AUTOMATIC CONTROLS

CATALOG-S

SAGInoMIYA

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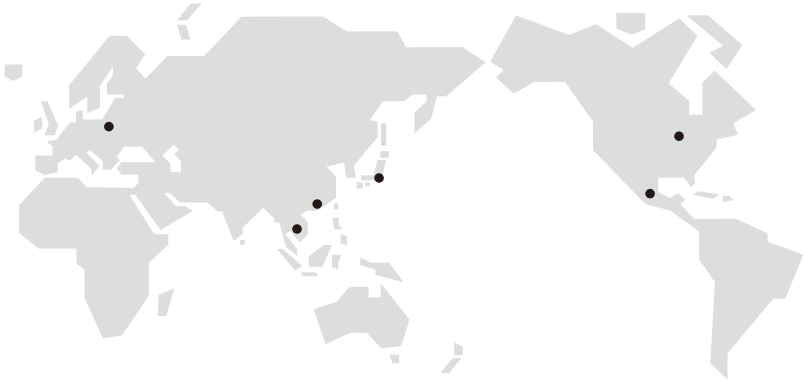


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AUTOMATIC CONTROLS

Catalog-edition-**S**

- REFERENCE INFORMATION
- APPROVAL STANDARD LIST
- PRESSURE CONTROLS
- TEMPERATURE & HUMIDITY CONTROLS
- PRESSURE & TEMPERATURE CONTROLS INFORMATION
- EXPANSION VALVES
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This condensed catalog-S is a revised edition of catalog-R

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SOLENOID VALVES & CONTROL VALVES

OTHER VALVES

OTHER CONTROL EQUIPMENT

REFERENCE INFORMATION

1. CONVERSION TABLES

1) Temperature conversion table (°C ↔ °F)

The figures in the center column show the temperature to be converted. The figures on the left show conversion from Fahrenheit to Centigrade and the figures on the right from Centigrade to Fahrenheit.

Example :

5°C→41.0°F

°C	⬇	°F
−15.0	5	41.0

−15.0°C←5°F

Temperature conversion formula :

°C=5/9 (°F−32)
°F=9/5×°C+32

°C	⬇	°F	°C	⬇	°F	°C	⬇	°F	°C	⬇	°F	°C	⬇	°F
−101.1	−150	−238.0	−37.2	−35	−31.0	−23.3	−10	14.0	−9.4	15	59.0	4.4	40	104.0
−95.6	−140	−220.0	−36.7	−34	−29.2	−22.8	−9	15.8	−8.9	16	60.8	5.0	41	105.8
−90.0	−130	−202.0	−36.1	−33	−27.4	−22.2	−8	17.6	−8.3	17	62.6	5.6	42	107.6
−84.4	−120	−184.0	−35.6	−32	−25.6	−21.7	−7	19.4	−7.8	18	64.4	6.1	43	109.4
−78.9	−110	−166.0	−35.0	−31	−23.8	−21.1	−6	21.2	−7.2	19	66.2	6.7	44	111.2
−73.3	−100	−148.0	−34.4	−30	−22.0	−20.6	−5	23.0	−6.7	20	68.0	7.2	45	113.0
−67.8	−90	−130.0	−33.9	−29	−20.2	−20.0	−4	24.8	−6.1	21	69.8	7.8	46	114.8
−62.2	−80	−112.0	−33.3	−28	−18.4	−19.4	−3	26.6	−5.6	22	71.6	8.3	47	116.6
−56.7	−70	−94.0	−32.8	−27	−16.6	−18.9	−2	28.4	−5.0	23	73.4	8.9	48	118.4
−51.1	−60	−76.0	−32.2	−26	−14.8	−18.3	−1	30.2	−4.4	24	75.2	9.4	49	120.2
−45.6	−50	−58.0	−31.7	−25	−13.0	−17.8	0	32.0	−3.9	25	77.0	10.0	50	122.0
−45.0	−49	−56.2	−31.1	−24	−11.2	−17.2	1	33.8	−3.3	26	78.8	15.6	60	140.0
−44.4	−48	−54.4	−30.6	−23	−9.4	−16.7	2	35.6	−2.8	27	80.6	21.1	70	158.0
−43.8	−47	−52.6	−30.0	−22	−7.6	−16.1	3	37.4	−2.2	28	82.4	26.7	80	176.0
−43.3	−46	−50.8	−29.4	−21	−5.8	−15.6	4	39.2	−1.7	29	84.2	32.2	90	194.0
−42.8	−45	−49.0	−28.9	−20	−4.0	−15.0	5	41.0	−1.1	30	86.0	37.8	100	212.0
−42.2	−44	−47.2	−28.3	−19	−2.2	−14.4	6	42.8	−0.6	31	87.8	43.3	110	230.0
−41.7	−43	−45.4	−27.8	−18	−0.4	−13.9	7	44.6	0.0	32	89.6	48.9	120	248.0
−41.1	−42	−43.6	−27.2	−17	1.4	−13.3	8	46.4	0.6	33	91.4	54.4	130	266.0
−40.6	−41	−41.8	−26.7	−16	3.2	−12.8	9	48.2	1.1	34	93.2	60.0	140	284.0
−40.0	−40	−40.0	−26.1	−15	5.0	−12.2	10	50.0	1.7	35	95.0	65.6	150	302.0
−39.4	−39	−38.2	−25.6	−14	6.8	−11.7	11	51.8	2.2	36	96.8	71.1	160	320.0
−38.9	−38	−36.4	−25.0	−13	8.6	−11.1	12	53.6	2.8	37	98.6	76.7	170	338.0
−38.3	−37	−34.6	−24.4	−12	10.4	−10.6	13	55.4	3.3	38	100.4	82.2	180	356.0
−37.8	−36	−32.8	−23.9	−11	12.2	−10.0	14	57.2	3.9	39	102.2	87.8	190	374.0

2) Temperature difference conversion table (°C ↔ °F)

°C	⬇	°F
0.056	0.1	0.18
0.111	0.2	0.36
0.278	0.5	0.90
0.56	1	1.8
1.11	2	3.6
1.67	3	5.4
2.22	4	7.2
2.78	5	9.0

°C	⬇	°F
3.33	6	10.8
3.89	7	12.6
4.44	8	14.4
5.00	9	16.2
5.56	10	18.0
6.11	11	19.8
6.67	12	21.6
8.33	15	27.0

This table is a comparison table of temperature difference. For example, a 9°F difference (77°F−68°F) corresponds to a 5°C difference (25°C−20°C).

3) Pressure conversion table (kgf/cm² ↔ MPa)

The figures in the center column show the pressure to be converted. The figures on the left show conversion from MPa to kgf/cm² and the figures on the right from kgf/cm² to MPa.

Example : 1 MPa=10.1972kgf/cm², 1kgf/cm²=0.09807 MPa

kgf/cm²	⬇	MPa
0	0	0
1.01972	0.1	0.009806
2.03944	0.2	0.019613
3.05916	0.3	0.029420
4.07888	0.4	0.039226
5.09860	0.5	0.049033
6.11832	0.6	0.058839
7.13804	0.7	0.068646
8.15776	0.8	0.078453
9.17748	0.9	0.088259
10.1972	1	0.09807
20.3944	2	0.19613
30.5916	3	0.29420
40.7888	4	0.39227
50.9860	5	0.49033
61.1832	6	0.58840
71.3804	7	0.68647
81.5776	8	0.78453
91.7748	9	0.88260
101.972	10	0.98066
112.169	11	1.07873
122.366	12	1.17680
132.563	13	1.27486
142.760	14	1.37293
152.958	15	1.47100
163.155	16	1.56906
173.352	17	1.66713
183.549	18	1.76520
193.746	19	1.96133
203.944	20	1.96133

kgf/cm²	⬇	MPa
214.141	21	2.05940
224.338	22	2.15746
234.535	23	2.25553
244.732	24	2.35360
254.930	25	2.45166
265.127	26	2.54973
275.324	27	2.64780
285.521	28	2.74586
295.718	29	2.84393
305.916	30	2.94199
316.113	31	3.04006
326.310	32	3.18313
336.507	33	3.23619
346.704	34	3.33426
356.902	35	3.43233
367.099	36	3.53039
377.296	37	3.62846
387.493	38	3.72653
397.690	39	3.82459
407.888	40	3.92266
418.085	41	4.02073
428.282	42	4.11879
438.479	43	4.21686
448.676	44	4.31493
458.874	45	4.41299
469.071	46	4.51106
479.268	47	4.60913
489.465	48	4.70719
499.662	49	4.80526
509.860	50	4.90332

kgf/cm²	⬇	MPa
520.057	51	5.00139
530.254	52	5.09946
540.451	53	5.19752
550.648	54	5.29559
560.846	55	5.39366
571.043	56	5.49172
581.240	57	5.58279
591.437	58	5.68786
601.634	59	5.78592
611.832	60	5.88399
622.029	61	5.98206
632.226	62	6.08012
642.423	63	6.17819
652.620	64	6.27626
662.818	65	6.37432
673.015	66	6.47239
683.212	67	6.57046
693.409	68	6.66852
703.606	69	6.76659
713.804	70	6.86465
724.001	71	6.96272
734.198	72	7.06079
744.395	73	7.15885
754.592	74	7.25692
764.790	75	7.35499
774.987	76	7.45305
785.184	77	7.55112
795.381	78	7.64919
805.578	79	7.74725
815.776	80	7.84532

kgf/cm²	⬇	MPa
825.973	81	7.94339
836.170	82	8.04145
846.367	83	8.13952
856.564	84	8.23759
866.762	85	8.33565
876.959	86	8.43372
887.156	87	8.53179
897.353	88	8.62985
907.550	89	8.72792
917.748	90	8.82598
927.945	91	8.92405
938.142	92	9.02212
948.339	93	9.12018
958.536	94	9.21825
968.734	95	9.31632
978.931	96	9.41438
989.128	97	9.51245
999.325	98	9.61052
1000.52	99	9.70858
1019.72	100	9.80665
1529.58	150	14.70997
2039.44	200	19.6133
2549.30	250	24.51662
3059.16	300	29.41995
3569.02	350	34.32327
4078.88	400	39.2266
4588.74	450	44.12992
5098.60	500	49.03325

4) Pressure conversion table (kgf/cm² ↔ psi)

kgf/cm²	⬇	psi	kgf/cm²	⬇	psi	kgf/cm²	⬇	psi	kgf/cm²	⬇	psi
0	0	0	0.773	11	156.5	2.180	31	440.9	4.218	60	853.4
0.0070	0.1	1.422	0.844	12	170.8	2.250	32	455.2	4.922	70	995.6
0.0141	0.2	2.845	0.914	13	184.9	2.320	33	469.4	5.625	80	1137.9
0.0211	0.3	4.267	0.984	14	199.1	2.390	34	483.6	6.328	90	1280.1
0.0281	0.4	5.689	1.055	15	213.4	2.461	35	497.8	7.031	100	1422.3
0.0352	0.5	7.112	1.125	16	227.6	2.531	36	512.0	7.734	110	1564.5
0.0422	0.6	8.534	1.195	17	241.8	2.601	37	526.3	8.437	120	1706.8
0.0492	0.7	9.956	1.266	18	256.0	2.672	38	540.5	9.140	130	1849.0
0.0562	0.8	11.379	1.336	19	270.2	2.742	39	554.7	9.843	140	1991.2
0.0633	0.9	12.801	1.406	20	284.5	2.812	40	568.9	10.55	150	2133.5
0.0703	1	14.22	1.477	21	298.7	2.883	41	583.2	14.06	200	2844.6
0.1406	2	28.45	1.547	22	312.9	2.953	42	597.4	21.09	300	4266.9
0.2109	3	42.67	1.617	23	327.1	3.023	43	611.6	28.12	400	5689.2
0.2812	4	56.89	1.687	24	341.4	3.094	44	625.8	35.15	500	7111.5
0.3515	5	71.12	1.758	25	355.6	3.164	45	640.1	42.18	600	8533.8
0.4218	6	85.34	1.828	26	369.8	3.234	46	654.3	49.22	700	9956.1
0.4922	7	99.56	1.898	27	384.0	3.304	47	668.5	56.25	800	11378.4
0.5625	8	113.79	1.969	28	398.3	3.375	48	682.7	63.30	900	12800.7
0.6328	9	128.01	2.039	29	412.5	3.445	49	696.9	70.31	1000	14223.0
0.7031	10	142.22	2.109	30	426.7	3.515	50	711.2			

5) Capacity conversion table (kW ↔ kcal/h)

1kW ↔ 860kcal/h

kW	⬇	1000 kcal/h	kW	⬇	1000 kcal/h	kW	⬇	1000 kcal/h	kW	⬇	1000 kcal/h
0.116	0.1	0.086	1.162	1	0.86	11.62	10	8.6	116.2	100	86
0.232	0.2	0.172	2.325	2	1.72	23.25	20	17.2	232.5	200	172
0.348	0.3	0.258	3.488	3	2.58	34.88	30	25.8	348.8	300	258
0.465	0.4	0.344	4.651	4	3.44	46.51	40	34.4	465.1	400	344
0.581	0.5	0.430	5.813	5	4.33	58.13	50	43.3	581.3	500	433
0.697	0.6	0.516	6.976	6	5.16	69.76	60	51.6	697.6	600	516
0.813	0.7	0.602	8.139	7	6.02	81.39	70	60.2	813.9	700	602
0.930	0.8	0.688	9.302	8	6.88	93.02	80	68.8	930.2	800	688
1.046	0.9	0.774	10.46	9	7.74	104.6	90	77.4	104.6	900	774

6) Length conversion table

(In ↔ mm)

In	mm	In	mm
1/8	3.18	1/64	0.40
1/4	6.35	3/64	1.19
3/8	9.53	5/64	1.98
1/2	12.70	7/64	2.78
5/8	15.88	9/64	3.57
3/4	19.05	11/64	4.39
7/8	22.23	13/64	5.16
1	25.40	15/64	5.95
1/16	1.59	17/64	6.75
3/16	4.76	19/64	7.54
5/16	7.94	21/64	8.33
7/16	11.11	23/64	9.13
9/16	14.29	25/64	9.92
11/16	17.46	27/64	10.72
13/16	20.64	29/64	11.51
15/16	23.81	31/64	12.30
1/32	0.79	33/64	13.10
3/32	2.38	35/64	13.89
5/32	3.97	37/64	14.68
7/32	5.56	39/64	15.48
9/32	7.14	41/64	16.27
11/32	8.73	43/64	17.07
13/32	10.32	45/64	17.86
15/32	11.91	47/64	18.65
17/32	13.49	49/64	19.45
19/32	15.08	51/64	20.24
21/32	16.67	53/64	21.04
23/32	18.26	55/64	21.83
25/32	19.84	57/64	22.62
27/32	21.43	59/64	23.42
29/32	23.02	61/64	24.21
31/32	24.61	63/64	25.00

7) Vacuum conversion table

(MPa ↔ MPa (abs) ↔ cmHgv ↔ kgf/cm²(abs))

MPa	MPa (abs)	cmHg v	kgf/cm² (abs)	MPa	MPa (abs)	cmHg v	kgf/cm² (abs)
−0.1013	0	76	0	−0.0480	0.0533	36	0.5438
−0.0987	0.0027	74	0.0272	−0.0453	0.0560	34	0.5710
−0.0960	0.0053	72	0.0544	−0.0427	0.0587	32	0.5981
−0.0933	0.0080	70	0.0816	−0.0400	0.0613	30	0.6254
−0.0907	0.0107	68	0.1088	−0.0373	0.0640	28	0.6526
−0.0880	0.0133	66	0.1360	−0.0347	0.0667	26	0.6798
−0.0853	0.0160	64	0.1631	−0.0320	0.0693	24	0.7069
−0.0827	0.0187	62	0.1903	−0.0293	0.0720	22	0.7341
−0.0800	0.0213	60	0.2175	−0.0267	0.0747	20	0.7613
−0.0773	0.0240	58	0.2447	−0.0240	0.0773	18	0.7885
−0.0747	0.0267	56	0.2719	−0.0213	0.0800	16	0.8157
−0.0720	0.0293	54	0.2991	−0.0187	0.0827	14	0.8429
−0.0693	0.0320	52	0.3263	−0.0160	0.0853	12	0.8700
−0.0667	0.0347	50	0.3535	−0.0133	0.0880	10	0.8972
−0.0640	0.0373	48	0.3806	−0.0107	0.0907	8	0.9245
−0.0613	0.0400	46	0.4078	−0.0080	0.0933	6	0.9517
−0.0587	0.0427	44	0.4350	−0.0053	0.0960	4	0.9788
−0.0560	0.0453	42	0.4622	−0.0027	0.0987	2	1.0060
−0.0533	0.0480	40	0.4894	0	0.1013	0	1.0332
−0.0507	0.0507	38	0.5166				

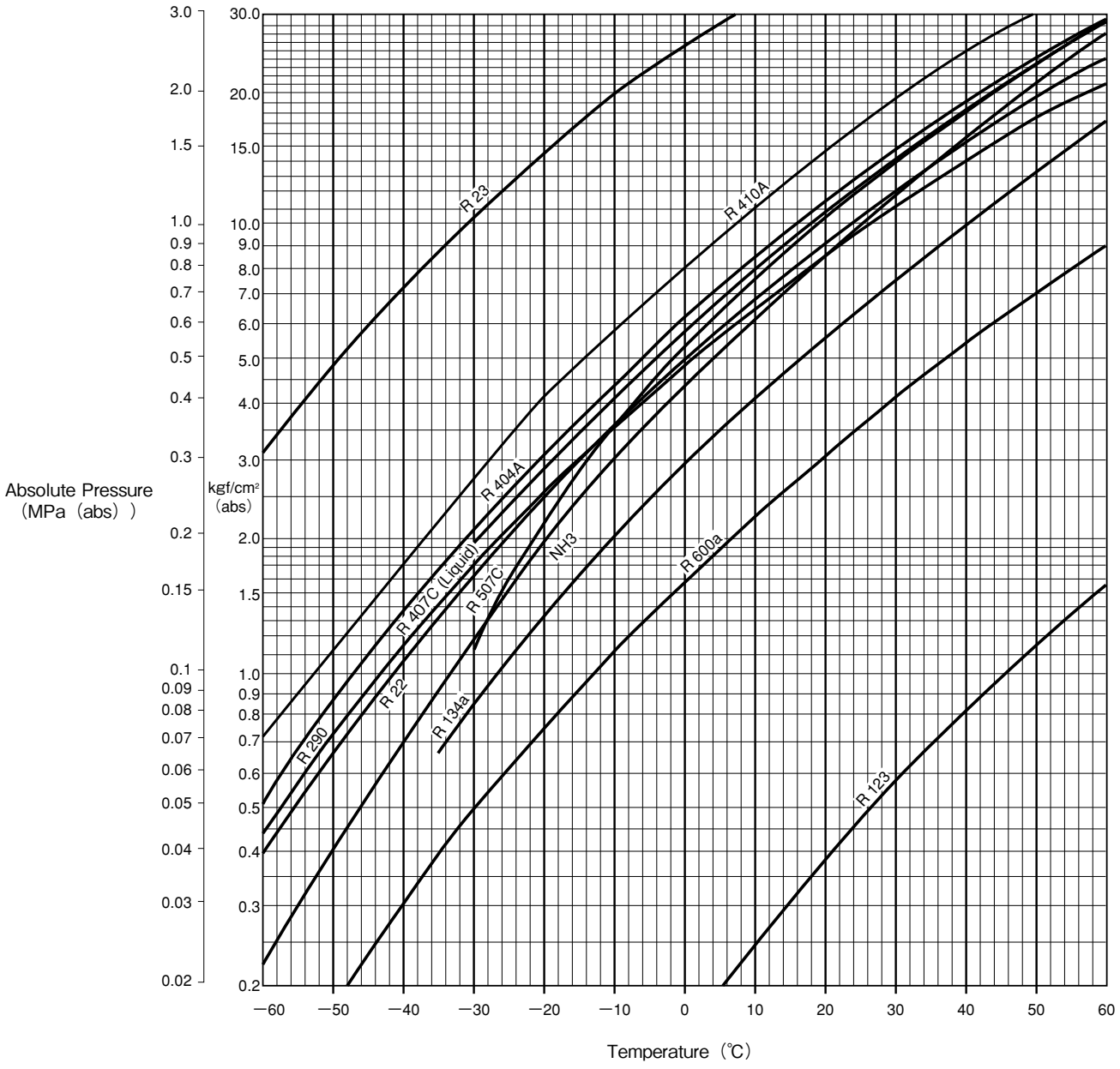
8) Other conversion values

1 kg=2.20462 lb, 1mm=0.03937 inch

1 U.S. Refrigeration Ton=12,000 Btu/h=3,024 kcal/h

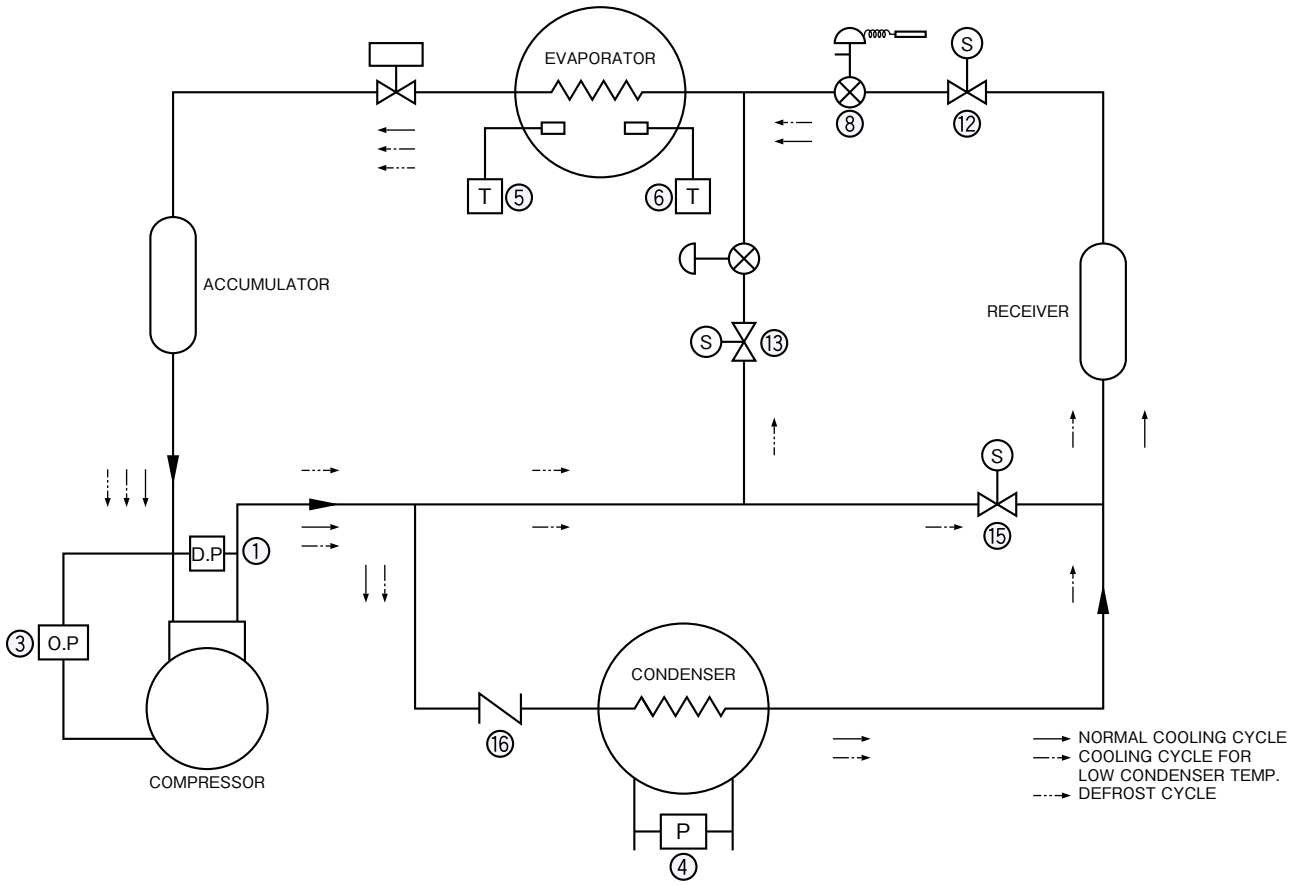
1 kgf/cm²=98.0667 kPa=0.980667 bar

2. SATURATED VAPOUR PRESSURE (°C ↔ MPa (abs), °C ↔ kgf/cm² (abs))



3. APPLICATION EXAMPLES

1). Refrigeration System with Hot Gas Defrosting



①Dual Pressure Controls
Type DYS

②Pressure Controls
Type SYS

③Oil Protection Controls
Type ONS

④Differential Pressure Controls
Type WNS

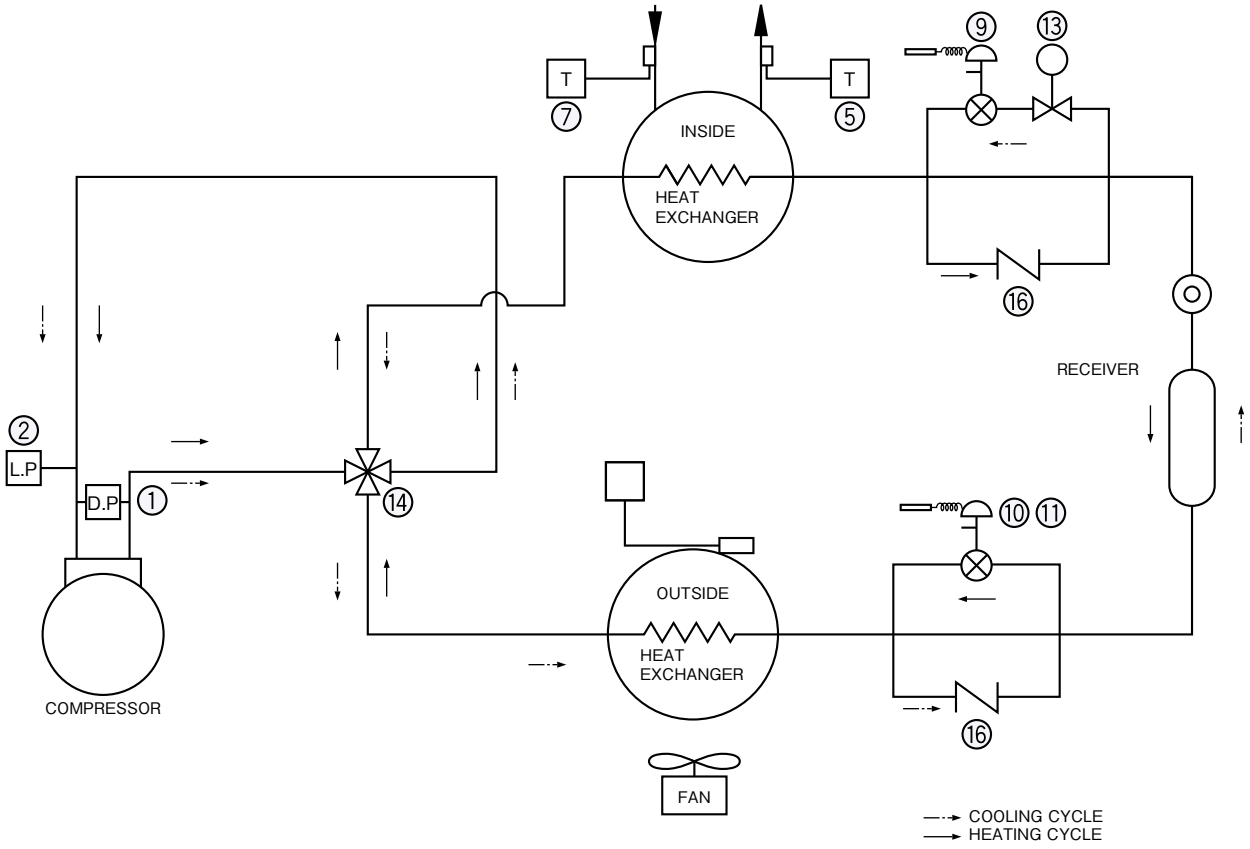
⑤Temperature Controls
Type TNS

⑥Temperature Controls
Type ALS

⑦Electronic Step Thermostat
Type DSE

⑧Thermostatic Expansion Valve
Type ATX

2). Heat Pump System…Chiller



⑨Thermostatic Expansion Valve
Type RCX

⑩Thermostatic Expansion Valve
Type SCX

⑪Thermostatic Expansion Valve
Type BHX

⑫Solenoid Valve
Type REV…E

⑬Solenoid Valve
Type REV…B

⑭4-Way Reversing Valve
Type STF

⑮Solenoid Valve
Type VPV

⑯Check Valve
Type BCV

APPROVAL STANDARD LIST

- Our products are listed by type number. In some types of products, not all models are listed.
- Some approved items have special catalog number for the listing.
- Some approved items require extra charges.
- Please contact the company for details.

Standard for safety

	Type Number		
CE	Pressure Controls	Temperature Controls	Solenoid Valves
	ANS(W)(P), DNS(W)(P) FNS(W)(P), HNS(W) ONS(W), SNS(W)(P) WNS(W), DYS, SYS, CFE ETB, FTB, HTB, LTB ACB, LCB, XSK, NSK	CNS(W)(P), INS(W) TNS(W)(P)	IEV, REV, WEV STF, VHV BPV, RPV
	Flow Switch	Fan Speed Controller	
	FQS	RGE, XGE	
UL	Pressure Controls	Temperature Controls	Solenoid Valves
	DNS, HNS, SNS, WNS ETB, FTB, HTB, LTB ACB, XSK, NSK	CNS, TNS, EWS FWS, LWS, RWS	TEV, VPV, STF, VHV
	Flow Switch	Expansion Valves	
	FQS	AKV, UKV, VKV	
CQC	Pressure Controls	Solenoid Valves	Electronic Expansion Valves
	SYS, DYS ACB, LCB, NSK	RPV, STF	UKV
CSA	Pressure Controls	Fan Speed Controller	
	DNS, SNS ETB, FTB, HTB LTB, ACB	RGE, XGE	
IECEE	Pressure Controls	Fan Speed Controller	
	ETB, FTB LTB, HTB, ACB	XGE	
DIN	Pressure Controls		
	DNS, SNS, ACB		
VDE	Pressure Controls		
	ETB, FTB, HTB, LTB, ACB		

Standard for marine

	Type Number	
	Pressure Controls	Temperature Controls
LR	FPS, SPS, WPS YPS, ANS, DNS FNS, HNS, ONS SNS, WNS, YNS	GPS, TPS, BNS CNS, GNS, INS TNS
GL	FPS, SPS, WPS YPS, ANS, DNS FNS, HNS, ONS SNS, WNS, YNS	GPS, TPS, BNS CNS, GNS, INS TNS
NV	FPS, SPS, WPS YPS, ANS, DNS FNS, HNS, ONS SNS, WNS, YNS	GPS, TPS, BNS CNS, GNS, INS TNS
BV	FPS, SPS, WPS YPS, ANS, DNS FNS, HNS, ONS SNS, WNS, YNS	GPS, TPS, BNS CNS, GNS, INS TNS
ABS	ANS, DNS, FNS HNS, ONS, SNS WNS, YNS	BNS, CNS, GNS INS, TNS
NK	FPS, SPS, WPS YPS, ANS, DNS FNS, HNS, ONS SNS, WNS, YNS	GPS, TPS, BNS CNS, GNS, INS TNS

PRESSURE CONTROLS

SMALL PRESSURE CONTROLS (DISC TYPE)

High Volume OEM Item

Type ACB & LCB

SAGINOMIYA

GENERAL DESCRIPTION

- Pressure Control CB series are disc type small pressure controls featuring compact structure and field proven high quality.
- It is designed to suit modern designed application with its compact and various type of connection styles, such application as air conditioning, automobile industries and others.
  Type ACB···High & medium pressure range
  Type LCB···Low pressure range

Type ACB

Type ACB

CE mark applicable (available upon request for Type ACB & Type LCB)
UL recognized (available upon request for Type ACB)

SPECIFICATIONS

- Ambient temperature: −30 to 100°C

STANDARD TYPE NUMBER SELECTION

Type ACB & LCB

Unit: MPa {kgf/cm²}

Catalog No.	Range		Max. Pressure	Contact Functions	Pressure Connections	Terminal Construction	Application	Dimension	Wt. (kg)
	Min.	Max.							
ACB	0.7 {7}	4.5 {45}	4.5 {45}	SPST (High Cut)	Female Flare	Open	High Pressure Cut Out	①	0.03
						Water Proof		②	0.06
					1/4" Solder	Open		③	0.03
						Water Proof		④	0.06
				SPDT	Female Flare	Open		⑤	0.03
						Water Proof		⑥	0.06
				SPST + Manual Reset				⑦	
				SPDT + Manual Reset				⑧	
LCB	0.1 {1}	0.7 {7}	1.5 {15}	SPST (Low Cut)		Open	Fan Control	①	0.03
							Low Pressure Cut Out	①	
						Water Proof		②	0.06
					1/4" Solder			④	

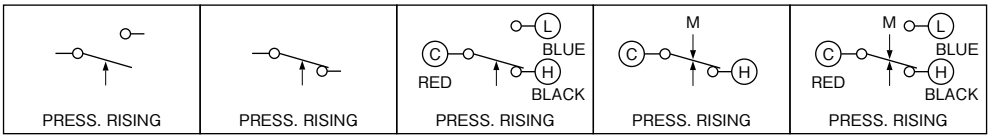
ELECTRICAL RATINGS

Type ACB & LCB

Category of Ratings			M Rating			L Rating			T Rating
Rated Amps. (A) \ Rated Voltage (V)		Power Factor (cos φ)	125V.AC	250V.AC	12V.DC	125V.AC	250V.AC	12V.DC	12/24V.DC
Non-Inductive Current		1	1 to 6	1 to 4	1 to 4	0.02 to 2	0.02 to 1	0.05 to 0.1	0.01 to 0.05
Inductive Current	Full Load	0.75			—			—	—
	Locked Rotor	0.45	1 to 24	1 to 16		0.02 to 8	0.02 to 4		

CONTACT FUNCTIONS

Type ACB & LCB

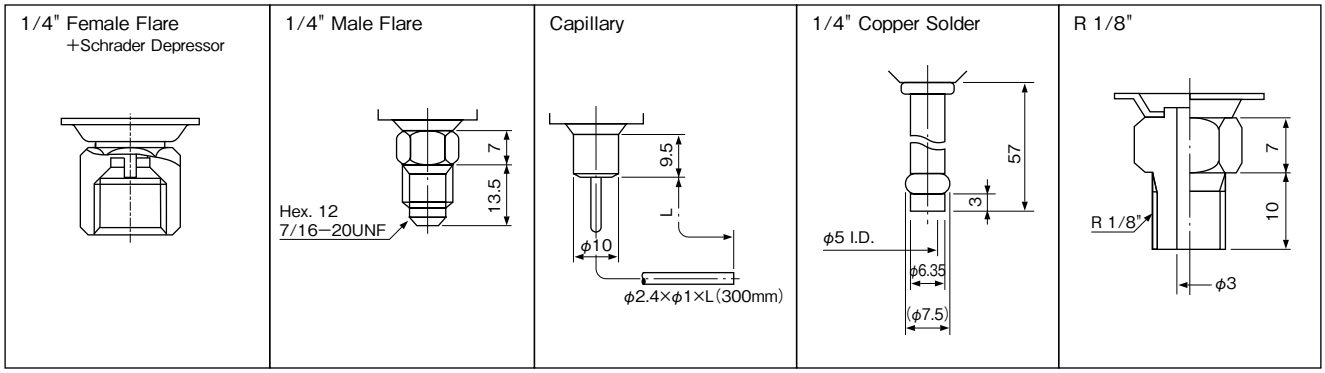


Code A | Code B | Code C | Code B w/Manual | Code C w/Manual

↑: Operating direction on press. increase at High Press.Side
M ↓: Operating direction on manual reset

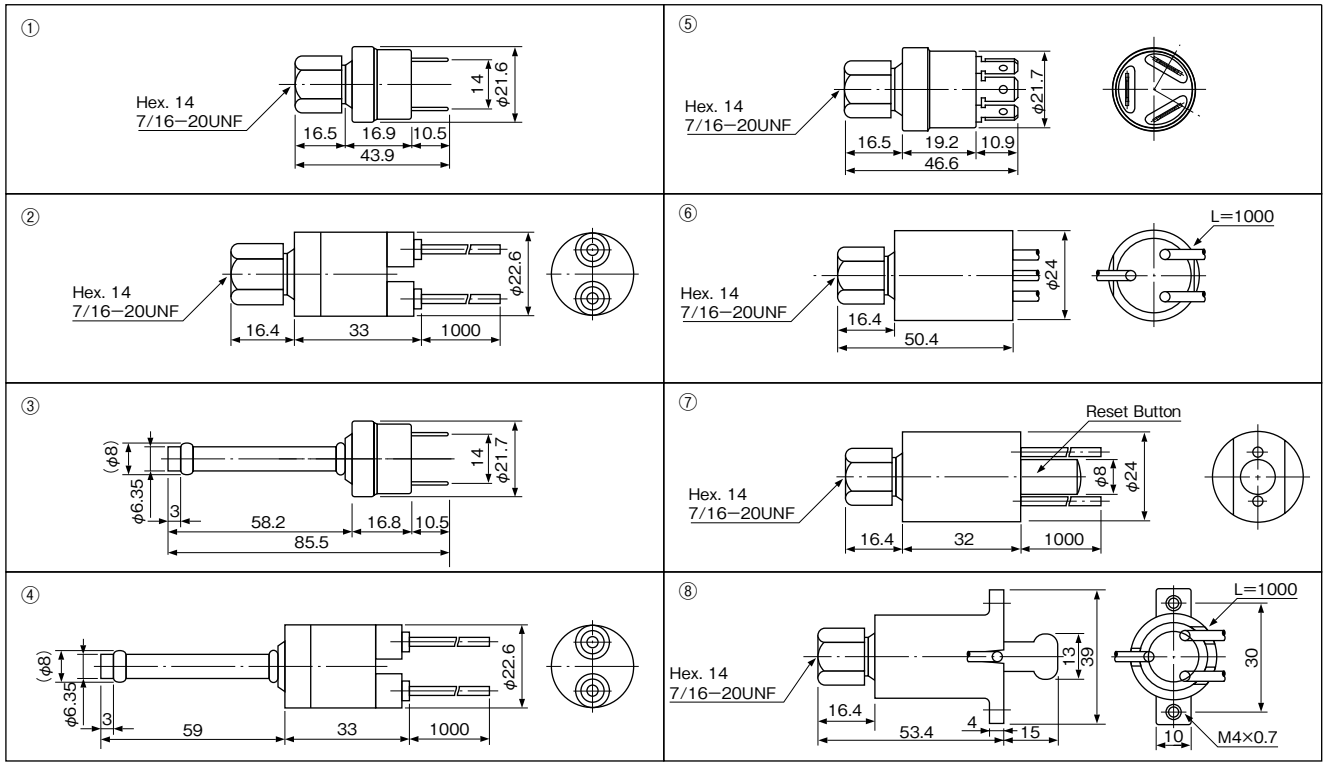
PRESSURE CONNECTIONS

Unit: mm



DIMENSIONS

Unit: mm



SMALL PRESSURE CONTROLS
High Volume OEM Item

Type LTB, ETB, HTB & FTB

SAGINOMIYA

GENERAL DESCRIPTION

- Factory set pressure switch designed for use in refrigeration units of quantity production such as room air conditioner (heat pump), packaged air conditioner (heat pump), water chiller etc.
- With SPDT contact mechanism.
- Models identified with electrical rating code L can be used for minimum 0.02A/125V.AC rating.
- Models with 0.78 to 1.96 MPa {8 to 20 kgf/cm²} range are also available for HTB and FTB.
- Models with 0.10 MPa {1 kgf/cm²} differential are also available for HTB (max. range limit: 1.27 MPa {13 kgf/cm²}).

CE mark applicable (available upon request)
UL recognized (available upon request)

Type HTB

Type FTB

TYPE NUMBER SELECTION (SPECIFICATIONS)

Unit: MPa {kgf/cm²}

Catalog No.	Application	Range Min.	Range Max.	Differential	Factory Setting On	Factory Setting Off	Max. Working Pressure	Pressure Connections	* Electrical Ratings	Wt. (kg)
LTB–A301	Low Pressure	0	0.392 {4}	0.059 to 0.147 {0.6 to 1.5}	0.294 {3}	0.196 {2}	1.5 {15}	①	H	0.08
LTB–A302									M	
LTB–A303									L	
LTB–A304								②	H	
LTB–A305									M	
LTB–A306									L	
ETB–A301		0.098 {1}	0.245 {2.5}	Automatic operation on pressure decrease and manual reset	Manual Reset	0.098 {1}		①	H	0.1
ETB–A302									M	
ETB–A303									L	
ETB–A304								②	H	
ETB–A305									M	
ETB–A306									L	
HTB–A301	High Pressure	1.96 {20}	2.94 {30}	Lower Limit 0.29 to 0.49 {3 to 5} / Upper Limit 0.29 to 0.69 {3 to 7}	1.96 {20}	2.45 {25}	3.3 {33}	①	H	0.09
HTB–A302									M	
HTB–A303									L	
HTB–A304								②	H	
HTB–A305									M	
HTB–A306									L	
FTB–A301				Automatic operation on pressure increase and manual reset	Manual Reset			①	H	0.1
FTB–A302									M	
FTB–A303									L	
FTB–A304								②	H	
FTB–A305									M	
FTB–A306									L	

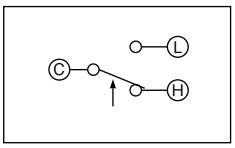
* Refer to Electrical Ratings Table in the list below.

ELECTRICAL RATINGS

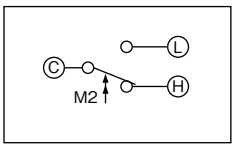
Rated Amps. (A) \ Rated Voltage (V)		Terminal	Power Factor (cos φ)	H Rating 125V.AC	H Rating 250V.AC	M Rating 125V.AC	M Rating 250V.AC	L Rating 125V.AC	L Rating 250V.AC
Non-Inductive Current		C–L	1	1 to 10	1 to 10	1 to 3	0.5 to 1.5	0.02 to 2	0.02 to 1
Inductive Current	Full Load		0.75	1 to 6	1 to 6	1 to 2	0.5 to 1		
	Locked Rotor		0.45	1 to 24	1 to 24	1 to 8	0.5 to 4	0.02 to 8	0.02 to 4
Non-Inductive Current		C–H	1	1 to 16	1 to 16		0.5 to 4	0.02 to 2	0.02 to 1
Inductive Current	Full Load		0.75			1 to 6	0.5 to 16		
	Locked Rotor		0.45	1 to 64	1 to 64	1 to 24	0.5 to 5	0.02 to 8	0.02 to 4

CONTACT FUNCTIONS

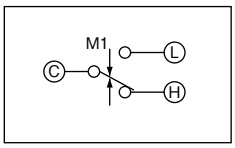
Type LTB & HTB



Type ETB (M2 : Manual Reset)



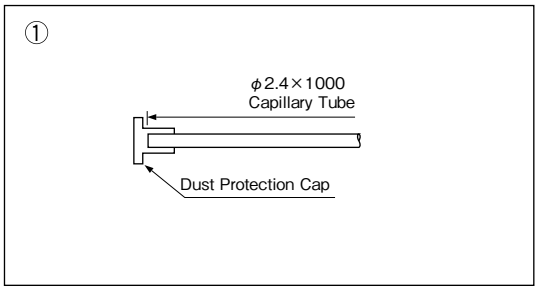
Type FTB (M1 : Manual Reset)

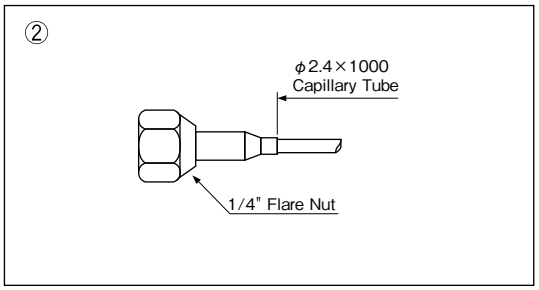


C	Common Terminal
L	Close on Pressure Increase
H	Close on Pressure Decrease

↑ : Operating direction on press. increase at High Press.Side
M1 ↓, M2 ↑ : Operating direction on manual reset

PRESSURE CONNECTIONS

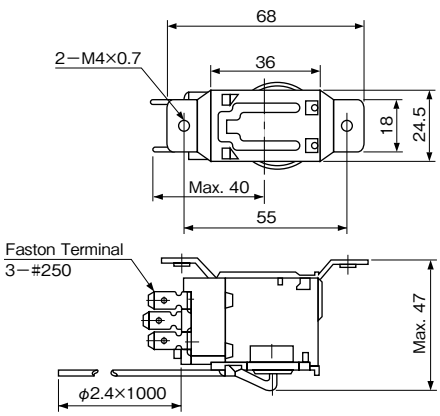




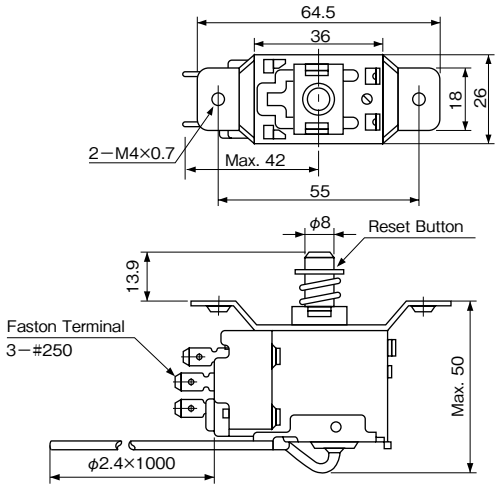
・1/4" Solder Connection is also available upon request.

DIMENSIONS

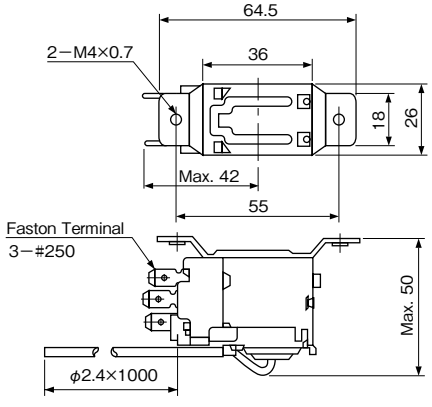
Type LTB



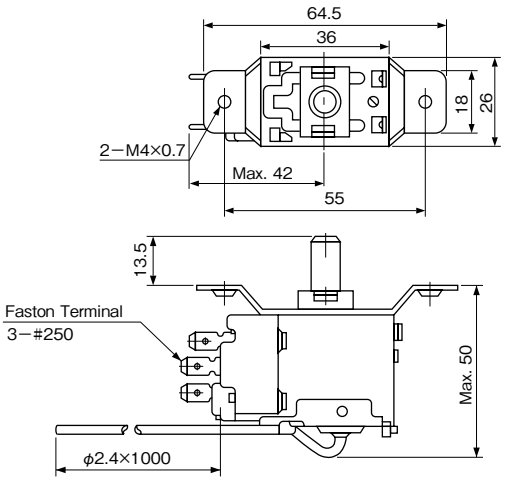
Type ETB



Type HTB



Type FTB



Unit: mm

SINGLE FUNCTION PRESSURE CONTROLS

Type SYS

SAGINOMIYA

GENERAL DESCRIPTION

- Type SYS is standard model. Reliable performance, and long life products.
- Applicable for R410A (SYS−C140X0)
- Scale plate with significantly clear visibility
- Compact and light weight

CE mark applicable (available upon request)

TYPE NUMBER SELECTION (SPECIFICATIONS)

Automatic reset type

Unit: MPa {kgf/cm²}

＊1 Catalog No.	＊2 Refrigerant	Range		Differential		Factory Setting		Max. Working Pressure	Contact Function	Wt. (kg)
		Min.	Max.	＊3 Min.	Max.	Off (On)	On (Off)			
SYS–C103X0	R404A,R407C R134a,R22	−0.06 {−50cmHg}	0.3 {3}	0.035 {0.35}	0.2 {2}	0.05 {0.5}	0.15 {1.5}	1.65 {16.5}	Diagram 1	0.25
SYS–C106X0			0.6 {6}	0.06 {0.6}	0.4 {4}	0.2 {2}	0.3 {3}			
SYS–C110X0		0.1 {1}	1 {10}	0.1 {1}	0.3 {3}	0.4 {4}	0.6 {6}			
SYS–C130X0		0.5 {5}	3 {30}	0.3 {3}	1 {10}	1.5 {15}	2 {20}	3.3 {33}		
SYS–C135X0		1 {10}	3.5 {35}	0.5 {5}	1.5 {15}	2 {20}	2.5 {25}	3.8 {38}		
SYS–C140X0	R410A etc.		4.3 {43}		1 {10}			4.7 {47}		

Manual reset type

Unit: MPa {kgf/cm²}

＊1 Catalog No.	＊2 Refrigerant	Range		Manual Reset	Factory Setting		Max. Working Pressure	Contact Function	Wt. (kg)
		Min.	Max.		Off (On)	On (Off)			
SYS–C106X0M2	R404A, R407C R134a, R22	−0.06{−50cmHg}	0.6 {6}	Automatic operation on pressure decrease, and manual reset.	0.2 {2}	Manual Reset	1.65 {16.5}	Diagram 2	0.25
SYS–C130X0M2		0.5 {5}	3 {30}		1.5 {15}		3.3 {33}		

・ Enclosure: IP20

＊1 Standard unit display is MPa. Other unit displays are available upon request by changing “X0” portion of a catalog number.
[X0: MPa, X1: bar, X2: kgf/cm2, X3: kPa, X4: lb/in2, X5: psi]

＊2 The products other than SYS–C140X0 are not compatible with R410A refrigerant.

＊3 Indicates the average value also considering instrumental errors.

ELECTRICAL RATINGS

Rated Voltage (V) / Rated Amps. (A)		Power Factor (cos φ)	125/250V. AC
Non-Inductive Current		1	12
Inductive Current	Full Load	0.75	
	Locked Rotor	0.45	72

Minimum contact capacity: 50mA

CONTACT FUNCTIONS

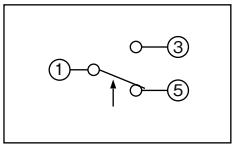


Diagram 1

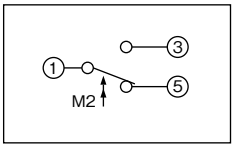


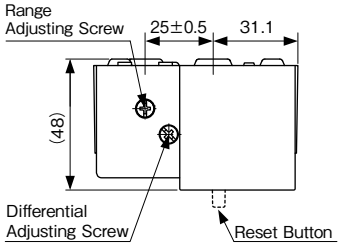
Diagram 2

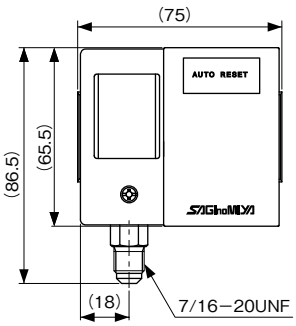
	Diagram 1 & 2
1	Common Terminal
3	Close on Pressure Increase
5	Close on Pressure Decrease

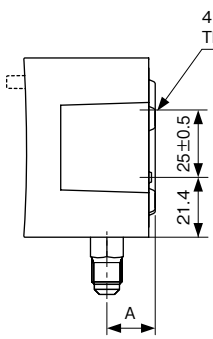
↑: Operating direction on press. increase at High Press. Side

M2↑: Operating direction on manual reset

DIMENSIONS







Catalog No.	Unit: mm
	A
SYS–C103 to 110	17.7
SYS–C130 to 140	16.7

Unit: mm

SINGLE FUNCTION PRESSURE CONTROLS

Type HNS

SAGINOMIYA

GENERAL DESCRIPTION

- Type HNS is high pressure controls with fixed pressure differential and safety cut out.
- Enclosure: IP20(With the upper lid: IP44)

CE mark applicable (available upon request)
UL recognized (available upon request)

TYPE NUMBER SELECTION (SPECIFICATIONS)

Automatic reset type

Unit: MPa {kgf/cm²}

Catalog No.	Range		Differential	Factory Setting		Max. Working Pressure	Contact Function	Wt. (kg)
	Min.	Max.	Fixed	Off	On			
HNS–C130X	0.8 {8}	3 {30}	0.3 to 0.5 {3 to 5}	2 {20}	1.6 {16}	3.3 {33}	Diagram 1	0.24

Manual reset type

Unit: MPa {kgf/cm²}

Catalog No.	Range		Manual Reset	Factory Setting		Max. Working Pressure	Contact Function	Wt. (kg)
	Min.	Max.		Off	On			
HNS–C130XM1	0.8 {8}	3 {30}	Automatic operation on pressure increase, and manual reset.	2 {20}	Manual Reset	3.3 {33}	Diagram 2	0.24

・ Drip Proof Models: Available upon request. (Refer to page 49.)

ELECTRICAL RATINGS

Rated Amps. (A) \ Rated Voltage (V)		Power Factor (cos φ)	125/250V. AC
Non-Inductive Current		1	12
Inductive Current	Full Load	0.75	
	Locked Rotor	0.45	72

Minimum contact capacity: 50mA

CONTACT FUNCTIONS

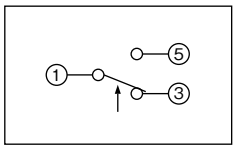


Diagram 1

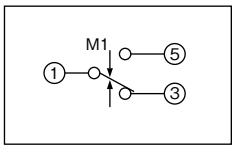
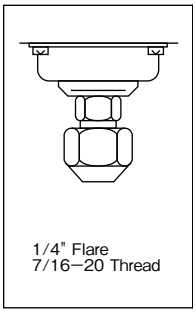


Diagram 2

	Diagram 1 & 2
1	Common Terminal
3	Open on Pressure Increase
5	Open on Pressure Decrease

↑ : Operating direction on press. increase at High Press. Side
M1↓ : Operating direction on manual reset

PRESSURE CONNECTIONS

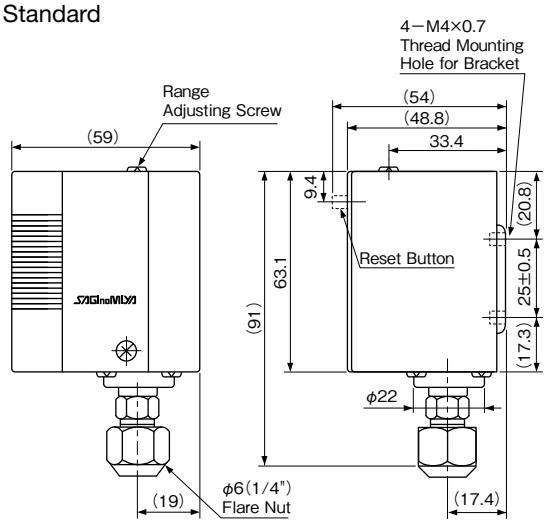


Standard

Refer to page 43, 44.

