

SINGLE LINE LUBRICATION SYSTEMS

KSP-215-216-AC

INSTRUCTION MANUAL

KOWA CORPORATION

2007.11.19

PRECAUTIONS OF SAFETY

Before the installation, operation, maintenance and inspection, read carefully this instruction manual and other accompanying documents for correct service.

Familiarize with the knowledge of equipment. Information of safety and all of cautionary instructions for service.

The precautions of safety are given to each equipment by using safety mark.

The precautions of safety is shown in each equipment of the centralized lubricating system by using safety mark

Particular attention should be called to the places where these safety marks are given.

The safety marks are divided into "WARNING" and "CAUTION".



If mishandled: In case a dangerous situation may occur, it could result in death or serious injury.



If mishandled: In case a middle injury or light injury, and in case a physical damage may occur.

For the matter being mentioned in the CAUTION, it may result in an importance according to circumstances. The important content is given to all of safety mark, and obey it without fail.

This system provides the max. working pressure 9.8MPa(100kg/cm²).

When each equipment is disassembled and inspected, stop the operation of pump, and release the pressure to perform the operation as 0MPa(0kg/cm³).

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1. Composition and specification

(1) Composition

The pump comprises a pump proper, a motor, a gear head, and a tank. The power of the motor is transferred through the gear head to the eccentric cam provided on the shaft of the gear head to drive the plunger by the cam and to feed grease (oil) by pressure.

Suction and delivery operation of the grease (oil) filled in the tank at the upper part of the pump proper is performed by reciprocating motion of the plunger.

(2) Specification

形 式 Model	タンク容量 (cm^3) Reservoir capacity	吐 出 量 (cm^3/min) Discharge capacity	吐出圧力 (MPa) Discharge pressure	電 動 機 Motor	重 量 (kg) Weight
KSP-215AC 216	550	10/13 (50/60Hz)	9.8	AC100V 0.5A AC200V 0.25A 20W-4P-1 ϕ (30分定格) 30 min Continuous rating	3.0

※付属品：取付ボルト・ナット

M8X30L.....3本

Mounting bolts & nuts (Attachment)

※CG：グリースカートリッジ NLGI #1以下(5°C以上)

GREASE CARTRIDGE NLGI #1 (More than 5°C)

2. Installation of main pump

- (1) Select a proper place convenient for servicing.
- (2) Avoid places exposed to dust, heat or water.
- (3) Avoid vibrating places.
- (4) Install horizontally.

3. Types of installation method of Auto Greak Systems

(1) Following three types of installation may be applied to KSP-215,216.

A. Single end-of-line type Model No.1 (single measuring valve)

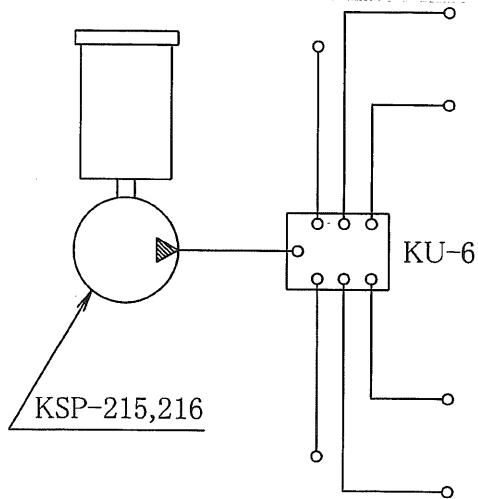


Figure 1

Main supply line is connecting pump discharge port and the inlet of KU type measuring valve.

Each discharge port of the measuring valve is directly connected to a lubricating point. Selection of KU type measuring valve depends on the number of lubricating points and required lubricating quantity. No delivery port shall be plugged. If there is any surplus of discharge port, it requires connection with another discharge port by using an auxiliary fitting. In this case, the delivery quantity is doubled.

