

430Series, 440Plus, 450Series, 460Series, 470Plus

Shop Manual

K1025179E

Serial Number 5001 and Up

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This documentation may include attachments and optional equipment that is not available in your machine's package. Please call your distributor for additional items that you may require.

Illustrations used throughout this manual are used only as a representation of the actual piece of equipment, and may vary from the actual item.

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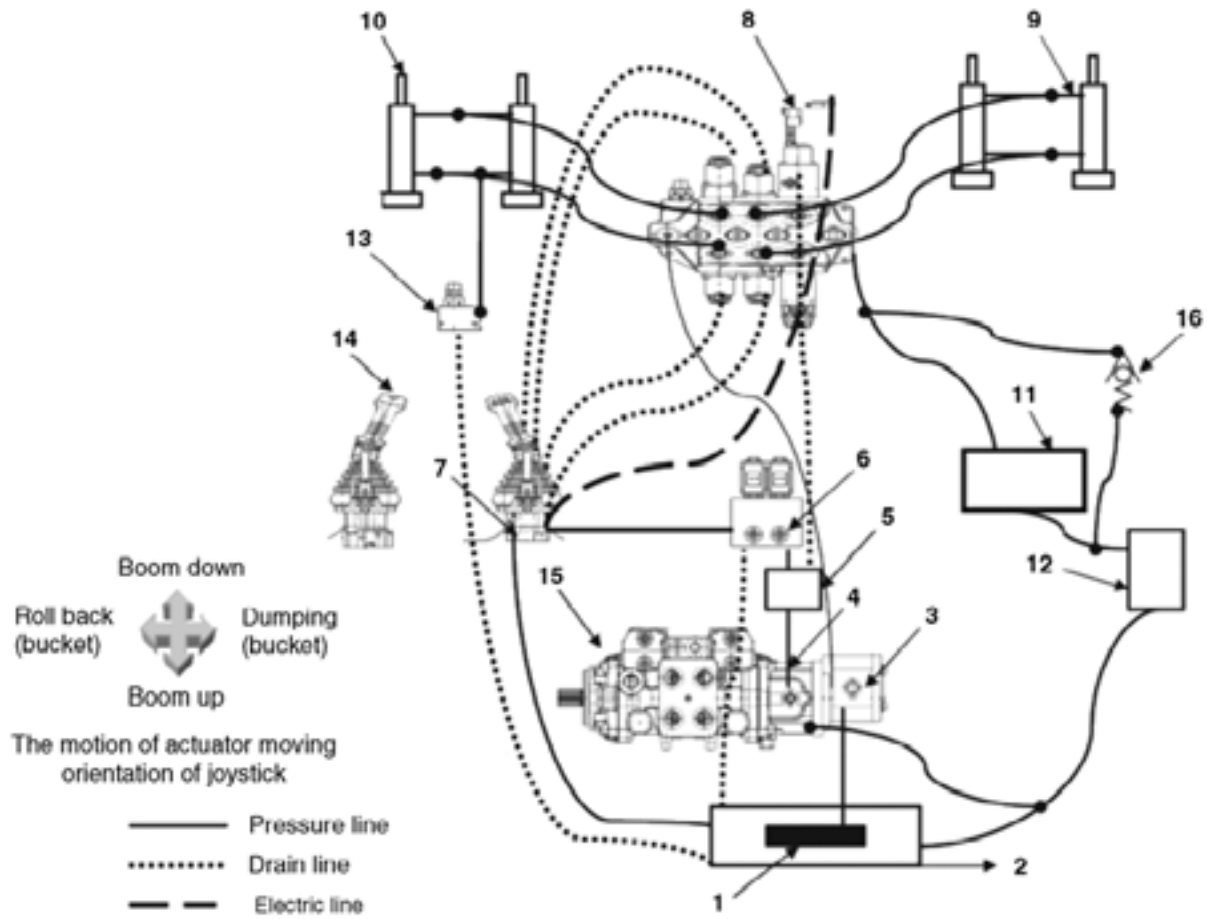


