DIM.	Boom	4.6 m (15' 1")		
	Arm	**3.0 m (9' 10")**	**2.1 m (6' 11")**	**2.5 m (8' 2")**
	Bucket Type (PCSA)	**0.39 m^3 (0.51 yd^3)**	**0.51 m^3 (0.67 yd^3)**	**0.45 m^3 (0.59 yd^3)**
A	Max. Digging Reach	8,665 mm (28' 5")	7,815 mm (25' 8")	8,285 mm (27' 2")
B	Max. Digging Reach (Ground)	8,530 mm (28' 0")	7,660 mm (25' 2")	8,140 mm (26' 8")
C	Max. Digging Depth	6,135 mm (20' 2")	5,235 mm (17' 2")	5,635 mm (18' 6")
D	Max. Loading Height	6,440 mm (21' 2")	5,865 mm (19' 3")	6,315 mm (20' 9")
E	Min Swing Radius	2,625 mm (8' 7")	2,285 mm (7' 6")	2,380 mm (7' 10")
F	Max. Digging Height	8,745 mm (28' 8")	8,150 mm (26' 9")	8,660 mm (28' 5")
G	Max. Bucket Pin Height	7,655 mm (25' 1")	7,080 mm (23' 3")	7,535 mm (24' 9")
H	Max. Vertical Wall Depth	4,685 mm (15' 4")	3,710 mm (12' 2")	4,495 mm (14' 9")
I	Max. Radius Vertical	5,970 mm (19' 7")	5,745 mm (18' 10")	5,605 mm (18' 5")
J	Max. Depth to 2.5 m Line	5,890 mm (19' 4")	4,910 mm (16' 1")	5,395 mm (17' 8")
K	Min. Radius 2.5 m Line	1,825 mm (6' 0")	1,805 mm (5' 11")	1,915 mm (6' 3")
L	Min. Digging Reach	-225 mm (0' -9")	955 mm (3' 2")	325 mm (1' 1")

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CLEANING AND INSPECTION

General Instructions

All parts must be clean to permit an effective inspection. During assembly, it is very important that no dirt or foreign material enters unit being assembled. Even minute particles can cause malfunction of close fitting parts such as thrust bearing, matched parts, etc.

⚠ WARNING

AVOID DEATH OR SERIOUS INJURY

Do not inhale vapors or allow solvent type cleaners to contact skin. Keep solvent away from open flame, arcs or sparks or other sources of ignition that could start a fire.

1. Clean all metal parts thoroughly using a suitable cleaning fluid. It is recommended that parts be immersed in cleaning fluid and moved up and down slowly until all oils, lubricants, and/or foreign materials are dissolved and parts are thoroughly clean.
2. For bearings that can be removed, soak them in a suitable cleaning fluid for a minute or two, then remove bearings from cleaning fluid and strike flat against a block of wood to dislodge solidified particles of lubricant. Immerse again in cleaning fluid to flush out particles. Repeat above operation until bearings are thoroughly clean. To dry bearings, use moisture-free compressed air. Be careful to direct airstream across bearing to avoid spinning bearings that are not lubricated. DO NOT SPIN BEARINGS WHEN DRYING; bearings may be rotated slowly by hand to facilitate drying process.
3. Carefully inspect all bearing rollers, cages and cups for wear, chipping or nicks to determine condition. Do not replace a bearing cone or cup individually without replacing mating cup or cone at the same time. After inspection, dip bearings in lightweight oil and wrap in clean lintless cloth or paper to protect them until installation.

   For those bearings that are to be inspected in place; inspect bearings for roughness of rotation, scoring, pitting, cracked or chipped races. If any of these defects are found, replace bearings. Also, inspect defective bearing housing and/or shaft for grooved, galled or burred conditions that indicate bearing has been turning in its housing or on its shaft.
4. It is more economical to replace oil seals, O-rings, sealing rings, gaskets and retaining rings when unit is disassembled than waiting for premature failures; refer to latest Micro Fiche and/or Parts Book for replacement items.

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REMOVAL

1. Park on firm and level ground.
2. Lower bucket or work tool to ground.
3. Stop engine.
4. Move safety lever to "RELEASED" (UNLOCK) position.
5. Turn starter switch to "I" (ON) position.

WARNING

AVOID DEATH OR SERIOUS INJURY

If engine must be running while performing maintenance, use extreme care. Always have one person in the cabin at all times. Never leave the cabin with the engine running.

6. To relieve pressure from accumulators, fully stroke work levers in all directions. Movement can occur.
7. Move safety lever to "LOCK" position.
8. Turn key to "O" (OFF) position and remove from starter switch.
9. Install maintenance warning tag on controls.
10. Disconnect the battery cable from the negative (-) battery terminal.
11. Prepare cabin shell for removal by disconnecting wiring connectors for:
    A. Cabin interior lighting.
    B. External light wiring.
    C. Radio antenna and connections.
    D. Wiper/washer connections.

