

OPERATION MANUAL

E l e c t r o - P n e u m a t i c
R e g u l a t o r

I T 1 0 ***

I T 2 0 ***

I T 4 0 ***



- I n d e x -

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1. Outline

The model IT Electro-pneumatic regulator will proportionally convert an electrical signal to a pneumatic pressure. IT10**、IT20**、and IT40** are three models.

2. Specifications

Model	IT10**	IT20**				IT40**							
Output pressure range Mpa {kgf/cm ² } Note.1	0.001~0.05 [0.01~0.51]	0.005~0.1 [0.05~1.0]	0.005~0.35 [0.05~3.51]	0.005~0.5 [0.05~5.1]	0.005~0.7 [0.05~7.1]	0.005~0.9 [0.05~9.1]	0.005~0.1 [0.05~1.9]	0.005~0.35 [0.05~3.51]	0.005~0.5 [0.05~5.1]				
Supply pressure Mpa {kgf/cm ² }	0.1~0.15 [1.0~1.5]	0.14~0.2 [1.4~2.0]	0.14~0.2 [1.4~2.0]	0.4~0.6 [4.1~6.1]	0.55~0.7 [5.51~7.1]	0.75~0.9 [7.51~9.1]	0.95~0.99 [9.51~10.1]	0.14~0.2 [1.4~2.0]	0.4~0.6 [4.1~6.1]				
Input Signal Note.2	Current type Voltage type	2-wire type: 4~20mAADC, 3-wire type: 0~20mAADC				3-wire type: 0~5VDC, 0~10VDC Max. current less than 2mA							
Power Supply Note.2,3	3-wire type: 12VDC Max. current less than 11mA												
Impedance	4~20mA					500Ω (Input signal is 20mA)							
Impedance	0~20mA					200Ω							
	0~5, 10V					30kΩ							
Linearity					±1.0% or less (Full span)								
Hysteresis					0.5% or less (Full span)								
Repeatability					±0.5% or less (Full span)								
Temperature Characteristics					±0.12% or less (Full span)/°C								
Ambient temp. and Fluid temp.					0~50°C								
Port size	SUP, OUT port	M5, PT, PF, NPT1/8			PT, PF, NPT1/4, 3/8		PT, PF, NPT1/4, 3/8, 1/2						
	EXH port				PT, PF, NPT 1/4		PT, PF, NPT, 1/4						
	Gauge port				PT, PF, NPT 1/8		PT, PF, NPT 1/8						
Electrical connection	Conduit type (Pg9, Lead wire: 0.5~1.5mm ² (φ 6~8))				DIN connector type								
Weight g	Conduit type	330		400		720							
	DIN type	290		370		690							

Note.1: Zero adjustment range 0~30%(Full Span)

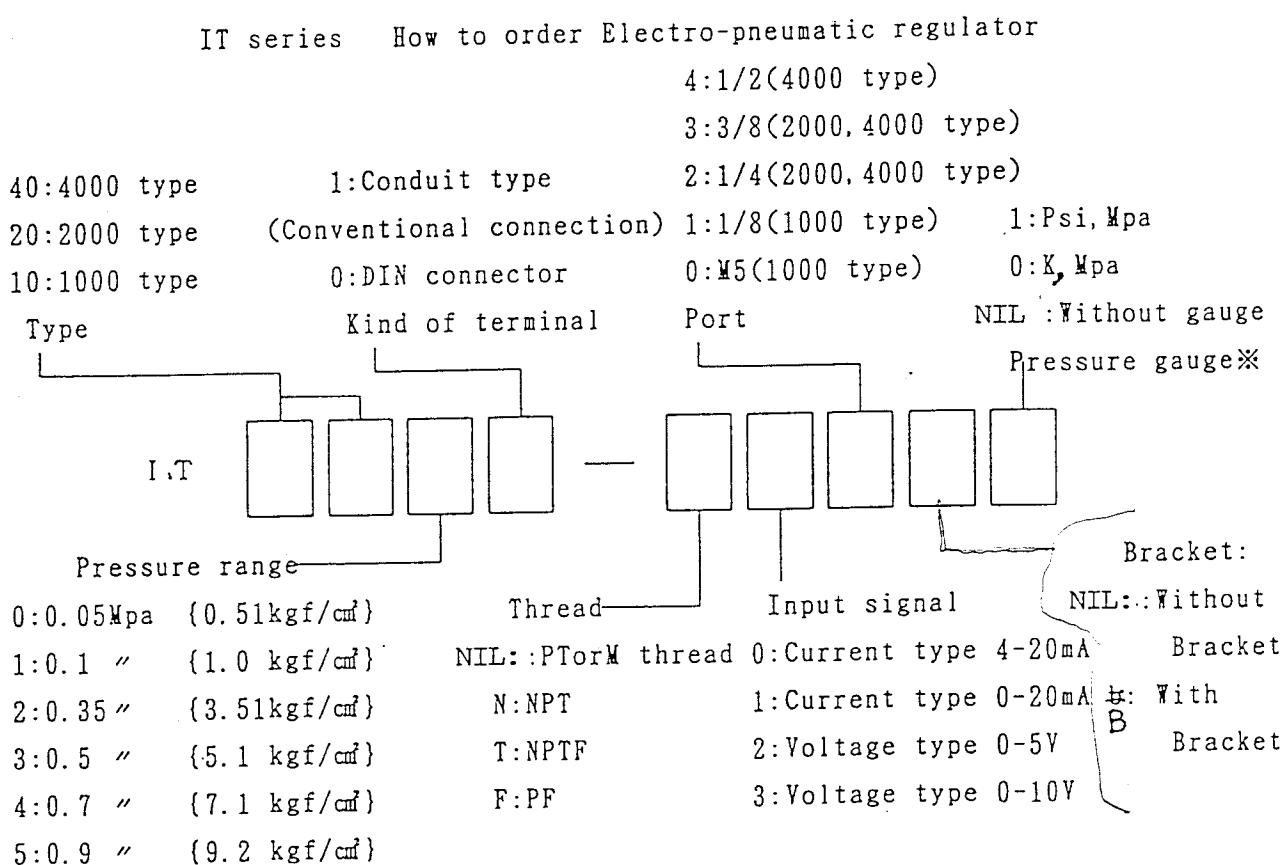
Span adjustment range 70~100%(Full Span)

Note.2: When using this device at an unstable, electrically noisy environment, shield cable should be employed and also line filter, zett-lap, spark killer should be installed to weed out the noise; thus to provide desirable power source and signal.

Note.3: Fixed power source is indispensable for 3 wire. Electricity from this power source should be stable and ripple regulation less 0.5%

Note.4: Shield cable as lead wire is recommended to resist against noise.

3. How to order



※ When the instruction of pressure gauge is not indicated in particular, it is shown as follows.

Pressure range	0.05	0.1	0.35	0.5	0.7	0.9	Mpa
Pressure gauge	0.2	0.2	0.5	0.7	1.0	1.0	

4 - Parts

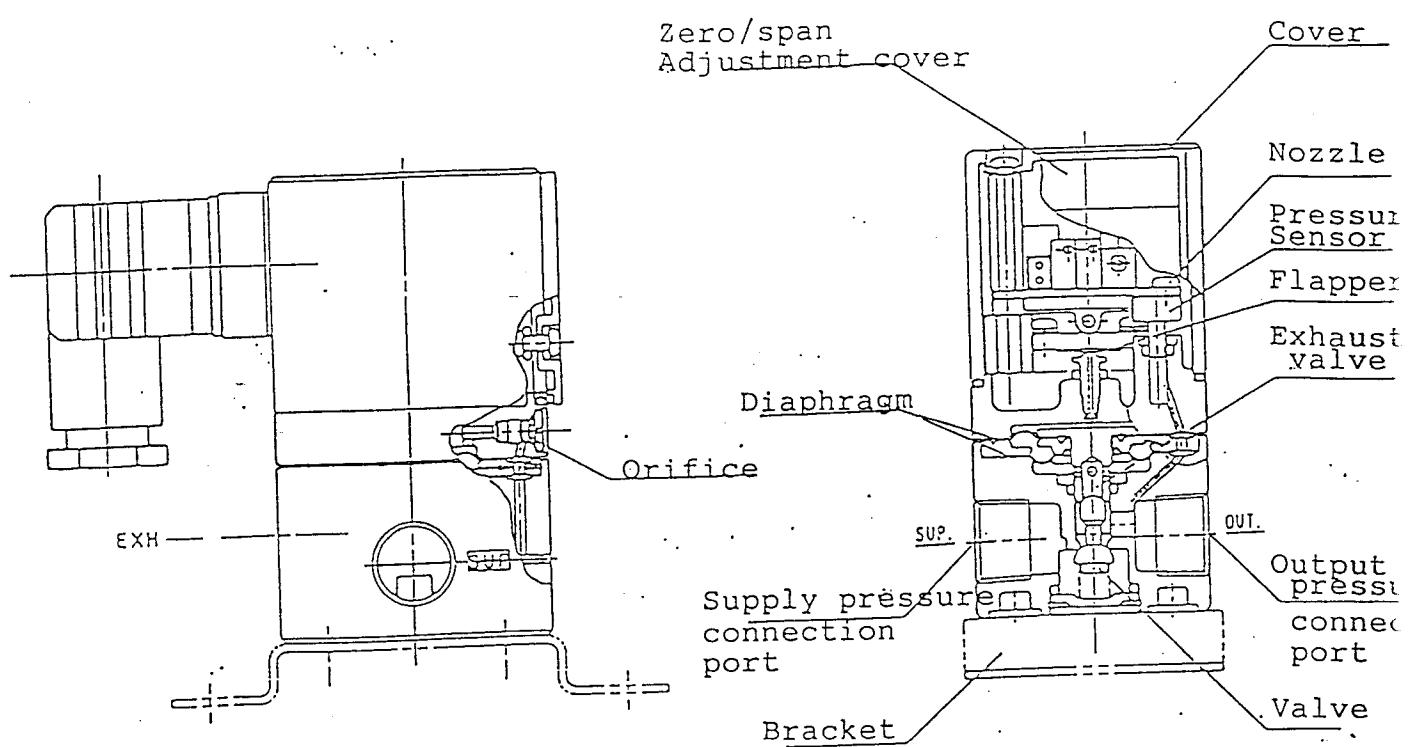
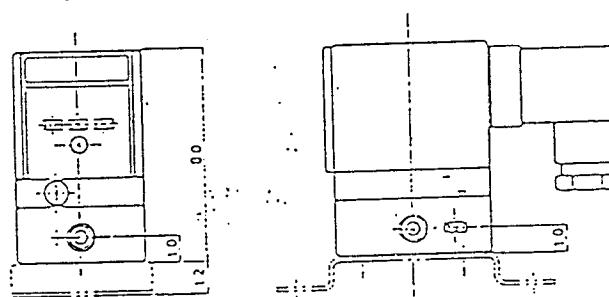
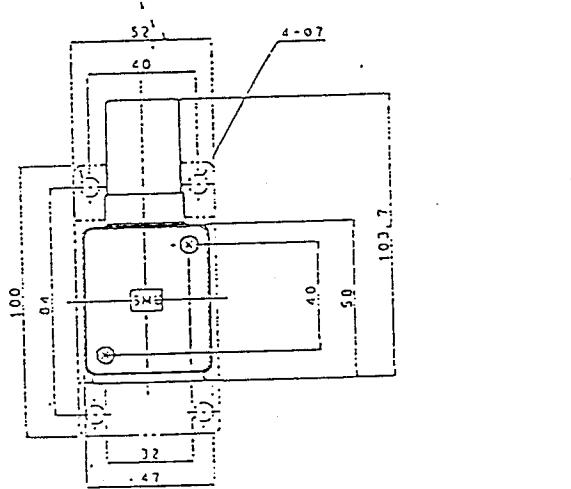
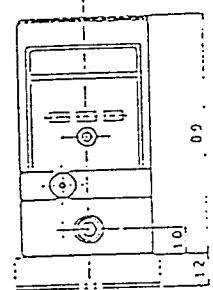
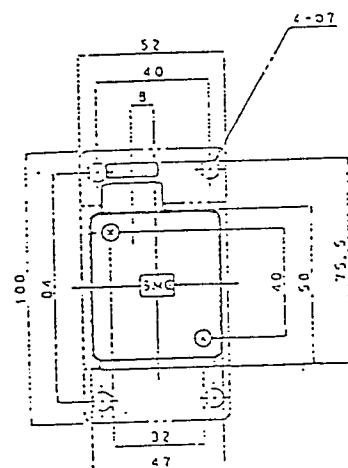


