

Dear
Dear

PAPER MACHINE • DRYPART

OIL FLOW

FLOW METER

Instruction Manual

Our Code Number :

APPROVAL	STAMP	CONTACT



KOWA CORPORATION
TEL. 0790-27-1315 FAX. 0790-27-1314

Safety Precautions

- Before installation, operation and inspection of repair, please read this Instruction Manual so that you can use our products properly.

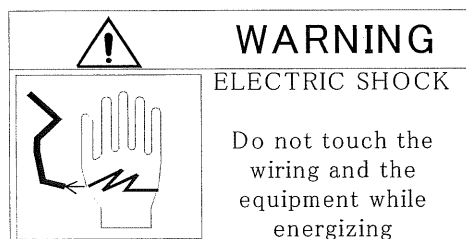
Also please use products after you get knowledge of products, safety information and precautions.

This Lubricating System shows safety information as a safety sign on equipment.

Please handle them with care especially these parts tagged a safety sign.

Mainly, there are two types of safety sign, "Warning" and "Caution". In addition, there are several equal signs.

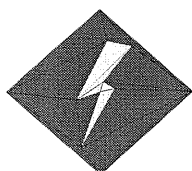
Every sign shows important information, therefore please keep information



ELECTRIC SHOCK

Do not touch the equipment and the wiring while driving .

It is likely to die when handling is mistaken .



ELECTRIC SHOCK

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It is likely to die when handling is mistaken .



When handling mistaken, it becomes important injury or a serious damage only accident.

Instruction for proper use

1. Keep a sensor panel away from water.
It may cause malfunction.
Moreover, it may cause a fire and other serious accidents.
2. Sensor Panel
Do not operate a product with wet hands.
It may cause electric shock.
3. Sensor Panel (Sensor monitor)
Do not open a door during turning on electricity.
When you need to operate or do other things, only qualified people can do.
Also do not touch a terminal and other parts during operation.
It may cause electric shock.
4. Wiring Work
When you install jumping wires and wiring work at sensor disuse area, you should check if you already turn off the power source.
It may cause electric shock.
5. A flowmeter is caught in a glass tube sometime because of extraneous matter or dirt. Please clean the rod for the cone setting up (or for cleaning) by moving top and bottom.
Please refer the Instruction Manual for Oil Flow Flow Meter "1 - 2 (4)"
When you adjust a flow rate with an adjust valve and other things, a float moves up and down. If a float does not move, it is highly possible that a float may be caught by extraneous matter, therefore be careful.

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Rating Curve	KOF-10	KOF-10/SPS	KOF-10U	KOF-15
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Without Sensor Type

	KOF-10	KOF-10/SPS	KOF-10U	KOF-15
Outline	e-FA-0837	e-FA-0837SPS-R2	e-KOF-10U	e-FA-0839
An assembly Drawing	e-FA-0835-R7	e-SA-KOF10-SPS	e-SA-KOF10U	e-FA-0836-R5

With Sensor Type

	KOF-A-10	KOF-A-10/SPS	KOF-A-10U	KOF-A-15
Outline	e-FA-0838	e-FA-0838SPS-R2	e-KOF-A-10U	e-FA-0840-R1
An assembly Drawing	a common drawing with No Sensor Type			

Spare Parts

	KOF-10	KOF-10/SPS	KOF-10U	KOF-15
KIT-1	e-KOF10-KIT1-R1	e-KOF10-SPS-KIT1	e-KOF10U-KIT1	e-KOF15-KIT1-R1
KIT-2	e-KOF10-KIT2-R1			e-KOF15-KIT2-R1
KIT-3	e-KOF10-KIT3-R1		e-KOF10U-KIT3	e-KOF15-KIT3-R1
KIT-4	e-KOF10-KIT4-R1			e-KOF15-KIT4
KIT-5	e-KOF1015-KIT5			

1. Specification

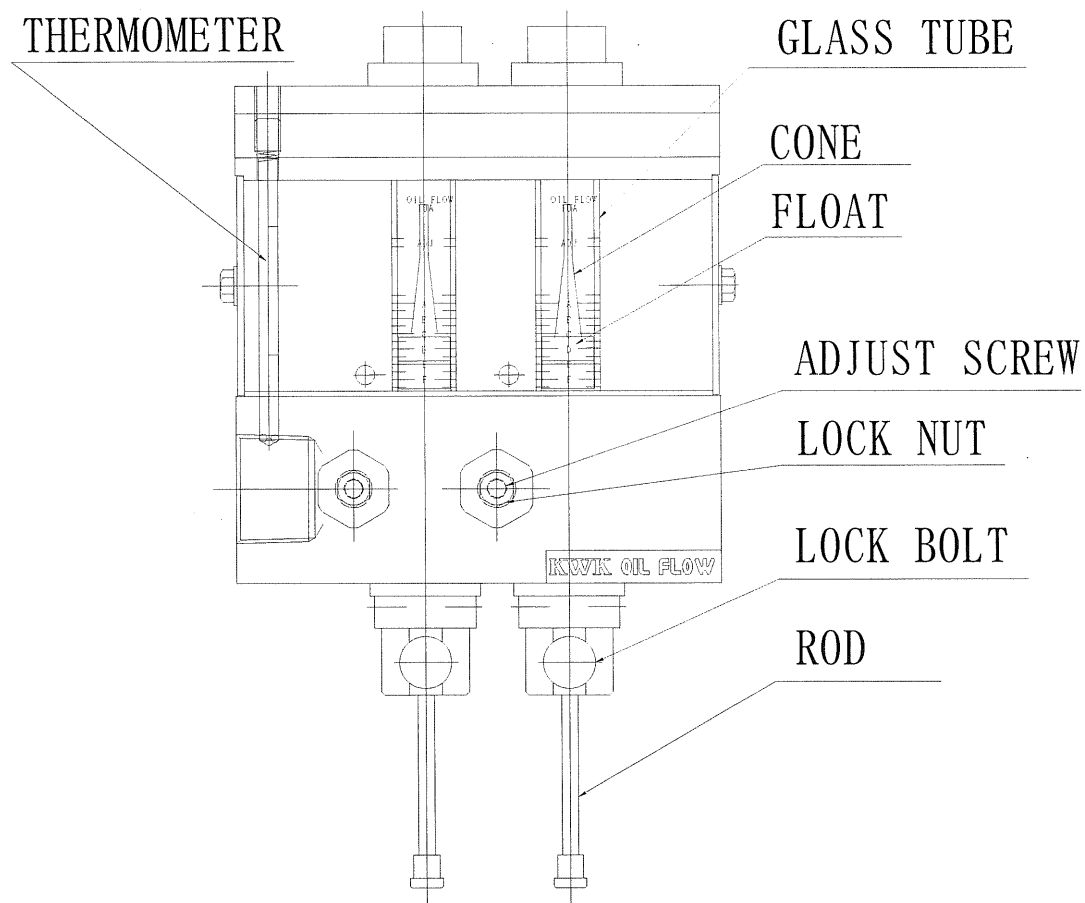
As to specifications and other information for each part, please refer the instruction or drawings.

For Oil Flow, using come mechanism makes it possible to measure any temperature, viscosity of oil and pressure correctly.

Depend on range of setting flow rate, there are four types of flow meter and you can coexist different flow rating flow meter in a body. Therefore you can change a size for each flow meter by exchanging parts.

1. 1 Structure and Overall

- (1) Structure of Oil Flow is put flow meter from 1pc to 10pc just beside each other on a common body.
- (2) Composition parts for each flow meter are below.
 - Glass Tube (the heatproof glass)
 - Cone (set flow rate, clean inside glass)
 - Float (check flow rate)
 - Adjust Valve (set flow rate)
 - Alarm Sensor (check a decline of flow rate) : Option. Also you can add later.



1. 2 Operation Outline

(1) Outline

When you open an adjust valve, oil runs to glass tube. Oil which is set at each flow meter goes out from each exit and supply each bearing with oil. In addition, as a characteristic of adjust screws is that a hole which oil flows is in a fan shape. Therefore it is less dust or other extraneous material adheres to these crews than to general needles.

Setting flow rate should be done for each flow meter.

As to a way to set flow rate, please refer "2, Setting Flow Rate".

(2) A way to fasten

Put the head of bolt into a hall for installation which is on the back of body, and fasten it with nuts on bracket of angles.

(3) An entrance and exit for oil

Entrance : There are on the under back of the body and side, however usually the back one is used.

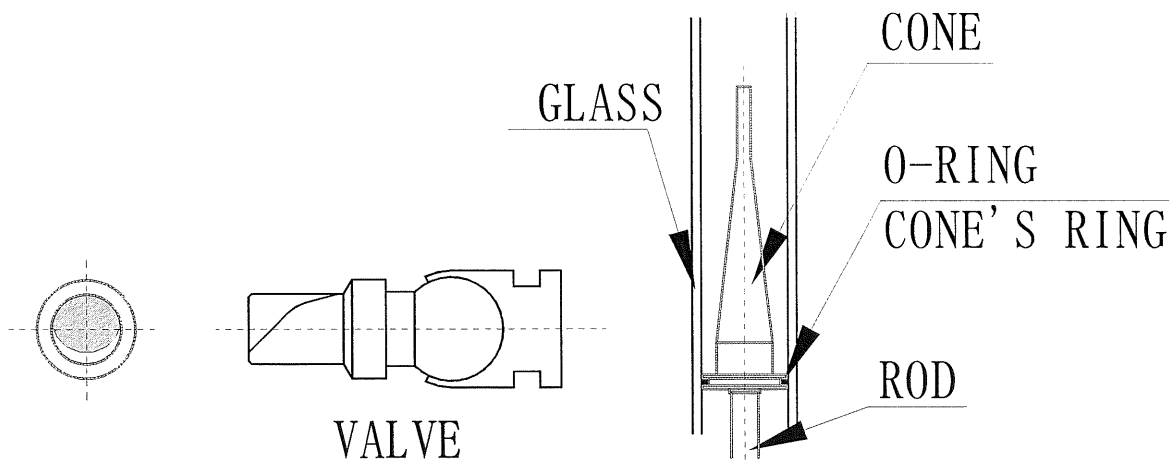
Exit : At an upper part of a back side of each glass tube.

(4) Cleaning of glass tubes

There is a ring at the bottom of a cone and it helps to clean dirt on a glass tube by moving top and bottom.

Notion

When oil is not running but a float does not go down, the float might stuck because of dirt, therefore please clean a glass tube or do a resolution check.



1. 3 Main Specification

(1) Range of use viscosity
75 ~ 460 cst

(2) Use Temperature
Max 70℃

(3) Use Pressure
Max. 1.0 MPa

(4) Set Position
The lowest position of a cone is below.
If you set under lower than below, flow rate does not become stable.

KOF-10U : B line or more
KOF-10-SPS : A line or more
KOF-10 : A line or more
KOF-15 : A line or more

(5) Range of Flow Rate (Please refer the retting curve)

KOF-10U	150 cSt	0.06 l/min~0.45 l/min
	220 cSt	0.042 l/min~0.285 l/min
KOF-10SPS	150 cSt	0.06 l/min~1.3 l/min
	220 cSt	0.04 l/min~0.7 l/min
KOF-10	150 cSt	0.14 l/min~2.1 l/min
	220 cSt	0.1 l/min~1.5 l/min
KOF-15	150 cSt	0.25 l/min~4.9 l/min
	220 cSt	0.16 l/min~3.7 l/min

You can change a size for each flow meter by exchanging parts.

(6) Piping ports

	For 1 Dic. port	For 2~10 Dic. ports
Supply Port	R c 1 / 2	R c 1
Discharge Port	R c 1 / 2	

(7) Dimensions

KOF-10U : KOF-10U
KOF-10/SPS : FA-0837SPS-R2
KOF-10 : FA-0837
KOF-15 : FA-0839

(8) Accessories (Option)

Alarm Sensor : Check a decline of flow rate with a proximity switch.

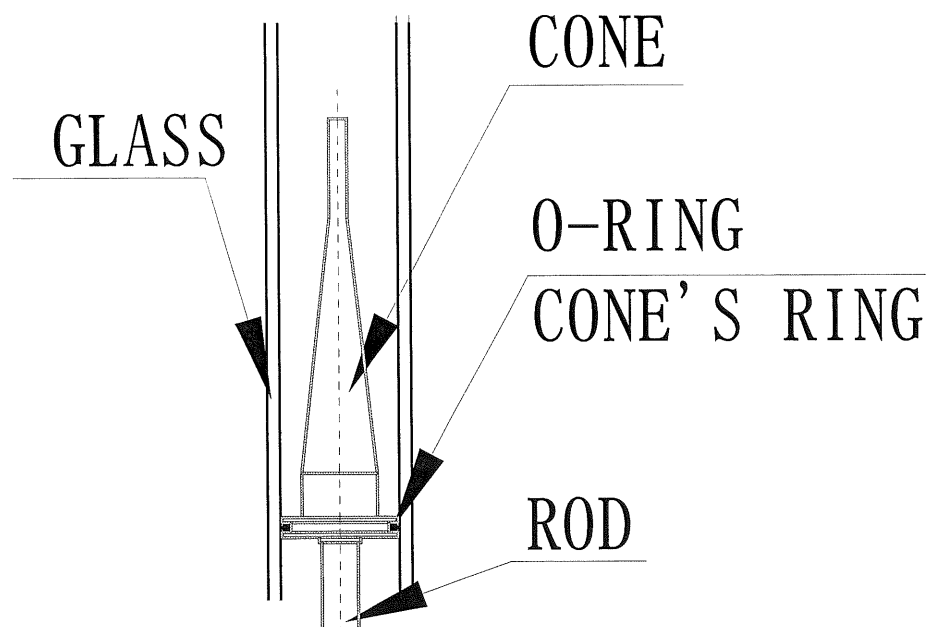
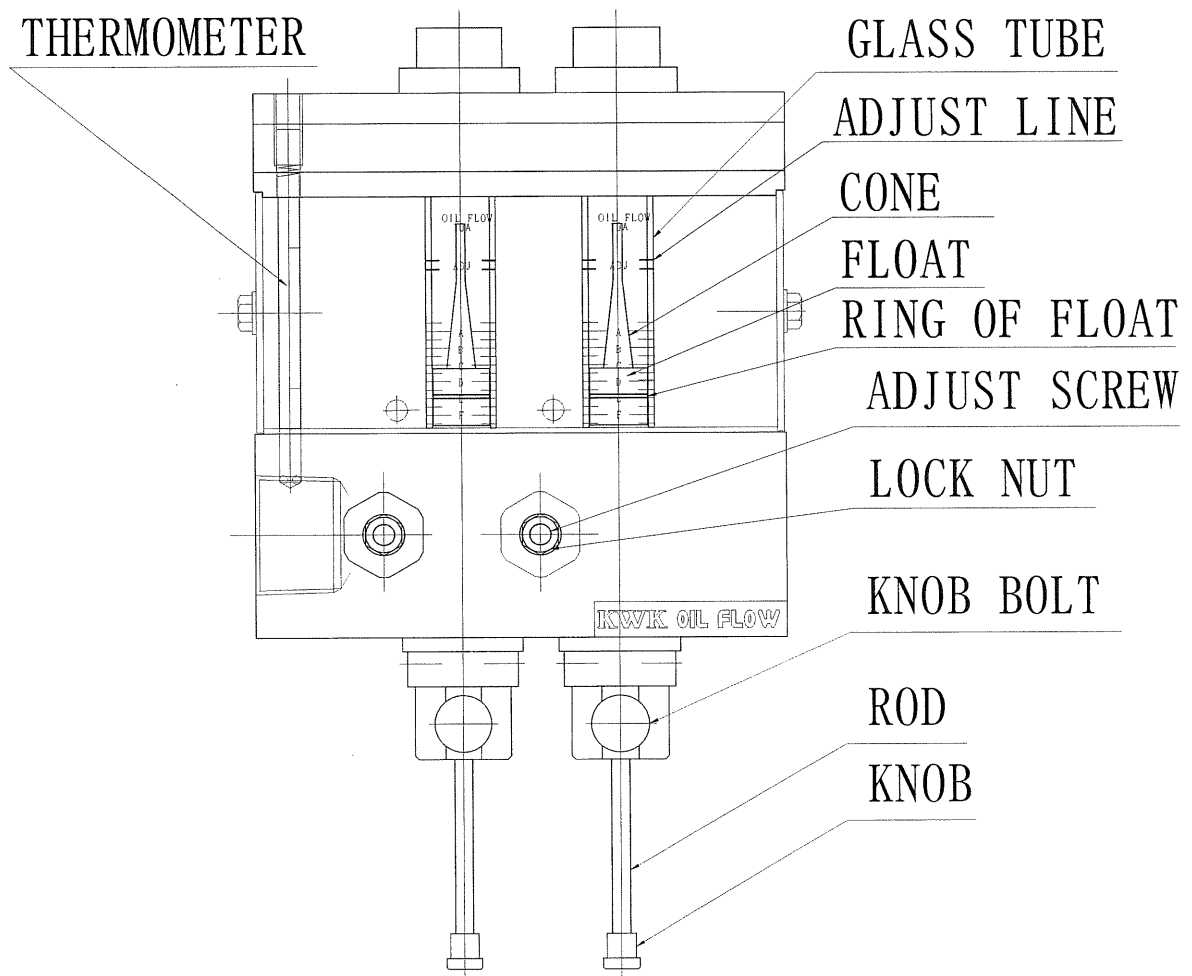
Sensor Panel : When this receives unusual signals from each sensor, it shows an unusual condition part and outputs a warning to a control of lubricating unit.

Notion: Please refer to the instruction manual for a flow sensor panel

2. Setting Flow Rate

A retting curve is based on requested flow rate, viscosity and use temperature.
Please check following things.

- 1, Pressure is proper before you adjust flow rate.
- 2, Carrying oil line included a flow meter is connected with a return piping.



- (1) Check a rating curve and choose a glass tube which matches your demand.
- (2) Loose knob bolts.
- (3) Move a rod (Cone setting) the top and bottom, and place the bottom of the cone's ring at the marked point.
- (4) Fasten knob bolts.
- (5) Do above from (1) to (4) process to every each oil flow.
- (6) Loose a lock nut of the adjust screw and operate the screw and open the valve. Then set the ring of the float on ADJ(adjust) line written on the top part of the glass tube.
- (7) One by one, operate process : (6) for other meter.
- (8) One by one, as you operate the adjust screw and open the valve, a position of the float which you set before may change, therefore some fine-tuning would be needed.
- (9) After fine-tuning and all float are set at ADJ line, fasten all lock nut of adjust screws.

Notion : Rating Curve

KOF-10U, KOF-10/SPS, KOF-10, KOF-15

3. Maintenance

We recommend you to inspect a flow meter at regular intervals.
Below are items that are to be inspected.

3. 1 Cleaning Glass Tube

You can clean a glass tube with a ring of the bottom of a cone by moving a cone setting-rod from the top to down.

If it is too dirty, please do a resolution check as a check of interior parts.

Also then you do a resolution check, you should not miss any parts.

Please refer the attached drawings.

3. 2 A Float Operation Check

When you close an entrance of an adjust screw or an oil flow, or when you stop the pump, float should be go down. Even if you just stop the pump, a float may not go down. (Oil inside a pipe flows)

In the case that the float does not go down, the float may be stuck because of dust or extraneous matter. Therefore move the cone from the top to the bottom, check if the float goes down.

3. 3 An Internal Parts Check

- (1) Remove oil and clean while checking whether there are any scratches.
- (2) Check whether following parts are contained. A float, a cone, an adjust valve and gasket etc. Please take every possible care for, especially, a glass tube, a gasket, a glass tube receiving and a spring receiving.
- (3) Replace damaged parts.

A drawing for spare parts is below

Reference drawing

Reference drawing

	KOF-10U	KOF-10/SPS	KOF-10	KOF-15
Assembly drawing	e-SA-KOF10U-R0	e-SA-KOF10-SPS-R0	e-FA-0835-R7	e-FA-0836-R5
KIT-1	e-KOF10U-KIT1-R0	e-KOF10-SPS-KIT1-R0	e-KOF10-KIT1-R1	e-KOF15-KIT1-R1
KIT-2	e-KOF10-KIT2-R1			e-KOF15-KIT2-R1
KIT-3	e-KOF10U-KIT3-R0	e-KOF10-KIT3-R1		e-KOF15-KIT3-R1
KIT-4	e-KOF10-KIT4-R1			e-KOF15-KIT4-R0
KIT-5	e-KOF1015-KIT5-R1			

You can take 「K I T - 2」 out if you take a cap off

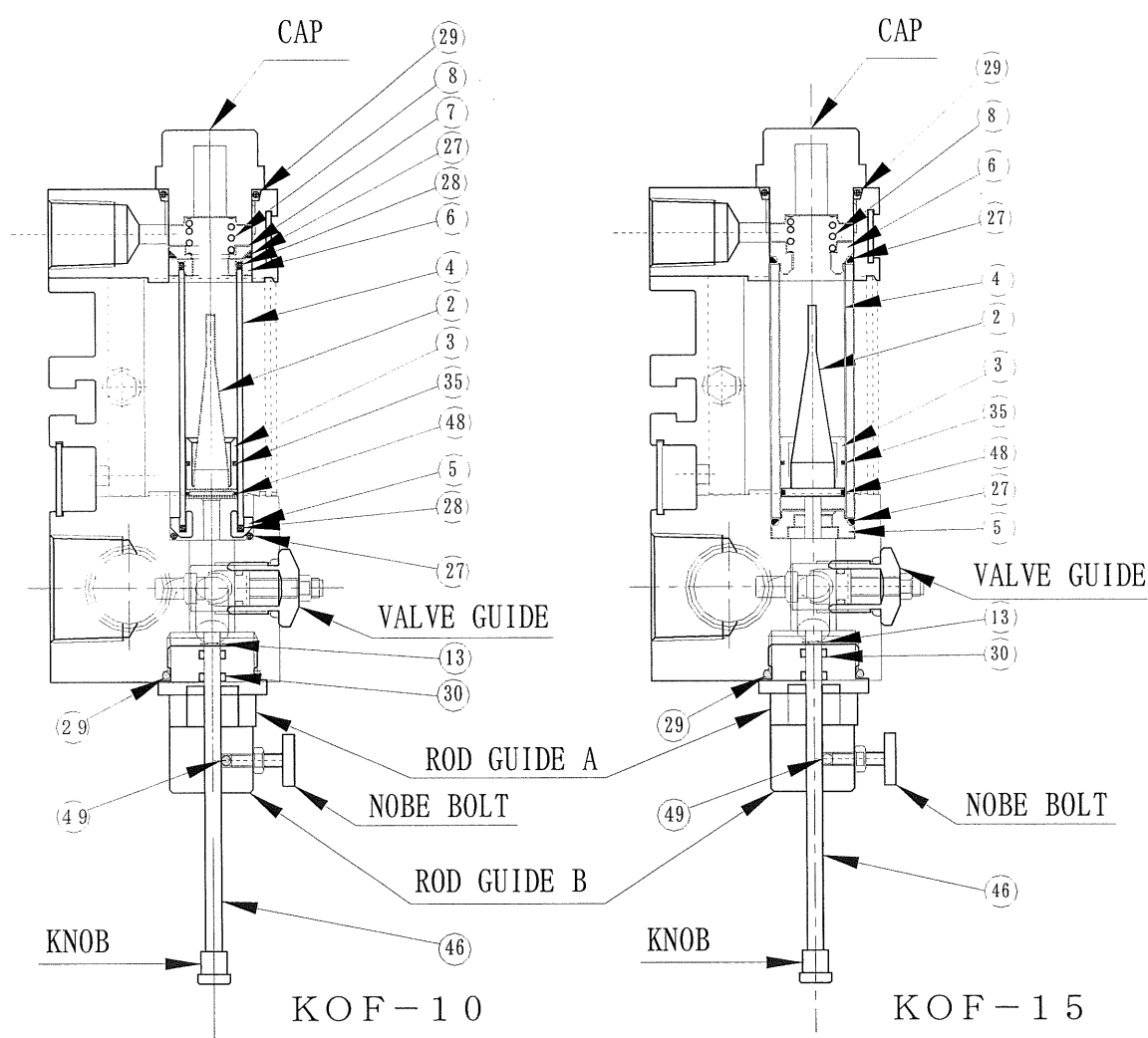
You can take 「K I T - 5」 out if you take a valve guide off.

You can take K I T - 1, 3、4」 out if you take a cap and a rod guide out.

Please refer the 「K I T - 1」 resolution instruction.

(4) Resolution Instruction K I T - 1

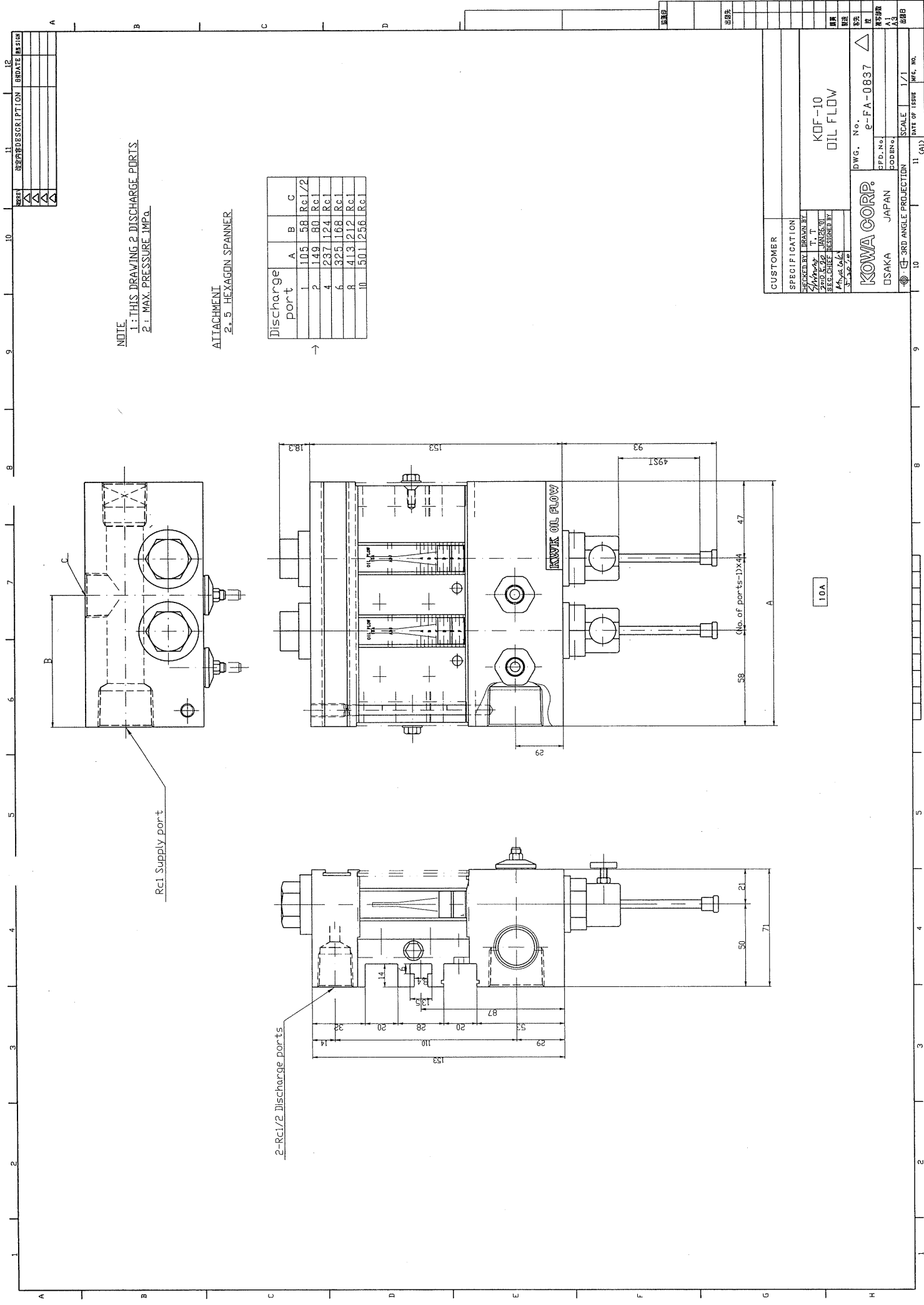
Explanation of resolution is based on KOF-10. As for other things, please follow KOF-10.
Please be careful not to miss any parts which you take out.



- a. Take out a cap, a spring (#8) , a spring receiving (#7) , a glass tube receiving, (#6) .At this time, check whether O-ring (#27,28,29) is out or not.
- b. Extract (#4) out to upper.
- c. Take a float (#3) out.
- d. Remove a knob of a cone setting rod (#46) .
- e. Take out a nylon ball(#49). If you can not take a ball out, you can take it out when you pull a rod out (at next process (f)).
- f. Push a rod (#46) up and from the top side, take a cone(#2) and a rod out. At this time, a nylon ball of a knob bolt may fall, therefore be careful not to lose it.
- g. Remove a rod guide A and B. You should check whether O-ring (#29) is out or not.
- h. A rod guide A and B are removable. If you need an exchange of O-ring (#30), please disassemble it.

Notice 1 : Assembling should be done as an opposite order.

Notice 2 : When you assemble it, please be careful not to hurt O-ring.



NOTE
1: THIS DRAWING 2 DISCHARGE PORTS
2: MAX. PRESSURE 1MPa

ATTACHMENT
2.5 HEXAGON SPANNER

Discharge port	A	B	C
1	105	58	Rc1/2
2	149	80	Rc1
4	237	124	Rc1
6	325	168	Rc1
8	413	212	Rc1
10	501	256	Rc1

CUSTOMER			
SPECIFICATION			
DESIGNED BY	T. T		
DRAWN BY	T. T		
2ND LDR	T. T		
3RD LDR	T. T		
4TH LDR	T. T		
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100TH LDR	T. T		

10A

KOWA CORP.
JAPAN

OSAKA

DATE OF ISSUE

SCALE

1/1

DWG. No.
e-FA-0837

CFD. No.
A1

CODENo.
A1

DATE OF ISSUE

1/1

DATE OF ISSUE

SCALE

1/1

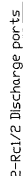
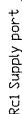
DATE OF ISSUE

1/1

Age Group	Number of people
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12

2.5 HEXAGON SPANNER

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NOTE
 1: THIS DRAWING 2 DISCHARGE PORTS.
 2: MAX. PRESSURE 1MPa.
 *3: When it is composed only of 10AU type.
 *4: Only when existing together to another type.

