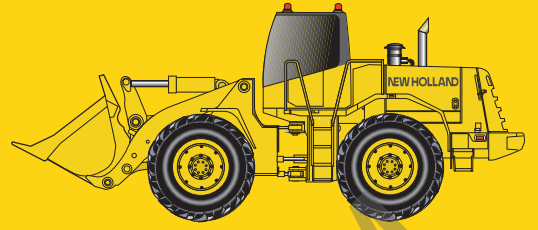


NEW HOLLAND CONSTRUCTION LW90



SERVICE MANUAL



NEW HOLLAND

75131004

March 1999

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SAFETY RULES

GENERALITIES

Read this Manual carefully before starting, operating, maintaining, fuelling or servicing the machine.

Read and comply with all safety precautions before any intervention.

Do not allow unauthorised personnel to operate or service this machine.

Do not wear rings, wrist watches, jewellery, loose or hanging garments, such as ties, torn clothing, scarves, unbuttoned or unzipped jackets that can get caught in moving parts. Wear certified safety clothes such as: hard hat, no-slip footwear, heavy gloves, ear protection, safety glasses, reflector vests, respirators. Ask your employer about specific safety equipment requirements.

Keep the operator's compartment, step plates, grab-rails and handles clean and clear of foreign objects, oil, grease, mud or snow to minimize the danger of slipping or stumbling. Remove mud or grease from your shoes before attempting to mount or operate the machine.

Do not jump on or off the machine. Always keep both hands and one foot, or both feet and one hand in contact with steps and grab rails.

Do not use controls or hoses as hand holds when climbing on or off the machine. Hoses and controls are movable parts and do not provide solid support. Besides, controls may be inadvertently moved and cause unexpected movement of the machine or its attachments.

Never operate the machine or its attachments from any position other than sitting in the driver's seat.

Keep head, body, limbs, hands and feet inside the operator's compartment at all times to reduce exposure to external hazards.

Be careful of possible slippery conditions of the steps and hand rails as well as of the ground around the machine.

Do not leave the machine until it has come to a complete stop.

Check the seat safety belt at least twice per year and replace it if it shows signs of wear, fraying or other weakness that could lead to failure.

STARTING

NEVER START OR OPERATE A FAILED MACHINE. Before operating the machine, always ensure that any unsafe condition has been satisfactorily corrected.

Check brakes, steering and attachment controls before moving off. Report any malfunctioning part or system to the maintenance managers for proper action.

Ensure all protective guards and panels as well as all safety devices provided are in place and in good operating condition.

Ensure that nobody is in the machine operating range before moving off or operating the attachment. **WALK COMPLETELY AROUND** the machine before mounting. Sound the horn.

Before starting machine, check, adjust and lock the driver's seat for maximum comfort and control of the machine.

Fasten your seat belts(when fitted).

Obey all flag signals and signs.

Due to the presence of flammable fluids on the machine, never check or fill fuel tanks or accumulator batteries near fires, open flames, or sparks.

REMEMBER THAT SPECIAL STARTING FLUIDS ARE FLAMMABLE. Scrupulously follow recommendations printed on the containers and in this Manual.

DO NOT PUNCTURE OR BURN CONTAINERS.

Containers must be stored in fresh, well ventilated places and out of the reach of unauthorised persons. Strictly follow the instructions provided by the Manufacturer.

Never use these products near fires, open flames, or sparks.

OPERATING

Check wheel and rim retainers before each working shift. If necessary, tighten to the torque specified.

Do not run the engine of this machine in closed buildings without proper ventilation capable to remove harmful exhaust gases.

Roll Over Protective Structures (ROPS) are required on wheel or crawler loaders, dozers, or graders. **NEVER OPERATE** the machine if such protective structure is removed.

Keep the operator's compartment free of foreign objects, especially if not firmly secured. Never use the machine to transport objects, unless proper securing points are provided.

DO NOT CARRY RIDERS ON THE MACHINE

Study and familiarize with escape routes alternate to normal exit routes.

According to law provisions, seat belts must be fitted with Roll Over Protection Structures or cabs. Keep safety belts fastened during operation.

For your personal safety, do not climb on or off the machine while it is in motion.

Make sure that bystanders are clear of the machine operating range before starting the engine and operating the attachment. Sound the horn. Obey all indications provided by flags, signs and signals.

DO NOT COAST OR FREEWHEEL down hills. Engage the most suitable gear speed to keep the machine under control.

