SINGLE LINE LUBRICATING SYSTEMS

MODEL KMPS

MANUAL OPERATED LUBRICATING PUMP

INSTRUCTION MANUAL

KWK KOWA CORPORATION

2007.11.19

INSTRUCTION MANUAL

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1. FEATURES OF SINGLE LINE LUBRICATING SYSTEM

As the composition of industrial machines and devices becomes more integral and intricated,lubrication control of higher order is to be demanded. SINGLE LINE integrated lubricating system is an automatic lubricating device for central lubrication of predetermined quantity of grease (or oil) to a number of lubricating points, deverloped to meet the requirement's for lubrication control of higher level. Since the required quantity of grease (oil) is supplied to the necessary points without any manual operation, the lubrication work can be rationalized while realizing save energy. Besides the effect of easier lubrication control,the system also serves to reduce the running cost.

(1) Simple lubrication is realized by one piping.
All the lubricating lines are constituted by one piping. This enables economical and simple lubrication control.

(2) Lubrication is reliable.
Lubrication control is accomplished by a progressive operation type over the entire line. If lubrication fails at any one point (the line is choked), it is immediately known, therefore, the lubrication to all the points is assured.

(3) A full range of system apparatus are available to make the system adaptable to various conditions.
It is possible to add functions such as setting of lubrication rates, automatic operation and checking of trouble in lubrication to your requirements.

(4) Component apparatus come in a comprehensive range of size and types.
The system can be made adaptable to ceatralized lubrication control for any small, middle and large scales.

(5) Planned lubrication can be reliably executed.
This system can execute the lubrication plans that match your operation plans exactly and reliably. For example, adjustment of lubrication rates, lubrication to remote places, lubrication to near places or adjustment and lubrication cycles.

2. STRUCTURE AND SPECIFICATIONS OF MANUAL TYPE LUBRICATING PUMP.

This manual, type grease pump is small sized and is handy since the operation is performed only by reciprocating the handle. This pump is advantageous for such uses of comparatively less frequent lubrication with less number of lubricating points. By using the pump of high pressure 210kg／cm² type (100kg／cm² type used oil), the piping can be smaller in diameter and harder lubricating condition can be met.The reservoir capacity is also available in three different types of 2 liters(for grease & oil) 3 liters (grease only) or 6 liters (grease only,) to be selected suitable for the quantity or grease used, and depending also on the installation space, lubrication frequency, and piping condition.

Only the tank of 2-liter capacity is transparent.

When this pump is applied to oil, the filter attached shall be used in place of the follower plate in the 2 liters reservoir.

3. FEATURES AND OPERATION OF MANUAL TYPE SINGLE LINE SYSTEMS

(1) When the pump handle is operated back and forth, the pinion built in the pump rotates and the plunger moves to the right or left.

(2) As the plunger moves to the right or left, one suction port opens and the rest are closed. Grease is sucked into the cylinder through the opened suction port.

(3) The grease sucked into the cylinder gradually increases its pressure as the plunger moves until it forces a check valve to open and runs through the open check valve into the port outlet, from which it is dclivered to the piping.

(4) The grease emerging from the pump is partly returned to the pump through the measuring valve.

(5) The grease returned to the pump pushes the pump cycle indicator stem to the outside. When the operator pushes the pump cycle indicator stem by hand, the grease returns through the internal check valve into the reservoir.

PUMP INDICATOR

This indicator functions as given below: when 3.2cc of grease returns to the return port, it makes the full stroke of indicator piston and it denotes the completion of lubrication.

Accordingly it shows that a predetermined amount of grease is fed by strokes of indicator piston.

In the case when the amount of lube is excessive, it brings the lubrication to completion by 2 - 3 strokes.

The lubrication is accomplished with the indicator piston come out. However,then, It is not capable of weighing the grease which returned to the pump.

When the operation of lubrication is completed, push back the pump indicator by hand.

PUMP RELIEF

Pump relief is incorporated in KMPS type manual lubricating pump.

For example, when it provides the choked state owing to the bearing etc., the handle operation becomes heavy and the pressure in the piping rises. Furthermore, if the handle is forcibly moved, it causes any trouble.

Hence, when the discharge pressure in excess of a definite pressure is made, it is so designed as to release the grease.

The set pressure of pump relief is as follows:

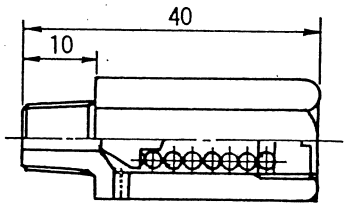
KMPS-121L · · · · · · · · · · · · · · 100kg／cm²(used oil)

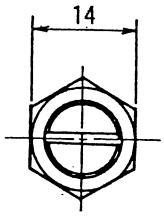
KMPS-221,231,261 · · · · · · · · · · 210kg／cm²

4. AUTO RELIEF & BLOCK INDICATOR

1) Auto Relief

The auto relief is used by screwing it into the spare discharge port of each measuring valve. When the discharge line is clogged or choked, the pressure rises abnormally and this forces the valve to open so that the lubricant stroked by the measuring valve is discharged to the outside and the clogged point is indicated. The clogged point can thus be identified without stopping the measuring valve. The auto relief is used for various kinds of safety measures.



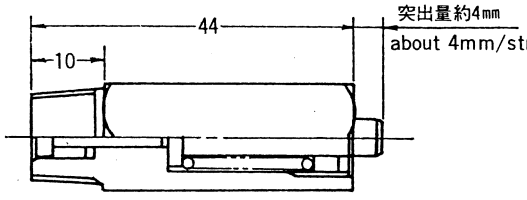


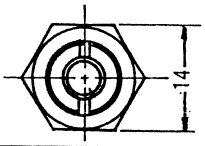
Model	Screw size	Pressure kg／cm²	Spring Color
R 1/8-5	R 1／8	50	Green
R 1/8-7		70	Blue
R 1/8-9		90	Yellow
R 1/8-15		150	Silver
R 1/8-18		180	Gold

Model	Screw size	Pressure kg／cm²	Spring Color
R 1/4-5	R 1／4	50	Green
R 1/4-7		70	Blue
R 1/4-9		90	Yellow
R 1/4-15		150	Silver
R 1/4-18		180	Gold

2) Block Indicator

The block indicator is screwed into each spare discharge port of the measuring valve. When the discharge line is clogged or choked and the pressure in the discharge part rises abnormally, the indicator pin pops to the outside.
This enables to locate the point in the system where the clogging occuured.
This adds reliability to the lubrication control.