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SYSTEMS OPERATION

Hydraulic System



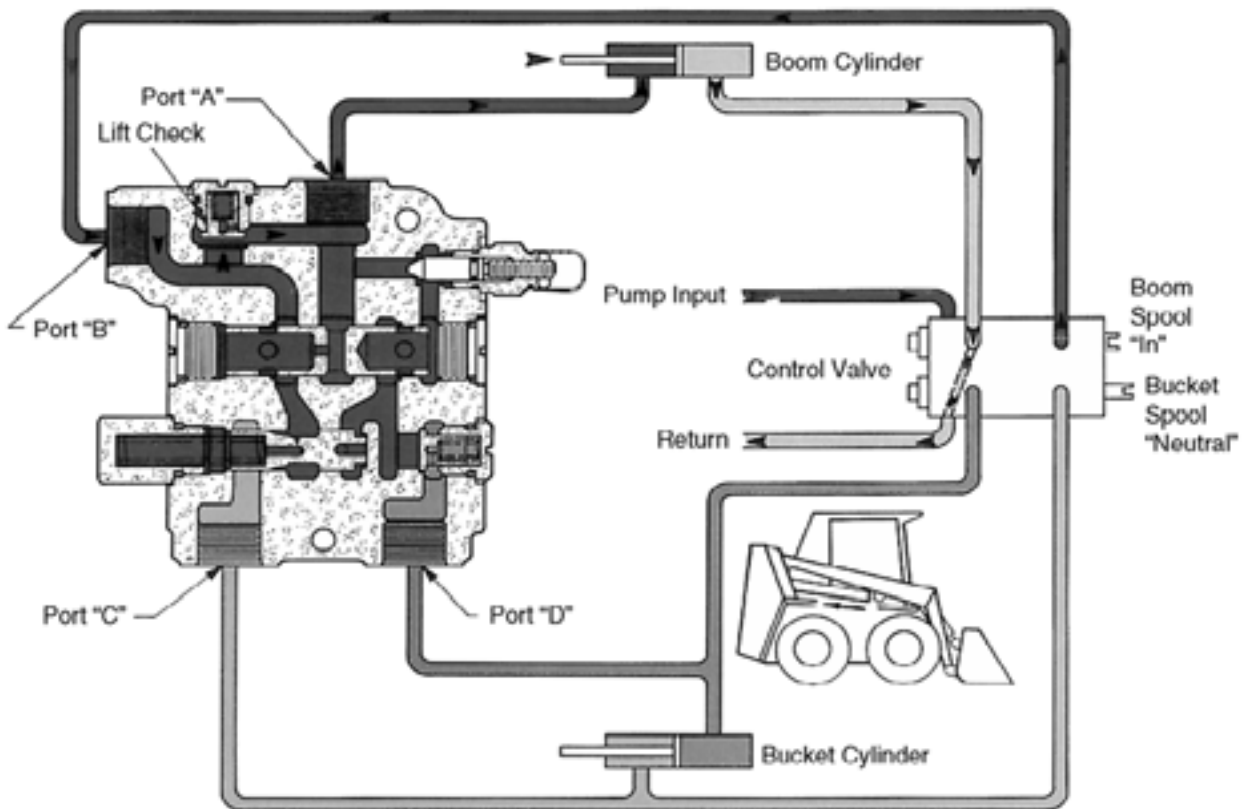
FG005844

Figure 1

Reference Number	Description
1	Suction Strainer
2	Hydraulic Tank
3	Hydraulic Gear Pump
4	Charging Pump
5	Filter
6	Feeding Unit
7	Joystick-RH
8	Control Valve

Reference Number	Description
9	Bucket Cylinder
10	Boom Cylinder
11	Oil Cooler
12	Return Filter
13	Needle Valve
14	Joystick-LH
15	HST Pump
16	Check Valve

Retracting Boom Cylinder



FG005908

Figure 10

Moving boom spool "In" the oil flow is directed to port "B" on the self-level valve. Flow enters self-level valve, opens lift check and flows out port "A" to the rod port on the boom cylinder. Flow from head port is directed back to the control valve.

Bucket Cylinder

Item	Unit	Specification				
		430 Series	440 Plus	450 Series	460 Series	470 Plus
Type	-	Single Rod, Double Acting				
Number	ea	2				
Cylinder Bore	in(mm)	2.78 (63)				
Cylinder Rod	in(mm)	1.10 (30)	1.5 (38.0)	←	←	←
Stroke	in(mm)	14.29 (363)	13.99 (355)	20.0 (507)	←	←
Mounting	-	Single Crest Crevice				
Plating on Rod	-	Hard chrome with 15-50 Micron Thickness				

Hydraulic Filter (Main)

Item	Unit	Specification				
		430 Series	440 Plus	450 Series	460 Series	470 Plus
Type	-	Full Flow Spin-On				
Filter Rating	-	13 Micron Rating of 20				
Rated Flow	LPM (GPM)	132.5 (35)				
By-Pass Valve	-	Closing PR50 PSID (Normally Open Type)				

HST Joystick Valve

Item	Unit	Specification				
		430 Series	440 Plus	450 Series	460 Series	470 Plus
Rated Flow	L(gal)/min	20 (5.3)	←	←	←	←
Max. Pressure	bar(psi)	100 (1,450)	←	←	←	←
Min Back Pressure	bar(psi)	3 (43.5)	←	←	←	←

Testing the direction of rotation of the engine

Make sure that direction of rotation of the axial piston unit matches the details on the name plate (see also "Preparing axial piston unit for assembly"). To do so, rotate the engine briefly at lowest rotational speed (jog).

Testing hydraulic fluid supply

The axial piston unit must always have a sufficient supply of hydraulic fluid. For this reason, it is not essential that the hydraulic fluid supply is given at initial start-up.

If you test the hydraulic fluid supply, perform a constant check on the noise development and check for any leakage oil discharge. If the axial piston unit gets louder (cavitation) or the leakage fluid is discharged with bubbles, it will indicate that the axial piston unit is not being supplied with sufficient hydraulic fluid. Instructions on troubleshooting are available on page 31.

To test the hydraulic fluid supply:

1. Allow the engine to run at the lowest rotational speed for roughly one minute.

The axial piston unit must be operated without load.

Pay attention to leakage and noise.

2. Check the axial piston unit's leakage fluid line here.

The leakage fluid should not contain any bubbles.

3. Check the suction pressure at port "S" of the axial piston unit.

The permissible values are available in the technical data sheet.



DANGER!

Danger of poisoning or injuries

Contact with hydraulic fluids can cause health damage (eye injuries, skin damage, poisoning due to inhalation).

- Always check the hydraulic lines for wear and damage prior to putting the unit into operation.
 - When handling hydraulic fluids, pay exact attention to the manufacturer's safety instructions.
-



WARNING!

Danger of burns

The variable pump heats up during operation. The unit's solenoids get hot during operation. Fingers and hands can be badly burned when touching the variable pump or solenoids.

- Let the variable pump cool down prior to any contact.
 - Protect yourself from burns by wearing safety gloves and protective clothing.
-



DANGER!

Danger of poisoning

When looking for leaks, escaping hydraulic fluid can break into the skin and cause serious poisoning.

