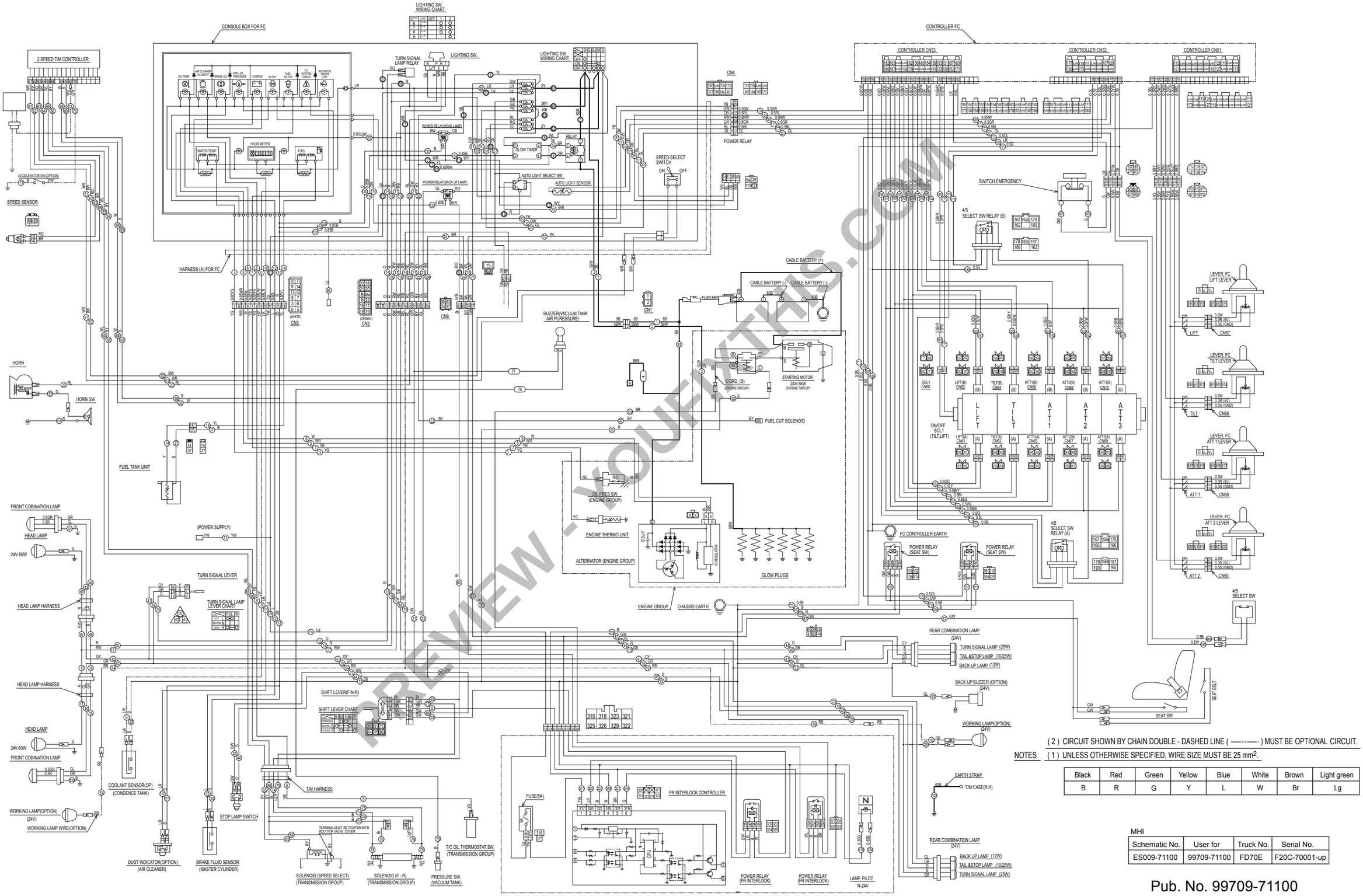


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(2) CIRCUIT SHOWN BY CHAIN DOUBLE - DASHED LINE (—·—·—) MUST BE OPTIONAL CIRCUIT.

NOTES (1) UNLESS OTHERWISE SPECIFIED, WIRE SIZE MUST BE 25 mm².

Black	Red	Green	Yellow	Blue	White	Brown	Light green
B	R	G	Y	L	W	Br	Lg

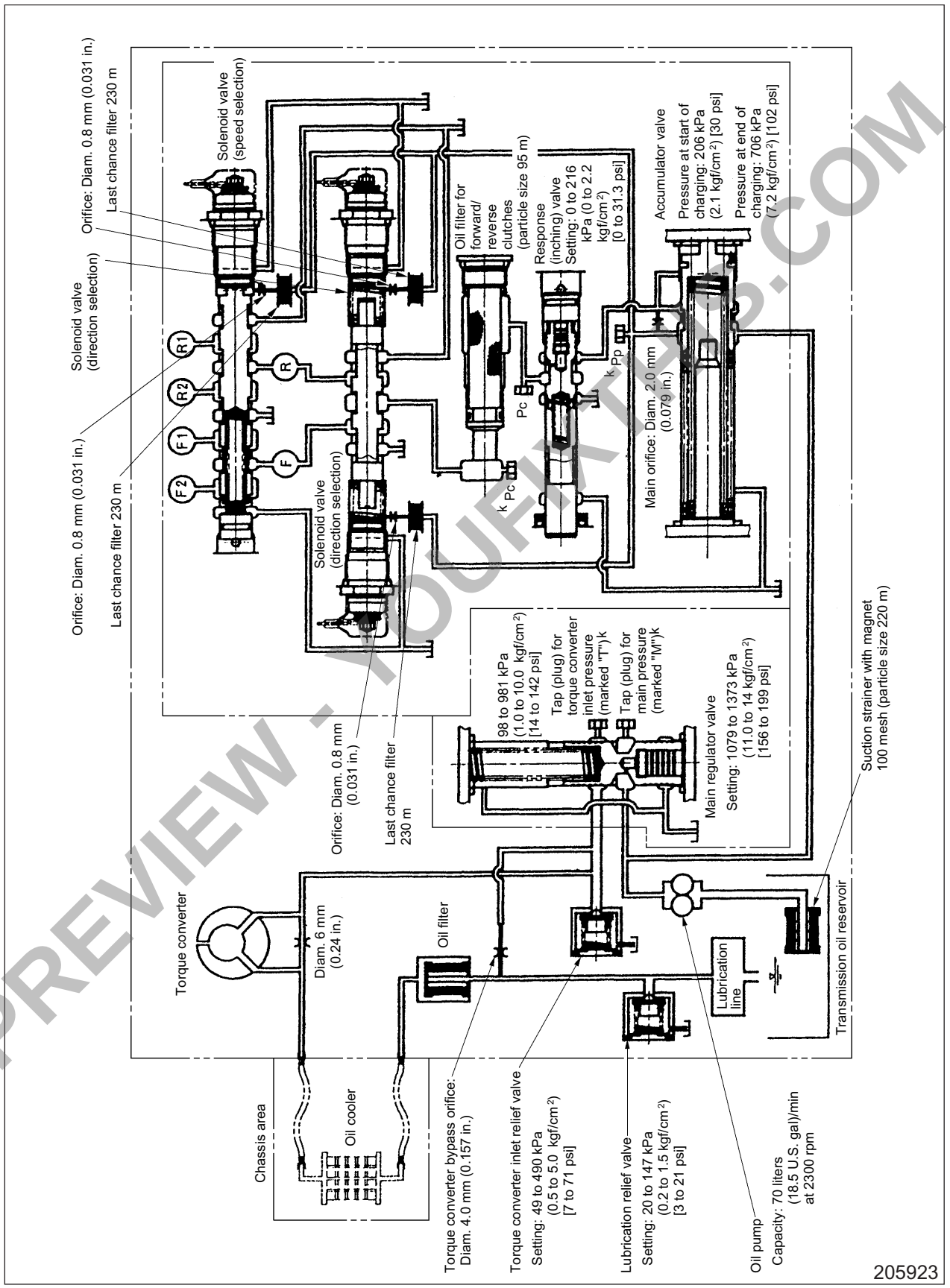
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Schematic No.	User for	Truck No.	Serial No.
ES009-71100	99709-71100	FD70E	F20C-70001-up