Figure - 1

5 - Dimensions

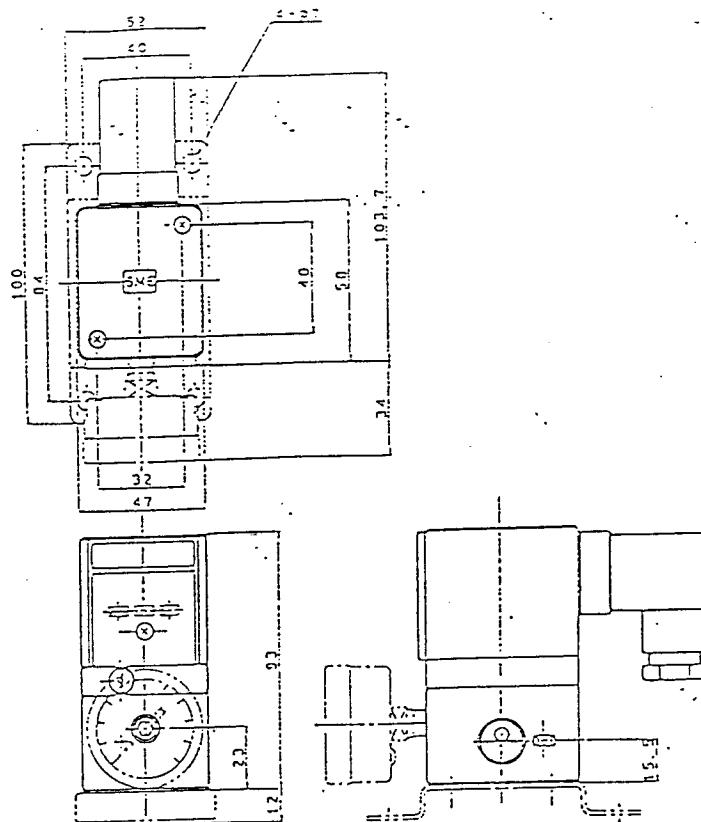


DIN terminal type

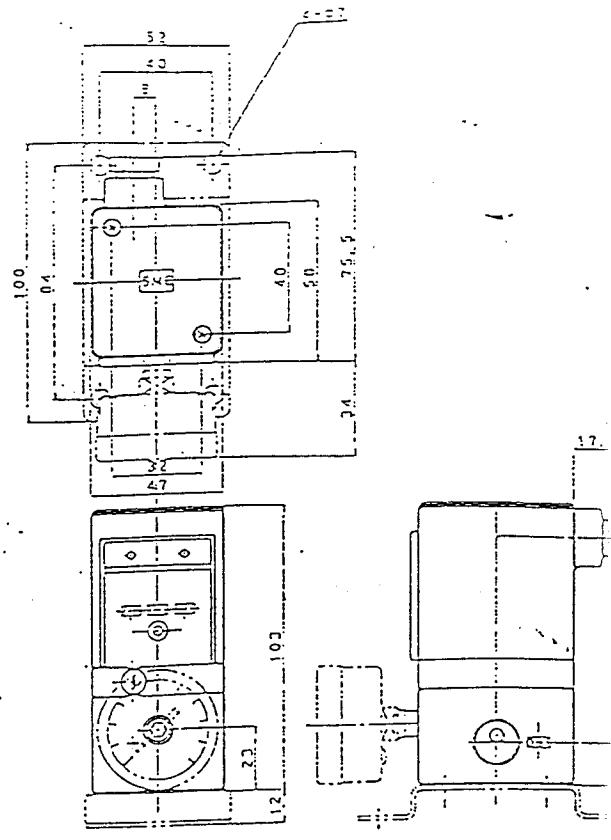


Conduit type

IT1000



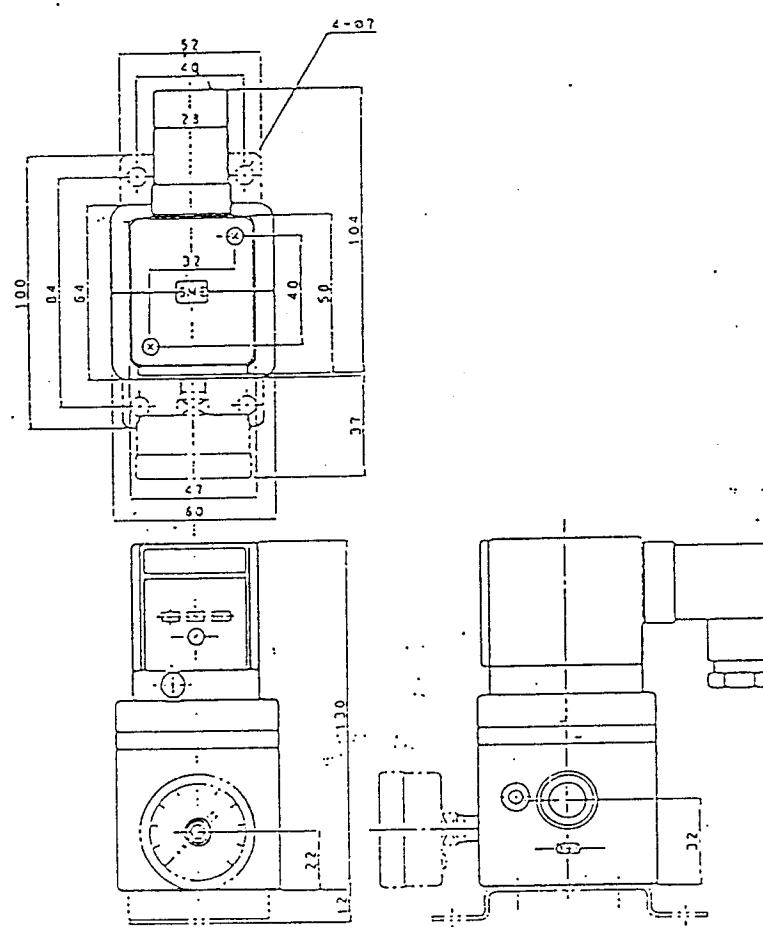
OIN terminal type



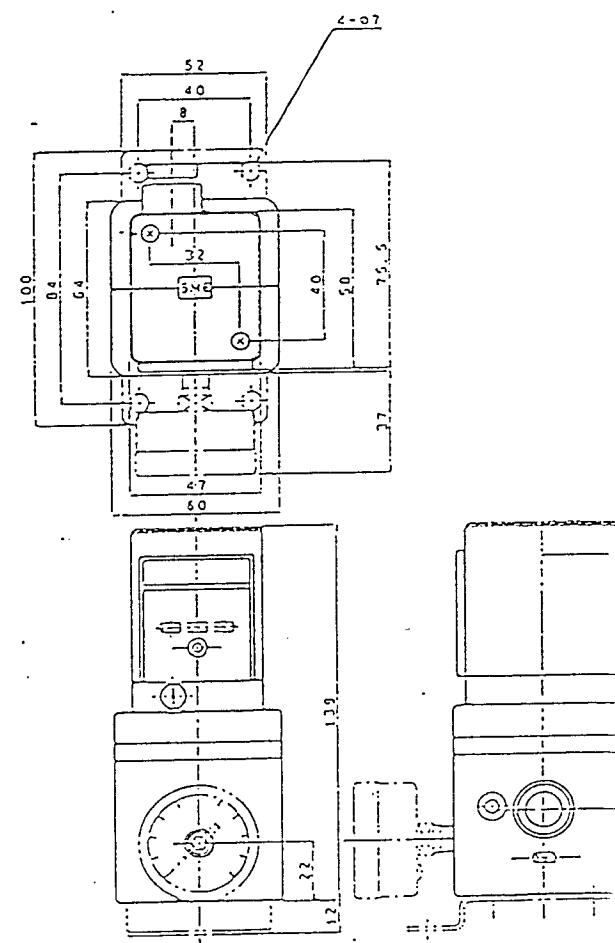
Conduit type

TIT2000

Figure - 3



O1Nterminal type



Conduit type

ITALIAN

6. Operation Principle

Greater the input signal, flapper ①, which is made of piezo-electric device is bent to the direction to close the nozzle ②. Consequently, pressure in the back pressure chamber ③ comes on to the upper of diaphragm ④ and to push exhaust valve ⑤ down and thence, working with this movement, inner valve ⑥ moves downward. And a part of supply pressure becomes output pressure. This output pressure is converted into electric signal through pressure sensor ⑦ and is feed back to controller ⑧. The controller ⑧ to attain an equilibrium this signal with the input signal and thus it always provides proportional output pressure with the input signal.

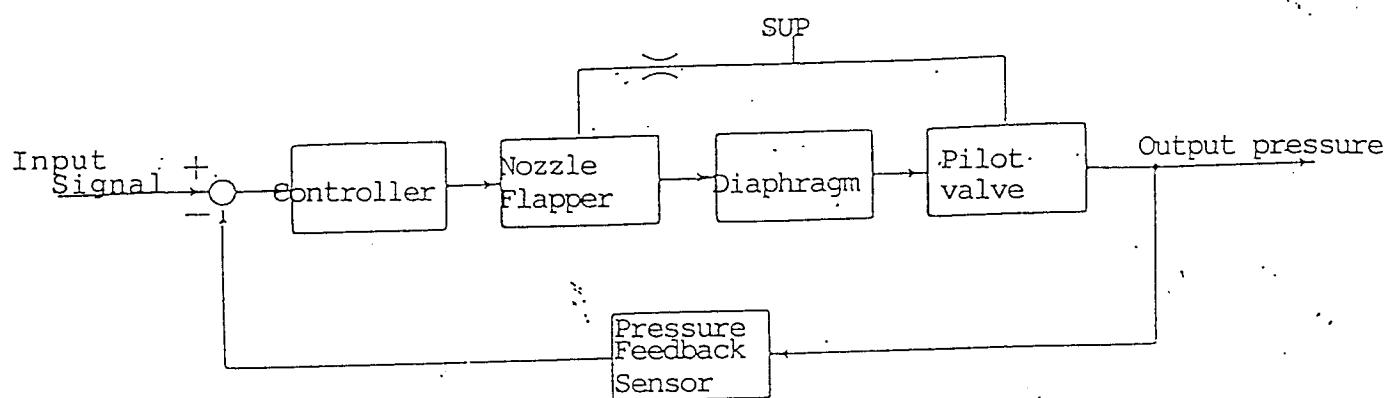


Figure :— 5 .

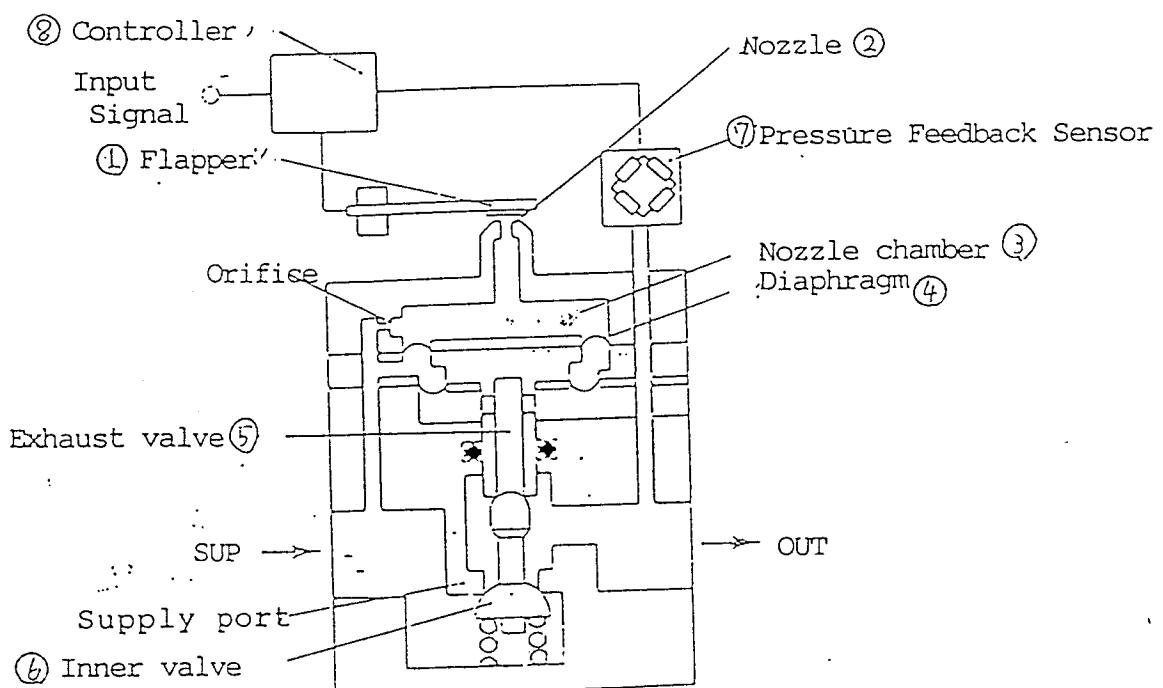


Figure- 6 Operation Principle

7. Piping and Wiring

7.1 Piping for pneumatic circuit

Port sizes are ~~M5~~^{M5}, 1/4, 3/8 or 1/2 female screw for both SUP and OUT.