- Always use a piece of cardboard or paper to look for leaks.
-



WARNING!

Danger of poisoning

Incorrectly connected components can considerably impair the functionality of a hydraulic system.

- Make sure that the hydraulic lines are connected properly.
 - Check the correct functioning of all components.
-

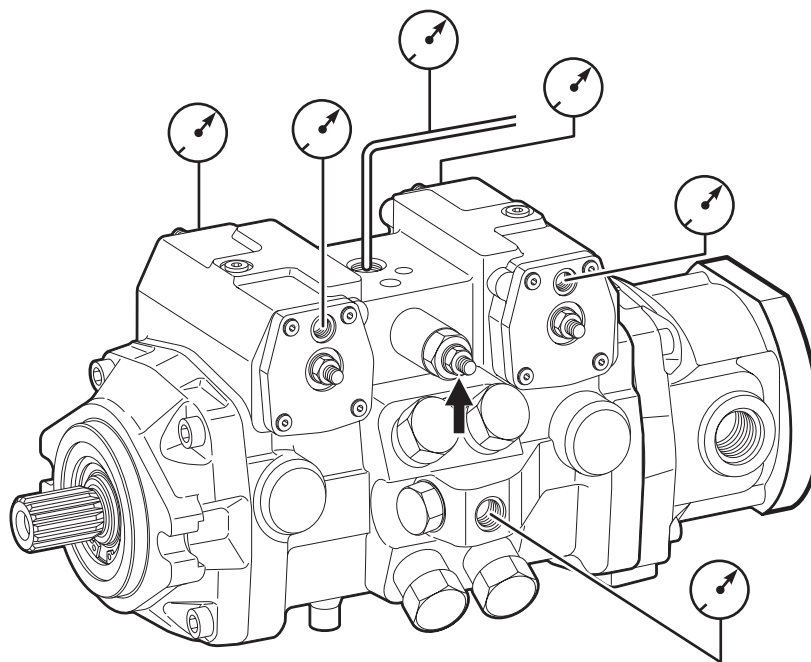
Adjustment Instructions - DA Control



Observe safety regulations!

Check setting data.

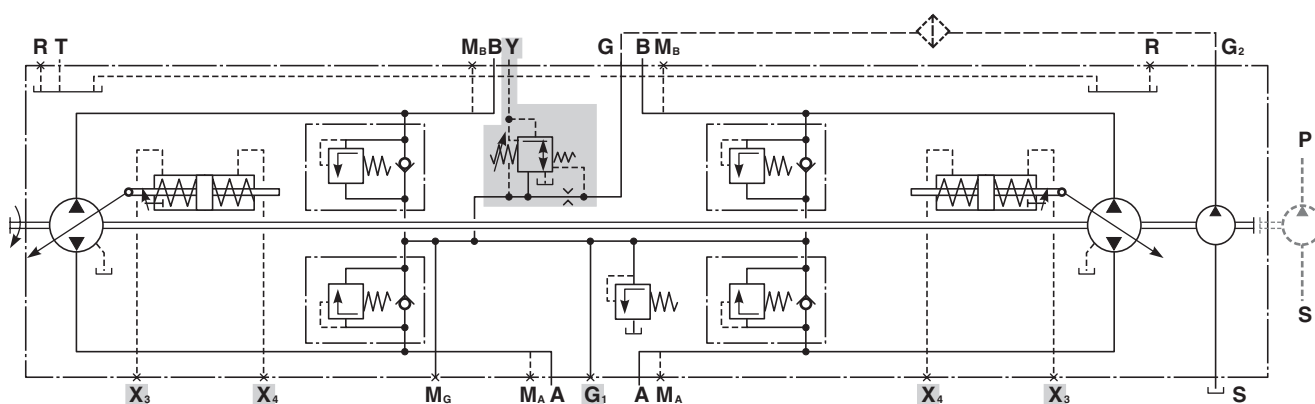
Operating temperature should be generally kept constant during the checking procedure.



Setting data* is in accordance to the order work!

FG005927

Figure 29



FG005928

Figure 30

Sealing of the Control Piston Cover

Mark cover. Must be fixed, loosen counter nut, hold adjustment screw.

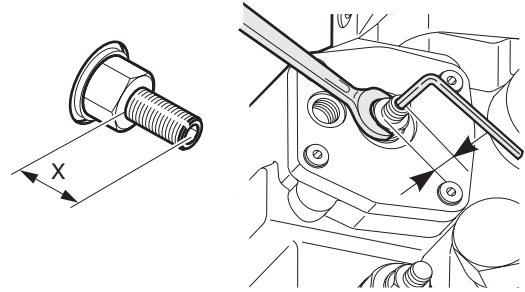


Figure 64

FG005960

Remove cover.

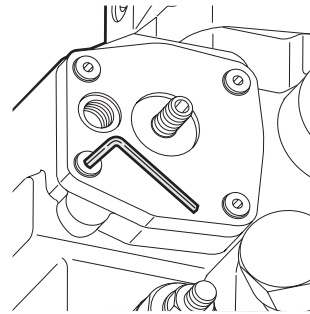


Figure 65

FG005961

Lift off by turning the setting screw.

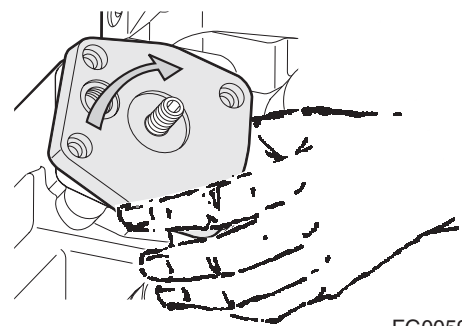


Figure 66

FG005962

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Pump Disassembly

Remove pump 1 (front pump, clockwise drive).