DIMENSIONS

Standard



Unit: mm

DUAL PRESSURE CONTROLS

Type DYS

SAGInoMIYA

GENERAL DESCRIPTION

- Type DYS is dual pressure controls that is integrated with over pressure protection of the high pressure side and control of low pressure side of the refrigeration unit.
- Scale plate with significantly clear visibility
- Compact and light weight

CE mark applicable (available upon request)

TYPE NUMBER SELECTION (SPECIFICATIONS)

Automatic reset type

Unit: MPa {kgf/cm²}

＊1 Catalog No.	Pressure Side	Range		Differential		Factory Setting		Max. Working Pressure	Contact Function	Wt. (kg)
		Min.	Max.	＊2 Min.	Max.	Off	On			
DYS–D306X0	Low Side	−0.06 {−50cmHg}	0.6 {6}	0.06 {0.6}	0.4 {4}	0.2 {2}	0.3 {3}	1.65 {16.5}	Diagram 1	0.40
	High Side	0.8 {8}	3 {30}	Approx.0.5 fixed. {Approx.5 fixed.}		2 {20}	1.5 {15}	3.3 {33}		
DYS–D606X0	Low Side	−0.06 {−50cmHg}	0.6 {6}	0.06 {0.6}	0.4 {4}	0.2 {2}	0.3 {3}	1.65 {16.5}	Diagram 2	
	High Side	0.8 {8}	3 {30}	Approx.0.5 fixed. {Approx.5 fixed.}		2 {20}	1.5 {15}	3.3 {33}		

Manual reset type

Unit: MPa {kgf/cm²}

＊1 Catalog No.	Pressure Side	Range		Differential		Factory Setting		Max. Working Pressure	Contact Function	Wt. (kg)
		Min.	Max.	＊2 Min.	Max.	Off	On			
DYS–D306X0M	Low Side	−0.06 {−50cmHg}	0.6 {6}	0.06 {0.6}	0.4 {4}	0.2 {2}	0.3 {3}	1.65 {16.5}	Diagram 3	0.40
	High Side	0.8 {8}	3 {30}	Automatic operation on pressure increase, and manual reset.		2 {20}	manual reset	3.3 {33}		
DYS–D606X0M	Low Side	−0.06{−50cmHg}	0.6 {6}	0.06 {0.6}	0.4 {4}	0.2 {2}	0.3 {3}	1.65 {16.5}	Diagram 4	
	High Side	0.8 {8}	3 {30}	Automatic operation on pressure increase, and manual reset.		2 {20}	manual reset	3.3 {33}		
DYS–D606X0MM	Low Side	−0.06{−50cmHg}	0.6 {6}	Automatic operation on pressure decrease, and manual reset.		0.2 {2}		1.65 {16.5}	Diagram 5	
	High Side	0.8 {8}	3 {30}	Automatic operation on pressure increase, and manual reset.		2 {20}		3.3 {33}		

・ Enclosure: IP20

＊1 Standard unit display is MPa. Other unit displays are available upon request by changing “X0” portion of a catalog number.
[X0: MPa, X1: bar, X2: kgf/cm2, X3: kPa, X4: lb/in2, X5: psi]

＊2 Indicates the average value also considering instrumental errors.

ELECTRICAL RATINGS

Rated Voltage (V) / Rated Amps. (A)		Power Factor (cos ϕ)	125/250V. AC
Non-Inductive Current		1	12
Inductive Current	Full Load	0.75	
	Locked Rotor	0.45	72

Minimum contact capacity: 50mA

CONTACT FUNCTIONS

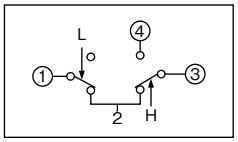


Diagram 1

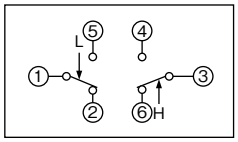


Diagram 2

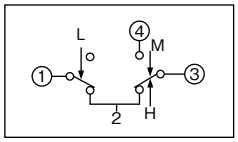


Diagram 3

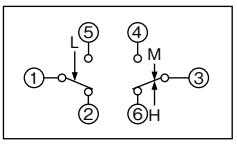


Diagram 4

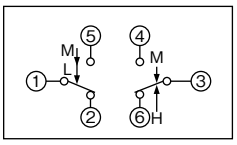
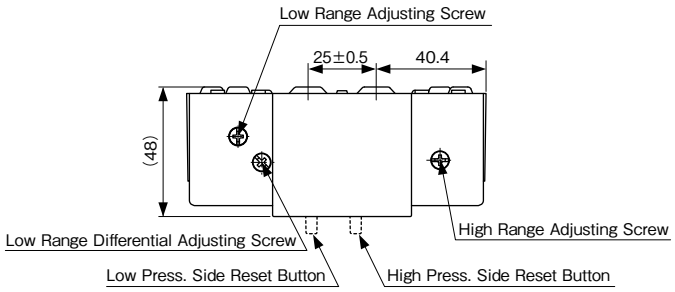
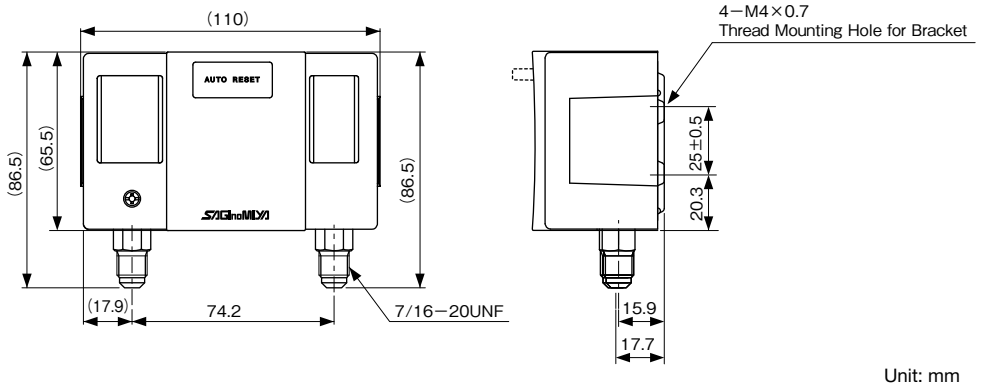


Diagram 5

L ↓: Operating direction on press. increase at Low Press. Side
H ↑: Operating direction on press. increase at High Press. Side
M↓: Operating direction on manual reset

DIMENSIONS





Unit: mm

PRESSURE CONTROLS WITH NARROW DIFFERENTIAL

Type FNS & ANS

SAGInoMIYA

GENERAL DESCRIPTION

- For use with fluorinated refrigerants as well as with air and water.
- Type FNS with fixed narrow differential
- Type ANS with adjustable narrow differential
- Available drip proof enclosure for marine application or explosion proof enclosure for special application.
- Mounting bracket is supplied as standard.
- With SPDT contact mechanism.
- IP44 with upper lid (option). ·····Type FNS
- Stainless steel models are available upon request.

CE mark applicable (available upon request)

Type FNS

Type ANS

SPECIFICATIONS

- Fluid temperature: −20 to 120°C
- Ambient temperature: −20 to 70°C

TYPE NUMBER SELECTION

Type FNS – Fixed narrow differential

Unit: MPa {kgf/cm²}

Catalog No.	Range		Differential	Factory Setting		Max. Working Pressure	Wt. (kg)
	Min.	Max.	Fixed	Off	On		
FNS–C101X	−0.06 {−50cmHg}	0.1 {1}	0.006 Approx. {0.06 Approx.}	(0.019) {(0.19)}	0.025 {0.25}	0.3 {3}	0.32
FNS–C102X	−0.02 {−20cmHg}	0.2 {2}	0.008 Approx. {0.08 Approx.}	(0.042) {(0.42)}	0.05 {0.5}	0.5 {5}	
FNS–C106X	−0.06 {−50cmHg}	0.6 {6}	0.02 Approx. {0.2 Approx.}	(0.28) {(2.8)}	0.3 {3.0}	1.5 {15}	
FNS–C110X	0.1 {1}	1 {10}	0.025 Approx. {0.25 Approx.}	(0.575) {(5.75)}	0.6 {6.0}		
FNS–C130X	0.5 {5}	3 {30}	0.12 Approx. {1.2 Approx.}	(2.38) {(23.8)}	2.5 {25}	3.3 {33}	

Type ANS – Adjustable narrow differential

Unit: MPa {kgf/cm²}

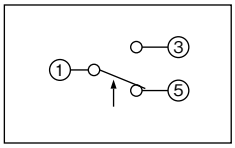
Catalog No.	Range		Differential				Factory Setting		Max. Working Pressure	Wt. (kg)
			Min.		Max.					
	Min.	Max.	Bottom	Top	Bottom	Top	Off	On		
ANS–C101XB	−0.06 {−50cmHg}	0.1 {1}	0.007 {0.07}	0.007 {0.07}	0.014 {0.14}	0.015 {0.15}	0.018 {0.18}	0.025 {0.25}	0.3 {3}	0.32
ANS–C103XB	−0.02 {−20cmHg}	0.3 {3}	0.008 {0.08}	0.01 {0.1}	0.018 {0.18}	0.027 {0.27}	0.141 {1.41}	0.15 {1.5}	1 {10}	
ANS–C106XB	−0.06 {−50cmHg}	0.6 {6}	0.015 {0.15}	0.018 {0.18}	0.03 {0.3}	0.045 {0.45}	0.28 {2.84}	0.3 {3.0}	1.5 {15}	
ANS–C110XB	0.1 {1}	1 {10}	0.02 {0.2}	0.03 {0.3}	0.045 {0.45}	0.07 {0.7}	0.575 {5.75}	0.6 {6.0}		
ANS–C130XB	0.5 {5}	3 {30}	0.12 {1.2}	0.2 {2.0}	0.23 {2.3}	0.37 {3.7}	2.32 {23.2}	2.5 {25}	3.3 {33}	
ANS–C135XB	1 {10}	3.5 {35}			0.24 {2.4}	0.39 {3.9}	2.82 {28.2}	3 {30}	3.8 {38}	

- Enclosure: IP20
- Drip Proof Models: Available upon request. (Refer to page 49.)

ELECTRICAL RATINGS

Rated Amps. (A) \ Rated Voltage (V)		Power Factor (cos ϕ)	125/250V. AC
Non-Inductive Current		1	12
Inductive Current	Full Load	0.75	
	Locked Rotor	0.45	72

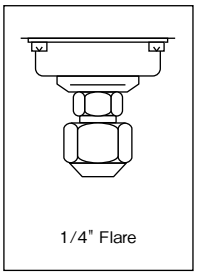
CONTACT FUNCTIONS



1	Common Terminal
3	Close on Pressure Increase
5	Close on Pressure Decrease

↑: Operating direction on press. increase at High Press. Side

PRESSURE CONNECTIONS

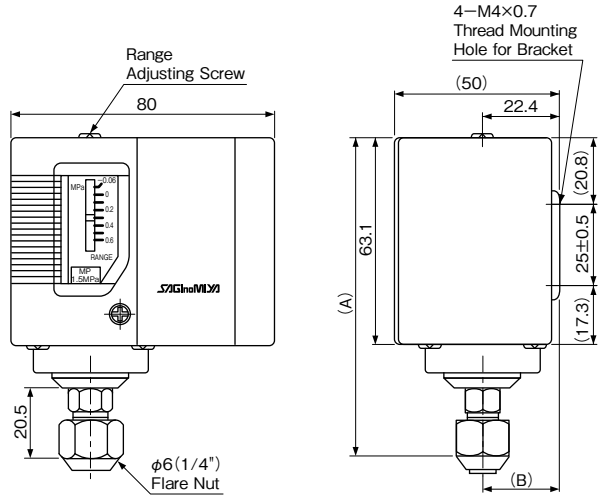


Standard

Refer to page 43, 44.

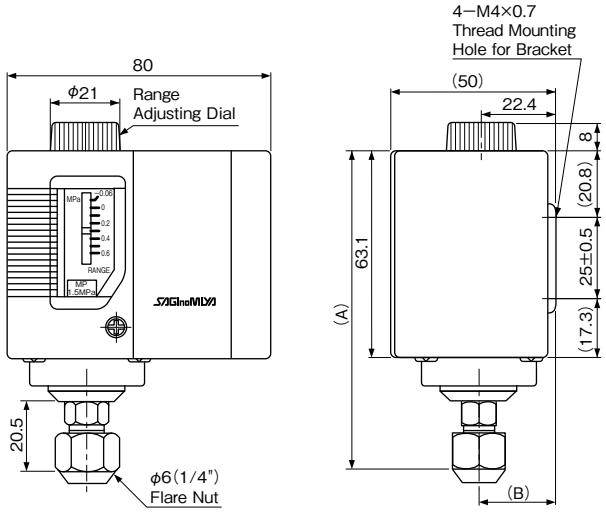
DIMENSIONS

Standard Model
Type FNS



Catalog No.	Unit: mm	
	A	B
FNS–C101X	113.3	22.4
FNS–C102X	99.7	
FNS–C106X	96.8	
FNS–C110X		
FNS–C130X	93.5	18.4

Type ANS



Catalog No.	Unit: mm	
	A	B
ANS–C101XB	113.3	22.4
ANS–C103XB	99.7	
ANS–C106XB	96.8	
ANS–C110XB		
ANS–C130XB	93.5	18.4
ANS–C135XB		

Unit: mm

OIL PROTECTION CONTROLS

Type ONS

SAGInoMIYA

GENERAL DESCRIPTION

- Provides dependable protection against major breakdown on pressure lubricated refrigeration compressors by guarding against low lubrication oil pressure.
- With manual reset.
- Built in time delay switch.
- Mounting bracket is supplied as standard.
- Stainless steel models are available upon request.

CE mark applicable (available upon request)

SPECIFICATIONS

- Fluid temperature: −20 to 120°C
- Ambient temperature: −20 to 70°C

TYPE NUMBER SELECTION

Unit: MPa {kgf/cm²}

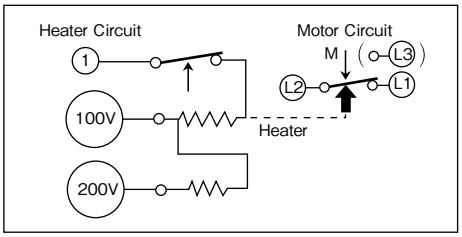
Catalog No.	Range		Differential	Timer Specification			Connection	Wt. (kg)
	Min.	Max.	Fixed	Delay Time(sec.)	Timer Voltage	Timer Circuit		
ONS–C106XQ1	0.05 {0.5}	0.35 {3.5}	Approx. 0.05 { Approx. 0.5 }	45	100/200V. AC	Standard (SPST) without Alarm Contact	1/4" Flare Nut	0.55
ONS–C106XQ2				90				
ONS–C106XQ3				110				
ONS–C106XQ4				45	110/220V. AC			
ONS–C106XQ5				90				
ONS–C106XQ6				110				
ONS–C106XQ7				45	115/230V. AC			
ONS–C106XQ8				90				
ONS–C106XQ9				110				
ONS–C106XQ10				45	120/240V. AC			
ONS–C106XQ11				90				
ONS–C106XQ12				110				
ONS–C106XL1Q1				45	100/200V. AC		1000mm Capil. Tube with 1/4" Flare Nut	0.62
ONS–C106XL1Q2				90				
ONS–C106XL1Q3				110				
ONS–C106XL1Q4				45	110/220V. AC			
ONS–C106XL1Q5				90				
ONS–C106XL1Q6				110				
ONS–C106XL1Q7				45	115/230V. AC			
ONS–C106XL1Q8				90				
ONS–C106XL1Q9				110				
ONS–C106XL1Q10				45	120/240V. AC			
ONS–C106XL1Q11				90				
ONS–C106XL1Q12				110				
ONS–C106XQ25				45	100/200V. AC	With Alarm Contact (SPDT)	1/4" Flare Nut	0.55
ONS–C106XQ26				90				
ONS–C106XQ27				110				
ONS–C106XQ28				45	110/220V. AC			
ONS–C106XQ29				90				
ONS–C106XQ30				110				
ONS–C106XQ31				45	115/230V. AC			
ONS–C106XQ32				90				
ONS–C106XQ33				110				
ONS–C106XQ34				45	120/240V. AC			
ONS–C106XQ35				90				
ONS–C106XQ36				110				
ONS–C106XL1Q25				45	100/200V. AC		1000mm Capil. Tube with 1/4" Flare Nut	0.62
ONS–C106XL1Q26				90				
ONS–C106XL1Q27				110				
ONS–C106XL1Q28				45	110/220V. AC			
ONS–C106XL1Q29				90				
ONS–C106XL1Q30				110				
ONS–C106XL1Q31				45	115/230V. AC			
ONS–C106XL1Q32				90				
ONS–C106XL1Q33				110				
ONS–C106XL1Q34				45	120/240V. AC			
ONS–C106XL1Q35				90				
ONS–C106XL1Q36				110				

- Max. Working Pressure: 1.5 MPa {15 kgf/cm²}
- Limit of Pressure Diff. Hp≧Lp: 1.5 MPa {15 kgf/cm²}, Hp represents oil pump discharge pressure and Lp crank case pressure.
- Enclosure: IP20
- Drip Proof Models: Available upon request. (Refer to page 50.)

ELECTRICAL RATINGS

Rated Amps. (A) \ Rated Voltage (V)		Power Factor ($\cos\phi$)	125/250V. AC
Non-Inductive Current		1	3.5
Inductive Current	Full Load	0.75	3
	Locked Rotor	0.45	10

CONTACT FUNCTIONS

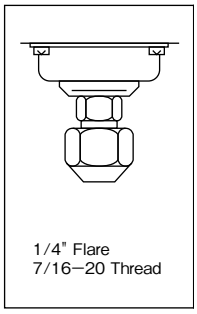


↑: Operating direction of pressure increase
⬆: Operating direction of timer when energized
M ↓: Operating direction of manual reset
(L3: Alarm Contact provided with a lead wire approx. ϕ3.5×100mm with a soldered terminal.)

1	Heater Circuit	Common Terminal
100		100V Power Supply Terminal
200		200V Power Supply Terminal
L1	Motor Circuit	Open on Decrease of Pressure Difference
L2		Main Contact
L3		Alarm Contact

110/220V. AC, 120/240V. AC etc. available

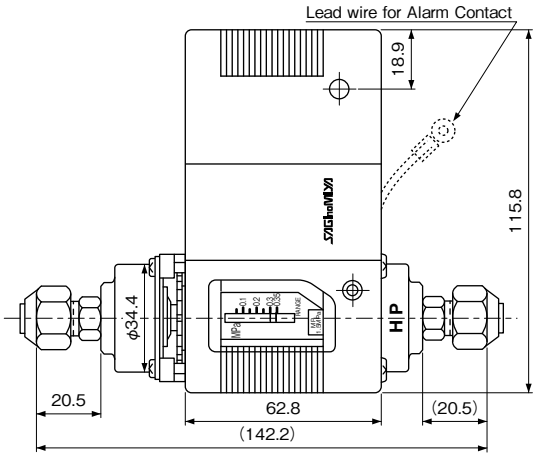
PRESSURE CONNECTIONS

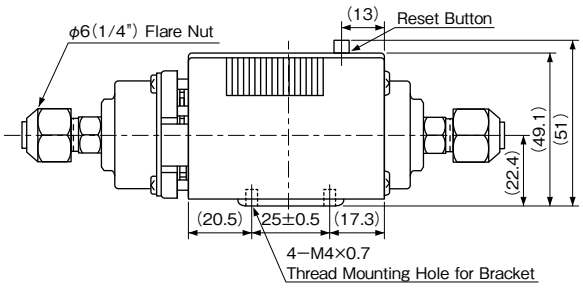


Standard

Refer to page 43, 44.

DIMENSIONS





Unit: mm

DIFFERENTIAL PRESSURE CONTROLS

Type WNS

SAGINOMIYA

GENERAL DESCRIPTION

- For use on any application where the relationship between two pressure is critical to proper equipment operation.
- With SPDT contact mechanism.
- Available drip proof enclosure for marine application or explosion proof enclosure for special application.
- Mounting bracket is supplied as standard.
- Stainless steel models are available upon request.

CE mark applicable (available upon request)
UL recognized (available upon request)

SPECIFICATIONS

- Fluid temperature: −20 to 120°C
- Ambient temperature: −20 to 70°C

TYPE NUMBER SELECTION

For water, air and fluorinated refrigerant

Unit: MPa {kgf/cm²}

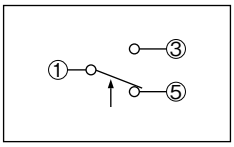
Catalog No.	Range		Differential		Factory Setting		Max. Working Pressure	Limit of Press. Differential (HP > LP)	Wt. (kg)
	Min.	Max.	Min.	Max	Off	On			
WNS–C102X	0.03 {0.3}	0.2 {2}	0.03 {0.3}	0.15 {1.5}	0.05 {0.5}	0.02 {0.2}	0.5 {5}	0.5 {5}	0.43
WNS–C106X	0.05 {0.5}	0.35 {3.5}	0.05 {0.5}	0.25 {2.5}	0.1 {1.0}	0.05 {0.5}	1.5 {15}	1.5 {15}	

- HP.....High Side Press. LP.....Low Side Press.
- Enclosure: IP20
- Drip proof models: Available upon request. (Refer to page 49.)
- Please contact us if other range models are required.

ELECTRICAL RATINGS

Rated Amps. (A) \ Rated Voltage (V)		Power Factor (cos φ)	125/250V. AC
Non-Inductive Current		1	12
Inductive Current	Full Load	0.75	
	Locked Rotor	0.45	72

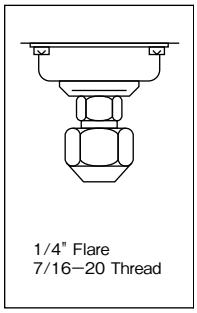
CONTACT FUNCTIONS



1	Common Terminal
3	Close on Pressure Increase
5	Close on Pressure Decrease

↑: Operating direction on press. increase at High Press. Side

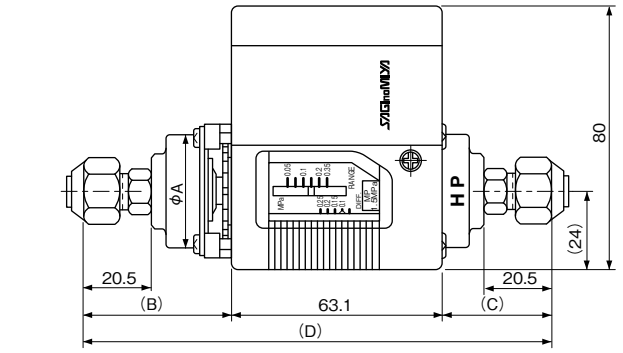
PRESSURE CONNECTIONS

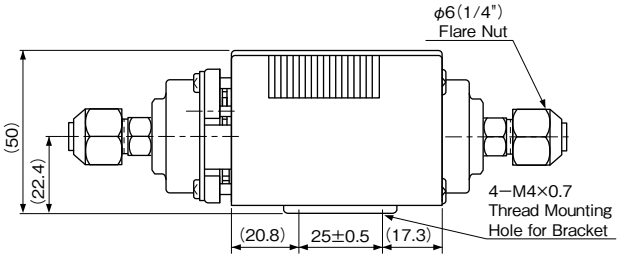


Standard

Refer to page 43, 44.

DIMENSIONS





Catalog No.	Unit: mm			
	φA	B	C	D
WNS–C102X	38.5	47.4	36.7	147.2
WNS–C106X	34.4	44.4	33.7	141.2

Unit: mm

DIGITAL PRESSURE CONTROLS

Type CFE

GENERAL DESCRIPTION

- All functions can be set by 3 push button switches.
- Independent ON/OFF setting.
- ON Delay timer function.
- Pressure calibration

CE mark applicable (available upon request)

SPECIFICATIONS

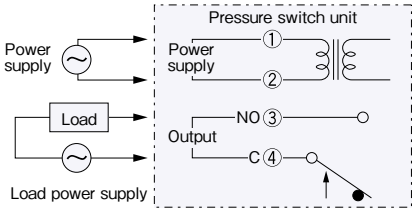
Supply voltage: 230V. AC±10% 50/60Hz
Output contact rating: 125/250V. AC 1A(cos ϕ =1) SPST
Delay timer function: 0 to 240 sec (step=1sec.)
Fluid: Refrigerants (excluding ammonia), water, air.
Ambient temp. range: −10 to 60°C
Storage temperature range: −10 to 60°C
Pressure connection: 7/16–20UNF male flare 1/4"
Enclosure: IPX2

TYPE NUMBER SELECTION

Unit: MPa

Catalog No.	Setting/Indication Range		Setting resolution	Calibration range	Airtight Pressure	Wt. (kg)
	Min.	Max.				
CFE–SC10B–001	−0.095	0.995	0.005	±0.03	3.85	0.29
CFE–SC35B–001	0	3.5	0.02	±0.12		
CFE–SC50B–001	0	5.0	0.02	±0.3	5.5	
CFE–SC10B–101	−0.95 bar	9.95 bar	0.05 bar	±0.3 bar	38.5 bar	
CFE–SC35B–102	0 bar	35 bar	0.2 bar	±1.2 bar		
CFE–SC50B–103	0 bar	50 bar	0.2 bar	±3.0 bar	55 bar	

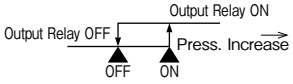
WIRING



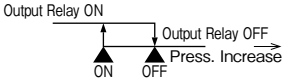
OPERATION

OPERATION PATTERN

During Set Low (LoC)

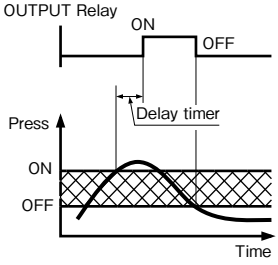


During Set High (HiC)

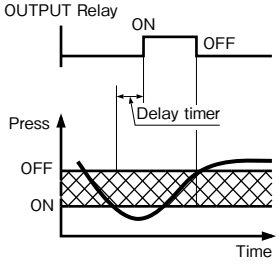


DELAY TIMER OPERATION PATTERN

During Set Low (LoC)



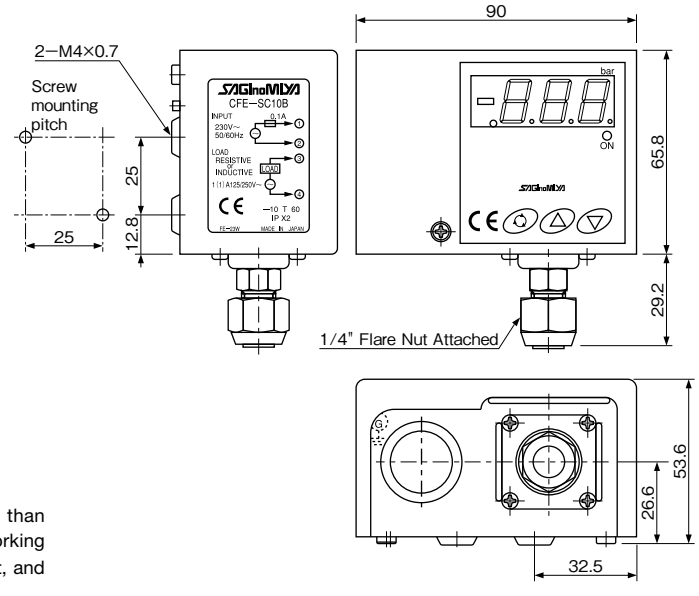
During Set High (HiC)



* In case pressure decrease than the ON pressure during working of Delay timer, timer is reset, and does not turn on.

* In case pressure decrease than the ON pressure during working of Delay timer, timer is reset, and does not turn on.

DIMENSIONS



Unit: mm

PRESSURE SENSORS
High Volume OEM Item (Type NSK)

Type NSK & XSK

SAGINOMIYA

GENERAL DESCRIPTION

- High reliability and accuracy
- Double diaphragm structure
- Diffusion silicone chip pressure sensor

SPECIFICATIONS

- Fluid temperature range: −30 to 120°C (Type NSK)
  −20 to 70°C (Type XSK)
- Ambient temperature range: −30 to 100°C (Type NSK)
  −30 to 80°C (Type NSK–BH)
  −20 to 70°C (Type XSK)

CE mark applicable (available upon request)
UL recognized (available upon request)

Type NSK–BC　Type NSK–BE　Type NSK–BH　Type XSK

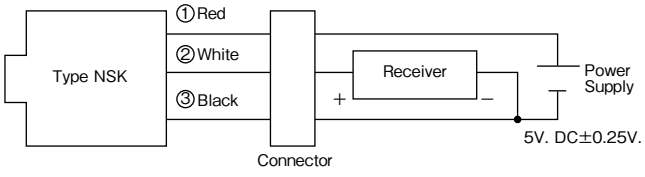
TYPE NUMBER SELECTION

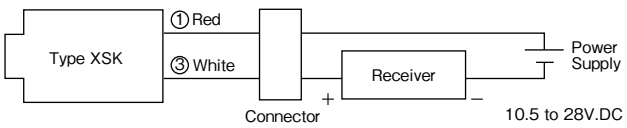
Unit: MPa {bar}

Catalog No.			Pressure Range	Supply Voltage	Output	* Accuracy	Current Consumption	Load Resistance	Airtight Pressure	Wt. (kg)
NSK–	BC	010I–103	0 to 1 {0 to 10}	5V. DC ± 0.25V	0.5 to 4.5V. DC	±2.5% F.S.	Max. 10mA	Min. 10 kΩ	3.85 {38.5}	0.04
		017I–103	0 to 1.7 {0 to 17}		0.5 to 3.5V. DC					
		020I–103	0 to 2 {0 to 20}		0.5 to 4.5V. DC	±2.0% F.S.				
		030I–103	0 to 3 {0 to 30}							
		035I–103	0 to 3.5 {0 to 35}							
		042I–103	0 to 4.15 {0 to 41.5}		0.5 to 3.5V. DC	±2.5% F.S.			4.56 {45.6}	
		050I–103	0 to 5 {0 to 50}		0.5 to 4.5V. DC				5.5 {55}	
	BE	010I–103	0 to 1 {0 to 10}	5V. DC ± 0.25V	0.5 to 4.5V. DC	±2.5% F.S.	Max. 10mA	Min. 10 kΩ	3.85 {38.5}	0.04
		017I–103	0 to 1.7 {0 to 17}		0.5 to 3.5V. DC					
		020I–103	0 to 2 {0 to 20}		0.5 to 4.5V. DC	±2.0% F.S.				
		030I–103	0 to 3 {0 to 30}							
		035I–103	0 to 3.5 {0 to 35}							
		042I–103	0 to 4.15 {0 to 41.5}		0.5 to 3.5V. DC	±2.5% F.S.			4.56 {45.6}	
		050I–103	0 to 5 {0 to 50}		0.5 to 4.5V. DC				5.5 {55}	
	BH	010D–103	0 to 1 {0 to 10}	5V. DC ± 0.25V	0.5 to 4.5V. DC	±2.5% F.S.	Max. 10mA	Min. 10 kΩ	3.85 {38.5}	0.06
		017D–103	0 to 1.7 {0 to 17}		0.5 to 3.5V. DC					
		020D–103	0 to 2 {0 to 20}		0.5 to 4.5V. DC	±2.0% F.S.				
		030D–103	0 to 3 {0 to 30}							
		035D–103	0 to 3.5 {0 to 35}							
		042D–103	0 to 4.15 {0 to 41.5}		0.5 to 3.5V. DC	±2.5% F.S.			4.56 {45.6}	
		050D–103	0 to 5 {0 to 50}		0.5 to 4.5V. DC				5.5 {55}	
XSK–	AC	10I–194	−0.05 to 1 {−0.5 to 10}	10.5 to 28V. DC	4 to 20mA	±3% F.S.	—	Max. 100Ω at 12V. DC Max. 500Ω at 24V. DC	3.85 {38.5}	0.09
		20I–194	0 to 2 {0 to 20}							
		30I–194	0 to 3 {0 to 30}							
		35I–194	0 to 3.5 {0 to 35}							
		50I–194	0 to 5 {0 to 50}						5.5 {55}	

* Included non lineality hysteresis, and temperature drift
・ Enclosure IP66

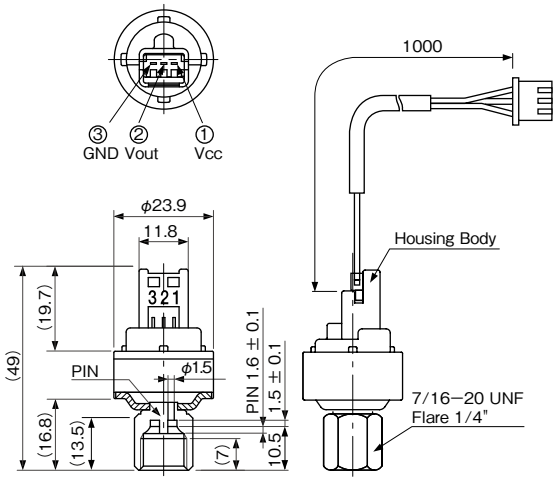
WIRING



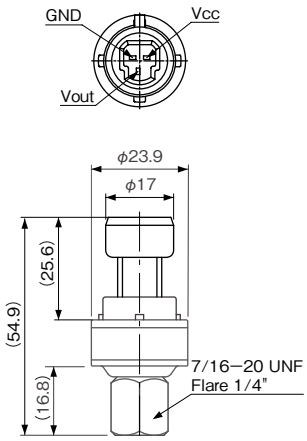


DIMENSIONS

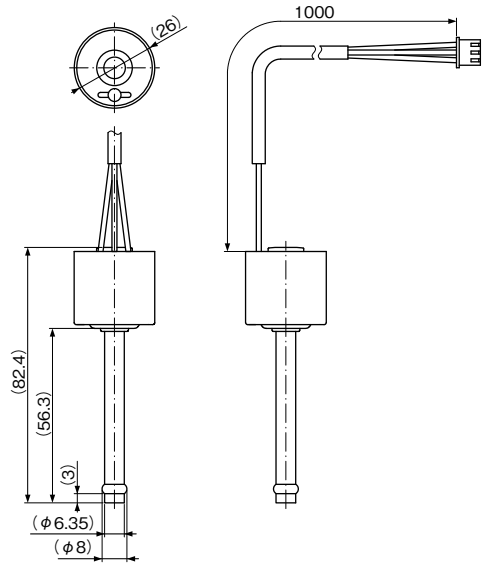
Type NSK–BC (Molex connector)



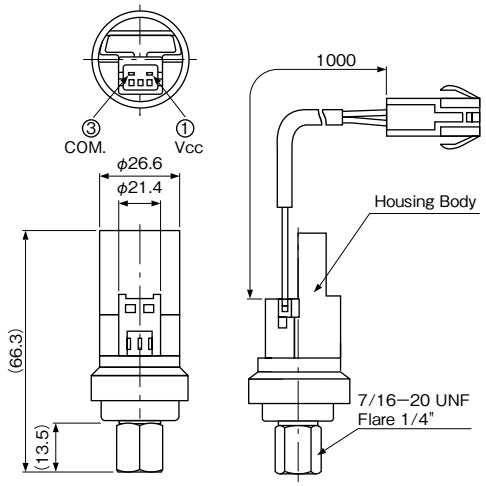
Type NSK–BE (Packard connector)



Type NSK–BH (Lead wire direct Connector)



Type XSK (Molex connector)



Unit: mm

ACCESSORY

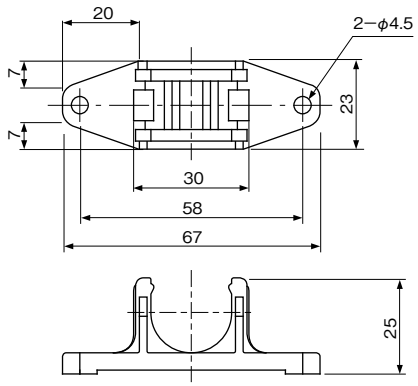
- Lead wire with connector is supplied as standard accessory except for NSK–BE type.

OPTIONAL PARTS

Bracket

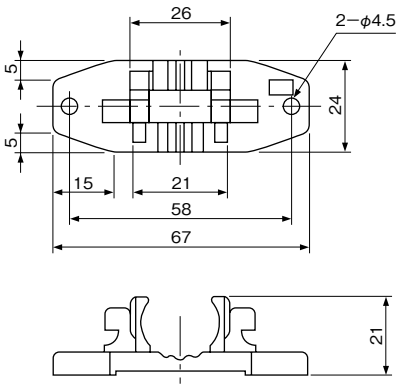
- NSK

  Type No. NSK–PP02 (for NSK–BC, BE)



- XSK

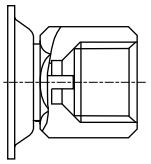
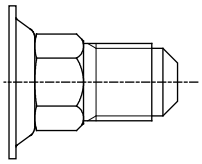
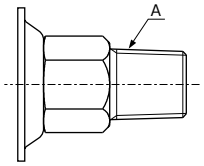
  Type No. YSK–PP02

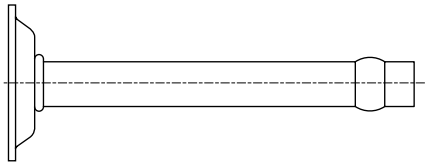


Unit: mm

PRESSURE CONNECTIONS

- Connection Material
  Stainless steel pressure connection is available upon request. (R only)
- Connection Style
  Standard connection style is 7/16–20UNF Female Flare with schrader depressor.
  The following connection styles are available upon request.

<table>
<tr><th>7/16–20UNF Female Flare 1/4" with schrader depressor</th><th>7/16–20UNF Male Flare 1/4"</th></tr>
<tr><td>  </td><td>  </td></tr>
<tr><th>R (NPT)</th><th>1/4" Copper Solder (Type NSK–BH)</th></tr>
<tr><td> 

<table>
<tr><th>A</th><th>Type</th></tr>
<tr><td rowspan="2">1/8"</td><td>NSK</td></tr>
<tr><td>XSK</td></tr>
<tr><td>1/4"</td><td>XSK</td></tr>
<tr><td>3/8"</td><td>XSK</td></tr>
</table></td><td>  </td></tr>
</table>

TEMPERATURE & HUMIDITY CONTROLS

GENERAL DESCRIPTION

- Most suitable model can be selected from the variations of wide temperature range with either adjustable or fixed differential. Narrow differential is further advantageous.
- Sensing elements are air sensed and liquid sensed type depending on control media. Also, sensing element can be selected from remote or direct type depending on application.
- Single pole double throw contacts allows use for either heating or cooling application, with large contact rating as well.
- Adjusting mechanism is driver adjusting type as standard on delivery, but a knob assembly and a concealed plate are also supplied as standard accessories.

UL listed (available upon request)

Type LWS

Type EWS

TYPE NUMBER SELECTION (SPECIFICATIONS)

Type LWS – Set high type with standard remote sensing element

Unit: °C

Catalog No.						Temp. Adjusting Range		Differential		Bulb Size (mm)	Ambient Temp.	Limit of Bulb Temp.	Wt. (kg)
Type	Designation												
	Contact	Model	Differential	Rating	Capillary Length	Min.	Max.	Min.	Max.				
LWS–	C1	030	A (Variable)	G	Standard L1 (L = 1m) Option L2 (L = 2m) L3 (L = 3m) L5 (L = 5m)	−35	30	2	7	φ9.5×100	−20 to 70	60	0.45
		060				−5	60					90	
		090				25	90			φ9.5×85		120	
		120				40	120	2.5	8	φ9.5×70		150	
		160				95	160					185	
		200			Standard L1 (L = 1m) Option L2 (L = 2m)	135	200					230	
		240				175	240					265	
		030	F (Fixed)	R	Standard L1 (L = 1m) Option L2 (L = 2m) L3 (L = 3m) L5 (L = 5m)	−35	30	2 (Fixed)		φ9.5×100		60	
		060				−5	60					90	
		090				25	90			φ9.5×85		120	
		120				40	120	2.5 (Fixed)		φ9.5×70		150	
		160				95	160					185	
		200			Standard L1 (L = 1m) Option L2 (L = 2m)	135	200					230	
		240				175	240					265	

・ Manual Reset Models of LWS–C1030F and LWS–C1060F for low limit application are available upon request.

Type FWS – Air Sensed type with standard remote sensing element

Unit: °C

Catalog No.						Temp. Adjusting Range		Differential		Bulb Size (mm)	Ambient Temp.	Limit of Bulb Temp.	Wt. (kg)
Type	Designation												
	Contact	Model	Differential	Rating	Capillary Length	Min.	Max.	Min.	Max.				
FWS–	C1	030	A (Variable)	G R	Standard L1 (L = 1m)	−35	30	2	7	Max. φ37×58	−20 to 70	60	0.52
		060				−5	60					90	
		090				25	90					120	
		120				40	120	2.5	8			150	
		160	F (Fixed)		Option L2 (L = 2m) L3 (L = 3m) L5 (L = 5m)	−35	30	2 (Fixed)				60	
		200				−5	60					90	
		240				25	90					120	
		030				40	120	2.5 (Fixed)				150	

Type RWS – with coiled capillary sensing element

Unit: °C

Catalog No.					Temp. Adjusting Range		Differential		Sensing Element (mm)	Ambient Temp.	Limit of Tube Temp.	Wt. (kg)
Type	Designation											
	Contact	Model	Differential	Rating	Min.	Max.	Min.	Max.				
RWS–	C1	060	F (Fixed)	G R	−5	60	2 (Fixed)		Coiled Tube Max. ϕ42×40	− 20 to 70	70	0.43
		034			−10	35	1.4(Fixed)			− 20 to 60	60	
		054			10	55				− 20 to 70	70	
		060	A (Variable)		−5	60	2	7				
		034			−10	35	1.4	5		− 20 to 60	60	
		054			10	55				− 20 to 70	70	

Type EWS – with direct immersion sensing element

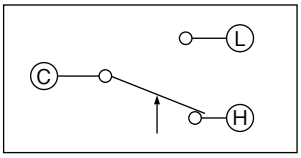
Unit: °C

Catalog No.					Temp. Adjusting Range		Differential		Sensing Element (mm)	Ambient Temp.	Limit of Tube Temp.	Wt. (kg)
Type	Designation											
	Contact	Model	Differential	Rating	Min.	Max.	Min.	Max.				
EWS–	C1	080	F (Fixed)	G R	0	80	2.5 (Fixed)		ϕ10.8×70	−20 to 70	110	0.51
		120			40	120					150	
		160			95	160					185	
		080	A (Variable)		0	80	2.5	8			110	
		120			40	120					150	
		160			95	160					185	

ELECTRICAL RATINGS

Electrical Rating Code	Rated Voltage (V) / Rated Amps. (A)		Power Factor (cos ϕ)	125V. AC	250V. AC
G	Non-Inductive Current		1.0	0.5 to 16	0.5 to 8
	Inductive Current	Full Load	0.75		
		Locked Rotor	0.45	96	48
R	Non-Inductive Current		1.0	0.05 to 8.5	0.05 to 4.5
	Inductive Current	Full Load	0.75		
		Locked Rotor	0.45	51	27

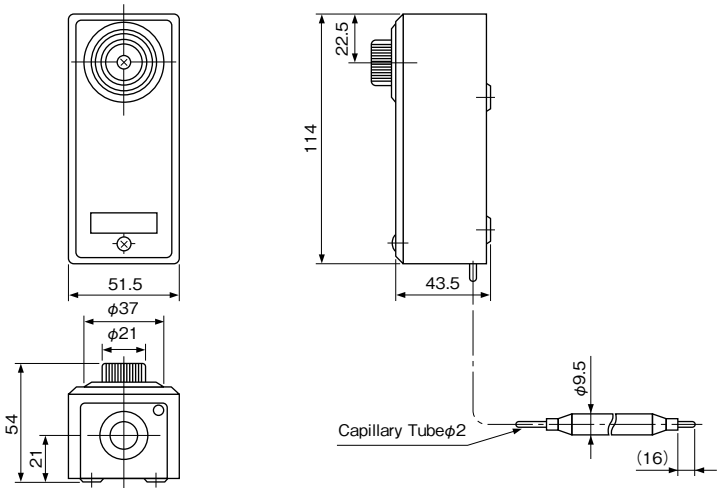
CONTACT STYLE



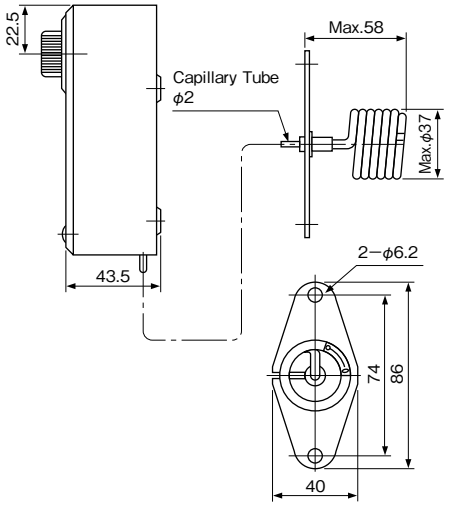
Models “set high”
The dial indicates the high switch point (Ⓒ – Ⓛ close, Ⓒ – Ⓗ open).
The low switch point (Ⓒ – Ⓛ open, Ⓒ – Ⓗ close) is obtained by deducting the differential from the high switch point.
Arrow mark indicates a direction of switch action on temperature increase.

DIMENSIONS

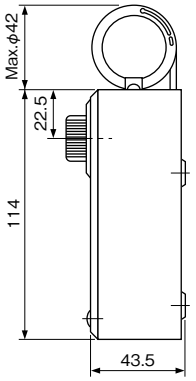
Type LWS



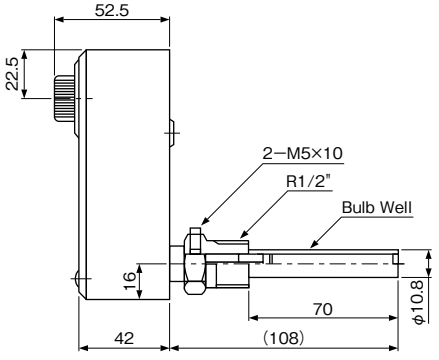
Type FWS



Type RWS



Type EWS



Unit: mm

ACCESSORY : Available upon request. (Refer to page 45.)

GENERAL DESCRIPTION

- Type TNS is provided with a differential adjustable mechanism.
- Type CNS is provided with a fixed differential. Also manual reset models are available.
- Type INS provides automatic High-cut temperature control with manual reset.
- Narrow and adjustable temperature differential for more accurate control model Type BNS is available.
- Available drip proof enclosure for marine application or explosion proof enclosure for special application.
- A mounting bracket is supplied as standard.
- With SPDT contact mechanism.
- IP44 with upper lid (option).

CE mark applicable (available upon request)
UL recognized (available upon request)

Type TNS

Type INS

TYPE NUMBER SELECTION (SPECIFICATIONS)

Type TNS – Automatic Reset Type

Unit: °C

Catalog No.	Range		Differential		Factory Setting		Limit Temp.	Bulb Size (mm)		Usage Condition	Wt. (kg)
	Min.	Max.	Min.	Max.	Off (On)	On (Off)		ϕA	B		
TNS–C100X	−25	0	Bottom 4.5 Top 3	15	−18	−15	70	6	80	$T_S > T_B$	0.34
TNS–C114X	−15	15			−3	0					
TNS–C134X	0	35			17	20					
TNS–C1070X	45	75	4	20	61	65	115	12.7	100	$T_S < T_B$	0.37
TNS–C1100X	65	105			71	75	140				
TNS–C1120X	95	125	5		110	115	160				
TNS–C1150X	115	150			140	145	180				
TNS–C1010XC	−45	10	4		−4	0	45			$T_S \geqq T_B$	
TNS–C1034XC	−20	35			16	20	70				
TNS–C1070XC	15	70			36	40	115				
TNS–C114XQ009	−30	15	Bottom 5 Top 2	15	−8	−5	120	Capillary Tube Type		$T_S > T_B$	
TNS–C114XQ010								Capillary Coil Type			
TNS–C134XQ009	−5	35			12	15		Capillary Tube Type			
TNS–C134XQ010								Capillary Coil Type			

- Bottom...Differential when the switch is set at minimum of range.
- Top...Differential when the switch is set at maximum of range.
- T_S...Ambient temp. of switch body. • T_B...Sensing bulb temp.
- Drip proof models: Available upon request. (Refer to page 51.)
- Enclosure: IP20

Type CNS – Automatic Reset Type

Unit: °C

Catalog No.	Range		Differential	Factory Setting		Limit Temp.	Bulb Size (mm)		Usage Condition	Wt. (kg)
	Min.	Max.		Off	On		ϕA	B		
CNS–C115X	−35	−15	Bottom 4 Top 3	−28	−25	70	6	80	$T_S > T_B$	0.34
CNS–C100X	−25	0		−18	−15					
CNS–C114X	−15	15		−3	0					
CNS–C134X	0	35		17	20					

- Bottom...Differential when the switch is set at minimum of range.
- Top...Differential when the switch is set at maximum of range.
- T_S...Ambient temp. of switch body. • T_B...Sensing bulb temp.
- Enclosure: IP20

TYPE CNS – Manual Reset Type

Unit: °C

Catalog No.	Range Min.	Range Max.	Manual Reset	* Factory Setting Off	* Factory Setting On	Limit Temp.	Bulb Size (mm) ϕA	Bulb Size (mm) B	Usage Condition	Wt. (kg)
CNS–C115XM2	−35	−15	Automatic operation on temperature decrease and manual reset	−28	Manual Reset	70	6	80	$T_S > T_B$	0.34
CNS–C100XM2	−25	0		−18						
CNS–C114XM2	−15	15		−3						
CNS–C134XM2	0	35		17						

* Based on the 1–3 terminal connection.
・ T_S...Ambient temp. of switch body. ・ T_B...Sensing bulb temp.
・ Enclosure: IP20

TYPE INS – Manual Reset Type

Unit: °C

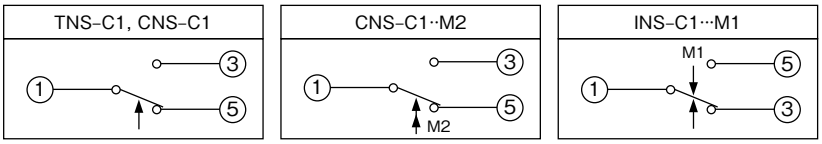
Catalog No.	Range Min.	Range Max.	Manual Reset	* Factory Setting Off	* Factory Setting On	Limit Temp.	Bulb Size (mm) ϕA	Bulb Size (mm) B	Usage Condition	Wt. (kg)
INS–C1070XM1	25	75	Automatic operation on temperature increase and manual reset.	Manual Reset	65	115	9.5	80	$T_S < T_B$	0.26
INS–C1120XM1	70	120			115	160				
INS–C1150XM1	115	150			140	180				

* Based on the 1–3 terminal connection.
・ T_S...Ambient temp. of switch body. ・ T_B...Sensing bulb temp.
・ Enclosure: IP20

ELECTRICAL RATINGS

Rated Amps. (A) \ Rated Voltage (V)		Power Factor ($\cos\phi$)	125/250 V. AC
Non-Inductive Current		1	12
Inductive Current	Full Load	0.75	
	Locked Rotor	0.45	72

CONTACT FUNCTIONS



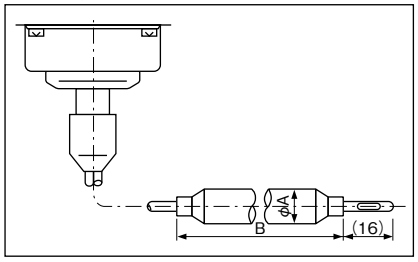
TNS & CNS Automatic Reset Type — CNS Manual Reset Type — INS Manual Reset Type

1	Common Terminal
3	Close on Temperature Increase
5	Close on Temperature Decrease

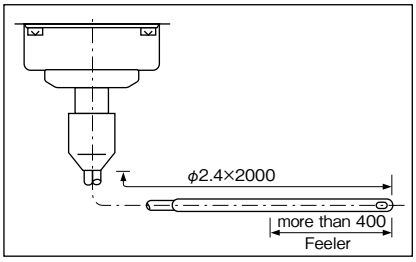
↑ : Operating direction on temp. increase at High temp. side
M1↓ , M2↑ : Operating direction on manual reset

SENSING ELEMENT STYLE

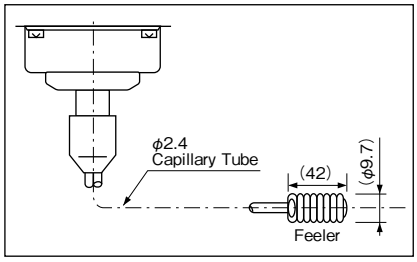
Sensing Bulb Type



Capillary Tube Type



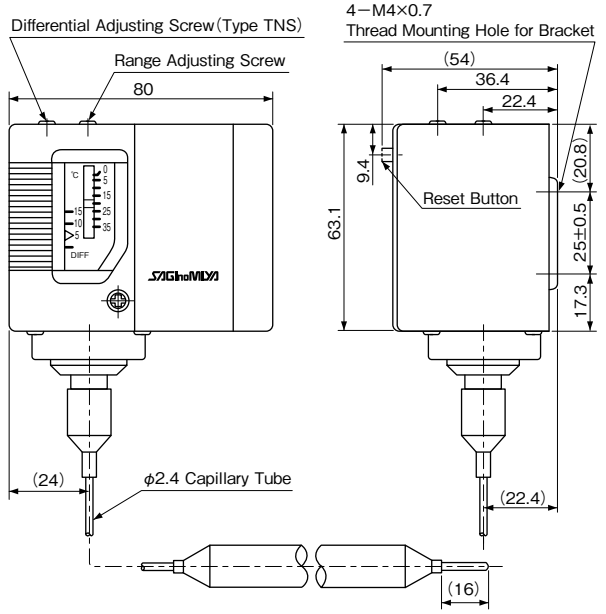
Capillary Coil Type



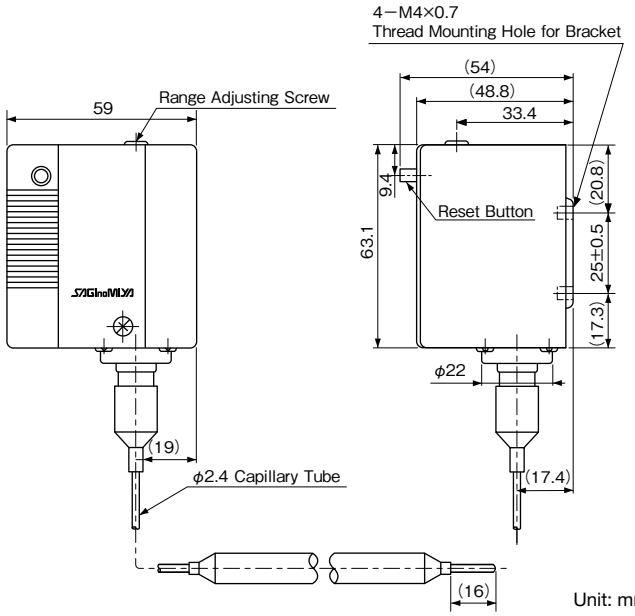
Standard: 1000mm Capillary tube. Other capillary length are available upon request.

DIMENSIONS

Type TNS, CNS



Type INS



Unit: mm

TEMPERATURE CONTROLS

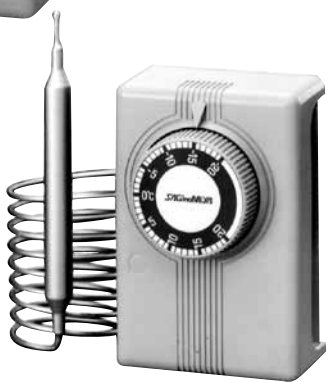
Type ALS & BLS

SAGInoMIYA

GENERAL DESCRIPTION

- Wide temp. range and narrow fixed differential. One control can meet most of your refrigeration or heating applications.
- Easy and accurate setting with large external knob.
- Tin Plating of bulb and capillary for food.
- SUS of main body for anti-corrosion and high durability, ABS resin of cover for anti-static.
- With SPDT contact mechanism.
- Insert holder is available upon request.
- Can mount horizontal and vertical position.

Type ALS



Type BLS

TYPE NUMBER SELECTION (SPECIFICATIONS)

Unit: °C

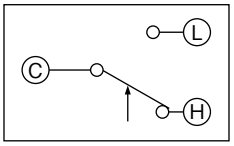
Catalog No.	Range		Differential	Limit of Bulb Temp.	Bulb Size (mm)	Capillary Tube Length (mm)	Wt. (kg)
	Min.	Max.					
BLS–C1020L1	−20	20	Approx. 2.0 (Fixed)	60	ϕ10×100	ϕ2.4×1000	0.3
ALS–C1011L1	−60	−10	Approx. 2.5 (Fixed)				
ALS–C1020L1	−40	20		80			
ALS–C1050L1	−10	50		110			
ALS–C1090L1	40	90		150			

・ When order model with earth terminal, add a suffix “x” to Catalog No.
・ Other capillary length is available upon request.