Prior to connect the pipe, air-flashing should be thoroughly carried out to prevent cutting scales, sealing tape and other foreign matter invade into the device. Since this device contains precision electronic parts, air to be used should particularly be clean and dry.

EXH port is M5, 1/8 female screw. Silencer(Our products AN series) is recommended in case of big capacity of output side for the purpose of relief function. Also, in case of convergence exhaust of piping outside from EXH port, port size more than $\phi 5\text{mm}$ is required. When the piping less than $\phi 5\text{mm}$ is used, the exahust air is throttled and bad operation such as hunting sometimes occurs.

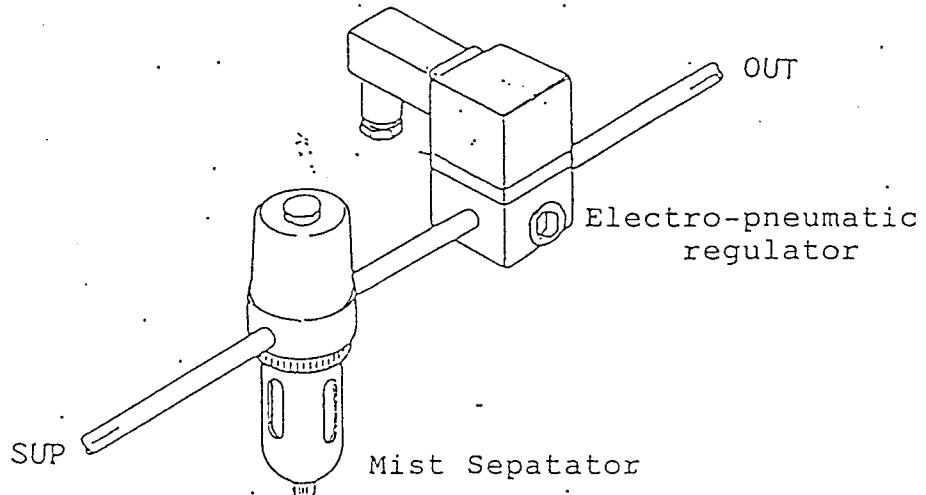


Figure-7 Air Piping

7.2 Electric wiring

Take care thoroughly that the current signal type is different from the voltage signal type in wiring.

Applicable lead wire is $0.5 \sim 1.5 \text{mm}^2$.

Be careful thoroughly of handling because the circuit is sometimes damaged when the monitor output terminal is short-circuited.

1. DIN type

1-1. Current type: 2-wire type $4 \sim 20(\text{mA})$

Impedance: Input signal $20(\text{mA})$ under supplying $500(\Omega)$

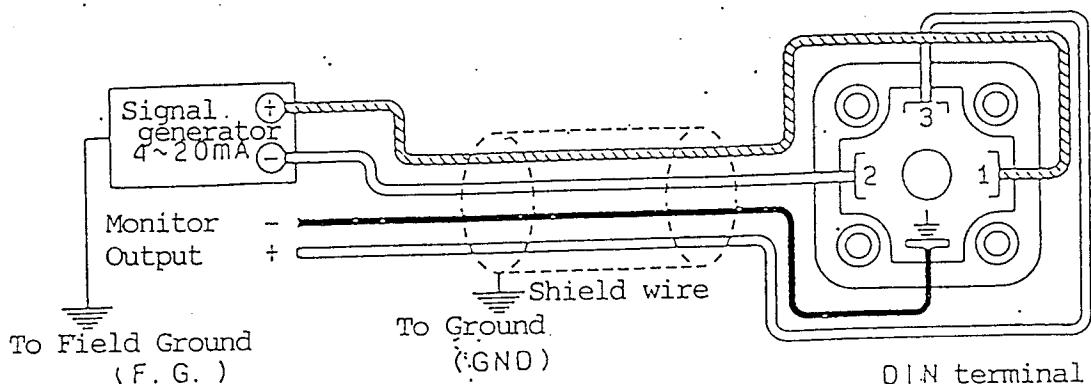


Fig. - 8

1-2. Voltage type 3-wire type $0 \sim 5, 0 \sim 10(\text{V})$

Impedance: $30(\text{k}\Omega)$

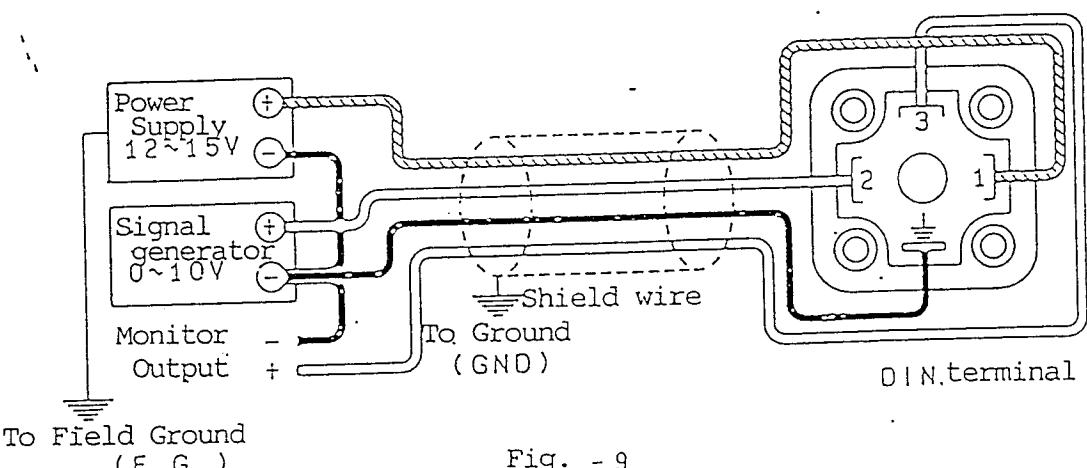


Fig. - 9

1-3. Current type 4-wire type $0 \sim 20(\text{mA})$

Impedance: $200(\Omega)$

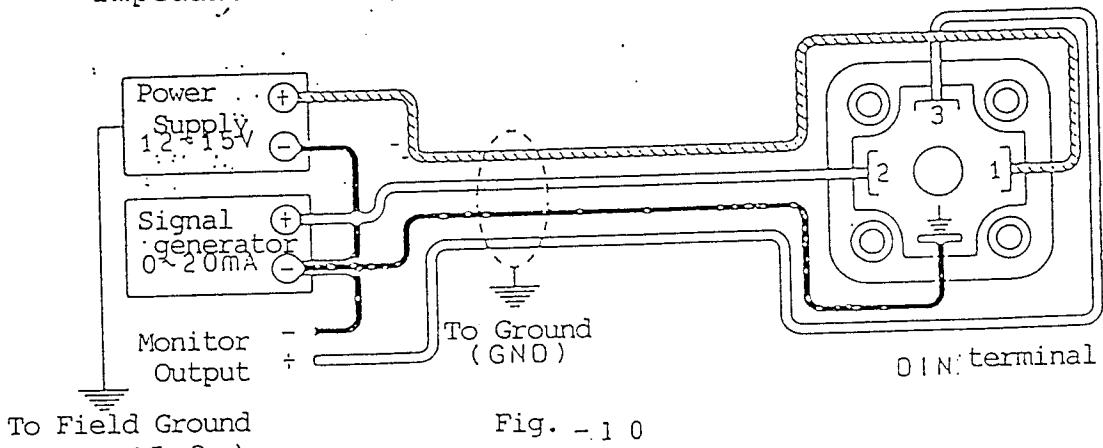


Fig. - 10

2. Conduit type

2-1. Current type 2-wire type $4\sim 20\text{ (mA)}$
 Impedance: Input signal 20 (mA) under supplying 500 (\Omega)

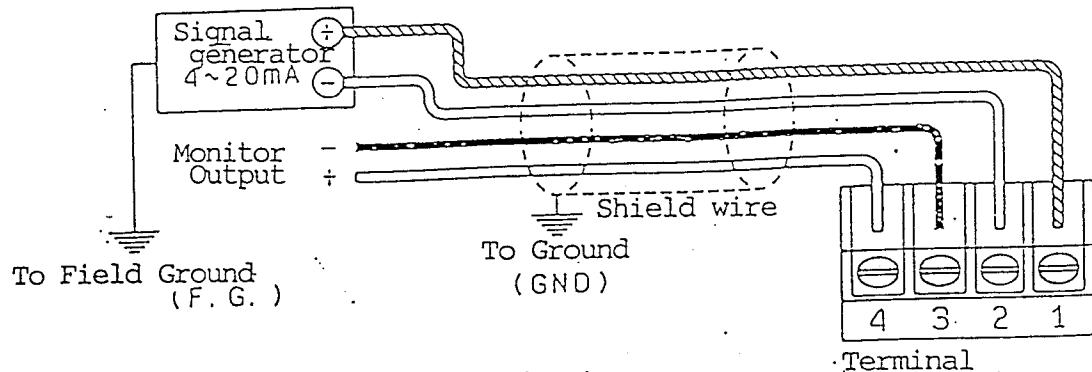


Fig. - 1 1

Voltage type
 2-2. 3-wire type $0\sim 5, 0\sim 10\text{ (V)}$
 Impedance : 30 (k \Omega)

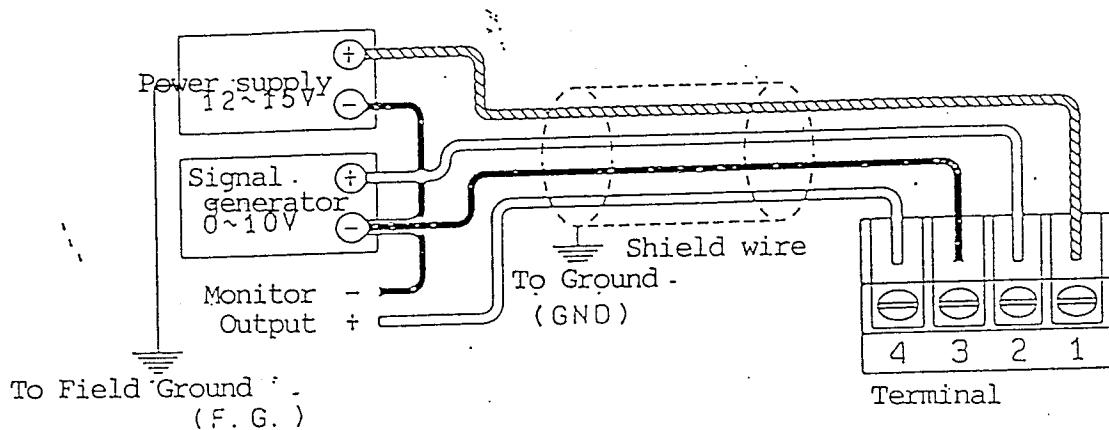


Fig. - 1 2

Current type
 2-3. 4-wire type $0\sim 20\text{ (mA)}$
 Impedance: 200 (\Omega)

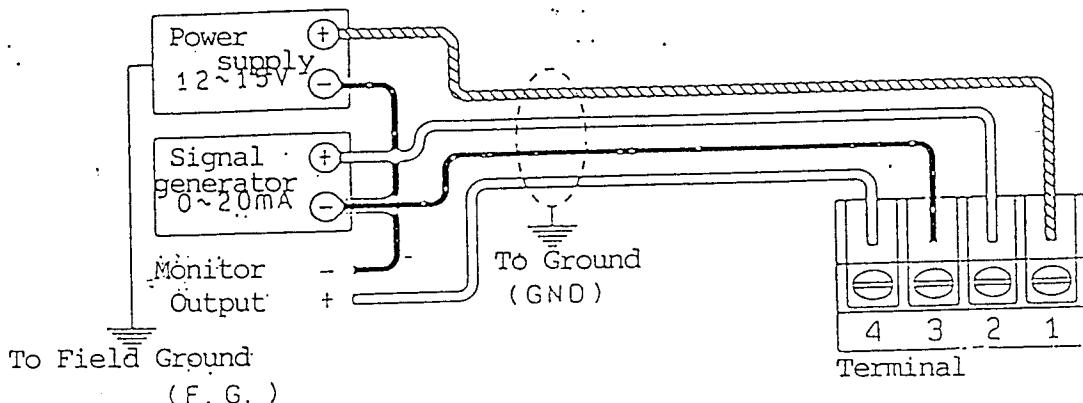


Fig. - 1 3

8. Span, Zero and Response Adjustment

8.1 Adjustment of Span and Zero point

Span and zero point adjustment are performed by rotating the screws with a small screwdriver with the cover of regulating section pushed upward by hand. Rotating the span adjusting screw clockwise will cause the span to increase and counterclockwise to decrease. Rotating the zero point adjustment screw clockwise will cause the starting point to become higher. It is best to monitor output pressure while adjusting. Be careful not to turn the adjustment screws past maximum adjustment range as the unit may be damaged.

