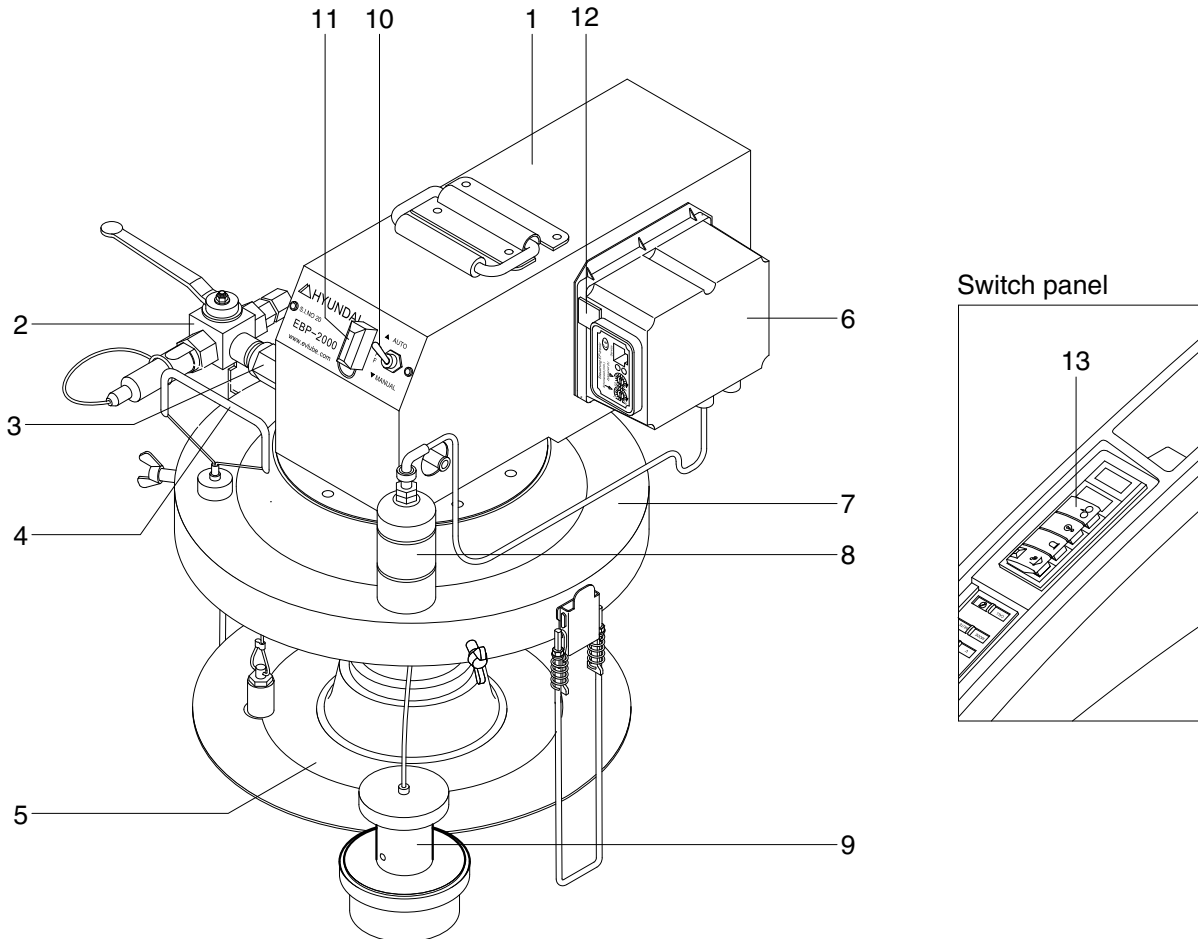


# 1. CENTRAL GREASE LUBRICATION SYSTEM

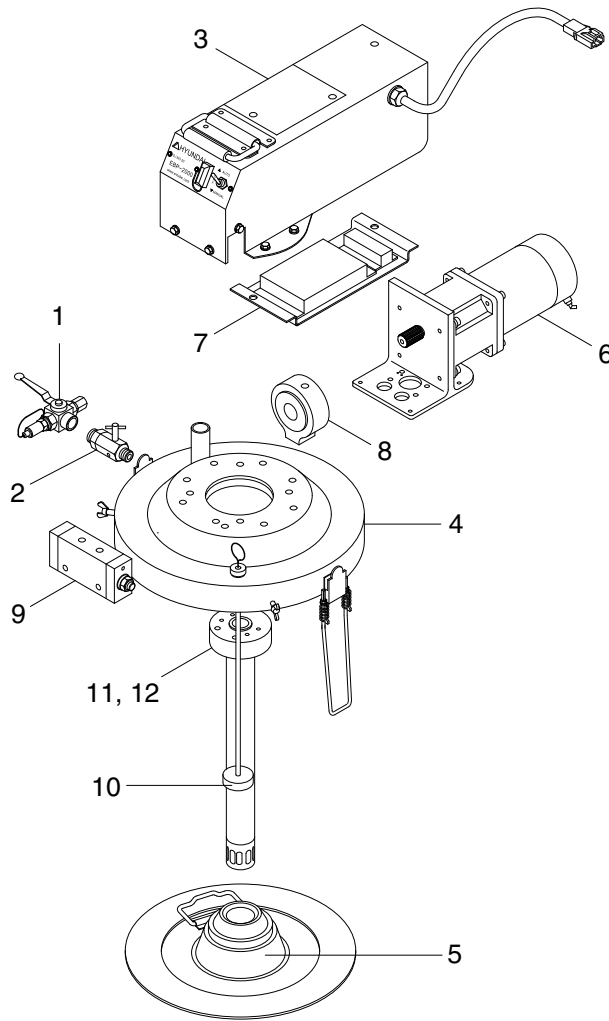
## 1) MAJOR COMPONENT



- |                                |                                 |                                 |
|--------------------------------|---------------------------------|---------------------------------|
| 1 Pump cover assy              | 6 Controller assy               | 10 Toggle switch                |
| 2 3-way valve assy             | 7 Main plate assy               | 11 Fuse                         |
| 3 Inline check and air vent    | 8 Low level sensor              | 12 Reset switch                 |
| 4 Follow plate air vent handle | and level indicator assy        | 13 Central grease lubrication   |
| 5 Follow plate assy            | 9 Cylinder assy and piston assy | switch (refer to the page 3-27) |

900L8AG100

## · PUMP PARTS LIST



900LBAG101

- |   |                           |   |                  |    |   |
|---|---------------------------|---|------------------|----|---|
| 1 | 3-way valve assy          | 6 | Motor assy       | 10 | Low level sensor and level indicator assy |
| 2 | Inline check and air vent | 7 | Controller       | 11 | Piston assy                               |
| 3 | Pump cover assy           | 8 | Cam assy         | 12 | Cylinder assy                             |
| 4 | Main plate assy           | 9 | Distributor assy |    |   |
| 5 | Follower plate assy       |   |                  |    |   |

## 2) SPECIFICATIONS

### (1) Pump

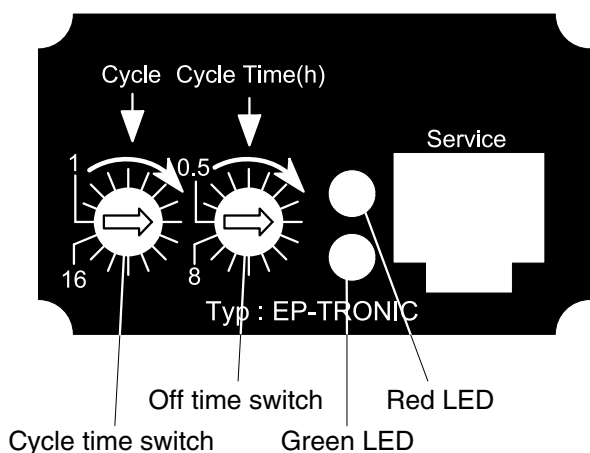
Item	Specification
Input power	24 VDC
Speed	60 rpm
Current	Max 15 amp
Output volume	110.0 cc/min $\pm$ 20%
Pressure	Max. 280 bar $\pm$ 20%, at 20 °C, NLGI No.2
Operating temperature	-35 to 70 °C (depending on the grease type)
Dimension (W x L x H)	369 x 419 x 496 mm
Filter	1st filter ; #60, 2nd filter ; #500
Grease can	I.D : 280~300 mm, Height : 336~363 mm
Lubricant	NLGI No.1 or No.2

- ※ It could be reducing a grease output volume after 30 min running.
- ※ When you use pump lower then -10 °C continuously, you should use a low temperature grease and check air bubble periodically.

### (2) Controller

Item	Specification
Type	EP-tronic
Power	24 VDC
Current max	Max 6 A
Temperature	On stroke : -40 ~ 85°C, In service : -35 ~ 70 °C
Lube cycle	Max 16 (1 increment)
Off time	0.5 h up to 8 hrs (1 increment 0.5 h)

#### · Controller front view



- **Cycle time switch**  
17 to 32 stroke (16 grades, every 1 stroke)
- **OFF time switch**  
0.5 to 8 hours ( 16 grades, every 0.5 h)

900L8AG102

### 3) SAFETY INSTRUCTION

Please observe the contents of the following description to use this product safely. In this manual warning and caution are intended to prevent death or serious injury that may be caused to the operator who are around the product and damage that may be caused the articles that are around the product, as well as to use safely and correctly.

- (1) Do not use strange materials to clean the pump in any case.  
Otherwise it may cause damage and explosion of pump.
- (2) Do not remodel the pump in any case . It may result in a bodily accident or failure.
- (3) Do not use gasoline to clean the pump in any case. It may cause ignition or explosion.
- (4) Do not use any solvent or chemical which corrode these materials .
- (5) Do not operate the gun lever with the discharge port facing to another person during machine operation at any case.
- (6) Do not use silicon grease
- (7) After the end of using pump, please be sure to shut off the power of this machine to release the internal pressure.
- (8) When replacing any port as maintenance, please be sure to stop the power to the machine to avoid having fingers nipped because of a malfunction.
- (9) Using of the pump for other purpose could lead to personal injuries or damages on properties.

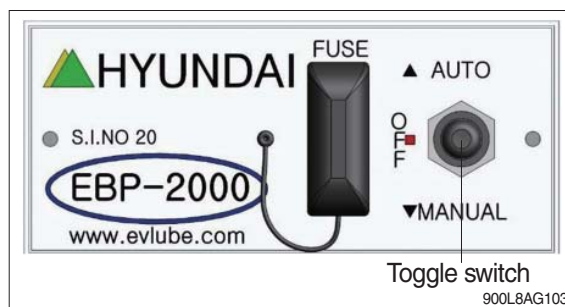
## 4) OPERATIONS

### (1) Pump

#### ① Change mode

Change mode with toggle switch at front of pump.

