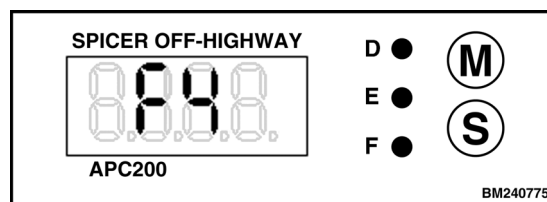# APC200 FAULT CODE GUIDE

H8.00-12.00XM (H170-280HD) [H007];

H13.00-14.00XM (H300-330HD) [G019];

H16.00XM-6 (H360HD) [G019];

H10.00-12.00XM-12EC (H360HD-EC) [G019];

H16.00-18.00XM/XMS-12 (H400-450HD/HDS) [A236];

H16.00-22.00XM-12EC (H400-500HD/HDS-EC) [B214];

H25-32XM-12, H28XM-16CH, H32XM-16CH, H25-32XMS-9

(H550-700HD, H550-700HDS) [F008]; H40.00-52.00XM-16CH

(H1050HD-CH, 1150HD-CH) [E117, F117]; H40.00-48.00XM-12 (H800-1050HD/HDS) [A917];

RS45-27CH, RS45-31CH, RS46-36CH, RS45-24IH, RS45-28IH, RS46-33IH (HR45-27CH,

HR45-31CH, HR45-36CH) [B222]; H16XM-12, H18XM-12, H20XM-12, H22XM-12 (H400HD, H450HD,

H500HD, H550HD) [B236]; H16XM-12EC, H18XM-12EC, H22XM-12EC (H400HD-EC, H450HD-EC,

H500HD-EC) [C214]; H25-32XM-12, H25-30XMS-9 (H550-700HD, H550-700HDS) [G008];

H8.0-12.0XM-6 (H190-280HD$_2$) [J007]; H13.0-14.0XM-6 (H300-330HD$_2$) [H019];

H16.0XM-6 (H360HD$_2$) [H019]; H10.0-12.0XM-12EC (H360HD$_2$-EC) [H019]; RS45-27CH,

RS45-31CH, RS46-36CH, RS46-41L CH, RS46-41S CH, RS46-41LS CH, RS45-24IH, RS45-28IH,

RS46-33IH, RS46-38L IH, RS46-38S IH, RS46-38LS IH (RS45-27, RS45-31, RS46-36,

RS46-41L, RS46-41S, RS46-41LS) [C222]; H36XMS-12, H40XM-12, H44XM-12, H48XM-12

(H800HD, H1050HD) [B917]; H40XM-16CH, H44XM-16CH, H48-16CH, H50-16CH, H52XM-16CH

(H1050HD, H1150HD) [G117]

HYSTER

SAFETY PRECAUTIONS
MAINTENANCE AND REPAIR

- When lifting parts or assemblies, make sure all slings, chains, or cables are correctly fastened, and that the load being lifted is balanced. Make sure the crane, cables, and chains have the capacity to support the weight of the load.

- Do not lift heavy parts by hand, use a lifting mechanism.

- Wear safety glasses.

- DISCONNECT THE BATTERY CONNECTOR before doing any maintenance or repair on electric lift trucks. Disconnect the battery ground cable on internal combustion lift trucks.

- Always use correct blocks to prevent the unit from rolling or falling. See HOW TO PUT THE LIFT TRUCK ON BLOCKS in the **Operating Manual** or the **Periodic Maintenance** section.

- Keep the unit clean and the working area clean and orderly.

- Use the correct tools for the job.

- Keep the tools clean and in good condition.

- Always use **HYSTER APPROVED** parts when making repairs. Replacement parts must meet or exceed the specifications of the original equipment manufacturer.

- Make sure all nuts, bolts, snap rings, and other fastening devices are removed before using force to remove parts.

- Always fasten a DO NOT OPERATE tag to the controls of the unit when making repairs, or if the unit needs repairs.

- Be sure to follow the **WARNING** and **CAUTION** notes in the instructions.

- Gasoline, Liquid Petroleum Gas (LPG), Compressed Natural Gas (CNG), and Diesel fuel are flammable. Be sure to follow the necessary safety precautions when handling these fuels and when working on these fuel systems.

- Batteries generate flammable gas when they are being charged. Keep fire and sparks away from the area. Make sure the area is well ventilated.

   NOTE: The following symbols and words indicate safety information in this manual:

   ⚠ **WARNING**
   Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

   ⚠ **CAUTION**
   Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury and property damage.

   On the lift truck, the WARNING symbol and word are on orange background. The CAUTION symbol and word are on yellow background.

APC200 Fault Code Guide

TABLE OF CONTENTS

> This section is for the following models:
>
> H8.00-12.00XM (H170-280HD) [H007];
> H13.00-14.00XM (H300-330HD) [G019];
> H16.00XM-6 (H360HD) [G019];
> H10.00-12.00XM-12EC (H360HD-EC) [G019];
> H16.00-18.00XM/XMS-12 (H400-450HD/HDS) [A236];
> H16.00-22.00XM-12EC (H400-500HD/HDS-EC) [B214];
> H25-32XM-12, H28XM-16CH, H32XM-16CH, H25-32XMS-9
> (H550-700HD, H550-700HDS) [F008];
> H40.00-52.00XM-16CH (H1050HD-CH, 1150HD-CH) [E117, F117];
> H40.00-48.00XM-12 (H800-1050HD/HDS) [A917];
> RS45-27CH, RS45-31CH, RS46-36CH, RS45-24IH, RS45-28IH, RS46-33IH
> (HR45-27CH, HR45-31CH, HR45-36CH) [B222];
> H16XM-12, H18XM-12, H20XM-12, H22XM-12 (H400HD, H450HD,
> H500HD, H550HD) [B236];
> H16XM-12EC, H18XM-12EC, H22XM-12EC (H400HD-EC,
> H450HD-EC, H500HD-EC) [C214];
> H25-32XM-12, H25-30XMS-9 (H550-700HD, H550-700HDS) [G008];
> H8.0-12.0XM-6 (H190-280HD$_2$) [J007];
> H13.0-14.0XM-6 (H300-330HD$_2$) [H019];
> H16.0XM-6 (H360HD$_2$) [H019];
> H10.0-12.0XM-12EC (H360HD$_2$-EC) [H019];
> RS45-27CH, RS45-31CH, RS46-36CH, RS46-41L CH, RS46-41S
> CH, RS46-41LS CH, RS45-24IH, RS45-28IH, RS46-33IH, RS46-38L
> IH, RS46-38S IH, RS46-38LS IH (RS45-27, RS45-31, RS46-36,
> RS46-41L, RS46-41S, RS46-41LS) [C222];
> H36XMS-12, H40XM-12, H44XM-12, H48XM-12 (H800HD, H1050HD) [B917];
> H40XM-16CH, H44XM-16CH, H48-16CH, H50-16CH, H52XM-16CH
> (H1050HD, H1150HD) [G117]

"THE QUALITY KEEPERS"

HYSTER APPROVED PARTS

General

This manual provides an explanation of the transmission fault codes that are generated by the APC200 family transmission controllers. Transmission controller APC211 is used for transmissions with intensifier valves. Transmission controller APC216 is used for transmissions with Full Flow control valves, as used on TE-10 and TE27-32 transmissions starting 2011. The terms used are generic for these controllers. Component locations and electrical schematics are in the Transmission Description SRMs for each different truck series. There are four different groups of fault codes, which are explained in this section.

For F008 and G008 trucks the indication "Forward" and "Reverse" needs to be considered for the transmission and for the truck separately. The truck moves according the position of the shift lever or MONOTROL pedal, but the signals forward and reverse have been interchanged with the transmission functions forward and reverse. The indication "forward" and "reverse" for transmission components is still identical to the original nomenclature of the manufacturer. This means that an indicated forward clutch has the function to move the F008 and G008 truck in reverse. The same interpretation applies for the explanation of fault codes and for the Dana Dashboard system, where the indication forward relates to transmission components with the same indication forward like for a clutch, pressure port or solenoid. When doing repairs or ordering spare parts, remember that activating the forward clutch on F008 and G008 trucks causes the lift truck to move in reverse direction, and activating the reverse clutch causes the F008 and G008 truck to move in forward direction.

TRANSMISSION EXCEED CODES

During operation of the truck, the APC200 controller may display transmission exceed codes on the hourmeter/fault code display. These exceed codes reflect that the request made by the operator will not be executed because of certain circumstances. Table 1 lists the exceed codes with a description of the encountered circumstances.

