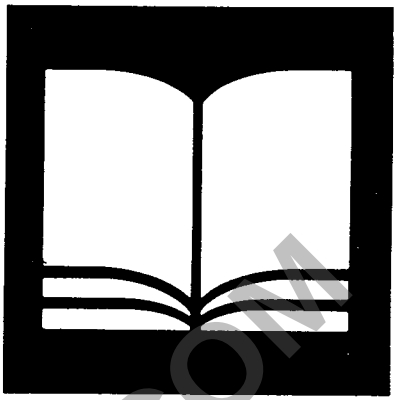


Section 1 HOW TO USE

CONTENTS

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⚠ SAFETY INFORMATION

UNDERSTAND CORRECT MACHINE OPERATION AND SERVICE

Only qualified people should operate the machine.
Learn the location and purpose of all controls, instruments, indicator lamps, and labels.
Be sure you understand a service procedure before you work on the excavator.
Do not run the engine while you service the excavator unless the procedure is approved.
Keep hands away from moving parts.
Unauthorized modifications to the excavator may impair the function and/or safety and affcect excavator life.



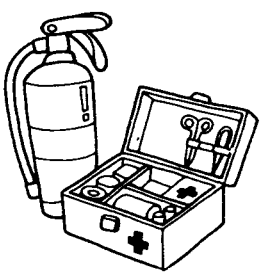
WEAR PROTECTIVE CLOTHING

Wear fairly tight clothing . . . and safety equipment.



USE SAFETY EQUIPMENT

Fasten a first-aid kit and a fire extinguisher to the machine.
Keep the extinguisher fully charged.
Learn to use it correctly.



INSPECT EXCAVATOR

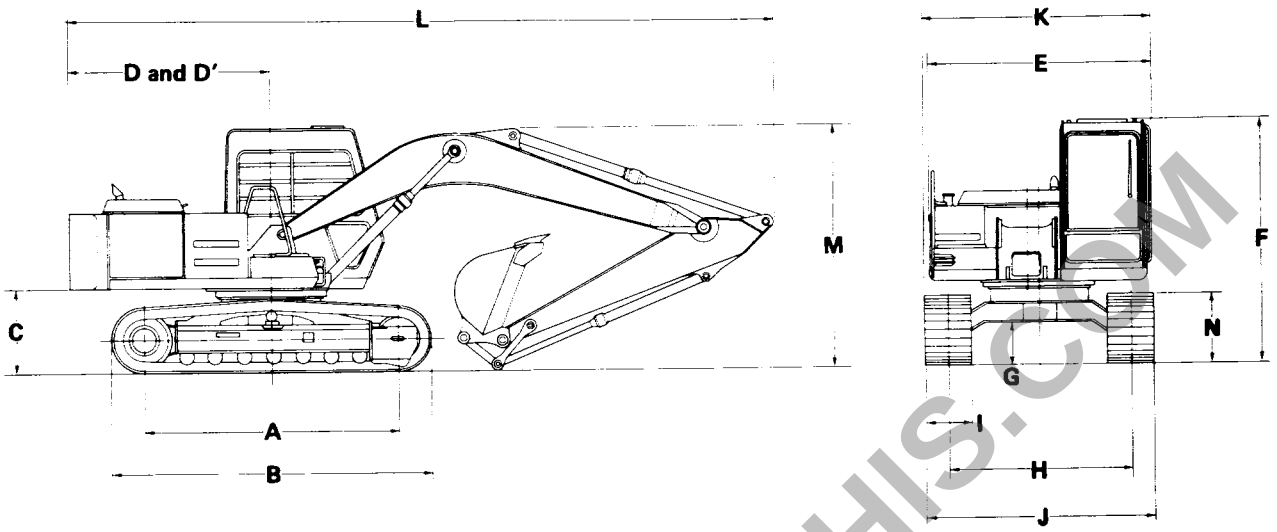
Inspect your excavator carefully each day before you start it. Use the check list which is printed on operation manual.
Do not start or operate the excavator unless you are in the operator's seat.
When you operate the excavator, do not let another person on the machine.
When you get on or off the excavator, use hand rails and steps.
Start the engine only in well-ventilated area.
Before you move the excavator, be sure all persons are away from the excavator.

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GENERAL SPECIFICATIONS

1. DIMENSIONS



A	Distance between tumblers	2 780 mm (9'1")
B	Undercarriage length	3 510 mm (11'6")
C*	Counterweight clearance	900 mm (2'11")
D	Rear-end swing radius	2 200 mm (7'3")
D'	Rear-end length	2 200 mm (7'3")
E	Overall width of superstructure	2 450 mm (8'0")
F	Overall height of cab	2 690 mm (8'10")
G*	Min. ground clearance	440 mm (1'5")
H	Track gauge	1 990 mm (6'6")
I	Track shoe width	500 mm (20") 510 mm (20") 600 mm (24") 700 mm (28")
J	Undercarriage width	2 490 mm (8'2") 2500 mm (8'2") 2590 mm (8'6") 2690 mm (8'10")
K	Overall width	2 490 mm (8'2") 2500 mm (8'2") 2590 mm (8'6") 2690 mm (8'10")
L	Overall length	7 670 mm (25'2") with 2.1 m (6'11") arm 7 680 mm (25'2") with 2.5 m (8'2") arm 7 690 mm (25'3") with 3.0 m (9'10") arm
M	Overall height of boom	2 540 mm (8'4") with 2.1 m (6'11") arm 2 680 mm (8'10") with 2.5 m (8'2") arm 2 670 mm** (8'9") with 3.0 m (9'10") arm
N	Track height	790 mm (2'7"): triple grouser shoes

* Track shoes lug height not included.

** This dimension is shown in the transportation hole position of the arm.

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TIGHTENING TORQUE

RETORQUE CHECK-Every 250 Hrs. (Initial 50 Hrs).

Retightening bolts and nuts.
The correct torque is essential for the proper fit of assembled parts.
The following bolts and nuts should be checked and retightend to the proper torque after the first 50 hrs. of operation, and then rechecked every 250 hrs. or 30 days. The tightening torque of each bolt is shown in this table.

Item	Retightening parts	Bolt diameter	Q'ty	Applicable spanner(mm)	Torque Ft.lbs	(kgf-m)	n-m
1.	Engine insulation rubber fixing bolts.	16	2	24	195	(27)	265
2.	Engine insulation rubber fixing nuts.	14	4	22	101	(14)	137
3.	Engine bracket fixing bolts.	10	7	17	36	(5)	49
4.	Engine bracket fixing nuts.	10	1	17	36	(5)	49
5.	Hydraulic tank fixing bolts.	16	4	24	152	(21)	206
6.	Fuel tank fixing bolts.	16	4	24	152	(21)	206
7.	Hydraulic hose and pipe unions.			19	22	(3)	29
				22	29	(4)	39
				27	69	(9.5)	93
				32	101	(14)	135
				36	130	(18)	174
				41	152	(21)	206
8.	Pump fixing bolts.	10	9	17	36	(5)	49
9.	Control valve fixing bolts.	14	8	22	101	(14)	137
10.	Control valve bracket fixing bolts.	12	4	19	65	(9)	88
11.	Swing device fixing bolts.	20	10	30	398	(55)	539
12.	Swing motor fixing bolts.	14	12	22	101	(14)	137
13.	Battery fixing bolts.	8	4	13	7	(1)	10
14.	Cab fixing bolts.	16	4	24	152	(21)	206
15.	Swing bearing fixing bolts						
	(Superstructure)	18	28	27	289	(40)	392
	(Track)	16	36	24	195	(27)	265
16.	Travel mechanism and sprocket fixing bolts.	16	60	24	195	(27)	265
17.	Upper roller fixing bolts.	12	8	19	65	(9)	88
18.	Lower roller fixing bolts.	16	56	24	195	(27)	265
19.	Shoe bolts.	16	344	24	325	(45)	441
20.	Cover, etc. fixing bolts.	10		17	36	(5)	49
		12		19	65	(9)	88

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OTHERS

1. MAINTENANCE INTERVALS

1.1 Greasing

Check the lubricating condition everyday.

Parts		No. of parts (Quantity)				Interval (Hours)						
		EX100	EX120	EX200	EX220	8	50	100	250	500	1000	2000
★ 1. Front joint pins		17	17	–	–	★		▒				
	Boom foot Boom cylinder bottom Bucket	–	–	10	10	★	▒					
	Others	–	–	7	7	★		▒				
2. Swing bearing		2	2	2	2					▒		
3. Swing gear		1	1	1	1					▒		

★ After digging operation in water, apply grease to the pins which will get in or have been in water.