NOTE: *Control console wiring harnesses and hydraulic piping lines that pass through the floor of the cabin do not need to be disassembled.*

NOTE: *If cabin is equipped with additional protective guards over cabin openings, they must be removed.*

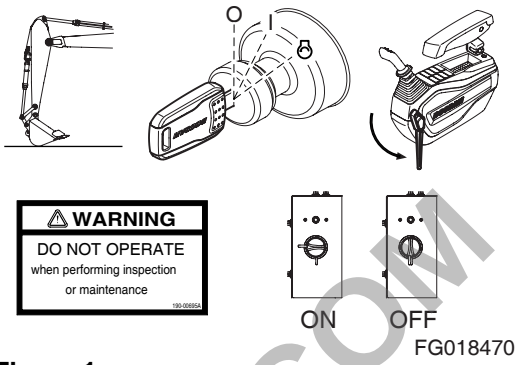


Figure 1

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HYDRAULIC SYSTEM - GENERAL NOTES

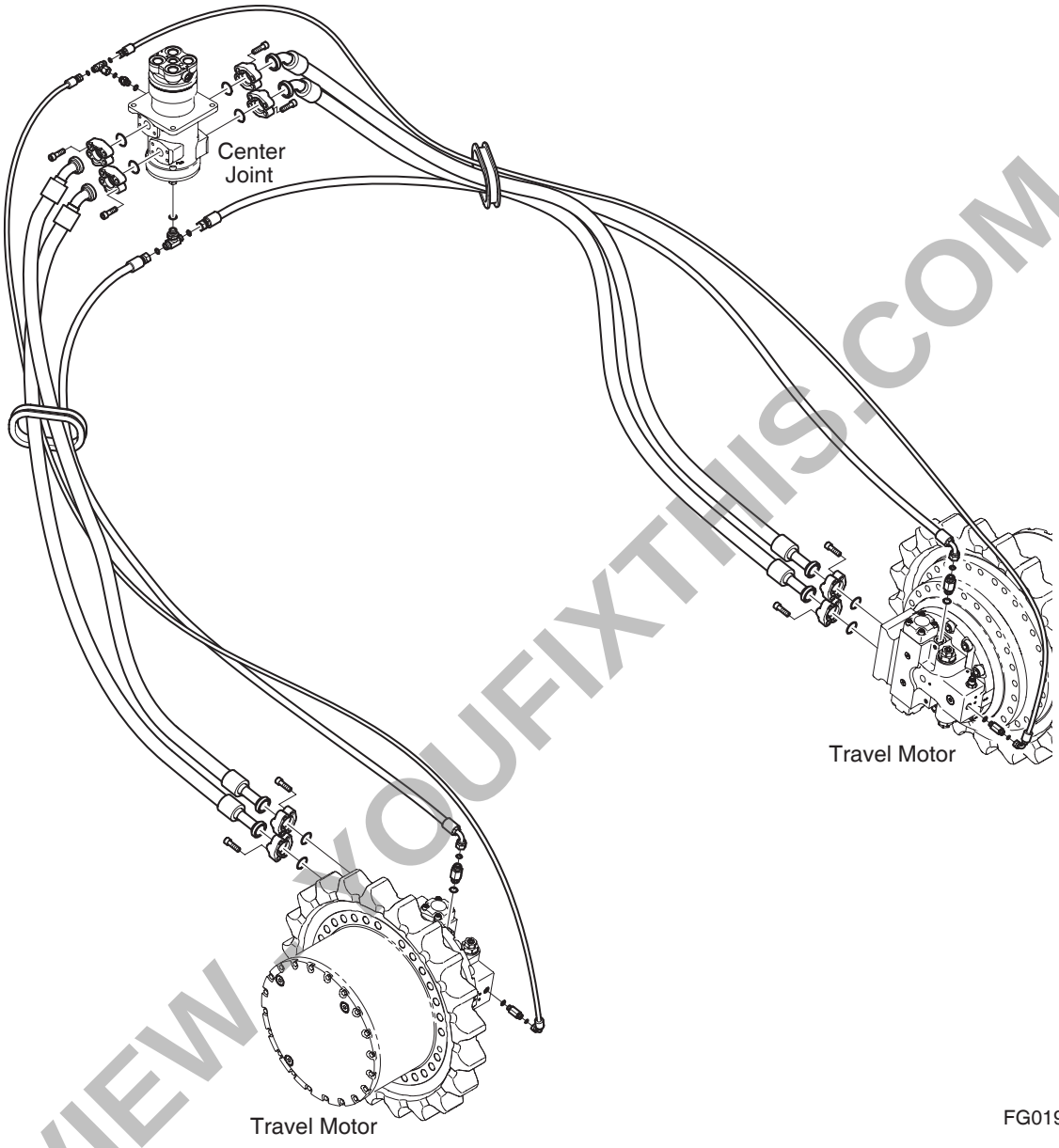


Figure 1

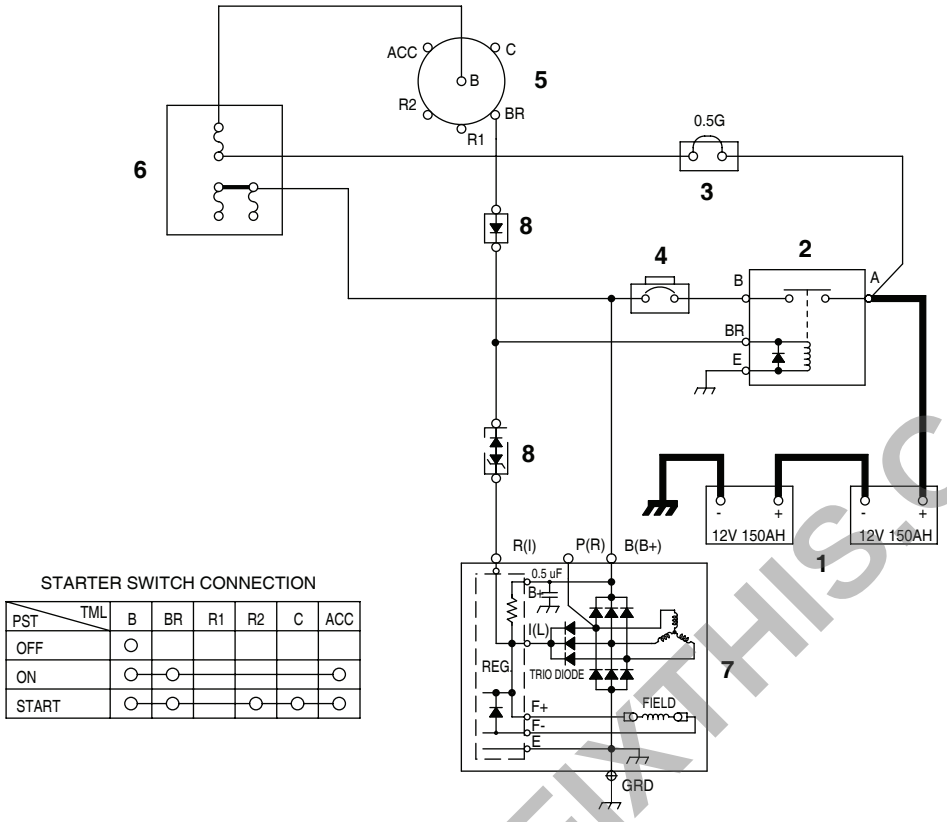
The hydraulic system has several improvements over conventional hydraulic systems - including cross sensing total horsepower control - to maximize output efficiency.

The system features an electronically controlled output optimization system, which allows the operator to choose between two, distinctly different power modes: high output/rapid cycling maximum speed power mode, and a standard power mode for most types of general operation.

Electronic management of hydraulic control valves assists in optimizing the application speed and overall operator control of hydraulic actuators and functions.

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STARTER SWITCH CONNECTION

PST \ TML	B	BR	R1	R2	C	ACC
OFF	○					
ON	○	○				○
START	○	○		○	○	○

FG018839

Figure 1 Electric Power Circuit Diagram

Reference Number	Description
1	Battery
2	Battery Relay
3	Fusible Link
4	Circuit Breaker

Reference Number	Description
5	Starter Switch
6	Fuse Box
7	Alternator
8	Diode

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Reference Number	Description
1	Counterweight
2	DPF
3	Hood
4	Hydraulic Oil Tank
5	Engine
6	Fuel Tank Fill Cap
7	Fuel Tank
8	Cooler
9	Control Valves
10	Swing Motor
11	Air Cleaner
12	Swing Bearing
13	Seat
14	Cabin
15	Boom Cylinder
16	Work Lever (Joystick)
17	Travel Lever
18	Arm Cylinder
19	Boom
20	Arm

Reference Number	Description
21	Bucket Cylinder
22	Guide Link
23	Push Link
24	Bucket
25	Side Cutter
26	Tooth Point
27	Idler
28	Track Adjuster
29	Track Guard
30	Center Joint
31	Lower Roller
32	Upper Roller
33	Battery
34	Sprocket
35	Travel Motor
36	Track Link and Shoe
37	Suction Filter
38	Return Filter
39	Pumps

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Track Excavator Maintenance Safety

Edition 3

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Cylinders SP002539
Swing Motor SP002527
Travel Device SP002516
Main Pump SP002517
Gear Pump SP002500
Main Control Valve SP002528
