A. GROUND TRANSPORTATION

1. Machine Preparation

a. Know the total weight, length, width and height of the machine being transported. See Figures 5.2A and 5.2B.

b. Know route to be traveled. Investigate bridges, overpasses, height of road signs on route.

c. Obtain any permits required from proper government agencies for machine transportation.

d. Use only a trailer with a rated capacity sufficient to transport the machine.

e. Make certain trailer has ramps or a ramp is available for loading and unloading the machine.

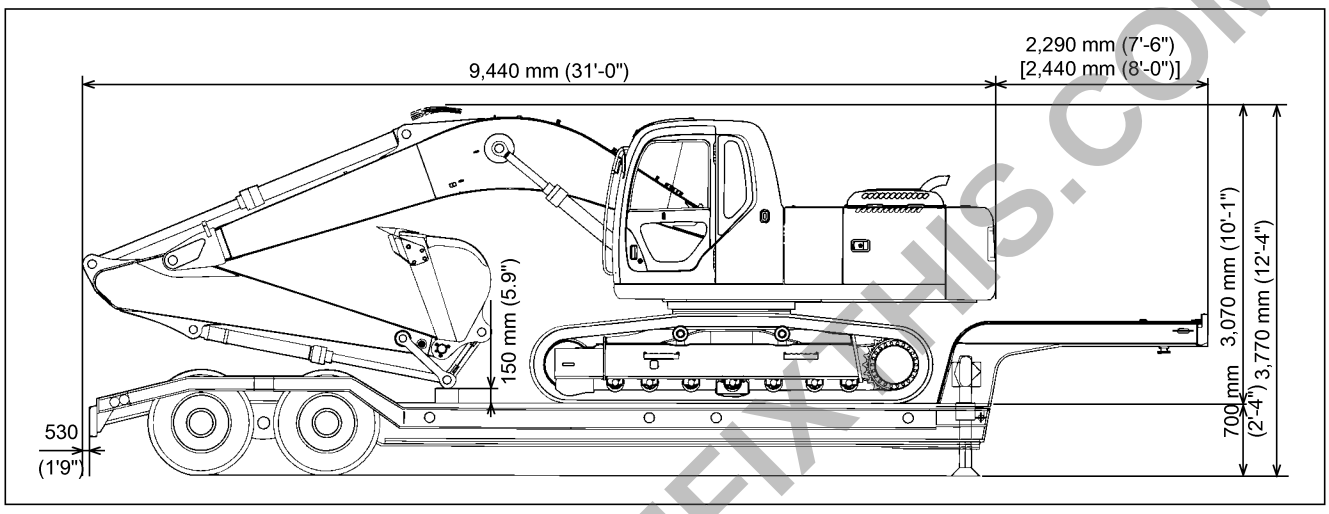


FIGURE 5.2A

Dimensions and weights are with 2.94 m (9'-8") arm, 0.81 m^3 (1.06 yrd^3) bucket and 5.65 m (18'-6") boom.

Note: *This illustration is for demonstration purposes only. Always, make sure to check actual dimensions after machine is loaded on trailer.*

SHOES / MODEL	600 mm (23.6")	700 mm (27.6")	800 mm (31.5")	900 mm (35.4")
SK210-VI	20,000 (44,090)	--	--	--
SK210LC-VI	20,500 (45,200)	21,000 (46,300)	21,300 (47,000)	21,500 (47,400)

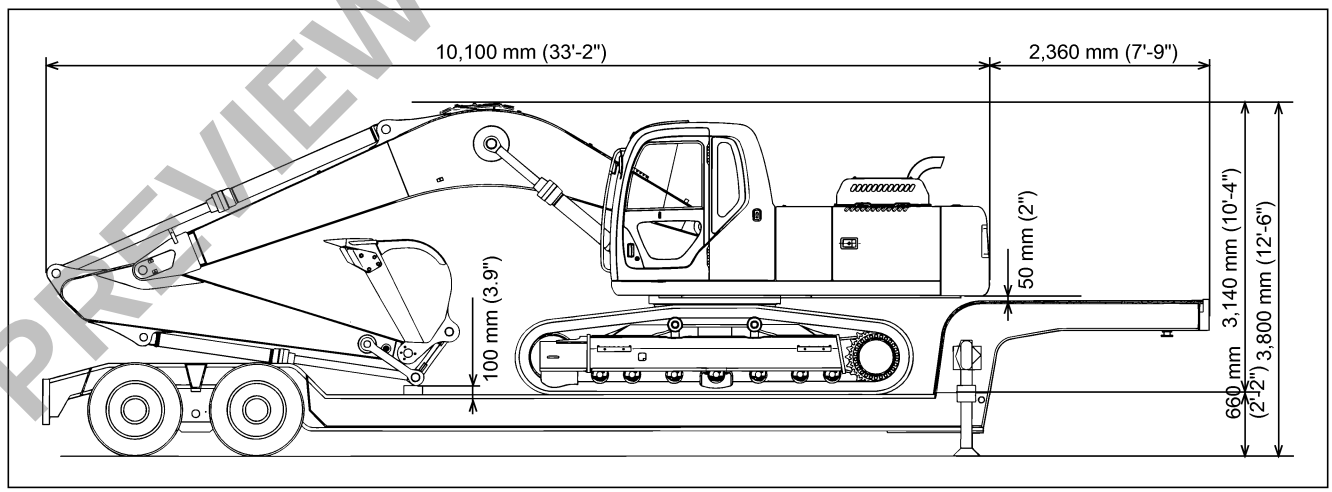


FIGURE 5.2B

Dimensions and weights are with 2.98 m (9'-9") arm, 1.04 m3 (1.36 yrd3) bucket and 6.02 m (19'-9") boom.

Note: *This illustration is for demonstration purposes only. Always, make sure to check actual dimensions after machine is loaded on trailer.*

SHOES / MODEL	600 mm (23.6")	800 mm (31.5")	900 mm (35.4")
SK250-VI	23,600 (52,000)	--	--
SK250LC-VI	24,200 (53,350)	24,800 (54,700)	25,100 (55,300)

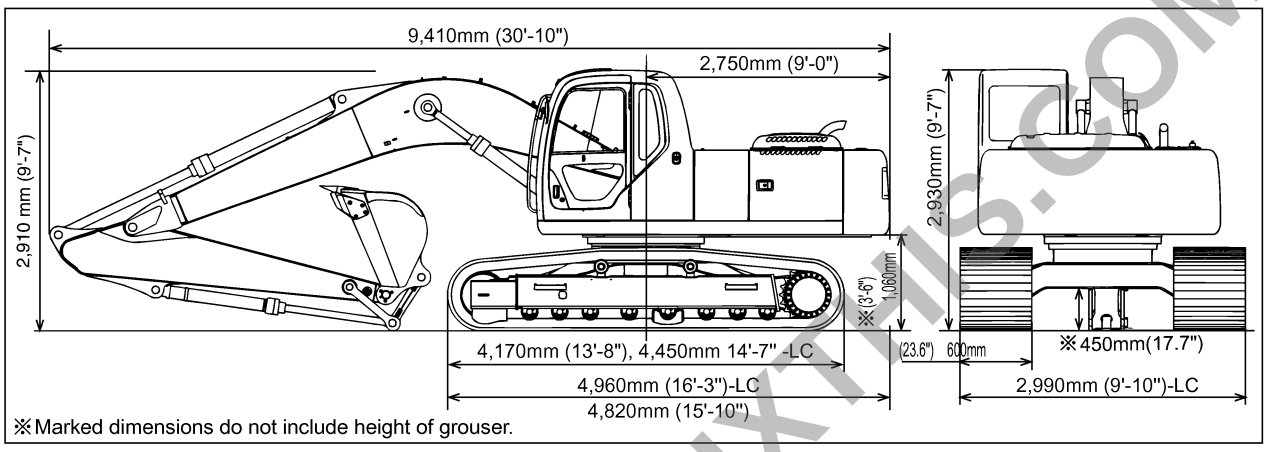
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1. SK210-VI and SK210LC-VI GENERAL SPECIFICATIONS

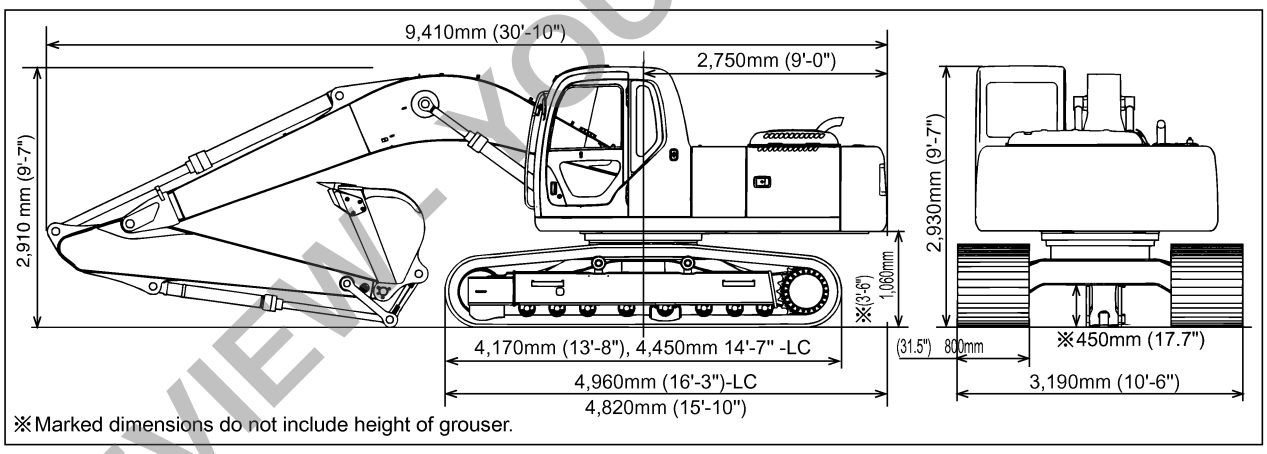
The specifications found in this section are given on the Standard SK210 LC -VI Hydraulic Excavator as manufactured. No modifications or options are taken in to consideration in regard to these specifications.

1-A. MACHINE DIMENSIONS

600 mm Track Shoes: Machine dimensions with Standard Boom {5.65 m (18' 6")}, Standard Arm {2.94 m (9' 8")}, Bucket {0.81 m^3 (1.06 yrd3)}, and Track Shoes {600 mm (23.6")}.



800 mm Track Shoes: Machine dimensions with Standard Boom {5.65 m (18' 6")}, Standard Arm {2.94 m (9' 8")}, Bucket {0.81 m3 (1.06 yrd3)}, and Track Shoes {800 mm (23.6")}.