1.2 Engine oil

Parts		No. of parts (Quantity)				Interval (Hours)						
		EX100	EX120	EX200	EX220	8	50	100	250	500	1000	2000
1. Engine oil pan	Oil level check	1	1	1	1	▒						
	Replacement	(15ℓ)	(15ℓ)	(26.5ℓ)	(27ℓ)				EX120 only	▒		
2. Engine oil filter replacement	Replacement	1	1	1	1				EX120 only	▒		
3. Engine oil bypass filter replacement	Replacement	–	–	1	1					▒		

1.3 Gear oil

Parts		No. of parts (Quantity)				Interval (Hours)						
		EX100	EX120	EX200	EX220	8	50	100	250	500	1000	2000
1. Pump transmission	Oil level check	–	–	1	1				▒			
	Replacement	–	–	(1.3ℓ)	(1.3ℓ)						▒	
2. Swing mechanism	Oil level check	1	1	1	1				▒			
	Replacement	(3.2ℓ)	(3.2ℓ)	(7.5ℓ)	(8.7ℓ)						▒	
3. Travel mechansim	Oil level check	2	2	2	2				▒			
	Replacement		(3.5ℓx2)	(5.5ℓx2)	(6.5ℓx2)							▒

★ EX100M

1.4 Hydraulic system

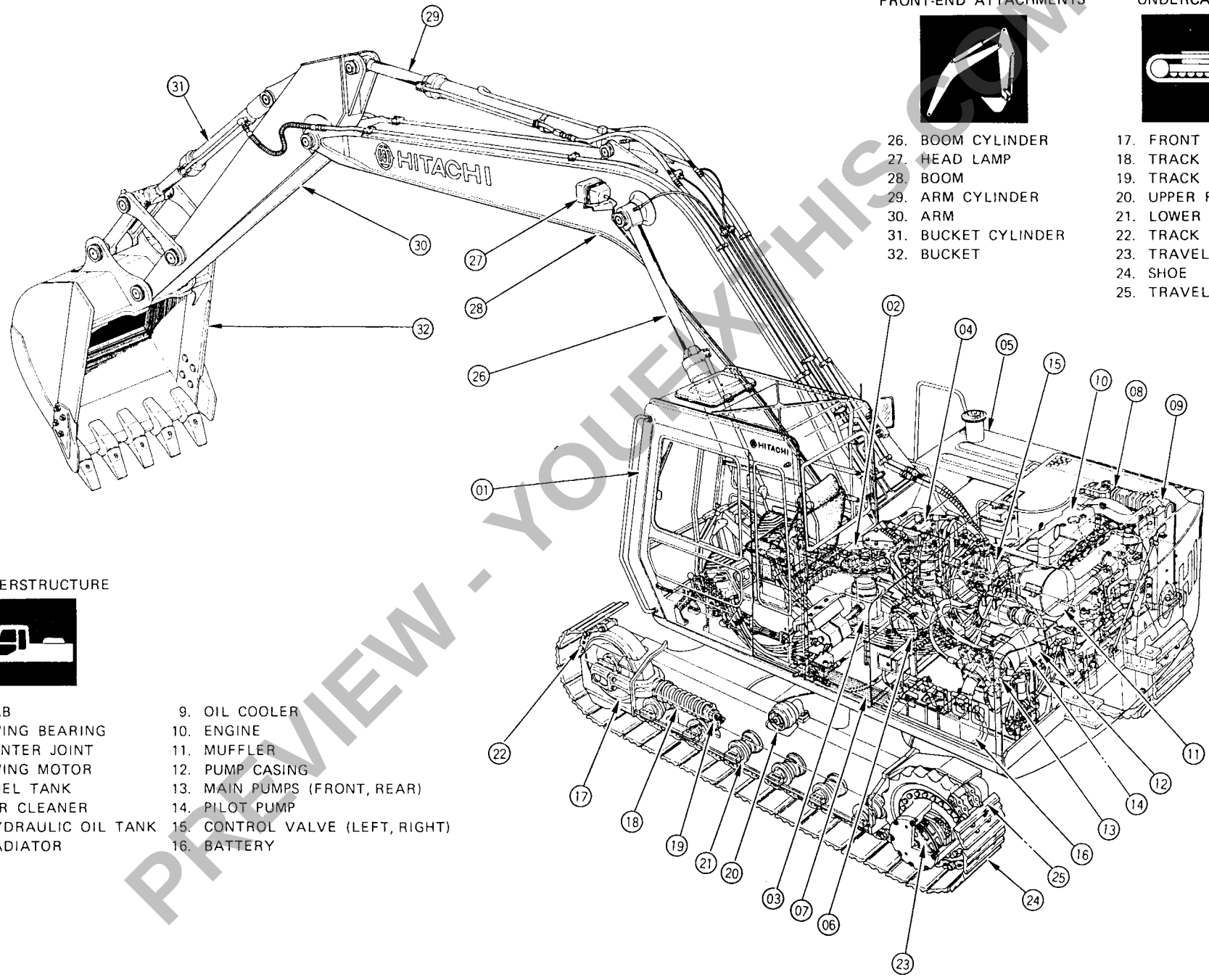
Parts	No. of parts (Quantity)				Interval (Hours)						
	EX100	EX120	EX200	EX220	8	50	100	250	500	1000	2000
1. Hydraulic oil level check	1	1	1	1	▒						
2. Hydraulic oil tank draining	1	1	1	1		▒					
3. Hydraulic oil replacement	(126ℓ)	(130ℓ)	(220ℓ)	(270ℓ)							▒
4. Suction filter cleaning	1	1	1	1	When replacing hydraulic oil						
5. Full-flow filter element replacement	1	1	1	1					▒		
6. Pilot filter element replacement	1	1	1	1						▒	

1.5 Fuel system

Parts	No. of parts (Quantity)				Interval (Hours)						
	EX100	EX120	EX200	EX220	8	50	100	250	500	1000	2000
1. Fuel tank water draining	1	1	1	1	▒						
2. Water sedimenter checking	1	1	1	1	▒						
3. Fuel filter element replacement	1	1	1	1					▒		
4. Feed pump strainer cleaning	1	1	1	1						▒	
5. Fuel tank capacity	(250ℓ)	(250ℓ)	(310ℓ)	(310ℓ)							

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FRONT-END ATTACHMENTS

26. BOOM CYLINDER
27. HEAD LAMP
28. BOOM
29. ARM CYLINDER
30. ARM
31. BUCKET CYLINDER
32. BUCKET

UNDERCARRIAGE

17. FRONT IDLER
18. TRACK SPRING
19. TRACK ADJUSTER
20. UPPER ROLLER
21. LOWER ROLLER
22. TRACK LINK
23. TRAVEL REDUCTION DEVICE
24. SHOE
25. TRAVEL MOTOR