ELECTRICAL RATINGS

Rated Amps. (A) \ Rated Voltage (V)		Power Factor (cos ϕ)	125V.AC	250V.AC	450V.AC	24V.DC	125V.DC
Non-Inductive Current		1	10	5	2	5	0.5
Inductive Current	Full Load	0.75	8.5	4.5	1	3	0.2
	Locked Rotor	0.45	50	37	10	10	5

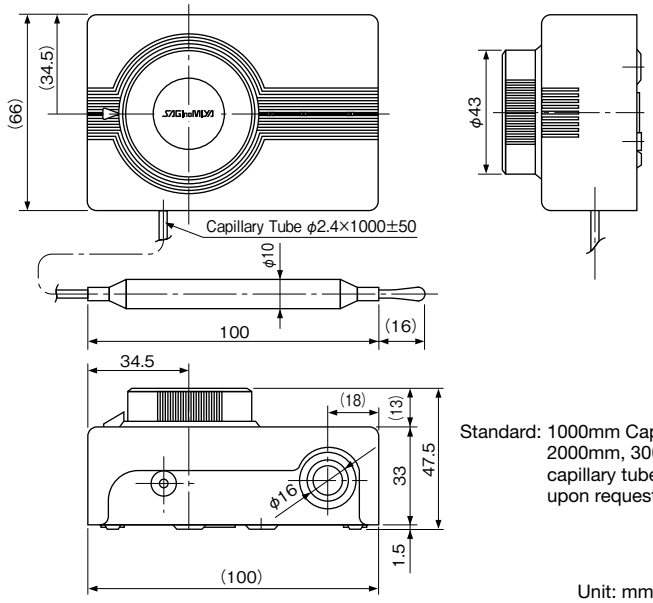
CONTACT FUNCTIONS



Arrow Mark indicates direction of operation on temperature increase.

C	Common Terminal
L	Close on Temperature Increase
H	Close on Temperature Decrease

DIMENSIONS

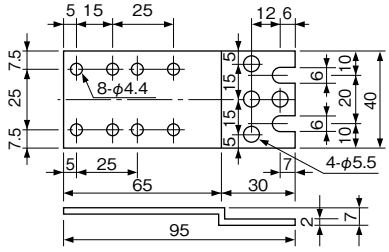


Standard: 1000mm Capillary tube.
2000mm, 3000mm and 5000mm capillary tubes are available upon request.

Unit: mm

ACCESSORY

Mounting Bracket



Part No.	ALS-AE02

PROPORTIONAL TEMPERATURE CONTROLS

Type PWS

SAGInoMIYA

GENERAL DESCRIPTION

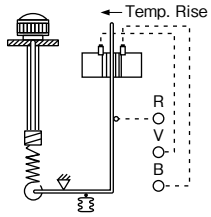
- Designed for accurate control for air and liquid temperature in duct and boiler.
- Incorporates a potentiometer which produces a variable voltage signal to actuate AWK/EGK type damper motor or MJV/WGK type motor valve.
- Proportional band (throttling range) is adjustable.
- Electrical rating: 24V. AC, 50mA.
  Potentiometer resistance 0 to 135Ω.

TYPE NUMBER SELECTION (SPECIFICATIONS)

Unit: °C

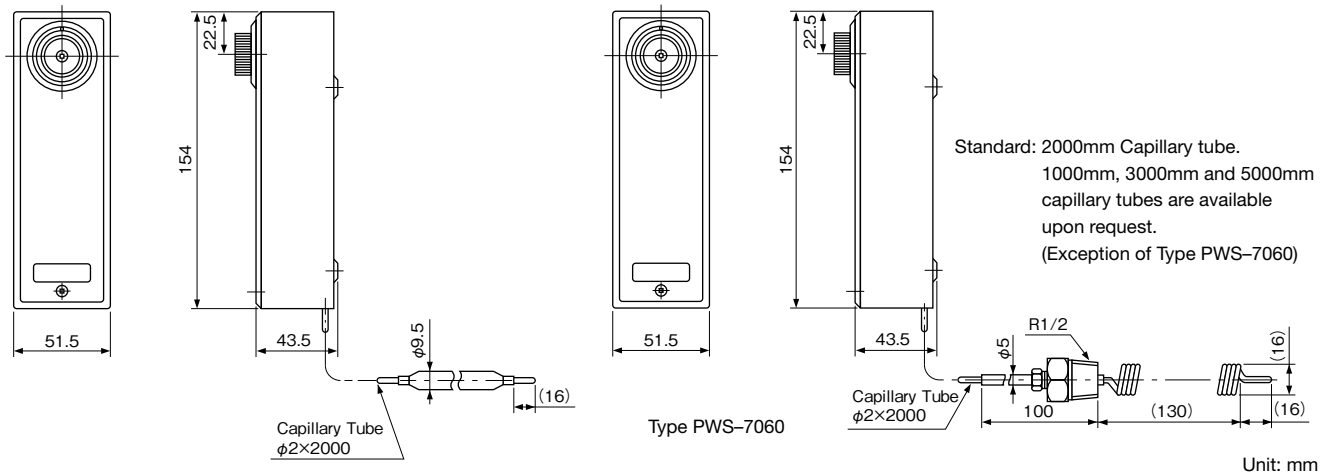
Catalog No.	Construction	Adjustable Temp. Range	Proportional Band		Usage Condition	Max. Ambient Temp.		Wt. (kg)
			Min.	Max.		At Switch Body	At Sensing Bulb	
PWS–7034	With One Potentiometer	−10 to 35	2.5	14	$T_S \geqq T_B$	− 20 to 70	60	0.52
PWS–7054		10 to 55					80	
PWS–7074		30 to 75					100	
PWS–7094		50 to 95					120	
PWS–7120		40 to 120	4	20			150	
PWS–7060		−5 to 60	35	15			90	0.68

INTERNAL WIRINGS (POTENTIOMETER ARRANGEMENT)



Resistance variation at potentiometer
with increase of temperature:
Increase between R and B
Decrease between R and V
R...Common terminal

DIMENSIONS



Type PWS–7060

Standard: 2000mm Capillary tube.
1000mm, 3000mm and 5000mm capillary tubes are available upon request.
(Exception of Type PWS–7060)

Unit: mm

ROOM THERMOSTATS

Type ARS

SAGInoMIYA

GENERAL DESCRIPTION

- High quality room thermostat for heating or cooling.
- Used for low or line voltage.
- Easy to adjust with dial knob.
- Dial stopper screw prevents unauthorized change of setting.

SPECIFICATIONS

- Ambient temperature: −20 to 50°C (Double-digit type)
  −10 to 50°C (Propotional type)

TYPE NUMBER SELECTION

Double-digit type

Unit: °C

Catalog No.				Range		Differential	Step Differential	Factory Setting		Wt. (kg)
Type	Contact Type	Temp.	Special Application	Min.	Max.			Off (On)	On (Off)	
ARS–	C1	20	S	0	20	Approx. 1.5	–	(8.5)	10	0.17
		30		10	30			(18.5)	20	
		40		20	40			(23.5)	25	
	S6	30	–	10	30		Approx. 2	Heat Side (18.5) Low Side (16.5)	20 18	0.22

Propotional type

Unit: °C

Catalog No.				Range		Differential (℃)	Factory Setting (℃)	Wt. (kg)
Type	Contact Type	Temp.	Special Application	Min.	Max.			
ARS–	P1	30	S	10	30	Approx. 2	25 Center value of Proportional band	0.17

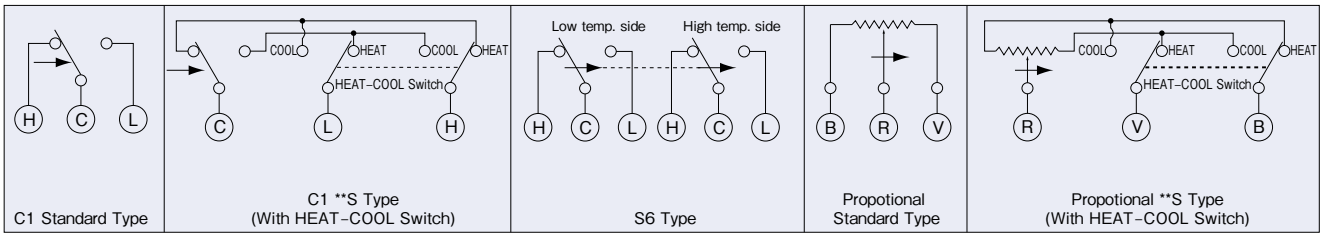
ELECTRICAL RATINGS

Catalog No.			ARS–C1			ARS–S6	
Rated Voltage (V) / Rated Amps. (A)		Power Factor (cos ϕ)	AC		DC	AC	
			125	250	24	125	250
Non-Inductive Current		1.0	6	3	2	4	2
Inductive Current	Full Load	0.75	6	3	1	4	2
	Locked Rotor	0.45	24	12	10	16	8

Minimum contact capacity: 50mA

Catalog No.	ARS–P1
Rated Voltage (V) / Rated Amps. (A)	AC
	24
Allowable current value	50mA
Resistance of the potentiometer	135Ω

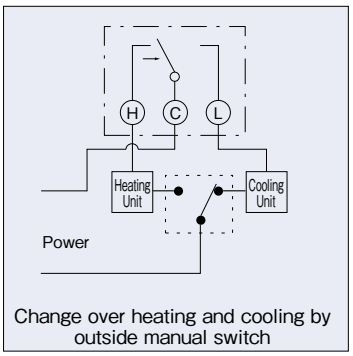
CONTACT FUNCTIONS



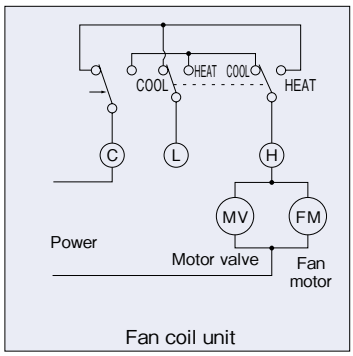
Arrow indicates temp. rise.

APPLICATION SAMPLES

−C1

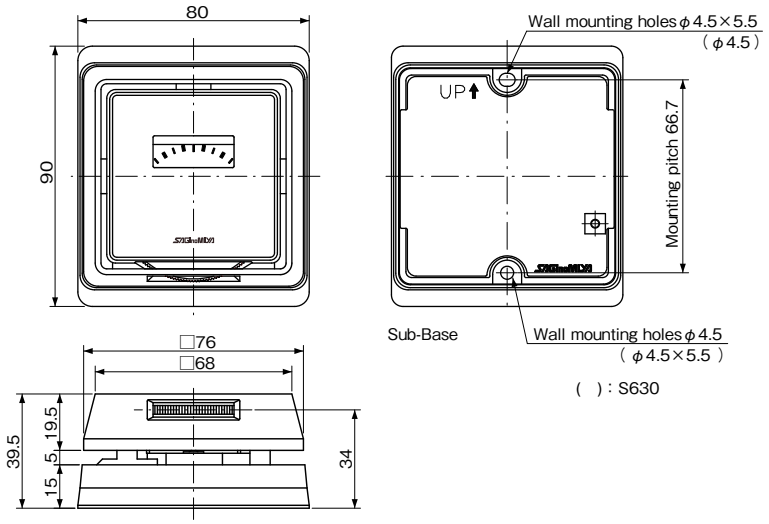


−C1＊＊S



Arrow indicates temp. rise.

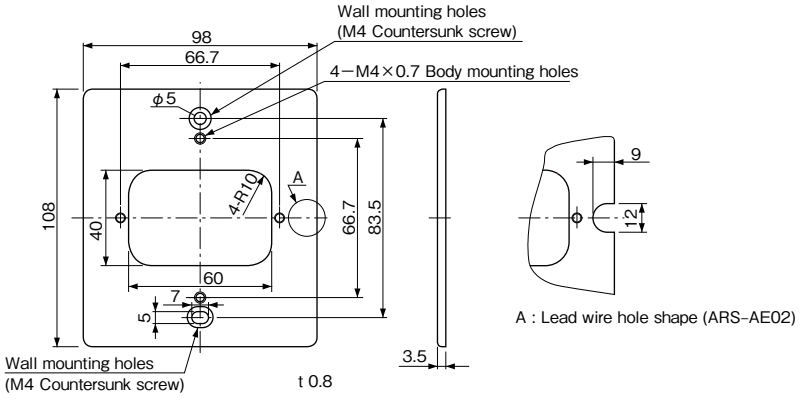
DIMENSIONS



Unit: mm

OPTIONAL PARTS

Mounting pitch 83.5㎜ plate (ARS–AE01, ARS–AE02)



Parts No.	Lead wire hole
ARS–AE01	Not Exist
ARS–AE02	Exist

Unit: mm

ROOM THERMOSTATS

Type WRS

SAGInoMIYA

GENERAL DESCRIPTION

- For fan coil units and air conditioners.
- Used for low or line voltage.
- Various models available with Fan Selector switch and/or Heat-Off-Cool change over switching.
- Using a diaphragm element, it assures high reliability and accurate control.
- Ambient temperature: − 20 to 50°C

TYPE NUMBER SELECTION (SPECIFICATIONS)

Unit: °C

Catalog No.			Sub-Base Function		Range		Differential	Wt. (kg)
Type	Contact & Temp. Range	Special Application	Change over Switch	Fan Switch	Min.	Max.		
WRS–	C130	X1	ON–OFF, HEAT–COOL	HIGH–MED–LOW	10	30	Approx. 1.5 (Fixed)	0.25
		X2	ON–OFF					
		X7	ON–OFF, HEAT–COOL					

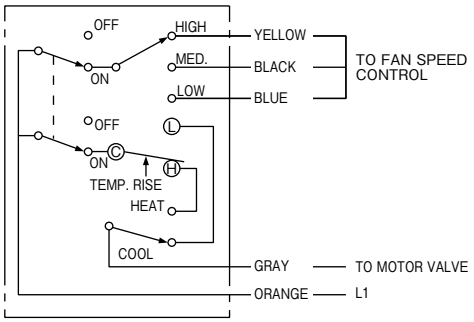
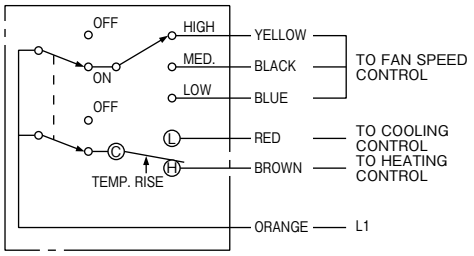
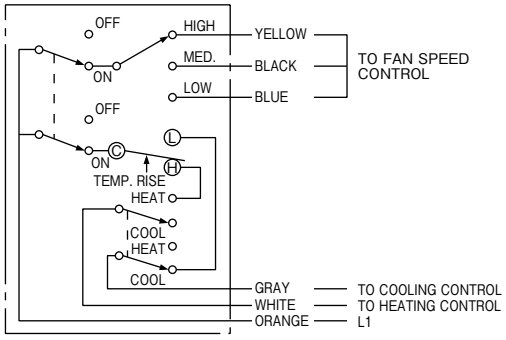
・ Change over switch of HEAT–COOL on WRS–C130X1 is only for changing switch mechanism of room thermostat itself between HIGHCUT (HEATING) and LOWCUT (COOLING) according to system requirement.
・ Please refer to the application sample and wiring diagram.

ELECTRICAL RATINGS

Rated Voltage (V) / Rated Amps. (A)		Power Factor ($\cos\phi$)	125V. AC	250V. AC
Non-Inductive Current		1	6	3
Inductive Current	Full Load	0.75		
	Locked Rotor	0.45	24	12

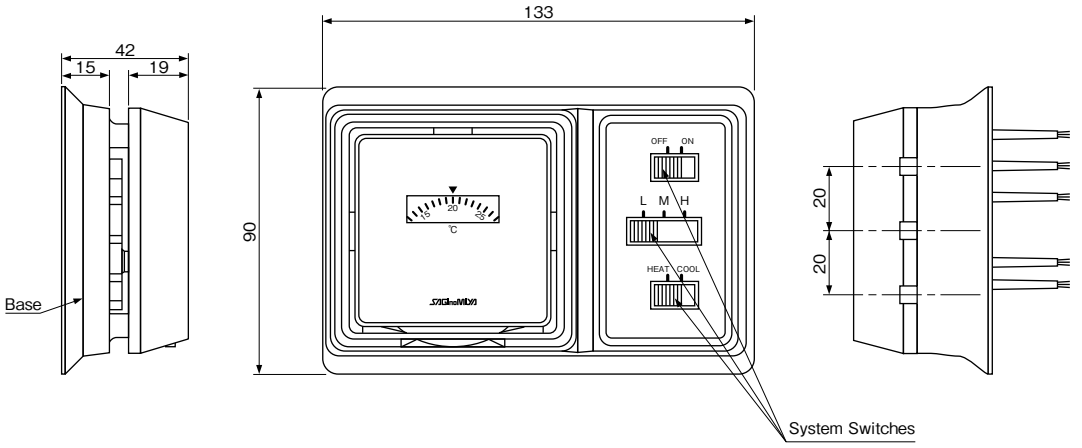
Minimum contact capacity: 50mA

CONTACT FUNCTIONS

Type	Internal Wiring
WRS–C130X1	
WRS–C130X2	
WRS–C130X7	

Arrow indicates temp. rise.

DIMENSIONS



Unit: mm

ROOM HUMIDISTATS

Type **AHS**

SAGInoMIYA

GENERAL DESCRIPTION

- Accurate humidity control assured by nylon ribbon.
- Used for low or line voltage.
- Easy adjustment by dial knob.
- Dial stopper screw prevents unauthorized change of setting.

SPECIFICATIONS

Unit: % RH

Catalog No.	Contact	Range		Differential	Ambient Temp. on Use (°C)	Wt. (kg)
		Min	Max.			
AHS–C1090	SPDT	30	90	Approx. 5	10 to 40	0.17

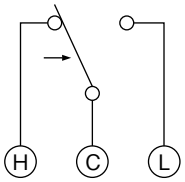
ELECTRICAL RATINGS

Rated Amps. (A) \ Rated Voltage (V)		Power Factor ($\cos\phi$)	125V. AC	250V. AC	24V. DC
Non-Inductive Current		1.0	4.5	2	1
Inductive Current	Full Load	0.75	3	1.5	0.4
	Locked Rotor	0.45	12	6	2

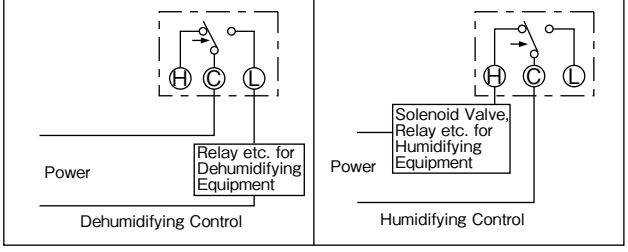
Minimum Contact Capacity: 50mA

CONTACT FUNCTIONS

Internal Wiring

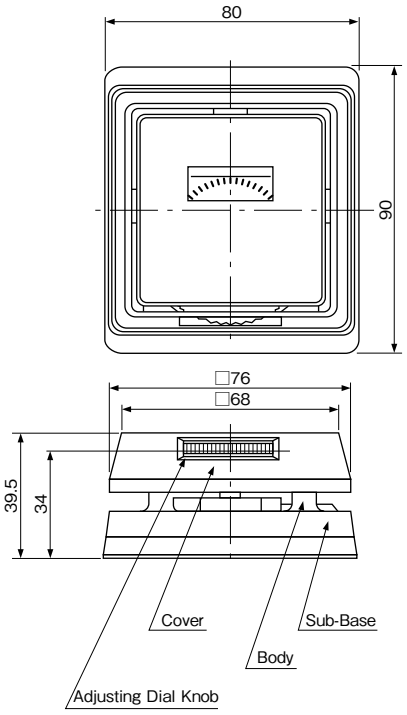


Application and Wiring Examples



Arrow mark indicates humidity increase.

DIMENSIONS



Unit: mm

DIGITAL THERMOSTATS & DIGITAL HUMIDISTAT

Type ULE & FLE

SAGInoMIYA

GENERAL DESCRIPTION

- Large LED, easy to see
- Back up memory on power failure
- Easy operation with a combination of setting knob and △▽ keypads
- Either for wall or panel mounting.
- Power source voltage: 85 to 264V. AC 50/60Hz
- Relay output: 250V. AC, 6A ($\cos\phi$ = 0.7)
- Ambient temperature: Controller... − 10 to 50°C
  Humidity sensor...0 to 50°C

Type ULE

Type FLE

TYPE NUMBER SELECTION (SPECIFICATIONS)

Type ULE – Digital Thermostats

Unit: °C

Catalog No.	Temp. Set Range	Differential	Temp. Indication	Function	Sensor Part No. (Standard)	Wt. (kg)
ULE–SD11–011	−50 to 30	Min. 0.5	−55 to 40	Standard	TEK–83H609 with 2m lead	0.2
ULE–SD12–011				2 Step		
ULE–SD13–011				Hi/Lo Limit with time delay		
ULE–SD21–011	0 to 100		0 to 110	Standard	TEK–83H601 with 2m lead	
ULE–SD22–011				Hi/Lo Limit with time delay		
ULE–SD23–011				2 Step		

・ Temperature sensor type TEK–83H609 or TEK–83H601, sensor holder and panel mounting brackets are supplied as standard accessory.

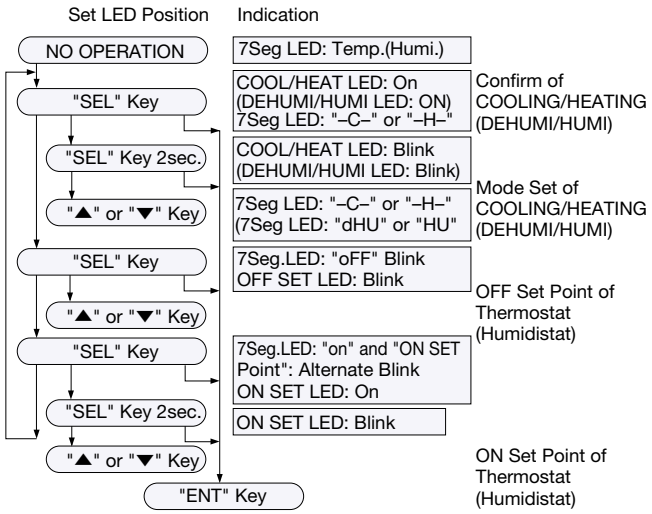
Type FLE – Digital Humidistat

Unit: %RH

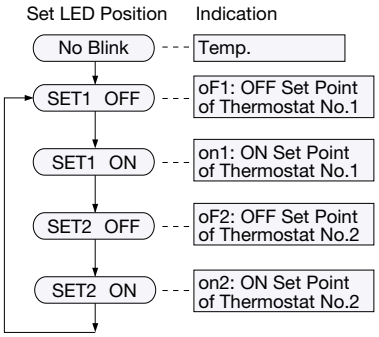
Catalog No.	Humidity Set Range	Differential	Humidity Indication	Calibration	Sensor Part No.	Wt. (kg)
FLE–SD11–011	30 to 90	Min. 3	20 to 99	±10	HEK–I1R001	0.3

MODE & SETTING

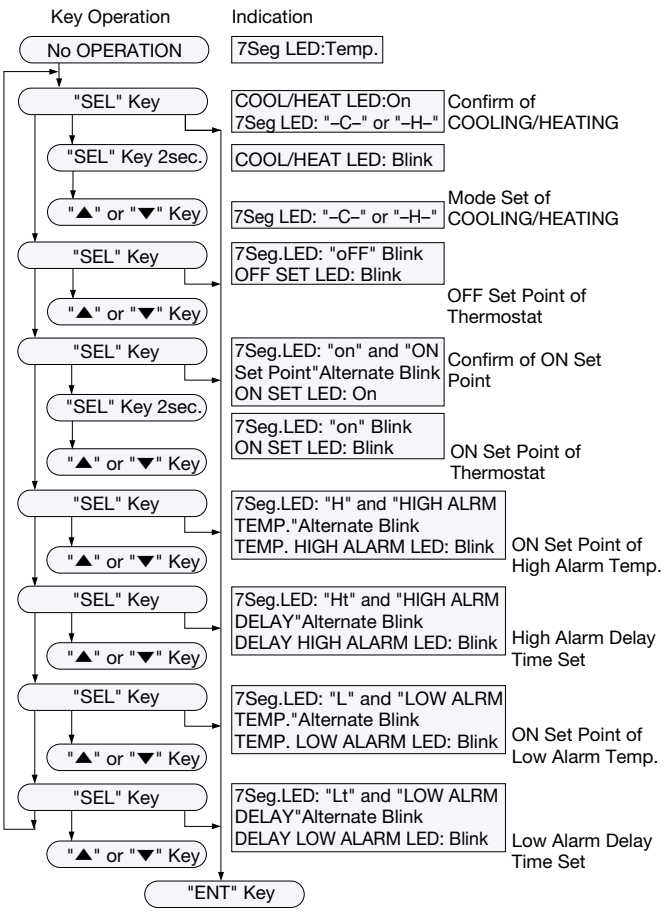
STANDARD MODEL



2 STEP MODEL



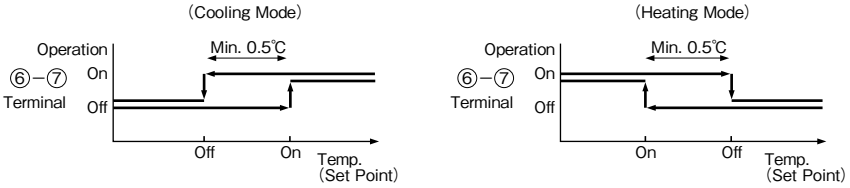
HI/LO LIMIT WITH TIME DELAY



OPERATION

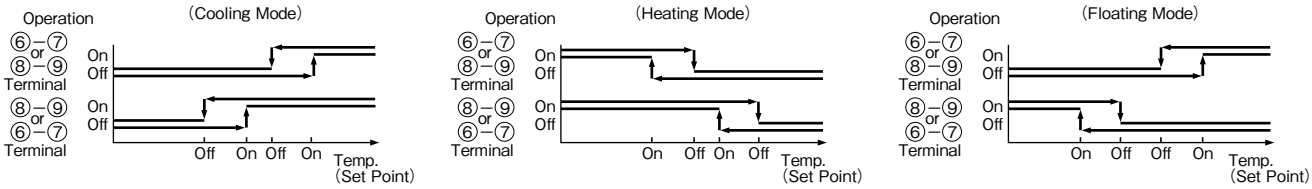
Type ULE – Digital Thermostats

STANDARD MODEL

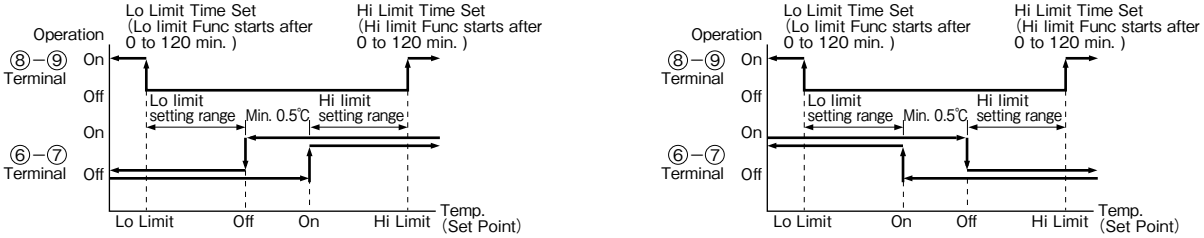


- Free to set On/Off set point independently within the range.
- When Off set point is changed, On set point automatically shifts. (Diff. remains same)
- When On set point is changed, Off set point remains unchanged. (Diff. changes)

2 STEP MODEL



Hi/Lo LIMIT W/TIMER MODEL



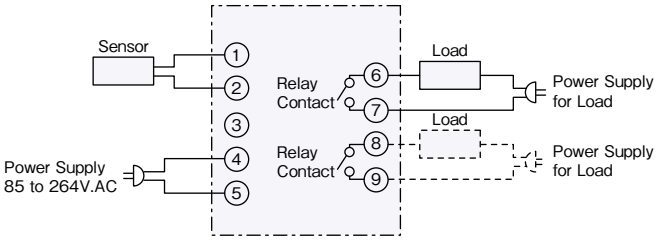
- Hi/Lo limit output is reset manualy (Push ENT Key in 2 sec or power off)
- Delay Timer can be set in the time range from 0 to 120 min respectively.

Type FLE – Digital Humidistat

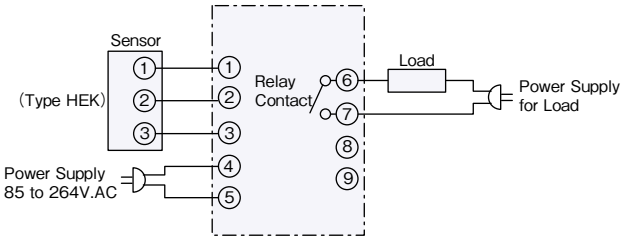
- Free to set On/Off set point independently within the range.
- When Off set point is changed, On set point automatically shifts. (Diff. remains same)
- When On set point is changed, Off set point remains unchanged. (Diff. changes)

WIRING DIAGRAM

Type ULE



Type FLE

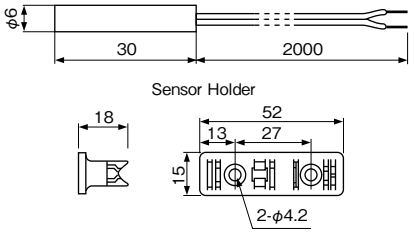
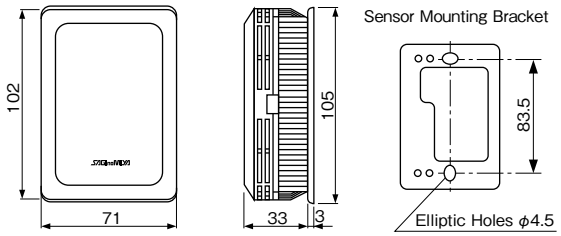


⑥–⑦: STANDARD, 2 STEP & Hi/Lo Model Control Output

⑧–⑨: 2 STEP Control Output Hi/Lo Limit Alarm Output

SENSORS

STANDARD

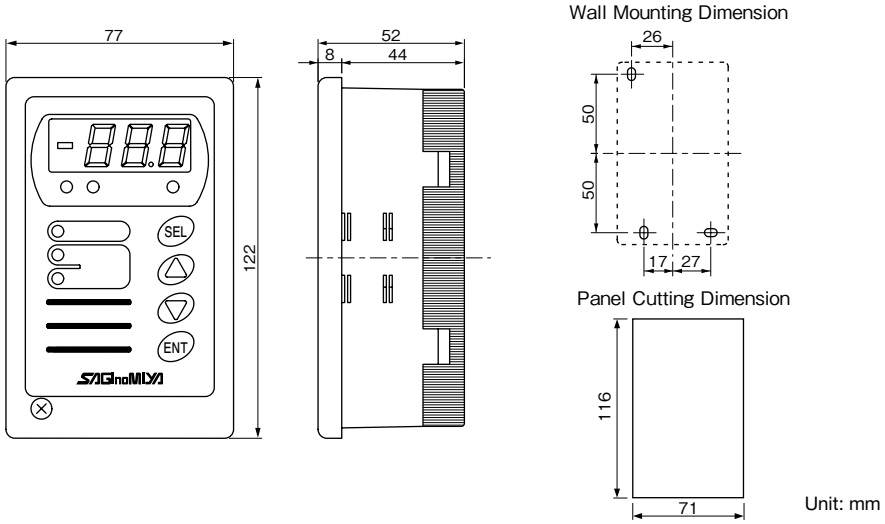
Sensor Part No.	Applicable Model	Dimension	Remarks
TEK–83H601 (Temperature) Lead Wire:Black	ULE–SD21–011 ULE–SD22–011 ULE–SD23–011		• Ambient temp. on usage: − 40 to 110°C • When the sensor is in use under the condition of dew, water dripping or outdoor, the sensor should be vertically installed with lead wire outlet downward. • Sensor holder is supplied as standard.
TEK–83H609 (Temperature) Lead Wire:Blue	ULE–SD11–011 ULE–SD12–011 ULE–SD13–011		• Ambient temp. on usage: − 55 to 80°C • When the sensor is in use under the condition of dew, water dripping or outdoor, the sensor should be vertically installed with lead wire outlet downward. • Sensor holder is supplied as standard.
HEK–I1R001 (Humidity)	FLE–SD11–011		• Designed to accord room interior. • Designed to be installed where certain air flow runs and the room humidity is represented. • Depending on load or other conditions, humidity control may become difficult. • Especially when the FLE is used under 10°C or above 40°C, contact manufacturer.

Following sensors are available as option. (Ambient temperature sensors are available upon request.)

Direct immersion sensor with nipple TEK–83N
Wall mounting sensor TEK–83R
Surface temp. sensor TEK–83E
Direct immersion sensor with terminal cover TEK–83B
Bulb well TEK–00N

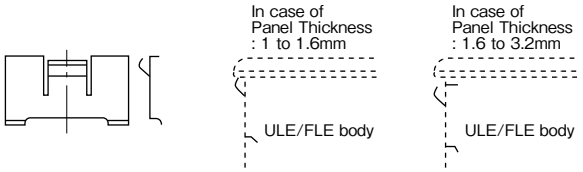
DIMENSIONS

Type ULE, FLE



Unit: mm

PANEL MOUNTING BRACKET



DIGITAL THERMOSTATS

Type TNE

SAGINOMIYA

GENERAL DESCRIPTION

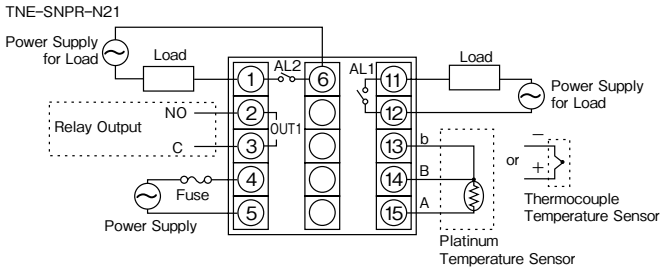
- Compact digital temperature controller (48mm×48mm) for many applications.
- High quality temperature control with platinum and thermo couple temperature sensor (option).
- Two kinds of output - current output and relay output - are available.
- Various function such as PID Control, Auto/Manual Changeover and Lock Function are installed.
- Two points output for High/Low limit alarm.
- Power source voltage: 100 to 240 V.AC 50/60Hz
- Adaptive temperature sensor: Pt100, JPt100
  Thermocouple
  (Type K, J, R, T, N, S, B)
- Indicator: Temperature … 7Seg. Green LED 4 digits
  Temperature set point … 7Seg. Red LED 4 digits
  Control output … Red LED×3

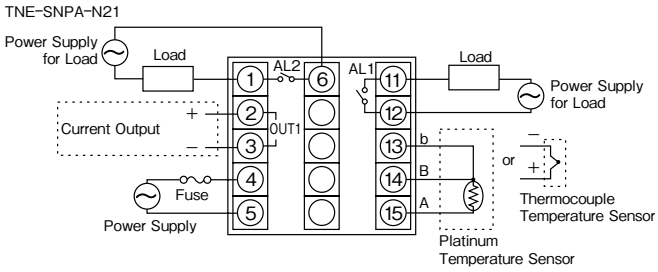
TYPE NUMBER SELECTION (SPECIFICATIONS)

Catalog No.	Temp. Set Range	Control Type	Control Output	Alarm Output (Relay)	Wt. (kg)
TNE–SNPR–N21	based on a connection sensor	On/Off	Relay (SPST 250V.AC 3A)	SPST 250V.AC 2A×2	0.18
TNE–SNPA–N21		PID (Self tuning)	Current (4 to 20 mA DC)		

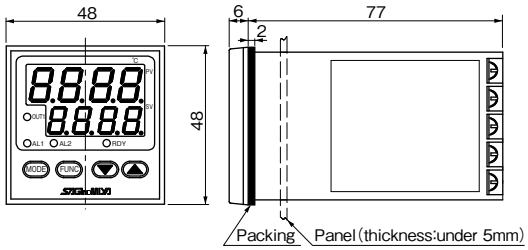
・ Ambient temperature 0 to 50℃

WIRING DIAGRAM



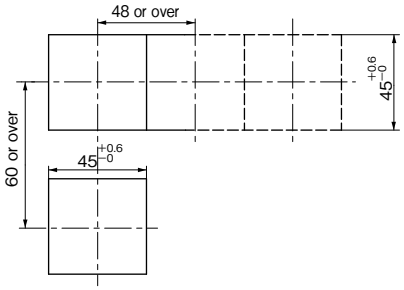


DIMENSIONS



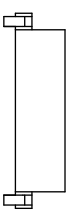
MOUNTING SIZE

Panel Cutout Size



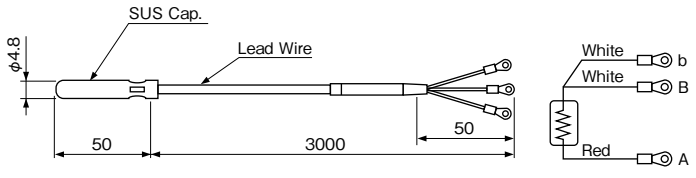
ACCESSORY

Fixing Bracket



OPTIONAL PARTS

Platinum Temperature Sensor (Type: PEK–02H001)



Temperature range: −70 to 140℃
Resistance value: 100Ω(0℃)

Unit: mm

PRESSURE &TEMPERATURE CONTROLS INFORMATION

CONNECTION & ACCESSORIES

NS PRESSURE CONTROLS NOMENCLATURE

Catalog No. is decided according to the specifications.

Example: HNS – C1 30 X [M1] [N] [W] [G] [Q]
Ⅰ Ⅱ Ⅲ Ⅳ

Ⅰ N＝SUS Bellows

Ⅱ W＝Drip Proof, P＝Water Proof (Except for Type HNS, WNS, YNS)

Ⅲ Connection Style.... Refer to Connection Table Below

Ⅳ Option....Special No.

ONS PROTECTION CONTROLS NOMENCLATURE

Catalog No. is decided according to the specifications.

Example: ONS – C1 06 X [N] [W] [G] [Q]
Ⅰ Ⅱ Ⅲ Ⅳ

Ⅰ N＝SUS Bellows

Ⅱ W＝Drip Proof

Ⅲ Connection Style.... Refer to Connection Table Below

Ⅳ Timer Specification.... Q1～Q12、Q25～Q36

Connection Table (for NS Series Pressure Controls)

Connection Style \ Size				Copper					Steel
				1/4"	φ8	3/8"	φ10	1/2"	φ10.5
B	Flare	Except Below		(Stand.)	B1	B2	B3	B4	—
		ANS		B	B1	B2	B3	B4	—
U	Union			U1	U2	—	U (Stand.)	—	U3
G	Female Thread		Rc	G (Stand.)	—	G3	—	G6	—
			G	G1	—	G4	—	G7	—
			NPT	G2	—	G5	—	G8	—
M	Male Thread	Except Below	R	M02	—	M01 (Stand.)	—	M07	—
			G	M03	—	M05	—	M08	—
			NPT	M04	—	M06	—	M09	—
		ANS	R	M1	—	M (Stand.)	—	M6	—
			G	M2	—	M4	—	M7	—
			NPT	M3	—	M5	—	M8	—
K	Flareless	Direct		K1	K2	—	K (Stand.)	—	—
		Connector		—	—	—	—	—	K3

Connection Style \ Size		1000 mm	2000 mm
L	Capillary	L1 (Stand.)	L2

NS TEMPERATURE CONTROLS NOMENCLATURE

Catalog No. is decided according to the specifications.

Example: TNS – C1 100 X M2 W L1 Q1

Ⅰ Ⅱ Ⅲ

Ⅰ W=Drip Proof, P=Water Proof

Ⅱ Connection Style.... Refer to Connection Table Below

Ⅲ Option....Special No.

Capillary Length Table

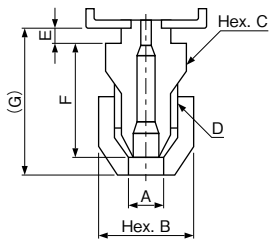
Connection Style \ Size	Normal		Nickel Plated	
	Except BNS	BNS	Except BNS	BNS
1m	Standard	L1	Q012	L1Q012
2m	L2		L2Q012	
3m	L3		L3Q012	
5m	L5		L5Q012	
7m	L7		L7Q012	
10m	L0		L0Q012	
Except Above	LQ	LZ	LQ012	LZQ012

＊ TNS–C1010XC to TNS–C1070XC: Capillary length are 1m to 5m

Connection Dimension Table

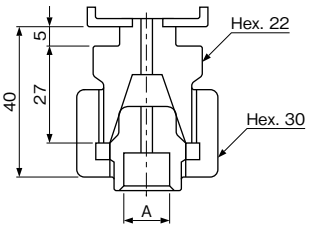
Unit: mm

(B) Flare



Size	A	B	C	D	E	F	G
φ1/4	φ6.5	17	12	7/16–20 UNF	0	20.5	26
φ8	φ8.2	22	17	5/8–18 UNF	5	24.5	36
φ3/8	φ9.7						
φ10	φ10.2						
φ1/2	φ12.9	24	22	3/4–16 UNF	5	27.5	40

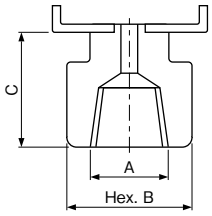
(U) Union



Size	A
φ6 Copper	φ6.5
φ8 Copper	φ8.5
φ10 Copper	φ10.5
φ10.5 Steel	φ11.0

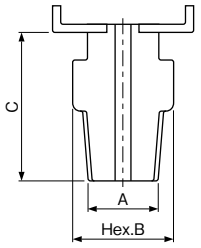
Pipe Thread

(G) Female



Size	A	B	C
1/4"	Rc1/4	19	23
	G1/4		
	1/4 NPT		
3/8"	Rc3/8	22	23
	G3/8		
	3/8 NPT		
1/2"	Rc1/2	27	27
	G1/2		
	1/2 NPT		

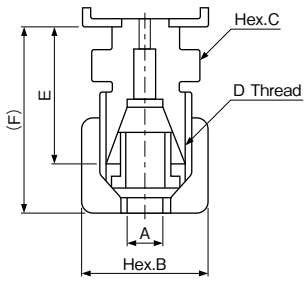
(M) Male



Size	A	B	C
1/4"	R1/4	17	29
	G1/4		
	1/4 NPT		
3/8"	R3/8	19	29
	G3/8		
	3/8 NPT		
1/2"	R1/2	22	33
	G1/2		
	1/2 NPT		

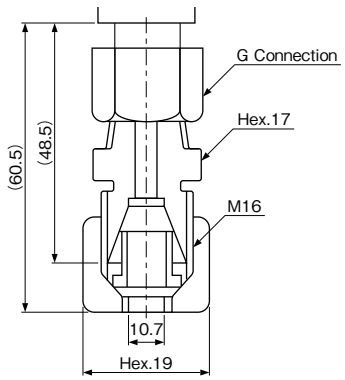
(K) Flareless Type Connection

Copper Pipe (Direct)



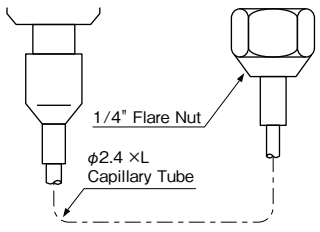
Size	A	B	C	D	E	F
φ6	6.2	14	14	M12	23	33
φ8	8.2	17	14	M14	23	33
φ10	10.2	19	17	M16	23	34

Steel Pipe (Connector Option)



K3

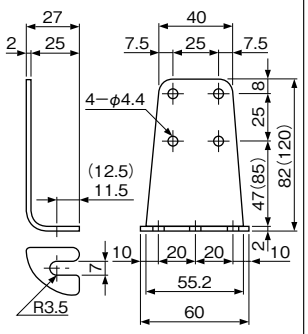
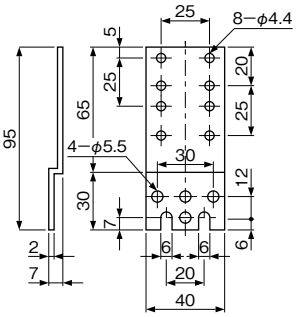
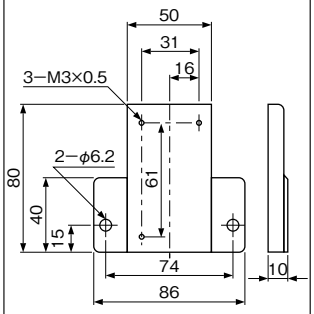
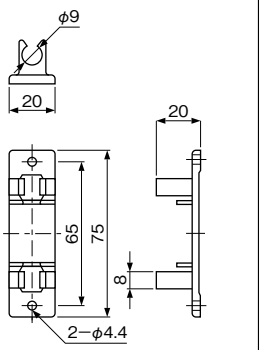
(L) Capillary



Type	L
L1	1000
L2	2000

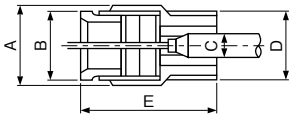
ACCESSORIES

Mounting Brackets

Name	Body Bracket						Bulb Bracket	
	Type	Parts No.	Type	Parts No.	Type	Parts No.	Type	Parts No.
	YS, NS, FE Series	SNS–AE01 (Standard Acce.)	NS Series	SNS–AE02	LWS FWS RWS	LWS–AE08	ALS, BLS	ALS–AE09
		SNS–AE11	ALS, BLS	ALS–AE02			LWS PWS (Except PWS-7060)	LWS–AE12
	ALS, BLS	ALS–AE01						
Form	 ( ) SNS–AE11				 Ambient temp.:−40 to 90℃			

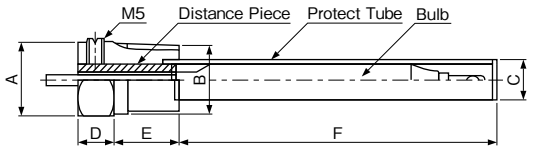
Insert Holder, Protect Tube (For Temperature Controls)

Insert Holder



Size	Max Press.	Torque	A	B	D	E
1/2"	Static Press. 1MPa	12N・m or less	Hex. 24	Hex. 22	R1/2	(43)
3/4"			Hex. 32	Hex. 30	R3/4	(54)

Protect Tube



Size	Max Press.	Torque	A	B	D	E
1/2"	Static Press. 3MPa	12N・m or less	Hex. 24	R1/2	10	20
3/4"			Hex. 24	R3/4	10	22

Insert Holder

Controls Catalog No.		Size	Parts No.	Size C
NS	TNS–C100 to C134 CNS–C115 (M2) to C134 (M2)	1/2"	TNS–AB01	ϕ6
		3/4"	TNS–AB09	
	TNS–C1070 TNS–C1010C to C1070C	1/2"	TNS–AB04	ϕ12.7
		3/4"	TNS–AB07	
	TNS–C1100 to C1150	1/2"	TNS–AB17	ϕ12.7 Heat Proof
		3/4"	TNS–AB18	
	INS–C1070M1	1/2"	TNS–AB02	ϕ9.5
		3/4"	TNS–AB05	
	INS–C1120M1, C1150M1	1/2"	TNS–AB15	ϕ9.5 Heat Proof
		3/4"	TNS–AB16	
WS	LWS–C1030 to C1094 PWS–7034 to 7094	1/2"	LWS–AB02	ϕ9.5
		3/4"	LWS–AB05	
	LWS–C1120 to C1240 PWS–7120	1/2"	LWS–AB15	ϕ9.5 Heat Proof
		3/4"	LWS–AB16	
LS	ALS–C1011 to C1050 BLS–C1020	1/2"	ALS–AB03	ϕ10
		3/4"	ALS–AB06	
	ALS–C1090	1/2"	ALS–AB10	ϕ10 Heat Proof

Protect Tube

Controls Catalog No.		Size	Parts No.		Size C×F
			Copper	SUS	
NS	TNS–C100 to C134 CNS–C115 (M2) to C134 (M2)	1/2"	TNS–AC01	TNS–AC46	ϕ8×95
		3/4"	TNS–AC35	TNS–AC56	
	TNS–C1070 to C1150 TNS–C1010C to C1070C	1/2"	TNS–AC05	TNS–AC12	ϕ15×115
		3/4"	TNS–AC09	TNS–AC14	
	INS–C1070M1 to C1150M1	1/2"	TNS–AC02	TNS–AC11	ϕ12×95
		3/4"	TNS–AC06	TNS–AC13	
WS	LWS–C1030 to C1090	1/2"	LWS–AC15	LWS–AC21	ϕ12×110
		3/4"	LWS–AC17	LWS–AC23	
	LWS–C1120 to 1160 PWS–7120	1/2"	LWS–AC19	LWS–AC25	ϕ12×80
		3/4"	LWS–AC20	LWS–AC26	
	LWS–C1200 to C1240	1/2"	LWS–AC48	LWS–AC50	ϕ12×80 Heat Proof
		3/4"	LWS–AC49	LWS–AC51	
	LWS–C1034 to C1094 PWS–7034 to 7094	1/2"	LWS–AC16	LWS–AC22	ϕ12×140
		3/4"	LWS–AC18	LWS–AC24	
	EWS–C1080 to C1160	1/2"	EWS–AC27	—	ϕ10.8×70
			—	EWS–AC28	ϕ12×75
LS	ALS–C1011 to C1090 BLS–C1020	1/2"	ALS–AC03	ALS–AC36	ϕ12×105
		3/4"	ALS–AC07	—	

DRIP PROOF & WATER PROOF CONTROLS

SERIES NS–W & NS–P

SAGINOMIYA

GENERAL DESCRIPTION

- Approved by various marine standards such as Bureau Veritas, Lloyd's Register, Germanischer Lloyd, Det Norske Veritas, Nippon Kaiji Kyokai, ABS etc.
- Suitable for indoor or outdoor applications where water drips and dusts are apt to enter, such as marine refrigeration units or industrial plants.
- External wiring is made by cabtyre cable connection with cable glands.
  Standard gland size: ϕ20mm
  Semi standard gland size: ϕ15mm
- To order, specify catalog No. with "W" or "P".
  Example: Type SNS–C106XW Drip proof model
  Type SNS–C106XP Water proof model

Type SNS–W, FNS–W, ANS–W

Type SNS–P, FNS–P, ANS–P

● Type SNS–W/P — Drip proof model of single function pressure controls.

TYPE NUMBER SELECTION (SPECIFICATIONS)

Automatic reset type

Unit: MPa {kgf/cm²}

Catalog No.		Range		Differential		Factory Setting		Max. Working Pressure	Contact Function	Wt. (kg)
		Min.	Max.	Min.	Max.	Off (On)	On (Off)			
SNS–C101X	**W**	−0.06 {−50cmHg}	0.1 {1}	0.015 {0.15}	0.05 {0.5}	0.025 {0.25}	0.05 {0.5}	0.3 {3}	Diagram 1	SNS–W: Approx. 1.1 SNS–P: Approx. 0.6
SNS–C102X	**W, P**	−0.02 {−20cmHg}	0.2 {2}	0.025 {0.25}	0.15 {1.5}			0.5 {5}		
SNS–C103X	**W, P**	−0.06 {−50cmHg}	0.3 {3}	0.035 {0.35}	0.2 {2}	0.05 {0.5}	0.15 {1.5}	1 {10}		
SNS–C104X	**W, P**	−0.06 {−50cmHg}	0.4 {4}	0.04 {0.4}		0.1 {1}	0.2 {2}	1.5 {15}		
SNS–C106X	**W, P**	−0.06 {−50cmHg}	0.6 {6}	0.06 {0.6}	0.4 {4}	0.2 {2}	0.3 {3}			
SNS–C110X	**W, P**	0.1 {1}	1 {10}	0.1 {1}	0.3 {3}	0.4 {4}	0.6 {6}			
SNS–C120X	**W**	0.5 {5}	2 {20}	0.2 {2}	0.5 {5}	1.2 {12}	1.5 {15}	3 {30}		
SNS–C130X	**W, P**		3 {30}	0.3 {3}	1 {10}	2 {20}	2.5 {25}	3.3 {33}		
SNS–C135X	**W, P**	1 {10}	3.5 {35}	0.5 {5}	1.5 {15}	2.5 {25}	3 {30}	3.8 {38}		

Manual reset type

Unit: MPa {kgf/cm²}

Catalog No.		Range		Manual Reset	* Factory Setting		Max. Working Pressure	Contact Function	Wt. (kg)
		Min.	Max.		Off (On)	On (Off)			
SNS–C102XM2	**W, P**	−0.02{−20cmHg}	0.2 {2}	Automatic operation on pressure decrease, and manual reset.	0.025 {0.25}	Manual Reset	0.5 {5}	Diagram 2	SNS–W: Approx. 1.1 SNS–P: Approx. 0.6
SNS–C106XM2	**W, P**	−0.06{−50cmHg}	0.6 {6}		0.2 {2}		1.5 {15}		
SNS–C130XM2	**W, P**	0.5 {5}	3 {30}		2 {20}		3.3 {33}		

* Based on the 1–3 terminal connection.