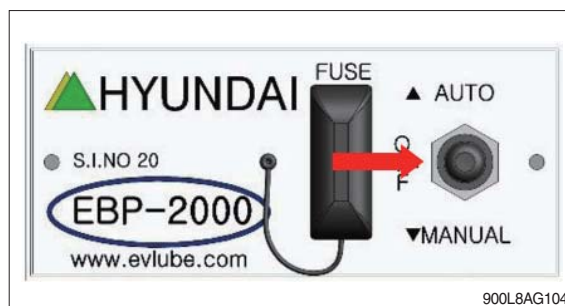
- a. AUTO – Automatic mode
- b. MANUAL – Manual mode
- c. OFF – Power off



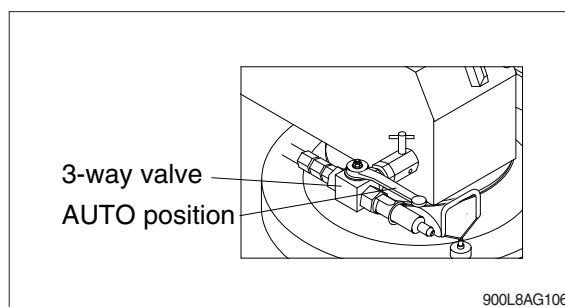
#### ② Exchange of AUTO mode

Please follow the following process to change auto mode.

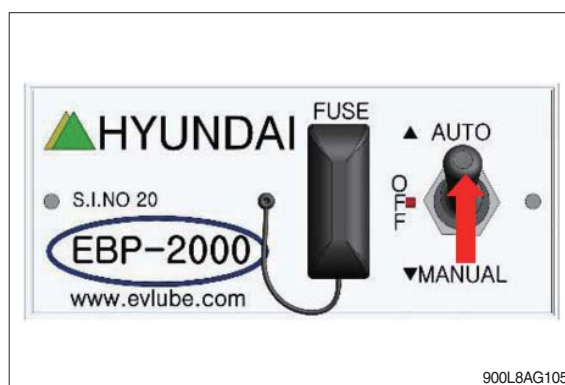
- a. Change toggle switch to OFF mode.



- b. Change 3-way valve to AUTO position.



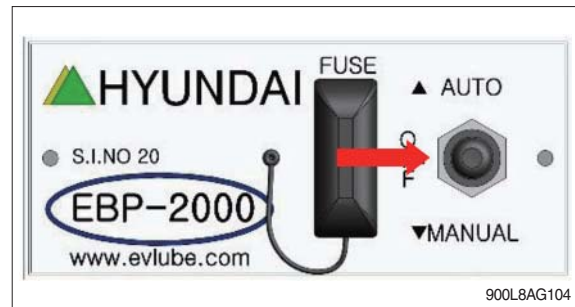
- c. Change toggle switch to AUTO mode.



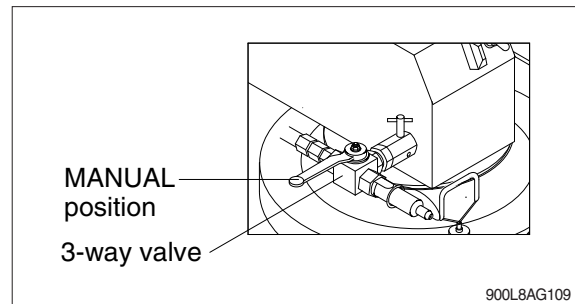
③ **Exchange of MANUAL mode**

Please follow the following process to change manual mode.

a. Change toggle switch to OFF mode.



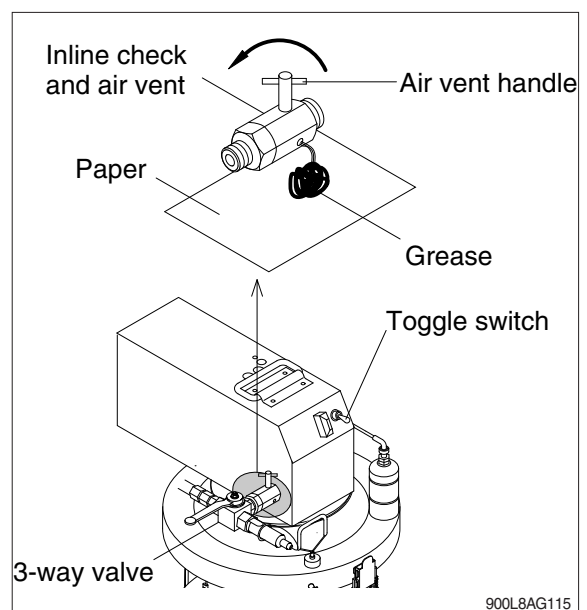
b. Change 3-way valve to MANUAL position.



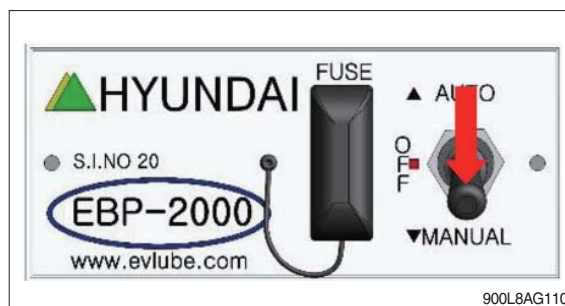
c. Connect the grease gun assy to the quick coupler.



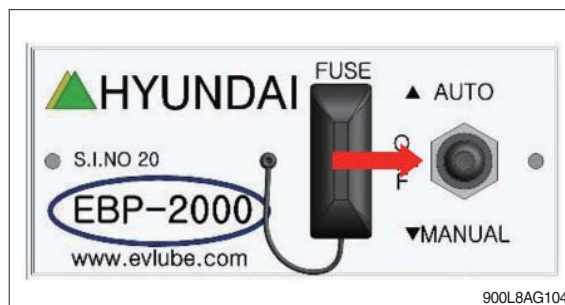
d. If pressure remaining in the pump, it is difficult to connect grease gun assy. In case, open the air vent and release the pressure and connect the quick coupler.



- e. Change toggle switch to MANUAL mode and move to the lube point for the greasing.



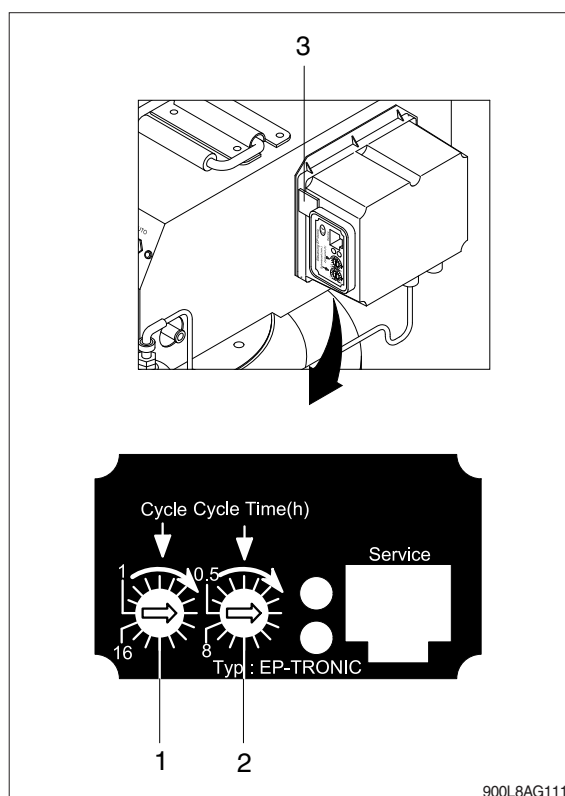
- f. After greasing, change toggle switch to OFF and release pressure inside grease hose and store it.



## (2) Controller

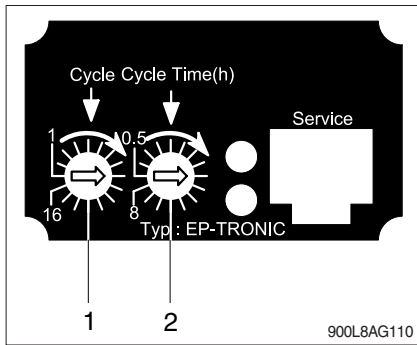
Please follow the following procedure to change lube on and lube off cycle.

- ① Change toggle switch to OFF mode at front of pump.
- ② Open dust cap of controller.
- ③ Set number of lube cycle with -driver. (1 in figure, max. 16 cycle, 1 increment every 1 notch, total 16 notches.)
- ④ Set number of lube off time with -driver. (2 in figure, 0.5 h up to 8 hours, 0.5 h increment every 1 notch, total 16 notches.)
- ⑤ Close dust cap.
- ⑥ Change toggle switch to AUTO mode.
- ⑦ After one lube cycle off, push reset switch (3 in figure).
- ⑧ Check whether pump is working as programed or not. (Please check number of moving a stroke of D0 distributor sensor.)



- ※ Please make sure to close controller protection cap. If it is not closed perfect, it will cause malfunction of controller.
- ※ Please change lube on and lube off cycle setting according to the working condition of equipment.

## 5) MAINTENANCE AND INSPECTION



※ Operation status of the pump is displayed 2 LEDs on the front of the controller as below.

Green LED (1) : Operation status

Red LED (2) : Error occurred

※ The red LED is light or blink when error is occurred. Also the pilot lamp of the central grease lubrication switch in the cab is light or blink same as the red LED operation pattern.

### (1) Controller LED display

Item	Reason	Descriptions	LED display
Standby	Controller standby	Not error	<p>Red LED</p> <p>ON</p> <p>OFF</p> <p>1.5 sec</p> <p>Green LED</p> <p>ON</p> <p>OFF</p> <p>900L8AG107</p>
Lubrication ON	Working lubrication ON	Not error	<p>Red LED</p> <p>ON</p> <p>OFF</p> <p>While lube ON</p> <p>Green LED</p> <p>ON</p> <p>OFF</p> <p>900L8AG107-1</p>
Cycle error	Stop main distributor	Refer to page 9-27, 1 and 2 of (2) system and page 9-30, (3) How to find distributor and lube line blocked.	<p>Red LED</p> <p>ON</p> <p>OFF</p> <p>1 sec</p> <p>1 sec</p> <p>Green LED</p> <p>ON</p> <p>OFF</p> <p>900L8AG107-2</p>
	Pump out of order	Refer to page 9-27, 1, 2 and 3 of (1) Pump.	
Grease level error	Grease level too low	Refer to page 9-23, (4) Exchange grease canister.	<p>Red LED</p> <p>ON</p> <p>OFF</p> <p>Until exchange new grease can</p> <p>Green LED</p> <p>ON</p> <p>OFF</p> <p>900L8AG107-3</p>



## (2) LED display (Controller/Reset switch)

Status	Control panel	Reset switch / Buzzer
Standby		
Pump running		
Stroke error		
Level error		

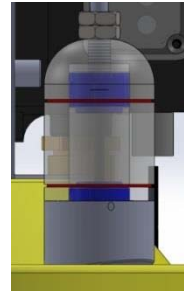
※ If system run normal, it does not displayed.