SPECIFICATIONS - WHEEL LOADER W90

IDENTIFICATION - 2620.080.001

MARKING: W90

ENGINE

Net power at the flywheel 63 kW
 Maximum torque speed 1400 rpm
 Maximum power speed 2100 rpm
 Make and model Fiat 8045.25.291
 Diesel type, 4 stroke, direct injection, turbocharged
 Number of cylinders 4
 Bore x stroke 104 x 115 mm
 Total displacement 3908 cm³
 Injector setting 260 + 12 bar
 Valve/rocker operation lash:
 - intake 0,30
 - exhaust 0,30
 Firing order 1-3-4-2

ENGINE SPEEDS

Minimum idle speed (no load) 785 + 865 rpm
 Maximum idle speed (no load) 2250 + 2350 rpm
 Converter stall speed 2090 + 2190 rpm
 Steering stall at idle speed > 600 rpm
 Attachment stall 2100 + 2200 rpm
 Full stal 1465 + 1665 rpm
 Minimum starting temperature: - 15° C
 Engine coolant high temperature sender
 setting 101 ± 1°C
 Engine oil low pressure switch
 setting 0.5 ± 0.1 bar

TORQUE CONVERTER

Type single-stage, single-phase
 Main convertor pressure 5 bar
 Convertor safety valve pressure 8.5 bar

TRANSMISSION

Maximum ground speeds (forward/reverse) in kph
 (with 15.5R25 tyres):

Forward speed	Kph	Reverse speed	Kph
1 st	7.23	1 st	7.17
2 nd	13.49	2 nd	13.37
3 rd	34.20	3 rd	33.90
-	-	-	-

Oil pump flow rate (at 2100 rpm) 74 lt/min
 Main pressure on the control valve 17 + 20 bar
 Transmission disengagement sensor 15 ± 1 bar
 Transmission induction sensors to gear teeth adjust
 clearance 0.5 + 0.8 mm
 Transmission oil high temperature sensor setting ..
 122 ± 3 °C

AXLES

Axles complete with disc brakes in oil bath.
 Self-locking differentials.
 Planetary final drives.
 Stiff front axle, support structure type
 - reduction ratio 1 : 22
 Oscillating rear axle, support structure type
 - reduction ratio 1.: 22

TYRES

Type tubeless
 Radial type MICHELIN 15.5 R25 XTLA
 Inflating pressure
 - Work: front = 2.75
 rear = 1.50 bar
 - Transfer: front = 2
 rear = 2 bar
 Wheel tightening torque 86 daNm

BRAKES

Brake pump flow rate 23.8 lt/min
 Accumulator recharge start pressure 80 bar
 Accumulator recharge end pressure ... 95 +105 bar
 Accumulator pre-charge pressure (0.75 lt) ... 47 bar
 Transmission disengagement pressure switch
 setting 15 ± 1 bar
 Brake oil low pressure sensor setting ... 60 ± 5 bar
 Brake lights pressure switch setting ... 1.8 ± 0.5 bar
 Parking brake applied pressure switch setting
 ON 8 bar - OFF 12 bar

STEERING SYSTEM

Cylinders 2 double-acting
 - bore x stroke 60 x 395 mm
 Stand-by/main priority valve setting 12 bar

NUTS (ZNT)					SCREWS (ZNT / DEIDR)		
Strength grade: 10 (R 80)					Strength grade: 10.9 (R 100)		
Diameter and pitch mm	normal daNm	low type daNm	with polyamide ring		Diameter and pitch mm	normal ZNT daNm	self-locking ZNT daNm
			normal daNm	low type daNm			
M6 x 1	1.3	1.2	-	-	M6 x 1	1.3	-
M8 x 1.25	3.2	2.6	3.9	3.2	M8 x 1.25	1.3	3.5
M10 x 1.25	7.2	5.2	8.2	6.2	M10 x 1.25	7.1	7.9
M10 x 1.5	6.5	5	7.7	6	M10 x 1.5	6.5	7
M12 x 1.25	13	8.7	14.5	10.2	M12 x 1.25	12.7	13.9
M12 x 1.75	11	8.1	12.9	9.6	M12 x 1.75	11	12
M14 x 1.5	19.5	13	21.6	15	M14 x 1.5	20	22
M14 x 2	18	12.5	20	14.6	M14 x 2	18	19
M16 x 1.5	30	17	34	20	M16 x 1.5	30	33
M 16 x 2	-	-	-	-	M16 x 2	-	-
M18 x 1.5	45	25	50	29	M18 x 1.5	45	48
M18 x 2.5	-	-	-	-	M18 x 2.5	-	-
M20 x 1.5	60	30.5	64.5	35	M20 x 1.5	60	65
M20 x 2.5	-	-	-	-	M20 x 2.5	-	-
M22 x 1.5	80	41	-	-	M22 x 1.5	80	90
M22 x 2.5	-	-	-	-	M22 x 2.5	-	-
M24 x 2	100	47	108	52.5	M24 x 2	100	110
M24 x 3	-	-	-	-	M24 x 3	-	-
M27 x 2	95	40.1	-	-	M27 x 2	100	-
M30 x 2	130	49.4	-	-	M30 x 2	140	-
M33 x 2	170	-	-	-	M33 x 2	190	-
M36 x 3	220	-	-	-	M36 x 3	240	-