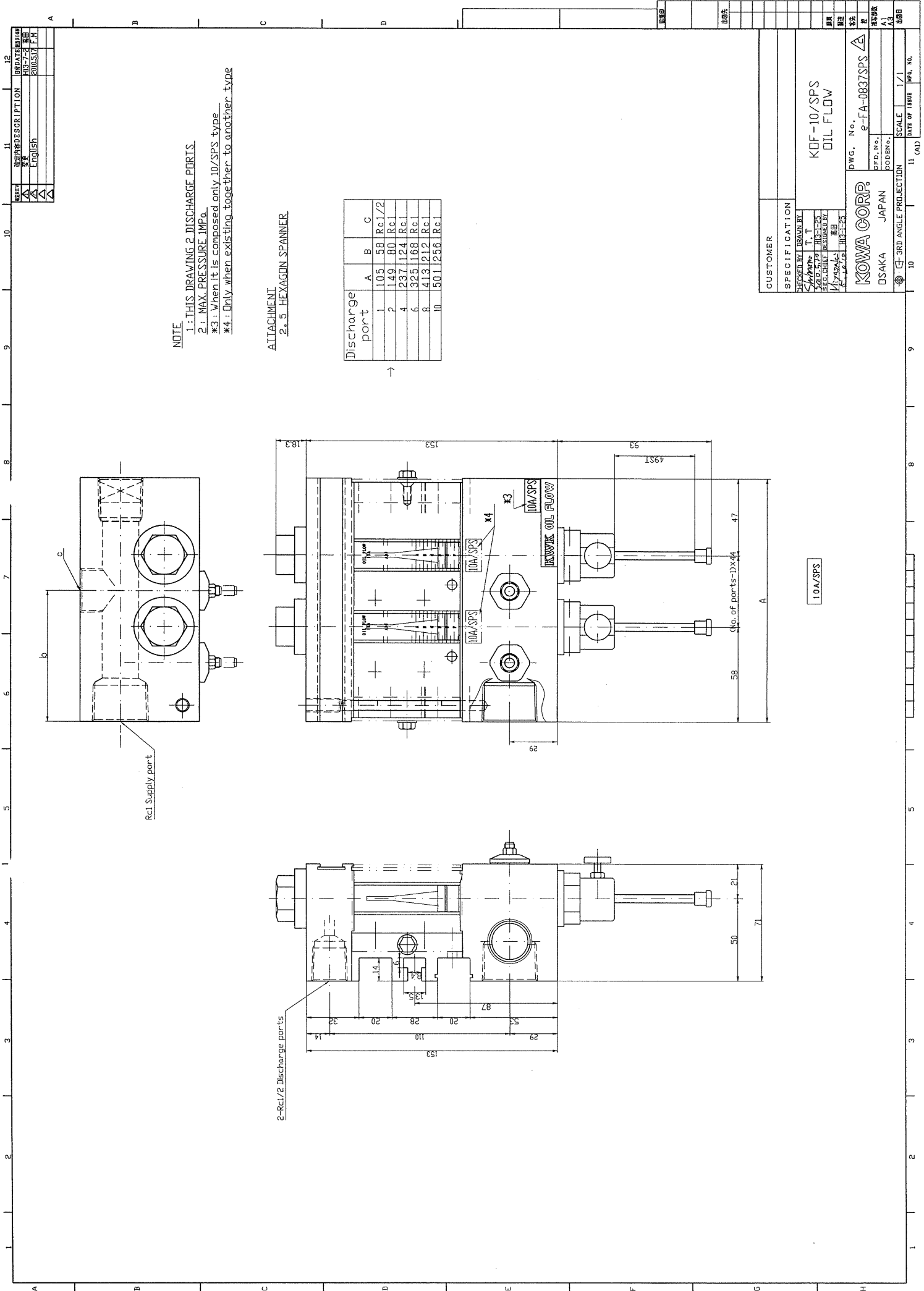
ATTACHMENT
 2.5 HEXAGON SPANNER

Discharge port	A	B	C
1	105	58	Rc1/2
2	149	80	Rc1
4	237	124	Rc1
6	325	168	Rc1
8	413	212	Rc1
10	501	256	Rc1

Specification of Switch
 Voltage : DC12V to 24V
 Load current : 3 to 100 mA
 Use Temperature : -25 to +70°C
 (Do not freeze)
 Use Humidity : 45 to 85%.

Customer Information:
 CUSTOMER: KOWA CORP.
 SPECIFICATION: KDF-A-10U OIL FLOW WITH ALARM SWITCH
 CHECKED BY: 藤取 隆夫
 DRAWN BY: 2010.11.13
 DESIGNED BY: 2010.11.13
 APPROVED BY: 2010.11.13
 2010.11.13

Scale and Projection:
 SCALE: 10U
 PROJECTION: 3RD ANGLE



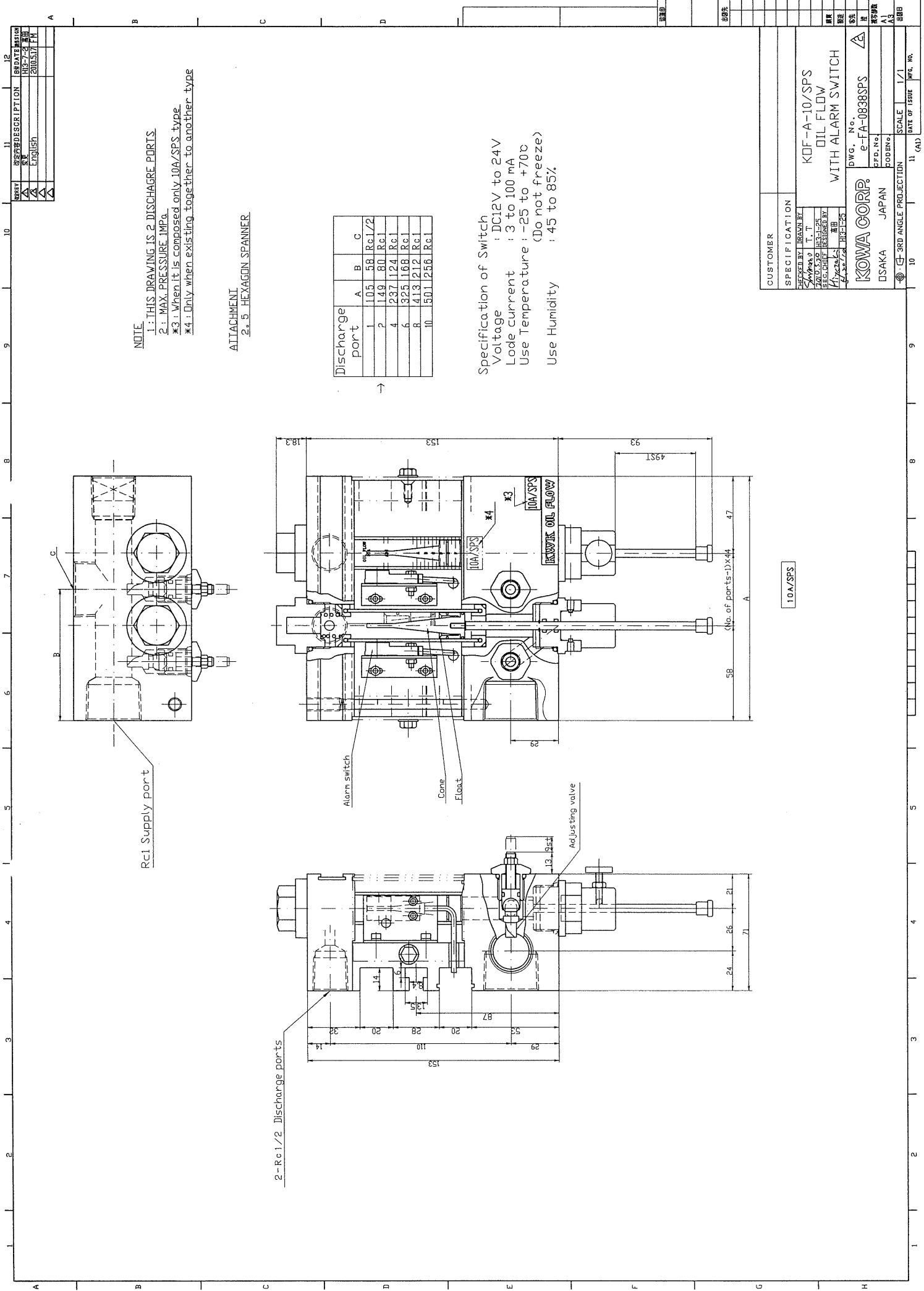
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4	English	2005.17	F.M.
5	English	2005.17	F.M.
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7	English	2005.17	F.M.
8	English	2005.17	F.M.
9	English	2005.17	F.M.
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12	English	2005.17	F.M.

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ATTACHMENT
2.5 HEXAGON SPANNER

Discharge port	A	B	C
1	105	58	Rcl/2
2	149	80	Rcl
4	237	124	Rcl
6	325	168	Rcl
8	413	212	Rcl
10	501	256	Rcl

CUSTOMER	
SPECIFICATION	
CHECKED BY	DRIVEN BY
DESIGNED BY	T. T.
APPROVED BY	DESIGNED BY
DATE	2005.17
SCALE	1/1
DATE OF ISSUE	2005.17
MFR. NO.	
DWG. No.	e-FA-0837SPS
PRODUCT	KDF-10/SPS OIL FLOW
COMPANY	KAWA CORP.
COUNTRY	JAPAN
PROJECT	OSAKA
SCALE	1/1
DATE OF ISSUE	2005.17
MFR. NO.	



REV.	DESCRIPTION	DATE	BY	CHK.
1	INITIAL	11/11	11/11	11/11
2	REVISION	11/11	11/11	11/11
3	REVISION	11/11	11/11	11/11
4	REVISION	11/11	11/11	11/11
5	REVISION	11/11	11/11	11/11
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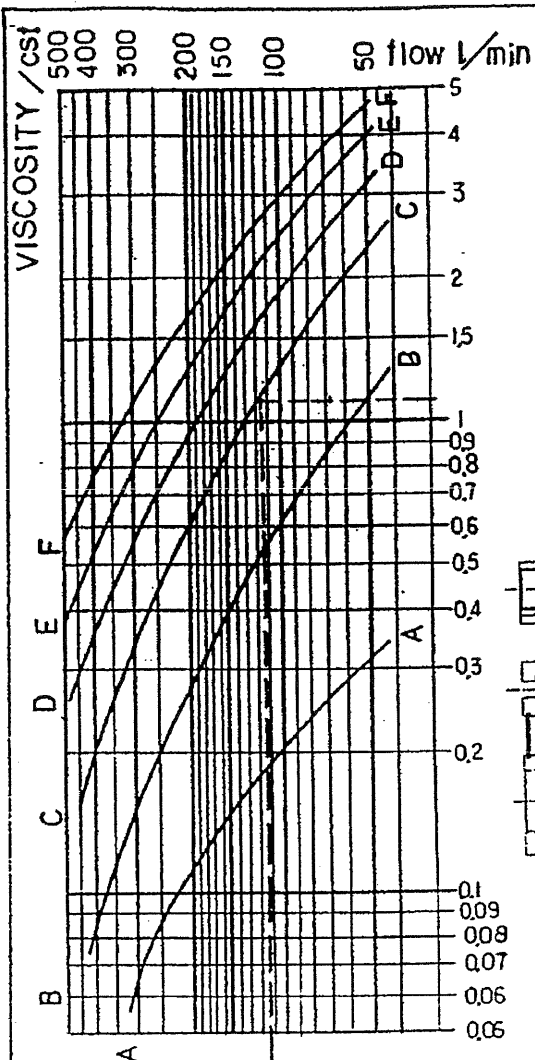
NOTE
1: THIS DRAWING IS 2 DISCHARGE PORTS
2: MAX. PRESSURE 1MPa
*3: When it is composed only 10A/SPS type
*4: Only when existing together to another type

ATTACHMENT
2.5 HEXAGON SPANNER

Discharge port	A	B	C
1	105	58	Rc1/2
2	149	80	Rc1
4	237	124	Rc1
6	325	168	Rc1
8	413	212	Rc1
10	501	256	Rc1

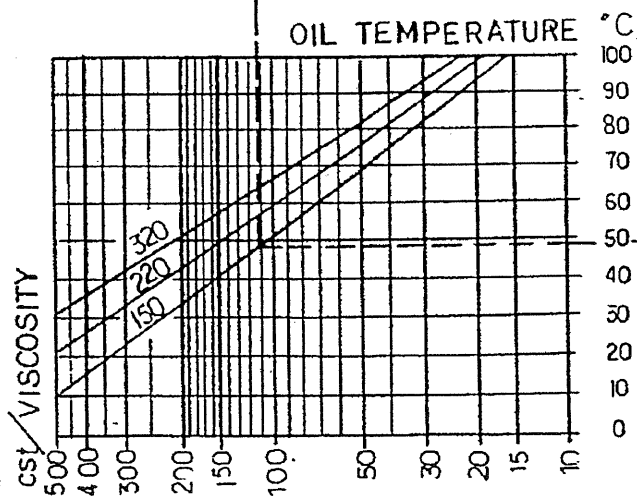
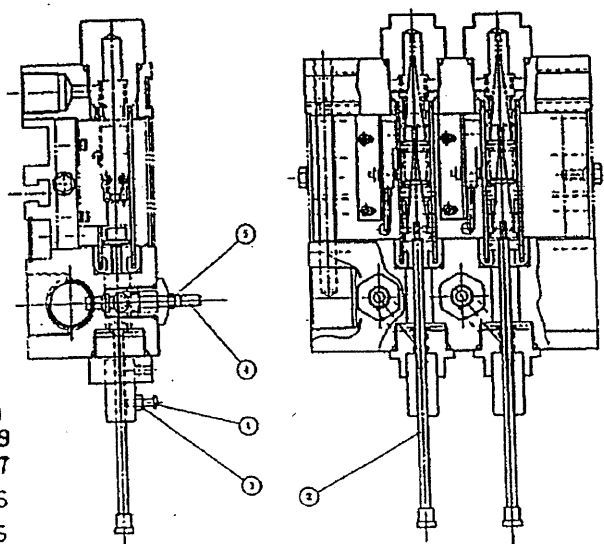
Specification of Switch
Voltage : DC12V to 24V
Load current : 3 to 100 mA
Use Temperature : -25 to +70c
(Do not freeze)
Use Humidity : 45 to 85%

CUSTOMER	
SPECIFICATION	
CHECKED BY: DRAWN BY: T. T.	
DESIGNED BY: T. T.	
APPROVED BY: T. T.	
DATE: 11/11	
DWG. No. e-FA-0838SPS	
KDF-A-10/SPS OIL FLOW WITH ALARM SWITCH	
KOWA CORP.	
DAKSA JAPAN	
SCALE 1/1	
DATE OF ISSUE 11/11	
PAGE NO. 1/1	



KOF10A 流量曲線表

KOF-10 Rating Curve

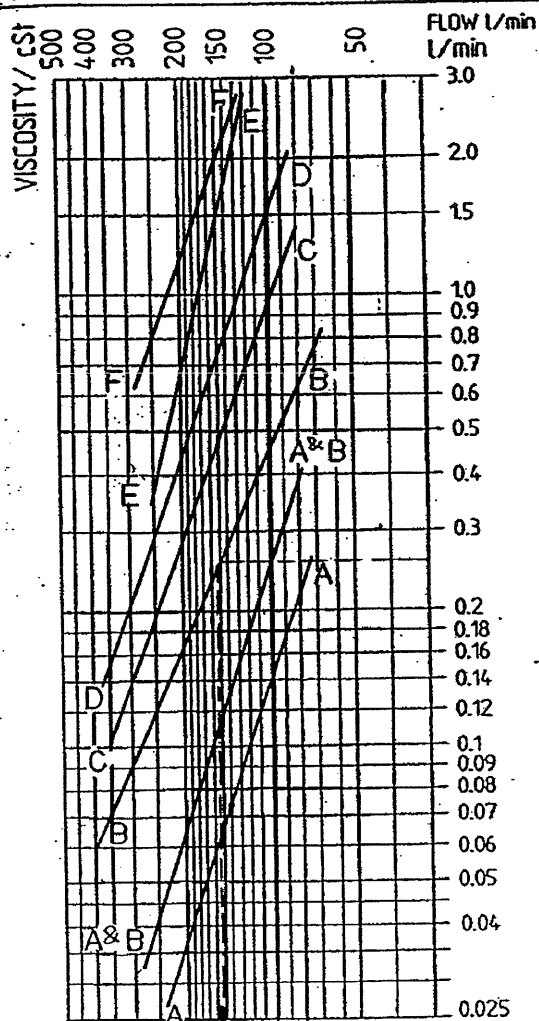


例

- T = 48°C
- OIL = ISO VG 150
- CONE SET AT C-CURVE
- FLOAT MARKER SET BETWEEN ADJ. LINES

FLOW 1.1 l/min

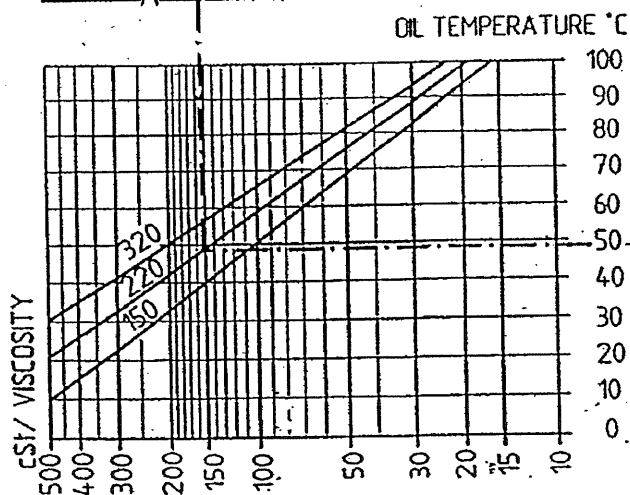
KOWA CORP.



KWK 流量計／オイルフロー
KOF-10A／SPS

流量曲線表

KOF-10/SPS
Rating Curve

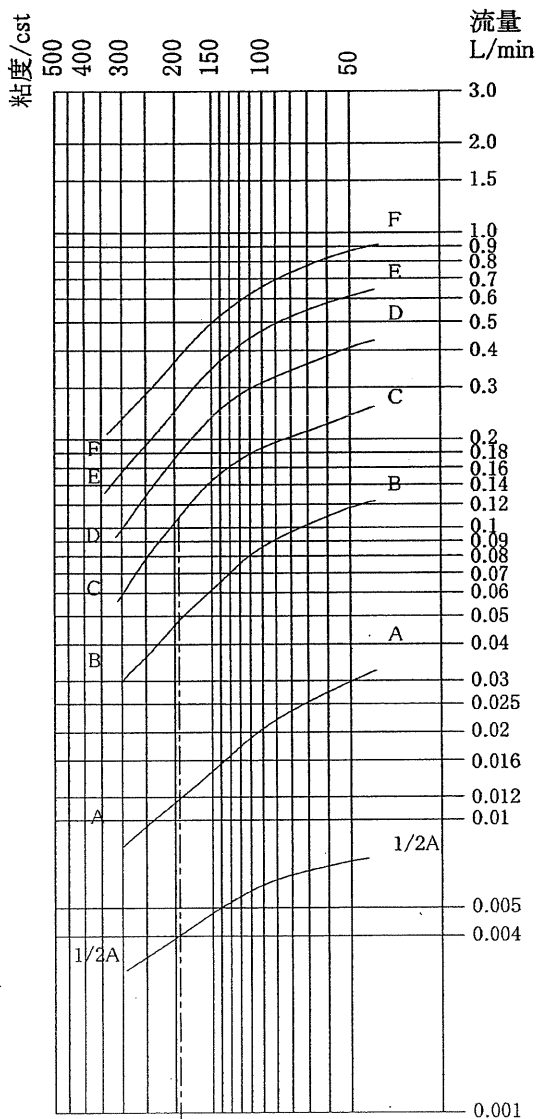


EXAMPLE:

- T= 48°
- OIL= ISO VG 220
- CONE SET AT B-CURVE
- FLOAT MARKER SET BETWEEN ADJ. LINES.

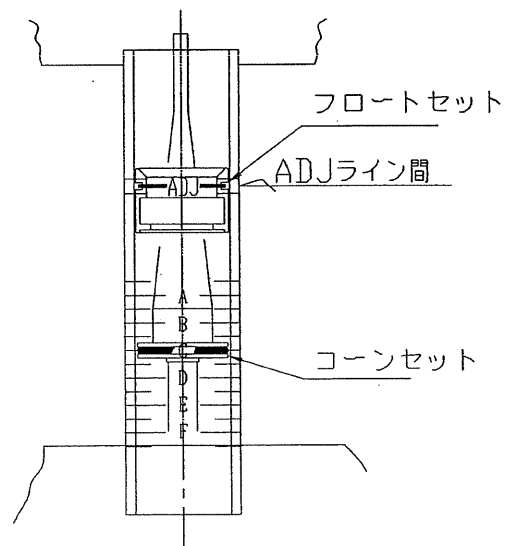
FLOW 0.26 L/min

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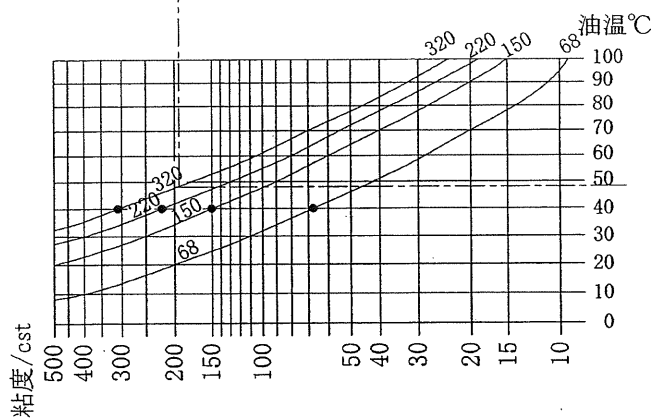


KOF-10U Rating Curve

KWK 流量計/オイルフロー
KOF-10U
流量曲線表



テストオイル
シェルオマラ
(昭和シェル石油株製)



セット例:

油温=48°C
オイル=シェルオマラ #320
コーンセット(白色リング)=Cライン
フロートセット位置=ADJ.ライン間
(白色リング)

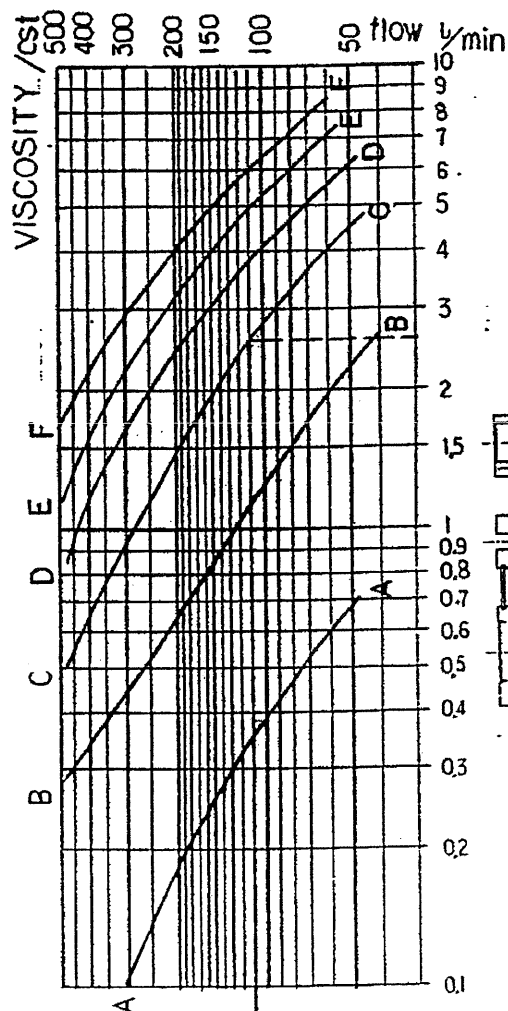
表より

流量 0.11 L/minを得る。

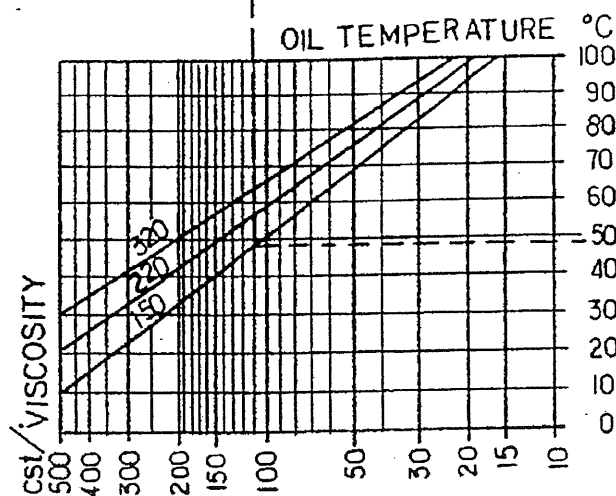
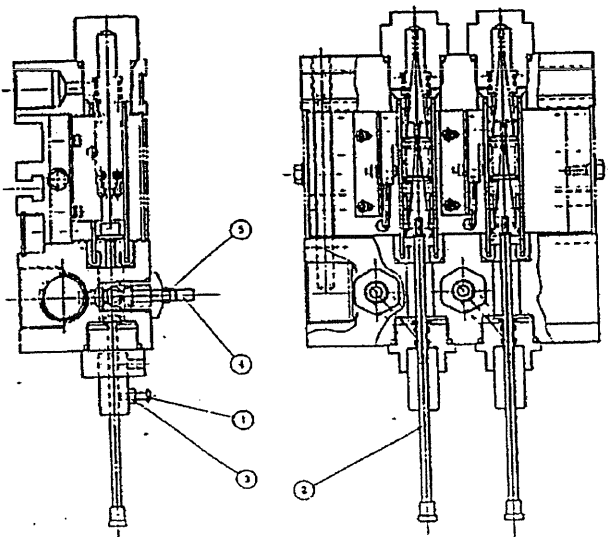
*オイル銘柄により若干の変動があります。
*コーンセットBライン以上で使用下さい。
それ以下は不安定領域となり使用できません。

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H21.10.28 作成

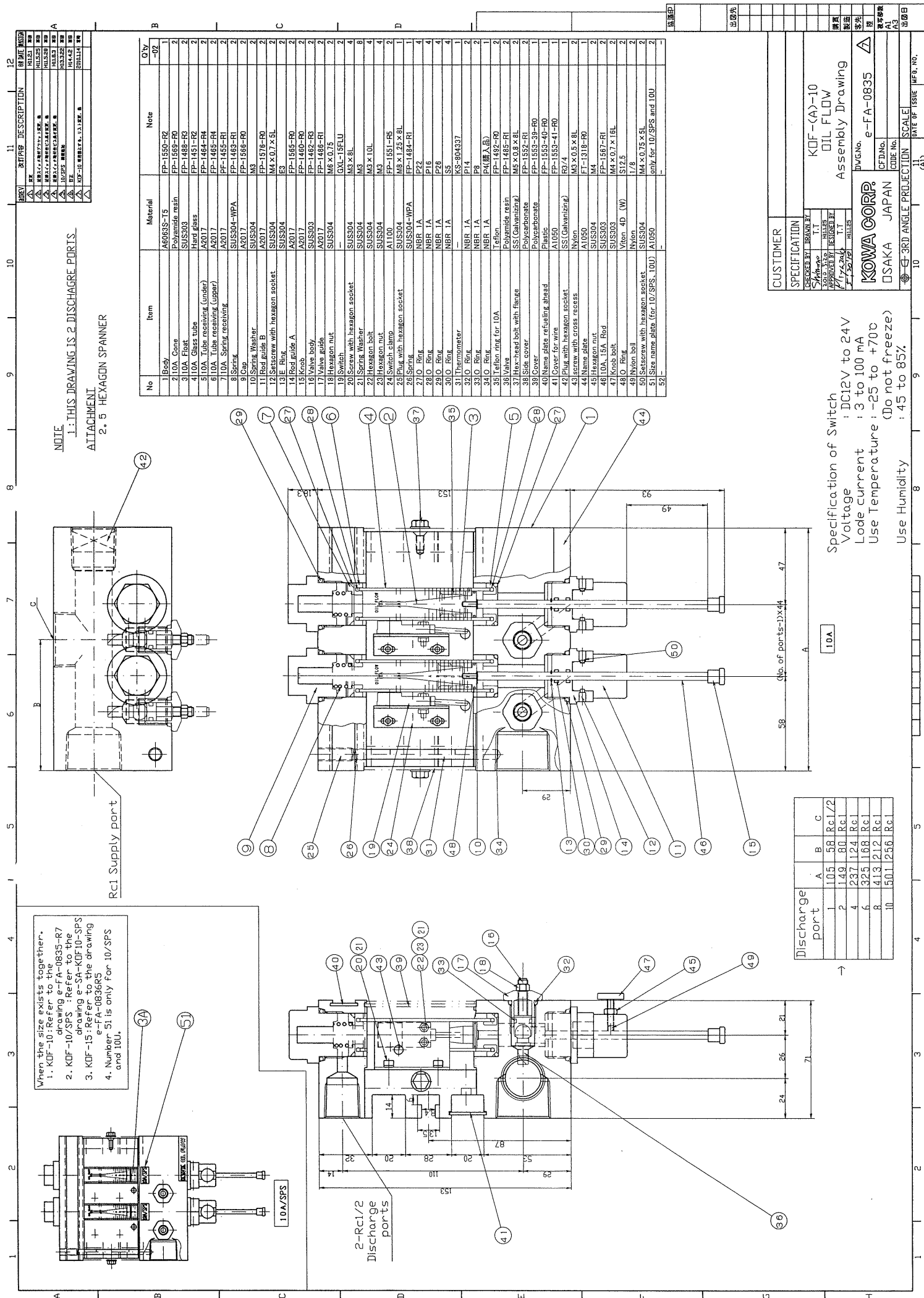


KOF15A 流量曲線表 KOF-15 Rating Curve



例
 - T = 48°C
 - OIL = ISO VG-150
 - CONE SET AT C-CURVE
 - FLOAT MARKER SET BETWEEN
 ADJ LINES
 FLOW 2.6 l/min

KOWA CORP.