Model	Screw size	Plessure kg／cm²	Color
B 1/8-3	R 1／8	30	White
B 1/8-5		50	Red
B 1/8-7		70	Orange
B 1/8-9		90	Brown
B 1/8-15		150	Black
B 1/8-18		180	No color

Model	Screw size	Plessure kg／cm²	Color
B 1/4-3	R 1／4	30	White
B 1/4-5		50	Red
B 1/4-7		70	Orange
B 1/4-9		90	Brown
B 1/4-15		150	Black
B 1/4-18		180	No color

※ It is also possible to attach a switch.

5. CAUTIONARY INSTRUCTION FOR MAINTENANCE

(1) Before operating the pump, please check the oil level in the reservoir. Refrain from operating the pump if the follower rod indication is below the minimum oil level. If the reservoir is empty, replenish grease by using a filling pump (a grease pack). Strictly refrain from opening the upper lid of the pump to supply grease by grabbing with the fingers, for example, as air and dust are allowed inside.

(2) For newly installed lubricating device, make sure, before operation, that grease is filled to all the pipes (main pipes, branch pipes, and greasing pipes) and the air is drawn completely.
The air mixed in the piping causes such troubles as exceptionally larger number of times of pump handle operation and unstable operation of the measuring valves.

(3) For this lubricating device, use a centralized lubricating grease of about 310 to 400 fluidity (NLGI#1 to #0).
Use of low fluidity grease increases flow resistance in the piping preventing smooth operation. Since the property of grease differs depending on each kind, adequate grease to the condition of lubrication shall be selected.

(4) Periodically check the piping for no breakage or no slackening.

6. TROUBLE SHOOTING

Trouble	Condition	Cause	Counter-measures
Pressure does not increase	Pump handle does not resist at all.	(1) Air is allowed in the reservoir and sucking of grease fails.	(1) Replace the grease with the one of the specified fluidity. (2) Push down the follower plate on the top and operate the pump handle at the same time. At this time, keep the air vent of the pump loose and keep operating the pump handle until grease comes out of the air vent.
		(2) Suction inlet of the plunger is loaded with foreign substance preventing grease suction.	(1) Draw out the grease in the reservoir for cleaning.
		(3) There is no grease in the reservoir. (The follower rod is lowered.)	(1) With a filling pump, replenish grease to the specified level.
	Number of times of pump handle operation is excep-tionally large.	(1) Leakage or breakage of piping.	(1) Repair or replace.
		(2) Malfunction of check valve of the pump. (Clogging of dust on the valve seat)	(1) Disassemble for cleaning or replace if damaged.
		(3) Air is allowed in the piping (main pipe).	(1) Remove the plug at the end of the piping to draw out the air. (Including the branch)
	Others	(1) Defective pressure gauge.	(1) Repair or replace the pressure gauge.
		(2) Interference of pinion gear of the pump with plunger.	(1) Disassemble for repair or replace.

Trouble	Condtion	Cause	Couter-measures
Pressure increases but measuring valve does not operate.	Pump handle is unusually heavy or can not be moved	(1) Blocking of piping (main pipe) (Broken or loaded with foreign) substance	(1) Repair the pipe or clean the inside, or replace the section.
		(2) Blocking of oil passage in the pump. (Grease does not come out of the pump outlet.)	(1) Disassemble for cleaning.
		(3) Piping is too long or pipe diameter is too small.	(1) Increase the number of units of pump suitably to the performance range (if the piping is too long). (2) Replace the pipe to suitable size or use grease of higher fluidity (if the pipe diameter is too small).
		(4) Viscosity of grease is too high.	(1) Change the grease to the one with specified fluidity.
		(5) Defective measuring valve.	(1) Disassemble for repair or replace.

7. CAUTIONARY INSTRUCTIONS FOR PIPING WORK

(1) Install the pump at a place of easy operation and avoid heat, dust, rain, etc. as much as possible.
In a place where the atmosphere affects the pump, attach the protective cover to the pump. Install the pump vertically as far as possible.
Also attach the measuring valves to the positions easy to inspect.

(2) Before proceeding to piping work, clean inside by full flushing to eliminate any residual rags, chips and other foreign substances.
Foreign substances can cause malfunction of respective units of the lubricating device and also cause wear and damage of bearing to be lubricated.

(3) Install measuring valve in a smooth surface so as not to be distorted by fastening bolt.

(4) A tie bolt of measuring valve is fixed by uniform strength. Therefore, donot handle it carelessy.

(5) Since lubricant is transfered by high pressure in this lubricating device, piping materials for high pressure (normally 100 kg/cm² or 210 kg/cm² for the main and branch pipes and normally 30kg/cm² for the oil feed pipe). Use of pipes for low-pressure application is hazardous not to mention breakage of the pipes.

8. SINGLE LINE MEASURING VALVE DISASSEMBLY, REASSEMBLY

When the malfunction of measuring valve occurs owing to the foreign matter, remove the foreign matter by the disassembly and cleaing of measuring valve.
In case of the disassembly and reassembly, take care of the following:

(1) Basic matter

1) The measuring valve is precisely manufactured and therefore care must be taken to prevent the piston and piston hole from causing damage.
2) Prior to disassembly, make the memorandum of the positions of arrangement, piping connection port, plug with the actual measuring valve watched. For reassembly, care must be paid not to mistake.
3) Select a clean working place. In case of the incorporation, care must be taken to prevent the foreign matter from entering.
4) The torque wrench service is required.
5) The packing which once used is not capable of employing. Hence prepare new packing. (Place an order with us or our agent.)
6) Washing oil (light oil) service is required.

(2) Measuning valve operation check.

1) Remove the hexagon socket washer head plug.
2) Depress the piston using a small round bar, and ensure that it moves smoothly, and then find the inoperative piston.
3) If there is inoperative piston, depress it from the opposite side, and it may take out easily.
4) Since the fitting of piston and piston hole is made precisely, care must be exercised not to cause the burr in the piston and the hole.
5) Since the piston must be incorporated in the original body without fall, provide the marking so that it can known thereby whether it is the piston of any piston of any body.
6) When the piston is sticking due to foregin substance into the mesuring valve, be sure to exchange the measuring valve with new one.

(3) Disassembly, Reassemdly of Measuring Valve Boby.

Each block of measuring valve is connected by tie bolts (KJ-type; 2 pcs ,KM-type; KL-type; 4 pcs). If these blocks are loosened, each block separates. The block is sometimes adhered by the packing, and then strike by the plastic hammer to separate.

Reasesembly:

1) Incorporate the body in the tie bolts. Then, perform as per the first incorporation so as to mistake the order.
2) New packing is employed for packing.
3) Clamping torque of tie bolt.
   Careless tightening of tie bolt results in inoperativeness. Surely tighten diagonally by the torgue wrench, and gradually tighten up to the clamping torque.

