FORKLIFT

SERVICE MANUAL

110D-7E

HYUNDAI

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3. SPECIFICATION FOR MAJOR COMPONENTS

1) 110D/130D-7E

(1) ENGINE

Item	Unit	Specification
Model	-	CUMMINS QSB6.7
Type	-	4 cycle turbocharged diesel type
Cooling Method	-	Water cooling
Number of cylinders and arrangement	-	6 cylinders, In-line
Firing order	-	1-5-3-6-2-4
Combustion chamber type	-	Direct injection
Cylinder bore X stroke	mm(in)	107 × 124mm(4.21" × 4.88")
Piston displacement	cc(cu in)	6700(410)
Compression ratio	-	17.2 : 1
Rated gross horse power	ps/rpm	162/2200
Maximum gross torque at rpm	kgf - m/rpm	74.6/1400
Engine oil quantity	/ (U.S.gal)	14.2(3.75)
Dry weight	kg(lb)	485(1069)
High idling speed	rpm	2250±50
Low idling speed	rpm	600~1200
Rated fuel consumption	g/ps.hr	168
Starting motor	V-kW	DENSO, 24-3.7
Alternator	V-A	24-70
Battery	V-AH	24-100

(2) MAIN PUMP

Item	Unit	Specification
Type	-	Fixed displacement gear pump
Capacity	cc/rev	61+73
Maximum operating pressure	bar	300
Rated speed (Max/Min)	rpm	2800/300

(3) MAIN CONTROL VALVE

Item	Unit	Specification
Type	-	Sectional
Operating method	-	Hydraulic pilot
Main relief valve pressure	bar	210/165
Flow capacity	lpm	180

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Fault code (Hex)	Meaning of the fault code possible reason for fault detection	Reaction of the TCU	Possible steps to repair
BB	**Slippage at converter lockup clutch** TCU calculates a differential speed at closed converter lockup clutch. If this calculated value is out of range, TCU interprets this as slipping clutch - Low pressure at converter lockup clutch - Low main pressure - Wrong signal at engine speed sensor - Wrong signal at turbine speed sensor - Wrong size of the sensor gap - Clutch is defective	-	· Check pressure at converter lockup clutch · Check main pressure in the system · Check sensor gap at engine speed sensor · Check sensor gap at turbine speed sensor · Check signal at engine speed sensor · Check signal at turbine speed sensor · Replace clutch
BD	**S.C. to ground at engine brake solenoid** TCU detected a wrong voltage at the output pin, that looks like a S.C. to vehicle ground - Cable is defective and is contacted to vehicle ground - Engine brake solenoid has an internal defect - Connector pin is contacted to vehicle ground	No reaction OP mode : Normal	· Check the cable from TCU to engine brake solenoid · Check the connectors from engine brake solenoid to TCU · Check the resistance* of engine brake solenoid * See page 3-36
BE	**S.C. to battery voltage at engine brake** TCU detected a wrong voltage at the output pin, that looks like a S.C. to battery voltage - Cable is defective and is contacted to battery voltage - Engine brake solenoid has an internal defect - Connector pin is contacted to battery voltage	No reaction OP mode : Normal	· Check the cable from TCU to the engine brake solenoid · Check the connectors from engine brake solenoid to TCU · Check the resistance* of engine brake solenoid * See page 3-36
BF	**O.C. at engine brake** TCU detected a wrong voltage at the output pin, that looks like a O.C. for this output pin - Cable is defective and has no connection to TCU - Engine brake solenoid has an internal defect - Connector has no connection to TCU	No reaction OP mode : Normal	· Check the cable from TCU to the engine brake solenoid · Check the connectors from engine brake solenoid to TCU · Check the resistance* of engine brake solenoid * See page 3-36

