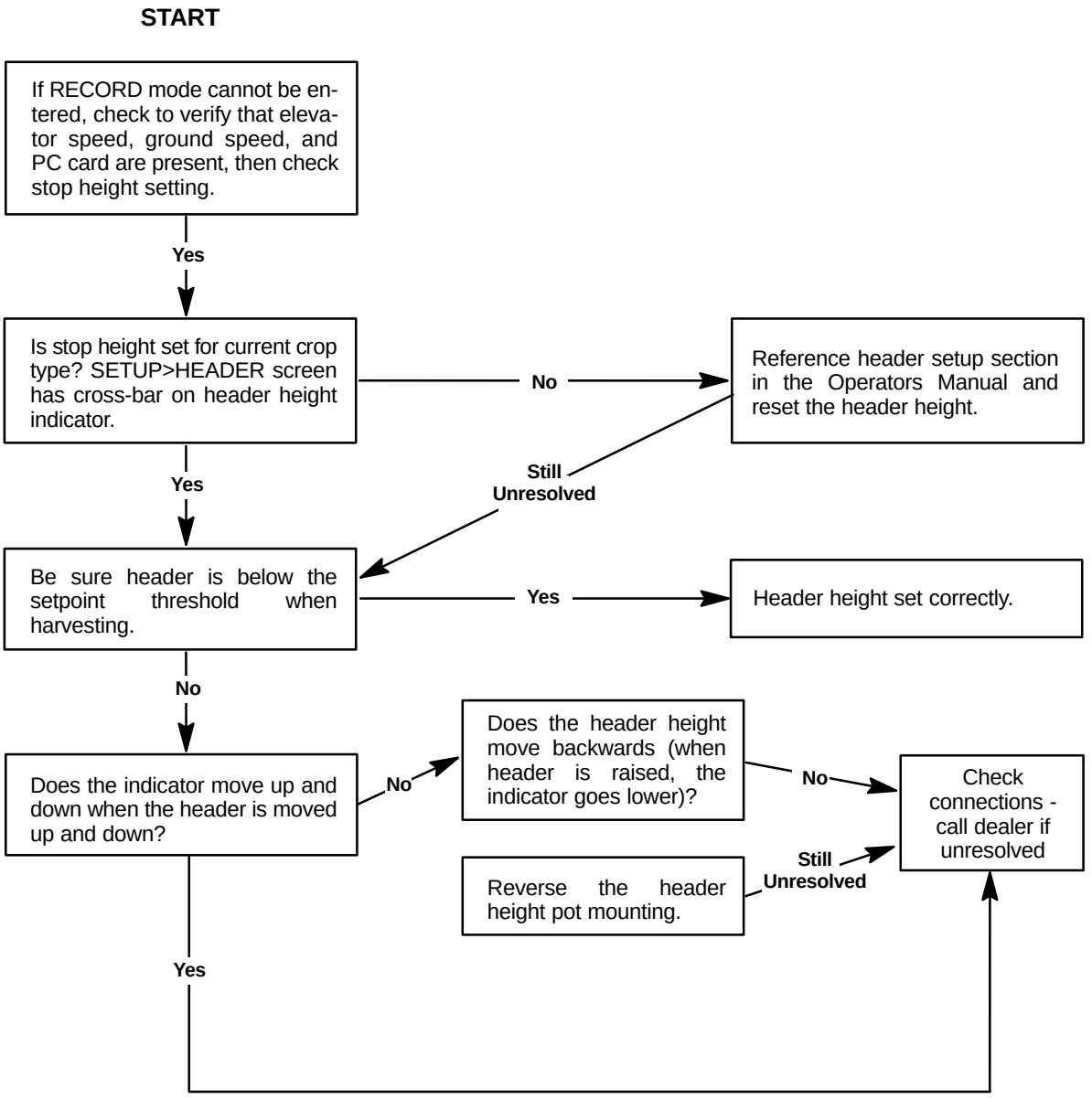
D0352	WARNING – CHANGING LANGUAGE – THE SYSTEM WILL RESET IF LANGUAGE IS CHANGED. CHOOSE THE DESIRED LANGUAGE	Whenever the system language setting is changed the display will reboot and return with the new language setting.
D0353	WARNING DELETING DATA CONTINUE?	The system will prompt the user that data is about to be deleted prior to performing this task. Selecting YES at this prompt will perform the function selected. Selecting NO will abort the delete function.
D0354	WARNING – LOADS NOT ARCHIVED – ONE OR MORE LOADS SELECTED FOR DELETION ARE NOT ARCHIVED. DATA WILL BE LOST.	The operator has selected a deletion function from the memory screen that contains harvest data that has not been archived to the desktop PC. Selecting YES at this warning will delete the data.
D0355	WARNING – CAL LOADS SELECTED. – ONE OR MORE CALIBRATION LOADS ARE SELECTED FOR DELETION. SAVE CALIBRATION LOADS?	The operator has selected a deletion function from the memory screen that contains the loads used for crop calibration. Selecting YES at this warning will delete the load data. Selecting NO will save the load data.
D0356	WARNING – UPDATING CALIBRATION DATA	The operator has selected an APPLY CALIBRATION function from the memory screen. Selecting YES at this warning will apply the most current crop calibration setting to the selected harvest data.
D0357	WARNING – IMPORTING VALUES. CONTINUE?	The operator has selected an IMPORT VALUES function from the memory screen. Selecting YES at this warning will apply the selected values to the current machine calibration information.