KL-type measuring valve	600 kgcm
KM-type measuring valve	300 kgcm
KJ-type measuring valve	160 kgcm

(4) Inspection

Upon the completion of all operation, connect to the grease gun and actually feed the grease, and then make sure that the measuring valve is securely actuated.
If the actuation is made within 15kg／cm², it is normal.

改定REV	改定内容 DESCRIPTION	日付DATE	担当SIGN
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2	フォロワープレート変更。	H22.5.18	大門
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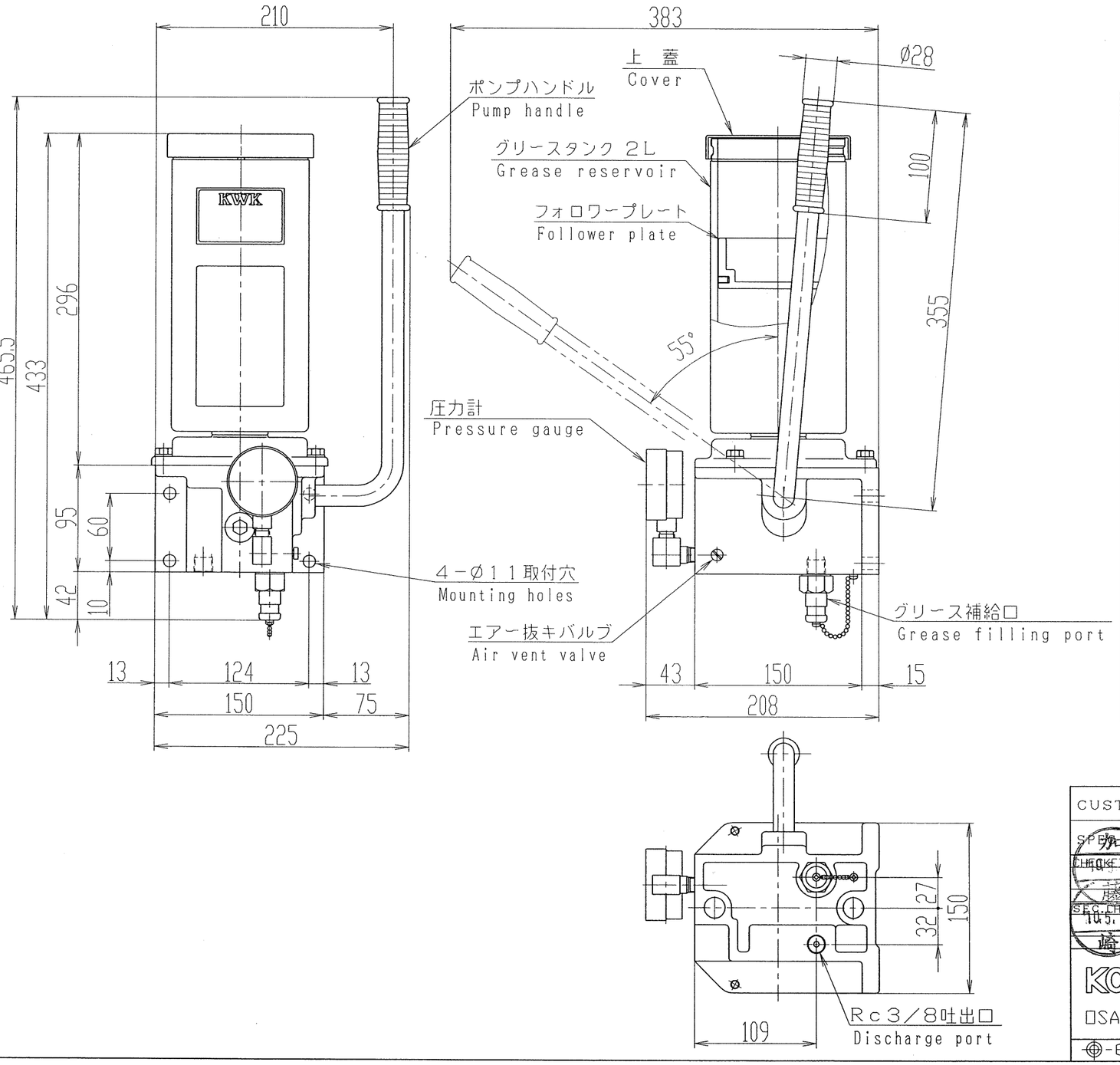

仕 様 Specification

形 式 Model	KMPS-221
タンク容量 Reservoir capacity	2 lit.
吐 出 量 Discharge capacity (Max)	4.5cm³/stroke
吐出圧力 Discharge pressure (Max)	20.6MPa
取付ボルト。ナット（付属） Mounting bolts & nuts	M10X40L 4sets (Attachment)
標準塗装色 Standard body color	マンセル記号 (Munsell) 2.5G6/2
質 量 Mass	16 kg

CUSTOMER		
SPECIFICATION		
CHECKED BY 藤 10.5.18	DRAWN BY YUKIE.M 96.2.28	KMPS-221手動式給油ポンプ HAND-OPERATED LUBRICATING PUMP
SEC. CHIEF 崎	DESIGNED BY K.TANAKA 96.2.28	
KOWA CORP. OSAKA JAPAN		DWG. No. KMPS-221 △2
		CFD. No.
		CODE No.
3RD ANGLE PROJECTION		SCALE 1/4