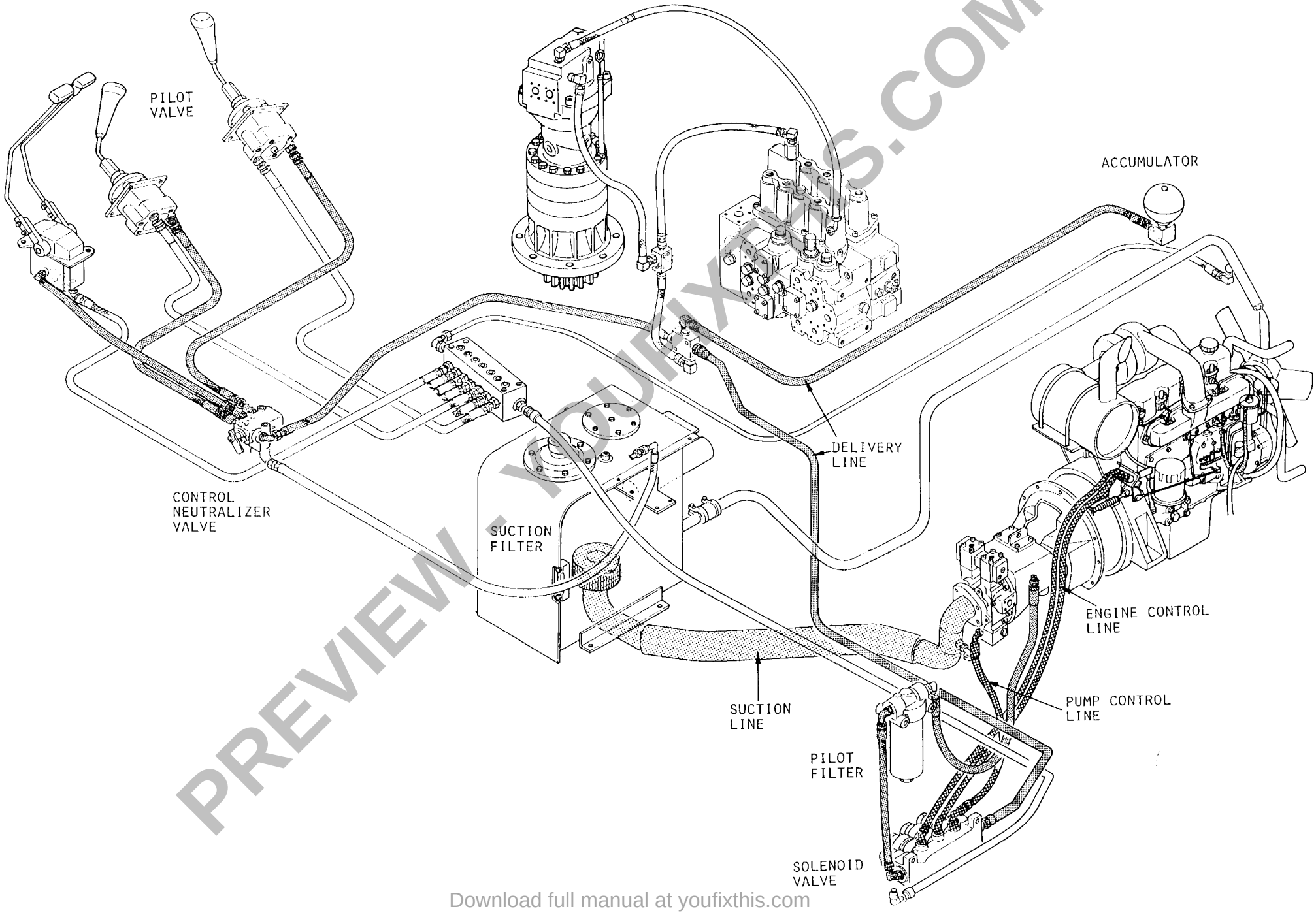
SUPERSTRUCTURE

1. CAB
2. SWING BEARING
3. CENTER JOINT
4. SWING MOTOR
5. FUEL TANK
6. AIR CLEANER
7. HYDRAULIC OIL TANK
8. RADIATOR
9. OIL COOLER
10. ENGINE
11. MUFFLER
12. PUMP CASING
13. MAIN PUMPS (FRONT, REAR)
14. PILOT PUMP
15. CONTROL VALVE (LEFT, RIGHT)
16. BATTERY

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EX100, EX120 HYDRAULIC SYSTEM



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MAINTENANCE

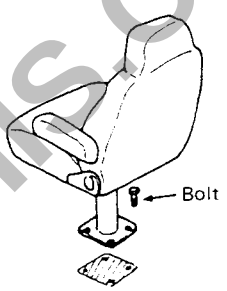
1. REMOVAL & INSTALLATION

1.1 CAB

1.1.1 Removal of operator's cab

1 Remove 4 bolts from operator's seat.
Remove operator's seat.

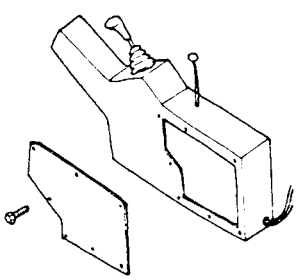
: 17 mm



2 Remove side cover from control box.

: 10 mm

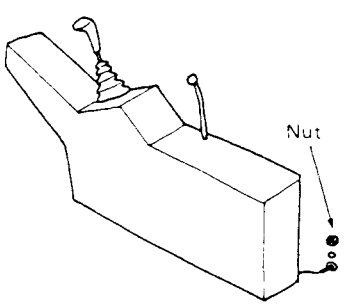
Disconnect wiring harness of wiper motor, antenna, radio speaker, room lamp and so on.



3 Remove the nut for earth wiring.

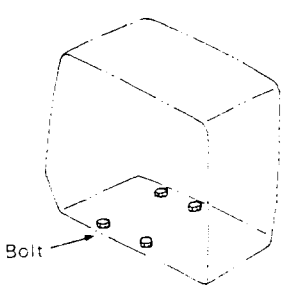
: 17 mm

Disconnect earth wiring.



4 Remove 4 cab mounting bolts.

: 17 mm

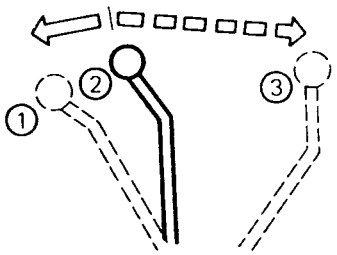


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FUEL (THROTTLE) LEVER

It adjusts the engine speed (output) and also serves as a stop lever.



① Engine stop: The lever is fully pushed foreward.

② Low idling: Pull the lever a little backward, and push it again foreword to a point where the lever control becomes heavy.

③ High idling: Pull the lever fully backward from the low idling position.

MODE SELECTION

3 operation modes can be selected by operating the mode selection switch located on the right console. In each of these operation modes, a microcomputer selects automatically the best combination of the engine speed and the flow rate of the pump which fits the current working conditions and purpose.

Use the following table for making the best choice to improve the working efficiency.



P (Power) Mode: For high speeds and large work volumes.

E (Economy) Mode: The work volume will be slightly lowered from P Mode, but it improves fuel efficiency greatly and reduces noise level.

L (Light) Mode: For low speeds to obtain high precision. The engine speed is further lowered, allowing more improved fuel consumption and noise level. The digging power is the same as in P and E Modes.

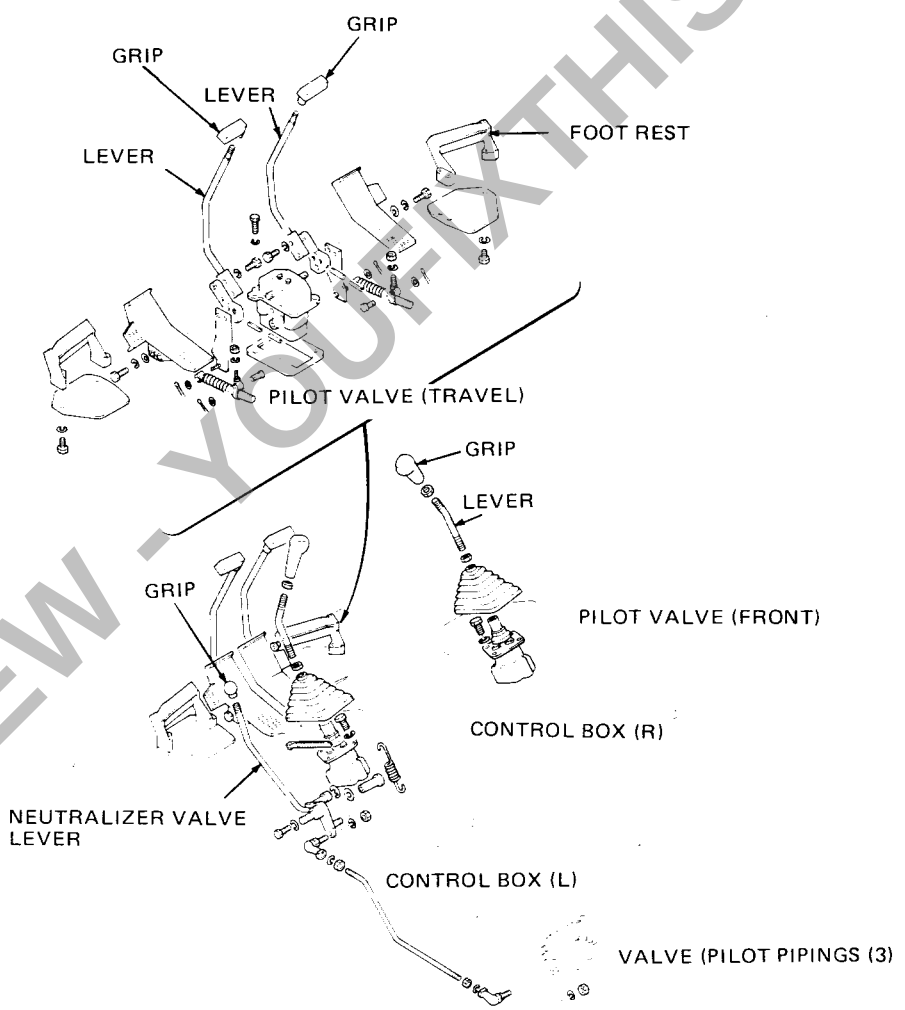
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16. CONTROL LEVER

16.1 CONSTRUCTION

Control lever consists of pilot valve, lever and pedal.