ELECTRICAL RATINGS

Rated Amps. (A) \ Rated Voltage (V)		Power Factor ($\cos\phi$)	125/250V. AC
Non-Inductive Current		1	12
Inductive Current	Full Load	0.75	
	Locked Rotor	0.45	72

Minimum contact capacity: 50mA

CONTACT FUNCTIONS

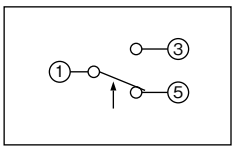


Diagram 1

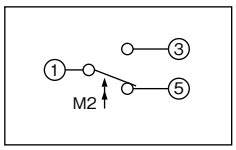


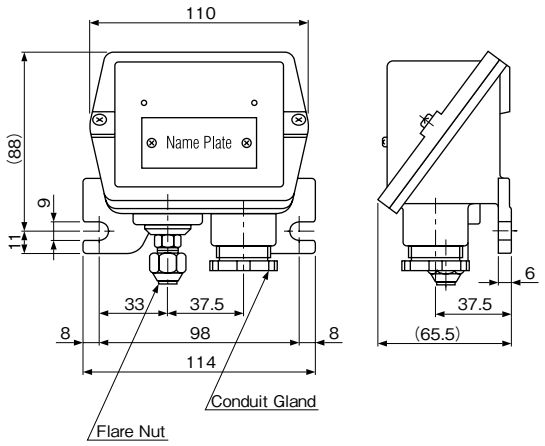
Diagram 2

	Diagram 1 & 2
1	Common Terminal
3	Close on Pressure Increase
5	Close on Pressure Decrease

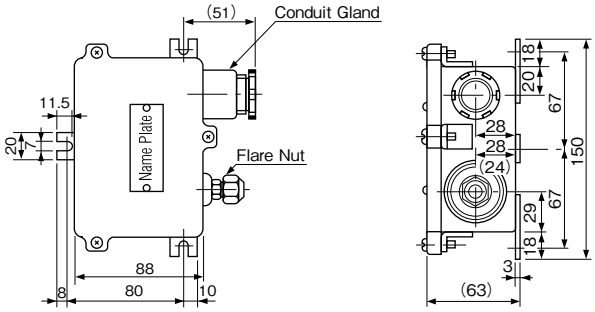
↑ : Operating direction on press. increase at High Press. Side
M2 ↑ : Operating direction on manual reset

DIMENSIONS

Type SNS–P, FNS–P, ANS–P



Type SNS–W, FNS–W, ANS–W



Unit: mm

● Type DNS–W/P — Drip proof model of dual function pressure controls

Type DNS–P

Type DNS–W

TYPE NUMBER SELECTION (SPECIFICATIONS)

Automatic reset type

Unit: MPa {kgf/cm²}

Catalog No.		Pressure Side	Range		Differential		Factory Setting		Max. Working Pressure	Contact Function	Wt. (kg)
			Min.	Max.	Min.	Max.	Off	On			
DNS–D304X	**W, P**	Low Side	−0.06 {−50cmHg}	0.4 {6}	0.04 {0.4}	0.2 {2}	0.1 {1}	0.2 {2}	1.5 {15}	Diagram 3	DNS–W: Approx. 1.4 DNS–P: Approx. 0.9
		High Side	0.8 {8}	3 {30}	Approx. 0.4 fixed. {Approx. 4 fixed.}		2 {20}	1.6 {16}	3.3 {33}		
DNS–D306X	**W, P**	Low Side	−0.06 {−50cmHg}	0.6 {6}	0.06 {0.6}	0.4 {4}	0.2 {2}	0.3 {3}	1.5 {15}		
		High Side	0.8 {8}	3 {30}	Approx. 0.4 fixed. {Approx. 4 fixed.}		2 {20}	1.6 {16}	3.3 {33}		
DNS–D604X	**W, P**	Low Side	−0.06 {−50cmHg}	0.4 {6}	0.04 {0.4}	0.2 {2}	0.1 {1}	0.2 {2}	1.5 {15}	Diagram 5	
		High Side	0.8 {8}	3 {30}	Approx. 0.4 fixed. {Approx. 4 fixed.}		2 {20}	1.6 {16}	3.3 {33}		
DNS–D606X	**W, P**	Low Side	−0.06 {−50cmHg}	0.6 {6}	0.06 {0.6}	0.4 {4}	0.2 {2}	0.3 {3}	1.5 {15}		
		High Side	0.8 {8}	3 {30}	Approx. 0.4 fixed. {Approx. 4 fixed.}		2 {20}	1.6 {16}	3.3 {33}		

Manual reset type

Unit: MPa {kgf/cm²}

Catalog No.		Pressure Side	Range		Differential		Factory Setting		Max. Working Pressure	Contact Function	Wt. (kg)
			Min.	Max.	Min.	Max.	Off	On			
DNS–D304XM	**W, P**	Low Side	−0.06 {−50cmHg}	0.4 {4}	0.04 {0.4}	0.2 {2}	0.1 {1}	0.2 {2}	1.5 {15}	Diagram 4	DNS–W: Approx. 1.4 DNS–P: Approx. 0.9
		High Side	0.8 {8}	3 {30}	Automatic operation on pressure increase, and manual reset.		2 {20}	manual reset	3.3 {33}		
DNS–D306XM	**W, P**	Low Side	−0.06{−50cmHg}	0.4 {4}	0.06 {0.6}	0.4 {4}	0.2 {2}	0.3 {3}	1.5 {15}		
		High Side	0.8 {8}	3 {30}	Automatic operation on pressure increase, and manual reset.		2 {20}	manual reset	3.3 {33}		
DNS–D604XM	**W, P**	Low Side	−0.06{−50cmHg}	0.4 {4}	0.04 {0.4}	0.2 {2}	0.1 {1}	0.2 {2}	1.5 {15}	Diagram 6	
		High Side	0.8 {8}	3 {30}	Automatic operation on pressure increase, and manual reset.		2 {20}	manual reset	3.3 {33}		
DNS–D606XM	**W, P**	Low Side	−0.06{−50cmHg}	0.6 {6}	0.06 {0.6}	0.4 {4}	0.2 {2}	0.3 {3}	1.5 {15}		
		High Side	0.8 {8}	3 {30}	Automatic operation on pressure increase, and manual reset.		2 {20}	manual reset	3.3 {33}		
DNS–D606XMM	**W**	Low Side	−0.06{−50cmHg}	0.6 {6}	Automatic operation on pressure decrease, and manual reset.		0.2 {2}	manual reset	1.5 {15}	Diagram 7	
		High Side	0.8 {8}	3 {30}	Automatic operation on pressure increase, and manual reset.		2 {20}		3.3 {33}		

ELECTRICAL RATINGS

Rated Amps. (A) \ Rated Voltage (V)		Power Factor ($\cos\phi$)	125/250V. AC
Non-Inductive Current		1	12
Inductive Current	Full Load	0.75	
	Locked Rotor	0.45	72

CONTACT FUNCTIONS

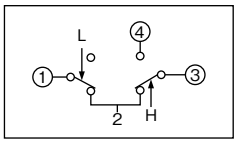


Diagram 3

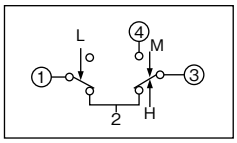


Diagram 4

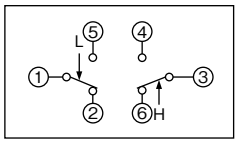


Diagram 5

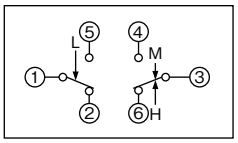


Diagram 6

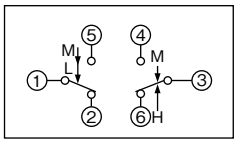
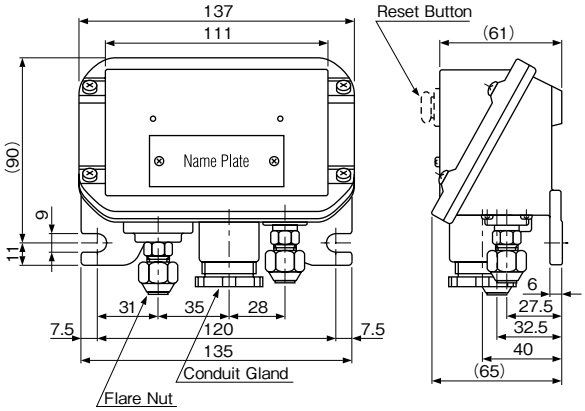


Diagram 7

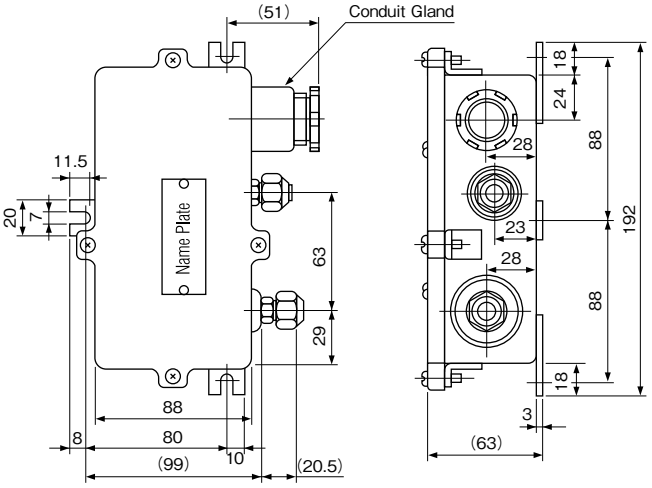
L ↓ : Operating direction on press. increase at Low Press. Side
H ↑ : Operating direction on press. increase at High Press. Side
M ↓ : Operating direction on manual reset

DIMENSIONS

Type DNS–P



Type DNS–W



Unit: mm

● Type HNS–W — Drip proof model of dual function pressure controls

TYPE NUMBER SELECTION (SPECIFICATIONS)

Automatic reset type

Unit: MPa {kgf/cm²}

Catalog No.		Range		Differential	* Factory Setting		Max. Working Pressure	Wt. (kg)
		Min.	Max.		Off	On		
HNS–C130X	**W**	0.8 {8}	3 {30}	0.3 to 0.5 Fixed {3 to 5 fixed}	2 {20}	1.6 {16}	3.3 {33}	Approx. 1.1

For specifications, electrical ratings, and contact functions, refer to page 14.

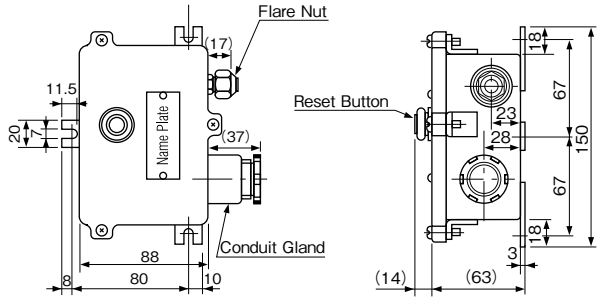
Manual reset type

Unit: MPa {kgf/cm²}

Catalog No.		Range		Manual Reset	* Factory Setting		Max. Working Pressure	Wt. (kg)
		Min.	Max.		Off	On		
HNS–C130XM1	**W**	0.8 {8}	3 {30}	Automatic operation on pressure increase, and manual reset.	2 {20}	manual reset	3.3 {33}	Approx. 1.1

For specifications, electrical ratings, and contact functions, refer to page 14.

DIMENSIONS



Unit: mm

● Type FNS–W/P & ANS–W/P — Drip proof model of dual function pressure controls

TYPE NUMBER SELECTION (SPECIFICATIONS)

Type FNS – Fixed narrow differential

Unit: MPa {kgf/cm²}

Catalog No.		Range		Differential	Factory Setting		Max. Working Pressure	Wt. (kg)
		Min.	Max.	Fixed	Off	On		
FNS–C1X**	**W, P**	−0.06 {−50cmHg} to 0.5 {5}	0.1 {1} to 3 {30}	0.006 Approx. {0.06 Approx.} to 0.12 Approx. {1.2 Approx.}	(0.019) {(0.19)} to (2.38) {(23.8)}	0.025 {0.25} to 2.5 {25}	0.3 {3} to 3.3 {33}	FNS–W: Approx. 1.3 FNS–P: Approx. 0.6

∗ FNS–C101X, type W is the only available.

For specifications, electrical ratings, and contact functions, refer to page 17, 18.
For dimensions, refer to page 47.

Type ANS – Adjustable narrow differential

Unit: MPa {kgf/cm²}

Catalog No.		Range		Differential				Factory Setting		Max. Working Pressure	Wt. (kg)
				Min.		Max.					
		Min.	Max.	Bottom	Top	Bottom	Top	Off	On		
ANS–C1XB**	**W, P**	−0.06 {−50cmHg} to 1 {10}	0.1 {1} to 3.5 {35}	0.007 {0.07} to 0.12 {1.2}	0.007 {0.07} to 0.2 {2.0}	0.014 {0.14} to 0.24 {2.4}	0.015 {0.15} to 0.39 {3.9}	0.018 {0.18} to 2.82 {28.2}	0.025 {0.25} to 3 {30}	0.3 {3} to 3.8 {38}	ANS–W: Approx. 1.3 ANS–P: Approx. 0.6

∗ ANS–C101XB, type W is the only available.

For specifications, electrical ratings, and contact functions, refer to page 17, 18.
For dimensions, refer to page 47.

● Type ONS–W & WNS–W — Drip proof model of dual function pressure controls

ONS–W

WNS–W

TYPE NUMBER SELECTION (SPECIFICATIONS)

Type ONS – for oil protection

Unit: MPa {kgf/cm²}

Catalog No.		Range		Differential	Timer Specification			Wt. (kg)
		Min.	Max.	Fixed	Delay Time (sec.)	Timer Voltage	Timer Circuit	
ONS–C106X	**W**	0.05 {0.5}	0.35 {3.5}	Approx. 0.05 {Approx. 0.5}	45, 90, 110	100/200V. AC 110/220V. AC 115/230V. AC 120/240V. AC	Standard (SPST) without Alarm Contact (SPDT)	Approx. 1.3

For specifications, electrical ratings, and contact functions, refer to page 19, 20.

Type WNS – for water, air and fluorinated refrigerant

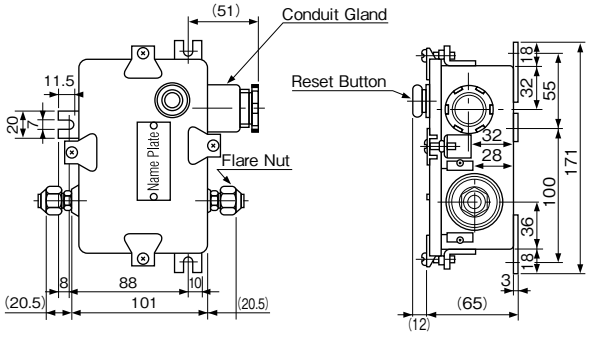
Unit: MPa {kgf/cm²}

Catalog No.		Range		Differential		Factory Setting		Max. Working Pressure	Limit of Press. Differential (HP > LP)	Wt. (kg)
		Min.	Max.	Min.	Max.	Off	On			
WNS–C102X	**W**	0.03 {0.3}	0.2 {2}	0.03 {0.3}	0.15 {1.5}	0.05 {0.5}	0.02 {0.2}	0.5 {5}	0.5 {5}	Approx. 1.3
WNS–C106X		0.05 {0.5}	0.35 {3.5}	0.05 {0.5}	0.25 {2.5}	0.1 {1.0}	0.05 {0.5}	1.5 {15}	1.5 {15}	

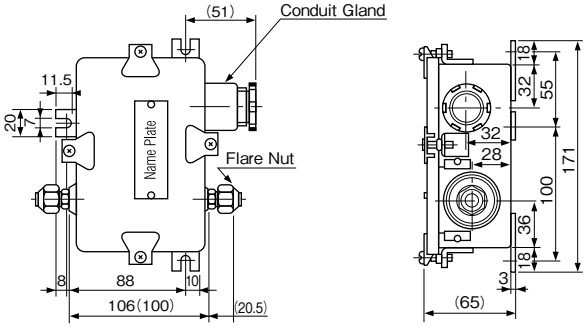
For specifications, electrical ratings, and contact functions, refer to page 21.

DIMENSIONS

Type ONS–W



Type WNS–W



Unit: mm

● Type TNS–W/P, CNS–W/P & INS–W — Drip proof model of dual function pressure controls

Type TNS–W, TNS–W

Type TNS–P, CNS–P

TYPE NUMBER SELECTION (SPECIFICATIONS)

Type TNS – Automatic reset type

Unit: °C

Catalog No.		Range		Differential		Factory Setting		Limit Temp.	Usage Condition	Wt. (kg)
		Min.	Max.	Min.	Max.	Off (On)	On (Off)			
TNS–C1＊＊X	**W, P**	−45 to 115	0 to 150	2 to 5	15, 20	−18 to 140	−15 to 145	40 to 180	$T_S > T_B$, $T_S < T_B$, $T_S \geqq T_B$	TNS–W: Approx. 1.3 TNS–P: Approx. 0.7

For specifications, electrical ratings, and contact functions, refer to page 29, 30.

Type CNS – Automatic reset type

Unit: °C

Catalog No.		Range		Differential	Factory Setting		Limit Temp.	Usage Condition	Wt. (kg)
		Min.	Max.		Off	On			
CNS–C1＊＊X	**W, P**	−35 to 0	−15 to 35	Bottom 4 Top 3	−28 to 17	−25 to 20	70	$T_S > T_B$	CNS–W: Approx. 1.3 CNS–P: Approx. 0.7

For specifications, electrical ratings, and contact functions, refer to page 29, 30.

Type CNS – Manual reset type

Unit: °C

Catalog No.		Range		Manual Reset	Factory Setting		Limit Temp.	Usage Condition	Wt. (kg)
		Min.	Max.		Off	On			
CNS–C1＊＊XM2	**W, P**	−35 to 0	−15 to 35	Automatic operation on temperature decrease and manual reset	−28 to 17	Manual Reset	70	$T_S > T_B$	CNS–W: Approx. 1.3 CNS–P: Approx. 0.7

For specifications, electrical ratings, and contact functions, refer to page 29, 30.

Type INS – Manual reset type

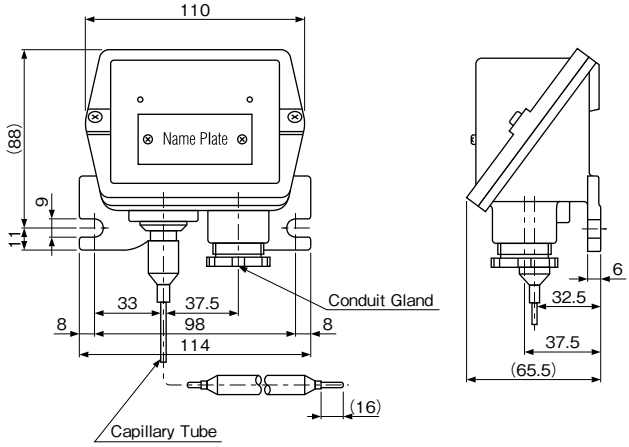
Unit: °C

Catalog No.		Range		Manual Reset	Factory Setting		Limit Temp.	Usage Condition	Wt. (kg)
		Min.	Max.		Off	On			
INS–C1070XM1	**W**	25 to 115	75 to 150	Automatic operation on temperature increase and manual reset.	Manual Reset	65 to 140	115 to 180	$T_S < T_B$	Approx. 1.3

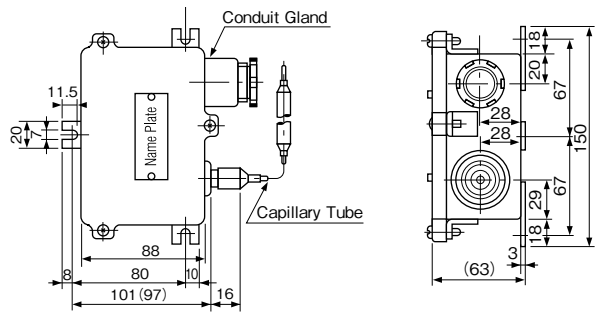
For specifications, electrical ratings, and contact functions, refer to page 29, 30.

DIMENSIONS

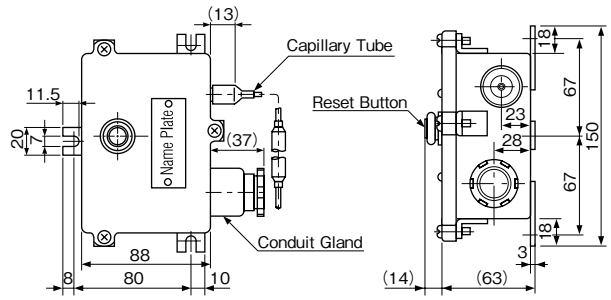
Type TNS–P, CNS–P



Type TNS–W, CNS–W



Type INS–W



Unit: mm

EXPANSION VALVES

VALVE SELECTION

In order to properly select Expansion Valves, the following items should be considered.

1) Required valve capacity should be based on the actual system operating conditions rather than the normal valve capacity rating.

2) When there exists an appreciable pressure drop between the valve outlet and the evaporator outlet, i.e., above 0.02 MPa {0.2 kgf/cm²}, or when a pressure drop type of refrigerant distributor is used at the evaporator inlet, the valve should have the external equalizer feature for best performance. Otherwise, it will increase a static superheat (valve opening temp.), restricting the refrigerant flow and causing the reduction of system capacity. As for R134a, 0.01 MPa {0.1kgf/cm²} pressure drop will increase the static superheat approximately 1°C.

3) Internally equalized valve may be used with the evaporator which has a negligible pressure drop, i.e., below 0.02 MPa {0.2 kgf/cm²}

GUIDE FOR EQUALIZER (Internal or External)

An internal or external equalizer should be selected depending on pressure drop between valve outlet and evaporator outlet. Internal equalizer increases superheat in the refrigeration system of which evaporator has some pressure drop, and the increase of superheat decreases the effective area of evaporator.

Select internal or external equalizer depending on refrigerant, pressure drop and evaporating temperature. The Guide Table for Equalizer indicates the pressure difference of refrigerant corresponding to 1°C temperature. The external equalizer valves should be used when the pressure drop exceeds the value of pressure difference indicated in the Table.

GUIDE TABLE FOR EQUALIZER

Unit: MPa {kgf/cm²}

Refrigerant	Evaporating Temperature (°C)									
	10	5	0	−5	−10	−20	−30	−40	−50	−60
R134a	0.014 {0.14}	0.012 {0.12}	0.011 {0.11}	0.009 {0.09}	0.008 {0.08}	0.006 {0.06}	0.004 {0.04}	0.003 {0.03}	–	–
R22	0.024 {0.24}	0.02 {0.20}	0.018 {0.18}	0.016 {0.16}	0.014 {0.14}	0.011 {0.11}	0.008 {0.08}	0.006 {0.06}	0.004 {0.04}	0.003 {0.03}
R404A	0.025 {0.25}	0.022 {0.22}	0.019 {0.19}	0.017 {0.17}	0.015 {0.15}	0.012 {0.12}	0.008 {0.08}	0.006 {0.06}	0.004 {0.04}	0.003 {0.03}
R407C	0.021 {0.21}	0.018 {0.18}	0.016 {0.16}	0.014 {0.14}	0.012 {0.12}	0.009 {0.09}	0.006 {0.06}	0.004 {0.04}	0.003 {0.03}	0.002 {0.02}
R410A	0.033 {0.33}	0.029 {0.29}	0.026 {0.26}	0.023 {0.23}	0.020 {0.20}	0.015 {0.15}	0.011 {0.11}	0.008 {0.08}	0.006 {0.06}	0.004 {0.04}

Pressure Diff. corresponding to 1°C temperature.

GUIDE FOR SETTING OF SUPERHEAT

Superheat Adjuster of Expansion Valve adjusts the superheat by which the valve begins to open from the fully closed condition, and this superheat is called Static Superheat.

S.S.H.: Static Superheat

O.S.H.: Operating Superheat (Superheat necessary for valve and refrigeration system operation)

S.H.C.: Superheat Change (Superheat which keeps the valve opening at the optimum balance point for refrigeration systems)

S.S.H. = O.S.H. − S.H.C.

To change the adjustment, remove the seal cap and turn the adjusting spindle. Turning the spindle clockwise to compress the spring decreases flow and raises superheat and turning the spindle counter clockwise to loosen the spring increases flow and lowers superheat.

CHARGE & MOP (MAXIMUM OPERATING PRESSURE)

G–Charge: Gas charge used generally on air conditioning gives pressure limiting, but loses control if valve body becomes colder than sensing bulb. A gas charged valve should be installed in a location where the valve body can be warmer than the bulb to prevent condensation of the charge in the powerhead.

L–Charge: Liquid charge provides accurate control when valve body becomes colder than sensing bulb; hence a liquid charged valve may be installed in any location regardless of temperature. The charge, however, does not provide maximum operating pressure (pressure limiting) for motor overload protection.

C–Charge:
CL–Charge
CY–Charge
Cross charge and Cross Low Temp. charge used generally on low temperature range application will not lose control even if valve body becomes colder than sensing bulb. A cross charged valve may be installed in any location regardless of temperature. Cross charge (C) for normal refrigeration (higher than − 40°C temp. range) and Cross Low Temp. charge (CL and CY) for low temp. refrigeration (CY... − 70 to − 40°C with R22 for Type ATX valves).

S–Charge:
SA–Charge
SL–Charge
Saginomiya's all purpose special charge combines the best properties of gas and liquid charges. The charge provides accurate control even if valve boby becomes colder than sensing bulb and further it provides MOP (pressure limiting) for motor overload protection. S–charged valve may be installed in any location regardless of temperature.

ORDERING INFORMATION

1) Catalog Number ... On standard products, specify the Catalog No. only.

2) Special Specifications ... On special applications, specify the followings:

a) Normal Pressure and Maximum Pressure
b) Normal Temperature and Minimum Temperature
c) Detailed Application
d) Refrigerant
e) Valve Location
f) Capacity (Condensing & Evaporating Temperature)
g) Length of Capillary Tube
h) External or Internal Evaporator
i) Pressure Drop at Evaporator
j) MOP (Maximum Operating Pressure)
k) Two Stage Compressor System or not

EXPANSION VALVES (SMALL CAPACITY TYPE)

High Volume OEM Item

Type ARX

SAGINOMIYA

GENERAL DESCRIPTION

- This product is expansion valve for small capacity.
- Application: Bottle cooler, display case, ice making machine, industrial air conditioner.

SPECIFICATIONS

- Charge: S–charge (MOP20℃), C–charge, CL–charge
- Max. working pressure: 3.0MPa {30kgf/㎠}
- Adjustable range of static superheat: 0 to 5℃

VALVE NOMENCLATURE

Catalog No. is decided according to the specifications.

Example: ARX (Ⅰ) – 2303 (Ⅱ) D (Ⅲ) H (Ⅳ) S (Ⅴ)

Ⅰ: Type..... ARX–Small capacity thermostatic expansion valve

Ⅱ: Model..... The first and the second digits indicate inlet and outlet pipe size respectively. The last two digits indicate nominal capacity.

Ⅲ: Connection..... D–Solder Connection

Ⅳ: Refrigerant..... H = R22, M = R134a, P = R407C, U = R404A

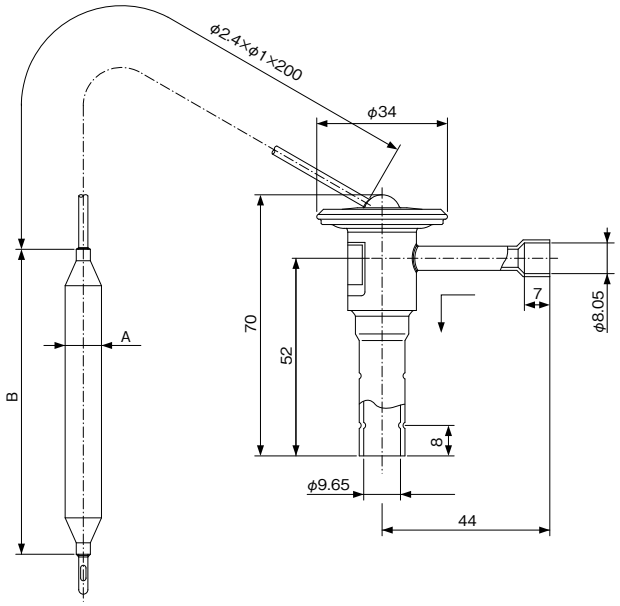
Ⅴ: Charge type..... S = S–charge, C = C–charge, CL = CL–charge

TYPE NUMBER SELECTION

Catalog No.					Capacity (U.S.R.T.) {kW}				Connection		Capil. Tube Length (mm)	Wt. (kg)
Type	Model	Connection	Refrigerant	Charge	R134a	R22	R407C	R404A	Inlet	Outlet		
ARX–	2303	D (Solder)	H(R22) M(R134a) P(R407C) U(R404A)	S (R22, R134a, R404A, R407C) C (R22) CL (R22, R404A)	0.48 {1.69}	0.36 {1.27}	0.50 {1.76}	0.34 {1.20}	5/16"	3/8"	200	0.12
	2305				0.80 {2.81}	0.60 {2.11}	0.82 {2.88}	0.57 {2.00}				
	2308				1.28 {4.57}	0.96 {3.37}	1.34 {4.71}	0.93 {3.27}				
	2310				1.60 {5.63}	1.20 {4.22}	1.65 {5.80}	1.14 {4.01}				
	2315				2.40 {8.44}	1.80 {6.33}	2.47 {8.70}	1.71 {6.01}				

Capacity: Based on condensing temp. 38°C and evaporating temp. 5°C.

DIMENSIONS



Refrigerant	Charge	A	B
H(R22) M(R134a) U(R404A)	S	3/8"	80
P(R407C)	S	1/2"	80
H(R22)	C	1/2"	80
H(R22) U(R404A)	CL	3/8"	50

Unit: mm

EXPANSION VALVES (BI-FLOW)

High Volume OEM Item

Type TCX

SAGINOMIYA

GENERAL DESCRIPTION

- Application: Heat pump air conditioner

  Note: This Bi-flow expansion valve features flow direction reversibility being suitable for heat pump application.
- Charge: C (Cross) charge
- Max. working pressure:
  High pressure side: 2.8 MPa {28 kgf/cm²}
  Low pressure side: 1.4 MPa {14 kgf/cm²}
- Static superheat: Fixed (Factory setting)
- Superheat change: 5 to 6°C

VALVE NOMENCLATURE

Catalog No. is decided according to the specifications.

Example: TCX (Ⅰ) – 2307 (Ⅱ) D (Ⅲ) H (Ⅳ) C (Ⅴ)

Ⅰ: Type..... TCX Bi-Flow Thermostatic expansion valve

Ⅱ: Model..... The first and the second digits indicate inlet and outlet pipe size respectively. The last two digits indicate nominal capacity.

Ⅲ: Connection..... D–Solder Connection

Ⅳ: Refrigerant..... H = R22

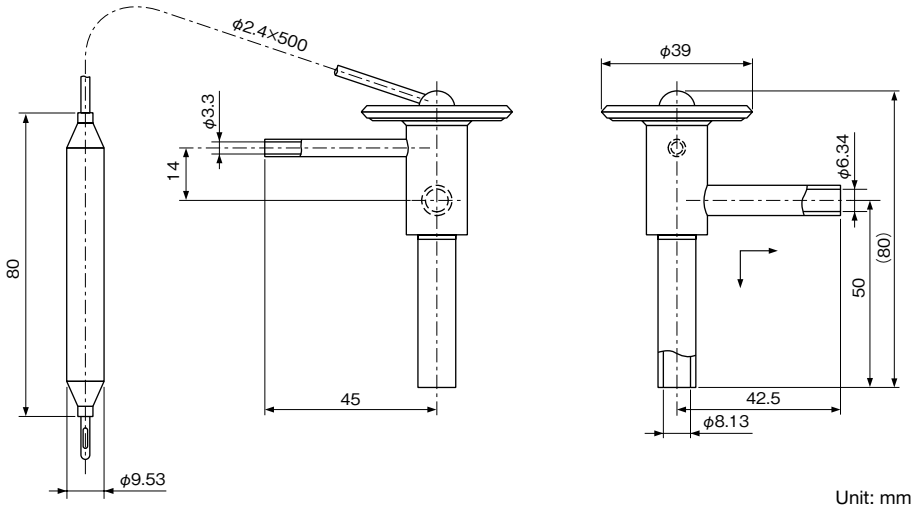
Ⅴ: Charge type..... C = C–charge

TYPE NUMBER SELECTION (SPECIFICATIONS)

Catalog No.					Capacity (U.S.R.T.) {kW}	Connection			Capil. Tube Length (mm)	Wt. (kg)
Type	Model	Connection	Refrigerant	Charge	R22	Inlet	Outlet	Equalizer		
TCX–	2307	D (Solder)	H (R22)	C	1.0 {3.52}	φ6.34	φ8.13	φ3.3	φ2.4 × 500	0.13
	2310				1.6 {5.63}					
	2315				2.4 {8.44}					
	2320				3.2 {11.3}					

Capacity: Based on condensing temp. 38°C and evaporating temp. 5°C.

DIMENSIONS



Unit: mm

GENERAL DESCRIPTION

- Application: Commercial refrigerator, freezer, air conditioner, cold chain box, etc.
- Suitable for refrigeration systems with hot gas defrosting.
- Type QCX ... Internal equalizer type
  Type RCX ... External equalizer type
- The same products can be used for R22 and R407C.
- With superheat external adjust device.

Type QCX–B

Type QCX–D

SPECIFICATIONS

- Max. working pressure: 3.0 MPa {30kgf/cm²}
- Adjustable range of static superheat:
  1 to 7°C at R22, R134a, R404A
  1 to 5°C at R407C, R410A
- ❍ Increase about 0.045MPa / rotation
- Superheat change: 4 to 5°C (C, SL–charge)
  3 to 4°C (SA–charge)

Type RCX–B

Type RCX–D

Charge		A Zone	R Zone	F Zone	MOP (°C)	Temp. Condition
		Evaporating Temp. (°C)				Power Element Temp.: Ts, Sensing Bulb Temp.: TB
SA	R22	−40 to 10	–	–	18	Ts ≧ TB
C		–	−40 to 0		–	Ts ≧ TB
SL			–	−60 to −25	−20	Ts ≧ TB
C	R134a	−30 to 10		–	–	Ts ≧ TB
SA	R404A	−40 to 10	–	–	18	Ts ≧ TB
C		–	−40 to 0		–	Ts ≧ TB
SL			–	−60 to −25	−20	Ts ≧ TB
SA	R407C	−40 to 10	–	–	18	Ts ≧ TB
C		–	−40 to 0		–	Ts ≧ TB
SA	R410A	−45 to 10	–	–	18	Ts ≧ TB
C		–	−40 to −10		–	Ts ≧ TB

VALVE NOMENCLATURE

Catalog No. is decided according to the specifications.

Example: $\frac{\text{QCX}}{\text{Ⅰ}} - \frac{\text{0234}}{\text{Ⅱ}}\ \frac{\text{B}}{\text{Ⅲ}}\ \frac{\text{U}}{\text{Ⅳ}}\ \frac{\text{SA}}{\text{Ⅴ}}$

Ⅰ: Type..... QCX–Internal equalizer type, RCX–External equalizer type
Ⅱ: Model..... The first and the second digits indicate nominal capacity.
The last two digits indicate inlet and outlet pipe size respectively.
Ⅲ: Connection..... B–Flare Connection, D–Solder Connection
Ⅳ: Refrigerant..... M = R134a, H = R22, R407C, U = R404A, V = R410A
Ⅴ: Charge type..... SL = SL–charge, C = C–charge, SA = SA–charge

TYPE NUMBER SELECTION (1)

Refrigerant		Catalog No.		Refrigerant	Capacity (U.S.R.T.) {kW} A,R Zone C.T. 38°C E.T. −5°C	Capacity (U.S.R.T.) {kW} F Zone C.T. 38°C E.T. −30°C	Connection Inlet	Connection Outlet	Capil. Tube Length (mm)	Wt. (kg)
F Zone	Freezing −60 to −25°C (SL: R22, R404A)	**QCX– RCX–**	0334B[D]HSL	R22	–	0.22 {0.79}	3/8" Flare [B] [3/8" Solder [D]]	1/2" Flare [B] [1/2" Solder [D]]	φ2.4 × 1500	0.28 (QCX–**34B) 0.24 (QCX–**34D) 0.29 (RCX–**34B) 0.24 (RCX–**34D)
			0534B[D]HSL			0.33 {1.16}				
			0834B[D]HSL			0.54 {1.91}				
			1234B[D]HSL			0.87 {3.07}				
			1634B[D]HSL			1.10 {3.87}				
			2434B[D]HSL			1.68 {5.91}				
			3134B[D]HSL			2.27 {7.97}				
			4734B[D]HSL			3.10 {10.9}				
			0234B[D]USL	R404A	–	0.13 {0.46}				
			0334B[D]USL			0.19 {0.68}				
			0534B[D]USL			0.32 {1.11}				
			0834B[D]USL			0.51 {1.79}				
			1034B[D]USL			0.64 {2.25}				
			1534B[D]USL			0.98 {3.44}				
			2034B[D]USL			1.32 {4.63}				
			3034B[D]USL			1.80 {6.34}				
R Zone	Refrigeration −40 to 0°C (C: R22, R404A, R407C)	**QCX– RCX–**	0334B[D]HC	R22	0.31 {1.10}	–				
			0534B[D]HC		0.47 {1.65}					
			0834B[D]HC		0.78 {2.75}					
			1234B[D]HC		1.25 {4.41}					
			1634B[D]HC		1.57 {5.51}					
			2434B[D]HC		2.35 {8.26}					
			3134B[D]HC		3.13 {11.0}					
			4734B[D]HC		4.69 {16.5}					
			0234B[D]UC	R404A	0.20 {0.70}	–				
			0334B[D]UC		0.30 {1.05}					
			0534B[D]UC		0.49 {1.74}					
			0834B[D]UC		0.78 {2.76}					
			1034B[D]UC		0.99 {3.48}					
			1534B[D]UC		1.48 {5.22}					
			2034B[D]UC		1.98 {6.95}					
			3034B[D]UC		2.96 {10.4}					
			0334B[D]HC	R407C	0.32 {1.13}	–				
			0534B[D]HC		0.48 {1.70}					
			0834B[D]HC		0.81 {2.84}					
			1234B[D]HC		1.29 {4.54}					
			1634B[D]HC		1.61 {5.67}					
			2434B[D]HC		2.42 {8.51}					
			3134B[D]HC		3.21 {11.3}					
			4734B[D]HC		4.83 {17.0}					
	Refrigeration −30 to 10°C (C: R134a)	**QCX– RCX–**	0234B[D]MC	R134a	0.24 {0.85}	–				
			0434B[D]MC		0.36 {1.28}					
			0634B[D]MC		0.61 {2.13}					
			1034B[D]MC		0.96 {3.38}					
			1234B[D]MC		1.21 {4.27}					
			1834B[D]MC		1.82 {6.40}					
			2434B[D]MC		2.43 {8.54}					
			3634B[D]MC		3.64 {12.8}					
	Refrigeration −40 to −10°C (C: R410A)	**QCX– RCX–**	0334B[D]VC	R410A	0.35 {1.22}	–				
			0534B[D]VC		0.52 {1.83}					
			0934B[D]VC		0.86 {3.04}					
			1434B[D]VC		1.37 {4.82}					
			1734B[D]VC		1.73 {6.08}					
			2634B[D]VC		2.59 {9.12}					
			3534B[D]VC		3.44 {12.1}					
			5234B[D]VC		5.18 {18.2}					

・ External equalizer for RCX: 1/4" flare (for all flare outlet bodies) , 1/4" solder[ID] (for all solder outlet bodies)

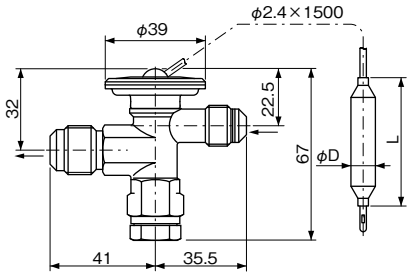
TYPE NUMBER SELECTION (2)

Refrigerant		Catalog No.		Refrigerant	Capacity (U.S.R.T.) {kW} A,R Zone C.T. 38°C E.T. −5°C	Capacity (U.S.R.T.) {kW} F Zone C.T. 38°C E.T. −30°C	Connection Inlet	Connection Outlet	Capil. Tube Length (mm)	Wt. (kg)
A Zone	Air Conditioning −40 to 10°C (SA: R22, R404A, R407C)	QCX– RCX–	0334B[D]HSA	R22	0.31 {1.10}	–	3/8" Flare [B] [3/8" Solder [D]]	1/2" Flare [B] [1/2" Solder [D]]	φ2.4 × 1500	0.28 (QCX–**34B) 0.24 (QCX–**34D) 0.29 (RCX–**34B) 0.24 (RCX–**34D)
			0534B[D]HSA		0.47 {1.65}					
			0834B[D]HSA		0.78 {2.75}					
			1234B[D]HSA		1.25 {4.41}					
			1634B[D]HSA		1.57 {5.51}					
			2434B[D]HSA		2.35 {8.26}					
			3134B[D]HSA		3.13 {11.0}					
			4734B[D]HSA		4.69 {16.5}					
			0234B[D]USA	R404A	0.20 {0.70}	–				
			0334B[D]USA		0.30 {1.05}					
			0534B[D]USA		0.49 {1.74}					
			0834B[D]USA		0.78 {2.76}					
			1034B[D]USA		0.99 {3.48}					
			1534B[D]USA		1.48 {5.22}					
			2034B[D]USA		1.98 {6.95}					
			3034B[D]USA		2.96 {10.4}					
			0334B[D]HSA	R407C	0.32 {1.13}	–				
			0534B[D]HSA		0.48 {1.70}					
			0834B[D]HSA		0.81 {2.84}					
			1234B[D]HSA		1.29 {4.54}					
			1634B[D]HSA		1.61 {5.67}					
			2434B[D]HSA		2.42 {8.51}					
			3134B[D]HSA		3.21 {11.3}					
			4734B[D]HSA		4.83 {17.0}					
	Air Conditioning −45 to 10°C (SA:R410A)		0334B[D]VSA	R134a	0.35 {1.22}	–				
			0534B[D]VSA		0.52 {1.83}					
			0934B[D]VSA		0.86 {3.04}					
			1434B[D]VSA		1.37 {4.82}					
			1734B[D]VSA		1.73 {6.08}					
			2634B[D]VSA		2.59 {9.12}					
			3534B[D]VSA		3.44 {12.1}					
			5234B[D]VSA		5.18 {18.2}					

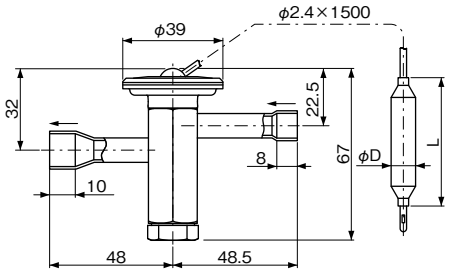
・ External equalizer for RCX: 1/4" flare (for all flare outlet bodies) , 1/4" solder[ID] (for all solder outlet bodies)

DIMENSIONS

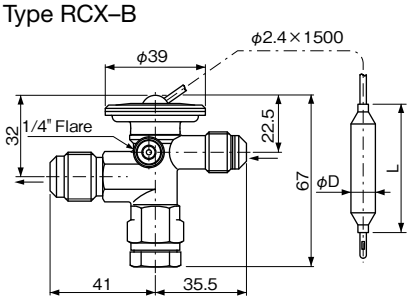
Type QCX–B



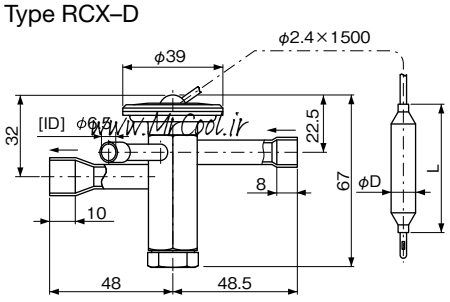
Type QCX–D



Type RCX–B



Type RCX–D

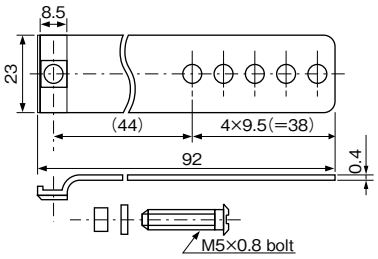


	D	L
SA	12.7	80
C	9.5	50
SL	12.7	80

Unit: mm

ACCESSORY

• Sensing Bulb Mounting Band



EXPANSION VALVES

Type SCX

SAGInoMIYA

GENERAL DESCRIPTION

- Application: Chillers, cold chain boxes, heat pump air conditioner, air conditioning, etc.
- Suitable for refrigeration systems with hot gas defrosting.
- The same products can be used for R22 and R407C.
- With superheat external adjust device.

Type SCX–D

Type SCX–B

SPECIFICATIONS

- Max. working pressure: 3.0 MPa {30kgf/cm²}
- Adjustable range of static superheat:
  1 to 7°C at R22, R134a, R404A
  1 to 5°C at R407C, R410A
- ↺ Increase about 0.045MPa / rotation
- Superheat change: 4 to 5°C (C, SL–charge)
  3 to 4°C (SA–charge)

Charge		A Zone	R Zone	F Zone	MOP (°C)	Temp. Condition
		Evaporating Temp. (°C)				Power Element Temp.: Ts, Sensing Bulb Temp.: TB
SA	R22	−40 to 10	—	—	18	Ts ≧ TB
C		—	−40 to 0		—	Ts ≦ TB
SL			—	−60 to −25	−20	Ts ≧ TB
C	R134a	−30 to 10		—	—	Ts ≦ TB
SA	R404A	−40 to 10	—	—	18	Ts ≧ TB
C		—	−40 to 0		—	Ts ≦ TB
SL			—	−60 to −25	−20	Ts ≧ TB
SA	R407C	−40 to 10	—	—	18	Ts ≧ TB
C		—	−40 to 0		—	Ts ≦ TB
SA	R410A	−45 to 10	—	—	18	Ts ≧ TB
C		—	−40 to −10		—	Ts ≦ TB

VALVE NOMENCLATURE

Catalog No. is decided according to the specifications.

Example: SCX (Ⅰ) − 0445 (Ⅱ) D (Ⅲ) U (Ⅳ) SA (Ⅴ)

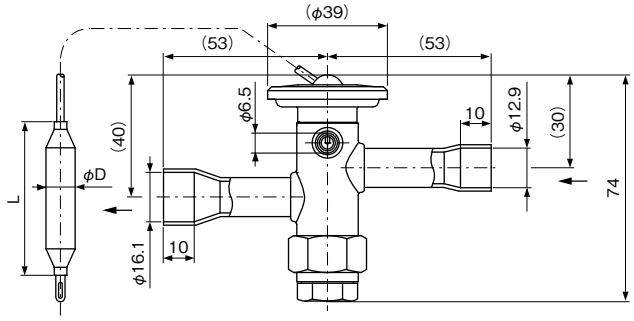
Ⅰ: Type..... SCX–External equalizer type
Ⅱ: Model..... The first and the second digits indicate nominal capacity.
The last two digits indicate inlet and outlet pipe size respectively.
Ⅲ: Connection..... B–Flare Connection, D–Solder Connection
Ⅳ: Refrigerant..... H = R22, M = R134a, P = R407C, U = R404A, V = R410A
Ⅴ: Charge type..... SL = SL–charge, C = C–charge, SA = SA–charge

TYPE NUMBER SELECTION

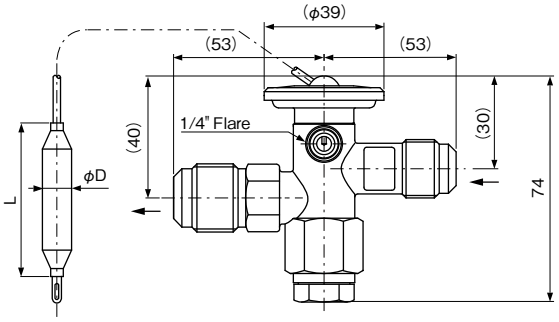
Refrigerant			Catalog No.		Refrigerant	Capacity (U.S.R.T.){kW}		Connection			Capil. Tube Length (mm)	Wt. (kg)
						A,R Zone	F Zone					
						C.T. 38°C	C.T. 38°C	Inlet	Outlet	Equalizer		
						E.T. −5°C	E.T. −30°C					
F Zone	Freezing	−60 to −25°C (SL:R22,R404A)	SCX–	0645D[B]HSL	R22	—	3.25 {11.4}	1/2" Solder(D) [1/2" Flare(B)]	5/8" Solder(D) [5/8" Flare(B)]	1/4" Solder(D) [1/4" Flare(B)]	φ2.4 × 1500	0.31 (SCX–**45D) 0.39 [SCX–**45B] 0.32 (SCX–**57D)
				0845D[B]HSL			4.53 {15.9}					
				1057DHSL			5.70 {20.0}	5/8" Solder(D)	7/8" Solder(D)			
				1257DHSL			6.83 {24.0}					
				1457DHSL			8.08 {28.4}					
				0445D[B]USL	R404A	—	1.92 {6.74}	1/2" Solder(D) [1/2" Flare(B)]	5/8" Solder(D) [5/8" Flare(B)]			
				0545D[B]USL			2.67 {9.39}					
				0657DUSL			3.36 {11.8}	5/8" Solder(D)	7/8" Solder(D)			
				0857DUSL			4.03 {14.2}					
				0957DUSL			4.76 {16.7}					
R Zone	Refrigeration	−30 to 10°C (C:R134a)	SCX–	0545D[B]MC	R134a	4.76 {16.7}	—	1/2" Solder(D) [1/2" Flare(B)]	5/8" Solder(D) [5/8" Flare(B)]			
				0745D[B]MC		6.62 {23.3}						
				0857DMC		8.32 {29.3}		5/8" Solder(D)	7/8" Solder(D)			
				1057DMC		9.98 {35.1}						
				1257DMC		11.8 {41.5}						
		−40 to 0°C (C:R22,R404A,R407C)	SCX–	0645D[B]HC	R22	5.78 {20.3}	—	1/2" Solder(D) [1/2" Flare(B)]	5/8" Solder(D) [5/8" Flare(B)]			
				0845D[B]HC		8.05 {28.3}						
				1057DHC		10.1 {35.6}		5/8" Solder(D)	7/8" Solder(D)			
				1257DHC		12.1 {42.6}						
				1457DHC		14.4 {50.5}						
				0445D[B]UC	R404A	3.65 {12.8}	—	1/2" Solder(D) [1/2" Flare(B)]	5/8" Solder(D) [5/8" Flare(B)]			
				0545D[B]UC		5.08 {17.9}						
				0657DUC		6.38 {22.5}		5/8" Solder(D)	7/8" Solder(D)			
				0857DUC		7.66 {26.9}						
				0957DUC		9.06 {31.9}						
				0645D[B]HC	R407C	5.95 {20.9}	—	1/2" Solder(D) [1/2" Flare(B)]	5/8" Solder(D) [5/8" Flare(B)]			
				0845D[B]HC		8.29 {29.1}						
				1057DHC		10.4 {36.6}		5/8" Solder(D)	7/8" Solder(D)			
				1257DHC		12.5 {43.9}						
				1457DHC		14.8 {52.0}						
		−40 to −10°C (C:R410A)	SCX–	0645D[B]VC	R410A	6.38 {22.4}	—	1/2" Solder(D) [1/2" Flare(B)]	5/8" Solder(D) [5/8" Flare(B)]			
				0945D[B]VC		8.87 {31.2}						
				1157DVC		11.2 {39.2}		5/8" Solder(D)	7/8" Solder(D)			
				1357DVC		13.4 {47.0}						
				1657DVC		15.8 {55.6}						
A Zone	Air Conditioning	−40 to 10°C (SA:R22,R404A,R407C)	SCX–	0645D[B]HSA	R22	5.78 {20.3}	—	1/2" Solder(D) [1/2" Flare(B)]	5/8" Solder(D) [5/8" Flare(B)]			
				0845D[B]HSA		8.05 {28.3}						
				1057DHSA		10.1 {35.6}		5/8" Solder(D)	7/8" Solder(D)			
				1257DHSA		12.1 {42.6}						
				1457DHSA		14.4 {50.5}						
				0445D[B]USA	R404A	3.65 {12.8}	—	1/2" Solder(D) [1/2" Flare(B)]	5/8" Solder(D) [5/8" Flare(B)]			
				0545D[B]USA		5.08 {17.9}						
				0657DUSA		6.38 {22.5}		5/8" Solder(D)	7/8" Solder(D)			
				0857DUSA		7.66 {26.9}						
				0957DUSA		9.06 {31.9}						
				0645D[B]HSA	R407C	5.95 {20.9}	—	1/2" Solder(D) [1/2" Flare(B)]	5/8" Solder(D) [5/8" Flare(B)]			
				0845D[B]HSA		8.29 {29.1}						
				1057DHSA		10.4 {36.6}		5/8" Solder(D)	7/8" Solder(D)			
				1257DHSA		12.5 {43.9}						
				1457DHSA		14.8 {52.0}						
		−45 to 10°C (SA:R410A)	SCX–	0645D[B]VSA	R410A	6.38 {22.4}	—	1/2" Solder(D) [1/2" Flare(B)]	5/8" Solder(D) [5/8" Flare(B)]			
				0945D[B]VSA		8.87 {31.2}						
				1157DVSA		11.2 {39.2}		5/8" Solder(D)	7/8" Solder(D)			
				1357DVSA		13.4 {47.0}						
				1657DVSA		15.8 {55.6}						

DIMENSIONS

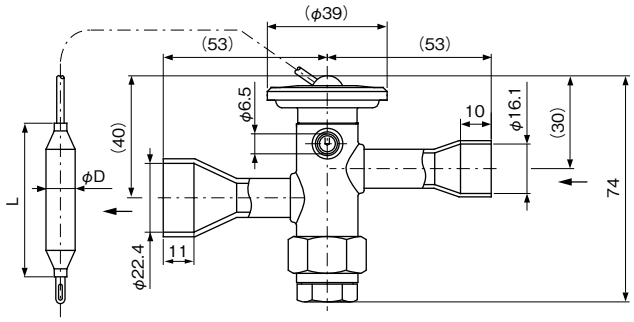
Type SCX–**45D



Type SCX–**45B



Type SCX–**57D

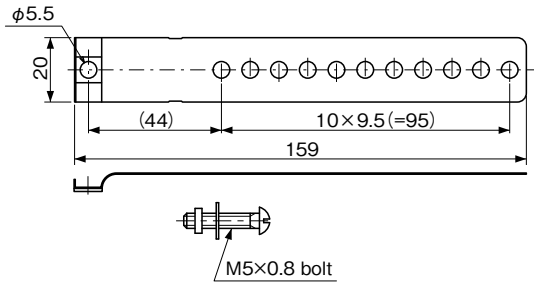


	D	L
SA	12.7	80
C	9.5	50
SL	12.7	80

Unit: mm

ACCESSORY

• Sensing Bulb Mounting Band



EXPANSION VALVES

Type BHX

SAGINOMIYA

GENERAL DESCRIPTION

- Application: General refrigeration and air conditioning system.
  Note: This valve provides excellent control in unloading, heat pump application, or in a hot gas defrost system.
- Charge: S (Special) charge for all purpose with 18°C (standard) MOP.
- Max. working pressure: 2.8 MPa {28 kgf/cm²}
- Adjustable range of static superheat: 0 to 8°C
- Superheat change: 4 to 5°C

VALVE NOMENCLATURE

Catalog No. is decided according to the specifications.

Example: $\frac{\text{BHX}}{\text{Ⅰ}} - \frac{45030}{\text{Ⅱ}} \frac{\text{B}}{\text{Ⅲ}} \frac{\text{H}}{\text{Ⅳ}} \frac{\text{S}}{\text{Ⅴ}}$

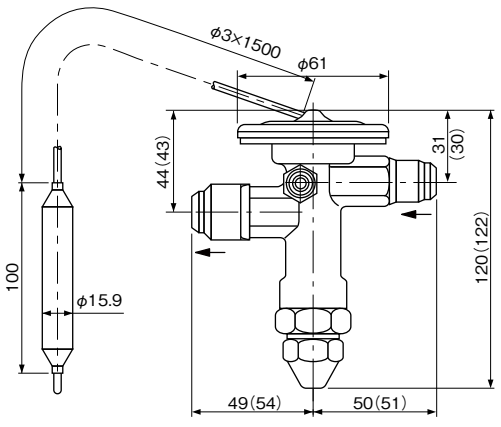
Ⅰ: Type..... BHX–Thermostatic expansion valve for general use
Ⅱ: Model..... The first and the second digits indicate inlet and outlet pipe size respectively. The last three digits indicate nominal capacity.
Ⅲ: Connection..... B–Flare Nut Connection, D–Solder Connection
Ⅳ: Refrigerant..... M = R134a, H = R 22
Ⅴ: Charge type..... S = S–charge

TYPE NUMBER SELECTION (SPECIFICATIONS)

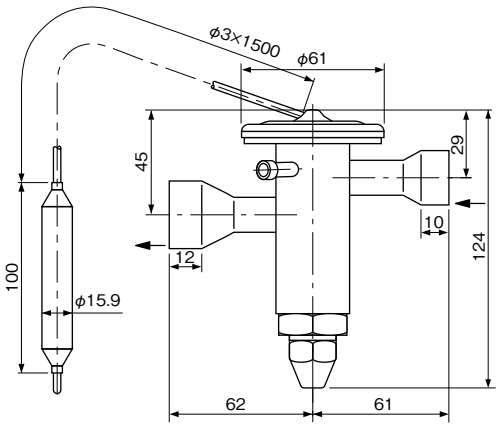
Catalog No.					Capacity (U.S.R.T.) {kW}		Connection			Capil. Tube Length (mm)	Wt. (kg)
Type	Model	Connection	Refrigerant	Charge	R134a	R22	Inlet	Outlet	Equalizer		
BHX–	45030	B (Flare) or D (Solder)	M (R134a) H (R22)	S (Special)	3.6 {12.7}	4.8 {16.9}	1/2"	5/8"	1/4" Flare	φ3 × 1500	0.85
	45040				4.8 {16.9}	6.4 {22.6}					
	45050				6.0 {21.1}	8.0 {28.1}					
	56070	B (Flare)			8.4 {29.5}	11.2 {39.4}	5/8"	3/4"			1.04
	56090				10.8 {38.0}	14.4 {50.6}					
	56110				13.2 {46.4}	17.6 {61.9}					
	56140				16.8 {59.1}	22.4 {78.7}					
	57070	D (Solder)			8.4 {29.5}	11.2 {39.4}		7/8"	1/4" Solder		0.84
	57090				10.8 {38.0}	14.4 {50.6}					
	71110				13.2 {46.4}	17.6 {61.9}	7/8"	1–1/8"			0.85
	71140				16.8 {59.1}	22.4 {78.7}					

Capacity: Based on condensing temp. 38°C and evaporating temp. 5°C.