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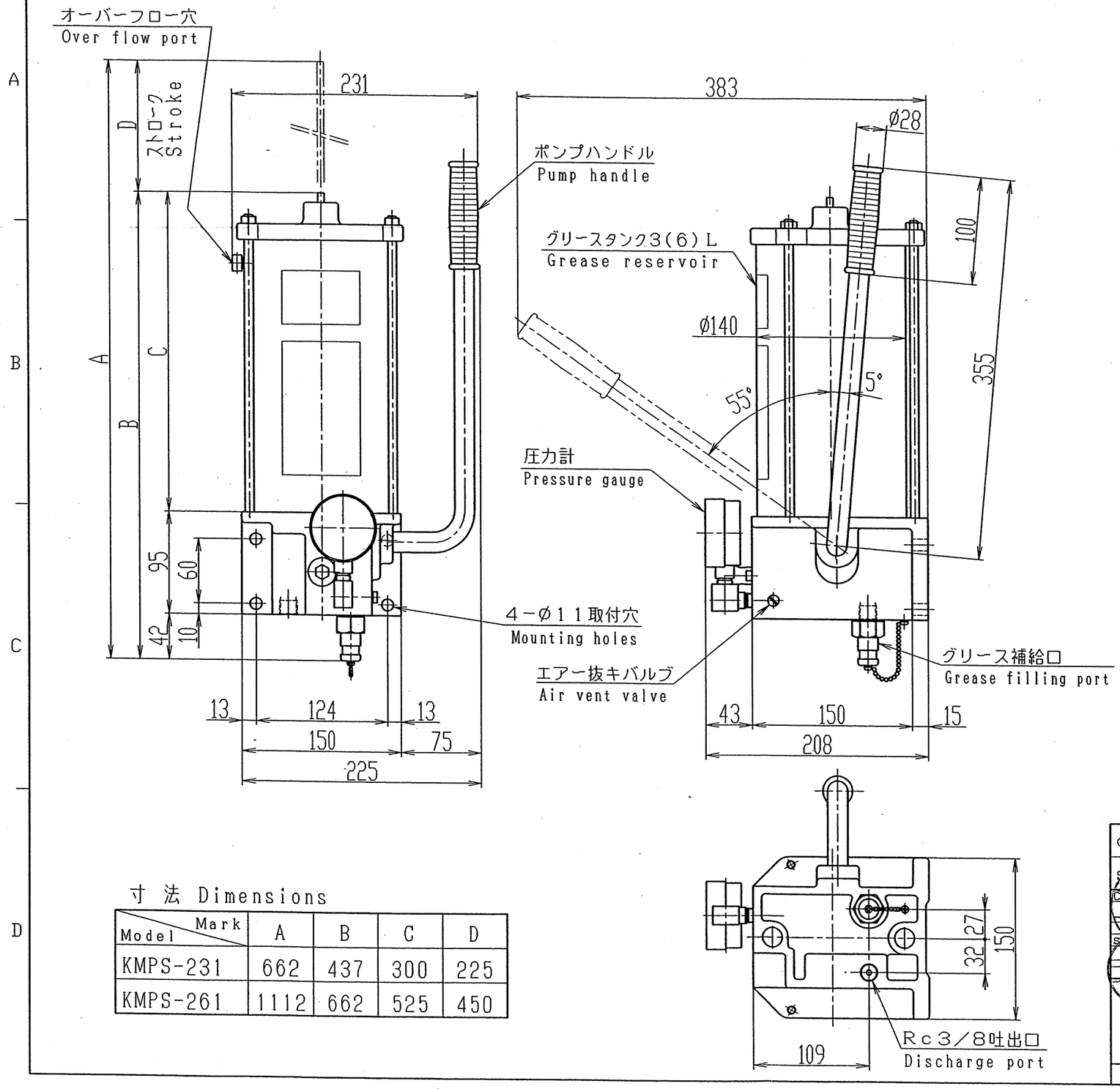


寸 法 Dimensions

Model \ Mark	A	B	C	D
KMPS-231	662	437	300	225
KMPS-261	1112	662	525	450

仕 様 Specification

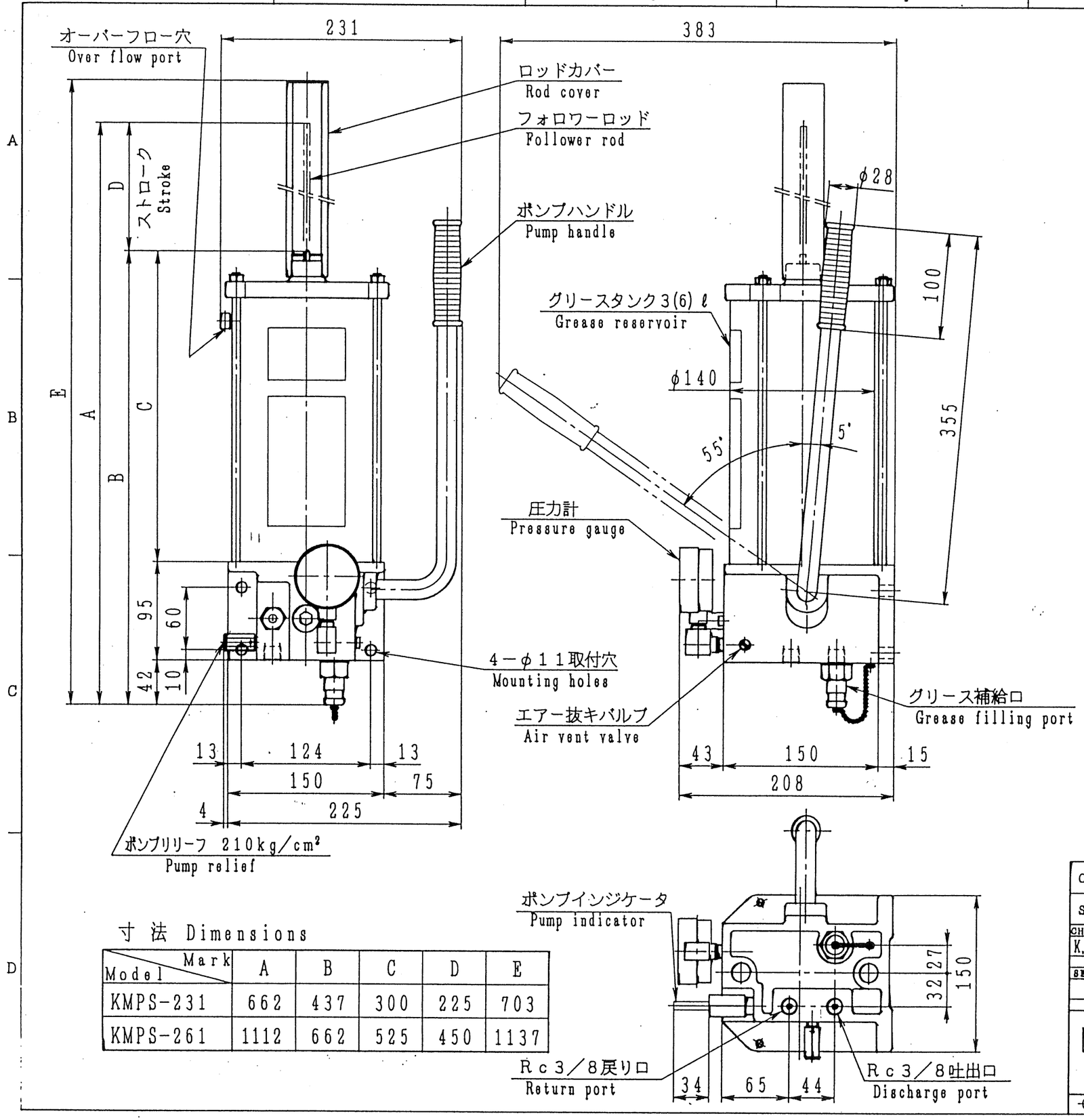
形 式 Model	KMPS-231	KMPS-261
タンク容量 Reservoir capacity	3 lit.	6 lit.
吐 出 量 Discharge capacity (Max)	4.5cm³/stroke	
吐出圧力 Discharge pressure (Max)	20.6MPa	
取付ボルト・ナット(付属) Mounting bolts & nuts	M10X40L 4sets (Attachment)	
標準塗装色 Standard body color	マンセル記号 (Munsell) 2.5G6/2	
質 量 Mass	20 kg	23 kg