B. Single end-of-line type Model No.2 (primary and secondary valves)

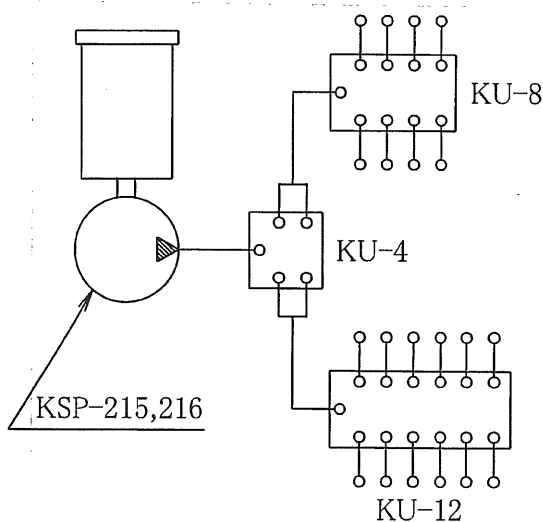


Figure 2

Main supply line is connecting pump discharge port and the inlet of the primary KU type measuring valve. Discharge ports of the primary KU valve are connected to the inlet of the secondary KU valves.

(2) Number of delivery ports and pipe length

Type of measuring valve	Max. delivery Port numbers		Max. main supply Line length	Delivery Amount /port
	Grease	Oil	Grease	
KU type	24	24	5~15M	0.3cc

Pipe fluid resistance changes with viscosity the grease to be used,

Make a plan to be able to operate by an average of 50% of the pump specification pressure.

(3) Some important points

1. For main supply line, bite-type fittings will facilitate installation.
2. Lubricating tubes (polyethylene tubes, flexible hoses, or pipes) : The length of lubricating tube, from the lubricating point to connecting measuring valve, is normally 3 meters or less. Depending on the viscosity of lubricant, it may be lengthened.

a. Polyethylene tubes :

Polyethylene tube or pipe must be inserted all the way into the discharge port of measuring valves. If this is not done correctly, it can cause a leakage. Fittings at the side of lubricating points need to be purchased separately. Polyethylene tube is flexible and has good water proof effect.

Allowable temperature variation : -20°C to +60°C

b. Flexible hoses:

Choose hose fitting, which can be applied for PF 1/8 outlet of measuring valves.

Allowable temperature variation: -20°C to +60°C

c. Pipes:

Pipes are to be used when the temperature of environment is expected to rise more than 60°C.

Use same sleeves and nuts as for polyethylene tubes above.

Note : If the back pressure of a lubricating point is higher than 7kg/cm², measuring valves may not work properly even if installation is properly done.

4. Trial run and adjustment

(1) Grease filling

Remove the cap of the grease feeding port on the pump proper and supply grease with a grease filling pump (KGP-420 for example). In filling grease, pay attention to the following points.

- 1) Be sure to supply clean grease at all times
- 2) Be sure to supply grease through the grease feeding inlet. If the top cover of the tank is opened to supply grease, air and dust are allowed inside, which can cause troubles.
- 3) Since property of grease differs depending on the kind, use the kind of grease suitable to the lubrication condition. Extreme-pressure grease of about 310 to 400 denseness (NLGI No. 1 to No. 0) shall be used for this pump.

(2) Oil filling

Open the top cover of the tank and supply oil through the filter.

In filling oil, pay close attention to the following points.

- 1) Supply clean oil to the tank at all times.
- 2) Be sure to keep the oil level between the upper and lower limits. (0.55 liter tank)

(3) Lubrication check

1) Turning direction of motor

Since the motor of this pump can be turned in either direction, there is no need to check the turning direction.

2) Air drawing

Loosen the air vent plug on the pump proper, make sure that the grease (oil) is free from any air bubble, then tighten the plug.

5. Trouble-shooting

Trouble	Cause	Point to check and counter-measure
Motor does not turn. (Malfunction of pump)	Trouble in electrical system	Check the electrical system and repair.
	Foreign matter is caught by plunger.	Repair or replace the pump.
Though motor turns, no grease (oil) comes out.	Tank is empty.	Supply grease (oil).
	Air is allowed inside.	Loosen air vent plug and operate pump until grease (oil) comes out.
	Foreign matter is caught by check valve of the pump.	Overhaul the check valve or replace the parts.
	Dust is caught by the relief valve.	Overhauling.
Distribution change-over valve and distribution valve do not operate.	Foreign matter is caught by inside piston.	Overhaul or replace the distribution change-over valve and the distribution valve.
	Air is trapped.	Loosen the joints at the outlet of the distribution change-over valve and the distribution valve, or loosen the air vent screw to discharge the air.
	Grease (oil) leakage in the middle of main pipe, or feed-oil pipe, or from joints, or the pipes or joints are broken.	Check the condition of each pipe and retighten the pipes and joints or replace.