Remote Control Valve (Work Lever / Joystick) SP002395
Travel Control Valve (with Damper) SP002381
Solenoid Valve Assembly SP002406
Breaker EPPR Valve (Option) SP002458
Dozer Valve SP002529
Hydraulic Schematic (DX140LC-3) SP002518

Electrical System

Electrical System SP002337
Electrical Schematic SP002508

Attachments

Boom and Arm SP002513
Bucket SP002506

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Rubber and Plastics

Polymer materials when heated, can form compounds that create a health hazard and can harm the environment. Scrapped rubber and plastic must never be burned. Extra precautions must be taken when servicing machines that have been in a fire or exposed to extreme heat.

If gas cutting or welding is to be done near such materials, the following safety instructions must be followed:

- Protect the material from heat.
- Use protective gloves, protective goggles and an approved respirator.

Waste Hazardous to the Environment

Painted parts or parts made of plastic or rubber which are to be scrapped must never be burned, but must be taken care of by an approved refuse handling plant.

Batteries, plastic objects and anything else which is suspected of being dangerous to the environment must be taken care of in an environmentally safe way.

Check List After Fire

When handling a machine which has been damaged by fire or been exposed to intense heat, the following instructions must be followed:

Use thick, gloves made of rubber and wear goggles to protect your eyes.

Never touch burned components with your bare hands, as there is a risk that you may come into contact with melted polymer materials. First wash thoroughly with plenty of limewater (a solution or suspension of calcium hydroxide, i.e. slaked lime in water).

As a precaution, seals (O-rings and other oil seals) should always be handled as if they were made of rubber that contains fluorides.

Treat skin, which is suspected of having touched burned rubber that contains fluorides, with Hydrofluoric Acid Burn Jelly or something similar. Seek medical advice. Symptoms may not appear until several hours afterwards.

Discard gloves, rags etc. which are suspected of having touched burned rubber that contains fluorides.

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General Maintenance

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23. Remove air ducts (4 thru 6, Figure 6). Remove atmospheric air duct (7).