CLUTCH CALIBRATION CONDITION MESSAGES

During clutch calibration, codes may be displayed that indicate incorrect circumstances for proper clutch calibration. The explanation of these codes are in Table 4.

FAULT CODES DURING CLUTCH CALIBRATION

During clutch calibration, fault codes with a preceding "E" may be displayed. For example E1.25. The first digit after the "E" can be a "1" or a "2". "1" relates to faults during clutch filling time. "2" relates to faults during clutch engagement. The last two digits indicate calibration faults, which are listed and explained in Table 6.

APC200 FAULT CODES

Each fault code represents a specific defect or malfunction. The suggested rectification is by checking electrical functionality between the APC200 and the components connected. See Table 7.

In the explanation of the fault codes are references to electrical functions, signals and pin numbers, which are listed in Table 2 for APC211, controllers and in Table 3 for APC216 controllers.

The pin codes A1 until S3 refer to the terminals in the APC200 connector, also referred to as connectors J1 and J2. These terminal references are shown on the electrical schematic to provide a link with the Hyster wire number. Not all terminals are used for the different truck applications.

LIMP HOME MODE

The APC200 display indicates the letters 'LH' left of the direction/position indication. See Figure 1.
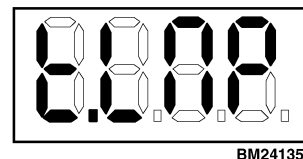

BM241357

Figure 1. Display Limp Home Mode

Defaulted to if either of following conditions occurs:
- a single fault on a transmission control output is detected
- a fault related to the engine speed sensor is detected
- two out of three vehicle speed sensors are in fault

NOTE: On some transmissions, ratios normally not selectable are used to substitute those that can no longer be selected. The controller uses default limits; all shifts use a default modulation curve. Inching is disabled.

If one of the above conditions is present, the transmission is put in neutral. In order to continue driving, neutral must first be selected on the shift lever. Once the shift lever has been put in neutral, the driver can re-engage a direction.

SHUT DOWN MODE

The APC200 display indicates the letters 'Sd' left of the direction/position indication. See Figure 2.
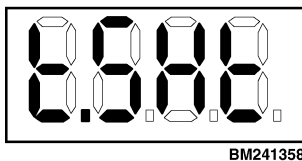

BM241358

Figure 2. Display Shut Down Mode

The Shut Down Mode is activated when a severe internal or external problem is detected. In this mode the transmission is forced into neutral by de-activating all clutches. In case of an intermittent problem, the controller will leave the Shut Down Mode and enter the LIMP HOME Mode. For some intermittent problems the Shut Down Mode remains activated until the controller is switched **OFF**. In order to resume driving, the truck must be restarted.

PRESSURE FEEDBACK SENSOR

Transmissions with intensifier valves can have a pressure feedback sensor.

If present, the pressure feedback signal is evaluated as an **ON/OFF** pressure switch, with internal resistance of 2K ohm when open and 1K ohm when pressurized. If resistance is substantially lower than 1K0, a short circuit condition is assumed. If it's higher than 2K0, an open load condition is assumed.

APC200 Fault Codes

TRANSMISSION EXCEED CODES

Table 1. Transmission Exceed Codes

Code	Description
tE001	The vehicle speed is too high to make the requested downshift. Downshift is disabled, until the vehicle speed comes below the downshift limit.
tE101	The vehicle speed is too high to make the requested direction change. Transmission is put into Neutral, until the vehicle speed comes below the direction change vehicle speed limit.
tE201	The engine speed is too high to make the requested direction change or the requested re-engagement of the direction. The controller will allow the direction change or re-engagement of the direction, after engine speed is lower than the allowed speed limit.
tE300	The reduced vehicle speed limitation is active.
tE301	The reduced vehicle speed limitation is active, however, the vehicle speed is above the limit.
tE302	The vehicle speed is above the maximum vehicle speed limit.
tE400	An abnormal deceleration is detected. Automatic shifting is disabled for a certain time.
tE401	An abnormal deceleration is detected. Automatic shifting is disabled.
tE501	The number of elapsed transmission working hours requires recalibration of the transmission.
tE600	Operator is not seated and the shift lever is not in **NEUTRAL** and/or the parking brake is not activated.

Table 1. Transmission Exceed Codes (Continued)

Code	Description
tE701	Turbine speed exceeds a preset limit. APC200 will force engine idle.
tE801	Condition to change low high range selector not fulfilled. Machine has to stand still.

Table 2. APC211 Signals and Pin Numbers

Pin	Function	Signal	Description
A1	PPWR	Power	Permanent Battery +
A2	ANI0	Pull To Ground	Pressure Feedback Switch
A3	GND	Ground	Ground
B1	VFS0+	Pulse Width Modulation	Forward VFS Hi Side Out
B2	DIGIN0	Pull to Plus	Shiftlever speed selection
B3	SS0	Sense	Drum Speed Sensor +
C1	VFS0-	Sense	Forward VFS Low Side In
C2	DIGIN1	Pull to Plus	Shiftlever speed selection
C3	SS0	Ground	Drum Speed Sensor -
D1	VFS1+	Pulse Width Modulation	2nd or 2nd/4th VFS Hi Side Out
D2	DIGIN2	Pull to Plus	Seat Switch
D3	SS1	Sense	Output Speed Sensor +
E1	VFS1-	Sense	2nd or 2nd/4th VFS Lo Side Out
E2	DO1	Switch to Plus	2nd/4th VFS Selector
E3	SS1	Ground	Output Speed Sensor -
F1	VFS2+	Pulse with Modulation	Reverse VFS Hi Side Out
F2	DO2	Switch to Plus	1st/3rd VFS Selector
F3	SS2	Sense	Engine Speed Sensor +
G1	VFS2-	Sense	Reverse VFS Low Side In
G2	DIGIN3	Pull to Plus	seat orientation
G3	SS2	Ground	Engine Speed Sensor -
H1	VFS3+	Pulse with Modulation	1st/3rd VFS Hi Side Out
H2	DIGIN4	Pull to Plus	Shiftlever Forward
H3	ANI1	Pull to Ground	Transmission Temperature Sensor
J1	VFS3-	Sense	1st/3rd VFS Low Side In
J2	DIGIN5	Pull to Plus	Shiftlever Reverse

Table 2. APC211 Signals and Pin Numbers (Continued)

Pin	Function	Signal	Description
J3	ANI2	Pull to Ground	Converter Out Temperature Switch
K1	DO0	Switch to Plus	RSP Drive Solenoid +
K2	DO3	Switch to Ground	RSP Drive Solenoid -
K3	GND	Ground	Ground
L1	VFS4+	Pulse with Modulation	No application
L2	CANL	Communication	CAN Low
L3	DIGIN6	Pull to Plus	Digital Input 6
M1	ANI4	Pull to Ground	5V Reference voltage
M2	CANH	Communication	CAN High
M3	DIGIN7	Pull to Plus	Shiftlever automatic/manual
N1	VFS5+	Pulse with Modulation	No application
N2	RXD	Communication	RS232 RXD
N3	DIGIN8	Pull to Plus	parking brake on/off
P1	ANI5	Pull to Ground	Analog Input 5
P2	TXD	Communication	RS232 TXD
P3	DIGIN9	Pull to Plus	reduced vehicle speed on/off
R1	VFS6+	Pulse with Modulation	No application
R2	SS3	Sense	Turbine Speed Sensor +
R3	ANI3	Pull to Ground	Inching
S1	ANI6	Pull to Ground	Seat orientation
S2	SPWR	Power	Switched Battery +
S3	SGND	Ground	VFS Ground

Table 3. APC216 Signals and Pin Numbers

Pin	Function	Signal	Description APC216 TE-10	Description APC216 TE27 - 32
A1	PP	Power	Permanent Battery +	Permanent Battery +
A2	ANI0	Pull to Ground	1st /3rd Pressure Sensor	1st /3rd Pressure Sensor
A3	GWD	Ground	Battery Ground	Battery Ground
B1	ANO0+	Pulse with Modulation	Forw/Rev VFS Hi Side Out	Forw/Rev VFS Hi Side Out
B2	DIGIN0	Pull to Plus	Shift Lever 1st speed	Shift Lever connection 4
B3	SS0	Sense	Drum Speed Sensor +	Drum Speed Sensor +
C1	ANO0-	Sense	Forw/Rev VFS Low Side In	Forw/Rev VFS Low Side In

Table 3. APC216 Signals and Pin Numbers (Continued)

