INSTRUCTION MANUAL
OF
MOTOR DRIVEN GREASE PUMP

UE－108AN－11

DAIKIN LUBRICATION PRODUCTS & ENGINEERING CO., LTD.

1. General

This motor-driven grease pump is designed for use with dual line system. A pump rated at 21MPa respectively for two lines enhances the reliability of lubrication and permits a simple and rational automatic lubrication system to be established. Thus contributing to the efficient operation of installations.

2. Features

・Compact pump mechanism
Efficient and compact pump mechanism driven by geared motor.

・Simplified piston mechanism
Maintenance and inspection simplified by the adoption of single piston and non-spring check valve.

・High pressure lubrication & high reliability
Complete lubrication assured by increased lubricating pressure up to 21MPa.

・Simplification of pipeline
High pressure lubrication permits reduction in piping size and selection of simple pipeline provided with Reversing valve operating under lubricating pressure itself.

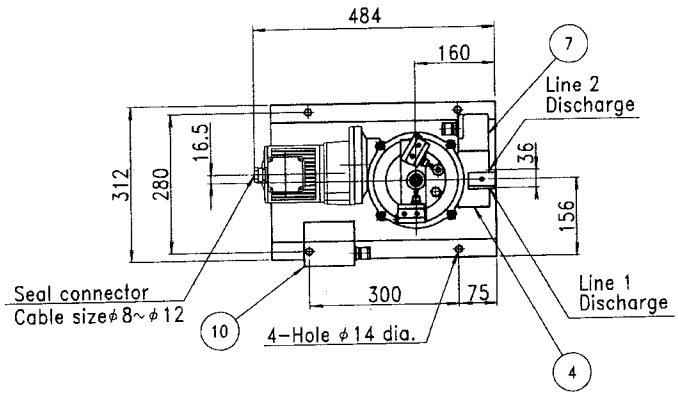
・Economical automatic lubrication
Automatic lubrication can be effected readily at low costs by setting an electric control panel together with the Pump.

Specification

Division of Components	Item (Unit)	Model
		UE-108AN-11
Pump	Discharge volume (cm^3/min)	30/36 (50/60Hz)
	Max. working Pressure (MPa)	21
Geared motor	Direction of revolution	Both direction
	Type	Total enclosed type・Flange type
	Output (kW)	0.1
	Number of poles (P)	4
	Reduction ratio	1/40
Tank	Tank capacity (ℓ)	8
Reversing valve	Type	LRV-7
	Pressure control range (MPa)	12 to 21
	Pipe connecting port	Rc1/4
	Control system	1/2 cycle lubrication
	Setting pressure (MPa)	17
Relief valve	Setting pressure (MPa)	23
Remarks	Piping system	Lance type
	Applicable grease	#0 to #2-NLGI consistency
Mass (kg)		52

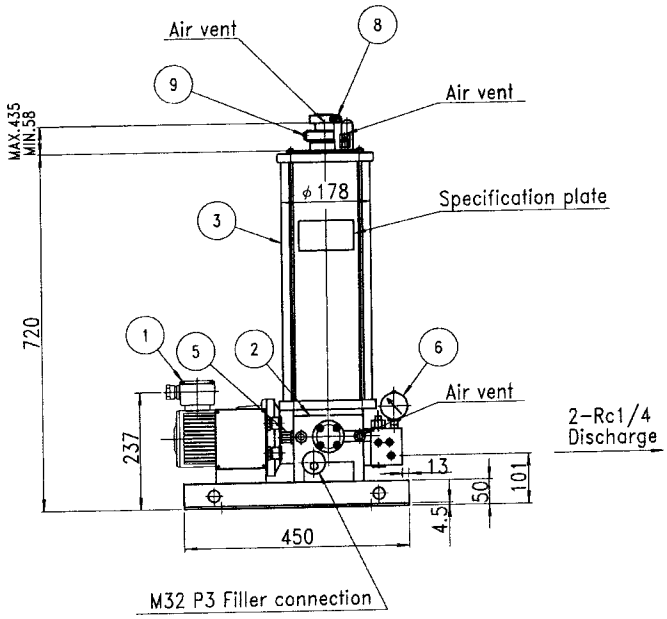
・Be sure to use the pump indoors.

Dimentions

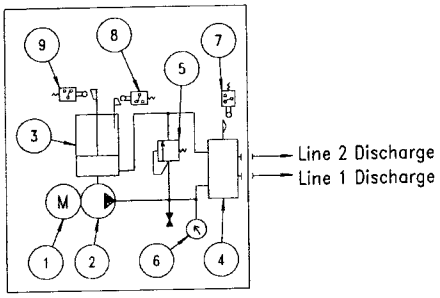


Construction

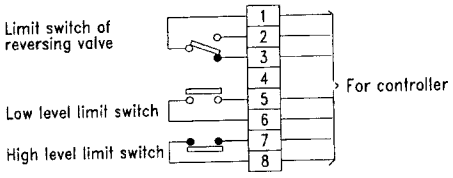
REF NO.	PART NO.	PART NAME	QTY.	REMARKS
10		Terminal box	1	8P
9	ZC-N21	Low level limit switch	1	
8	ZC-N21	High level limit switch	1	
7	Z-15GW22-B	Limit switch of reversing valve	1	
6	FP1617-1	Pressure gauge	1	40MPa
5		Relief valve	1	
4	LRV-7	Reversing valve	1	
3	T-08A	Grease tank	1	
2	GPE-08A	Grease pump	1	
1		Geared motor	1	0.1kW× 4P, 3φ (IP44)



Graphic diagram



Terminal connection

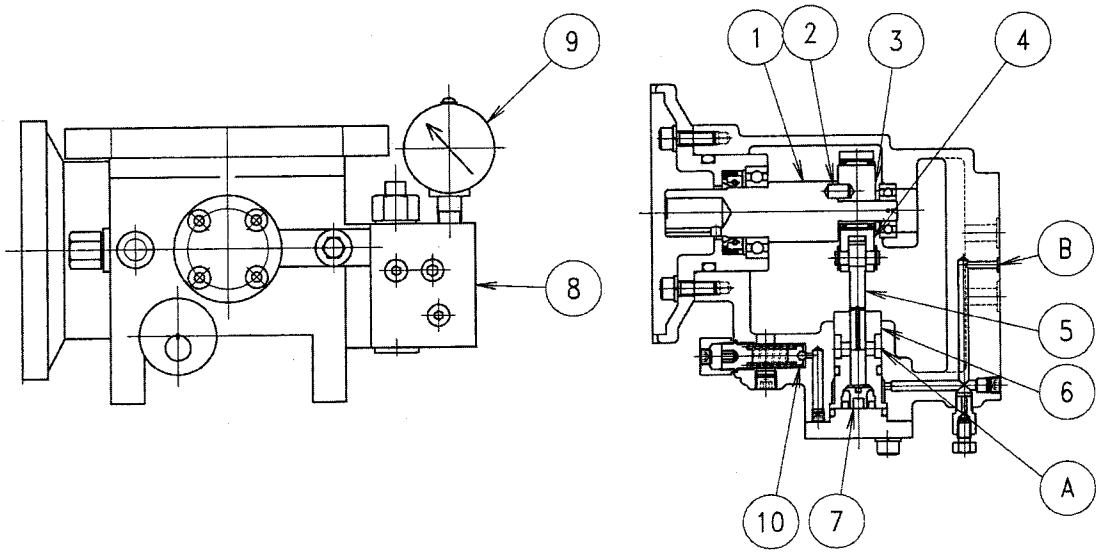


3. Description of Operation

1) Pump unit

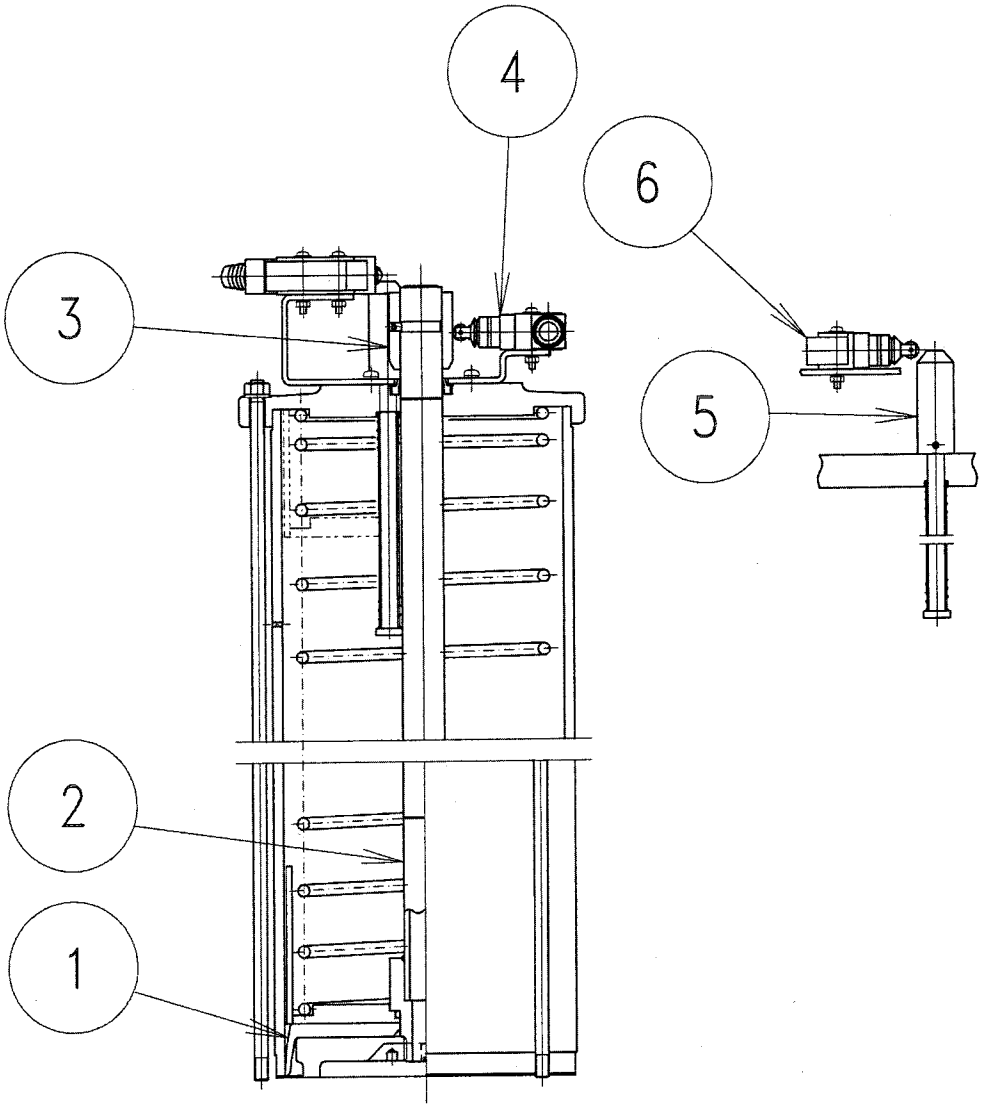
・The rotational force produced by the start of geared motor is transmitted to ③ Eccentric connected to the motor through ① Drive Shaft with ② Pin. This rotational force is further converted into the reciprocating motion of ⑤ Piston connected to the leading end of ④ Connecting Rod by the eccentric motion of the eccentric.

・Grease is sucked in from the suction port Ⓐ of ⑥ Pump cylinder and is delivered to the discharge port Ⓑ through ⑦ Check Packing in the compression process of the piston.
The pressurized grease coming into Type-LRV ⑧ Reversing valve is delivered under pressure to the discharge ports of Line Ⅰ and Line Ⅱ and, at the same time, it is delivered to ⑨ Pressure Gauge and ⑩ Relief Valve also and is led to the drain to the tank for use in checking the discharge pressure and at the time of abnormally high pressure.



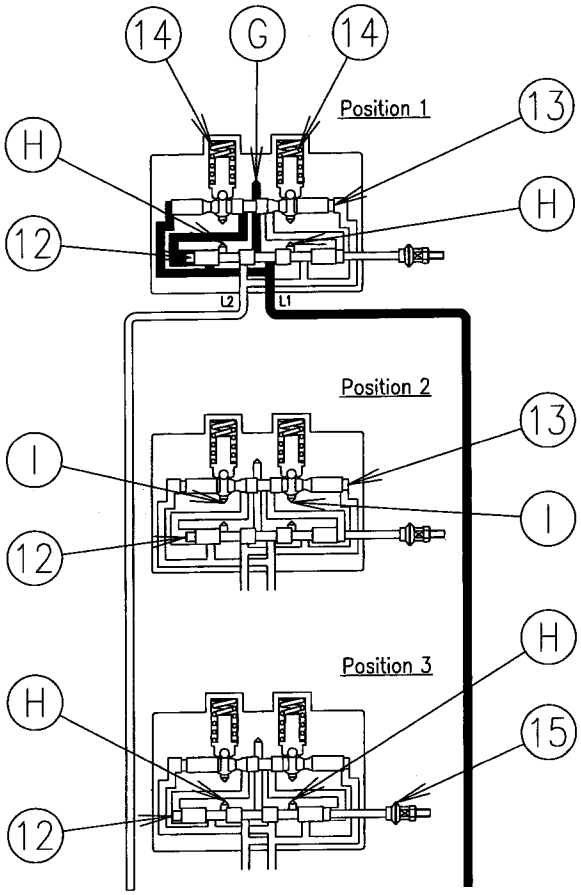
2) Tank unit

- To keep the up and down movements of grease level properly, the grease reservoir tank is provided with ① Follower Plate which moves up and down along the tank inner surface which following the increase and decrease of grease.
  The grease level can be automatically controlled by setting with the control panel.
  If it arrives at the lower limit due to the drop of grease level, ④ Low Level Limit Switch is turned on by ③ Cam attached to the top of ② Follower Plate Rod and automatic lubrication will start.
- When the grease level arrives at the upper limit, ⑥ High Level Limit Switch is turned on and stops supplying by ⑤ Cam attached to the upper cover.
- Do not operate the pump below red line of ② Follower Plate Rod.
  When the grease comes out from Air vent hole, charging grease should be stopped.



3) Reversing valve

・The Reversing valve is attached to the dual line system Lance type pump to switch the grease delivered under pressure from the pump alternately to the two lines of supply main pipe and control the supply pressure of the supply main pipe. The grease pressurized by the pump flows through the Reversing valve and actuates all the distributing valves. Thereafter, switching of the supply main pipe is effected by grease pressure with the increase of supply pressure up to the preset switching pressure.
Upon completion of the switching operation, the residual pressure in the main pipe and branch pipes is released into the tank.



Position 1
The grease delivered under pressure from the pump is delivered to the supply main pipe L1 (Line Ⅰ) through the passage Ⓖ by ⑫ Main Piston. At the same time, it pressurized the left end of ⑫ Main Piston.
The supply main pipe L2 (Line Ⅱ) is opened through the Reversing valve interior to the tank open port Ⓗ.
After all the distributing valves have completed their operations, the pressure in L1 increases and exceeds the preset switching pressure the preset switching pressure, so that ⑬ Pilot Piston is pushed away to the right side against ⑭ Setting Spring.

Position 2
After ⑬ Pilot Piston has moved to the right side, the left side of ⑫ Main Piston is opened to tank open port Ⓘ and, at the same time, the right side is pressurized and pushed away to the left side.

Position 3
After ⑫ Main Piston has moved to the left side, L1 together with the left side is opened to the tank open port Ⓗ and the grease delivered under pressure from the pump becomes ready to be delivered to L2, so that switching is completed.
⑫ Main Piston is linked with ⑮ Cam for actuating the limit switch which operates each time when ⑫ Main Piston moves leftward or rightward, so that the electrical control of pump operation is effected.

4) Relief valve

・The relief valve is incorporated into the side face of pump housing.
In preparation for the case where the piping is blocked for some reason or other, this relief valve is provided for the purpose of emergency pressure release and, therefore, it functions to protect the whole system by releasing the relieved grease pressure into the tank.

4. Cautionary Instructions in Handling

1) Applicable grease

Use such grease as is suited for centralized lubrication within the range of NLGI consistency No. #0～#2 (provided that the consistency at the service temperature shall be not less than 240 — unmixed.)

2) Charge with grease

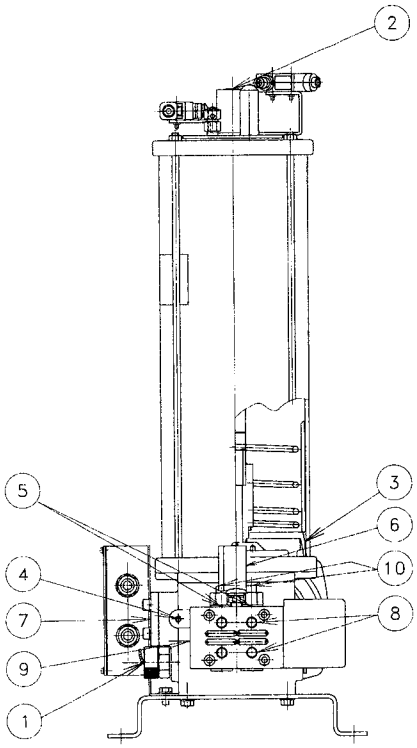
・For replenishment, be sure to charge the tank with grease through ① Supply Port by the use of filling pump.
・When charging the empty tank with grease, remove ② Hexagon Socket Head Plug and release the air entrapped underneath ③ Follower Plate.

3) Start-up of operation

・Loosen ④ Air Vent Valve and operate the pump until grease free from bubbles has come out of the pump.
Operate the pump to deliver grease so that the air and foreign matter contained in the pipe will be removed from the end of piping.

4) When the pump pressure in ⑥ Pressure gauge will not increase

- Loosen ④ Air Vent Valve and remove air.
- If the pressure will not increase even after the removal of air, take off ⑦ Cover and take out the check packing for inspection and cleaning.
- Check ⑧ piping connection has no problem.
- Check piping for leak, and repair, if leak is located.
- By setting a pressure gauge on ⑨Line Pressure Detection Port, the switch pressure can be indicated. If necessary, adjust the switching pressure by ⑩ Switching Pressure Adjusting Screw.
- When adjusting switching pressure, loosen the lock nut and rotate the ⑩ Adjusting Screw right turn, thus the switching pressure being increased. On that time, adjust equally to both side of right and left. After adjustment, tighten the lock nut completely.



【Handle with care】

When starting up of operation, after finishing adjustment of reversing valve, be sure to charge all the lines with lubricant and vent the air.

If the air is not vented completely, the pressure does not rise and the system becomes out of working order, because of compression and expansion of the air inside of distributing valve or piping.

How to vent the air, operate the pump in state of removing fittings of each piping end (each inlet of distributing valve and bearing), in the order of overflowing of lubricant, connect the fittings.

If the air is mixed into lubricant in the middle of rising pressure, pressure gauge indicates the certain point and there are few deflection of pointer. In this case, loosen the air vent valve of pump and operate pump until when the lubricant with air entrainment does not come out.

In case of the air is mixed into the piping, loosen the appropriate point of piping and vent the air.

5. Maintenance & Adjustment

Where there are troubles such as failure in pressure increase, reduction in discharge volume, and so on, that are considered to be attributed to the wear of pump cylinder set during the long-time operation, replace the cylinder set in accordance with the following procedure.

1) First remove ① Drain Plug of pump housing to drain the grease contained in the tank and then dismount the geared motor and tank unit from the pump unit. (A compression spring is incorporated inside the tank. Be sure to drain off the grease before dismounting the tank.)

2) Next take off ② Cover from the side face of the pump after loosening 4 pieces of ③ Hexagon Socket Head Bolt and then take out ④ O-Ring and ⑤ Check Packing.

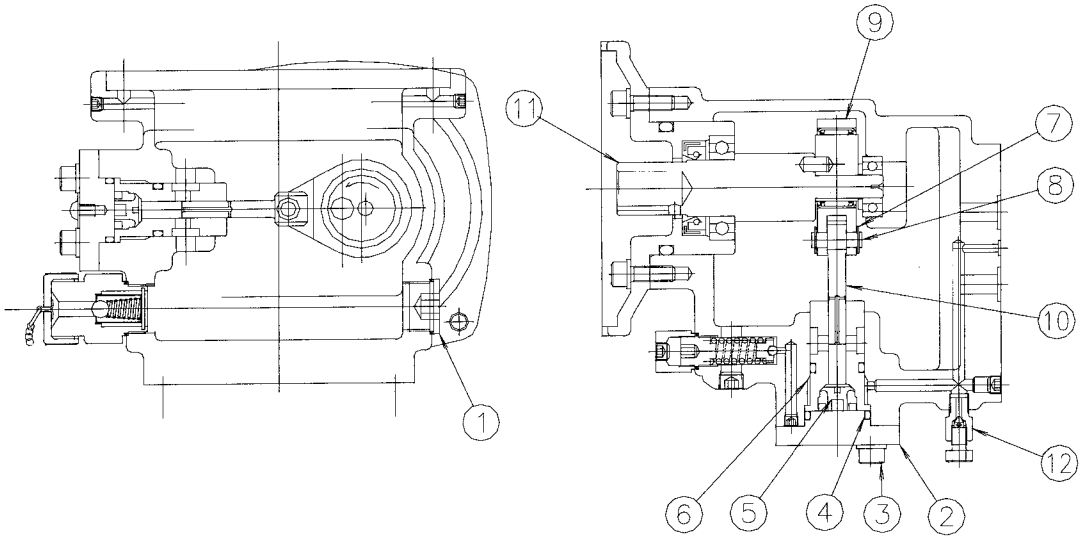
3) Pull out ⑥ Pump Cylinder from the housing while rapping the end face of the cylinder lightly from the interior of the housing.

4) After removing ⑦ E-shaped Retaining Ring, pull out ⑧ Connecting Pin from ⑨ Connecting Rod and then remove ⑩ Piston.

5) Set a new piston to the connecting rod and fix the pump cylinder to the housing while inserting the piston into the pump cylinder.

6) After setting the check packing and cover, make sure that ⑪ Drive Shaft is rotated lightly by hand and then mount the geared motor and tank unit.

7) After replacing the cylinder set, be sure to loosen ⑫ Air Vent Valve of the pump and operate the pump to conduct air venting until grease free from bubbles has come out of the valve.



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UE－108ANP－11

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2. Features
・Compact pump mechanism
Efficient and compact pump mechanism driven by geared motor.

・Simplified piston mechanism
Maintenance and inspection simplified by the adoption of single piston and non-spring check valve.