TROUBLESHOOTING

Condition/Situation	System Requirements	Required Action
“CARD” indicator not displayed.	Upon power-up, the system checks for the presence of a PC data card. If present, a “CARD” status message will appear on the YIELD* screens.	Insert a PC card and cycle power to the system.
“REC” indicator not displayed.	The system requires 4 conditions to be meet in order to record data to the PC card: PC card detected, header below stop height setting, ground speed signal, elevator speed between 250 – 599 RPM.	The most common cause of not getting the “REC” indicator is that the header stop height has not been set for the current crop type. Check stop height setting, elevator speed, ground speed, and “CARD” indicator
“HEAD” indicator not displayed.	The system requires that the header stop height be set for EACH crop type. When the header is lowered below the set point, the “HEAD” status indicator will appear on the YIELD* screens.	Check that the stop height has been set for the current crop type. Check header height signal from potentiometer on right side of the feeder house.
“LOAD” indicator flashing.	The system has detected harvest operation but no LOAD has been assigned.	Create or select a LOAD for the current FARM/ FIELD.
“GPS” indicator flashing.	The system has not detected a GPS or a DGPS signal from the GPS receiver.	Check the output ports settings of the DGPS receiver. Check GPS receiver wiring connections. Ensure the GPS receiver is not obstructed from view of the sky.
“YMIU” indicator flashing.	The system has detected a loss of communication between the Universal Display and the YMIU.	Check that the green LED light on the YMIU is flashing. Check the wiring connections.
“HEAD” indicator flashing.	The system has detected crop flow without all conditions for “REC” being met.	Engage machine and lower head while moving to reset the system. Ensure all conditions for “REC” are present.
“Avg” values not updating.	The system requires that 4 harvest conditions be met in order to record and display data. If an input signal is missing, the Avg. values will not be updated.	Check that all conditions for “REC” are met. Check that YMIU, or LOAD indicator is not flashing.
Single steady audible alarm.	The system will provide a single steady audible alarm for approximately a 3 second duration when the header height is lowered below the stop height setting.	System is functioning as designed. Audible alarm can be configured to “OFF” if not desired. Recommended setting is “ON”.
Change/create loads on the go.	The system will allow the operator to change/create LOAD’s while harvest is in process.	There will be a 14 second delay until data changes to the new selection to allow for synchronization of crop flow already present in the machine.
“MARKER” indicator not following the ”REC” indicator	The system records marker data independent of harvest control. Marker data will be recorded into the current FARM/FIELD/ LOAD whenever activated.	System is functioning as designed.

Condition/Situation	System Requirements	Required Action
Ground speed reading not matching machine display.	The distance calibration process determines the ground speed reading. This calibration should be performed in field conditions.	In most cases, the ground speed reading is more accurate than the combine displayed value. Typically the values are within .2 MPH.
Initial uncalibrated crop weights have greater than 10% error.	The system should be capable of achieving an initial level of accuracy of 10% or less. This value may vary depending upon the clean grain elevator speed selection, crop conditions and harvest conditions.	1. Check that the correct combine type is selected. (SET-UP>COMBINE) 2. Check the clean grain elevator to deflector plate gap setting. Distance should be 3/8″–1/2″. 3. Check the moisture sensor reading and the calibration process. 4. Harvest the data at consistent throughput levels for each load. Minimize stop and go operation. 5. Check that a throughput level of 5400 Lbs/Hr (2450 kg/Hr) or greater was present at the flow sensor. (Option low flow sensor required below this level) 6. Check the flow sensor for any buildup of material. 7. Check that the actual weights were entered into the correct load.
Display reads “Error: Bad Application Pointer”	The system does not detect any application software on the display.	Harvesting software must be loaded onto the display by the dealer using the EST laptop.
Moisture reading appears much lower than expected.	The moisture sensor fin must be submerged by crop to get an accurate reading.	Check the by-pass motor control circuit for proper operation.
Moisture reading does not appear to change.	The by-pass motor circuit is designed to discharge and replace material at the moisture sensor.	Check the by-pass motor control circuit for proper operation.
Existing harvest summary data did not change after performing a crop calibration.	Crop calibration only affects the loads selected for calibration plus any new harvest information.	To update prior harvest information or the current load with the most current crop calibrations, use the APPLY CAL VALUES screen.

HEADER STOP HEIGHT



SECTION 6
VEHICLE STORAGE

Your combine represents an important investment and its life depends upon how well you take care of it.

END-OF-SEASON SERVICE

Follow the steps outlined below at the end of each season's use or when the machine will not be used for an extended period of time. This will ensure the combine is kept in good condition and ready for the next season.

1. Remove the header to facilitate cleaning.
2. Clean the interior and exterior of the combine thoroughly because any chaff and dirt left in the machine will attract moisture and cause rust.

NOTE:

- *Avoid pressure washing at ambient temperatures below 10°C (50°F). Place the machine in a heated workshop for at least 24 hours.*
- *Avoid direct water jets onto electric equipment, bearings, seals, gearbox, oil tank or fuel tank filler caps, into the engine exhaust, engine, cab air filters and decals.*
- *When using a high pressure washer spray:*
  - Keep a minimum distance of 30 cm (11″) between the spray gun and the surface to be cleaned.
  - Spray under an angle of minimum 25° (do not spray in perpendicular direction).
  - Maximum water temperature: 60°C (140°F).
  - Maximum water pressure: 60 bar (870 PSI). Do not use chemicals.
  - Legislation in certain countries and good practice requires special treatment of waste water through sedimentation and oil separation and controlled removal of residues.

  Leave covers open at the bottom of the elevators to allow any moisture to drain out. Leave the unloading auger cleaning doors open.

3. Remove the sieves, clean them and coat with oil or a rust preventative.
4. Remove all chains. Clean and coat the chains with oil. Reinstall them, then adjust to the correct tension.
5. Lubricate the machine thoroughly, as described in Section 4 - LUBRICATION AND MAINTENANCE.
6. Coat all bright parts (except pulleys) with paint, a rust preventative, oil or grease to protect them from rust.
7. Retract all hydraulic cylinders and coat exposed parts of the cylinder rods with grease.
8. Clean all belts, then check belt tension. Adjust if necessary.
9. Clean the air filter element.
10. Use compressed air, or water under pressure, to clean out the engine radiator. Use a low-pressure water jet, or compressed air, to clean the air-conditioner condenser fins.
11. Check the anti-freeze content in the engine cooling system.
12. Fill the fuel tank completely.
13. Store the combine in a dry place, protected from the weather.
14. Close off all engine openings with plugs or greaseproof paper.
15. Support the combine on wooden blocks to relieve the weight from the tires. Leave tires inflated.
16. Disconnect the battery cables. Clean and charge the batteries.

IMPORTANT: *Sulfation from electrolyte stratification, excessive temperatures or prolonged periods of non–use account for approximately 85% of the deep cycle and starting battery failures in batteries that are not used weekly. The best way to prevent sulfation is to keep a lead–acid battery fully charged so that lead sulfate does not form. The batteries should be charged every 6 to 8 weeks with a 5 to 6 amperes current for a period of 24 hours to a minimum of 12.6 volt.*

NOTE: *Removing the batteries will not harm the storage of information in the monitor.*

17. Every 4 weeks, remove the engine opening seals, start the engine and run at 3/4 throttle for 1 to 2 hours.
18. Switch on the air conditioning while the engine is running, only if the ambient temperature is above 15°C (60°F) minimum. This will ensure lubrication of the compressor parts. Operate the air-conditioning system for at least 15 minutes.
19. Reinstall the engine opening seals.

Periodic checks will help to keep your combine maintenance and repairs to a minimum and avoid costly breakdowns during the season. Therefore, it is good practice to have the combine inspected at the end of the season. Your Case IH dealer will gladly quote a price for this work.