SINGLE LINE LUBRICATION SYSTEMS

KSP-216-2L-LLS

INSTRUCTION MANUAL

KOWA CORPORATION

2019. 7. 9

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This system provides the max. working pressure 9.8MPa(100kg/cm²).

When each equipment is disassembled and inspected, stop the operation of pump, and release the pressure to perform the operation as 0MPa(0kg/cm²).

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1. Equipment overview

This lubrication system consists of an electric lubrication pump (KSP-216), a measuring valve (KU,KJ,KM) and piping.

The grease pumped by the operation of the pump is metered by the measuring valve and lubricated by the bearings. Whether the grease is completely refueled can be confirmed by the reciprocating motion of the measuring valve.

If the indicator rod reciprocates, it indicates that all refueling is complete.

2. Composition and specification

(1) Composition

This pump consists of a pump body, an AC motor and a tank. The power from the motor rotates the cam through the reduction gear and causes the plunger to reciprocate by the cam for suction and discharge. The oil tank provided at the top of the pump is filled with grease, and it is discharged by reciprocating the plunger.

(2) Specification

Model	Reservoir capacity (L)	Discharge capacity (cm ³ /min)	Discharge pressure (MPa)	Motor	Weight (kg)
KSP-216	2	10/13 (50/60Hz)	14.7	AC200V 0.25A 20W-4P-1 ϕ 30min Continuous rating	15

3. Types of installation method of Auto Greak Systems

Following types of installation may be applied to KSP-216.

3.1 Combination with KU type measuring valve

(1) Single end-of-line type Model No.1 (single measuring valve)

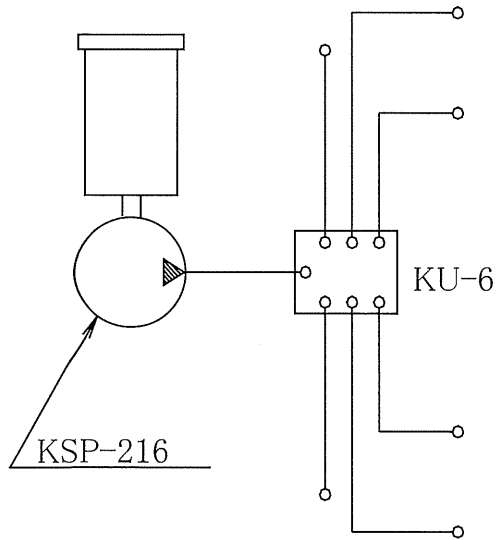


Figure 1

Main supply line is connecting pump discharge port and the inlet of KU type measuring valve.

Each discharge port of the measuring valve is directly connected to a lubricating point.

Selection of KU type measuring valve depends on the number of lubricating points and required lubricating quantity. No delivery port shall be plugged. If there is any surplus of discharge port, it requires connection with another discharge port by using an auxiliary fitting. In this case, the delivery quantity is doubled.

(2) Single end-of-line type Model No.2 (primary and secondary valves)

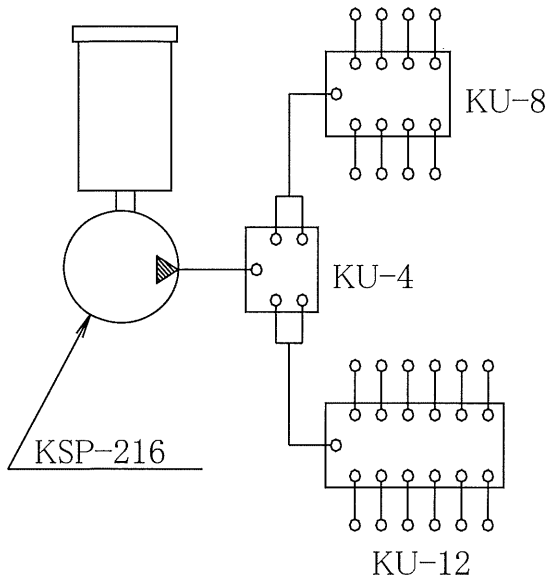


Figure 2

Main supply line is connecting pump discharge port and the inlet of the primary KU type measuring valve. Discharge ports of the primary KU valve are connected to the inlet of the secondary KU valves.