Pin	Function	Signal	Description APC216 TE-10	Description APC216 TE27 - 32
C2	DIGIN1	Pull to Plus	Shift Lever 2nd speed	Shift Lever connection 1
C3	SS0	Ground	Drum Speed Sensor -	Drum Speed Sensor -
D1	ANO1+	Pulse with Modulation	1st/3rd VFS Hi Side Out	1st/3rd VFS Hi Side Out
D2	DIGIN2	Pull to Plus	Seat Switch Not Seated/Seated	Shift Lever connection 1
D3	SS1	Sense	Output Speed Sensor +	Output Speed Sensor +
E1	ANO1-	Sense	1st/3rd VFS Low Side In	1st/3rd VFS Low Side In
E2	DO1	Switch to Plus	Selector valve Reverse	Selector valve Reverse
E3	SS1	Ground	Output Speed Sensor -	Output Speed Sensor -
F1	ANO2+	Pulse with Modulation	2nd/4th VFS Hi Side Out	2nd/4th VFS Hi Side Out
F2	DO2	Switch to Plus	Selector valve 1st/3rd	Selector valve 1st/3rd
F3	SS2	Sense	Engine Speed Sensor +	Engine Speed Sensor +
G1	ANO2-	Sense	2nd/4th VFS Lo Side Out	2nd/4th VFS Lo Side Out
G2	DIGIN3	Pull to Plus	Reduced Vehicle Speed Redundant off/on	--------------------------
G3	PON	Power	Key switch ON For TE-10	Turbine Speed Sensor + for TE27-32
H1	ANO3+	Pulse with Modulation	Analog output 3 +	Analog output 3 +
H2	DIGIN4	Pull to Plus	Lever selection Forward	Lever selection Forward
H3	ANI1	Pull to Ground	Sump temp input 0 - 5 KOhm	Sump temp input 0 - 5 KOhm
J1	ANO3-	Sense	Analog output 3 -	Analog output 3 -
J2	DIGIN5	Pull to Plus	Lever selection Reverse	Lever selection Reverse
J3	ANI2	Pull to Ground	Temp switch cooler in input 0 - 5V	Temp switch cooler in input 0 - 5V
K1	DO0	Switch to Plus	Selector valve Forward	Selector valve Forward
K2	DO3	Switch to Ground	---------------------	Selector valve 2nd/4th
K3	SGND	Ground	Temperature switch Signal Ground	Temperature switch Signal Ground
L2	CANL	Communication	CAN Low	CAN Low
L3	DIGIN6	Pull to Plus	Reduced Vehicle Speed Redundant OFF/ON	Reduced Vehicle Speed Redundant OFF/ON
M1	VREF5V	Pull to Ground	Inching Pedal +	Inching Pedal +
M2	CANH	Communication	CAN High	CAN High

Table 3. APC216 Signals and Pin Numbers (Continued)

Pin	Function	Signal	Description APC216 TE-10	Description APC216 TE27 - 32
M3	DIGIN7	Pull to Plus	Lever selection Auto/Manual	Lever selection Auto/Manual
N2	RXD	RXD	RS232 RXD	RS232 RXD
N3	DIGIN8	Pull to Plus	Parking Brake ON/OFF	Parking Brake ON/OFF
P1	ANI5	Pull to Ground	Hydraulic lever	Seat Orientation ON/OFF
P2	TXD	Communication	RS232 TXD/Speed out	RS232 TXD/Speed out
P3	DIGIN9	Pull to Plus	Reduced Vehicle Speed ON/OFF	Reduced Vehicle Speed ON/OFF
R1	PON	Power	---------------------	Ignition supply
R2	SP3	Sense	Turbine Speed Sensor	---------------------------
R3	ANI3	Pull to Ground	Inching Pedal signal	Inching Pedal signal
S1	ANI6	Pull to ground	2nd/4th Pressure Sensor	2nd/4th Pressure Sensor
S2	PP	Power	Permanent Battery +	Permanent Battery +
S3	GND	Ground	Battery Ground	Battery Ground

CLUTCH CALIBRATION CONDITION MESSAGES

Table 4. Clutch Calibration Condition Messages

Code	Cause	Action
6o.n HM241630	The APC200 expects the shift lever to be in **NEUTRAL**, but finds it in another position. (**FORWARD** OR **REVERSE**)	Put the shift lever back in **NEUTRAL** or the MONOTROL® pedal in **REVERSE**.
Pb0n HM241631	The APC200 expects the parking brake to be **ON** but finds that it is **OFF**.	Apply the parking brake.
StoP. HM241632	The APC200 has detected output speed.	Make sure that the parking brake is **ON** and working properly. Once the lift truck has been stopped, the APC200 requests to shift to **FORWARD**. Once in **FORWARD**, the calibration will continue after the shift lever has been shifted to **NEUTRAL** or after the MONOTROL® pedal is in **REVERSE**.

Table 4. Clutch Calibration Condition Messages (Continued)

Code	Cause	Action
rPn HM241633	Engine rpm is below the required lower limit for calibration.	The engine speed will be automatically adapted. When engine speed is back within the correct limits, the display will show the following: **rPn-** HM241635
rPn HM241634	Engine rpm is above the allowed upper limit for calibration.	
t°44 HM241636	When the temperature becomes too low during the automatic calibration, the APC200 display indicates the actual transmission temperature.	Use the M button on the APC200 to go back to the Heat Mode and the S button to trigger this mode. Warm-up the transmission again until the temperature reaches 60°C (140°F). Then go back to the Automatic Calibration Mode by pressing the M button, and continue clutch calibration by pressing the S button.

FAULT CODES DURING CLUTCH CALIBRATION

Table 5. Fault Codes During Clutch Calibration

Fault Code	Explanation
E.1.XX	'1' relates to faults during clutch filling time.
E.2.XX	'2' relates to faults during clutch engagement.
E1.XX	'XX' relates to the fault codes listed in Table 6.

Table 6. Fault Codes During Clutch Calibration

Fault Code	Explanation	Controller's Action	Comments	Troubleshooting
1-5, 7-9, 11-13, 15, 17-24	Unexpected Algorithm response during calibration.	Stop calibration of clutch xx. Wait for continue request.	• Engine does not respond to target engine speed. • Vehicle started moving. • Bad parameter configuration.	Continue calibration to identify if all clutches experience same problem. Download correct parameter file and restart calibration. Check if vehicle starts moving during calibration. Check engine speed response.
06	During calibration the turbine speed signal does not reach a minimum value.	Controller will flag the fault and will abort calibration of clutch with error code.	• Turbine speed does not reach minimum value during shifting iteration process caused by slipping clutch or bad turbine speed signal.	Measure clutch pressure to detect clutch leakage check speed sensor signal (can be in relation with 42.04 and/or 42.05 during normal operation and with E1.26 during touch pressure calibration) Check stall speed to detect slipping clutch
10	Transmission failure during calibration.	calibration is stopped.	• Caused by shutdown error code during calibration. Example: 20.60 error code during calibration.	Resolve cause of shutdown error code during calibration.
14	During calibration, the turbine speed signal does not decrease.	Controller will flag the fault and will abort calibration of clutch with error code.	• Turbine speed does not decrease caused by excessive internal leakage and/or slipping clutch or bad turbine speed signal.	Measure clutch pressure to detect clutch leakage Check speed sensor signal (must be in relation with 42.04 and/or 42.05 during normal operation and with E1.26 during touch pressure calibration).
16	During calibration, the turbine speed signal is too low to start calibration.	Controller will flag the fault and will abort calibration of clutch with error code.	• Faulty turbine speed sensor. • Sticking or burnt clutch which causes turbine drop before pressure is applied.	Check speed sensor signal (must be in relation with 42.04 and/or 42.05 during normal operation and with E1.25 during touch pressure calibration).
25	Early touch detection during touch pressure calibration. Too much drag.	Controller will flag the fault and will abort touch pressure calibration of clutch with error code.	• Too much drag because of thick oil. • Sticking or burnt clutch which causes turbine drop before pressure is applied. • Speed sensor problem. • Faulty VFS (Variable Forced Solenoid).	Perform autocalibration at higher temperature 90 to 100°C (194 to 212°F) Check speed sensor signal (must be in relation with 42.04 and/or 42.05 during normal operation) Check and if necessary change proportional valve.