・High pressure lubrication & high reliability
Complete lubrication assured by increased lubricating pressure up to 21MPa.

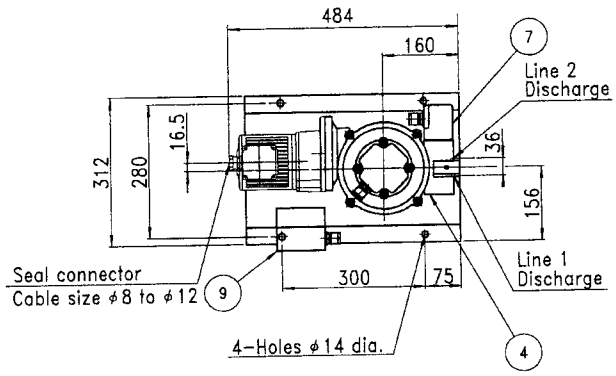
・Simplification of pipeline
High pressure lubrication permits reduction in piping size and selection of simple pipeline provided with Reversing valve operating under lubricating pressure itself.

・Economical automatic lubrication
Automatic lubrication can be effected readily at low costs by setting an electric control panel together with the Pump.

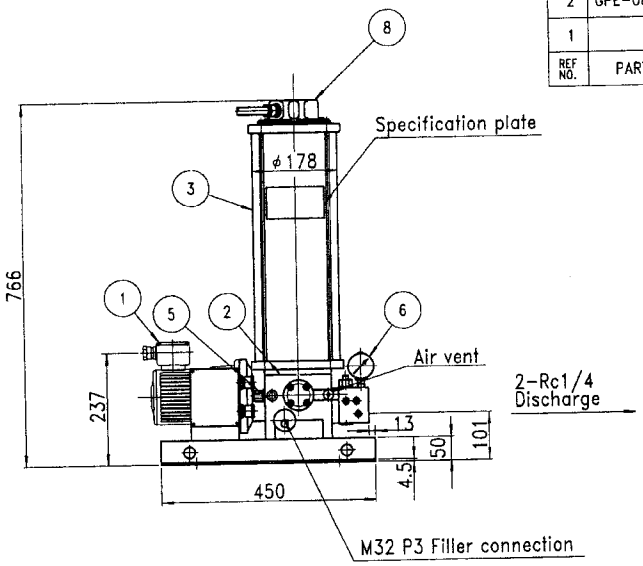
Specification

Division of Components	Item (Unit)	Model
		UE-108ANP-11
Pump	Discharge volume (cm^3/min)	30/36 (50/60Hz)
	Max. working Pressure (MPa)	21
Geared motor	Direction of revolution	Both direction
	Type	Total enclosed type・Flange type
	Output (kW)	0.1
	Number of poles (P)	4
	Reduction ratio	1/40
Tank	Tank capacity (ℓ)	8
Reversing valve	Type	LRV-7
	Pressure control range (MPa)	12 to 21
	Pipe connecting port	Rc1/4
	Control system	1/2 cycle lubrication
	Setting pressure (MPa)	17
Relief valve	Setting pressure (MPa)	23
Remarks	Piping system	Lance type
	Applicable grease	#0 to #2-NLGI consistency
Mass (kg)		44

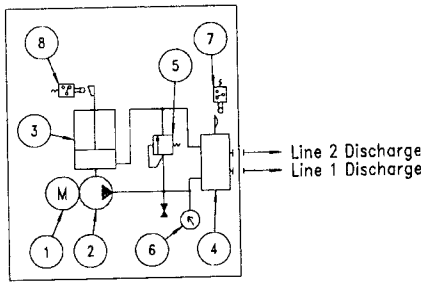
・Be sure to use the pump indoors.



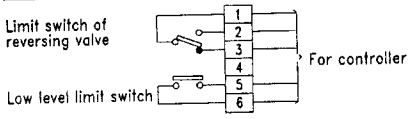
REF NO.	PART NO.	PART NAME	QTY.	REMARKS
9		Terminal box	1	6P
8	Z-15GW22-B	Low level limit switch	1	
7	Z-15GW22-B	Limit switch of reversing valve	1	
6	FP1617-1	Pressure gauge	1	40MPa
5		Relief valve	1	
4	LRV-7	Reversing valve	1	
3	T-08AP-L	Grease tank	1	
2	GPE-08A	Grease pump	1	
1		Geared motor	1	0.1kW×4P, 3φ (IP44)



Graphic diagram



Terminal connection

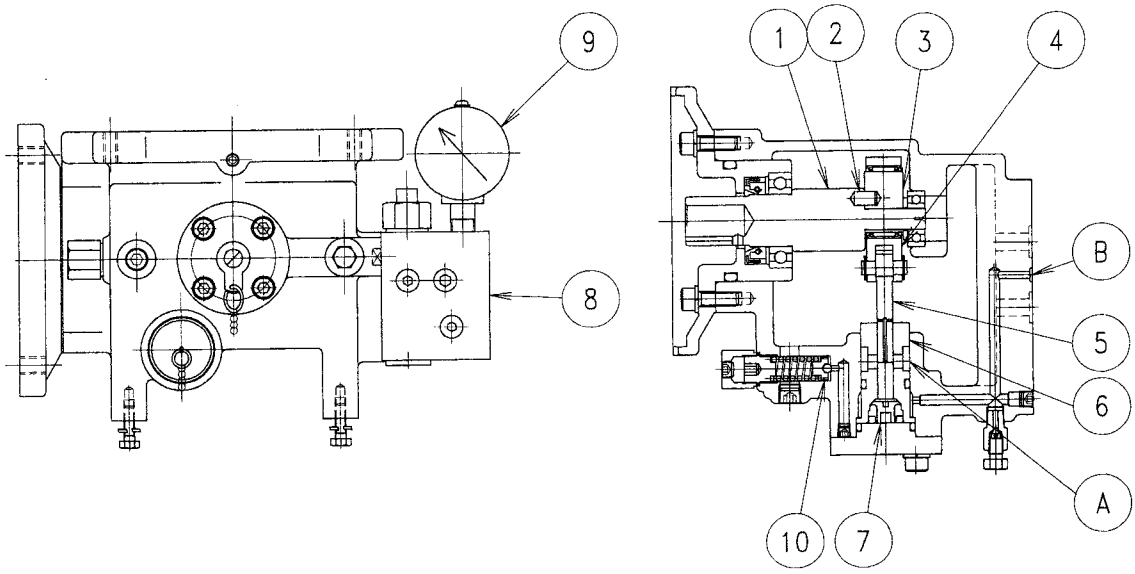


3. Description of Operation

1) Pump unit

・The rotational force produced by the start of geared motor is transmitted to ③ Eccentric connected to the motor through ① Drive Shaft with ② Pin. This rotational force is further converted into the reciprocating motion of ⑤ Piston connected to the leading end of ④ Connecting Rod by the eccentric motion of the eccentric.

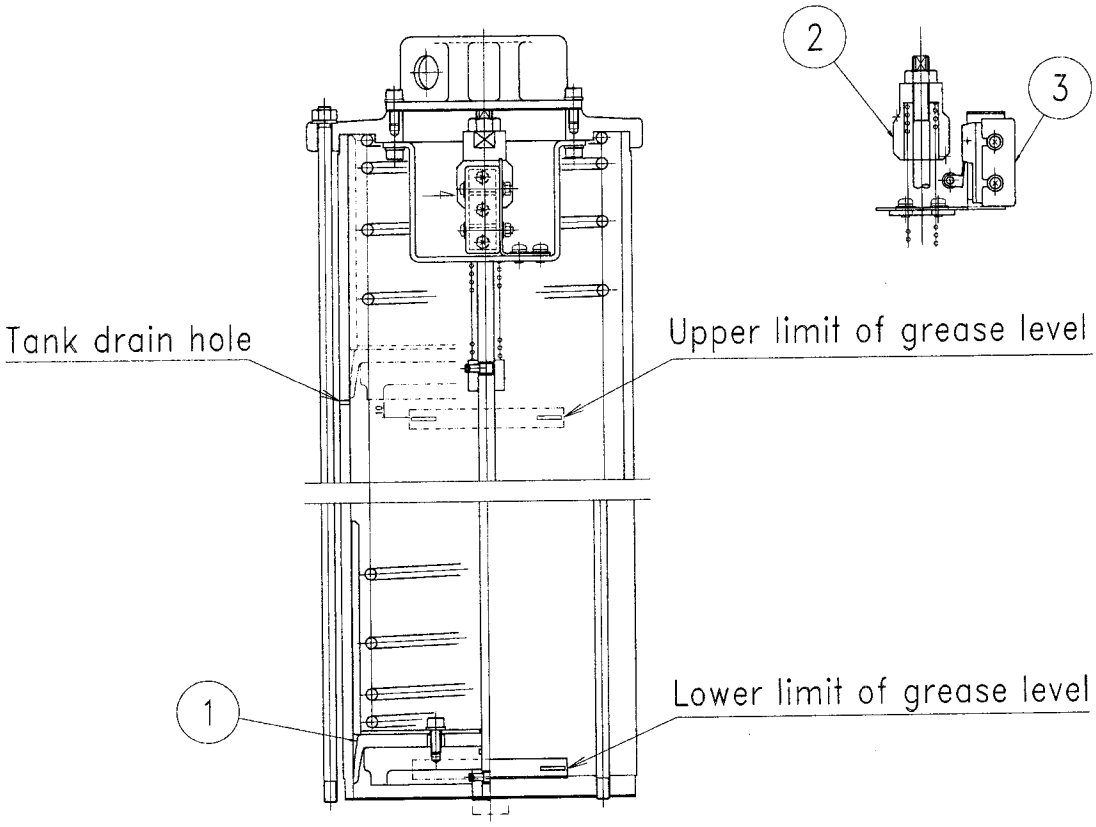
・Grease is sucked in from the suction port Ⓐ of ⑥ Pump cylinder and is delivered to the discharge port Ⓑ through ⑦ Check Packing in the compression process of the piston.
The pressurized grease coming into Type-LRV ⑧ Reversing valve is delivered under pressure to the discharge ports of Line I and Line II and, at the same time, it is delivered to ⑨ Pressure Gauge and ⑩ Relief Valve also and is led to the drain to the tank for use in checking the discharge pressure and at the time of abnormally high pressure.



2) Tank unit

・To keep the up and down movements of grease level properly, the grease reservoir tank is provided with ① Follower Plate which moves up and down along the tank inner surface which following the increase and decrease of grease.
The grease level can be checked from the outside. If it arrives at the lower limit due to the drop of grease level, ③ Low Level Limit Switch is turned on by ② Cam attached to the top of follower plate rod.

・In replenishment, do not replenish the grease beyond upper limit of grease level. If replenishing beyond upper limit, the grease may overflow from the tank drain hole.



3) Reversing valve

・The Reversing valve is attached to the dual line system lance type pump to switch the grease delivered under pressure from the pump alternately to the two lines of supply main pipe and control the supply pressure of the supply main pipe. The grease pressurized by the pump flows through the Reversing valve and actuates all the distributing valves. Thereafter, switching of the supply main pipe is effected by grease pressure with the increase of supply pressure up to the preset switching pressure.
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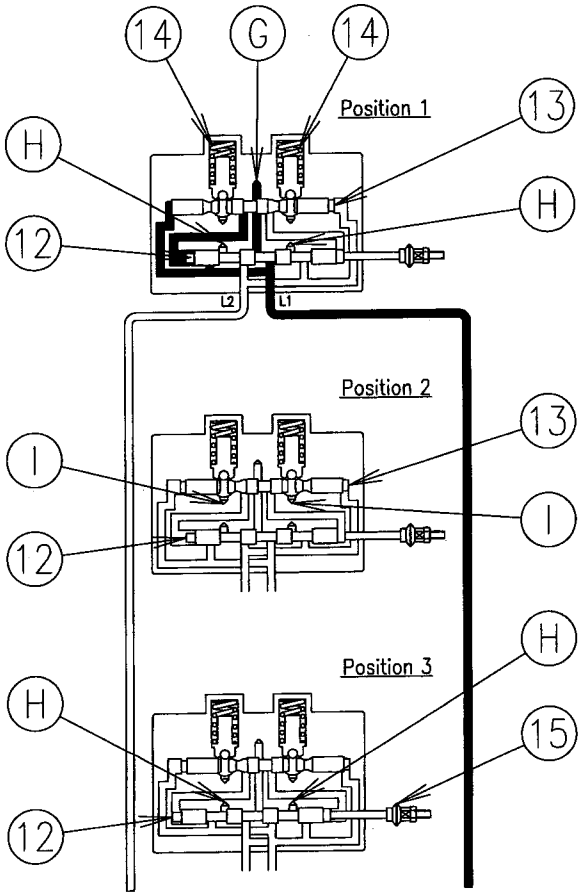

Position 1
The grease delivered under pressure from the pump is delivered to the supply main pipe L1 (Line I) through the passage Ⓖ by ⑫ Main Piston. At the same time, it pressurized the left end of ⑫ Main Piston.
The supply main pipe L2 (Line II) is opened through the Reversing valve interior to the tank open port Ⓗ.
After all the distributing valves have completed their operations, the pressure in L1 increases and exceeds the preset switching pressure the preset switching pressure, so that ⑬ Pilot Piston is pushed away to the right side against ⑭ Setting Spring.

Position 2
After ⑬ Pilot Piston has moved to the right side, the left side of ⑫ Main Piston is opened to tank open port Ⓘ and, at the same time, the right side is pressurized and pushed away to the left side.

Position 3
After ⑫ Main Piston has moved to the left side, L1 together with the left side is opened to the tank open port Ⓗ and the grease delivered under pressure from the pump becomes ready to be delivered to L2, so that switching is completed.
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4) Relief valve

・The relief valve is incorporated into the side face of pump housing. In preparation for the case where the piping is blocked for some reason or other, this relief valve is provided for the purpose of emergency pressure release and, therefore, it functions to protect the whole system by releasing the relieved grease pressure into the tank.

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2) Charge with grease

・For replenishment, be sure to charge the tank with grease through ① Supply Port by the use of filling pump.

・When charging the empty tank with grease, remove ② Hexagon Socket Head Plug and release the air entrapped underneath ③ Follower Plate.

3) Start-up of operation

・Loosen ④ Air Vent Valve and operate the pump until grease free from bubbles has come out of the pump.

・Operated the pump to deliver grease so that the air and foreign matter contained in the pipe will be removed from the end of piping.

4) Where the pump pressure in ⑥ Pressure gauge will not increase

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- Check ⑧ Piping Connections for wrong connections.
- If necessary, adjust the switching pressure by ⑩ Switching Pressure Adjusting Screw.
- Check piping for leak, and repair, if leak is located.
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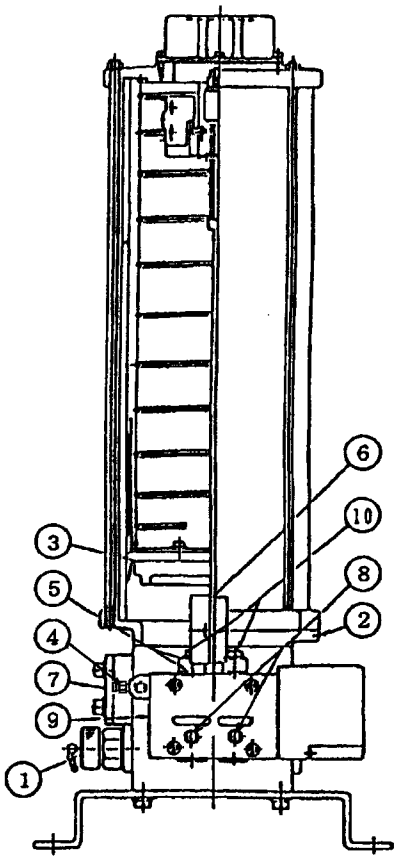

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2) Next take off ② Cover from the side face of the pump after loosening 4 pieces of ③ Hexagon Socket Head Bolt and then take out ④ O-Ring and ⑤ Check Packing.

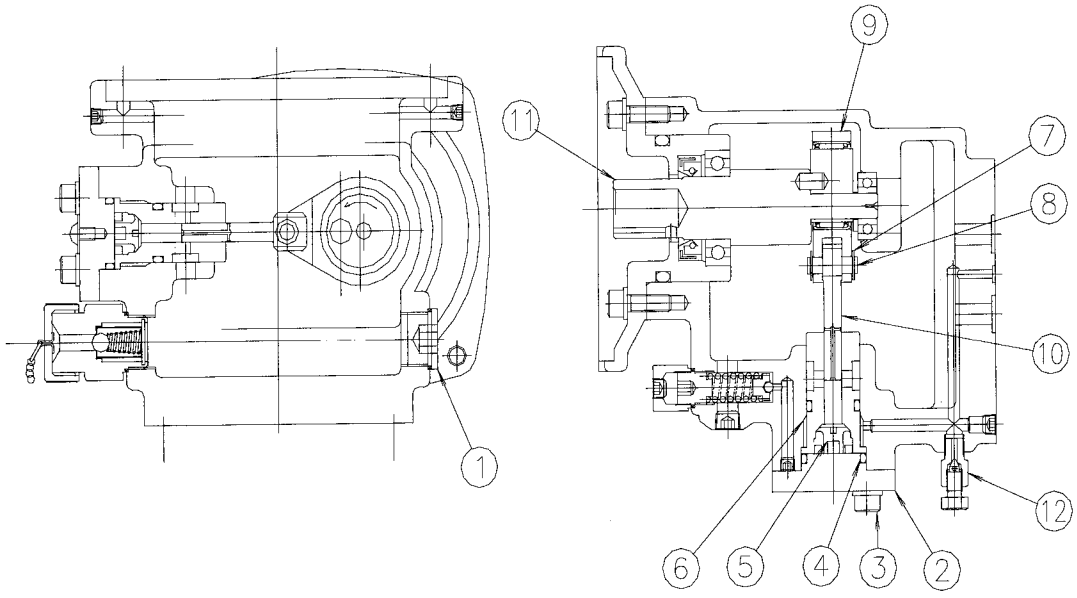
3) Pull out ⑥ Pump Cylinder from the housing while rapping the end face of the cylinder lightly from the interior of the housing.

4) After removing ⑦ E-shaped Retaining Ring, pull out ⑧ Connecting Pin from ⑨ Connecting Rod and then remove ⑩ Piston.

5) Set a new piston to the connecting rod and fix the pump cylinder to the housing while inserting the piston into the pump cylinder.

6) After setting the check packing and cover, make sure that ⑪ Drive Shaft is rotated lightly by hand and then mount the geared motor and tank unit.

7) After replacing the cylinder set, be sure to loosen ⑫ Air Vent Valve of the pump and operate the pump to conduct air venting until grease free from bubbles has come out of the valve.



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UEC－108AN－20－11

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Relief valve	Setting pressure (MPa)	23
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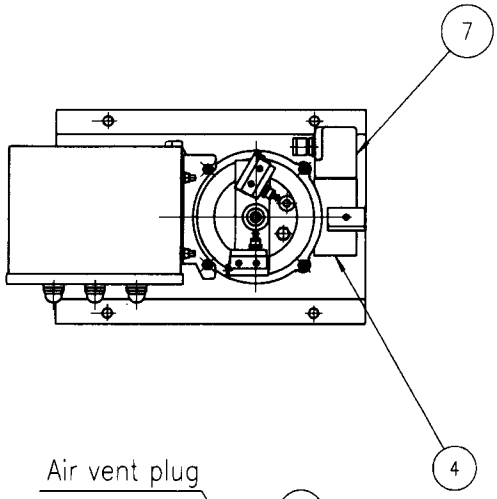
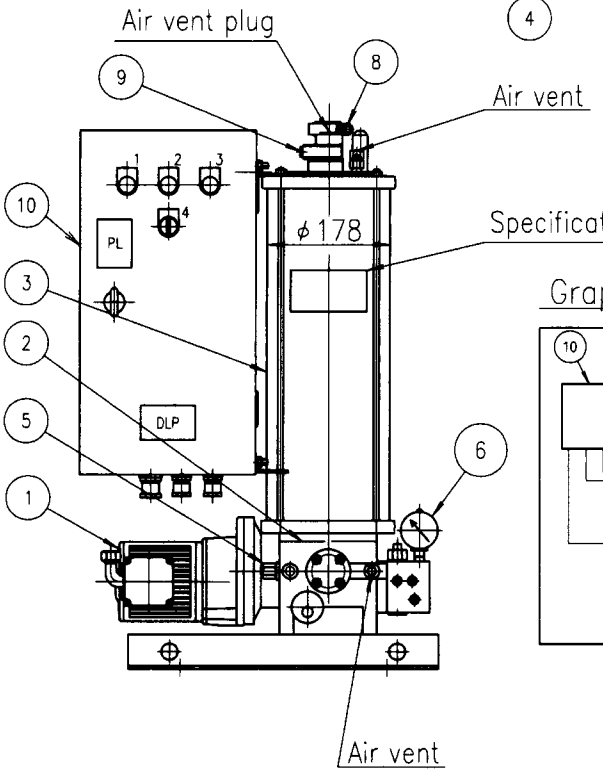
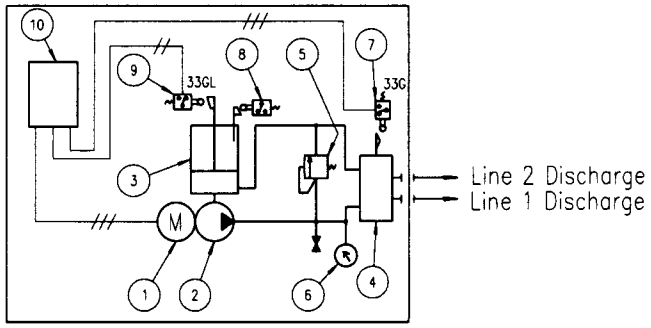


Construction

REF NO.	PART NO.	PART NAME	QTY.	REMARKS
10	EF-3	Electric control panel	1	
9	ZC-N2155	Low level limit switch	1	
8	ZC-N2155	High level limit switch	1	
7	Z-15GW22-B	Limit switch of reversing valve	1	
6	FP1617-1	Pressure gauge	1	40MPa
5		Relief valve	1	
4	LRV-7	Reversing valve	1	
3	T-08A	Grease tank	1	
2	GPE-08A	Grease pump	1	
1		Geared motor	1	0.1kW× 4P, 3φ(IP44)



Graphic diagram

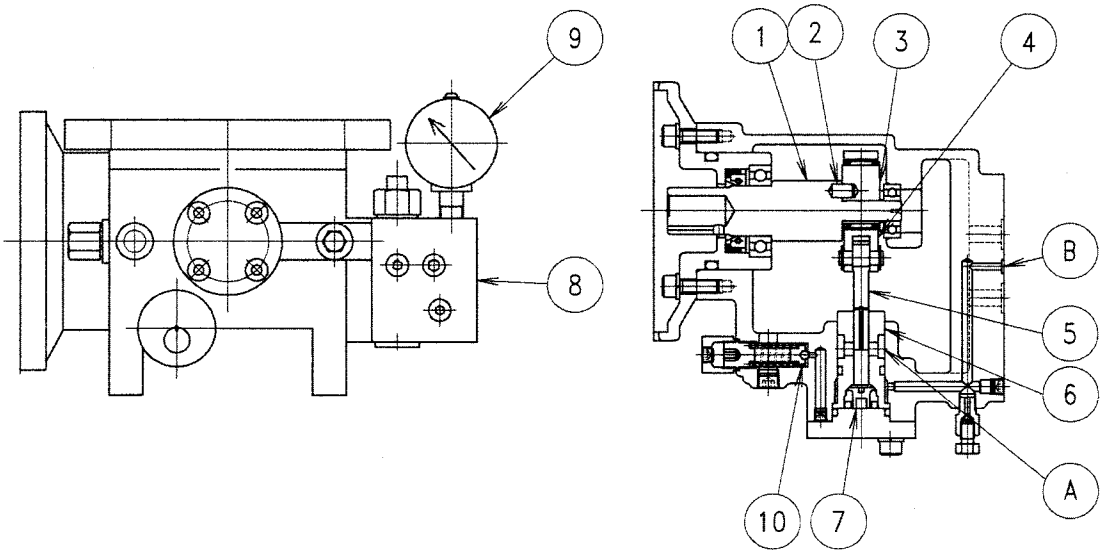


3. Description of operation

1) Pump unit

・The rotational force produced by the start of geared motor is transmitted to ③ Eccentric connected to the motor through ① Drive shaft with ② Pin. This rotational force is further converted into the reciprocating motion of ⑤ Piston connected to the leading end of ④ Connecting rod by the eccentric motion of the eccentric.