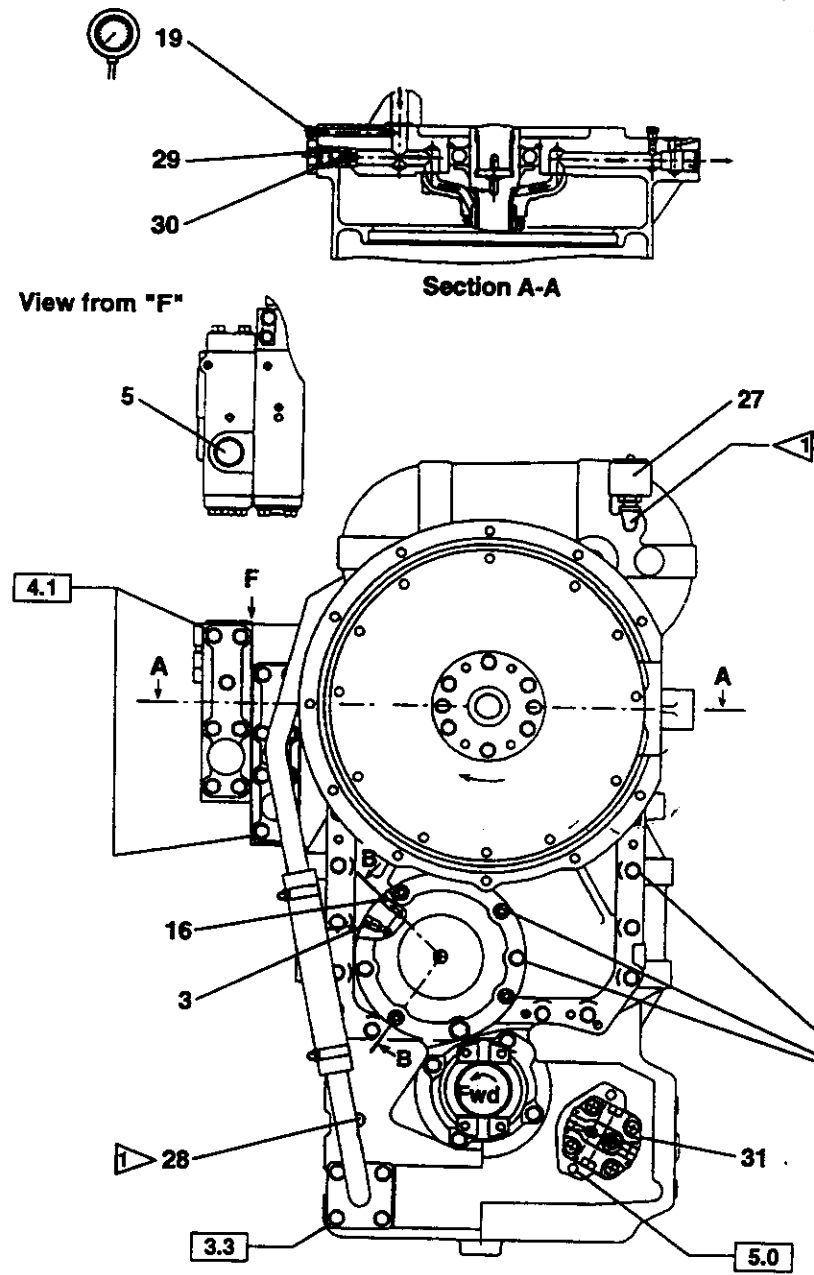
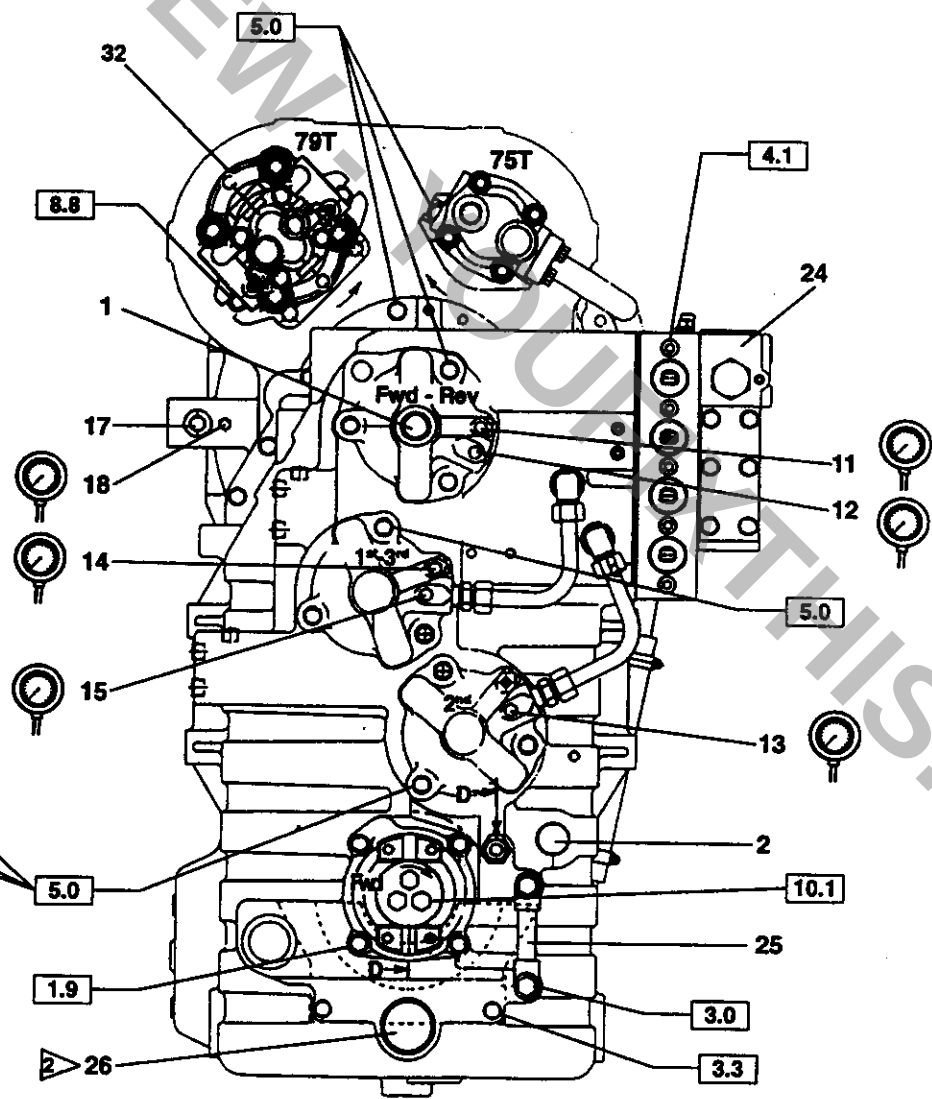
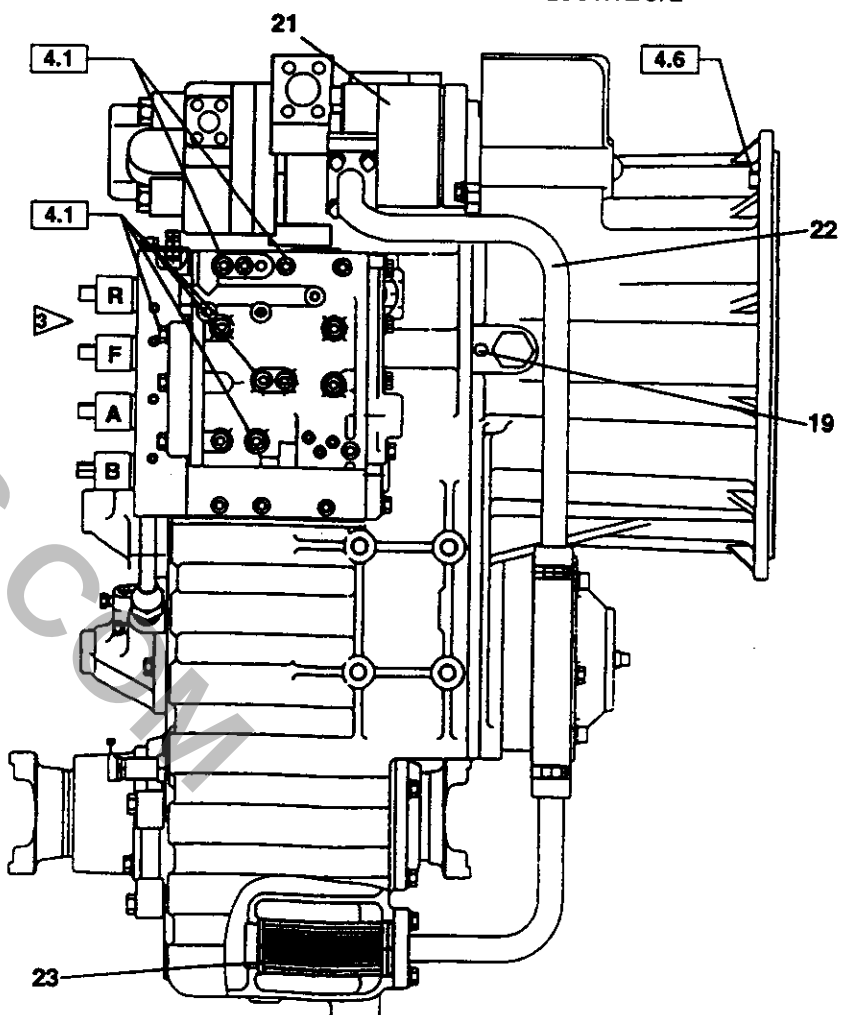
Carefully read personal and machine SAFETY PRECAUTIONS at the beginning of this Manual