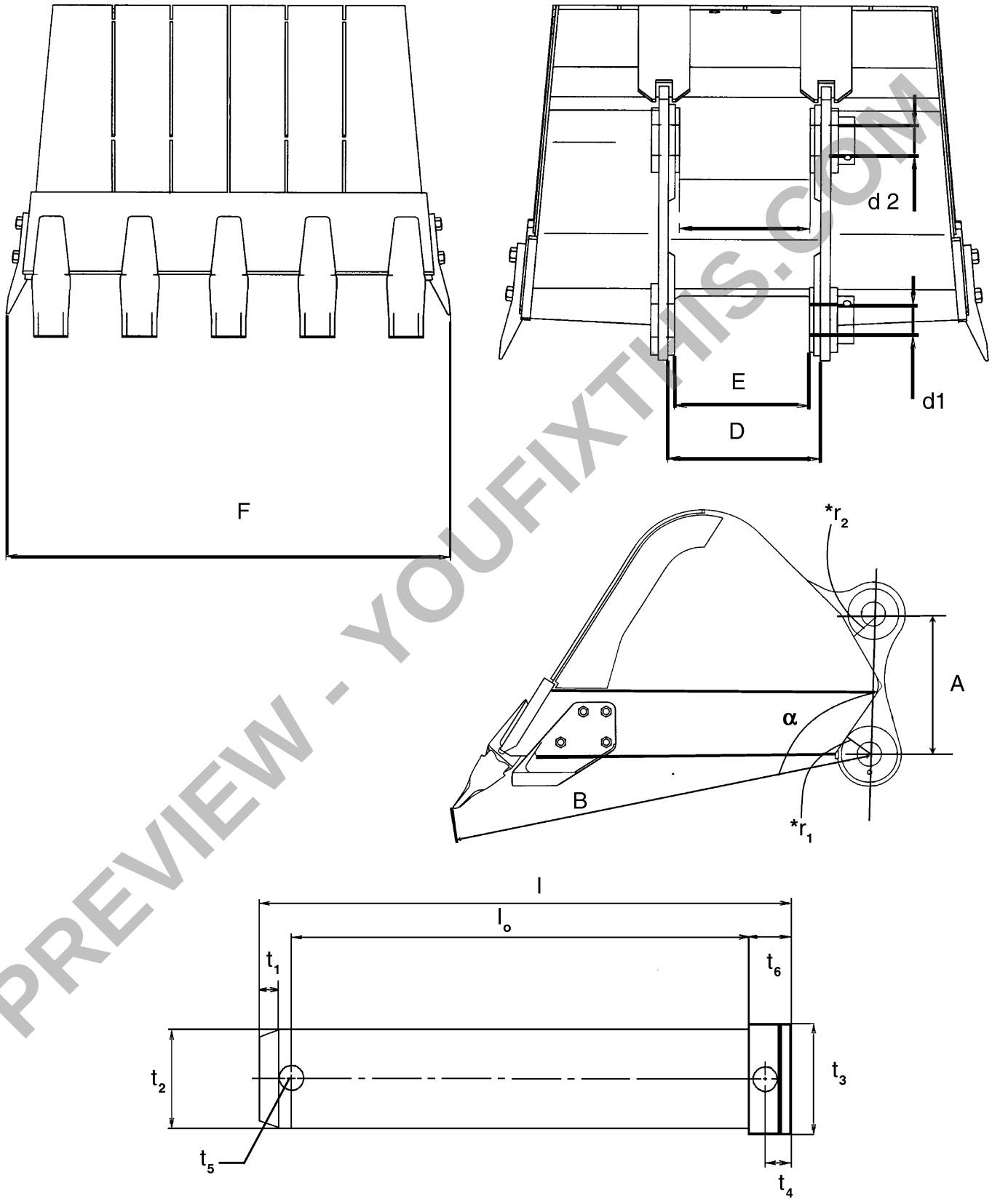
1-B. WORKING WEIGHTS

TRIPLE GROUSER SHOES					
Track Shoe Width	mm (in)	600 (23.6)	700 (27.6)	800 (31.5)	900 (35.4)
Overall Width	m (ft-in)	2.99 (9-10)	3.09 (10-2)	3.19 (10-6)	3.29 (10-10)
Ground Pressure	kg/cm2 (psi)	0.43 (6.11)	0.37 (5.40)	0.33 (4.83)	0.30 (4.27)
Working Weight	kg (lbs)	20,500 (45,200)	21,000 (46,300)	21,300 (47,000)	21,500 (47,000)
Bucket Weight: 650 kg (1,430 lbs)					

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3.1 BUCKET DIMENSIONAL DRAWING KAI SPECIFICATIONS

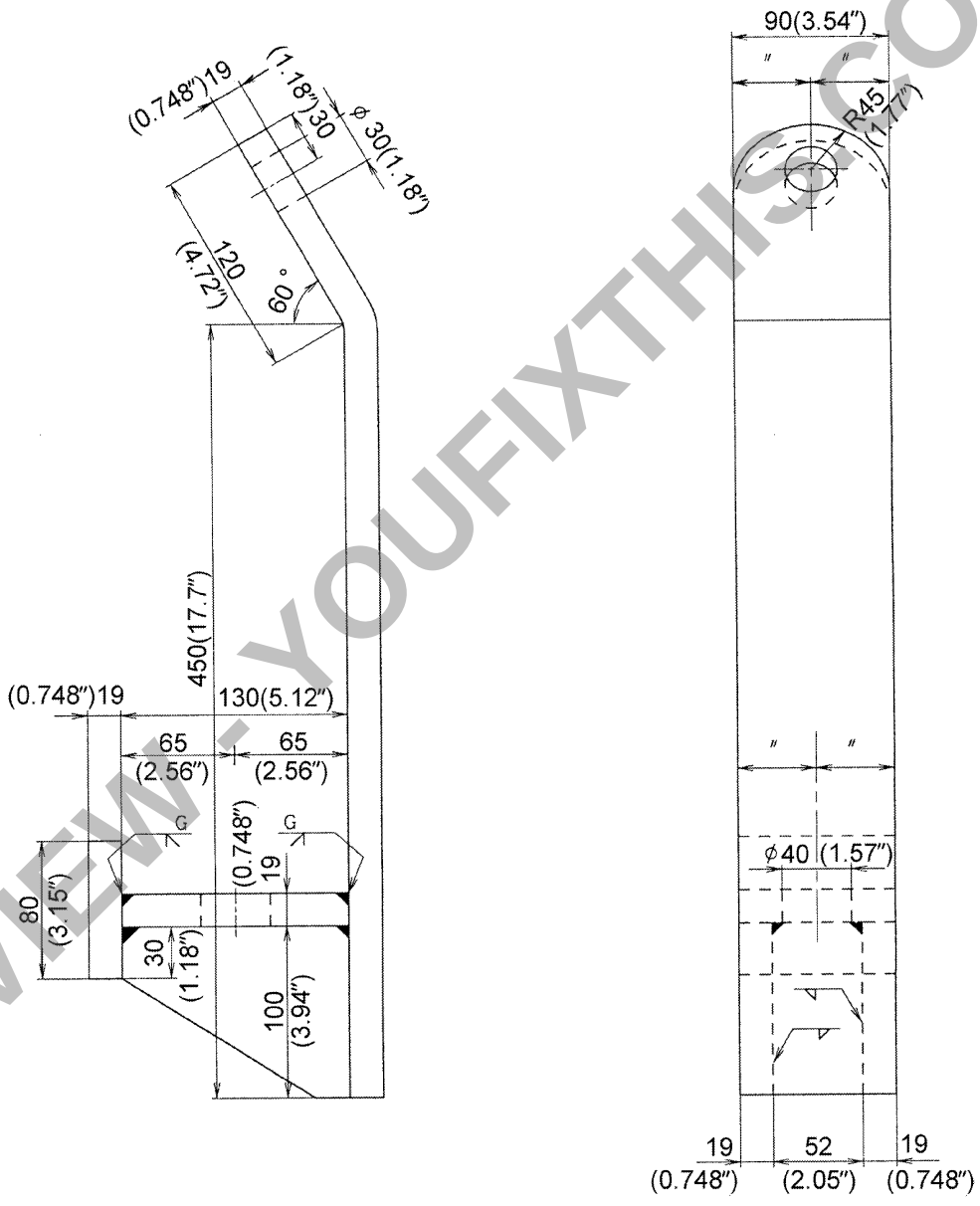


* Individual bucket designs could effect this clearance.

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10. UPPER FRAME LIFTING JIG



Q'ty : 2set

Material : POK400(SS41)

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CHAPTER 12

EH215 CRAWLER EXCAVATOR

NEW HOLLAND CONSTRUCTION

STANDARD MAINTENANCE TIME TABLE

CH 12

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1. STANDARD WORKING TIME TABLE for MAINTENANCE OF EXCAVATOR

01 Attachment 1-1
02 Cab & Guard 1-2
03 Swing Frame 1-3
04 Travel System 1-5
06 Electric Equipment 1-6

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2.1 Cooling System 2-2
2.2 Electric system 2-3
2.3 Engine 2-5
2.4 Fuel System 2-13

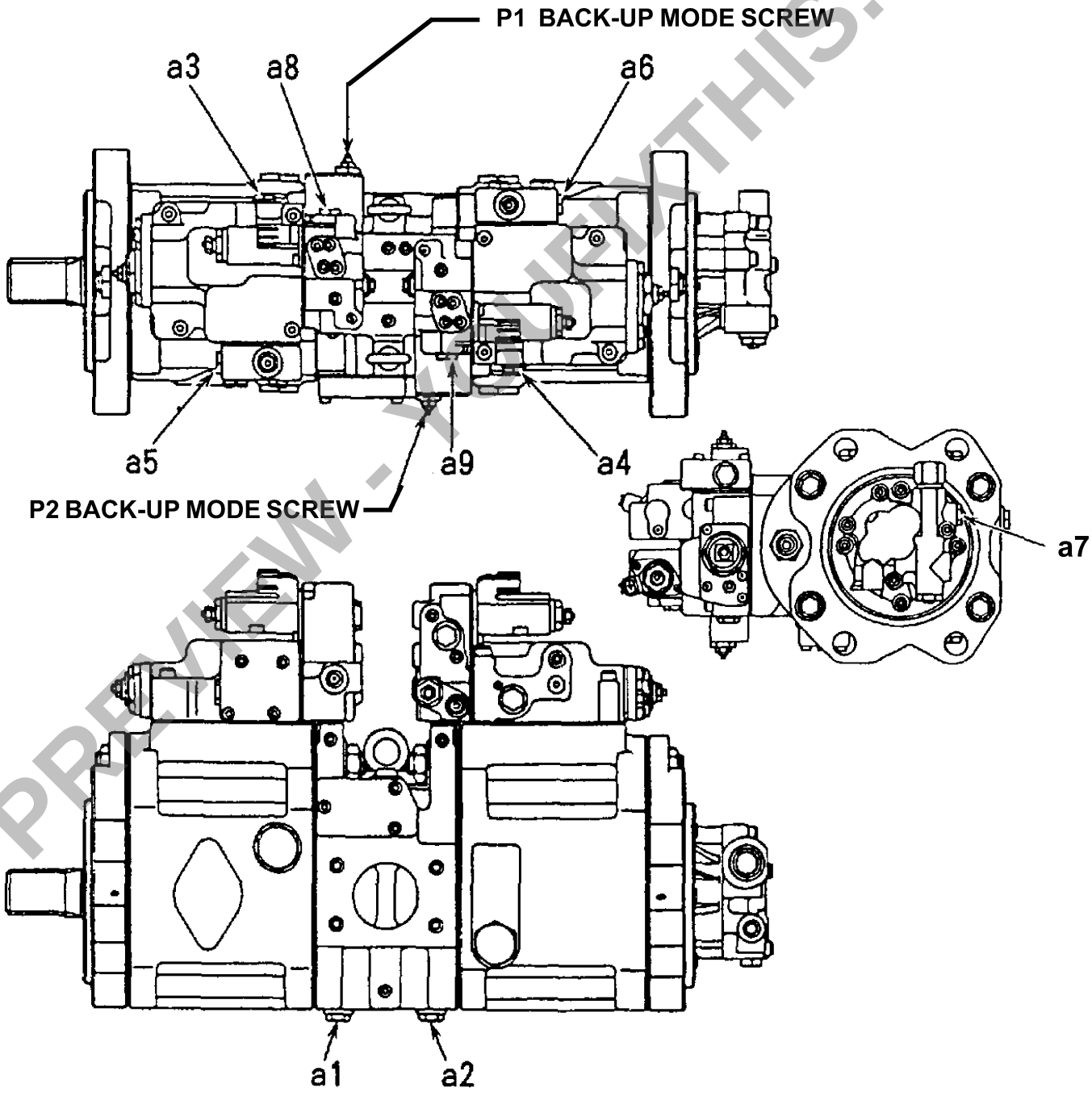
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Model Cross-reference: SK210LC is NEW HOLLAND Model EH215

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10. MEASUREMENT OF ADDITIONAL CIRCUIT PRESSURE PORTS

1. High pressure sensor circuit
   Remove a5, a6 port plugs PF 1/4 of main pump and attach pressure gauge of 700 kgf/cm² (10,000 psi).
2. Pump proportional valve secondary pressure circuit Remove a8, a9 port plugs PF 1/4 of main pump and attach pressure gauge of 70 kgf/cm² (1000 psi).
3. Pilot piston circuit
   Remove a3, a4 port plugs PF 1/4 of main pump and attach pressure gauge of 70 kgf/cm² (1000 psi).
4. Negative control pressure
   When operating in backup mode.
   Remove a3, a4 port plugs PF 1/4 of main pump and attach pressure gauge of 70 kgf/cm² (1000 psi).