Pub. No. 99709-71100

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2.6 Torque Converter Drive Transmission Hydraulic System Schematic

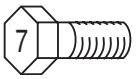
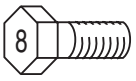
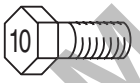
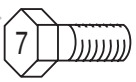
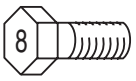
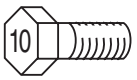


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2. Tightening torque of standard bolts

2.1 Metric screw thread for automobiles

	Nominal size		Pitch		With spring washer 101656								
													
	mm	in.	mm	in.	N·m	kgf·m	lbf·m	N·m	kgf·m	lbf·m	N·m	kgf·m	lbf·m
Metric fine thread	6	0.24	1	0.04	7.4	0.75	5.4	9.6	0.98	7.1	12.7	1.3	9.4
	8	0.32	1.25	0.05	16.7	1.7	12.3	22.6	2.3	16.6	30.4	3.1	22.4
	10	0.39	1.25	0.05	34.3	3.5	25.3	45.1	4.6	33.3	69.6	7.1	51.4
	12	0.47	1.25	0.05	63.7	6.5	47.0	82.4	8.4	60.8	122.6	12.5	90.4
	14	0.55	1.5	0.06	102.0	10.4	75.2	132.4	13.5	97.6	192.2	19.5	141.8
	16	0.63	1.5	0.06	154.9	15.8	114.3	202.0	20.6	149.0	287.3	29.3	211.9
	18	0.71	1.5	0.06	224.6	22.9	165.5	292.2	29.8	215.5	413.8	42.2	305.2
	20	0.79	1.5	0.06	310.9	31.7	229.3	404.0	41.2	298.0	573.7	58.5	423.1
	22	0.87	1.5	0.06	413.8	42.2	305.2	537.5	54.8	396.4	763.0	77.8	562.7
	24	0.95	1.5	0.06	547.2	55.8	403.6	711.0	72.5	524.4	1006.2	102.6	742.1
	27	1.06	1.5	0.06	794.3	81.0	585.9	1032.6	105.3	761.6	1451.1	148.0	1070.5
	30	1.18	1.5	0.06	1100.3	112.2	811.5	1430.8	145.9	1055.3	2012.3	205.2	1484.2
	33	1.30	1.5	0.06	1467.1	149.6	1082.1	1907.4	194.5	1406.8	2680.2	273.3	1976.8
	36	1.42	1.5	0.06	1918.2	195.5	1414.8	2493.8	254.3	1839.4	3497.1	356.6	2579.3
	39	1.54	1.5	0.06	2461.5	251.0	1815.5	3198.8	326.2	2359.4	4469.9	455.8	3296.8
	Nominal size		Pitch		Without spring washer 101656								
													
	6	0.24	1	0.04	8.6	0.88	6.4	10.8	1.1	8.0	14.7	1.5	10.8
	8	0.32	1.25	0.05	19.6	2.0	14.5	26.5	2.7	19.5	36.6	3.7	26.8
	10	0.39	1.25	0.05	41.2	4.2	30.4	53.0	5.4	29.1	81.4	8.3	60.0
	12	0.47	1.25	0.05	74.5	7.6	55.0	97.1	9.9	71.6	144.2	14.7	106.3
	14	0.55	1.5	0.06	119.6	12.2	88.2	155.9	15.9	115.0	226.5	23.1	167.1
	16	0.63	1.5	0.06	182.4	18.6	134.5	237.3	24.2	175.0	338.3	34.5	249.5
	18	0.71	1.5	0.06	263.8	26.9	194.6	343.2	35.0	253.2	487.4	49.7	359.5
	20	0.79	1.5	0.06	365.8	37.3	269.8	475.6	48.5	350.8	674.7	68.8	497.6
	22	0.87	1.5	0.06	486.4	49.6	358.8	632.5	64.5	466.5	897.3	91.5	661.8
	24	0.95	1.5	0.06	643.3	65.6	474.5	836.5	85.3	617.0	1183.7	120.7	873.0
	27	1.06	1.5	0.06	934.6	95.3	689.3	1216.0	123.9	894.2	1707.3	174.1	1259.3
	30	1.18	1.5	0.06	1294.5	132.0	954.8	1682.8	171.6	1241.2	2367.3	241.4	1746.0
	33	1.30	1.5	0.06	1726.0	176.0	1273.0	2243.8	228.8	1654.9	3153.8	321.6	2326.1
	36	1.42	1.5	0.06	2256.5	230.1	1664.3	2934.1	299.2	2164.1	4114.0	419.6	3035.0
	39	1.54	1.5	0.06	2896.0	295.3	2135.9	3763.8	383.8	2776.0	5258.3	536.2	3878.3

Remarks:

1. The tolerance on these torque is ± 10%.
2. These torques are for “dry” condition.

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6.6.6 Troubleshooting Guide for Solenoid Control Valves

Trouble symptoms	Possible causes	Remedies
The pump discharge pressure will not build up	1. Unload solenoid not working	Remedies
	2. Sticky plunger in proportioning solenoid of reducing valve, or sticky shuttle in reducing valve	Remedies
	3. Open in lead wire or in solenoid coil	Repair or replace.
	4. Input current to solenoid too small	Check to make sure that solenoid is drawing specified maximum input current.
	5. Unload valve stuck open	• Check unload solenoid for action. • Check unload valve for action.
	6. Spool stuck in flow-divider valve	Disassemble and clean by washing.
Sticky spool	Sticky plunger in proportioning solenoid of reducing valve, or sticky shuttle in reducing valve.	Disassemble and clean by washing. If plunger is sticky, replace solenoid.