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GROUP 7 CONNECTORS

1. CONNECTOR DESTINATION

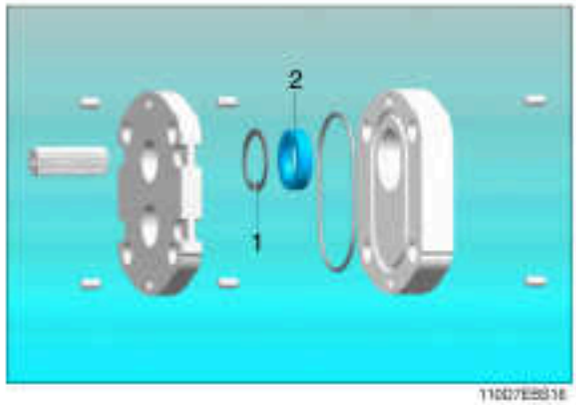
Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-1	KET	52	I/conn(Engine harness-Main harness)	MG613245	MG643241
CN-2	KET	52	I/conn(Main harness-Engine harness)	MG613245	MG643241
CN-3	DEUTSCH	4	Seat switch	DT04-4P	-
CN-6	AMP	16	I/conn(Frame harness-Engine harness)	368047-1	368050-1
CN-7	AMP	16	I/conn(Cabin harness-Main harness)	368047-1	368050-1
CN-8	KET	12	I/conn(Main harness-Monitor harness)	MG613245	MG643241
CN-9	DEUTSCH	2	I/conn(Frame harness-Master W/Lamp harness)	DT04-2P	DT06-2S
CN-10	DEUTSCH	6	I/conn(Frame harness-Fender harness)	DT04-6P	DT06-6S
CN-11	DEUTSCH	6	I/conn(Frame harness-Fender harness)	DT04-6P	DT06-6S
CN-12	DEUTSCH	4	To harness rear camera	DT04-4P	DT06-4S
CN-13	KET	4	Fender-RH	S814-004100	
CN-14	KET	6	Cabin harness	MG610049	MG620048
CN-15	KET	6	Aircon harness	MG610049	
CN-16	DEUTSCH	2	Mast work lamp harness	DT06-2S	DT04-2P
CN-19	KET	2	Inching potentiometer	-	MG610320
CN-21	AMD	6	Front wiper	-	163007
CN-22	KET	2	Front washer	-	MG610320
CN-23	KET	2	Speaker LH	MG610070	
CN-24	KET	2	Speaker RH	MG610070	
CN-25	Molex	2	Horn	35825-0211	
CN-26	KET	2	Tilt alarm	ST730018-3	ST750036-3
CN-27	KUM	16	CD & MP3	-	PK145-16017
CN-30	KET	2	Compressor	MG610043	-
CN-36	-	1	Fuse box	21FT-15610	-
CN-37	-	1	Fuse box	21FT-15620	-
CN-38	-	1	Fuse box	21FT-15630	-
CN-45	Ring term	1	Start motor	S820-308000	926682-3
CN-50	AMP	68	Transmission control unit	963598-1	
CN-51	AMP	6	T/M diagnostic	480704-0	
CN-55	KET	14	Opss unit	MG610350	
CN-56	AMP	20	Cluster	-	174047-2
CN-57	AMP	20	Cluster	-	175967-2
CN-60	KET	2	Fusible link	21N4-01320	-
CN-65	DEUTSCH	2	Back-up buzzer	-	DT06-2S
CN-71	DEUTSCH	2	Parking solenoid	DT06-2S	-
CN-74	PACKARD	4	Alternator	-	12186568

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(4) Separation intermediate section

① Remove the through shaft and intermediate section as well as guard pins.

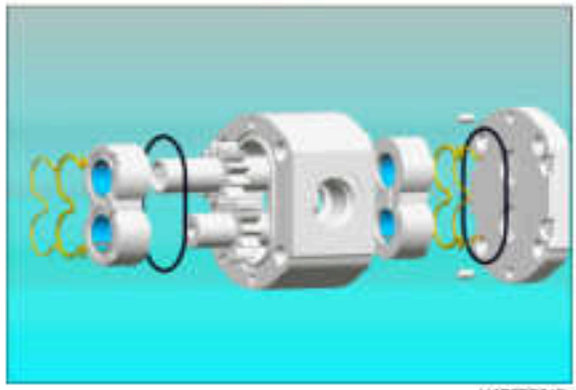
② Remove snap ring(1) and shaft seal(2) with proper tool.



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(5) 3rd working section

① Do same job as for 1st and 2nd sections.