Table 6. Fault Codes During Clutch Calibration (Continued)

Fault Code	Explanation	Controller's Action	Comments	Troubleshooting
26	No touch detection during touch pressure calibration.	Controller will flag the fault and will abort touch pressure calibration of clutch with error code.	• Slipping clutch or excessive internal leakage. • Speed sensor problem. • Faulty VFS (Variable Forced Solenoid).	Measure clutch pressure to detect clutch leakage Check speed sensor signal (must be in relation with 42.04 and/or 42.05 during normal operation) Check and if necessary change proportional valve.
28	The turbine speed does not reach value = 0 rpm at the end of the closing phase of the touch pressure calibration.	Controller will flag the fault and will abort release pressure calibration of clutch with error code.	• Slipping clutch or excessive internal leakage. • Speed sensor problem. • Faulty VFS (Variable Forced Solenoid)	Measure clutch pressure to detect clutch leakage Check speed sensor signal (must be in relation with 42.04 and/or 42.05 during normal operation) Check and if necessary change proportional valve.
29	Turbine speed does not reach a high enough value during release of the touch pressure calibration.	Controller will flag the fault and will abort release pressure calibration of clutch with error code.	• Too much drag because of thick oil. • Sticking or burnt clutch which causes turbine drop before pressure is applied. • Speed sensor problem. • Faulty VFS (Variable Forced Solenoid).	Perform autocalibration at higher temperature 90 to 100°C (194 to 212°F) Check speed sensor signal (must be in relation with 42.04 and/or 42.05 during normal operation) Check and if necessary change proportional valve.

APC200 FAULT CODES

Table 7. APC200 Fault Codes

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
00.50	There is a hardware problem related to the internal RAM (in CPU) of the APC200.	The APC200 reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Replace the APC200.
00.51	There is a hardware problem related to the system RAM (in CPU) of the APC200.	The APC200 reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Replace the APC200.
00.52	There is a hardware problem related to the external RAM of the APC200.	The APC200 reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Replace the APC200.
00.53	There is a hardware problem related to the Flash program memory of the APC200.	The APC200 reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Replace the APC200.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
20.60	Pressure feedback line, ANI0 (pin A2) is in the 1500 - 4000 ohm range, indicating there is no system pressure present. The speed sensor indicates that ANI0 should be in the 500 - 1500 ohm range.	The APC200 reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Check the wiring between the controller and the pressure feedback sensor. Check the pressure feedback sensor (engine running/stopped).
20.61	Pressure feedback line, ANI0 (pin A2) is in the 500 - 1500 ohm range, indicating system pressure is present. The speed sensor indicates that ANI0 should be in the 1500 - 4000 ohm range.	Controller reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Check the wiring between the APC200 and the pressure feedback sensor. Check the pressure feedback sensor (engine running/stopped).
21.00	Supply pressure on sensor 1 to transmission too low. Proportional solenoid stuck.	Controller reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Check supply pressure to the transmission. Log pressure when problem occurs.
21.01	Supply pressure on sensor 1 to transmission too high. Proportional solenoid stuck.	Controller reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Check supply pressure to the transmission. Log pressure when problem occurs.
22.00	Supply pressure on sensor 2 to transmission too low. Proportional solenoid stuck.	Controller reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Check supply pressure to the transmission. Log pressure when problem occurs.
22.01	Supply pressure on sensor 2 to transmission too high. Proportional solenoid stuck.	Controller reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Check supply pressure to the transmission. Log pressure when problem occurs.
23.00	Supply pressure on sensor 3 to transmission too low. Proportional solenoid stuck.	Controller reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Check supply pressure to the transmission. Log pressure when problem occurs.
23.01	Supply pressure to transmission too high. Proportional solenoid stuck.	Controller reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Check supply pressure to the transmission. Log pressure when problem occurs.
24.00	Supply pressure to transmission too low. Proportional solenoid stuck.	Controller reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Check supply pressure to the transmission. Log pressure when problem occurs.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
24.01	Supply pressure on sensor 4 to transmission too high. Proportional solenoid stuck.	Controller reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Check supply pressure to the transmission. Log pressure when problem occurs.
30.04	Power supply to the APC200 is below 16 Volts.	The APC200 will save all logged information to flash memory, will power down, and switch all outputs **OFF**.	Check power supply cables to the controller. Check alternator, check the connection cables between the battery and the alternator, check the battery.
30.05	Power supply to the APC200 is above 32 Volts.	The APC200 will have reduced proportional control accuracy due to incorrect PWM duty cycle.	Check power supply, check if a jump start setup is still connected.
31.00	Voltage supply for the sensors is below 7.2 Volts.	The APC200 receives incorrect sensor signals, but does not take action.	Check power supply. Check the APC200.
31.01	Voltage supply for the sensors is above 8.8 Volts.	The APC200 receives incorrect sensor signals, but does not take action.	Check power supply. Check the APC200.
34.00	One or more speed sensor related failures.	The APC200 reverts to a Limp Home Mode.	Check the wiring between the controller and the speed sensors. Check the speed sensors.
34.01	Measured turbine speed is too low during initialization. Supply pressure to transmission too low. Speed sensor failure.	Controller reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Check the wiring between the controller and the speed sensors. Check the speed sensors, Check the speed sensor positions. Check supply pressure to the transmission.
34.02	Measured drum speed is too high during initialization. Too much drag because of thick oil. Sticking or burnt clutch. Speed sensor failure.	Controller reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Check the wiring between the controller and the speed sensors. Check the speed sensors, Check the speed sensor positions. Check oil quality.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
34.03	Internal transmission speeds are indicating there is no system pressure present, although pressure should be there. Speed sensor failure. Total Neutral Solenoid failure. Supply pressure to transmission too low.	Controller reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Check the wiring between the controller and the speed sensors. Check the speed sensors, Check the speed sensor positions. Check supply pressure to the transmission, Check the Total Neutral Solenoid.
34.04	Internal transmission speeds are indicating there is system pressure present, although pressure should NOT be there. Speed sensor failure. Total Neutral Solenoid failure. Too much drag because of thick oil. Sticking or burnt clutch.	Controller reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Check the wiring between the controller and the speed sensors. Check the speed sensors, Check the speed sensor positions. Check the Total Neutral Solenoid. Check oil quality.
40.06	The APC200 receives from the shift lever a request to engage forward and reverse at the same time.	The APC200 will deactivate the total neutral solenoid. This automatically places the transmission in **NEUTRAL**.	Check the wiring between the controller and the shift lever concerning the forward and the reverse signal.
40.08	Seat orientation input was changed while the parking brake was not active, or/and the shift lever was not in **NEUTRAL**, or/and the lift truck was not at standstill.	The APC200 will deactivate the total neutral solenoid. This automatically places the transmission in **NEUTRAL**.	Check the seat orientation switch or train the driver to change the seat orientation according the correct procedure.
41.06	The APC200 receives from the shift lever an unknown range shift pattern.	The APC200 will not allow range shifting, however driving is still possible.	Check the wiring between the controller and the shift lever concerning the range signals.
42.04	The transmission ratio measured by the APC200 is more than 5% below the value of what it should be.	The APC200 reverts to shut down mode, and flags the fault, indicating that one or more clutches are slipping.	Check the transmission, in order to determine if and which clutch is slipping. Check the transmission ratio settings of the APC200.
42.05	The transmission ratio measured by the APC200 is more than 5% above the value of what it should be.	The APC200 reverts to shut down mode, and flags the fault, indicating that one or more clutches are slipping.	Check the transmission, in order to determine if and which clutch is slipping. Check the transmission ratio settings of the APC200.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
43.03	The transmission converter out temperature sensor is out of range. Possibly not connected or shorted.	APC200 will only flag the fault.	Check the wiring between the APC200 and the converter out temperature sensor. Check the converter out temperature sensor.
43.07	APC200 measures a converter out temperature is greater than 100°C (212°F).	The APC200 flags the fault in order to warn the driver for high temperature level.	Consider application and ambient temperature. Check if the converter out temperature sensor registers the oil temperature correctly.
43.08	APC200 measured a converter out temperature higher than 120°C (248°F).	The APC200 will force the transmission to **NEUTRAL**, and if engine is controlled, the engine will be limited 50% of its maximum speed.	Consider application and ambient temperature. Check if the converter out temperature sensor registers the oil temperature correctly.
44.10	No EEC2 message (throttle position signal from the engine controller) on the CAN bus when expected.	APC200 flags the fault and responds to the engine controller with TSC1 message: 'idle position'.	Check engine controller and CAN connection to the APC200.
45.06	An invalid pattern exists for the reduced lift truck speed redundant digital inputs (two inputs used).	The APC200 will limit the lift truck speed to a preset reduced lift truck speed.	Consider the circumstances when the fault was detected. Check the Output Speed Sensor and the Engine Speed Sensor check the wiring that connects these sensors with the APC200.
46.05	The transmission has exceeded the maximum torque during inching.	The APC200 will open or close the inching clutch depending on the parameter settings.	Reactivate inching by shifting the forward reverse lever through **NEUTRAL**, or by releasing the inching pedal.
47.01	Turbine speed exceeds the speed limit set.	The APC200 flags the fault.	Release throttle pedal, slow down the vehicle.
50.00	Pressure Feedback Switch (pin A2) related fault: analog input is shorted to ground, or below the minimum value.	Controller reverts to a Limp Home Mode.	Check the wiring between pin A2 and the Pressure Feedback switch. Check the Pressure Feedback Switch.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
50.01	Pressure Feedback Switch (pin A2) related fault: analog input is not connected, or above the maximum value.	Controller reverts to a Limp Home Mode.	Check the wiring between pin A2 and the Pressure Feedback switch. Check the Pressure Feedback Switch.
50.04	Analog input 0 (pin A2) related fault: analog input value is below the minimum value calibrated.	APC200 will flag the fault, and will use the lowest clipped value in its settings.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
50.05	Analog input 0 (pin A2) related fault: analog input value is above the maximum value calibrated.	APC200 will flag the fault, and will use the highest clipped value in its settings.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
51.00	Analog input 1 (pin H3) related fault: analog input is shorted to ground.	Depending on the function that is assigned to this pin: - Temperature Sensor: controller will use the lowest clipped value in its settings (which results in bad temperature compensation. - Pressure Feedback: the controller will revert to limp home mode. - Pressure Sensor: the controller will revert to shut down mode. - Other: the controller will use the lowest clipped value.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly - recalibrate if necessary.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
51.01	Analog input 1 (pin H3) related fault: analog input is not connected.	Depending on the function that is assigned to this pin:	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
		- Temperature Sensor: controller will use the lowest clipped value in its settings (which results in bad temperature compensation.	
		- Pressure Feedback: the controller will revert to limp home mode.	
		- Pressure Sensor: the controller will revert to shut down mode.	
		- Other: the controller will use the lowest clipped value.	
51.04	Analog input 1 (pin H3) related fault: analog input value is below the minimum value calibrated.	Controller will flag the fault, and will use the lowest clipped value in its settings.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
51.05	Analog input 1 (pin H3) related fault: analog input value is above the maximum value calibrated.	Controller will flag the fault, and will use the highest clipped value in its settings.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
52.00	Analog input 2 (pin J3) related fault: analog input is shorted to ground, or below the minimum value.	Depending on the function that is assigned to this pin:	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
		- Temperature Sensor: controller will use the lowest clipped value in its settings (which results in bad temperature compensation.	
		- Pressure Feedback: the controller will revert to limp home mode.	
		- Pressure Sensor: the controller will revert to shut down mode	
		- Other: the controller will use the lowest clipped value.	
52.01	Analog input 2 (pin J3) related fault: analog input is not connected, or above the maximum value.	Depending on the function that is assigned to this pin:	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
		- Temperature Sensor: controller will use the highest clipped value in its settings (which results in bad temperature compensation.	
		- Pressure Feedback: the controller will revert to limp home mode	
		- Pressure Sensor: the controller will revert to shut down mode.	
		- Other: the controller will use the lowest clipped value.	
52.04	Analog input 2 (pin J3) related fault: analog input value is below the minimum value calibrated.	Controller will flag the fault, and will use the lowest clipped value in its settings.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
52.05	Analog input 2 (pin J3) related fault: analog input value is above the maximum value calibrated.	Controller will flag the fault, and will use the highest clipped value in its settings.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
53.00	Analog input 3 (pin R3) related fault: analog input value is below the minimum value.	Depending on the function that is assigned to this pin:	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
		- Temperature Sensor: controller will use the lowest clipped value in its settings (which results in bad temperature compensation.	
		- Pressure Feedback: the controller will revert to limp home mode.	
		- Pressure Sensor: the controller will revert to shut down mode.	
		- Other: the controller will use the lowest clipped value.	
53.01	Analog input 3 (pin R3) related fault: analog input is not connected or above the maximum value.	Depending on the function that is assigned to this pin:	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
		- Temperature Sensor: controller will use the highest clipped value in its settings (which results in bad temperature compensation.	
		- Pressure Feedback: the controller will revert to limp home mode.	
		- Pressure Sensor: the controller will revert to shut down mode.	
		- Other: the controller will use the lowest clipped value.	