ORDERING PARTS AND/OR ACCESSORIES

When preparing the combine for storage, check thoroughly for any parts that may have become worn and need replacing.

Parts and/or Accessories should be ordered at once and fitted before the next harvesting season.

When ordering Parts and/or Accessories, always ensure to give your Case IH dealer the model number and product identification number of your combine. See the chapter headed ‘‘Product Identification’’.

INSIST ON GENUINE CASE IH PARTS AS THEY WILL GIVE THE BEST PERFORMANCE AND ARE COVERED BY OUR WARRANTY.

FOR BEST PERFORMANCE YOUR COMBINE SHOULD BE SERVICED BY AN AUTHORIZED CASE IH DEALER.

PRESEASON SERVICE

Follow the steps outlined below at the beginning of each season to ensure the machine is in good condition and ready for use.

1. Remove the wooden blocks supporting the combine.
2. Check the tire pressures and wheel nuts torque.
3. Lubricate the machine, as detailed in the ‘‘Lubrication Schedule”.
4. Check all belt and chain tensions (including the feeder and grain elevator chain).
5. Remove the protective oil from the sieves and reinstall them in the machine.
6. Check the oil level of the gearboxes and reservoirs and add oil, if needed.
7. Check machine adjustments, as described in Section 4 – LUBRICATION AND MAINTENANCE.
8. Remove the engine opening seals. Run the engine to bring it up to operating temperature, then drain the oil. Replace the oil filter(s) and fill with new engine oil.
9. Run the engine at half speed, engage the threshing mechanism and the header, and check for problems.
10. Drive the combine to check the operation of the hydraulic equipment and the brakes.
11. Stop the combine and replace the covers of the grain and returns cross auger, the bottom covers and the cleaning doors of the grain and returns elevator, and the unloading tube.
12. Lubricate the combine once again, but do not overgrease.
13. It is recommended to have your Case IH dealer or a refrigerant specialist check the entire air-conditioning system for leakage at the beginning of each season.

SECTION 7
ACCESSORIES

FEEDER

Perforated feeder house floor section
This replaces a solid feeder house floor.

The perforated bottom is used to evacuate dirt and soil when operating in peas, soy, beans, etc.

Feeder Rock Trap Kit

This kit is available to add a gear driven rock trap system to the combine.

Feeder Non-Rock Trap Kit

This kit will convert a feeder with rock trap to a non-rock trap configuration.

Smooth Slat Feeder Chain

When working with crops such as edible beans smooth slat feeder chain is available to reduce crop damage.

Top Shaft Sprocket Stripper

When operating in heavy wrapping conditions, top shaft sprocket stripping can be installed to prevent crop from wrapping around the top shaft sprockets.

Feeder Lateral Tilt Kit

This kit will convert a non-tilting adapter to hydraulic lateral tilt to allow the header to follow uneven ground.

2200 Corn Header Conversion Kits

To adapt 8 row and 12 row 2200 Corn Headers to mount to AFX 8010 Combine.

Ride Control

Adds accumulator to header lift circuit. Required for header pressure float option.

THRESHING AND SEPARATION

Smooth Rasp Bars
When working with crops such as edible beans, smooth rasp bars are available to reduce crop damage.

Rotor Modules

Various types of rotor modules that can be mounted in either the threshing or separating area of the rotor are available to fine tune the combine for any crop condition.

Large 1/4″ wire
Slotted hole
Small 3/16″ wire
Large skip wire
Solid
Round bar

Rotor Cage Filler Plates

Filler plates are used to hold the crop over the concave for a longer time to improve threshing in tough conditions.

Filler plates can also be used to even crop distribution onto the grain pan.

CLEANING SYSTEM AND LOWER FRAME

Remote Sieve Control

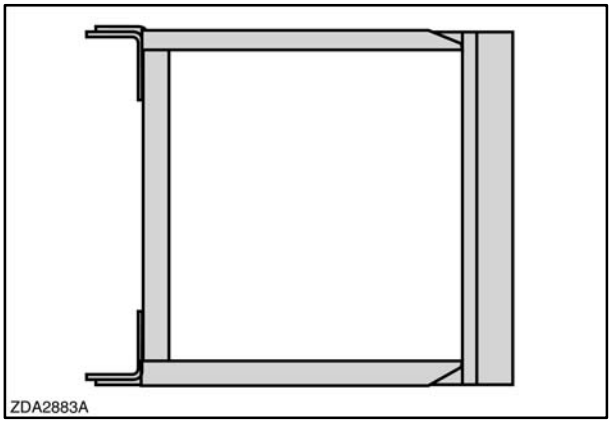
This equipment can be installed to adjust the lower and upper sieve electrically with switches from the cab and from behind the rear axle on the left side of combine.

Presieve Closz Slat 1-1/8″

This sieve can be used when harvesting lower yielding small grains to obtain a cleaner sample.

Round Hole Sieve Frame

A frame can be obtained to adapt to a round hole sieve of your preferred hole size.



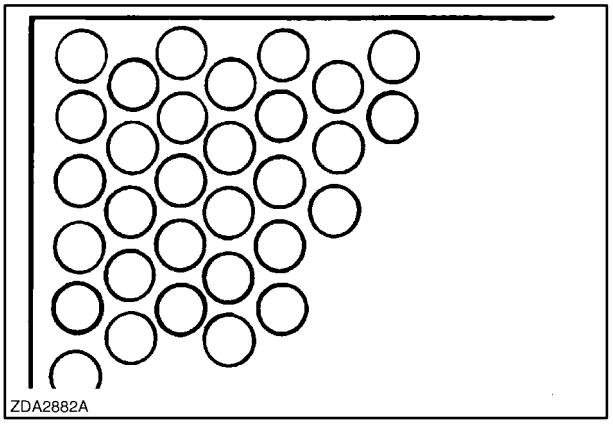
1

Round Hole Sieve (16 or 18 mm)

A 16 mm or 18 mm diameter round hole sieve can be used as an lower sieve in maize/corn when operating in damp conditions, as this sieve can be easily cleaned.

A 2.5 mm diameter round hole sieve is available for alfalfa and grass.

A 10 mm diameter round hole sieve is available for soybeans, edible beans and milo.



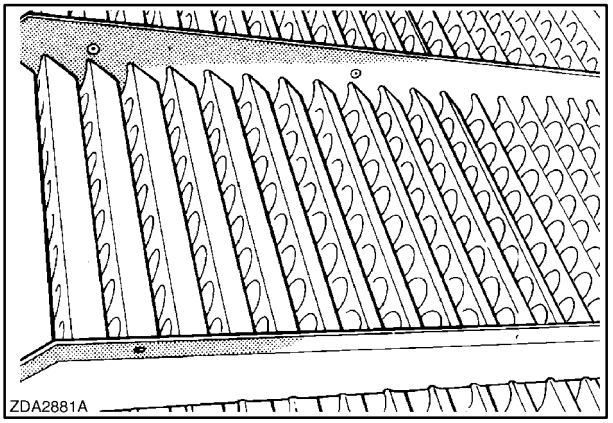
2

Adjustable Upper Sieve 1-5/8″

This sieve is recommended as an upper sieve when harvesting maize/corn.