Remove pump housing with lifting device.



CAUTION!

Control plate may fall out!

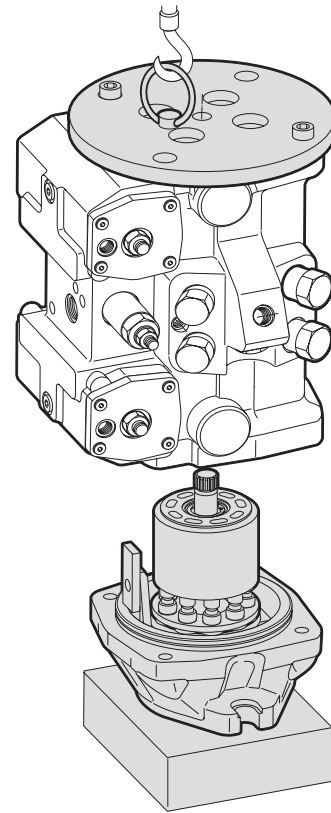


Figure 85

FG005981

Pump housing with lifting device.

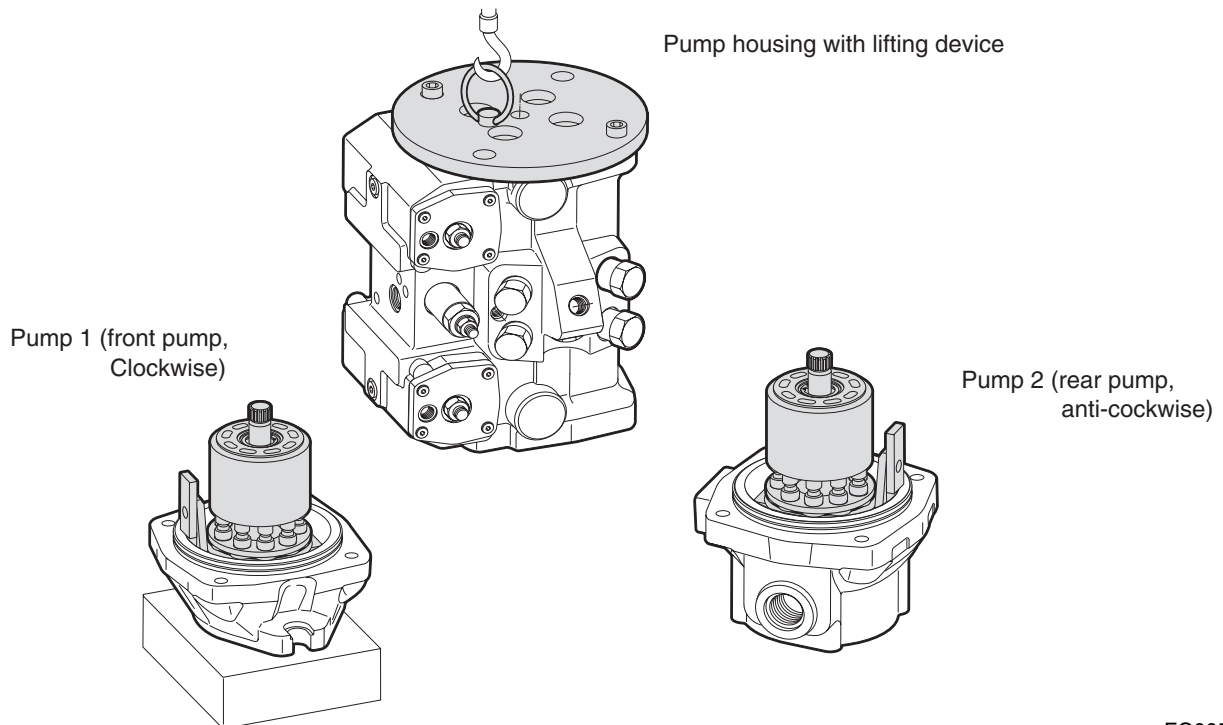
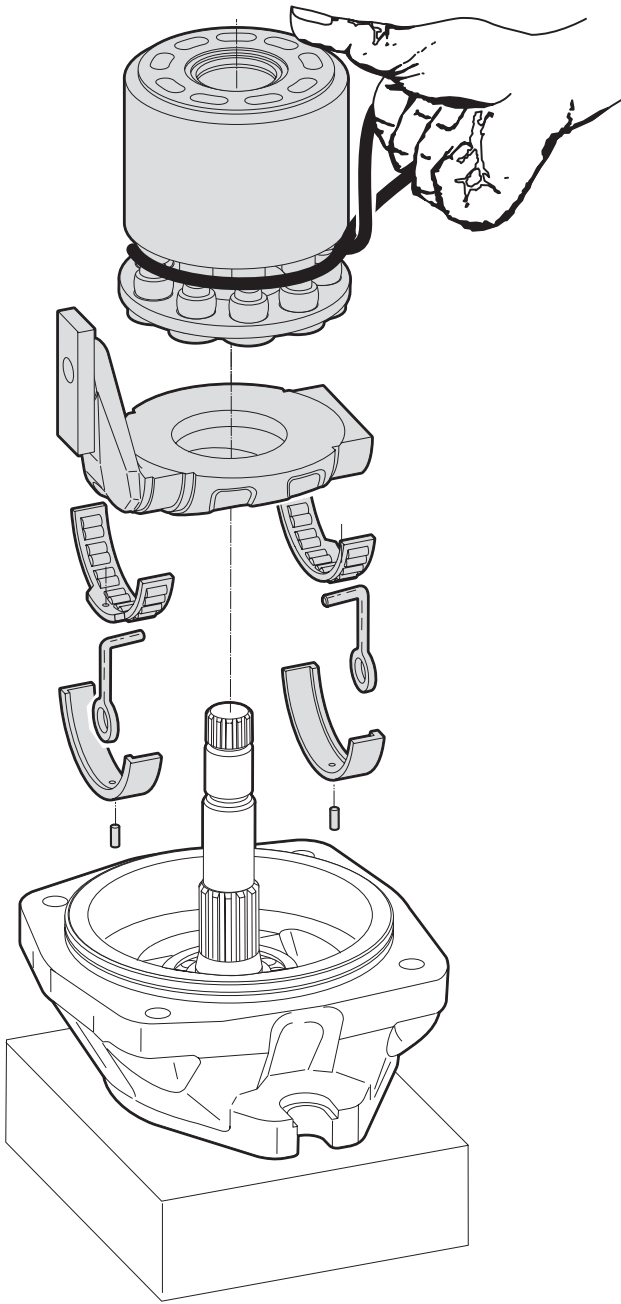