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
53.04	Analog input 3 (pin R3) related fault: analog input value is below the minimum value calibrated.	APC200 will flag the fault, and will use the lowest clipped value in its settings.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
53.05	Analog input 3 (pin R3) related fault: analog input value is above the maximum value calibrated.	Controller will flag the fault, and will use the highest clipped value in its settings.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
54.00	Analog input 4 (pin M1) related fault. The reference power supply (5 V ref.) for the analog inputs ANI0, ANI2, ANI3, ANI5, ANI6 and ANI8 is below 4,8 V.	Controller will revert to shutdown. The controller uses the analog input ANI4 to have a reference power supply for the analog inputs ANI0, ANI2, ANI3, ANI5, ANI6 and ANI8.	Check the reference power supply of the analog inputs ANI0, ANI2, ANI3, ANI5, ANI6 and ANI8.
54.01	Analog input 4 (pin M1) related fault. The reference power supply (5 V ref.) for the analog inputs ANI0, ANI2, ANI3, ANI5, ANI6 & ANI8 is above 5,2 V.	Controller will revert to shutdown. The controller uses the analog input ANI4 to have a reference power supply for the analog inputs ANI0, ANI2, ANI3, ANI5, ANI6 and ANI8.	Check the reference power supply of the analog inputs ANI2, ANI3, ANI5, and ANI6.
55.00	Analog input 5 (pin P1) related fault: analog input is shorted to ground, or measured input value is below the minimum value.	Depending on the function that is assigned to this pin: - Temperature Sensor: controller will use the highest clipped value in its settings (which results in bad temperature compensation. - Pressure Feedback: the controller will revert to limp home mode. - Pressure Sensor: the controller will revert to shut down mode. - Other: the controller will use the lowest clipped value.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
55.01	Analog input 5 (pin P1) related fault: analog input is not connected, or measured input value is above the maximum value.	Depending on the function that is assigned to this pin:	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
		- Temperature Sensor: controller will use the highest clipped value in its settings (which results in bad temperature compensation.	
		- Pressure Feedback: the controller will revert to limp home mode.	
		- Pressure Sensor: the controller will revert to shut down mode.	
		- Other: the controller will use the lowest clipped value.	
55.04	Analog input 5 (pin P1) related fault: analog input value is below the minimum value calibrated.	Controller will flag the fault, and will use the lowest clipped value in its settings.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
55.05	Analog input 5 (pin P1) related fault: analog input value is above the maximum value calibrated.	Controller will flag the fault, and will use the highest clipped value in its settings.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
56.00	Analog input 6 (pin S1) related fault: analog input is shorted to ground or measured input value is below the minimum value.	Depending on the function that is assigned to this pin:	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
		- Temperature Sensor: controller will use the lowest clipped value in its settings (which results in bad temperature compensation.	
		- Pressure Feedback: the controller will revert to limp home mode.	
		- Pressure Sensor: the controller will revert to shut down mode.	
		- Other: the controller will use the lowest clipped value.	
56.01	Analog input 6 (pin S1) related fault: analog input is not connected or measured input value is above the maximum value.	Depending on the function that is assigned to this pin:	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
		- Temperature Sensor: controller will use the highest clipped value in its settings (which results in bad temperature compensation.	
		- Pressure Feedback: the controller will revert to limp home mode.	
		- Pressure Sensor: the controller will revert to shut down mode.	
		- Other: the controller will use the lowest clipped value.	
56.04	Analog input 6 (pin S1) related fault: analog input value is below the minimum value calibrated.	Controller will flag the fault, and will use the lowest clipped value in its settings.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
56.05	Analog input 6 (pin S1) related fault: analog input value is above the maximum value calibrated.	Controller will flag the fault, and will use the highest clipped value in its settings.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
57.00	Analog input 7 (pin C2) related fault: analog input is shorted to ground or measured input value is below the minimum value.	Depending on the function that is assigned to this pin: - Temperature Sensor: controller will use the lowest clipped value in its settings (which results in bad temperature compensation - Pressure Feedback: the controller will revert to limp home mode - Pressure Sensor: the controller will revert to shut down mode - Other: the controller will use the lowest clipped value.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
57.01	Analog input 7 (pin C2) related fault: analog input is not connected or measured input value is above the maximum value.	Depending on the function that is assigned to this pin: - Temperature Sensor: controller will use the highest clipped value in its settings (which results in bad temperature compensation - Pressure Feedback: the controller will revert to limp home mode - Pressure Sensor: the controller will revert to shut down mode - Other: the controller will use the lowest clipped value.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
57.04	Analog input 7 (pin C2) related fault: analog input value is below the minimum value calibrated.	Controller will flag the fault, and will use the lowest clipped value in its settings.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
57.05	Analog input 7 (pin C2) related fault: analog input value is above the maximum value calibrated.	Controller will flag the fault, and will use the highest clipped value in its settings.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
58.00	Analog input 8 (pin B2) related fault: analog input is shorted to ground or measured input value is below the minimum value.	Depending on the function that is assigned to this pin: - Temperature Sensor: controller will use the lowest clipped value in its settings (which results in bad temperature compensation - Pressure Feedback: the controller will revert to limp home mode - Pressure Sensor: the controller will revert to shut down mode - Other: the controller will use the lowest clipped value.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
58.01	Analog input 8 (pin B2) related fault: analog input is not connected or measured input value is above the maximum value.	Depending on the function that is assigned to this pin: - Temperature Sensor: controller will use the highest clipped value in its settings (which results in bad temperature compensation - Pressure Feedback: the controller will revert to limp home mode - Pressure Sensor: the controller will revert to shut down mode - Other: the controller will use the lowest clipped value.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
58.04	Analog input 8 (pin B2) related fault: analog input value is below the minimum value calibrated.	Controller will flag the fault, and will use the lowest clipped value in its settings.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
58.05	Analog input 8 (pin B2) related fault: analog input value is above the maximum value calibrated.	Controller will flag the fault, and will use the highest clipped value in its settings.	Check the wiring between the controller and the device connected to this analog input. Check this device connected. Check if the calibration is done correctly recalibrate if necessary.
60.00	Drum Speed Sensor, SSO+ (pin B3) related fault: speed channel is shorted to ground.	When only 1 speed channel has a failure, and which is not the engine speed channel, the controller will calculate what the missing speed should be. If several speed channels have a failure, or if the engine speed channel has a failure, the controller reverts to a "limp home" mode.	Check the wiring between the controller and the speed sensor connected to speed channel 0. Check the speed sensor connected to speed channel 0.
60.01	Drum Speed Sensor, SSO+ (pin B3) related fault: speed channel is not connected.	When only 1 speed channel has a failure, and which is not the engine speed channel, the controller will calculate what the missing speed should be. If several speed channels have a failure, or if the engine speed channel has a failure, the controller reverts to a "limp home" mode.	Check the wiring between the controller and the drum speed sensor. Check functionality of the drum speed sensor.
60.03	Drum Speed Sensor, SSO+ (pin B3) related fault: speed measurement out of range.	The controller flags the error code.	Check the wiring between the controller and the drum speed sensor. Check functionality of the drum speed sensor.
60.04	Drum Speed Sensor, SSO+ (pin B3) pulse count more than 5% below the value of what it should be.	This message is given as additional information for transmission ratio faults.	Check the transmission, in order to understand if and which clutch is slipping. Check the transmission ratio settings of the controller.
60.05	Drum Speed Sensor, SSO+ (pin B3) pulse count more than 5% above the value of what it should be.	This message is given as additional information for transmission ratio faults.	Check the transmission, in order to determine which clutch is slipping. Check the transmission ratio settings of the controller.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
61.00	Output Speed Sensor, SS1+ (pin D3) related fault: speed channel is shorted to ground.	When only 1 speed channel has a failure, and which is not the engine speed channel, the controller will calculate what the missing speed should be. If several speed channels have a failure, or if the engine speed channel has a failure, the controller reverts to a "limp home" mode.	Check the wiring between the controller and the Output Speed Sensor. Check functionality of the Output Speed Sensor.
61.01	Output Speed Sensor, SS1+ (pin D3) related fault: speed channel is not connected.	When only 1 speed channel has a failure, and which is not the engine speed channel, the controller will calculate what the missing speed should be. If several speed channels have a failure, or if the engine speed channel has a failure, the controller reverts to a "limp home" mode.	Check the wiring between the controller and the Output Speed Sensor. Check functionality of the Output Speed Sensor.
61.03	Output Speed Sensor, SS1+ (pin D3) related fault: speed measurement out of range	The controller flags the error code.	Check the wiring between the controller and the speed sensor connected to speed channel 1. Check the speed sensor connected to speed channel 1.