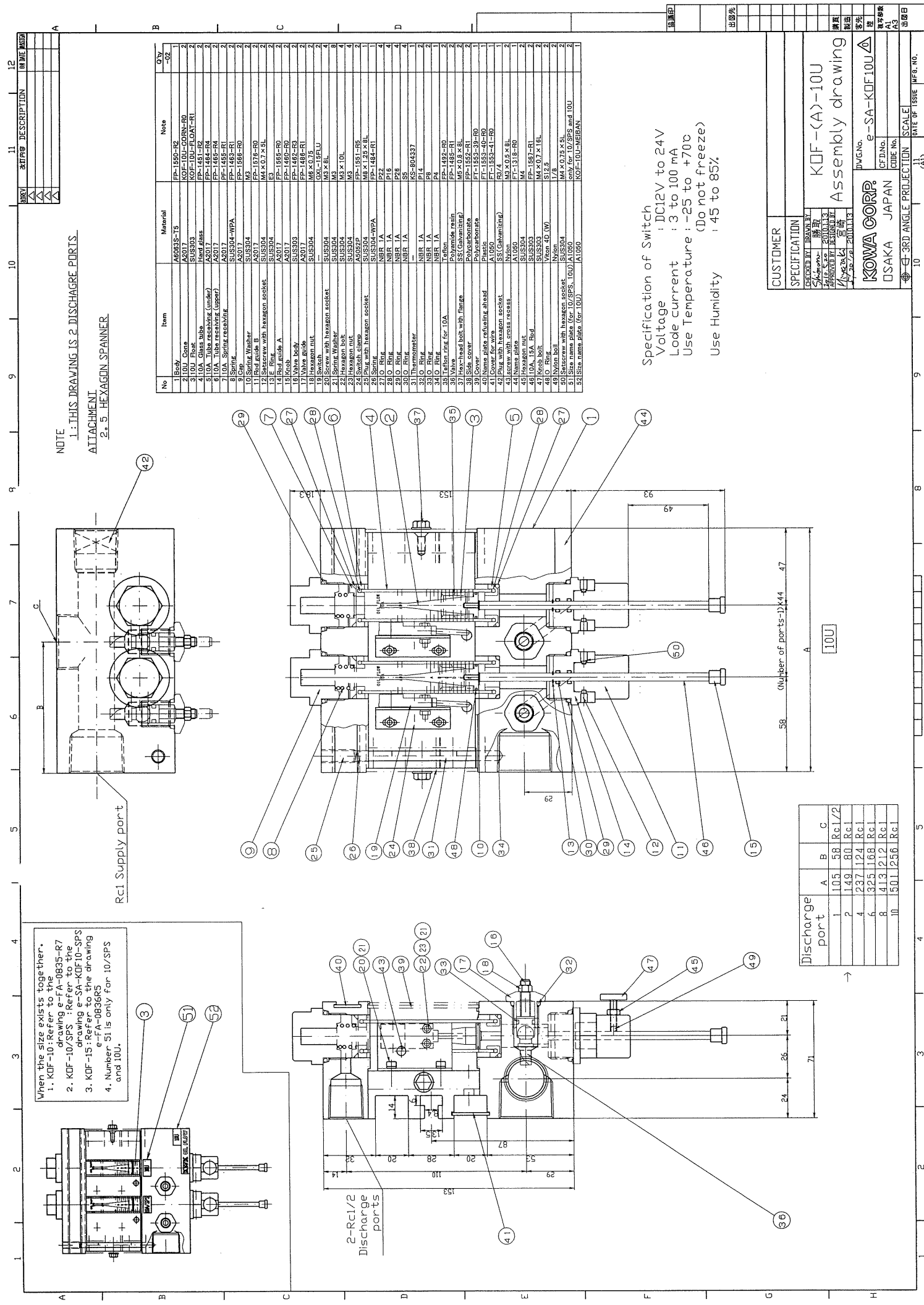
NOTE
1: THIS DRAWING IS 2. DISCHARGE PORTS
ATTACHMENT
2. 5 HEXAGON SPANNER

No	Item	Material	Note	Qty
1	Body	AG03S-T5	FP-1550-R2	-02
2	210A Cone	Polyamide resin	FP-1550-R2	1
3	100A Float	SUS303	FP-1488-R3	2
4	100A Glass tube	Hard glass	FP-1451-R2	2
5	100A Tube receiving (upper)	A2017	FP-1484-R4	2
6	100A Tube receiving (under)	A2017	FP-1485-R4	2
7	100A Spring receiving	A2017	FP-1455-R1	2
8	Spring	SUS304-WPA	FP-1483-R1	2
9	Cap	A2017	FP-1556-R0	2
10	Spring Washer	SUS304	MG	2
11	Rod guide B	A2017	FP-1516-R0	2
12	Set screw with hexagon socket	SUS304	M4 x 0.7 x 9L	2
13	E Ring	SUS304	E3	2
14	Rod guide A	A2017	FP-1565-R0	2
15	Knob	A2017	FP-1480-R0	2
16	Valve body	SUS303	FP-1482-R0	2
17	Valve guide	A2017	FP-1486-R1	2
18	Hexagon nut	SUS304	M6 x 0.75	2
19	Switch	SUS304	GAL-19FLU	2
20	Screw with hexagon socket	SUS304	M3 x 8L	4
21	Spring Washer	SUS304	MG x 10L	4
22	Hexagon bolt	SUS304	M3	4
23	Hexagon nut	SUS304	M3	4
24	Switch clamp	A1100	FP-1551-R5	2
25	Plug with hexagon socket	SUS304-WPA	M8 x 1.25 x 8L	1
26	Spring	NBR 1A	FP-1484-R1	4
27	O Ring	P22	P22	4
28	O Ring	NBR 1A	P26	4
29	O Ring	NBR 1A	S2	4
30	O Ring	NBR 1A	SS-304337	4
31	Thermometer	NBR 1A	P14	2
32	O Ring	NBR 1A	P4	2
33	O Ring	NBR 1A	P4 (輸入品)	1
34	O Ring	NBR 1A	FP-1492-R0	2
35	Teflon ring for 10A	Teflon resin	FP-1485-R1	2
36	Valve	PS (Polystyrene)	M6 x 0.8 x 8L	2
37	Hex head bolt with flange	SS (SUS303)	FP-1552-R1	2
38	Sign cover	Polycarbonate	FP-1553-39-R0	1
39	Cone	Polycarbonate	FP-1553-40-R0	1
40	Name plate refueling ahead	Al060	FP-1553-41-R0	1
41	Cover for wire harness	SS (Galvanizing)	F2/4	1
42	Plug with hexagon socket	Nylon	M3 x 0.5 x 8L	2
43	Hex head bolt with cross recess	Al060	FT-1318-R0	1
44	Hex head bolt	SUS303	M4	1
45	Hex head bolt	SUS303	FP-1567-R1	2
46	Knob bolt	SUS303	M4 x 0.7 x 16L	2
47	O Ring	Nylon 4D (W)	S12.5	2
48	Nylon ball	SUS304	M4 x 0.75 x 5L	2
49	Set screw with hexagon socket	Al060	only for 10/SPS and 10U	2
50	Set screw with hexagon socket	Al060	only for 10/SPS and 10U	2
51	Size name plate for 10/SPS, 10U	Al060	only for 10/SPS and 10U	2
52				

CUSTOMER	
SPECIFICATION	
CHECKED BY	DRAWN BY
DATE	T.T
KDF-(A)-10	
OIL FLOW	
Assembly Drawing	
DWG No. e-FA-0835	
C/DWG	CODE No.
KOWA CORP.	
OSAKA JAPAN	
SCALE	
DATE OF ISSUE	
MFG. NO.	

Specification of Switch
Voltage : DC12V to 24V
Load current : 3 to 100 mA
Use Temperature : -25 to +70°C
(Do not freeze)
Use Humidity : 45 to 85%

Discharge port	A	B	C
1	105	58	Rcl/2
2	149	80	Rcl
4	237	124	Rcl
6	325	168	Rcl
8	413	212	Rcl
10	501	256	Rcl

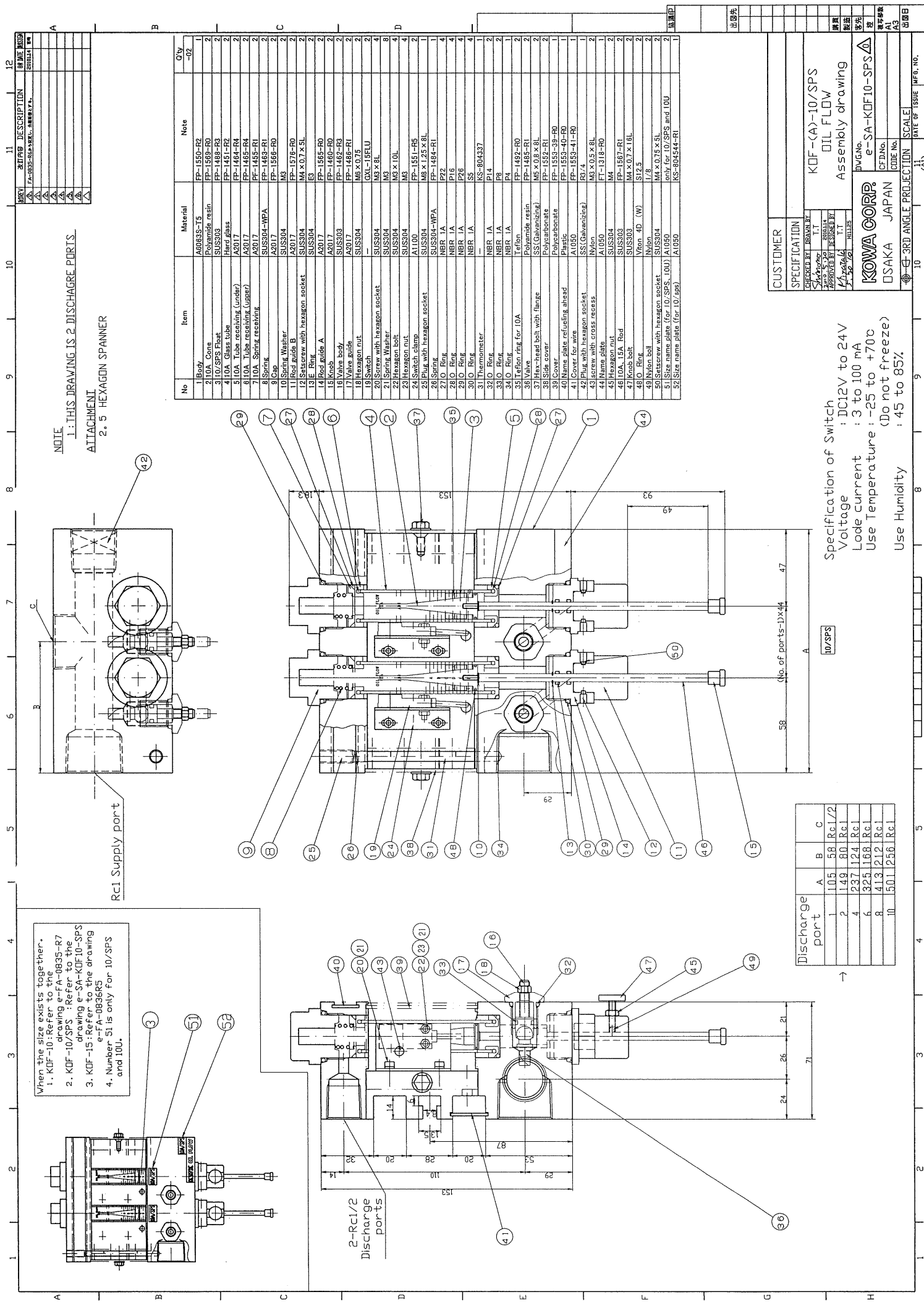


When the size exists together.
1. KDF-10: Refer to the drawing e-FA-0835-R7
2. KDF-10/SPS: Refer to the drawing e-SA-KDF10-SPS
3. KDF-1S: Refer to the drawing e-FA-0836RS
4. Number 51 is only for 10/SPS and 10U.

Discharge port	A B C		
	1	2	4
1	105	58	105
2	149	80	149
4	237	124	237
6	325	168	325
8	413	212	413
10	501	256	501

Specification of Switch
Voltage : DC12V to 24V
Load current : 3 to 100 mA
Use Temperature : -25 to +70°C
(Do not freeze)
Use Humidity : 45 to 85%

No	Item	Material	Note	QTY
1	Body	AB0835-T5	FP-1550-R2	1
2	10U Core	KDF-10U-CORE-R0	KDF-10U-CORE-R0	1
3	10U Core	KDF-10U-CORE-R0	KDF-10U-CORE-R0	1
4	10A Glass tube	Hard glass	FP-1481-R2	2
5	10A Tube receiving (under)	A2017	FP-1484-R4	2
6	10A Tube receiving (upper)	A2017	FP-1485-R4	2
7	10A Spring receiving	A2017	FP-1486-R4	2
8	Spring	SUS304-WPA	FP-1556-R0	2
9	Spring	SUS304	M3	2
10	Spring Washer	SUS304	FP-1576-R0	2
11	Red guide B	A2017	M4×0.7×5L	2
12	Screw with hexagon socket	SUS304	M4×0.7×5L	2
13	Pin	SUS304	M3×10L	2
14	Red guide A	A2017	FP-1555-R0	2
15	Knob	SUS303	FP-1480-R0	2
16	Valve body	SUS303	FP-1482-R3	2
17	Valve guide	SUS304	FP-1488-R1	2
18	Hexagon nut	SUS304	OX-15FLU	2
19	Screw with hexagon socket	SUS304	M3×8L	4
20	Spring Washer	SUS304	M3×10L	8
21	Hexagon bolt	SUS304	FP-1551-R0	2
22	Hexagon nut	SUS304	FP-1484-R1	2
23	Plug with hexagon socket	SUS304-WPA	M8×1.25×8L	2
24	Ring	NBR 1A	P22	4
25	Ring	NBR 1A	P28	4
26	Ring	NBR 1A	SS	4
27	Thermometer	NBR 1A	KS-804337	1
28	Ring	NBR 1A	P14	2
29	Ring	NBR 1A	P4	2
30	Ring	NBR 1A	FP-1482-R0	2
31	Ring	NBR 1A	FP-1485-R1	2
32	Ring	NBR 1A	M5×0.8×8L	2
33	Ring	NBR 1A	FP-1553-R0	2
34	Ring	NBR 1A	FP-1553-40-R0	2
35	Valve	Polyamide resin	FP-1553-41-R0	1
36	Side cover	SS (Galvanizing)	R3/4	1
37	Hex-head bolt with Flange	SS (Galvanizing)	FT-1318-R0	1
38	Side cover	Plastic	M4×0.7×16L	2
39	Side cover	Plastic	M4×0.7×16L	2
40	Name plate refueling head	Al080	only for 10/SPS and 10U	2
41	Cover for wire	SS (Galvanizing)	KDF-10U-MERBAN	2
42	Plug with hexagon socket	SUS304	M4×0.75×5L	2
43	Screw with cross recess	Al080	only for 10/SPS and 10U	2
44	Hexagon nut	SUS303	M4×0.7×16L	2
45	Hexagon nut	SUS303	M4×0.7×16L	2
46	10A, 15A, Red	NBR 1A	M4×0.75×5L	2
47	Knob ball	NBR 1A	only for 10/SPS and 10U	2
48	Ring	NBR 1A	only for 10/SPS and 10U	2
49	Screw with hexagon socket	SUS304	only for 10/SPS and 10U	2
50	Size name plate (for 10/SPS, 10U)	Al080	only for 10/SPS and 10U	2
51	Size name plate (for 10/SPS, 10U)	Al080	only for 10/SPS and 10U	2
52	Size name plate (for 10U)	Al080	only for 10/SPS and 10U	2



NOTE
1: THIS DRAWING IS 2 DISCHARGE PORTS
ATTACHMENT
2. 5 HEXAGON SPANNER

When the size exists together.
1. KDF-10: Refer to the drawing e-SA-0835-R7
2. KDF-10/SPS: Refer to the drawing e-SA-KDF10-SPS
3. KDF-15: Refer to the drawing e-SA-0836-R5
4. Number 51 is only for 10/SPS and 10U.

Discharge port		A	B	C
1	105	58	Rc1/2	
2	149	80	Rc1	
4	237	124	Rc1	
6	325	168	Rc1	
8	413	212	Rc1	
10	501	256	Rc1	

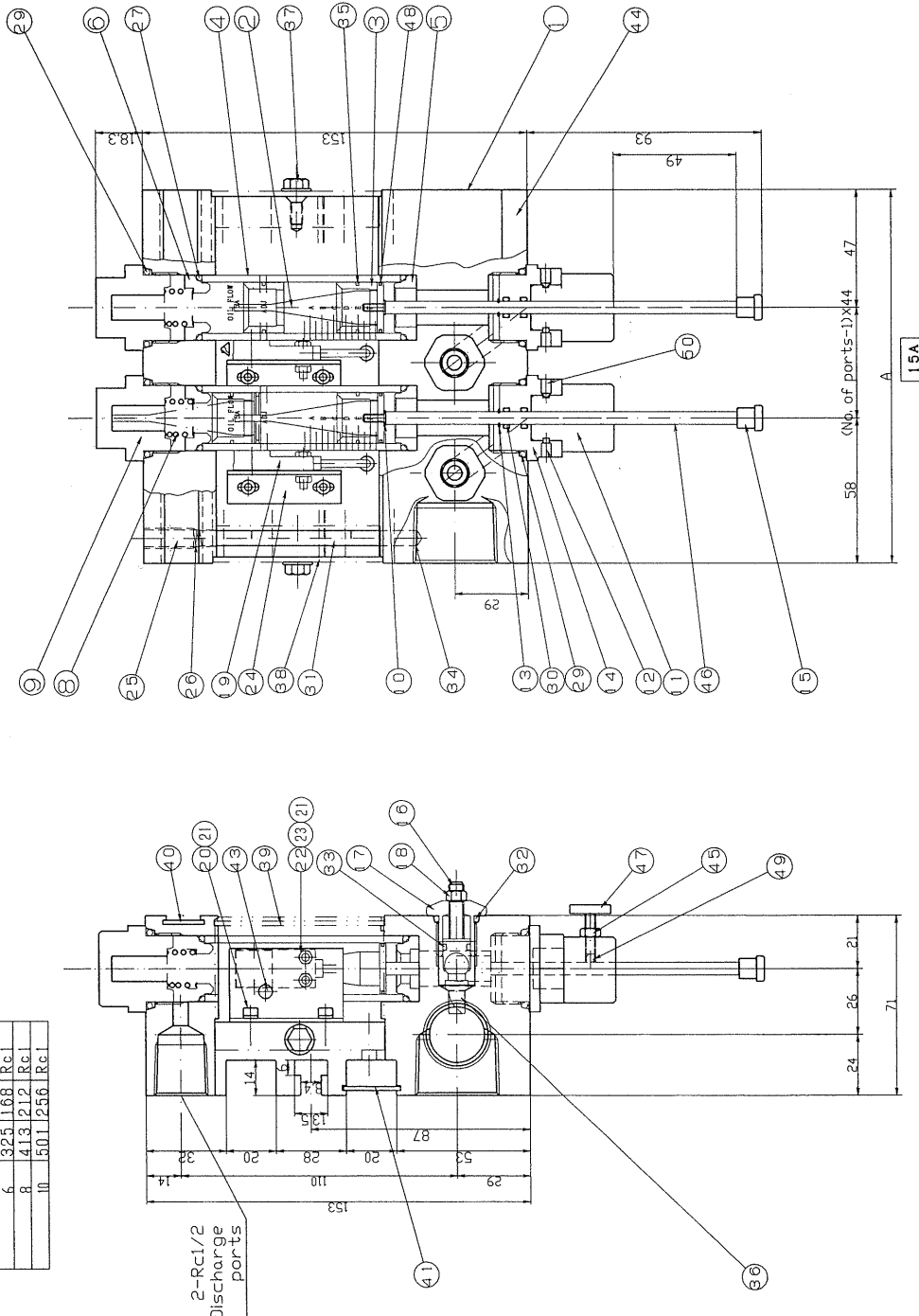
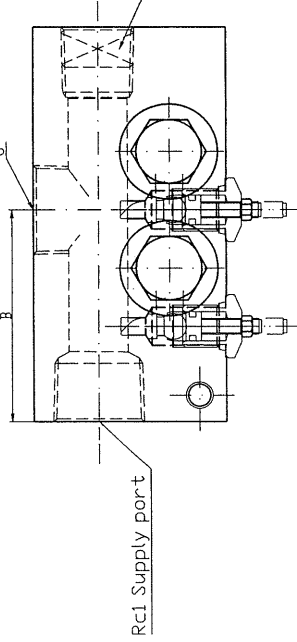
Specification of Switch
Voltage : DC12V to 24V
Load current : 3 to 100 mA
Use Temperature : -25 to +70°C
(Do not freeze)
Use Humidity : 45 to 85%

CUSTOMER		SPECIFICATION	
KOWA CORP.		KDF-(A)-10/SPS	
OSAKA JAPAN		OIL FLOW	
DATE OF ISSUE		Assembly drawing	
SCALE		1:1	
DATE OF ISSUE		MFG. NO.	
DATE OF ISSUE		MFG. NO.	

No	Item	Material	Note	Qty
1	Body	A00835-T5	PP-1550-R2	-02
2	10A Cone	Polyamide resin	PP-1589-R0	2
3	10/SPS Flare	SUS303	PP-1488-R3	2
4	10A Glass tube	Hard glass	PP-1451-R2	2
5	10A Tube receiving (under)	A2017	PP-1464-R4	2
6	10A Tube receiving (upper)	A2017	PP-1465-R4	2
7	10A Spring receiving	A2017	PP-1465-R1	2
8	Cap	SUS304-WPA	PP-1463-R1	2
9	Spring Washer	A2017	PP-1566-R0	2
10	Spring Washer	SUS304	M3	2
11	10 Rod guide B	A2017	PP-1576-R0	2
12	10 Rod guide A	SUS304	M4 × 0.7 × SL	2
13	10 Ring	SUS304	M3	2
14	10 Rod guide A	A2017	PP-1585-R0	2
15	10 Knob	SUS303	PP-1462-R0	2
16	10 Valve body	A2017	PP-1462-R0	2
17	10 Valve body	A2017	PP-1466-R1	2
18	10 Valve body	SUS304	M6 × 0.75	2
19	10 Switch	—	GXL-18FLU	2
20	10 Screw with hexagon socket	SUS304	M3 × 8L	4
21	10 Spring Washer	SUS304	M3	8
22	10 Hexagon bolt	SUS304	M3 × 10L	4
23	10 Hexagon nut	SUS304	M3	4
24	10 Switch clamp	A1000	PP-1551-R5	2
25	10 Plug with hexagon socket	SUS304	M8 × 1.25 × 8L	1
26	10 Spring	SUS304-WPA	PP-1484-R1	4
27	10 Ring	NBR 1A	P16	4
28	10 Ring	NBR 1A	P26	4
29	10 Ring	NBR 1A	P16	4
30	10 Ring	NBR 1A	P26	4
31	10 Thermometer	—	KS-804337	1
32	10 Ring	NBR 1A	P14	2
33	10 Ring	NBR 1A	P8	2
34	10 Ring	NBR 1A	P4	2
35	10 Teflon ring for 10A	Teflon	PP-1462-R0	2
36	10 Valve	Polyamide resin	PP-1465-R1	2
37	10 Hex-head bolt with flange	SS (Galvanizing)	M4 × 0.7 × 8L	2
38	10 Disc cover	Polyamide resin	PP-1552-R1	2
39	10 Disc cover	Polyamide resin	PP-1553-R0	2
40	10 Disc cover	Polyamide resin	PP-1553-R0	2
41	10 Cover for wire	AI050	PP-1553-41-R0	1
42	10 Plug with hexagon socket	SS (Galvanizing)	R3.4	1
43	10 screw with cross recess	Nylon	M3 × 0.5 × 8L	2
44	10 Name plate	AI050	FT-1318-R0	2
45	10 Hexagon nut	SUS304	M4	2
46	10A, 15A Rod	SUS303	PP-1567-R1	2
47	10 Knob bolt	SUS303	M4 × 0.7 × 18L	2
48	10 Ring	Viton 4D (W)	S12.5	2
49	10 Nylon ball	Nylon	I/8	2
50	10 Screw with hexagon socket	SUS304	M4 × 0.75 × SL	2
51	10 Size name plate (for 10/SPS, 10U)	AI050	only for 10/SPS and 10U	2
52	10 Size name plate (for 10/SPS)	AI050	RS-804544-R1	1

Specification of Switch
 Voltage : DC12V to 24V
 Load current : 3 to 100 mA
 Use Temperature : -25 to +70°C
 (Do not freeze)
 Use Humidity : 45 to 85%

Discharge port	A	B	C
1	105	58	Rc1/2
2	149	80	Rc1
4	237	124	Rc1
6	325	168	Rc1
8	413	212	Rc1
10	501	256	Rc1

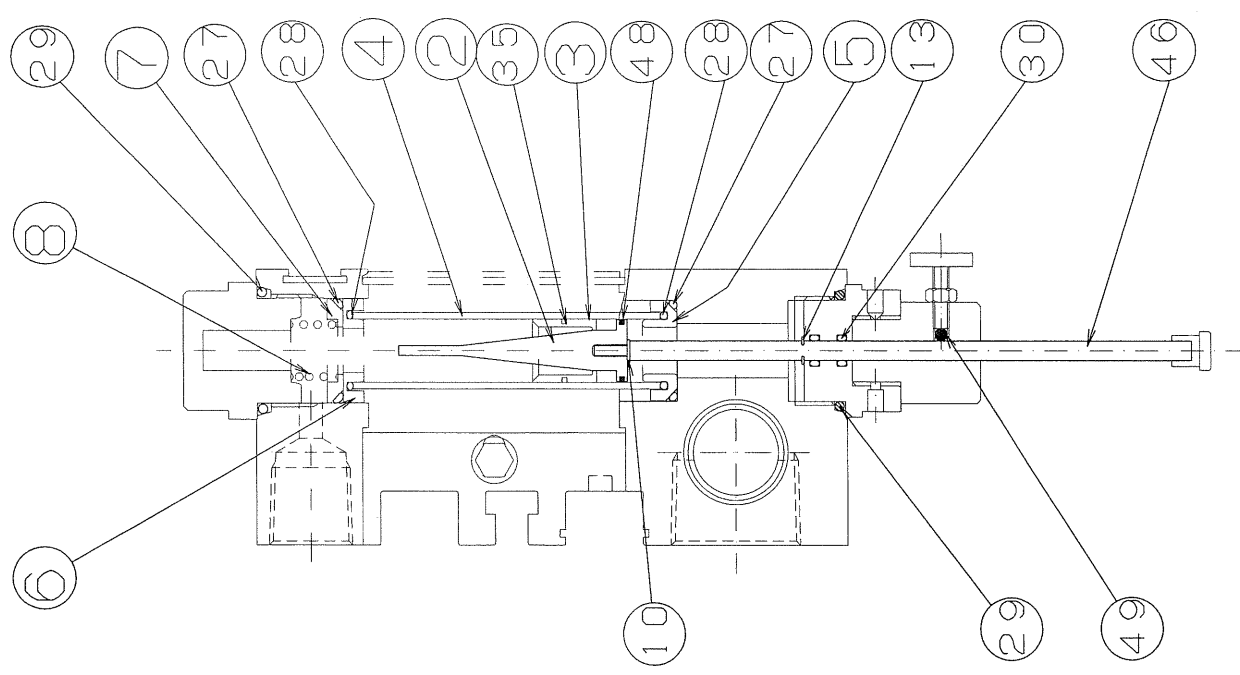


NOTE
 1: THIS DRAWING 2 DISCHARGE PORTS
 2: MAX. PRESSURE 1MPa
 ATTACHMENT
 2. 5 HEXAGON SPANNER

No	Item	Material	Note	Qty
1	Body	A6083S-T5	FP-1550-R2	-02
2	15A Cone	Polyamide resin	FP-1570-R0	2
3	15A Float	SUS303	FP-1490-R1	2
4	15A Glass tube	Hard glass	FP-1451-R2	2
5	15A Tube receiving (under)	A2017	FP-1577-R0	2
6	15A Tube receiving (upper)	A2017	FP-1456-R2	2
7	-	-	-	-
8	Spring	SUS304-WPA	FP-1463-R1	2
9	Cap	A2017	FP-1566-R0	2
10	Spring Washer	SUS304	M3	2
11	Rod guide B	A2017	FP-1576-R0	2
12	Set screw with hexagon socket	SUS304	M4 x 0.7 x 9L	2
13	E Ring	SUS304	E3	2
14	Rod guide A	A2017	FP-1565-R0	2
15	Knob	SUS303	FP-1460-R0	2
16	Valve body	A2017	FP-1462-R3	2
17	Valve guide	A2017	FP-1466-R1	2
18	Hexagon nut	SUS304	M6 x 0.75	2
19	Switch	-	GXL-15FLU	2
20	Screw with hexagon socket	SUS304	M3 x 7L	4
21	Spring Washer	SUS304	M3	8
22	Hexagon bolt	SUS304	M3 x 10L	2
23	Hexagon nut	SUS304	M3	4
24	Switch clamp	A5052P	FP-1551-R5	2
25	Plug with hexagon socket	SUS304	M8 x 1.25 x 8L	1
26	Spring	SUS304-WPA	FP-1484-R1	1
27	O Ring	NBR 1A	P22	4
28	-	-	-	-
29	O Ring	NBR 1A	P28	4
30	O Ring	NBR 1A	S5	4
31	Thermometer	-	KS-804337	1
32	O Ring	NBR 1A	P14	2
33	O Ring	NBR 1A	P8	2
34	O Ring	NBR 1A	P4	1
35	Teflon ring for 15A	Teflon	FP-1493-R0	2
36	Valve	Polyamide resin	FP-1485-R1	2
37	Hex-head bolt with flange	SS (Galvanizing)	M5 x 0.8 x 8L	2
38	Side cover	Polycarbonate	FP-1552-R1	2
39	Cover	Polycarbonate	FT-1553-39-R0	1
40	Name plate, refueling ahead	Plastic	FT-1553-40-R0	1
41	Cover for wire	A1050	FT-1553-41-R0	1
42	Plug with hexagon socket	SS (Galvanizing)	R3/4	1
43	Screw with cross recess	Nylon	M3 x 0.5 x 8L	2
44	Name plate	A1050	FT-1318-R0	1
45	Hexagon nut	SUS304	M4	2
46	10A, 15A Rod	SUS303	FP-1567-R1	2
47	Knob bolt	SUS303	M4 x 0.7 x 16L	2
48	O Ring	Viton 4D (W)	S16	2
49	Nylon ball	Nylon	1/8	2
50	Set screw with hexagon socket	SUS304	M4 x 0.75 x 5L	2
51	-	-	-	-
52	-	-	-	-