※ The pilot lamp of the central grease lubrication switch in the cab is displayed when error occurs.

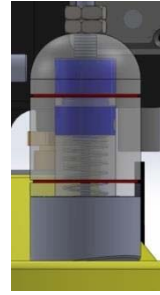
**(3) Check grease level**

※ Grease level could be checked as follows.

- ① Error LED of controller.
- ② Level indicator of pump.



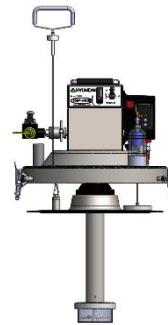
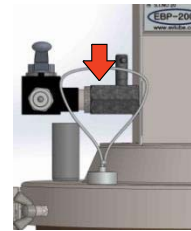
Full and medium



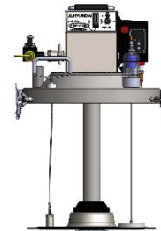
Empty

900L8AG112

- ③ Air vent handle of follower plate.



Full



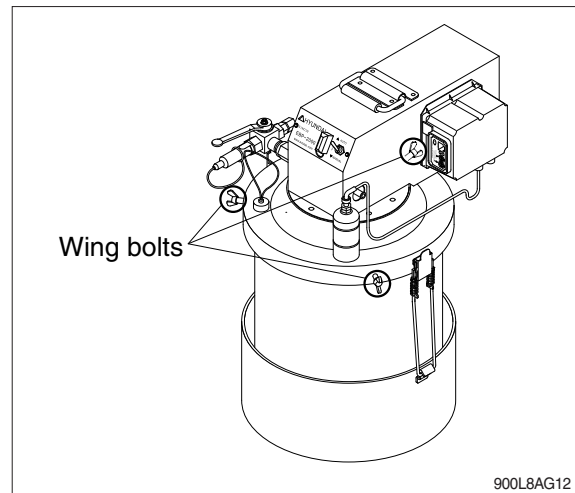
Empty

900L8AG113

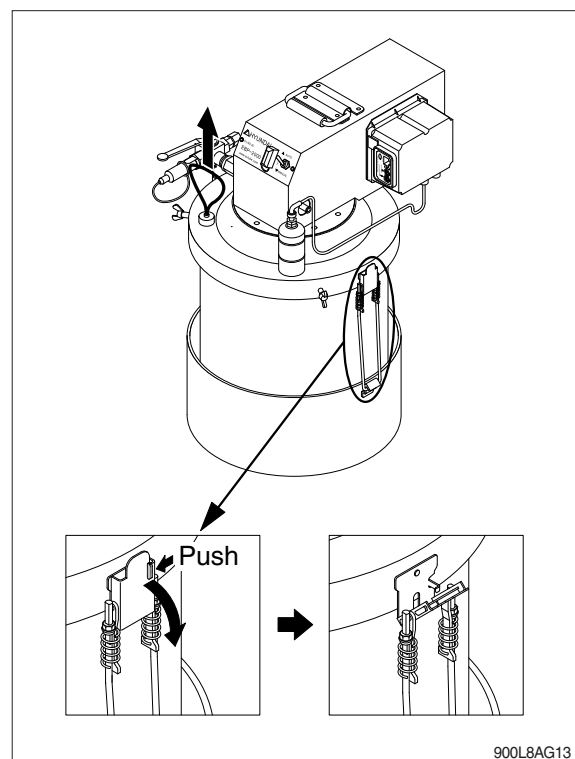
#### (4) Exchange grease canister

※ Exchange of grease canister is a following procedure.

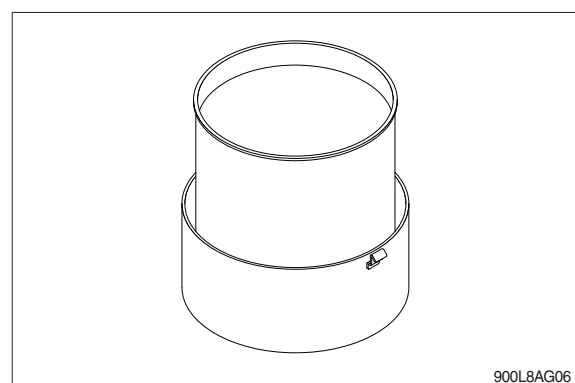
- ① Replace toggle switch to OFF and disconnect power cable.
- ② Unfasten wing bolts (3EA).



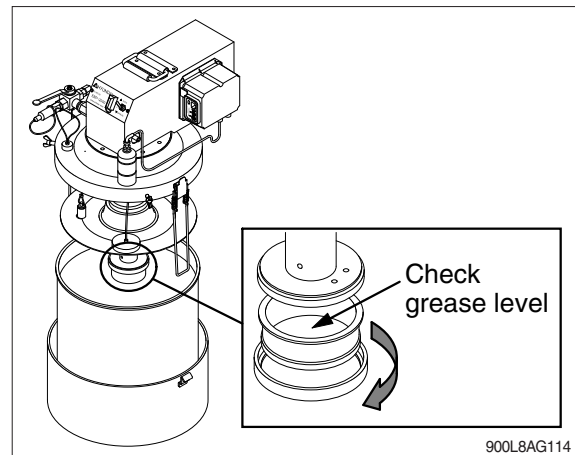
- ③ Unlock the clamp and loosen the clamp leg.
- ④ Pull air vent handle of following plate up.
- ⑤ Remove grease pump from grease canister.



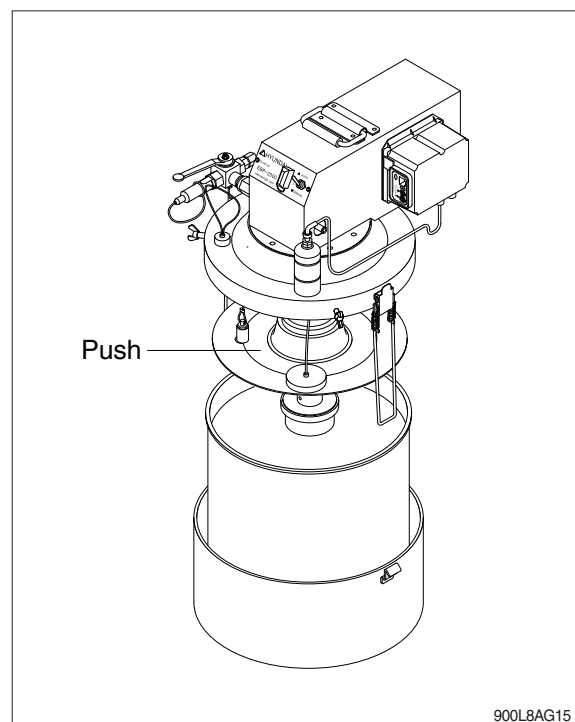
- ⑥ Remove grease canister and fix new grease canister.



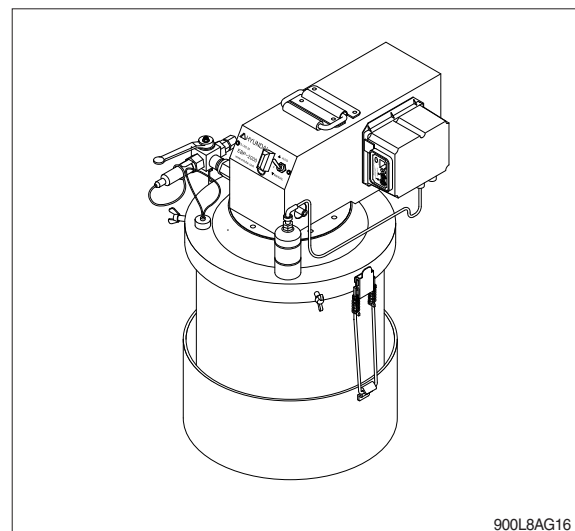
- ⑦ Open cover of grease canister and make grease level inside of canister as parallel.
- ⑧ Arrange follower plate to be moved the center of grease canister and check the indicator of level and air vent handle of follower plate.



- ⑨ Insert pump into grease canister and push follower plate down as well.

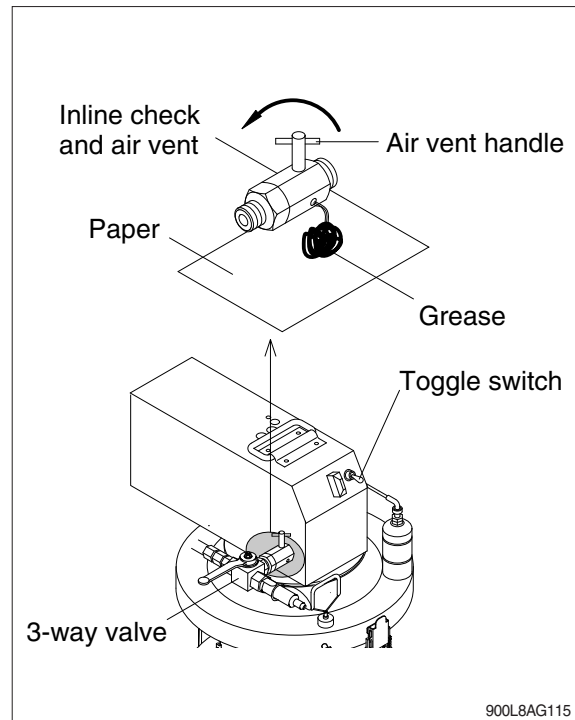


- ⑩ Close clamp and fasten wing bolts (3EA).
- ⑪ Check grease level position and connect power cable.
- ⑫ Change toggle switch to AUTO mode and remove air inside of pump.
- ※ Refer to page 9-25, (5) How to remove air pocket.