DIMENSIONS



Type BHX–45030B to 45050B
(BHX–56070B to 56140B)



Type BHX–57070D to 71140D

Unit: mm

EXPANSION VALVES

Type ATX (R410A)

SAGInoMIYA

GENERAL DESCRIPTION

- Applicable for R410A
- Capacity can be changed by replacing the body sheet assembly.
- Application: General refrigeration and air conditioning system.
- Suitable for refrigeration systems with hot gas defrosting.

TYPE ATX–D

SPECIFICATIONS

- Max. working pressure: 3.3 MPa {33kgf/cm²}
- Adjustable range of static superheat: 1 to 7°C
- ↺ Increase about 0.007MPa / rotation

Charge	Evaporating Temp.(℃)	MOP (℃)	Temp. Condition
			Power Element Temp.: T_S, Sensing Bulb Temp.: T_B
C	10 to −20	—	$T_S \geqq T_B$
CL	−10 to −40		

VALVE NOMENCLATURE

Catalog No. is decided according to the specifications.

Example: ATX (Ⅰ) – 34006 (Ⅱ) B (Ⅲ) V (Ⅳ) C (Ⅴ)

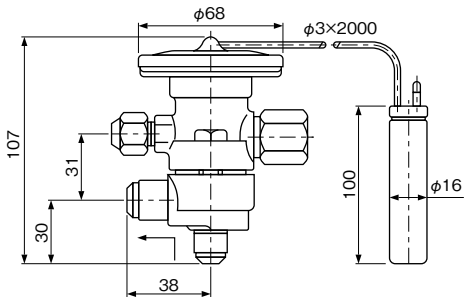
Ⅰ: Type ... ATX–Thermostatic expansion valve for general use.
Ⅱ: Model ... The first and the second digits indicate inlet and outlet pipe size respectively.
The last three digits indicate nominal capacity.
Ⅲ: Connection ... B–Flare Nut Connection D–Solder Connection
Ⅳ: Refrigerant ... V = R410A
Ⅴ: Charge type ... C = C–charge, CL = CL–charge

TYPE NUMBER SELECTION

Catalog No.					Capacity (U.S.R.T.){kW}	Connection			Wt. (kg)
Type	Model	Connection	Refrigerant	Charge	CT38℃ ET5℃	Inlet	Outlet	Equalizer	
ATX–	34006	B (Flare) or D (Solder)	V (R410A)	C CL	1.10 {3.85}	3/8" 〔3/8"OD〕	1/2" 〔1/2"OD〕	1/4" Flare	1.2 (B) 1.1 〔D〕
	34013				2.32 {8.14}				
	34023				3.98 {14.0}				
	34035				6.05 {21.3}				
	34045				7.77 {27.3}				
	57060	D (Solder)			10.7 {37.6}	5/8"OD or 7/8"ID	7/8"OD or 1-1/8"ID		1.3
	57080				14.3 {50.3}				
	71110				19.6 {69.0}				
	71140				24.9 {87.4}				
	71160				28.6 {101}				
	12220				39.4 {139}	1"OD or 1-1/4"ID	1"OD or 1-1/4"ID		1.5
	12270				48.2 {170}				
	12330				58.6 {206}				
	12420				74.2 {261}				
	12500				89.2 {314}				

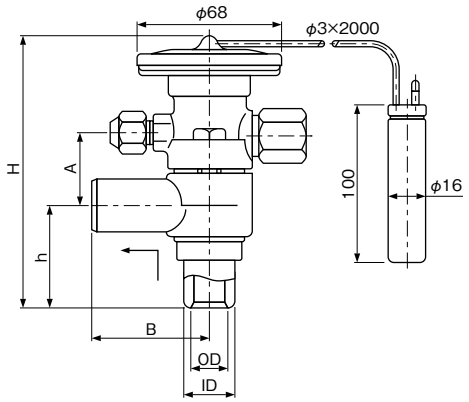
DIMENSIONS

Type ATX–B



Type	H	h	A	B
ATX–34006D to 34045D	107	30	31	38
ATX–57060D to 71160D	132	52	34	51
ATX–12220D to 12500D	138	56	36	

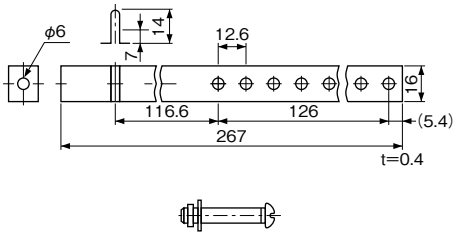
Type ATX–D



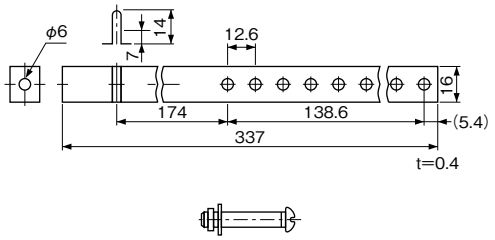
ACCESSORY

• Sensing Bulb Mounting Band

For Type ATX–34006 to 71160



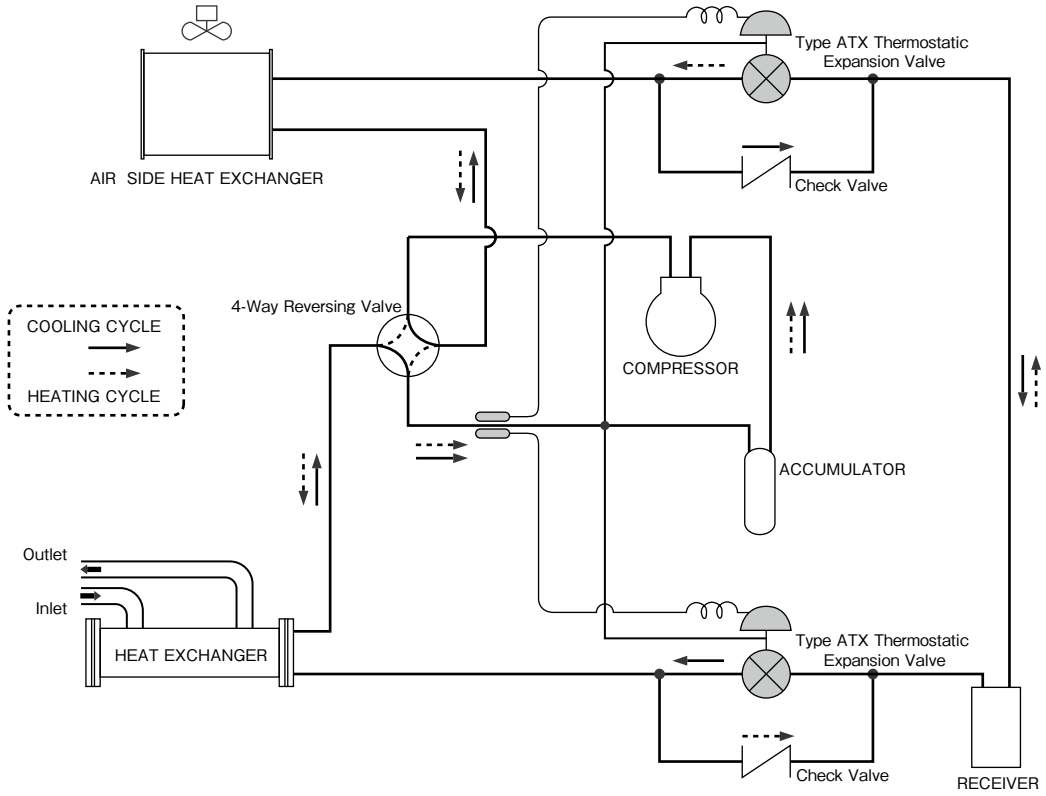
For Type ATX–12220 to 12500



SYSTEM EXAMPLE

Heat Pump Chiller System

• In case of using ATX in heat pump circuits, sensing bulb and external equalizer shall be mounted at a position between 4way reversing valve and accumulator.



EXPANSION VALVES

Type ATX

SAGINOMIYA

GENERAL DESCRIPTION

- Capacity can be changed by replacing the body sheet assembly.
- Application: General refrigeration and air conditioning system.
- In the case of −20°C less, S–charge type is best suited for heat-pump air conditioners and unloading system attached device evaporation temperature.

Type ATX–B

Type ATX–D

SPECIFICATIONS

- Max. working pressure:
  2.8 MPa {28kgf/cm²} ..... (S, SL, CY–charge)
  3.3 MPa {33kgf/cm²} ..... (S–charge for R407C)
  1.4 MPa {14kgf/cm²} ..... (G, L, C, CL–charge)
- Adjustable range of static superheat:
  3 to 13°C ..... (G, L, CL–charge)
  0 to 13°C ..... (CY–charge)
  0 to 8°C ..... (S–charge)
  1 to 7°C ..... (S, SL–charge for R404A)
- ↺ Increase about 0.007MPa / rotation

VALVE NOMENCLATURE

Catalog No. is decided according to the specifications.

Example: $\frac{\text{ATX}}{\text{Ⅰ}} - \frac{34006}{\text{Ⅱ}} \frac{\text{B}}{\text{Ⅲ}} \frac{\text{H}}{\text{Ⅳ}} \frac{\text{L}}{\text{Ⅴ}}$

Ⅰ: Type..... ATX–Thermostatic expansion valve for general use.
Ⅱ: Model..... The first and second digits indicate inlet and outlet pipe size respectively.
The last three digits indicate nominal capacity.
Ⅲ: Connection..... B–Flare Nut Connection, D–Solder Connection
Ⅳ: Refrigerant..... M = R134a, H = R22, U = R404A, P = R407C
Ⅴ: Charge type..... G = G–charge, L = L–charge, C = C–charge, CL = CL–charge, CY = CY–charge, S = S–charge, SL = SL–charge

TYPE NUMBER SELECTION

Catalog No.					Capacity (U.S.R.T.) {kW}					Connection			Capil.Tube Length (mm)	Wt. (kg)
Type	Model	Connection	Refrigerant	Charge	R22	R134a	R404A	R407C	R404A(SL)	Inlet	Outlet	Equalizer		
ATX–	34006	B (Flare)	M (R134a) H (R22) U (R404A) P (R407C)	S (R134a R22 R404A R407A) SL (R404A) G L C CL (R22)	1.0 {3.51}	0.7 {2.46}	0.7 {2.46}	1.0 {3.51}	0.3 {1.16}	3/8"	1/2"	1/4" Flare	φ3 × 1500	1.2
	34013				2.1 {7.39}	1.6 {5.63}	1.5 {5.27}	2.2 {7.74}	0.8 {2.90}					
	34023				3.6 {12.7}	2.8 {9.85}	2.7 {9.49}	3.7 {13.0}	1.4 {4.78}					
	34035				5.5 {19.3}	4.2 {14.8}	4.0 {14.1}	5.7 {20.0}	2.0 {7.19}					
	34045				7.0 {24.8}	5.4 {19.0}	5.1 {17.9}	7.2 {25.3}	2.6 {9.23}					

* Capillary tube length: 2000mm for S–charge valve as standard.
・ Capacity: Based on condensing temp. 38℃ and evaporating temp. 5℃. (−30℃ for SL–charge).

TYPE NUMBER SELECTION

Catalog No.					Capacity (U.S.R.T.) {kW}					Connection			Capil. TubeLength (mm)	Wt. (kg)
Type	Model	Connection	Refrigerant	Charge	R22	R134a	R404A	R407C	R404A(SL)	Inlet	Outlet	Equalizer		
ATX–	34006	D (Solder)	M (R134a) H (R22) U (R404A) P (R407C)	S (R134a R22 R404A R407C) SL (R404A) G L C CL (R22)	1.0 {3.51}	0.7 {2.46}	0.7 {2.46}	1.0 {3.51}	0.3 {1.16}	3/8" OD	1/2" OD	1/4" Flare	ϕ3 × 1500	1.1
	34013				2.1 {7.39}	1.6 {5.63}	1.5 {5.27}	2.2 {7.74}	0.8 {2.90}					
	34023				3.6 {12.7}	2.8 {9.85}	2.7 {9.49}	3.7 {13.0}	1.4 {4.78}					
	34035				5.5 {19.3}	4.2 {14.8}	4.0 {14.1}	5.7 {20.0}	2.0 {7.19}					
	34045				7.0 {24.8}	5.4 {19.0}	5.1 {17.9}	7.2 {25.3}	2.6 {9.23}					
	57060				9.7 {34.1}	7.2 {25.4}	6.8 {23.9}	10.0 {35.1}	3.7 {12.9}	5/8" OD or 7/8" ID	7/8" OD or 1–1/8" ID		ϕ3 × 2000	1.3
	57080				13.0 {45.7}	9.6 {33.7}	9.1 {32.0}	13.4 {47.1}	4.9 {17.3}					
	71110				17.8 {62.6}	13.2 {46.4}	12.5 {44.0}	18.3 {64.3}	6.9 {24.4}					
	71140				22.6 {79.4}	16.8 {59.1}	16.0 {56.3}	23.3 {81.9}	8.7 {30.7}					
	71160				26.0 {91.6}	19.2 {67.5}	18.2 {64.0}	26.8 {94.2}	10.0 {35.0}					
	12220				35.8 {126}	26.4 {92.8}	25.1 {88.3}	36.9 {130}	13.7 {48.2}	1" OD or 1–1/4" ID	1" OD or 1–1/4" ID		ϕ3 × 3000	1.5
	12270				43.5 {154}	32.4 {114}	30.8 {108}	44.8 {158}	16.9 {59.3}					
	12330				53.4 {187}	39.6 {140}	37.6 {132}	55.0 {193}	20.6 {72.4}					
	12420				67.6 {237}	50.4 {177}	47.9 {168}	69.6 {245}	27.6 {97.1}					
	12500				81.0 {285}	60.0 {211}	57.0 {200}	83.4 {293}	33.0 {116}					

* Capillary tube length: 2000mm for S–charge valve as standard.
・ Capacity: Based on condensing temp. 38℃ and evaporating temp. 5℃.(−30℃ for SL–charge).

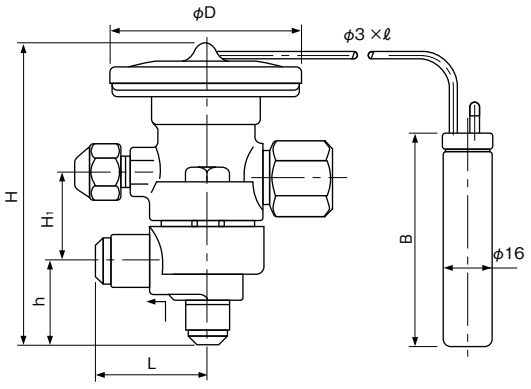
Extreme Low Temperature Model (− 70°C to − 40°C)

Catalog No.					Capacity (U.S.R.T.) {kW}	Connection			Capil. Tube Length (mm)	Wt. (kg)
Type	Model	Connection	Refrigerant	Charge	R22	Inlet	Outlet	Equalizer		
ATX–	34006	B (Flare) or D (Solder)	H (R22)	CY (Extreme Low)	1.39 {4.88}	3/8"OD	1/2"OD	1/4" Flare	ϕ3 × 2000	1.2 (Flare) 1.1 (Solder)
	34013				3.21 {11.3}					
	34023				5.40 {19.0}					
	34035				7.56 {26.6}					
	34045				9.74 {34.3}					
	57060	D (Solder)			11.3 {39.8}	5/8"OD or 7/8"ID	7/8"OD or 1-1/8"ID			1.3
	57080				15.3 {53.7}					

・ Capacity: Based on condensing temp. 40℃ and evaporating temp. −60℃, sub-cooling 50℃.

DIMENSIONS

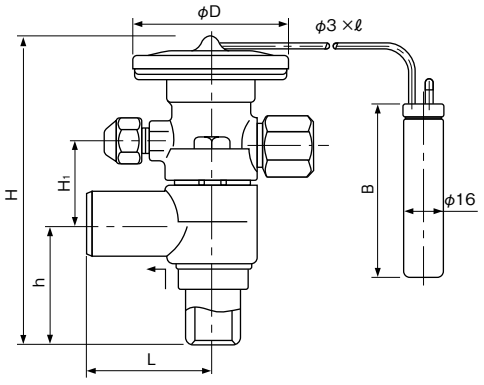
Type ATX–B



Catalog No.			Unit: mm						
Type	Model	Connection	L	H	H1	h	ϕD	ℓ	B
ATX–	34006	B (Flare) or D (Solder)	38	107	31	30	64	1500	76
	34013								
	34023								
	34035								
	34045								
	57060	D (Solder)	51	132	34	52		2000	
	57080								
	71110								
	71140								
	71160								
	12220			138	138	56	68	3000	100
	12270								
	12330								
	12420								
	12500								

・ S,CY,SL–Charge C,CL–Chrage for R410A : ϕD=68, ℓ =2000,B=100

Type ATX–D

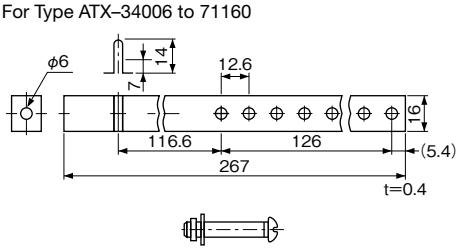


Unit: mm

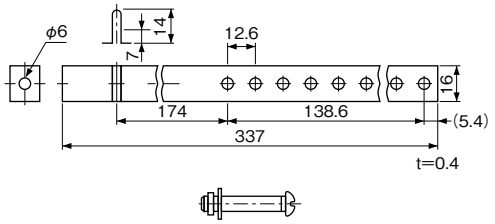
ACCESSORY

• Sensing Bulb Mounting Band

For Type ATX–34006 to 71160



For Type ATX–12220 to 12500



ELECTRONIC EXPANSION VALVES
High Volume OEM Item (Type UKV, VKV, AKV)

Type UKV, VKV, PKV & AKV

SAGINOMIYA

GENERAL DESCRIPTION

- Application: Wide range of air conditioning and refrigeration equipment
- Refrigerant: R22, R134a, R404A, R407C, R410A
- High cool down capability.
- Quick response.
- Less energy consumption.
- Bi-Flow capability. (Type UKV, VKV, AKV)

Type UKV

Type PKV

Type AKV

SPECIFICATIONS

Max. working pressure: 4.2 MPa {42kgf/cm²}
Valve operating pulse range: 0 to 480 pulse, 1–2 phase excitation.

TYPE NUMBER SELECTION

Type UKV – High volume OEM item

Catalog No.	Port Size (φmm)	Capacity (U.S.R.T.) {kW}					Connection (Solder) (mm)		Operating Pressure Differential B to A flow direction (MPa) {kgf/cm²}	Valve shut press on, A to B flow direction (MPa) {kgf/cm²}	Wt. (kg)
		R22	R134a	R404A	R407C	R410A	B side	A side			
UKV–18D	1.8	2.9 {10.3}	2.3 {8.1}	2.1 {7.3}	3.0 {10.6}	3.4 {12.1}	φ6.35 OD	φ6.35 OD	0 to 3.5 {0 to 35}	2.8 {28} or less	0.05
UKV–25D	2.5	5.6 {19.6}	4.4 {15.3}	3.9 {13.8}	5.7 {20.1}	6.5 {23.0}	φ7.94 OD	φ7.94 OD		2.2 {22} or less	
UKV–30D	3.0	7.6 {26.8}	6.0 {20.9}	5.4 {18.9}	7.8 {27.5}	9.0 {31.5}			0 to 2.8 {0 to 28}	1.5 {15} or less	
UKV–32D	3.2	8.2 {28.8}	6.4 {22.5}	5.8 {20.3}	8.4 {29.6}	9.6 {33.9}				1.2 {12} or less	
UKV–40D	4.0	11.1 {39.1}	8.7 {30.6}	7.9 {27.6}	11.4 {40.2}	13.1 {46.0}			0 to 2.1 {0 to 21}	0.7 {7} or less	

- Capacity: Based on CT = 38°C, ET = 5°C, SC = 0°C and SH = 0°C
- Please contact us if other capacity or connection are required.

Type VKV – Middle volume OEM item

Catalog No.	Port Size (φmm)	Capacity (U.S.R.T.) {kW}					Connection (Solder) (mm)		Operating Pressure Differential B to A flow direction (MPa) {kgf/cm²}	Valve shut press on, A to B flow direction (MPa) {kgf/cm²}	Wt. (kg)
		R22	R134a	R404A	R407C	R410A	B side	A side			
VKV–14D	1.4	1.5 {5.2}	1.1 {4.0}	1.0 {3.6}	1.5 {5.3}	1.7 {6.1}	φ7.94 OD	φ7.94 OD	0 to 3.5 {0 to 35}	2.8 {28} or less	0.11
VKV–18D	1.8	2.9 {10.3}	2.3 {8.1}	2.1 {7.3}	3.0 {10.6}	3.4 {12.1}				2.4 {24} or less	
VKV–20D	2.0	3.5 {12.4}	2.7 {9.7}	2.5 {8.7}	3.6 {12.7}	4.1 {14.5}				2.4 {24} or less	0.13
VKV–25D	2.5	5.3 {18.5}	4.1 {14.5}	3.7 {13.1}	5.4 {19.0}	6.2 {21.8}				2.2 {22} or less	
VKV–30D	3.0	7.0 {24.7}	5.5 {19.3}	4.9 {17.4}	7.2 {25.4}	8.3 {29.1}			0 to 2.5 {0 to 25}	1.5 {15} or less	
VKV–32D	3.2	8.2 {28.8}	6.4 {22.5}	5.8 {20.3}	8.4 {29.6}	9.6 {33.9}	φ9.52 OD	φ12.7 OD		1.0 {10} or less	0.15

- Capacity: Based on CT = 38°C, ET = 5°C, SC = 0°C and SH = 0°C
- Please contact us if valves for application of hot gas bypass are required.

Type PKV – Flare connection model type

Catalog No.	Port Size (φmm)	Capacity (U.S.R.T.) {kW}					Connection (Flare)		Operating Pressure Differential (MPa) {kgf/cm²}	Wt. (kg)
		R22	R134a	R404A	R407C	R410A	Inlet	Outlet		
PKV–14BS	1.4	1.5 {5.2}	1.1 {4.0}	1.0 {3.6}	1.5 {5.3}	1.7 {6.1}	3/8"	3/8"	0 to 2.3 {0 to 23}	0.5
PKV–18BS	1.8	2.9 {10.3}	2.3 {8.1}	2.1 {7.3}	3.0 {10.6}	3.4 {12.1}				
PKV–24BS	2.4	5.0 {17.5}	3.9 {13.7}	3.5 {12.3}	5.1 {18.0}	5.9 {20.6}				
PKV–30BS	3.0	7.9 {27.8}	6.2 {21.7}	5.6 {19.6}	8.1 {28.5}	9.3 {32.7}		1/2"	0 to 2.2 {0 to 22}	0.7

- Capacity: Based on CT = 38°C, ET = 5°C, SC = 0°C and SH = 0°C

Type AKV – Large capacity type

Catalog No.	Port Size (φmm)	Capacity (U.S.R.T.) {kW}					Connection (Solder) (mm)		Operating Pressure Differential B to A flow direction (MPa) {kgf/cm²}	Valve shut press on, A to B flow direction (MPa) {kgf/cm²}	Wt. (kg)
		R22	R134a	R404A	R407C	R410A	B side	A side			
AKV–55D	5.5	23.7 {83.4}	18.5 {65.2}	16.7 {58.8}	24.4 {85.6}	27.9 {98.1}	φ15.88 OD	φ15.88 OD	0 to 2.5 {0 to 25}	0.7 {7} or less	0.4
AKV–65D	6.5	28.4 {99.9}	22.2 {78.1}	19.8 {70.4}	29.2 {102.5}	33.4 {117.4}					0.42

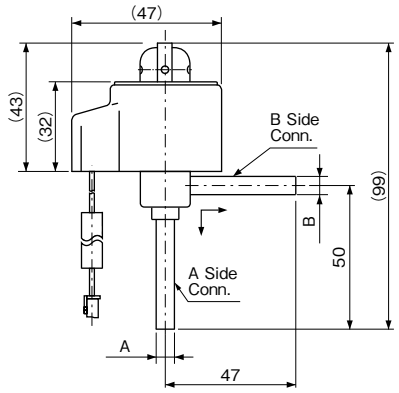
- Capacity: Based on CT = 38°C, ET = 5°C, SC = 0°C and SH = 0°C

Coil

Valve Type	Rated Voltage & Current	Wt.(kg)
Type UKV	12V DC…260mA/Phase	0.13
Type VKV, PKV		0.15
Type AKV	12V DC…375mA/Phase	0.4

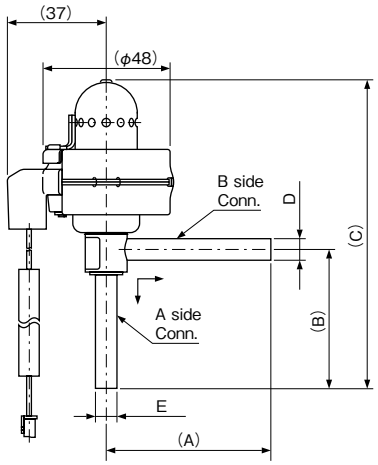
DIMENSIONS

Type UKV



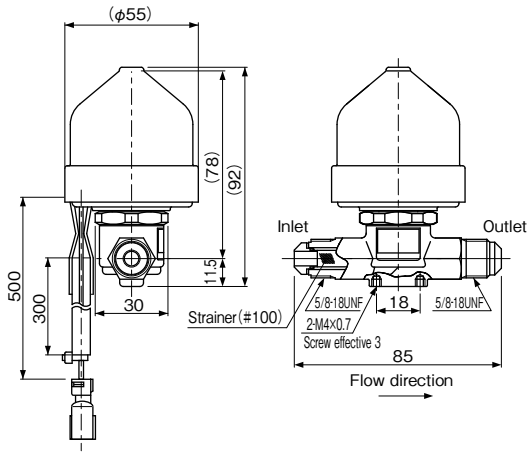
Catalog No.	A	B
UKV–18D		ϕ6.35
UKV–25D		
UKV–30D		ϕ7.94
UKV–32D		
UKV–40D		

Type VKV

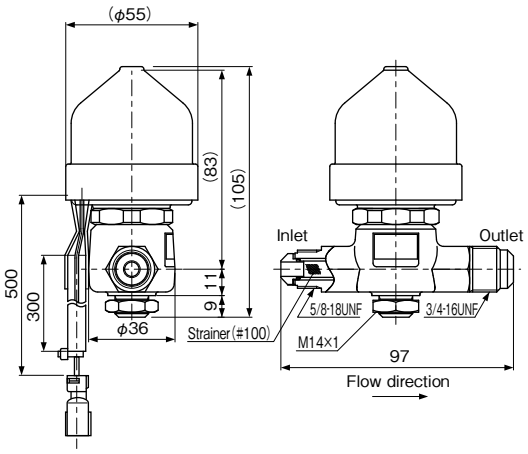


Catalog No.	A	B	C	D	E
VKV–14D	64	49	112	ϕ7.94	
VKV–18D					
VKV–20D					
VKV–25D					
VKV–30D					
VKV–32D	66	64	130	ϕ9.52	ϕ12.7

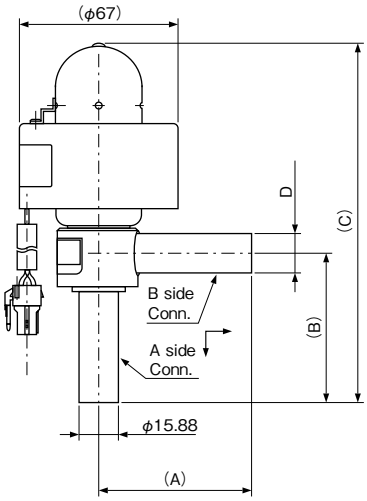
Type PKV–14BS to 24BS



Type PKV–30BS



Type AKV



Unit: mm

Catalog No.	A	B	C	D	E
AKV–55D	64.5	65.5	150	ϕ15.88	
AKV–65D					

ELECTRONIC EXPANSION VALVES
High Volume OEM Item

Type UKV–F

SAGINOMIYA

GENERAL DESCRIPTION

- Application: Residential air conditioner, etc.
- Refrigerant: R22, R134a, R404A, R407C, R410A
- With internal check valve function.
- High cool down capability.
- Quick response.
- Less energy consumption.

Type UKV–F

SPECIFICATIONS

Max. working pressure: 4.2 MPa {42kgf/cm²}
Valve operating pulse range: 0 to 500 pulse, 1–2 phase excitation.

TYPE NUMBER SELECTION

Type UKV–F – With internal check valve function

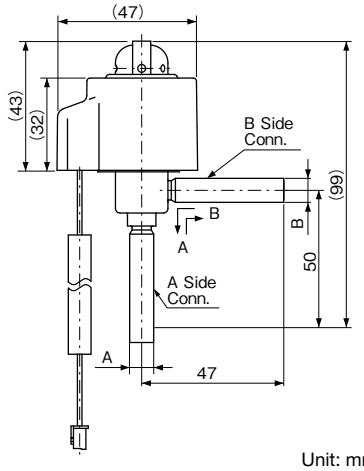
Catalog No.	Port Size (ϕ mm)	Capacity (U.S.R.T.) {kW}					Connection (Solder) (mm)		Operating Pressure Differential (MPa) {kgf/cm²} Flow Direction		Cv Value Flow Direction A to B Full opening position	Wt. (kg)
		R22	R134a	R404A	R407C	R410A	B side	A side	B to A	A to B		
UKV–F19D	1.9	2.9 {10.3}	2.3 {8.1}	2.1 {7.3}	3.0 {10.6}	3.4 {12.1}	ϕ7.94 OD	ϕ7.94 OD	0 to 3.3 {0 to 33}	N/A	0.47	0.05
UKV–F25D	2.5	4.7 {16.5}	3.7 {12.9}	3.3 {11.6}	4.8 {16.9}	5.5 {19.4}						

・ Capacity: Based on CT = 38°C, ET = 5°C, SC = 0°C and SH = 0°C

Coil

Rated Voltage & Current	Wt.(kg)
12V DC…260mA/Phase	0.13

DIMENSIONS

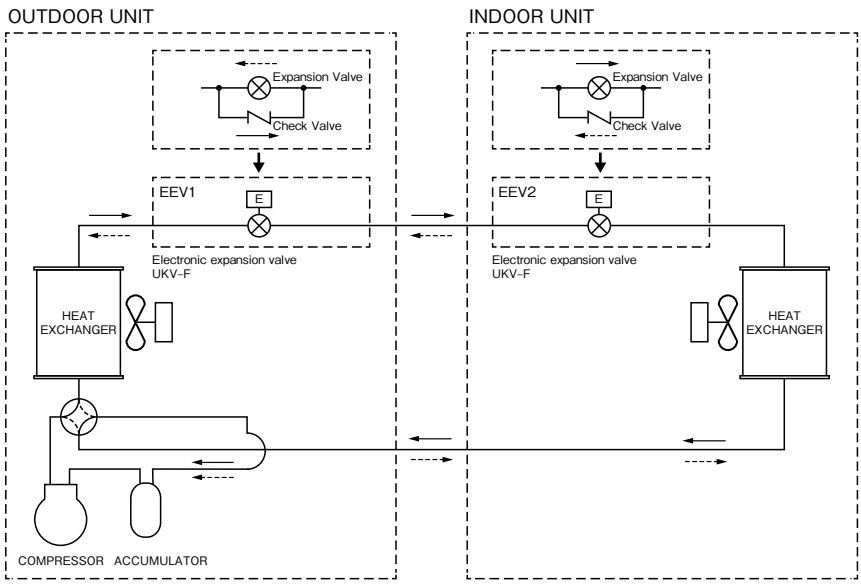


Unit: mm

B → A: Flow when the valve works as an expansion valve.
A → B: Flow when the valve works as a tube.

Catalog No.	A	B
UKV–F19D	ϕ7.94	
UKV–F25D		

APPLICATION EXAMPLE



COOLING CYCLE →
HEATING CYCLE ⇢

COOLING CYCLE
EEV1: Flow when the valve works as a tube.
EEV2: Flow when the valve works as an expansion valve.
HEATING CYCLE
EEV1: Flow when the valve works as an expansion valve
EEV2: Flow when the valve works as a tube.

PULSE CONVERTERS

Type **LNE**

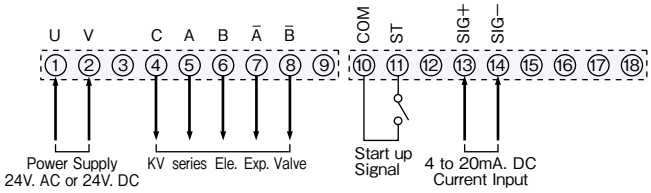
SAGInoMIYA

GENERAL DESCRIPTION

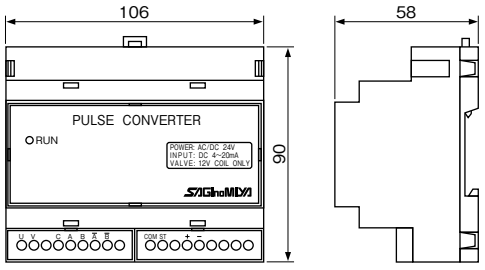
- Can be used for all types of VKV, PKV, and AKV electronic expansion valves.
- Current input is converted to driving pulse output to electronic expansion valve with the pulse converter.
- Convert 4 to 20mA. DC input to 0 to 480 pulse output.

Input	Start up input	No voltage contact signal
	Current input	4 to 20mA. DC
Output	0 to 480 pulse	For VKV, PKV & AKV
Sampling time		0.1, 1, 5, and 10 sec.

WIRING



DIMENSIONS (Type: LNE–ZN20–020)



(Wt. 0.25kg)

Unit: mm

SOLENOID VALVES & CONTROL VALVES

SOLENOID VALVES FOR REFRIGERANT
High Volume OEM Item

Type TEV & VPV

SAGINOMIYA

GENERAL DESCRIPTION

- Direct-operated, pilot operated, 2-way, normally closed valve. Normally open type is available.
- For use with non-corrosive refrigerant.
- Compactly designed for use in small appliances produced in quantity such as room air conditioners, dehumidifiers and ice making machines.
- Various piping configuration available.

Type VPV

Type TEV

SPECIFICATIONS

- Fluid temperature: −30 to 120°C
- Ambient temperature: −30 to 50°C

TYPE NUMBER SELECTION

Unit: MPa {kgf/cm²}

Catalog No.	Port Size (mm)	Cv Value	Connection		O.P.D.		Max. Working Pressure	Operation	Wt. (kg)
			Copper Tube O.D.	Style	Min.	Max.			
TEV–S1220D	1.2	0.037	1/4"	Solder	0	3.6 {36.7}	4.3 {43.8}	Normal Close	0.025
TEV–S1620D	1.6	0.07							
TEV–S1920D	1.9	0.1				2.75 {28}			
VPV–L202D	1.8	0.07	1/4"		0	2.06 {21}		Normal Open	0.06
VPV–603D	5.8	0.65	5/16"		0.005 {0.05}	3.6 {36.7}		Normal Close	0.08
VPV–803DQ50	7.8	1.5	3/8"		0.01 {0.1}	2.75 {28}			0.14
VPV–1204DQ50	11.0	3.0	1/2"		0.015 {0.15}				0.26

・ O.P.D.: Operating Pressure Differential (by air pressure)

ELECTRICAL RATING OF SOLENOID COILS

Type	Rated Voltage		Tolerance (%)	Voltampere		Power Consumption (W)	Insulation Class	Wt. (kg)
				Running	Inrush			
TEV	24V. AC 100V. AC 110V. AC 120V. AC	50/60Hz	±10	9/7	22/16	4.5/3.5	* Class B Molded	0.1
VPV	208V. AC 220V. AC 230V. AC 240V. AC			13/10	36/30	8/7		0.14

Current (A) = Voltampere / Rated Voltage

* IEC compliance

DIMENSIONS

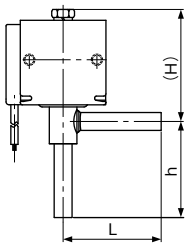


figure 1

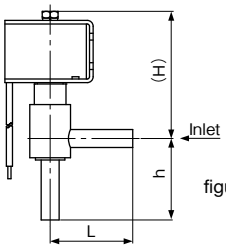


figure 2

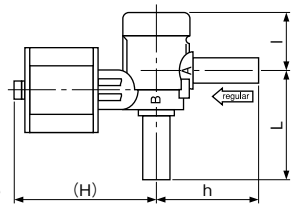


figure 3

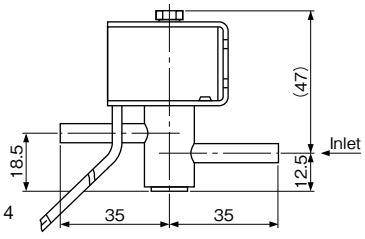


figure 4

Catalog No.		Unit: mm				Form
		L	H	h	I	
TEV–	S1220D	35	40	33	—	figure 1
	S1620D					
	S1920D					
VPV–	603D	36.5	55	36	—	figure 2
	803D	41.5	53.5	38.5	22.5	figure 3
	1204D	61.5	57.5	61.5	28.5	
	L202D	—	—	—	—	figure 4

Unit: mm

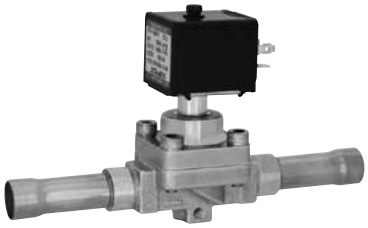
SOLENOID VALVES FOR REFRIGERANT

Type RPV

SAGInoMIYA

GENERAL DESCRIPTION

- New solenoid valves for refrigerant "High-pressure R410A standard"
- Various product line up (Body: 21 types, Coil: DIN plug type, Lead wire type)
- Low power consumption (6W at 50Hz / 4.5W at 60Hz)



Type RPV–D

Type RPV–B

SPECIFICATIONS

- Body test pressure: 6.5MPa (66.2kgf/cm²)
- Fluid temperature: −40 to 125°C
- Ambient temperature: −30 to 50°C

TYPE NUMBER SELECTION

Unit: MPa {kgf/cm²}

Catalog No.	Port Size (mm)	Cv Value	Nominal Capacity (Refrigerants in Liquid) (U.S.R.T.)			Connection		O.P.D.		Max. Working Pressure	Wt. (kg)
			R410A	R134a	R22	Copper Tube O.D.	Style	Min.	Max.		
RPV–302BYF	3	0.27	1.2	1.1	1.2	1/4"	Flare	0	3.6 {36.7}	4.3 {43.8}	0.3
RPV–303BYF		0.30	1.3	1.3	1.4	3/8"					0.3
RPV–602BYF	6	0.60	2.6	2.5	2.7	1/4"					0.4
RPV–603BYF		0.90	3.8	3.8	4.1	3/8"					0.4
RPV–803BYF	8	1.2	5.1	5.1	5.4	3/8"		0.005 {0.05}			0.45
RPV–804BYF		1.4	5.9	5.9	6.3	1/2"					0.45
RPV–1004BYF	10	2.4	10	10	11	1/2"					0.6
RPV–1005BYF		2.4	10	10	11	5/8"					0.6
RPV–1205BYF	12	3.6	15	15	16	5/8"					0.7
RPV–1606BYF	16	5.6	24	24	25	3/4"					1.1
RPV–302DYF	3	0.27	1.2	1.1	1.2	1/4"	Solder	0			0.3
RPV–303DYF		0.30	1.3	1.3	1.4	3/8"					0.3
RPV–602DYF	6	0.60	2.6	2.5	2.7	1/4"					0.4
RPV–603DYF		0.90	3.8	3.8	4.1	3/8"					0.4
RPV–803DYF	8	1.2	5.1	5.1	5.4	3/8"		0.005 {0.05}			0.4
RPV–804DYF		1.4	5.9	5.9	6.3	1/2"					0.4
RPV–1004DYF	10	2.4	10	10	11	1/2"					0.6
RPV–1005DYF		2.4	10	10	11	5/8"					0.6
RPV–1205DYF	12	3.6	15	15	16	5/8"					0.7
RPV–1606DYF	16	5.6	24	24	25	3/4"					1.1
RPV–1607DYF		5.6	24	24	25	7/8"					1.1

- Enclosure Lead wire direct: IP67 / DIN: IP65 (When DIN socket is used)
- Nominal capacities (R410A) are based on ⊿P = 0.015 MPa, condensing temp. = 38°C and evaporating temp. = 5°C
- Weight includes a coil (Without Strainer, Flare nuts, Bracket).

ELECTRICAL RATING OF SOLENOID COILS

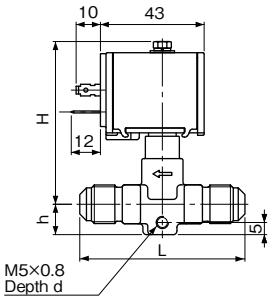
Rated Voltage		Tolerance (%)	Voltampere (VA)		Power Consumption (W)	*1 Insulation Class	Coil Style	
			Running	Inrush			Lead wire	*2 DIN plug
24V.AC	50/60Hz	±10	12.5/9.5	45/44	6/4.5	Class B Molded	○	—
100V.AC								○
200V.AC								
220V.AC								
230V.AC								
240V.AC								
110V.AC	60Hz		9.5	44	4.5			
220.AC–230V.AC	50Hz		10.5-12.5	41-45	5.2-6			

Current (A) = Voltampere / Rated Voltage

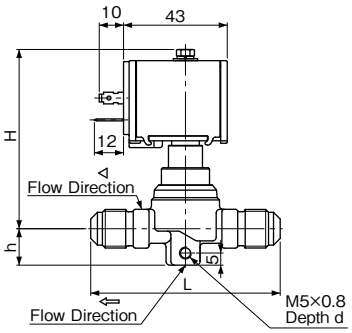
*1 IEC compliance
*2 EN 175301-803 (DIN 43650) / ISO 4400

DIMENSIONS

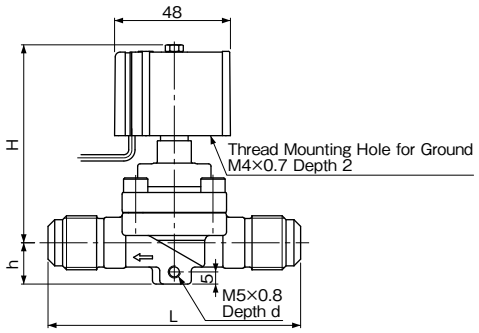
Type RPV–302BYF, 303BYF



Type RPV–602BYF to 804BYF

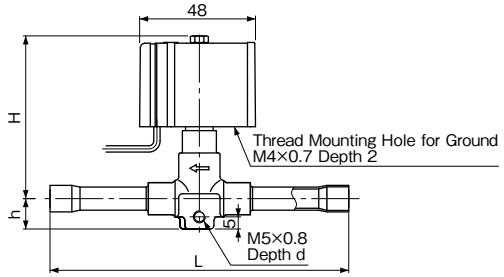


Type RPV–1004BYF to 1606BYF

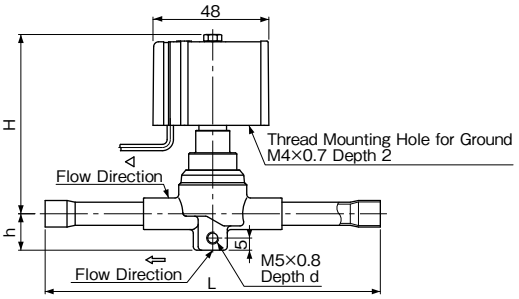


Catalog No.	Unit: mm			
	L	H	h	d
RPV–302BYF	64	67	12.5	12
RPV–303BYF	68	67	12.5	12
RPV–602BYF	71	74	15	12
RPV–603BYF	78	74	15	12
RPV–803BYF	84	75.5	15	14
RPV–804BYF	90	75.5	15	14
RPV–1004BYF	96	77	15.5	17
RPV–1005BYF	101	77	15.5	17
RPV–1205BYF	104	82	17	20
RPV–1606BYF	124	89	19	24

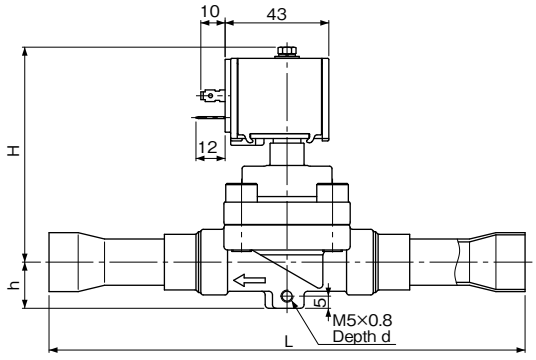
Type RPV–302DYF, 303DYF



Type RPV–602DYF to 804DYF



Type RPV–1004DYF to 1607DYF



Catalog No.	Unit: mm			
	L	H	h	d
RPV–302DYF	123	67	12.5	12
RPV–303DYF	123	67	12.5	12
RPV–602DYF	140	74	15	12
RPV–603DYF	138	74	15	12
RPV–803DYF	141	75.5	15	14
RPV–804DYF	139	75.5	15	14
RPV–1004DYF	158	77	15.5	17
RPV–1005DYF	168	77	15.5	17
RPV–1205DYF	171	82	17	20
RPV–1606DYF	196	89	19	24
RPV–1607DYF	196	89	19	24

Unit: mm

OPTIONAL PARTS

DIN socket for DIN plug coil
Flare Nut

SOLENOID VALVES FOR REFRIGERANT

Type REV & UEV

SAGInoMIYA

GENERAL DESCRIPTION

- Type REV: Pilot operated, 2-way, Normally closed valve.
  Type UEV: Pilot operated, 2-way, Normally opened valve.
- For non-corrosive refrigerant (liquid or gas) in refrigeration, cooling, air conditioning systems.
- "Double plunger" construction provides reliable On/Off action.
- Compact molded coil commonly fits all valve sizes.
- Operates in any position ... can be conveniently located in horizontal or vertical line with coil on top.
- Manual Opening Stem ... On Flange connection models, supplied as standard. On Flare or Solder connection models, supplied upon request.

Type UEV–D

Type REV–D

SPECIFICATIONS

- Fluid temperature: −40 to 125°C (Type REV)
  −40 to 120°C (Type UEV)
- Ambient temperature: −30 to 40°C

TYPE NUMBER SELECTION

Type REV – Normally closed valve (1)

Unit: MPa {kgf/cm²}

Catalog No.	Port Size (mm)	Cv Value	Connection				O.P.D.		Max. Working Pressure	Wt. (kg)
			Copper Tube O.D.		Steel Tube O.D.	Style	Min.	Max.		
REV–703BXF	7	1.0	3/8"		–	Flare	0.007 {0.07}	2.45 {25}	2.94 {30}	0.6
REV–1004BXF	10	2.0	1/2"							0.9
REV–1205BXF	12	3.5	5/8"							1.1
REV–1506BXF	15	5.3	3/4"							1.5
REV–1003GXF	10	2.0	3/8"			Rc				1.0
REV–1204GXF	12	3.5	1/2"							1.3
REV–1506GXF	15	5.3	3/4"							1.7
REV–703DXF	7	1.0	3/8"			Solder				0.5
REV–1004DXF	10	2.0	1/2"							0.8
REV–1205DXF	12	3.5	5/8"							0.9
REV–1506DXF	15	5.3	3/4"							1.1
REV–2007DXF	20	9.0	7/8"							1.6
REV–2010DXF			1"							
REV–2011DXF			1–1/8"							
REV–2511DXF	25	13.8	1–1/8"							2.2
REV–2512DXF			1–1/4"							
REV–2513DXF			1–3/8"							
REV–3213DXF	32	19.4	1–3/8"							3.2
REV–3214DXF			1–1/2"							
REV–3215DXF			1–5/8"							
REV–2006EXF	20	9.0	7/8"	1–1/8"	3/4"	Flange				5.1
REV–2510EXF	25	13.8	1"	1–1/2"	1"					7.7
REV–3212EXF	32	19.4	1–1/4"	1–5/8"	1–1/4"					8.9
REV–4014EXF	40	32.0	1–1/2"	2"	1–1/2"					10.8
REV–5020EXF	50	45.0	2"	2–1/2"	2"					16.3
REV–6524EXF	65	74.0	2–1/2"	3"	2–1/2"					23.2
REV–6530EXF			3"	3–1/2"	3"					26.6

・ Weight includes a coil.
・ Enclosure IP34 (REV–W: Drip proof model)

TYPE NUMBER SELECTION

Type REV – Normally closed valve (2)

Unit: MPa {kgf/cm²}

Catalog No.	Port Size (mm)	Cv Value	Connection		O.P.D.		Max. Working Pressure	Wt. (kg)
			Copper Tube O.D.	Style	Min.	Max.		
REV–703BYF	7	1.0	3/8"	Flare	0.007 {0.07}	2.45 {25}	4.2 {42}	0.6
REV–1004BYF	10	2.0	1/2"					0.9
REV–1205BYF	12	3.5	5/8"					1.1
REV–1506BYF	15	5.3	3/4"					1.5
REV–1003GYF	10	2.0	3/8"	Rc				1.0
REV–1204GYF	12	3.5	1/2"					1.3
REV–1506GYF	15	5.3	3/4"					1.7
REV–703DYF	7	1.0	3/8"	Solder				0.5
REV–1004DYF	10	2.0	1/2"					0.8
REV–1205DYF	12	3.5	5/8"					0.9
REV–1506DYF	15	5.3	3/4"					1.1
REV–2007DYF	20	9.0	7/8"					1.6
REV–2010DYF			1"					
REV–2011DYF			1–1/8"					

・ Weight includes a coil.
・ Enclosure IP34 (REV–W: Drip proof model)

TYPE NUMBER SELECTION

Type UEV – Normally opened valve

Unit: MPa {kgf/cm²}

Catalog No.	Port Size (mm)	Cv Value	Connection		O.P.D.		Max. Working Pressure	Wt. (kg)
			Copper Tube O.D.	Style	Min.	Max.		
UEV–1004BXF	10	2.0	1/2"	Flare	0.007 {0.07}	1.96 {20}	2.94 {30}	0.9
UEV–1205BXF	12	3.5	5/8"					1.1
UEV–1506BXF	15	5.3	3/4"					1.5
UEV–1003GXF	10	2.0	3/8"	Rc				1.0
UEV–1204GXF	12	3.5	1/2"					1.3
UEV–1506GXF	15	5.3	3/4"					1.7
UEV–2010GXF	20	9.0	1"					1.9
UEV–1004DXF	10	2.0	1/2"	Solder				0.8
UEV–1205DXF	12	3.5	5/8"					0.9
UEV–1506DXF	15	5.3	3/4"					1.1
UEV–2007DXF	20	9.0	7/8"					1.6
UEV–2010DXF			1"					
UEV–2011DXF			1–1/8"					

・ Weight includes a coil.
・ Enclosure IP34 (UEV–W: Drip proof model)

ELECTRICAL RATING OF SOLENOID COILS

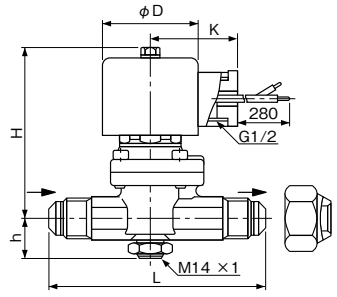
Type	Rated Voltage		Tolerance (%)	Voltampere (VA)		Power Consumption (W)	Insulation Class
				Running	Inrush		
REV	24V.AC, 100V.AC, 110V.AC 200V.AC, 220V.AC, 240V.AC	50/60Hz	+10 −15	17/14	43/35	8/7	* Class B Molded
	12V.DC, 24V.DC 48V.DC, 100V.DC	—	±10	—	—	10	
UEV	24V.AC, 100V.AC, 110V.AC 200V.AC, 220V.AC, 240V.AC	50/60Hz	+10 −15	17/14	43/35	8/7	

Current (A) = Voltampere / Rated Voltage

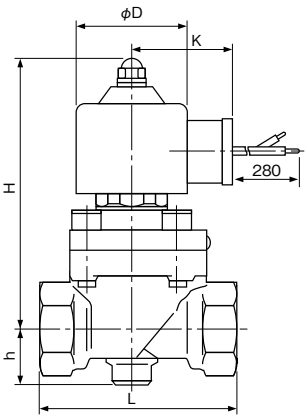
* IEC compliance

DIMENSIONS

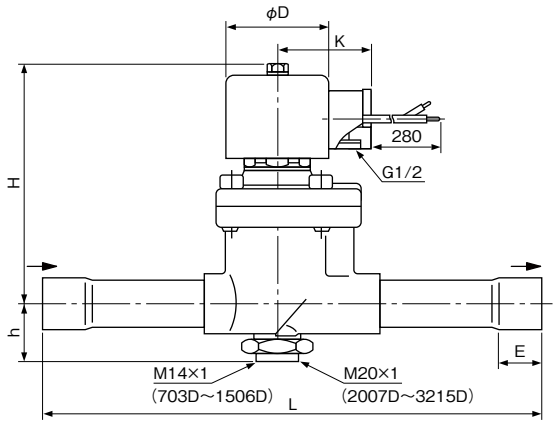
Type REV–B, UEV–BX



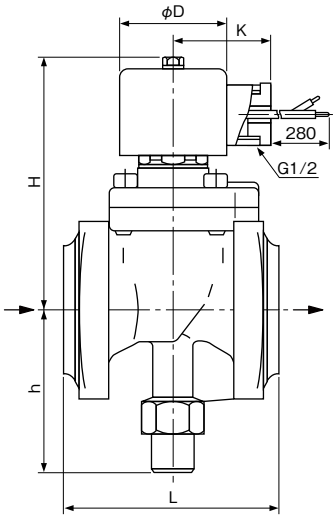
Type REV–G, UEV–GX



Type REV–D, UEV–DX



Type REV–EX



Unit: mm

Catalog No.		Unit: mm					
		L	H	h	E	ϕD	K
REV–	703BX [Y]	90	70 [73]	19	–	48	44
	1004BX [Y]	105	88 [90]	21			
	1205BX [Y]	115	90 [92]	22			
	1506BX [Y]	135	96 [99]	25			
	1003GX [Y]	65	89 [91]	20			
	1204GX [Y]	75	94 [96]	21			
	1506GX [Y]	85	99 [102]	24			
	703DX [Y]	150	70 [73]	19	10		
	1004DX [Y]	160	88 [90]	21	13		
	1205DX [Y]	180	90 [92]	22	16		
	1506DX [Y]	190	96 [99]	25	19		
	2007DX [Y]	230	112 [116]	29	20		
	2010DX [Y]						
	2011DX [Y]						
	2511DX	240	123	31	23		
	2512DX						
	2513DX						
	3213DX	260	126	35	26		
	3214DX						
	3215DX						
	2006EX	95	112	73	–		
	2510EX	110	123	78			
	3212EX	120	126	87			
	4014EX	130	133	92			
	5020EX	170	149	115			
	6524EX	200	169	129			
	6530EX	210					
UEV–	1004BX	105	108	21	–	48	44
	1205BX	115	110	22			
	1506BX	135	116	25			
	1003GX	65	109	20			
	1204GX	75	112	21			
	1506GX	85	119	24			
	2010GX	100	133	33			
	1004DX	160	108	21	13		
	1205DX	180	110	22	16		
	1506DX	190	116	25	19		
	2007DX	230	132	29	20		
	2010DX						
	2011DX						

SOLENOID VALVES FOR WATER

Type WEV

SAGInoMIYA

GENERAL DESCRIPTION

- Pilot operated, 2-way, normally closed valve.
- For water in refrigeration, cooling, air conditioning systems, and general industrial plant.
- Valves for non-corrosive brine are available. To order, specify catalog No. with "B"
  Example: WEV–1504GLW for water
  WEV–1504GLB for glycol, warm water
- Compact molded coil commonly fits all valve sizes.
- Operates in any position ... can be conveniently located in horizontal or vertical line with coil on top.