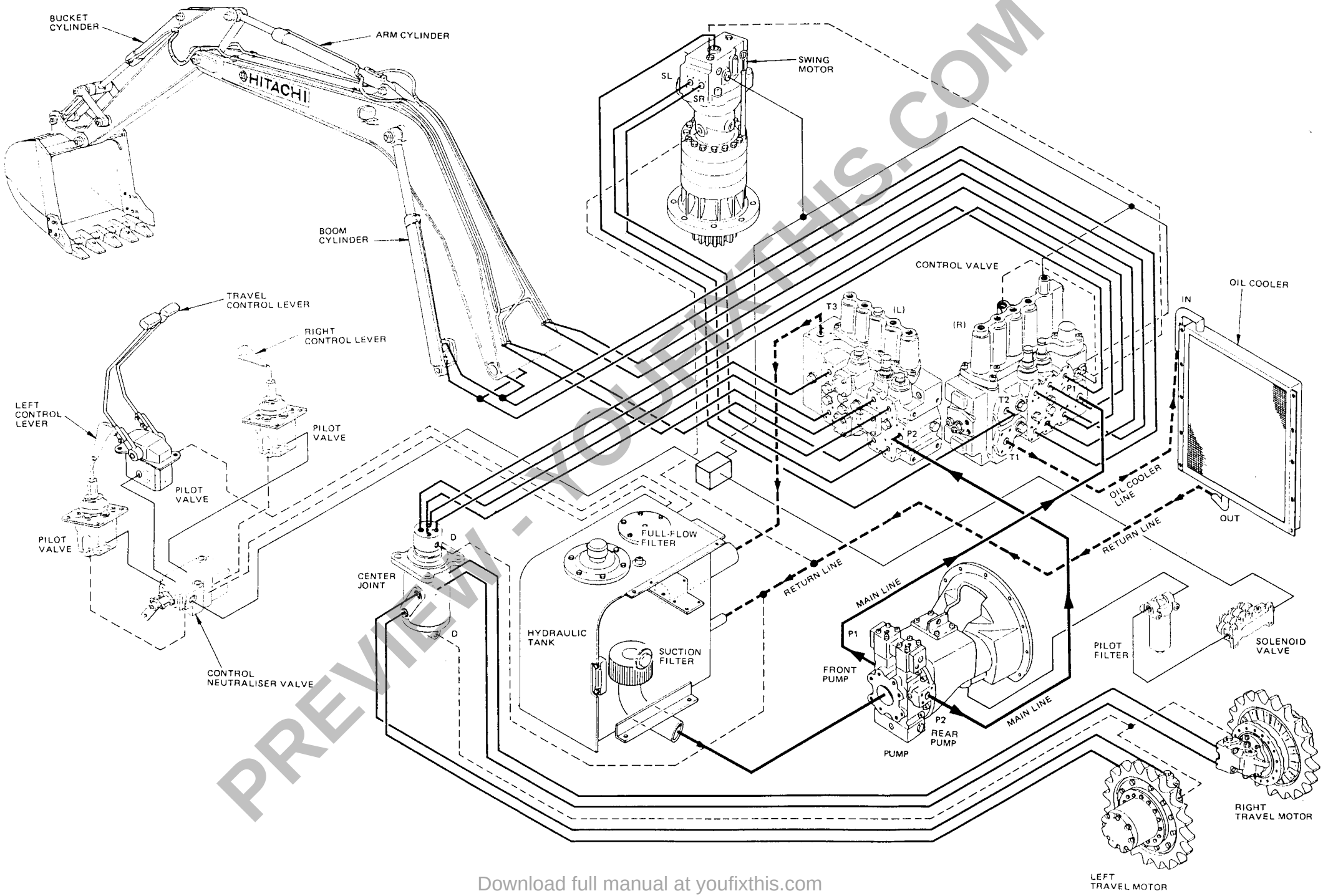
The hydraulic pilot type control lever system can be easily changed to each operation pattern by reconnecting the pilot hoses.



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HYDRAULIC SYSTEM

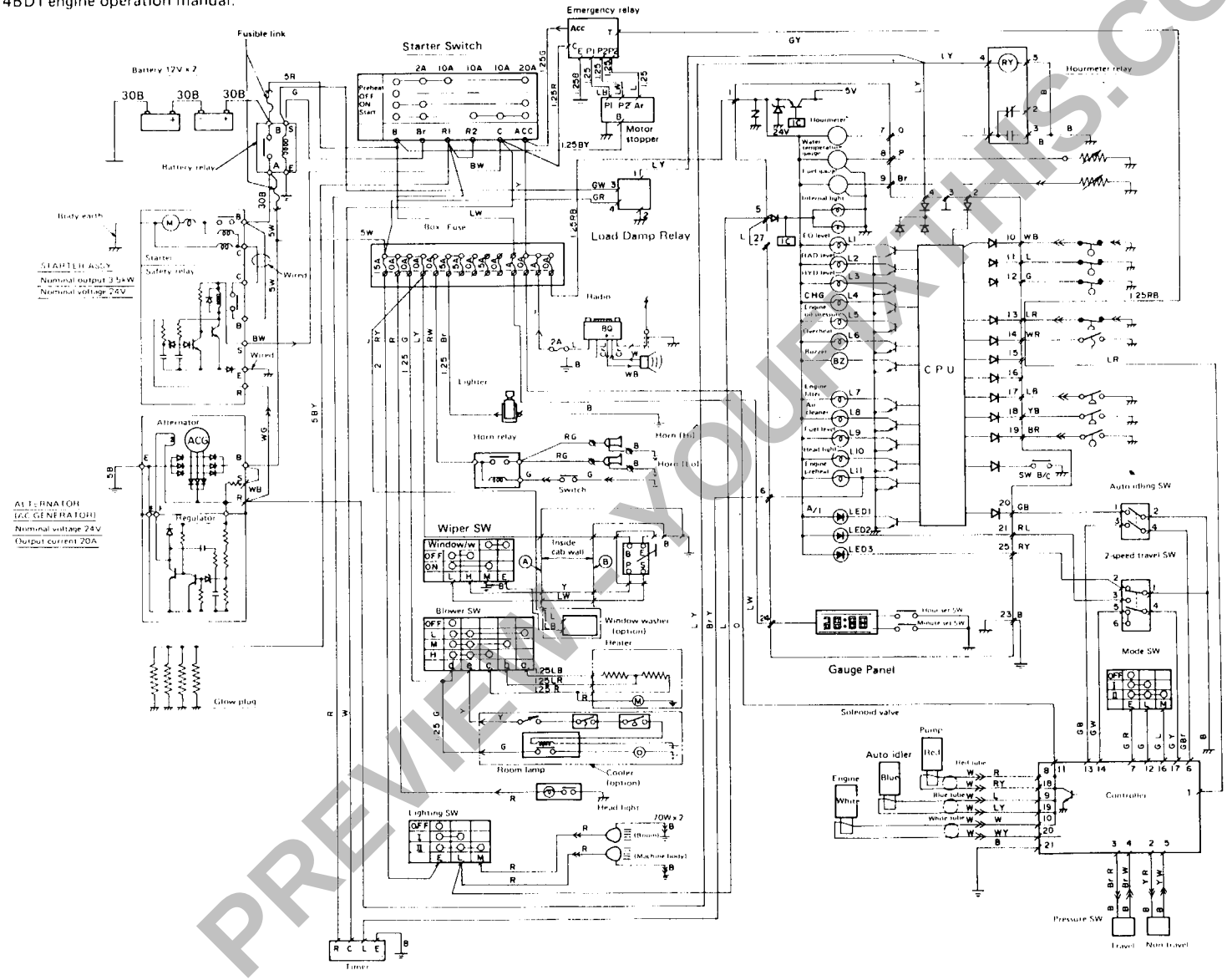


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2. ELECTRICAL CIRCUIT (Applicable Serial No. EX120: 15001 ~ 18997)

This machine uses a 24 volt, negative earth type system. For additional details, refer to the ISUZU 4BD1 engine operation manual.

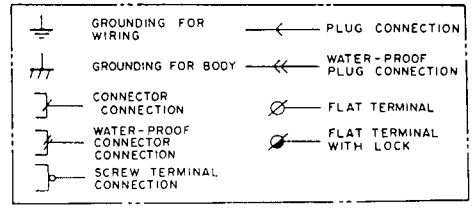


NOTES: Colour distinction of electrical wires.

B	: Black	BR	: Black/Red
Br	: Brown	BW	: Black/White
G	: Green	BY	: Black/Yellow
Gr	: Gray	GW	: Green/White
L	: Blue	GY	: Green/Yellow
O	: Orange	LB	: Blue/Black
R	: Red	LR	: Blue/Red
W	: White	LW	: Blue/White
Y	: Yellow	LY	: Blue/Yellow
		RB	: Red/Black
		RW	: Red/White
		RY	: Red/Yellow
		WG	: White/Green
		WL	: White/Blue
		WR	: White/Red
		YB	: Yellow/Black
		YR	: Yellow/Red

(Notes) Re the wires consisting of 2 colors, the first color indicates the bese color of wire, and the second color is the color of marking. Ex.) BW: Black base and white marking.