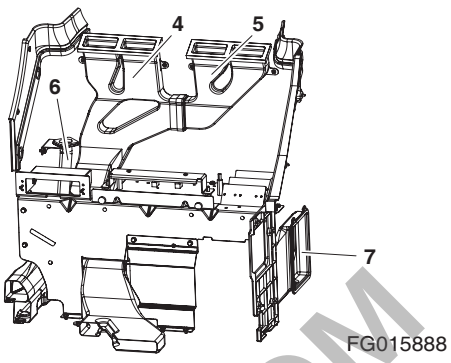


Figure 6

24. Remove all bolts fastening brackets (8 thru 10, Figure 7) to separate brackets from body of operator's cabin.
25. Disconnect connectors on interior lights, speakers and antenna.

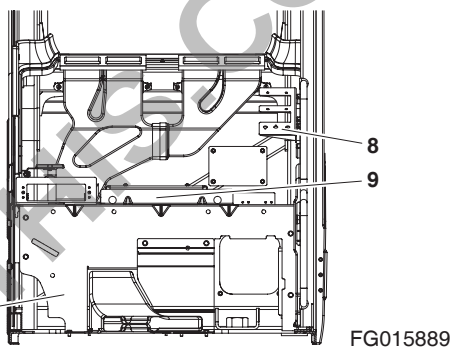


Figure 7

26. Remove four mounting nuts from four corners of cabin floor (2, Figure 8).
27. Remove four bolts (3, Figure 8) from door side of cabin floor.
28. Remove four bolts (1, Figure 8) on right-hand side of floor in operator's cabin.
29. Remove two bolts (4, Figure 8) at front of floor in operator's cabin, and bolt (5, Figure 8) at rear of floor in operator's cabin.

Quantity	Description
4	16 mm nuts at each corner of cabin.
4	12 mm x 1.75 bolts at door side of cabin.
7	12 mm x 1.75 bolts, 4 on right side of cabin and 2 under front window. One bolt is positioned in center of rear part of operator's cabin.

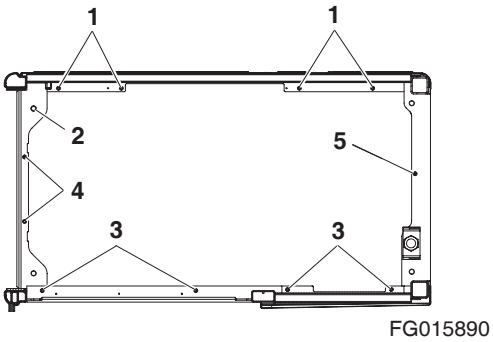


Figure 8

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4. The increased clearance recommended for muddy, sandy or snowy ground conditions is between distance "C" in the below table.

Terrain Type	Recommended Distance "A"
Normal "B"	240 - 260 mm (9.448 - 10.236 in)
Muddy, Sandy or Snowy "C"	260 - 290 mm (10.236 - 11.417 in)

⚠ WARNING

AVOID DEATH OR SERIOUS INJURY

The track adjusting mechanism is under very high-pressure. NEVER release grease pressure too fast. The track tension grease valve should never be loosened more than one (1) complete turn from the fully tightened down position. Bleed off grease pressure slowly. Keep your body away from the valve always. Always wear eye and face protection when adjusting track tension.

5. Track tension adjustments are made through the grease fitting (1, Figure 3) in the middle of each side frame. Adding grease increases the length of an adjustment cylinder (2). Extending the adjustment cylinder, increases the pressure on the tension spring pushing the track idler wheel outward.

6. If there is not enough slack or clearance in the tracks and the adjustment is too tight, the idler wheel and adjusting cylinder can be retracted by bleeding off grease through hole in adjustment cylinder (2, Figure 3).

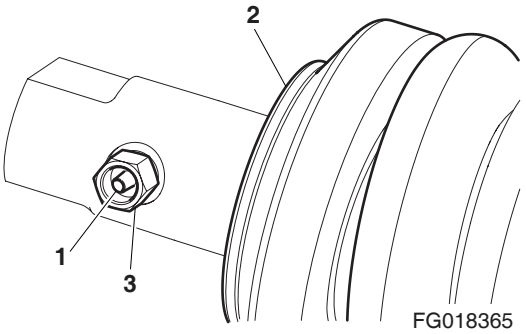


Figure 3

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SPECIAL TOOLS

This tool is used to adjust the clearance, referred to as "Measure H" in the installation instructions below, between the pump driveshaft and the front side of the drive coupling hub (4, Figure 2).

NOTE: *Dimensions A and B are the same as Measure H in* Figure 3*. Two tools in the figure below are designed for various models, while only their one end may be used in some special models.*