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Clutch oil pressure: 17 - 20 bar
Safety valve opening pressure: 7.2 bar

daNm Tightening torque

 Pressure test port



Notes:

1  Threads: LOCTITE 572

2  Outer diameter: LOCTITE 572

3  Control valve solenoid excitement table
●: ENERGISED

	Sol. Fwd	Sol. Rev	Sol. A	Sol. B
3 rd Fwd	●			
2 nd Fwd	●		●	●
1 st Fwd	●		●	
N				
1 st Rev		●	●	
2 nd Rev		●	●	●
3 rd Rev		●		

Note -  Pressure port plug threads: LOCTITE 572

Note - Sections B-B and D-D: see next page.

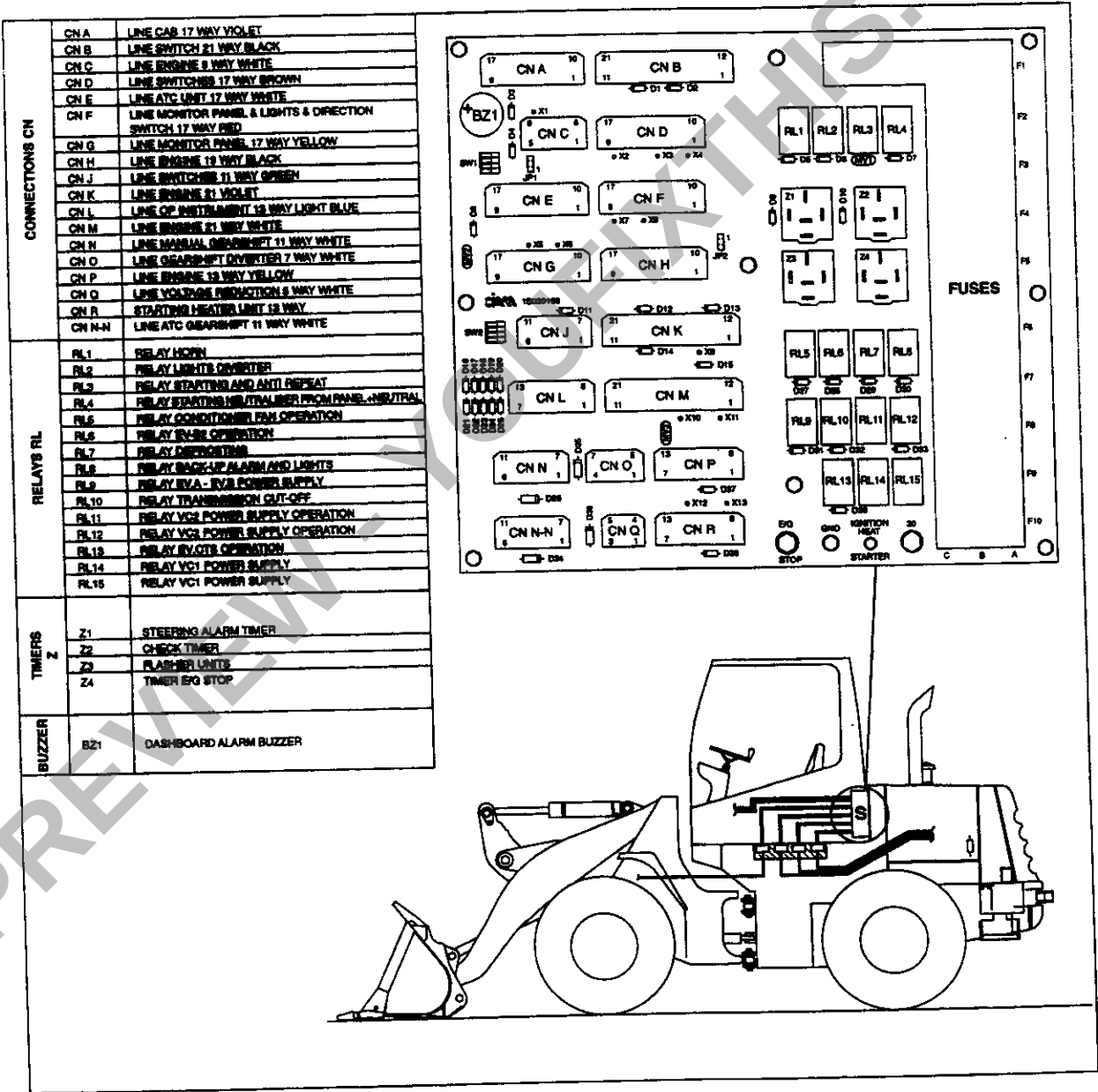
Fig. 2-3 Converter/transmission assembly

7.2 LOGIC BOARD

The logic board is located inside the rear panel behind the operator's seat. To reach it, loosen the two retaining knobs. All the components of the machine are connected to the board by the "CN" connections.