・Grease is sucked in from the suction port Ⓐ of ⑥ Pump cylinder and is delivered to the discharge port Ⓑ through ⑦ Check packing in the compression process of the piston.
The pressurized grease coming into Type-LRV ⑧ Reversing valve is delivered under pressure to the discharge ports of Line Ⅰ and Line Ⅱ and, at the same time, it is delivered to ⑨ Pressure gauge and ⑩ Relief valve also and is led to the drain to the tank for use in checking the discharge pressure and at the time of abnormally high pressure.

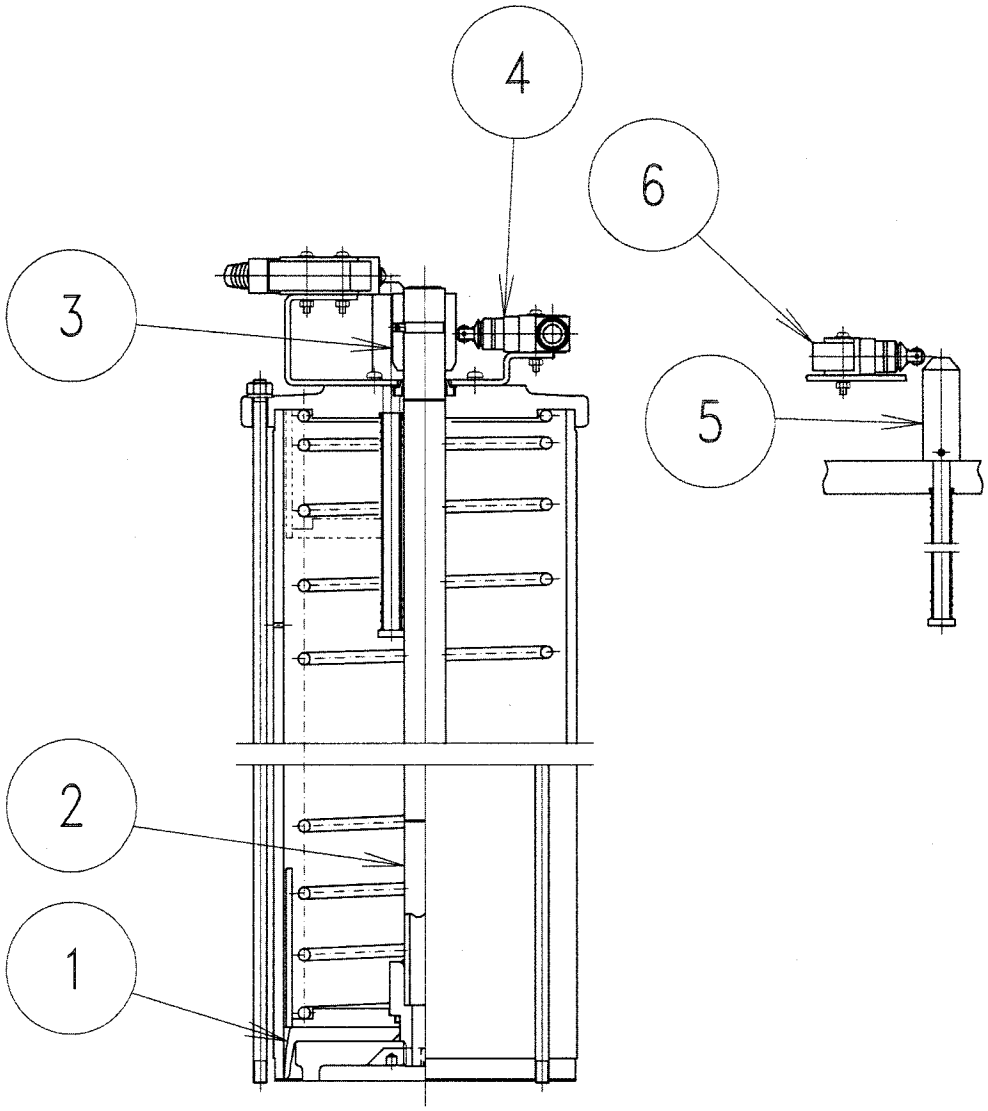


2) Tank unit

・To keep the up and down movements of grease level properly, the grease reservoir tank is provided with ① Follower plate which moves up and down along the tank inner surface which following the increase and decrease of grease.
The grease level can be automatically controlled by setting with the control panel.
If it arrives at the lower limit due to the drop of grease level, ④ Low level limit switch is turned on by ③ Cam attached to the top of ② Follower plate rod and automatic lubrication will start.

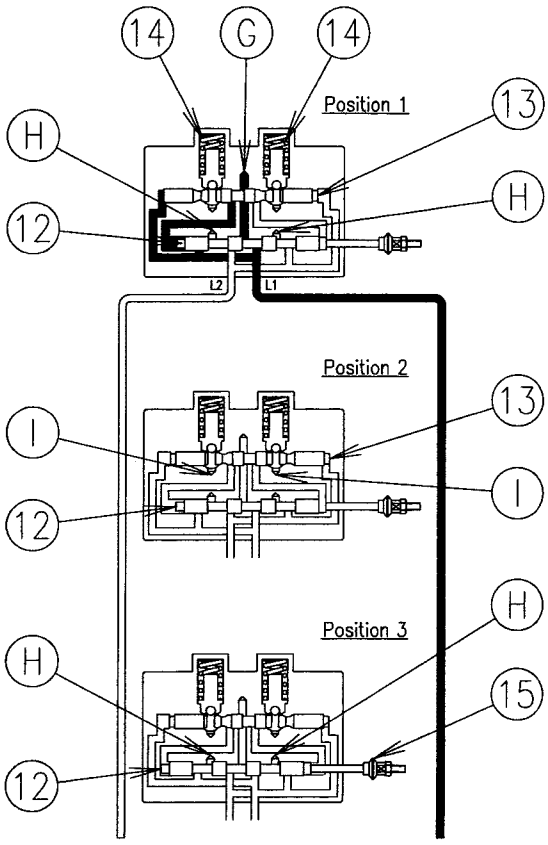
・When the grease level arrives at the upper limit, ⑥ High level limit switch is turned on and stops supplying by ⑤ Cam attached to the upper cover.

・Do not operate the pump below red line of ② Follower plate rod.
When the grease comes out from Air vent hole, charging grease should be stopped.



3) Reversing valve

・The Reversing valve is attached to the dual line system Lance type pump to switch the grease delivered under pressure from the pump alternately to the two lines of supply main pipe and control the supply pressure of the supply main pipe. The grease pressurized by the pump flows through the Reversing valve and actuates all the distributing valves. Thereafter, switching of the supply main pipe is effected by grease pressure with the increase of supply pressure up to the preset switching pressure.
Upon completion of the switching operation, the residual pressure in the main pipe and branch pipes is released into the tank.



Position 1

The grease delivered under pressure from the pump is delivered to the supply main pipe L1 (Line I) through the passage Ⓖ by ⑫ Main piston. At the same time, it pressurized the left end of ⑫ Main piston.
The supply main pipe L2 (Line II) is opened through the Reversing valve interior to the tank open port Ⓗ.
After all the distributing valves have completed their operations, the pressure in L1 increases and exceeds the preset switching pressure the preset switching pressure, so that ⑬ Pilot piston is pushed away to the right side against ⑭ Setting spring.

Position 2

After ⑬ Pilot piston has moved to the right side, the left side of ⑫ Main piston is opened to Tank open port Ⓘ and, at the same time, the right side is pressurized and pushed away to the left side.

Position 3

After ⑫ Main piston has moved to the left side, L1 together with the left side is opened to the tank open port Ⓗ and the grease delivered under pressure from the pump becomes ready to be delivered to L2, so that switching is completed. ⑫ Main piston is linked with ⑮ Cam for actuating the limit switch which operates each time when ⑫ Main piston moves leftward or rightward, so that the electrical control of pump operation is effected.

4) Relief valve

・The relief valve is incorporated into the side face of pump housing. In preparation for the case where the piping is blocked for some reason or other, this relief valve is provided for the purpose of emergency pressure release and, therefore, it functions to protect the whole system by releasing the relieved grease pressure into the tank.

4. Cautionary instructions in handling

1) Applicable grease

Use such grease as is suited for centralized lubrication within the range of NLGI consistency No. #0～#2 (provided that the consistency at the service temperature shall be not less than 240 — unmixed.)

2) Charge with grease

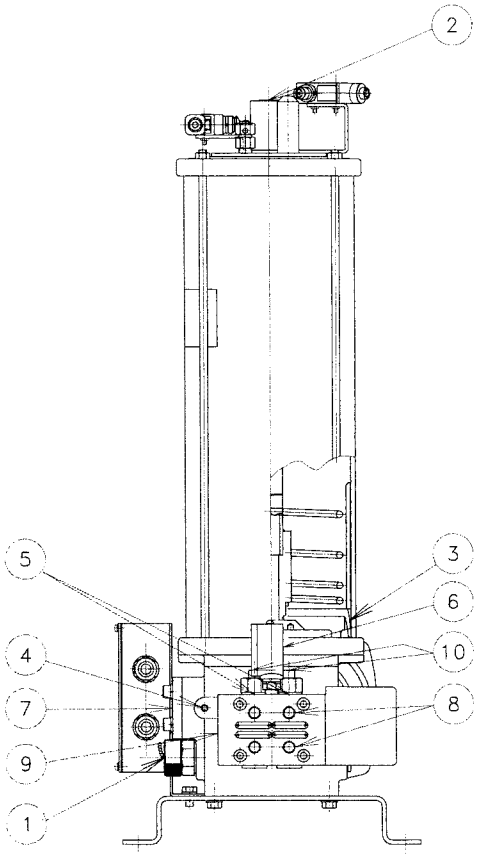
・For replenishment, be sure to charge the tank with grease through ① Supply port by the use of filling pump.
・When charging the empty tank with grease, open ② Air vent valve and release the air entrapped underneath ③ Follower plate.

3) Start-up of operation

・Loosen ④ Air vent valve and operate the pump until grease free from bubbles has come out of the pump.
・Remove ⑤ Hexagon socket head plug and operate the pump to deliver grease so that the air and foreign matter contained in the pipe will be removed from the end of piping.

4) When the pump pressure in ⑥ Pressure gauge will not increase

・Loosen ④ Air vent valve and remove air.
・If the pressure will not increase even after the removal of air, take off ⑦ Cover and take out the check packing for inspection and cleaning.
・Check ⑧ Piping connection has no problem.
・Check piping for leak, and repair, if leak is located.
・By setting a pressure gauge on ⑨Line pressure detection port, the switch pressure can be indicated. If necessary, adjust the switching pressure by ⑩ Switching pressure adjusting screw.
・When adjusting switching pressure, loosen the lock nut and rotate the ⑩Switching pressure adjusting screw right turn, thus the switching pressure being increased. On that time, adjust equally to both side of right and left. After adjustment, tighten the lock nut completely.



5. Maintenance & adjustment

Where there are troubles such as failure in pressure increase, reduction in discharge volume, and so on, that are considered to be attributed to the wear of pump cylinder set during the long-time operation, replace the cylinder set in accordance with the following procedure.

1) First remove ① Drain plug of pump housing to drain the grease contained in the tank and then dismount the geared motor and tank unit from the pump unit. (A compression spring is incorporated inside the tank. Be sure to drain off the grease before dismounting the tank.)

2) Next take off ② Cover from the side face of the pump after loosening 4 pieces of ③ Hexagon socket head bolt and then take out ④ O-ring and ⑤ Check packing.

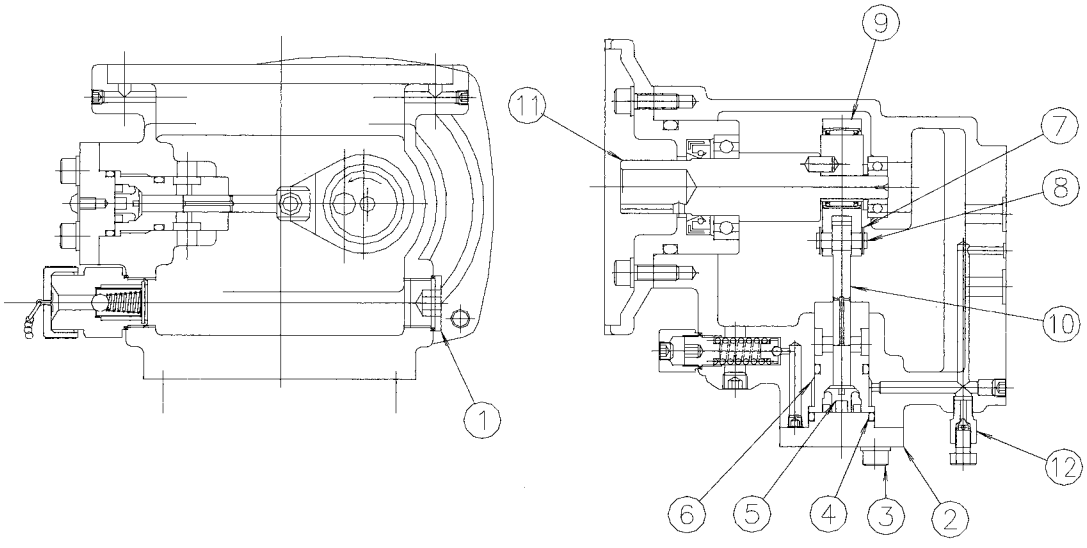
3) Pull out ⑥ Pump cylinder from the housing while rapping the end face of the cylinder lightly from the interior of the housing.

4) After removing ⑦ E-shaped retaining ring, pull out ⑧ Connecting pin from ⑨ Connecting rod and then remove ⑩ Piston.

5) Set a new piston to the connecting rod and fix the pump cylinder to the housing while inserting the piston into the pump cylinder.

6) After setting the check packing and cover, make sure that ⑪ Drive shaft is rotated lightly by hand and then mount the geared motor and tank unit.

7) After replacing the cylinder set, be sure to loosen ⑫ Air vent valve of the pump and operate the pump to conduct air venting until grease free from bubbles has come out of the valve.



◆ EF TYPE ELECTRIC CONTROL PANEL INSTRUCTION

This electric control panel functions to control the resting and driving of the pump in such a way that the pump will run automatically after an optional resting and will stop automatically upon completion of lubrication.
Test run performed in accordance with following the point.

1. Test run

1.1 Preparation before operation
Charge the pump with grease.

1.2 Test run
1) Put the operation switch (CS) on the panel surface in operation mode.
2) Open the door of the panel, signal timer (62G) temporary sets the full range.
3) Put the power source. .... Resting lamp on the light.
4) Close the door of the panel, put the operation switch (CS) on the panel surface in start mode. .... Driving lamp on the light.
5) Distributing valve start to operate, upon completion of operation of all the distributing valve, the pressure increases abruptly and the pump comes to a stop automatically. .... Resting lamp on the light.
6) Repeat the run and stop 2 to 3 times.

1.3 Record of operating condition
Run the pump to measure and record, not less than twice, the time taken from start till stop and the maximum pressure at the time immediately before stop.

1.4 Timer setting
1) Adjust and set the system timer (2G) at the pump operation interval.
2) Set the signal timer (62G) at the scale mark indicating twice the figure of pre-measured pump operation time.

1.5 Automatic Operation
Put the operation switch (CS) in the start mode and check the pump until it has come to a stop.
After stopping of the pump, the pump is put in the operation mode and it will start automatically at intervals of preset time on the system timer and come to a stop automatically upon completion of lubrication.

2. Maintenance & inspection

2.1 Check the system periodically for the start of operation.

1) Pump operation time and pressure
Compare the time taken from the start to the stop of the pump (the time required for lubrication) with the record on test run and make sure that there is no remarkable difference between the two.

2.2 When trouble indicator lamp has come on.

The cause of trouble indicator lamp which can be classified into the three main causes.

1) First check the level in the tank and replenish the tank, if empty, with grease.
Turn OFF power source in the control panel and then turn ON again. The trouble lamp goes out and the resting lamp comes on.
Put the operation switch (CS) in the start mode and make sure that run and automatic stop are effective.

If 1) is not the cause, turn OFF power source in the control panel and then turn ON again.

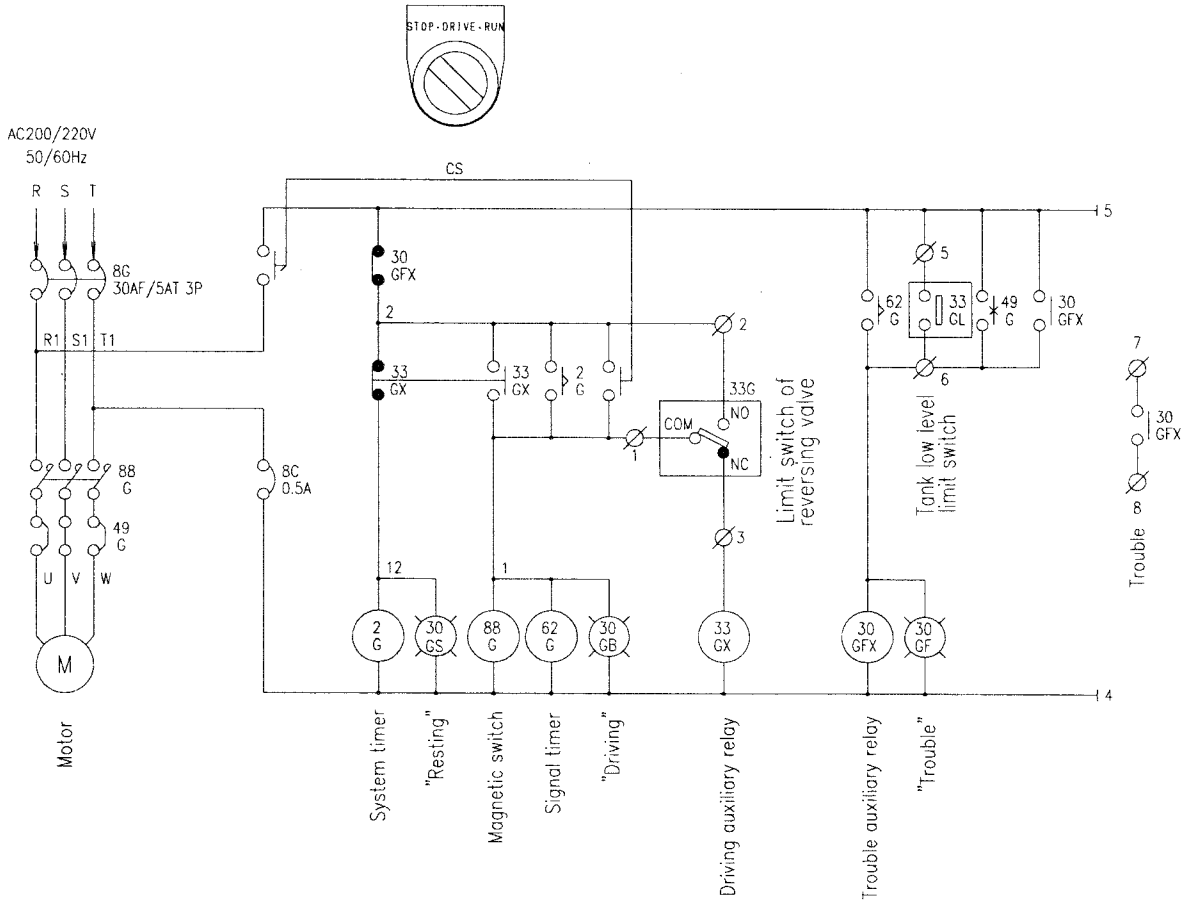
2) The case of trouble indicator lamp has come on, it means over load driving of the motor.
Remove the cause and return on the thermal by hand operation.

3) In the case of the trouble lamp goes out and the resting lamp comes on, put the operation switch (CS) in the start mode and running the pump unit.