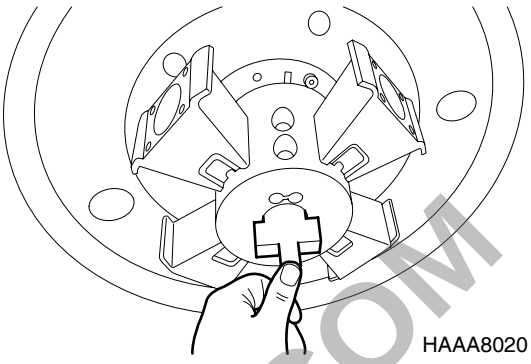


Figure 2

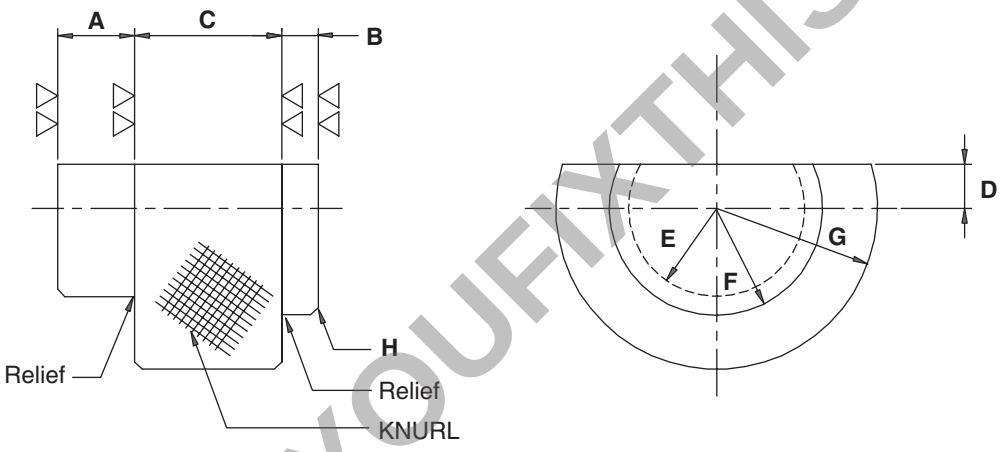


Figure 3

Model	A	B	C	D	E	F	G	H
DX140LC-3	10.5 ±0.1mm	5.0 ±0.1mm	20.0mm	7.0 mm	Radius, 12.0 mm	Radius, 14.0 mm	Radius, 25.0 mm	1.0 mm X 45°

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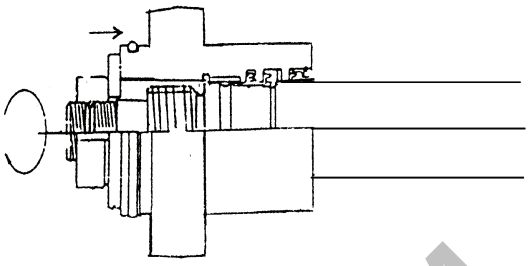
Center Joint (Swivel)

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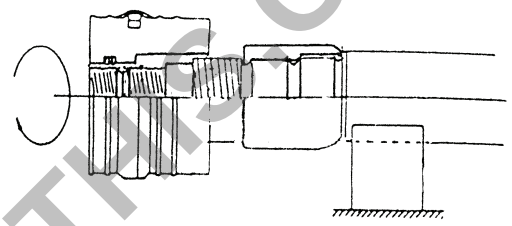
5. Immobilize piston rod on solid support blocks. Assemble O-ring (21) and backup ring (22). Prepare to attach rod cover assembly to piston rod. Push rod cover by tightening piston nut (23).



HAOF450S

Figure 34

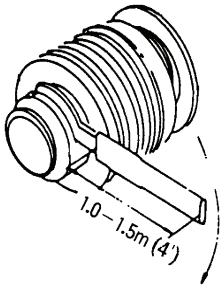
6. Assemble cushion ring (16) and attach piston assembly to piston rod.



HAOF460S

Figure 35

7. Use specially fabricated or factory sourced tool to tighten piston nut (23).

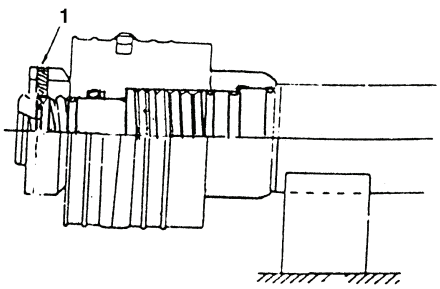


0356

Figure 36

8. Assemble wear ring (19), slide ring (20) and set screw (24) to piston assembly.

Reference Number	Description
1	Set Screw



HAOF470S

Figure 37

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Function

1. Hydraulic motor

   This hydraulic motor is a swash plate type axial piston motor, converting the hydraulic force from the pump to rotary motion.

2. Brake valve

   A. Controls inertia when stopping the hydraulic motor to provide smooth stopping.

   B. Prevents runaway rotation when the hydraulic motor is rotated by external force.
   This is done by preventing hydraulic cavitation.

   C. Prevents the generation of abnormally high-pressure when the hydraulic motor is stopped suddenly.

3. Parking brake

   The parking brake prevents the hydraulic motor from being rotated by external force while stopped. A friction plate type mechanism is used, constructed so as to form one unit with the hydraulic motor.

4. High-low 2-speed switching mechanism

   Switches the hydraulic motor between high-speed rotation with low torque, and low speed rotation with high torque.

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9. Assembling the packing brake

NOTE: *Soak the friction plate (115) in machine oil before assembling.*

A. Turn the workbench by 90 degrees.

B. On the cylinder block (104), assemble the four opposite plates (116) and the three friction plates in turns.

C. Apply grease thinly and insert the O-rings (135, 139) into the O-ring groove on the piston (112).



Figure 98

D. Assemble the piston (112) in the spindle (2).

NOTE: *If the piston (112) would not be inserted into the spindle (2) because of the friction of the O-rings (135, 139), knock the end of the piston (112) lightly with a plastic hammer.*

Take care to prevent scratch on the O-ring when assembling the piston (112).