CUSTOMER	
SPECIFICATION	
CHECKED BY 14.4.08	DRAWN BY K. TANAKA
SECT. CHIEF 02.4.09	DESIGNED BY K. TANAKA

手動式給油ポンプ
HAND-OPERATED LUBRICATING PUMP
KMPS-231、KMPS-261

KOWA CORP.
OSAKA JAPAN

DWG. No. KMPS-231 ⚠1
CFD. No.
CODE No.
3RD ANGLE PROJECTION
SCALE 1/4



改定内容 DESCRIPTION	DATE

仕 様 Specification

形 式 Model	KMPS-231-WP	KMPS-261-WP
タンク容量 Reservoir capacity	3 lit.	6 lit.
吐 出 量 Discharge capacity (Max)	4.5cc/stroke	
吐出圧力 Discharge pressure (Max)	210kg/cm²	
取付ボルト・ナット（付属） Mounting bolts & nuts	M10×40L 4sets (Attachment)	
標準塗装色 Standard body color	マンセル記号 (Munsell) 2.5G6/2	
重 量 Weight	20 kg	23 kg

寸 法 Dimensions

Model \ Mark	A	B	C	D	E
KMPS-231	662	437	300	225	703
KMPS-261	1112	662	525	450	1137

CUSTOMER	
SPECIFICATION	
CHECKED BY: K. TANAKA / DRAWN BY:	KMPS-WP 手動式給油ポンプ HAND-OPERATED LUBRICATING PUMP
SEC. CHIEF / DESIGNED BY:	
KOWA CORP. OSAKA JAPAN	DWG. No. KMPS-231WP△
3RD ANGLE PROJECTION	CFD. No. / CODE No. / SCALE 1/4

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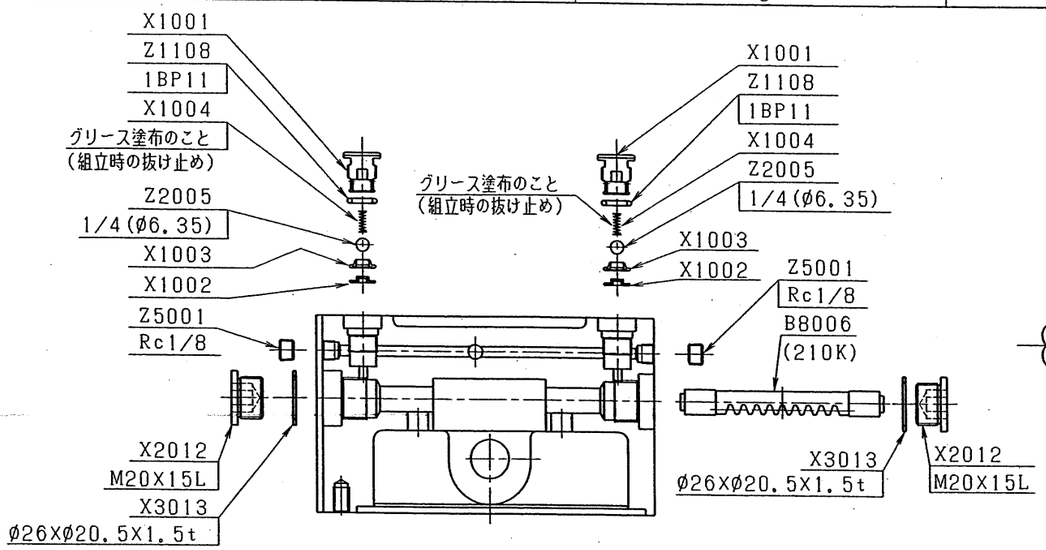