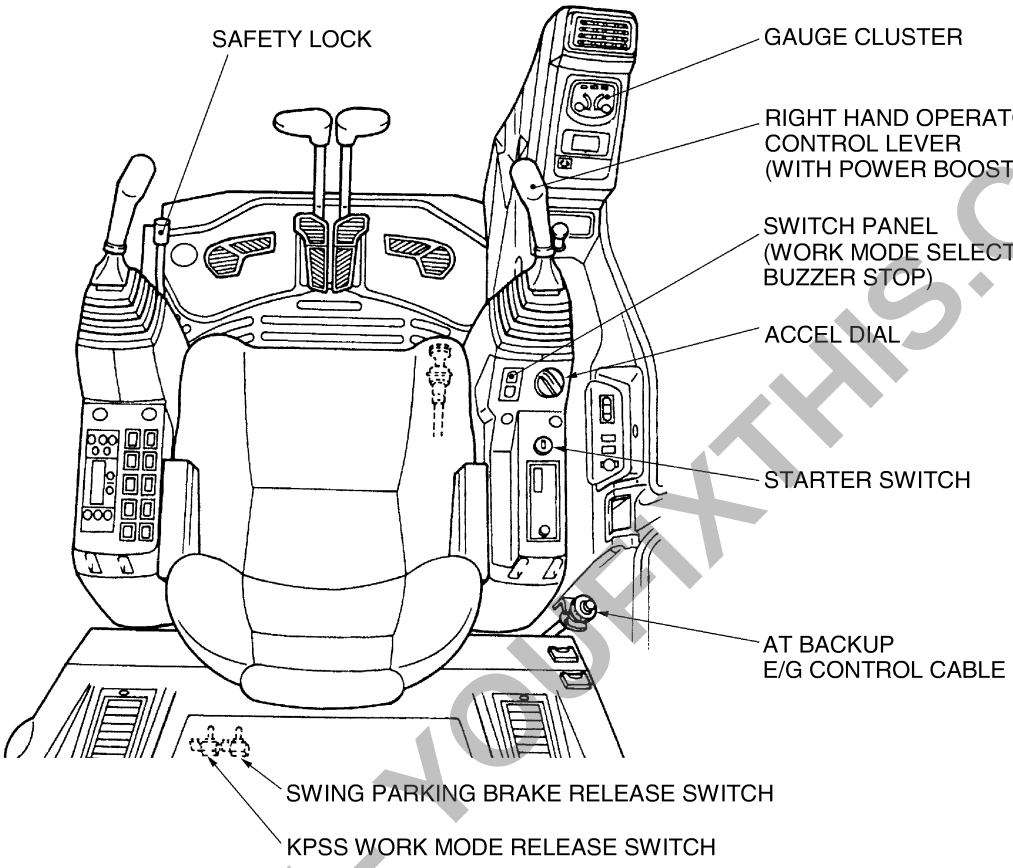
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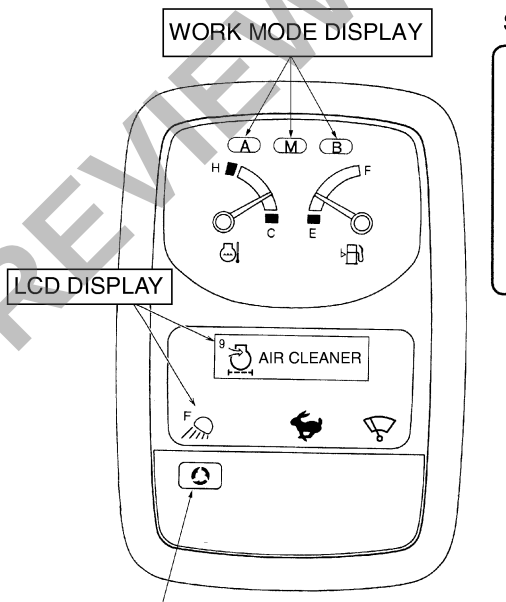
2. MECHATRO CONTROLLER

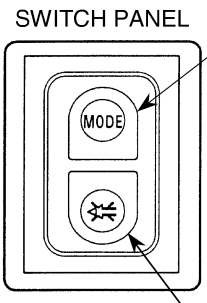
2.1 SUMMARY OF MECHATRO CONTROLLER

Electro-hydraulic conversion information is displayed on the multi display of the gauge cluster. However, the mechatro display and the cumulative engine oil lubrication time may be changed over if the screen change switch is pressed.



GAUGE CLUSTER





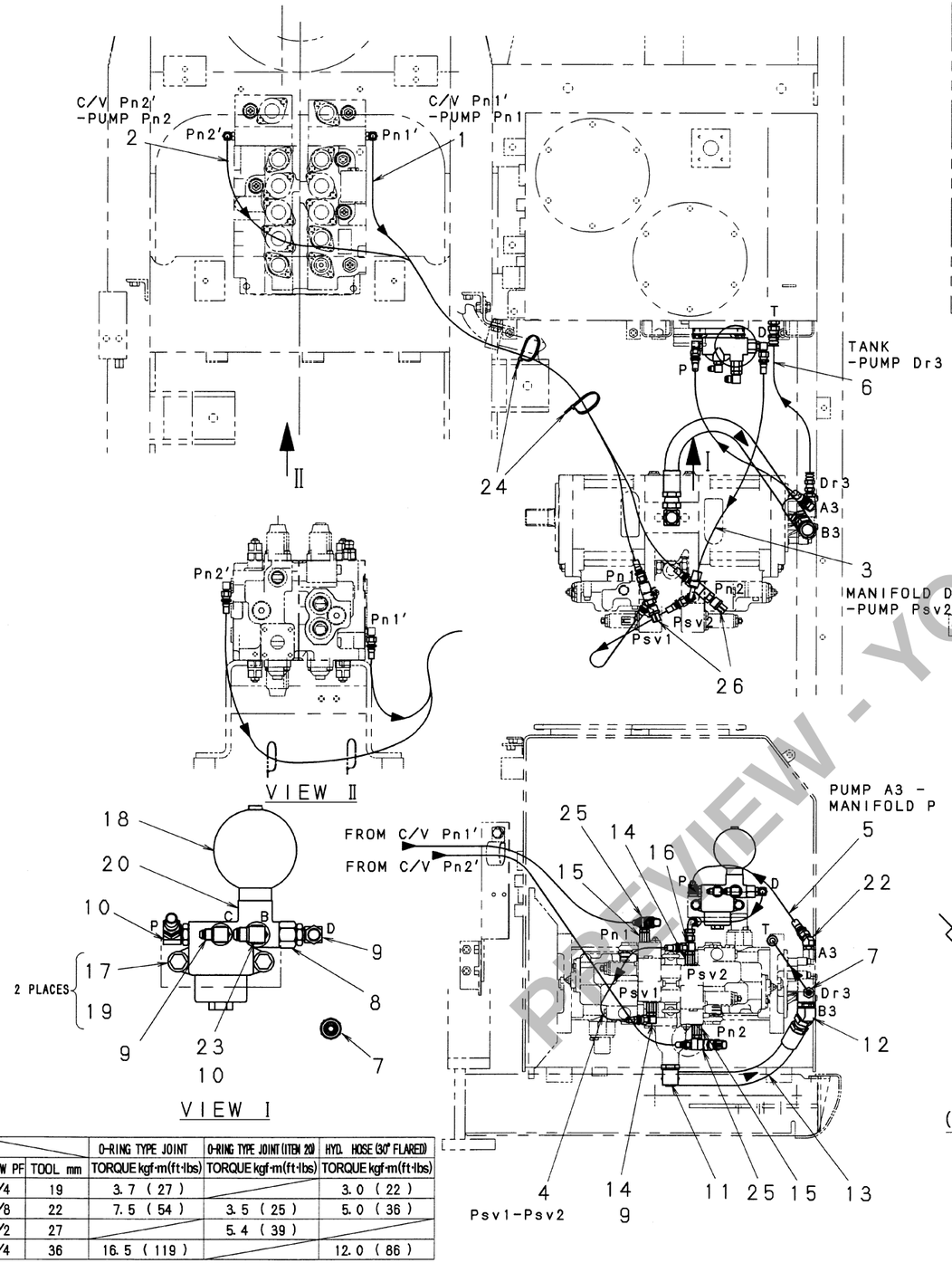
Work mode select switch functions
① Work mode select M→A→B
② Display item roll forwarded in trouble history indication
③ Cumulative hours from engine oil change display up
④ Flow rate display up in the B (breaker) mode

Buzzer stop switch functions
① Stops the warning sounding
② Service diagnosis display item down
③ Display item rollbacked in trouble history indication
④ Cumulative hours from engine oil change display down
⑤ Flow rate display down in the B (breaker) mode