Figure 86

FG005982

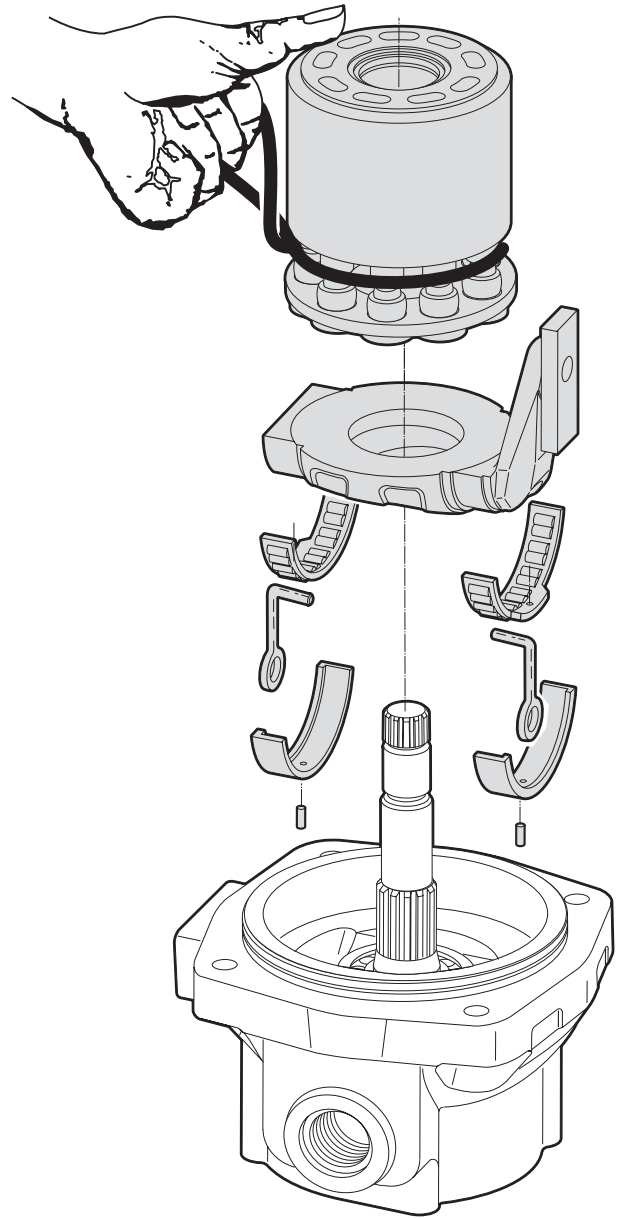
Assembly of the Pump

Pump 1
Mount rotary group to tohe flange



clockwise

Pump 2
Mount rotary group to tohe flange



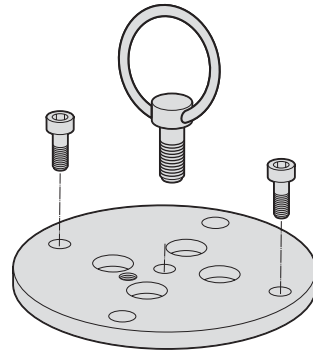
anti-clockwise

Figure 115

FG006011

Devices

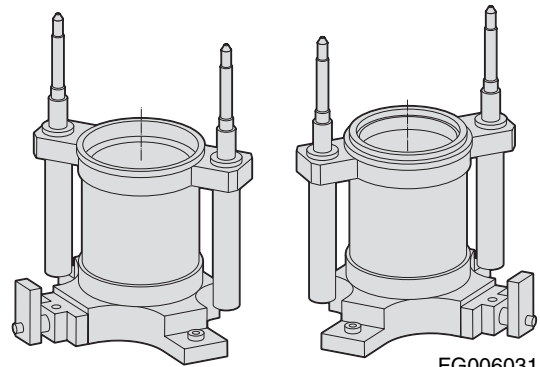
- Disassembly
 - Eye bolt - drive shaft
 - Device (dislocation of the center of gravity - rear pump)



FG006030

Figure 133

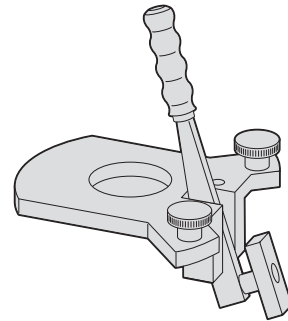
- Assembly
 - Centering device
 - Bearing flange - case