3.2 Combination with KJ, KM, KL type measuring valve

Single-line measuring valves (KL, KM, KJ) are made of rigid steel, and one or two M-blocks with a dispensing function are I blocks (blocks containing lubricant) and E We have a sandwich structure in the block (final block). M blocks with outlets can be combined arbitrarily from a minimum of three to a maximum of eight, and the number of outlets can be set by selecting the number of blocks. The combination of these blocks uses packing with excellent sealing performance. Each discharge port has a check valve to prevent backflow. This type of measuring valve is combined to plan the discharge amount and the number of discharge ports of each discharge port, so it is made to order.

(1) Single end-of-line type (single measuring valve)

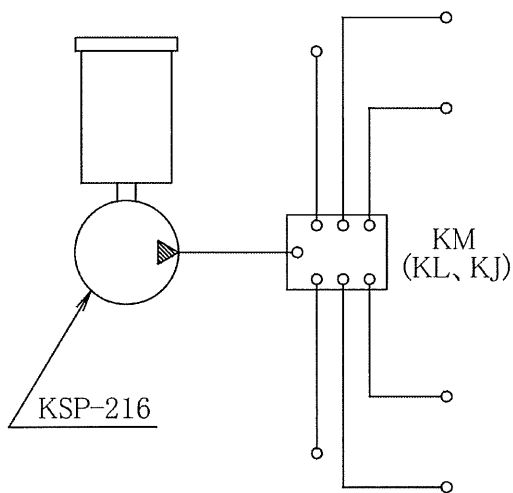


Figure 1

In this method, one KM (KL, KJ) measuring valve is connected to the main pipe from the oil pump. KM (KL, KJ) measuring valves are available with 1 to 16 outlets. You can choose according to the number of refueling points.

In addition, please do not close the outlet by all means. Please plan not to generate unnecessary ports.

(2) Single end-of-line type (primary and secondary valves)

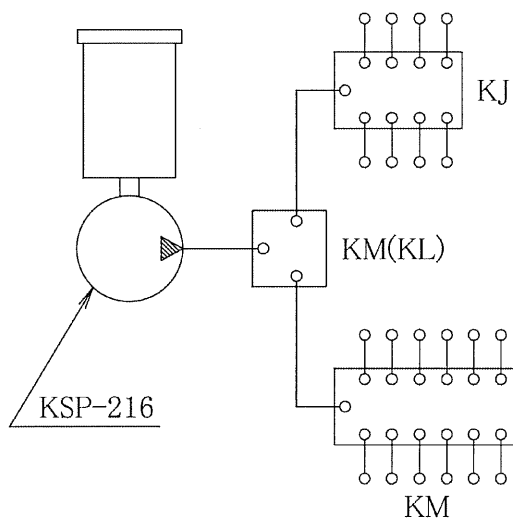


Figure 2

In this method, the main pipe from the feed pump is connected to the KL (or KM) measuring valve (primary), and the branch pipe is connected to the KM (or KJ, KL) measuring valve (secondary).

Although measuring valve types (KL, KM, KJ) are not assumed for the primary measuring valve or the secondary measuring valve, in general, a large volume for the primary measuring valve and a small volume measuring valve for the secondary measuring valve are used. You

4. Installation and piping

(1) Main unit installation

- ① Select a proper place convenient for servicing.
- ② Avoid places exposed to dust, heat or water.
- ③ Avoid vibrating places.
- ④ Install horizontally.

(2) Number of delivery ports and pipe length

Type of measuring valve	Max. delivery Port numbers		Max. main supply Line length	Delivery Amount /port
	Grease	Oil	Grease	
KU type	24	24	5~15m	0.3 cm ³
KL · KM · KJ type	24	24	5~20m	By combination

The piping resistance will change depending on the viscosity of the grease used, so plan to operate at an average of 50% of the maximum pump discharge pressure.