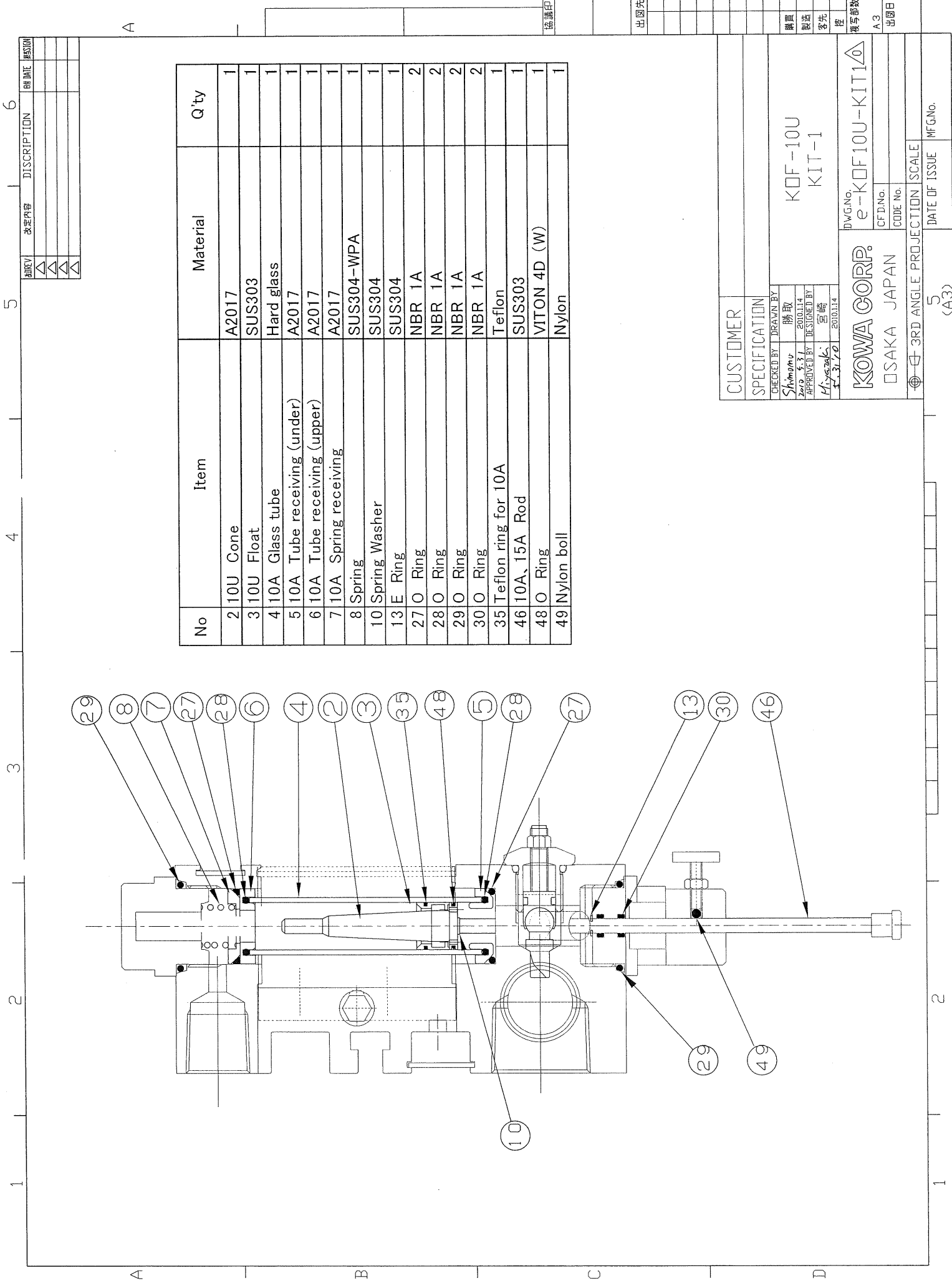
CUSTOMER
 SPECIFICATION
 KDF-(A)-15
 OIL FLOW
 Assembly Drawing
 DWG. No. e-FA-0836
 CF. No. A1
 CODE No. A3
 SCALE
 DATE OF ISSUE
 MFG. No.

KOWA CORP.
 OSAKA JAPAN



No	Item	Material	Q'ty
2	10A Cone	Polyamide resin	1
3	10A Float	SUS303	1
4	10A Glass tube	Hard glass	1
5	10A Tube receiving (under)	A2017	1
6	10A Tube receiving (upper)	A2017	1
7	10A Spring receiving	A2017	1
8	Spring	SUS304-WPA	1
10	Spring Washer	SUS304	1
13	E Ring	SUS304	1
27	O Ring	NBR 1A	2
28	O Ring	NBR 1A	2
29	O Ring	NBR 1A	2
30	O Ring	NBR 1A	2
35	Teflon ring for 10A	Teflon	1
46	10A, 15A Rod	SUS303	1
48	O Ring	Viton 4D (W)	1
49	Nylon boll	Nylon	1

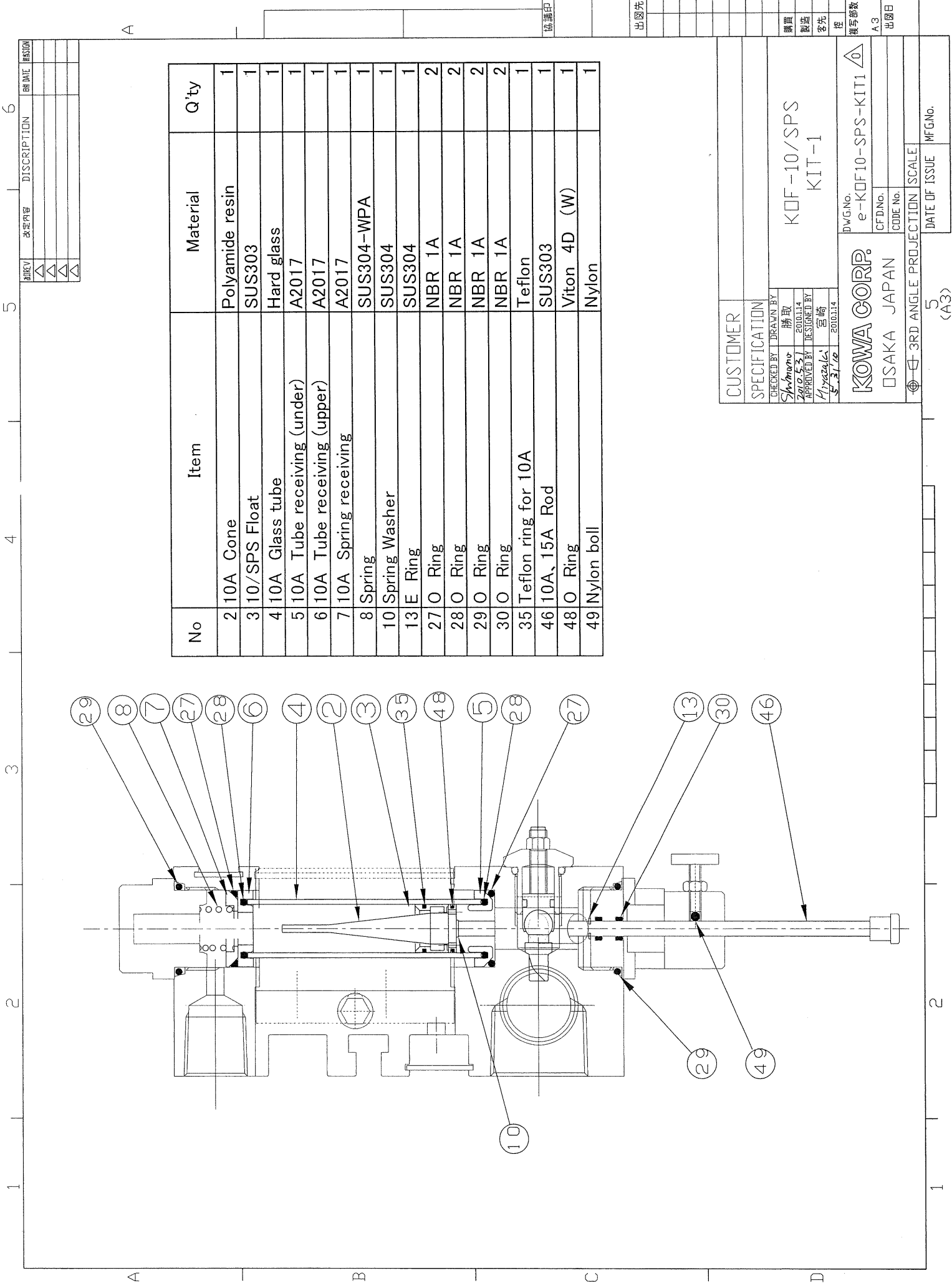
CUSTOMER	
SPECIFICATION	
CHECKED BY	SHIMOMOTO
DRAWN BY	M. S.
DATE	2010.5.31
DESIGNED BY	H. I. 2. 4. 1. 4
APPROVED BY	M. S.
DATE	2010.5.31
SCALE	1:1
KOWA CORP.	
OSAKA JAPAN	
DWG. No. e-KOF10-KIT1	
A3	
DATE OF ISSUE	
MFG. No.	



REV	改定内容	DISCUSSION	DATE	REVISION
△				
△				
△				
△				

No	Item	Material	Q'ty
2	10U Cone	A2017	1
3	10U Float	SUS303	1
4	10A Glass tube	Hard glass	1
5	10A Tube receiving (under)	A2017	1
6	10A Tube receiving (upper)	A2017	1
7	10A Spring receiving	A2017	1
8	Spring	SUS304-WPA	1
10	Spring Washer	SUS304	1
13	E Ring	SUS304	1
27	O Ring	NBR 1A	2
28	O Ring	NBR 1A	2
29	O Ring	NBR 1A	2
30	O Ring	NBR 1A	2
35	Teflon ring for 10A	Teflon	1
46	10A, 15A Rod	SUS303	1
48	O Ring	VITON 4D (W)	1
49	Nylon boll	Nylon	1

CUSTOMER	
SPECIFICATION	
CHECKED BY	勝取
DRAWN BY	2001.14
APPROVED BY	DESIGNED BY
2001.14	宮崎
KOWA CORP.	
OSAKA JAPAN	
DATE OF ISSUE	
MFG.No.	
SCALE	
3RD ANGLE PROJECTION	
5 (A3)	
KOF-10U KIT-1	
DWG.No. e-KOF10U-KIT1	
CFD.No.	
CODE No.	
DATE OF ISSUE	
MFG.No.	

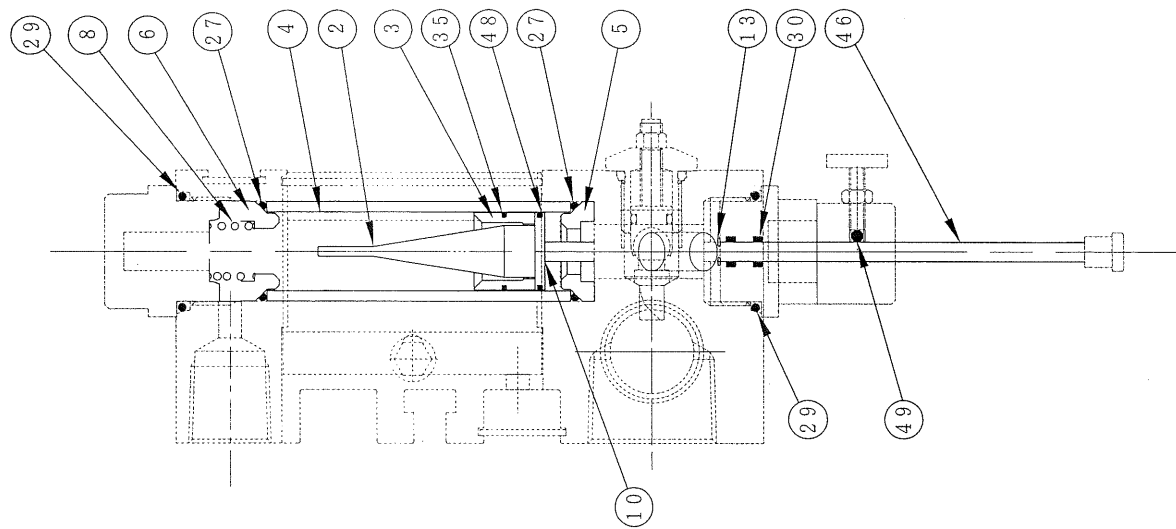


No	Item	Material	Q'ty
2	10A Cone	Polyamide resin	1
3	10/SPS Float	SUS303	1
4	10A Glass tube	Hard glass	1
5	10A Tube receiving (under)	A2017	1
6	10A Tube receiving (upper)	A2017	1
7	10A Spring receiving	A2017	1
8	Spring	SUS304-WPA	1
10	Spring Washer	SUS304	1
13	E Ring	SUS304	1
27	O Ring	NBR 1A	2
28	O Ring	NBR 1A	2
29	O Ring	NBR 1A	2
30	O Ring	NBR 1A	2
35	Teflon ring for 10A	Teflon	1
46	10A, 15A Rod	SUS303	1
48	O Ring	Viton 4D (W)	1
49	Nylon ball	Nylon	1

CUSTOMER			
SPECIFICATION			
CHECKED BY	DRAWN BY		
Shimono	勝取		
2010.5.31	2010.11.4		
APPROVED BY	DESIGNED BY		
Hyazaki	宮崎		
5/31/10	2010.11.4		
DWG No.		e-KDF10-SPS-KIT1	
CFD No.		A3	
CODE No.			
DATE OF ISSUE		MFG No.	
5		(A3)	

KOWA CORP.
OSAKA JAPAN

KDF-10/SPS
KIT-1



No	Item	Material	Q'ty
2	15A Cone	Polyamide resin	1
3	15A Float	SUS303	1
4	15A Glass tube	Hard glass	1
5	15A Tube receiving (under)	A2017	1
6	15A Tube receiving (upper)	A2017	1
8	Spring	SUS304-WPA	1
10	Spring Washer	SUS304	1
13	E Ring	SUS304	1
27	O Ring	NBR 1A	2
29	O Ring	NBR 1A	2
30	O Ring	NBR 1A	2
35	Teflon ring for 15A	Teflon	1
46	10A, 15A Rod	SUS303	1
48	O Ring	Viton 4D (W)	1
49	Nylon boll	Nylon	1

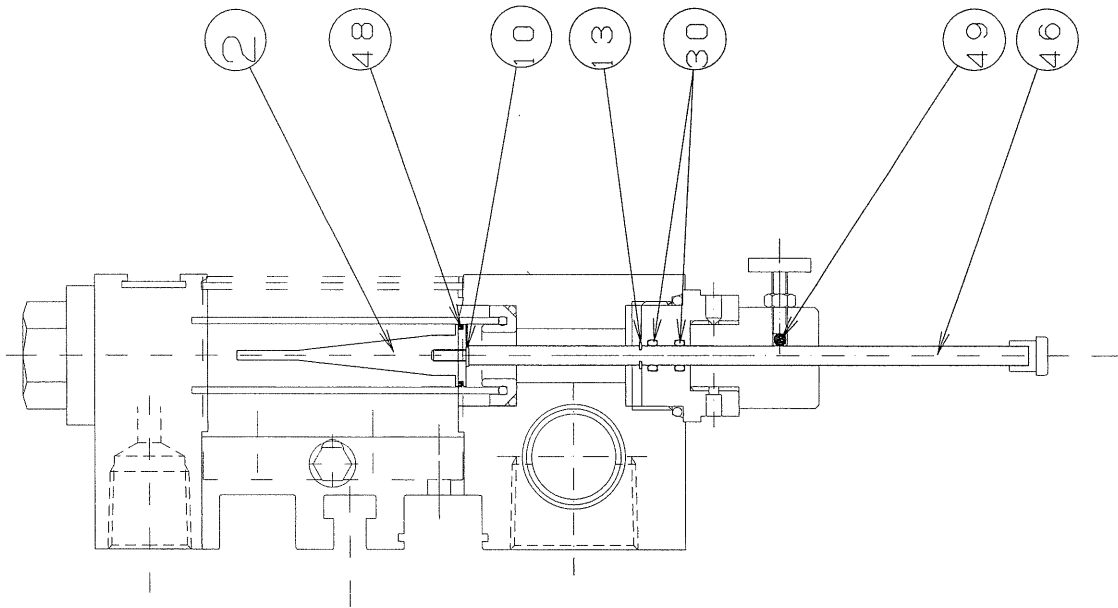
CUSTOMER			
SPECIFICATION			
CHECKED BY	DRAWN BY		
Shimizu	T. T		
2010.5.31	JAN. 26. 01		
SIG. CHIEF	DESIGNED BY		
1/1-2010/6			
3-13170			
KOWA CORP.		DWG. No.	e-KOF15-KIT1
OSAKA	JAPAN	CODE No.	
		SCALE	

改訂履歴	改定内容	DISCRIPTION	日付	修正
△	KDF-10/10/SPS,10U内蔵版と7号		2010.1.12	
△				
△				
△				



No	Item	Material	Q'ty
4	10A Glass tube	Hard glass	1
27	O Ring	NBR 1A	2
28	O Ring	NBR 1A	2
29	O Ring	NBR 1A	1

CUSTOMER	
SPECIFICATION	
CHECKED BY Shimura	DRAWN BY T.T
2/16/03	JAN26/01
APPROVED BY DESIGNED BY	
Miyazaki	01/31/00
KDF-10 KDF-10/SPS KDF-10U KIT-2	
DWG No. e-KDF10-KIT2	
KOWA CORP.	
OSAKA JAPAN	
CFD No.	CODE No.
DATE OF ISSUE	
MFG No.	

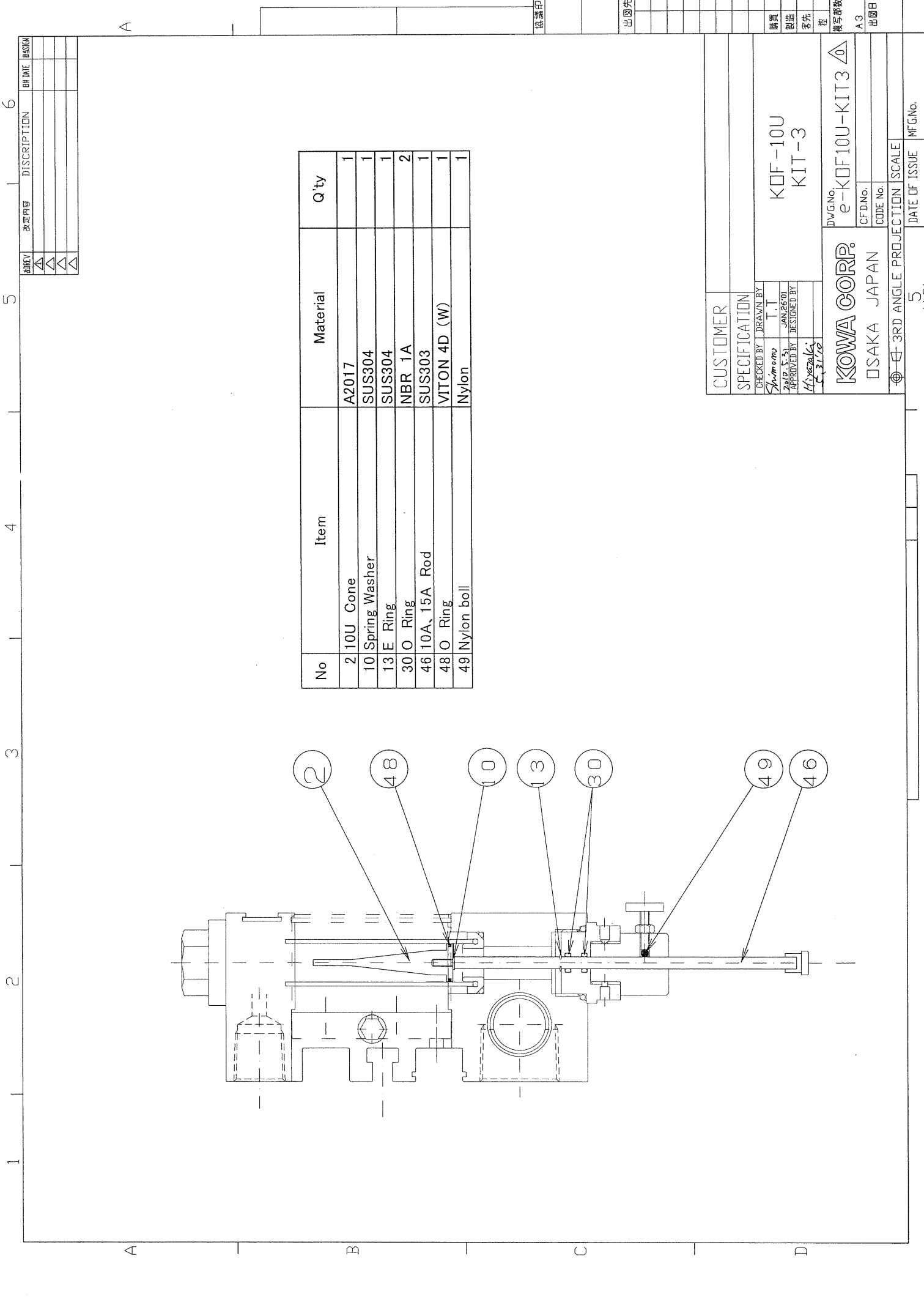


No	Item	Material	Q'ty
2	10A Cone	Polyamide resin	1
10	Spring Washer	SUS304	1
13	E Ring	SUS304	1
30	O Ring	NBR 1A	2
46	10A, 15A Rod	SUS303	1
48	O Ring	Viton 4D (W)	1
49	Nylon boll	Nylon	1

CUSTOMER		SPECIFICATION	
KDF-10		KDF-10/SPS	
KIT-3		KIT-3	
CHECKED BY	T.T.	DWG No.	e-KDF10-KIT3
2010.5.3	JAN.26'01	CFD No.	A3
APPROVED BY	DESIGNED BY	CODE No.	出図B
4/1/2001	5-21-12	DATE OF ISSUE	MFG No.
KOWA CORP.		SAKA JAPAN	
3RD ANGLE PROJECTION		SCALE	

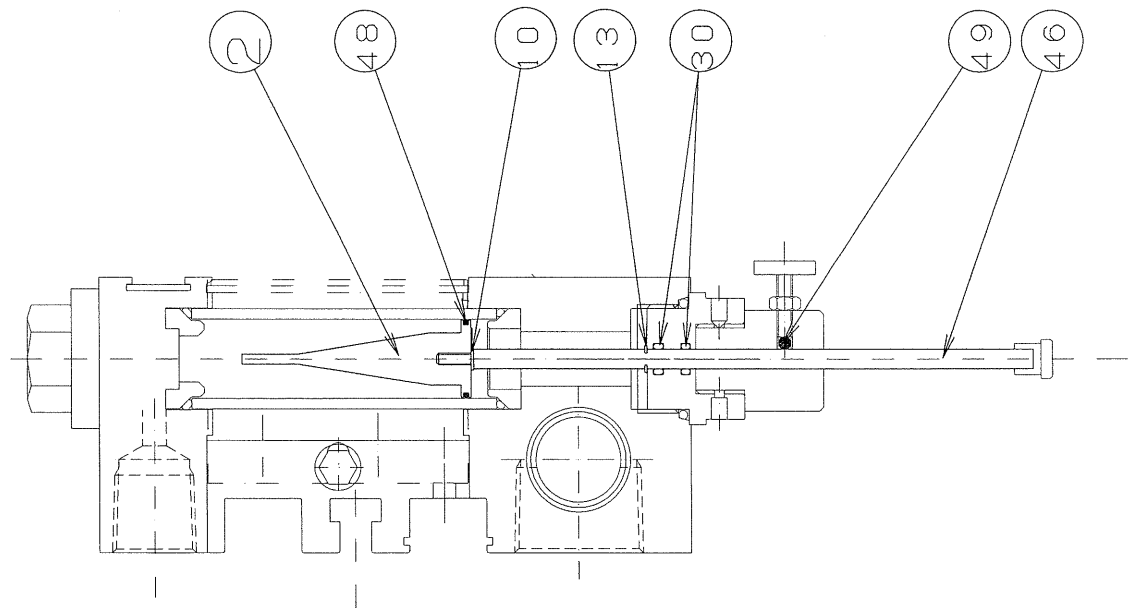
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△			
△			
△			

協議中	出図先	購買	製造	客先	店	検写部教
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1 2 3 4 5 6

A B C D A



No	Item	Material	Q'ty
2	15A Cone	Polyamide resin	1
10	Spring Washer	SUS304	1
13	E Ring	SUS304	1
30	O Ring	NBR 1A	2
46	10A, 15A Rod	SUS303	1
48	O Ring	Viton 4D (W)	1
49	Nylon boll	Nylon	1

変更内容	DISCRIPTION	DATE	REVISION
△	Change the material of No.48		
△			
△			
△			

CUSTOMER	
SPECIFICATION	
CHECKED BY	T.T
Shimizu	JAN 26 '01
DESIGNED BY	Mizuno
DATE	2001.01.26
KOF-15 KIT-3	
DWG. No. e-KOF15-KIT3	
KOWA CORP.	
OSAKA JAPAN	
DATE OF ISSUE	
MFG.No.	