FG006031

Figure 134

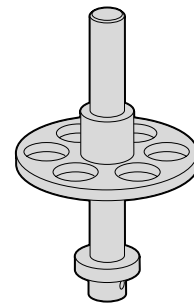
- Centering device stroke piston



FG006032

Figure 135

- Centering device bearing



FG006033

Figure 136

5. Remove hexagon screw (14), plunger (15), lever assembly (17), boot (18), O-ring (19, 20) from body (16)

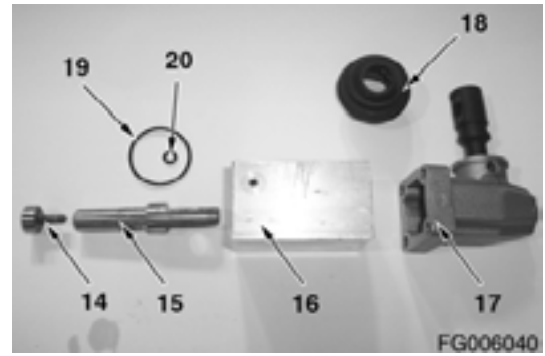


Figure 166

6. Remove hexagon screw (25), bushing (26) and spring (27) from spool (28)

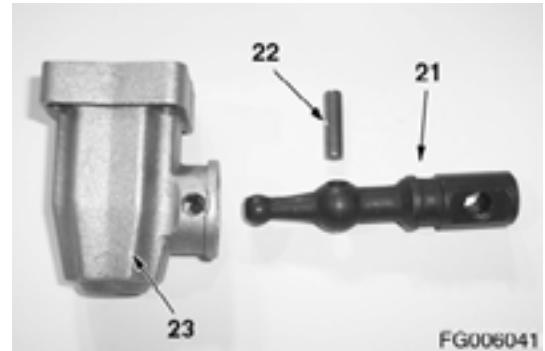


Figure 167

7. Remove auxiliary spool assembly (24) from control valve assembly (3)



Figure 168

8. Remove hexagon screw (25), bushing (26) and spring (27) from spool (28)

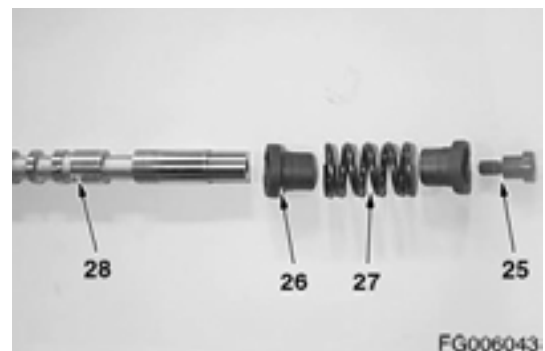
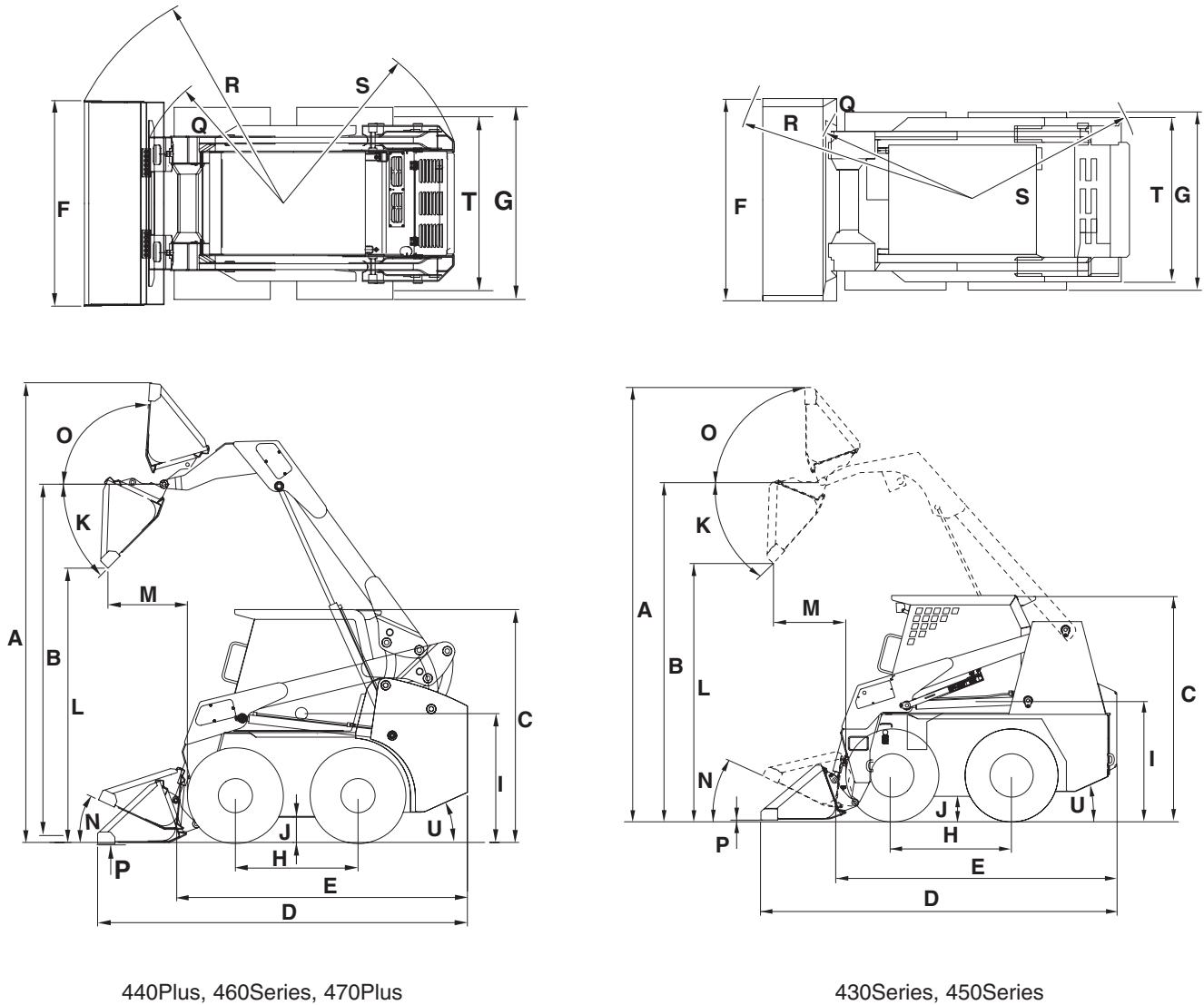