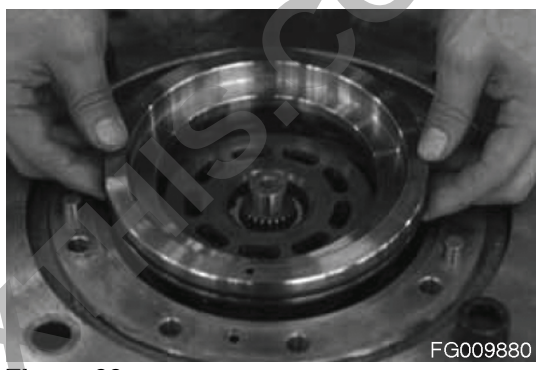


Figure 99

10. Assembling the 2-speed switching spool in the rear flange

NOTE: *Insert the spring (366) and spool (363) into the rear flange (301).*

A. Assemble the O-ring (359) on the plug (357).

NOTE: *Apply grease on the O-ring (359).*

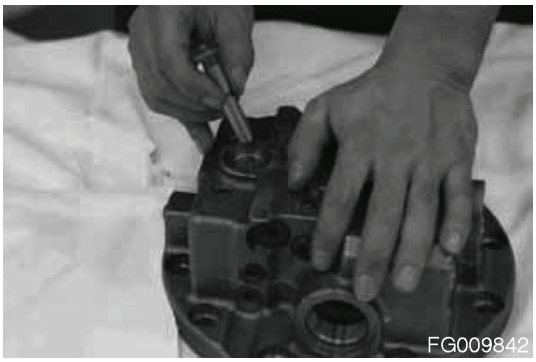


Figure 100

B. Insert the plug (357) into the rear flange (301).

C. Tighten the plug (357) with the rear flange (301) using a hex-wrench, temporarily.



Figure 101

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Gear Pump

Edition 2

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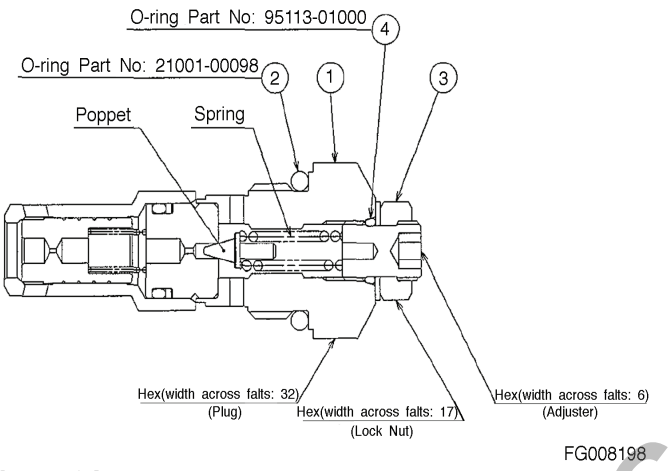


Figure 24

Disassembling

1. This part is replaced by assembly.
2. When replacing, unscrew plug <width across flats: 32> with wrench, remove O-ring.
3. If oil leaks at the adjuster kit, disassemble adjuster kit and replace O-ring.

IMPORTANT

When disassembling the adjuster kit, parts may be ejected by the spring. Be careful not to lose the poppet.

Assembling

1. Check if there is dust, paint, etc., on the thread of the plug. Insert a new O-ring.
2. Clean the relief mounting part of the valve housing. Install a relief valve and insert the plug.
   - Torque: 59 - 69 Nm
3. When the adjuster kit is disassembled, clean the threads. Adjust pressure in compliance with the clause.

IMPORTANT

All specified torques values are for wet conditions (applied with oil).

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13. Remove hex bolts (1) and washer.

    Remove cover (2) from frame (3).

    - : 19 mm

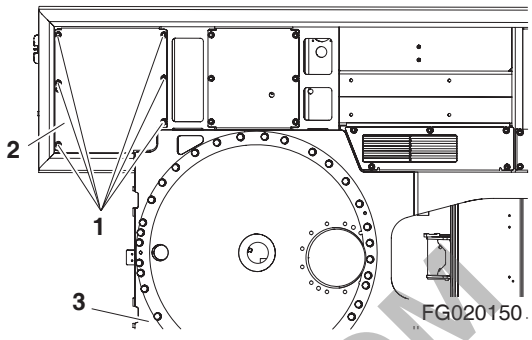


Figure 7

14. Remove hoses (1) from travel control valve (2). Attach identification tags to the removed hoses for reassembling.

    - : 17 mm, 22 mm

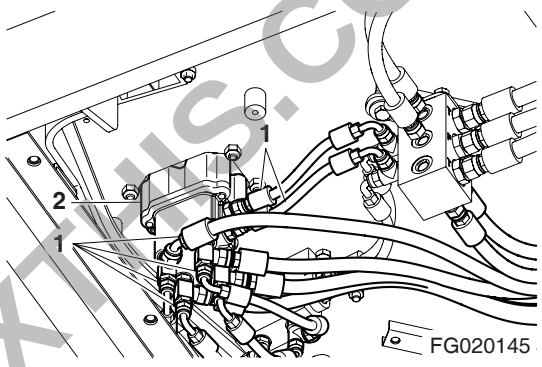


Figure 8

15. Remove floor mat (1) from the cabin.

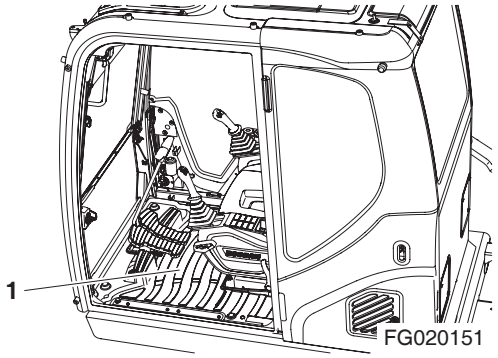


Figure 9

16. Remove bolts (1) and washer.

    Remove footrest (2) from floor plate (3).