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4) ASSEMBLY

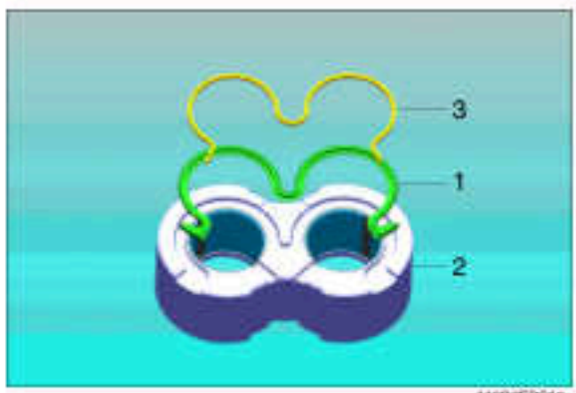
(1) Preassemble

Pressure plates

① Locate O-ring(1) into the grove on the aluminum pressure plate(2).

② Locate back-up ring(3) upon the O-ring(1).

③ Smear clean grease on the O-ring(1) and back-up ring(3) to fix their position while moving.

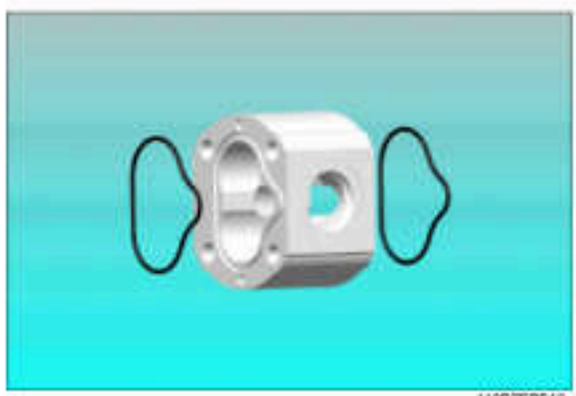


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Working body

④ Insert square rings into the grooves.

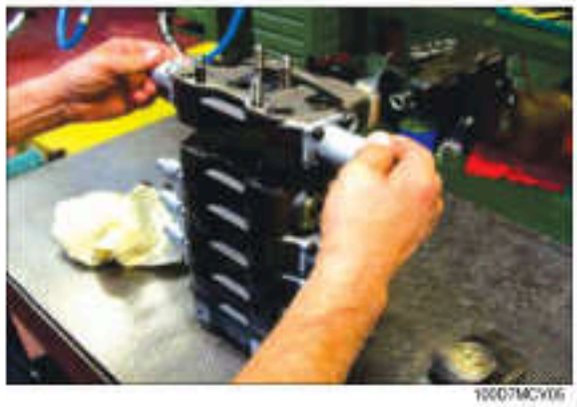
※ Shape of square ring is different depend on type of bodies.



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Locate new or repaired working section in right position according to the order of functions.

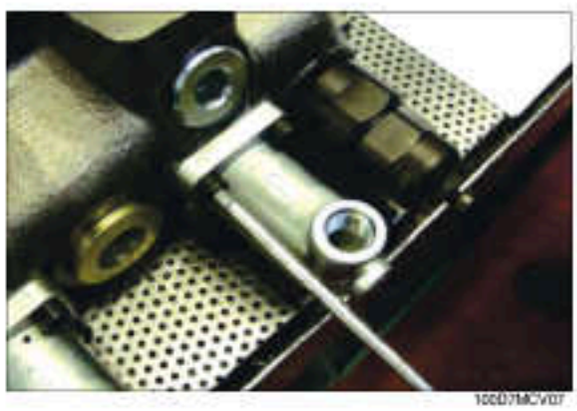


Tighten four nuts (M17) in a crisscross pattern with proper assembling torque of 4.3kgf · m(31lbf · ft).

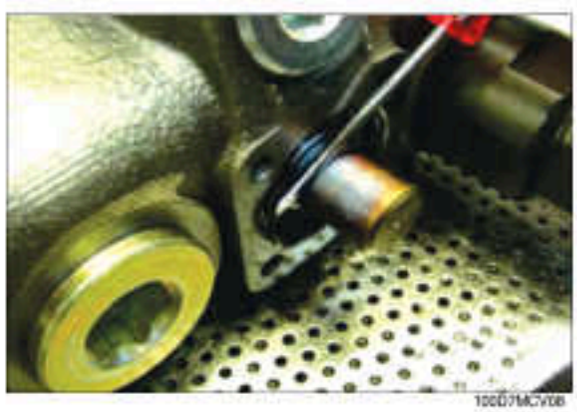


(2) **Replacing spool & control kit**

Loosen 4 screws holding aluminum kits to the body with 5mm wrench.