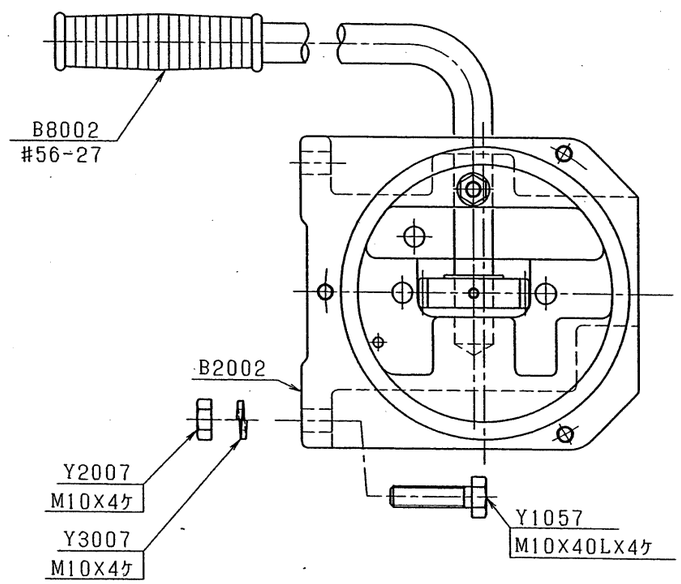

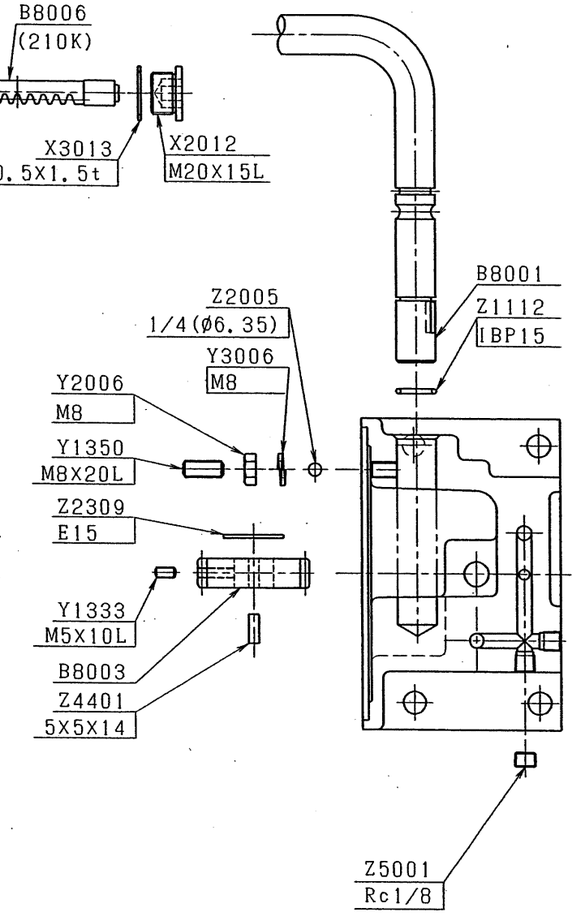

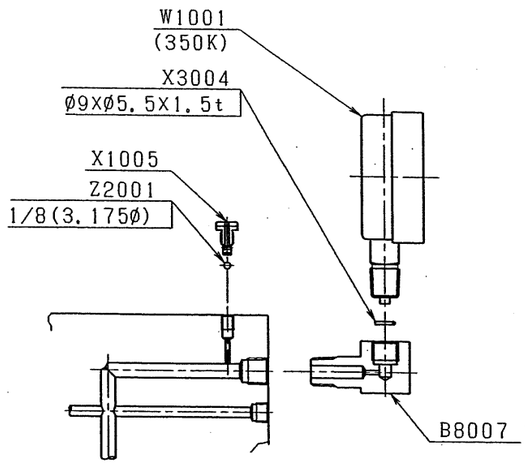

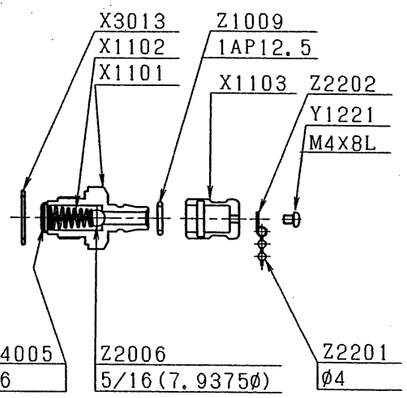

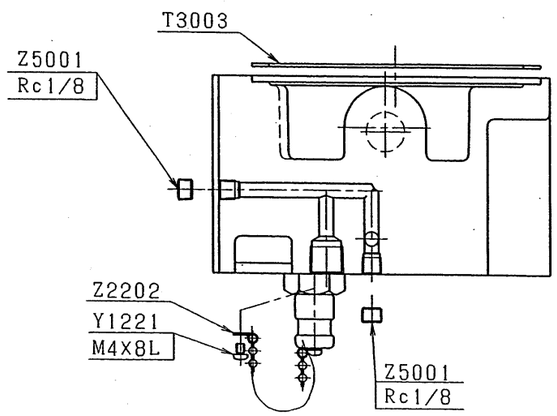

CUSTOMER	
SPECIFICATION	

CHECKED BY	DRAWN BY
下野 2002.3.4	A.F
SEC. CHIEF	DESIGNED BY
宮 2.3.4	K.TANAKA '93.2.28

KMPSポンプ(210K)
分 解 図

KOWA CORP.
OSAKA JAPAN

DWG. No. KMPS2 1

CFD. No.

CODE No.

3RD ANGLE PROJECTION

SCALE

改定REV	改定内容 DESCRIPTION	日付 DATE	担当 SIGN
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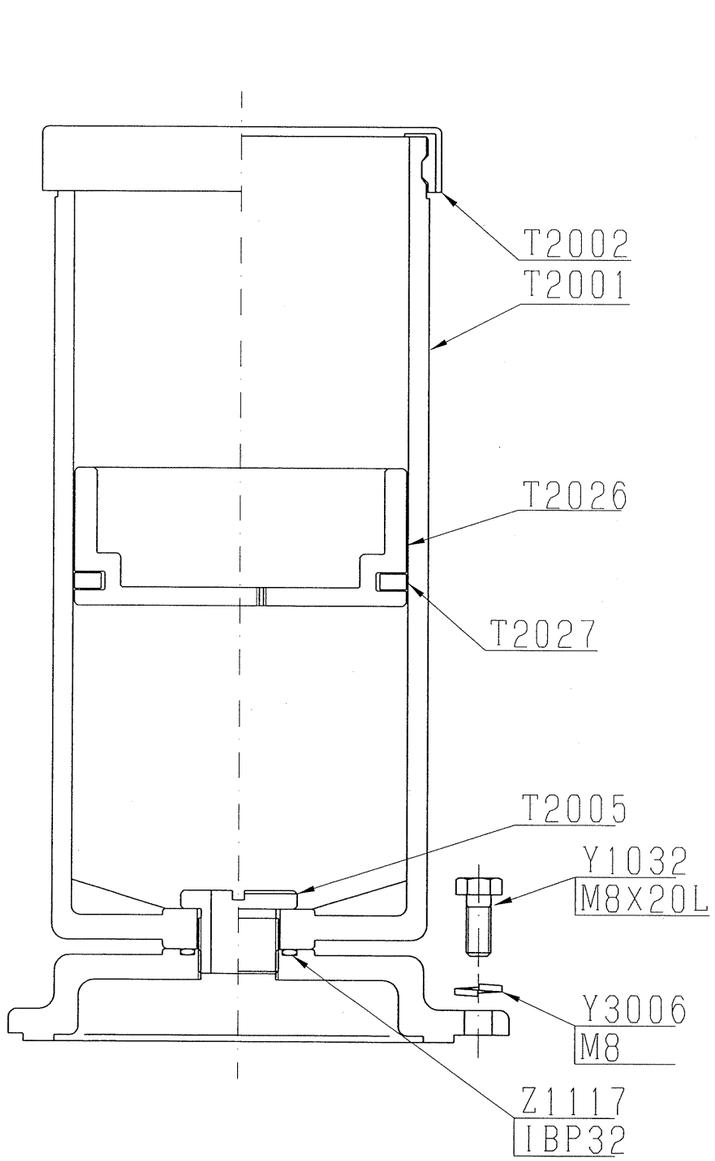