6.6.7 Troubleshooting Guide for Solenoid Control Valves

	Components	Trouble	Condition	LED ON-OFF pattern	Threshold	Action	System check lamp
1	-	-	Normal	A	-	No action	OFF
2	Control levers (1) Lift lever (2) Tilt lever (3) Attachment 1 lever (4) Attachment 2 lever	Not in neutral	Control levers are not in their neutral positions when power supply is turned on.	D	128 10 (A/D value)	Turn off corresponding solenoid's outputs.	Flash
		Open circuit	Input level is higher than lever maximum position level.	B	245 to 255 (A/D value)	Turn off corresponding solenoid's outputs.	ON
		Short circuit	Input level is lower than lever minimum position level.	B	0 to 10 (A/D value)	Turn off corresponding solenoid's outputs.	ON
3	Solenoids (1) Lift (2) Tilt (3) Attachment 1 (4) Attachment 2	Open circuit	Abnormal if current is 0 when solenoid output is ON.	C	120 mA or lower	Turn off abnormal solenoid's output.	ON
		Short circuit	Abnormal if solenoid output current level is higher than threshold level.	C	2.4 A or higher	Turn off abnormal solenoid's output.	ON
		Leakage	Abnormal current is detected during emergency operation.	C	140 mA or higher	Turn off all solenoids' outputs	ON
4	Seat switch	Open circuit	Check I/O levels. Abnormal if signal stays OFF.	E	OFF for 15 seconds or longer	Turn off all solenoids' outputs	Flash
5	CPU	Abnormality	(CPU does not run.) (WDT causes CPU reset.)	F	-	Turn off all solenoids' outputs	Irregular
6	Battery voltage	Voltage drop, overvoltage	Voltage is out of specification	C	Lower than 10 V; higher than 32 V	Turn off all solenoids' outputs	ON
7	Setting switch	Check mode	Setting of SW 2 (DIP switch)	G	S1 ON	Start check mode operation (solenoid operation)	(OFF)

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4. Main specifications

Truck model		FD70E
Truck Model		Mitsubishi F20C
Type		Standard (with 2-speed powershift transmission)
Capacity/load center		7000/600 kgf/mm (15432/24 lbf/in.)
Lift, maximum		3300 mm (130 in.)
Lift speed (unloaded/loaded)		470/440 mm/sec (93/87 fpm)
Lowering speed (unloaded/loaded)		550 mm/sec (108 fpm)
Mast tilt angle (forward-backward)		6˚– 12˚
Free lift		205 mm (8.1 in.)
Forward travel speed (1st/2nd)		10/27.5 km/h (6.2/17.1 mph)
Reverse travel speed (1st/2nd)		
Minimum turning radius		3395 mm (133.7 in.)
Minimum intersecting aisle		3050 mm (120 in.)
Front wheel (double-tire)	Size	8.25-15-12PR (1)
	Inflation	0.7MPa (7kgf/cm^2) [101 psi]
Rear wheel	Size	8.25-15-12PR (1)
	Inflation	0.7MPa (7kgf/cm^2) [101 psi]
Relief-valve setting of power steering		10.8 MPa (110 kgf/cm^2) [1567 psi]
Relief-valve setting of control valve		19.1 MPa (195 kgf/cm^2) [2770 psi]
Truck weight		9320 kg (20546 lb)