Figure 169

SPECIFICATIONS

Dimensional & Performance Specifications

Dimensional Specifications



IGAT0011

Figure 1

Electrical Components

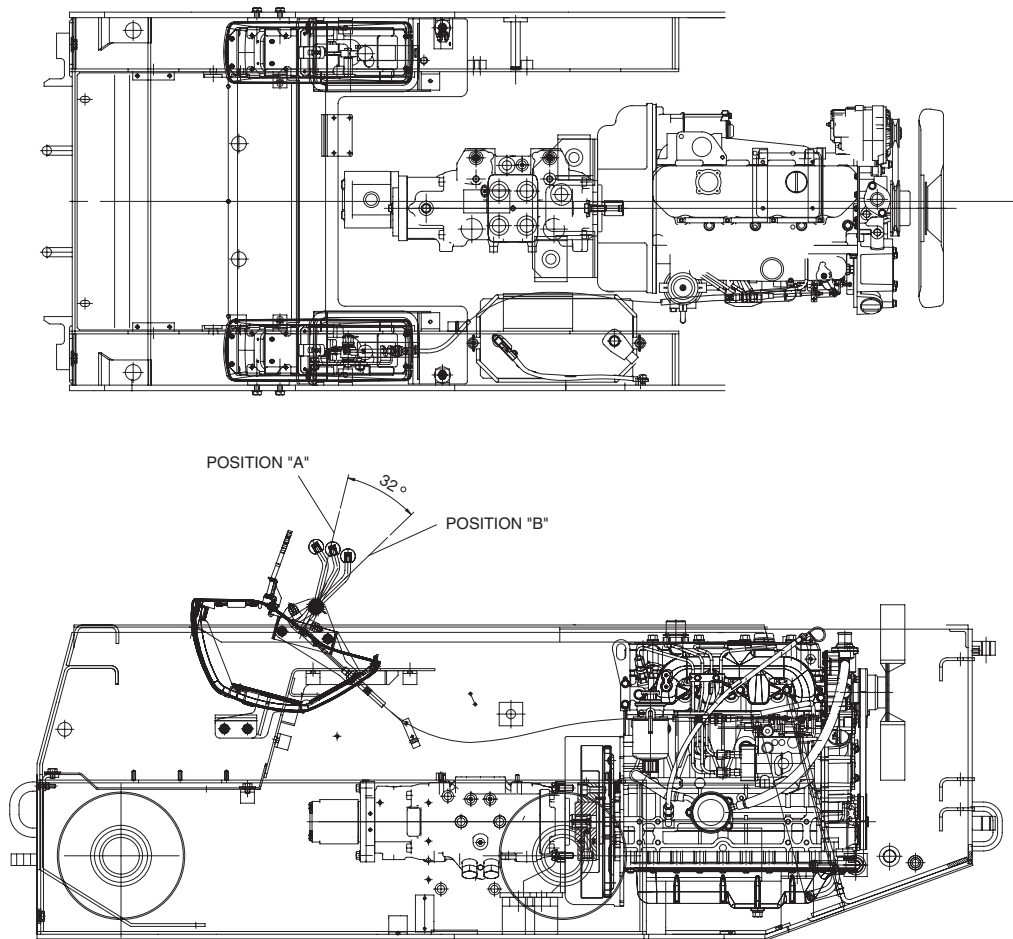
Item	Unit	Specification				
		430 Plus	440 Plus	450 Plus	460 Plus	470 Plus
Alternator	-	12V - 45A	←	12V - 61A	←	←
Battery	-	12V-100AH, 700CCA	←	←	←	←
Starter	-	12V-2.0KW	12V-1.7KW	12V-2.2KW	←	←
Lighting						
• Head Lamps	each	2	←	←	←	←
• Rear Lamps	each	1	←	←	←	←

Instrument Features

Item	Unit	Specification
Instrument Panel (A)		Standard
• Buzzer Alarm	-	
• Stop (Red) Warning (Yellow) Warning	-	
• Engine Oil Pressure	-	
• Engine Water Temperature	each	
• Battery Voltage	each	
• HST Charge Pressure	-	
• HST Oil Temperature	-	
• HST Filter	-	
Instrument Panel (B)		Standard
• Fuel Meter	-	
• Hour Meter	-	
• Park Brake Monitor	-	
• Pre-Heater Monitor	-	
Key Switch	-	
Light Switch	-	
Fuses	-	

Throttle Control

Adjustment of Throttle Lever



FG006071

Figure 6

1. Mount cable to Engine support bracket.
2. Install pin to cable end and adjust to align with throttle lever hole in full off position.
3. Adjust throttle lever to position "A" using rear lever stop bolt and lock with nut.
4. Move throttle lever to position "B" to get full on throttle movement and adjust lever stop bolt and lock with nut.