協賛印
出図先
購買
製造
客先
控
複写部
A3
出図日

1

2

3

4

5

6

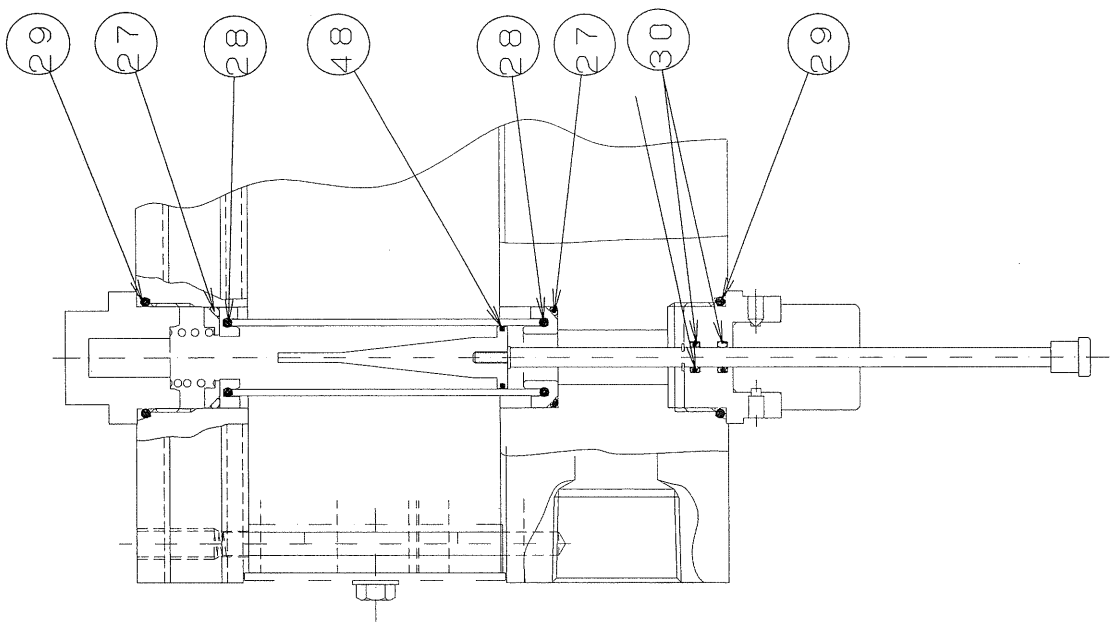
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B

C

D

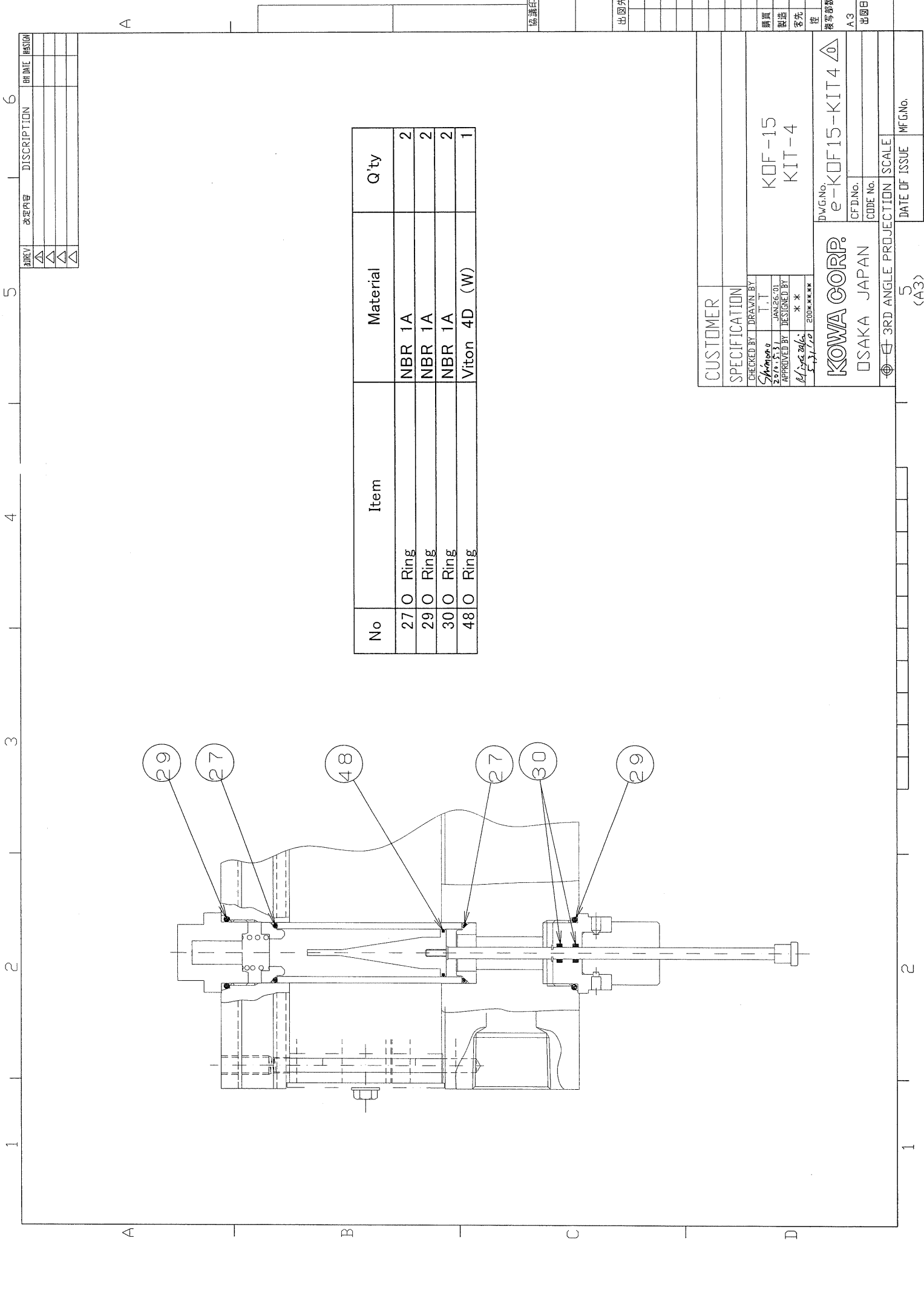
A



No	Item	Material	Q'ty
27	O Ring	NBR 1A	2
28	O Ring	NBR 1A	2
29	O Ring	NBR 1A	2
30	O Ring	NBR 1A	2
48	O Ring	Viton 4D (W)	1

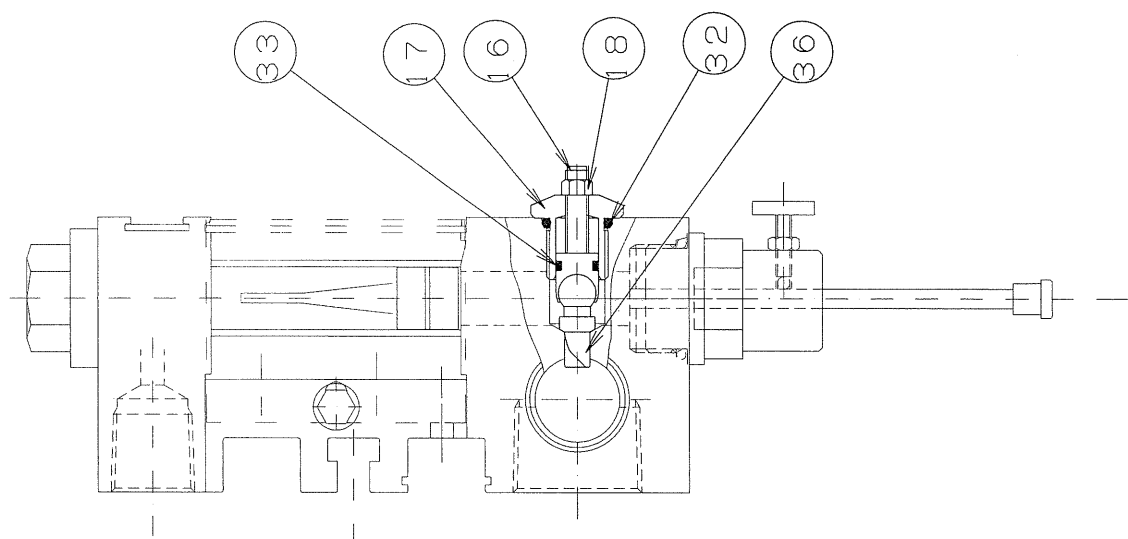
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△	Common Chart making		2001.12	F.M
△				
△				
△				

協議印		出図先		購買		製造		客先		印		提出部数		A3		出図日	
CUSTOMER		SPECIFICATION		CHECKED BY		DRAWN BY		T.T		JAN 26 01		DESIGNED BY		H. YAZAKI		5.31.02	
				Shimizu		T.T		KOF-10		KOF-10/SPS		KOF-10U		KIT-4			
				KOWA CORP.		e-KOF 10-KIT 4		DWG.No.		CFD.No.		CODE No.		DATE OF ISSUE		MFG.No.	
				OSAKA JAPAN				3RD ANGLE PROJECTION		SCALE							
				5		(A3)											



No	Item	Material	Q'ty
27	O Ring	NBR 1A	2
29	O Ring	NBR 1A	2
30	O Ring	NBR 1A	2
48	O Ring	Viton 4D (W)	1

CUSTOMER	SPECIFICATION	CHECKED BY DRAWN BY				購買 製造 客先 店	
		<i>Shimizu</i> T.T.		JAN-26-01		機号贴付	
		DESIGNED BY		2210.5.31		A3	
		APPROVED BY		***		出図日	
		<i>M. Sato</i>		5.31.01			
KOWA CORP.				DWG.No. e-KDF15-KIT4 △			
OSAKA JAPAN				C/DWG.No.			
				CODE No.			
④ ⊖ 3RD ANGLE PROJECTION				SCALE			
5 {A3}				DATE OF ISSUE			
				MFG.No.			



No	Item	Material	Q'ty
16,36	ValveAss'y	SUS303,Polyamide resin	1
17	Valve guide	A2017	1
18	Hexagon nut	SUS304	1
32	O Ring	NBR 1A	1
33	O Ring	NBR 1A	1

REV	改定内容	DISCRIPTION	DATE	REVISION
△	Model addition		2010.12.01	F.M
△				
△				
△				

CUSTOMER	
SPECIFICATION	
CHECKED BY Shimizu	DRAWN BY T.T
2010.5.5	JAN26.01
APPROVED BY Uyazawa	DESIGNED BY * *
5.31.10	200*****
KDF-10,KDF-10/SPS KDF-10U,KDF-15 KIT-5	
DWG.No. e-KDF1015-KIT5 ①	
KOWA CORP.	
OSAKA JAPAN	
C/FD No.	DATE OF ISSUE
SCALE	MFG.No.

協議印	出図先	購買	製造	名先	印	提出部数	A3	出図日
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Dear,

Dear

PAPER MACHINE • DRYPART

OIL FLOW SENSOR MONITOR

K O F - A - * *

Instruction Manual

Our Code Number :

APPROVAL	STAMP	CONTACT



KOWA CORPORATION

TEL. 0790-27-1315 FAX. 0790-27-1314

Safety Precautions

- Before installation, operation and inspection of repair, please read this Instruction Manual so that you can use our products properly.

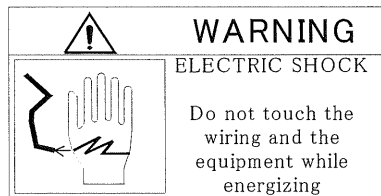
Also please use products after you get knowledge of products, safety information and precautions.

This Lubricating System shows safety information as a safety sign on equipment.

Please handle them with care especially these parts tagged a safety sign.

Mainly, there are two types of safety sign, "Warning" and "Caution". In addition, there are several equal signs.

Every sign shows important information, therefore please keep information.



ELECTRIC SHOCK

Do not touch the equipment and the wiring while driving .

It is likely to die when handling is mistaken .



ELECTRIC SHOCK

Do not touch the equipment and the wiring while driving .

It is likely to die when handling is mistaken .



When handling mistaken, it becomes important injury or a serious damage only accident.

Instruction for proper use

1. Keep a sensor panel away from water.
It may cause malfunction.
Moreover, it may cause a fire and other serious accidents.
2. Do not operate a product with wet hands.
It may cause electric shock.
3. Do not open a door during turning on electricity.
When you need to operate or do other things, only qualified people can do.
Also do not touch a terminal and other parts during operation.
It may cause electric shock.
4. Wiring Work
When you install jumping wires and wiring work at sensor disuse area, you should check if you already turn off the power source.
It may cause electric shock.
5. A flowmeter is caught in a glass tube sometime because of extraneous matter or dirt.
Please clean a rod for a cone setting up (or for cleaning) by moving top and bottom.
Please refer the Instruction Manual for Oil Flow Flow meter "1 - 2 (4)"
When you adjust a flow rate with the adjust valve and other things, the float moves up and down. If the float does not move, it is highly possible that the float may be caught by extraneous matter, therefore be careful.

INDEX

Safety Precautions	1
Instruction for proper use	2
1. Main specification	4
1.1 Overall	
1.2 Oil Sensor Panel	
1.3 Sensor	
2. Wire	6
2.1 Power Source	
2.2 A Warning Output	
2.3 Sensor	
3. Attached materials	8
An attached drawing	

Drawing for sensor monitor		Power Source	Drawing Number	Place of a Door	Q'ty of drawing
	For ten points	AC100V	e-KOF-CP-110	Front	2pcs
		AC200V	e-KOF-CP-210	Front	2pcs
	For twenty points	AC100V	e-KOF-CP-120	Front	2pcs
		AC200V	e-KOF-CP-220	Front	2pcs
	For thirty points	AC100V	e-KOF-CP130	Front	2pcs
		AC200V	e-KOF-CP-230	Front	2pcs
	For sixty points	AC100V	e-KOF-CP-160	Front and Back	4pcs
			e-KOF-CP-160-L	Front	4pcs
		AC200V	e-KOF-CP-260	Front and Back	4pcs
			e-KOF-CP-260-L	Front	4pcs
A Drawing For Low Level Alarm			e-KOF-SENSOR-R7	-	1pc

Attached Materials

Sequencer User's Manual (Excerpt) ——— Section 6 : 16 pages
(Troubleshooting)

Notice: [CX-Programmer] in explanation indicates a software for a sequencer program. Therefore when you use it, please purchase it.

- 1) You can check with LED light.
- 2) You can input the program on a computer with the ladder drawing which we provide you separately.

1. Main Specification

1.1 Overall

Equip a proximity switch with each flow meter (glass tube) of an oil flow and check decrease of flow rate for each flow meter by an oil sensor monitor.

1.2 Oil Flow Sensor Panel

A sensor panel has 10 points, 20 points, 30 points and 60 points.

For feature and other information, please refer the attached drawing.

1) Structure Made of Copper

A-Wall-Mounted • Dustproof • Indoor

2) Use Temperature

0 °C ~ 50 °C

3) Power Sources AC100V/110V (50Hz/60Hz)

AC200V/220V (50Hz/60Hz)

Operation Circuit AC100V/110V (50Hz/60Hz) 、 DC24V

AC200V/220V (50Hz/60Hz) 、 DC24V

4) Seqencer

Model CP1E-E20DR-A 、 CP1E-E40DR-A

Specification of Power Sources AC100V~240V

Specification of Input DC24V +10% 、 -15%

ON Voltage/Current : DC17V 3mA or More

OFF Voltage/Current : DC5V 1mA or Less

Output Specification MAX : AC250V/2A

DC24V/2A (4A/Common)

Input/Output Terminal : A LED Indication

Situation of Flow Meter is shown at 「LED」

LED Lighting : Normal

LED Lighting Out : Unusual (Flow Rate is declining, Sensor Defect, Disconnection)

5) Timer (Timer Inside Seqencer)

This alarm is used for prevent from an alarm reaction by a temporary change of flow rate, when you start to operate the lubricating system.

At a certain time after a sensor operates, it outputs a warning by a lighting pilot lamp of flowing volume decrease (RL of a board side)

Set Time : 10 seconds

6) A Pilot Lamp

On the panel WL : Power Sources

RL : Unusual(One lamp shows max 10 points)

(Flow rate is declining, sensor defect, disconnection)

Notion: RL (Unusual sign) lights ten seconds later when anything unusual happens—— A warning output

When it returns to normal within ten seconds, RL does not light and no warning sign.

Inside the panel

A. Input Terminal of Sequencer LED

It displays state of each flow meter

LED Lighting : Normal

LED Lighting Out : Unusual (Flow rate is declining, sensor defect, disconnection)

Notion: LED of the sequencer shows operation state of a sensor regardless of timer, so when float of oil flow goes down a certain level from an adjust line, LED lights out immediately.

B. Error of Sequencer

As for error of CPU Unit itself, please refer an attached user's manual for CE1CPU unit (Excerpt-Troubleshooting)

Notion: When a program error shows up, please re-enter a ladder drawing which we supply separately.

7) Outside Output

When a warning happens (RL is lighting), it shows warning signals all together.

Output : Relay (No-Voltage)

Number of Terminal : 21-22

1.3 Sensor

Model : GXL-15FLU

A light inside a sensor (LED) : Green—safe area

Red—Unstable Area

Lighting Out—Flow Rate is declining

1) Relationship of a warning light (RL) among a sensor, a sequencer and a board side

State of Oil Supply	Sensor (LED)		Sequencer Input Area (LED)	Panel Display Light (A board side RL)
	Green	Red		
Normal	Lighting	Lighting Out	Lighting	Lighting Out
	Lighting Out	Lighting	Lighting	Lighting Out
Decrease of Flow Rate	Lighting Out	Lighting Out	Lighting Out	Lighting

2) Causes of lighting of a warning

- a. Decrease of flow rate
- b. Sensor defect
- c. Disconnection, inferior wires

3) Treatment when you do not use a sensor

Equip a jumping wire on a stand for a sensor terminal, and shortcut.

If you forget a jumping wire, a warning comes up.

2. Wiring

As for wiring, please refer a drawing of oil flow sensor monitor.

2.1 Power Sources

Wire after checking voltage of a power source by specifications or a drawing of sensor monitor.

Terminal Number : R-T AC100V/110V or AC200V/220V (50/60Hz)

Application Wire : 1.25 ~ 2.0 sq

2.2 Output

Number of Terminal : 21-22

2.3 Sensor

Sensor takes ten pieces as one block.

→ Because it regards one block (1point~10points) of oil flow as one unit.

Ex) Number of terminal 101~110 (1 Type) — Compatible with RL1 (Warning)

Number of terminal 201~210 (2 Type) — Compatible with RL2 (Warning)

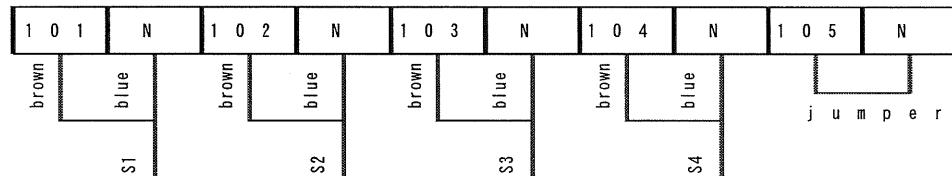
Therefore if an oil flow is less than 10 points, please do not use the rest of terminal and equip a jumping wire.

Notice: If you equip other flow sensor's sensor, they operates normally, however, it would be hard to see a connection between a warning and a flow meter (a flow rate pipe/ a glass pipe).

Wiring Points (Below)

Please wire blue color wires on N terminal.

If you do not use a sensor, you should shortcut with a jumping wire.



3. Position of a sensor monitor and an oil flow

You should install a sensor monitor within three meter from the flowmeter.

(a lead wire of a sensor : 5m)

If it is possible, please equip this beside an oil flow panel.

4. Installation Area of Sensor Panel And a Warning Signal

Installation area of a sensor panel and a warning signal depends on model of a flow meter. Please refer the drawing of low level alarm.

5. Setting Up a Flow Meter of Oil Flow

Please refer “ Instruction Manual for Oil Flow Flow Meter”

The following is an attached drawing

Parts list

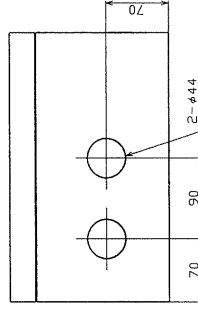
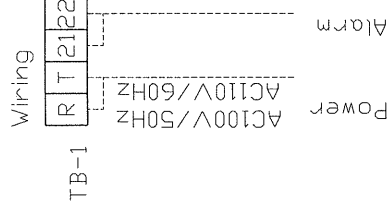
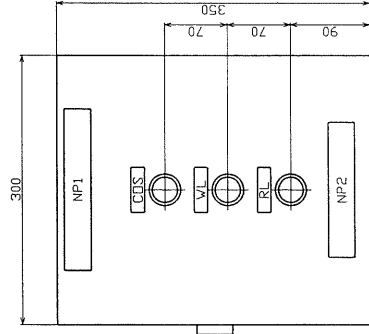
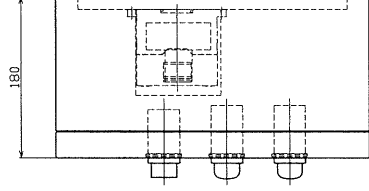
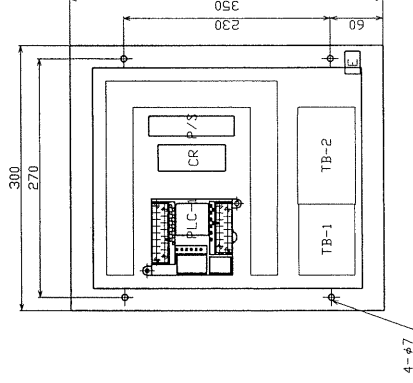
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PLC-1	Sequencer	CP1E-E20DR-A	1
CR	Auxiliary relay	MY4N	1
P/S	Power supply	S8VS-01524	1
COS	Selective switch	ASN320	1
WL	Pilot lamp (W)	APN116DNW	1
RL	Pilot lamp (R)	APN116DNR	1
TB-1	Terminal for Power	BNF10N(2A)	2P
	Terminal for Alarm	BNH10W	2P
TB-2	Terminal for sensor	BC1S-1.5T	20
	Box	be equal to IP42	1

Name plate (Acrylic fiber)

Mark	Character	Size
NP1	Oil flow sensor monitor	180 × 30 × 3t
NP2	KOWA CORPORATION	150 × 30 × 3t
COS	OFF ON	
WL	POWER	50 × 15 × 3t
RL	Abnormal	

Painting
Printing painting
Color : Munsell 5Y7/1

Note
Please put jumping wire in the corresponding terminal when there is a sensor not used.



Wiring of sensor
PLC-1

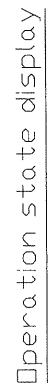
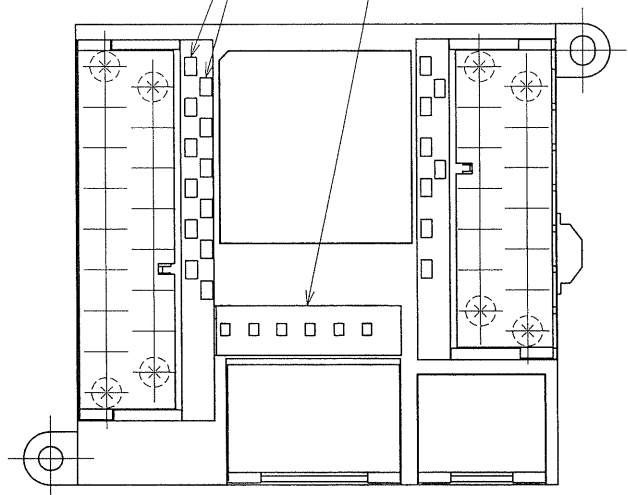
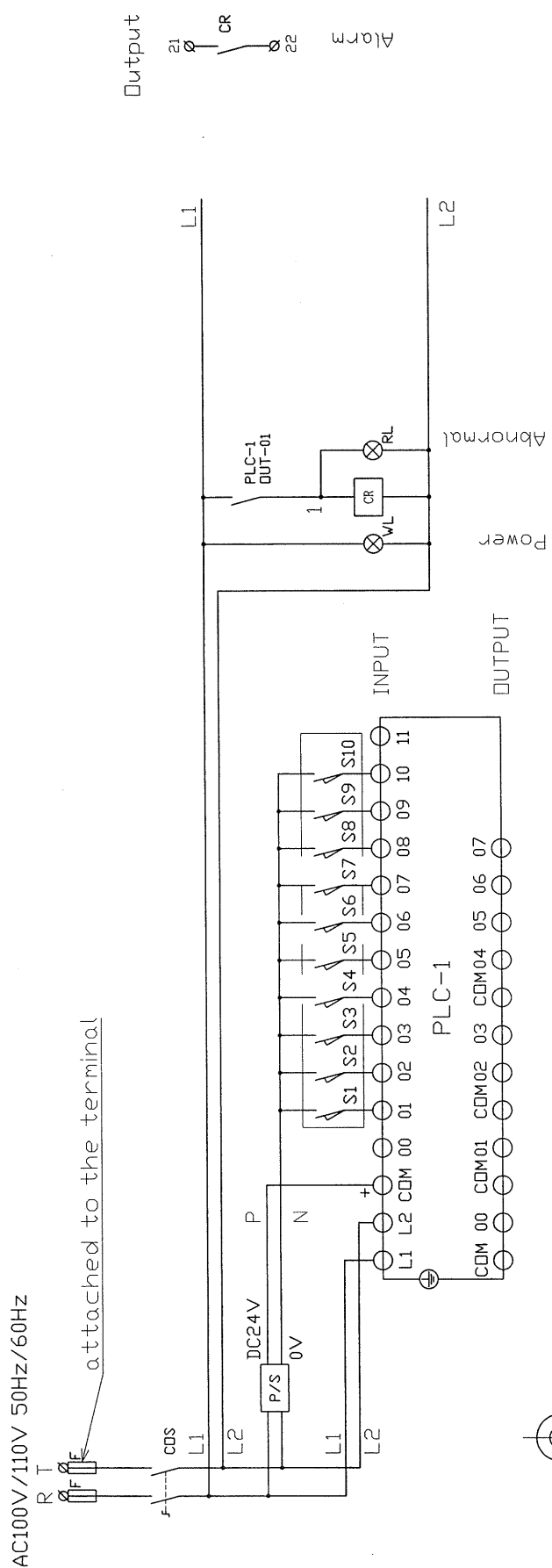
TB-2	101	N	102	N	103	N	104	N	105	N	106	N	107	N	108	N	109	N	110	N
	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10										

KOWA CORP.
OSAKA JAPAN

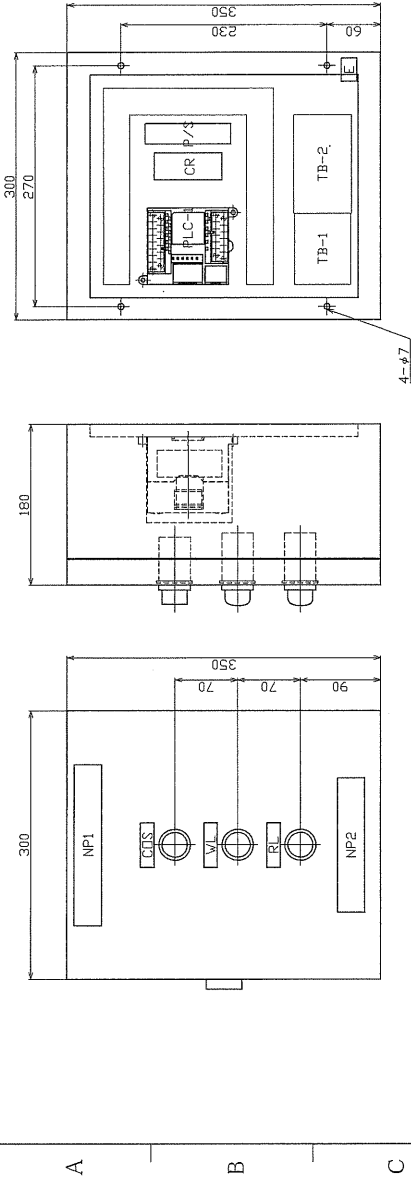
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Shimizu 2010.5.21	宮崎	Oil flow sensor monitor
APPROVED BY	DESIGNED BY	
Miyazaki 15.11.10	Miyazaki	10P
2010.1.8	2010.1.8	

DWG.No.	SHEET No.
e-KDF-CP-110	1/2
CFD.No.	
CODE No.	
DATE OF ISSUE	MFG. No.

REV	DESCRIPTION	DATE	SIGN
2			
1			



				KOWA CORP. OSAKA JAPAN	CHECKED BY <i>Sakuma v</i> 2010.5.21 DESIGNED BY APPROVED <i>Miyazaki</i> 5/31/10	DRAWN BY 宮崎 2010.12.1	TITLE Dil flow sensor monitor 10P	DWG.No. e-KDF-CP-110 Δ 2/2 A3 出図日 CFID.No. CODE No.	SHEET No.	検査部数	
2											
1											
REV		DESCRIPTION	DATE	SIGN							



Parts list

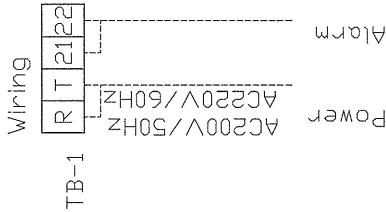
Mark	Item	Model or Spec.	Q'ty
PLC-1	Sequencer	CP1E-E20DR-A	1
CR	Auxiliary relay	MY4N	1
P/S	Power supply	S8VS-01524	1
COS	Selective switch	ASN320	1
WL	Pilot lamp (W)	APN126DNW	1
RL	Pilot lamp (R)	APN126DNR	1
TB-1	Terminal for Power	BNF10N(1A)	2P
TB-2	Terminal for Alarm	BNH10W	2P
TB-2	Terminal for sensor	BC1S-1.5T	20
-	Box	be equal to IP42	1

Name plate (Acrylic fiber)

Mark	Character	Size
NP1	Oil flow sensor monitor	180 x 30 x 3t
NP2	KOWA CORPORATION	150 x 30 x 3t
COS	OFF ON	
WL	POWER	50 x 15 x 3t
RL	Abnormal	

Painting
Printing painting
Color : Munsell 5Y7/1

Note
Please put jumping wire in the corresponding terminal when there is a sensor not used.



Wiring of sensor
PLC-1

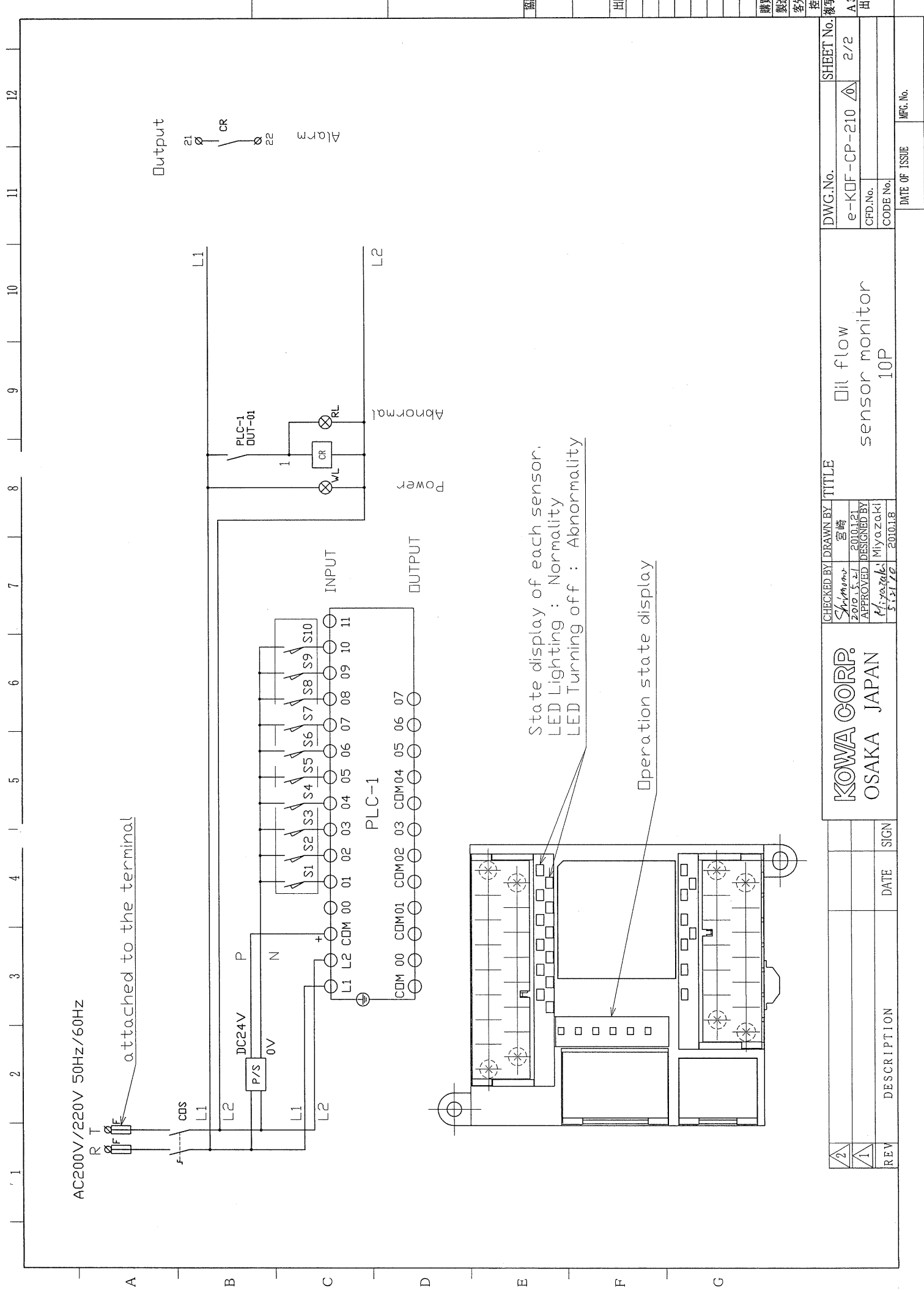
TB-2	101	N	102	N	103	N	104	N	105	N	106	N	107	N	108	N	109	N	110	N
	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue

KOWA CORP.
OSAKA JAPAN

CHECKED BY	DRAWN BY	TITLE
Shimizu	宮崎	Oil flow sensor monitor
2012.6.7	2010.1.21	
APPROVED	DESIGNED BY	
Kawar	Miyazaki	
Jun 7 '12	2010.1.8	

REV	DESCRIPTION	DATE	SIGN
2	Correction of errors in voltage	2012/6/7	nakabe
1			

DWG.No.	SHEET No.
e-KOF-CP-210	1/2
CFD.No.	CODE No.
DATE OF ISSUE	MFG. No.