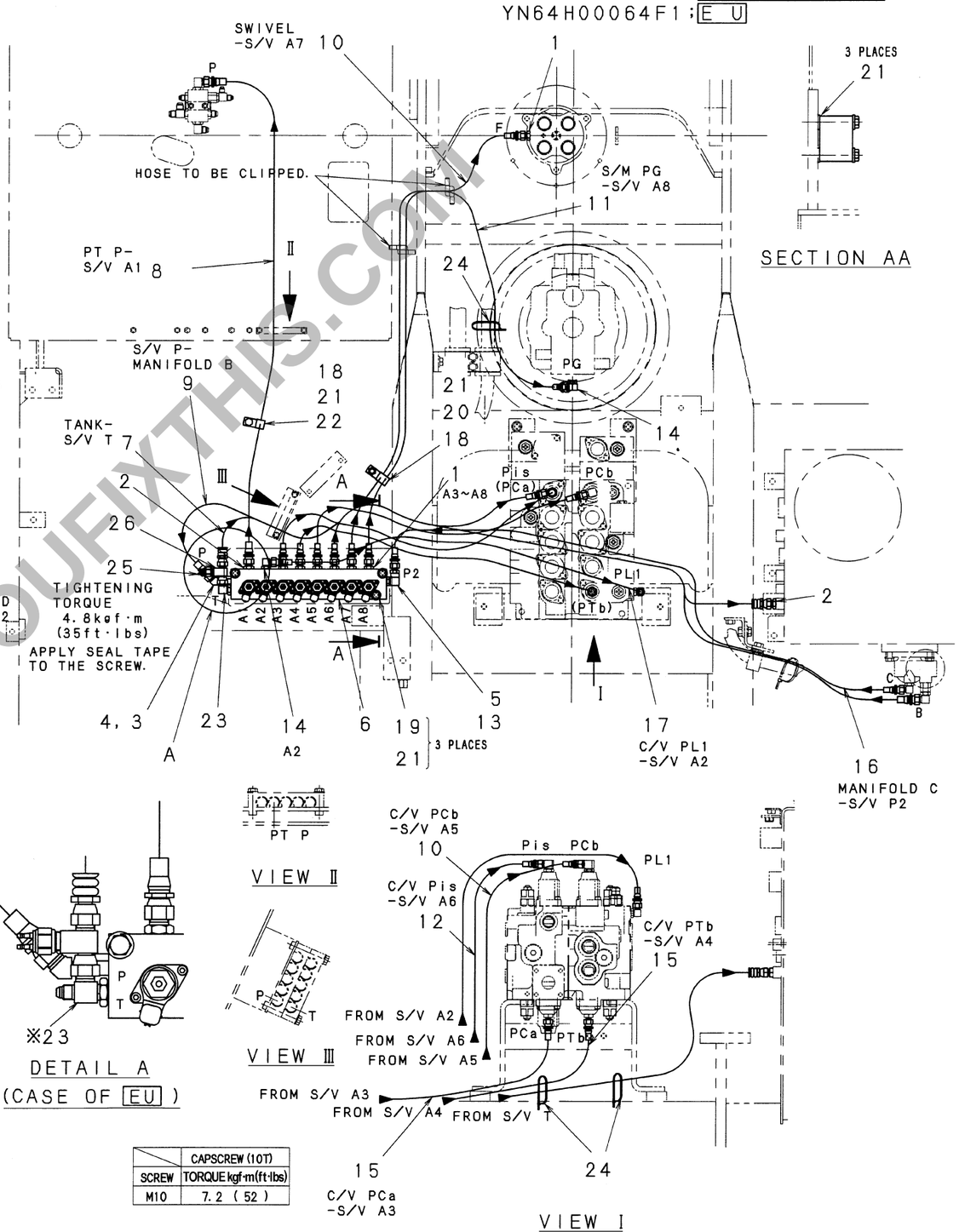
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PILOT PIPING

(1) Pump delivery ; YN06H00016F1



(2) Proportional valve block lines ; YN64H00046F1 ; ASIA, OCEANIA
YN64H00064F1 ; EU



		O-RING TYPE JOINT	O-RING TYPE JOINT (ITEM 20)	HYD. HOSE (30° FLARED)
SCREW PF	TOOL mm	TORQUE kgf·m(ft·lbs)	TORQUE kgf·m(ft·lbs)	TORQUE kgf·m(ft·lbs)
1/4	19	3.7 (27)		3.0 (22)
3/8	22	7.5 (54)	3.5 (25)	5.0 (36)
1/2	27		5.4 (39)	
3/4	36	16.5 (119)		12.0 (86)

	CAPSCREW (10T)
SCREW	TORQUE kgf·m(ft·lbs)
M10	7.2 (52)

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CHAPTER 23

EH215 CRAWLER EXCAVATOR

NEW HOLLAND CONSTRUCTION

ELECTRICAL SYSTEM

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2.3 Specifications of Electrical Equipment E1-5
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3.4 Instrument Panel Assembly 10A
3.5 Upper Electrical Assembly 11
3.6 Upper Harness Assembly 12
3.7 Engine Harness Assembly 18
3.8 Upper Harness Assembly (Floor Plate) 20
3.9 Cab Assembly 24
3.10 Cab Harness Assembly 25

CH 23

Model Cross-reference: SK210LC is NEW HOLLAND Model EH215

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1. HYDRAULIC PUMP · REGULATOR

1.1 SUMMARY

(1) Outside view and hydraulic port

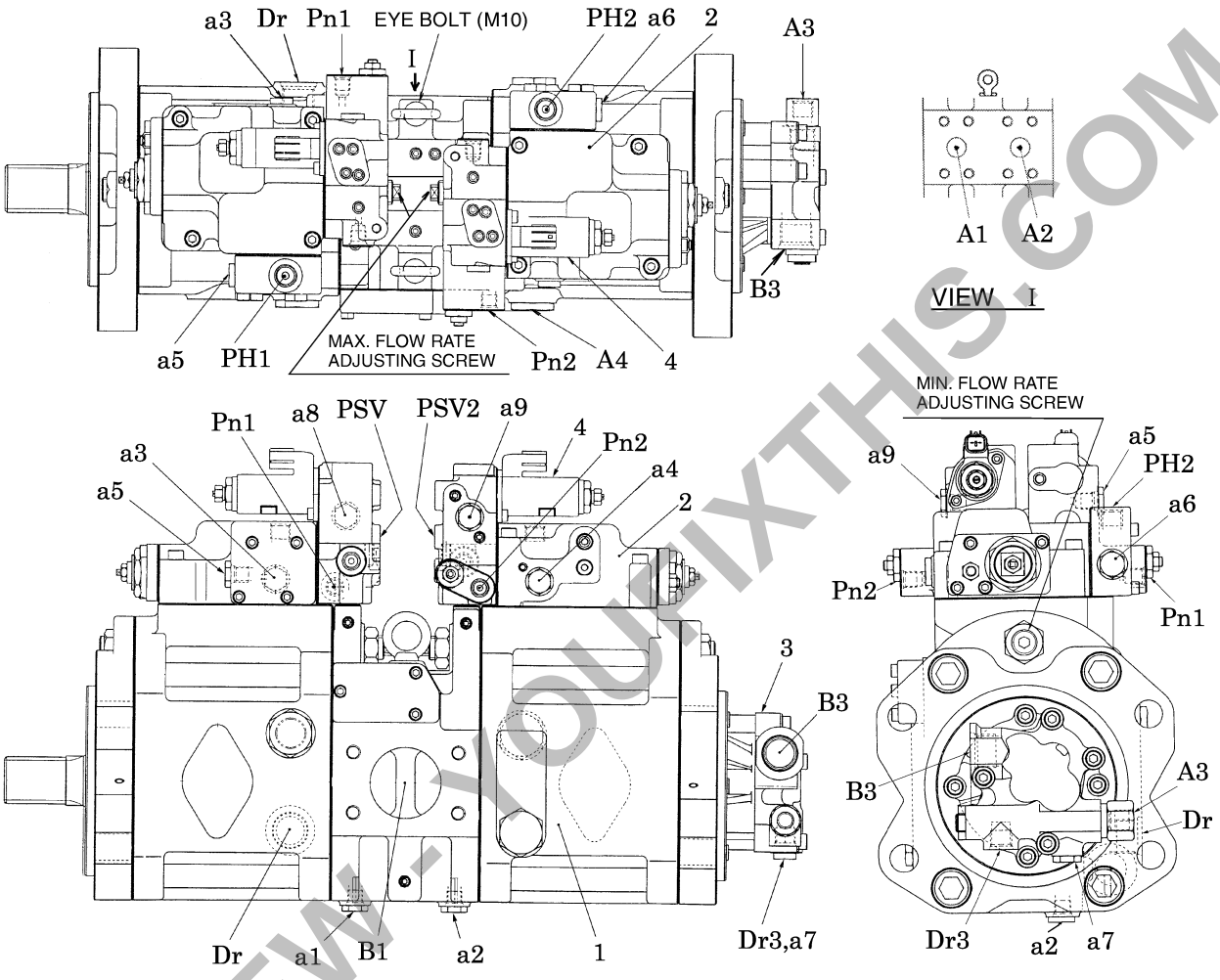


Fig. 1-1 Hydraulic pump · regulator

No.	NAME
1	MAIN PUMP ASSY
2	REGULATOR ASSY
3	GEAR PUMP ASSY(FOR PILOT)
4	SOLENOID PROPORTIONAL REDUCING VALVE

Table 1-1 Hydraulic ports

Code	Ports name	Size
A1,2	Delivery port	
B1	Suction port	
Dr	Drain port	PF3/4
PSV1,2	Servo assist port	PF1/4
Pn1,2	Servo assist port	PF1/4
PH1,2	Pressure sensor port	PF3/8
a1～9	Gauge port	PF1/4
A3	Delivery port of gear pump	PF3/8
B3	Suction port of gear pump	PF3/4
Dr3	Drain port of gear pump	PF3/8

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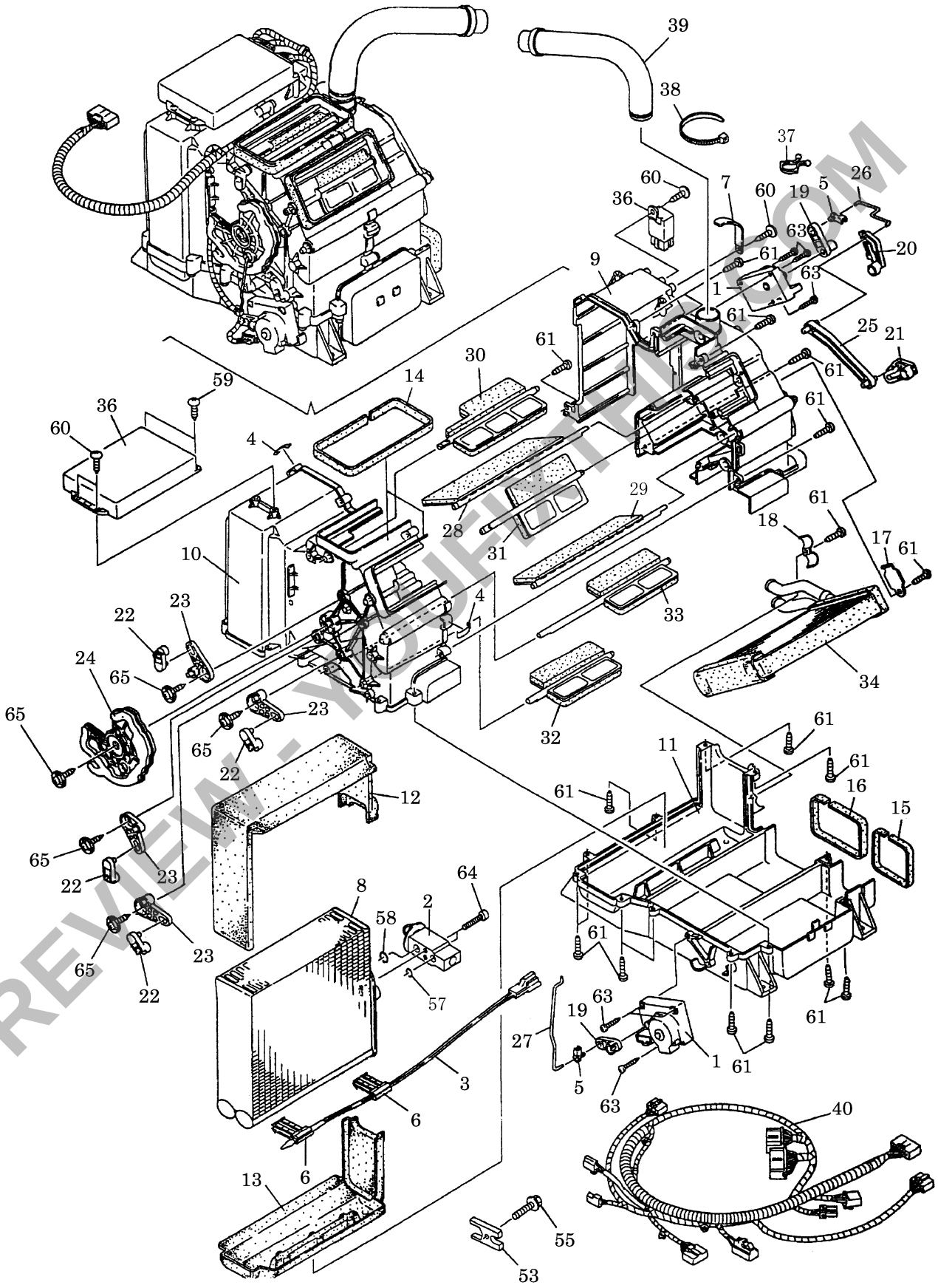