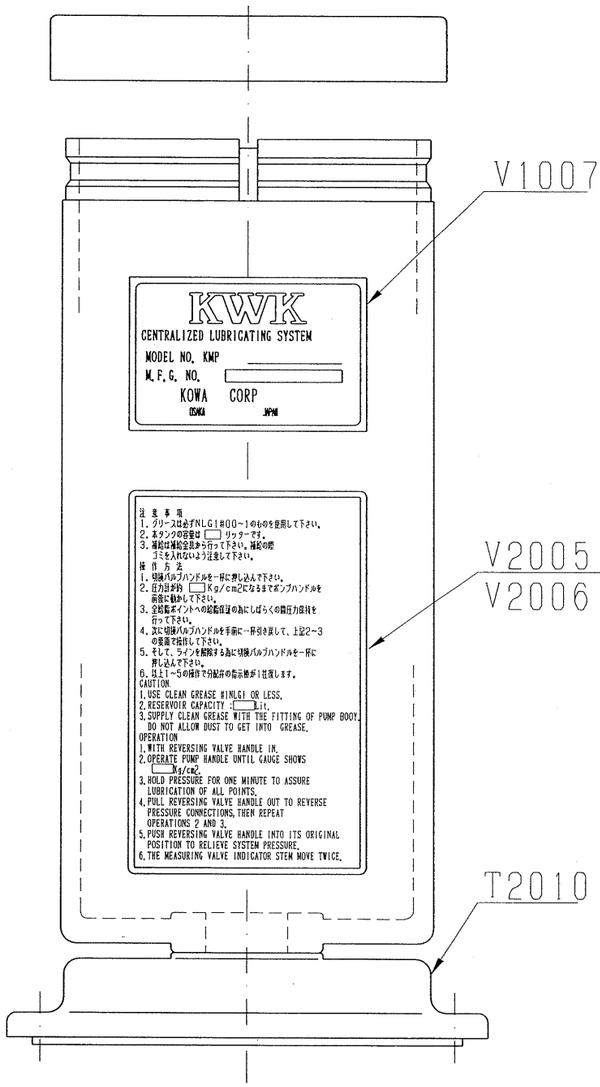

CUSTOMER	
SPECIFICATION	
APPROVED '10.5.25	CHECKED 藤
DRAWN BY A.F '93.2.28	DESIGNED BY K.TANAKA '93.2.28

KMP(S)-221
2litグリースタンク

KOWA CORP.
OSAKA JAPAN

DWG. No. KMP2L △1

CFD. No.

CODENo.

3RD ANGLE PROJECTION | SCALE 1/2

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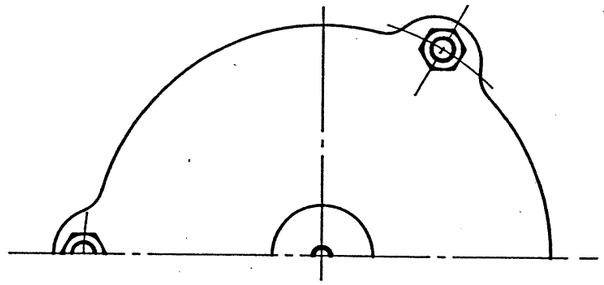