Adjustable Upper Sieve (Peterson1-1/8″)

This sieve can be fitted as an upper or lower sieve to obtain a cleaner sample, especially in oil seed rape.



3

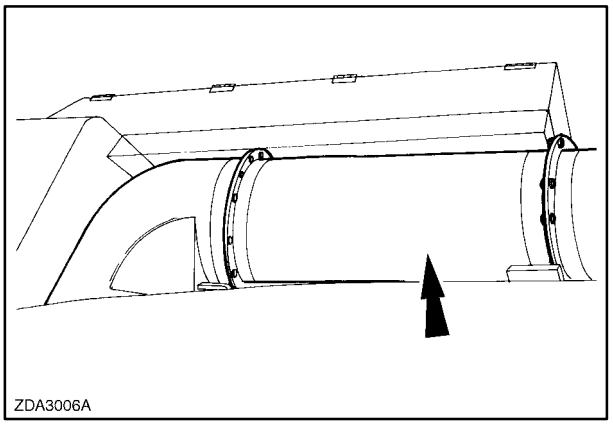
Hard Thresh Tailings Kit

A rough surface tailings auger cleanout door and tri-sweep housing door can be obtained for hard threshing small grains to increase tailings threshing.

CLEAN GRAIN ELEVATOR, GRAIN TANK AND UNLOADING

Unloading Tube Extension Kit

An unloading tube extension kit of 0,9 m (3 ft) is available for use with the 4.57 m, (18 ft) unloading auger.



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Perforated Covers: Long or Round

Perforated covers under the clean grain and return cross auger and the grain elevator can be installed when threshing beans and peas to obtain a cleaner grain sample.

Extended Wear Clean Grain Elevator and Delivery Auger

When operating in abrasive crops such as rice, the combine can be equipped with an extended wear clean grain elevator and delivery auger.

Clean Grain Elevator and Grain Tank Cross Auger Slow Speed Kit

When operating in delicate crops, such as edible beans, a slowdown kit is available for the clean grain elevator, bubble-up auger and front grain tank trough auger.

STRAW HANDLING

Straw Chopper Standard or Fine Chop

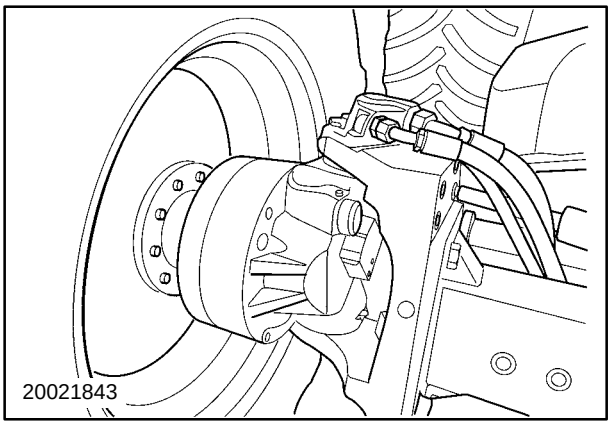
This equipment can be fitted on the machine to cut the straw residue.

Beater or Chopper Concave Cover

Cover slots in the beater or chopper concave to prevent material from passing through slots, reducing cleaning system load.

TRACTION AND TIRES

2 Speed Powered Rear Axle (wheel motors)
Hydrostatic wheel motors can be installed in place of the wheel hubs if additional traction is required in muddy conditions.



5

Dual Wheels and Axle Extensions
Dual wheels and floatation tires are available to give more floatation in soft ground conditions. Various axle extensions are available for a variety of row spacings.

Operator's Deck Extensions
This extension allows the use of wider traction wheels.

Service Light
Hand held portable light that plugs in at three locations on the combine.

HID Stadium Lights
High Intensity lights are available for increased

Deluxe Service Lighting
Additional lights under shields and in engine area.

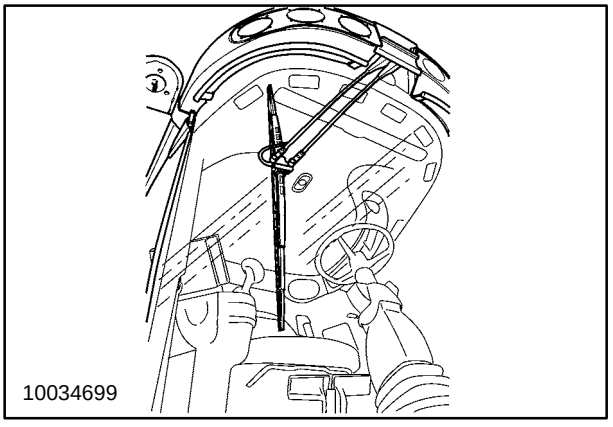
ENGINE

Block Heater
A block heater can be installed to aid the engine in cold weather.

CAB

Windshield Washer System
A washer system can be installed to clean the cab windscreen.

Electric Adjust and Heated Mirrors
Allow mirror adjustment from the operator's seat and defog or defrost capable.



6

ELECTRICAL AND ELECTRONIC

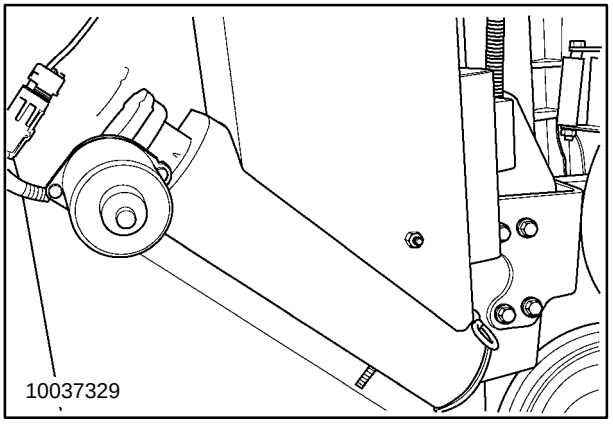
Beacon light
Beacon lights can be installed to provide advanced warning to other road users, when travelling on public highways, that the vehicle is wide and slow moving.

NOTE: *Check with local and regional authorities to determine if beacon light is required or prohibited for road use.*

Yield Monitoring package

- **Moisture sensor**

This equipment can be fitted on the grain elevator to check the grain moisture.