### (5) How to remove air pocket

- ① Turn 3-way valve to MANUAL position.  
Refer to page 9-17, ② Exchange of AUTO mode.
  - ② Lay paper down under air vent.
  - ③ Change toggle switch to MANUAL mode.  
Refer to page 9-18, ③ Exchange of MANUAL mode.
  - ④ Open air vent.
  - ⑤ Open air vent until grease mixed air come out.
  - ⑥ Close air vent and turn toggle switch and 3-way valve to AUTO position.  
Refer to page 9-17, ② Exchange of AUTO mode.
  - ⑦ Clean air vent and pump.
- ※ **The grease mixed air is cloudy in white.**

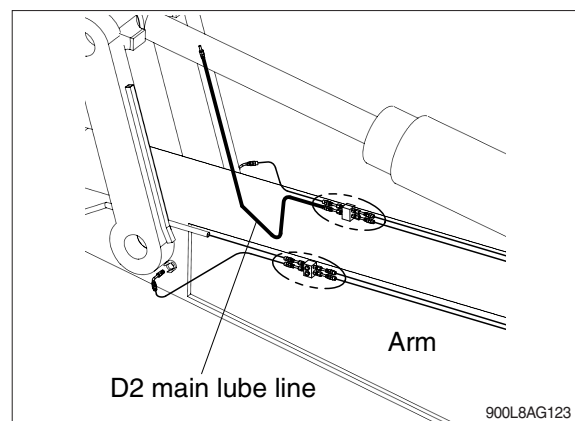


## (6) Inspection of pump

Interval	Item	Descriptions
Daily	Pump	- Check output pressure - Check sensor of D0 distributor
	Controller	- Check status of controller display
	Grease level	- Check grease level gauge and manual level handle
Weekly	1st filter	- Check filter and clean if necessary
	Leakage of grease	- Make screw a part leak edged up
	Fixing pump	- Check clamp
	Controller	- Push reset switch (Refer to page 9-19, (2) controller) and check
Yearly	Cam ring	- Fill grease into cam ring bearing if necessary
	Parts fastened	- Check and make it tidy if necessary

## (7) Inspection of lube system

Interval	Item	Descriptions
Daily	Lube line	Check the end of arm lube point / D2 main lube line (refer below figure)
	Lube point	Check optical
Weekly	Distributor leakage	Replace fitting or make it tidy if leakage



## 6) TROUBLESHOOTING

### (1) Pump

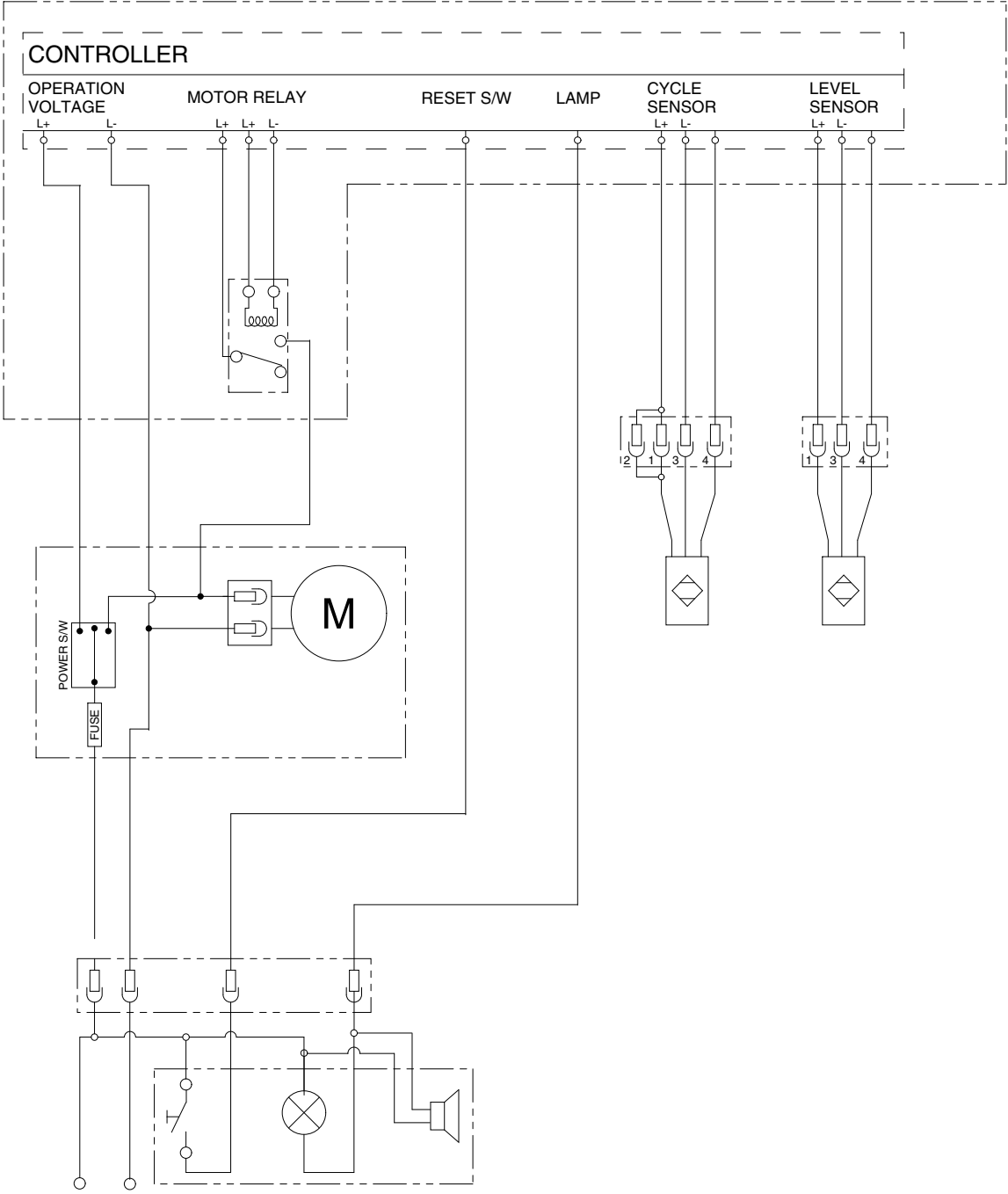
Trouble	Reason	Service
1. Pump does not working	1) Power off 2) Pump motor broken	1) Check fuse and toggle switch 2) Replace the motor assy
2. Grease doesn't discharge although pump is operating	1) Grease low level 2) Pump element broken 3) Piston assy broken 4) Relief valve broken 5) Filter blocked 6) Air inside pump	1) Replace grease canister 2) Replace the cylinder assy 3) Replace the pump piston assy 4) Replace distributor assy 5) Check filter and clean 6) Remove air using air vent. ※ <b>Refer to page 9-25, (5) How to remove air pocket.</b>
3. Could not either pump high pressure or accurate grease volume	1) Relief valve broken 2) Seal inside of pump broken 3) Filter blocked 4) Air inside pump	1) Relief valve readjust or replace distributor assy 2) Replace the cylinder assy 3) Check filter and clean 4) Remove air using air vent ※ <b>Refer to page 9-25, (5) How to remove air pocket.</b>
4. Reduced pump speed	1) High pressure in the lube line 2) Low ambient temperature	1) Check the lube line and points 2) Change grease with low NLGI grade
5. When pumping pressure will be gone up too higher	1) Lube line/point blocked 2) Relief valve broken	1) Check lube line/point and repair 2) Relief valve readjust or replace the distributor assy
6. Other trouble	Contact Hyundai or Hyundai distributor	

### (2) System

Trouble	Reason	Service
1. Certain lube point not delivered grease	1) Lube line broken 2) Distributor blocked	1) Change lube line 2) Change distributor
2. Cycle error	1) Pump out of order or grease empty 2) Lube point blocked 3) Lube line blocked 4) Main lube line blocked/broken/leakage	1) Please refer to this page, (1) Pump. 2) Check lube point 3) Change lube line 4) Check main lube line and change it
3. Noise at certain point	1) Lack of grease 2) Blocked lube point 3) Lube line broken or blocked	1) Adjust lube on cycle (Refer to page 9-19, (2) Controller.) 2) Check Lube point 3) Check lube line and change it
6. Other trouble	Contact Hyundai or Hyundai distributor.	

