Service Manual

JS290 - Tier III Auto

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Section 2 - Care and Safety

Section 3 - Routine Maintenance

Section B - Body & Framework

Section C - Electrics

Section E - Hydraulics

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Error Codes / Error Diagnosis (Automatic Temperature Control (ATC) System)

Table 5. Error Code 1 - High Pressure Lock Out

Effect	Description	Causes	Remedy
The unit cannot cool the cab The compressor disengages.	The high pressure switch operates twice In 1 minute.	The system is overcharged.	Check the continuity of switch (usually open switch).
			Check the gas in system and recharge, refer to table.
		There is no power to the high pressure switch.	Check for 24V at the switch.
			Check the continuity between ATC control module pin 33 and switch.
		There is a bad earth on the high pressure switch.	Check the earth wire between ATC control module pin 34 and switch.
		There is a defective switch.	Replace the switch.

Note: *If, an Error code shows after one minute this can show a system Error.*

Note: *If, an Error code shows instantly this can show a wiring Error.*

Table 6. Error Code 2 - Low Pressure Lock Out

Effect	Description	Causes	Remedy
The unit cannot cool the cab The compressor disengages.	The low pressure switch opens for longer than 1 minute.	The system is undercharged.	Check the continuity of switch (usually closed switch).
			Check the gas in system and recharge, refer to table.
		There is no power to the low pressure switch.	Check for 24V at the switch.
			Check the continuity between ATC control module pin 35 and switch.
		There is a bad earth on the low pressure switch.	Check the earth wire between ATC control module pin 36 and switch.
		There is a defective switch.	Replace the switch.

Note: *If an Error code shows after one minute this can show a system error.*

Note: *If an Error code shows instantly this can show a wiring error.*

Note: *Battery reset may be required to remove the error after repair.*

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Slew Motor

Table 4.

Type	Fixed displacement piston motor
Suction Capacity	180.1 cm^3/rev (11 in^3/rev)
Rated Pressure	324 bar (330 kgf/cm^2 ,4699 lbf/in^2)
Working Pressure Max.	392 bar (400 kgf/cm^2 ,5689 lbf/in^2)
Max Flow	250 l/min (66 gal/min)
Pressure Relief	290 bar (296 kgf/cm^2 ,4206 lbf/in^2)
Brake Torque	967 Nm (98.6 kgf m, 713lbf ft)
Brake Pressure Release	27 bar (33 kgf/cm^2)
Dry Weight	63 kg (139 lb)

Slew Gearbox

Table 5.

Reduction Gears	Planetary gears with 2 gear reduction
Reduction Gear Ratio	23.18

Main Control Valve

Table 6.

Type	Hydraulic Pilot System
Operating System	Set pressure relief
Main Relief Pressure:	
Standard	343 bar (5685 lb/in^2) at 138 litre/min (30.3 UK gal)
Pressure Raising	373 bar (5410 lb/in^2) at 114 litre/min (25 UK gal)
Overload Relief Pressure:	
Bucket open/close	392 bar (5685 lb/in^2) at 20 litre/min (4.4 UK gal)
Dipper	392 bar (5685 lb/in^2) at 20 litre/min (4.4 UK gal)
Boom Raising	392 bar (5685 lb/in^2) at 20 litre/min (4.4 UK gal)
Boom Lowering Pressure	264 bar (3828 lb/in^2) at 20 litre/min (4.4 UK gal)
Aux	314 bar (4554 lb/in^2) at 20 litre/min (4.4 UK gal)
Function	Travel priority, Slew priority, Boom and Dipper holding valves, Boom and Dipper 2-Speed internal confluence
Dry weight	286 kg (631 lb)

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Schematic

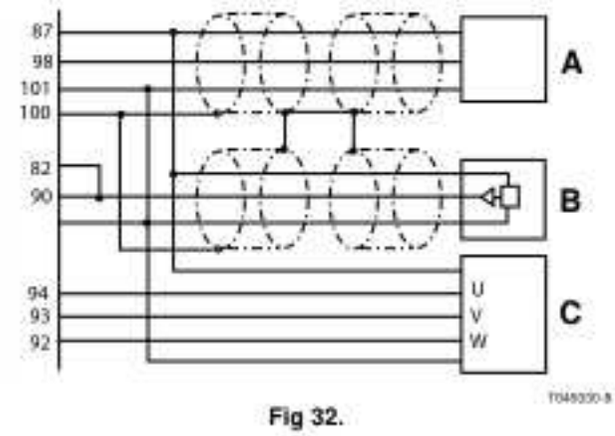


Fig 32.

Table 19.