    - : 17 mm

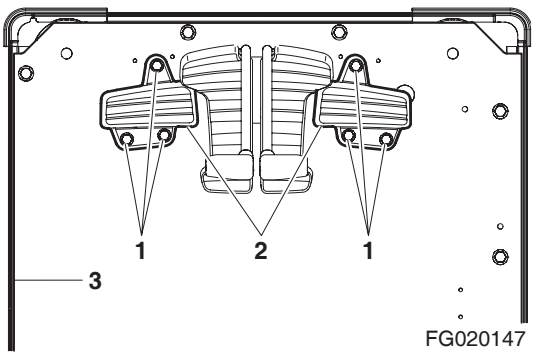


Figure 10

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5. Assemble the plug kit (II).
Assemble the rod seal (II-11), O-ring (II-12) and push rod (II-13) to the plug (II-10) in this order.

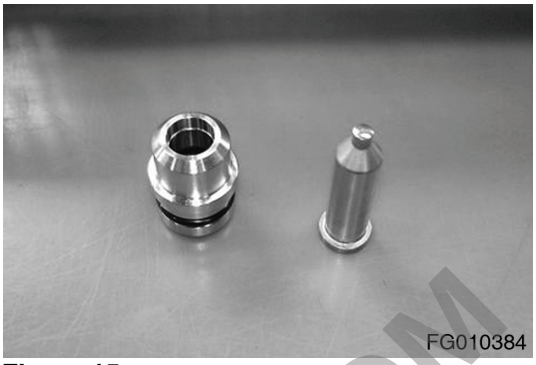


Figure 15



Figure 16

6. Assemble the plug kit (II) to the body (1).

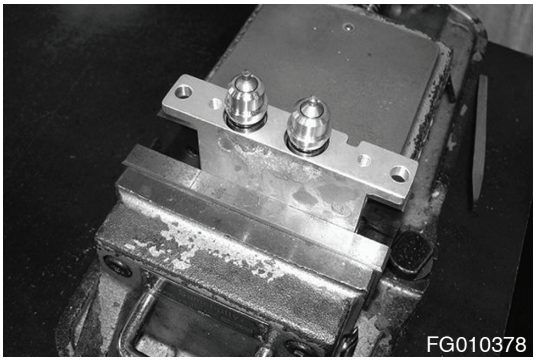


Figure 17

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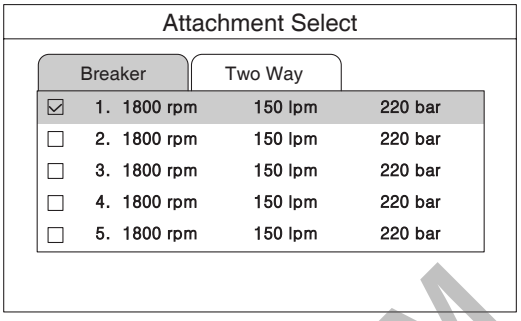
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A. Attachment Select (Optional)

The attachment select screen is used to select attachments among the already set-up available attachments.

At the vehicle configuration, if the cursor is placed on the attachment select, click on the jog switch to access the attachment select screen.

Press the ESC button to return to the previous screen.



FG020156

Figure 29

How to Select Attachments

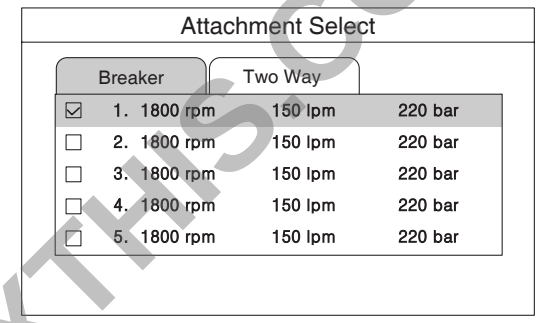
When you access the attachment select screen, the initial screen locates the cursor at breaker/two-way at the top.

Operate the jog switch clockwise/counterclockwise to select breaker/two-way. Then, click on the jog switch to move the cursor to the selectable lists.

When the cursor is placed on the list, operate the jog switch clockwise/counterclockwise to move the cursor. Then, click on the jog switch to select attachments to use.

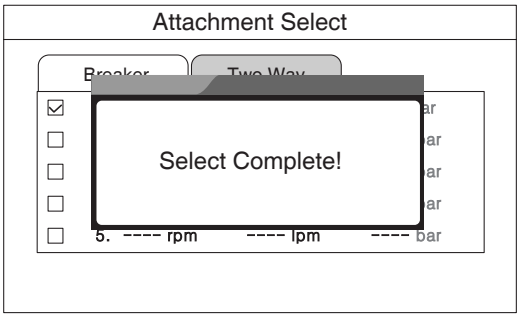
When the selection is completed, the "Select Complete!" pop-up window is displayed for 3 seconds, and the checkbox of the selected list is updated.

The cursor can only be moved from the selectable lists. The selectable list items at the attachment setting are set as "Enable" in the use or non-use of attachments in the attachment setting.