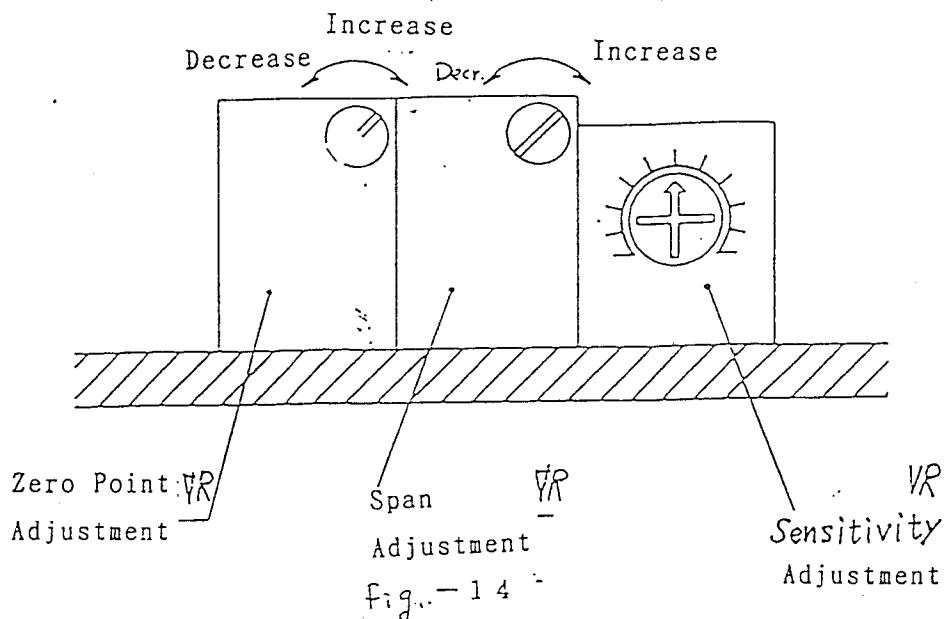
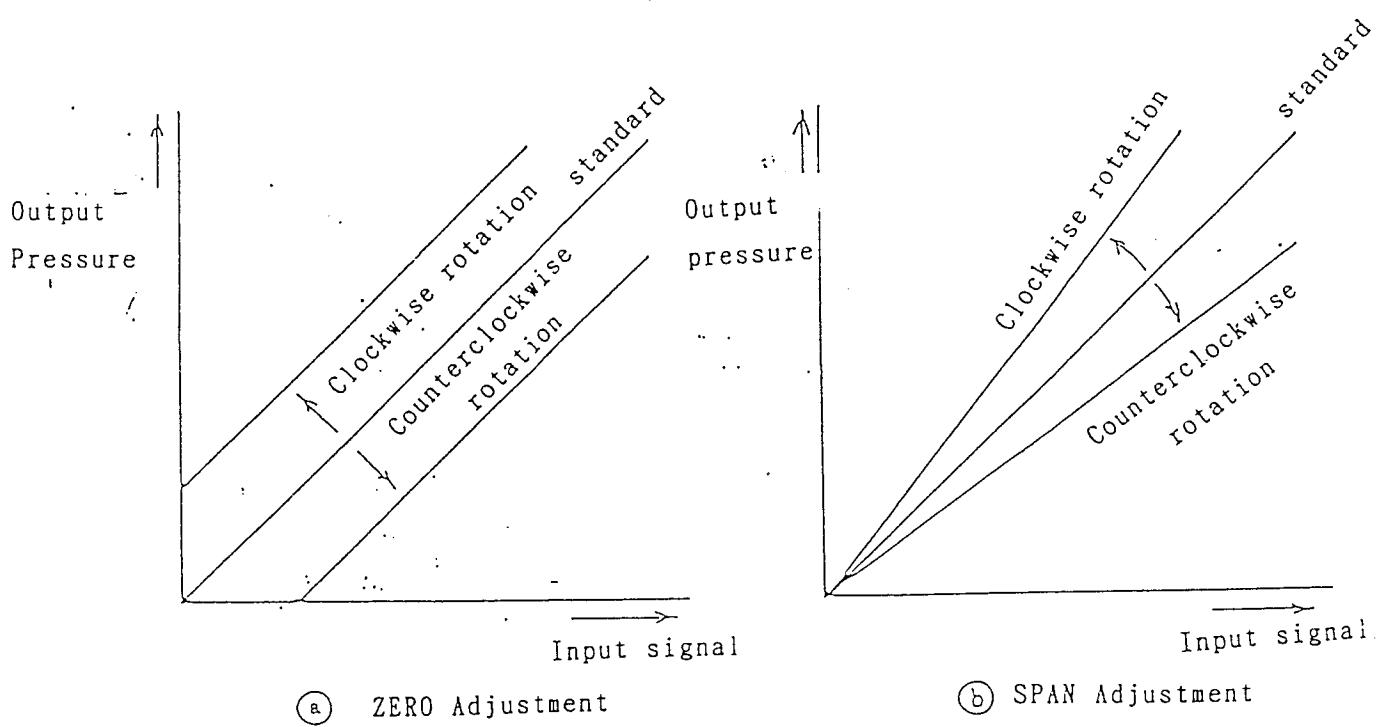


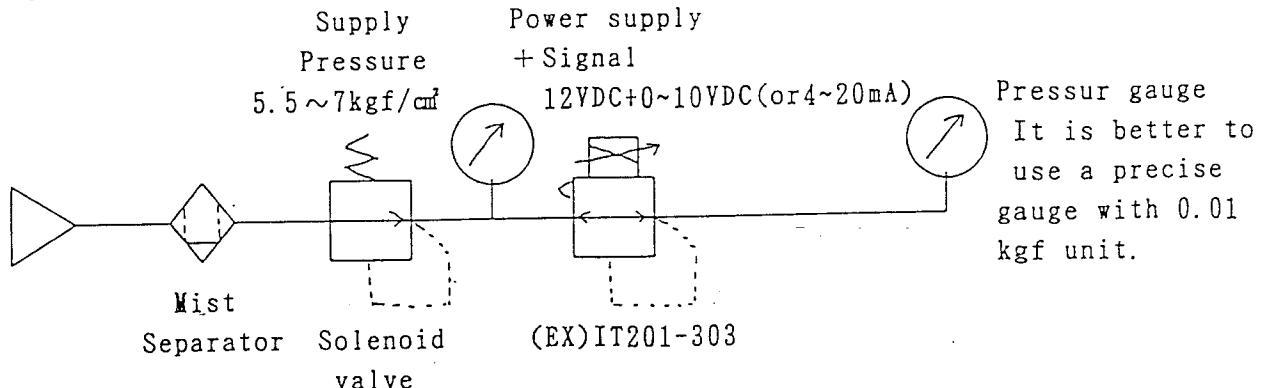
fig.- 14



Relation of Input-Output according to ZERO, SPAN Adjustment

The followings are the concrete methods to adjust. For example, in case of input signal 0~10VDC (4~20mA), output signal 0.5~5kgf/cm is gained by the following method.

① Piping



② After piping as above, switch on supply pressure and power supply.

③ Ensure that the input signal is variable and output changes. When output signal is not change even if input signal is variable, turn left ZERO, SPAN adjustment volume completely. At that time, be careful of turning too much because the volume is endless and it may be damaged. The volume body is semi-transparent, so do not turn the volume more than it after inside mobile parts operate.

④ Set the input signal 0VDC(4mA) and adjust the output pressure to be 0.5kgf/cm² by turning ZERO adjustment volume. Pressure increases in case of turning right and decreases in case of turning left.

⑤ Next, set the input signal 10VDC(20mA) and adjust the output pressure to be 5 kgf/cm² by turning volume for SPAN adjustment. Pressure increases in case of turning right and decreases in case of turning left as same as ZERO adjustment volume.

⑥ Set the input signal 0VDC(4mA) again, adjust the output pressure to be 0.5kgf/cm² by using the ZERO adjustment volume.

⑦ When the input signal is 0~10VDC (4~20mA) by repeating above operation two or three times, the output pressure can be adjusted to be 0.5 ~ 5kgf/cm²

8. 2 Sensitivity Adjustment

Sensitivity Adjustment Screw is turned with a small screwdriver. Sensitivity is decreased by turning clockwise and is increased by turning counterclockwise.

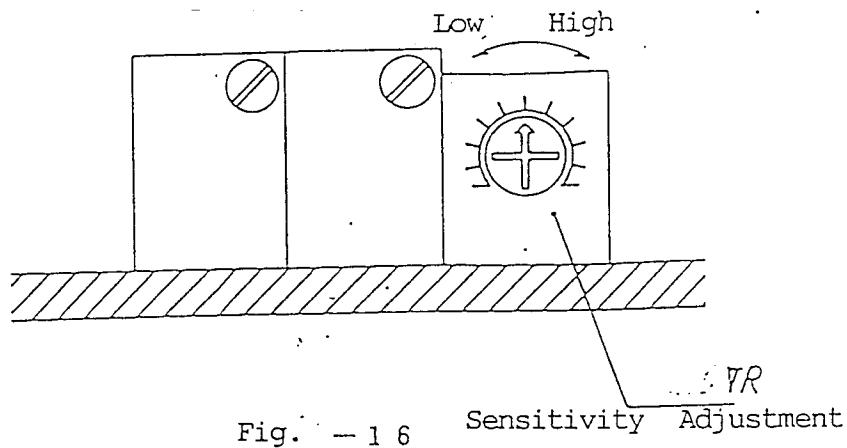


Fig. - 16 Sensitivity Adjustment

8. 3 Output pressure set value in case of shipment.

In case of shipment, the following values are adjusted.

Type	Output Pressure Mpa {kgf/cm ² }	
IT1000	0.001~0.05	{0.01~0.51}
IT1010	0.005~0.1	{0.05~1.0 }
IT2010	0.005~0.1	{0.05~1.0 }
IT2020	0.005~0.35	{0.05~3.51}
IT2030	0.005~0.5	{0.05~5.1 }
IT2040	0.005~0.7	{0.05~7.1 }
IT2050	0.005~0.9	{0.05~9.2 }
IT4010	0.005~0.1	{0.05~1.0 }
IT4020	0.005~0.35	{0.05~3.51}
IT4030	0.005~0.5	{0.05~5.1 }
IT4040	0.005~0.7	{0.05~7.1 }
IT4050	0.005~0.9	{0.05~9.2 }

9. Maintenance and Inspection

9.1 When the supply pressure air become contaminated or when it contains moisture to such a degree that when the drain cock of the filter opened, condensate will be drained, it is also contaminated. This will cause trouble ; take corrective action to purify theair pressure source.

9.2 Replacement of Restriction Assembly

When the filter for restriction gets clogged with carbon particles, replace the restriction assembly. Before doing so, be sure to turn off the power supply and pressure air.

10. Monitor Output Signal

The wiring for the output signal voltage can be accessed through the main wiring conduit. The output terminal is number four on the terminal block. The monitoring device must have an input impedance of 100k or greater.

Monitor Output Voltage	Pressure range Mpa (kg/cm ²)	Input signal	Valve-outlet pressure Mpa (kg/cm ²)	Monitor voltage VDC
0.05 (0.51)	Current type mA	0	0.05(0.51)	3.74±0.2
		0	0.05(0.51)	5±0.2
0.1 (1.0)	Current type mA	0	0.1(1.0)	3.74±0.2
		0	0.1(1.0)	5±0.2
0.35 (3.6)	Current type mA	0	0.35(3.6)	3.74±0.2
		0	0.35(3.6)	5±0.2
0.5 (5.1)	Current type mA	0	0.5(5.1)	3.74±0.2
		0	0.5(5.1)	5±0.2
0.7 (7.1)	Current type mA	0	0.7(7.1)	3.74±0.2
		0	0.7(7.1)	5±0.2
0.9 (9.2)	Current type mA	0	0.9(9.2)	3.66±0.2
		0	0.9(9.2)	5±0.2

(Note) The output voltage may vary a little from unit to unit.

