

## General

**Specifications**

**Vehicle Model**

**VIN**

**The mechanic performance table of bolts in China**

## Specifications

### Main specifications of the trucks equipped with 4DA1 engine

The common configurations: HFC4DA1 engine, displacement: 2771cc; Max Power (HP/rpm): 77/3600; Max Torque (N.m/rpm) : 174/2100-2300; JAC MSB-5M transmission, hydraulic brake, JAC new model cabin, no power assist of clutch.

Model 型号	Serious Number for produce 结构区别号	Cabin 驾驶室	Final gear ratio 后桥速比	Tyre 轮胎	Overall Size (mm) (L*W*H) 整车尺寸	Wheelbase ( mm ) 轴距	Gross Vehicle Weight ( kg ) 最大质量	Max Speed ( km/h ) 最大时速	Seating Capacity 额定成员数	Air Conditioner 空调	Power Steering 动转	Pre-heater 预热	Exhaust Braking 排气制动
HFC1040K/KR1	D803/D804	Single/King Cab	D803-6.142	6.50-16	5745*1866*2213	3000	4930	90	2	○	○	√	×
HFC1035KD	D836	Single	5.375	7.00R16 Rear single	4850*1730*2240	2490	3900	110	2	○	○	×	√
HFC1042K	D810	Single	D800-6.142	7.00R16	5980*1880*2200	3360	5740	100	2	○	√	√	√
HFC1045K2	B826/B827	Single/King	B1DAB0-6.142	6.50R16/6.50-16	5980*1998*2200	3308	5215	95	3	√	√	√	√
HFC1020K/KR1	D870/D871	Single/King Cab	D870-6.142	6.50-16	5400*1868*2200	2800	3630	90	2	○	√	√	×

Remark: √ :Standard Equipment      ○:Optional      ●:Under develop      ×:Not Available

### Main specifications of the trucks equipped with 4DA1-1 engine

The common configurations: HFC4DA1-1 engine, displacement: 2771cc; Max Power (HP/rpm): 92/3600; Max Torque (N.m/rpm) : 202/2100-2300; JAC MSB-5M transmission, hydraulic brake, JAC new model cabin, no power assist of clutch.

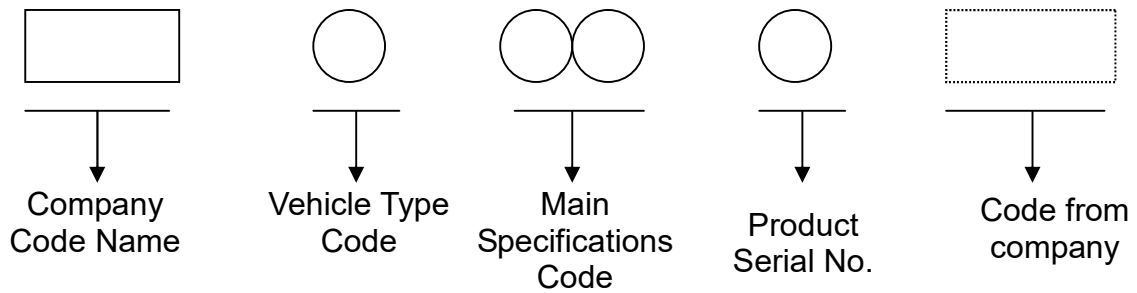
Model 型号	Serious Number for produce 结构区别号	Cabin 驾驶室	Final gear ratio 后桥速比	Tyre 轮胎	Overall Size (mm) (L*W*H) 整 车尺寸	Wheelbase ( mm ) 轴距	Gross Vehicle Weight ( kg ) 最大质量	Max Speed ( km/h ) 最大时速	Seating Capacity 额定成员数	Air Conditioner 空调	Power Steering 动转	Pre-heater 预热	Exhaust Braking 排气制动
HFC1035KD	D817	Single	5.375	7.00R16 Rear single	4850*1730*2240	2490	3900	110	2	○	○	×	√
HFC1042K2RD	D819	Double	5.375	7.00R16 Rear single	4875*1715*2215	2490	3900	110	2+3	○	○	0	○
HFC1040K/KR1	D830/D831	Single/King Cab	D803-6.142	6.50-16	5745*1866*2213	3000	4930	90	2	○	○	√	√
HFC1045K2/R1	B802/803	Single/King Cab	B1DAB0-5.571	6.50R16/6.50-16	5980*1998*2220	3308	5735	95	3	○	○	√	√
HFC1045K2	B832	Single/King Cab	B1DAB0-5.571	6.50R16/6.50-16	5980*1998*2220	3308	5735	95	3	○	√	√	○
HFC1040K2	D800/D801	Single/King Cab	D800-6.142	7.00R16	5995*1900*2250	3360	5740	100	2	○	○	√	√
HFC1042KR	D802	double	D800-6.142	7.00R16	5995*1900*2250	3360	4490	100	2+3	○	○	√	√
HFC1035KD	D874	Single	5.375	7.00R16 Rear single	4850*1730*2240	2490	3900	110	2	○	√	√	√