61.04	Output Speed Sensor, SS1+ (pin D3) pulse count more than 5% below the value of what it should be.	This message is given as additional information for transmission ratio faults.	Check the transmission, in order to understand if and which clutch is slipping. Check the transmission ratio settings of the controller.
61.05	Output Speed Sensor, SS1+ (pin D3) pulse count more than 5% above the value of what it should be.	This message is given as additional information for transmission ratio faults.	Check the transmission, in order to understand if and which clutch is slipping. Check the transmission ratio settings of the controller.
62.00	Engine Speed Sensor (pin F3) related fault: speed channel is shorted to ground.	Controller reverts to a Limp Home Mode.	Check the wiring between the controller and the Engine Speed Sensor. Check functionality of the Engine Speed Sensor.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
62.01	Engine Speed Sensor (pin F3) related fault: speed channel is not connected.	Controller reverts to a Limp Home Mode.	Check the wiring between the controller and the Engine Speed Sensor. Check functionality of the Engine Speed Sensor.
62.03	No engine speed information available on CAN bus for more than 200ms. Signal error.	Controller reverts to a Limp Home Mode.	Check engine controller and CAN connection to the controller.
62.04	Engine Speed Sensor (pin F3) pulse count more than 5% below the value of what it should be.	This message is given as additional information for transmission ratio faults.	Check the transmission, in order to understand if and which clutch is slipping. Check the transmission ratio settings of the controller.
62.05	Engine Speed Sensor (pin F3) pulse count more than 5% above the value of what it should be.	This message is given as additional information for transmission ratio faults.	Check the transmission, in order to understand if and which clutch is slipping. Check the transmission ratio settings of the controller.
62.06	No engine speed detected while turbine speed is measured	Controller reverts to a Limp Home Mode.	Check the transmission and speed sensor. Check speed sensor alignment and position.
63.00	Engine Speed Sensor (pin G3) or Turbine Speed Sensor (pin R2) related fault: speed channel is shorted to ground.	When only 1 speed channel has a failure, and which is not the engine speed channel, the controller will calculate what the missing speed should be. If several speed channels have a failure, or the engine speed channel has a failure, the controller reverts to a "limp home" mode.	Check the wiring between the controller and the speed sensor connected to pin G3 and R2. Check functionality of the speed sensors.
63.01	Engine Speed Sensor (pin G3) or Turbine Speed Sensor (pin R2) related fault: speed channel is not connected.	When only 1 speed channel has a failure, and which is not the engine speed channel, the controller will calculate what the missing speed should be. If several speed channels have a failure, or if the engine speed channel has a failure, the controller reverts to a "limp home" mode.	Check the wiring between the controller and the speed sensor connected to pin G3 and R2. Check functionality of the speed sensors.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
63.03	Engine Speed Sensor (pin G3) or Turbine Speed Sensor (pin R2) related fault: speed measurement out of range.	The controller flags the error code.	Check the wiring between the controller and the speed sensor connected to pin G3 and R2. Check functionality of the speed sensors.
63.04	Engine Speed Sensor (pin G3) or Turbine Speed Sensor (pin R2) related fault: pulse count more than 5% below the value of what it should be.	This message is given as additional information for transmission ratio faults.	Check the transmission, in order to understand if and which clutch is slipping. Check the transmission ratio settings of the controller.
63.05	Engine Speed Sensor (pin G3) or Turbine Speed Sensor (pin R2) related fault: pulse count more than 5% above the value of what it should be.	This message is given as additional information for transmission ratio faults.	Check the transmission, in order to understand if and which clutch is slipping. Check the transmission ratio settings of the controller.
70.00	Clutch Forward VFS0 (pin B1 and C1) related fault: output wires are shorted to each other, or the sense line is shorted to battery +, or the plus line is shorted to ground	Controller reverts to a Limp Home Mode.	Check the wiring between APC200 and the Forward VFS. Check the Forward VFS itself.
70.01	Clutch Forward VFS0 (pin B1 and C1) related fault: the output plus line is shorted to battery +	Controller reverts to a Limp Home Mode.	Check the wiring between APC200 and the Forward VFS. Check the Forward VFS itself.
70.02	Clutch Forward VFS0 (pin B1 and C1) related fault: the output current exceeds 1400 mA or/and the output plus line is shorted to battery +.	Controller reverts to a "shut down" mode and will deactivate the total neutral solenoid.	Check the wiring between APC200 and the Forward VFS. Check the Forward VFS itself.
70.03	Clutch Forward VFS0 (pin B1 and C1) related fault: the output current is out of range, occurs when the load has the incorrect impedance	Controller reverts to a "shut down" mode and will deactivate the total neutral solenoid.	Check the wiring between APC200 and the Forward VFS. Check the Forward VFS itself.
70.09	Clutch Forward VFS0 (pin B1 and C1) related fault: the output is not connected	Controller reverts to a Limp Home Mode.	Check the wiring between the controller and VFS0 (=VFS forward). Check the VFS itself.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
71.00	VFS1 (pin D1 and E1) related fault: output wires are shorted to each other, or the sense line is shorted to battery +, or the plus line is shorted to ground	Controller reverts to a Limp Home Mode.	Check the wiring between APC200 and VFS1. Check the VFS1 itself. (VFS1 is either for the 2nd clutch or for the 2nd/4th clutch selection.)
71.01	VFS1 (pin D1 and E1) related fault: the output plus line is shorted to battery +	Controller reverts to a Limp Home Mode.	Check the wiring between APC200 and VFS1. Check the VFS1 itself. (VFS1 is either for the 2nd clutch or for the 2nd/4th clutch selection.)
71.02	VFS1 (pin D1 and E1) related fault: the output current exceeds 1400 mAor/and the output plus line is shorted to battery +.	Controller reverts to a "shut down" mode and will deactivate the total neutral solenoid.	Check the wiring between APC200 and VFS1. Check the VFS1 itself. (VFS1 is either for the 2nd clutch or for the 2nd/4th clutch selection.)
71.03	VFS1 (pin D1 and E1) related fault: the output current is out of range, occurs when the load has the incorrect impedance	Controller reverts to a Limp Home Mode.	Check the wiring between APC200 and VFS1. Check the VFS1 itself. (VFS1 is either for the 2nd clutch or for the 2nd/4th clutch selection.)
71.09	VFS1 (pin D1 and E1) related fault: the output is not connected	Controller reverts to a Limp Home Mode.	Check the wiring between APC200 and VFS1. Check the VFS1 itself. (VFS1 is either for the 2nd clutch or for the 2nd/4th clutch selection.)
72.00	Clutch Reverse VFS2 (pin F1 and G1) related fault: output wires are shorted to each other, or the sense line is shorted to battery +, or the plus line is shorted to ground.	Controller reverts to a Limp Home Mode.	Check the wiring between APC200 and the Reverse VFS. Check the Reverse VFS itself.
72.01	Clutch Reverse VFS2 (pin F1 and G1) related fault: the output plus line is shorted to battery +.	Controller reverts to a Limp Home Mode.	Check the wiring between APC200 and the Reverse VFS. Check the Reverse VFS itself.
72.02	Clutch Reverse VFS2 (pin F1 and G1) related fault: the output current exceeds 1400 mA or/and the output plus line is shorted to battery +.	Controller reverts to a "shut down" mode and will deactivate the total neutral solenoid.	Check the wiring between APC200 and the Reverse VFS. Check the Reverse VFS itself.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
72.03	Clutch Reverse VFS2 (pin F1 and G1) related fault: the output current is out of range, occurs when the load has the incorrect impedance	Controller reverts to a Limp Home Mode.	Check the wiring between APC200 and the Reverse VFS. Check the Reverse VFS itself.
72.09	Clutch Reverse VFS2 (pin F1 and G1) related fault: the output is not connected	Controller reverts to a Limp Home Mode.	Check the wiring between APC200 and the Reverse VFS. Check the Reverse VFS itself.
73.00	Clutch 1st/3rd VFS3 (pin H1 and J1) related fault: output wires are shorted to each other, or the sense line is shorted to battery +, or the plus line is shorted to ground.	Controller reverts to a Limp Home Mode.	Check the wiring between APC200 and the 1st/3rd VFS3. Check the 1st/3rd VFS itself.
73.01	Clutch 1st/3rd VFS3 (pin H1 and J1) related fault: the output wire plus line is shorted to battery +.	Controller reverts to a Limp Home Mode.	Check the wiring between APC200 and the 1st/3rd VFS3. Check the 1st/3rd VFS itself.
73.02	Clutch 1st/3rd VFS3 (pin H1 and J1) related fault: the output current exceeds 1400 mAor/and the output plus line is shorted to battery +.	Controller reverts to a "shut down" mode and will force neutral 0.	Check the wiring between APC200 and the 1st/3rd VFS3. Check the 1st/3rd VFS itself.
73.03	Clutch 1st/3rd VFS3 (pin H1 and J1) related fault: the output current is out of range, occurs when the load has the incorrect impedance.	Controller reverts to a Limp Home Mode.	Check the wiring between APC200 and the 1st/3rd VFS3. Check the 1st/3rd VFS itself.
73.09	Clutch 1st/3rd VFS3 (pin H1 and J1) related fault: the output is not connected.	Controller reverts to a Limp Home Mode.	Check the wiring between APC200 and the 1st/3rd VFS3. Check the 1st/3rd VFS itself.
74.00	Analog output 4 (pin L1) related fault: output wire is shorted to ground.	Controller will flag the fault, but no actions will be taken.	Check the wiring between the controller and the device connected on the analog output 4.
74.01	Analog output 4 (pin L1) related fault: output wire is shorted to battery +, or not connected.	Controller will flag the fault, but no actions will be taken.	Check the wiring between APC200 and VFS4+. Check the VFS itself.
74.02	Analog output 4 (wires B01) related fault: the output current exceeds 1400 mA.	Controller will flag the fault, but no actions will be taken.	Check the wiring between the controller and the device connected on the analog output 4.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
74.03	Analog output 4 (wires B01) related fault: the output current is out of range, occurs when the load has the incorrect impedance.	Controller will flag the fault, but no actions will be taken.	Check the wiring between the controller and the device connected on the analog output 4. Check the device connected.