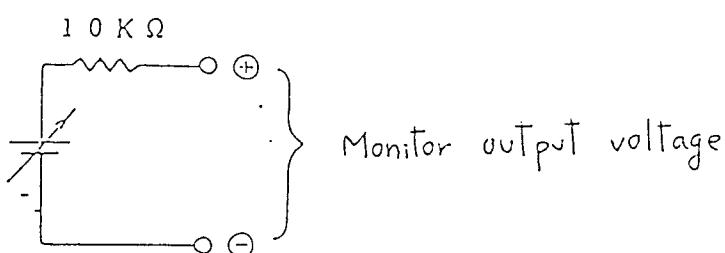


Figure-17 Monitor Output Voltage Equivalent Circuit

Electric Circuit

As it is shown in Fig.18 (for voltage signal type) and in Fig.19 (for current signal type), the circuit is designed by PID control, which pick up output pressure by pressure sensor.

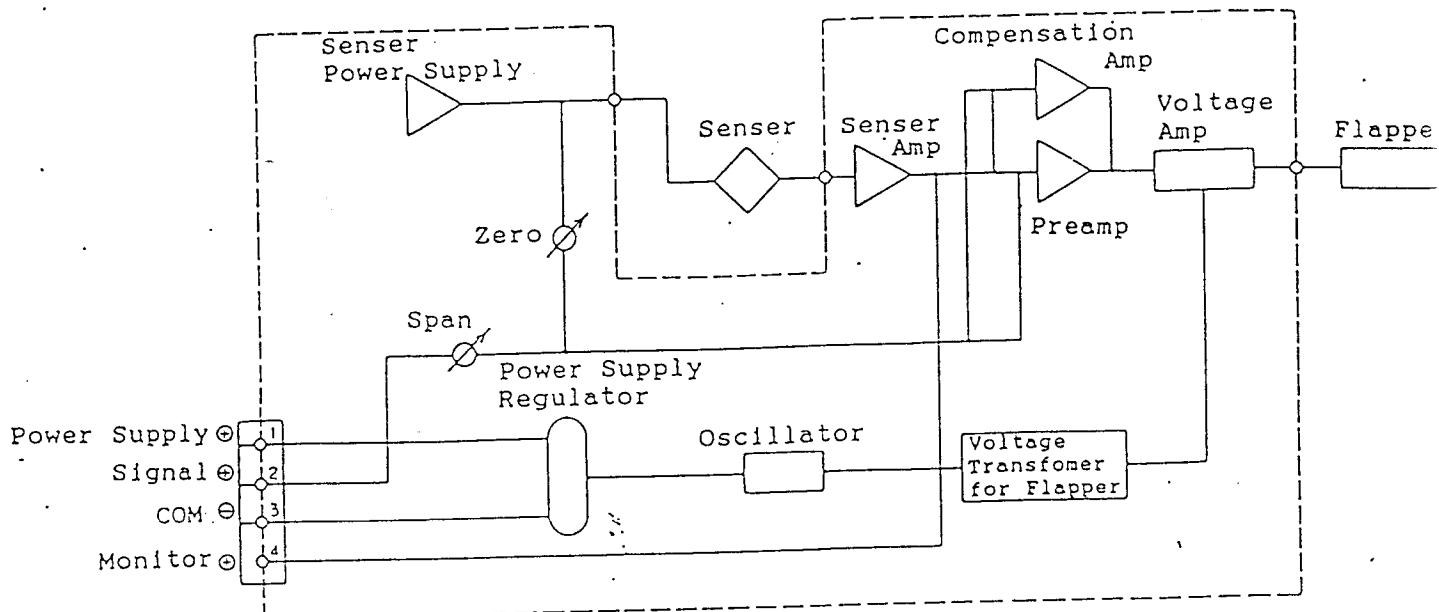


Fig.18 .

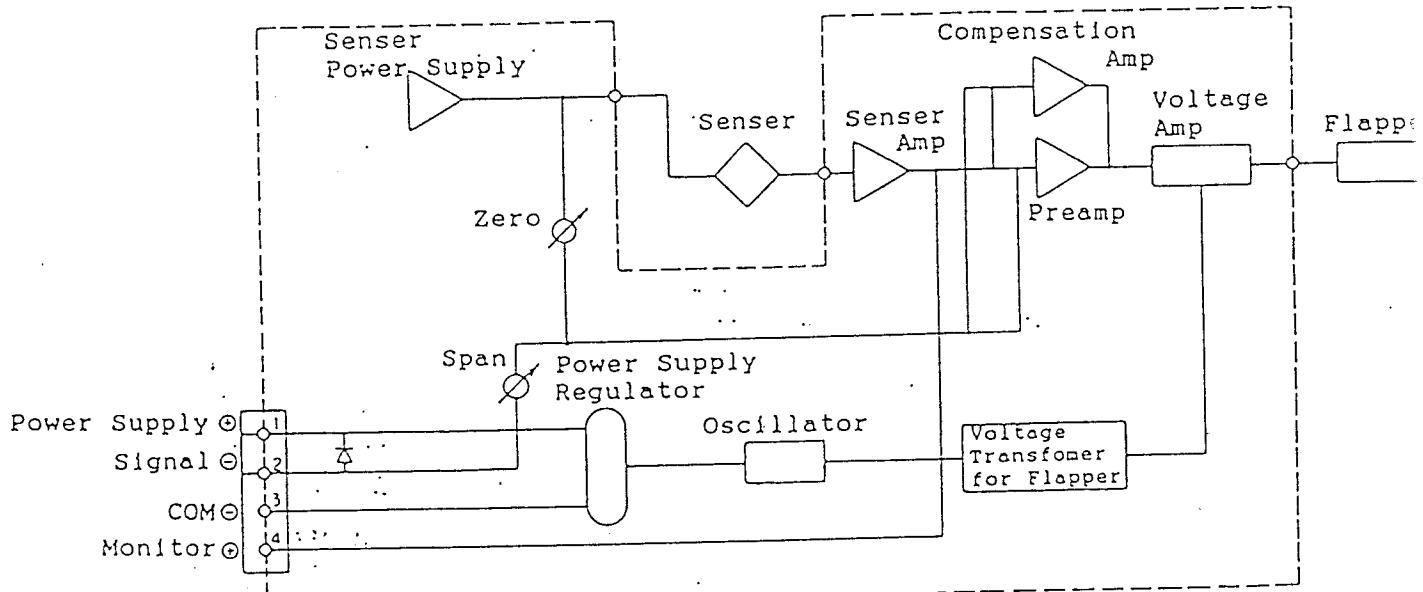


Fig.19

12. Troubleshooting

Most problems with IT systems are a result of poor air quality, poor electrical power source, signal, and/or incorrect wiring connections. If there is a problem, check firstly the power supply, wiring and compressed air.

Refer to Fig. 20 and Fig. 21 below.

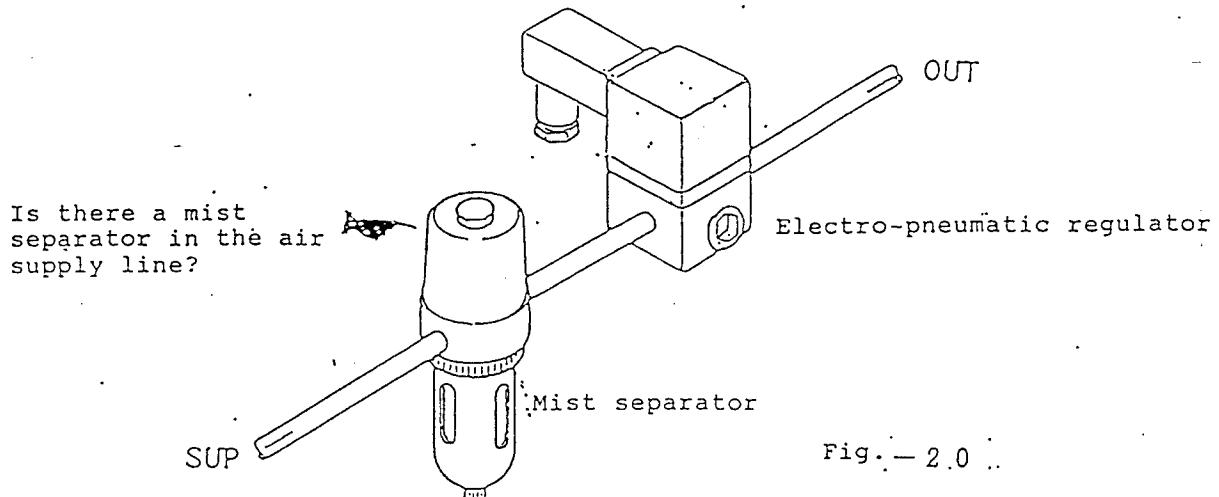


Fig. - 2.0

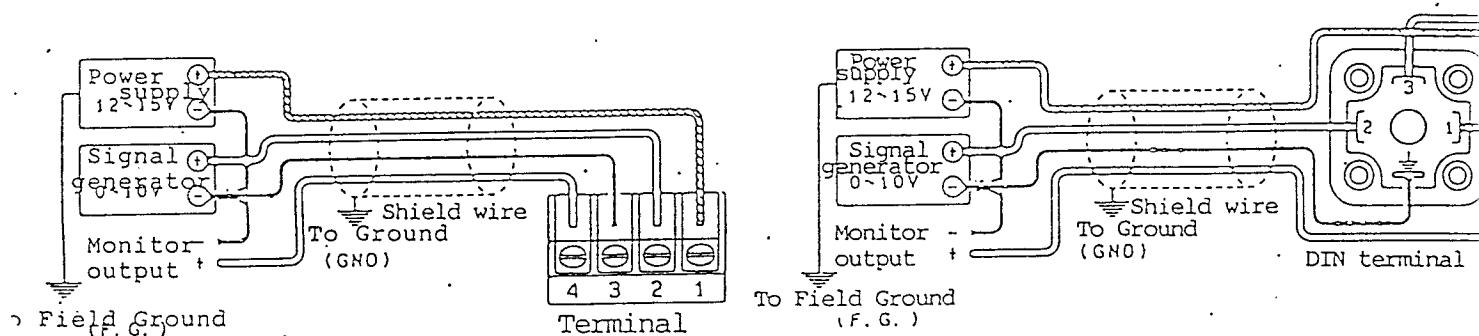


Figure-21

12.1 How to check

12.1.1. Is pneumatics normal?

- ① Supply pressure should be "ON". Also, power supply and controlled voltage should be off temporarily. (Note 1)
- ② Push lightly the flapper with the tip of finger in low direction.
At that time, ensure whether there is the output pressure or not.

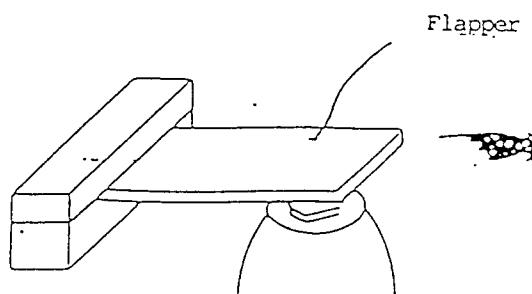


Fig. -22

- ③ When there is the output pressure, pneumatics is normal. Take a step shown in 12.1.2. " Is the flapper voltage normal? "
- ④ When there is not the output pressure, pneumatics is out of order. Check the following items.
- ⑤ Supply pressure should be "OFF" temporarily and the orifice should be removed. Then ensure that any dust or carbon are not attached to the end of orifice. Any dust or carbon lead that the output pressure cannot be build up entirely.
Remove with -screwdriver. When mounting again after ensuring, tighten it clockwise completely.

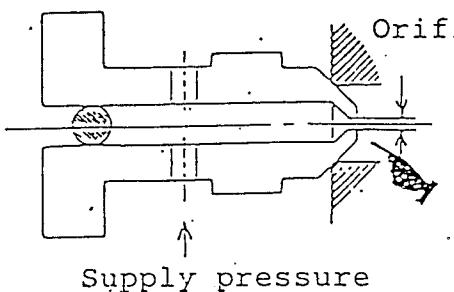


Fig. - 2 3

- ⑥ When there is no problem with the orifice , the diaphragm "o" ring is damaged. Therefore, replace parts. Refer to Page .

(Note. 1) Flapper is made of ceramic material, so sufficient care should be taken in case of ensuring the output pressure because excessive force and displacement cause the damage,

12.1.2. Is the flapper voltage normal?

- ^(Note 2)
1. Take the measurement with the supply pressure turned "OFF" and the electrical power supply turned "ON". Leave the span and zero adjustments as is. When this flapper voltage is $100v \pm 20v$, both circuit are normal.