AC200V/220V 50Hz/60Hz

attached to the terminal

State display of each sensor,
LED Lighting : Normality
LED Turning off : Abnormality

Operation state display

2	REV	DESCRIPTION	DATE	SIGN	KOWA CORP. OSAKA JAPAN	CHECKED BY Shimizu 2010.5.14	DRAWN BY 宮崎 2010.1.21	TITLE Oil flow sensor monitor 10P	DWG.No. e-KOF-CP-210	SHEET No. 2/2	A3	出図日
1	REV					APPROVED BY Miyazaki 5.14.10	DESIGNED BY Miyazaki 2010.1.8		CFD.No.			
									CODE No.			
									DATE OF ISSUE			
									MFG. No.			

12 11 10 9 8 7 6 5 4 3 2 1

Parts list

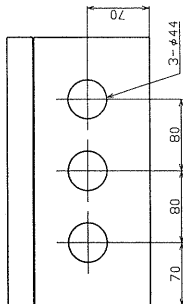
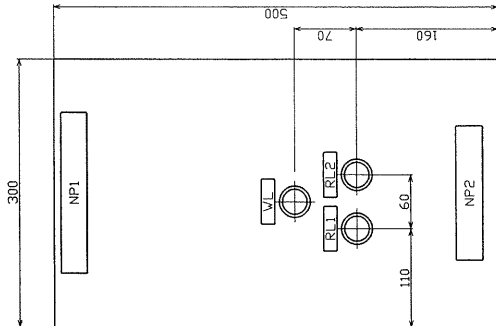
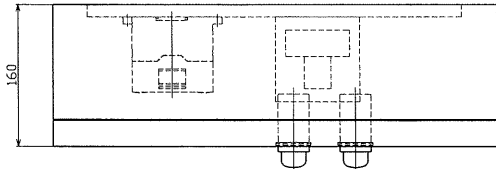
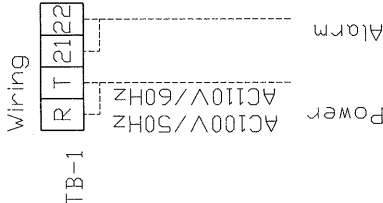
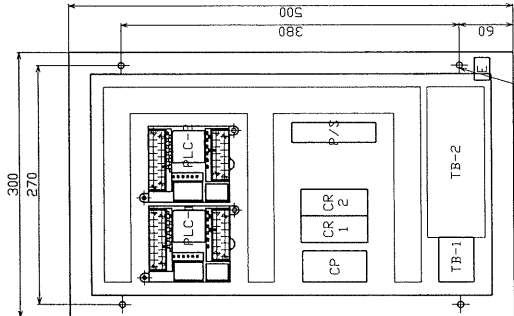
Mark	Item	Model or Spec.	Q'ty
PLC-1.2	Sequencer	CP1E-E20DR-A	1
CP	Circuit protector	CP32F-M/2A	1
CR	Auxiliary relay	MY4N	2
P/S	Power supply	S8VS-01524	1
WL	Pilot lamp (W)	APN116DNR	1
RL	Pilot lamp (R)	APN116DNR	2
TB-1	Terminal	BNH15MW	4P
TB-2	Terminal for sensor	BC1S-1.5T	40
-	Box	be equal to IP42	1

Name plate (Acrylic fiber)

Mark	Character	Size
NP1	Oil flow sensor monitor	180 × 30 × 3t
NP2	KOWA CORPORATION	150 × 30 × 3t
WL	Power	
RL1	Abnormal of No.1	50 × 15 × 3t
RL2	Abnormal of No.2	

Painting
Printing painting
Color : Munsell 5Y7/1

Note
Please put jumping wire in the corresponding terminal when there is a sensor not used.



Wiring of sensor
PLC-1

TB-2	101	N	102	N	103	N	104	N	105	N	106	N	107	N	108	N	109	N	110	N	201	N	202	N	203	N	204	N	205	N	206	N	207	N	208	N	209	N	210	N
brown	S1	blue	S2	brown	S3	blue	S4	brown	S5	blue	S6	brown	S7	blue	S8	brown	S9	blue	S10	brown	S1	blue	S2	brown	S3	blue	S4	brown	S5	blue	S6	brown	S7	blue	S8	brown	S9	blue	S10	brown

KOWA CORP.
OSAKA JAPAN

CHECKED BY
S. Yamada
2010.5.11
APPROVED
Miyazaki
5.21/10
2010.1.21

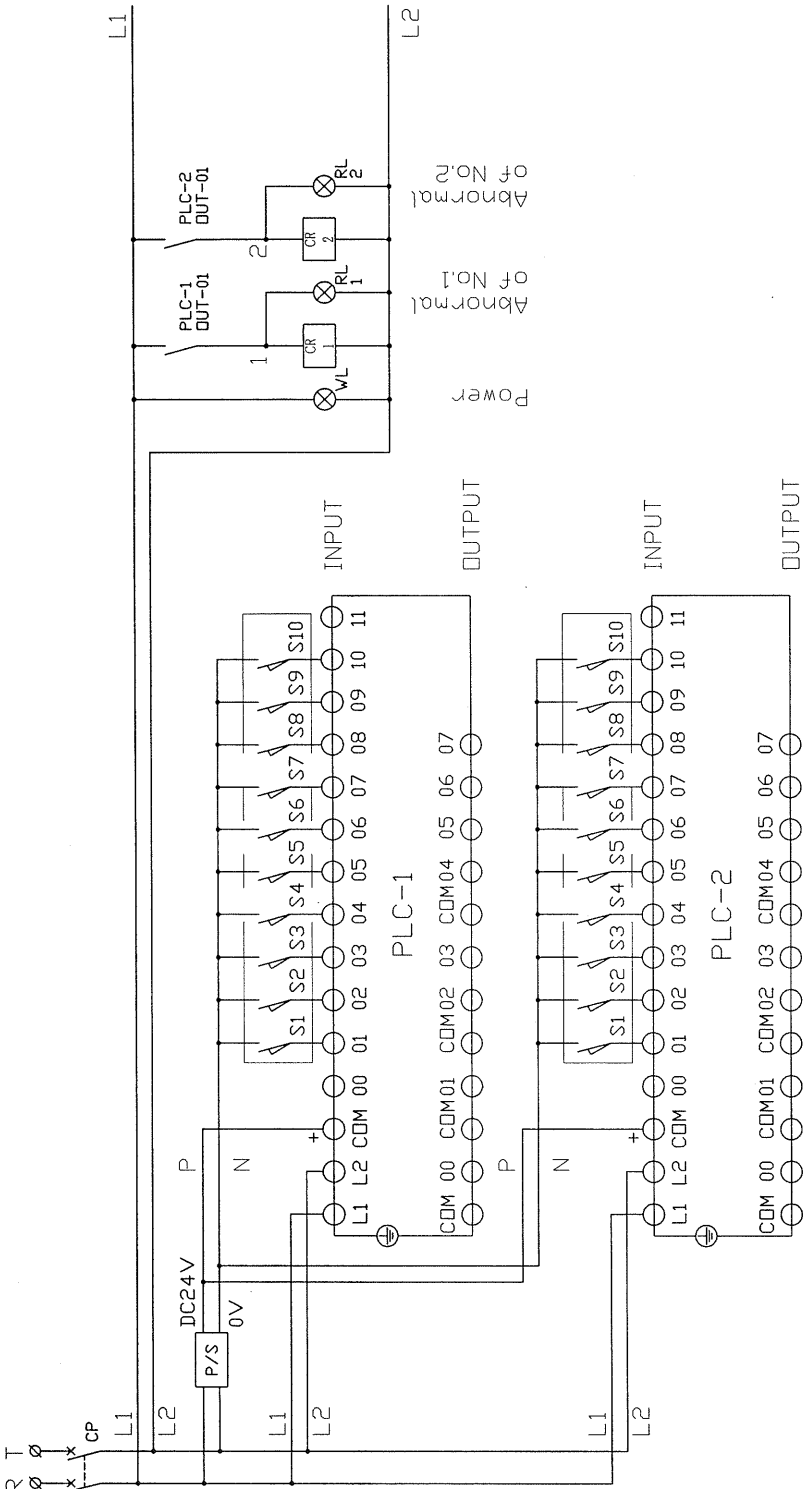
Oil flow
sensor monitor
20P

DWG.No.
e-KDF-CP-120
CPD.No.
CODE No.

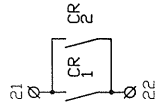
SHEET No.
A3
1/2
出図日

DATE OF ISSUE
MFG. No.

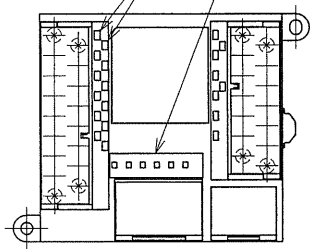
AC100V/110V 50Hz/60Hz



Output



State display of each sensor
LED Lighting : Normality
LED Turning off : Abnormality
Operation state display



REV	DESCRIPTION	DATE	SIGN
1			

KOWA CORP.
OSAKA JAPAN

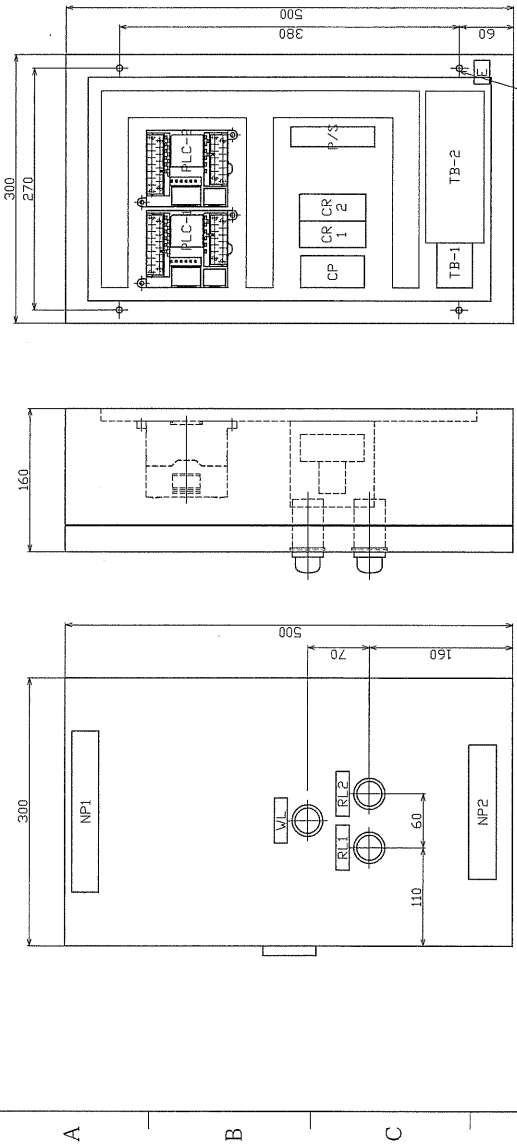
CHECKED BY: S. Amamiya
DRAWN BY: 宮崎 宣
2010.1.21
APPROVED BY: Miyazaki
5.21/2010.1.21

Oil flow
sensor monitor
20P

DWG.No. e-KDF-CP-120
SHEET No. 2/2

出図日 A.3
出図人
CODE No.
DATE OF ISSUE
MFG. No.

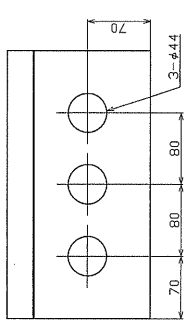
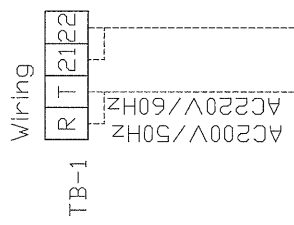
協賛印
出図先
購買
製造
客先
控
複写部



Parts list			
Mark	Item	Model or Spec.	Q'ty
PLC-1,2	Sequencer	CP1E-E20DR-A	1
CP	Circuit protectoe	CP32F-M/2A	1
CR	Auxiliary relay	MY4N	2
P/S	Power supply	S8VS-01524	1
WL	Pilot lamp (W)	APN126DNW	1
RL	Pilot lamp (R)	APN126DNR	2
TB-1	Terminal	BNH15MW	4P
TB-2	Terminal for sensor	BC1S-1.5T	40
-	Box	be equal to CH16-35	1

Name plate (Acrylic fiber)

Mark	Character	Size
NP1	Oil flow sensor monitor	180 x 30 x 3t
NP2	KOWA CORPORATION	150 x 30 x 3t
WL	Power	
RL1	Abnormal of No.1	50 x 15 x 3t
RL2	Abnormal of No.2	



Painting
Printing painting
Color : Munsell 5Y7/1

Power
Alarm

Note
Please put jumping wire in the corresponding
terminal when there is a sensor not used.

Wiring of sensor
PLC-1

PLC-2

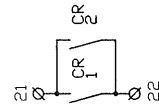
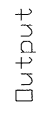
TB-2	101	N	brown	S1	blue	S10	brown	S1	brown	N	210	N
	102	N	brown	S2	blue	S11	brown	S2	blue	N	211	N
	103	N	brown	S3	blue	S12	brown	S3	blue	N	212	N
	104	N	brown	S4	blue	S13	brown	S4	blue	N	213	N
	105	N	brown	S5	blue	S14	brown	S5	blue	N	214	N
	106	N	brown	S6	blue	S15	brown	S6	blue	N	215	N
	107	N	brown	S7	blue	S16	brown	S7	blue	N	216	N
	108	N	brown	S8	blue	S17	brown	S8	blue	N	217	N
	109	N	brown	S9	blue	S18	brown	S9	blue	N	218	N
	110	N	brown	S10	blue	S19	brown	S10	blue	N	219	N
	111	N	brown	S11	blue	S20	brown	S11	blue	N	220	N

REV	DESCRIPTION	DATE	SIGN
1	Correction of errors in voltage	2012/6/7	nakate

CHECKED BY		DRAWN BY	TITLE	
Shimizu		宮崎	Oil flow sensor monitor	
2012-6-7		2010.1.21	DESIGNED BY	
APPROVED		Miyazaki	20P	
2012.7.12		2010.1.21		

DWG.No.	SHEET No.
e-KOF-CP-220	1/2
CPD.No.	A3
CODE No.	出図日
DATE OF ISSUE	MFG. No.

KOWA CORP.	
OSAKA JAPAN	



State display of each sensor
LED Lighting : Normality
LED Turning off : Abnormality

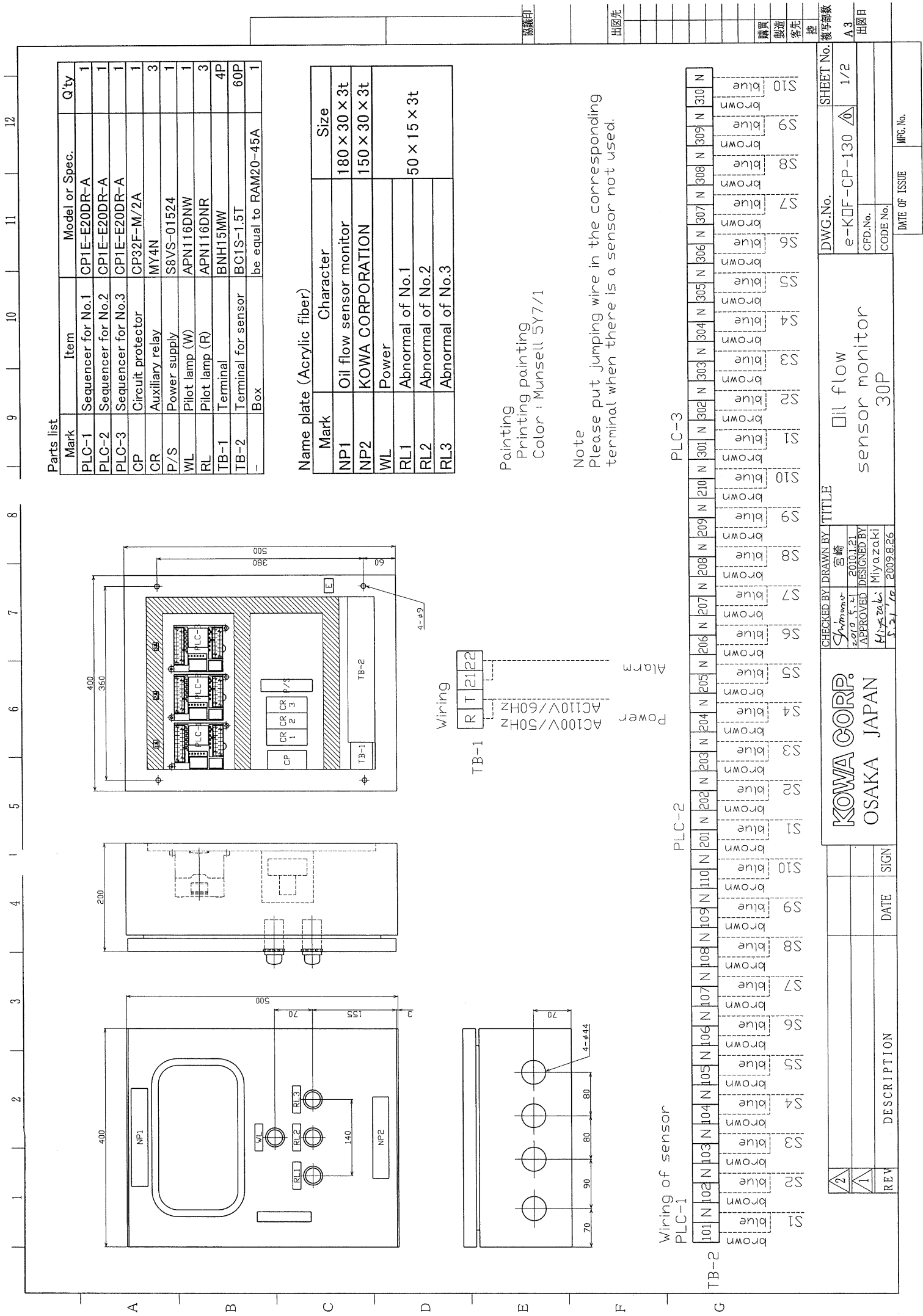
Operation state display



KOWA CORP.
OSAKA JAPAN

Oil flow
sensor monitor
20P

DWG.No.	SHEET No.	正 移学部教 A 3 出図日
e-KOF-CP-220	2/2	
CFD.No.		
CODE No.		
DATE OF ISSUE		MFG. No.



Mark	Item	Model or Spec.	Q'ty
PLC-1	Sequencer for No.1	CP1E-E20DR-A	1
PLC-2	Sequencer for No.2	CP1E-E20DR-A	1
PLC-3	Sequencer for No.3	CP1E-E20DR-A	1
CP	Circuit protector	CP32F-M/2A	1
CR	Auxiliary relay	MY4N	3
P/S	Power supply	S8VS-01524	1
WL	Pilot lamp (W)	APN116DNR	1
RL	Pilot lamp (R)	APN116DNR	3
TB-1	Terminal	BNH15MW	4P
TB-2	Terminal for sensor	BC1S-1.5T	60P
-	Box	be equal to RAM20-45A	1

Mark	Character	Size
NP1	Oil flow sensor monitor	180 × 30 × 3t
NP2	KOWA CORPORATION	150 × 30 × 3t
WL	Power	
RL1	Abnormal of No.1	50 × 15 × 3t
RL2	Abnormal of No.2	
RL3	Abnormal of No.3	

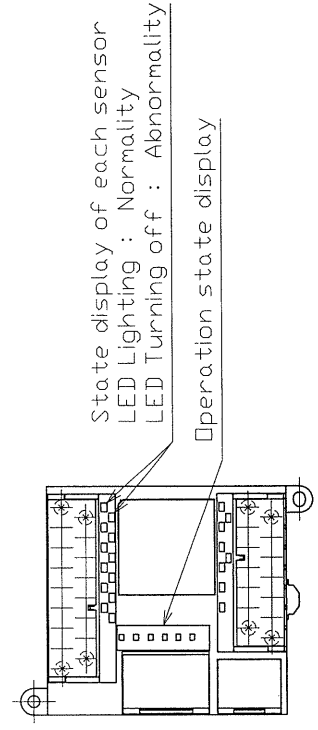
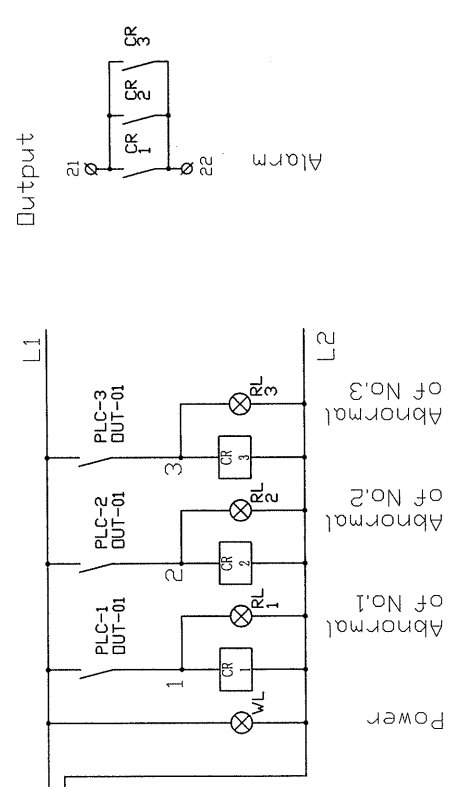
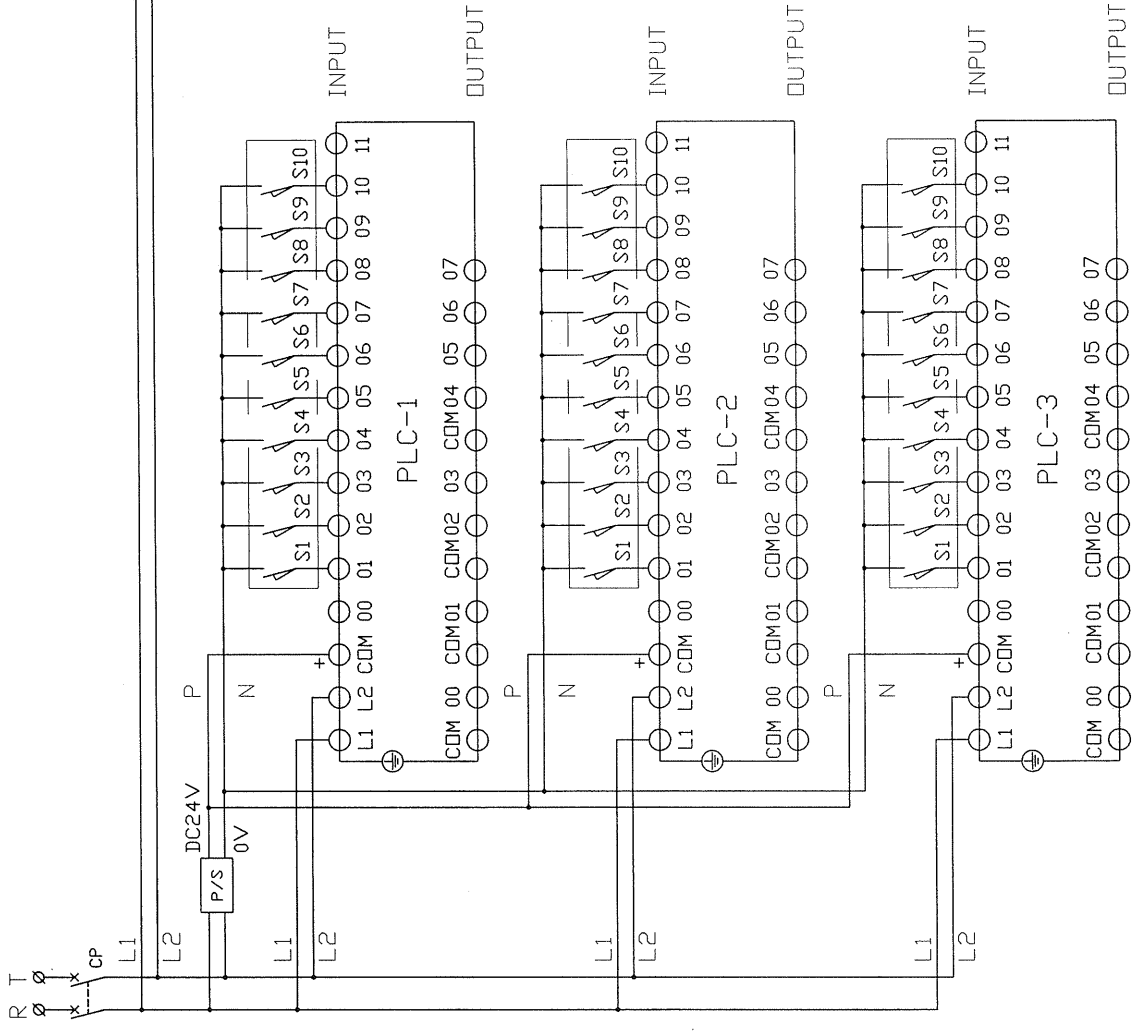
Painting
Printing painting
Color : Munsell 5Y7/1

Note
Please put jumping wire in the corresponding terminal when there is a sensor not used.

Wiring of sensor										PLC-1										PLC-2										PLC-3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
TB-2		101	N	102	N	103	N	104	N	105	N	106	N	107	N	108	N	109	N	110	N	101	N	102	N	103	N	104	N	105	N	106	N	107	N	108	N	109	N	110	N	101	N	102	N	103	N	104	N	105	N	106	N	107	N	108	N	109	N	110	N																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
brown		blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue	brown	blue

CHECKED BY		DRAWN BY		TITLE		DWG.No.		SHEET No.	
Shimizu		宮崎		Oil flow sensor monitor 30P		e-KDF-CP-130		1/2	
2010.5.21		2010.1.21		DESIGNED BY		CFD.No.		A3	
Miyazaki		Miyazaki		APPROVED BY		CODE No.		出図日	
5.21/10		2009.8.26							
REV		DESCRIPTION		DATE		SIGN		MFG. No.	

AC100V/110V 50Hz/60Hz



State display of each sensor
LED Lighting : Normality
LED Turning off : Abnormality
Operation state display

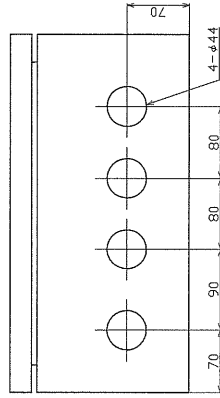
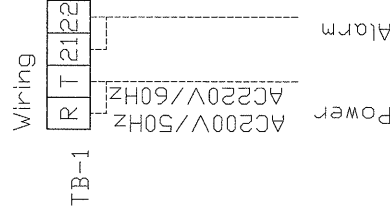
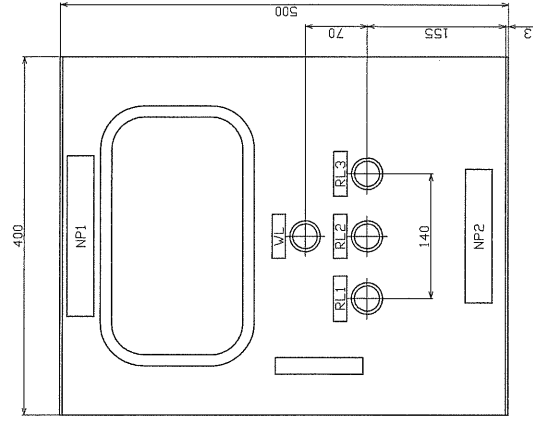
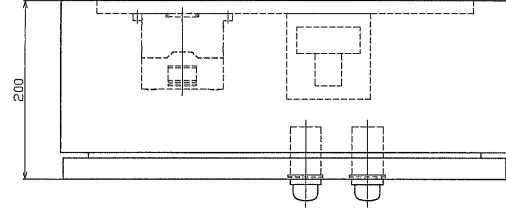
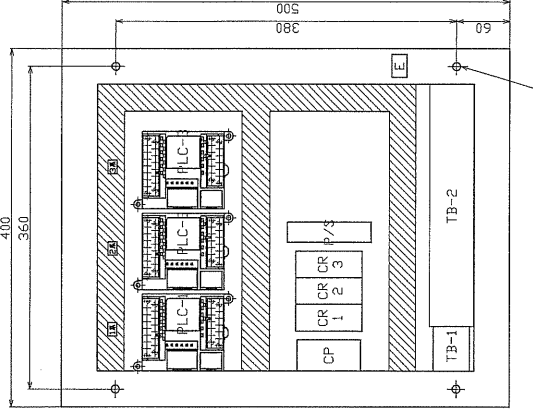
REV	DESCRIPTION	DATE	SIGN
2			
1			

KOWA CORP.
OSAKA JAPAN

CHECKED BY	DRAWN BY	TITLE
Sakaguchi	宮崎	Oil flow sensor monitor
2009.5.21	2010.1.21	
APPROVED BY	DESIGNED BY	
Miyazaki	Miyazaki	
5.31.10	2009.8.26	

DWG.No.	SHEET No.	Revision
e-KDF-CP-130	2/2	A.3
CFD.No.		出図日
CODE No.		