7) ELECTRIC WIRING DIAGRAM

EBP-2000 SL

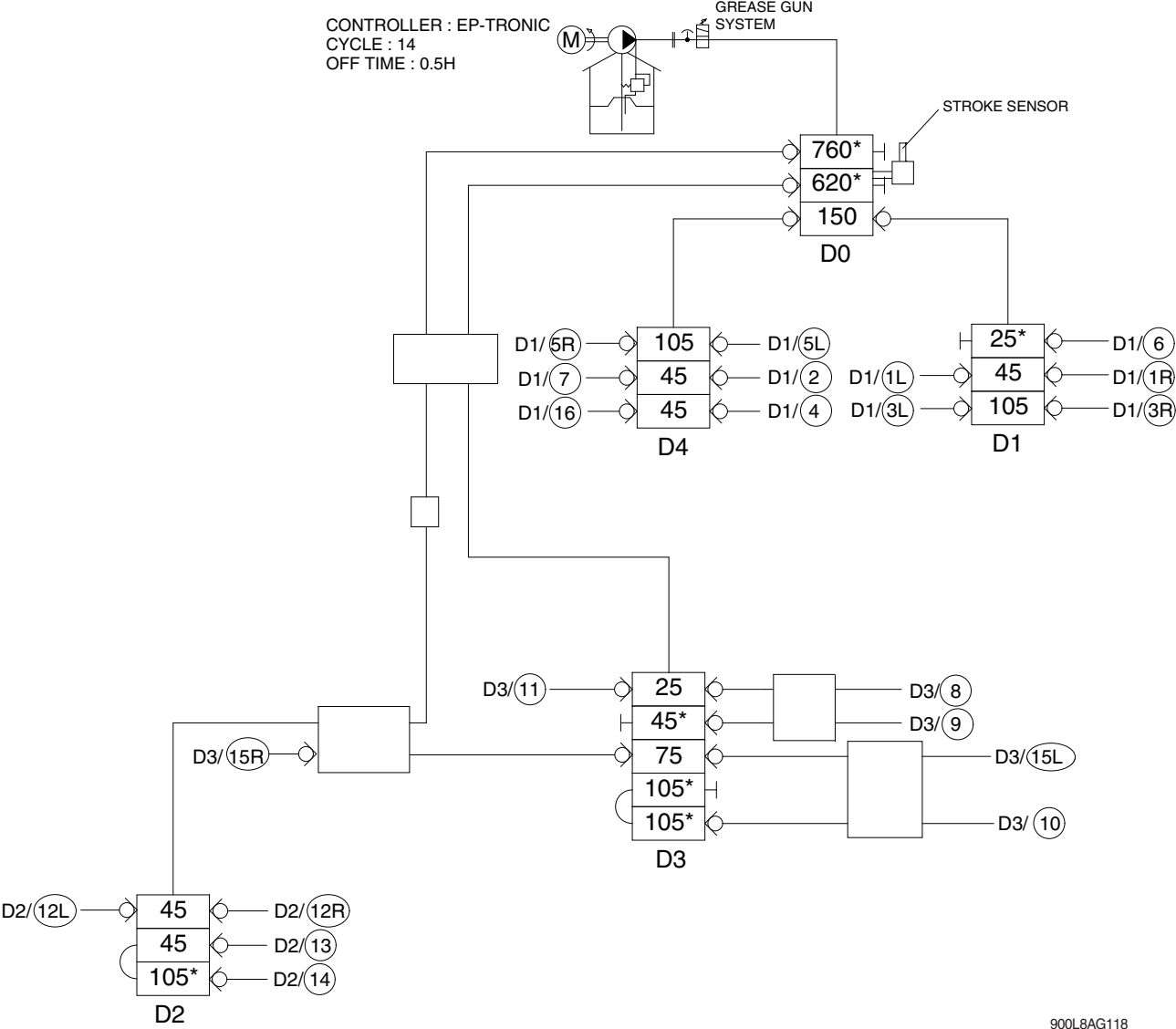


900L8AG117



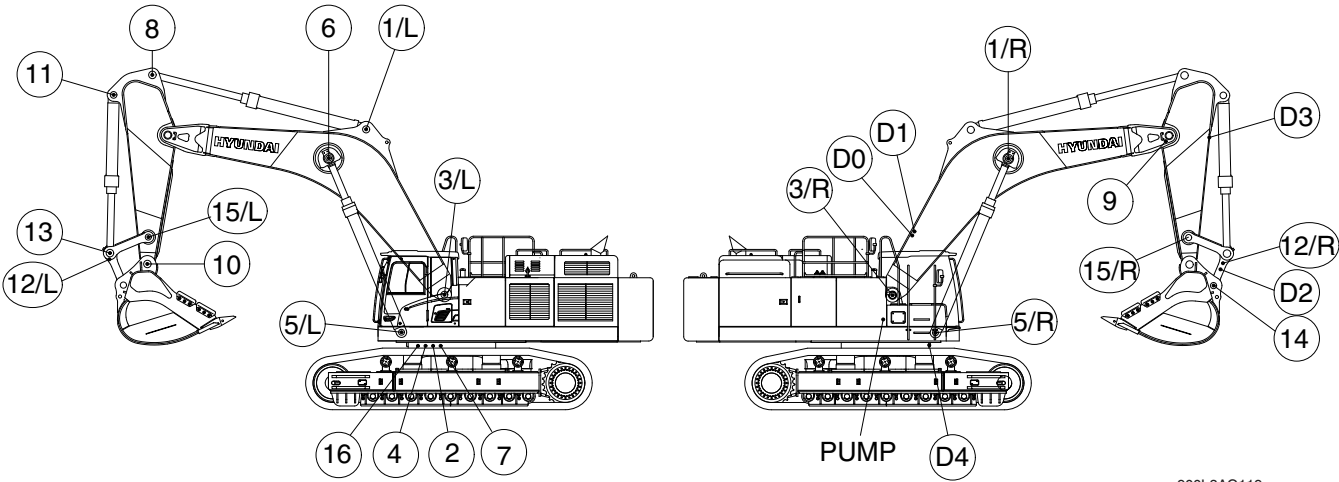
8) CENTRALIZED LUBE SYSTEM

(1) System layout



900L8AG118

(2) Lube point



900L8AG119

### (3) How to find distributor and lube line blocked

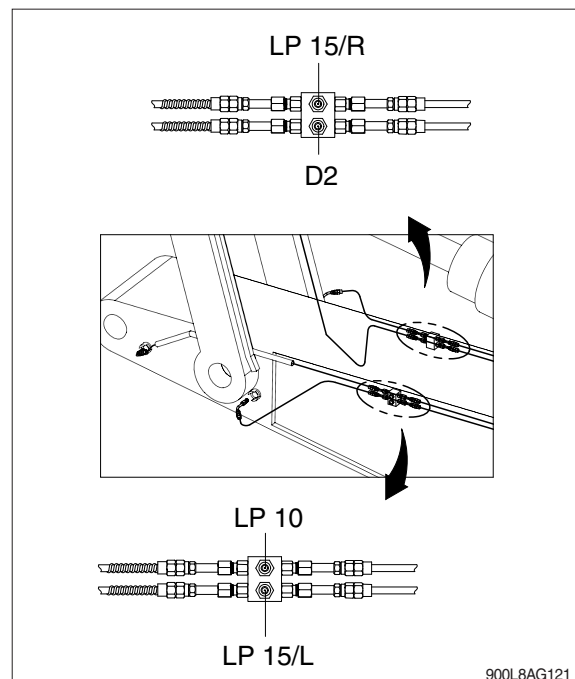
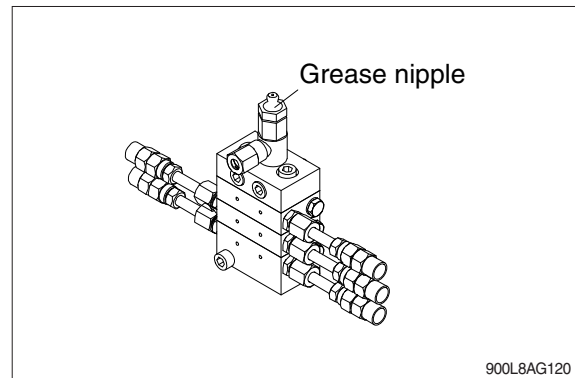
Please follow the following information.

※ Refer to page 9-31, 9) CHECK AND REPAIR LUBE LINE AND DISTRIBUTOR.

- ① Disconnect input main lube line of main distributor.
- ② Check whether grease come out through main lube line or not.
- ③ Connect main lube line and check each outlet of distributor as one by one after disconnect each sub lube line.
- ④ Please check for sub distributor as main distributor done.
- ⑤ Although all distributor and lube line are not out of order, if grease could not come out through certain distributor or lube line, it means this distributor or lube line is blocked.  
Therefore please change this distributor or lube line.
- ⑥ Although all distributor and lube line are not out of order, if stroke error display continually, please fill grease at this lube point with manual grease gun and check it.

### (4) Grease nipple for manual filling

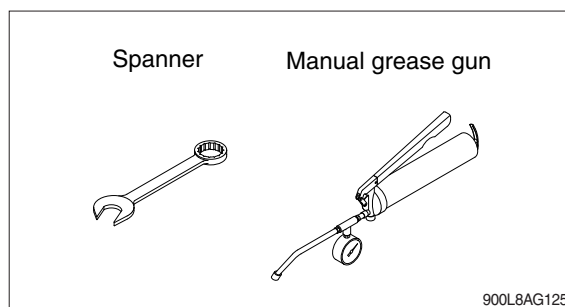
There is grease nipple installed at distributor and grease nipple block for filling grease needed additionally or emergency.



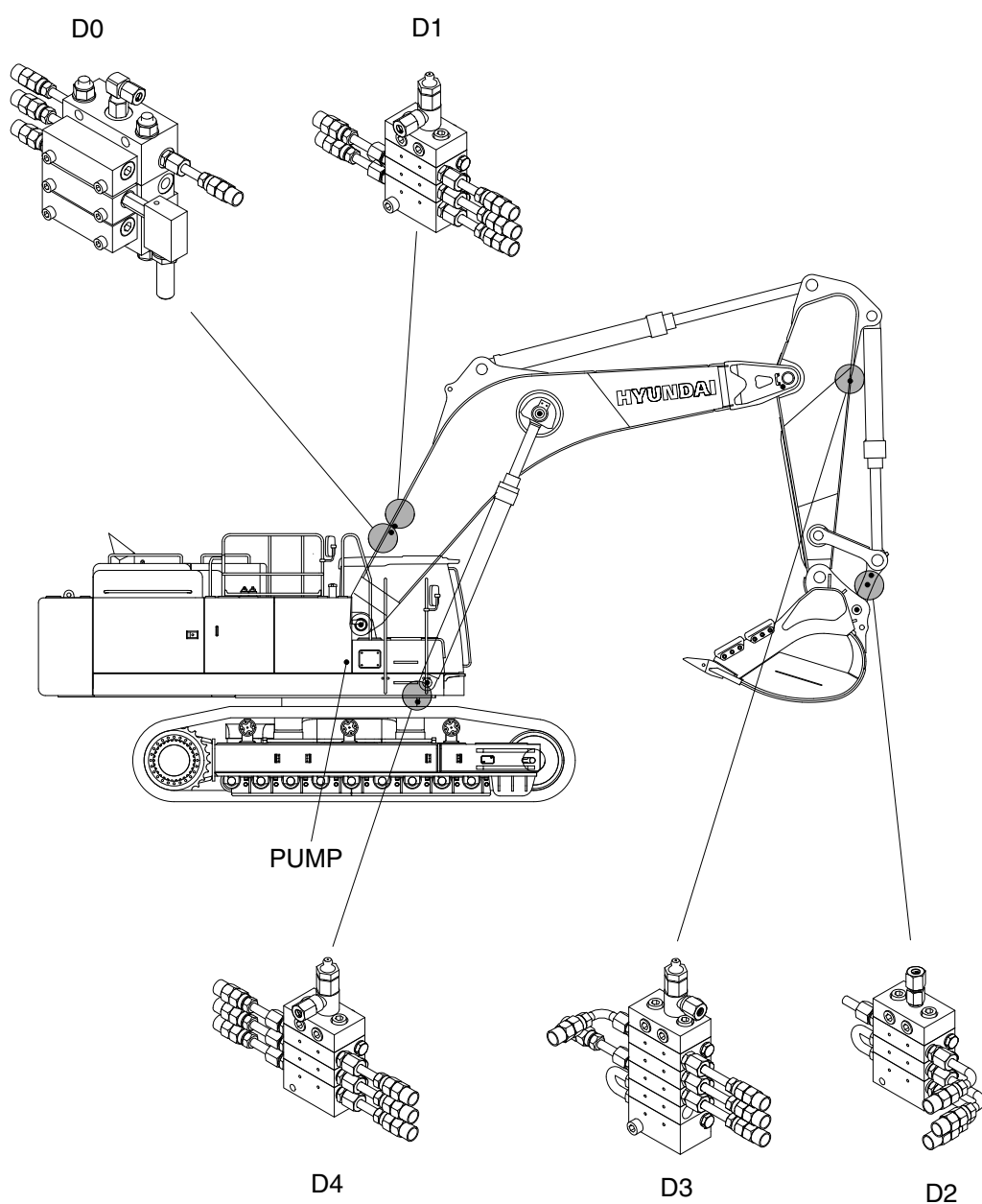
## 9) CHECK AND REPAIR LUBE LINE AND DISTRIBUTOR

### (1) Tools

- ① Spanner : 12, 14, 17 mm
- ② Manual grease gun with pressure gauge.



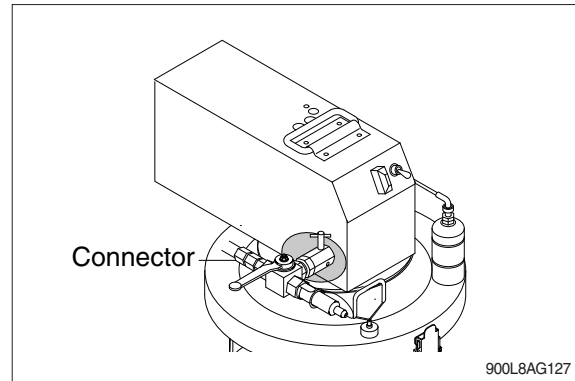
### (2) Distributor position



900L8AG126

### (3) Inspection of main lube line at pump

- ① Disconnect connector using a 17 mm spanner.