(3) Some important points

1. For main supply line, bite-type fittings will facilitate installation.
2. Lubricating tubes (polyethylene tubes, flexible hoses, or pipes) : The length of lubricating tube, from the lubricating point to connecting measuring valve, is normally 3 meters or less. Depending on the viscosity of lubricant, it may be lengthened.

a. Polyethylene tubes :

Polyethylene tube or pipe must be inserted all the way into the discharge port of measuring valves. If this is not done correctly, it can cause a leakage. Fittings at the side of lubricating points need to be purchased separately. Polyethylene tube is flexible and has good water proof effect.

Allowable temperature variation : -20°C to +60°C

b. Flexible hoses:

Choose hose fitting, which can be applied for PF 1/8 outlet of measuring valves.

Allowable temperature variation: -20°C to +60°C

c. Pipes:

Pipes are to be used when the temperature of environment is expected to rise more than 60°C. Use same sleeves and nuts as for polyethylene tubes above.

Note : If the back pressure of a lubricating point is higher than 0.7MPa, measuring valves may not work properly even if installation is properly done.

5. Trial run and adjustment

(1) Grease filling

Remove the cap of the grease feeding port on the pump proper and supply grease with a grease filling pump (KGP-420 for example). In filling grease, pay attention to the following points.

- 1) Be sure to supply clean grease at all times
- 2) Be sure to supply grease through the grease feeding inlet. If the top cover of the tank is opened to supply grease, air and dust are allowed inside, which can cause troubles.
- 3) Since property of grease differs depending on the kind, use the kind of grease, suitable to the lubrication condition. Extreme-pressure grease of about 310 to 400 denseness (NLGI No.1 to No.0) shall be used for this pump.

(2) Lubrication check

1) Turning direction of motor

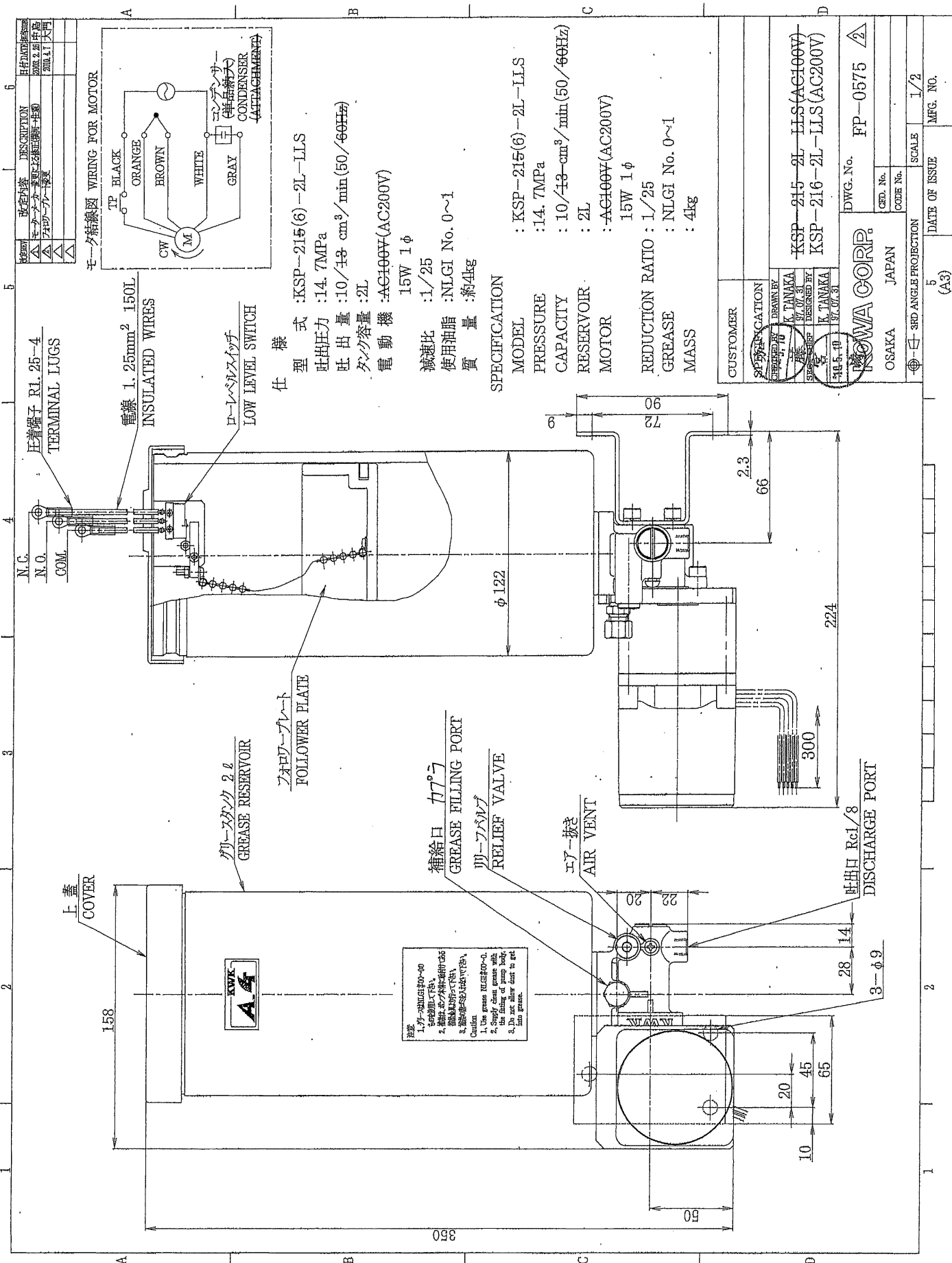
Since the motor of this pump can be turned in either direction, there is no need to check the turning direction.