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- **Grain flow sensor**

This equipment can be installed on the machine (with moisture sensor) to check the mass flow.

Yield Mapping package

- **(Differential) Global Positioning System unit (D) GPS**

This equipment can be installed on the machine (included with moisture and grain flow sensor) to have yield mapping.

Header Trailer Hitch
Two types of trailer hitches are available for towing a header trailer.

- **Fixed trailer hitch**
- **Automatic rotation trailer hitch**

Fire extinguisher
A fire extinguisher is available. It is recommended one be mounted on the engine deck and one on the front ladder.

SECTION 8
SPECIFICATIONS

WHEELS AND TIRES

NOTE: *The specifications given below are only approximate and may vary slightly from machine and/or harvesting conditions.*

⚠ WARNING ⚠

The tires specified by the manufacturer are the only tires approved. If replacement tires are used, these must be identical in size and strength (PR rating for bias tires or Load Index for radial tires (e.g. 166 A8) to specified tires. The recommended tire pressure has to be maintained at all times.

Only original CASE IH wheel rims should be used in combination with the tire sizes indicated. Only these tire/wheel combinations have been approved in relation to the machine weight, width and road speed limits.

⚠ CAUTION ⚠

Road travel in the 4th gear with grain in the tank is not allowed.

WHEEL HARDWARE TORQUE

TORQUE	MINIMUM		MAXIMUM	
	N·m	Ft. lbs.	N·m	Ft. lbs.
Traction wheel hardware torque	710	525	790	580
Steering wheel nut torque (HDASA)	410	302	492	363
Steering wheel bolt torque (PRA)	550	406	610	450

Check wheel hardware torque after one hour of operation, then after 10 hours of operation for one week and thereafter on a weekly basis.

RECOMMENDED TIRES AND INFLATION PRESSURES

When combines are transported on trailers or railroad cars, or when tires are shipped loose, tires are inflated to 2.0 bar (30 psi) minimum, to allow rigid blocking and prevent tire damage. Pressures must be adjusted to operating pressure before combine is put into service.

The following tables give the required inflation pressure. This pressure is required for field and when the machine is to be driven frequently on public roads. Check tire pressure weekly or every 50 hours.

Tire Selection Chart AFX 8010

Allowed Recommended

Drive Tires *1	Tire Width mm (in)	Max Inf Press Bar (psi)	Wheel Dished In mm (in)	Wheel Dished Out mm (in)	Wheel Spacer mm (in) *4	Treadwidth mm (in)		Nominal Overall Width m (ft)	Actual Overall Width mm (in)
650/75R32 172A8 R1W	640 (25.2)	3.2 (46)	30 (1.2)			2848 (112.1)		3.5 (11.5)	3488 (137.3)
				46 (1.8)		3000 (118.1)		3.75 (12.3)	3640 (143.3)
710/70R38 171A8 R1W	739 (29.1)	2.7 (39)	82 (3.2)			2744 (108.0)		3.5 (11.5)	3488 (137.3)
			82 (3.2)		102 (4.0)	2944 (115.9)		3.75 (12.3)	3688 (145.2)
800/65R32 172A8 R1W	796 (31.3)	2.6 (38)	100 (3.9)		102 (4.0)	2908 (114.5)		3.75 (12.3)	3704 (145.8)
				115 (4.5)		3138 (123.5)		4.0 (13.1)	3934 (154.9)
900/60R32 176A8 R1W	921 (36.3)	2.1 (30)		115 (4.5)		3138 (123.5)		4.1 (13.5)	4059 (159.8)
1050/50R32 178A8 HF3	1080 (42.5)	1.7 (25)		118 (4.6)		3144 (123.8)		4.3 (14.1)	4224 (166.3)
Tracks	900 (35.4)			190 (7.5)		3288 (129.4)		4.2 (13.8)	4188 (164.9)

Steering Tires *1	Tire Width mm (in)	Max Inf Press Bar (psi)	Axle Type	Wheel Dished In mm (in)	Wheel Dished Out mm (in)	Axle Width Position	Height Position	Stop bolt Length mm (in) *2	Actual Overall Width mm (in)	Turn Radius m (ft) *3
460/70R24 150A8 R4	484 (19.1)	3.0 (44)	HDASA		10 (0.4)	3	4	18 (0.7)	3508 (138.1)	4.0 (13.1)
			HDASA		10 (0.4)	4	4	18 (0.7)	3658 (144.0)	4.1 (13.5)
			HDASA		10 (0.4)	6	4	18 (0.7)	3958 (155.8)	4.2 (13.8)
480/70R30 152A8 R1W	499 (19.6)	3.3 (48)	HDASA		50 (2.0)	3	3	48 (1.9)	3627 (142.8)	5.6 (18.4)
			HDASA		50 (2.0)	4	2	29 (1.1)	3777 (148.7)	4.6 (15.1)
			HDASA		50 (2.0)	5	2	18 (0.7)	3927 (154.6)	4.2 (13.8)
			PRA	34 (1.3)		3	3	35 (1.4)	3698 (145.6)	5.2 (17.1)
			PRA		50 (2.0)	3	2	26 (1.0)	3868 (152.3)	4.6 (15.1)
540/65R30 150A8 R1W	552 (21.7)	2.6 (38)	HDASA		50 (2.0)	3	4	46 (1.8)	3680 (144.9)	5.4 (17.7)
			HDASA		50 (2.0)	5	2	18 (0.7)	3980 (156.7)	4.2 (13.8)
			HDASA		50 (2.0)	6	3	18 (0.7)	4130 (162.6)	4.3 (14.1)
			PRA	34 (1.3)		3	3	43 (1.1)	3752 (147.7)	5.7 (18.7)
			PRA	34 (1.3)		3	4	39 (1.5)	3752 (147.7)	5.4 (17.7)
			PRA		50 (2.0)	3	2	26 (1.0)	3920 (154.3)	4.7 (15.4)
			PRA		50 (2.0)	4	3	13 (0.5)	4070 (160.2)	4.1 (13.5)
			PRA		50 (2.0)	5	3	13 (0.5)	4220 (166.1)	4.2 (13.8)
600/65R28 147A8 R1W	616 (24.3)	2.0 (29)	HDASA		65 (2.6)	4	2	48 (1.9)	3924 (154.5)	5.7 (18.7)
			HDASA		65 (2.6)	5	2	18 (0.7)	4074 (160.4)	4.2 (13.8)
			HDASA		65 (2.6)	6	3	18 (0.7)	4224 (166.3)	4.3 (14.1)
			PRA	49 (1.9)		5	2	18 (0.7)	4083 (160.7)	4.4 (14.4)
			PRA	49 (1.9)		6	3	18 (0.7)	4233 (166.7)	4.2 (13.8)
18.4–38 14 PR R1	499 (19.6)	2.6 (38)	HDASA	40 (1.6)		7	2	18 (0.7)	4056 (159.7)	4.4 (14.4)
			PRA	40 (1.6)		6	2	18 (0.7)	4142 (163.1)	4.3 (14.1)

*1 – Tire Restrictions
650/75R32 172A8 R1W – restricted to 24' grain header and 6RFw/C corn head
460/70R24 150A8 R4 – restricted to 20 kph with HDASA axle
18.4–38 14 PR R1 – use lower frame pivot hole for rear axle mounting

*2 – Stop bolt length measured at side of socket set screw from cast surface. On PRA axle measure on stop screw side closest to steer cylinder.