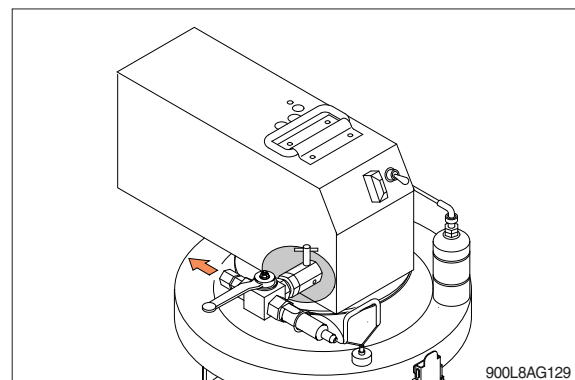
- ② Place toggle switch to AUTO mode and push reset switch.



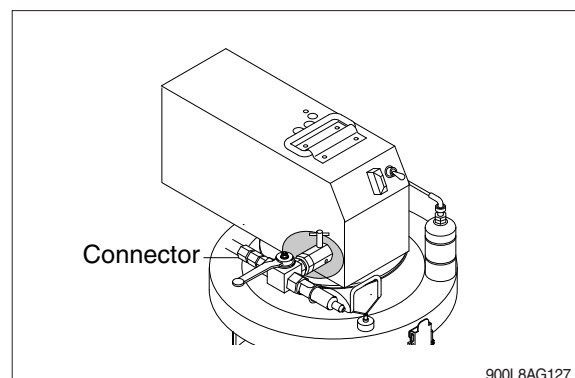
- ③ Check grease come out.

※ **Although pump run, but there is no grease come out.**

- Check grease level -> Exchange grease canister
- Pump out of order -> Please refer to page 9-27, 2 of (1) Pump.

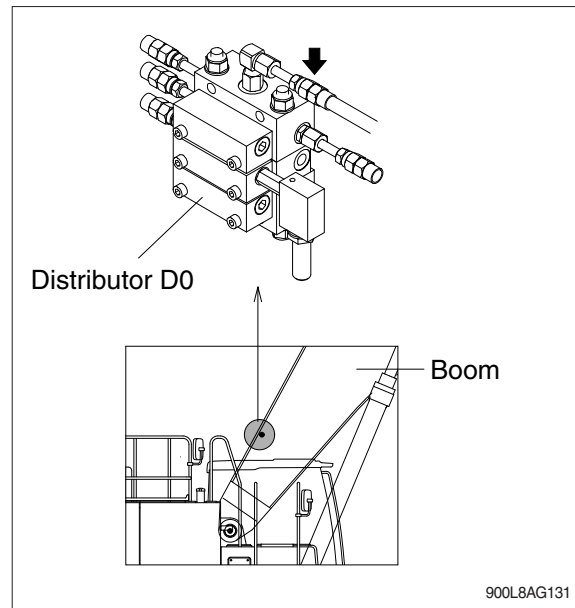


- ④ Connect connector using a 17 mm spanner.



#### (4) Inspection of main lube line at main distributor

- ① Disconnect connector using a 17 mm spanner.



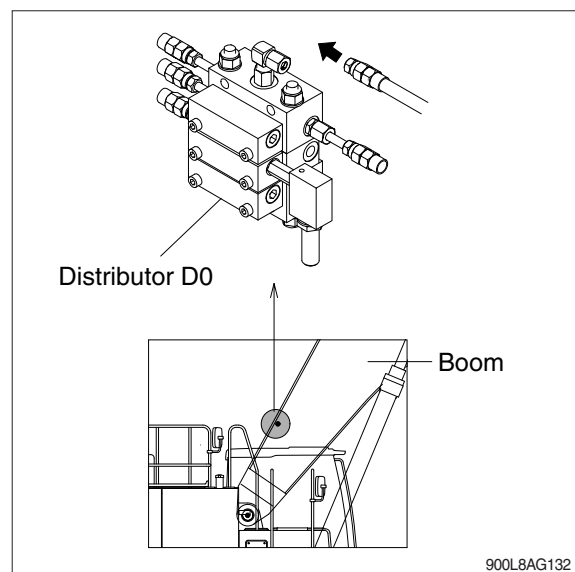
- ② Place toggle switch to AUTO mode and push reset switch.



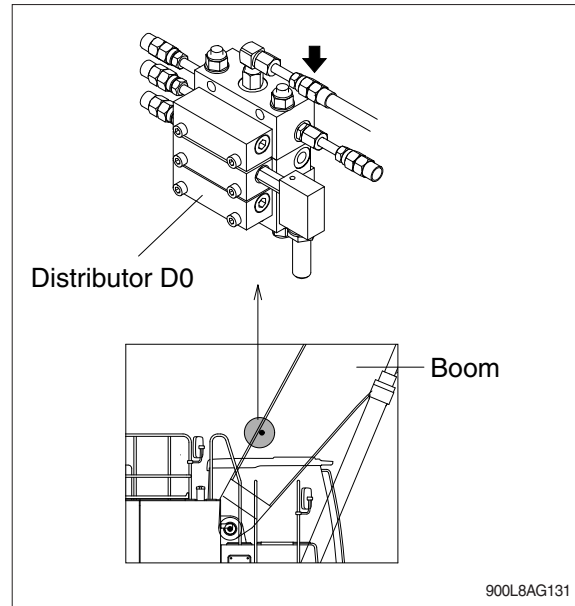
- ③ Check grease come out.

※ **Although pump run, but there is no grease come out.**

- Blocked main lube line -> Exchange main lube line
- Check 3-way valve direction (Refer to page 9-17, ② Exchange AUTO mode.)
- Pump out of order -> Refer to page 9-27, 3 of (1) Pump.



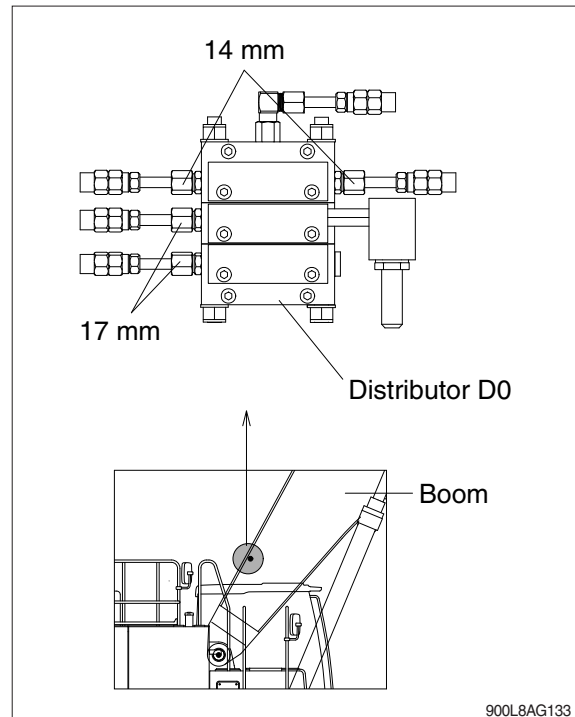
- ④ Connect fitting using a 17 mm spanner.



#### (5) Inspection of main distributor

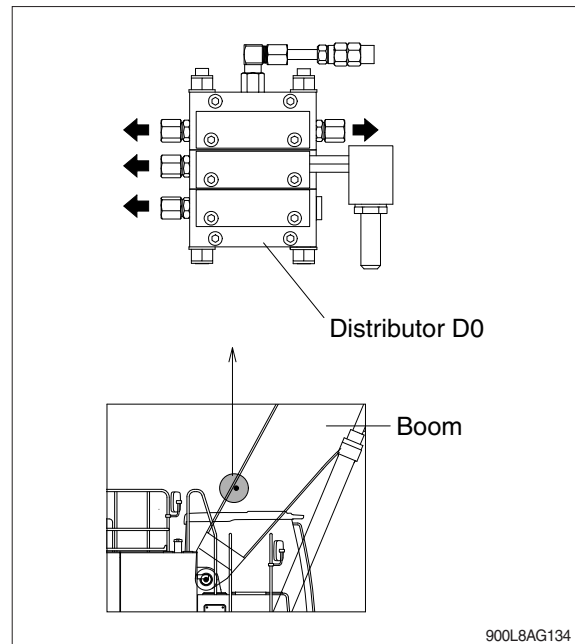
- ① Disconnect connector using a 17 mm spanner and 14 mm spanner.

※ **Whenever you disconnect main lube line from main distributor, please mark number of main lube line clearly.**



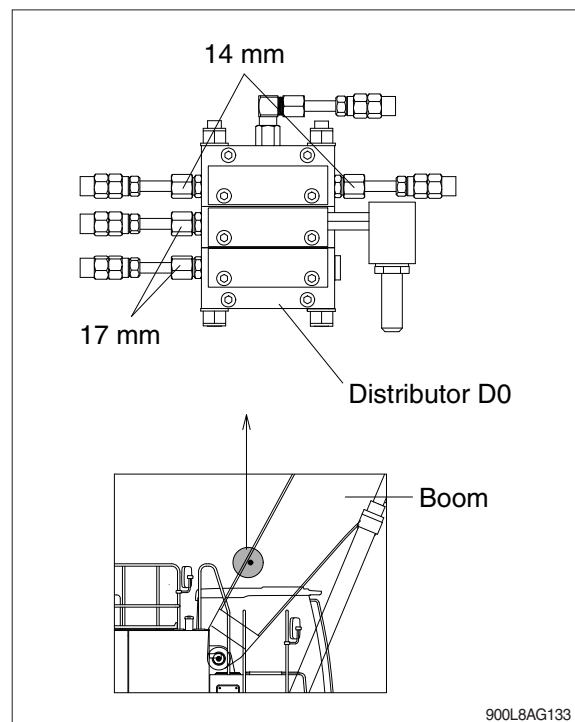
② Check each outlet grease come out.

- ※ During inspection if pump stop, then push reset switch again.
- ※ Although pump run, there is no grease come out.
- Main distributor blocked. -> Exchange main distributor.



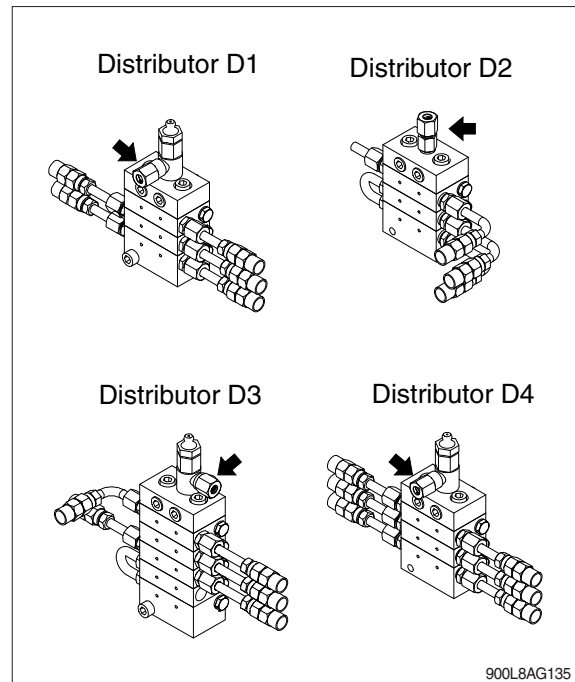
③ Connect connector using a 17 mm spanner and 14 mm spanner.