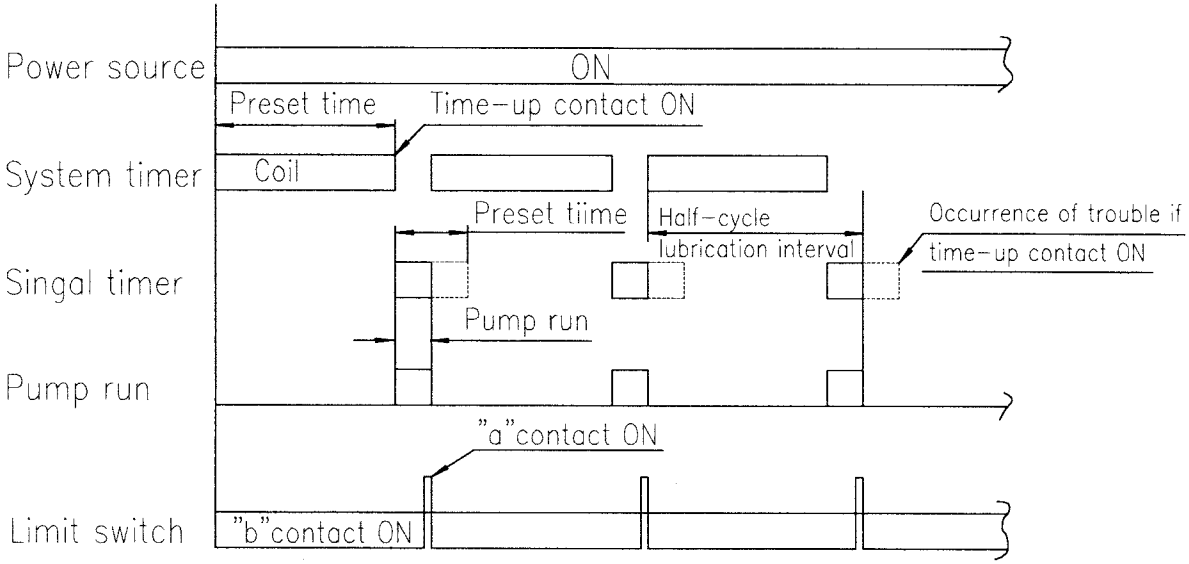
a) When pressure has increased;
Check the pressure gauge attached to the pump.
If pump pressure seems to be higher than the preset pressure of relief valve, the cause is attributed to the failure of reversing valve. Therefore, disassemble and clean up the valve.

b) When pressure dose not increase;
- Check the piping for possible leaks.
- When there are no leaks from the piping (limited to the main pipe and branches in this case), loosen the union in the vicinity of pump outlet and check whether or not air is entrapped in the grease flowing out. If air entrapment is found in the grease, then allow grease to flow out until no more air has been detected.
- Check the pump unit to see if the check packing is damaged.

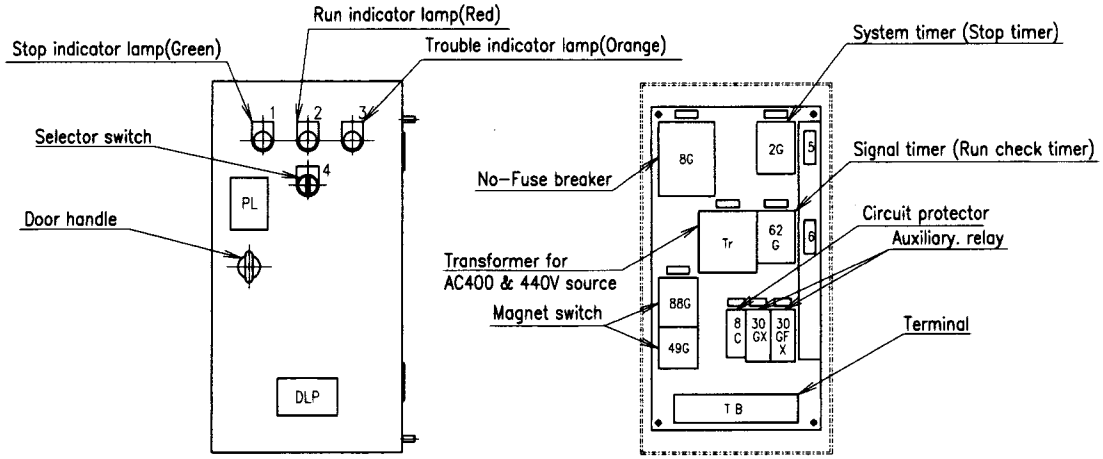
Developed connection diagram (EF-3 type)



Control flow diagram



■ Electric Control Panel



Appearance view　　Disposition diagram

[Thermal relay setting]
Preset the RC scale attached to the Magnet switch at the following values.
AC200V 50Hz 0.76A
AC220V 60Hz 0.56A

INSTRUCTION MANUAL
OF
MOTOR DRIVEN GREASE PUMP

UEC－108AN－40－11

DAIKIN LUBRICATION PRODUCTS & ENGINEERING CO., LTD.

1. General

This motor-driven grease pump is designed for use with dual line system. A pump rated at 21MPa respectively for two lines enhances the reliability of lubrication and permits a simple and rational automatic lubrication system to be established. Thus contributing to the efficient operation of installations.

2. Features

・Compact pump mechanism
Efficient and compact pump mechanism driven by geared motor.

・Simplified piston mechanism
Maintenance and inspection simplified by the adoption of single piston and non-spring check valve.

・High pressure lubrication & high reliability
Complete lubrication assured by increased lubricating pressure up to 21MPa.

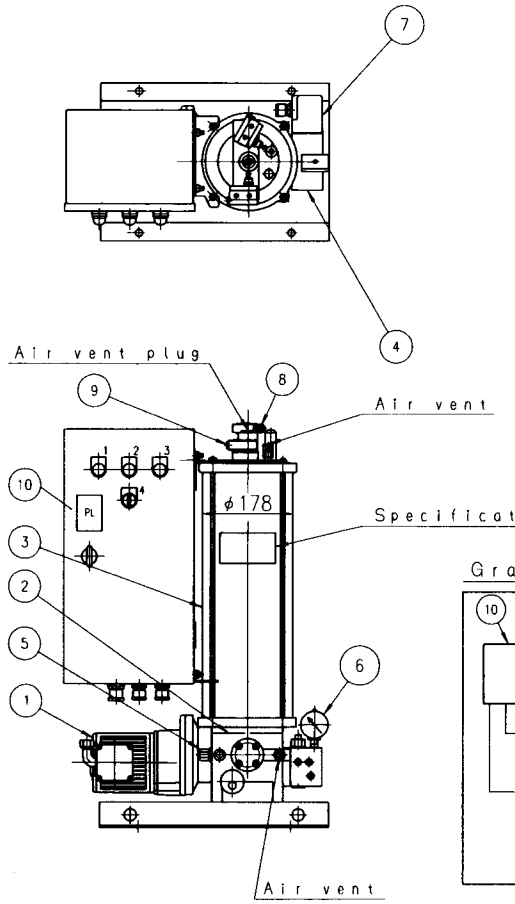
・Simplification of pipeline
High pressure lubrication permits reduction in piping size and selection of simple pipeline provided with Reversing valve operating under lubricating pressure itself.

・Economical automatic lubrication
Automatic lubrication can be effected readily at low costs by EF type automatic control panel.

Specification

Division of Components	Item (Unit)	Model
		UEC-108AN-40-11
Pump	Discharge volume (cm^3/min)	30/36 (50/60Hz)
	Max. working Pressure (MPa)	21
Geared motor	Direction of revolution	Both direction
	Type	Total enclosed type・Flange type
	Output (kW)	0.1
	Number of poles (P)	4
	Reduction ratio	1/40
Tank	Tank capacity (ℓ)	8
Reversing valve	Type	LRV-7
	Pressure control range (MPa)	12 to 21
	Pipe connecting port	Rc1/4
	Control system	1/2 cycle lubrication
	Setting pressure (MPa)	17
Relief valve	Setting pressure (MPa)	23
Remarks	Piping system	Lance type
	Applicable grease	#0 to #2-NLGI consistency
Mass (kg)		61

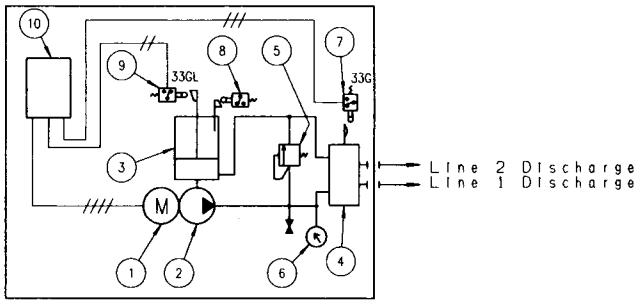
・Be sure to use the pump indoors.



Construction

REF NO.	PART NO.	PART NAME	QTY.	REMARKS
10	EF-3T	Control box	1	
9	ZC-N2155	Low level switch	1	
8	ZC-N2155	High level switch	1	
7	Z-15GW22-B	Limit switch of reversing valve	1	
6	FP1617-1	Pressure gauge	1	40MPa
5		Relief valve	1	
4	LRV-7	Reversing valve	1	
3	T-08A	Grease tank	1	
2	GPE-08A	Grease pump	1	
1		Geared motor	1	0.1kWx4P, 3φ(IP44)

Graphic diagram

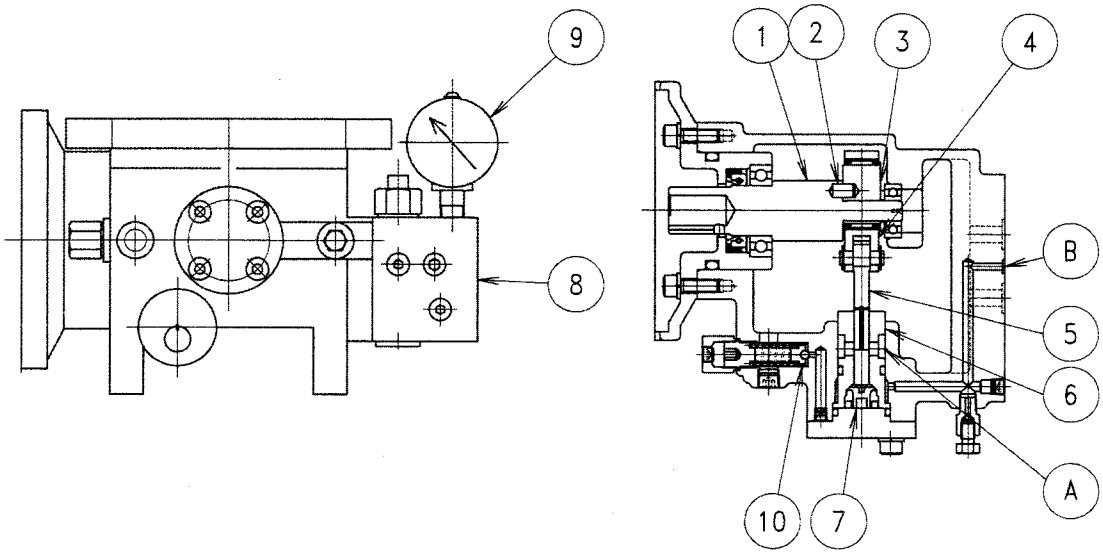


3. Description of operation

1) Pump unit

・The rotational force produced by the start of geared motor is transmitted to ③ Eccentric connected to the motor through ① Drive shaft with ② Pin. This rotational force is further converted into the reciprocating motion of ⑤ Piston connected to the leading end of ④ Connecting rod by the eccentric motion of the eccentric.

・Grease is sucked in from the suction port Ⓐ of ⑥ Pump cylinder and is delivered to the discharge port Ⓑ through ⑦ Check packing in the compression process of the piston.
The pressurized grease coming into Type-LRV ⑧ Reversing valve is delivered under pressure to the discharge ports of Line Ⅰ and Line Ⅱ and, at the same time, it is delivered to ⑨ Pressure gauge and ⑩ Relief valve also and is led to the drain to the tank for use in checking the discharge pressure and at the time of abnormally high pressure.

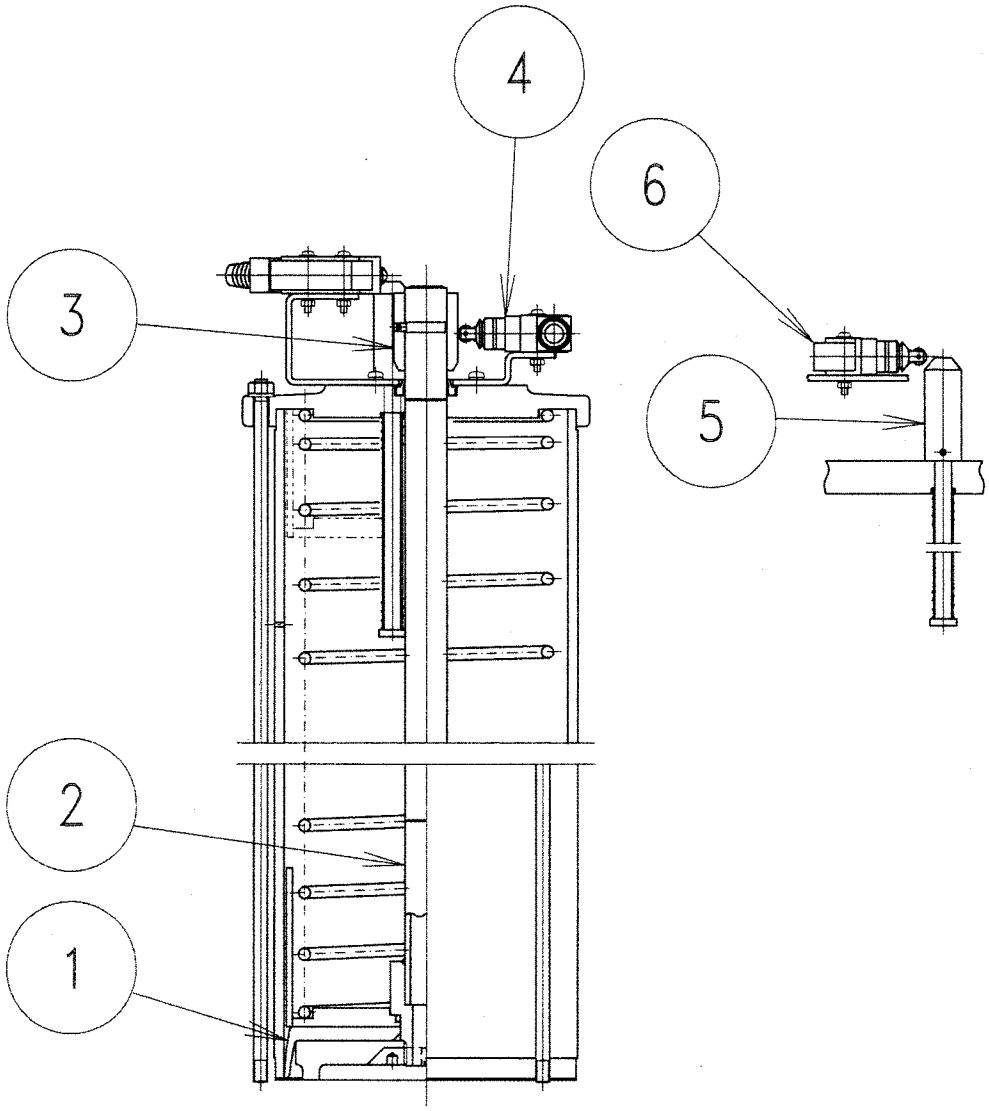


2) Tank unit

・To keep the up and down movements of grease level properly, the grease reservoir tank is provided with ① Follower plate which moves up and down along the tank inner surface which following the increase and decrease of grease.
The grease level can be automatically controlled by setting with the control panel.
If it arrives at the lower limit due to the drop of grease level, ④ Low level limit switch is turned on by ③ Cam attached to the top of ② Follower plate rod and automatic lubrication will start.

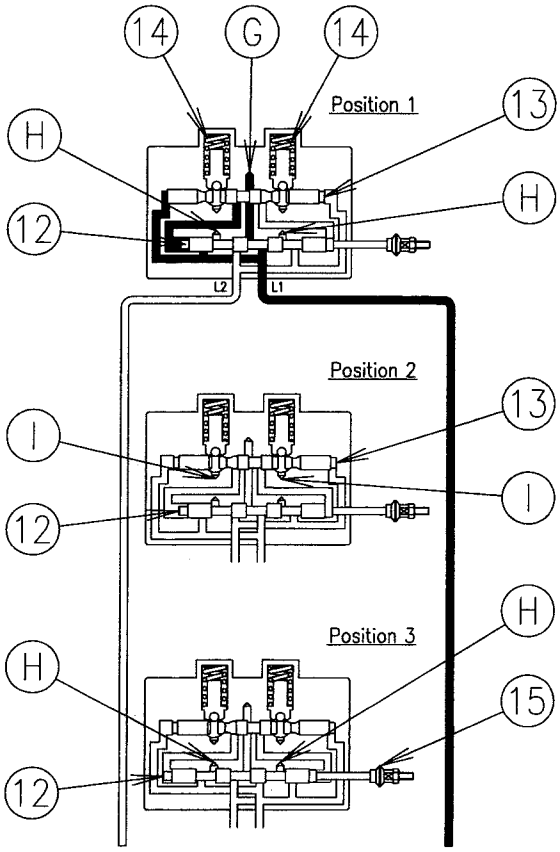
・When the grease level arrives at the upper limit, ⑥ High level limit switch is turned on and stops supplying by ⑤ Cam attached to the upper cover.

・Do not operate the pump below red line of ② Follower plate rod.
When the grease comes out from Air vent hole, charging grease should be stopped.



3) Reversing valve

・The Reversing valve is attached to the dual line system Lance type pump to switch the grease delivered under pressure from the pump alternately to the two lines of supply main pipe and control the supply pressure of the supply main pipe. The grease pressurized by the pump flows through the Reversing valve and actuates all the distributing valves. Thereafter, switching of the supply main pipe is effected by grease pressure with the increase of supply pressure up to the preset switching pressure.
Upon completion of the switching operation, the residual pressure in the main pipe and branch pipes is released into the tank.



Position 1
The grease delivered under pressure from the pump is delivered to the supply main pipe L1 (Line I) through the passage Ⓖ by ⑫ Main piston. At the same time, it pressurized the left end of ⑫ Main piston.
The supply main pipe L2 (Line II) is opened through the Reversing valve interior to the tank open port Ⓗ.
After all the distributing valves have completed their operations, the pressure in L1 increases and exceeds the preset switching pressure the preset switching pressure, so that ⑬ Pilot piston is pushed away to the right side against ⑭ Setting spring.

Position 2
After ⑬ Pilot piston has moved to the right side, the left side of ⑫ Main piston is opened to Tank open port Ⓘ and, at the same time, the right side is pressurized and pushed away to the left side.

Position 3
After ⑫ Main piston has moved to the left side, L1 together with the left side is opened to the tank open port Ⓗ and the grease delivered under pressure from the pump becomes ready to be delivered to L2, so that switching is completed. ⑫ Main piston is linked with ⑮ Cam for actuating the limit switch which operates each time when ⑫ Main piston moves leftward or rightward, so that the electrical control of pump operation is effected.

4) Relief valve

・The relief valve is incorporated into the side face of pump housing. In preparation for the case where the piping is blocked for some reason or other, this relief valve is provided for the purpose of emergency pressure release and, therefore, it functions to protect the whole system by releasing the relieved grease pressure into the tank.

4. Cautionary instructions in handling

1) Applicable grease

Use such grease as is suited for centralized lubrication within the range of NLGI consistency No. #0～#2 (provided that the consistency at the service temperature shall be not less than 240 — unmixed.)

2) Charge with grease

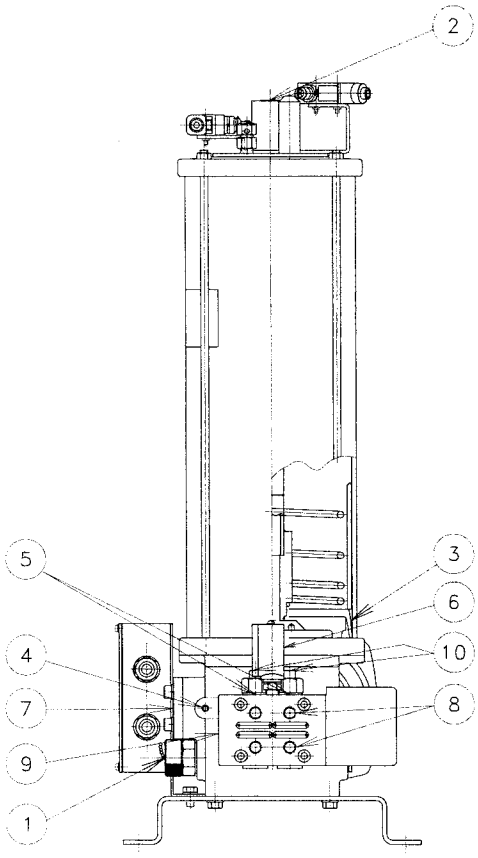
・For replenishment, be sure to charge the tank with grease through ① Supply port by the use of filling pump.
・When charging the empty tank with grease, open ② Air vent valve and release the air entrapped underneath ③ Follower plate.

3) Start-up of operation

・Loosen ④ Air vent valve and operate the pump until grease free from bubbles has come out of the pump.
・Remove ⑤ Hexagon socket head plug and operate the pump to deliver grease so that the air and foreign matter contained in the pipe will be removed from the end of piping.

4) When the pump pressure in ⑥ Pressure gauge will not increase

・Loosen ④ Air vent valve and remove air.
・If the pressure will not increase even after the removal of air, take off ⑦ Cover and take out the check packing for inspection and cleaning.
・Check ⑧ Piping connection has no problem.
・Check piping for leak, and repair, if leak is located.
・By setting a pressure gauge on ⑨Line pressure detection port, the switch pressure can be indicated. If necessary, adjust the switching pressure by ⑩ Switching pressure adjusting screw.
・When adjusting switching pressure, loosen the lock nut and rotate the ⑩Switching pressure adjusting screw right turn, thus the switching pressure being increased. On that time, adjust equally to both side of right and left. After adjustment, tighten the lock nut completely.



5. Maintenance & adjustment

Where there are troubles such as failure in pressure increase, reduction in discharge volume, and so on, that are considered to be attributed to the wear of pump cylinder set during the long-time operation, replace the cylinder set in accordance with the following procedure.

1) First remove ① Drain plug of pump housing to drain the grease contained in the tank and then dismount the geared motor and tank unit from the pump unit. (A compression spring is incorporated inside the tank. Be sure to drain off the grease before dismounting the tank.)

2) Next take off ② Cover from the side face of the pump after loosening 4 pieces of ③ Hexagon socket head bolt and then take out ④ O-ring and ⑤ Check packing.