Type WEV–G


Type WEV–F

TYPE NUMBER SELECTION (SPECIFICATIONS)

Unit: MPa {kgf/cm²}

Catalog No.			Port Size (mm)	Cv Value	Connection		O.P.D.		Max. Working Pressure	Wt. (kg)
Type	Model	Fluid			Steel Tube O.D.	Style	Min.	Max.		
WEV–	1504GL	W (Water)	15	4.3	1/2"	Rc	0.015 {0.15}	0.98 {10}	0.98 {10}	0.6
	2006GL		20	7.8	3/4"					0.8
	2510GL		25	10.4	1"					1.1
	3212GL		32	17.6	1–1/4"					1.6
	4014GL		40	26	1–1/2"					2.4
	5020GL		50	42	2"		0.03 {0.3}			3.6
	1504FL	B (glycol, Warm Water)	15	4.3	1/2"	* Flange (Round Type)	0.015 {0.15}			2.0
	2006FL		20	7.8	3/4"					2.6
	2510FL		25	10.4	1"					3.7
	3212FL		32	17.6	1–1/4"					5.0
	4014FL		40	26	1–1/2"					5.7
	5020FL		50	42	2"		0.03 {0.3}			7.7
	6524FL		65	65	2–1/2"					12.8
	8030FL		80	100	3"					16.5

* Without companion flange (Weight without companion flange and bolts)

- O.P.D.: Operating Pressure Differential (by water pressure)
- Ambient temperature: −30 to 50°C, allowable fluid temperature: 0 to 60°C (Type W), −35 to 90°C (Type B)
- Apparent power: 16VA
- Use of a strainer 80 to 100 mesh at the valve inlet is recommended.
- Weight includes a coil
- Enclosure IP34 (WEV–W: Drip proof model)

ELECTRICAL RATING OF SOLENOID COILS

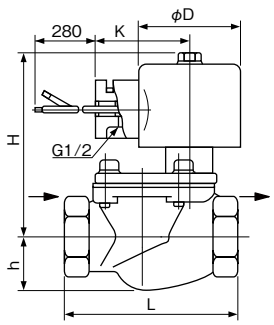
Rated Voltage		Tolerance (%)	Voltampere (VA)		Power Consumption (W)	Insulation Class
			Running	Inrush		
24V.AC, 100V.AC, 110V.AC 200V.AC, 220V.AC, 240V.AC	50/60Hz	±10	18/14	57/47	9/8	* Class B Molded
12V.DC, 24V.DC 48V.DC, 100V.DC	—		—	—	11	

Specify voltage & frequency when order.

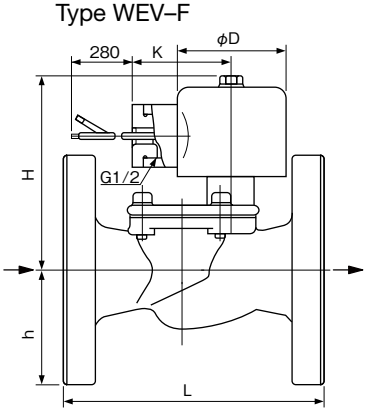
* IEC compliance

DIMENSIONS

Type WEV–G



Type WEV–F



Unit: mm

Catalog No.		Unit: mm				
		L	H	h	ϕD	K
WEV–	1504GL	65	82	19	48	44
	2006GL	80	86	25		
	2510GL	90	91	29		
	3212GL	105	97	36		
	4014GL	120	103	47		
	5020GL	140	126	55		
	1504FL	105	82	48		
	2006FL	115	86	50		
	2510FL	125	91	63		
	3212FL	140	97	68		
	4014FL	150	103	70		
	5020FL	160	126	78		
	6524FL	200	138	88		
	8030FL	240	152	93		

BI-FLOW SOLENOID VALVES
High Volume OEM Item

Type BPV

SAGINOMIYA

GENERAL DESCRIPTION

- Bi-flow controlling applicable. Developed for the purpose of simplification of complicated refrigeration circuit.
- Not only for ordinary refrigeration circuit, suitable for flow change of heat exchanger on multi type heat pump air conditioner.

Type BPV–A

Type BPV–D

SPECIFICATIONS

- Fluid temperature: − 30 to 120°C
- Ambient temperature: − 20 to 60°C

TYPE NUMBER SELECTION

Catalog No.		* Fluid	Port Size (mm)	Cv Value	Bleed Cv Value B → A	Connection		Operation Pressure Differential (MPa)		Max. Working Pressure (MPa)	Wt. (kg)
						Style	Copper Tube O.D.	Min.	Max.		
BPV–	803ADY	Refrigerant	7.8	1.5	Less Than 0.01	Solder	3/8"	0.01	2	4.2	0.31
	1204ADY		11	2.9	Less Than 0.013		1/2"				0.45
	1706ADY		17	6.6			3/4"	0.015			0.9
	1706D			4.4	Less Than 0.015					3.0	1.3
	2210D		22	8.6	Less Than 0.02		1"				2.2
	2514D		(25)	12			1–1/2"				3.5

* Gas line only
- Bleeding will be happen when pressure of B side is higher than A side.
- Weight includes a coil

ELECTRICAL RATING OF SOLENOID COILS

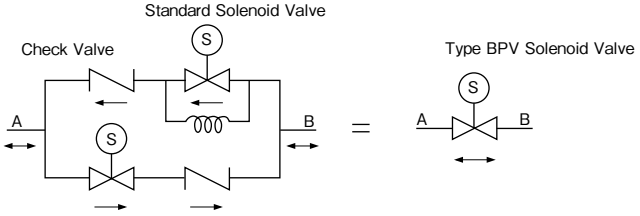
Port Size (mm)	Rated Voltage		Tolerance (%)	Voltampere (VA)		Power Consumption (W)	Insulation Class
				Running	Inrush		
7.8, 11	100V.AC, 200V.AC 220V.AC, 240V.AC	50/60Hz	±10	12/10	36/30	6/5	* Class B Molded
17, 22 (25)				17/14	51/42	7.5/6	

- Current (A)=Voltampere / Rated Voltage

* IEC compliance

Function of Bi-flow Solenoid Valve

Equivalent circuit of type BPV Bi-flow Solenoid Valve is as follow.



DIMENSIONS

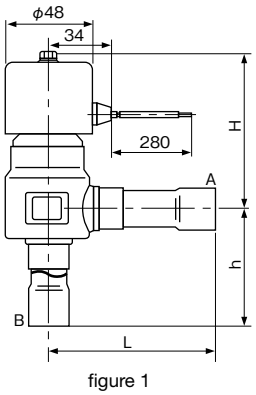


figure 1

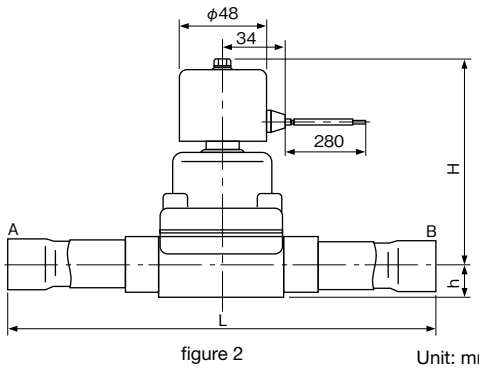


figure 2

Catalog No.		Unit: mm			Form
		L	H	h	
BPV–	803ADY	48	76	48	figure 1
	1204ADY	61	77	60	
	1706ADY	91	85	82	
	1706D	185	100	13	figure 2
	2210D	230	111.5	17.5	
	2514D	260	116.5	21.5	

Unit: mm

3-WAY SOLENOID VALVES

Type IEV

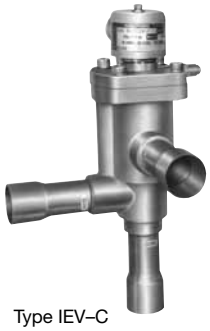
SAGInoMIYA

GENERAL DESCRIPTION

- For non-corrosive refrigerant (gas) in refrigeration units or air.
- Pilot operated, 3-way Distributing valve and Selector valve.

CE mark applicable (available upon request)

Type IEV–B



Type IEV–C

TYPE NUMBER SELECTION (SPECIFICATIONS)

Catalog No.	Port Size (mm)	Cv Value	* Nominal Capacity (Refrigerants in Liquid) (U.S.R.T.)		Connection		O.P.D.		Max. Working Press.	Body Test Press.	Fluid Temp. (°C)	Ambient Temp. (°C)	Operation	Wt. (kg)
			R134a	R22	Copper pipe (O.D.)	Style	Min.	Max.						
IEV–B1505DXF	18	6.3	16	20	5/8"	Solder	0.49 {5.0}	2.25 {22.9}	2.94 {30}	4.41 {45}	−20 to 120	−20 to 50	branched	0.95
IEV–B2007DXF	20	9.0	23	29	7/8"									1.0
IEV–B3211DXF	30	25	65	79	1–1/8"		0.29 {3.0}	2.06 {21}			−20 to 125			2.6
IEV–B3212DXF					1–1/4"									
IEV–B3213DXF					1–3/8"									
IEV–C3211DXF			42	36	1–1/8"								switched	
IEV–C3212DXF					1–1/4"									
IEV–C3213DXF					1–3/8"									

* Nominal capacities are based on ⊿P = 0.014710 MPa {0.15 kgf/cm²}, condensing temp. = 38°C and evaporating temp. = 5°C.

・ O.P.D.: Operating Pressure Differential (by air pressure)

・ Weight includes a coil

ELECTRICAL RATING OF SOLENOID COILS

Port Size (mm)	Rated Voltage		Tolerance (%)	Voltampere (VA)		Power Consumption (W)	Insulation Class
				Running	Inrush		
18, 20	100V.AC, 110V.AC 200V.AC, 220V.AC	50/60Hz	±10	11/9	33/27	6/5	* Class B Molded
30				16/13	40/33	8/7	

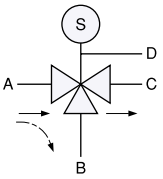
Current (A) = Voltampere / Rated Voltage

* IEC compliance

OPERATION

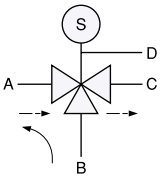
Type IEV–B

Energized: A→C
non Energized: A→B



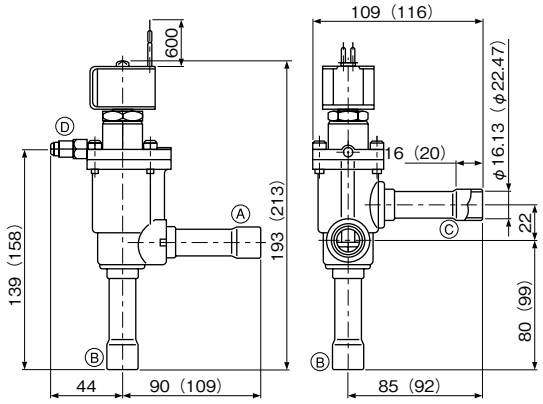
Type IEV–C

Energized: B→A
non Energized: A→C

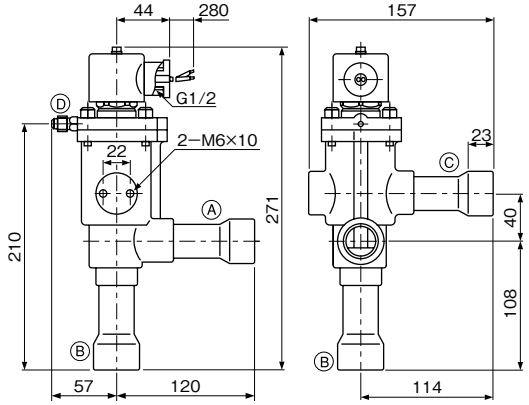


DIMENSIONS

Type IEV–B1505DXF (B2007DXF)



Type IEV–B3211DXF to B3213DXF, C3211DXF to C3213DXF



Unit: mm

4-WAY REVERSING VALVES
High Volume OEM Item (Type STF)

Type STF & VHV

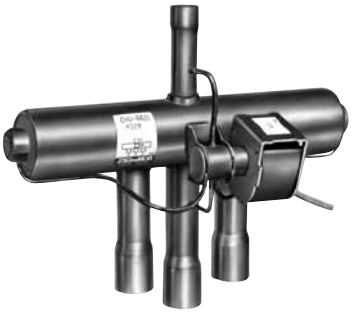
SAGInoMIYA

GENERAL DESCRIPTION

- Pilot operated 4-way reversing valves are suitable for heat pump applications on unitary, split system and window type air conditioners, etc.
- 4-way pilot valve adoption has an advantage on reliable changeover operations.
- Designed to lower the minimum operating pressure difference between high and low side. Pressure drop and valve leakage are minimized.

CE mark applicable (available upon request)
UL listed (available upon request)

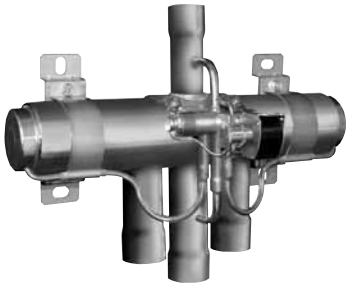
Type STF–H01,H02



Type STF–H04, H07

TYPE NUMBER SELECTION (SPECIFICATIONS)

- Max. working pressure: 4.2MPa {42.8kgf/cm²} (Type STF–H****)
  4.15MPa {42.3kgf/cm²} (Type VHV, STF–****G)
- Ambient temperature: − 20 to 55°C
- Allowable fluid temperature: − 20 to 120°C (STF–H0104 to STF–1511G)
  − 20 to 130°C (STF–2011G to 5001G, VHV–6001)
- Ambient humidity: Less than 95% R.H.



Type STF–25, 30, 40, 50
VHV–60

Catalog No.	Port Size (mm)	Capacity (R410A)		O.P.D. (MPa) {kgf/cm²}		Connection (O.D.)		Wt. (kg)
		(kW)	(U.S.R.T.)	Max.	Min.	Discharge	Suction & Coils	
STF–H0104	8	1.8 to 6.4	0.51 to 1.82	3.1 {31.6}	0.3 {3.1}	5/16"	3/8"	0.2
STF–H0202	11.1	2.0 to 11.4	0.57 to 3.24			3/8"	1/2"	0.32
STF–H0301	11.5	5.3 to 14.6	1.50 to 4.15			1/2"	5/8"	0.37
STF–H0404	16	8.3 to 33	2.36 to 9.39				3/4"	0.77
STF–H0712	20	21 to 53	5.97 to 15.0			3/4"	7/8"	1.32
STF–1511G	23	39 to 59	11.1 to 16.7			7/8"	1–1/8"	1.55
STF–2011G	24	39 to 74	11.1 to 21.0					
STF–2501G	28	52 to 94	14.8 to 26.7			1"	1–1/4"	3.4
STF–3001G	34	65 to 124	18.5 to 35.2			1–1/4"	1–1/2"	4.7
STF–4001G	40	115 to 188	32.7 to 53.4			1–1/2"	1–3/4"	9.1
STF–5001G	50	145 to 225	41.2 to 63.9				2–1/8"	9.4
VHV–6001	60	230 to 360	65.4 to 102			I.D. 1–5/8"	2–5/8"	20.0

・ O.P.D.: Operating Pressure Differential (with air)

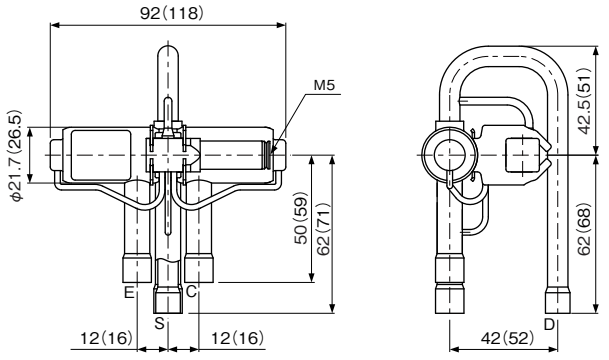
ELECTRICAL RATING OF SOLENOID COILS

Catalog No.	Rated Voltage		Tolerance (%)	Voltampere(VA)		Power Consumption (W)	Insulation Class
				Running	Inrush		
STF–H****	100V. AC 200V. AC	50/60Hz	+10 –15	10/8	30/24	6/5	*
	110V. AC 220V. AC		+10 –10				
	230V. AC 240V. AC			11/9	33/27		
STF–**G VHV**	100V. AC 200V. AC	50/60Hz	+10 –15	13/10	39/30	7/6	Class B Molded
	110V. AC 220V. AC		+10 –10	11/9	33/27	6/5	
	230V. AC 240V. AC						

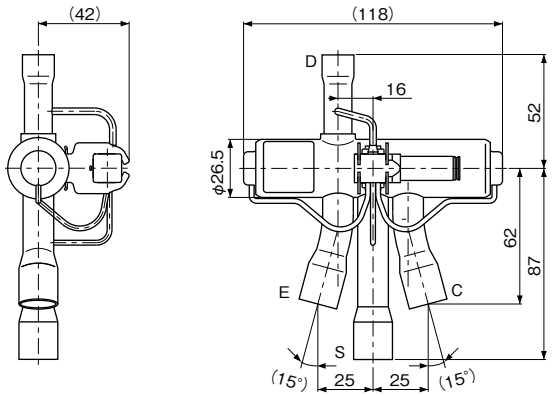
* IEC compliance

DIMENSIONS

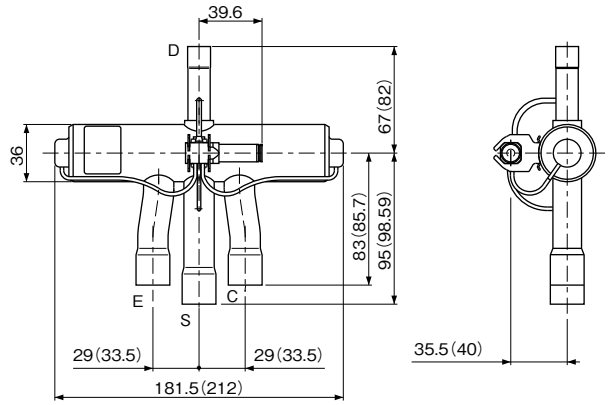
Type STF–H0104 (–H0202)



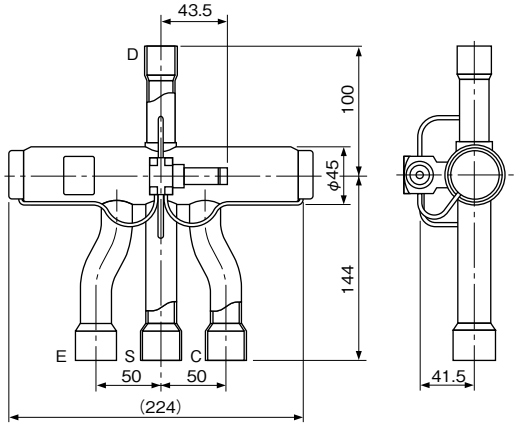
Type STF–H0301



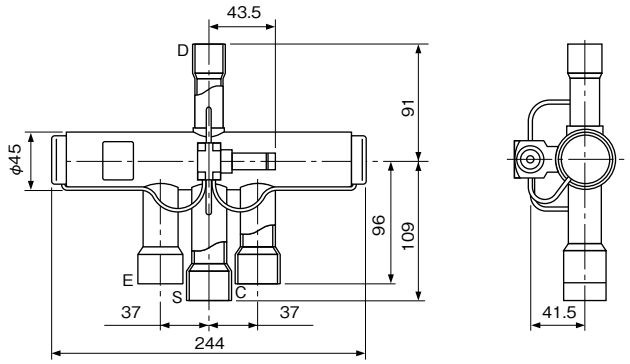
Type STF–H0404 (–H0712G)



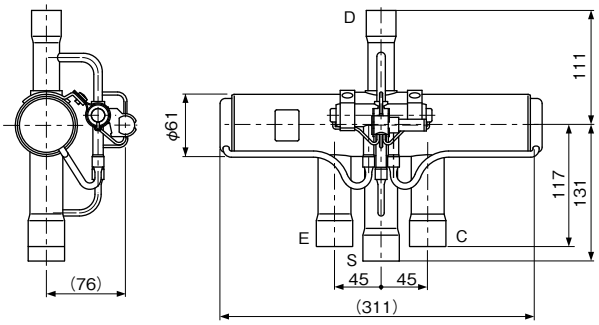
Type STF–1511G



Type STF–2011G

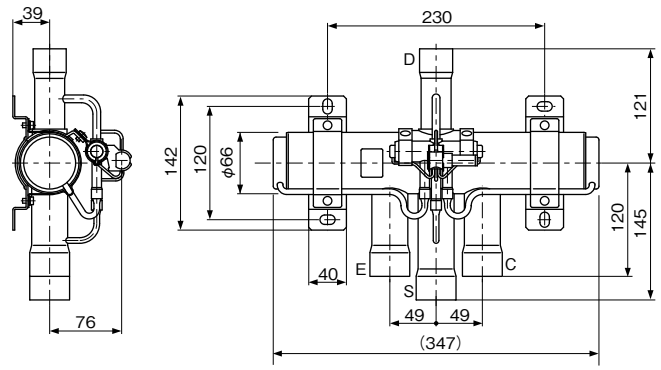


Type STF–2501G

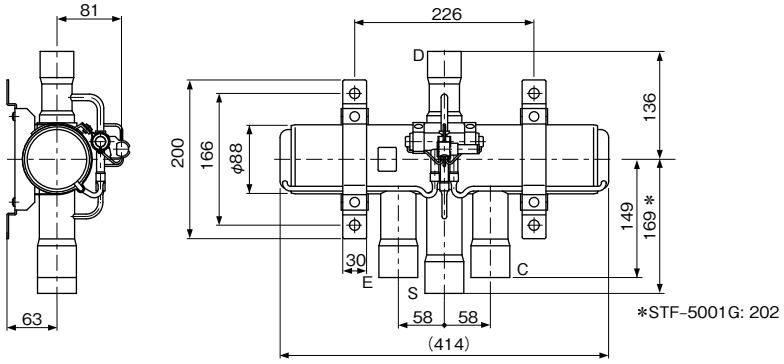


Unit: mm

Type STF–3001G

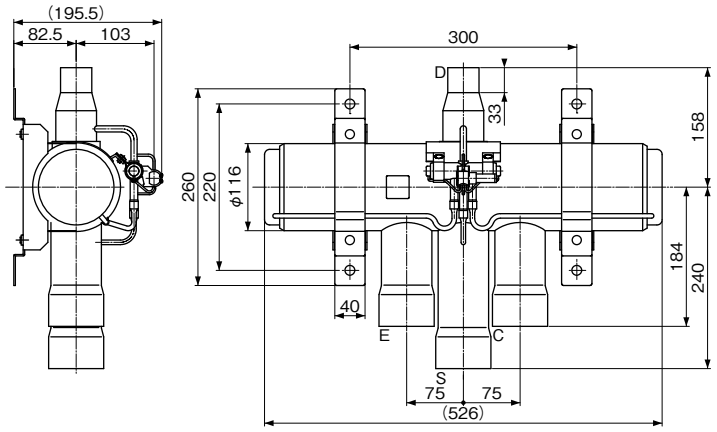


Type STF–4001G, –5001G



*STF–5001G: 202

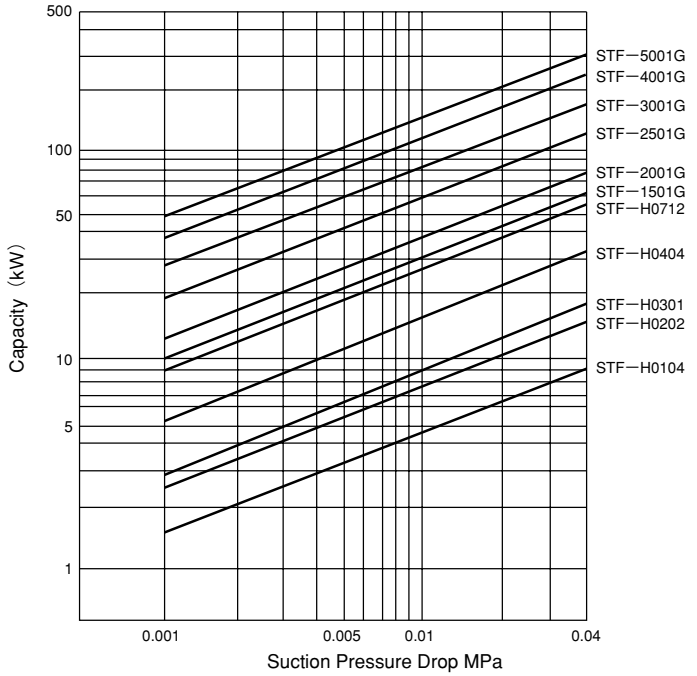
Type VHV–6001



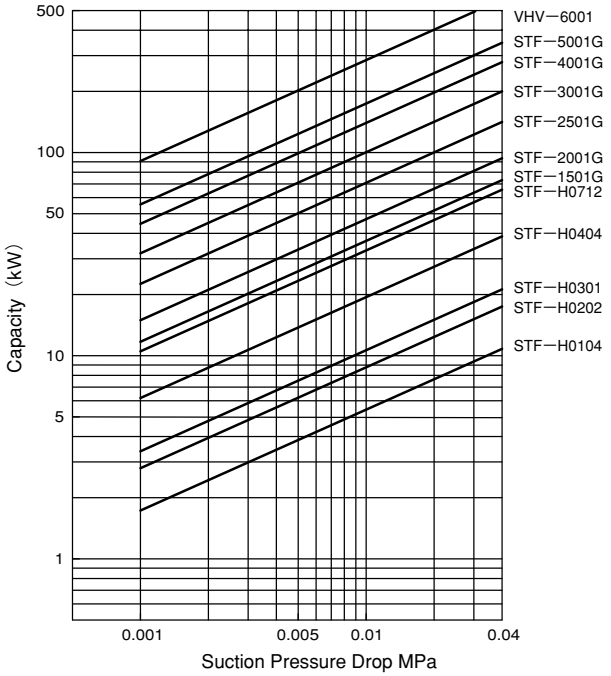
Unit: mm

FLOW RATE (Capacity)

Refrigerant: R22,R407C



Refrigerant: R410A



* Flow Rate Conditions Condensing temp.: 38°C
Evaporator temp.: 5°C
Superheat temp.: 5°C

MOTORIZED BALL VALVES

Type MJV

SAGInoMIYA

GENERAL DESCRIPTION

- Proportional Control valve for hot or chilled water, industrial water and steam circuit.
- Compact & Light weight design, manual operation is also available.
- Various types of water supply Equipments
- Air Handling Units
- Ice Strage Units

Type MJV

SPECIFICATIONS

Item \ Valve Type			Two-way Valve	Two-way Valve for Steam	Three-way Valve
VALVE PART	Water Test Pressure		1.6MPa		
	Air Tight Pressure		1.6MPa		
	Max. Working Pressure		1.6MPa (0.2MPa for Steam)	1.6MPa (0.5MPa for Steam)	1.6MPa
	Fluid		Non-corrosive water and Steam (Hot water and Three-way Valve are not available.)		
	Fluid Temperature		0 to 120°C	0 to 160°C	0 to 90°C
	Flow Characteristics		Equal Percentage		Corrected Linear
	Valve Leakage		Cv: 0.1% or less		—
	Material		Body: Bronze Casting, Seat Ring: Fluoro-resin, O-ring: Fluoro rubber, Spindle: Stainless Steel, Plug: Stainless Steel		
MOTOR PART	Power Supply Voltage		24V.AC±10%, 50/60Hz		
	Max. power Consumption		12VA		
	Housing Construction		Rain-Proof (JIS C 0920 IP53)		
	Ambient Temperature		Operating Temp.: −10 to 50°C, Storage Temp.: −20 to 70°C		
	Timing		Approx. 52 sec.		
	INPUT SIGNAL	Resistance Input	0 to 135Ω		
		Current Input	DC 4 to 20mA (Input Impedance 250Ω)		
		Voltage Input	DC 1 to 5V (Input Impedance 100kΩ), DC 0 to 10V (Input Impedance 250kΩ)		
	Material		Case: PPS Resin, Cover: ABS Resin		
	Manual Operation		Yes		
	Flow Display		O: Open, S: Close		O: C→A Open, S: C→A Close
Movement of Valve			Input Signal 135Ω·4mA·1V·0V:Close		Input Signal 135Ω·4mA·1V·0V: C→A Close

TYPE NUMBER SELECTION

Two-way Valve

Catalog No.			Connection Rc (O.D.)	Cv Value	Max. Operation Press. Differential (MPa)	Connection Fastening Torque (N·m)	Dimension			Wt. (kg)
Type	Model	Input Signal					H	L	D	
MJV–	1504GQ1	70 (Resistance 0 to 135Ω) 71 (4 to 20 mA) 72 (1 to 5 VDC) 73 (0 to 10 VDC)	1/2	1	1	34.3	152	56	32	1.5
	1504GQ2			2						
	1504G			3.5						
	2006G		3/4	6.5		49	155	69	42	1.7
	2510G		1	12		58.8	159	82	50	1.9
	3212G		1–1/4	20	0.8	78.5	165	97	60	2.6
	4014G		1–1/2	30	0.6	83.4	178	106	71	3.2
	5020G		2	45	0.4	98.1	185	128	84	4.6

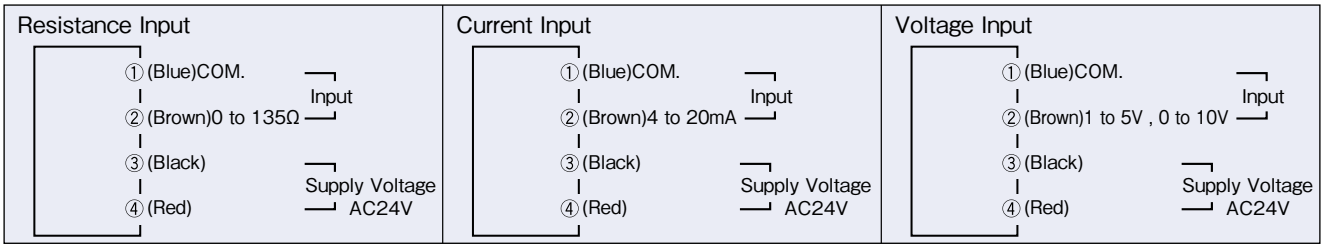
Two-way Valve for Steam

Catalog No.			Connection Rc (O.D.)	Cv Value	Max. Operation Press. Differential (MPa)	Connection Fastening Torque (N·m)	Dimension			Wt. (kg)
Type	Model	Input Signal					H	L	D	
MJV–	H1504GQ1	70 (Resistance 0 to 135Ω) 71 (4 to 20 mA) 72 (1 to 5 VDC) 73 (0 to 10 VDC)	1/2	1	1	34.3	202	56	32	1.8
	H1504GQ2			2						
	H1504G			3.5						
	H2006G		3/4	6.5		49	205	69	42	2.0
	H2510G		1	12		58.8	209	82	50	2.2

Three-way Valve

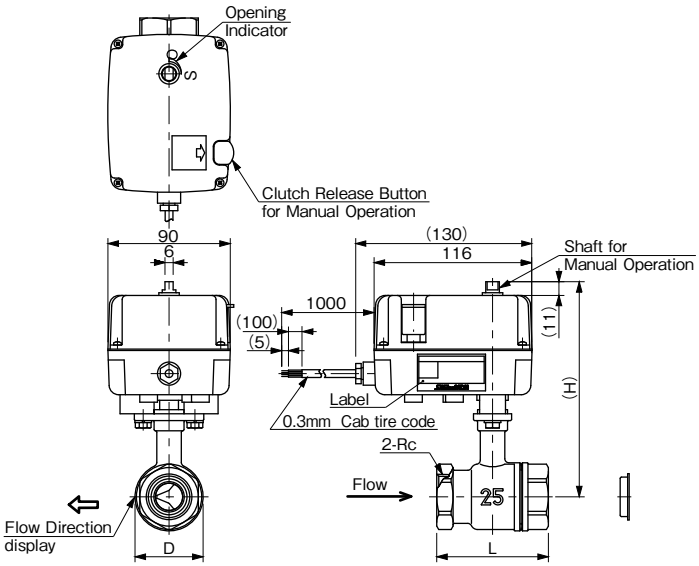
Catalog No.			Connection Rc (O.D.)	Cv Value	Max. Operation Press. Differential (MPa)	Connection Fastening Torque (N·m)	Dimension				Wt. (kg)
Type	Model	Input Signal					H1	H2	H2	L	
MJV–	M1504G	70 (Resistance 0 to 135Ω) 71 (4 to 20 mA) 72 (1 to 5 VDC) 73 (0 to 10 VDC)	1/2	3.5	0.1	34.3	152	30	56	32	1.6
	M2006G		3/4	6.5		49	155	37	69	42	1.8
	M2510G		1	12		58.8	159	44	82	50	2.1
	M3212G		1–1/4	20		78.5	165	51	97	60	2.8
	M4014G		1–1/2	30		83.4	178	57	106	71	3.5
	M5020G		2	45		98.1	185	67	128	84	5.0

Wiring

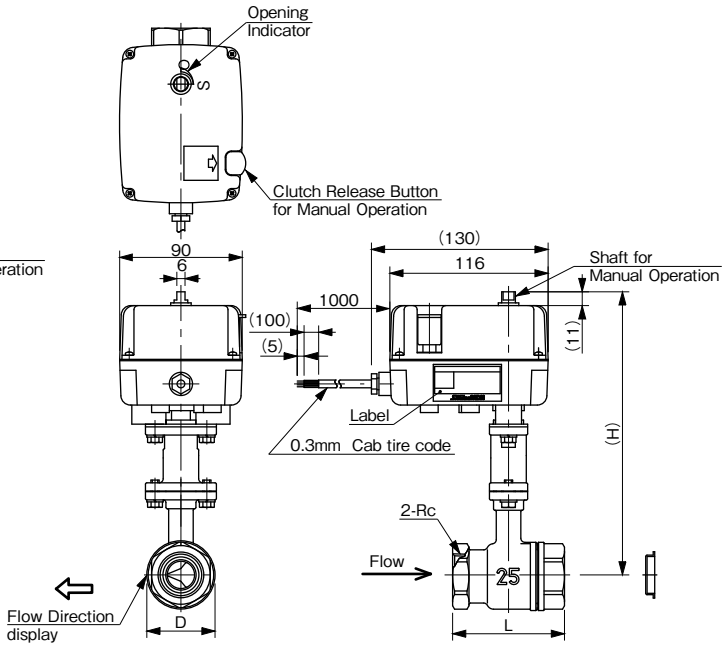


DIMENSIONS

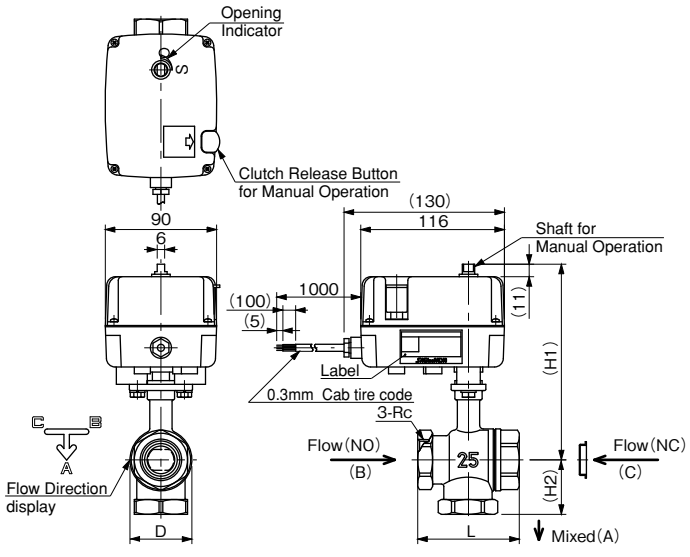
Two-way Valve



Two-way Valve for Steam



Three-way Valve



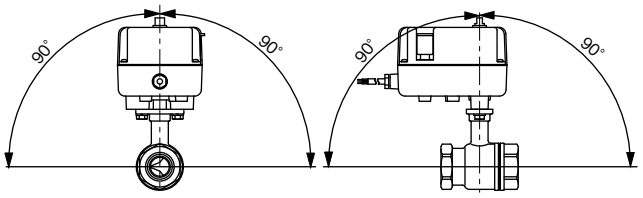
Unit: mm

Manual Operation

- Use a spanner at Manual Operation shaft (Torque:3N·m), with pushing a Clutch Release Button. Manual operation can be carried out by rotating the shaft. Don't operate in energized position for the safty. -- please do not operate it by any means.

Mounting Position

Mounting position should be in the below range.



Opening Indicator: O...Open, S...Close

DAMPER & VALVE MOTOR ACTUATORS

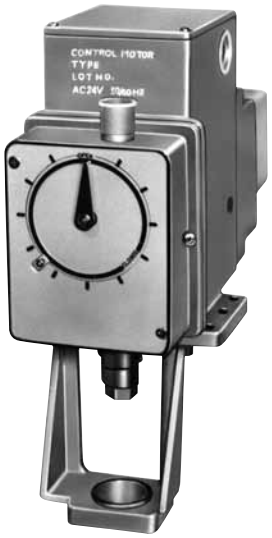
Type EGK & WGK

SAGInoMIYA

GENERAL DESCRIPTION

- Series GK motor actuator can provide On-Off, proportional or floating control of damper, valve or other controlling devices.
- Balancing relay without contact causes no burn-out.
- Type EGK is for damper.
  Type WGK is for valve.

Type EGK



Type WGK

TYPE NUMBER SELECTION (SPECIFICATIONS)

Power requirement: 24V. AC ±10%, 50/60Hz

Max. power consumption: 21VA (without spring return action)
24VA (with spring return action)

Input signal: resistance 0 to 135Ω
Current 4 to 20mA. DC
(Input Impedance 250Ω)
Voltage 1 to 5V. DC
(Input Impedance 100kΩ)

Type: EGK

Torque: 12.2N·m {1.25 kg·m}
(without spring return action)
3.9N·m {0.4 kg·m}
(with spring return action)
Rotation angle: 90 to 270°
(without spring return action)
90 to 160°
(with spring return action)
Delivery Setting 90°
Timing: 80 sec/160°
Ambient temp.: − 20 to 55°C
(without spring return action)
− 10 to 55°C
(with spring return action)
Weight: 4.3kg
(without spring return action)
6.1kg
(with spring return action)

Type: WGK

Thrust: 1220N {125 kgf}
(without spring return action)
390N {40 kgf}
(with spring return action)
Stroke: 14 to 50mm
(without spring return action)
14 to 30mm
(with spring return action)
Delivery Setting 20mm
Timing: 80 sec/stroke 25mm
Ambient temp.: − 20 to 55°C
(without spring return action)
− 10 to 55°C
(with spring return action)
Weight: 5kg
(without spring return action)
6.7kg
(with spring return action)

DAMPER MOTOR SELECTION

Function / Model	On-Off / Floating Control	Without Positioning Balance Relay	With Positioning Balance Relay	With Positioning Balance Relay	
	＊1 On-Off / Floating	＊2 On-Off Servo	＊3 Resistance Input	＊4 Current Input	Voltage Input
Standard	EGK–N500A	EGK–N600 A/S	EGK–N700 A/S	EGK–N701 A/S	EGK–N702 A/S
With Auxiliary Potentiometer	—	EGK–N610 A/S	EGK–N710 A/S	EGK–N711 A/S	EGK–N712 A/S
With Auxiliary Switch	EGK–N520A	EGK–N620 A/S	EGK–N720 A/S	EGK–N721 A/S	EGK–N722 A/S

VALVE MOTOR SELECTION

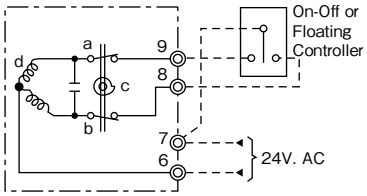
Function / Model	On-Off / Floating Control	Without Positioning Balance Relay	With Positioning Balance Relay	With Positioning Balance Relay	
	＊1 On-Off / Floating	＊2 On-Off Servo	＊3 Resistance Input	＊4 Current Input	Voltage Input
Standard	WGK–N500A	WGK–N600 A/S	WGK–N700 A/S	WGK–N701 A/S	WGK–N702 A/S
With Auxiliary Potentiometer	—	WGK–N610 A/S	WGK–N710 A/S	WGK–N711 A/S	WGK–N712 A/S
With Auxiliary Switch	WGK–N520A	WGK–N620 A/S	WGK–N720 A/S	WGK–N721 A/S	WGK–N722 A/S

＊ 1. The motor actuates with On-Off or floating signal from sensor.
＊ 2. The motor actuates with proportional signal from electronic sensor (Example: Type RBE Control Unit).
＊ 3. The motor actuates with the signal between 0 and 135Ω from electric sensor (Example: Type PWS Thermostat).
＊ 4. Spring Return Type is so designed that actuator shaft returns to safe side on current failure.
・ Auxiliary potentiometer is to provide the signal between 0 and 135Ω in accordance with motor angular rotation for output.
・ Auxiliary switch provides the contact signal of S.P.D.T. for output.
・ Enclosure: IP62

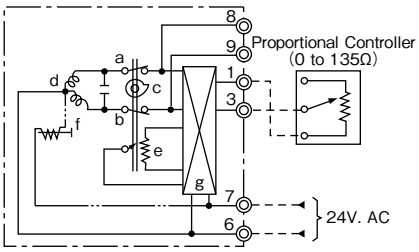
INTERNAL WIRINGS

- Check power supply to be 24V. AC ±10%.
- Wiring is to be based on the technical standard of electrical installation. Be assured to use covered copper wire larger than 1.2 mm dia.
- Terminal wiring should be conducted with flexible wire of adequate length to prevent wire disconnection from slight move of the motor.

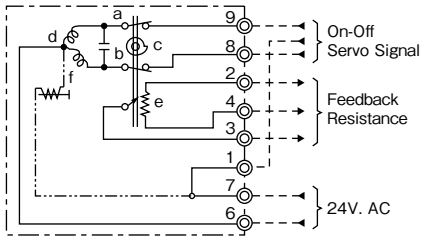
EGK–N500A, WGK–N500A



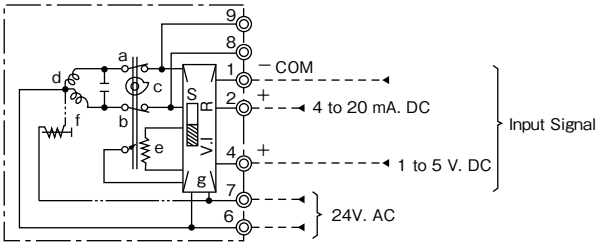
EGK–N700A/S, WGK–N700A/S



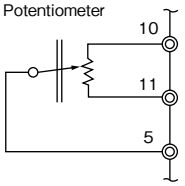
EGK–N600A/S, WGK–N600A/S



EGK–N701A/S, N702A/S, WGK–N701A/S, N702A/S

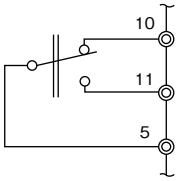


Auxiliary Potentiometer



EGK–N □ 1 □ A/S
WGK–N □ 1 □ A/S

Auxiliary Switch



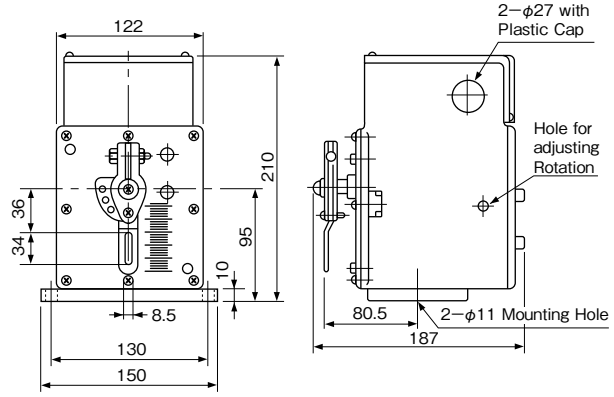
EGK–N □ 2 □ A/S
WGK–N □ 2 □ A/S

◎ Terminals
——— Motor Internal Wiring
- - - - - Motor External Wiring
—·—·— Spring Return Type Only

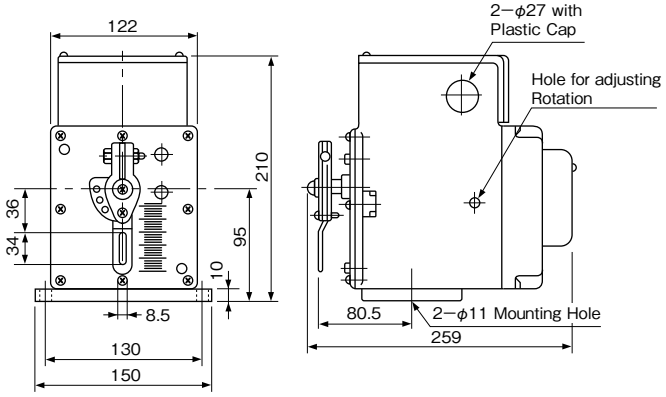
a: Upper Limit Switch
b: Lower Limit Switch
c: Cam
d: Condenser Motor
e: Feedback Potentiometer
f : Spring Return Releasing Magnet
g: Balance Relay

DIMENSIONS

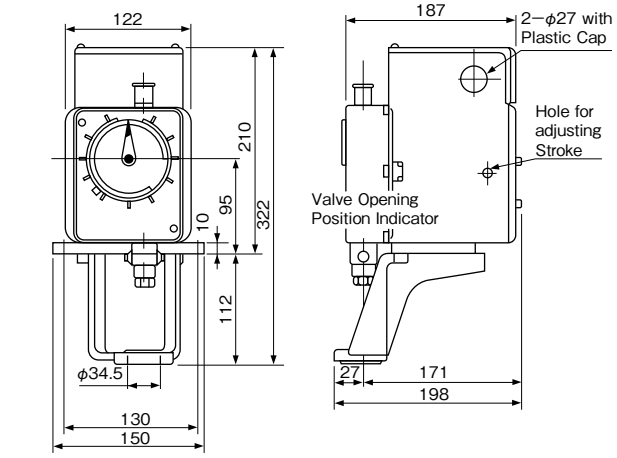
Type EGK–N···A



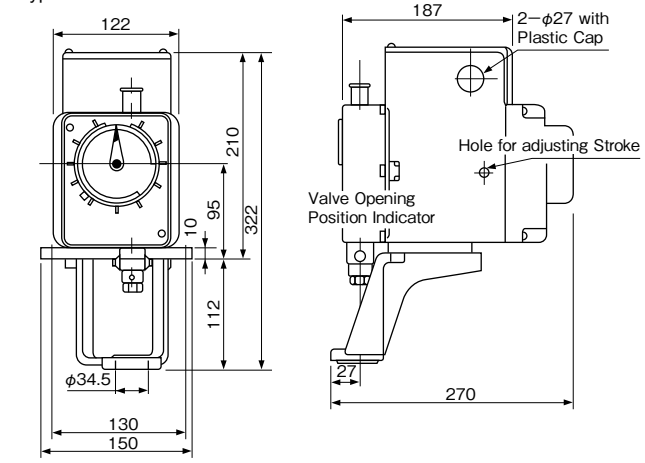
Type EGK–N···S



Type WGK–N···A



Type WGK–N···S



2-WAY & 3-WAY CONTROL VALVES

Type NVK

GENERAL DESCRIPTION

- Type NVK control valves are accompanied by Saginomiya type WGK motor for two position (On-Off), floating or proportional control.
- For use with low or high pressure hot and chilled water or non-corrosive fluid.
- NVK ... 2-way valve (single seated type)
  NVK–W ... 2-way valve (double seated type)
  NVK–M ... 3-way valve (mixing valve)
- Wide model selection available for various applications.
- V-port plug provides almost linear flow characteristic.

Type NVK–G

Type NVK–F

TYPE NUMBER SELECTION (SPECIFICATIONS)

Type NVK – 2-way valve

Item \ Model	NVK– ＊＊＊＊ GL	NVK– ＊＊＊＊ FL	NVK– ＊＊＊＊ FP	NVK–W ＊＊＊＊ FL
Connection	Rc	Flange (JIS 10K)	Flange (JIS 20K)	Flange (JIS 10K)
Fluid	Non-corrosive Water and Steam			
Max. Working Press.	0.98MPa {10 kgf/cm²}		1.96MPa {20 kgf/cm²}	0.98MPa {10 kgf/cm²}
Fluid Temp. (°C)	0 to 200		0 to 250	0 to 200
Flow Characteristic	Equal Percentage			
Material of Body	CAC406	FC200	FCD–S	FC200
Material of Plug	SCS14			
Material of Seat Ring	SUS316			
Material of Stem	SUS304			

Type NVK–M – 3-way valve

Item \ Model	NVK–M ＊＊＊＊ GL	NVK–M ＊＊＊＊ FL
Connection	Rc	Flange (JIS 10K)
Fluid	Non-corrosive Water for Air conditioning	
Max. Working Press.	0.98MPa {10 kgf/cm²}	
Fluid Temp. (°C)	0 to 200	
Flow Characteristic	Equal Percentage	
Material of Body	CAC406	FC200
Material of Plug	SCS14	
Material of Seat Ring	SUS316	
Material of Stem	SUS304	

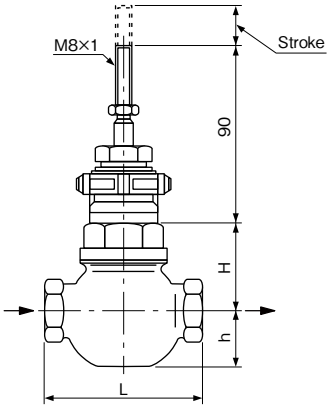
Type NVK – 2-way valve

Catalog No.		Port Size (mm)	Connection		Cv	Stroke (mm)	Close off Rating MPa {kgf/cm²}			Dimensions (mm)			Wt. (kg)
			Tube O.D.	Style			WGK–N＊A	WGK–N＊S	WGK–N＊L	L	H	h (h2)	
NVK–	1504GL@1	15	1/2"	Rc	1	20	0.98 {10}	0.98 {10}	0.98 {10}	80	43	28	0.9
	1504GL@2				2.5								
	1504GL				5			0.66 {6.7}					
	2006GL	20	3/4"		8			0.38 {3.9}					0.95
	2510GL	25	1"		12			0.24 {2.4}		90	48	29	1.2
	3212GL	32	1–1/4"		20		0.95 {9.7}	0.14 {1.4}		105	50	30	1.6
	4014GL	40	1–1/2"		30		0.61 {6.2}	0.09 {0.9}		120	60	35	2.4
	5020GL	50	2"		45		0.40 {4.1}	0.05 {0.5}	0.67 {6.8}	140	68	46	3.6
	6524FL	65	2–1/2"	Flange (JIS 10K)	70	30	0.28 {2.9}	0.044 {0.45}	0.48 {4.9}	276	125	87.5	19.9
	8030FL	80	3"		110		0.19 {1.9}	0.028 {0.29}	0.31 {3.2}	298	149	92.5	25
	10040FL	100	4"		180	40	0.12 {1.2}	—	0.2 {2}	352	169	105	36
	1504FP@1	15	1/2"	Flange (JIS 20K)	1	20	1.96 {20}	1.76 {18}	1.96 {20}	190	45	47.5	3.5
	1504FP@2				2.5								
	1504FP				5			0.66 {6.7}					
	2006FP	20	3/4"		8			0.38 {3.9}		194		50	4
	2510FP	25	1"		12		1.57 {16}	0.24 {2.4}		197	50	62.5	5.7
	3212FP	32	1–1/4"		20		0.95 {9.7}	0.14 {1.4}	0.98 {10}	210	53	67.5	7.3
	4014FP	40	1–1/2"		30		0.61 {6.2}	0.09 {0.9}		235	61	70	8.6
	5020FP	50	2"		45		0.40 {4.1}	0.062 {0.62}	0.67 {6.8}	267	72	77.5	12
	6524FP	65	2–1/2"		70	30	0.28 {2.9}	0.044 {0.45}	0.48 {4.9}	292	125	87.5	20
	8030FP	80	3"		110		0.19 {1.9}	0.028 {0.29}	0.31 {3.2}	317	149	100	28.5
	10040FP	100	4"		180	40	0.12 {1.2}	—	0.2 {2}	368	169	112.5	39.5
NVK–W	4014FL@1	40	1–1/2"	Flange (JIS 10K)	20	20	0.98 {10}	0.98 {10}	0.98 {10}	222	110	70	10.5
	4014FL				30								
	5020FL	50	2"		45					254	114	(80)	13.5
	6524FL	65	2–1/2"		70	30		0.81 {8.3}		276	129	(96)	18
	8030FL	80	3"		110			0.66 {6.7}		298	156	(115)	28.5
	10040FL	100	4"		180	40		—		352	187	(150)	46.5
	12550FL	125	5"		260					403	208	(153)	63.3
	15060FL	150	6"		380					451	225	(170)	90.6
	20080FL	200	8"		630	45	0.69 {7}			543	278	(212)	167
	250100FL	250	10"		960		0.49 {5}		0.83 {8.5}	673	319	(232)	251

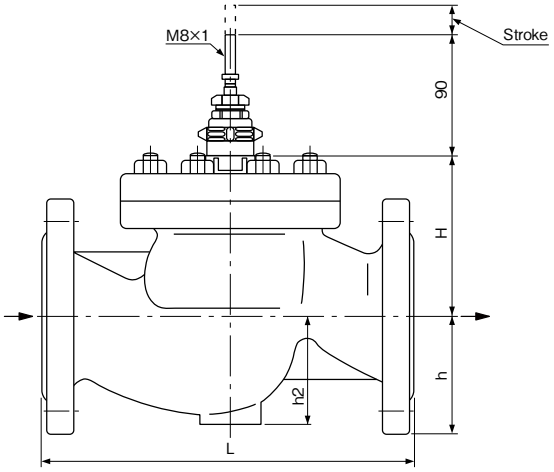
・ Cv ... Flow (L/min) passing through the valve at full opening when water temperature is 15°C and pressure difference across the valve is 0.00048 MPa {0.0049 kgf/cm²}

・ The dimension value bracketed off by ( ) shows "h2" value due to "h2" value being bigger than the one of "h".