- ※ Whenever you connect main lube line to main distributor, please connect according to number of main lube line accordingly.



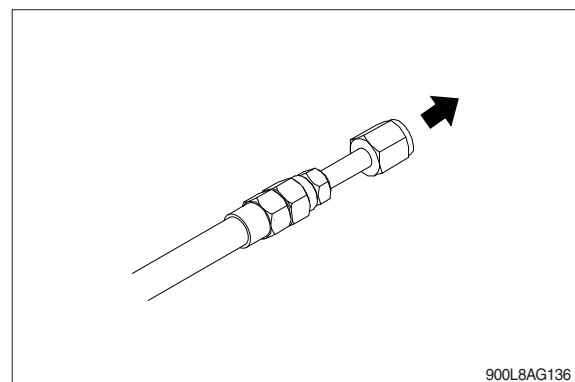
**(6) Inspection of main lube line at sub distributor**

- ① Disconnect connector using a 14 mm spanner.

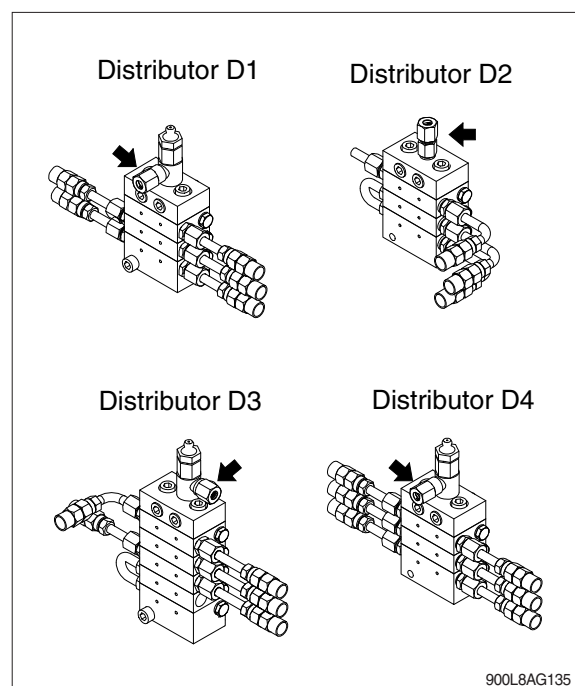


- ② Check main lube line grease come out.

- ※ Although pump run, there is no grease come out.
- Sub distributor main lube line blocked.
- > Exchange main lube line.



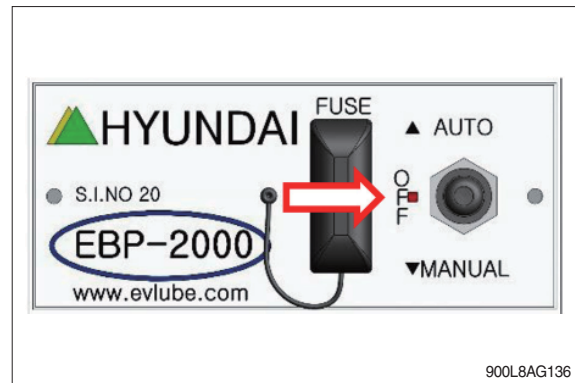
- ③ Connect connector using a 14 mm spanner.



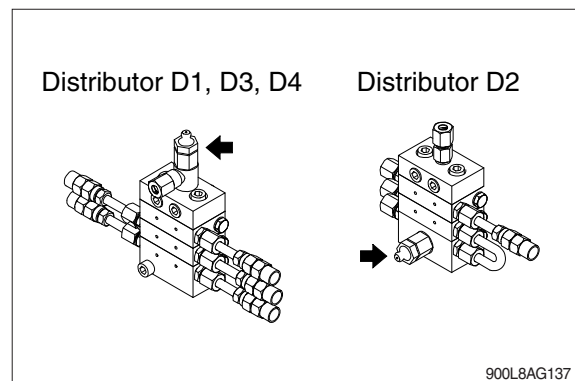


## (7) Inspection of sub distributor

- ① Place toggle switch to OFF position.

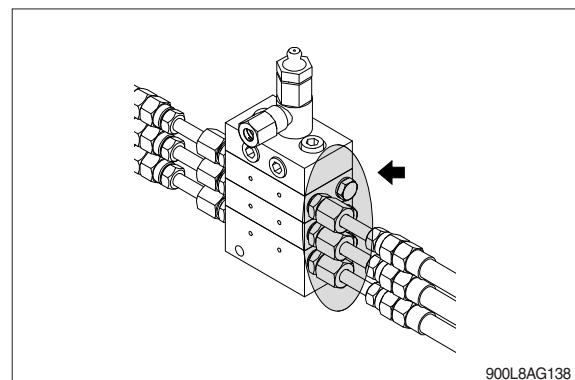


- ② Check grease nipple of distributor.



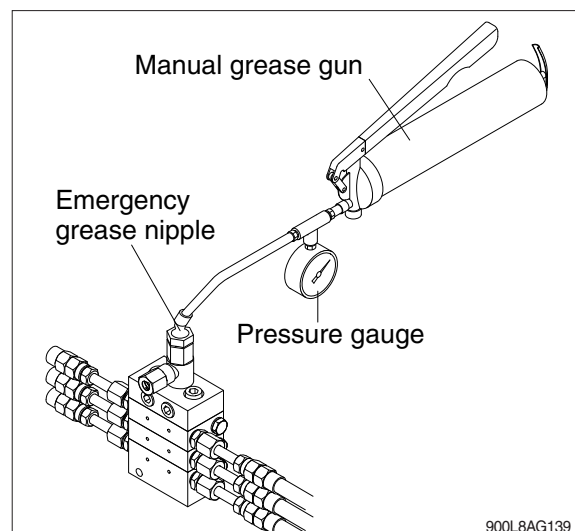
- ③ Disconnect connector using a 12 mm spanner.

⚠ Whenever you disconnect main lube line from main distributor, please mark number of main lube line clearly.



- ④ Fill grease to emergency grease nipple of sub distributor and check pressure of output with manual grease gun.

※ Grease not come out from sub distributor.  
- Sub distributor blocked. -> Exchange sub distributor.



**(8) Inspection of sub distributor sub lube line**

① Make lube line as one bundle after disconnection.

※ **Whenever you connect main lube line to main distributor, please connect according to No. of main lube line accordingly.**

※ **After connect all lube line, please check lube line whether it is connected as before disconnection or not.**

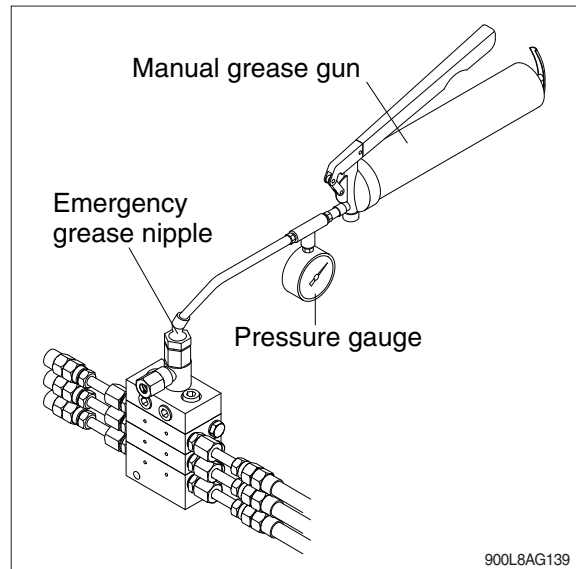
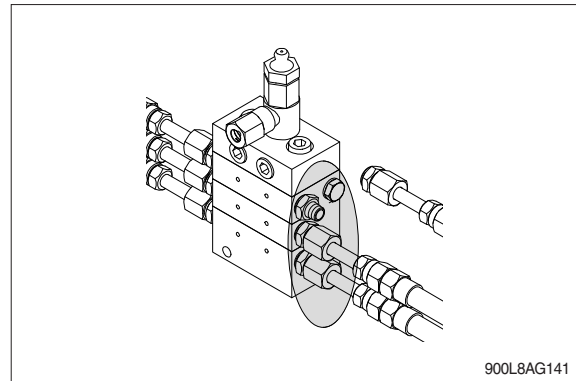
② Please check pressure gauge and output of grease from sub distributor.

③ Case 1 : Pressure does not goes up high.

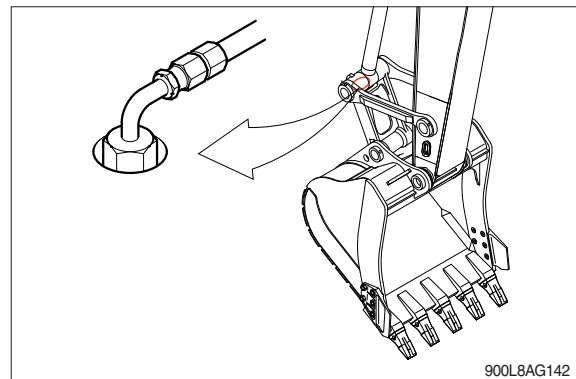
-> Repeat above ① and ②.

Case 2 : Pressure goes up high.

-> Go to ④



④ Disconnect cap using a 12 mm spanner.



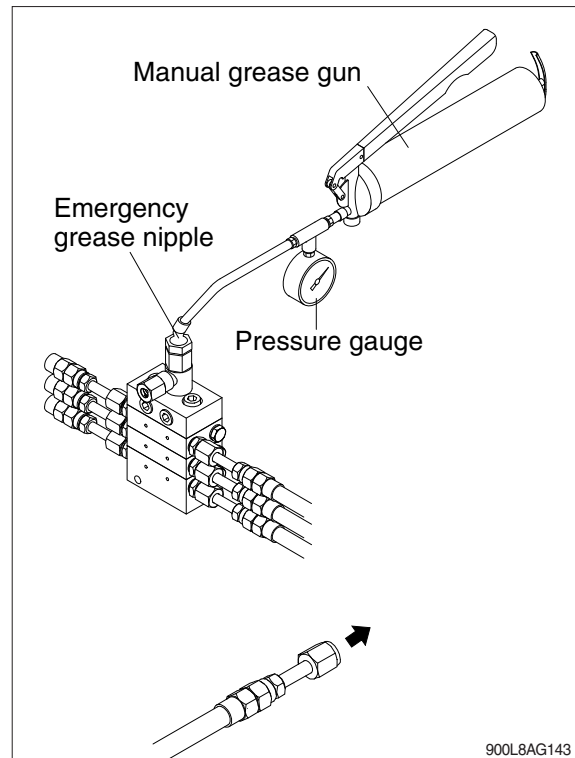
⑤ Check whether grease come out or not after fill grease into emergency grease nipple of distributor with manual grease gun.