74.09	Analog output 4 (wires B01) related fault: the output is not connected	Controller will flag the fault, but no actions will be taken.	Check the wiring between the controller and the device connected on the analog output 4. Check the device connected.
75.00	Analog output 5 (pin N1) related fault: output wire is shorted to ground.	Controller will flag the fault, but no actions will be taken.	Check the wiring between APC200 and VFS5+. Check the VFS itself.
75.01	Analog output 5 (pin N1) related fault: output wire is shorted to battery +, or not connected.	Controller will flag the fault, but no actions will be taken	Check the wiring between APC200 and VFS5+. Check the VFS itself.
75.02	Analog output 5 (wires B03) related fault: the output current exceeds 1400 mA.	Controller will flag the fault, but no actions will be taken.	Check the wiring between the controller and the device connected on the analog output 5.
75.03	Analog output 5 (wires B03) related fault: the output current is out of range, occurs when the load has the incorrect impedance.	Controller will flag the fault, but no actions will be taken.	Check the wiring between the controller and the device connected on the analog output 5. Check the device connected.
75.09	Analog output 5 (wires B03) related fault: the output is not connected	Controller will flag the fault, but no actions will be taken.	Check the wiring between the controller and the device connected on the analog output 5. Check the device connected.
76.00	Analog output 6 (pin R1) related fault: output wire is shorted to ground.	Controller will flag the fault, but no actions will be taken.	Check the wiring between APC200 and VFS6+. Check the VFS itself.
76.01	Analog output 6 (pin R1) related fault: output wire is shorted to battery +, or not connected.	Controller will flag the fault, but no actions will be taken.	Check the wiring between APC200 and VFS6+. Check the VFS itself.
76.02	Analog output 6 (pin R1) related fault: the output current exceeds 1400 mA.	Controller will flag the fault, but no actions will be taken.	Check the wiring between APC200 and VFS6+. Check the VFS itself.
76.03	Analog output 6 (pin R1) related fault: the output current is out of range, occurs when the load has the incorrect impedance.	Controller will flag the fault, but no actions will be taken.	Check the wiring between APC200 and VFS6+. Check the VFS itself.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
76.09	Analog output 6 (pin R1) related fault: the output is not connected	Controller will flag the fault, but no actions will be taken.	Check the wiring between APC200 and VFS6+. Check the VFS itself.
77.02	All proportional valve grounds are switched off due to an over current on one or more proportional valves.	Controller reverts to a "shut down" mode and will force neutral 0.	Check the wiring to all VFS'sand check the VFS's themselves.
80.00	Total Neutral Solenoid (pin K1) related fault: output is shorted to ground.	Controller reverts to a Limp Home Mode.	Check the wiring between APC200 and Total Neutral Solenoid. Check the Solenoid itself.
80.01	Total Neutral Solenoid (pin K1) related fault: output is shorted to battery +	Controller reverts to a Limp Home Mode.	Check the wiring between APC200 and Total Neutral Solenoid. Check the Solenoid itself.
80.09	Digital output 1 (pin E2) related fault: output is not connected	The APC200 reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Check the wiring between the controller and the total neutral solenoid + line. (RSP+). Check the solenoid itself.
81.00	Digital output DIG1 (wire A15) is shorted to ground.	Controller reverts to a Limp Home Mode.	Check the wiring between the controller and the 2/4 selector solenoid + line. Check the 2/4 selector solenoid.
81.01	Digital output DIG1 (wire A15) is not connected or shorted to batter +.	Controller reverts to a Limp Home Mode.	Check the wiring between the controller and the 2/4 selector solenoid + line. Check the 2/4 selector solenoid.
81.09	Digital output DIG1 (wire A15) is not connected.	Controller reverts to a Limp Home Mode.	Check the wiring between the controller and the 2/4 selector solenoid + line. Check the 2/4 selector solenoid.
82.00	Selector Valve 1st/3rd (pin F2) related fault: output is shorted to ground	The APC200 reverts to a Shut Down Mode and disengages all clutches.	Check the wiring between APC200 and the 1/3rd selector solenoid + line. Check the 1/3rd selector solenoid.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
82.01	Selector Valve 1st/3rd (pin F2) related fault: output is shorted to battery +.	The APC200 reverts to a Limp Home Mode.	Check the wiring between the controller and the 1/3rd selector solenoid + line. Check the 1/3rd selector solenoid.
82.09	Selector Valve 1st/3rd (pin F2) related fault: output is not connected	The APC200 reverts to a Limp Home Mode.	Check the wiring between the controller and the 1st/3rd selector solenoid + line (DIG2). Check the solenoid itself.
83.00	Total Neutral Solenoid (pin K2) related fault: output is shorted to battery +	Controller reverts to a Limp Home Mode.	Check the wiring between APC200 and the total neutral solenoid minus line. Check the total neutral solenoid itself.
83.01	Total Neutral Solenoid (pin K2) related fault: output is not connected, or shorted to ground	Controller reverts to a Limp Home Mode.	Check the wiring between the controller and the total neutral solenoid minus line. Check the total neutral solenoid itself.
83.09	Total Neutral Solenoid Minus (pin K2) related fault. Output is not connected.	The APC200 reverts to a Shut Down Mode and will deactivate the total neutral solenoid.	Check the wiring between the controller and the total neutral solenoid minus line (RSP-). Check the solenoid itself.
90.xx - 99.xx	System Error. Software related fault.	The APC200 reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
90.90	Wrong firmware is flashed into the APC200.	The APC200 reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.01	Software related fault. Gear pattern doesn't contain a direction.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.02	Software related fault. Duplicate direction pattern.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.03	Software related fault. Duplicate gear pattern.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.04	Software related fault. Duplicate bump pattern.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
92.06	Software related fault. Digital input pattern faulty.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.07	Software related fault. Digital input pattern interferes with cab pattern.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.08	Software related fault. Digital input: Neutral Lock Definition faulty.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.09	Software related fault. Duplicate digital input assignment.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.10	Software related fault. Duplicate digital output assignment.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.11	Software related fault. Digital output selected on unsupported wire.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.12	Software related fault. Digital output pattern faulty.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.13	Software related fault. Digital output selected on transmission wire.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.14	Software related fault. Error in speed sensor 1-2 assignment.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.15	Software related fault. Error in speed sensor 3 assignment.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.16	Software related fault. Duplicate speed sensor assignment.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.17	Software related fault. Invalid supply voltage selected.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.18	Software related fault. Duplicate analog input pattern.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.19	Software related fault. Pressure sensor wires interfere with analog input wires.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
92.20	Software related fault. Wrong configuration regarding servo motor or brake valve (on analog outputs 4-5-6).	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
92.30	Software related fault. Wrong configuration regarding full flow selection and past digital error treatment.	Controller reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
93.00	Failed initialization of essential controller data in flash memory, caused by memory conflict	The APC200 reverts to a "shut down" mode and will deactivate the total neutral solenoid.	Stop machine. Load the correct firmware into the APC200.
93.01	Failed initialization of essential controller data in flash memory, caused by memory conflict	The APC200 reverts to a "shut down" mode and will deactivate the total neutral solenoid.	Stop machine. Load the correct firmware into the APC200.
93.02	Failed initialization of essential controller data in flash memory, caused by memory conflict	The APC200 reverts to a "shut down" mode and will deactivate the total neutral solenoid.	Stop machine. Load the correct firmware into the APC200.
93.03	Failed initialization of essential controller data in flash memory, caused by memory conflict	The APC200 reverts to a "shut down" mode and will deactivate the total neutral solenoid.	Stop machine. Load the correct firmware into the APC200.
93.04	Failed initialization of essential controller data in flash memory, caused by memory conflict	The APC200 reverts to a "shut down" mode and will deactivate the total neutral solenoid.	Stop machine. Load the correct firmware into the APC200.
93.05	Failed initialization of essential controller data in flash memory, caused by memory conflict	The APC200 reverts to a "shut down" mode and will deactivate the total neutral solenoid.	Stop machine. Load the correct firmware into the APC200.
93.09	Failed initialization of essential controller data in flash memory, caused by memory conflict	The APC200 reverts to a "shut down" mode and will deactivate the total neutral solenoid.	Stop machine. Load the correct firmware into the APC200.
93.10	Initialization of statistical data in flash memory, caused by firmware upgrade or memory conflict.	The APC200 will flag the fault, but no actions will be taken.	Load the correct firmware into the APC200.
93.11	Initialization of logged error data in flash memory, caused by firmware upgrade or memory conflict.	The APC200 will flag the fault, but no actions will be taken.	Load the correct firmware into the APC200.
94.00	Failed initialization of essential controller data in flash memory, caused by memory conflict	The APC200 reverts to a "shut down" mode and will deactivate the total neutral solenoid.	Stop machine. Load the correct firmware into the APC200.
94.01	Failed initialization of essential controller data in flash memory, caused by memory conflict	The APC200 reverts to a "shut down" mode and will deactivate the total neutral solenoid.	Stop machine. Load the correct firmware into the APC200.