Notes:
1. Unless specified, all wires shall be 0.85 mm² in section.
2. SYMBOLS

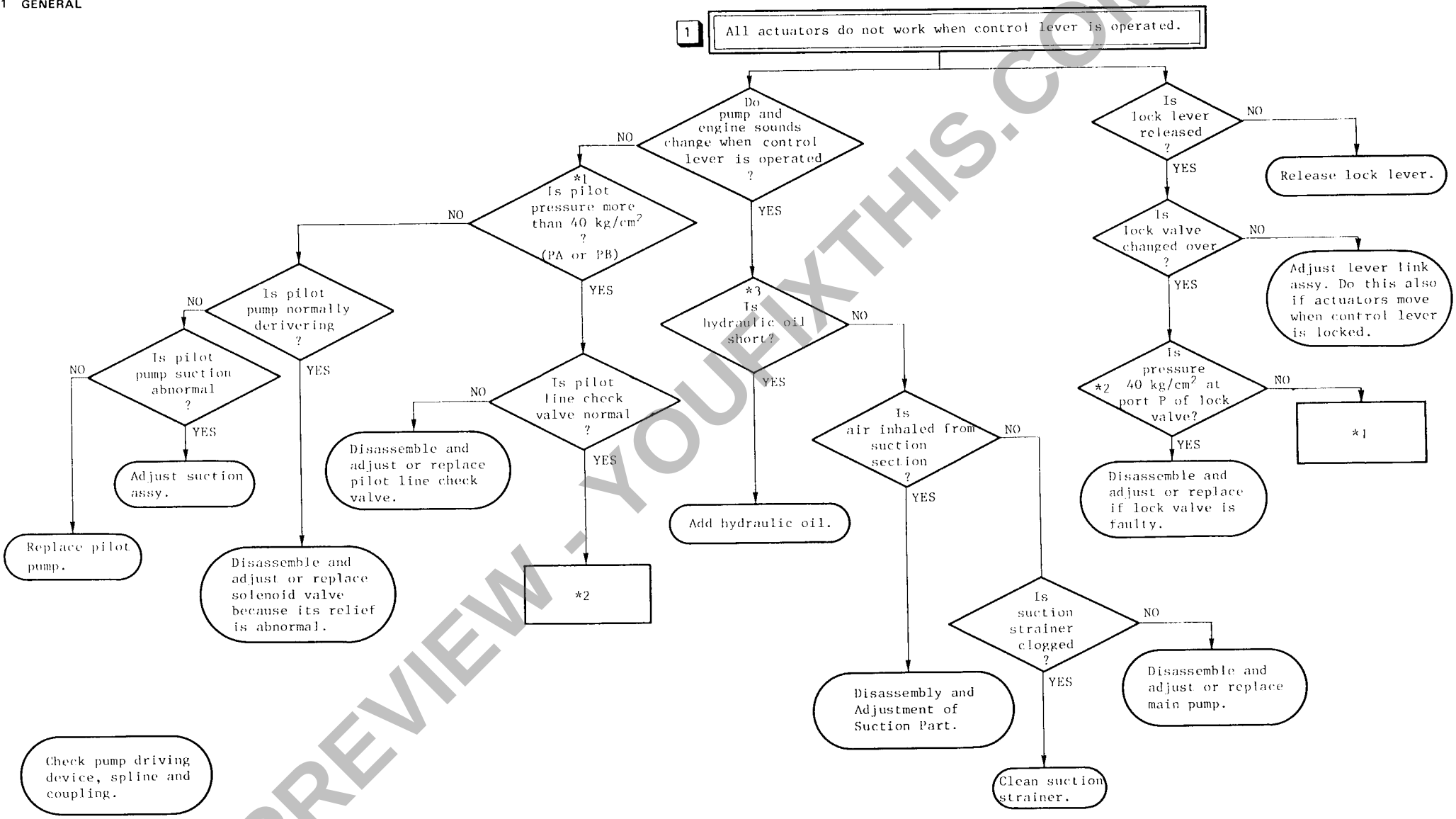


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1. HYDRAULIC SYSTEM

1.1 GENERAL



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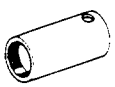
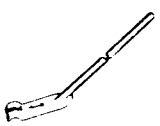
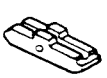
MAIN DATA AND SPECIFICATIONS

Item \ Machine Model		EX100	EX120
Item \ Engine Model		4BD1	4BD1T
Engine type		Water cooled, four cycle, vertical in-line, overhead valve	
Combustion chamber type		Direct injection	
Cylinder liner type		Dry	
No. of cylinders — Bore × stroke	mm(in)	4 — 102.0 × 118.0 (4.02 × 4.65)	
Total piston displacement	$cm^3(in^3)$	3,856 (235)	
Compression ratio (To 1)		17.5	
Engine dimensions Length × width × height	mm(in)	828 × 647 × 779 (32.6 × 25.5 × 30.7)	828 × 702 × 848 (32.6 × 27.6 × 33.4)
Engine weight (Dry)	kg(lb)	336 (741)	340 (750)
Fuel injection order		1 — 3 — 4 — 2	
Fuel injection timing (BTDC)	degrees	16	18
Specified fuel		Diesel fuel	
Injection pump		In-line plunger, Bosch A type	
Governor		Mechanical, RSV type	
Low idle speed	rpm	855 — 895	
Injection nozzle		Hole type (with four orifices)	
Injection starting pressure	$kg/cm^2(psi)$	150 (2,133)	185 (2,630)
Fuel filter type		Cartridge (spin-on)	
Water sedimentor		Sedimenter/water level indicating type	
Compression pressure	$kg/cm^2(psi)$	31 (441) at 200 rpm	
Valve clearances (At cold)	Intake mm(in)	0.40 (0.016)	
	Exhaust mm(in)	0.40 (0.016)	
Lubrication method		Pressurized circulation	
Oil pump		Gear type	
Main oil filter type		Cartridge (spin-on)	
Lubricating oil capacity	lit(US/UK gal)	13 (3.43/2.85)	
Oil cooler		Water cooled integral type	
Cooling method		Pressurized forced circulation	
Coolant capacity	lit(US/UK gal)	8.5 (2.2/1.8) (Engine only)	

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SPECIAL TOOL LIST

ITEM NO.	ILLUSTRATION	PART NO.	PARTS NAME
1.		1-85111-003-0	Cylinder head bolt wrench
2.		5-85317-001-0	Compression gauge adaptor
3.		9-8521-0122-0	Crankshaft taper bushing remover
4.		9-8523-1426-0	Valve spring compressor
5.		1-85220-001-0	Valve guide remover and installer
6.		9-8523-1818-0	Camshaft bearing remover and installer
7.		9-8523-1169-0	Cylinder liner remover
8.		9-8523-2557-0	Cylinder liner remover ankle
9.		9-8523-2554-0	Cylinder liner installer
10.		9-8521-0141-0	Crankshaft gear remover

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Group 1 Safety Precations ES5-1
Group 2 Specifcations ES5-2
Group 3 Construction & Function ES6-3A
Group 4 Circuit Operations ES6-4B
Group 5 Maintenance ES5-5



SECTION 10 TROUBLESHOOTING

Group 1 Introduction TS11-1
Group 2 Diagnose Malfunctions TS11-2A
Group 3 Excavator Performance Test TS11-3B
Group 4 Components Performance Standard TS11-4B
Group 5 Electrical System Test TS13-5A



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Group 3 Engine Disassembly EG9-3
Group 4 Inspection & Repair EG9-4
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Group 11 Troubleshooting EG9-11
Group 12 Special Tool List EG9-12

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2.3.2 RADIATOR

1. Radiator

. Radiation area	20.66 m^2
. Exchange calorie	More than 49,000 kcal/h
. Water flow rate	110 ℓ/min.
. Water capacity	5.4 ℓ
. Weight	16 kg

2. Oil cooler

. Radiation area	10.14 m^2
. Exchange calorie	More than 20,000 kcal/h
. Oil flow rate	240 ℓ/min.
. Oil capacity	3.2 ℓ
. Weight	37.5 kg

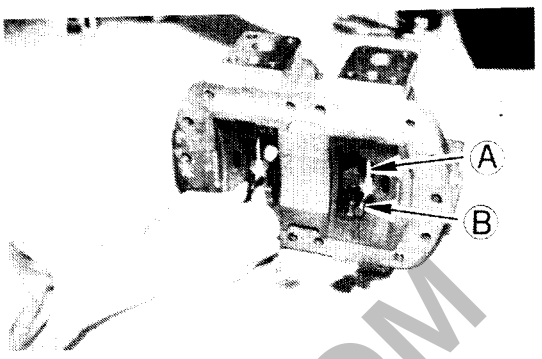
2.3.3 AIR CLEANER

. Filtration area	3.4 m^2
. Air flow rate	5.8 m^3/min.
. Weight	6.5 kg

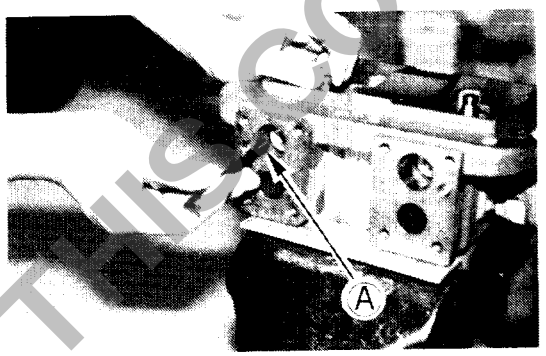
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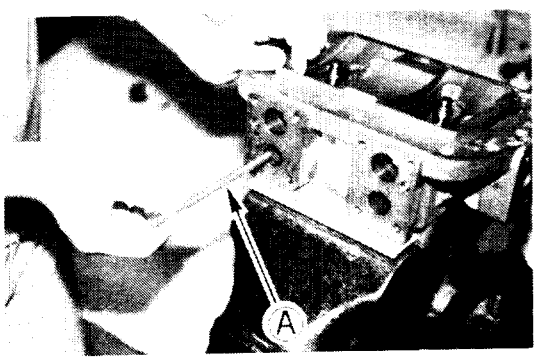
37 Install 2 pistons Ⓐ.
Insert 2 rods Ⓑ to each piston.