Remark: √:Standard Equipment      ○:Optional      ●:Under develop      ×:Not Available

## General

---

### Vehicle Model



Company Code Name: HFC-----represents JAC motor

Vehicle Type Code: 1---Cargo truck    2---Off-road vehicle    3---Dumper  
4---Tractor    5---Special purpose vehicle    6---Passenger car  
7---Sedan    9---Semitrailer

Main Specifications Code: 25---represents the maximum gross weight is 25 tons.

Product serial No.: 1---Product development serial No. (1<sup>st</sup> change, 2<sup>nd</sup> development)

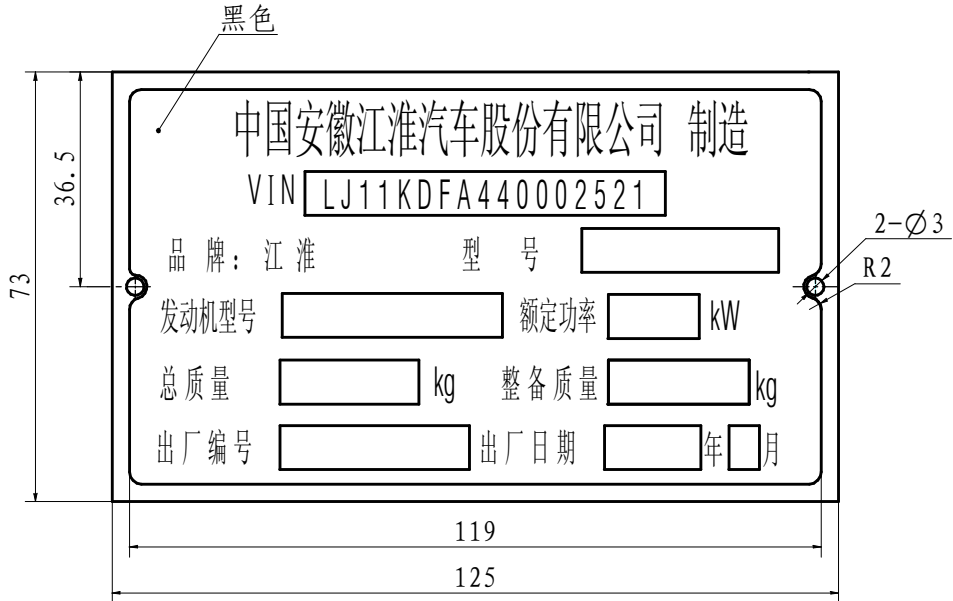
Code from company: K---Diesel    R1---King cabin

For example: HFC3251KR1 represents JAC vehicle with king cab, 25 tons maximum gross weight, the first change.