A	CMP Sensor
B	Common Rail Pressure Sensor
C	EGR Valve Position Sensor

Resistance

Table 20.

Measuring Terminal No.	Normal Value	Abnormal Value
87 - Sensor connector power supply terminal	100 ohms or less	10 M ohms or more
98 - Sensor connector signal terminal	10 M ohms or more	100 ohms or less
98 - Sensor connector signal terminal	100 ohms or less	10 M ohms or more
98- Ground	5 Volts when disconnecting the connector. Therefore it will always will be 5 Volts	4 Volts or less / 1.8 Volts or more

Voltage

Voltage with engine running between pins:

87 -98 = 0.5V.

98 -101 = 4.5V.

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4JJ

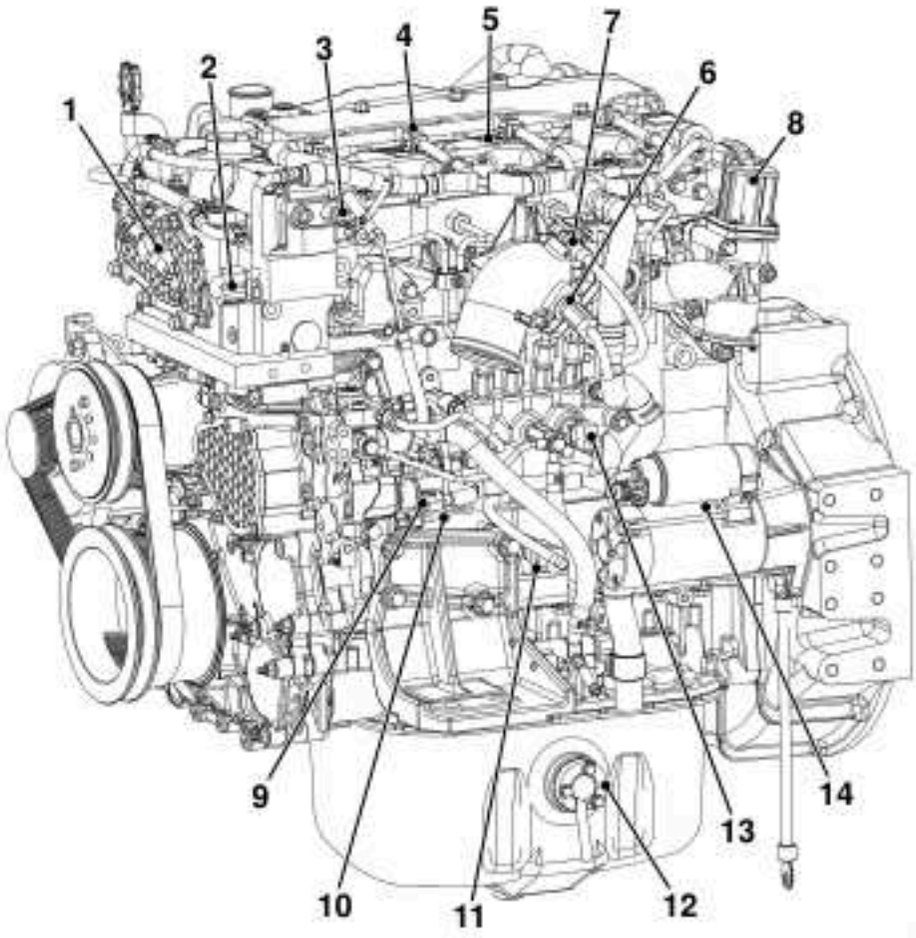


Fig 2.

Item	Description
1	Camshaft Position (CMP) Sensor. ⇨ *Camshaft Position (CMP) Sensor - 4JJ (K-16)*.
2	Engine Coolant Temperature Sensor ⇨ *Engine Coolant Temp Sensor (K-3)*.
3	Overheat Switch. ⇨ *Overheat Switch (K-5)*.
4	Injectors. ⇨ *Injector (K-29)*.
5	Glow Plugs ⇨ *Glow Plug (K-30)*.
6	Boost Temperature Sensor. ⇨ *Boost Temperature Sensor (K-25)*
7	Boost Pressure Sensor. ⇨ *Boost Pressure Sensor (K-27)*
8	Suction Control Valve. ⇨ *Suction Control Valve (K-21)*.
9	Exhaust Gas Re-circulation (EGR) Valve. ⇨ *Exhaust Gas Re-circulation (EGR) Valve (K-18)*.
10	Fuel Temperature (FT) Sensor. ⇨ *Fuel Temperature (FT) Sensor (K-23)*.