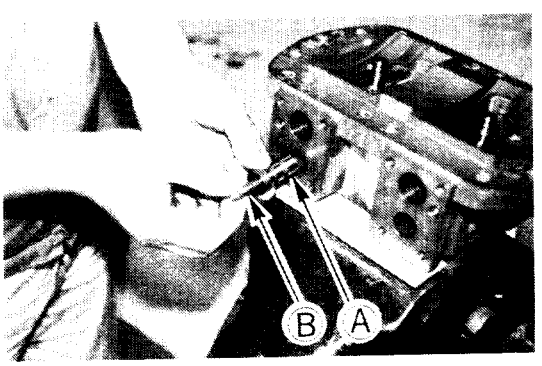
38 Hold the casing by the vise.
Install screw Ⓐ and screw Ⓑ in that order and tighten them.
: 4 mm
: 1.7 kgf.m (12.3 ft.lbs)
Note: Apply the shellec onto the threaded part of the screw.



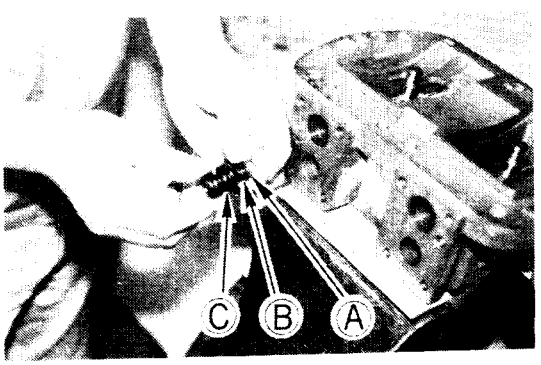
39 Insert 2 rods Ⓐ.



40 Insert bushing Ⓐ with spool Ⓑ into the casing either holes.



41 Insert retainer Ⓐ, spring Ⓑ and spring Ⓒ in that order into the casing.



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32 Install at first friction plate (38) and next disk plate (39) alternately.

Note: Align the notice of disk plate.

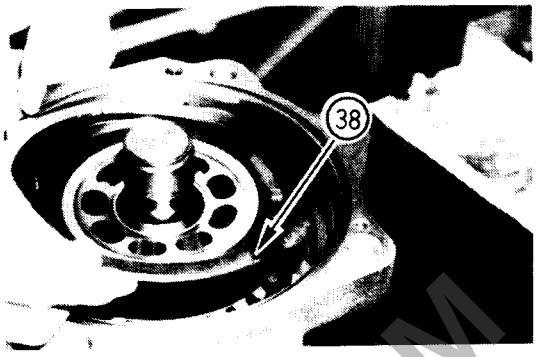
Applicable Serial No.

EX90: 01001 ∿ 01119; EX100: 20001 ∿ 21752

EX100M: 02001 ∿ 02118

EX120: 15001 ∿ 18866, 18877 ∿ 18967

EX100WD: 0101 ∿ 0763



Install at first disk plate (39) and next friction plate (38) alternately.

Note: Align the notice of disk plate.

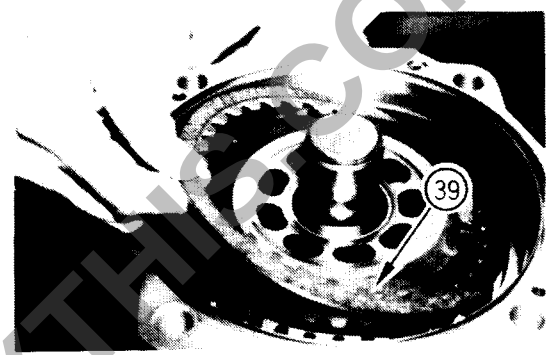
Applicable Serial No.

EX90: 01120 ∿ ; EX100: 21753 ∿

EX100M: 02119 ∿

EX120: 18867 ∿ 18876, 18968 ∿

EX100WD: 0764 ∿



33 Install collar (37) to the case (01) by using a special tool (ST-2322).

Note: Turn the chamfered part to following side.

- Friction plate side Applicable Serial No.

  EX90: 01001 ∿ 01119; EX100: 20001 ∿ 21752

  EX100M: 02001 ∿ 02118

  EX120: 15001 ∿ 18866, 18877 ∿ 18967

  EX100WD: 0101 ∿ 0763

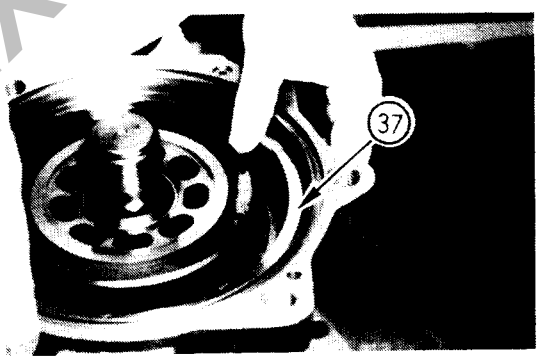
- Brake piston side Applicable Serial No.