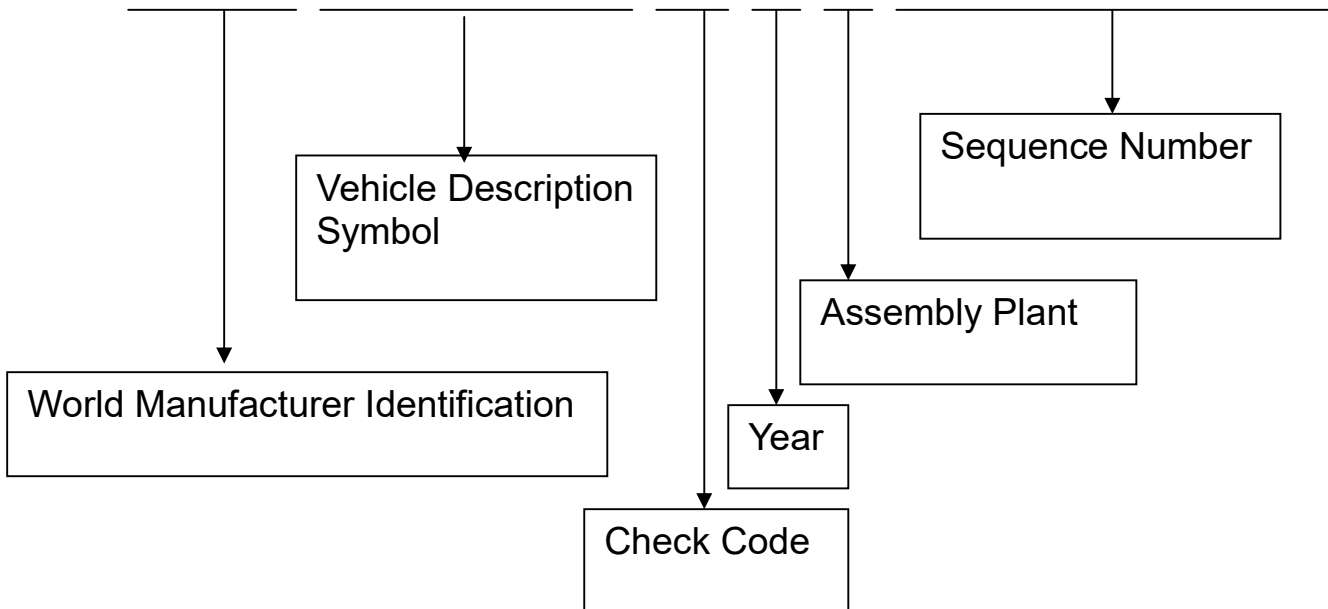
## General

### VIN----Vehicle Identification Number

VIN comprises of 17 digits. They separately represent:



<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>
L	J	1	1	K	D	B	C	X	8	X	X	X	X	X	X	X



## General

---

### The mechanic performance table of bolts in China

Quality Grade( mark)	6.8	8.8	9.8	10.9	12.9
Tensile strength limit $\sigma_b$ max(MPa)	600	800	900	1040	1220
Yield limit $\sigma_s$ max(MPa)	480	640	720	940	1100
Corresponding to Hyundai standards	4T	6T	7T	8T	10T

The number before the radix point represents one percent of the nominal tensile strength;

The number after the radix point represents ten times of the ratio of the nominal yield limit and nominal tensile strength.

# **Section I**

## **Engine**

**HFC4DA1(4DA1-1)**



## Introduction

We prepare this manual to help technicians get to know and understand 4DA1 Series engine so that they are able to master quick maintenance and service.

The manual gives you instructions on assembly and disassembly of parts and systems of 4DA1 Series engine, general maintenance standards, special tools as well as common fault diagnosis and troubleshooting.

Our products are subject to continuous innovation. If any information in this manual is not applicable for the innovative products, the discrepancies will be modified in a second edition.

No part or parts of this manual may be reproduced or illegally used in any form or by any means without written consent of Jianghuai Automobile.