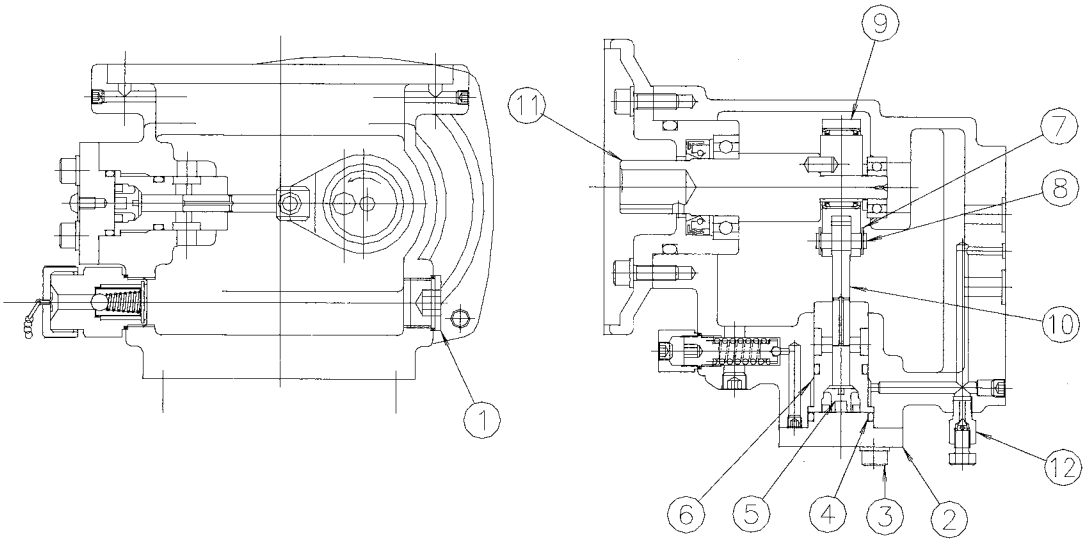
3) Pull out ⑥ Pump cylinder from the housing while rapping the end face of the cylinder lightly from the interior of the housing.

4) After removing ⑦ E-shaped retaining ring, pull out ⑧ Connecting pin from ⑨ Connecting rod and then remove ⑩ Piston.

5) Set a new piston to the connecting rod and fix the pump cylinder to the housing while inserting the piston into the pump cylinder.

6) After setting the check packing and cover, make sure that ⑪ Drive shaft is rotated lightly by hand and then mount the geared motor and tank unit.

7) After replacing the cylinder set, be sure to loosen ⑫ Air vent valve of the pump and operate the pump to conduct air venting until grease free from bubbles has come out of the valve.



◆ EF TYPE ELECTRIC CONTROL PANEL INSTRUCTION

This electric control panel functions to control the resting and driving of the pump in such a way that the pump will run automatically after an optional resting and will stop automatically upon completion of lubrication.
Test run performed in accordance with following the point.

1. Test run

1.1 Preparation before operation
Charge the pump with grease.

1.2 Test run
1) Put the operation switch (CS) on the panel surface in operation mode.
2) Open the door of the panel, signal timer (62G) temporary sets the full range.
3) Put the power source. .... Resting lamp on the light.
4) Close the door of the panel, put the operation switch (CS) on the panel surface in start mode. .... Driving lamp on the light.
5) Distributing valve start to operate, upon completion of operation of all the distributing valve, the pressure increases abruptly and the pump comes to a stop automatically. .... Resting lamp on the light.
6) Repeat the run and stop 2 to 3 times.

1.3 Record of operating condition
Run the pump to measure and record, not less than twice, the time taken from start till stop and the maximum pressure at the time immediately before stop.

1.4 Timer setting
1) Adjust and set the system timer (2G) at the pump operation interval.
2) Set the signal timer (62G) at the scale mark indicating twice the figure of pre-measured pump operation time.

1.5 Automatic Operation
Put the operation switch (CS) in the start mode and check the pump until it has come to a stop.
After stopping of the pump, the pump is put in the operation mode and it will start automatically at intervals of preset time on the system timer and come to a stop automatically upon completion of lubrication.

2. Maintenance & inspection

2.1 Check the system periodically for the start of operation.

1) Pump operation time and pressure
Compare the time taken from the start to the stop of the pump (the time required for lubrication) with the record on test run and make sure that there is no remarkable difference between the two.

2.2 When trouble indicator lamp has come on.

The cause of trouble indicator lamp which can be classified into the three main causes.

1) First check the level in the tank and replenish the tank, if empty, with grease.
Turn OFF power source in the control panel and then turn ON again. The trouble lamp goes out and the resting lamp comes on.
Put the operation switch (CS) in the start mode and make sure that run and automatic stop are effective.

If 1) is not the cause, turn OFF power source in the control panel and then turn ON again.

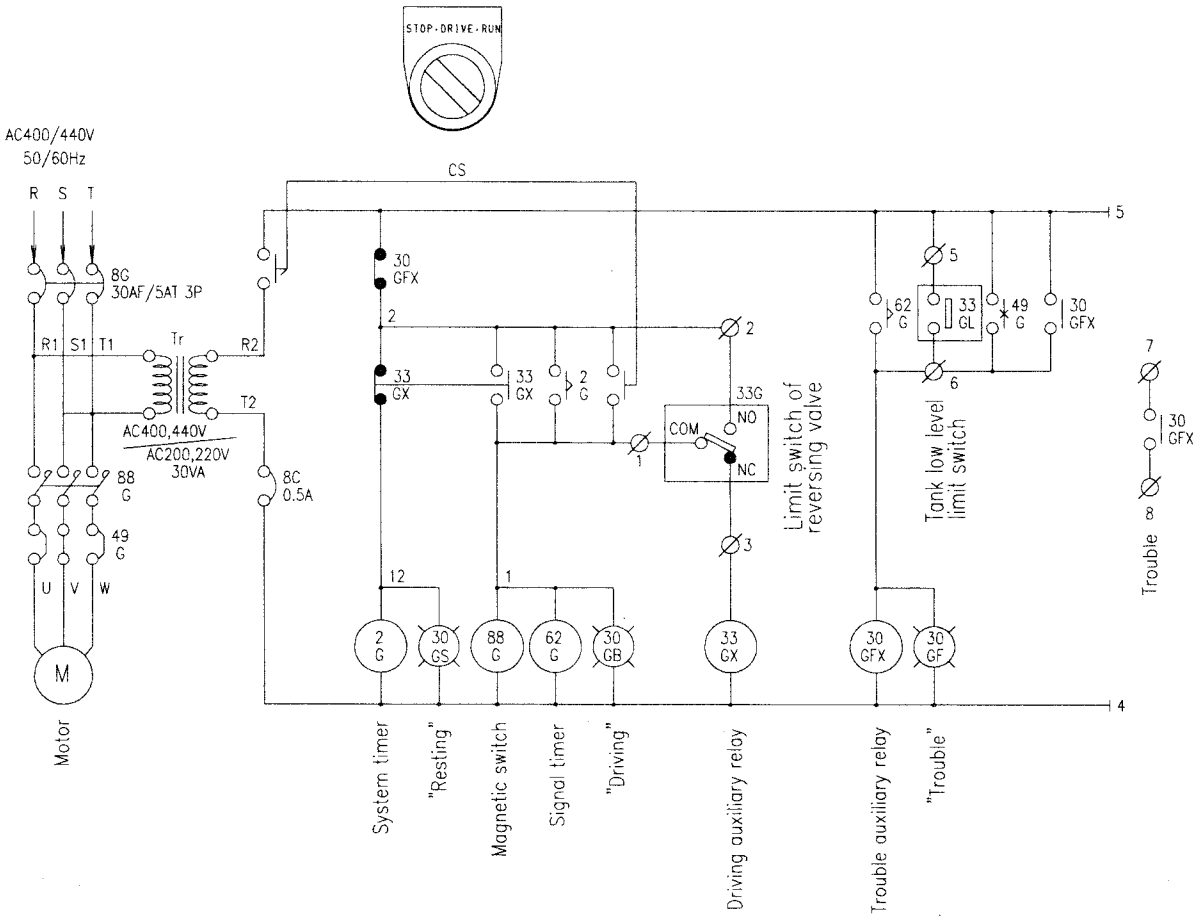
2) The case of trouble indicator lamp has come on, it means over load driving of the motor.
Remove the cause and return on the thermal by hand operation.

3) In the case of the trouble lamp goes out and the resting lamp comes on, put the operation switch (CS) in the start mode and running the pump unit.

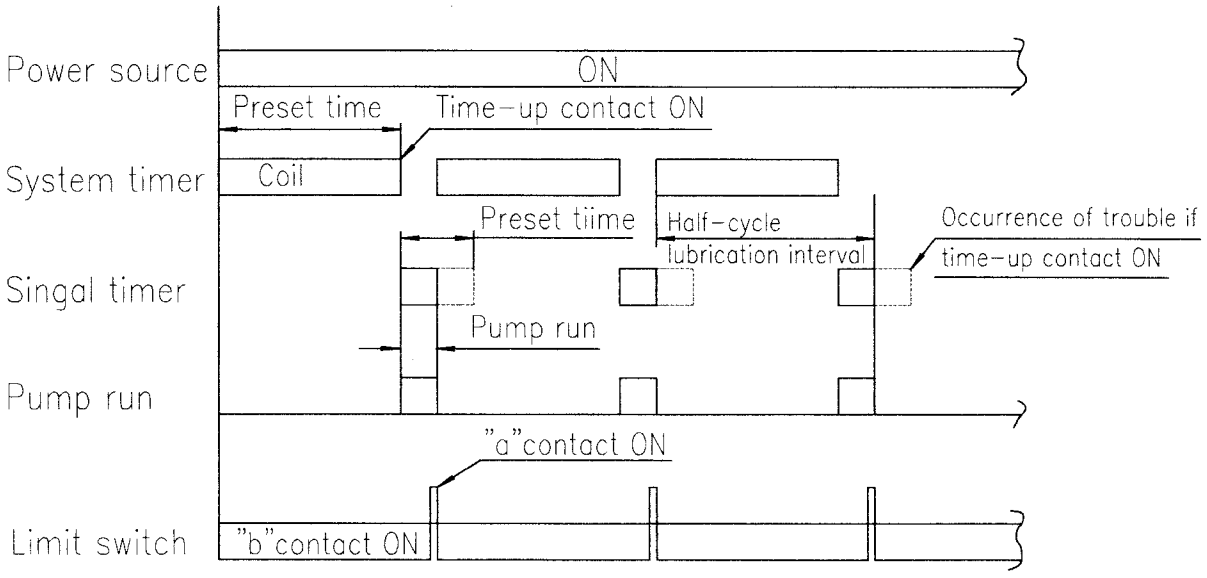
a) When pressure has increased;
Check the pressure gauge attached to the pump.
If pump pressure seems to be higher than the preset pressure of relief valve, the cause is attributed to the failure of reversing valve. Therefore, disassemble and clean up the valve.

b) When pressure dose not increase;
- Check the piping for possible leaks.
- When there are no leaks from the piping (limited to the main pipe and branches in this case), loosen the union in the vicinity of pump outlet and check whether or not air is entrapped in the grease flowing out. If air entrapment is found in the grease, then allow grease to flow out until no more air has been detected.
- Check the pump unit to see if the check packing is damaged.

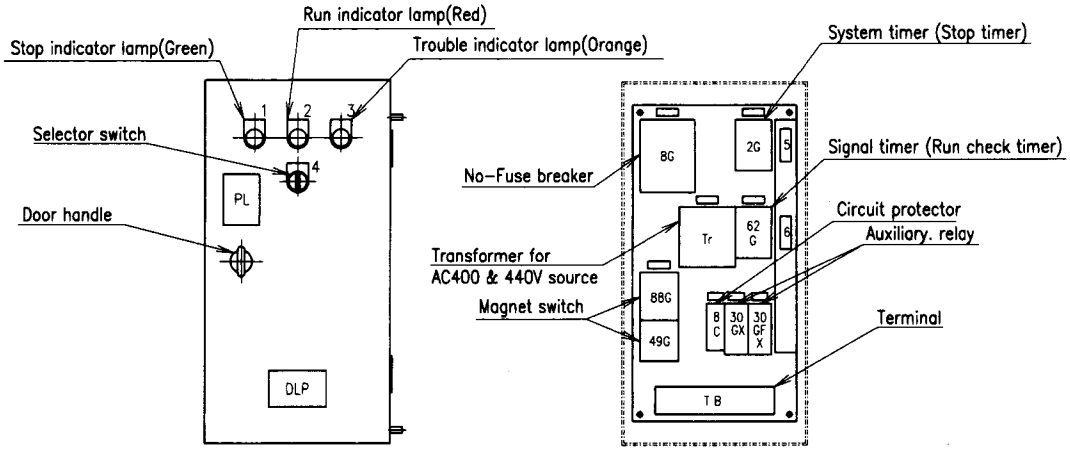
Developed connection diagram (EF-3T type)



Control flow diagram



■ Electric Control Panel



Appearance view　　Disposition diagram

[Thermal relay setting]
Preset the RC scale attached to the Magnet switch at the following values.
AC400V 50Hz 0.42A
AC440V 60Hz 0.37A

INSTRUCTION MANUAL
OF
MOTOR DRIVEN GREASE PUMP

UEC－108ANP－11

DAIKIN LUBRICATION PRODUCTS & ENGINEERING CO., LTD.

1. General

This motor-driven grease pump is designed for use with dual line system. A couple of pumps rated at 21MPa respective for the reliability of lubrication and permits a simple and rational automatic lubrication system to be established.

Thus contributing to the efficient operation of installations.

2. Features

- Compact pump mechanism

  Efficient and compact pump mechanism driven by geared motor.

- Simplified piston mechanism

  Maintenance and inspection simplified by the adoption of single piston and non-spring check valve.

- High pressure lubrication & high reliability

  Complete lubrication assured by increased lubricating pressure up to 21MPa.

- Simplification of pipeline

  High pressure lubrication permits reduction in piping size and selection of simple pipeline provided with Reversing valve operating under lubricating pressure itself.

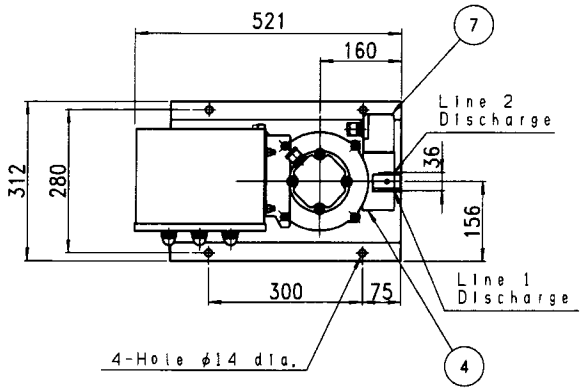
- Economical automatic lubrication

  Automatic lubrication can be effected readily at low costs with the aid of EF-type fully automatic electric control panel.

Specifications

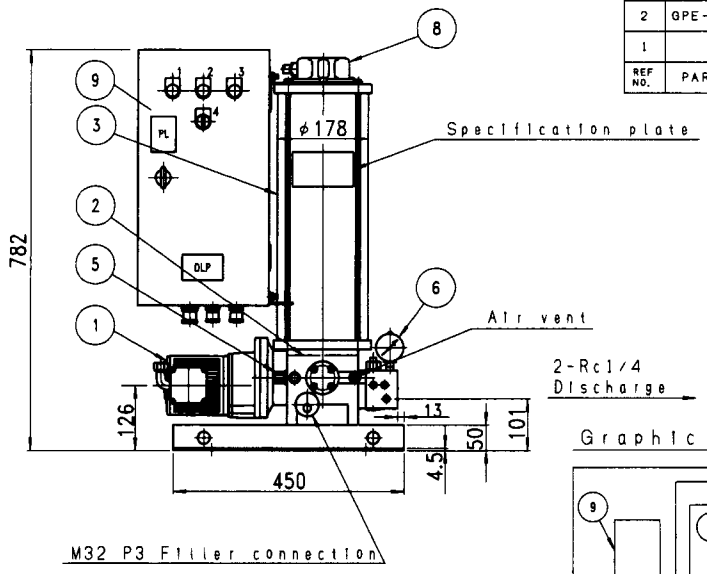
Division of Components	Item (Unit)	Model
		UEC-108ANP-11
Pump	Discharge volume (cm^3/min)	30/36 (50/60Hz)
	Max. working pressure (MPa)	21
Geared motor	Direction of revolution	Both direction
	Type	Totally enclosed, Flange type
	Output (kW)	0.1
	Number of poles (P)	4
	Reduction ratio	1/40
Tank	Capacity (ℓ)	8
Reversing valve	Type	LRV-7
	Pressure control range (MPa)	12 to 21
	Pipe connecting port	Rc1/4
	Control system	1/2 cycle lubrication
	Preset pressure (MPa)	17
Relief valve	Preset pressure (MPa)	23
Remarks	Piping system	Lance type
	Applicable grease	#0 to #2-NLGI consistency
Mass (kg)		53

・Be sure to use the pump indoors.

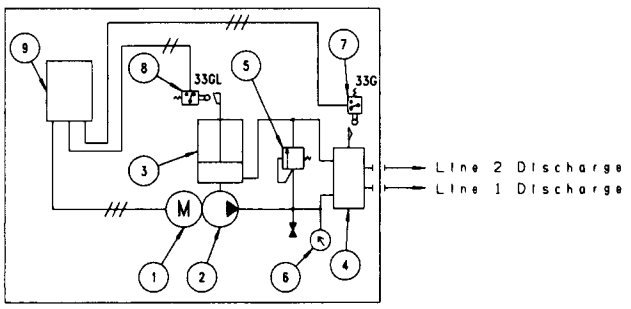


Construction

REF NO.	PART NO.	PART NAME	QTY.	REMARKS
9	EF-3T	Electric control panel	1	
8	Z-15GW22-B	Low level limit switch	1	
7	Z-15GW22-B	Limit switch of reversing valve	1	
6	FP1617-1	Pressure gauge	1	40MPa
5		Relief valve	1	
4	LRV-7	Reversing valve	1	
3	T-08AP-L	Grease tank	1	
2	GPE-08A	Grease pump	1	
1		Geared motor	1	0.1kWX4P, 3φ (IP44)



Graphic diagram



3. Description of Operation

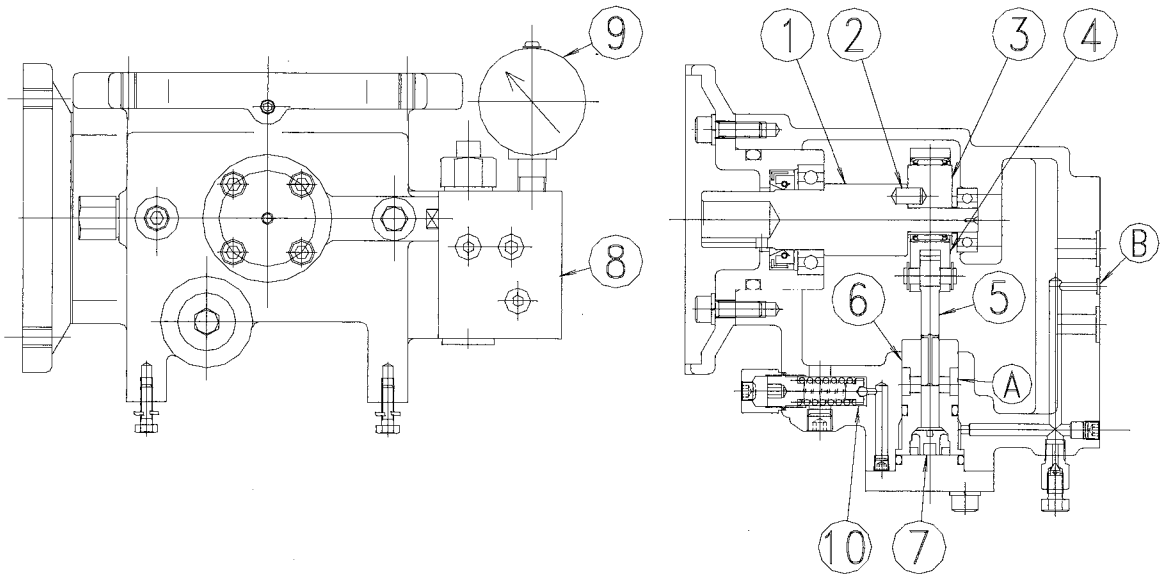
1) Pump unit

・The rotational force produced by the start of geared motor is transmitted to ③ Eccentric connected to the motor through ① Drive Shaft with ② Pin. This rotational force is further converted into the reciprocating motion of ⑤ Piston connected to the leading end of ④ Connecting Rod by the eccentric motion of the eccentric.

・Grease is sucked in from the suction port Ⓐ of ⑥ Pump cylinder and is delivered to the discharge port Ⓑ through ⑦ Check Packing in the compression process of the piston.

The pressurized grease coming into ⑧ Type-LRV.