DIMENSIONS



Type NVK–G



Type NVK–F, WF

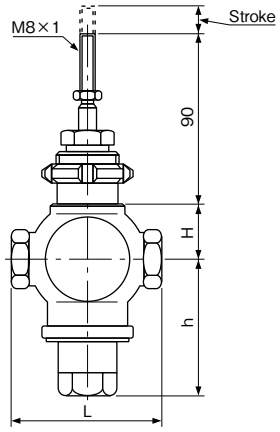
Unit: mm

Type NVK 3-way valve (used as a mixing valve)

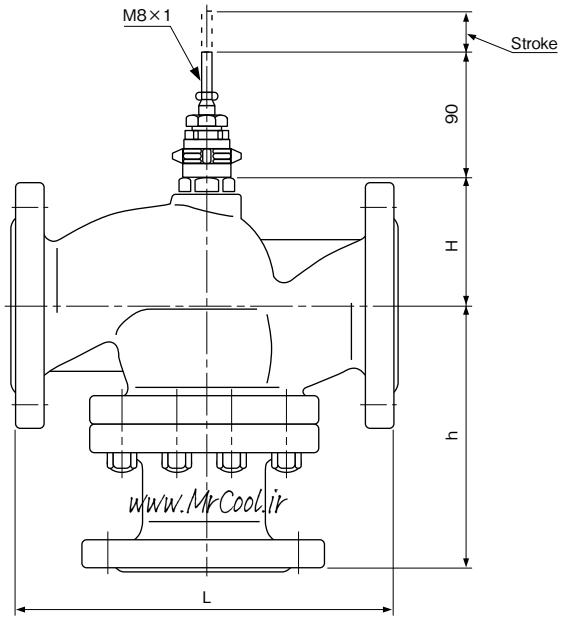
Catalog No.		Port Size (mm)	Connection		Cv	Stroke (mm)	Close off Rating MPa {kgf/cm²}			Dimension (mm)			Wt. (kg)
			Tube O.D.	Style			WGK–N＊A	WGK–N＊S	WGK–N＊L	L	H	h	
NVK–M	1504GL	15	1/2"	Rc	5	20	0.98 {10}	0.38 {3.9}	0.98 {10}	80	29	72	1.1
	2006GL	20	3/4"		8							73	1.12
	2510GL	25	1"		12			0.23 {2.3}		90	32	77	1.45
	3212GL	32	1–1/4"		20		0.95 {9.7}	0.14 {1.4}		105	38	80	1.95
	4014GL	40	1–1/2"		30		0.61 {6.2}	0.09 {0.9}		120	43	84	2.7
	5020GL	50	2"		45		0.40 {4.1}	0.061 {0.62}	0.67 {6.8}	140	51	97	4.17
	6524FL	65	2–1/2"	Flange (JIS 10K)	70	30	0.28 {2.9}	0.044 {0.45}	0.48 {4.9}	276	92	185	24.5
	8030FL	80	3"		110		0.19 {1.9}	0.028 {0.29}	0.31 {3.2}	298	106	215	31
	10040FL	100	4"		180	40	0.12 {1.2}	—	0.2 {2}	352	131	238	42
	12550FL	125	5"		260		0.08 {0.8}		0.13 {1.3}	403	149	263	64.5
	15060FL	150	6"		380		0.05 {0.5}		0.09 {0.9}	451	173	288	92

・ Cv ... Flow (L/min) passing through the valve at full opening when water temperature is 15°C and pressure difference across the valve is 0.00048 MPa {0.0049 kgf/cm²}

DIMENSIONS



Type NVK–MG



Type NVK–MF

Unit: mm

OTHER VALVES

CHECK VALVES

Type ACV & BCV

SAGINOMIYA

GENERAL DESCRIPTION

- Install in the liquid line of heat pump air conditioner to prevent the counter flow at change over of cycles from heating to cooling and vice versa.
- Also for prevention of reverse flow of high pressure gas when compressor stops.
- For use with Fluorinated Refrigerants, air or oil.
- Can be mounted in horizontal or vertical line.

Type ACV–B

Type BCV

TYPE NUMBER SELECTION (SPECIFICATIONS)

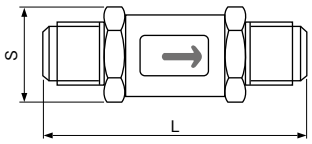
Type ACV

Catalog No.	Fluid	Port Size (mm)	Cv Value	Connection		Max. Working Pressure (MPa) {kgf/cm²}	Allowable Liquid Temp. (℃)	Wt. (kg)	
				Copper Tube (O.D.)	Style			B	D
ACV–2B (D)	Fluorinated Refrigerants Air Inert Gas	4.8	0.55	1/4"	B: Flare D: Solder	3 {30.6}	−40 to 125	0.1	0.05
ACV–3B (D)		7.5	1	3/8"				0.2	0.1
ACV–4B (D)		10	2.4	1/2"				0.4	0.2
ACV–5B (D)		12.5	4.2	5/8"				0.5	0.3
ACV–6B (D)		16	6	3/4"				0.7	0.5

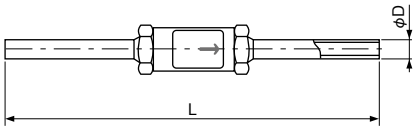
Type BCV

Catalog No.	Fluid	Port Size (mm)	Cv Value	Connection		Max. Working Pressure (MPa) {kgf/cm²}	Allowable Liquid Temp. (℃)	Wt. (kg)
				Copper Tube (I.D.)	Style			
BCV–302DY	Fluorinated Refrigerants	3	0.33	1/4"	Solder	4.15 {42.3}	−30 to 120	0.02
BCV–603DY		5.5	0.97	3/8"				0.04
BCV–804DY		8	2	1/2"				0.07
BCV–1005DY		10	3.5	5/8"				0.14
BCV–1306DY		12.5	4.7	3/4"				0.18
BCV–1810DY		18	8	1"				0.34

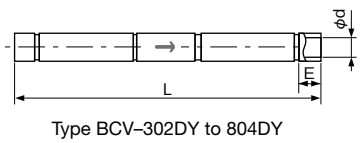
DIMENSIONS



Type ACV–B

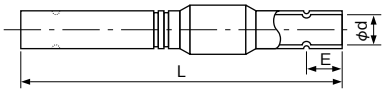


Type ACV–D



Type BCV–302DY to 804DY

Unit: mm



Type BCV–1005DY to 1810DY

Type ACV

Catalog No.	Unit: mm		
	L	ϕD	S
ACV–2B	58	—	14
ACV–3B	76		19
ACV–4B	87		24
ACV–5B	103		30
ACV–6B	115		36
ACV–2D	120	6.35	—
ACV–3D	160	9.53	
ACV–4D	187	12.70	
ACV–5D	235	15.88	
ACV–6D	300	19.05	

Type BCV

Catalog No.	Unit: mm		
	L	ϕD	E
BCV–302DY	112	6.55	—
BCV–603DY	120	9.71	8
BCV–804DY	140	12.93	13
BCV–1005DY	160	16.12	16
BCV–1306DY	180	19.30	19
BCV–1810DY	200	25.7	20

PRESSURE ACTUATED WATER REGULATING VALVES

Type VWR

SAGInoMIYA

GENERAL DESCRIPTION

- Type VWR: 2-way press. actuated water regulating valves,open on pressure increase.
- Refrigerant: R410A, R407C, R404A
- Type VWR is applicable to the adjustment range which exceeds the applicable adjustment range of type AWR (Refer to next page).
- Pressure connection: 1/4" flare nut (Standard)
- Body material: Bronze for water and glycol.

TYPE NUMBER SELECTION (SPECIFICATIONS)

PRESSURE ACTUATED VALVES 2-WAY

Unit: MPa {kgf/cm²}

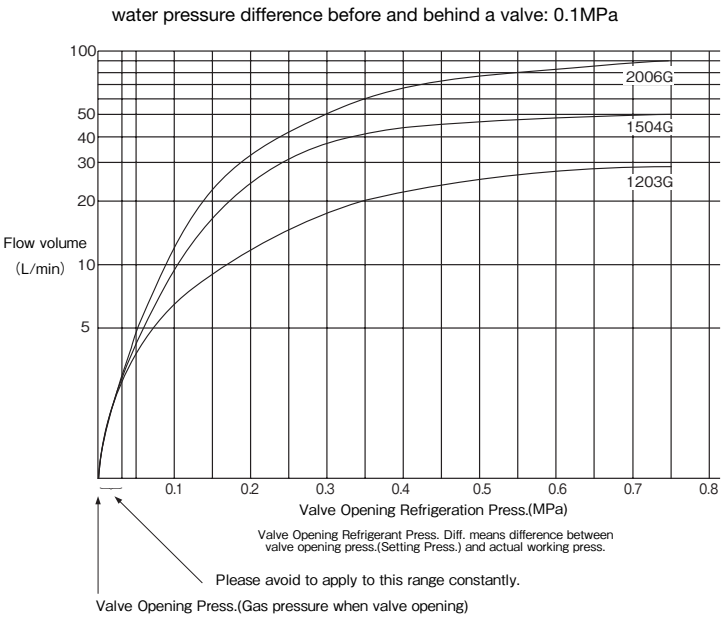
Catalog No.		Kind of Refrigerant	Valve Body Material	Connection		Press. Range	Max. Working Press.	Max. Water Temp.(°C)	Max. Water Press.	* Factory Setting	Wt. (kg)
				Size	Style						
VWR–	1203G	Fluorinated Refrigerants	Bronze	3/8"	Rc	1.5 to 2.9 {15.3 to 29.6}	4.2 {42.8}	60	1 {10.2}	2.4 {24.5}	0.68
	1504G			1/2"							0.9
	2006G			3/4"							1.0

* Pressure at which valve starts opening.

・ Adjust type VWR to a set value which is suitable for the refrigerant employed.

FLOW CAPACITY

Flow Capacity shows respectively refrigeration press. diff. at horizontal axis and flow rate of cooling water at vertical axis considering water press. diff. before and behind a valve with 0.1 MPa. (press. diff. between inlet and outlet of valve)
In case of water press. diff. before and behind a valve is excepting for 0.1MPa, value is calculated multipling by coefficient in compensation table.



ADJUSTMENT

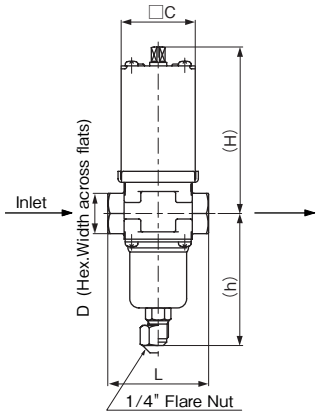
One full turn of adjusting screw changes pressure setting as shown below.

Catalog No.		Change in Press. Setting
VWR–	1203G	Approx. 0.2MPa
	1504G	
	2006G	

COMPENSATION COEFFICIENTS

Press. Drop Across Valve: MPa {kgf/cm²}	Coefficient
0.2 {2}	1.4
0.1 {1}	1
0.03 {0.3}	0.55
0.05 {0.5}	0.7
0.07 {0.7}	0.8

DIMENSIONS



Catalog No.		Unit: mm				
		D	L	H	h	□C
VWR–	1203G	22	55	91	72	40
	1504G	27	70	100	83	42
	2006G	32	80	104	87	

PRESSURE ACTUATED WATER REGULATING VALVES

Type CWR, AWR, GWR, MWR & SWR

SAGINOMIYA

GENERAL DESCRIPTION

- Type CWR, AWR & MWR: 2-way press. actuated water regulating valves, open on pressure increase.
  Type GWR: 2-way press. actuated water regulating valves, open on pressure decrease.
  Type SWR: 3-way press. actuated water regulating valves.
- Pressure connection: 1/4" flare nut (Standard)
- Body material: Bronze for water and glycol, cast iron for water only

Type AWR

Type SWR

TYPE NUMBER SELECTION (SPECIFICATIONS)

PRESSURE ACTUATED VALVES 2-WAY

Unit: MPa {kgf/cm²}

Catalog No.		Kind of Refrigerant	Valve Body Material	Connection		Press. Range	Max. Working Press.	Max. Water Temp. (°C)	Max. Water Press.	* Factory Setting	Wt. (kg)
				Size	Style						
CWR–	803GLWQ1	Fluorinated Refrigerants	Bronze	3/8"	Rc	0.6 to 1.8 {6.0 to 18.0}	2 {20}	60	1 {10}	0.75 {7.5}	0.45
AWR–	1204BLW			1/2"	Flare	0.78 to 1.77 {8.0 to 18.0}	1.96 {20}		0.98 {10}	0.88 {9}	0.8
	1203GLW			3/8"	Rc	0.59 to 1.77 {6.0 to 18.0}				0.74 {7.5}	0.66
AWR– GWR–	1504GLW			1/2"							0.8
	2006GLW			3/4"							1.0
	2510GLW			1"							1.8
	3212GLW			1–1/4"							2.1
	4014FLW		Cast Iron	1–1/2"	Flange						11.2
	5020FLWR			2"		R: 0.59 to 1.18 {6.0 to 12.0}				R: 0.74 {7.5}	17.8
	5020FLWH										
	6524FLWR			2–1/2"		H: 1.08 to 1.77 {11.0 to 18.0}				H: 1.23 {12.5}	21.6
	6524FLWH										
MWR–	4014FLW		Bronze	1–1/2"		0.59 to 1.77 {6.0 to 18.0}				0.74 {7.5}	11.2
	5020FLWR			2"		R: 0.59 to 1.18 {6.0 to 12.0}				R: 0.74 {7.5}	17.8
	5020FLWH										
	6524FLWR			2–1/2"		H: 1.08 to 1.77 {11.0 to 18.0}				H: 1.23 {12.5}	21.6
	6524FLWH										

* Pressure at which valve starts opening.

・ AWR, GWR & MWR with flange connection are supplied with JIS 10K (0.98 MPa) round companion flanges (JIS B2220 2239) and bolts/nuts.

PRESSURE ACTUATED VALVES 3-WAY

Unit: MPa {kgf/cm²}

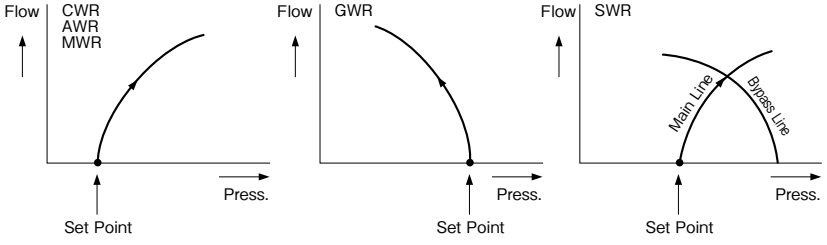
Catalog No.		Kind of Refrigerant	Valve Body Material	Connection		Press. Range	Max. Working Press.	Max. Water Temp. (°C)	Max. Water Press.	* Factory Setting	Wt. (kg)
				Size	Style						
SWR–	1504GLW	Fluorinated Refrigerants	Bronze	1/2"	Rc	0.59 to 1.77 {6 to 18}	1.96 {20}	60	0.98 {10}	0.74 {7.5}	1.1
	2006GLW			3/4"							1.5
	2510GLW			1"							2.5
	3212GLW			1–1/4"							3.0

* Pressure at which main valve starts opening.

・ Pressure range: Main line opening point

VALVE ACTION

Set Point is pressure for valve opening. Each cheractaristic of valves is different as follows.



ADJUSTMENT

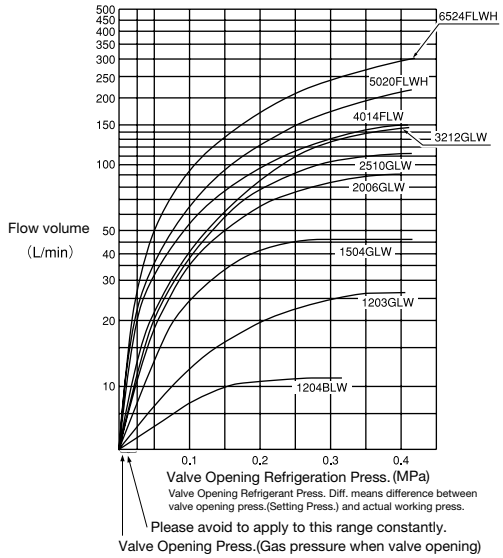
One full turn of adjusting screw changes pressure setting as shown below.

Catalog No.		Change in Press. Setting
AWR–	1204BLW	Approx. 0.1MPa
	1203GLW	
AWR– GWR– SWR–	1504GLW	
	2006GLW	
	2510GLW	Approx. 0.075MPa
	3212GLW	
AWR– MWR– GWR–	4014FLW	
	5020FLW	Approx. 0.09MPa
	6524FLW	

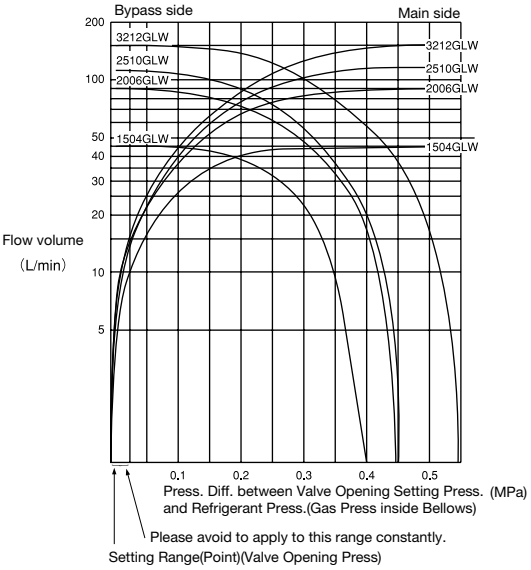
FLOW CAPACITY

Flow Capacity shows respectively refrigeration press. diff. at horizontal axis and flow rate of cooling water at vertical axis considering water press. diff. before and behind a valve with 0.1 MPa. (press. diff. between inlet and outlet of valve)
In case of water press. diff. before and behind a valve is excepting for 0.1MPa, value is calculated multipling by coefficient in compensation table.

Type AWR, MWR, GWR
water pressure difference before and behind a valve: 0.1MPa

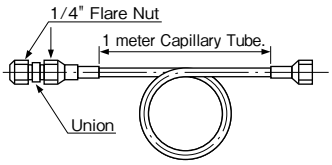


Type SWR
water pressure difference before and behind a valve: 0.1MPa



ACCESSORY

- Pressure dampening capillary tube assembly only attached for AWR–50, –65, MWR–50 and –65. Please use these for safty.

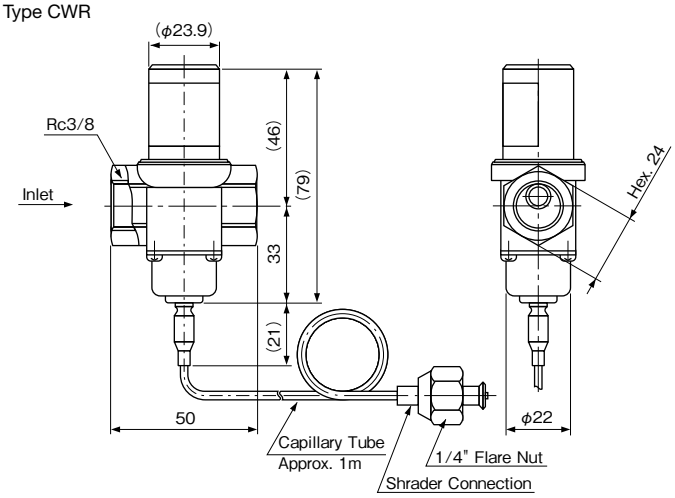


COMPENSATION COEFFICIENTS

Press. Drop Across Valve: MPa {kgf/cm²}	Coefficient
0.2 {2}	1.4
0.1 {1}	1
0.03 {0.3}	0.55
0.05 {0.5}	0.7
0.07 {0.7}	0.8

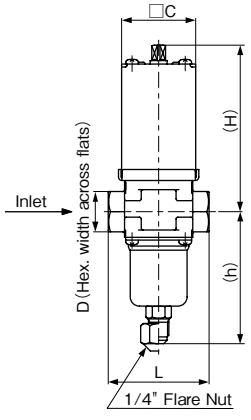
DIMENSIONS

Type CWR

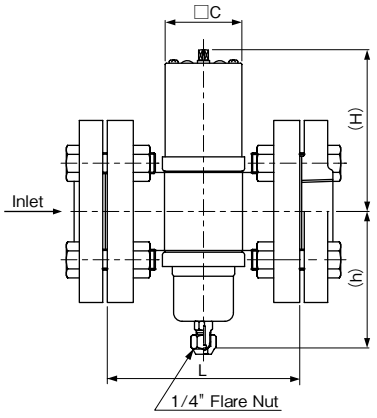


Catalog No.		Unit: mm					
		D	L	H	h	h1	□C
AWR–	1204BLW	—	100	90	70	—	40
	1203GLW	22	55	91	72		
AWR– GWR–	1504GLW	27	70	100	83		42
	2006GLW	32	80	104	87		
	2510GLW	40	90	116	97		59
	3212GLW	50	100	121	102		
AWR– MWR– GWR–	4014FLW	—	148	125	105		89
	5020FLW	—	173	180	155		
	6524FLW		179				
SWR–	1504GLW	27	70	100	31	83	42
	2006GLW	32	80	104	39	87	
	2510GLW	40	90	116	44	97	59
	3212GLW	50	100	121	54	102	

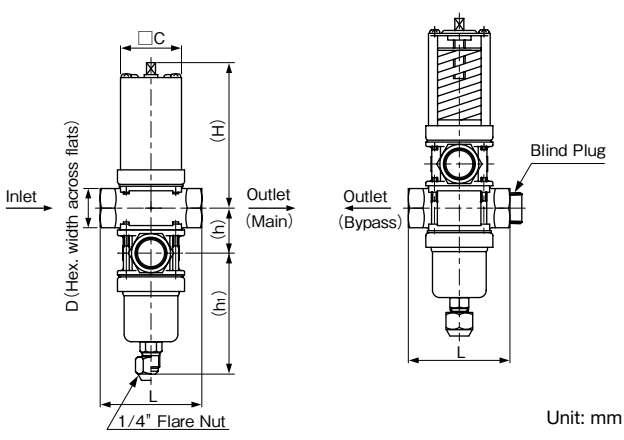
Type AWR–G, GWR–G



Type AWR–F, MWR–F, GWR–F



Type SWR



Unit: mm

TEMPERATURE ACTUATED WATER REGULATING VALVES

Type OWR, HWR & XWR

SAGInoMIYA

GENERAL DESCRIPTION

- Type OWR: 2-way temp. actuated water regulating valves, open on temperature rise.
  Type HWR: 2-way temp. actuated water regulating valves, open on temperature decrease.
  Type XWR: 3-way temp. actuated water regulating valves.
- Temperature sensing element (type OWR, HWR & XWR)
  Standard capillary tube: 1000mm×2.4
- Body material: Bronze for water and glycol, cast iron for water only

Type OWR

Type XWR

TYPE NUMBER SELECTION (SPECIFICATIONS)

TEMPERATURE ACTUATED VALVES 2-WAY

Unit: °C

Catalog No.		Valve Body Material	Connection		Temp. Range	Max. Water Temp.	Max. Water Press. MPa {kgf/cm²}	Max. Bulb Temp.	Bulb Size (mm)	*Factory Setting	Wt. (kg)
			Size	Style							
OWR– HWR–	5004G	Bronze	1/2"	Rc	30 to 50	60	0.98 {10}	80	φ19×150	40	1.0
	5006G		3/4"								1.2
	5010G		1"						φ19×320		2.0
	5012G		1–1/4"								2.2
	5014F	Cast Iron	1–1/2"	Flange							11.5
	5020F		2"						φ32×350		18.3
	5024F		2–1/2"								22.2
	P7504G	Bronze	1/2"	Rc	50 to 75			100	φ19×150	60	1.0
	P7506G		3/4"								1.2
	P7510G		1"						φ19×320		2.0
	P7512G		1–1/4"								2.2
	P7514F	Cast Iron	1–1/2"	Flange							11.5
	P7520F		2"						φ32×350		18.3
	P7524F		2–1/2"								22.2

* Pressure at which valve starts opening.
- OWR & HWR with flange connection are supplied with JIS 10K (0.98 MPa) round companion flanges (JIS B2220 2239) and bolt/nuts.
- Capillary tube ... Standard 1 meter, optional 1.5, 2 and 3 meters

TEMPERATURE ACTUATED VALVES 3-WAY

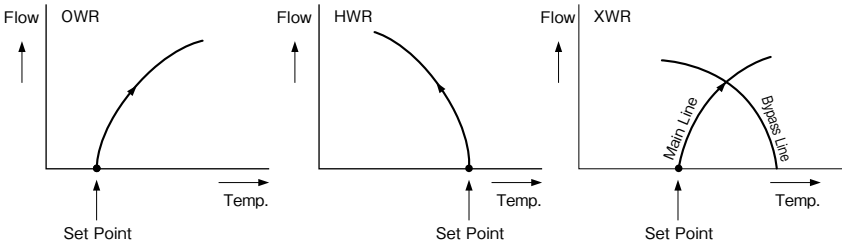
Unit: °C

Catalog No.		Valve Body Material	Connection		Temp. Range	Max. Water Temp.	Max. Water Press. MPa {kgf/cm²}	Max. Bulb Temp.	Bulb Size (mm)	*Factory Setting	Wt. (kg)
			Size	Style							
XWR–	5004G	Bronze	1/2"	Rc	30 to 50	60	0.98 {10}	80	φ19×150	40	1.0
	5006G		3/4"								1.5
	5010G		1"						φ19×320		2.5
	5012G		1–1/4"								3.0
	P7504G		1/2"		50 to 75			100	φ19×150	60	1.1
	P7506G		3/4"								1.5
	P7510G		1"						φ19×320		2.5
	P7512G		1–1/4"								3.0

* Pressure at which valve starts opening.
- Capillary tube ... Standard 1 meter, optional 1.5, 2 and 3 meters

VALVE ACTION

Set Point is pressure for valve opening. Each cheractaristic of valves is different as follows.



ADJUSTMENT

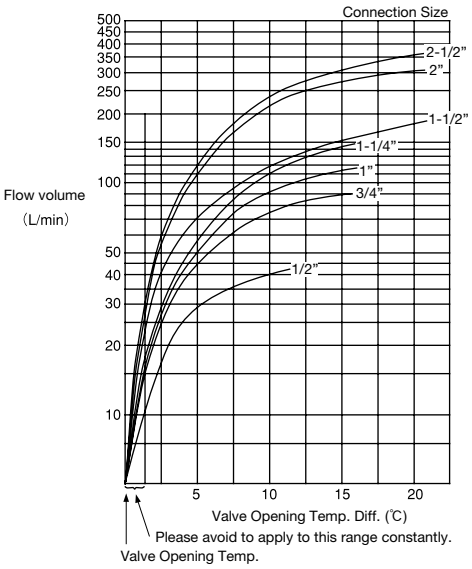
One full turn of adjusting screw changes temperature setting as shown below.

Catalog No.		Change in Temp. Setting
OWR– HWR– XWR–	** 04G	Approx. 4.0°C
	** 06G	
	** 10G	Approx. 3.0°C
	** 12G	
OWR– HWR–	** 14F	Approx. 4.0°C
	** 20F	
	** 24F	

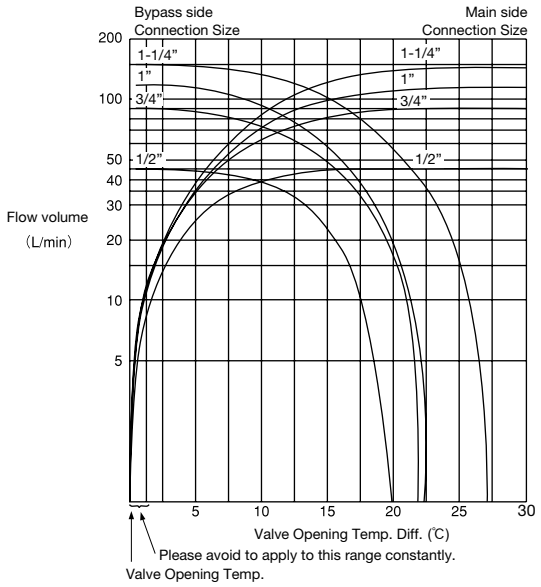
FLOW CAPACITY

Flow Capacity shows respectively opening temp. diff. at horizontal axis and flow rate of cooling water at vertical axis considering water press. diff. before and behind a valve with 0.1 MPa. (press. diff. between inlet and outlet of valve)
In case of water press. diff. before and behind a valve is excepting for 0.1MPa, value is calculated multipling by coefficient in compensation table.

Type OWR, HWR
water pressure difference before and behind a valve: 0.1MPa



Type XWR
water pressure difference before and behind a valve: 0.1MPa

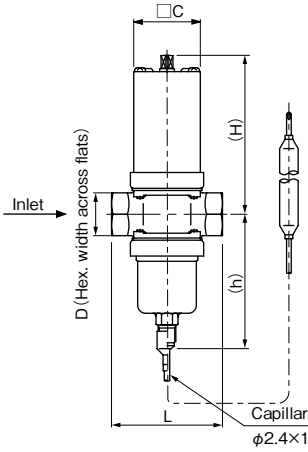


COMPENSATION COEFFICIENTS

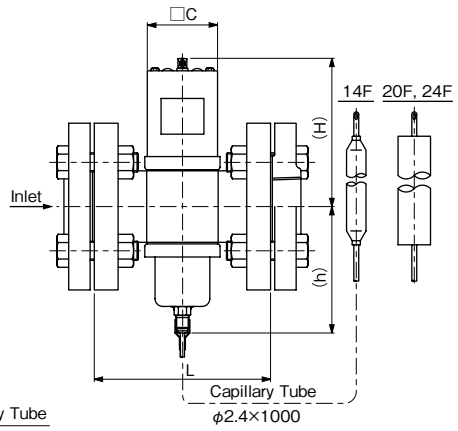
Press. Drop Across Valve: MPa {kgf/cm²}	Coefficient
0.2 {2}	1.4
0.1 {1}	1
0.03 {0.3}	0.55
0.05 {0.5}	0.7
0.07 {0.7}	0.8

DIMENSIONS

Type OWR–G, HWR–G

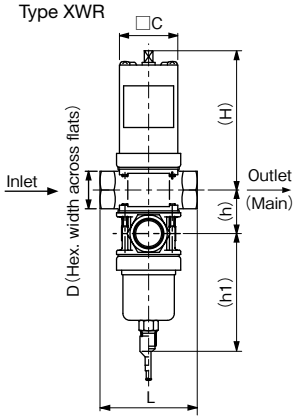


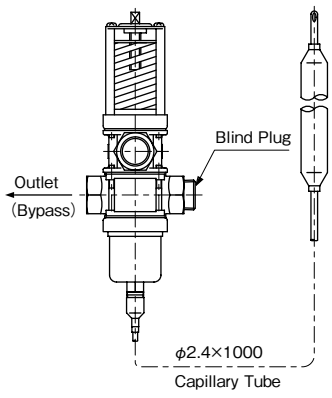
Type OWR–F, HWR–F



Catalog No.		Unit: mm				
		D	L	H	h	□C
OWR– HWR–	5004G	27	70	100	83	42
	5006G	32	80	104	87	
	5010G	40	90	116	97	59
	5012G	50	100	121	102	
	5014F	—	148	125	105	
	5020F	—	173	180	155	89
	5024F	—	179			
	P7504G	27	70	100	83	42
	P7506G	32	80	104	87	
	P7510G	40	90	116	97	59
	P7512G	50	100	121	102	
	P7514F	—	148	125	106	
	P7520F	—	173	180	155	89
	P7524F		179			

Type XWR





Unit: mm

Catalog No.		Unit: mm					
		D	L	H	h	h1	□C
XWR–	5004G	27	70	100	31	83	42
	5006G	32	80	104	39	87	
	5010G	40	90	116	44	97	59
	5012G	50	100	121	54	102	
	P7504G	27	70	100	31	83	42
	P7506G	32	80	104	39	87	
	P7510G	40	90	116	44	97	59
	P7512G	50	100	121	54	102	

PRESSURE REGULATING VALVES

Type EPR

SAGInoMIYA

GENERAL DESCRIPTION

- Evaporating pressure regulating valves
- Direct operated, 2-way valves designed for maintaining suitable evaporating pressure in refrigeration. Fitted at the evaporator outlet to keep suitable set evaporating pressure.

Type EPR–B

Type EPR–D

SPECIFICATIONS

Operation / Specifications	Direct Operation type
Max. Working Pressure	2.5MPa {25kgf/cm²}
Airtight Test Pressure	3MPa {30kgf/cm²}
Fulid Temp.	to 100°C
Pressure Adjustment	❍ Increase 1604 to 05: 0.08MPa {Approx.0.82kgf/cm²} /rotation 1905 to 07: 0.05MPa {Approx.0.51kgf/cm²} /rotation

TYPE NUMBER SELECTION

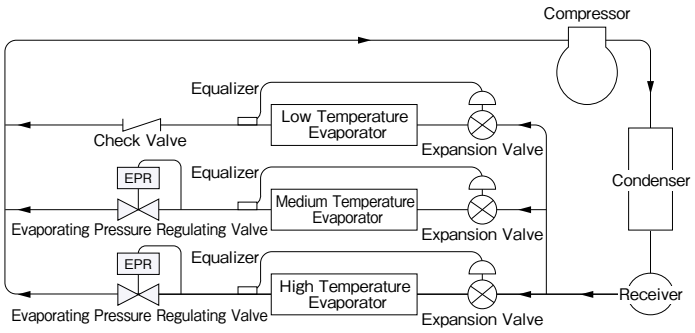
Catalog No.		Equalization	Port size (mm)	Nominal Capacity (U.S.R.T.) {kW} CT 38°C ⊿P0.074MPa {0.75kgf/cm²} ET 5°C				Adjusting Range (MPa) {kgf/cm²}	Connection		Factory Setting (MPa) {kgf/cm²}	Wt. (kg)
Type	Model			R22	R134a	R404A	R407C		Style	Copper Tube (O.D.)		
EPR–	1604B	Internal	15	2.6 {9.1}	1.5 {5.3}	1.9 {6.7}	2.0 {6.9}	0 to 0.6 {0 to 6}	Flare	1/2"	0.3 {3}	0.3
	1605B									5/8"		
	1905B		20	5.5 {19}	3.5 {12}	4.1 {14}	5.4 {19}			3/4"		0.5
	1906B								Solder	12.7		
	1604D		15	2.6 {9.1}	1.5 {5.3}	1.9 {6.7}	2.0 {6.9}			15.88		0.2
	1605D											
	1905D		20	5.5 {19}	3.5 {12}	4.1 {14}	5.4 {19}			19.05		0.4
	1906D											
	1907D									22.23		

・ Nominal capacity is based on condensing temp. 38℃, evaporating temp. 5℃, pressure drop across the valve 0.074 MPa {0.75kgf/cm²}, and Set Pressure R134a...0.1MPa {1kgf/cm²}, R22, R407C...0.2MPa {2kgf/cm²}, R404A...0.3MPa {3kgf/cm²}

APPLICATION EXAMPLE

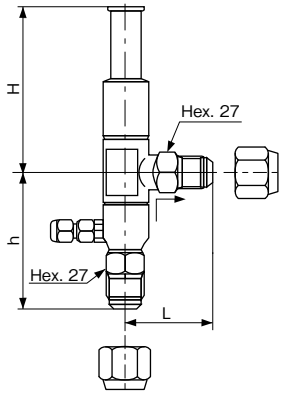
• Evaporating pressure regulating valve type EPR

Fitted at the evaporator outlet to keep suitable set evaporating pressure.
At multi evaporator system, evaporating pressure regulating valves are used to control each different pressure (temperature) of evaporators.
Compressor operates based on the lowest pressure (temperature) of evaporators, pressure regulating valves keep pressure (temperature) of each evaporator at their setting pressure.
In this case, a check valve is required at the outlet of lowest pressure evaporator.
Also, evaporating pressure regulating valve is used at water chiller for prevent form congelation of cool water and vegetable warehouse for prevents form over dehumidification.

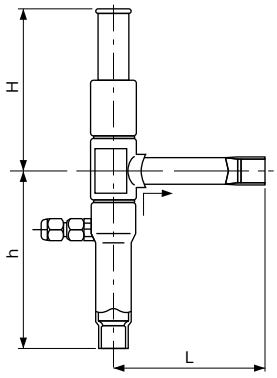


DIMENSIONS

Type EPR–B



Type EPR–D



Direct Operation Type

Catalog No.		Unit: mm		
Type	Model	L	H	h
EPR–	1604B	45	82	91
	1605B	53		94
	1905B	56	109	100
	1906B	60		105
	1604D	71	82	78
	1605D			
	1905D	100	109	120
	1906D			
	1907D			

Unit: mm

PRESSURE REGULATING VALVES
High Volume OEM Item (Type DPR)

Type SPR & DPR

SAGINOMIYA

GENERAL DESCRIPTION

- Type SPR ... Direct operated, 2-way valves, designed for maintaining suitable compressor suction pressure in refrigeration or air conditioning units.

  Fitted in suction line after the evaporator to prevent compressor overload.

- Type DPR ... Fitted in by-pass line between compressor discharge and suction line in refrigeration or air conditioning units. (Quantity order only.)

  Senses excessive compressor discharge pressure and releases it through the bypass line to the low pressure side to protect the compressor from overloading.

  Reduces frequency of cut-in and cut-out of high pressure switch to keep the compressor operating.

  A typical advantage is in the heating cycle of heat pump systems during spring or autumn, or at the time when filter is clogged with foreign materials.

Type SPR–B

Type SPR–D

Type DPR

SPECIFICATIONS (Type SPR)

Operation / Specifications	Standard model	Set pressure range wide model
Max. Working Pressure	2.5MPa {25kgf/cm²}	
Airtight Test Pressure	3MPa {30kgf/cm²}	
Fulid Temp.	to 100°C	
Pressure Adjustment	↶ Increase 1604 to 05: Approx. 0.08MPa {0.82kgf/cm²} /rotation 1905 to 07: Approx. 0.05MPa {0.51kgf/cm²} /rotation 3011 to 13: Approx. 0.03MPa {0.31kgf/cm²} /rotation	↶ Increase 1604 to 05: Approx. 0.13MPa {1.3kgf/cm2} /rotation 1905 to 07: Approx. 0.07MPa {0.7kgf/cm2} /rotation 3011 to 13: Approx. 0.04MPa {0.4kgf/cm2} /rotation

TYPE NUMBER SELECTION

Type SPR – Standard model

Catalog No.		Fluid	Port Size (mm)	Nominal Capacity (U.S.R.T.) {kW} CT38°C ⊿P0.049MPa {0.5kgf/cm²} ET−10°C				Connection		Wt. (kg)
Type	Model			R22	R134a	R404A	R407C	Copper Tube (O.D.)	Style	
SPR–	1604B	Fluorinated Refrigerants	15	1.4 {4.9}	0.9 {3.2}	1.1 {3.9}	1.3 {4.7}	1/2"	Flare	0.3
	1605B							5/8"		
	1905B		20	3.0 {10.5}	1.8 {6.3}	2.5 {8.8}	3.1 {10.9}			0.5
	1906B							3/4"		
	1604D		15	1.4 {4.9}	0.9 {3.2}	1.1 {3.9}	1.3 {4.7}	1/2"	Solder	0.2
	1605D							5/8"		
	1905D		20	3.0 {10.5}	1.8 {6.3}	2.5 {8.8}	3.1 {10.9}			0.4
	1906D							3/4"		
	1907D							7/8"		
	3011D		29	5.0 {17.6}	2.7 {9.5}	4.5 {15.8}	5.4 {19.1}	1–1/8"		1.3
	3013D							1–3/8"		

・ Nominal capacity is based on condensing temp. 38°C, evaporating temp. −10°C, pressure drop across the valve 0.049 MPa {0.5kgf/cm²}, and Set Pressure R134a…0.2MPa {2kgf/cm²}, R22,R407C…0.4MPa {4kgf/cm²}, R404A...0.5MPa {5kgf/cm²}.

Type SPR – Set pressure range wide model

Catalog No.		Fluid	Port Size (mm)	Nominal Capacity (U.S.R.T.) {kW} CT38°C ⊿P0.049MPa {0.5kgf/cm²} ET−10°C	Connection		Wt. (kg)
Type	Model			R404A	Copper Tube (O.D.)	Style	
SPR–	1604BW	Fluorinated Refrogerants	15	1.08 {3.8}	1/2"	Flare	0.3
	1605BW				5/8"		
	1905BW		20	2.1 {7.4}			0.5
	1906BW				3/4"		
	1604DW		15	1.08 {3.8}	1/2"	Solder	0.2
	1605DW				5/8"		
	1905DW		20	2.1 {7.4}			0.4
	1906DW				3/4"		
	1907DW				7/8"		
	3011DW		29	4.04 {14.2}	1–1/8"		1.3
	3013DW				1–3/8"		

・ Nominal capacity is based on condensing temp. 38°C, evaporating temp. −10°C, pressure drop across the valve 0.049 MPa {0.5kgf/cm²}, and Set Pressure 0.5MPa {5kgf/cm²}.

Type DPR

Catalog No.		Fluid	Port Size (mm)	* Factory Adjustable Range (MPa)	Connection (mm)		Max. Working Press. (MPa) {kgf/cm²}	Wt. (kg)
Type	Model				Tube (I.D.)	Style		
DPR–	343D	Fluorinated Refrigerants	3.4	0.98 to 2.45	7.94	Solder	2.9 {29}	0.11

The drawing exchange is necessary for the instruction of working pressure setting. Please contact us before order.

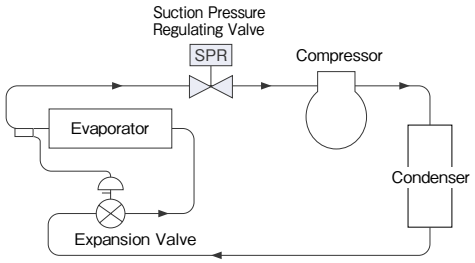
APPLICATION EXAMPLE

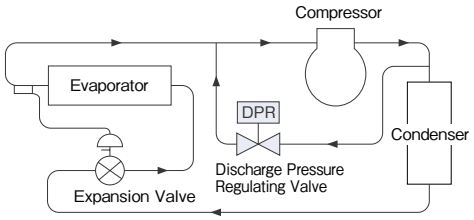
• Suction pressure regulating valve type SPR

Suction pressure regulating valve is installed between compressor and evaporator in order to keep outlet pressure (suction pressure) under it's setting.
In case of rapid increase of load, suction pressure regulating valve could be used to prevent from overload of electric motor for compressor.

• Discharge pressure regulating valve type DPR

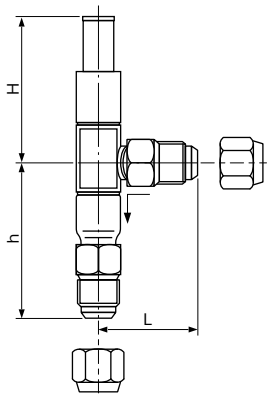
Discharge pressure regulating valve is mounted in the low-pressure side bypass piping from the discharge piping of a compressor as a control valve to control the discharge pressure to be lower than the specified pressure for the purpose of preventing the compressor from being an abnormal high pressure.



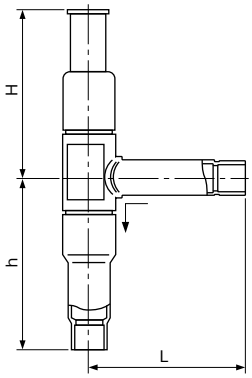


DIMENSIONS

Type SPR–B

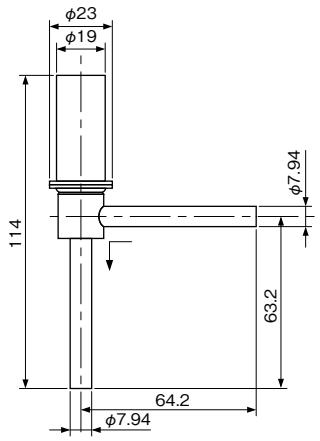


Type SPR–D



Catalog No.		Unit: mm		
Type	Model	L	H	h
SPR–	1604B	45	82	91
	1605B	53		94
	1905B	56	109	100
	1906B	60		105
	1604D	71	82	78
	1605D			
	1905D	100	109	120
	1906D			
	1907D			
	3011D	140	147	170
	3013D			

Type DPR



Unit: mm

PRESSURE REGULATING VALVES

Type HPR

SAGInoMIYA

GENERAL DESCRIPTION

- Type HPR can control the condensing pressure corresponding to the change in the outside temperature, and prevents the condensation pressure decrease in the control in winter, also steady throughout the year control is possible.
- This product properly maintains the inlet pressure of the expansion valve and prevents the decrease in the refrigeration capacity.
- Suitable for refrigeration systems with hot gas defrosting.

SPECIFICATIONS

Max.Working Pressure: 2.9MPa {29kgf/cm²} (R22, R134a, R404A, R407C)
4.17MPa {41.7kgf/cm²} (R410A)
Airtight Test Pressure: 3.5MPa {35kgf/cm²} (R22, R134a, R404A, R407C)
4.17MPa {41.7kgf/cm²} (R410A)
Fluid Temperature: to 125℃

TYPE NUMBER SELECTION

Catalog No.			Port size (mm)	Connection		Factory Setting (MPa)	Wt. (kg)
Type	Model	Refrigerant		Copper Tube (O.D.)	Style		
HPR–	1304D〔B〕	H (R22) M (R134a) U (R404A) P (R407C) V (R410A)	13	1/2"	Copper Tube O.D. [Flare]	1.32 (H,U,P) 0.686 (M) 2.15 (V)	0.76
	1305D〔B〕			5/8"			
	2207D		22	7/8"			1.65

・ Flare type is produced only 5/8 and 1/2.
・ R410A type is produced only 5/8 and 1/2.

CAPACITY TABLE

Nominal capacity is based on condensing temp. 38℃ , evaporating temp. 5℃, and Supercooling temp. 0℃.

R22

Catalog No.		Port size (mm)	Capacity (U.S.R.T.) {kW}							
			R22							
Type	Model		Pressure drop across the valve (MPa) {kgf/cm²}							
			0.005 {0.05}	0.01 {0.1}	0.015 {0.15}	0.02 {0.2}	0.025 {0.25}	0.03 {0.3}	0.035 {0.35}	0.04 {0.4}
HPR–	1304D〔B〕H	13	5.97 {21.0}	8.50 {29.9}	10.4 {36.5}	12.0 {42.2}	13.4 {47.1}	15.2 {53.5}	16.1 {56.6}	17.0 {59.8}
	1305D〔B〕H									
	2207DH	22	14.7 {51.7}	20.8 {73.1}	25.6 {90.0}	29.6 {104}	33.0 {116}	36.1 {127}	39.0 {137}	41.8 {147}

R134a

Catalog No.		Port size (mm)	Capacity (U.S.R.T.) {kW}							
			R134a							
Type	Model		Pressure drop across the valve (MPa) {kgf/cm²}							
			0.005 {0.05}	0.01 {0.1}	0.015 {0.15}	0.02 {0.2}	0.025 {0.25}	0.03 {0.3}	0.035 {0.35}	0.04 {0.4}
HPR–	1304D〔B〕M	13	5.94 {20.9}	8.47 {29.8}	10.4 {36.4}	12.0 {42.2}	13.3 {46.9}	15.1 {53.1}	16.0 {56.1}	16.9 {59.4}
	1305D〔B〕M									
	2207DM	22	14.6 {51.5}	20.7 {72.8}	25.5 {89.5}	29.3 {103}	33.0 {116}	35.8 {126}	39.0 {137}	41.8 {147}

R404A

Catalog No.		Port size (mm)	Capacity (U.S.R.T.) {kW}							
			R404A							
Type	Model		Pressure drop across the valve (MPa) {kgf/cm²}							
			0.005 {0.05}	0.01 {0.1}	0.015 {0.15}	0.02 {0.2}	0.025 {0.25}	0.03 {0.3}	0.035 {0.35}	0.04 {0.4}
HPR–	1304D〔B〕U	13	3.90 {13.7}	5.23 {18.4}	6.74 {23.7}	7.88 {27.7}	8.73 {30.7}	9.87 {34.7}	10.5 {36.8}	11.0 {38.7}
	1305D〔B〕U									
	2207DU	22	9.58 {33.7}	13.6 {47.7}	16.7 {58.7}	19.3 {67.8}	21.6 {75.8}	23.6 {82.9}	25.5 {89.6}	27.3 {95.9}

R407C

Catalog No.		Port size (mm)	Capacity (U.S.R.T.) {kW}							
			R407C							
Type	Model		Pressure drop across the valve (MPa) {kgf/cm²}							
			0.005 {0.05}	0.01 {0.1}	0.015 {0.15}	0.02 {0.2}	0.025 {0.25}	0.03 {0.3}	0.035 {0.35}	0.04 {0.4}
HPR–	1304D〔B〕P	13	6.14 {21.6}	8.76 {30.8}	10.7 {37.6}	12.4 {43.5}	13.8 {48.5}	15.7 {55.1}	16.6 {58.3}	17.5 {61.6}
	1305D〔B〕P									
	2207DP	22	15.1 {53.1}	21.4 {75.1}	26.3 {92.4}	30.4 {107}	33.8 {119}	37.0 {130}	40.1 {141}	42.9 {151}

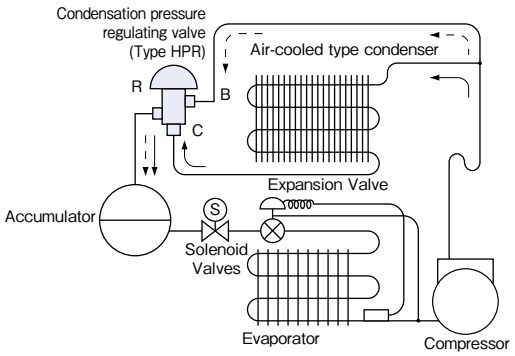
R410A

Catalog No.		Port size (mm)	Capacity (U.S.R.T.) {kW}							
			R410A							
Type	Model		Pressure drop across the valve (MPa) {kgf/cm²}							
			0.005 {0.05}	0.01 {0.1}	0.015 {0.15}	0.02 {0.2}	0.025 {0.25}	0.03 {0.3}	0.035 {0.35}	0.04 {0.4}
HPR–	1304D〔B〕V	13	6.57 {23.1}	9.36 {32.9}	11.4 {40.2}	13.2 {46.4}	14.7 {51.8}	16.8 {58.9}	17.7 {62.3}	18.7 {65.8}
	1305D〔B〕V									

APPLICATION EXAMPLE

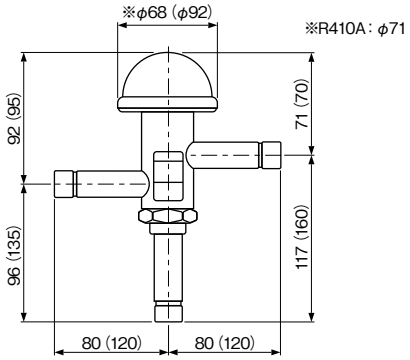
• Condensation pressure regulating valve type HPR

This product can control the condensing pressure corresponding to the change in the outside temperature, and prevents the condensing pressure decrease in the control in the winter, also steady throughout the year control is possible.
This product properly maintains the inlet pressure of the expansion valve and prevents the decrease in the refrigeration capacity.
Suitable for use in refrigeration systems with hot gas defrosting and in extremely cold region.



◡ Condensing Pressure higher than the set value (summer) C→R
◡ Condensing Pressure lower than the set value (winter) B→R

DIMENSIONS



Type HPR–1304 to 1305D
(Type HPR–2207D)

Unit: mm

DIAPHRAGM TYPE STOP VALVES

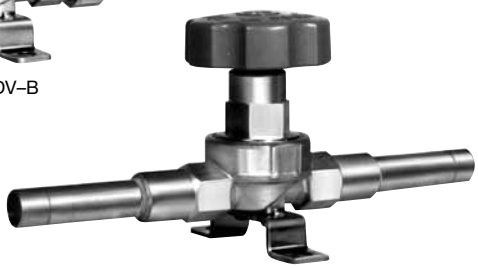
Type ADV

SAGInoMIYA

GENERAL DESCRIPTION

- The valve can be used on the lines of delivery gas, liquid, suction gas and hot gas, etc.
- The valve is applicable to not only Fluorinated refrigerants, but also air.
- In spite of its compactness and light weight, the port diameter is comparatively large to enable to flow a large amount.
- The large diameter handle makes easy and smooth rotation even in vacuum condition.
- Carefully processed valve with selected material provides long trouble free service and dependable operation.
- Type ADV cannot be used in a reverse flow.

Type ADV–B



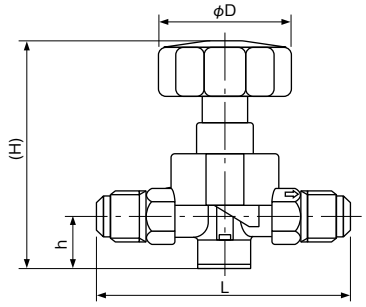
Type ADV–D

TYPE NUMBER SELECTION (SPECIFICATIONS)

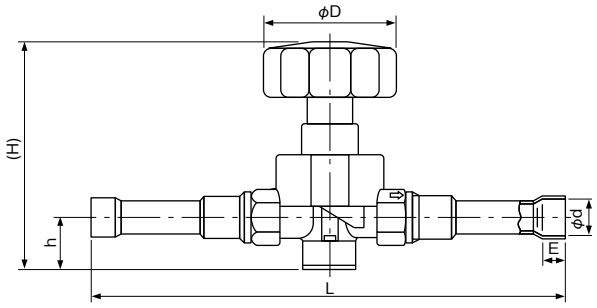
Unit: MPa {kgf/cm²}

Catalog No.		Port Size (mm)	Flow Coefficient	Connection		Max. Working Pressure	Fluid Temp. (°C)	Wt. (kg)
				Copper Tube (O.D.)	Style			
ADV–	902BY	9	0.35	1/4"	Flare	3.6 {36}	−40 to 120	0.26
	903BY		0.79	3/8"				0.32
	1404BY	14	1.61	1/2"				0.51
	1605BY	16	2.82	5/8"				0.85
	1606BY		3.46	3/4"				1.13
	902DY	9	0.35	1/4" (6.35)	Solder			0.24
	903DY		0.79	3/8" (9.53)				0.28
	1404DY	14	1.61	1/2" (12.7)				0.46
	1605DY	16	2.82	5/8" (15.88)				0.76
	1606DY		3.46	3/4" (19.05)				0.91
	1607DY			7/8" (22.23)				

DIMENSIONS



Type ADV–BY



Type ADV–DY

Unit: mm

Catalog No.		Unit: mm					
		L	H	h	ϕD	ϕd	E
ADV–	902BY	80	75	20	52	—	—
	903BY	85	75.5	19.5			
	1404BY	101	87.5				
	1605BY	128	98	23	70		
	1606BY	135	102	25			
	902DY	165	75	20	52	6.5	8
	903DY		75.5	19.5		9.65	
	1404DY	190	87.5			12.95	10
	1605DY	200	98	23	70	16.15	12
	1606DY		102	25		19.3	14
	1607DY					22.45	

OTHER CONTROL EQUIPMENT

FLOW SENSORS
High Volume OEM Item

Type ELK

SAGINOMIYA

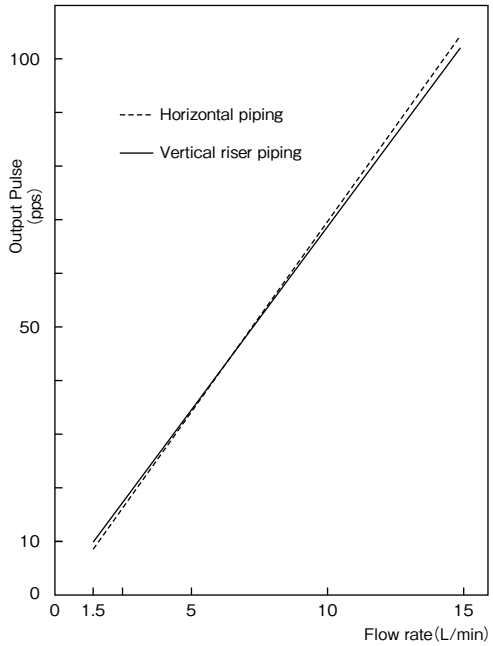
GENERAL DESCRIPTION

- Turbine type flow sensor having an impeller to rotate in proportion to flow rate.
- For burner On-Off of hot water supply system, accumulation of automatic hot water supply.
- Pulse output corresponding flow rate.
- Max. working pressure: 1MPa
- Fluid temperature: 0 to 80°C (No frozen)
- Rated voltage: 4.5 to 13.2 V. DC
- Housing body material: PPS
- Installation is vertical riser piping or horizontal piping.

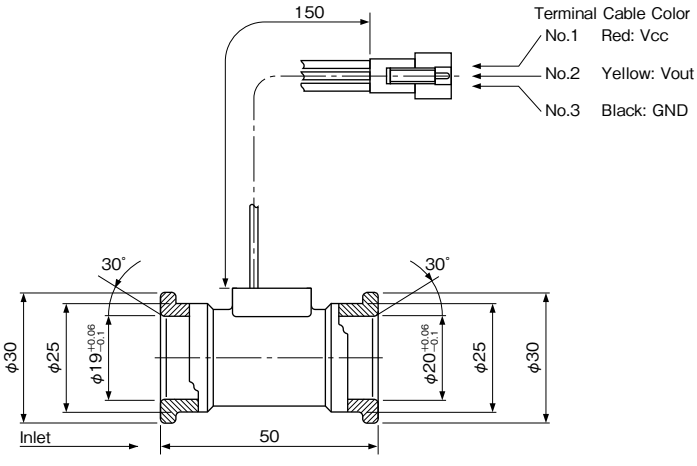
SPECIFICATIONS

Catalog No.	Range of Flow Rate (L/min)	Flow Rate–Output Pulse Characteristics			Output Mode	Max. Output Current (mA)	Wt. (kg)
		Based Flow Rate (L/min)	Vertical riser piping (pps)	Horizontal piping (pps)			
ELK–0508	1.5 to 25	1.5	9.6±2	7.7±2	Open Collector	15	0.025
		10	68.7±6	69.2±6			
		15	102.9±12	104.1±12			

FLOW RATE–OUTPUT PULSE CHARACTERISTICS



DIMENSIONS



Unit: mm

FLOW SWITCHES

Type FQS

SAGINOMIYA

GENERAL DESCRIPTION

- For use on liquid lines such as water, ethylene glycol, or any non-corrosive fluid in chillers, pumps, condensers, boilers, etc.
- With S.P.D.T. contact mechanism.
- Paddle consists of three segments that can be removed or trimmed for use in 1 to 6" pipe.
- Drip proof models: Available upon request.