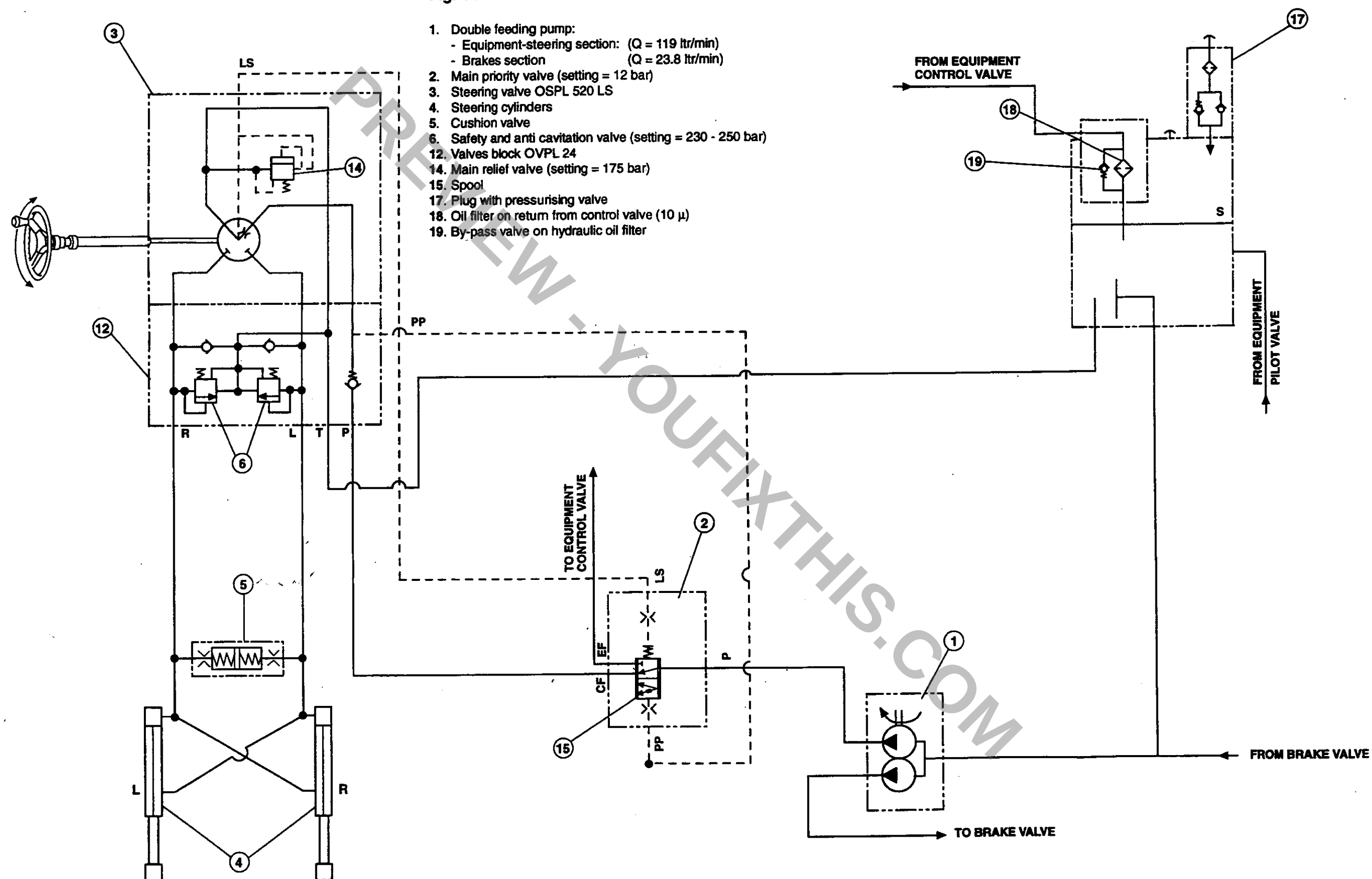
Also, the fuses, the solenoid switches ("RL" relays), timers "Z" the cab buzzer and two switches "SW1" and "SW2" to divert the gearshift control from manual to mechanic and viceversa, are located.

7.2.1 CONNECTIONS - RELAYS - TIMERS - BUZZER



S. Logic board.

Carefully read personal and machine SAFETY PRECAUTIONS (at the beginning of this manual)

Fig. 4-2 STEERING SYSTEM DIAGRAM

2.6.3. Troubleshooting

2.6.3.1 Torque convertor

Problem	Possible Cause	Inspection	Remedy
Overheating or loss of power	Low oil level	Check oil level with dipstick	Top up to specific level
	Improper oil used	Check oil type	Change to specified oil
	Oil cooler line malfunction	Check coolant for dirt	Clean
	Defective oil seal ring	Measure oil pressure at inlet port of torque convertor	Disassemble and replace parts
		Check breather for oil splash	Disassemble and replace parts
	Safety valve malfunction	Measure oil pressure at inlet port of torque convertor	Disassemble and replace part
	Broken bearing	Check for foreign matter in transmission drain	Disassemble and replace parts
		Check filter and oil	Disassemble and replace parts
	Low charge pump output	Check transmission strainer for clogging	Clean
		Measure oil pressure at inlet port of torque converter	Replace pump
		Measure transmission clutch oil pressure	Replace pump
	Excessive wear	Check operating conditions and modes	Use properly
	Transmission failure	See "2.6.3.2 TRANSMISSION"	
Oil leakage (from the flywheel)	Defective oil baffle seal	Check for oil leakage in the flywheel	Replace parts
	Defective oil baffle O-ring	Check for oil leakage in the flywheel	Replace parts
Excess noise	Broken bearing	Check for foreign matter in transmission drain	Disassemble and replace parts
		Check filter and oil	Disassemble and replace parts
	Broken gear or improper backlash	Check with noise detector	Disassemble and replace parts
	Broken pump or drive year	Check with noise detector	Replace pump
	Aerated oil	Check oil for aeration	Retighten piping or replace parts
	Improper oil used	Check oil type	Change to specified oil

Carefully read personal and machine SAFETY PRECAUTIONS at the beginning of this Manual

2.6. TRANSMISSION DISASSEMBLY/RE-ASSEMBLY

2.6.1. DISASSEMBLY

Note: When disassembling the transmission, use a bench, a hoist (transmission weight: 415 kg) and eyebolts (M16 and M10) for your safety and easy maintenance.