DATE OF ISSUE	MFG.No.
---------------	---------



2-79

PLC-3

Wiring of sensor

PLC-1[illegible]

2			
1	Correction of errors in voltage	2012/6/7	release
REV	DESCRIPTION	DATE	SIGN

KOWA CORP.
OSAKA JAPAN

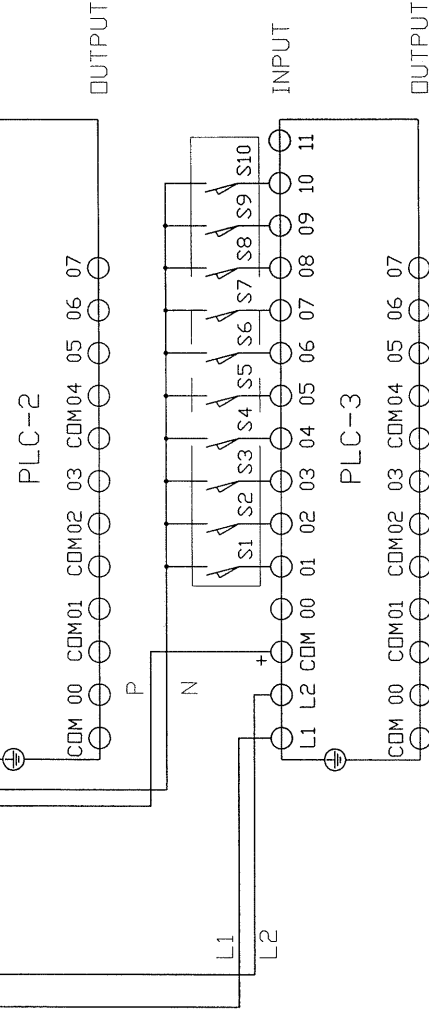
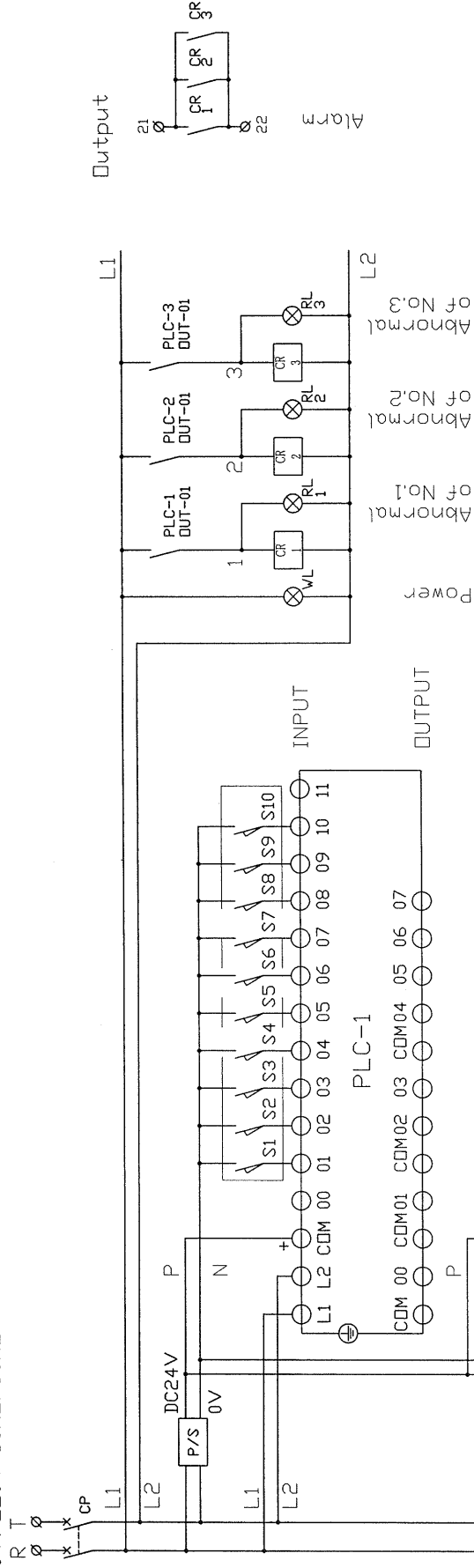
CHECKED BY	DRAWN BY	TITLE
<i>Shimoda</i>	宮崎	
2012-6-7	2010.1.21	
APPROVED	DESIGNED BY	
<i>Kato</i>	Miyazaki	
2012-7-7	2009.8.26	

DWG.No.	SHEET No.
e-K $\square$ F-CP-230 Δ	1/2
CFD.No.	
CODE No.	

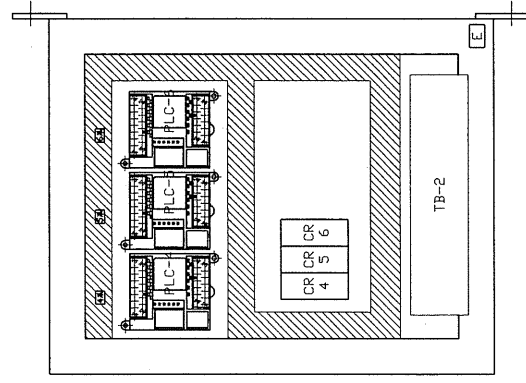
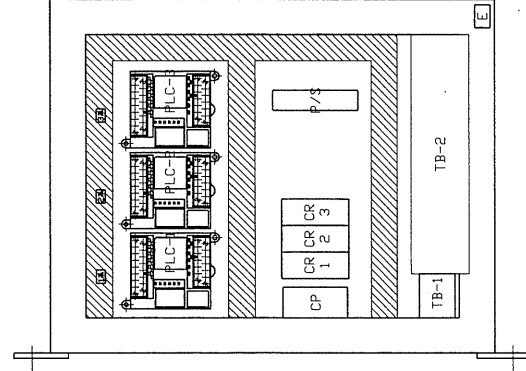
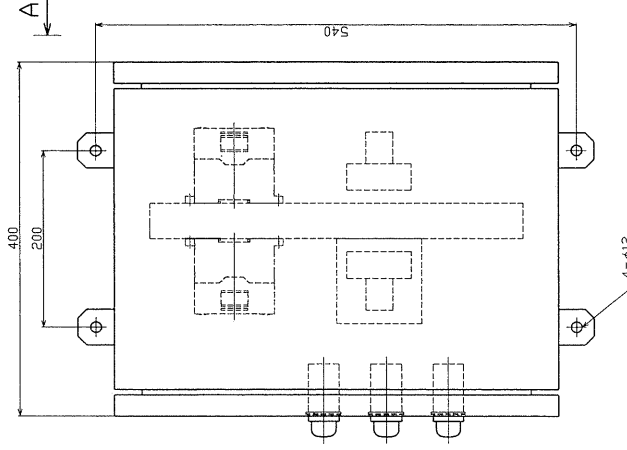
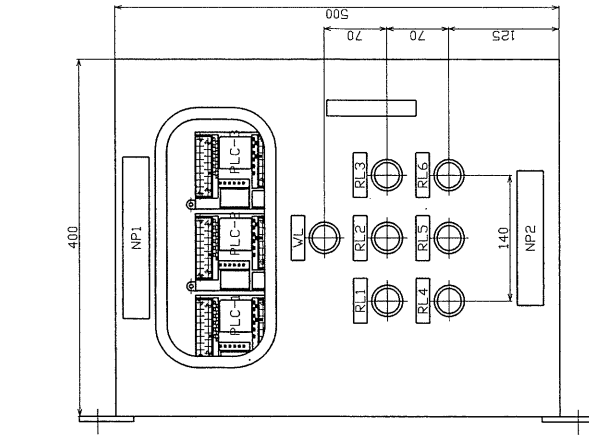
DATE OF ISSUE	MFG. No.
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Painting
Printing painting
Color : Munsell 5Y7/1

Note
Please put jumping wire in the corresponding terminal when there is a sensor not used.



DWG.No.	SHEET No.		修正 字 数
e-KOF-CP-230	△	2/2	A3
CFD.No.	出図日		
CODE No.			
DATE OF ISSUE		MFC. No.	



Technical drawing of a rectangular plate with the following specifications:

- Overall width: 140
- Overall height: 280
- Four circular holes arranged in a 2x2 grid.
- Distance between the centers of the holes in the horizontal direction: 80
- Distance between the centers of the holes in the vertical direction: 80
- Distance from the top edge to the center of the top row of holes: 90
- Distance from the bottom edge to the center of the bottom row of holes: 70
- Distance from the left edge to the center of the left column of holes: 70
- Distance from the right edge to the center of the right column of holes: 70
- Each hole has a diameter of $\phi 4$.

Painting
Printing painting
Color : Munsell 5Y7/1

Vision A

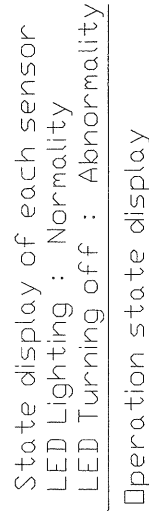
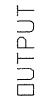
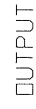
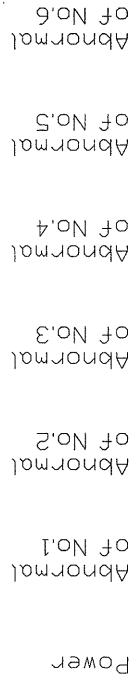
2			
1			
REV	DESCRIPTION	DATE	SIGN

KOWA CORP.
OSAKA JAPAN

CHECKED BY	Shimono	DRAWN BY	宮崎
2010.5.31	APPROVED	2010.2.16	DESIGNED BY
Miyazaki		Miyazaki	
5.31'10		2010.2.9	

TITLE	Oil flow sensor monitor 60P

DWG. No.	e-KOF-CP-160	SHEET No.	1/4	複写部数	A3
CFD. No.					出図日
CODE No.					
DATE OF ISSUE		MFG. No.			

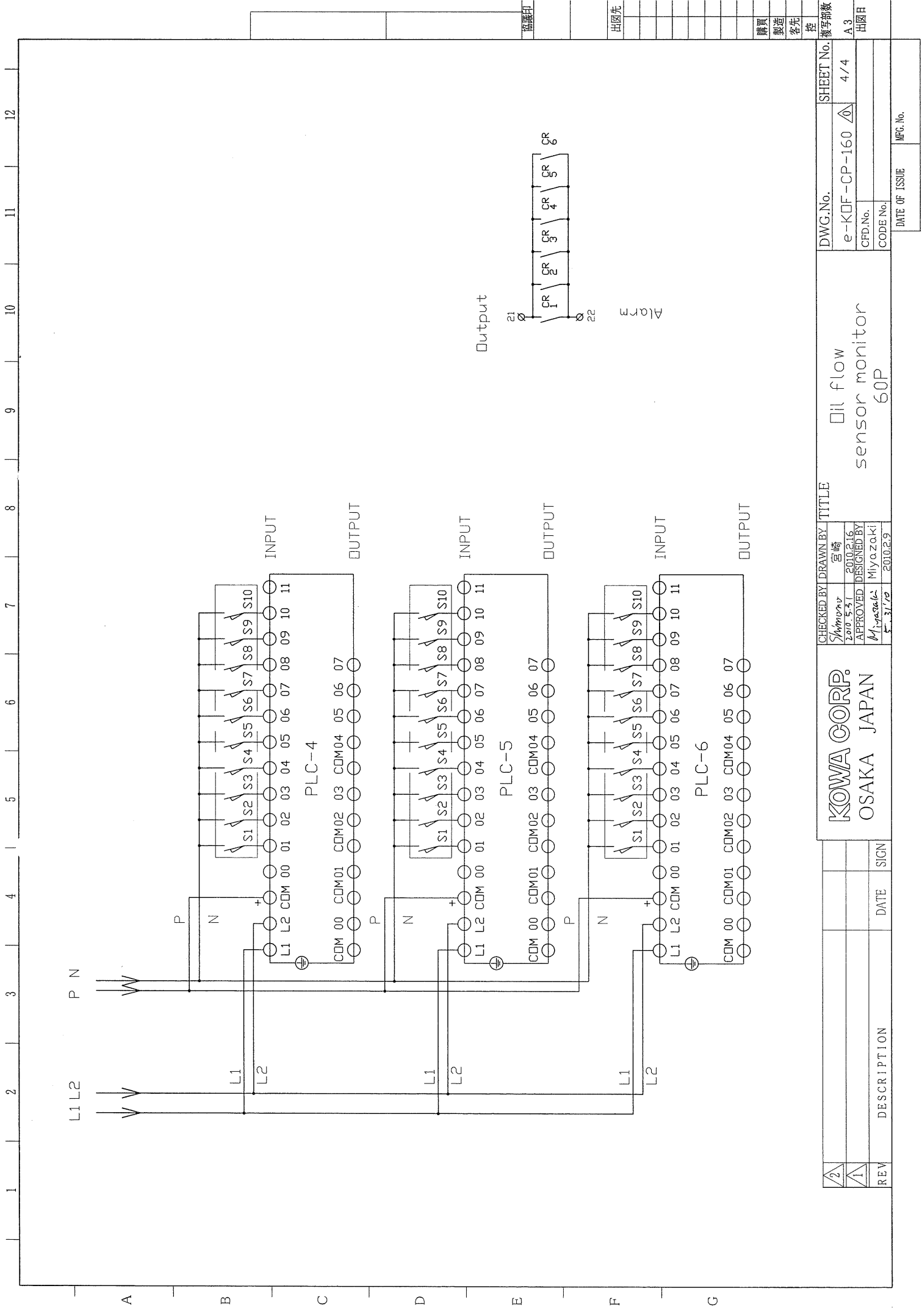


KOWA CORP.
OSAKA JAPAN

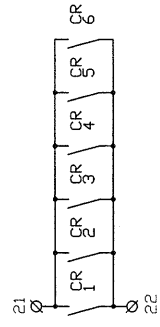
Oil flow
sensor monitor

出図日	A3
複写部数	
SHEET No.	
3/4	
-CP-160 Δ	

DATE OF ISSUE



Output



Alarm

2

1

REV DESCRIPTION DATE SIGN

KOWA CORP.
OSAKA JAPAN

CHECKED BY
Shimono
2010.5.31
APPROVED BY
Miyazaki
5/31/10
2010.2.9

DRAWN BY
宮崎

Oil flow
sensor monitor
60P

DWG.No.
e-KDF-CP-160

SHEET No.
4/4

修字部数
A 3

出図日

出図日

CODE No.

DATE OF ISSUE

MFG. No.

出図先

購買

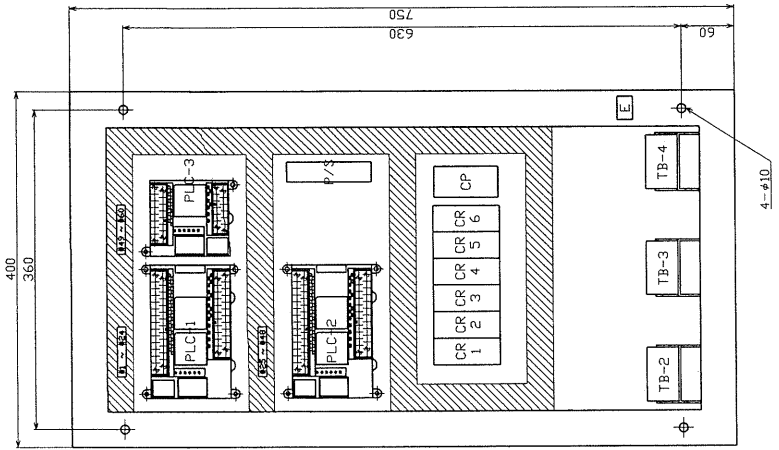
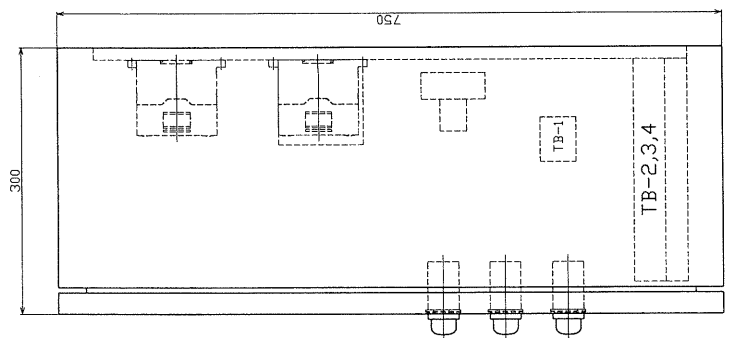
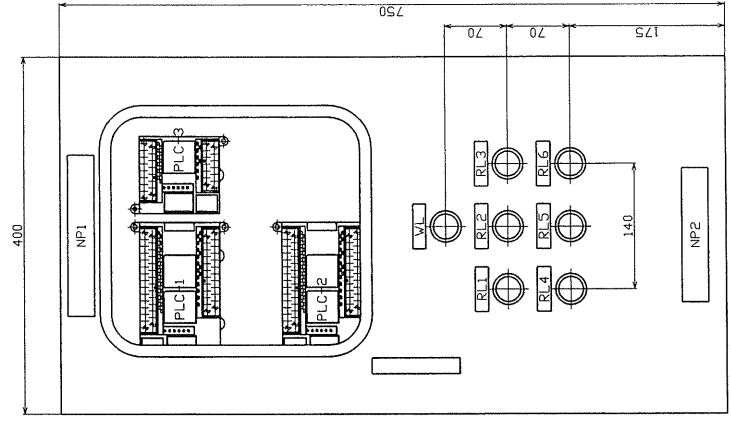
製造

客先

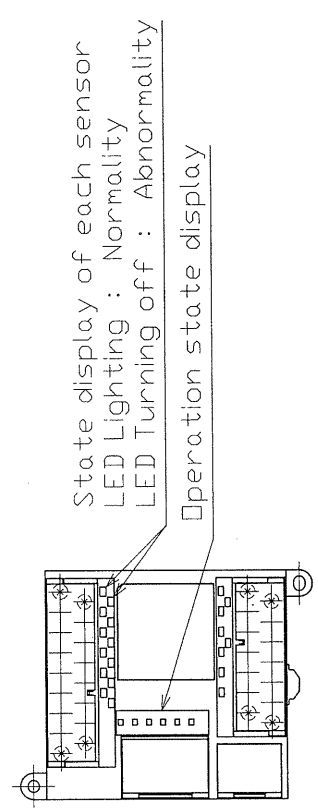
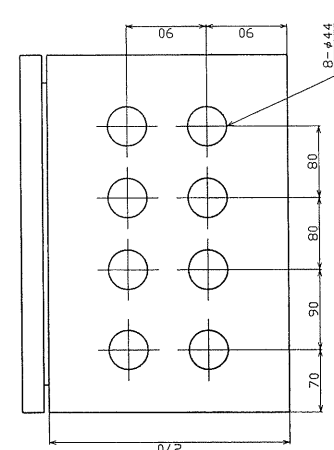
控

協賛社

1 2 3 4 5 6 7 8 9 10 11 12



Painting
Printing painting
Color : Munsell 5Y7/1



REV	DESCRIPTION	DATE	SIGN
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2			
1			

KOWA CORP.
OSAKA JAPAN

CHECKED BY	DRAWN BY	TITLE
Sakamoto	宮崎	Oil flow sensor monitor
2010.2.16	2010.2.16	
APPROVED BY	DESIGNED BY	
Miyazaki	Miyazaki	
2010.2.9	2010.2.9	

Oil flow sensor monitor
60P

DWG.No.	SHEET No.
e-KDF-CP-160-L	1/4
CPD.No.	A 3
CODE No.	出図日

DATE OF ISSUE	MFG. No.
---------------	----------

出図先	購買	製造	客先	控	複写部数
					A 3

協賛印

Parts list

Mark	Item	Model or Spec.	Q'ty
PLC-1,2	Segencer	CP1E-E40DR-A	2
PLC-3	Segencer	CP1E-E20DR-A	1
CP	Circuit protector	CP32F-M/2A	1
CR	Auxiliary relay	MY4N	6
P/S	Power supply	S8VS-03024	1
WL	Pilot lamp (W)	APN116DNR	1
RL	Pilot lamp (R)	APN116DNR	6
TB-1	Terminal	BNH15MW	4P
TB-2,3,4	Terminal for sensor	BC1S-1.5T	3-40P
-	Box	be equal to IP44	1

Name plate (Acrylic fiber)

Mark	Character	Size
NP1	Oil flow sensor monitor	180 × 30 × 3t
NP2	KOWA CORPORATION	150 × 30 × 3t
WL	Power	50 × 15 × 3t
RL1	Abnormal of No.1	
RL2	Abnormal of No.2	
RL3	Abnormal of No.3	
RL4	Abnormal of No.4	
RL5	Abnormal of No.5	
RL6	Abnormal of No.6	

REV	DESCRIPTION	DATE	SIGN	KOWA CORP. OSAKA JAPAN	CHECKED BY Shimono 2010.5.24	DRAWN BY 宮崎 2010.2.16	TITLE Oil flow sensor monitor 60P	DWG.No. e-KDF-CP-160-L	SHEET No. 2/4
								A3	
								CPD.No.	出図日
								CODE No.	
DATE OF ISSUE				MFG. No.					

出図先

購買

製造

客先

控

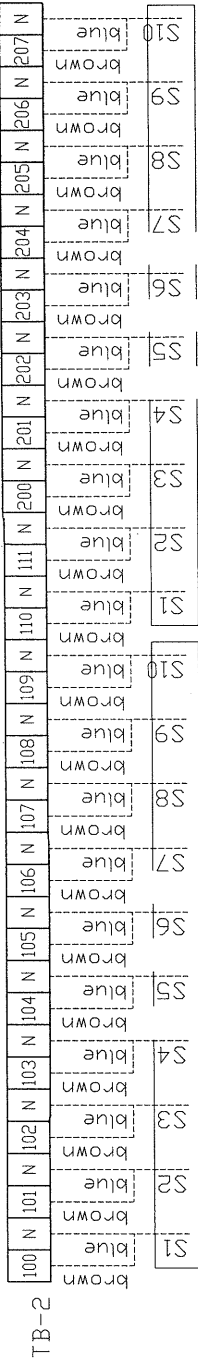
複写部教

協議印

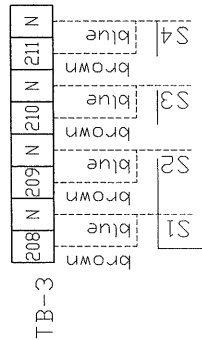
Note

- 1.Please put jumping wire in the corresponding terminal when there is a sensor not used.
- 2.The number of the Flow meter: Every Ten discharge parts

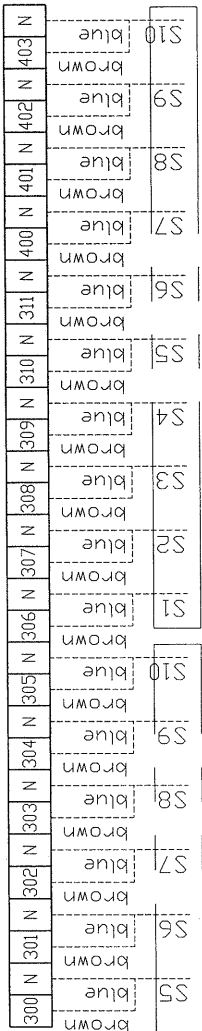
Wiring of sensor
PLC-1



Wiring of sensor
PLC-1

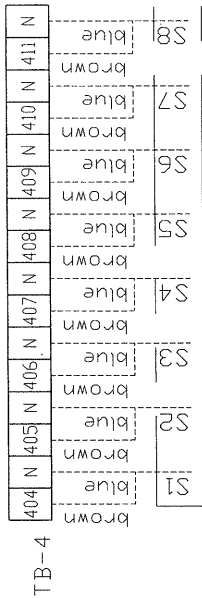


PLC-2



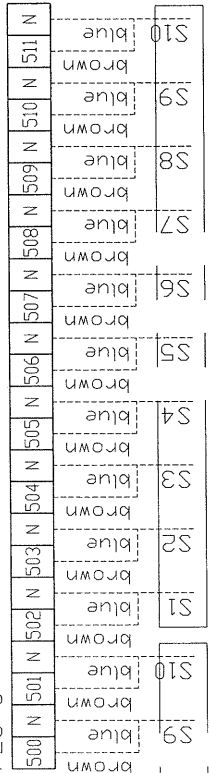
No.3

Wiring of sensor
PLC-2

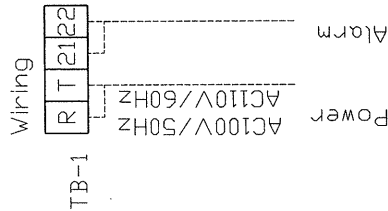


No.5

PLC-3



No.6



REV	DESCRIPTION	DATE	SIGN
2			
1			

KOWA CORP.
OSAKA JAPAN

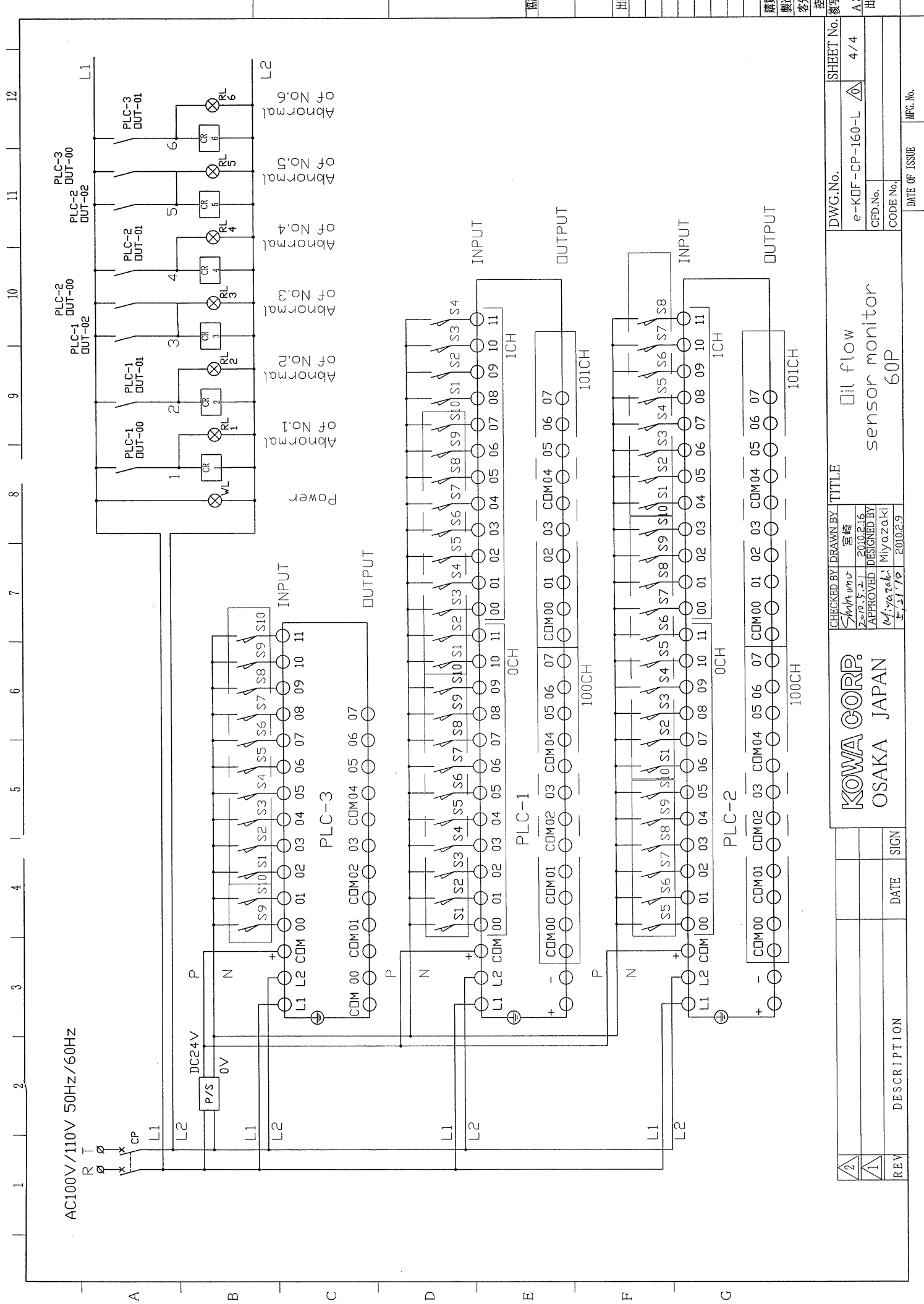
CHECKED BY: *Sawamura*
DRAWN BY: *宮崎*
2010.2.16
APPROVED BY: *Miyazaki*
DESIGNED BY: *Miyazaki*

Oil flow
sensor monitor
60P

DWG.No. e-KDF-CP-160-L
SHEET No. 3/4
A3
CFD.No.
CODE No.
DATE OF ISSUE
MFG. No.