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1. Inspection point

○: Check or clean

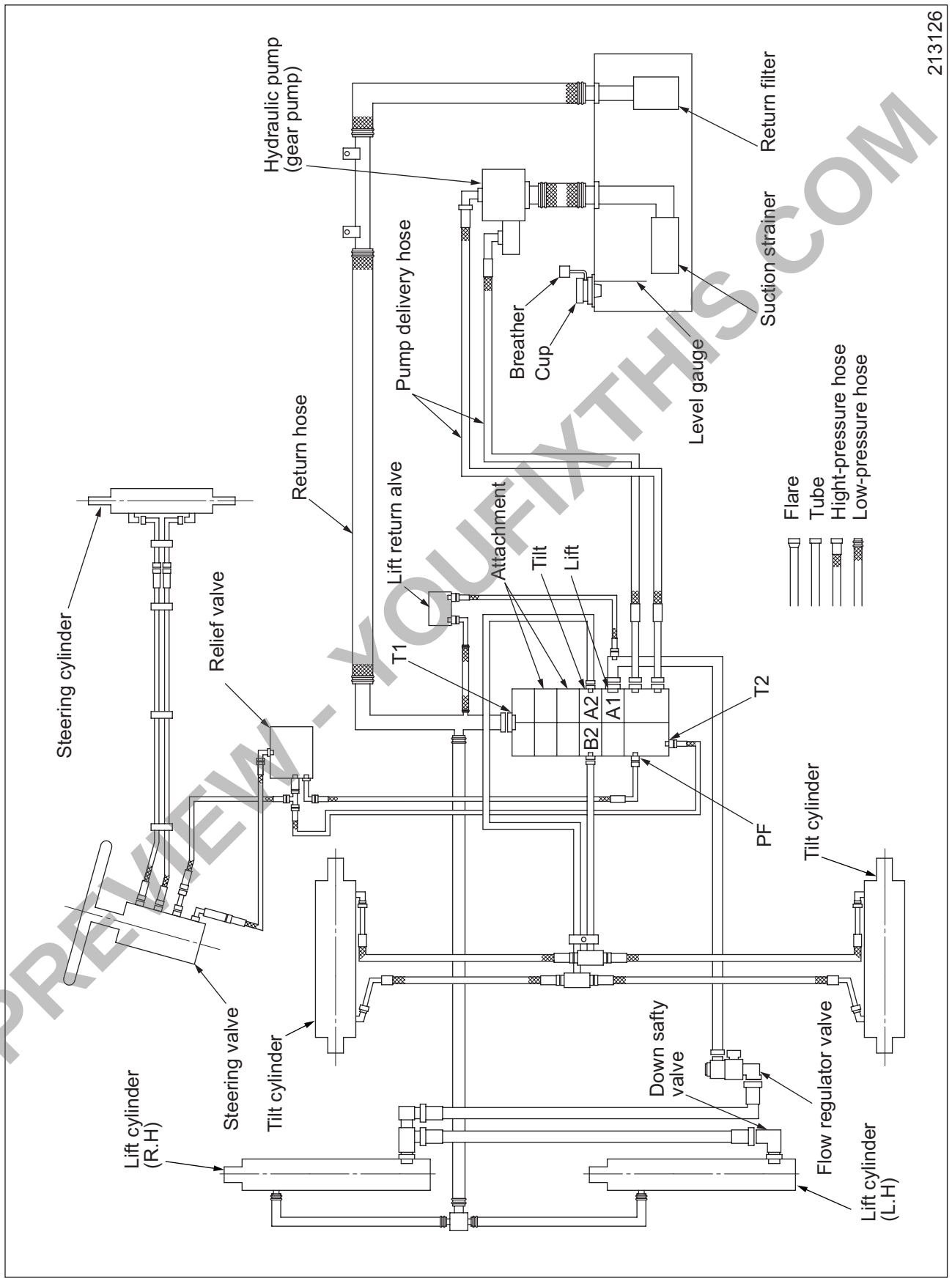
⊗: Replace or adjust

Inspection and maintenance points and items		Procedure	Pre-start	Intervals		Maintenance standards
				Every 200 hours or monthly	Every 2400 hours or 12 months	FD70E
Cooling system	Water leaks	Visual	○	○	○	
	Radiator filler cap - function	Visual/feel		○	○	
	Coolant level	Visual	○	○	○	13.5 L (3.57 U.S. gal.)
	Fan belt - tension and damage	Visual/ measure		○	○	Automatic tension pulley - readjustment
	Cooling fan - damage	Visual/feel		○	○	
	Rubber hoses - damage	Visual/feel		○	○	
Engine operation	Starting and noise	Operation test/listen	○	○	○	
	Idling and acceleration	Tachometer/operation test		○	○	650 rpm
	Exhaust smoke	Visual		○	○	
Valves	All valves - valve clearance	Thickness gage			○	When engine is cold: Intake: 0.25 mm (0.0098 in.) Exhaust: 0.25 mm (0.0098 in.)
Air cleaner	Element - clogging or damage	Visual			⊗	Replace every 6 months or 1200 hours.
Lubrication system	Oil leaks	Visual	○	○	○	
	Oil - level and contamination	Visual/feel	○	⊗	⊗	Replace every month or 200 hours. Capacity: 13 L (790 cu.in)
	Oil filter element - clogging	Check		⊗	⊗	Replace every 1 months or 200 hours.
Governor	No-load maximum speed	Tachometer		○	○	2480 $^{0}_{-50}$ rpm
Fuel system	Fuel leaks	Visual		○	○	
	Fuel filter - clogging	Check			⊗	Replace every 6 months or 1200 hours.
	Injection nozzles - injection pressure and discharge pattern	Nozzle tester			○	11.77 MPa (120.0 kgf/cm^2) [1707.3 psi]
	Injection timing	Operation test			○	BTDC 20˚
	Feed pump - function	Operation test			○	
Compression pressure	All cylinders - measurement	Compression gauge			○	3.23 MPa (32.9 kgf/cm^2) [468.5 psi] (at 300 rpm)

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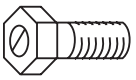
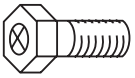
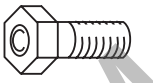
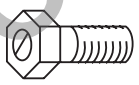
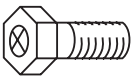
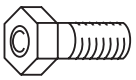
2.9 Piping of Hydraulic System



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2.2 Metric Coarse Thread

	Nominal size		Pitch		With spring washer 101656								
													
	mm	in.	mm	in.	N·m	kgf·m	lbf·m	N·m	kgf·m	lbf·m	N·m	kgf·m	lbf·m
Metric coarse thread	10	0.39	1.5	0.06	33.3	3.4	24.6	43.1	4.4	31.8	67.7	6.9	49.9
	12	0.47	1.75	0.07	58.8	6.0	43.4	76.5	7.8	56.4	115.7	11.8	85.3
	14	0.55	2	0.08	96.4	9.8	70.9	124.5	12.7	91.9	182.4	18.6	134.5
	16	0.63	2	0.08	147.14	15.0	108.5	191.2	19.5	141.0	274.6	28.0	202.5
	18	0.71	2.5	0.10	203.0	20.7	149.7	264.8	27.0	195.3	383.4	39.1	282.8
	20	0.79	2.5	0.10	286.4	29.2	211.2	371.7	37.9	274.1	536.4	54.7	395.6
	22	0.87	2.5	0.10	383.4	39.1	282.8	499.2	50.9	368.2	715.9	73.0	528.0
	24	0.95	3	0.12	492.3	50.2	363.1	640.4	65.3	472.3	924.8	94.3	682.1
	27	1.06	3	0.12	724.7	73.9	534.5	942.2	96.1	695.1	1350.4	137.7	996.0
	30	1.18	3.5	0.14	969.9	98.9	715.3	1259.2	128.4	928.7	1843.7	188.0	1359.8
	33	1.30	3.5	0.14	1328.8	135.5	980.1	1727.0	176.1	1273.7	2477.2	252.6	1827.1
	36	1.42	4	0.16	1676.0	170.9	1236.1	2180.0	222.3	1607.9	3199.9	326.3	2360.1
	39	1.54	4	0.16	2219.2	226.3	1636.8	2884.1	294.1	2127.2	4118.8	420.0	3037.9
	42	1.65	4.5	0.18	2754.7	280.9	2031.8	3581.4	365.2	2641.5	5137.7	523.9	3789.4
	Nominal size		Pitch		Without spring washer 101656								
													
	10	0.39	1.5	0.06	39.2	4.0	28.9	51.0	5.2	37.6	79.4	8.1	58.6
	12	0.47	1.75	0.07	69.6	7.1	51.4	90.2	9.2	66.5	135.3	13.8	99.8
	14	0.55	2	0.08	112.8	11.5	83.2	146.1	14.9	107.8	215.7	22.0	159.1
	16	0.63	2	0.08	172.6	17.6	127.3	224.6	22.9	165.6	323.6	33.0	238.7
	18	0.71	2.5	0.10	239.3	24.4	176.5	311.9	31.8	230.0	451.1	46.0	332.7
	20	0.79	2.5	0.10	336.4	34.3	248.1	437.4	44.6	322.6	630.6	64.3	465.1
	22	0.87	2.5	0.10	392.3	40.0	289.3	587.4	59.9	433.3	842.4	85.9	621.3
	24	0.95	3	0.12	578.6	59.0	426.7	753.2	76.8	555.5	1088.5	111.0	802.9
	27	1.06	3	0.12	852.2	86.9	628.5	1108.2	113.0	817.3	1588.7	162.0	1171.7
	30	1.18	3.5	0.14	1140.5	116.3	841.2	1481.8	151.1	1092.9	2168.3	221.1	1599.2
	33	1.30	3.5	0.14	1563.2	159.4	1153.0	2031.9	207.2	1498.7	2915.5	297.3	2150.4
	36	1.42	4	0.16	1972.1	201.1	1454.6	2564.4	261.5	1891.4	3765.8	384.0	2777.5
	39	1.54	4	0.16	2610.5	266.2	1925.4	3393.1	346.0	2502.6	4845.5	494.1	3573.8
	42	1.65	4.5	0.18	3241.1	330.5	2390.5	4212.9	429.6	3107.3	6044.8	616.4	4458.4