## Table of Contents

<b>1. Maintenance</b> .....	<b>5</b>
1.1 Diagnosis and troubleshooting .....	5
1.1.1 Start problems.....	5
1.1.2 Unstable idle speed .....	7
1.1.3 Insufficient power .....	8
1.1.4 High fuel consumption .....	9
1.1.5 High oil consumption .....	10
1.1.6 Engine overheating.....	10
1.1.7 White smoke coming out of engine exhaust .....	10
1.1.8 Black smoke coming out of engine exhaust.....	11
1.1.9 Low oil pressure.....	11
1.1.10 Abnormal engine noise .....	11
1.1.11 Engine cooling problem .....	12
1.2 Data and specifications.....	20
1.2.1 Data and specifications.....	20
1.2.2 Engine cooling .....	21
1.2.3 Starting system .....	21
1.2.4 Charging system.....	22
1.3 Maintenance standards.....	22
1.3.1 Engine mechanical system.....	22
1.3.2 General terms for diesel performance.....	24
1.4 Maintenance work.....	26
1.4.1 Air filter .....	26
1.4.2 Lubricant system.....	27
1.4.3 Fuel system .....	28
1.4.4 Cooling system .....	30
1.4.5 Drive belt adjustment.....	32
1.4.6 Engine control (governed speed, valve clearance, injection timing, compression pressure) .....	33
1.5 Tightening torque .....	39
1.5.1 Torque for cylinder head, cylinder head cover and rocker shaft support .....	39
1.5.2 Torque for crankshaft, bearing cap, connecting rod bearing cap, crankshaft damper pulley, flywheel and oil pan .....	41
1.5.3 Torque for timing pulley chamber, timing pulley, timing gear and camshaft race .....	42
1.5.4 Engine fuel system .....	42
1.5.5 Torque for cooling system and lubricant system .....	43
1.5.6 Torque for intake manifold, exhaust manifold and exhaust pipe.....	44
1.5.7 Engine electrical system.....	45
1.5.8 Torque for engine mounting bracket.....	46
1.6 Special tools.....	47
<b>2. Engine mechanical system</b> .....	<b>49</b>

✘	2.1 Cylinder head .....	49
	2.2 Valve spring, valve guide oil seal, valve guide and push rod .....	56
	2.3 Camshaft and tappet.....	64
	2.4. Rocker arm assembly .....	72
	2.5 Oil pump .....	75
	2.6. Crankshaft.....	80
	2.7. Piston and connecting rod .....	95
	2.8 Cylinder block.....	106
	<b>3.4 DA1 Series Engine .....</b>	<b>118</b>
	3.1 General.....	118
	3.2 Right support of engine.....	119
	3.3 Left support of engine .....	121
	3.4 Air-intake manifold.....	123
	3.5 Exhaust manifold.....	125
	3.6 Oil cooler .....	127
	3.8 Cylinder head cover .....	130
	3.9 Rocker shaft assembly.....	131
	3.10 Valve stem oil seal and valve spring .....	134
	3.11 Timing gear.....	138
	3.12 Cylinder head assembly and gasket.....	146
	3.13 Oil pan .....	157
	3.14 Oil pump assembly .....	160
	3.15 Piston, Piston ring and connecting rod .....	164
	3.16 Camshaft and tappet.....	177
	3.17 Crankshaft front oil seal .....	197
	3.18 Crankshaft rear oil seal .....	200
	3.19 Crankshaft and main bearing.....	207
	<b>4 Engine cooling system .....</b>	<b>229</b>
	4.1 General.....	229
	4.2 Water pump.....	232
	4.2.1 On-vehicle repair .....	232
	4.2.2 Single-piece repair.....	236
	4.3 Thermostat .....	239
	4.4. Radiator.....	241
	4.5 Drive belt adjustment .....	244
	<b>5 Fuel system.....</b>	<b>246</b>
	5.1 General.....	246
	5.2 Fuel filter assembly .....	250
	5.3 Fuel injector.....	253
	5.4 Injection pump assembly .....	258
	5.5 Fuel system related parameters .....	266
	5.6 Fuel tank.....	267
	5.7 Fuel lever gauge .....	269
	<b>6 Starting system (To mention in a reference) .....</b>	<b>270</b>
	6.1 General.....	270

<input type="checkbox"/>	6.2 Starting circuit.....	271
	6.3 Starter motor .....	272
	<b>7 Intake/exhaust system .....</b>	<b>281</b>
	7.1 General.....	281
	7.1 Air filter .....	282
	7.2 Exhaust pipe and charger assembly.....	284