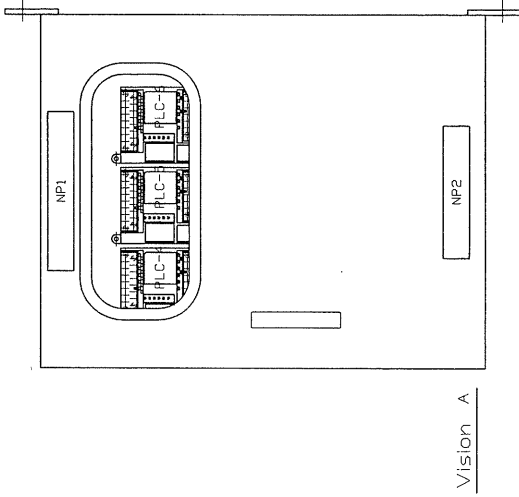
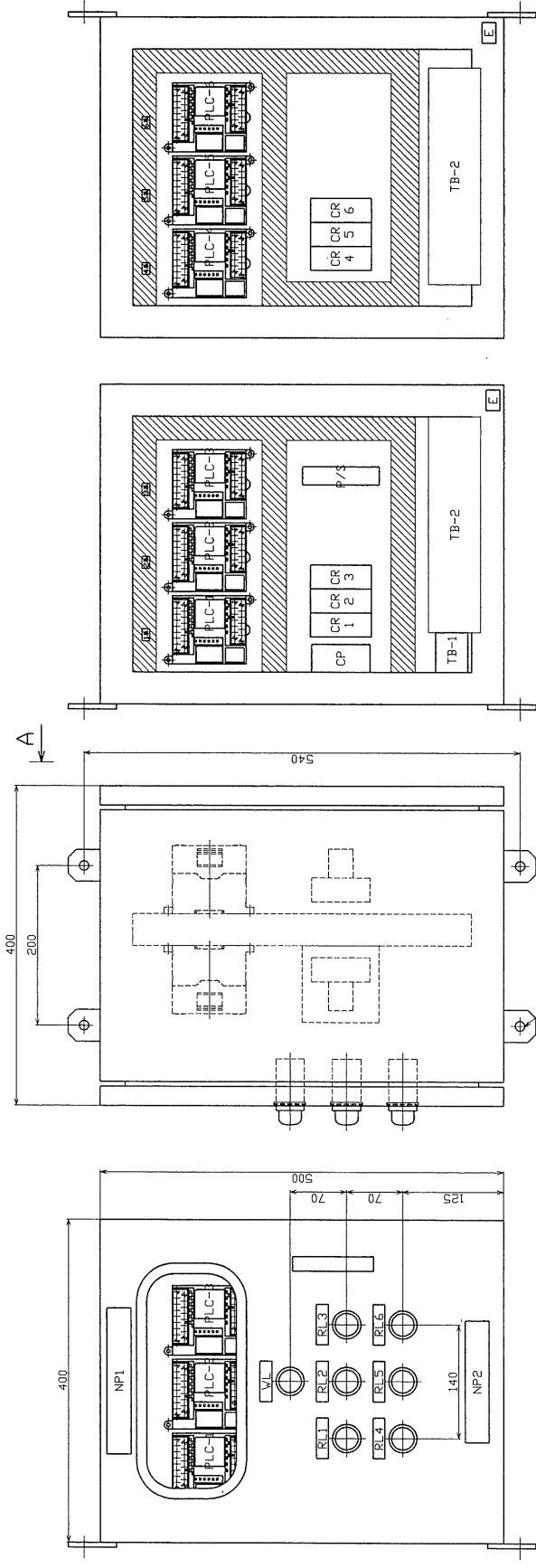
出図先
購買
製造
客先
控
複写部数
A3
出図日

協蔵印



△ 2				KOWA CORP. OSAKA JAPAN				OIL flow sensor monitor 60P				DWG.No. e-KDF-CP-160-L	SHEET No. 4 / 4	複写部数 A3 4/4		
	△ 1				APPROVED 2010.2.16 2010.2.21				DESIGNED BY Miyazaki 2010.2.9				CFD.No.			
		REV														
DESCRIPTION				DATE	SIGN	DATE OF ISSUE										MFG. No.

1 2 3 4 5 6 7 8 9 10 11 12



Painting
Printing painting
Color : Munsell 5Y7/1

REV 2

DESCRIPTION

DATE

SIGN

KOWA CORP.
OSAKA JAPAN

CHECKED BY *Miyazaki*
DRAWN BY *宮崎*
DATE *2010.2.16*
APPROVED *Miyazaki*
DESIGNED BY *Miyazaki*
DATE *2010.2.9*

Oil flow
sensor monitor
60P

DWG. No.
e-KDF-CP-260
SHEET No.
1/4
A3
出図日

DATE OF ISSUE

IPC. No.

出図先

購買

製造

客先

控

複写部数

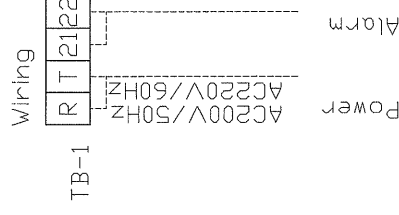
協業印

Parts list

Mark	Item	Model or Spec.	Q'ty
PLC	Sequencer	CP1E-E20DR-A	6
CP	Circuit protector	CP32F-M/2A	1
CR	Auxiliary relay	MY4N	6
P/S	Power supply	S8VS-03024	1
WL	Pilot lamp (W)	APN126DNW	1
RL	Pilot lamp (R)	APN126DNR	6
TB-1	Terminal	BNH15MW	4P
TB-2	Terminal for sensor	BC1S-1.5T	120P
-	Box	be equal to IP44	1

Name plate (Acrylic fiber)

Mark	Character	Size
NP1	Oil flow sensor monitor	180 × 30 × 3t
NP2	KOWA CORPORATION	150 × 30 × 3t
WL	Power	
RL1	Abnormal of No.1	
RL2	Abnormal of No.2	
RL3	Abnormal of No.3	
RL4	Abnormal of No.4	
RL5	Abnormal of No.5	
RL6	Abnormal of No.6	



Note
Please put jumping wire in the corresponding terminal when there is a sensor not used.

Wiring for sensor

2-07a

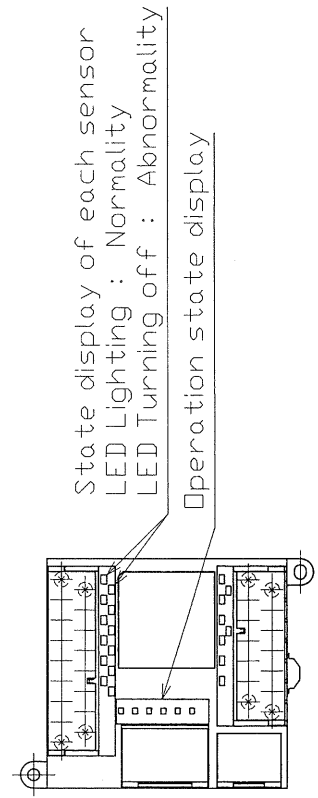
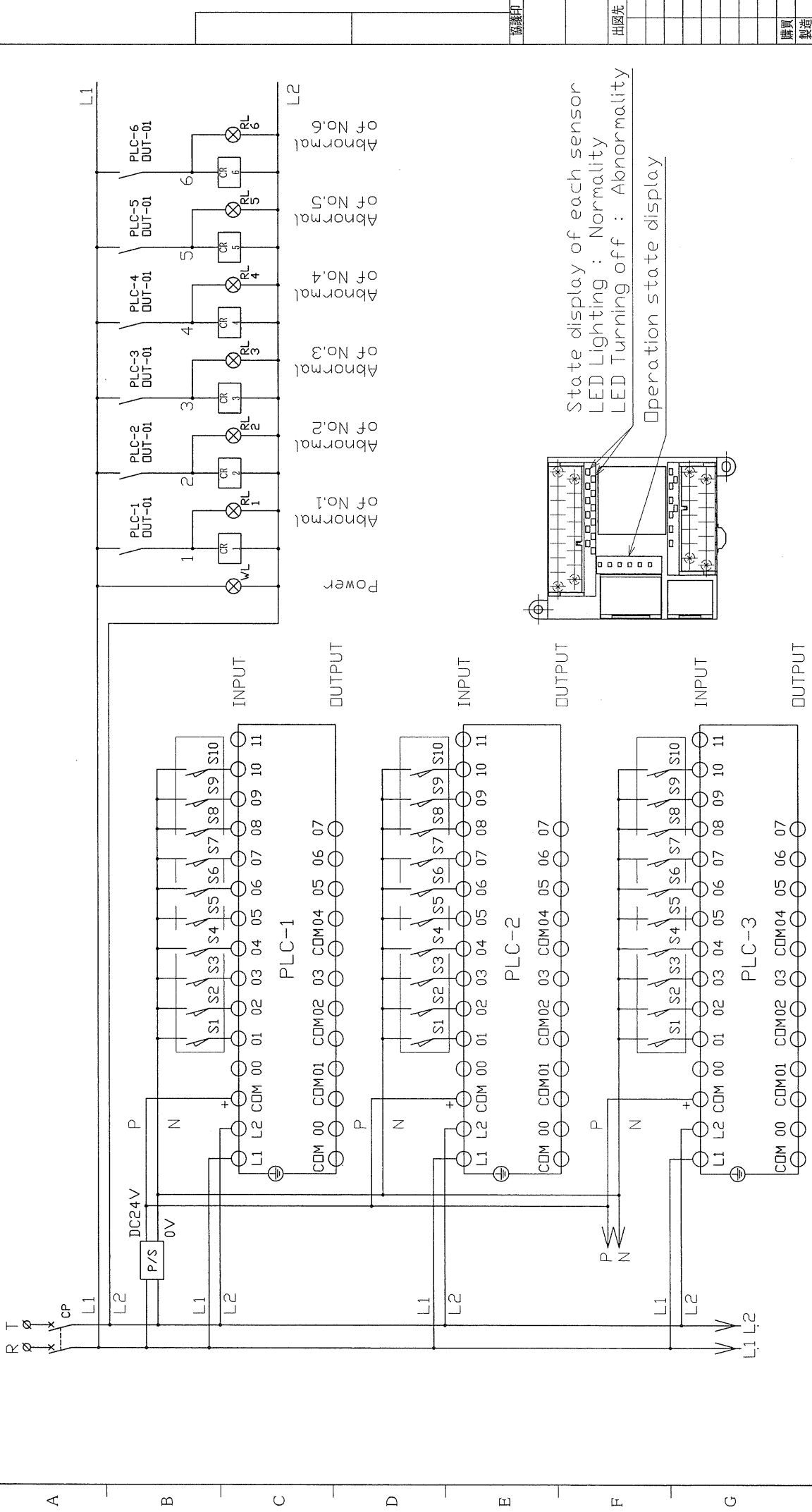
3-1-1[illegible]PLC-45-17aPLC-6[illegible]

2			
1	Correction of errors in voltage	2012/6/7	DATE
REV	DESCRIPTION	DATE	SIGN

KOWA CORP. OSAKA JAPAN	CHECKED BY <u>Shimada</u> 2010.2.16		TITLE Oil flow sensor monitor 60P	DWG. No. _____ e-KDF-CP-260 <u>A</u>	SHEET No. <u>2/4</u>
	APPROVED BY <u>Kato</u> Miyazaki				
	DATE <u>Aug. 7 12</u>				
	CODE No. _____				
			DATE OF ISSUE	MFC. No.	

1 2 3 4 5 6 7 8 9 10 11 12

AC200V/220V 50Hz/60Hz



2						KOWA CORP. OSAKA JAPAN	CHECKED BY DRAWN BY TITLE				DWG.No.		SHEET No.		A3 出図日	
							Shimizu 宮崎 2010.5.31 2010.2.16				e-KDF-CP-260 A		3/4			
1							APPROVED BY DESIGNED BY				CFD.No.					
REV							Miyazaki 5.31.10				CODE No.					
							DATE		SIGN				DATE OF ISSUE		MFG. No.	

MFG. No.

CODE No.

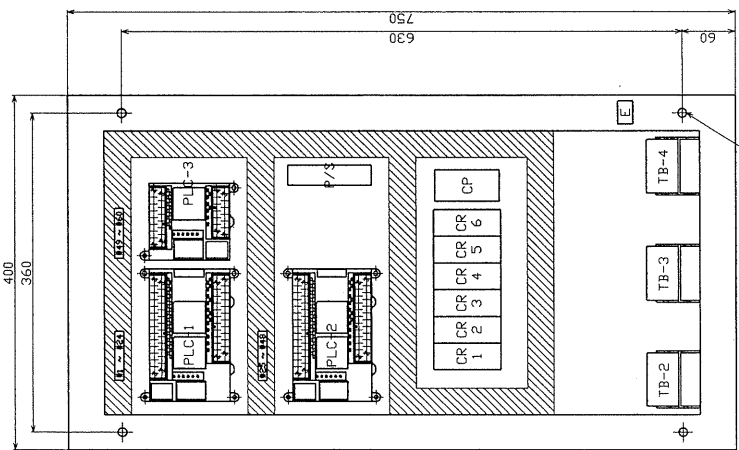
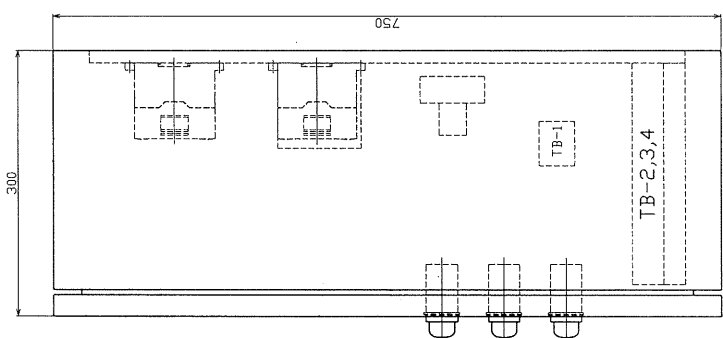
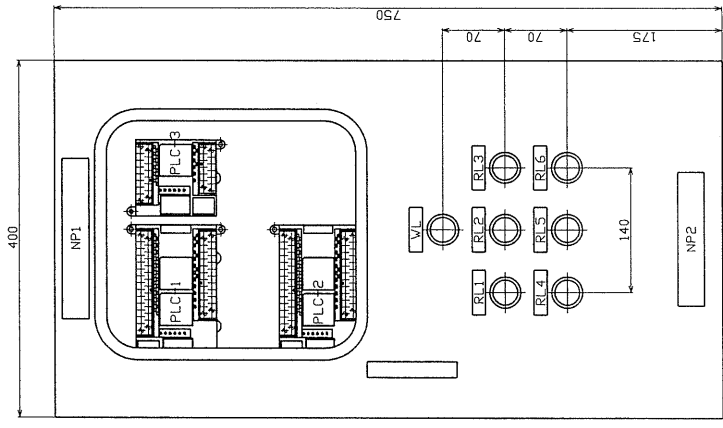
五
四
三

複写部数

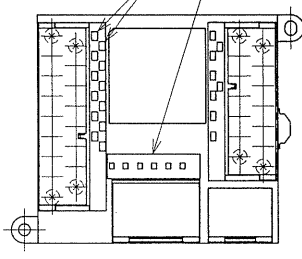
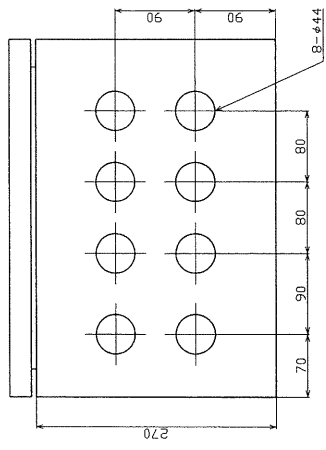
A3

五
四
三

1 2 3 4 5 6 7 8 9 10 11 12



Painting
Printing painting
Color : Munsell 5Y7/1



State display of each sensor
LED Lighting : Normality
LED Turning off : Abnormality
Operation state display

REV	DESCRIPTION	DATE	SIGN
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2			
1			

KOWA CORP.
OSAKA JAPAN

CHECKED BY	DRAWN BY	TITLE
Shimono	宮崎	Oil flow sensor monitor
Zeno E. J.	2010.2.16	60P
APPROVED BY	DESIGNED BY	
Miyazaki	Miyazaki	
5.21.10	2010.2.9	

DWG.No.	SHEET No.
e-KDF-CP-260-L	1/4
CFD.No.	A 3
CODE No.	出図日
DATE OF ISSUE	MFG. No.

出図先	協賛社
購買	製造
販売	客先
接	接

Parts list

Mark	Item	Model or Spec.	Q'ty
PLC-1,2	Seqencer	CP1E-E40DR-A	2
PLC-3	Seqencer	CP1E-E20DR-A	1
CP	Circuit protector	CP32F-M/2A	1
CR	Auxiliary relay	MY4N	6
P/S	Power supply	S8VS-03024	1
WL	Pilot lamp (W)	APN126DNW	1
RL	Pilot lamp (R)	APN126DNR	6
TB-1	Terminal	BNH15MW	4P
TB-2,3,4	Terminal for sensor	BC1S-1.5T	3-40P
-	Box	be equal to IP44	1

Name plate (Acrylic fiber)

Mark	Character	Size
NP1	Oil flow sensor monitor	180 × 30 × 3t
NP2	KOWA CORPORATION	150 × 30 × 3t
WL	Power	50 × 15 × 3t
RL1	Abnormal of No.1	
RL2	Abnormal of No.2	
RL3	Abnormal of No.3	
RL4	Abnormal of No.4	
RL5	Abnormal of No.5	
RL6	Abnormal of No.6	

2 1 REV	DESCRIPTION DATE SIGN	KOWA CORP. OSAKA JAPAN	CHECKED BY Shimizu 2010.5.21 DRAWN BY 宮崎 2010.2.16 TITLE Oil flow sensor monitor		DWG.No. e-KDF-CP-260-L	SHEET No. 2/4
			CFD.No.		A3 出図日	
			CODE No.			
			DATE OF ISSUE		MFG. No.	

協賛社

出図先

購買

製造

客先

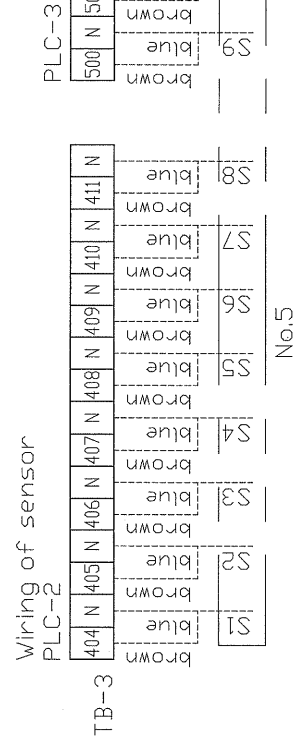
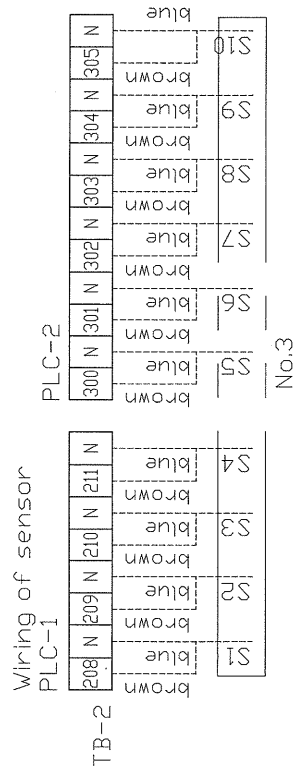
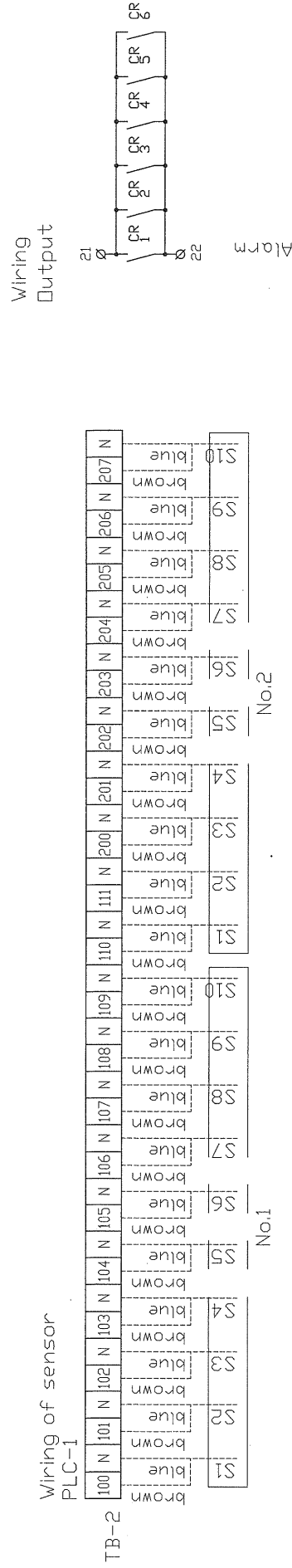
社

複写部数

NON

1. Please put jumping wire in the corresponding terminal when there is a sensor not used.

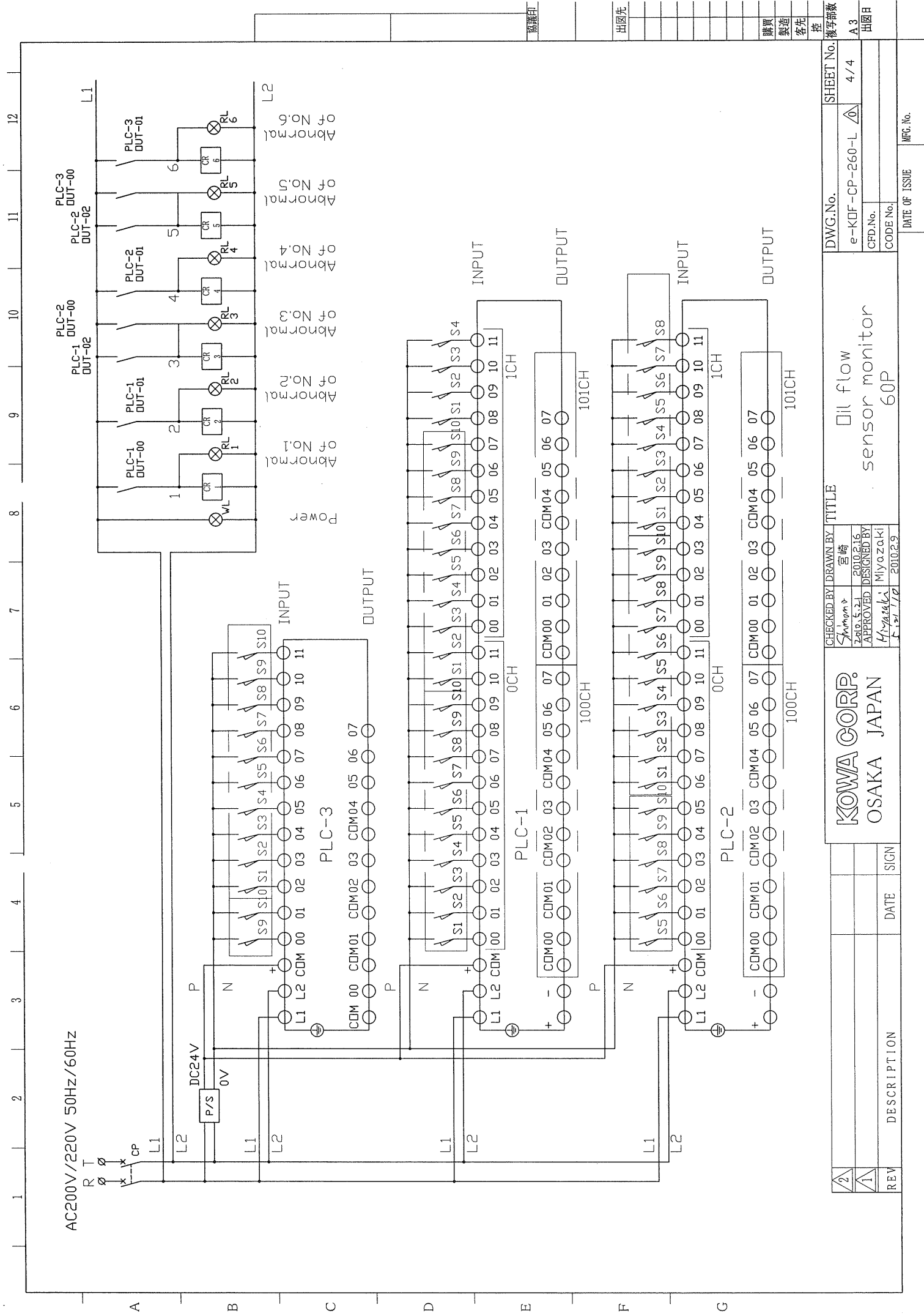
2.The number of the Flow meter: Every Ten discharge ports

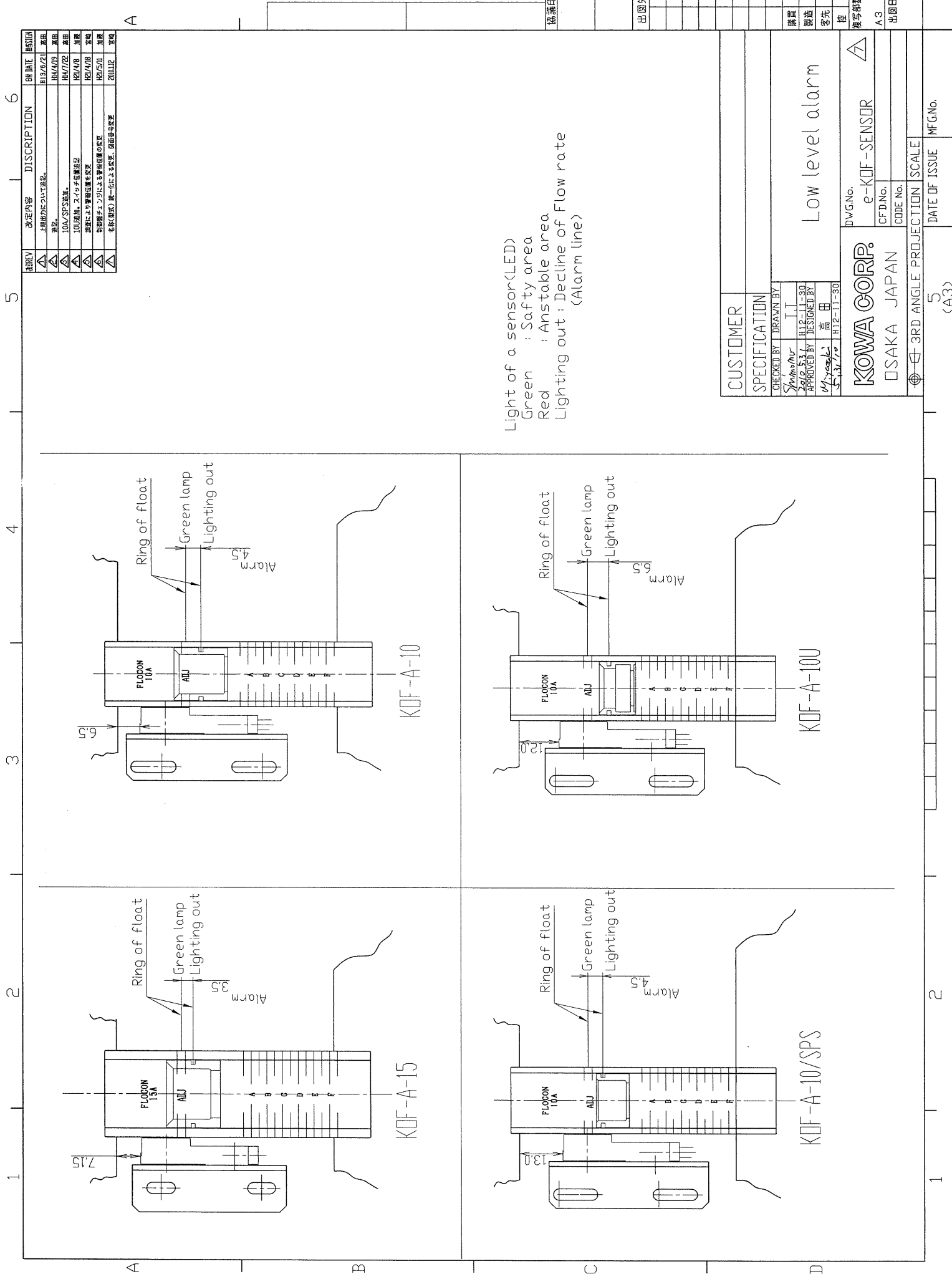


2			
1			
REV	DESCRIPTION	DATE	SIGN

KOWA CORP. OSAKA JAPAN	CHECKED BY	DRAWN BY
	2012.5.19 Sprague	2010.2.16 宮崎
	APPROVED	DESIGNED BY
	Kato 2010.2.9	Miyazaki 2010.2.9

TITLE	DWG.No.		SHEET No.	製写品数
	e-KOF-CP-260-L		3/4	A3
	CFD.No.	出図日		
	CODE No.			
Oil flow sensor monitor 60P	DATE OF ISSUE		MFG. No.	





REV	改定内容	DISCRPTION	BR DATE	REVISION
△	上掲出力について確認。		H13/4/21	変更
△	確認。		H14/4/19	変更
△	10A/SPS追加。		H14/7/22	変更
△	10U追加、スイッチ付電線記		H17/4/8	追加
△	設置により警報伝達を変更		H17/4/8	変更
△	制御電圧レンジによる警報伝達の変更		H17/5/11	追加
△	名称(型式)統一化による変更、図面番号変更		2010.12	変更

CUSTOMER	
SPECIFICATION	
CHECKED BY	T.T
DESIGNED BY	H12-11-30
APPROVED BY	高田
DATE	H12-11-30
Low level alarm	
DWG.No. e-KOF-SENSOR	
CFD.No. A3	
CODE No.	
KOWA CORP.	
OSAKA JAPAN	
DATE OF ISSUE	
SCALE	
MFG.No.	

Light of a sensor(LED)
Green : Safety area
Red : Anstable area
Lighting out : Decline of Flow rate
(Alarm line)