Remarks:

1. The tolerance on these torque is ± 10%.
2. These torques are for “dry” condition.

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7. Troubleshooting

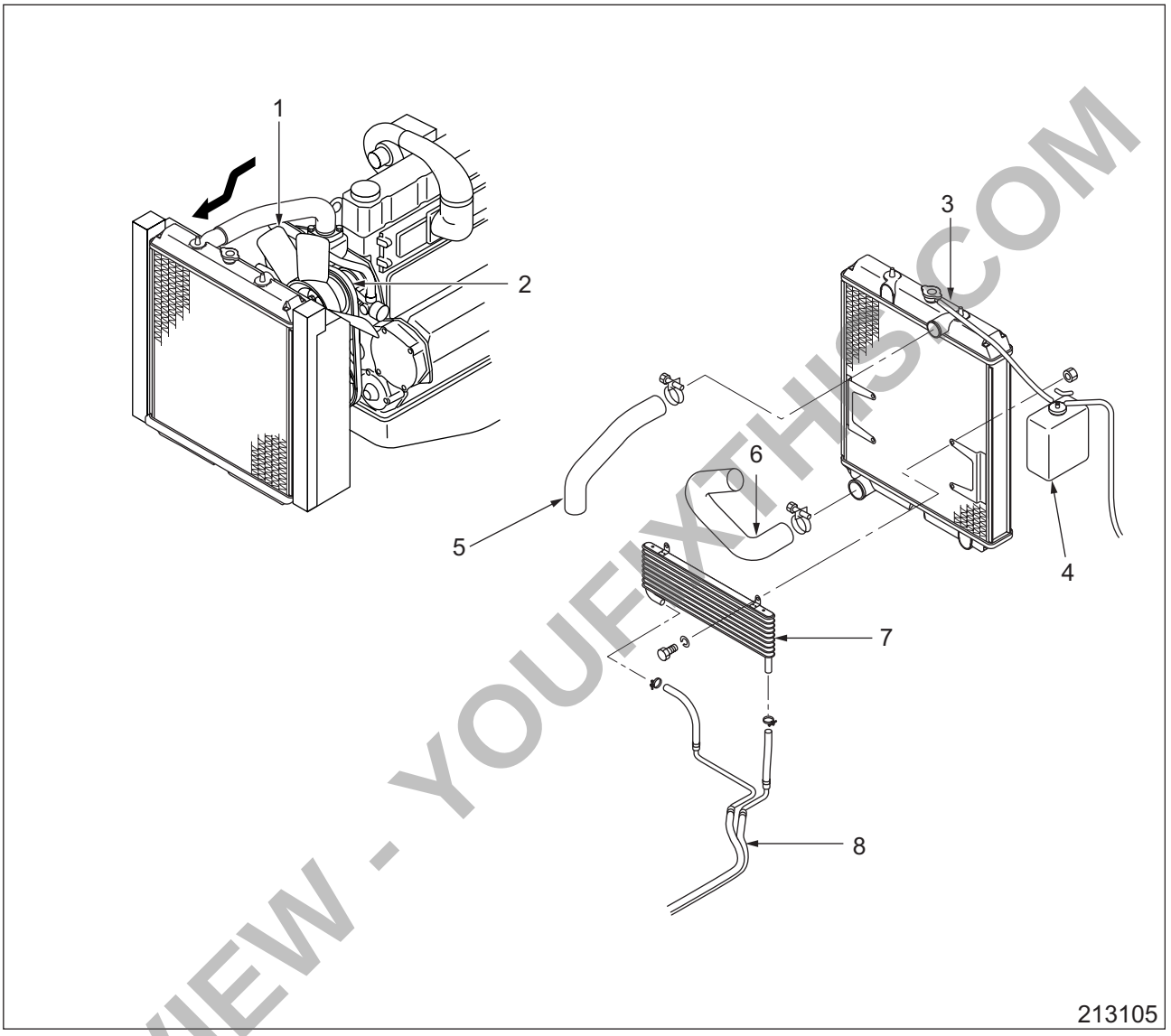
7.1 Starter System

Starter switch	Starter will not crank engine	• Weak or dead battery	• Recharge or replace.
		• Open or short circuit	• Repair or replace.
		• Poor continuity in starter switch	• Replace.
		• Starter or starter relay defective	• Replace.
		• Transmission shift lever is not in neutral position.	• Move lever to neutral position.
	Turning off starter switch will not stop engine	• Open or short circuit	• Repair or replace.
		• Engine stop solenoid defective	• Replace.
		• Control timer defective	• Replace.

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2. Structure



1 Cooling fan
2 Fan belt
3 Radiator
4 Reserve tank
5 Upper hose
6 Lower hose
7 Intercooler
8 Oil pipe

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Inspection and maintenance points and items		Procedure	Pre-start	Intervals		Maintenance standards
				Every 200 hours or monthly	Every 2400 hours or 12 months	FD70E
Starter	Pinion - meshing action	Operation test		○	○	
Alternator	Charging	Operation test/visual		○	○	
Battery	Fluid level	Visual	○	○	○	
	Specific gravity of electrolyte	Hydrometer		○	○	1.26 or more
Electrical wiring	insulator, connectors and battery terminals - looseness, damage or corrosion	Visual/feel	○	○	○	
Steering wheel	Play, looseness, rattle	Feel/measure	○	○	○	15 to 30 mm (0.6 to 1.2 in.) with engine idling
	Response	Operation test	○	○	○	
Gear box	Oil leak	Visual	○	○	○	
	Loose installation	Wrench		○	○	
Rods and arms	Looseness, rattle, bend, damage	Wrench/ visual		○	○	
	Missing of split pin	Visual		○	○	
Knuckle	Rattle in the connection (king pin)	Feel			○	
Steering axis	Bend or damage of steering axis	Visual/feel			○	
Bellcrank	Fit of bellcrank pin and bellcrank	Feel			○	
	Vertical play of bellcrank	Feel			○	
Power steering	Oil leak	Visual	○	○	○	
	Loose installation	Wrench			○	
Brake pedal	Play and height of pedal depressed	Measure	○	○	○	Play: 12 to 31 mm (0.5 to 1.2 in.) Pedal height (to top of pedal pad) 220 mm (8.7 in.)
	Performance	Operation test/measure	○	○	○	5 m (16 ft), maximum with rated load Stroke to the point where brake start working: 38 to 65 mm (1.5 to 2.6 in.)
Parking brake	Performance	Operation test/spring balancer	○	○	○	Lever operation angle 71˚ to 76˚ Operating effort: 245 to 294 N (25.0 to 30.0 kgf) [55.1 to 66.1 lbf]
Brake hoses and pipes	Fluid leak, damage, or installation	Visual	○	○	○	