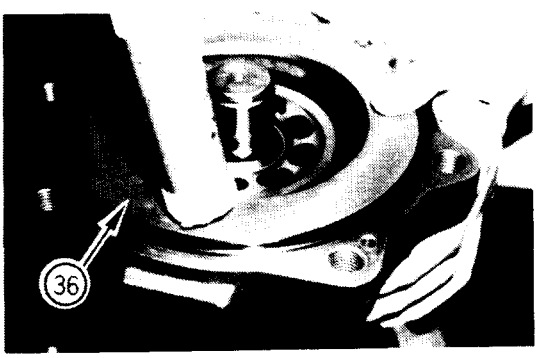
  EX90: 01120 ∿ ; EX100: 21753 ∿

  EX100M: 02119 ∿

  EX120: 18867 ∿ 18876, 18968 ∿

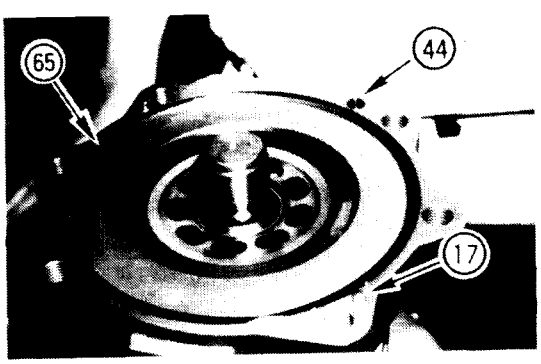
  EX100WD: 0764 ∿





34 Install brake piston (36) to the case by using a plastic hammer or special tool (ST-2323).

35 Install O-rings (65 and 44) and pins (17) to the case.

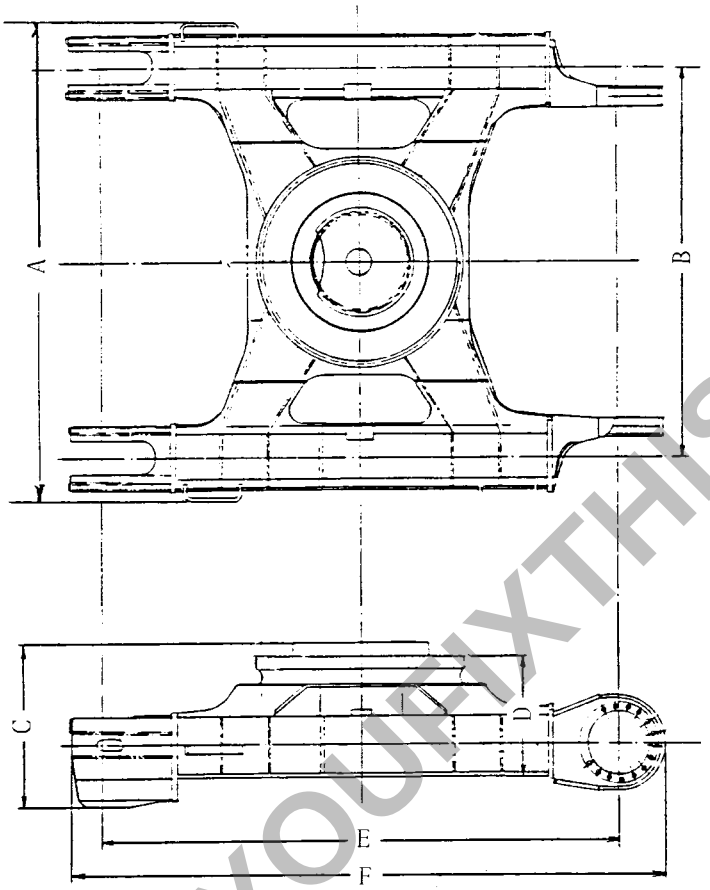


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UNDERCARRIAGE

1.2 SPECIFICATIONS



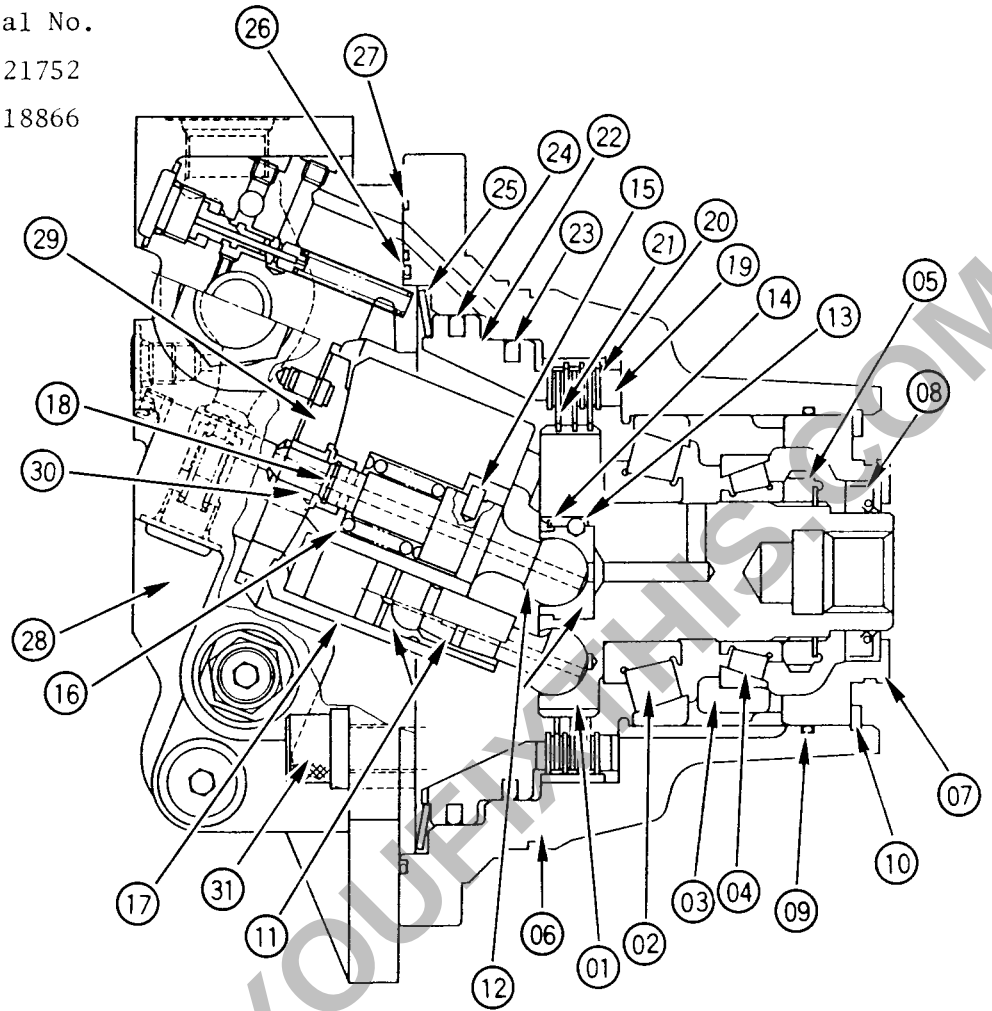
	EX120	
A	1990mm	
B	2530mm	
C	828mm	
D	610mm	
E	2780mm	
F	3166 mm	
Weight	1320 kg	

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HMT 045 CF MOTOR

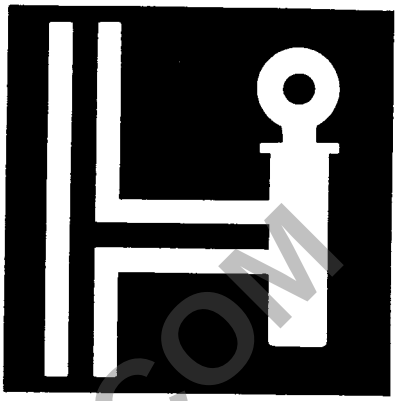
Applicable Serial No.
EX100: 20001 ∿ 21752
EX120: 15001 ∿ 18866



Item	Part Name	Q'ty	Item	Part Name	Q'ty
01	Driving disk	1	17	Rotor	1
02	Roller bearing	1	18	Retaining ring	1
03	Spacer	1	19	Spacer	1
04	Roller bearing	1	20	Plate	4
05	Bearing nut	1	21	Friction plate	3
06	Motor casing	1	22	Piston	1
07	Seal cover	1	23	D-Ring	1
08	Oil seal	1	24	D-Ring	1
09	O-Ring	1	25	Disk spring	1
10	Retaining ring	1	26	O-Ring	1
11	Piston	7	27	O-Ring	1
12	Center shaft	1	28	Brake valve	1
13	Ball	1	29	Valve plate	1
14	Retaining ring	1	30	Bushing	1
15	Pin	1	31	Socket bolt	4
16	Compression spring	1			

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Section 7 HYDRAULIC SYSTEM

CONTENTS

Group 1-OUTLINE HS-5A-1

Group 2-MAIN HYDRAULIC CIRCUIT .... HS-5A-2~12

1. Suction Circuit and Delivery Circuit HS-5A-2
2. Return Circuit HS-5A-6
3. Drain Circuit HS-5A-8

Group 3-PILOT CIRCUIT ..... HS-5A-13~26

1. Suction, Delivery and Return Circuit HS-5A-14
2. Accumulator HS-5A-16
3. Control neutralizer Valve HS-5A-16
4. Pump Displacement Control Circuit HS-5A-18
5. Relief Pressure Change Circuit HS-5A-20
6. Switch Valve Circuit HS-5A-20
7. Swing Parking Brake Circuit HS-5A-21
8. Heat-Run Circuit HS-5A-22

Group 4-SINGLE OPERATION ..... HS-5A-27~44

1. Boom Raise Circuit Operation HS-5A-27
2. Boom Lower Circuit Operation HS-5A-29
3. Arm Roll-In Circuit Operation HS-5A-31
4. Arm Roll-Out Circuit Operation HS-5A-33
5. Bucket Circuit Operation HS-5A-35
6. Swing Circuit Operatrion HS-5A-37
7. Swing Operation HS-5A-39
8. Travel Circuit Operation HS-5A-41
9. Travel Forward and Reverse Operation HS-5A-43

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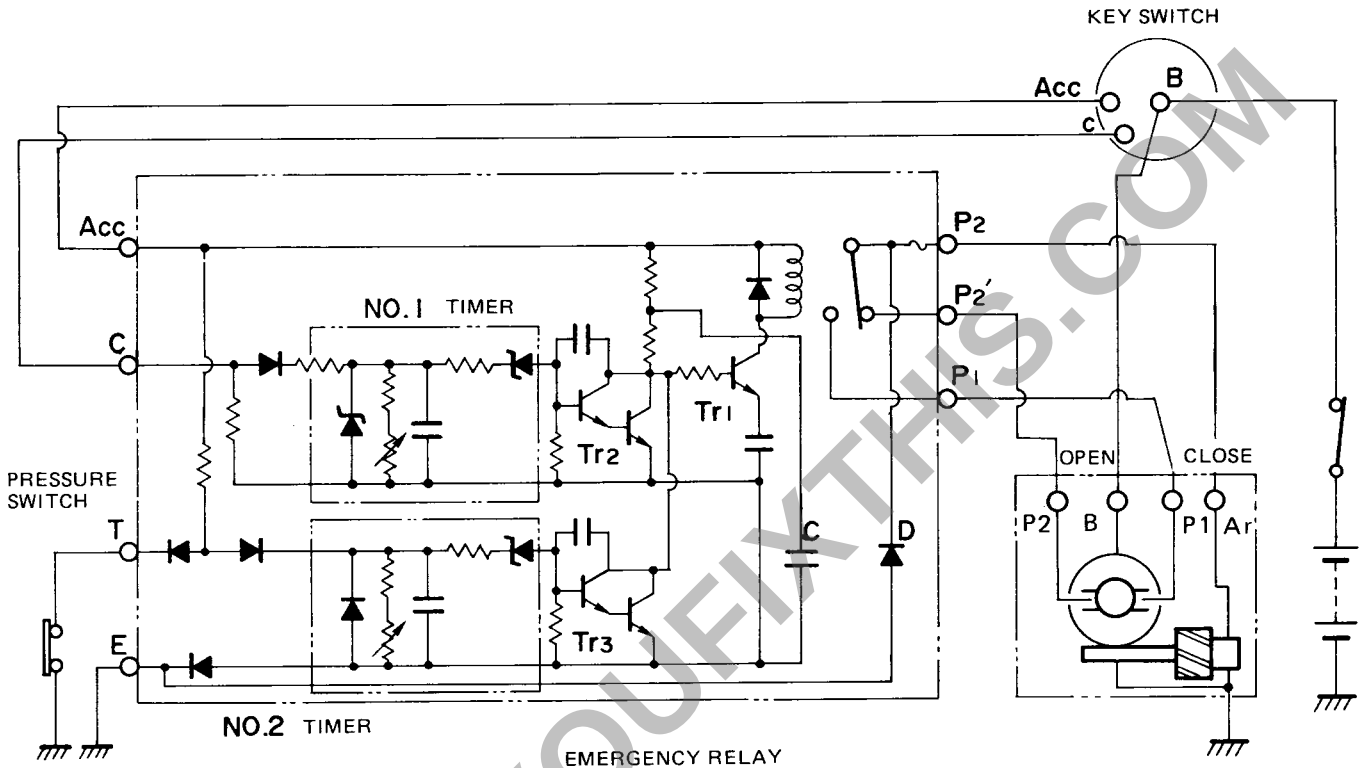
Continued on next page