*3 – Turn radius is measured to center of front axle.

*4 – Wheels must be dished in when wheel spacers are used.

Engineering Ref:
HDASA rev. per ECR 121148
PRA rev. per ECR 121149

AFX European Tire / Operator Platform Extension Combinations														
Drive Tire Size	**Wheel Dish**	**Wheel Spacer**	**Tread Width**	**Over Tire Width**	**CL to Outside of LH Tire**	**CL to Outside of RH Tire**	**Required Base 150mm (5.9 in) Platform Extension**	**Required Base 250mm (9.8 in) Platform Extension Kit**	**CL to Inside of Ladder**	**Tire / Ladder Clearance**	**CL to Outside of Platform**	**Minimum Machine Width – Transport**	**Machine Width – Transport w/250 Ext Kit**	**Machine Width – Transport w/500 Ext Kit**
650/75R32 172A8 R1W	In	0	2848	3488	1744	1744	1	0	1919	175	1638	3488	3632	3882
	Out	0	3000	3640	1820	1820	1	0	1919	99	1638	3640	3708	3958
710/70R38 171A8 R1W	In	0	2744	3488	1744	1744	1	0	1919	175	1638	3488	3632	3882
	In	102	2944	3688	1844	1844	1	0	1919	75	1638	3688	3732	3982
800/65R32 172A8 R1W	In	102	2908	3704	1852	1852	1	0	1919	67	1638	3704	3740	3990
	Out	0	3138	3934	1967	1967	1	1	2169	202	1888	3934	3934	4105
900/60R32 176A8 R1W	Out	0	3138	4059	2030	2030	1	1	2169	139	1888	4060	4060	4168
1050/50R32 178A8 HF3	Out	0	3144	4224	2112	2112	1	1	2169	57	1888	4224	4224	4250

AFX SPECIFICATIONS

	AFX8010
HEADER	
Grain Header	
Grain Header, 2030	up to 30 ft
Flex Header	
Flex header, 2020	20, 23, 25 ft
Corn Header	
Corn Header, 2100	up to 8R
Other Headers	
Windrow Pickup, 2016	12, 14 ft
FEEDER	
Number of Chains	4
Chain type	550 HD
Number of Slats	22 with rock trap / 26 less rock trap
Rocktrap / Non-Rocktrap	
Slat type	Roll Formed Serrated
Driveline, variable	Gearbox and Shaft–CVT
Feeder Clutch	Radial Pin
Header Lift cylinders, dia.	75 mm (3.0″)
Reverser System	Hydraulic
Stone Trap (Opt.)	Beater/Sump
THRESHING	
Threshing Drive	
Drive Type	Gearbox and Shaft–CVT
Rotor Speed Range	220 to 1180 rpm
Speed Control	Electronic
Rotor	
Rotor Diameter	762 mm (30″)
Rotor Length	2612 mm
Length of auger section	497 mm
Length of threshing section	886 mm
Length of separation section	886 mm
Length of discharge section	305 mm

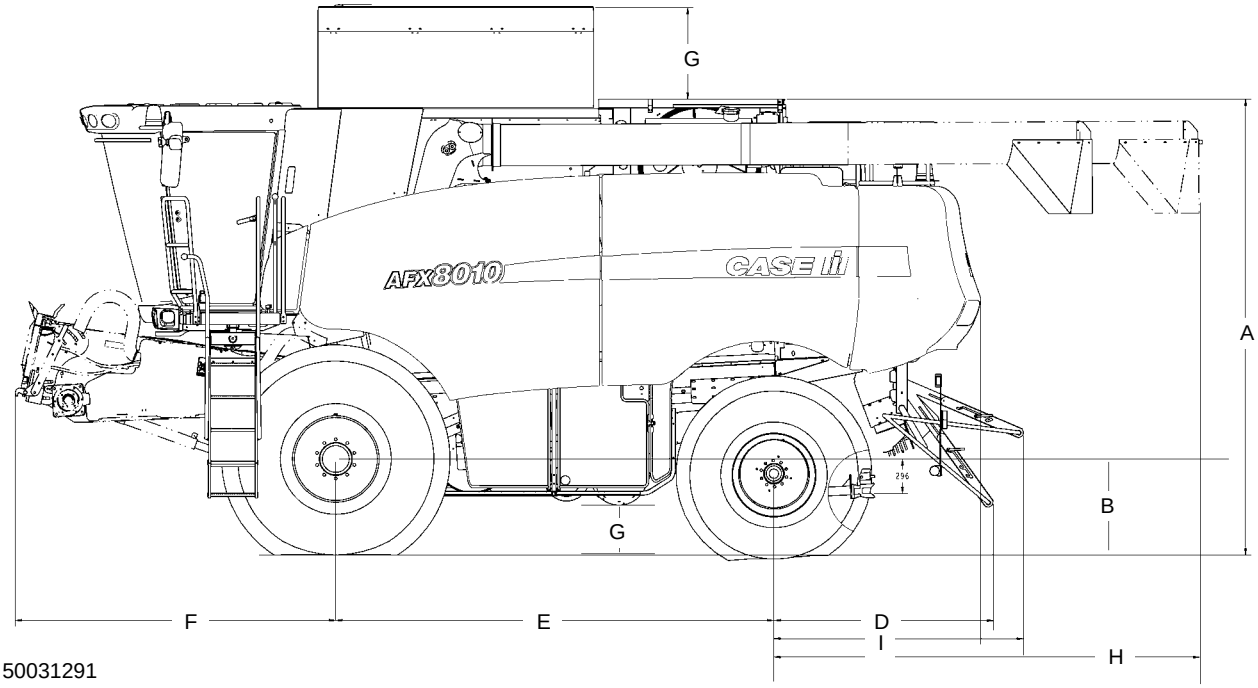
	AFX8010
Rotor, Standard	
Number of raspbars	64
High Alloy	No
Number Spiked Rasp Bars	8
Number Helical Separator Bars	2
Rotor, Rice	
Number of raspbars	74
Spiked, High Alloy	Yes
Number Helical Separator Bars	2
Rotor, Extended Wear	
Number of raspbars	64
High Alloy	Yes
Number Straight Separator Bars	4
Number Helical Separator Bars	2
Rotor Modules	
Number of separating sections	4
Number of threshing sections	4
Clearance Range	120 mm (4.7″)
Wrap Angle	180°
Separation Concept	Centrifugal force
Small Wire Threshing Module	
Number of bars	14
Number of wires	36
Wire Diameter	4.76 mm
Distance between wires	6.1 mm
Large Wire Threshing Module	
Number of bars	14
Number of wires	15 / LSW (large skip wire) 6
Wire Diameter	6.35 mm
Distance between wires	18.4 mm
Slotted Threshing Module	
Slot length	50 mm
Slot width	25 mm
% Open Area	35
Round Bar Threshing Module	
Number of bars	18
Bar diameter	16 mm
Distance between bars	16 mm
Smooth Threshing Module	
Discharge Beater	
Type	3 Blade
Speed	780 rpm
Width	1285 mm
Diameter	454 mm