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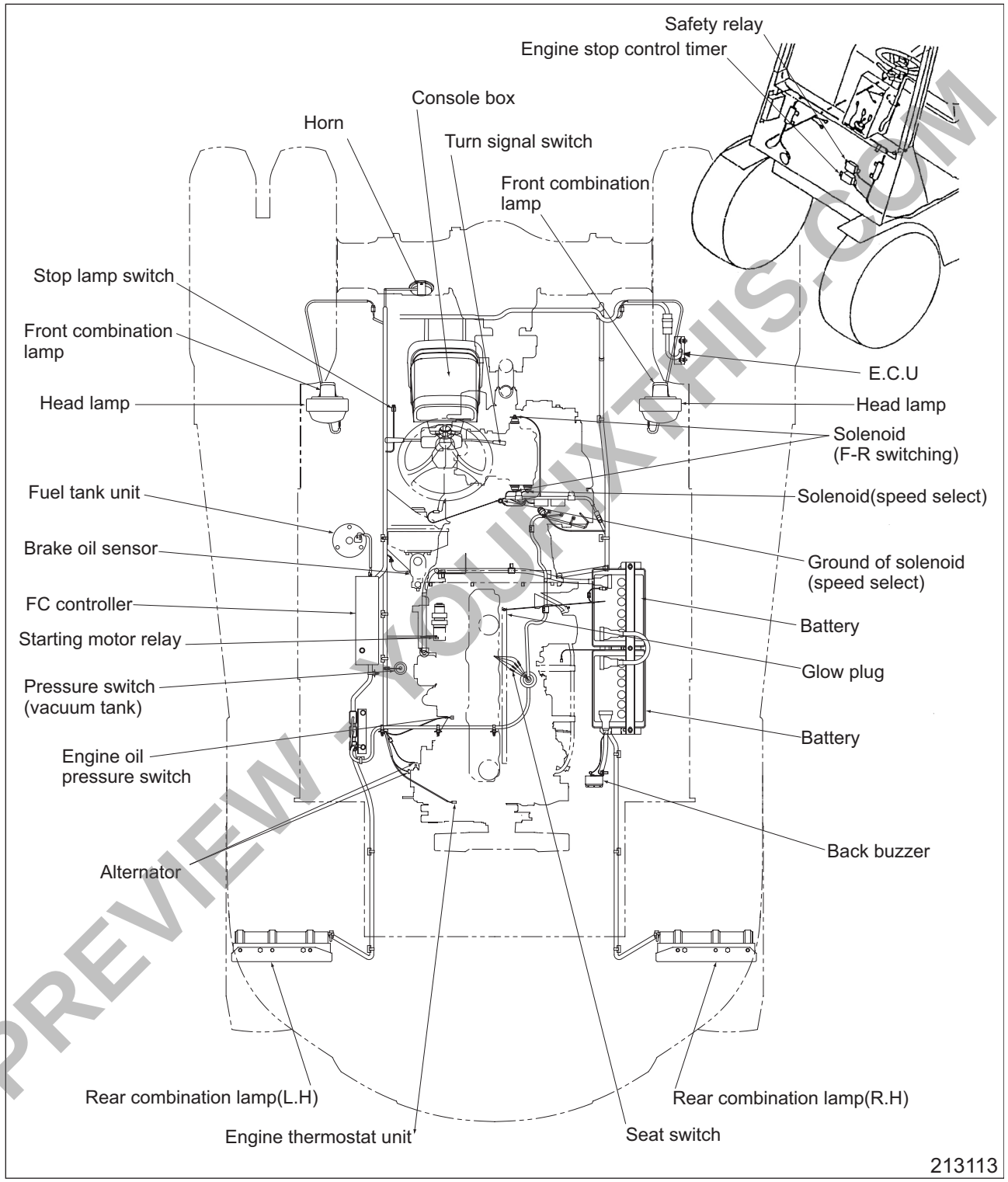
7.2 Gauges

Temperature gauges	Will not indicate at all	• Open or short circuit	• Repair or replace.
		• Gauge internally defective	• Replace.
		• Gauge unit defective	• Replace.
	Will not indicate accurately	• Gauge or gauge unit is not of the specified type.	• Replace.
		• Loose terminal connection	• Repair.
	Will indicate higher than actual temperature	• Wiring between gauge and gauge unit grounded	• Repair.
		• Gauge internally defective	• Replace.
Fuel gauge	Will not indicate at all	• Open or short circuit	• Repair.
		• Gauge internally defective	• Replace.
		• Gauge unit defective	• Replace.
	Will not indicate accurately	• Gauge or gauge unit is not of the specified type.	• Replace.
		• Loose terminal connection	• Repair.
	Will indicate “full” regardless of amount of fuel left in tank	• Wiring between gauge and gauge unit grounded	• Repair.
		• Gauge internally defective	• Replace.
		• Gauge unit defective	• Replace.
	Will indicate “empty” regardless of amount of fuel left in tank	• Open or short circuit between gauge and gauge unit	• Repair.
		• Gauge internally defective	• Replace.
		• Gauge unit defective	• Replace.

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2. Location of Components



NOTE

Every harness should be properly secured to avoid interference or rubbing against other parts.

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Inspection and maintenance points and items		Procedure	Pre-start	Intervals		Maintenance standards
				Every 200 hours or monthly	Every 2400 hours or 12 months	FD70E
Brake fluid	Fluid level	Visual	○	○	○	240 cc (0.06 U.S. gal.)
Brake booster	Performance	Operation test	○	○	○	
Wheel brake	Master cylinder and wheel cylinders - operation, wear, and damage	Overhaul/ visual			⊗	
Brake drum and shoes	Lining-to-drum clearance	Thickness gage		○	○	0.45 to 0.65 (0.017 to 0.026 in.)
	Sliding surfaces of shoes and wear of lining.	Disassemble/calipers			○	10 mm (0.4 in.)
	Drum - wear or damage	Visual/ measure			○	317.5 mm (12.50 in.)
	Deterioration (free length) of return spring	Measure			○	Front side: 90 mm (3.54 in.) Rear side: 93 mm (3.66 in)
	Operation of shoes	Operation test			○	
	Anchor pins - seizure	Visual			○	
Backing plate	Distortion, cracks or damage	Dye check			○	
	Fitting cable - damage	Visual			○	
	Ratchet - wear or damage	Visual			○	
Torque converter drive transmission	Oil level and leak	Visual	○	○	⊗	Replace every 6 months or 1200 hours.
						22 L (5.8 U.S. gal.)
	Strainer - clogging	Visual		○	⊗	Replace or clean every 6 months or 1200 hours.
	Control valve filters				⊗	