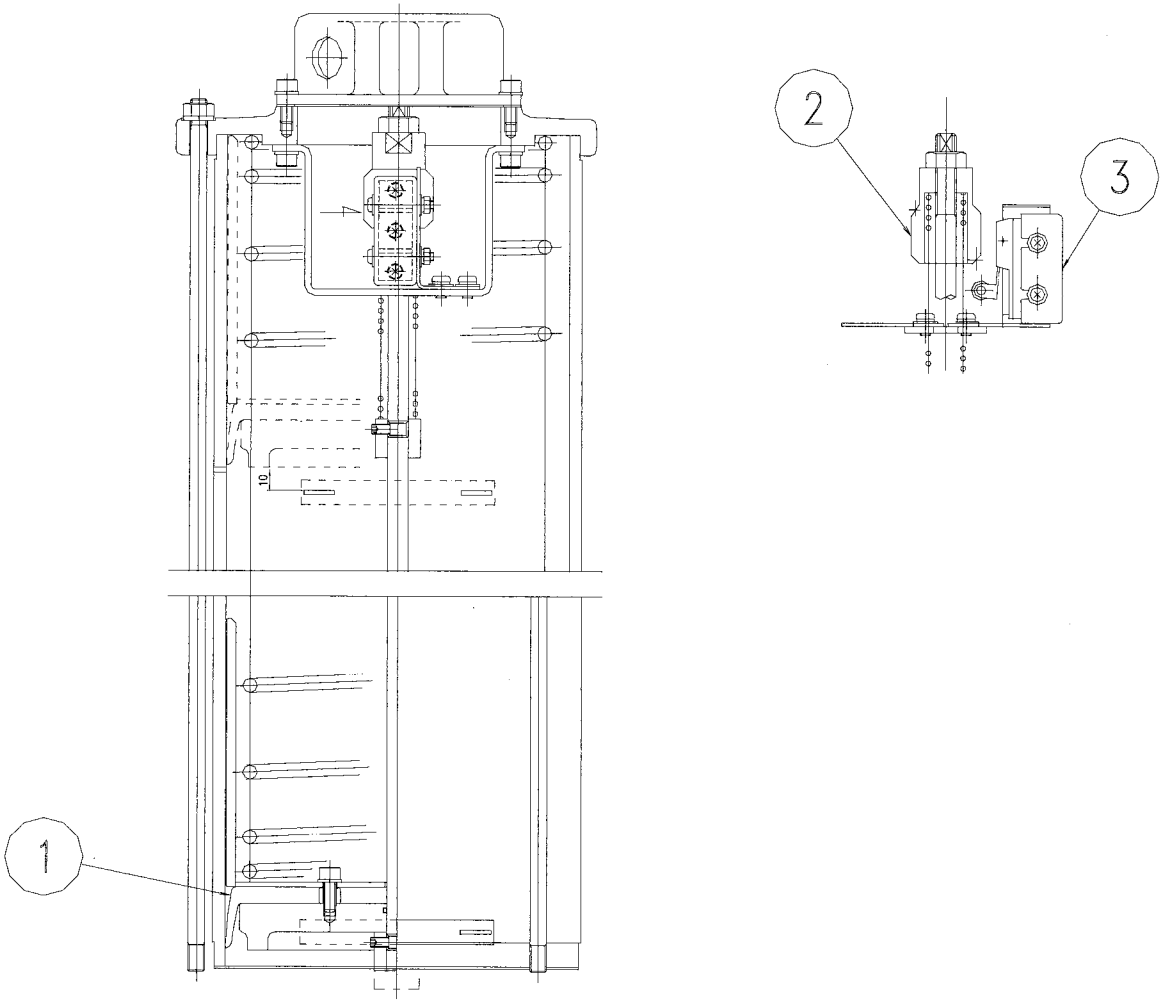
Reversing valve is delivered under pressure to the discharge ports of Line Ⅰ and Line Ⅱ and, at the same time, it is delivered to ⑨ Pressure Gauge and ⑪ Relief Valve also and is led to the drain to the tank for use in checking the discharge pressure and at the time of abnormally high pressure.



2) Tank unit

・To keep the up and down movements of oil level properly, the grease reservoir tank is provided with ① Follower Plate which moves up and down along the tank inner surface which following the increase and decrease of grease. The oil level can be checked from the outside.
If it arrives at the lower limit due to the drop of oil level, ③ Low Level Limit Switch is turned ON by ② Cam attached to the top of follower plate rod.

・In replenishment, the tank should not be replenished with grease beyond the high oil level Automatic replenishment is also made practicable the addition of a high level limit switch.

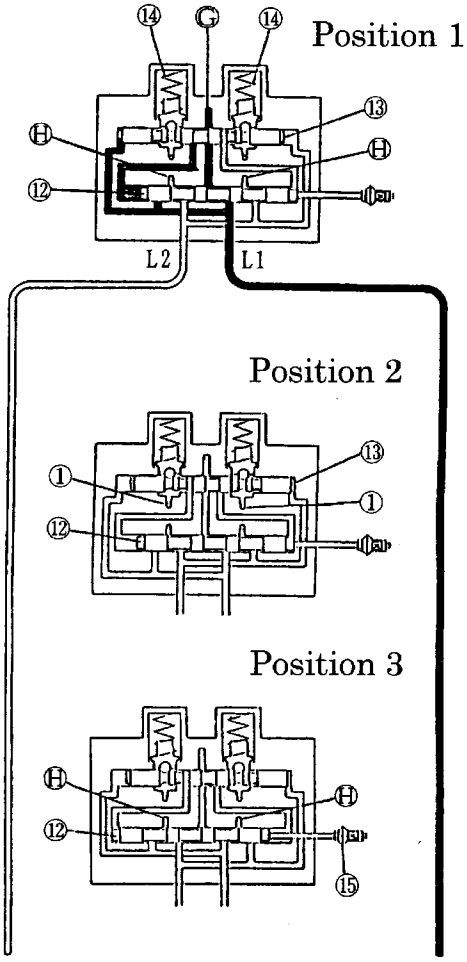


3) Reversing valve

・The Reversing valve is attached to the dual line system lance type pump to switch the grease delivered under pressure from the pump alternately to the two lines of supply main pipe and control the supply pressure of the supply main pipe.

The grease pressurized by the pump flows through the Reversing valve and actuates all the distributing valves. Thereafter, switching of the supply main pipe is effected by hydraulic pressure with the increase of supply pressure up to the preset switching pressure.

Upon completion of the switching operation, the residual pressure in the main pipe and branch pipes is released into the tank.



Position 1

The grease delivered under pressure from the pump is delivered to the supply main pipe L1 (Line I) through the passage Ⓖ by ⑫ Main Piston.

At the same time, it pressurized the left end of ⑫ Main Piston.

The supply main pipe L2 (Line II) is opened through the Reversing valve interior to the tank open port Ⓗ.

After all the distributing valves have completed their operations, the pressure in L1 increases and exceeds the preset switching pressure the preset switching pressure, so that ⑬ Pilot Piston is pushed away to the right side against ⑭ Spring.

Position 2

After ⑬ Pilot Piston has moved to the right side, the left side of ⑫ Main Piston is opened to tank open port Ⓘ and, at the same time, the right side is pressurized and pushed away to the left side.

Position 3

After ⑫ Main Piston has moved to the left side, L1 together with the left side is opened to the tank open port Ⓗ and the grease delivered under pressure from the pump becomes ready to be delivered to L2, so that switching is completed.

⑫ Main Piston is linked with ⑮ Cam for actuating the limit switch which operates each time when ⑫ Main Piston moves leftward or rightward, so that the electrical control of pump operation is effected.

4) Relief valve

・The relief valve is incorporated into the side face of pump housing. In preparation for the case where the piping is blocked for some reason or other, this relief valve is provided for the purpose of emergency pressure release and, therefore, it functions to protect the whole system by releasing the relieved grease pressure into the tank.

4. Cautionary Instructions in Handling

1) Applicable grease

Use such grease as is suited for centralized lubrication within the range of NLGI consistency No. #0 to #2 (provided that the consistency at the service temperature shall be not less than 240 — unmixed.)

2) Charge with grease

・For replenishment, be sure to charge the tank with grease through ① Supply Port by the use of filling pump.

・When charging the empty tank with grease, remove ② Hexagon Socket Head Plug and release the air entrapped underneath ③ Follower Plate.

3) Start-up of operation

・Loosen ④ Air Vent Valve and operate the pump until grease free from bubbles has come out of the pump.

・Operated the pump to deliver grease so that the air and foreign matter contained in the return pipe will be removed from the end of piping.

4) Where the pump pressure in ⑥ Pressure gauge will not increase

・Loosen ④ Air Vent Valve and remove air.

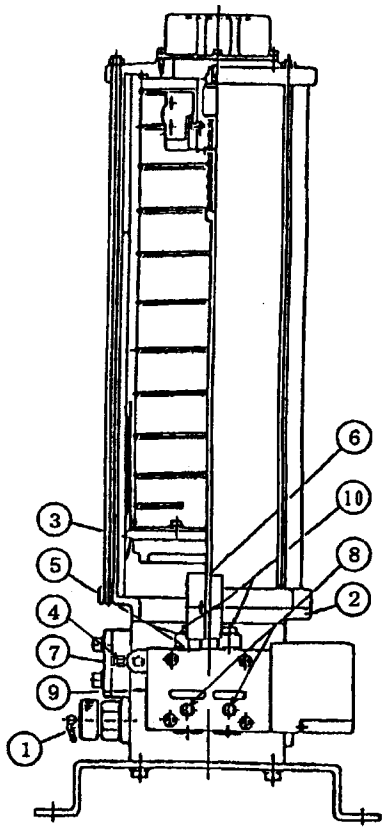
・If the pressure will not increase even after the removal of air, take off ⑦ Cover and take out the check packing for inspection and cleaning.

・Check ⑧ Piping Connections for wrong connections.

・Check piping for leak, and repair, if leak is located. If necessary, adjust the switching pressure by ⑩ Switching Pressure Adjusting Screw.

・When adjusting the ⑩ switching pressure, loosen the lock nut and rotate the adjusting screw right turn, thus the switching pressure being increased.

・Adjust the switching pressure equally right and left.
After adjustment, tighten the lock nut completely.



5. Maintenance & Adjustment

Where there are troubles such as failure in pressure increase, reduction in discharge volume, and so on, that are considered to be attributed to the wear of pump cylinder set during the long-time operation, replace the cylinder set in accordance with the following procedure.

1) First remove ① Drain Plug of pump housing to drain the grease contained in the tank and then dismount the geared motor and tank unit from the pump unit. (A compression spring is incorporated inside the tank. Be sure to drain off the grease before dismounting the tank.)

2) Next take off ② Cover from the side face of the pump after loosening 4 pieces of ③ Hexagon Socket Head Bolt and then take out ④ O-ring and ⑤ Check Packing.

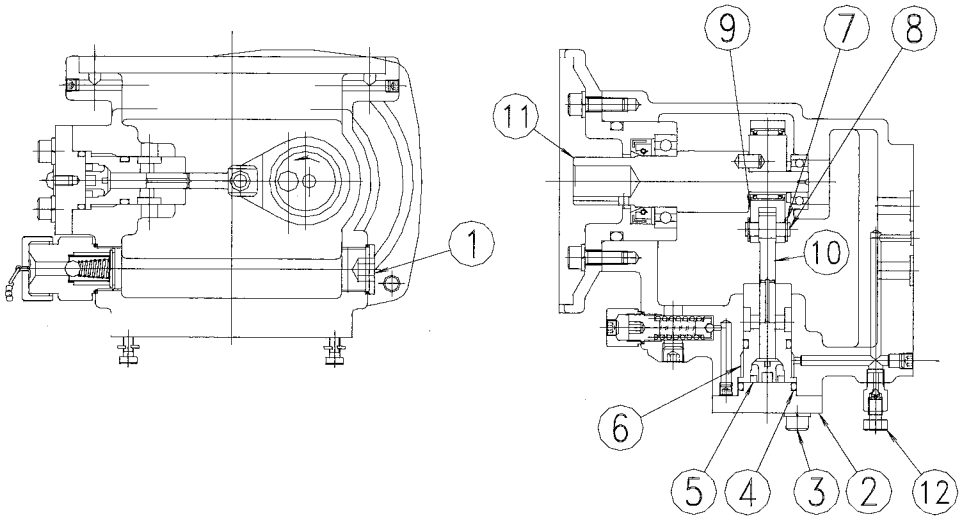
3) Pull out ⑥ Pump Cylinder from the housing while rapping the end face of the cylinder lightly from the interior of the housing.

4) After removing ⑦ E-shaped Retaining Ring, pull out ⑧ Connecting Pin from ⑨ Connecting Rod and then remove ⑩ Piston.

5) Set a new piston to the connecting rod and fix the pump cylinder to the housing while inserting the piston into the pump cylinder.

6) After setting the check packing and cover, make sure that ⑪ Drive Shaft is rotated lightly by hand and then mount the geared motor and tank unit.

7) After replacing the cylinder set, be sure to loosen ⑫ Air Vent Valve of the pump and operate the pump to conduct air venting until grease free from bubbles has come out of the valve.



◆ EF TYPE ELECTRIC CONTROL PANEL INSTRUCTION

This electric control panel functions to control the run and stop of the pump in such a way that the pump will run automatically after an optional stop and will stop automatically upon completion of lubrication. Test run performed in accordance with following the point.

1. Test run

1.1 Preparation before operation

Charge the pump with grease.

1.2 Test run

1) Put the operation switch (CS) on the panel surface in operation mode.
2) Open the door of the panel, signal timer (62G) temporary sets the full range.
3) Put the power supply. .... Pause lamp on the light.
4) Close the door of the panel, Put the operation switch (CS) on the panel surface in start mode..... Run lamp on the light.
5) Distributing valve start to operate, Upon completion of operation of all the distributing valve, the pressure increases abruptly and the pump comes to a stop automatically. .... Pause lamp on the light.
6) Repeat the run and stop 2 to 3 times.

1.3 Record of operating condition

Run the pump to measure and record, not less than twice, the time taken from start till stop and the maximum pressure at the time immediately before stop.

1.4 Timer setting

1) Adjust and set the system timer (2G) at the pump operation interval.
2) Set the signal timer (62G) at the scale mark indicating twice the figure of pre-measured pump operation time.

1.5 Automatic Operation

Put the operation switch (CS) in the start mode and check the pump until it has come to a stop. After stopping of the pump, the pump is put in the operation mode and it will start automatically at intervals of preset time on the system timer and come to a stop automatically upon completion of lubrication.

2. Maintenance & Inspection

2.1 Check the system periodically for the start of operation.

1) Pump operation time

Compare the time taken from the start to the stop of the pump (the time required for lubrication) with the record on test run and make sure that there is no remarkable difference between the two.

2.2 When trouble indicator lamp has come on.

The cause of trouble indicator lamp which can be classified into the three main causes.

1) First check the level in the tank and replenish the tank, if empty, with grease. Turn OFF power supply to the control panel and then turn ON again. The trouble lamp goes out and the stop lamp comes on.

Put the operation switch (CS) in the start mode and make sure that run and automatic stop are effective.

2) In the case of trouble indicator lamp has come on...Check pump motor.

Remove the cause and turn on the thermal switch of magnetic starter.

3) In the case of the trouble lamp goes out and the stop lamp comes on, put the operation switch (CS) in the start mode and running the pump unit.

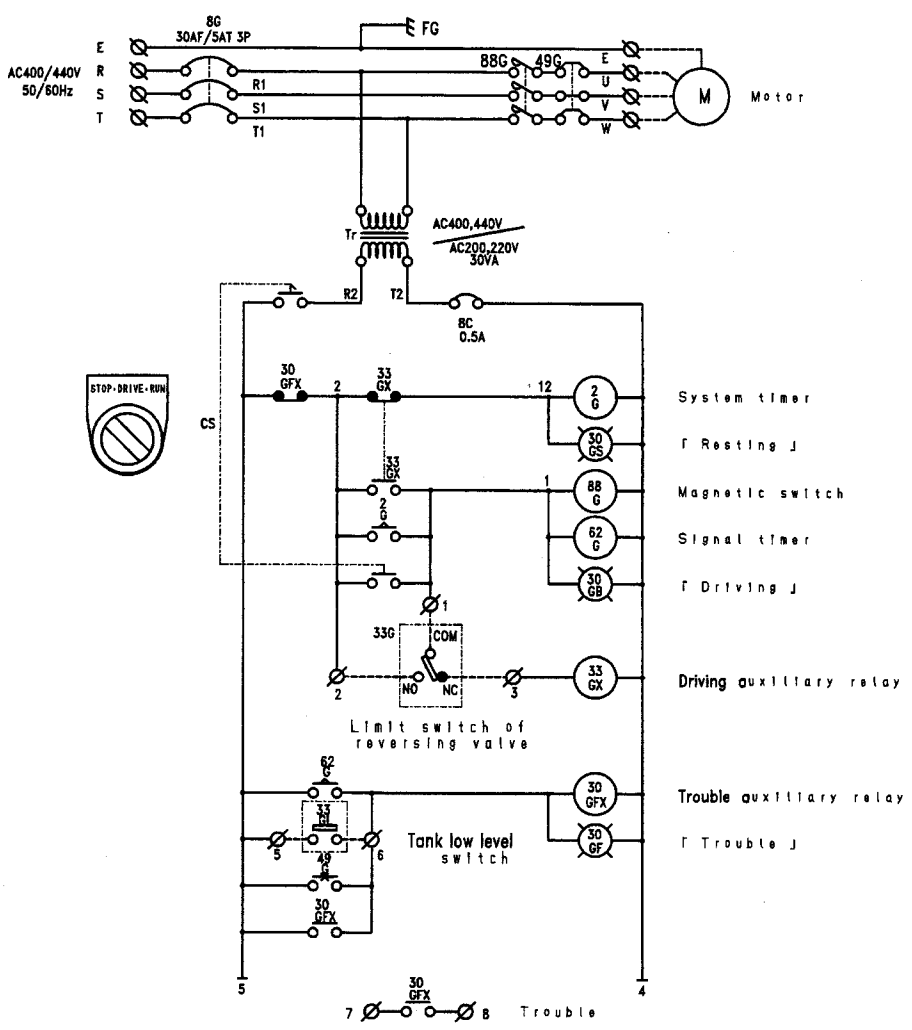
a) Where pressure has increased

If pump pressure seems to be higher than the preset pressure of safety valve, the cause is attributed to the failure of selector valve. Therefore, disassemble and clean up the valve.

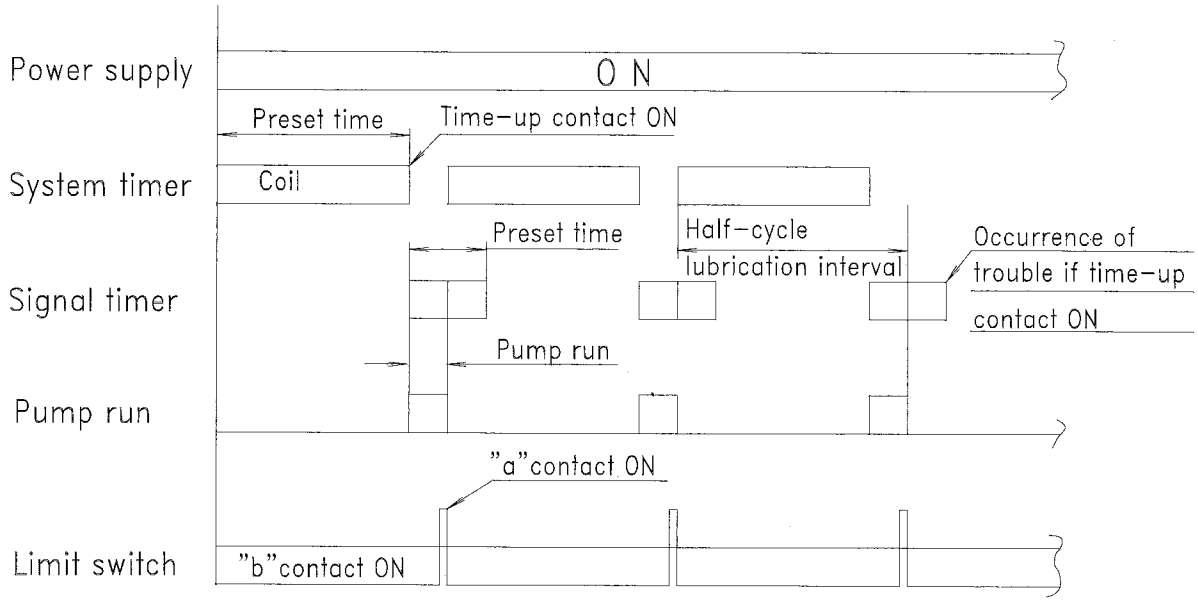
b) Where pressure will not increase up to the preset pressure on the hydraulic selector valve.

- Check the piping for possible leaks.
- Where there are no leaks from the piping (limited to the main pipe and branches in this case), loosen the union in the vicinity of pump outlet and check whether or not air is entrapped in the grease flowing out. If air entrapment is found in the grease, then allow grease to flow out until no more air has been detected.
- Check the pump unit to see if the check packing is damaged.

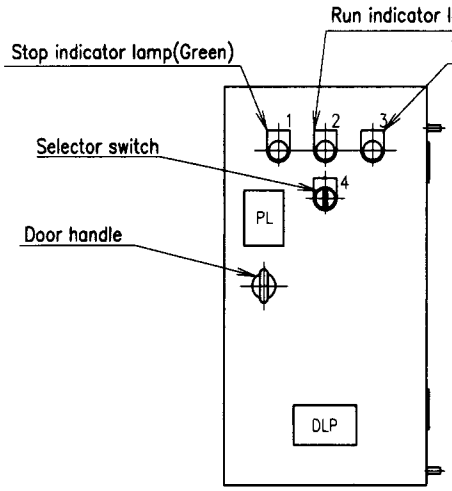
Developed Connection Diagram of EF-3T type



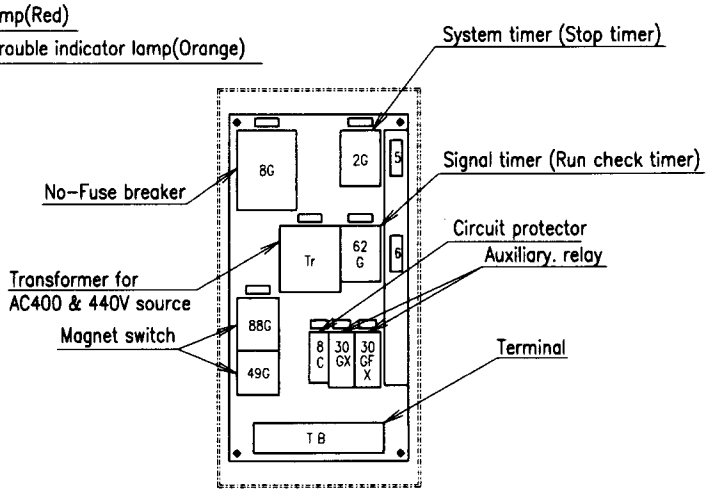
Control Flow Diagram



■ Electric Control Panel



Appearance view



Disposition diagram

【Applicable Power Supply】

Type	EF-3	AC200V	50/60Hz
		AC200V	60Hz
Type	EF-3T	AC400V	50/60Hz
		AC440V	60Hz

The transformer for 3T type is per-connected to the primary side 400V and secondary side 200V as a standard.

For the district supplied at the source voltage 440V 60Hz, connections should be changed to the terminals of primary side 440V and secondary side 220V.

【Thermal Relay Setting】

Preset the RC scale attached to the electromagnetic switch at the following values.

AC200V	50Hz	0.76A
AC220V	60Hz	0.56A
AC400V	50Hz	0.32A
AC440V	60Hz	0.30A

UE－225AN・UE－225AN－A TYPE
MOTOR DRIVEN GREASE PUMP UNIT
INSTRUCTION MANUAL

1. General

This motor-driven grease pump is designed for use with dual line system. A couple of pumps rated at 21MPa and 10MPa respectively for two lines enhances the reliability of lubrication and permits a simple and rational automatic luburication system to be established. thus contributing to the efficient operation of installations.