Fig. 4 Air-conditioner unit

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1. ATTACHMENT ASSY AND NAME

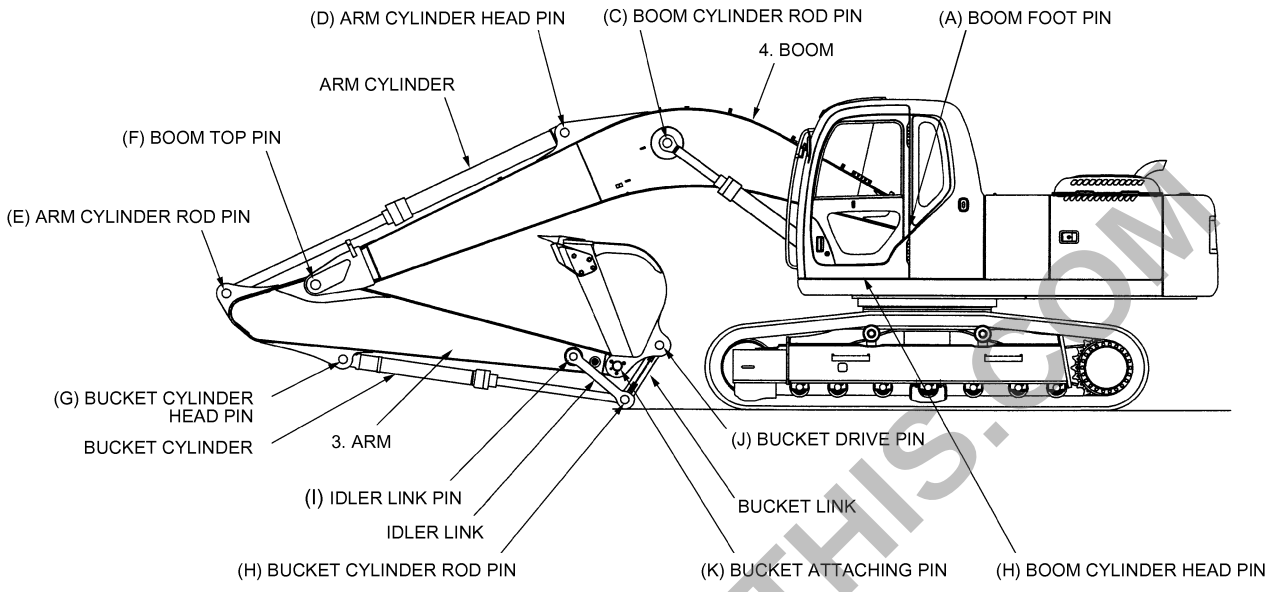


Fig. 1-1 Front attachment name and position

2. BUCKET

2.1 REMOVING BUCKET

(1) Put the machine in position to remove bucket.

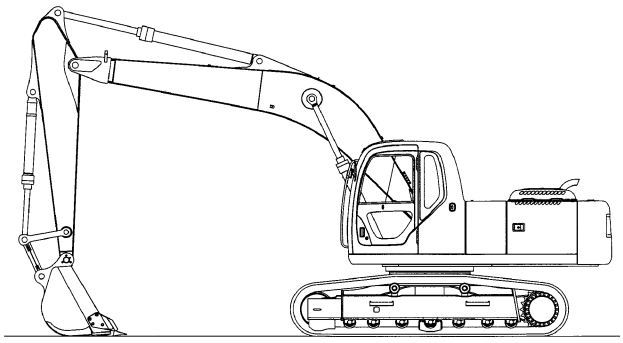
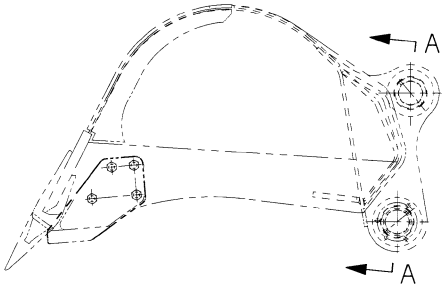
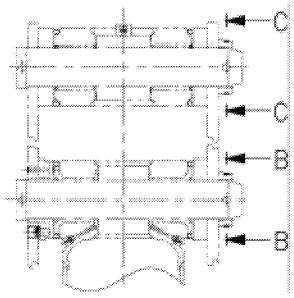


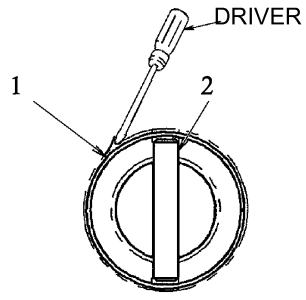
Fig. 2-1 Position to remove bucket

(2) Removing pin (2)
Expand slit of ring (1) with driver, and remove it.
Push out the pin (2) with driver (•).





SECTION A•A



SECTION B-B & C-C

Fig. 2-2 Removing pin (2)

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1. OPERATOR SEAT

1.1 REMOVAL

(1) Remove seat belt.

1) Remove the head rest of the operator's seat to ease handling.
2) Move the whole control stand to its foremost position.
3) Move the operator's seat to its forward end.
4) Incline the reclining seat as forward as possible.
5) Remove the snap hook of the seat belt (1) from the eye bolts (2 places)

(2) Remove operator's seat. (Include upper rail.)

1) With the above-mentioned seat belt removed, remove two cap screws (A8) M8×20 from the upper rail. Then move the control stand to its rearmost end and remove two cap screws (A8) M8×20.
   : 6mm
2) Remove the operator's seat. [about 22kg (48 lbs).]
   Before removing the cab, remove the A/C mounting cover assembly in this condition. This eases removal and fixing of harness connectors.
   Carry out the following operations as required.
3) Remove cover (A3).
4) Remove support (A1).
5) Remove seat stand (A2).

1.2 INSTALLATION

Install it in reverse procedure of removing according to the tightening torque table.

Tightening position	Allen wrench HEX	Tightening torque kgf·m (ft·lbs)
Sems bolt (A7)	17	4.7 (34)
Capscrew (A8)	6	4.3 (31)

Reference : Movement on rail
Upper rail ..... Fixed on lower surface of seat
[Forward 80mm (0.26in), backward 80mm (0.26in)]
Lower rail ..... Fixed on seat stand.
[Forward 60mm (0.19in), backward 60mm (0.19in)]
Amount of adjustment of seat height
[Up; 23mm (0.07in), down; 37mm (0.16in)]

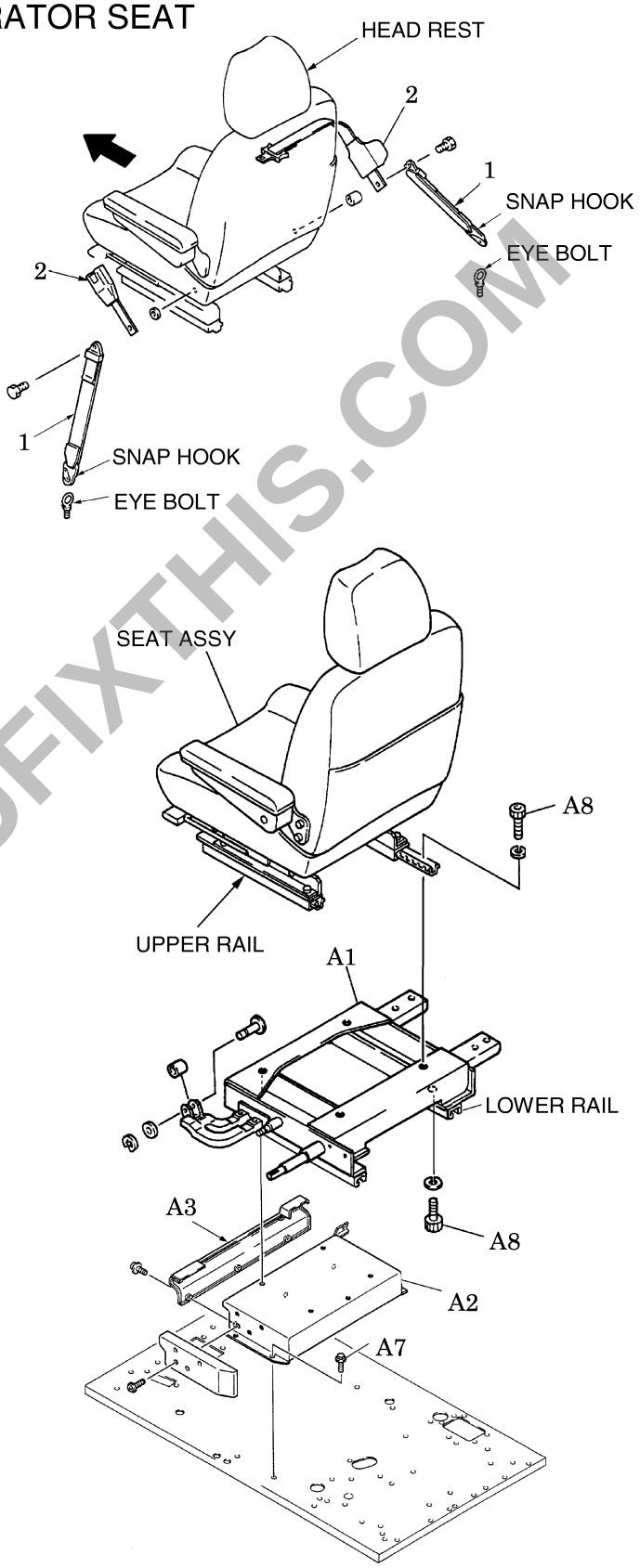


Fig. 1-1 Disassembling and Assembling seat

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1. TRAVEL SYSTEM

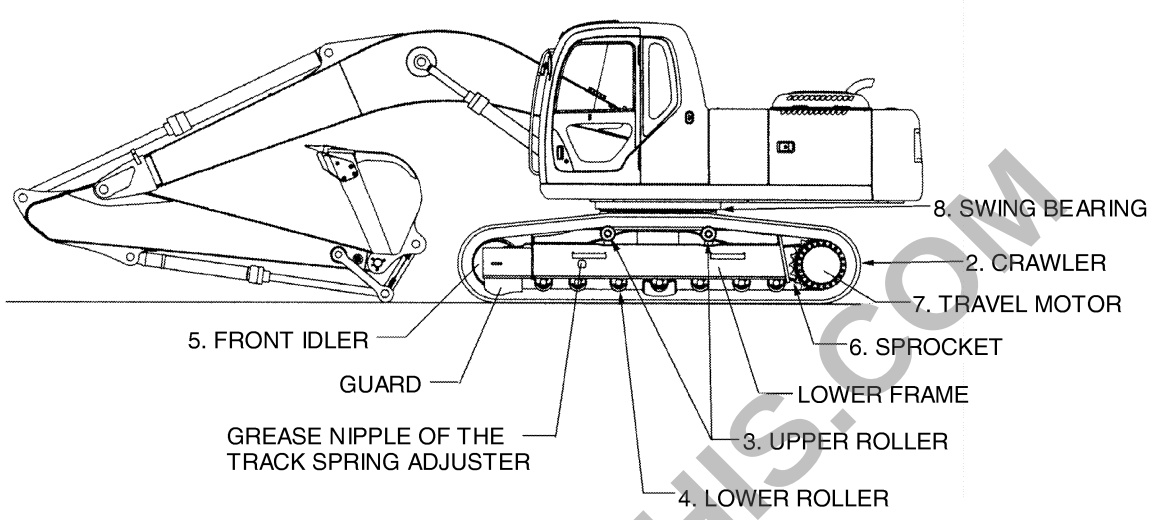


Fig. 1-1 Designation and location of undercarriage

2. CRAWLER

2.1 REMOVING CRAWLER

(1) Position the machine to remove crawler.