Table 7. APC200 Fault Codes (Continued)

Fault Code	Fault Explanation	APC200 Action	Troubleshooting
94.02	Failed initialization of essential controller data in flash memory, caused by memory conflict	The APC200 reverts to a "shut down" mode and will deactivate the total neutral solenoid.	Stop machine. Load the correct firmware into the APC200.
94.03	Failed initialization of essential controller data in flash memory, caused by memory conflict	The APC200 reverts to a "shut down" mode and will deactivate the total neutral solenoid.	Stop machine. Load the correct firmware into the APC200.
94.04	Failed initialization of essential controller data in flash memory, caused by memory conflict	The APC200 reverts to a "shut down" mode and will deactivate the total neutral solenoid.	Stop machine. Load the correct firmware into the APC200.
94.05	Failed initialization of essential controller data in flash memory, caused by memory conflict	The APC200 reverts to a "shut down" mode and will deactivate the total neutral solenoid.	Stop machine. Load the correct firmware into the APC200.
94.09	Failed initialization of essential controller data in flash memory, caused by memory conflict	The APC200 reverts to a "shut down" mode and will deactivate the total neutral solenoid.	Stop machine. Load the correct firmware into the APC200.
95.71	Data in the APC200 is not compatible with the data expected by the APC200 firmware. Wrong APT file (data file) is in the APC200 (typically after APC200 firmware upgrade).	The APC200 reverts to a Shut Down Mode and disengages all clutches.	Load the correct firmware into the APC200.
99.95	CAN peak load detected: APC200 temporarily could not process all incoming messages, due to an excessive peak of CAN requests.	The APC200 will reply on the CAN messages which are available in its buffer.	No action required.
xx.49	Fault with undefined cause. Software related fault.	The APC200 will flag the fault - action will depend on the fault.	Replace APC200 controller.

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