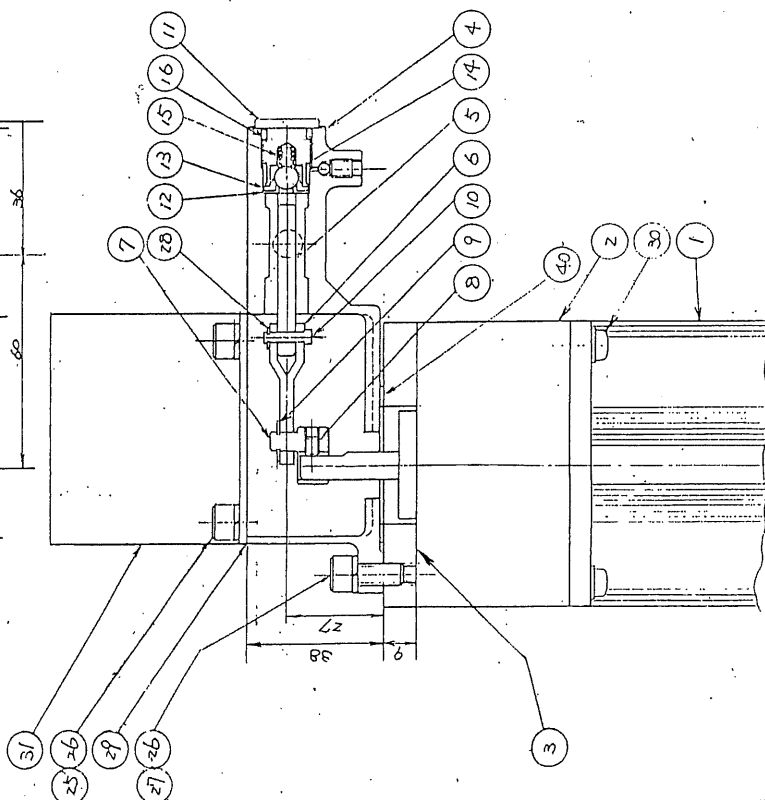
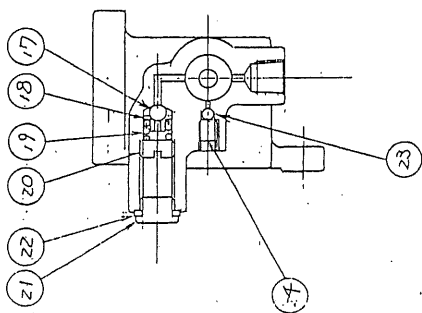
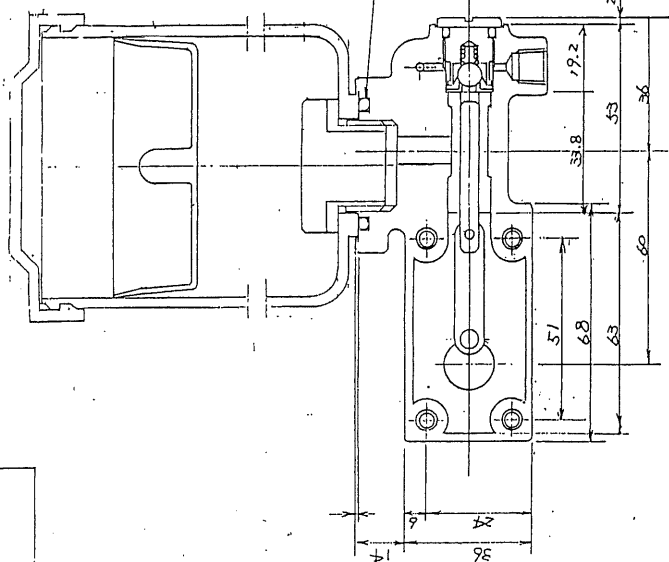
2) Air draining