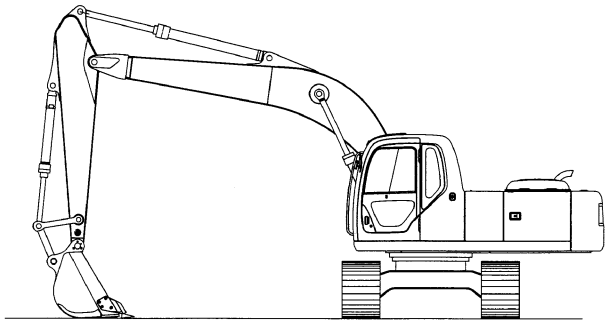


Fig. 2-1 Crawler removing position

(2) Pushing out master pin.

1) Find the master pin and place it in its removing/fixing position in Fig.2.2.

2) Loosen the grease nipple and slacken crawler.

: 19mm

⚠
- When loosening the grease nipple of the adjuster, do not loosen it more than one turn.
- Where grease does not come out well, move the machine back and forth. The over loosening of grease nipple may cause it to jump out incurring danger of injury. So be careful not to over loosen the grease nipple.

3) Pushing out master pin

Apply jig on master pin and strike it out with a mallet.

(Refer to Fig.2-6 Fixing the master pin.)

⚠
- When using a big hammer, wear protective goggles and a long-sleeved uniform so you do not injure yourself by flying objects.

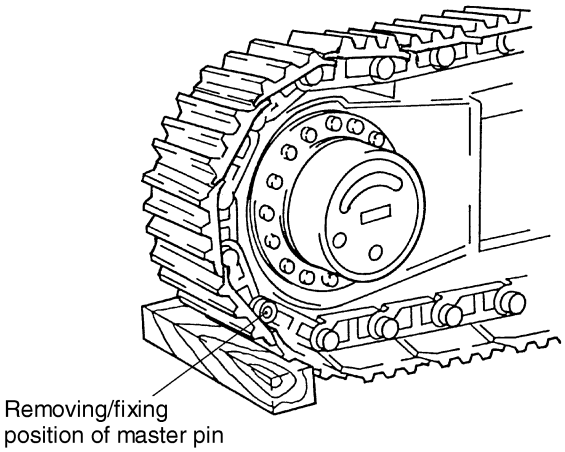


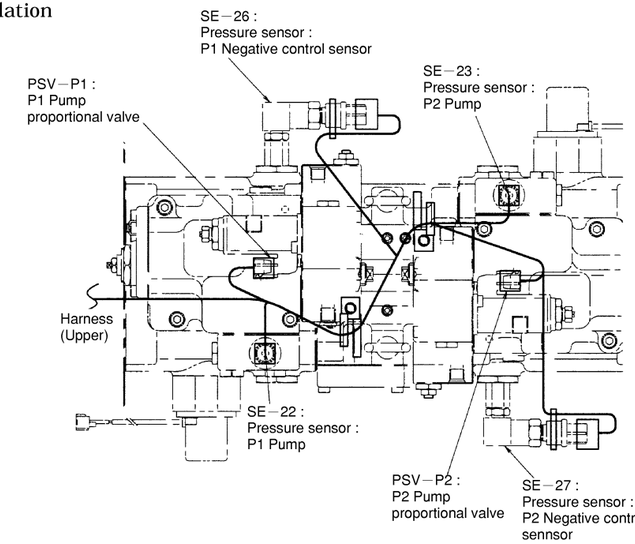
Fig. 2-2 Removing/fixing position of master pin

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4. CHECK POINTS FOR MECHATRO SYSTEM (FOR TROUBLESHOOTING)

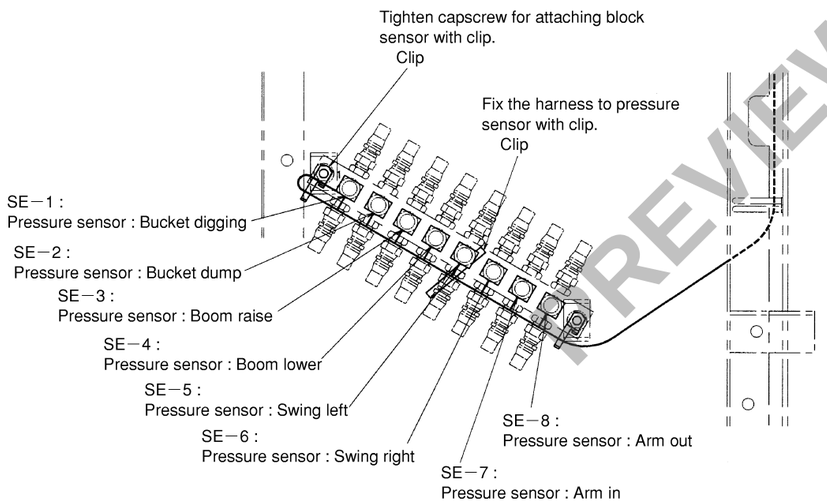
4.1 ATTACHING POSITION OF SENSOR

(1) Pump relation



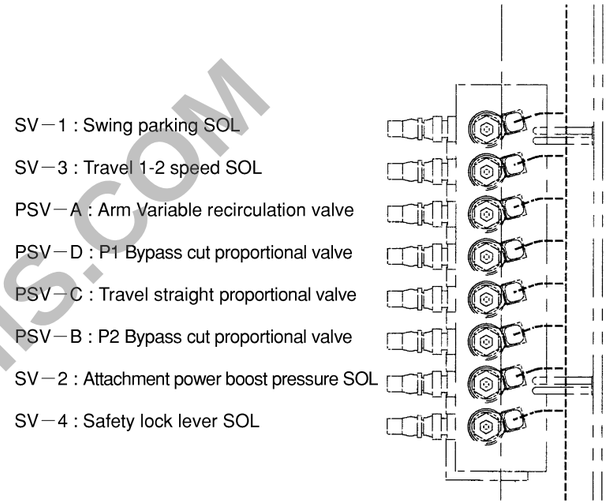
Pump assy ; YN10V00007F1
- Pump high pressure sensor SE−22, SE−23 ; LC52S00002P1
- Pump proportional valve PSV−P1, PSV−P2 ; YN35V00018F2
- Negative control sensor SE−26, SE−27 ; YN52S00016P1

(2) Low pressure sensor for pilot operation



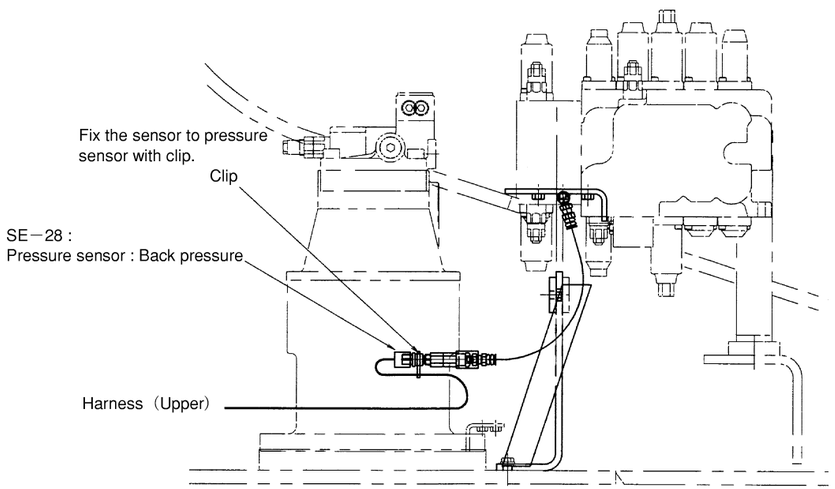
LOW PRESSURE SENSOR
(SE−1～SE−8 ; LC52S00001P2)

(3) Solenoid proportional valve block



PROPORTIONAL BLOCK SECTION
(PSV-A～PSV-D ; YN35V00022F1)

(4) Back pressure sensor



BACK PRESSURE SENSOR SECTION
(SE−28 ; LC52S00001P2)

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CHAPTER 42

EH215 CRAWLER EXCAVATOR

NEW HOLLAND CONSTRUCTION

HYDRAULIC SYSTEM (TROUBLESHOOTING)

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1. TROUBLE DIAGNOSIS
   1.1 Trouble Diagnosis; Hydraulic System 1
   1.2 Hydraulic Pressure Measurement by Service Diagnosis 1
2. TROUBLESHOOTING 3

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Model Cross-reference: SK210LC is NEW HOLLAND Model EH215

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CHAPTER 43

EH215 CRAWLER EXCAVATOR

NEW HOLLAND CONSTRUCTION

ELECTRICAL SYSTEM (TROUBLESHOOTING)

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CHAPTER 44

EH215 CRAWLER EXCAVATOR

NEW HOLLAND CONSTRUCTION

ENGINE
(TROUBLESHOOTING)

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   7.0 Knocking occurs after warming up E/G 6
   8.0 Exhaust is abnormal 7
   9.0 Excessive oil consumption 7
   10.0 Excessive fuel consumption 7
   11.0 E/G does not stop when starter key is turned off 8
   12.0 When starter key is turned ON, power is not cut off but engine stops 8