2. Featurs

・Compact pump mechanism

Efficient and compact pump mechanism driven by geared motor.

・Simplified piston mechanism

Maintenance and inspection simplified by the adoption of single piston and non－spring check valve.

・High pressure lubrication & high reliability

Complete lubrication assured by increased lubricating pressure up to 21MPa.

・Simplification of pipeline

High pressure lubrication permits reduction in piping size and selection of simple pipeline provided with Reversing valve operating under lubricating pressure itself.

・Economical automatic lubrication

Automatic lubrication can be effected readily at low costs by setting an electrical control panel together with the Pump.

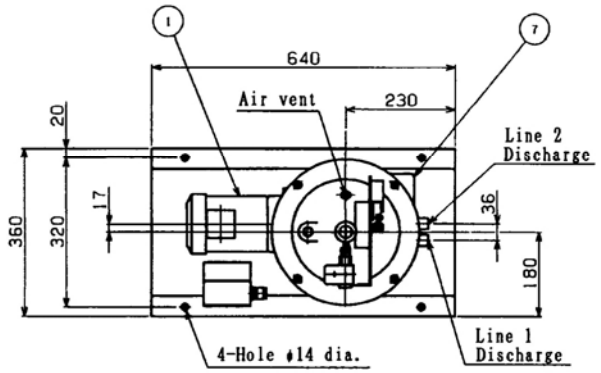
Specifications

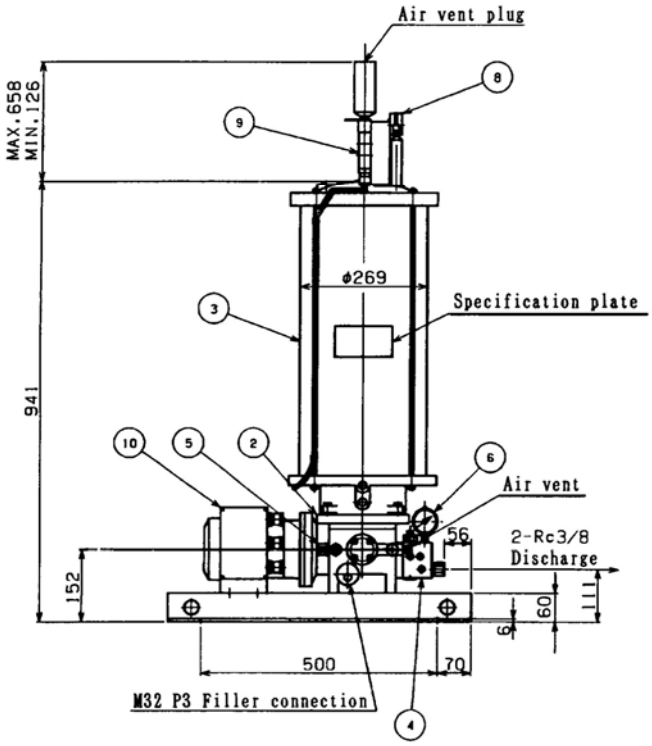
Division of Components	Item (Unit)	Type	
		UE－225AN	UE－225AN－A
Pump	Discharge volume	64/76cm³/min(50/60Hz)	
	Rated pressure	21MPa	10MPa
	Pump revolutions	78/94min⁻¹(50/60Hz)	
	Direction of revolution	Right turn (viewing from motor fan side)	
Geared motor	Type	Totally enclosed, Flange type, Continuous rating, Class－E insulation	
	Output × Number of poles	0.2KW × 4P	
	Reduction ratio	1/20	
Tank	Capacity	25ℓ	
Reversing valve	Type	LRV-7	LRV-7B
	Pressure control range	12～21MPa	3～10MPa
	Pipe connecting port	Rc 1/4	
	Control system	1/2 cycle lubrication	
Application	Piping system	End type (circuit system)	
	Applicable grease	NLGI Consistency No.#0～#2	
Net Weight		102kg	

	UE－225AN	UE－225AN－A
Preset pressure on Reversing valve	21MPa	10MPa
Preset pressure on Relief valve	23MPa	13MPa

・ Be sure to use the pump indoors.

Dimentions





Construction

・Pump components are as shown below.

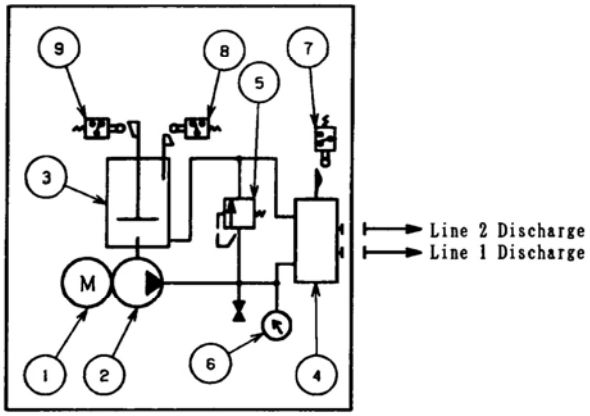
UE-225AN

REF NO.	PART NO.	PART NAME	QTY.	REMARKS
10		Terminal box	1	8P
9	ZE-NA2-2	Low level switch	1	
8	ZE-NA2-2	High level switch	1	
7	Z-15GW22-B	Limit switch of reversing valve	1	
6		Pressure gauge	1	40MPa
5		Relief valve	1	
4	LRV-7	Reversing valve	1	
3	T-25A	Grease tank	1	
2	GPE-08A	Grease pump	1	
1		Geared motor	1	0.2kWX4P, 3ϕ

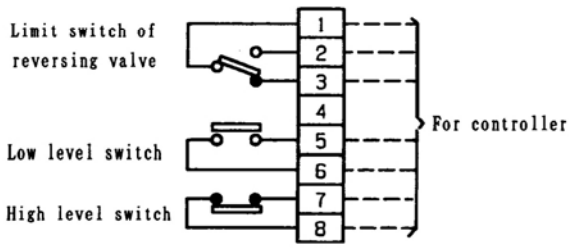
UE-225AN-A

REF NO.	PART NO.	PART NAME	QTY.	REMARKS
10		Terminal box	1	8P
9	ZE-NA2-2	Low level switch	1	
8	ZE-NA2-2	High level switch	1	
7	Z-15GW22-B	Limit switch of reversing valve	1	
6		Pressure gauge	1	20MPa
5		Relief valve	1	
4	LRV-7B	Reversing valve	1	
3	T-25A	Grease tank	1	
2	GPE-08A-A	Grease pump	1	
1		Geared motor	1	0.2kWX4P, 3ϕ

Graphic diagram



Terminal connection

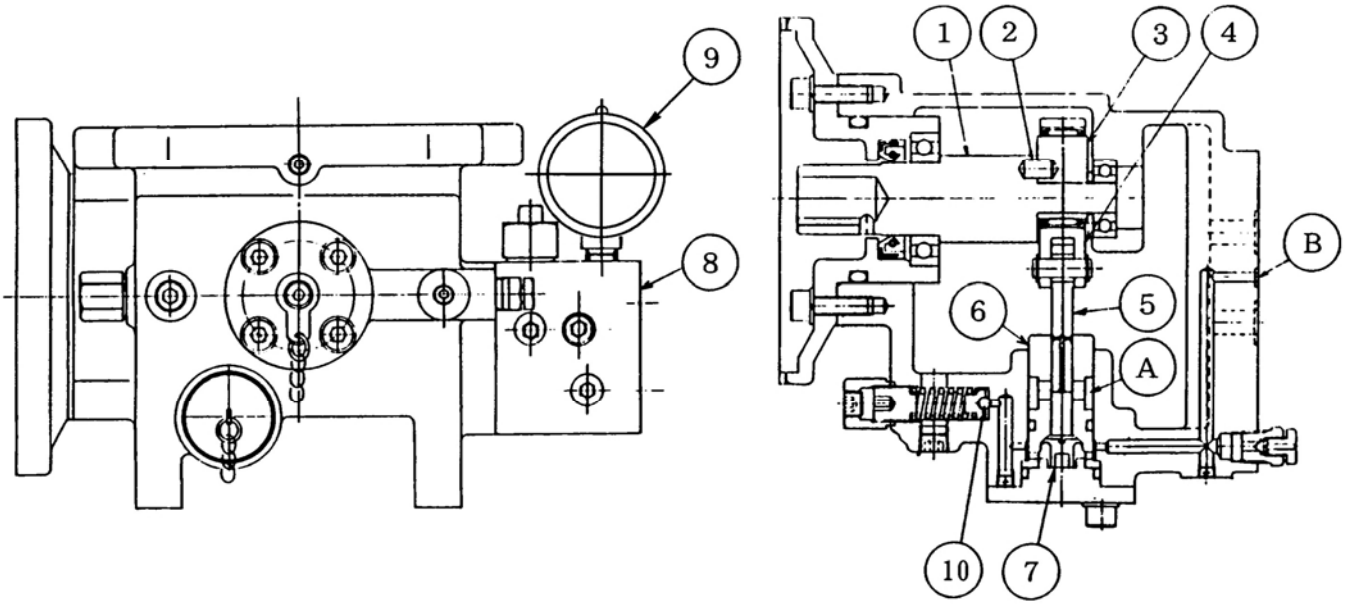


3. Description of Operation

1) Pump unit

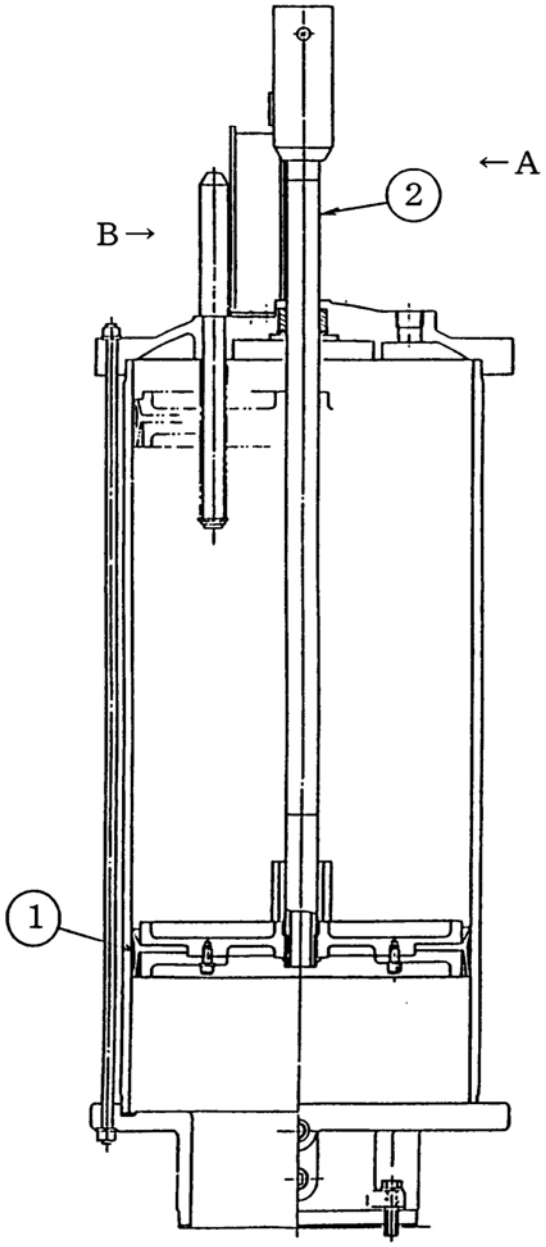
・The rotational force produced by the start of geared motor is transmitted to ③ Eccentric connected to the motor through ① Drive Shaft with ② Pin. This rotational force is further converted into the reciprocating motion of ⑤ Piston connected to the leading end of ④ Connecting Rod by the eccentric motion of the eccentric.

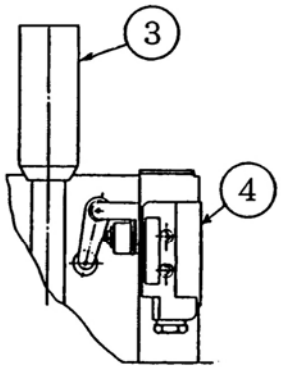
・Grease is sucked in from the suction port Ⓐ of ⑥ Pump cylinder and is delivered to the discharge port Ⓑ through ⑦ Check Packing in the compression process of the piston.
The pressurized grease coming into ⑧ Type－LRV.
Reversing valve is delivered under pressure to the discharge ports of Line Ⅰ and Line Ⅱ and, at the same time, it is delivered to ⑨ Pressure Gauge and ⑩ Relief Valve also and is led to the drain to the tank for use in checking the discharge pressure and at the time of abnormally high pressure.



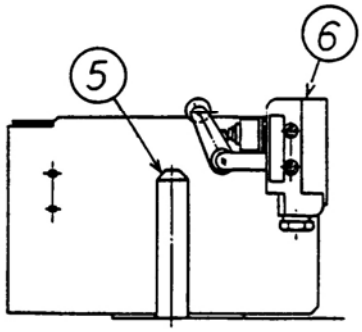
2) Tank unit

The reservoir to store grease is equipped with the Follower Plate ① for keeping proper fluctuation of the oil level, the plate coming up and down the tank inside according to increase and decrease in the grease.
The oil level can be confirmed by the scale of the Piston Rod ②, but, when it comes down to the bottom by its decreasing, the Low Level Switch ④ turns on according to the Cam ③ fitted on the upper part of the piston tod, and when the oil level comes up to the top by its increasing, the High Level Switch ⑥ turns on according to the cam fitted to the Cam Holder ⑤.
With this electrically connected, it is possible to be automatically furnished with grease other than lamp indication, alarm signals, etc.





View － A



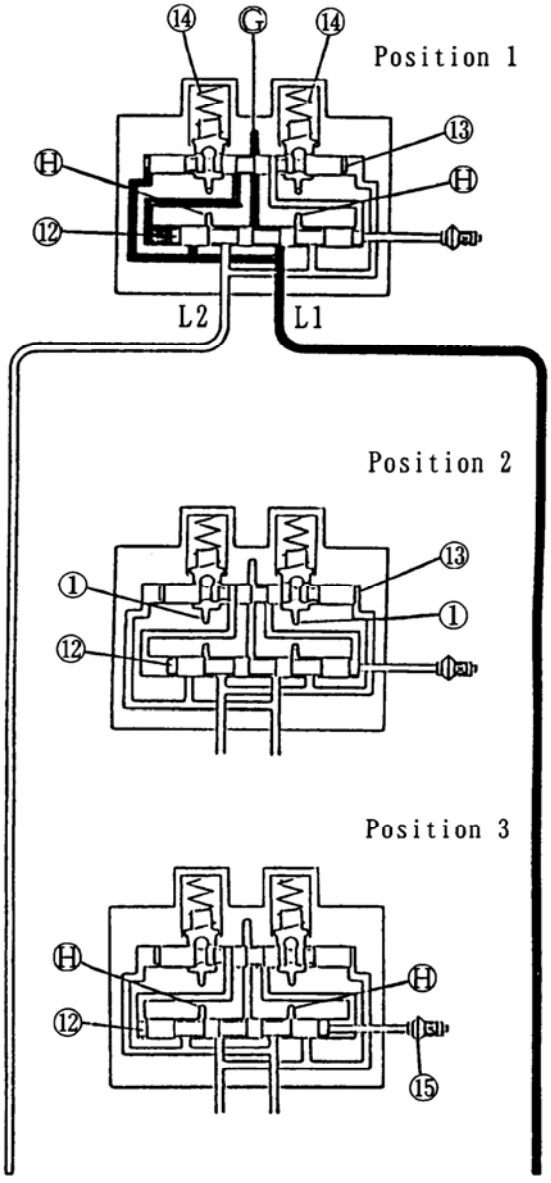
View － B

3) Reversing valve

・The Reversing valve is attached to the dual live system loop type pump to switch the lubricating oil delivered under pressure from the pump alternately to the two lines of supply main pipe and control the supply pressure of the supply main pipe.

The lubricating oil pressurized by the pump flows through the Reversing valve and actuates all the distributing valves. Thereafter, switching of the supply main pipe is effected by hydraulic pressure with the increase of supply pressure up to the preset switching pressure.

Upon completion of this switching iperation, the residual presure in the main pipe and branch pipes is released into the tank.



Position 1

The lubricating oil delivered under pressure from the pump is delivered to the supply main pipe L1 (Line Ⅰ) through the passage Ⓖ by ⑫ Main Piston.

At the same time, it pressurized the left end of ⑫ Main Piston.

The supply main pipe L2 (Line Ⅱ) is opned through the Reversing valve interior to the tank open port Ⓗ.

After all the distributing valves have completed their operations, the pressure in L1 increases and exceeds the preset switching pressure the preset switching pressure, so that ⑬ Pilot Piston is pushed away to the right side against ⑭ Spring.

Position 2

After ⑬ Pilot Piston has moved to the right side, the left side of ⑫ Main Piston is opned to ① Tank Open Port and, at the same time, the right side is pressurized and pushed away to the left side.

Position 3

After ⑫ Main Piston has moved to the left side, L1 together with the left side is opened to the tank open port Ⓗ and the lubricating oil delivered under pressure from the pump becomes ready to be delivered to L2, so that switching is completed.

⑫ Main Piston is linked with ⑮ Cam for actuating the limit switch which operates each time when ⑫ Main Piston moves leftward or rightward, so that the electrical control of pump operation is effected.

4) Relief valve

・The relief valve is incorporated into the side face of pump housing. In preparation for the case where the piping is blocked for some reason or other, this relief valve is provided for the purpose of emergency pressure release and, therefore, it functions to protect the whole system by releasing the relieved grease pressure into the tank.

4. Cautionary Instructions in Handling

1) Applicable grease

Use such grease as is suited for centralized lubrication within the range of NLGI consistency No. #0～#2 (provided that the consistency at the service temperature shall be not less than 260 － unmixed.)

2) Charge with grease

・For replenishment, be sure to charge the tank with grease through ① Supply Port by the use of filling pump.

・When charging the empty tank with grease, remove ② Air vent plug and release the air entrapped underneath ③ Follower Plate.

3) Start－up of operation

・Loosen ④ Air Vent Valve and operate the pump until grease free from bubbles has come out of the pump.

・Operated the pump to deliver grease so that the air and foreign matter contained will be removed from the end of piping.

4) Where the pump pressure in ⑥ Pressure gauge will not increase

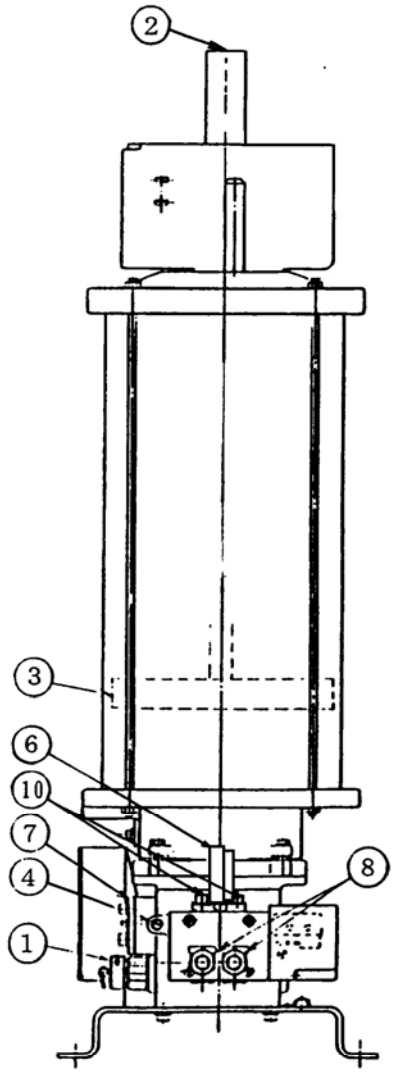
・Loosen ④ Air Vent Valve and remove air.

・If the pressure will not increase even after the removal of air, take off ⑦ Cover and take out the check packing for inspection and cleaning.

・Check ⑧ Piping Connections for wrong connnections.

・Check piping for leak, and repair, if leak is located.
If necessary, adjust the switching pressure by ⑩ Switching Pressure Adjusting Screw.

・When adjusting the switching pressure, loosen the lock nut and rotate the adjusting screw right turn, thus the switching pressure being increased.
After adjustment, tighten the lock nut completely.



5. Maintenance & Adjustment

Where there are troubles such as failure in pressure increase, reduction in discharge volume, and so on, that are considered to be attributed to the wear of pump cylinder set during the long－time operation, replace the cylinder set in accordance with the following procedure.

1) First remove ① Drain Plug of pump housing to drain the grease contained in the tank and then dismount the geared motor and tank unit from the pump unit.

2) Next take off ② Cover from the side face of the pump after loosening 4 pieces of ③ Hexagon Socket Head Bolt and then take out ④ O－ring and ⑤ Check Packing.

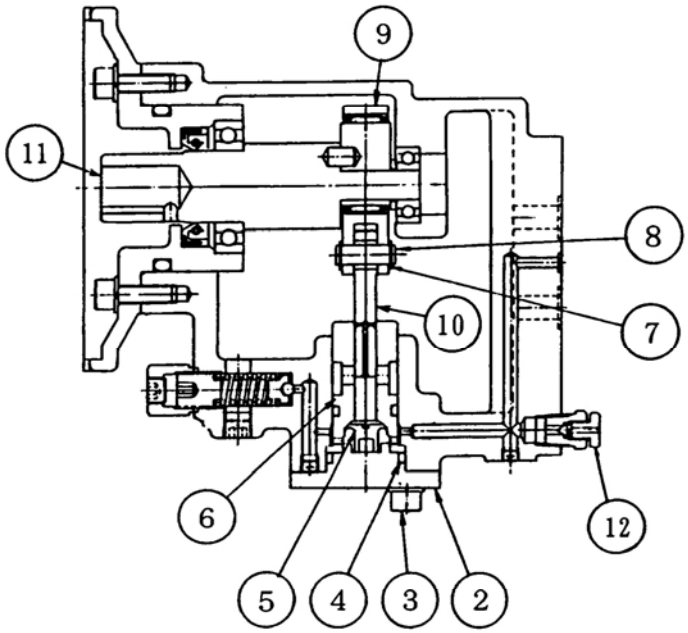
3) Pull out ⑥ Pump Cylinder from the housing while rapping the end face of the cylinder lightly from the interior of the housing.

4) After removing ⑦ E－shaped Retaining Ring, pull out ⑧ Connecting Pin from ⑨ Connecting Rod and then remove ⑩ Piston.

5) Set a new piston to the connecting rod and fix the pump cylinder to the housing while inserting the piston into the pump cylinder.