Item	Description
11	Engine Oil Pressure Sensor. ⇨ *Engine Oil Pressure Sensor (K-8)*
12	Engine Oil Level Sensor. ⇨ *Engine Oil Level Sensor (K-32)*.
13	Common Rail Pressure Sensor. ⇨ *Common Rail Pressure Sensor (K-6)*.
14	Crankshaft Position (CKP) Sensor. ⇨ *Crankshaft Position Sensor - 4JJ (K-12)*.
15	Barometric Pressure (in battery bay - early models, in cab - late models). ⇨ *Barometric Pressure Switch (K-35)*.
16	Air Intake Temperature (in air intake hose behind air filter). ⇨ *Air Intake Temperature Sensor (K-33)*.

⇨ *Schematics (K-36)*.

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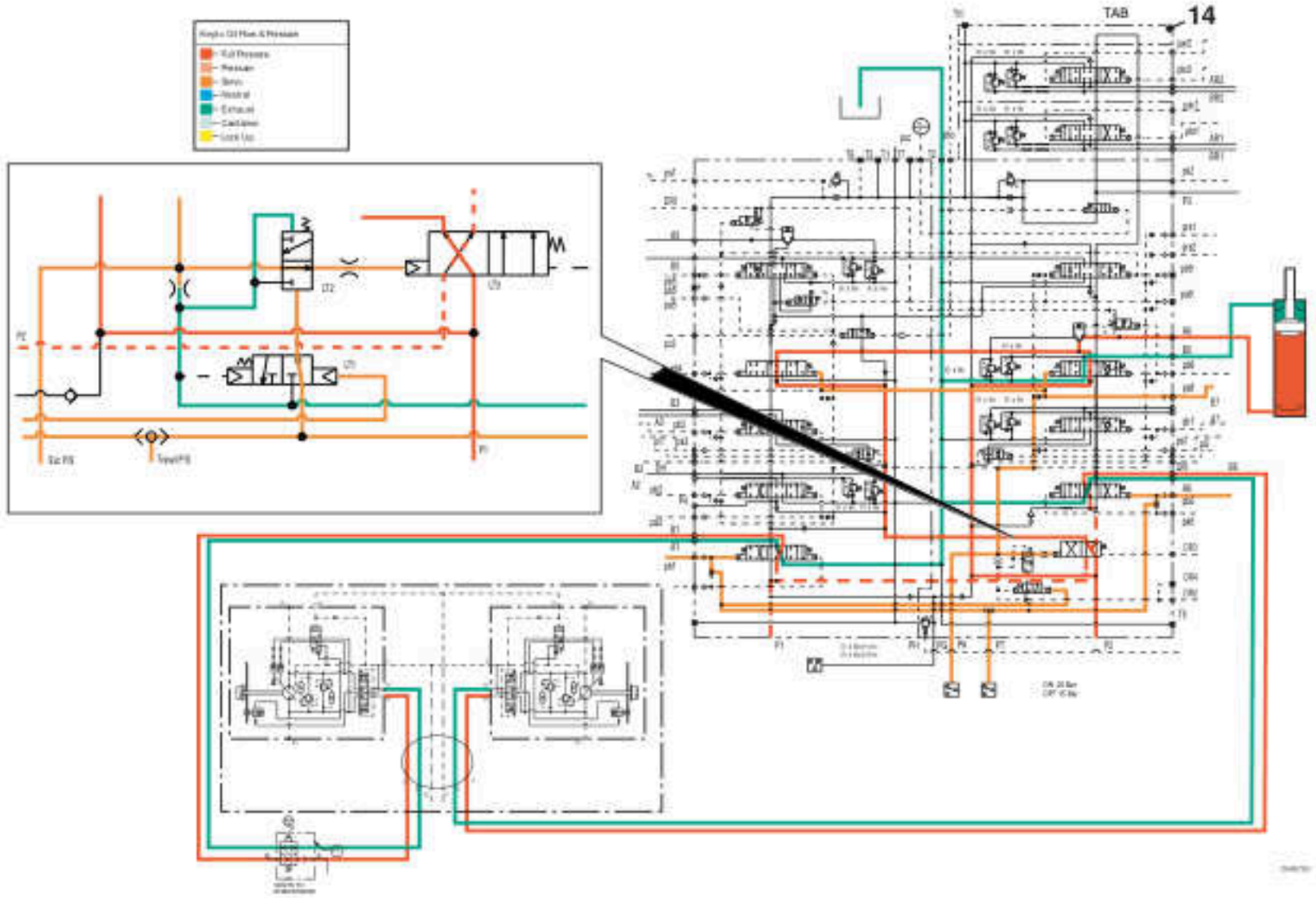


Fig 6. Straight Line Travel Schematic

⇨ *Straight Line Travel (E-24)*

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