FG020156

Figure 30



FG020153

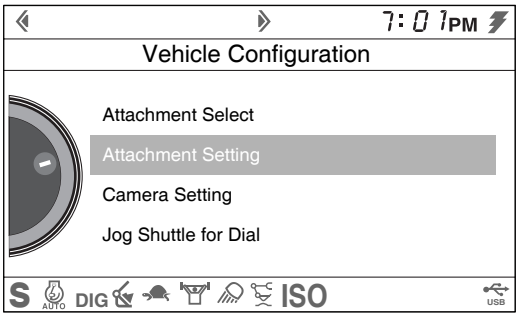
Figure 31

B. Attachment Setting

The attachment setting screen is used to set up the use or non-use of attachments, max. engine limit, and max. attachment flow rate, etc.

At the vehicle configuration, when the cursor is placed on attachment setting, click on the jog switch to access the attachment setting list screen.

If the system is set up as the owner's password locked, access the attachment setting list screen by using owner's password input screen.



FG018493

Figure 32

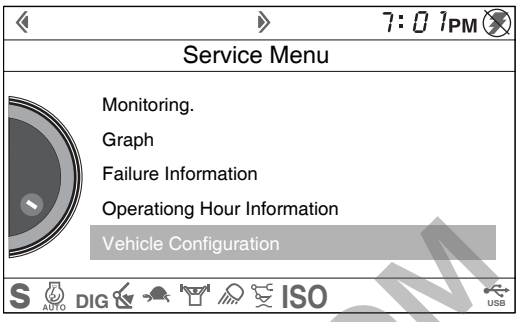
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Vehicle Configuration

1. Vehicle Configuration

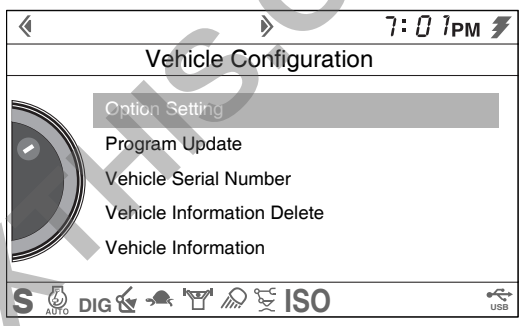
   A. Entering Submenus: When a cursor is located in "Vehicle Configuration" of special menu screen (Figure 142) press jog switch (1 on Figure 118) and "Vehicle Configuration" screen will be displayed (Figure 143).



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Figure 142

   B. Vehicle Configuration Screen (Figure 143).



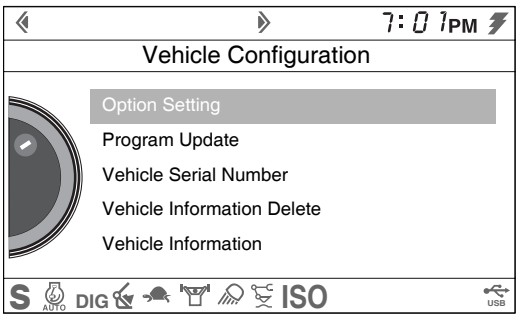
FG018881

Figure 143

   C. Exiting Submenus: If escape button (ESC, 4 on Figure 118) is pressed for more than 1 second, this information screen will be returned to previous screen.

Option Setting

1. Entering Submenus: When a cursor is located in "Option Setting" of special menu screen (Figure 144) press jog switch (1 on Figure 118) and "Option Setting screen" will be displayed (Figure 145)



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Figure 144

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TROUBLESHOOTING

Refrigerant Pressure Check

1. Open all doors and windows.
2. Install manifold gauge set.
3. Start engine and maintain engine speed at 1,800 - 2,000 rpm.

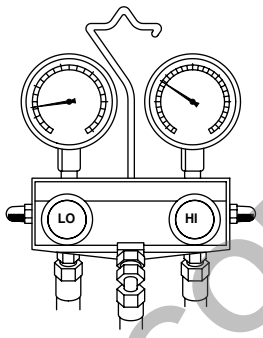


Figure 196

4. Check high / low-pressure of refrigerant.

1	**High-pressure: 8.0 - 10.0 kg/cm² (114 - 142 psi)** **Low-pressure: Approximately 1.0 kg/cm² (14 psi)**		
Possible Cause: Low Refrigerant Level			
Step	**Inspection Item**		**Remedy**
1	Check for traces of refrigerant oil.	Yes	Reassemble using correct tightening torque.
		No	Go to next step.
2	Using a leak detection device or soapy water check for refrigerant leakage at all major components and joints.	Yes	Repair leaking component.
		No	Recharge system to correct pressure.

2	**High-pressure: Over 23 kg/cm² (327 psi)** **Low-pressure: Approximately 2.5 - 3.0 kg/cm² (36 - 43 psi)**		
Possible Cause: Overcharge, Frost on condenser			
Step	**Inspection Item**		**Remedy**
1	Check for condenser pin damage or contamination.	Yes	Clean, repair or replace condenser.
		No	Refrigerant overcharge.

3	**High-pressure: Approximately 20 - 25 kg/cm² (285 - 356 psi)** **Low-pressure: Approximately 2.5 - 3.5 kg/cm² (36 - 50 psi)**
Possible Cause: Air in system.	
1. Recover any remaining refrigerant. 2. Vacuum out system. 3. Recharge system. **NOTE:** *If the system has been exposed to the air for a long time, replace the receiver dryer.*	

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