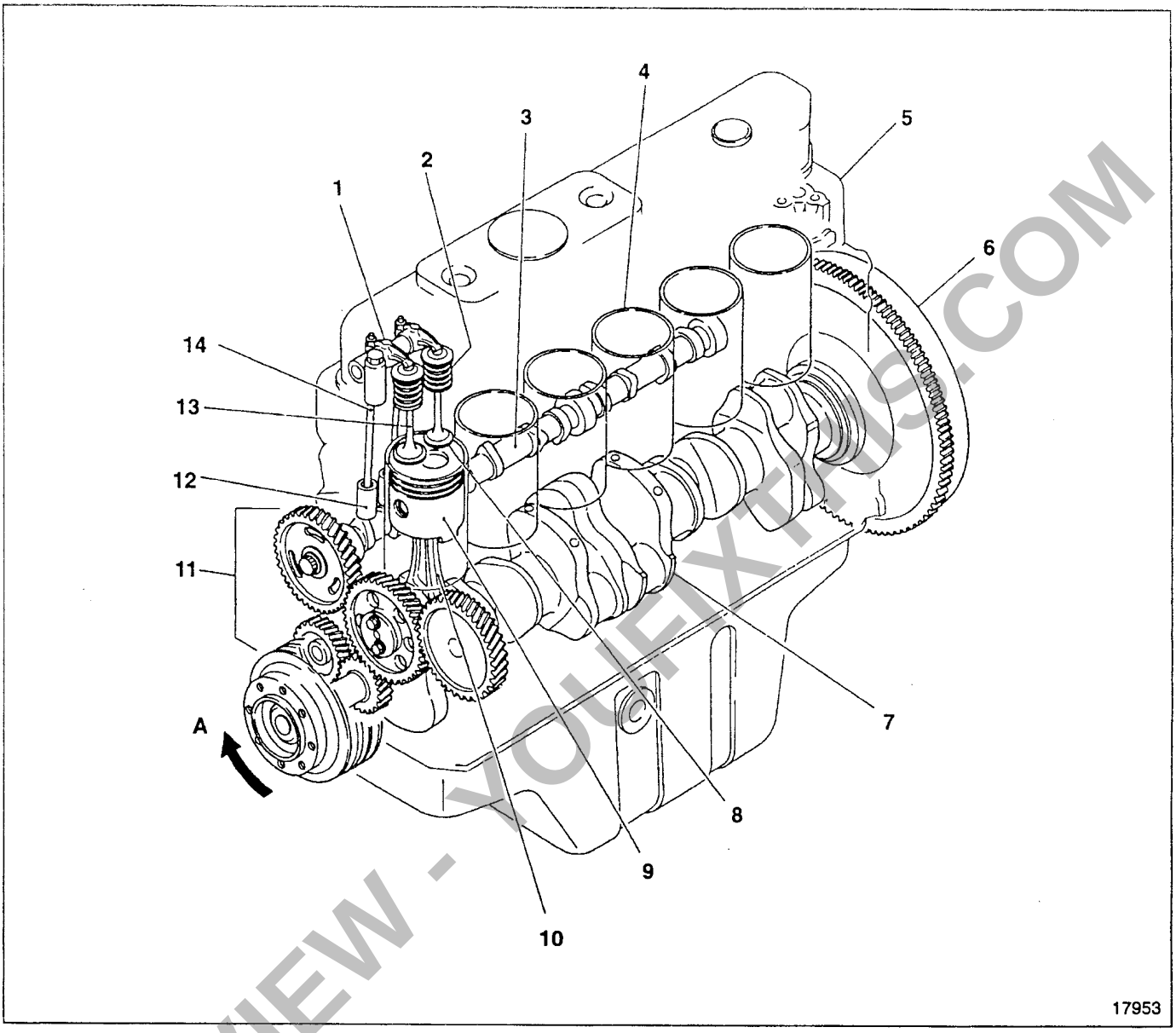
Checking condition: Starter Key in ON 8

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CH 44

Model Cross-reference: SK210LC is NEW HOLLAND Model EH215

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1 Rocker arm
2 Valve spring
3 Camshaft
4 Cylinder sleeve
5 Cylinder head
6 Flywheel
7 Crankshaft
8 Exhaust valve
9 Piston
10 Connecting rod
11 Timing gear
12 Tappet
13 Inlet valve
14 Push rod

A: Direction of rotation

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SERVICE MANUAL

EH215
CRAWLER EXCAVATOR

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NEW HOLLAND
CONSTRUCTION

6-75780NA

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EH215 CRAWLER EXCAVATOR

NEW HOLLAND CONSTRUCTION

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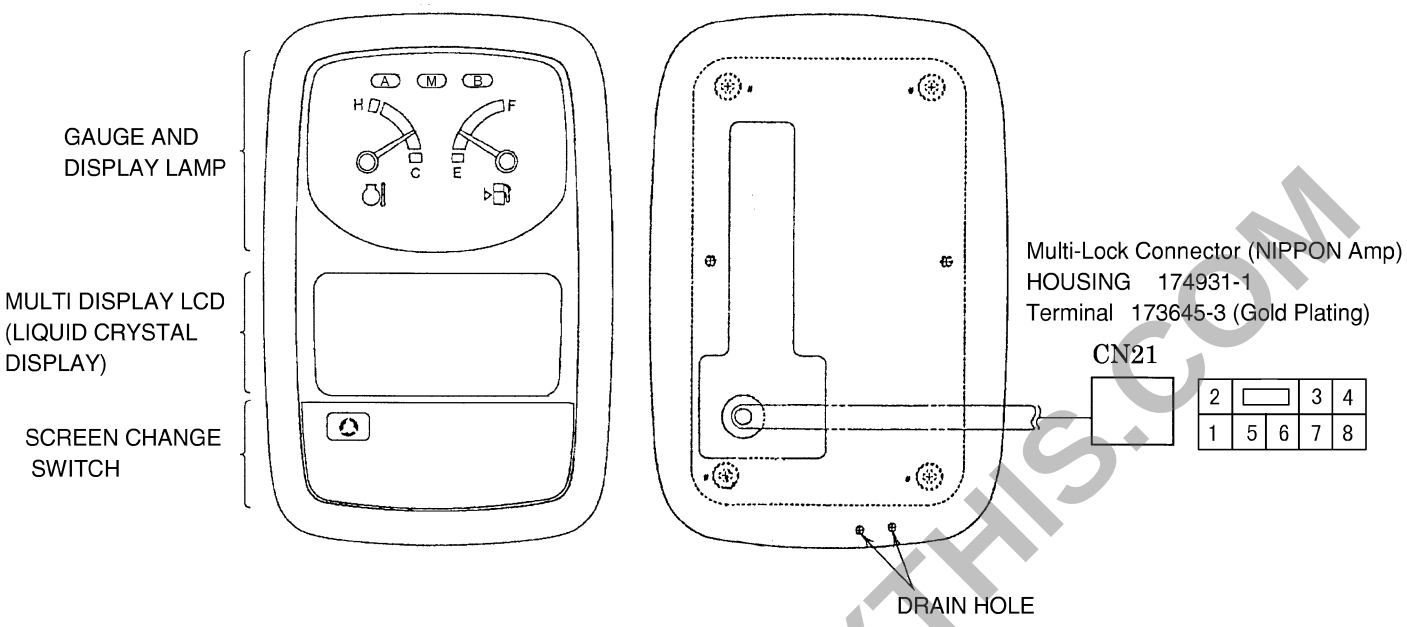
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(2) Gauge cluster (symbol C-2)

1) General view



2) Connector CN21

No.	Name	Wire color	No.	Name	Wire color
1	Fuel sensor		5	GND	
2	Engine coolant temp. sensor		6	Power supply (+24V)	
3	RXD 2 (Serial communication)		7	GND	
4	TXD 1 (Serial communication)		8	SHIELD	

3) Function

① It processes signals by communication between the gauge cluster and the mechatro controller, displays them in lamps, displays them in LCDs and actuates the buzzer.

② It puts out coolant temperature signals, fuel level signals and panel switch signals to the mechatro controller through the communication port.

4) Display and summary of actuate item

No.	Item name		Type
1	Monitor display		LCD dot 128×55
2	Gauge display (Coolant temp., Fuel level)		Tolerance coil
3	Mode display (A・M・B)		Lamp display (1.4W)
4	Warning buzzer		Piezoelectric type
5	Screen change switch		
6	Back light	For gauge	Lamp (2W)
		For SW, For LCD	LED

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(2) Swing reduction unit

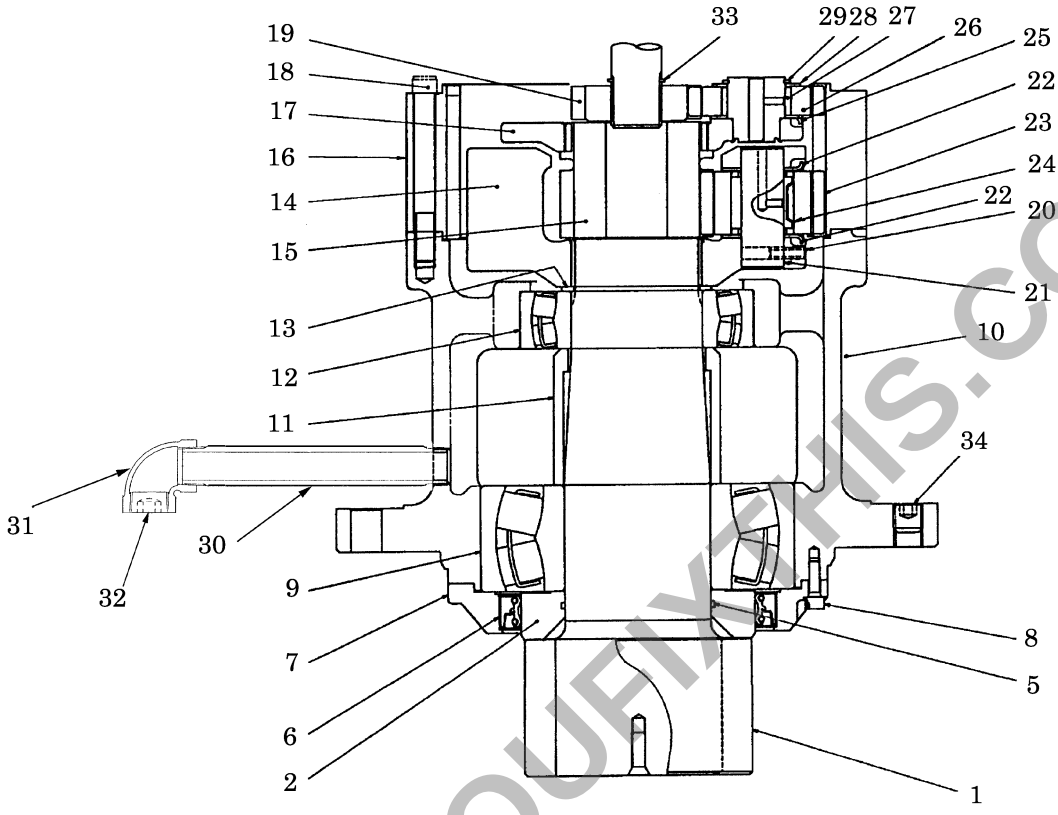


Fig. 5-3 Cross-sectional view of swing reduction unit

Tightening torque kgf·m (ft·lbs)	No.	NAME	Q'TY	No.	NAME	Q'TY
	1	PINION SHAFT	1	19	#.1 SUN GEAR	1
	2	SLEEVE	1	20	SPRING PIN	4
	4	PLUG	1	21	SHAFT	4
	5	O RING	1	22	THRUST WASHER	8
	6	OIL SEAL	1	23	#.2 PINION	4
	7	RETAINER	1	24	NEEDLE BEARING	4
3.4 (25)	8	SOCKET BOLT ; M8×25	12	25	THRUST WASHER	3
	9	BEARING	1	26	#.1 PINION	3
	10	HOUSING	1	27	ROLLER	102
	11	SPACER	1	28	THRUST WASHER	3
	12	BEARING	1	29	SNAP RING	3
	13	SNAP RING	1	30	PIPE ; L=180	1
	14	#.2 SPIDER	1	31	ELBOW	1
	15	#.2 SUN GEAR	1	32	PLUG ; PT3/4	2
	16	RING GEAR	1	33	SNAP RING	1
	17	#.1 SPIDER ASSY	1	34	SET SCREW ; M20×20	2
※18.5 (130)	18	SOCKET BOLT ; M14×130	10			

● ※ Apply Three-Bond #1360K

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8) Installing adjust plug (Fig. 1-31 Ⓖ section)
Insert adjust plug (615) and fit a snap ring (858).