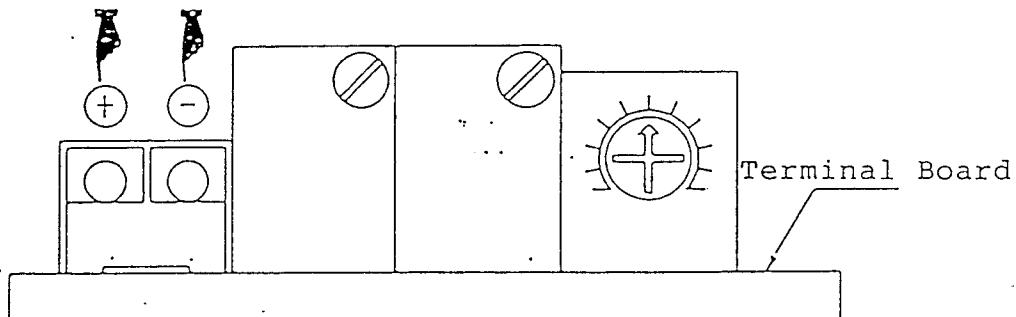


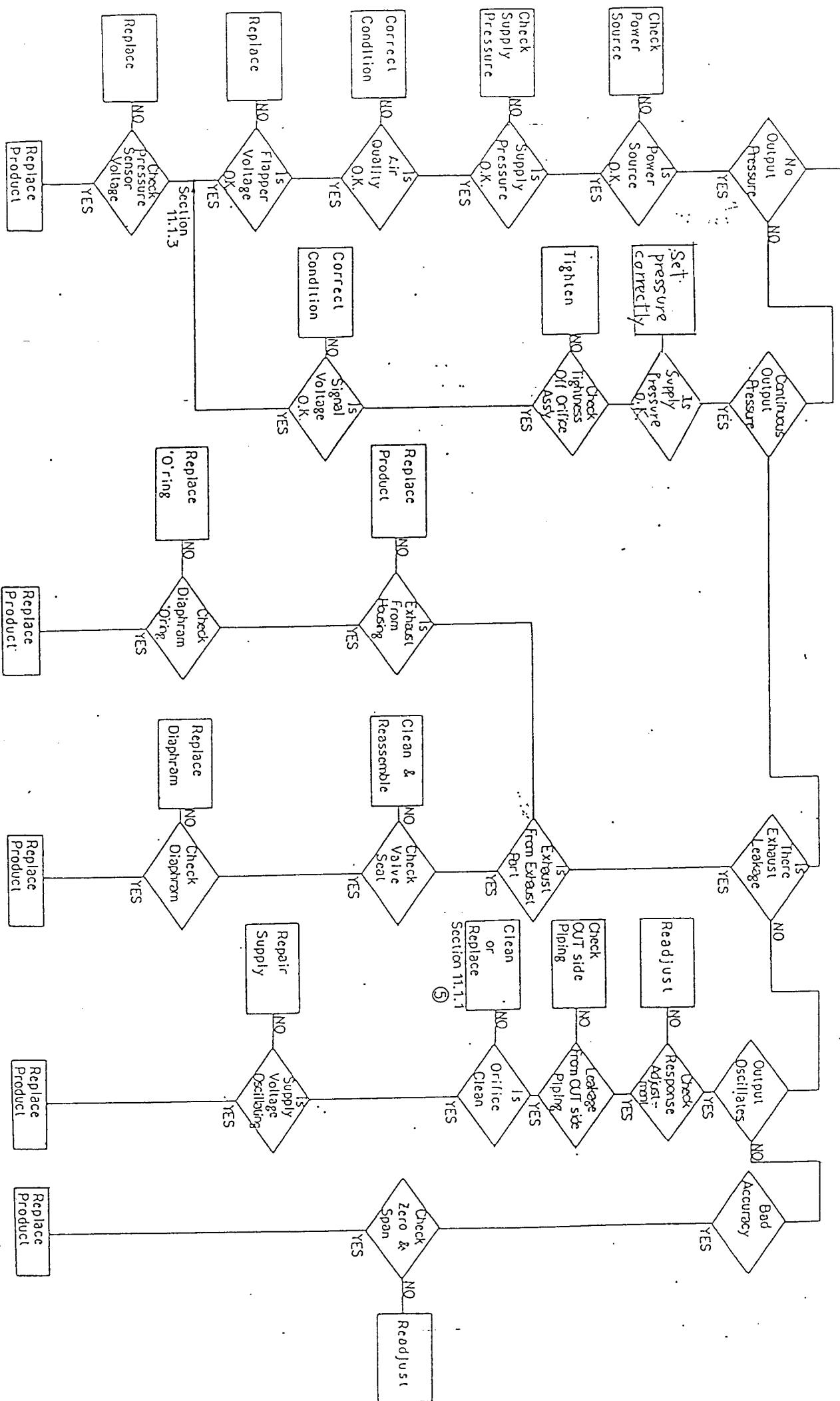
Fig. - 2 4

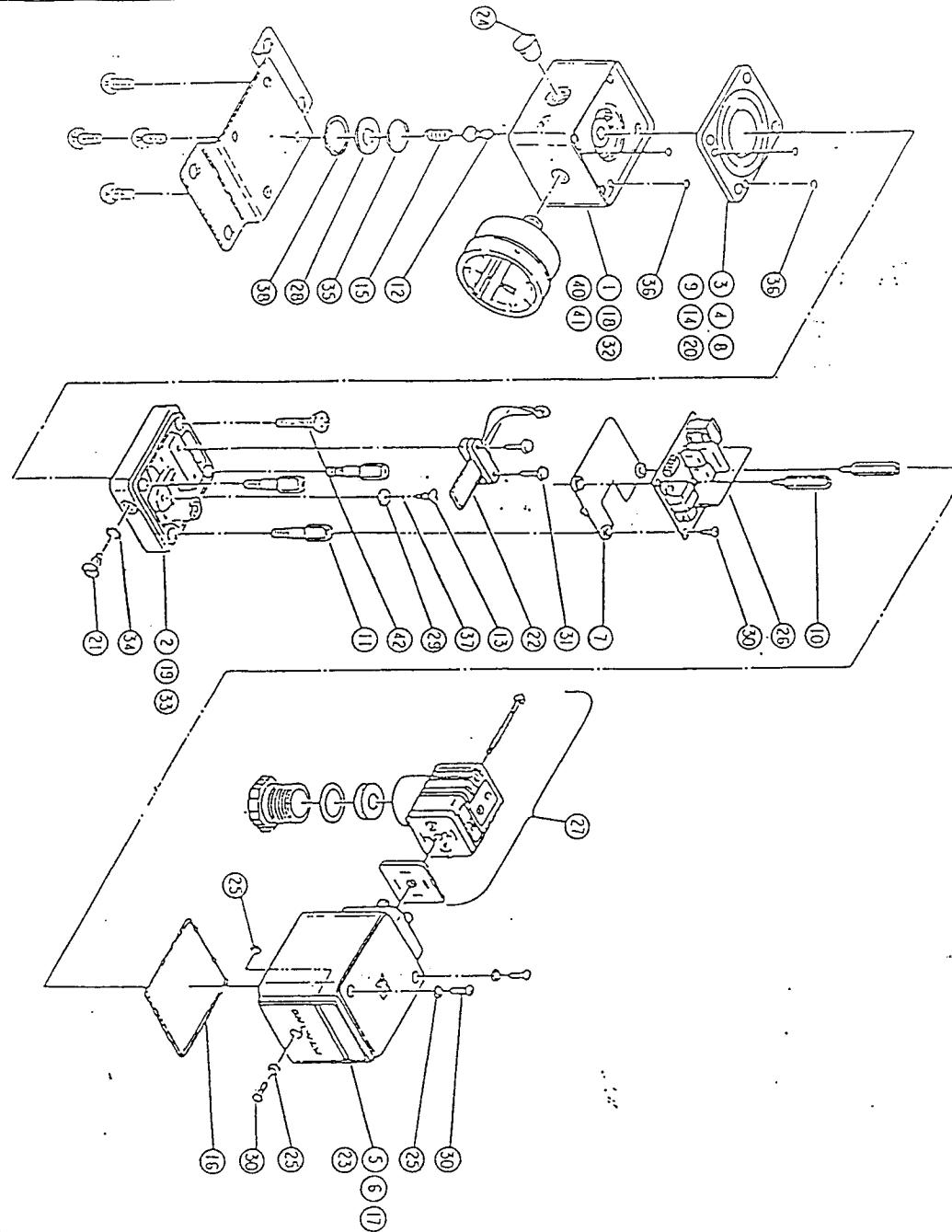
When the flapper voltage is low, electric_parts are bad, so replace the terminal board.

(Note2): Note in case of measuring voltage.

Little current flows, so use a high impedance voltage meter.

Troubleshooting Flow Chart

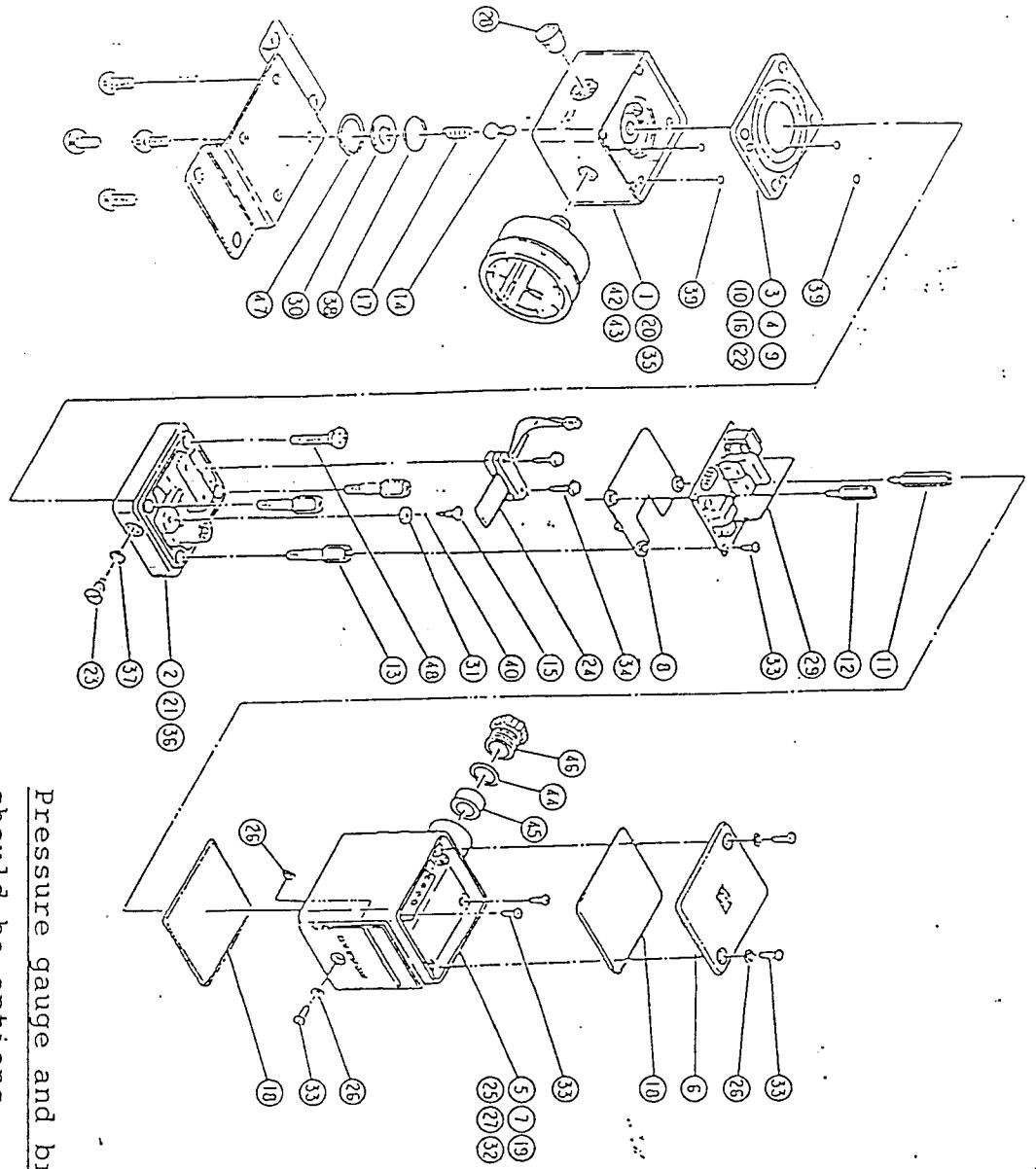




Pressure gauge and bracket
should be options.