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GROUP INDEX

GROUP INDEX	Items
GENERAL INFORMATION	Model View, Truck Models Covered, Serial Number Locations, Main specifications, Chassis and Mast Model Identification, Dimensions
COOLING SYSTEM	Specifications, Structure, Suggestions for Removal and Installation, Inspection and Adjustment
ELECTRICAL SYSTEM	Specifications, Location of Components, Structure, Disassembly and Reassembly, Batteries and Charging, Troubleshooting, Electrical Wiring Diagram
POWER TRAIN	Specifications, Structure, Reduction Ratio Removal and Installation of Engine and Transmission Unit
POWERSHIFT TRANSMISSIONS	Specifications, Structure, Suggestions for Removal and Installation, Disassembly and Reassembly, Readjust, Troubleshooting, Service Data
FRONT AXLE AND REDUCTION DIFFERENTIAL	Specifications, Structure, Suggestions for Removal and Installation, Disassembly and Reassembly, Troubleshooting, Service Data
REAR AXLE	Specifications, Description, Removal and Installation, Disassembly and Reassembly, Adjusting, Troubleshooting, Service Data
BRAKE SYSTEM	Specifications, Structure, Disassembly and Reassembly, Adjustment and Testing, Troubleshooting, Service Data
STEERING SYSTEM	Specifications, Structure and Functions, Removal and Installation, Disassembly and Reassembly, Troubleshooting, Service Data
HYDRAULIC SYSTEM	Specifications, Structure and Functions, Removal and Installation, Disassembly and Reassembly, Inspection and Adjustment, Testing, Troubleshooting, Service Data
MASTS AND FORKS	Specifications, Structure, Operation of Triplex Mast, Suggestions for Removal and Installation, Disassembly and Reassembly, Readjust, Troubleshooting, Service Data
FORK POSITIONER	Applicable Attachment Models, Specifications, Structure, Suggestions for Removal and Installation, Disassembly and Reassembly, Troubleshooting, Service Data
SIDE SHIFTER	Applicable Attachment Models, Specifications, Structure, Suggestions for Removal and Installation, Disassembly and Reassembly, Troubleshooting, Service Data
SERVICE DATA	Inspection Point, Tightening Torque of Standard Bolts, Periodic Replacement Parts, Lubrication Standards, Weight of Major Components, Special Tools

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⚠WARNING

The proper and safe lubrication and maintenance for these forklift trucks, recommended by Mitsubishi Forklift Trucks, are outlined in the OPERATION & MAINTENANCE MANUAL for these trucks.

Improper performance of lubrication or maintenance procedures is dangerous and could result in injury or death. Read and understand the OPERATION & MAINTENANCE MANUAL before performing any lubrication or maintenance on these trucks.

⚠WARNING

Do not operate these trucks unless you have read and understood the instructions in the OPERATION & MAINTENANCE MANUAL. Improper truck operation is dangerous and could result in injury or death.

The serviceman or mechanic may be unfamiliar with many of the systems on this truck. This makes it important to use caution when performing service work. A knowledge of the system and/or components is important before the removal or disassembly of any component.

Because of the size of some of the truck components, the serviceman or mechanic should check the weights noted in this Manual. Use proper lifting procedures when removing any components.

Following is a list of basic precautions that should always be observed.

(1) Read and understand all warning plates and decals on the truck before operating, lubricating or repairing the product.

(2) Always wear protective glasses and protective shoes when working around trucks. In particular, wear protective glasses when pounding on any part of the truck or its attachments with a hammer or sledge. Use welders gloves, hood/goggles, apron and other protective clothing appropriate to the welding job being performed. Do not wear loose-fitting or torn clothing. Remove all rings from fingers when working on machinery.

(3) Do not work on any truck that is supported only by lift jacks or a hoist. Always use blocks or jack stands to support the truck before performing any disassembly.

(4) Lower the forks or other implements to the ground before performing any work on the truck. If this cannot be done, make sure the forks or other implements are blocked correctly to prevent them from dropping unexpectedly.

(5) Use steps and grab handles (if applicable) when mounting or dismounting a truck. Clean any mud or debris from steps, walkways or work platforms before using. Always face truck when using steps, ladders and walkways. When it is not possible to use the designed access system, provide ladders, scaffolds, or work platforms to perform safe repair operations.

(6) To avoid back injury, use a hoist when lifting components which weight 23 kg (50 lb.) or more. Make sure all chains, hooks, slings, etc., are in good condition and are of the correct capacity. Be sure hooks are positioned correctly. Lifting eyes are not to be side loaded during a lifting operation.

(7) To avoid burns, be alert for hot parts on trucks which have just been stopped and hot fluids in lines, tubes and compartments.

(8) Be careful when removing cover plates. Gradually back off the last two bolts or nuts located at opposite ends of the cover or device and pry cover loose to relieve any spring or other pressure, before removing the last two bolts or nuts completely.

(9) Be careful when removing filler caps, breathers and plugs on the truck. Hold a rag over the cap or plug to prevent being sprayed or splashed by liquids under pressure. The danger is even greater if the truck has just been stopped because fluids can be hot.

(10) Always use tools that are in good condition and be sure you understand how to use them before performing any service work.

(11) Reinstall all fasteners with same part number. Do not use a lesser quality fastener if replacements are necessary.

(12) If possible, make all repairs with the truck parked on a level, hard surface. Block truck so it does not roll while working on or under truck.

(13) Disconnect battery and discharge any capacitors (electric trucks) before starting to work on truck. Hang “Do not Operate” tag in the Operator’s Compartment.