Loosen the air vent plug on the pump proper, make sure that the grease is free from any air bubble, then tighten the plug.

6. Trouble-shooting

Trouble	Cause	Point to check and countermeasure
Motor does not turn. (Malfunction of pump)	Trouble in electrical system	Check the electrical system and repair.
	Foreign matter is caught by plunger.	Repair or replace the pump.
Though motor turns, no grease (oil) comes out.	Tank is empty.	Supply grease.
	Air is allowed inside.	Loosen the air vent plug and operate the pump until grease comes out.
	Foreign matter is caught by check valve of pump.	Overhaul the check valve or replace the parts.
	Dust is caught by the relief valve.	Overhauling.
Distribution change-over valve and distribution valve do not operate.	Foreign matter is caught by inside piston.	Overhaul or replace the distribution change-over valve and the distribution valve.
	Air is trapped.	Loosen the joints at the outlet of the distribution change-over valve and the distribution valve, or loosen the air vent screw to discharge the air.
	Grease (oil) leakage in the middle of main pipe, or feed-oil pipe, or from joints, or the pipes or joints are broken.	Check the condition of each pipe and retighten the pipes and joints or replace.





No	品名	数量	備考
42	花巻金具 千円ワ	1	CS-80054
41	銅管継手本体	1	CS-80053△
40	取付用 7x11-116x1	1	FP-005D
39	シート	3	H8 1種 270x141
38	取付ボルト	3	H8x20 1 270x141
37	取付板	1	
36			
35	Oリング	1	IAP32
34			
33			
32	ベース	1	CS-80057△ (CS8057)
31	大型取付ナットネジ	3	CS-80058△ (CS8058)
30	パッキン	1	H5x55x 270x141
29	7x11止め輪	1	H5x55x 270x141
28	六角取付ボルト	3	H6x14 1
27	スプリングナット	4	H6x10 1
26	六角取付ボルト	7	H5x70x141
25	六角取付止めネジ	1	H5x70x141
24	銅球	1	1/8 B
23	銅ワッシャー	1	CS-800081
22	取付ブラケット	1	CS-800081
21	調整ネジ	1	CS-800320
20	スプリングシート	1	CS-800321
19	銅球	1	3/16 B
18	スプリングシート	1	CS-800322
17	銅球	1	1/4 B
16	銅球	1	CS-800097
15	コイルスプリング	1	CS-800111
14	銅球	1	CS-800346
13	シートワッシャー	1	H5x55
12	大型取付ナットネジ	1	H4x67x151 1種
11	エッジ本体	1	CS-800344
10	平ワッシャー	1	CS-800111
9	六角取付止めネジ	1	CS-800346
8	六角取付止めネジ	1	H5x55
7	銅管	1	CS-800344
6	電線棒	1	CS-800345
5	プレート	1	CS-800343
4	本体	1	CS-800343△
3	取付ボルト	1	CS-800343△
2	減速機	1	FP-0051
1	圓筒機	1	
No	品名	数量	備考