6) After setting the check packing and cover, make sure that ⑪ Drive Shaft is rotated lightly by hand and then mount the geared motor and tank unit.

7) After replacing the cylinder set, be sure to loosen ⑫ Air Vent Valve of the pump and operate the pump to conduct air venting until grease free from bubbles has come out of the valve.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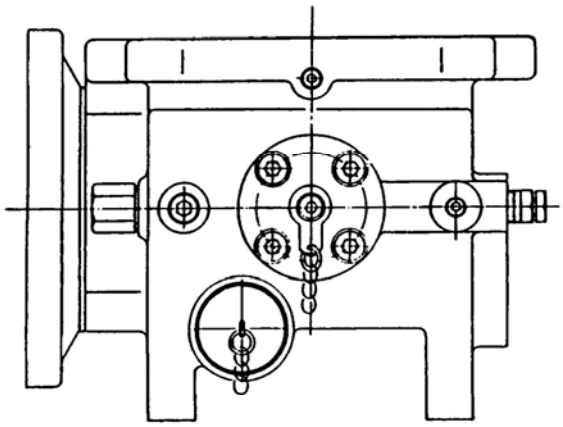
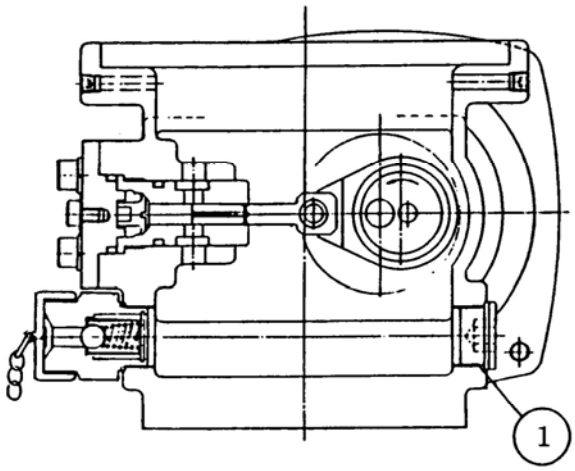



1

INSTRUCTION MANUAL
OF
MOTOR DRIVEN GREASE PUMP

UE－225AL－11

DAIKIN LUBRICATION PRODUCTS & ENGINEERING CO., LTD.

1. General

This motor-driven grease pump is designed for use with dual line system. A pump rated at 21MPa respectively for two lines enhances the reliability of lubrication and permits a simple and rational automatic lubrication system to be established. Thus contributing to the efficient operation of installations.

2. Features

・Compact pump mechanism
Efficient and compact pump mechanism driven by geared motor.

・Simplified piston mechanism
Maintenance and inspection simplified by the adoption of single piston and non-spring check valve.

・High pressure lubrication & high reliability
Complete lubrication assured by increased lubricating pressure up to 21MPa.

・Simplification of pipeline
High pressure lubrication permits reduction in piping size and selection of simple pipeline provided with Reversing valve operating under lubricating pressure itself.

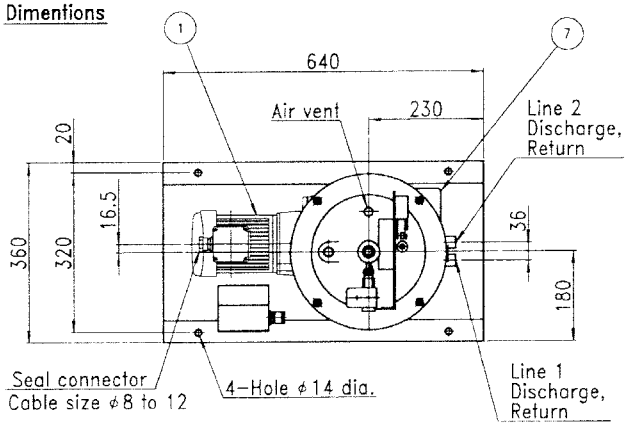
・Economical automatic lubrication
Automatic lubrication can be effected readily at low costs by setting an electric control panel together with the Pump.

Specification

Division of Components	Item(Unit)	Type
		UE-225AL-11
Pump	Discharge volume (cm^3/min)	64/76 (50/60Hz)
	Max. working Pressure (MPa)	21
Geared motor	Direction of revolution	Both direction
	Type	Total enclosed type・Flange type
	Output (kW)	0.2
	Number of poles (P)	4
	Reduction ratio	1/20
Tank	Tank capacity (ℓ)	25
Reversing valve	Type	LRV-6
	Pressure control range (MPa)	3 to 10
	Pipe connecting port	Rc1/4
	Control system	1/2 cycle lubrication
	Setting pressure (MPa)	5
Relief valve	Setting pressure (MPa)	23
Remarks	Piping system	Loop type
	Applicable grease	#0 to #2-NLGI consistency
Mass (kg)		102

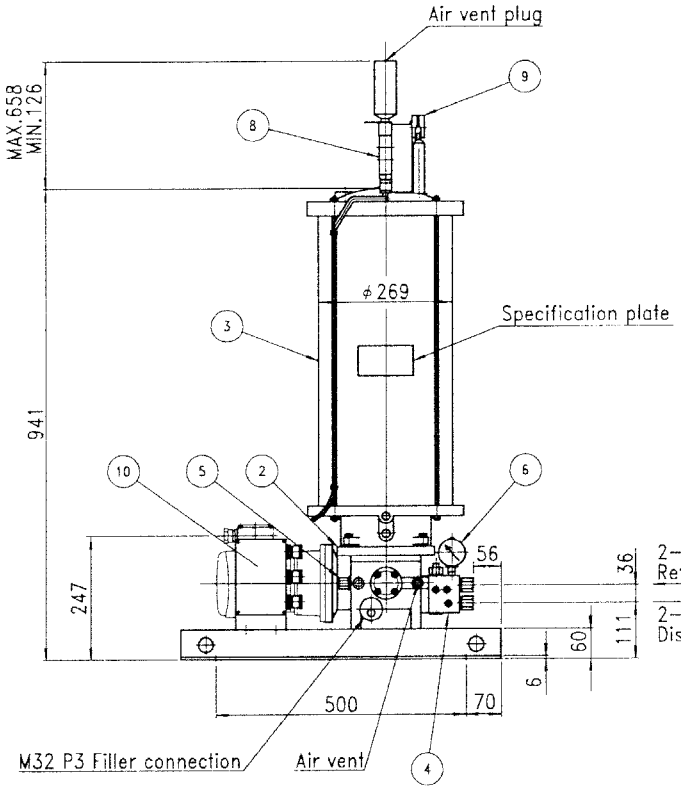
・Be sure to use the pump indoors.

Dimentions

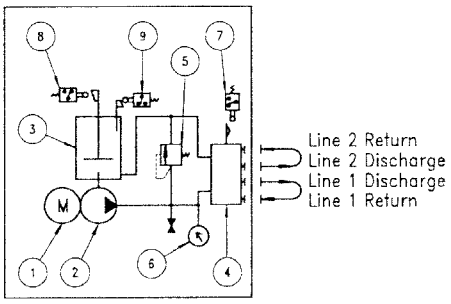


Construction

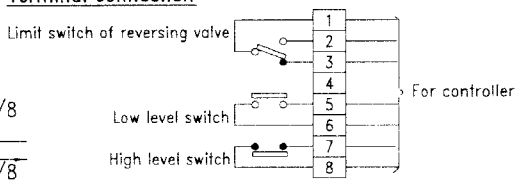
REF. NO.	PART NO.	PART NAME	QTY.	REMARKS
10		Terminal box	1	12P
9	ZA-NA2-2	High level switch	1	
8	ZA-NA2-2	Low level switch	1	
7	Z-15GW22-B	Limit switch of reversing valve	1	
6	FP1617-1	Pressure gauge	1	40MPa
5		Relief valve	1	
4	LRV-6	Reversing valve	1	
3	T-25A	Grease tank	1	
2	GPE-08A	Grease pump	1	
1		Geared motor	1	0.2kW,4P,3ϕ(IP44)



Graphic diagram



Terminal connection

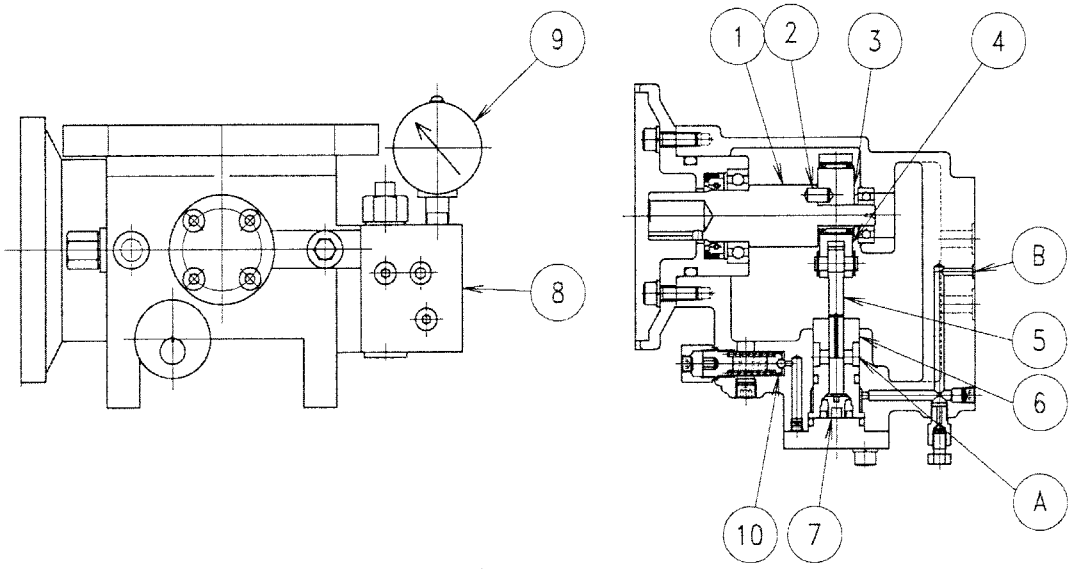


3. Description of Operation

1) Pump unit

・The rotational force produced by the start of geared motor is transmitted to ③ Eccentric connected to the motor through ① Drive Shaft with ② Pin. This rotational force is further converted into the reciprocating motion of ⑤ Piston connected to the leading end of ④ Connecting Rod by the eccentric motion of the eccentric.

・Grease is sucked in from the suction port Ⓐ of ⑥ Pump cylinder and is delivered to the discharge port Ⓑ through ⑦ Check Packing in the compression process of the piston.
The pressurized grease coming into Type-LRV ⑧ Reversing valve is delivered under pressure to the discharge ports of Line Ⅰ and Line Ⅱ and, at the same time, it is delivered to ⑨ Pressure Gauge and ⑩ Relief Valve also and is led to the drain to the tank for use in checking the discharge pressure and at the time of abnormally high pressure.

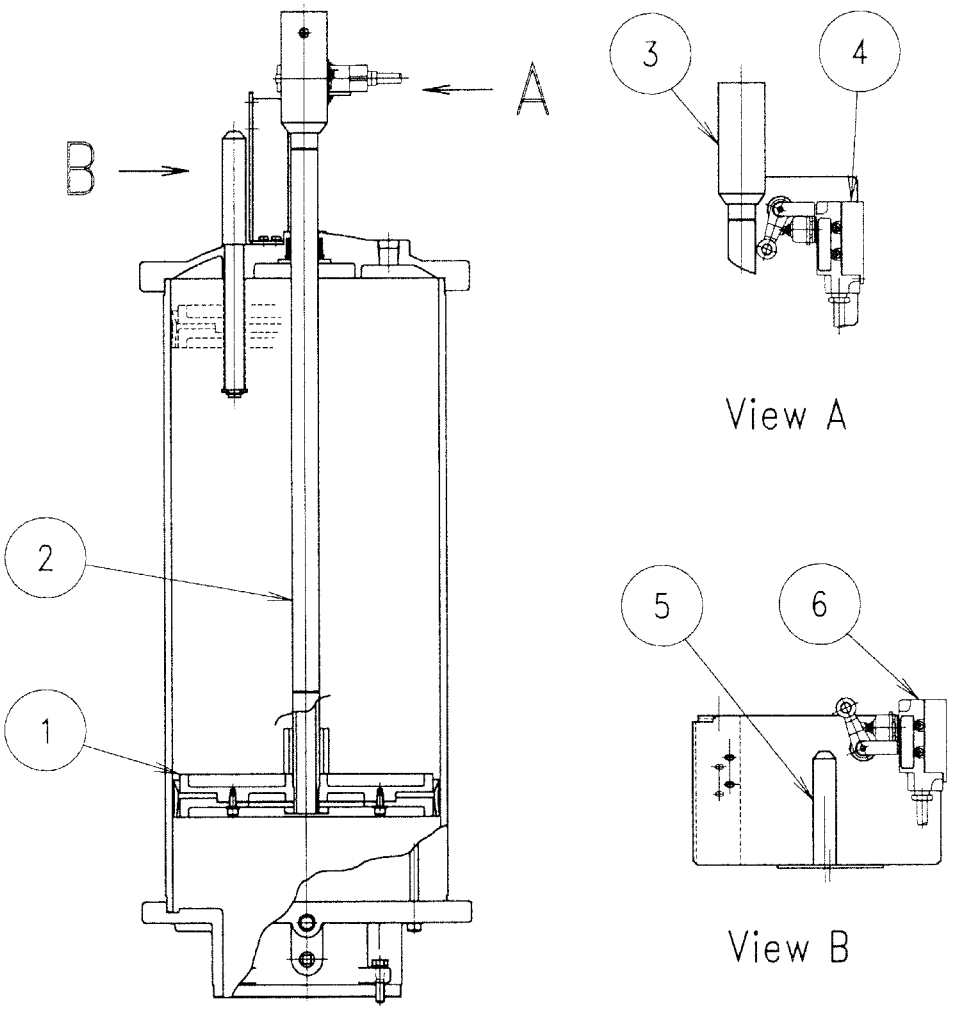


2) Tank unit

・To keep the up and down movements of grease level properly, the grease reservoir tank is provided with ① Follower Plate which moves up and down along the tank inner surface which following the increase and decrease of grease.
The grease level can be automatically controlled by setting with the control panel.
If it arrives at the lower limit due to the drop of grease level, ④ Low Level Limit Switch is turned on by ③ Cam attached to the top of ② Follower Plate Rod and automatical lubrication will start.

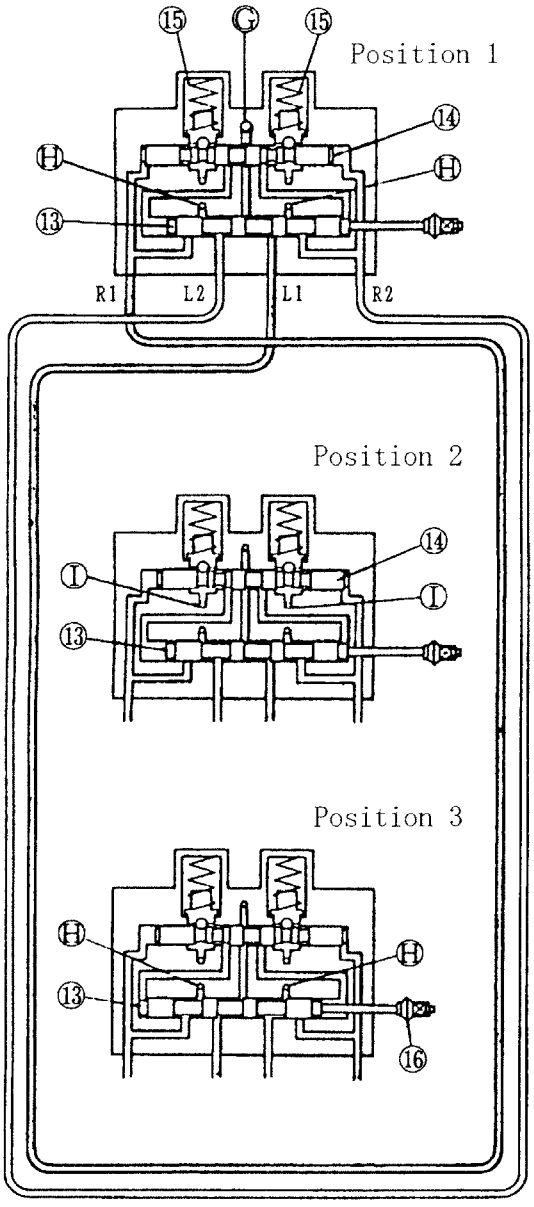
・When the grease level arrives at the upper limit, ⑥ High Level Limit Switch is turned on and stops supplying by ⑤ Cam attached to the upper cover.

・Do not operate the pump below red line of ② Follower Plate Rod and do not supply the grease beyond red line.



3) Reversing valve

・The Reversing valve is attached to the dual line system loop type pump to switch the lubricating oil delivered under pressure from the pump alternately to the two lines of supply main pipe and control the supply pressure of the supply main pipe.
The lubricating oil pressurized by the pump flows through the Reversing valve and actuates all the distributing valves. Thereafter, switching of the supply main pipe is effected by hydraulic pressure with the increase of supply pressure up to the preset switching pressure.
Upon completion of the switching operation, the residual pressure in the main pipe and branch pipes is released into the tank.



Position 1
The lubricating oil delivered under pressure from the pump is delivered to the supply main pipe L1 (Line Ⅰ) through the passage Ⓖ by ⑬ Main Piston.
At the same time, it pressurized the left end of ⑬ Main Piston.
The supply main pipe L2 (Line Ⅱ) is opened through the Reversing valve interior to the tank open port Ⓗ.
After all the distributing valves have completed their operations, the pressure in L1 increases and exceeds the preset switching pressure the preset switching pressure, so that ⑭ Pilot Piston is pushed away to the right side against ⑮ Spring.

Position 2
After ⑭ Pilot Piston has moved to the right side, the left side of ⑬ Main Piston is opened to Ⓘ Tank Open Port and, at the same time, the right side is pressurized and pushed away to the left side.

Position 3
After ⑬ Main Piston has moved to the left side, L1 together with the left side is opened to the tank open port Ⓗ and the lubricating oil delivered under pressure from the pump becomes ready to be delivered to L2, so that switching is completed.
⑬ Main Piston is linked with ⑯ Cam for actuating the limit switch which operates each time when ⑬ Main Piston moves leftward or rightward, so that the electrical control of pump operation is effected.

4) Relief valve

・The relief valve is incorporated into the side face of pump housing. In preparation for the case where the piping is blocked for some reason or other, this relief valve is provided for the purpose of emergency pressure release and, therefore, it functions to protect the whole system by releasing the relieved grease pressure into the tank.

4. Cautionary Instructions in Handling

1) Applicable grease

Use such grease as is suited for centralized lubrication within the range of NLGI consistency No. #0 to #2 (provided that the consistency at the service temperature shall be not less than 240 — unmixed.)

2) Charge with grease

・For replenishment, be sure to charge the tank with grease through ① Supply Port by the use of filling pump.

・When charging the empty tank with grease, remove ② Air Vent Plug and release the air entrapped underneath ③ Follower Plate.

3) Start-up of operation

・Loosen ④ Air Vent Valve and operate the pump until grease free from bubbles has come out of the pump.

・Operated the pump to deliver grease so that the air and foreign matter contained in the pipe will be removed from the end of piping.

4) Where the pump pressure in ⑤ Pressure gauge will not increase

・Loosen ④ Air Vent Valve and remove air.

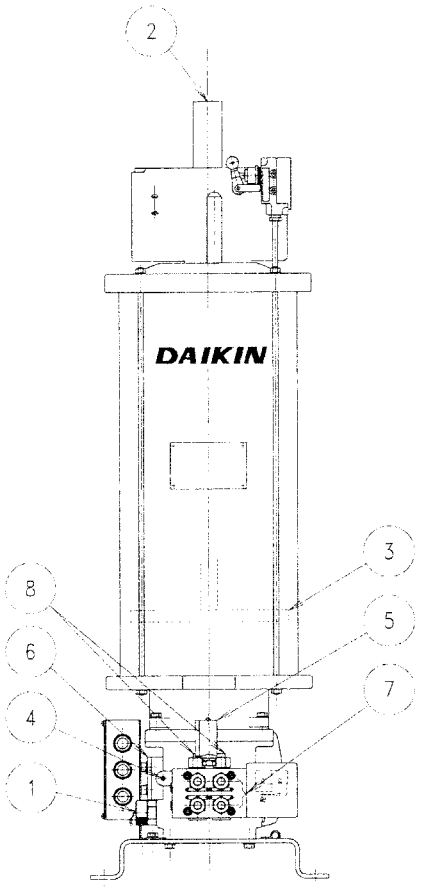
・If the pressure will not increase even after the removal of air, take off ⑥ Cover and take out the check packing for inspection and cleaning.

・Check ⑦ piping connection has no problem.

・Check piping for leak, and repair, if leak is located.

・Adjust the switching pressure by ⑧ Switching Pressure Adjusting Screw.

・When adjusting switching pressure, loosen the lock nut and rotate the ⑧ Adjusting Screw right turn, thus the switching pressure being increased. On that time adjust equaly to both side of right and left. After adjustment, tighten the lock nut completely.



5. Maintenance & Adjustment

Where there are troubles such as failure in pressure increase, reduction in discharge volume, and so on, that are considered to be attributed to the wear of pump cylinder set during the long-time operation, replace the cylinder set in accordance with the following procedure.

1) First remove ① Drain Plug of pump housing to drain the grease contained in the tank and then dismount the geared motor and tank unit from the pump unit.
(A compression spring is incorporated inside the tank. Be sure to drain off the grease before dismounting the tank.)

2) Next take off ② Cover from the side face of the pump after loosening 4 pieces of ③ Hexagon Socket Head Bolt and then take out ④ O-Ring and ⑤ Check Packing.

3) Pull out ⑥ Pump Cylinder from the housing while rapping the end face of the cylinder lightly from the interior of the housing.

4) After removing ⑦ E-shaped Retaining Ring, pull out ⑧ Connecting Pin from ⑨ Connecting Rod and then remove ⑩ Piston.

5) Set a new piston to the connecting rod and fix the pump cylinder to the housing while inserting the piston into the pump cylinder.

6) After setting the check packing and cover, make sure that ⑪ Drive Shaft is rotated lightly by hand and then mount the geared motor and tank unit.

7) After replacing the cylinder set, be sure to loosen ⑫ Air Vent Valve of the pump and operate the pump to conduct air venting until grease free from bubbles has come out of the valve.