※ In case grease does not come out from sub lube line.

- Sub lube line blocked. -> Exchange sub lube line.

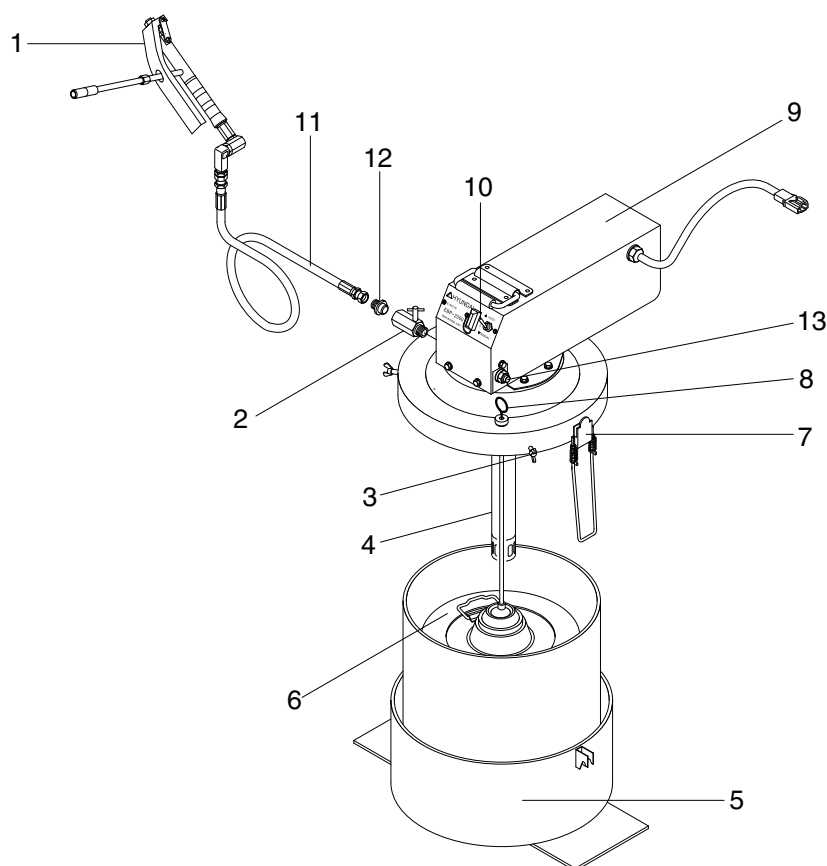
※ In case grease come out from sub lube line.

- Lube point blocked. -> Repair or replace.



## 2. SEMI AUTO GREASE LUBRICATION SYSTEM

### 1) MAJOR COMPONENT



380LC8AG01

- |                          |                                |
|--------------------------|--------------------------------|
| 1 Grease gun             | 8 Level gauge                  |
| 2 Inline check & airvent | 9 Grease pump                  |
| 3 Wing bolt              | 10 Grease lubrication switch   |
| 4 Piston & cylinder      | 11 Grease hose                 |
| 5 Grease can holder      | 12 Grease filter               |
| 6 Follower plate         | 13 Over pressure control valve |
| 7 Grease can clamp       |                                |

### • Specifications

Item	Specification
Input power	24VDC
RPM	60
Current	15 amp
Output volume	110.0 cc/min $\pm$ 20%
Pressure	Max. 280 bar $\pm$ 20%
Operating temperature	-35°C to 70°C (depending on the grease type)
Weight	15 kg
Filter	1st filter ; 1.0 mm, 2nd filter ; 0.2 mm
Grease can	20 liter
Grease hose	10 meter

## 2) PREPARATION FOR OPERATION

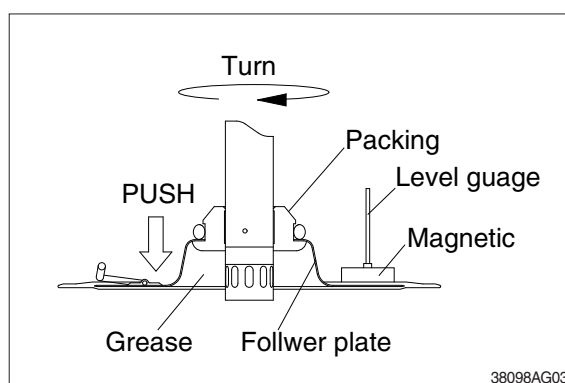
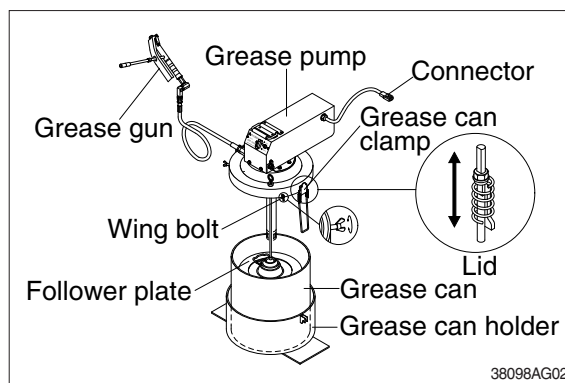
### (1) Instruction

- ※ Place the unit on flat and stable place.
- ※ After you use the grease, please make sure to change it into new grease can.
- Never use it by filling the grease, for it becomes the cause of system failure.

- ① Loosen the wing bolts, clamp and remove the grease pump from the grease can.
- ② Remove the follower plate and level gauge.
- ③ Change a new grease can.
- ④ Place the follower plate on the grease can horizontally and push it down by rubbing it to left and right with hand until the grease comes out from the packing in the middle of the follower plate.

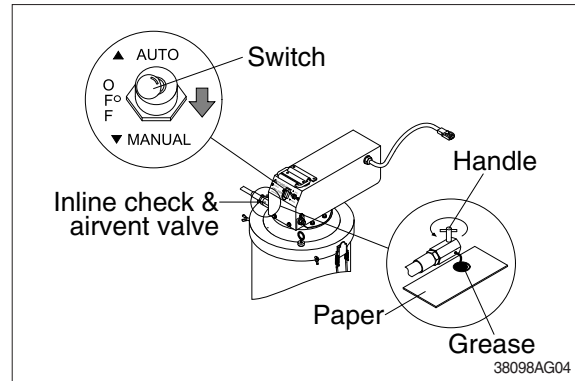
- ※ Take care not to allow sand and dust to adhere on the suction tube and follower plate of the pump.

- ⑤ Place the magnetic of level gauge on the follower plate.
- ⑥ Insert the grease pump into the center of grease follower plate.
- ⑦ Install the clamp tight (2EA) according the height of can and tighten the wing bolt (3EA).
- ⑧ Check the power connector.

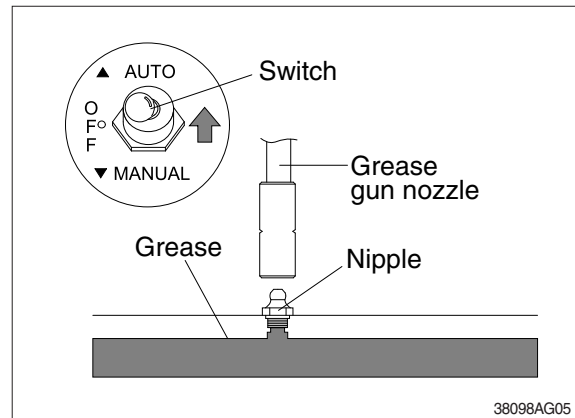


## (2) Grease gun operation

- ① Switch on to the MANUAL.
- ② Open the inline check & airvent valve and operate the pump until grease will be discharged from a small hole under check valve.
- ③ After grease is discharged fully, close the valve handle.



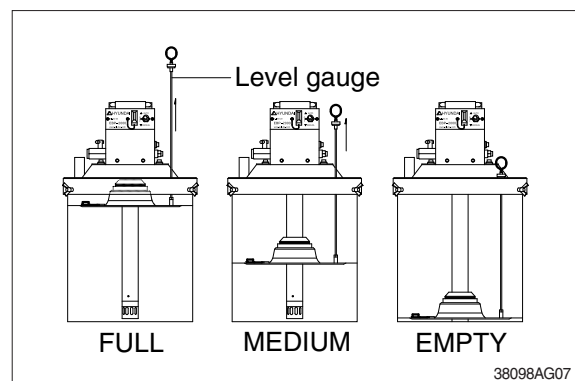
- ④ Switch on to the AUTO, take out grease gun and hose to the point where you want to lubricate and lubricate a grease to lube point after hold grease gun handle.
- ⑤ Rearrange the grease gun and hose after lubricate all lube points and keep it in the tool box.
- ⑥ Switch OFF.



- ※ It could be reducing a grease output volume after 30 minute running.
- ※ When you use pump lower than -10°C continuously, you should use a low temperature grease.
- ※ The grease mixed air is cloudy in white replace the new grease.

## (3) Grease level check

- ① Hold the level gauge handle and make straight line between the gauge plate attached follower plate and gauge handle.
  - ② Check the length of the level gauge between gauge handle to the top of pump. The distance of gauge (wire rope) is indicated grease level.
  - ③ When grease level goes down to the empty the level gauge plate will be separated from the follower plate (It is attached with magnet). Replace the new grease can.
- ※ Pump will be pumping out a remaining grease for 3 minutes after the grease level indicated empty.



### 3) SAFETY INSTRUCTION AND MAINTENANCE

#### (1) Safety instruction

- ① Do not use silicon grease.
- ② Do not operate the grease gun with the discharge port facing to another person during machine operation at any case.
- ③ After the end of using pump, please be sure to shut off the power of this machine to release the internal pressure.
- ④ When replacing any port as maintenance, please be sure to stop the power to the machine.

#### (2) Maintenance

- ① If any leakage is found, replace seals leaked and also it is required to replace them once a year.
- ② Check whether pump could pump the accurate grease volume or not periodically.
- ③ Please clean grease filter if output volume is less than 25% of stroke volume. (110 cc/min)

### 4) TROUBLESHOOTING

Category	Applications	Service
Pump does not work	Electric cable is broken Pump is defective	Renew the electric cable and fuse Replace the pump
Pump is working but does not supply of lubrication	Grease low level Air packed in the grease can Air packed in the lube line Defective pump element Defective cam and piston Pipes are burst or leakage Defective over pressure valve	Replace the grease can Remove air packet using with follower plate Remove air packet using inline air vent handle Replace the pump element Replace the pump piston Renew the pipes Replace the over pressure valve
Could not either pump high pressure or accurate grease volume	Defective over pressure valve Defective seal in side pump Defective pump parts	Replace the over pressure valve Replace the pump seal Replace the pump parts
Reduced pump speed	Pump and grease pipes is blocked Low ambient temperature	Check and replace the grease pipes Replace the low temperature grease
Leakage of grease at the over pressure valve	Grease filter is blocked Grease pipes is blocked	Clean grease filter Clean grease pipes