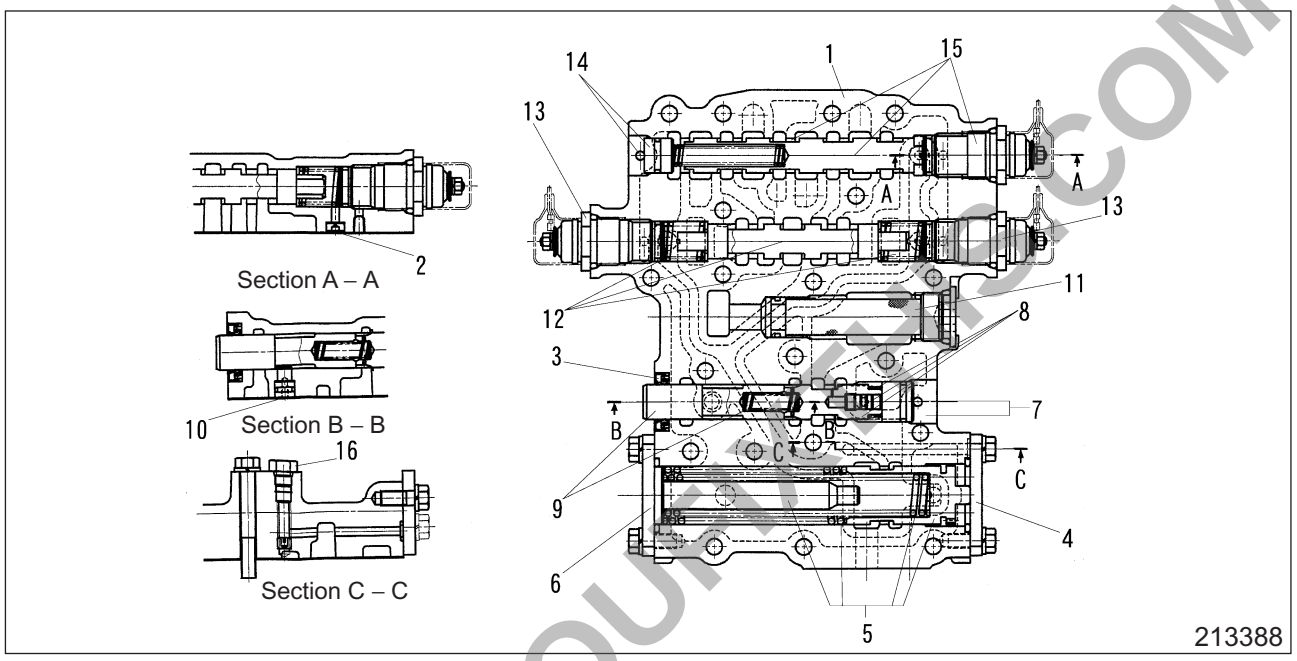
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4.3.3 Reassembly

(1) Preparation

Wash the oil passages in the valve housing completely and make sure no oil passage is restricted before reassembly.



(2) Reassembly sequence

1 Valve body
2 Oil filter
3 Oil Seals
4 Plate, O-ring
5 Accumulator piston, Inner spring, Outer spring, Spring seat
6 Plate, O-ring
7 Plug, O-ring, Roller bearing
8 Clutch valve, Spring, Slug
9 Spring, Clutch valve plunger
10 Stopper pin, O-ring
11 Oil filter, O-ring
12 Spring, Directional valve
13 Solenoid valve
14 Plug, O-ring, Roller bearing
15 Spring, Speed (H/L) valve, Solenoid valve
16 Plug, O-ring

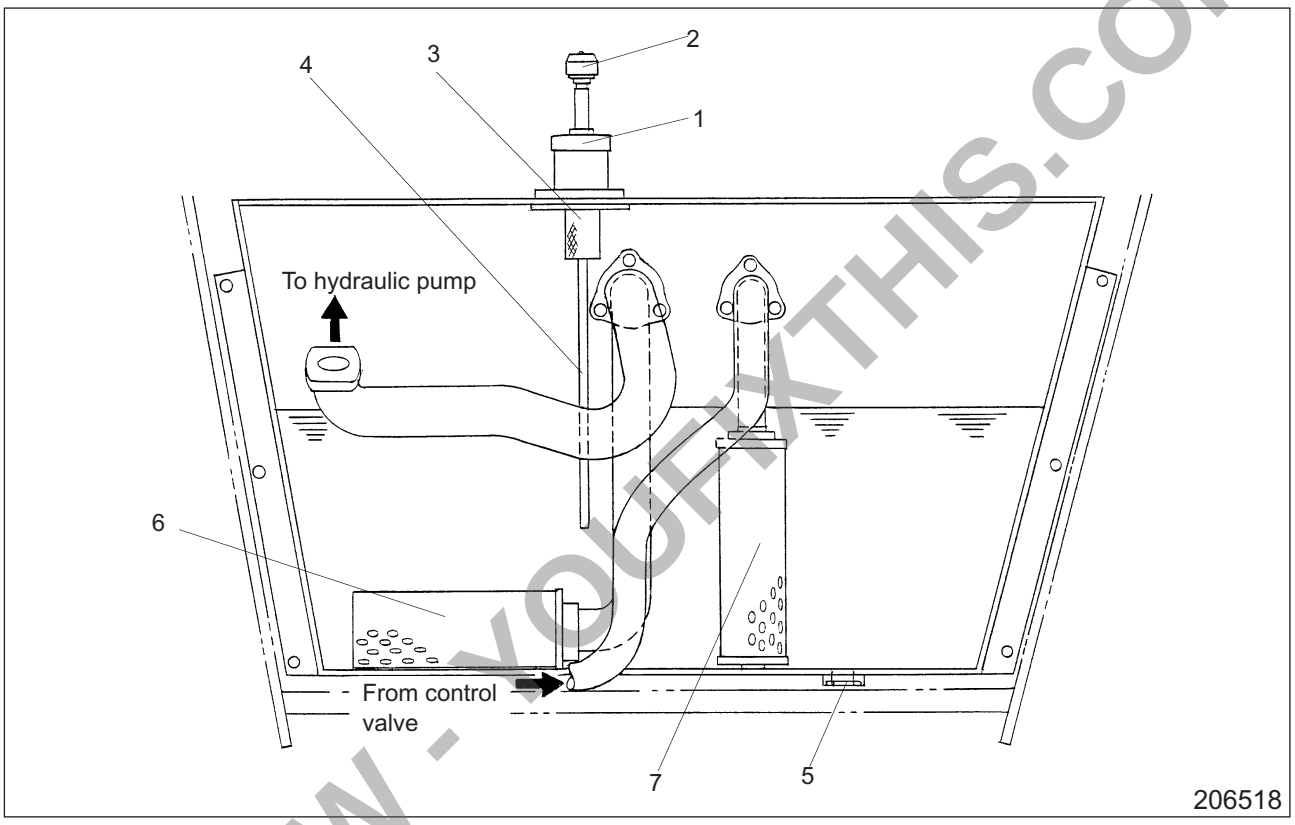
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The lift control valve section controls the operation of the lift cylinders 8 and 9 to raise or lower the mast.
The tilt control valve section controls extension and retraction of the tilt cylinders 6 and 7 to cause the mast to lean forward or backward.

The attachment control valve section controls the operation of the attachment actuators.
The return oils from the steering valve and mast control cylinders go to the hydraulic tank through the control valve's end cover section 11 and return hose 12.

2.2 Hydraulic Tank



1 Cap
2 Air breather
3 Strainer
4 Oil level gage
5 Drain plug
6 Suction strainer
7 Return filter

The hydraulic tank is an all-welded structure and is bolted to the middle of the right-hand side frame member. Oil is lifted from the tank through suction strainer (105 μ) by the gear pump. The oil returning from the lift cylinders joins the oil returning from the hydraulic and steering control valves and returns to the tank through return filter (25 μ).

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