Preheating & Charging System (430Series/440Plus)

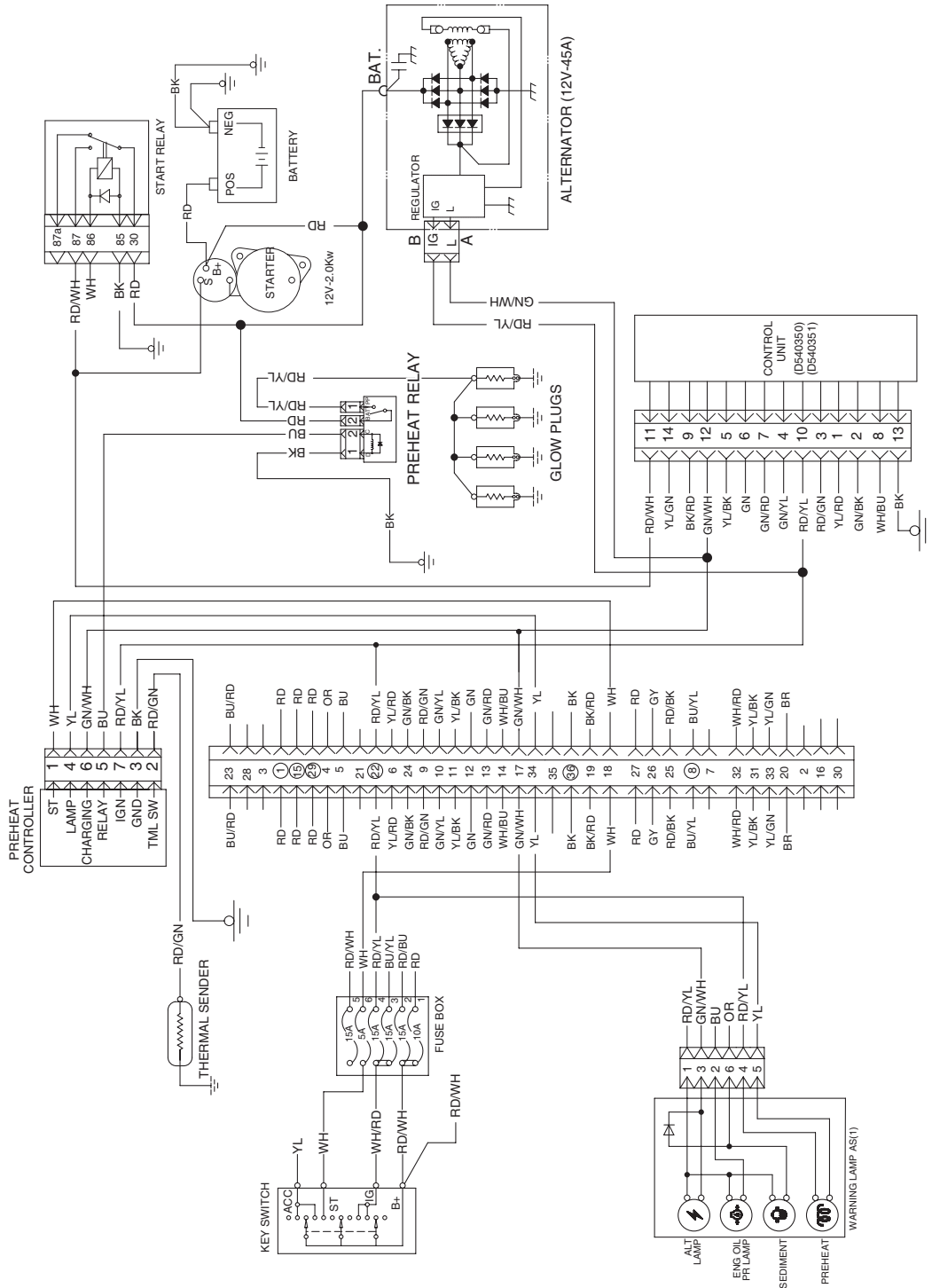


Figure 3

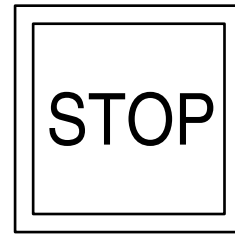
The Preheat controller controls the operation of the glow plug to give better starts to a cold engine.

According to temperature that is sensed in sensor, lamp operating time and Pre-Heat and After-Heat's time change automatically.

FG006090

9. Stop Light

- The light turns on simultaneously with water temperature and engine oil pressure warning lights.

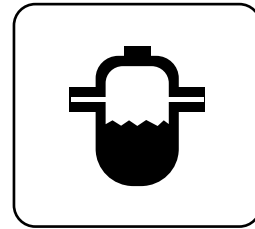


FG006101

Figure 18

10. Sediment

- The light turns ON when the water exceeds 70cc in the fuel filter.

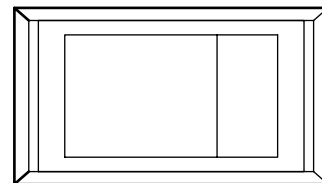


FG006102

Figure 19

11. Light Switch

- Step 1 : Two front lights turn on.
- Step 2 : Two front lights and one rear light turn on simultaneously.

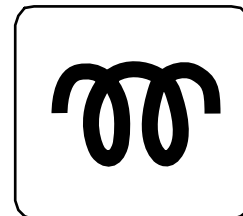


FG006103

Figure 20

12. Pre-heat Light

- When the key is turned to the "IGN" position, the glow plug (Air Heater) relay turns on this light.



FG005801

Figure 21

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