2.6.1.1 Disassembling the torque converter

a) Removing the Torque Converter

1. Attach eyebolts (M16) into the tapped holes on the top surface of the transmission housing and hoist the torque converter. Remove the drain plug to drain off oil. Oil: 17 lt.

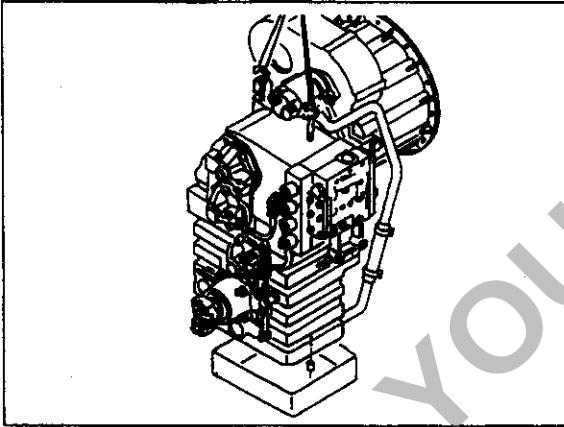


Fig. 2-33

2. Remove the suction tube (1) and the charge pump (2). If they are hard to remove, tap them with a soft mallet. Remove the pump sleeve from inside the converter housing.

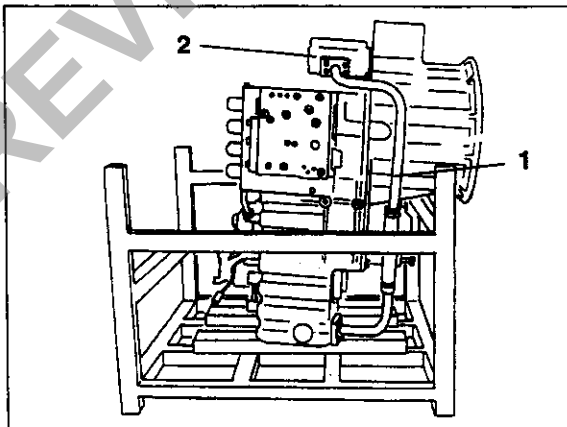


Fig. 2-34

3. Disassemble the parking brake as follows (in the case of split-type housing).
Note: When the piston housing is separate from the brake housing

- 1) Remove the plug from the cover center and screw in the brake releasing bolt.

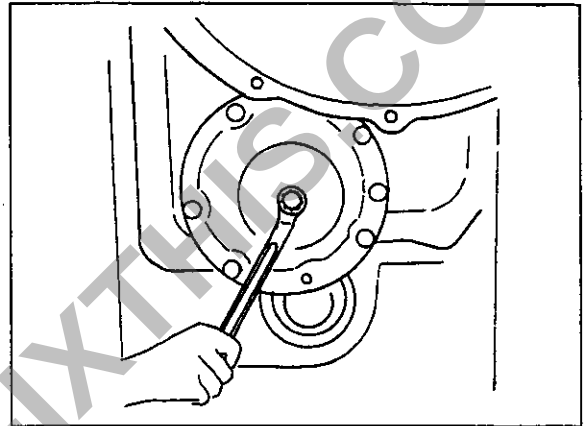


Fig. 2-35

- 2) Remove the four Allen screws and remove the cover and piston housing as a set. Before disassembly, put match marks on the case outer side. Do not loosen the two hex headed bolts.

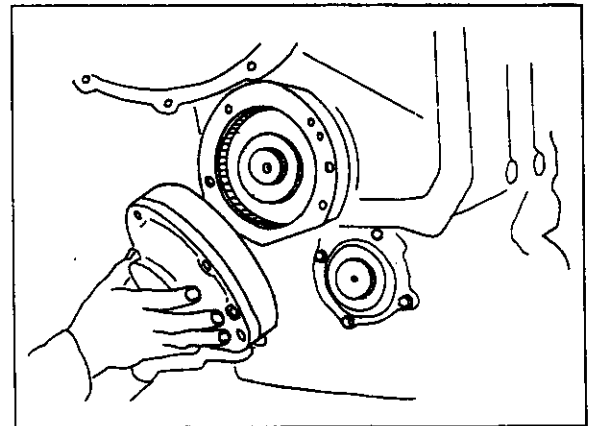


Fig. 2-36

2.1 GENERAL DESCRIPTION

The drive line is composed of the control unit (torque converter and transmission assembly), drive shafts, front and rear axles and tyres.

Engine power is transmitted to the convertor-transmission unit, where revolutions are reduced and torque increased.

Power transmitted to each axle reaches the tyres through the wheels and sets the loader in motion. The diagram shows the drive line of the loader.