ITEM NO.	NAME	UNIT	QTY	REF.	NOTE
1	PUSH PIN	PC	100	CC1	X
2	SCREW	PC	100	CC2	X
3	SCREW	PC	100	CC3	X
4	SCREW	PC	100	CC4	X
5	SCREW	PC	100	CC5	X
6	SCREW	PC	100	CC6	X
7	SCREW	PC	100	CC7	X
8	SCREW	PC	100	CC8	X
9	SCREW	PC	100	CC9	X
10	SCREW	PC	100	CC10	X
11	SCREW	PC	100	CC11	X
12	SCREW	PC	100	CC12	X
13	SCREW	PC	100	CC13	X
14	SCREW	PC	100	CC14	X
15	SCREW	PC	100	CC15	X
16	SCREW	PC	100	CC16	X
17	SCREW	PC	100	CC17	X
18	SCREW	PC	100	CC18	X
19	SCREW	PC	100	CC19	X
20	SCREW	PC	100	CC20	X
21	SCREW	PC	100	CC21	X
22	SCREW	PC	100	CC22	X
23	SCREW	PC	100	CC23	X
24	SCREW	PC	100	CC24	X
25	SCREW	PC	100	CC25	X
26	SCREW	PC	100	CC26	X
27	SCREW	PC	100	CC27	X
28	SCREW	PC	100	CC28	X
29	SCREW	PC	100	CC29	X
30	SCREW	PC	100	CC30	X
31	SCREW	PC	100	CC31	X
32	SCREW	PC	100	CC32	X
33	SCREW	PC	100	CC33	X
34	SCREW	PC	100	CC34	X
35	SCREW	PC	100	CC35	X
36	SCREW	PC	100	CC36	X
37	SCREW	PC	100	CC37	X
38	SCREW	PC	100	CC38	X
39	SCREW	PC	100	CC39	X
40	SCREW	PC	100	CC40	X
41	SCREW	PC	100	CC41	X
42	SCREW	PC	100	CC42	X
43	SCREW	PC	100	CC43	X
44	SCREW	PC	100	CC44	X
45	SCREW	PC	100	CC45	X
46	SCREW	PC	100	CC46	X
47	SCREW	PC	100	CC47	X
48	SCREW	PC	100	CC48	X
49	SCREW	PC	100	CC49	X
50	SCREW	PC	100	CC50	X
51	SCREW	PC	100	CC51	X
52	SCREW	PC	100	CC52	X
53	SCREW	PC	100	CC53	X
54	SCREW	PC	100	CC54	X
55	SCREW	PC	100	CC55	X
56	SCREW	PC	100	CC56	X
57	SCREW	PC	100	CC57	X
58	SCREW	PC	100	CC58	X
59	SCREW	PC	100	CC59	X
60	SCREW	PC	100	CC60	X
61	SCREW	PC	100	CC61	X
62	SCREW	PC	100	CC62	X
63	SCREW	PC	100	CC63	X
64	SCREW	PC	100	CC64	X
65	SCREW	PC	100	CC65	X
66	SCREW	PC	100	CC66	X
67	SCREW	PC	100	CC67	X
68	SCREW	PC	100	CC68	X
69	SCREW	PC	100	CC69	X
70	SCREW	PC	100	CC70	X
71	SCREW	PC	100	CC71	X
72	SCREW	PC	100	CC72	X
73	SCREW	PC	100	CC73	X
74	SCREW	PC	100	CC74	X
75	SCREW	PC	100	CC75	X
76	SCREW	PC	100	CC76	X
77	SCREW	PC	100	CC77	X
78	SCREW	PC	100	CC78	X
79	SCREW	PC	100	CC79	X
80	SCREW	PC	100	CC80	X
81	SCREW	PC	100	CC81	X
82	SCREW	PC	100	CC82	X
83	SCREW	PC	100	CC83	X
84	SCREW	PC	100	CC84	X
85	SCREW	PC	100	CC85	X
86	SCREW	PC	100	CC86	X
87	SCREW	PC	100	CC87	X
88	SCREW	PC	100	CC88	X
89	SCREW	PC	100	CC89	X
90	SCREW	PC	100	CC90	X
91	SCREW	PC	100	CC91	X
92	SCREW	PC	100	CC92	X
93	SCREW	PC	100	CC93	X
94	SCREW	PC	100	CC94	X
95	SCREW	PC	100	CC95	X
96	SCREW	PC	100	CC96	X
97	SCREW	PC	100	CC97	X
98	SCREW	PC	100	CC98	X
99	SCREW	PC	100	CC99	X
100	SCREW	PC	100	CC100	X
101	SCREW	PC	100	CC101	X
102	SCREW	PC	100	CC102	X
103	SCREW	PC	100	CC103	X
104	SCREW	PC	100	CC104	X
105	SCREW	PC	100	CC105	X
106	SCREW	PC	100	CC106	X
107	SCREW	PC	100	CC107	X
108	SCREW	PC	100	CC108	X
109	SCREW	PC	100	CC109	X
110	SCREW	PC	100	CC110	X
111	SCREW	PC	100	CC111	X
112	SCREW	PC	100	CC112	X
113	SCREW	PC	100	CC113	X
114	SCREW	PC	100	CC114	X
115	SCREW	PC	100	CC115	X
116	SCREW	PC	100	CC116	X
117	SCREW	PC	100	CC117	X
118	SCREW	PC	100	CC118	X
119	SCREW	PC	100	CC119	X
120	SCREW	PC	100	CC120	X
121	SCREW	PC	100	CC121	X
122	SCREW	PC	100	CC122	X
123	SCREW	PC	100	CC123	X
124	SCREW	PC	100	CC124	X
125	SCREW	PC	100	CC125	X
126	SCREW	PC	100	CC126	X
127	SCREW	PC	100	CC127	X
128	SCREW	PC	100	CC128	X
129	SCREW	PC	100	CC129	X
130	SCREW	PC	100	CC130	X
131	SCREW	PC	100	CC131	X
132	SCREW	PC	100	CC132	X
133	SCREW	PC	100	CC133	X
134	SCREW	PC	100	CC134	X
135	SCREW	PC	100	CC135	X
136	SCREW	PC	100	CC136	X
137	SCREW	PC	100	CC137	X
138	SCREW	PC	100	CC138	X
139	SCREW	PC	100	CC139	X
140	SCREW	PC	100	CC140	X
141	SCREW	PC	100	CC141	X
142	SCREW	PC	100	CC142	X
143	SCREW	PC	100	CC143	X
144	SCREW	PC	100	CC144	X
145	SCREW	PC	100	CC145	X
146	SCREW	PC	100	CC146	X
147	SCREW	PC	100	CC147	X
148	SCREW	PC	100	CC148	X
149	SCREW	PC	100	CC149	X
150	SCREW	PC	100	CC150	X
151	SCREW	PC	100	CC151	X
152	SCREW	PC	100	CC152	X
153	SCREW	PC	100	CC153	X
154	SCREW	PC	100	CC154	X
155	SCREW	PC	100	CC155	X
156	SCREW	PC	100	CC156	X
157	SCREW	PC	100	CC157	X
158	SCREW	PC	100	CC158	X
159	SCREW	PC	100	CC159	X
160	SCREW	PC	100	CC160	X
161	SCREW	PC	100	CC161	X
162	SCREW	PC	100	CC162	X
163	SCREW	PC	100	CC163	X
164	SCREW	PC	100	CC164	X
165	SCREW	PC	100	CC165	X
166	SCREW	PC	100	CC166	X
167	SCREW	PC	100	CC167	X
168	SCREW	PC	100	CC168	X
169	SCREW	PC	100	CC169	X
170	SCREW	PC	100	CC170	X
171	SCREW	PC	100	CC171	X
172	SCREW	PC	100	CC172	X
173	SCREW	PC	100	CC173	X
174	SCREW	PC	100	CC174	X
175	SCREW	PC	100	CC175	X
176	SCREW	PC	100	CC176	X
177	SCREW	PC	100	CC177	X
178	SCREW	PC	100	CC178	X
179	SCREW	PC	100	CC179	X
180	SCREW	PC	100	CC180	X
181	SCREW	PC	100	CC181	X
182	SCREW	PC	100	CC182	X
183	SCREW	PC	100	CC183	X
184	SCREW	PC	100	CC184	X
185	SCREW	PC	100	CC185	X
186	SCREW	PC	100	CC186	X
187	SCREW	PC	100	CC187	X
188	SCREW	PC	100	CC188	X
189	SCREW	PC	100	CC189	X
190	SCREW	PC	100	CC190	X
191	SCREW	PC	100	CC191	X
192	SCREW	PC	100	CC192	X
193	SCREW	PC	100	CC193	X
194	SCREW	PC	100	CC194	X
195	SCREW	PC	100	CC195	X
196	SCREW	PC	100	CC196	X
197	SCREW	PC	100	CC197	X
198	SCREW	PC	100	CC198	X
199	SCREW	PC	100	CC199	X
200	SCREW	PC	100	CC200	X
201	SCREW	PC	100	CC201	X
202	SCREW	PC	100	CC202	X
203	SCREW	PC	100	CC203	X
204	SCREW	PC	100	CC204	X
205	SCREW	PC	100	CC205	X
206	SCREW	PC	100	CC206	X
207	SCREW	PC	100	CC207	X
208	SCREW	PC	100	CC208	X
209	SCREW	PC	100	CC209	X
210	SCREW	PC	100	CC210	X
211	SCREW	PC	100	CC211	X
212	SCREW	PC	100	CC212	X
213	SCREW	PC	100	CC213	X
214	SCREW	PC	100	CC214	X
215	SCREW	PC	100	CC215	X
216	SCREW	PC	100	CC216	X
217	SCREW	PC	100	CC217	X
218	SCREW	PC	100	CC218	X
219	SCREW	PC	100	CC219	X
220	SCREW	PC	100	CC220	X
221	SCREW	PC	100	CC221	X
222	SCREW	PC	100	CC222	X
223	SCREW	PC	100	CC223	X
224	SCREW	PC	100	CC224	X
225	SCREW	PC	100	CC225	X
226	SCREW	PC	100	CC226	X
227	SCREW	PC	100	CC227	X
228	SCREW	PC	100	CC228	X
229	SCREW	PC	100	CC229	X

42			1M5X22
41	Steel ball	SUS440	1φ 1
40	Steel ball	SUS440	1φ 2
39	Plug	SS41	1R(PT1/8)
38	C type snap ring	SUS	1JIS B 2804 18 for hole
37	'O"ring	NBR	1φ 1.8xφ 1.7
36	'O"ring	NBR	4φ 3xφ 1
35	'O"ring	NBR	1P-14
34	'O"ring	NBR	1φ 4.5xφ 1.0
33	'O"ring	NBR	1P-3
32	'O"ring	NBR	1P-7
31		SUS	2M3x14
30		SUS	4M3x8
29	Adjustable lock nut	S65CM	1ALN-4
28T21-5-42	Spring seat	SUP	1
27GOM3014J5	DIN terminal		1
26Refer to another sheet	Pressure amplifier		1
25P3020347	Flat packing	URETHANE	4
24P3020117	Filter	SUS	1
23P302030-2	Cable Assy(DIN)		1
22P302030-1	Flapper Assy		1
21P3020341	Orifice	SUS303	1
20P3020321	Diaphragm cover cap	A2017	1Chromate
19P3020119	'O"ring cover cap	C2801P	1
18P302042	'O"ring cover cap	A2017	1Chromate
17P3020319	Packing B	NBR	1
16P3020318	Packing A	NBR	1
15P2240178	Valve heat spring	SUS304YPB	1
14P302043	Exhaust valve	A5056	1
13P3020315	Nozzle	SUS303	1
12P2240166	Valve	SUS303	1
11P3020313	Mounting bolt	SU303	3
10P3020312	Mounting bolt	C36040	2NI plating
9P3020311	Diaphragm B	NBR	1
8P3020310	Diaphragm A	NBR	1
7P302038	Spacer	ABS	1
6P302037	Adjustment cover	PP	1
5P302036	Case cover	ABS	1
4P302035	Diaphragm desk	ADC12	1Chromate
3P302034	Constant pressure ring	ADC12	1Chromate
2P302033	Nozzle body	ADC12	1Chromate
1P302041	Pilot valve body	ADC12	1Chromate



Pressure gauge and bracket
should be options.