	AFX8010
Beater Concave	
Grate Width	1367 mm
Wrap Angle	50 degrees
Grate Type	perforated sheet
Number of perforations	312 (39 rows of 8)
Opening size	15 mm x 40 mm
Setting	Spring loaded
Drive	3HB belt
CLEANING SHOE	
Frame Width	1580 mm
Cleaning Shoe Type	Self leveling
Drive	1HC belt
Standard Speed	310 rpm
Upper Shaker Shoe	
Horizontal Stroke	45 mm (1-3/4″)
Throwing Angle, front	27 degrees
Throwing Angle, rear	27 degrees
Grain Pan width	1580 mm (62-3/16″)
Grain Pan length	1570 mm (81.8″)
Grain Pan + rake surface	2.733 sq. m (4236 sq in.)
Pre-sieve width	1580 mm (62-3/16″)
Pre-sieve length	901 mm (35-1/2″)
Pre-sieve area (with rake)	1.424 sq. m (2207 sq in.)
Upper sieve width	2 x 790 mm (2 x 31″)
Upper sieve length	1445 mm (56-7/8″)
Upper sieve area	2.284 sq. m (3540 sq. in)
Upper sieve grate surface	0.237 sq. m (367 sq. in)
Upper sieve wire finger surface	0.253 sq. m (392 sq. in)
Lower Shaker Shoe	
Horizontal Stroke	40 mm (1-1/2″)
Throwing Angle	15 degrees
Lower sieve length	1445 mm (56-7/8″)
Lower sieve width	2 x 790 mm (2 x 31″)
Lower sieve area	2.284 sq. m (3540 sq. in)
Total sieve area under wind control	6.25 sq. m (9687 sq. in)
CLEANING FAN	
Type	Cross-Flow
Drive	Hydraulic
Fan speed range	300 rpm to 1150 rpm
Speed Control	Closed loop
Number of blades	40

	AFX8010
RETURN SYSTEM	
Tailings Return Type	Triple Impellor Crop Processor
Cross auger speed	560 rpm
Bottom impellor speed	560 rpm
Middle impellor speed	510 rpm
Top impellor speed	700 rpm
GRAIN TANK, UNLOAD	
Central filling, folding bubbler	Std
Grain tank capacity	11630 liters (330 US bu)
In-cab control of grain tank covers	not available
Unloading concept	Over the top unloading
Unloading tube length, standard	5.5 m (18 ft)
Unloading tube length w/extension	6.4 m (21ft)
ENGINE	
Type	Case IH 10.3L
Gross Power (ISO TR14396)	295 kW (395 hp)
Governor	Electronic
Rated Speed	2100 rpm
Low idle speed	1000 rpm
High idle speed	2100 rpm
Cylinder displacement	10.3L (639 cu. in)
Crankcase capacity(w/filters)	32 liters (8.5 US gals)
Battery	2 x 12V – 950 CCA
Alternator type	185 Ampere (12 volt)
Fuel tank	1000 liters (264 US gals)
STRAW CHOPPER & SPREADER	
Straw chopper (Opt)	Integral
Rotor type	2-row helix
Number of knives–Standard cut	28
Number of counterknives–Standard cut	21
Number of knives–Fine cut	56
Number of counterknives–Fine cut	42
Speed	780 rpm (LO) or 3025 rpm (HI)
Shift method	Sliding collar
Chaff spreader type	Vertical, twin disc
Chaff spreader drive	Hydraulic
HYDRAULIC SYSTEM	
Reservoir capacity	57 liters (15 US gals)
Pump type	Closed center load sensing
Pump capacity	0 – 148 l/min (0 – 39 US gpm)
Maximum pressure	207 bar (3000 psi)
Steering Valve	
Maximum pressure	186 bar (2700 psi)

	AFX8010
HYDROSTATIC SYSTEM	
Pump capacity (cc/rev)	130
Motor capacity (cc/rev)	130
Maximum pressure, forward	420 bar (6090 psi)
Maximum pressure, rearward	420 bar (6090 psi)
CAB	
Cab type	Std/Deluxe opt.
Operator Seat	Air Ride
Instructional Seat	Padded
Air conditioning	Manual/ATC w/ Deluxe
Heating	Std
Power adjust and heated mirrors	opt.
Wipers	Dual
Windshield Washer	opt.
TRACTION	
Transmission	4 speed hydrostatic
Oil capacity	19 liters (5 US gals)
Differential	20/61
Differential Lock	opt.
Steering axle	Adjustable
Powered Rear Axle type	Cam lobe swivel motor steerable wheel drives
BRAKES	
Services brakes type	Manual dual caliper disc
Park brake type	Spring applied, hydraulically released
FINAL DRIVES	
Type	Planetary
Ratio	1/13.09
WEIGHT (approximate)	16488 kg (36,350 lbs)