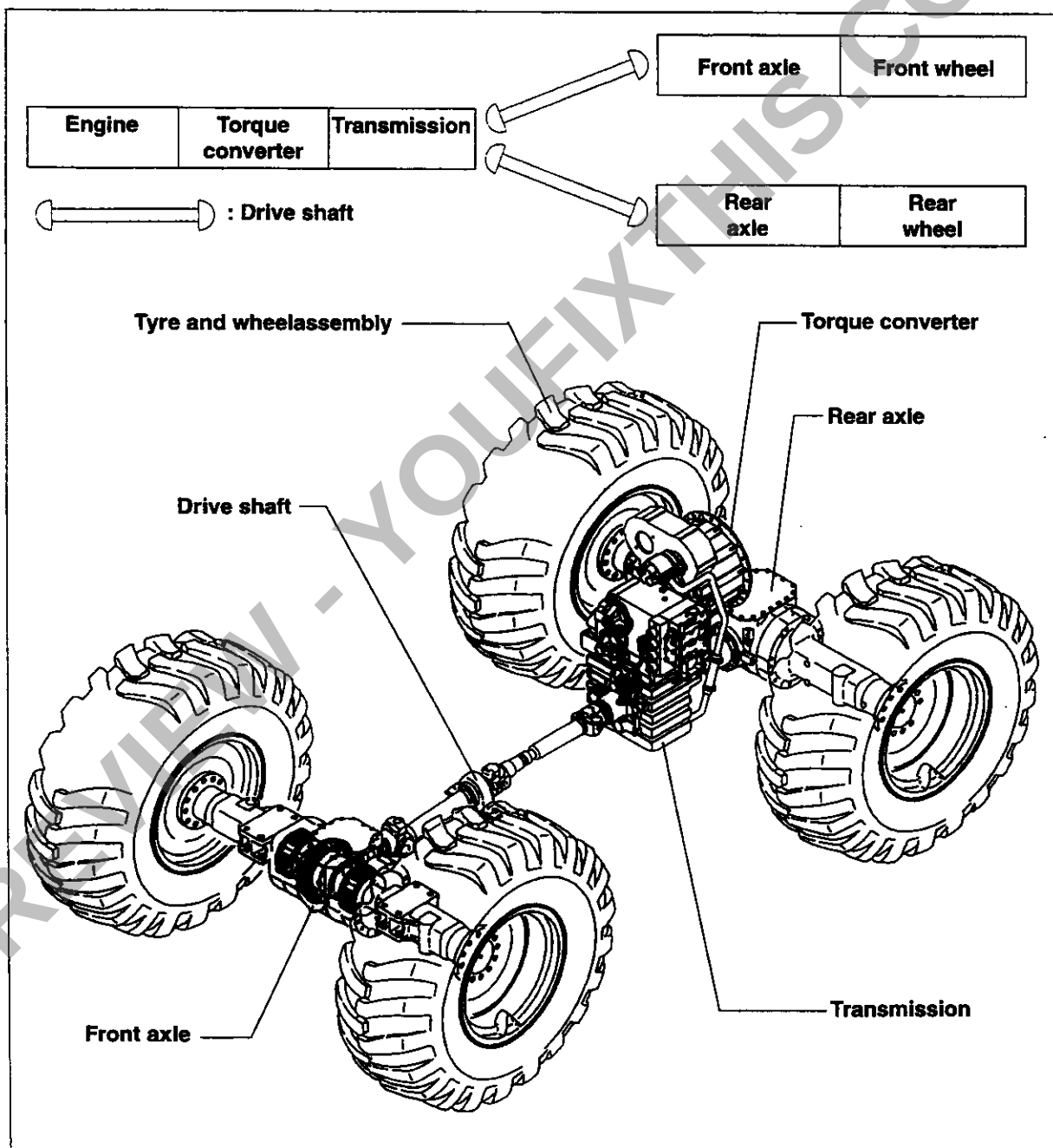
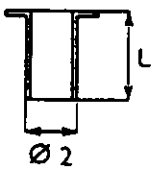
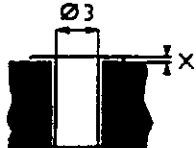
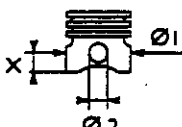


Fig. 2-1 Drive line components

1.3 SPECIFICATIONS AND ASSEMBLY CLEARANCES

CYLINDER ASSEMBLY AND CRANKING ELEMENTS		mm
	Cylinder sleeve seats: Ø 1	106.85 + 106.90
	Cylinder sleeves: outside diameter Ø 2 length L	107.02 + 107.05 198.00 + 198.50
	Cylinder sleeve to block seat	0.2
	Outside diameter Ø 2	0.2
	Cylinder sleeves: inside diameter Ø 3 protrusion X	104.000 + 104.024
	Pistons: measuring height X outside diameter Ø 1 piston pin seat Ø 2	12 103.870 + 103.852 38.000 + 38.006
	Piston to cylinder sleeve clearance	0.130 + 0.172
	Piston diameter Ø 1	0.6
	Piston protrusion X	0.64 + 0.97
	Piston pin Ø 3	37.984 + 37.990
	Piston pin to pin seat clearance	0.010 + 0.022
	Piston ring grooves X 1* X 2 X 3	2.73 + 2.70 2.55 + 2.57 4.03 + 4.05
* dimension taken at 101 mm dia.		

Carefully read personal and machine SAFETY PRECAUTIONS at the beginning of this Manual

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