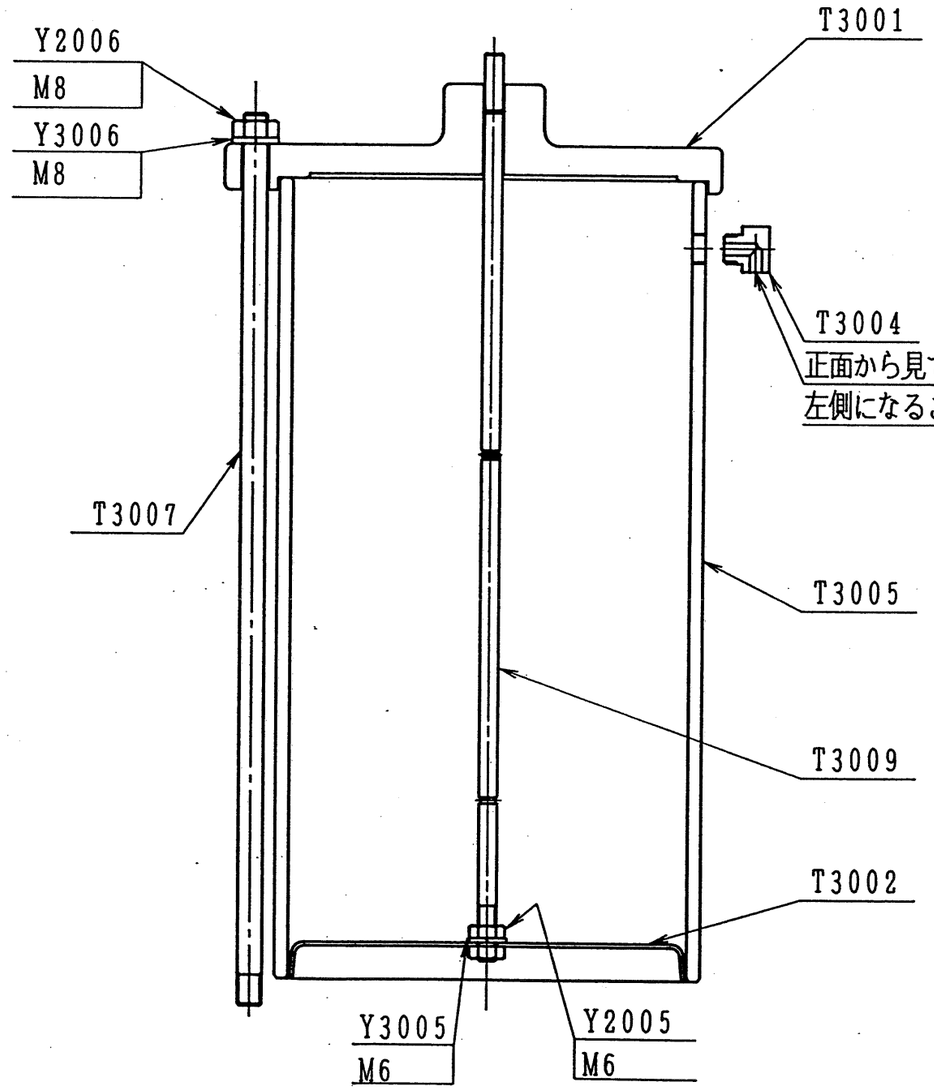

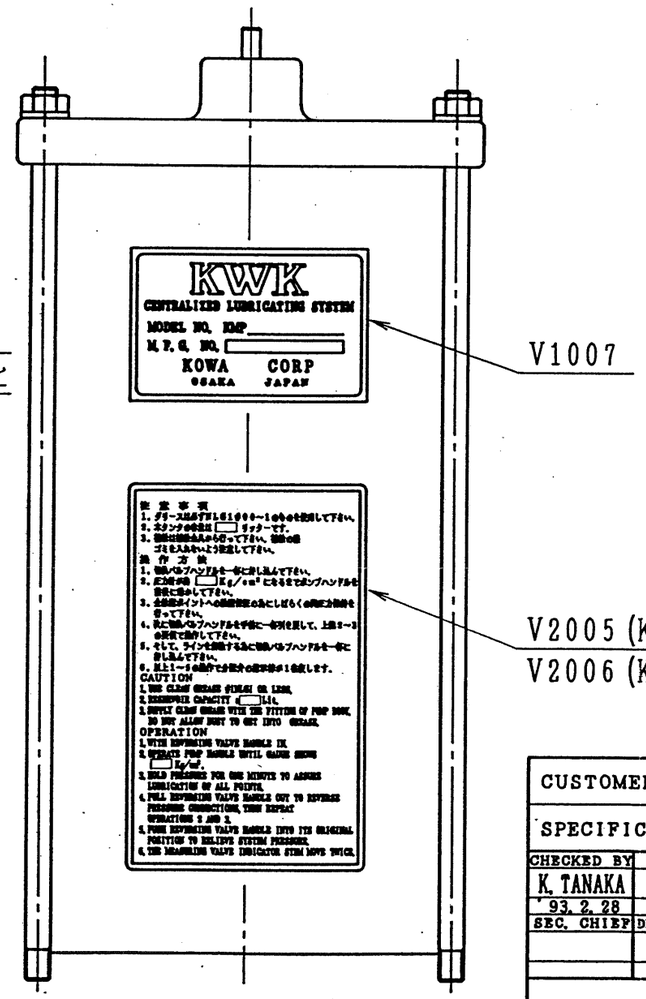

CUSTOMER	
SPECIFICATION	

CHECKED BY	DRAWN BY
K. TANAKA	A. F
'93. 2. 28	
SEC. CHIEF	DESIGNED BY

KMP (S) −3ℓタンク
標準図

KOWA CORP.
OSAKA JAPAN

DWG. No. KMP3L △

CFD. No.

CODE No.

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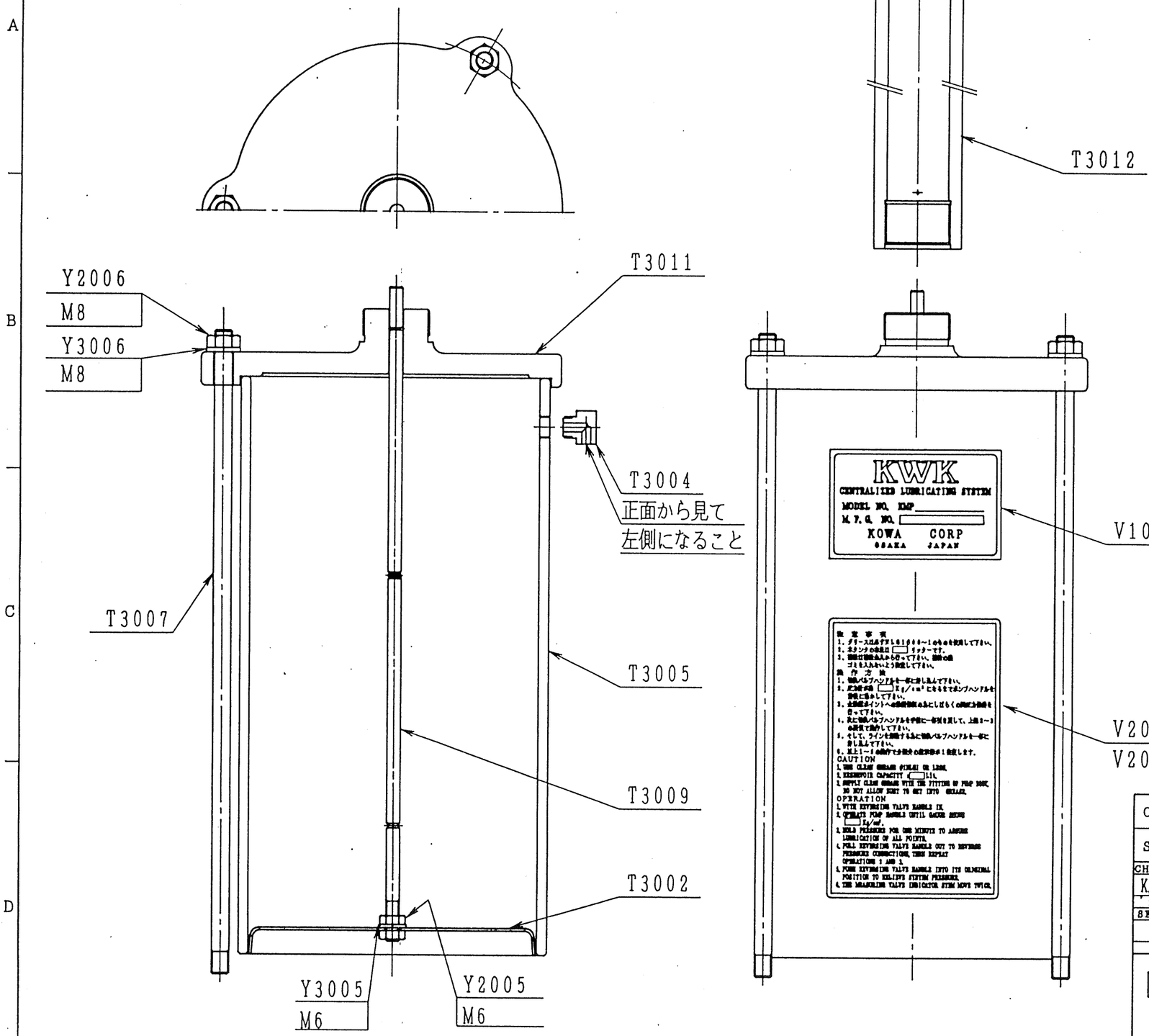

CUSTOMER	
SPECIFICATION	

CHECKED BY	DRAWN BY
K. TANAKA	A. F
'93. 2. 28	
SEC. CHIEF	DESIGNED BY

KMP (S) −3ℓタンク 標準図

KOWA CORP.
OSAKA JAPAN

DWG. No. KMP3LW △

CFD. No.

CODE No.

3RD ANGLE PROJECTION | SCALE 2/1

改定内容 DESCRIPTION	DATE	REVISION

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Y3006 M8
Y2006 M8
T3001
T3002
T3010
T3006
T3004
正面から見て
左側になること

V2005 (KMP)
V2006 (KMPS)
V1007

CUSTOMER	
SPECIFICATION	

CHECKED BY	DRAWN BY
K. TANAKA	A. F
'93. 2. 28	
SEC. CHIEF	DESIGNED BY

KMP (S) −6ℓタンク 標準図

KOWA CORP.
OSAKA JAPAN

DWG. No. KMP6L △

CFD. No.

CODE No.

3RD ANGLE PROJECTION | SCALE 2/1