CIRCUIT OPERATIONS

Principles of Operation

(1) When the key switch is turned OFF

The following is a circuit diagram showing the relations of the engine stopper, emergency relay, oil pressure switch, engine key switch:



The positions of the key switch and its internal connections have the following relations:

Key position	Connection				
	B	R_1	ACC	R_2	C
OFF	○				
Preheat	○	○			
Operation	○	○	○		
Start	○	○	○	○	○

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EX100, EX120, EX150 COMPONENTS PERFORMANCE TEST

5. SWING OVERLOAD RELIEF VALVE

5.1 SPECIFICATIONS & JUDGEMENT

Unit : kgf/cm² (MPa)

Model	Standard	Recommended to service	Limit of use
EX100	235 ± 10 (23 ± 1)	Max. 245 (24) Min. 212 (20.8)	Max. 245 (24) Min. 201 (19.7)
EX120	260 ± 10 (25.5 ± 1)	Max. 270 (26.5) Min. 225 (22.1)	Max. 270 (26.5) Min. 214 (21)
EX150	250 ± 10 (24.5 ± 1)	Max. 260 (25.5) Min. 216 (21.2)	Max. 260 (22.5) Min. 205 (20)

5.2 MEASUREMENT

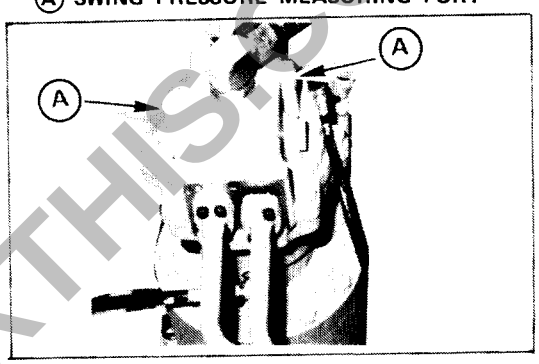
1 ❶ Stop the engine. Release the air pressure from the hydraulic tank.

❷ Connect the 0 to 400 kgf/cm² (0 to 40 MPa) pressure gauge assembly (ST-6934) to swing motor pressure measuring port.

❸ Turn mode switch to "P" mode and auto-idling switch "OFF". Start and run the engine at fast idle.

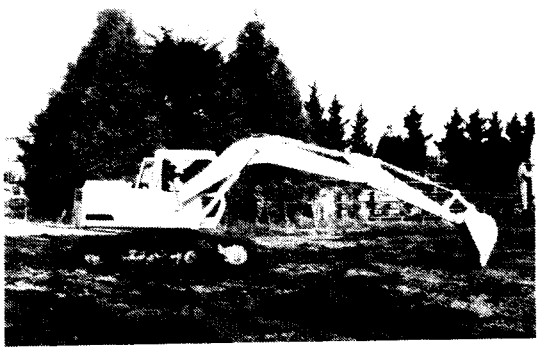
Check oil leakage from the connections.

Ⓐ SWING PRESSURE MEASURING PORT



2 Set the front attachment as shonw in the photo.

Start and run the engine at fast idle.



3 Operate and hold swing control lever full stroke slowly.

4 Read the pressure gauge, the pressure indication must be specified value for swing functions.

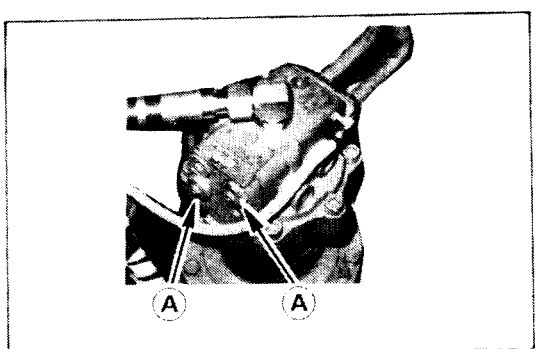
Note: If necessary, adjust the swing crossover relief valve.

5.3 ADJUSTMENT

1 ❶ Loosen lock nut Ⓐ.

❷ Turn adjusting screw Ⓑ.

❸ After adjusting, tighten the lock nut to about 1 kgf.m (7.23 ft.lbs).

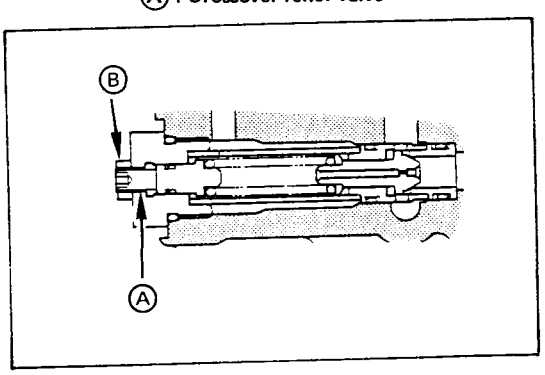


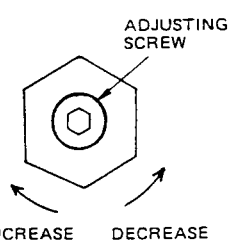
Ⓐ : Crossover relief valve

2

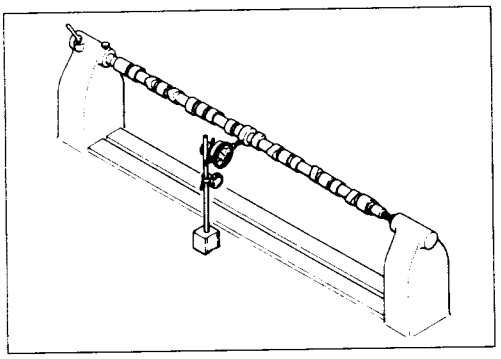
Turn	Pressure variation; kgf/cm² (MPa)
1/4	13 (1.3)

Note: Make sure its relief set pressure again after adjusting.





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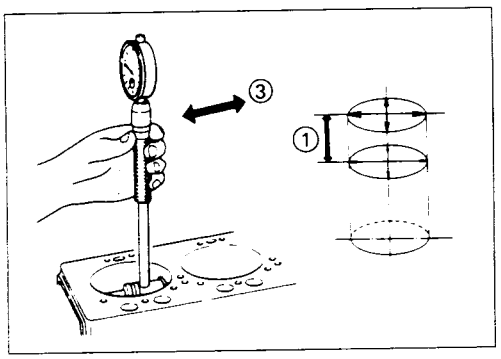
5. Place the camshaft on a measuring stand.
   Use a dial indicator to measure the camshaft run-out.
   Note the total indicator reading (TIR).
   If the measured run-out exceeds the specified limit, the camshaft must be replaced.

mm(in)

	Limit
Camshaft Run-Out TIR	0.12 (0.003)

CYLINDER BODY AND LINER

Cylinder Liner Bore Measurement



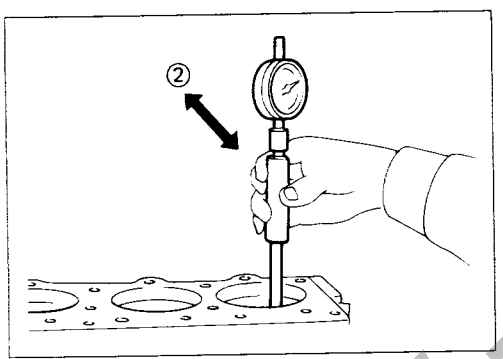
Use a cylinder indicator to measure the cylinder liner bore at measuring position ① in line with the crankshaft ② and across the crankshaft ③.

Measuring Point ① mm (in): 20.0 (0.79) (Maximum Wear Portion)

If the measured value exceeds the specified limit, the cylinder liner must be replaced.

mm(in)

	Standard	Limit
Cylinder Liner Bore Total Indicator Reading	102.021 — 102.060 (4.0196 — 4.0212)	102.20 (4.0267)

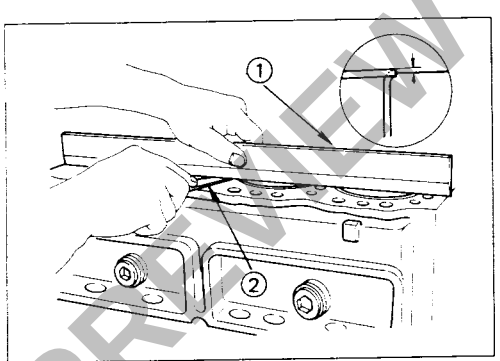


Note:

The inside of the dry type cylinder liner is chrome plated. It cannot be rebored or honed.

It the inside of the cylinder liner is scored or scorched, the cylinder liner must be replaced.

Cylinder Liner Projection Inspection



1. Hold a straight edge ① along the top edge of the cylinder liner to be measured.
2. Use a feeler gauge ② to measure each cylinder liner projection.

mm(in)

	Limit
Cylinder Liner Projection	0.03 — 0.10 (0.001 — 0.004)

The difference in the cylinder liner projection height between any two adjacent cylinders must not exceed 0.03 mm (0.001 in).

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