ITEM NO.	NAME	QTY	UNIT	SPECIFICATION		NOTES
				SIZE	TYPE	
1	P302031	1	PCP	1/2"	1/2"	
2	P302032	1	PCP	1/2"	1/2"	
3	P302033	1	PCP	1/2"	1/2"	
4	P302034	1	PCP	1/2"	1/2"	
5	P3020342	1	PCP	1/2"	1/2"	
6	P3020343	1	PCP	1/2"	1/2"	
7	P3020345	1	PCP	1/2"	1/2"	
8	P302035	1	PCP	1/2"	1/2"	
9	P30203510	1	PCP	1/2"	1/2"	
10	P30203511	1	PCP	1/2"	1/2"	
11	P30203512	1	PCP	1/2"	1/2"	
12	P30203513	1	PCP	1/2"	1/2"	
13	P30203514	1	PCP	1/2"	1/2"	
14	P30203515	1	PCP	1/2"	1/2"	
15	P30203516	1	PCP	1/2"	1/2"	
16	P30203517	1	PCP	1/2"	1/2"	
17	P30203518	1	PCP	1/2"	1/2"	
18	P30203519	1	PCP	1/2"	1/2"	
19	P30203520	1	PCP	1/2"	1/2"	
20	P30203521	1	PCP	1/2"	1/2"	
21	P30203522	1	PCP	1/2"	1/2"	
22	P30203523	1	PCP	1/2"	1/2"	
23	P30203524	1	PCP	1/2"	1/2"	
24	P30203525	1	PCP	1/2"	1/2"	
25	P30203526	1	PCP	1/2"	1/2"	
26	P30203527	1	PCP	1/2"	1/2"	
27	P30203528	1	PCP	1/2"	1/2"	
28	P30203529	1	PCP	1/2"	1/2"	
29	P30203530	1	PCP	1/2"	1/2"	
30	P30203531	1	PCP	1/2"	1/2"	
31	P30203532	1	PCP	1/2"	1/2"	
32	P30203533	1	PCP	1/2"	1/2"	
33	P30203534	1	PCP	1/2"	1/2"	
34	P30203535	1	PCP	1/2"	1/2"	
35	P30203536	1	PCP	1/2"	1/2"	
36	P30203537	1	PCP	1/2"	1/2"	
37	P30203538	1	PCP	1/2"	1/2"	
38	P30203539	1	PCP	1/2"	1/2"	
39	P30203540	1	PCP	1/2"	1/2"	
40	P30203541	1	PCP	1/2"	1/2"	
41	P30203542	1	PCP	1/2"	1/2"	
42	P30203543	1	PCP	1/2"	1/2"	
43	P30203544	1	PCP	1/2"	1/2"	
44	P30203545	1	PCP	1/2"	1/2"	
45	P30203546	1	PCP	1/2"	1/2"	
46	P30203547	1	PCP	1/2"	1/2"	
47	P30203548	1	PCP	1/2"	1/2"	
48	P30203549	1	PCP	1/2"	1/2"	

ITEM NO.	NAME	QTY	UNIT	SPECIFICATION		NOTES
				SIZE	TYPE	
1	P302041	1	PCP	1/2"	1/2"	
2	P3020411	1	PCP	1/2"	1/2"	
3	P3020412	1	PCP	1/2"	1/2"	
4	P3020413	1	PCP	1/2"	1/2"	
5	P3020414	1	PCP	1/2"	1/2"	
6	P3020415	1	PCP	1/2"	1/2"	
7	P3020416	1	PCP	1/2"	1/2"	
8	P3020417	1	PCP	1/2"	1/2"	
9	P3020418	1	PCP	1/2"	1/2"	
10	P3020419	1	PCP	1/2"	1/2"	
11	P3020420	1	PCP	1/2"	1/2"	
12	P3020421	1	PCP	1/2"	1/2"	
13	P3020422	1	PCP	1/2"	1/2"	
14	P3020423	1	PCP	1/2"	1/2"	
15	P3020424	1	PCP	1/2"	1/2"	
16	P3020425	1	PCP	1/2"	1/2"	
17	P3020426	1	PCP	1/2"	1/2"	
18	P3020427	1	PCP	1/2"	1/2"	
19	P3020428	1	PCP	1/2"	1/2"	
20	P3020429	1	PCP	1/2"	1/2"	
21	P3020430	1	PCP	1/2"	1/2"	
22	P3020431	1	PCP	1/2"	1/2"	
23	P3020432	1	PCP	1/2"	1/2"	
24	P3020433	1	PCP	1/2"	1/2"	
25	P3020434	1	PCP	1/2"	1/2"	
26	P3020435	1	PCP	1/2"	1/2"	
27	P3020436	1	PCP	1/2"	1/2"	
28	P3020437	1	PCP	1/2"	1/2"	
29	P3020438	1	PCP	1/2"	1/2"	
30	P3020439	1	PCP	1/2"	1/2"	
31	P3020440	1	PCP	1/2"	1/2"	
32	P3020441	1	PCP	1/2"	1/2"	
33	P3020442	1	PCP	1/2"	1/2"	
34	P3020443	1	PCP	1/2"	1/2"	
35	P3020444	1	PCP	1/2"	1/2"	
36	P3020445	1	PCP	1/2"	1/2"	
37	P3020446	1	PCP	1/2"	1/2"	
38	P3020447	1	PCP	1/2"	1/2"	
39	P3020448	1	PCP	1/2"	1/2"	
40	P3020449	1	PCP	1/2"	1/2"	
41	P3020450	1	PCP	1/2"	1/2"	
42	P3020451	1	PCP	1/2"	1/2"	
43	P3020452	1	PCP	1/2"	1/2"	
44	P3020453	1	PCP	1/2"	1/2"	
45	P3020454	1	PCP	1/2"	1/2"	
46	P3020455	1	PCP	1/2"	1/2"	
47	P3020456	1	PCP	1/2"	1/2"	
48	P3020457	1	PCP	1/2"	1/2"	

ITEM NO.	NAME	QTY	UNIT	SPECIFICATION		NOTES
				SIZE	TYPE	
1	P3020458	1	PCP	1/2"	1/2"	
2	P3020459	1	PCP	1/2"	1/2"	
3	P3020460	1	PCP	1/2"	1/2"	
4	P3020461	1	PCP	1/2"	1/2"	
5	P3020462	1	PCP	1/2"	1/2"	
6	P3020463	1	PCP	1/2"	1/2"	
7	P3020464	1	PCP	1/2"	1/2"	
8	P3020465	1	PCP	1/2"	1/2"	
9	P3020466	1	PCP	1/2"	1/2"	
10	P3020467	1	PCP	1/2"	1/2"	
11	P3020468	1	PCP	1/2"	1/2"	
12	P3020469	1	PCP	1/2"	1/2"	
13	P3020470	1	PCP	1/2"	1/2"	
14	P3020471	1	PCP	1/2"	1/2"	
15	P3020472	1	PCP	1/2"	1/2"	
16	P3020473	1	PCP	1/2"	1/2"	
17	P3020474	1	PCP	1/2"	1/2"	
18	P3020475	1	PCP	1/2"	1/2"	
19	P3020476	1	PCP	1/2"	1/2"	
20	P3020477	1	PCP	1/2"	1/2"	
21	P3020478	1	PCP	1/2"	1/2"	
22	P3020479	1	PCP	1/2"	1/2"	
23	P3020480	1	PCP	1/2"	1/2"	
24	P3020481	1	PCP	1/2"	1/2"	
25	P3020482	1	PCP	1/2"	1/2"	
26	P3020483	1	PCP	1/2"	1/2"	
27	P3020484	1	PCP	1/2"	1/2"	
28	P3020485	1	PCP	1/2"	1/2"	
29	P3020486	1	PCP	1/2"	1/2"	
30	P3020487	1	PCP	1/2"	1/2"	
31	P3020488	1	PCP	1/2"	1/2"	
32	P3020489	1	PCP	1/2"	1/2"	
33	P3020490	1	PCP	1/2"	1/2"	
34	P3020491	1	PCP	1/2"	1/2"	
35	P3020492	1	PCP	1/2"	1/2"	
36	P3020493	1	PCP	1/2"	1/2"	
37	P3020494	1	PCP	1/2"	1/2"	
38	P3020495	1	PCP	1/2"	1/2"	
39	P3020496	1	PCP	1/2"	1/2"	
40	P3020497	1	PCP	1/2"	1/2"	
41	P3020498	1	PCP	1/2"	1/2"	
42	P3020499	1	PCP	1/2"	1/2"	
43	P3020500	1	PCP	1/2"	1/2"	
44	P3020501	1	PCP	1/2"	1/2"	
45	P3020502	1	PCP	1/2"	1/2"	
46	P3020503	1	PCP	1/2"	1/2"	
47	P3020504	1	PCP	1/2"	1/2"	
48	P3020505	1	PCP	1/2"	1/2"	
49	P3020506	1	PCP	1/2"	1/2"	
50	P3020507	1	PCP	1/2"	1/2"	
51	P3020508	1	PCP	1/2"	1/2"	
52	P3020509	1	PCP	1/2"	1/2"	
53	P3020510	1	PCP	1/2"	1/2"	
54	P3020511	1	PCP	1/2"	1/2"	
55	P3020512	1	PCP	1/2"	1/2"	
56	P3020513	1	PCP	1/2"	1/2"	
57	P3020514	1	PCP	1/2"	1/2"	
58	P3020515	1	PCP	1/2"	1/2"	
59	P3020516	1	PCP	1/2"	1/2"	
60	P3020517	1	PCP	1/2"	1/2"	
61	P3020518	1	PCP	1/2"	1/2"	
62	P3020519	1	PCP	1/2"	1/2"	
63	P3020520	1	PCP	1/2"	1/2"	
64	P3020521	1	PCP	1/2"	1/2"	
65	P3020522	1	PCP	1/2"	1/2"	
66	P3020523	1	PCP	1/2"	1/2"	
67	P3020524	1	PCP	1/2"	1/2"	
68	P3020525	1	PCP	1/2"	1/2"	
69	P3020526	1	PCP	1/2"	1/2"	
70	P3020527	1	PCP	1/2"	1/2"	
71	P3020528	1	PCP	1/2"	1/2"	
72	P3020529	1	PCP	1/2"	1/2"	
73	P3020530	1	PCP	1/2"	1/2"	
74	P3020531	1	PCP	1/2"	1/2"	
75	P3020532	1	PCP	1/2"	1/2"	
76	P3020533	1	PCP	1/2"		

48	Cross-recessed pan head screw	SUS	1M5x22
47	C type snap ring	SUS	1
46	Cable brand screw	ABS	1DIN46320 P09
45	Seal packing	NBR	1DIN46320 P09
44	Metal washer	SPC	1DIN46320 P09
43	Steel ball	SUS440	1φ 1.2
42	Steel ball	SUS440	1φ 2
41	Plug	SS41	1R(PT1/8)
40	'O"ring	NBR1	1φ 1.8xφ 0.7
39	'O"ring	NBR	4φ 3xφ 1
38	'O"ring	NBR	1P-14
37	'O"ring	NBR	1φ 4.5xφ 1.0
36	'O"ring	NBR	1P-3
35	'O"ring	NBR	1P-6
34	Cross-recessed pan head screw	SUS	2M3x14
33	Cross-recessed pan head screw	SUS	6M3x8
32	Tapping screw	SUS304	2M3x4
31	Adjustable lock nut	S65CM	1ALN-4
30T21-5-42	Spring seat	SUS	1
29Refer to anothe sheet	Pressure amplifier		1
28P3020117	Filter	SUS	2
27P3020346	Packing for terminal board	NBR	1
26P3020347	Flat packing	Urethane	4
25P302030-3	Cable Assy		1
24P302030-1	Flapper Assy		1
23P3020341	Orifice	SUS303	1
22P3020321	Diaphragm cap	A2017	1Chromate
21P3020119	'O"ring cap	C2801P	1
20P302042	'O"ring cap	A2017	1Chromate
19P3020319	Packing B	NBR	1
18P3020318	Packing A	NBR	2
17P2240178	Valve base spring	SUS304YPB	1
16P302043	Exhaust valve	A5056	1
15P3020315	Nozzle	SUS303	1

14P2240166	Valve	SUS303	1
13P3020313	Mounting bolt	SUS303	3
12P3020345	Mounting bolt	C360408	1NI plating
11P3020344	Mounting bolt	C360408	1NI plating
10P3020311	Diaphragm B	NBR	1
9P3020310	Diaphragm A	NBR	1
8P302038	Spacer	ABS	1
7P302037	Adjustment cover	PP	1
6P3020343	Case cover B	ABS	1
5P3020342	Case cover A	ABS	1
4P302035	Diaphragm desk	ADC12	1Chromate
3P302034	Constant pressure ring	ADC12	1Chromate
2P302033	Nozzle body	ADC12	1Chromate
1P302041	Pilot valve body	ADC12	1Chromate