CUSTOMER

SPECIFICATION

CHECKED BY: J. H. Suga
DATE: 11/15/84

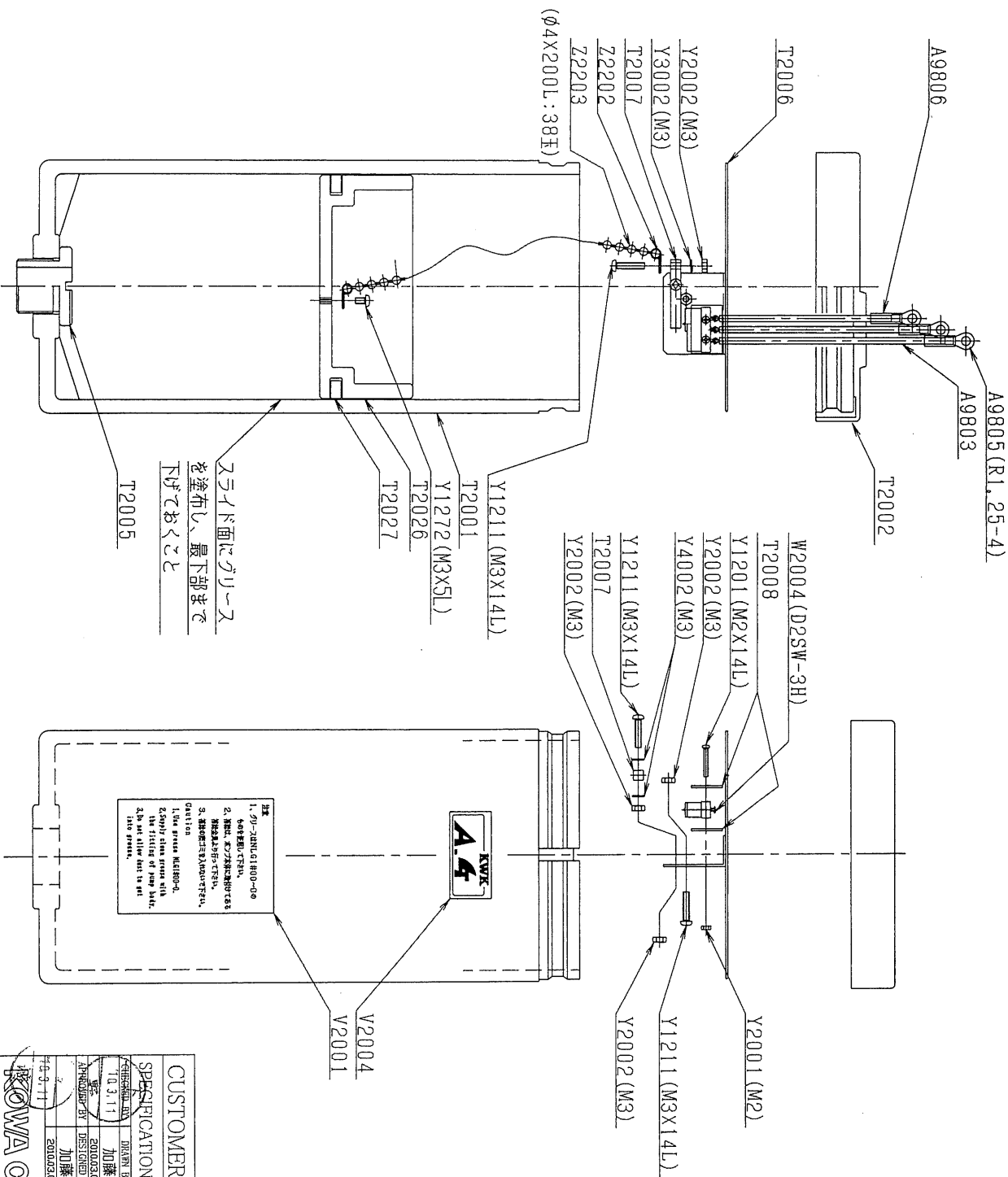
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金体組立図

DWG No.

KOWA CORP.
OSAKA JAPAN

記号	改定内容	DESCRIPTION	日付	担当者
△	1. 3D CAD 図面作成	1. 3D CAD 図面作成	2012.11.15	加藤
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DATE OF ISSUE		SCALE		MFG. No.		REV. No.		CODE No.		CIR. No.		DATE OF ISSUE	

5 (A3)