DIMENSIONS



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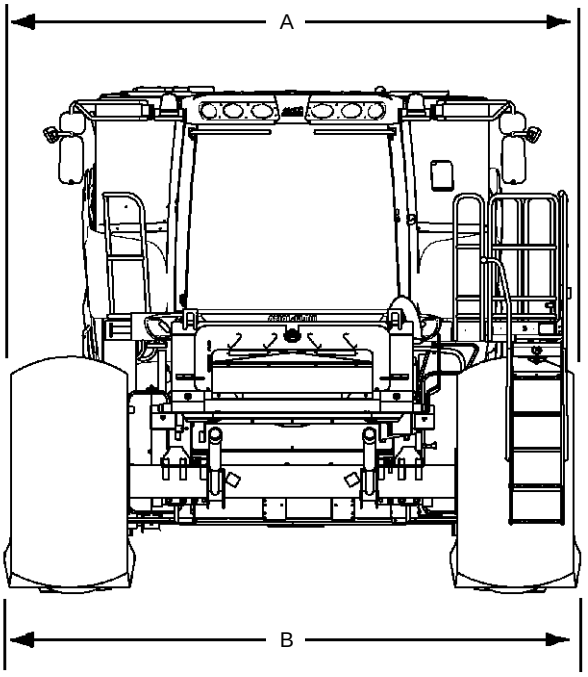

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TIRE SIZE	A		B		C	
	meters	inches	meters	inches	mm	inches
650/75R32 172 A8 R1W	3.99	157.0	0.818	32.2	456	18.0
710/70R38 171 A8 R1W	4.03	158.5	0.855	33.7	493	19.4
800/65R32 172A8 R1	3.98	156.6	0.808	31.8	446	17.6
900/60R32 176A8 R1W	3.99	157.2	0.823	32.4	461	18.1
1050/50R32 178A8 HF3	4.02	158.4	0.853	33.6	491	19.3

	mm	inches
D with HDASA	1881	74.1
D with PRA	1860	73.2
E with HDASA	3752	147.7
E with PRA	3773	148.5
F	2746	108.1
G	786	30.9
H with HDASA and 18ft auger	2719	107.0
H with PRA and 18ft auger	2698	106.2
H with HDASA and 21ft auger	3673	144.6
H with PRA and 21ft auger	3652	143.8
I with HDASA	1771	69.7
I with PRA	1750	68.9

Drive Tire Size	**A** See “Tire Selection Chart” for overall width	Required 250mm Platform Ext. Kit	Tire / Ladder Clearance		**B** Transport Width w/250mm platform extension when > Tire width		**B** Transport Width w/500mm platform extension	
			mm	in	mm	in	mm	in
650/75R32 172 A8 R1W		0	175	7	3632	143	3882	153
		0	99	4	3708	146	3958	156
710/70R38 171 A8 R1W		0	175	7	3632	143	3882	153
		0	75	3	3732	147	3982	157
800/65R32 172A8 R1		0	67	3	3740	147	3990	157
		1	202	8			4105	162
900/60R32 176A8 R1W		1	140	5			4168	164
1050/50R32 178A8 HF3		1	57	2			4250	167

INDEX

1ST 50 HOUR SERVICE SHEETS

CHECK AND ADJUST, AS REQUIRED (CUSTOMER COPY)

1. Perform the 50 hour grease zerk service . . . ☐
2. Check wheel nut and torques . . . . . ☐
3. Check steering ball joints . . . . . ☐
4. Check and clean air conditioning condensor ☐
5. Check tire pressure . . . . . ☐
6. Check electrolyte level in batteries . . . . . ☐
7. Check engine oil level . . . . . ☐
8. Check PTO gearbox oil level . . . . . ☐
9. Check hydraulic oil level . . . . . ☐
10. Check all chain and belt tensions . . . . . ☐
11. Lubricate all chains . . . . . ☐
12. Check coolant level (shunt tank) . . . . . ☐
13. Check brake fluid level . . . . . ☐
14. Clean cab air filter . . . . . ☐
15. Check fuel level . . . . . ☐
16. Drain water from fuel system prefilter/ water separator . . . . . ☐

THE INSPECTION HAS BEEN MADE

COMBINE MODEL NO: _____ **COMBINE PIN NO:** _____

SIGNATURE OWNER, DATE: _____ **SIGNATURE DEALER, DATE:** _____

CHECK AND ADJUST, AS REQUIRED (DEALER COPY)

1. Perform the 50 hour grease zerk service . . . ☐
2. Check wheel nut and torques . . . . . ☐
3. Check steering ball joints . . . . . ☐
4. Check and clean air conditioning condensor ☐
5. Check tire pressure . . . . . ☐
6. Check electrolyte level in batteries . . . . . ☐
7. Check engine oil level . . . . . ☐
8. Check PTO gearbox oil level . . . . . ☐
9. Check hydraulic oil level . . . . . ☐
10. Check all chain and belt tensions . . . . . ☐
11. Lubricate all chains . . . . . ☐
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15. Check fuel level . . . . . ☐
16. Drain water from fuel system prefilter/ water separator . . . . . ☐

THE INSPECTION HAS BEEN MADE

COMBINE MODEL NO: _____ **COMBINE PIN NO:** _____

SIGNATURE OWNER, DATE: _____ **SIGNATURE DEALER, DATE:** _____

OWNER COPY

DELIVERY REPORT

MODEL AFX 8010 COMBINE

Delivery Date _____

Owner's Name _____

Address _____

Dealer's Name _____

Address _____

Combine:	Model	_____	PIN No.	_____
Engine:	Model	_____	PIN No.	_____
Head:	Model	_____	PIN No.	_____
	Model	_____	PIN No.	_____
	Model	_____	PIN No.	_____

Using the operator's manual as a guide, instruction was given as indicated by the check marks.

( ) Safety precautions and practice

( ) Lubrication points and schedule

( ) Maintenance areas, adjustments, and schedule

( ) Field adjustments for various crop conditions

( ) Operation

( ) Use of optional equipment

( ) Preseason service

( ) End-of-season service

( ) Proper use of operator's manual

( ) Customer given operator's manual

( ) All safety shielding is installed

Dealer Representative's Signature _____

"I have been instructed in the operation, maintenance, and safety features of this machine as detailed in the operator's manual."

Owner's Signature _____

DEALER COPY

DELIVERY REPORT

MODEL AFX 8010 COMBINE

Delivery Date _____

Owner's Name _____

Address _____

Dealer's Name _____

Address _____

Combine:	Model	_____	PIN No.	_____
Engine:	Model	_____	PIN No.	_____
Head:	Model	_____	PIN No.	_____
	Model	_____	PIN No.	_____
	Model	_____	PIN No.	_____

Using the operator's manual as a guide, instruction was given as indicated by the check marks.

( ) Safety precautions and practice

( ) Lubrication points and schedule

( ) Maintenance areas, adjustments, and schedule

( ) Field adjustments for various crop conditions

( ) Operation

( ) Use of optional equipment

( ) Preseason service

( ) End-of-season service

( ) Proper use of operator's manual

( ) Customer given operator's manual

( ) All safety shielding is installed

Dealer Representative's Signature _____

"I have been instructed in the operation, maintenance, and safety features of this machine as detailed in the operator's manual."

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