- Use care so as not to mistake the holes into which the fulcrum and adjust plug are inserted.
- At this point, operate the feedback lever and make sure that the gap is not large and that the lever moves smoothly.

9) Installing return spring and the spring seat (Fig. 1-31 Ⓘ section)
Assemble return spring (654) and spring seat (653) into the spool hole and fit snap ring (814).

10) Assembling compensating parts (Fig. 1-31 Ⓘ, Ⓘ section)
Assemble set spring (655) into the spool hole. Place compensating piston (621) and piston casing (622) into the compensating hole and attach pilot cover (641). Then fasten them together with socket bolts (436).
: 5mm,
Tightening torque : 1.2kgf·m (8.7 lbf·ft)

11) Assembling into the pilot hole and the compensating hole (Fig. 1-31 Ⓥ, Ⓘ section)
Put spring seat (644), pilot spring (646) and adjust stem (645) into the pilot hole. Then assemble spring seat (624), inner spring (626) and outer spring (625) into the compensating hole.

- Do not mistake the direction of the spring seat.

12) Installing cover
Attach cover (C) (629) fitted with adjust screws (628), (925), adjust stem (627), lock nut (630), nut (801) and socket bolt (924). Then fasten them with socket bolts (438).
: 5mm,
Tightening torque : 1.2kgf·m (8.7 lbf·ft)

This completes assembly.

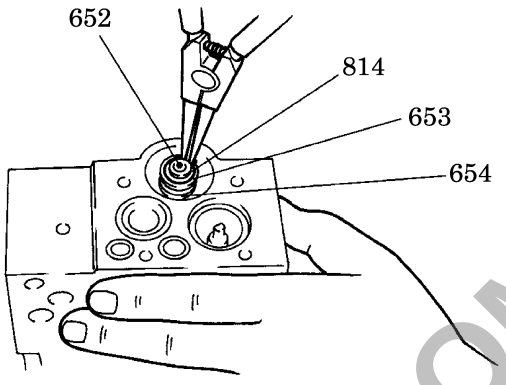


Fig. 1-46 Installing return spring (654) and spring seat (653)

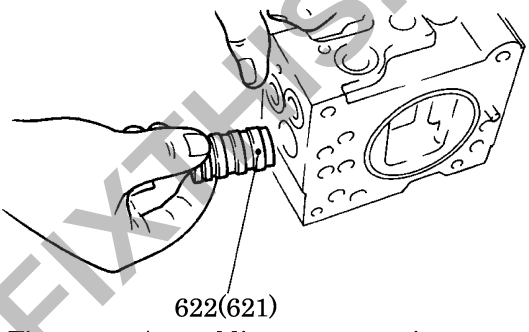


Fig. 1-47 Assembling compensating parts

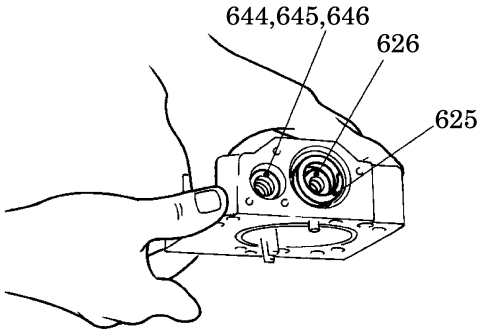


Fig. 1-48 Assembling into the pilot hole and compensating hole

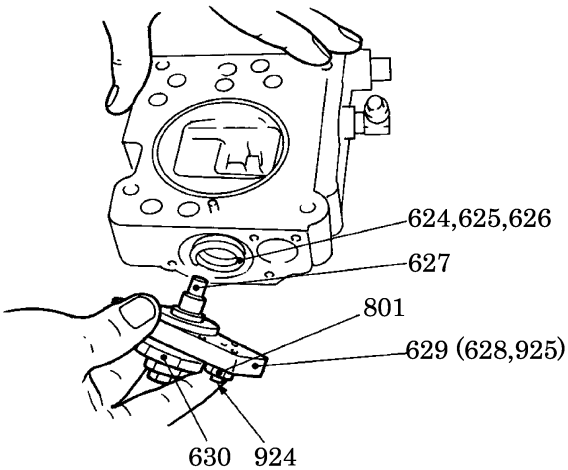
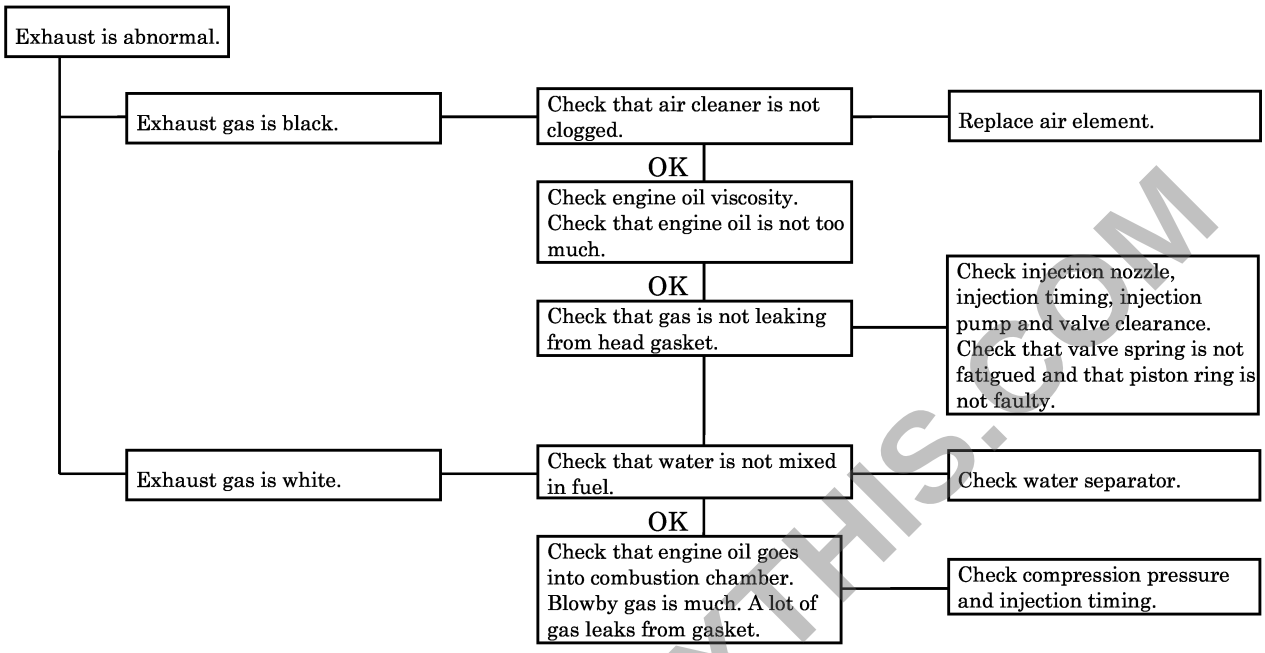


Fig. 1-49 Installing cover (629)

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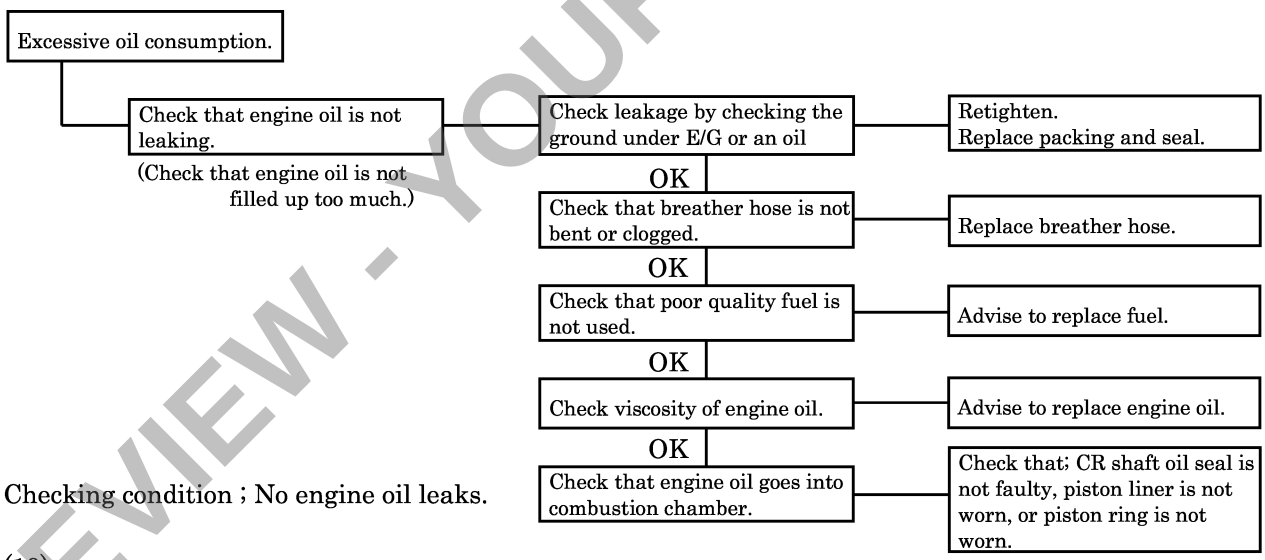
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(8)



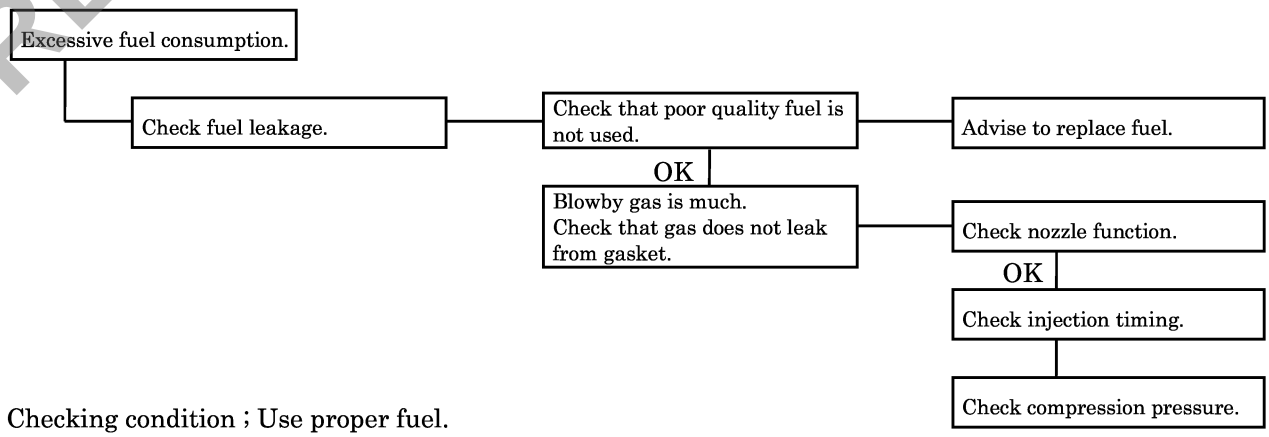
Checking condition ; Engine water temperature is more than 50±5℃ (122±12° F).

(9)



Checking condition ; No engine oil leaks.

(10)



Checking condition ; Use proper fuel.

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