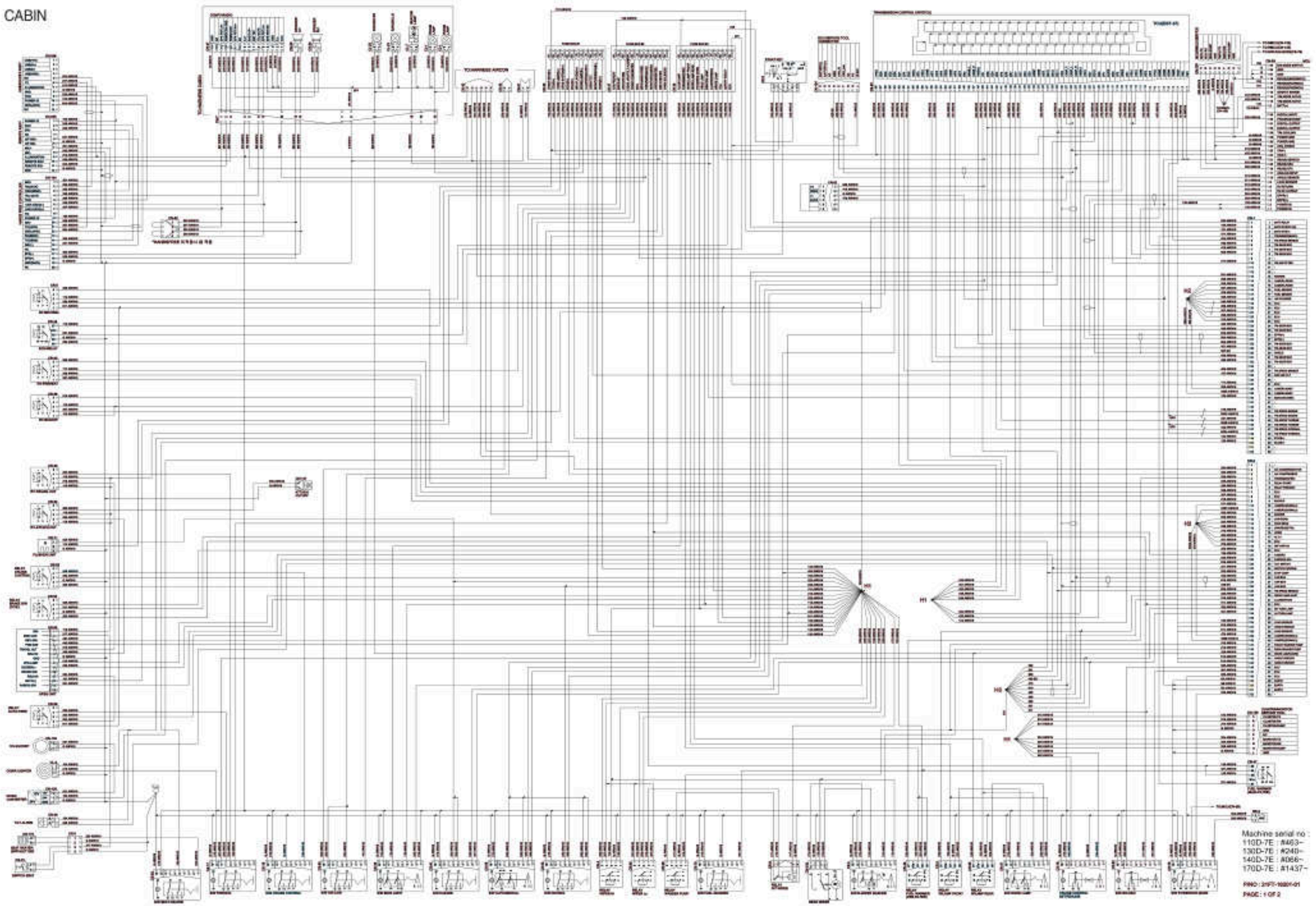


Take off all components and O-ring, valve inside, with attention not to give any damage to it.
Don't use anything with sharp edge.



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CABIN



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