CE mark applicable (available upon request)
UL listed (available upon request)

SPECIFICATIONS

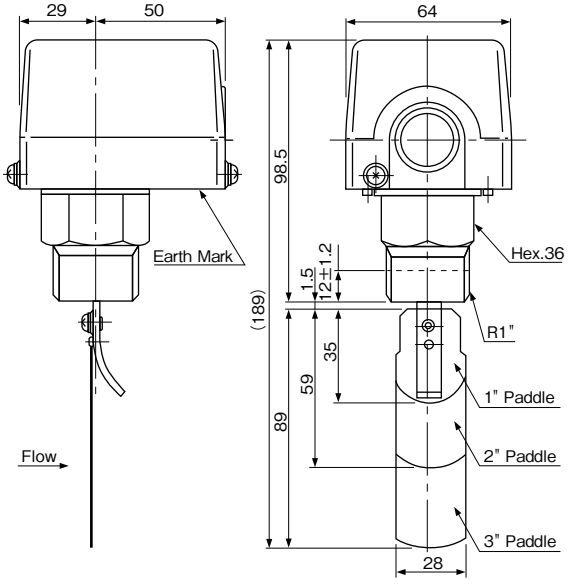
Catalog No.	Paddle Size	Connection		Max.Working Pressure MPa{kgf/cm²}	Fluid Temp. (°C)	Max. Flow Velocity (m/s)	Wt. (kg)
		Size	Style				
FQS–U30G	3"	1"	R	0.98 {10}	5 to 80	2	0.6

・ Enclosure: IP20 (IP62 model: available upon request.)

ELECTRICAL RATINGS

Rated Voltage (V) / Rated Amps. (A)		Power Factor (cos ϕ)	125V. AC	250V. AC
Non-Inductive Current		1	15	15
Inductive Current	Full Load	0.75	3.5	2.5
	Locked Rotor	0.45	21	15

DIMENSIONS



Unit: mm

OPERATION ADJUSTMENT RANGE TABLE

- When the operating value is not specified, the flow switch is shipped with the operating value set around the minimum flow rate.
- When you turn the flow adjusting screw clockwise, the operating point goes up. When you turn it counterclockwise, the operating point goes down.
- When more than two paddles is attached, you can change the flow rate adjustment range by removing the paddles one by one in order of the longer paddle first.

Pipe Size	Paddle Size	* Adjustment range (L/min)			
		Min.		Max.	
		Flow Decrease	Flow Increase	Flow Decrease	Flow Increase
1"	1"	18	28	45	55
1–1/4"		43	53	100	120
1–1/2"		63	78	135	162
2"	1"+2"	50	65	150	180
	1"	151	181	220	264
2–1/2"	1"+2"	105	126	355	426
	1"	356	427	360	432
3"	1"+2"+3"	100	120	225	270
	1"+2"	226	271	480	576
	1"	481	577	510	612
4"	1"+2"+3"	200	240	385	462
	1"+2"	386	463	820	984
	1"	821	985	870	1044
5"	1"+2"+3"	350	420	594	713
	1"+2"	595	714	1265	1518
	1"	1266	1519	1342	1610
6"	1"+2"+3"	530	636	836	1003
	1"+2"	837	1004	1780	2136
	1"	1781	2137	1890	2268

* Flow decrease ... Flow amount at which the switch operates on flow decrease.
Flow increase ... Flow amount at which the switch operates on flow increase.

DRAIN PUMPS
High Volume OEM Item

Type SDP

SAGINOMIYA

GENERAL DESCRIPTION

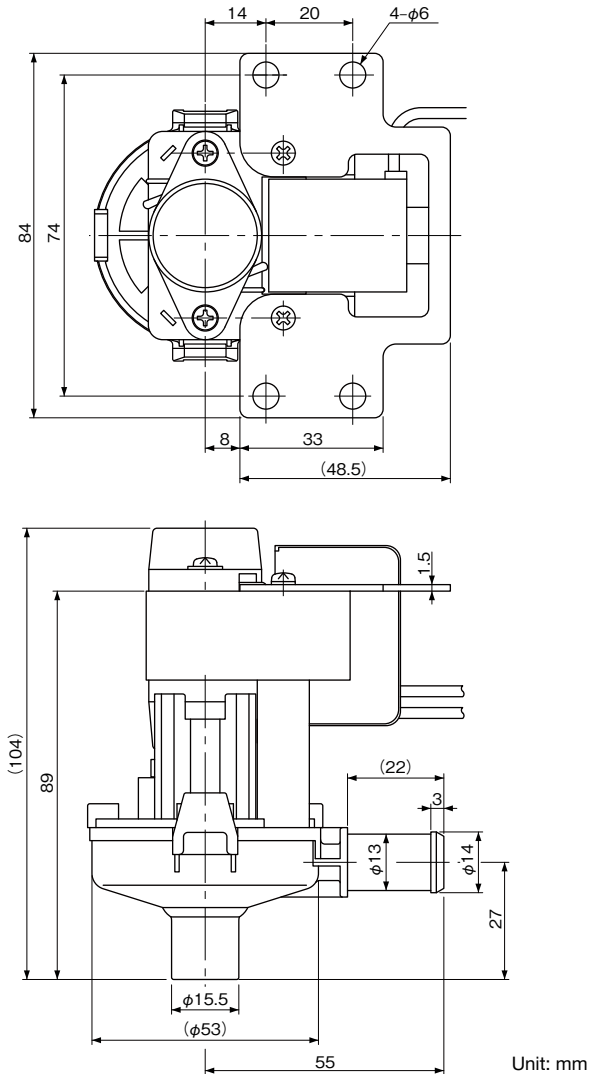
- Drain pump which can exhaust drain water in accumlating at indoor unit.
- By adopting a high durable and power motor, this realizes much higher durability, low noise and high pump head.
- Fluid: Drain water
- Fluid temperature: 0 to 35°C (No frozen water)
- Ambient temperature: −10 to 45°C
- Motor coil insulation: Class “E” (IEC compliance)

SPECIFICATIONS

Catalg No.	Rated Voltage	Tolerance (%)	Power Consumption (50/60Hz)	Max. Flow	Pump Head (mm)	Sound Level	Wt. (kg)
SDP–14 ＊＊	220 to 240V.AC 50/60Hz	±10	11.0/9.5W at 230V.AC	400cm^3 /min or more at Rated Voltage	200 to 1125	36dB (A) or less on no drain	0.50

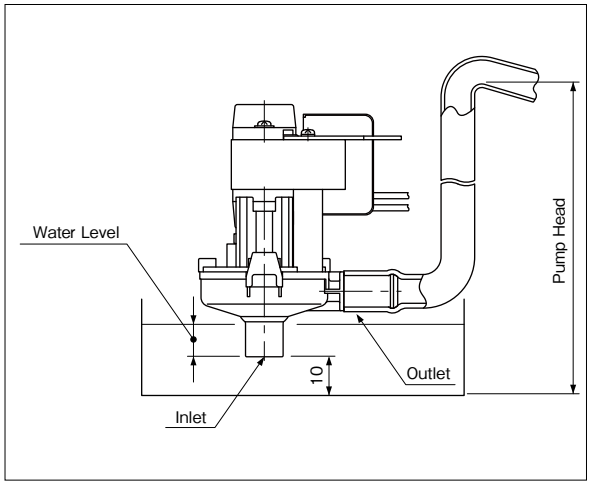
DIMENSIONS

Type SDP–14



Unit: mm

NOTE FOR USE



＊ It must be 10mm or more the distance from drain pan to the bottom of pump.

CONDENSER FAN SPEED CONTROLLERS

Type RGE

SAGINOMIYA

GENERAL DESCRIPTION

- The most suitable for controlling the speed of a condenser fan of freezing and refrigeration condensing unit, package air conditioner and other units which are operated throughout a year.
- Keep condensing pressure constant in winter and intermediate seasons for stable operation.
- One of the following operation models is selectable when low speed.
  Minimum Speed Operation
  Cut off Operation
- Excellent noise-resisting design.
- Applicable to the external forced operation switch.

CE mark applicable

c SP us listed (available upon request)

Single-phase type

Three-phase type

SPECIFICATIONS

- Max.working pressure: 4.7MPa
- Control method: Phase control
- Enclosure: IP54

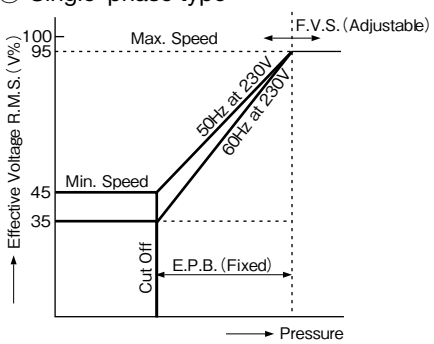
TYPE NUMBER SELECTION

Catalog No.	*1 F.V.S. Setting (MPa)			*2 E.P.B. (MPa)	Refrigerants	Electrical Ratings		Function	Ambient Temp. (°C)	Operation	Wt. (kg)
	Factory Set	Adjusting Range					Ampere				
		Min.	Max.								
RGE–Z1L4–7	1.9	0.8	2.8	Fixed 0.6	R22, R404A, R407C	Single phase 200 to 240V. AC 50/60Hz	0.2 to 3A	At approx. 45% (50Hz) at approx. 35% (60Hz) Cut Off or Minimum Speed function is selectable with changeover switch. Default setting: Cut Off	−20 to 55	①	0.36
RGE–Z1L6–7	3.2	1.6	3.9	Fixed 0.9	R410A						
RGE–Z1N4–7	1.9	0.8	2.8	Fixed 0.4	R22, R404A, R407C		0.2 to 4A				0.5
RGE–Z1N6–7	3.2	1.6	3.9	Fixed 0.8	R410A						
RGE–Z1P4–7	1.9	0.8	2.8	Fixed 0.4	R22, R404A, R407C		0.2 to 6A				0.54
RGE–Z1P6–7	3.2	1.6	3.9	Fixed 0.8	R410A						
RGE–Z1Q4–7	1.9	0.8	2.8	Fixed 0.4	R22, R404A, R407C		0.2 to 8A				0.58
RGE–Z1Q6–7	3.2	1.6	3.9	Fixed 0.8	R410A						
RGE–Z3R4–7	1.6	0.8	2.8	Fixed 0.4	R22, R404A, R407C	Three phase 200 to 240V. AC 50/60Hz	0.2 to 5A	At approximately 35%, Cut Off or Minimum Speed function is selectable with changeover switch. Default setting: Min. Speed	−20 to 50	②	1.4
RGE–Z3R6–7	3.2	1.6	3.9	Fixed 0.8	R410A						
RGE–Z3T4–7	1.6	0.8	2.8	Fixed 0.6	R22, R404A, R407C		0.2 to 7A				1.53
RGE–Z3T6–7	3.2	1.6	3.9	Fixed 0.8	R410A						
RGE–X3R4–7	1.6	0.8	2.8	Fixed 0.4	R22, R404A, R407C	Three phase 380 to 415V. AC 50/60Hz	0.2 to 5A		−15 to 50		1.4
RGE–X3R6–7	3.2	1.6	3.9	Fixed 0.8	R410A						

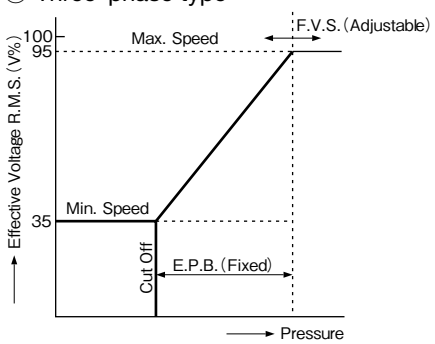
* 1: The pressure at which the control delivers 95% output effective voltage (VRMS).
* 2: Pressure width where effective voltage corresponds to the minimum speed or causes cut off operation
・ Min. speed: Fan motor will be kept running at the specific value (V%) when pressure band increase more than E.P.B.
・ Cut off: Fan motor will be stopped when pressure decrease to the specific value (V%) for R.M.S.
・ For other pressure set values or min. speed/cut off set values, please contact us.

OPERATION

① Single-phase type



② Three-phase type

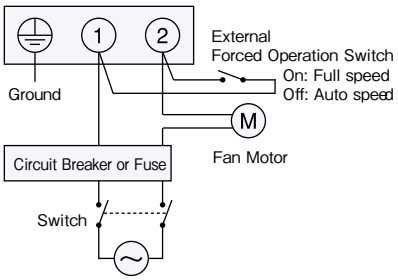


The operating characteristic may vary according to the voltage, frequency, and fan motor characteristics.

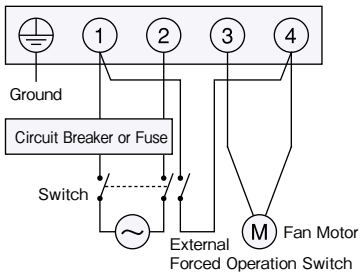
WIRING

Single-phase type

for 2A (RGE−Z1)

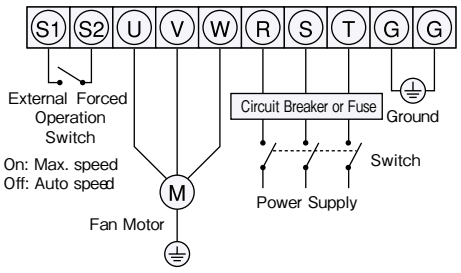


for 4A, 6A, 8A (RGE−Z1)



Apply external forced operation switches that afford to cut consumption curret of fan motors.

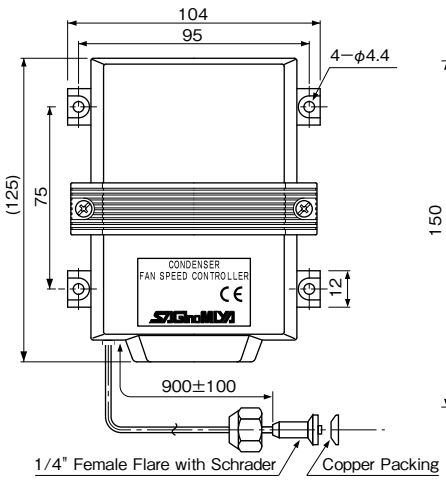
Three-phase type

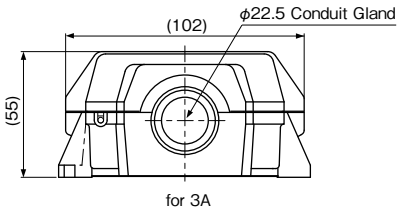


Use a forced operation switch with non-voltage contact signal.

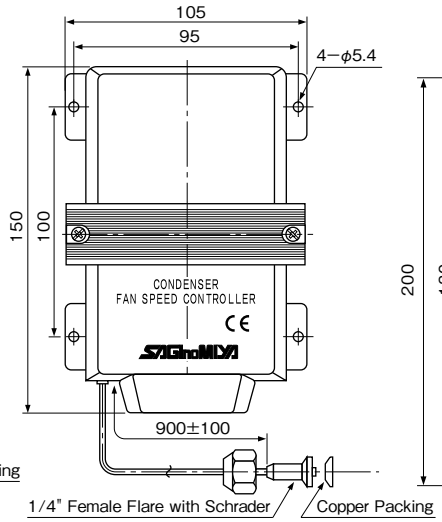
DIMENSIONS

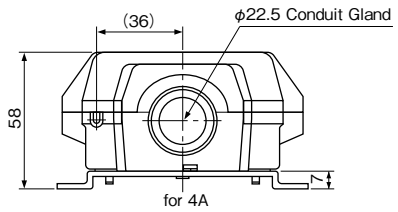
Single-phase type



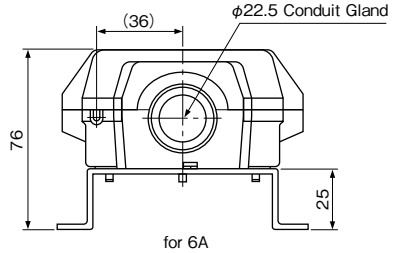


for 3A

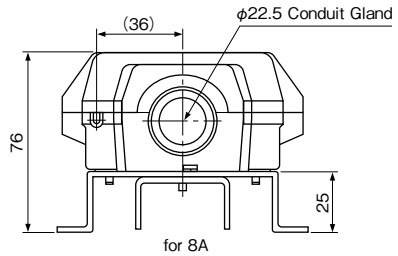




for 4A

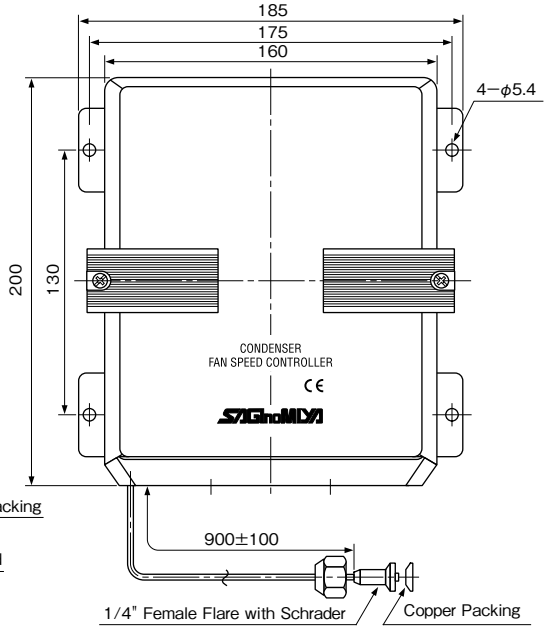


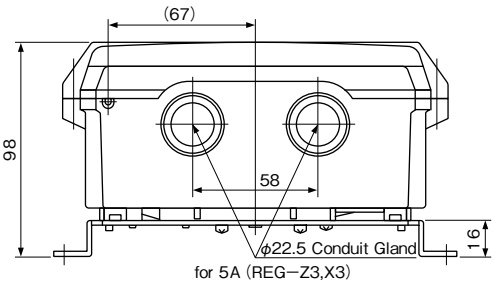
for 6A



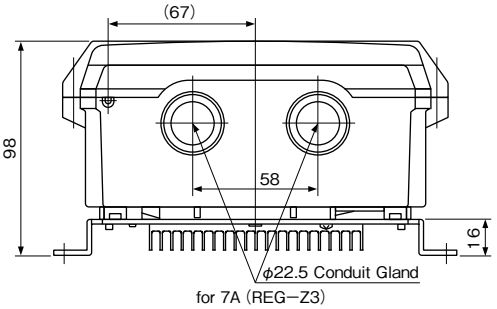
for 8A

Three-phase type





for 5A (REG−Z3,X3)



for 7A (REG−Z3)

Unit: mm

CONDENSER FAN SPEED CONTROLLERS

Type XGE

SAGInoMIYA

GENERAL DESCRIPTION

- The most suitable for controlling the speed of a condenser fan of freezing and refrigeration condensing unit, package air conditioner and other units which are operated throughout a year.
- Keep condensing pressure constant in winter and intermediate seasons for stable operation.

CE mark applicable c SP us listed (available upon request)

SPECIFICATIONS

- Control method: Phase control
- Max. working pressure: 4.7MPa
- Power supply: [Rated Voltage] 200 to 240V. AC ∿ single phase [Frequency] 50/60Hz [Rated Amp.] 0.2 to 3A
- Pressure connection: 1/4" Female flare with Schrader (7/16-20 UNF)
- Enclosure: IP65

TYPE NUMBER SELECTION

Catalog No.	*1 F.V.S. Setting (MPa)			*2 E.P.B (MPa)	Refrigerants	Function	Ambient temp. (°C)	Fluid temp. (°C)	Wt. (kg)
	Factory Set	Adjusting Range							
		Min.	Max.						
XGE–4CC–7	1.9	1.0	2.5	0.6	R22, R407C, R404A	Cut off type	−20 to 55	−20 to 70	0.19
XGE–4MC–7						Min. speed type			
XGE–6CC–7	2.8	2.2	3.9	0.7	R410A	Cut off type			
XGE–6MC–7						Min. speed type			

Cut off : Fan motor will be stopped when pressure decrease to the specific value(V%) for R.M.S.

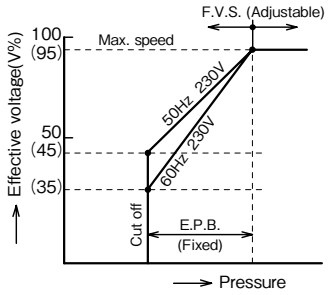
Min. speed: Fan motor will be kept running at the specific value(V%) when pressure band increase

*1 F.V.S.: FULL VOLTAGE SET POINT
The pressure at which the control delivers 95% output effective voltage.

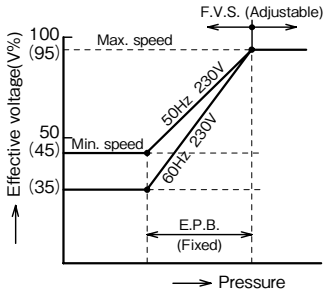
*2 E.P.B.: EFFECTIVE PROPORTIONAL BAND
Pressure width where effective voltage corresponds to the min. speed or causes cut off operation.

OPERATION

XGE–4CC–7 and XGE–6CC–7 (Cut off type)

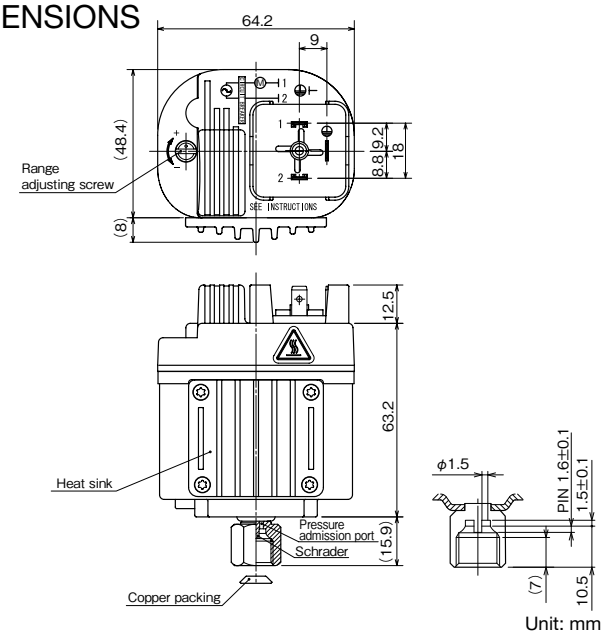


XGE–4MC–7 and XGE–6MC–7 (Min. speed type)



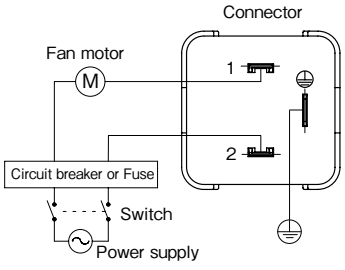
*The operating characteristic may vary according to the voltage, frequency, and fan motor characteristics.

DIMENSIONS



Unit: mm

WIRINGS



Supplied with a gasket. Cable exit in 4 directions possible.

ACCESSORIES (XGE-1 Plug parts set)

- Plug
- Gasket
- Plug fixing screw
- Plastic bag

TEMPERATURE RECORDERS

Type AKM & BKM

SAGInoMIYA

GENERAL DESCRIPTION

- Portable temperature recorder widely applicable for use in refrigeration, air conditioning and medical fields.
- High recording accuracy with quartz driving motor. Recording paper feeding speed: 3.3mm per hour
- Motor driven by dry cell battery: 1.5V. DC, C–type Life 1 year
- Type BKM is a temperature sensitive recording paper which is supplied as standard for use 12 month period. Specify catalog No. when order additional papers.
- Higher and lower alarm pointers can be set within the range.

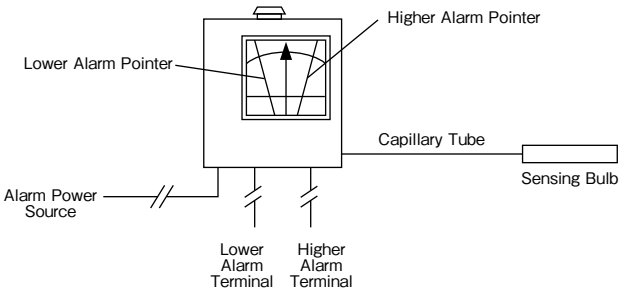
TYPE NUMBER SELECTION (SPECIFICATIONS)

Unit: °C

Catalog No.	Application Examples	Temp. Range Min.	Temp. Range Max.	Indicating Accuracy	Recording Accuracy	Alarm Accuracy	Alarm Power Source	Catalog No, of Recording Paper	Wt. (kg)
AKM–4014LH1X	For Refrigeration & Freezing	−40	14	±2	plus Indicating Accuracy	Temp. Scale ±2	100 to 120V. AC	BKM–4044X	1.6
AKM–4014LH2X							200 to 240V. AC		
AKM–0054LH1X	For Air-conditioning	0	54				100 to 120V. AC	BKM–0054X	
AKM–0054LH2X							200 to 240V. AC		
AKM–1044LH1X		−10	44				100 to 120V. AC	BKM–4044X	
AKM–1044LH2X							200 to 240V. AC		
AKM–0620LH1X	For Medical Use	−6	20	2 to 8 : ±0.8 −6 to 2 , 8 to 20 : ±2	2 to 8 : ±0.8 −6 to 2 , 8 to 20 : ±2		100 to 120V. AC	BKM–0620X	
AKM–0620LH2X							200 to 240V. AC		

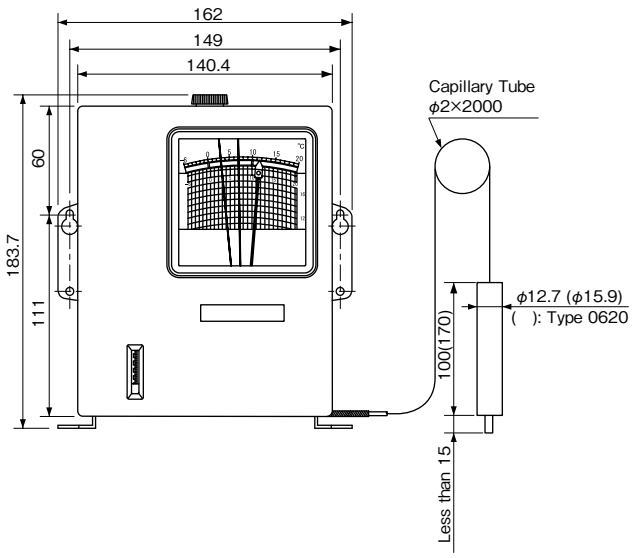
・ Alarm Contact: Each one on upper and lower limit pointer, 100V. AC1A, 200V. AC 0.5A.

WIRINGS



- Standard capillary tube length: φ2.0×2000mm (Plastic covering on capillary tube available.)
- Alarm lamp or buzzer can be connected to the contacts on higher and lower alarm terminals.

DIMENSIONS



Unit: mm

CO_2 REFRIGERANT APPLICATIONS
High Volume OEM Item

Type CCB, HSK, HPV, UKV–J & JKV

SAGINOMIYA

GENERAL DESCRIPTION

- Used for CO_2 refrigerant applications.
- Available for extreme high pressure.
- Application: Bottle cooler, display case, heat pump water heaters, vending machine

Type CCB

Type HSK

Type HPV

Type UKV–J

● PRESSURE CONTROL for High Pressure [Type CCB]

SPECIFICATIONS

Unit: MPa {kgf/cm²}

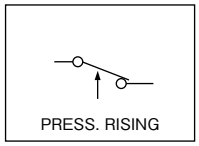
Catalog No.	Setting		Max. Pressure	Contact Function	Pressure Connection	Terminal Construction	Application	Wt. (kg)
	on	off						
CCB–＊＊＊＊	10 {100}	15 {150}	15 {150}	SPST (High Cut)	1/4" Solder	Open	High Pressure Cut Out	0.07

- Allowable fluid temperature: −30 to 100 °C
- Enclosure: IP20 (IP66 model: available upon request)

ELECTRICAL RATINGS

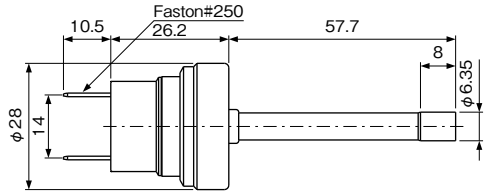
Category of Ratings			T Rating		M Rating	
Rated Voltage (V) / Rated Amps. (A)		Power Factor (cos φ)	24V. DC	12V. DC	120V. AC	240V. AC
Non-Inductive Current		1	0.01 to 0.05		1 to 6	
Inductive Current	Full Load	0.75	—	—	—	—
	Locked Rotor	0.45				

CONTACT FUNCTION



DIMENSIONS

Type CCB



Unit: mm

● PRESSURE SENSOR for High Pressure [Type HSK]

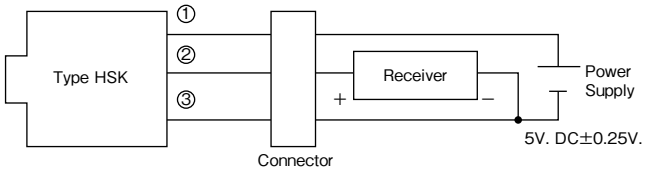
SPECIFICATIONS

Unit: MPa {kgf/cm²}

Catalog No.	Pressure Range	Supply Voltage	Output	Accuracy	Current Consumption	Load Resistance	Airtight Pressure	Pressure Connection	Wt. (kg)
HSK–BC150D–＊＊＊	{0 to 150} 0 to 15	5V. DC±0.25V	0.5 to 4.5V. DC	±2.5% F.S.	Max. 10mA	Min. 10kΩ	15 {150}	φ6 Solder	0.07

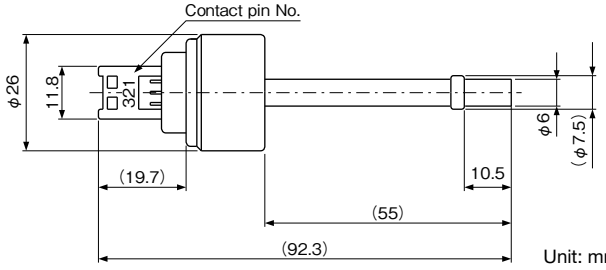
- Allowable fluid temperature: −30 to 120 °C
- Enclosure: IP66
- Ambient temperature: −30 to 100 °C

WIRING



DIMENSIONS

Type HSK



Unit: mm

SOLENOID VALVE for High Pressure [Type HPV]

TYPE NUMBER SELECTION (SPECIFICATIONS)

Unit: MPa {kgf/cm²}

Catalog No.	Port Size (mm)	Cv Value	Connection		O.P.D.		Max. Working Pressure	Operation	Wt. (kg)
			Copper Tube O.D.	Style	Min.	Max.			
HPV–102D	1.0	0.028	1/4"	Solder	0	10.0 {100}	13.0 {130}	Normal close	0.05
HPV–122D	1.2	0.038					13.8 {138}		0.09
HPV–402D	4.0	0.32	1/4"		0		14.0 {140}		0.09
HPV–825DS	7.8	0.54	5/16"		0.1{1}		15.0 {150}		0.13

- O.P.D.: Operating Pressure Differential (by air pressure)
- Ambient temperature: −20 to 50 °C
- Allowable fluid temperature: −30 to 120 °C

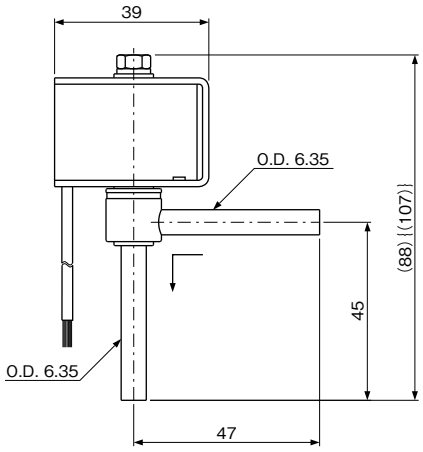
ELECTRICAL RATING OF SOLENOID COILS

Valve Type	Rated Voltage		Tolerance (%)	Voltampere		Power Consumption (W)	Insulation Class	Wt. (kg)
				Running	Inrush			
HPV–102D	100V. AC 200V. AC	50/60Hz	±10	11/8	32/27	6/4.5	* Class B Molded	0.13
HPV–122D				16/13	52/38	9/8		0.16
HPV–402D	200V. AC			10/8	32/26	5.5/4.5		0.16
HPV–825DS				14/11	42/33	7/6		0.20

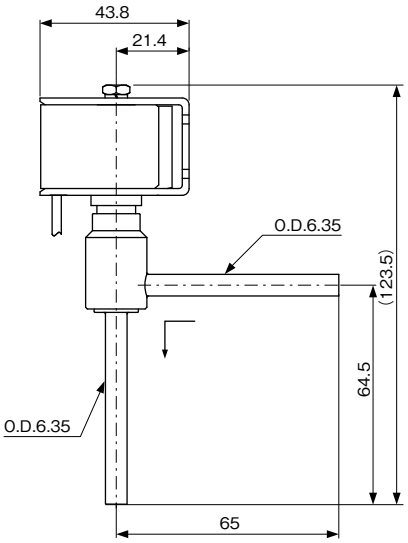
* IEC compliance

DIMENSIONS

Type HPV–102D {HPV–122D}

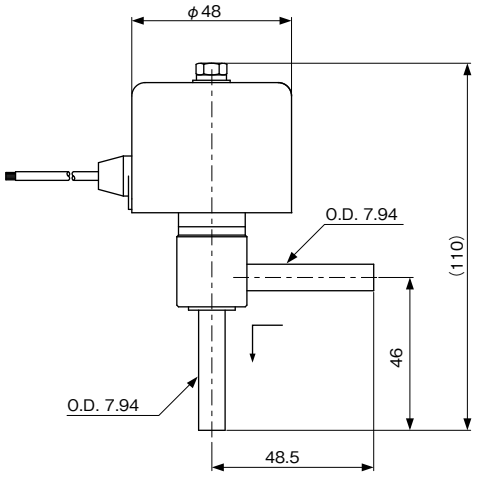


Type HPV–402D



Please contact us if other connection are required.

Type HPV–825DS



Unit: mm

● ELECTRONIC EXPANSION VALVE for High Pressure [Type UKV–J, JKV]

TYPE NUMBER SELECTION (SPECIFICATIONS)

Unit: MPa {kgf/cm²}

Catalog No.	Port Size (φmm)	Cv Value	Capacity (U.S.R.T) {kW}		Max. Working Pressure	Operating Pressure Differential	Connection (Solder) (mm)		Wt. (kg)
			＊1 R744 (CO_2)	＊2 R744 (CO_2)			B side	A side	
UKV–J14D	1.4	0.065	2.3 {8.1}	3.4 {11.8}	15 {150}	0 to 10 {0 to 100}	φ6.35 OD	φ6.35 OD	0.05
JKV–20D	2.0	0.12	4.2 {14.8}	6.1 {21.6}			φ7.94 OD	φ7.94 OD	0.2
JKV–24D	2.4	0.17	5.9 {20.7}	8.6 {30.4}					

＊1: CT = −5 °C, ET = −25 °C, SH = 0 °C, SC = 0 °C ＊2: Gas cooler inlet temp. = 70 °C, Gas cooler outlet temp. = 22 °C, ET = 6 °C, SH = 0 °C

- Allowable fluid temperature: −30 to 70 °C
- Ambient temperature: −30 to 70 °C
- Enclosure: IP66

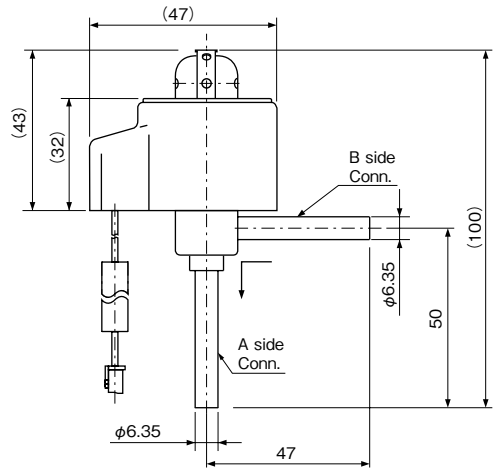
SPECIFICATIONS OF COIL

Valve Type	Excitation method	Rated Voltage & Current	＊ Insulation Class	Wt. (kg)
UKV–J14D	1-2 Phase excitation	12V. DC. ・・・・260mA/Phase	Class E Molded	0.13
JKV–20D				0.14
JKV–24D		12V. DC. ・・・・380mA/Phase		0.19

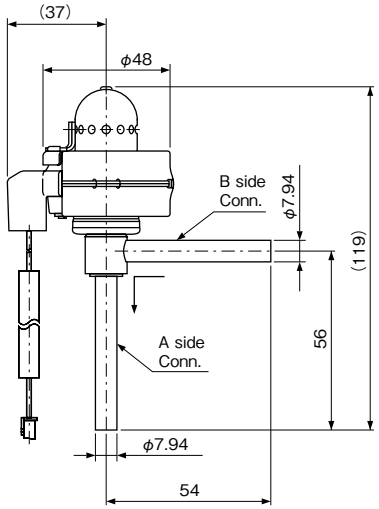
＊ IEC compliance

DIMENSIONS

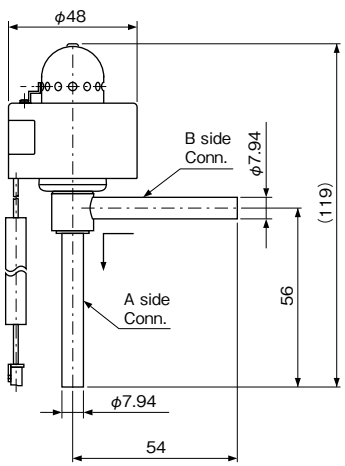
Type UKV–J



Type JKV–20D



Type JKV–24D



Unit: mm

CONTROL APPLIANCES FOR HOT WATER SUPPLY UNITS

Type CRV, VSV, WSV, HEV, XJV, QJV, TCV, CAV, ELK

SAGInoMIYA

GENERAL DESCRIPTION

• Control appliances for hot water supply unit

- Pressure Reducing Valve
  Type CRV
  - This water valve can be connected directly to a water conduit.

Type CRV

- Relief Valve
  Type WSV and VSV
  - This valve being provided with a diaphragm is highly reliable and the most suitable for the maintenance of a hot water supply unit. (WSV type)
  - This valve is provided with a negative pressure operating device. If the hot water supply unit or piping becomes a negative pressure internally, this device introduces the atmospheric pressure to prevent the damage of the unit and a reverse flow. (VSV type)

Type WSV

Type VSV

- Solenoid Valve
  Type HEV
  - This small solenoid valve is used for feed water, cooling water, and hot water circuits of the hot water supply unit.
  - A bronze casting type are prepared as the body material.

Type HEV

- Electric Complex Valve
  Type XJV
  - This three-way mixed proportional valve applies to the cold and hot water of a fully automatic hot water supply unit.
  - It controls the mixing ratio of cold water and hot water to produce an optimum mixed water temperature.

Type XJV

- Electric Proportional Valve
  Type QJV
  - This two-way proportional valve applies tothe cold and hot water of a fully automatic hot water supply unit.
  - It controls the flow of cold water, hot water, and water for industrial for use.

Type QJV

- Check Valve
  Type TCV
  - This is a resin type check valve for water.

Type TCV

- Automatic Air Vent Valve
  Type CAV
  - This valve automatically releases the air generated in the hot water circuit outside.
  - Since the unit and joint each being made of stainless steel material (SUS) are assembled together, it has excellent corrosion resistance, and also, it is safe and sanitary.
  - This valve is characterized with a large exhaust volume and an excellent air exhaust performance.

Type CAV

- Flow Sensor
  Type ELK
  - This turbine system flow sensor is provided with an impeller which rotates in proportion to the flow.
  - This sensor is used for starting and stopping the burner of an instantaneous hot water supply unit and also integrating the automatic hot water feeding.
  - It outputs pulses according to the flow.

Type ELK

BELLOWS
High Volume OEM Item

Type HBL & WSL

SAGInoMIYA

Hydraulically-Formed Bellows | Type HBL etc...

Hydraulically corrugated bellows made from a tin wall metal pipe.
Material and specifications are selectable for applications.
Match for mass production and quality are very stable.

Material example: Phosphor bronze, beryllium copper, stainless steel, inconel, etc .

Welding Bellows | Type WSL etc ...

Bellows made from precision-made tin wall metal rings.
Suitable for extremely precision use.
Material is selectable for applications.

Material example: Stainless steel, inconel, etc .

Welding Bellows for vacuum use 〈S bellows〉

Welding bellows for low pressure and long stroke use
Main Characteristics: Using anticorrosion material SUS316L
Long stroke structure
With End Fittings for easy to install
Low price and fast delivery

• Applications

Aerospace, marine, chemical, refrigeration, air conditioning, electric, construction, medical, and other various kinds of industrys.
Bellows assembled with fittings are also available.

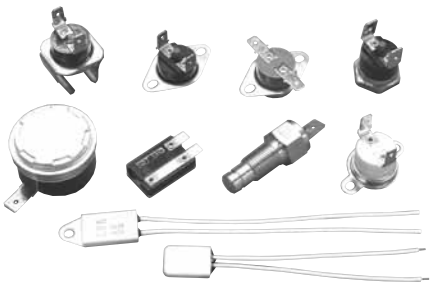
GENERAL DESCRIPTION

Various controls and valves are available by Saginomiya.
The following are some examples.

- 3-WAY CHANGE-OVER VALVE
  Type RKV
  - Control appliance for changing over flow direction in two evaporator type household retrigerator.

Type RKV

- BI-METAL DISC THERMOSTATS
  Type 03, 05, 24
  - For various applications, wide available temperature range: — 20 to 260°C
  - Auto reset or manual reset



Please contact the company for detail information on the above controls.

CONSENT RELATED TO DISCLAIMERS

We, SAGINOMIYA SEISAKUSHO, INC., (hereinafter referred to as "Saginomiya"), truly appreciate your choosing Saginomiya's products (hereinafter referred to as "Products").
When the Products are used, this document as provided below shall be applicable except to the extent that there is anything to the contrary in any applicable estimate, agreement, catalogue, specification, etc.

●CONFIRMATION OF OPERATION

All customers using the Products (hereinafter referred to as "Customers") are requested to, after properly installing the Products, test the operation of the Products to confirm that all the systems in connection with the Products fully function.
In order to prevent the occurrence of bodily injury, fire accidents, serious damage, etc., in connection with the Customers' machinery or equipment due to improper installation of the Products, Saginomiya kindly requests the Customers to take the necessary safety measures by preparing safe designs such as a fail-safe design (*1) and a fire spread prevention design, as well as to make the proper adjustments for product reliability necessary for fault-tolerance (*2).

(*1) Fail-safe design: Design to ensure safety in the event of any mechanical failure
(*2) Fault-tolerance: Utilization of redundancy technology

Periodic Inspection of the Products
Be sure to confirm the proper operation of the Products and keep records of such operation at least once a year.

Saginomiya shall be held harmless and be indemnified by the Customers from any damages incurred due to the Customers failing to conduct the above operational procedures, provided, however, that, this shall not apply if the damages which the Customers incurred due to the defect of the Products caused by Saginomiya.

●RESTRICTIONS OF USE

The Products are designed and manufactured for the purpose of using them for cooling and heating and refrigerating appliances and air conditioning equipment or various industrial equipment, but are not designed and manufactured for the purpose of using the Products for any instrument or system related to human life or health purposes.
Therefore, the use of the Products in fields related to items (1) through (3) below is not intended whatsoever. Saginomiya shall be held harmless and be indemnified from any and all damages incurred by use of the Products under item (3).

(1) In any field related to nuclear power and radiation;
(2) In any field related to space or seafloor equipment;
(3) In any equipment or device requiring a high degree of reliance on such equipment or device with respect to which it is reasonably foreseeable that failure or malfunction of the equipment or device would either directly or indirectly cause serious damage to human life, health or property;

Also, when using the Products under the fields related to items (1) through (9) below (except for item (3), in relation to which the Products must never be used), please be sure to notify our Saginomiya's contact desk in charge of sales and obtain Saginomiya's prior written approval for such use. Saginomiya shall be held harmless and be indemnified from any and all damages incurred by use of the Products in relation to these fields if the Customers do not notify Saginomiya's contact desk and obtain Saginomiya's prior written approval.

(4) Transportation device (railroad, aviation, ship or vessel, vehicle equipment, etc.);
(5) Disaster-prevention or crime-prevention device;
(6) Facility or application directly related to medical equipment, burning appliances, electro thermal equipment, amusement rides and devices, facilities/applications associated directly with billing, or device using flammable fluid;
(7) Equipment requiring high reliance on supply systems such as electricity, gas, water, etc., in large-scale communication system, or in transportation or air traffic control system;
(8) Facilities that are to comply with regulations of governmental / public agencies or specific industries or
(9) Other machineries or equipment equivalent to those set forth in the above items (4) to (8) which require for high reliability and safety.

It is recommended to replace the Products within 5 to 10 years of delivery if no other duration of use is provided in the applicable specifications or instruction manual because the conditions and environment of use also have an impact on the Products.

●SCOPE OF WARRANTY

SAGINOMIYA WILL PROVIDE THE CUSTOMERS WITH REPLACEMENT OR REPAIRED THE PRODUCTS DELIVERED, FREE OF COST, ONLY WITHIN ONE YEAR OF DELIVERY TO THE CUSTOMER, IF FAILURE OCCURS IN THE CUSTOMERS' EQUIPMENT USING THE PRODUCTS DUE TO A DEFECT OF THE PRODUCTS; PROVIDED, HOWEVER, THAT IN ANY EVENT THE RATIO OF THE AMOUNT THAT SAGINOMIYA BEARS FOR THE DAMAGES INCURRED BY THE FAILURE OF THE PRODUCTS OR CUSTOMERS' EQUIPMENT SHALL NOT EXCEED THE PRICE OF THE PRODUCTS WE DELIVERED. IN ADDITION, SAGINOMIYA SHALL BE HELD HARMLESS AND BE INDEMNIFIED FROM ANY AND ALL DAMAGES INCURRED WHEN THE FAILURE OF THE CUSTOMERS' EQUIPMENT OCCURRED DUE TO ANY CAUSE SET FORTH BELOW.

(1) WHEN CAUSED BY INAPPROPRIATE HANDLING OR USE OF THE PRODUCTS BY THE CUSTOMERS (SUCH AS NOT COMPLYING WITH THE CONDITIONS, ENVIRONMENTAL SPECIFICATIONS OR CAUTIONS INDICATED IN ANY APPLICABLE CATALOGUE, SPECIFICATIONS, INSTRUCTION MANUAL, ETC.);
(2) WHEN FAILURE OCCURRED DUE TO ANY REASON OTHER THAN THE PRODUCTS;
(3) WHEN CAUSED BY MODIFICATION OR REPAIR OF THE PRODUCTS MADE BY ANYONE OTHER THAN SAGINOMIYA OR DESIGNEE OF SAGINOMIYA;
(4) WHEN CAUSED BY THE USE OF THE PRODUCTS IN VIOLATION OF THE ABOVE "RESTRICTIONS OF USE" OR "CONFIRMATION OF OPERATION";
(5) WHEN SUCH FAILURE WAS NOT REASONABLY FORESEEABLE AT THE TIME OF SAGINOMIYA'S SHIPMENT; OR
(6) BY ANY OTHER CAUSE NOT ATTRIBUTABLE TO SAGINOMIYA, SUCH AS AN ACT OF GOD, DISASTER, OR ACT OF ANY THIRD PARTY.

PLEASE NOTE THAT THE CUSTOMERS WILL NOT BE ENTITLED TO ANY OF THE ABOVE WARRANTY IF THE CUSTOMERS PURCHASED THE PRODUCTS FROM INTERNET AUCTION, ETC.

SAGINOMIYA
SEISAKUSHO,INC.

Revision1 (2014.12) 2014.10

⚠ WARNING

Failure to read and follow all instruction carefully before installing or operation the product could cause personal injury and/or property damage.

Specifications are subject to change without notice.

First edition 1975. 4 Z

Automatic Controls

REFERENCE INFORMATION
APPROVAL STANDARD LIST
PRESSURE CONTROLS
TEMPERATURE & HUMIDITY CONTROLS
PRESSURE & TEMPERATURE CONTROLS INFORMATION
EXPANSION VALVES
SOLENOID VALVES & CONTROL VALVES
OTHER VALVES
OTHER CONTROL EQUIPMENT

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URL : http://www.saginomiya-global.com/en/

Dear business partner,

Notice of digital thermostats and digital humidistats renewal

Thank you for using our catalog.

This is to inform you that notice of digital thermostats and digital humidistats renewal.
Digital thermostats "Type ULE" and digital humidistats "Type FLE" (AUTOMATIC CONTROLS CATALOG-S page 38 to 40) have been discontinued.
As a renewal item, you can use type ALE or BLE.
For details, please see page 1 to 4 of this booklet.

Also, notice of our move to new premises, and list of errata for AUTOMATIC CONTROLS CATALOG-S, are presented here.
For details, please see page 5 of this booklet.

SAGINOMIYA SEISAKUSHO, INC.
Product Development Department
Public Relations & Advertisement Section

DIGITAL THERMOSTATS & DIGITAL HUMIDISTATS

Type ALE & BLE

SAGInoMIYA

GENERAL DESCRIPTION

- LCD with high brightness backlight
- Power supply voltage: 85 to 264V.AC 50/60Hz
- Forced ON/OFF
- Relay output: 250V. AC , 10A(cos ϕ =1)
  6A(cos ϕ =0.7)
  3A(cos ϕ =0.4)
- Ambient temperature: Controller ··· −10 to 50°C
- Type ALE :
  - Available 0.1°C pitch display (select 0.1°C / 0.5°C / 1°C)
  - Max.4 ON/OFF points during 24 hours model available.
  - MODBUS communication
- Type BLE :
  - Setting in each 1%RH is possible.
  - Ambient temperature: Humidity sensor 0 to 50°C

Type ALE

Type BLE

TYPE NUMBER SELECTION (SPECIFICATIONS)

Type ALE – Digital Thermostats

Unit: °C

Catalog No.	Temp. Set Range	Differential	Temp. Indication	Function	Sensor Part No. (Standard)	Wt. (kg)
ALE–SD11–011	−50 to 30	Min. 0.5	−55 to 40	Standard(1 Step)	TEK–83H609 (with 2m lead)	0.2
ALE–SD12–011				2 Step		
ALE–SD13–011				1 Step + Hi/Lo limit with time delay		
ALE–SD14–011				1 Step + Programmable		
ALE–SD21–011	0 to 100		0 to 110	Standard(1 Step)	TEK–83H601 (with 2m lead)	
ALE–SD22–011				2 Step		
ALE–SD23–011				1 Step + Hi/Lo limit with time delay		
ALE–SD24–011				1 Step + Programmable		

- Temperature sensor type TEK–83H609 or TEK–83H601 and sensor holder are supplied as standard accessories.
- Enclosure IP44(Front of products)

Type BLE – Digital humidistats

Unit: %RH

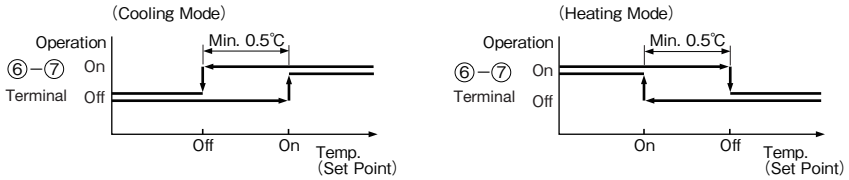
Catalog No.	Humidity Set Range	Differential	Humidity Indication	Calibration	Function	Sensor Part No. (Standard)	Wt. (kg)
BLE–SD11–011	30 to 90	Min. 3	20 to 99	±10	1 Step	HEK–I1R001	0.2
BLE–SD12–011					2 Step		

- Humidity sensor type HEK–I1R001 is supplied as standard accessory.
- Enclosure IP44(Front of products)

OPERATION

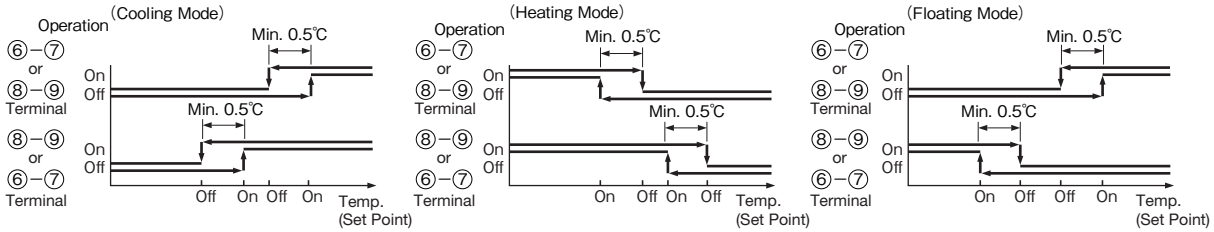
Type ALE – Digital thermostats

Standard (1 Step) model

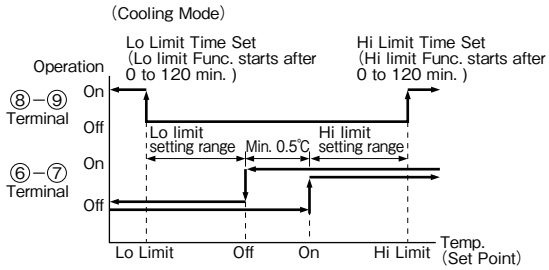


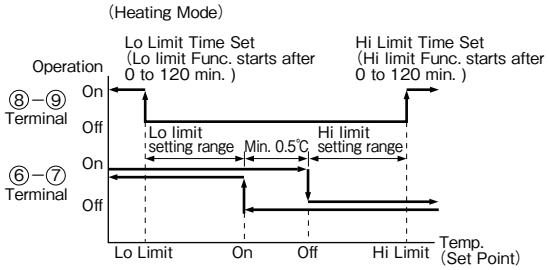
- Free to set On/Off set point independently within the range.
- When Off set point is changed, On set point automatically shifts. (Diff. remains same)
- When On set point is changed, Off set point remains unchanged. (Diff. changes)

2 Step model



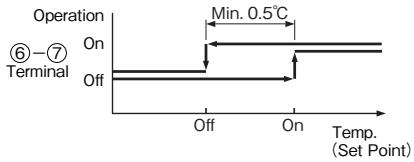
1 Step + Hi/Lo limit with time delay model

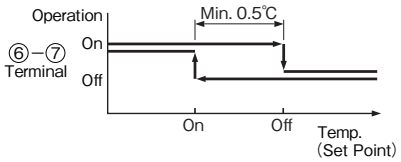




- Hi/Lo limit output is reset manualy (Push reset: Push ENT Key in 2 sec or power off)
- Delay Timer can be set in the time range from 0 to 120 min respectively.

1 Step + Programmable model





- Free to set On/Off set point independently within the range.
- When Off set point is changed, On set point automatically shifts. (Diff. remains same)
- When On set point is changed, Off set point remains unchanged. (Diff. changes)

Programmable function

Max. 4 ON/OFF points during 24 hours model available

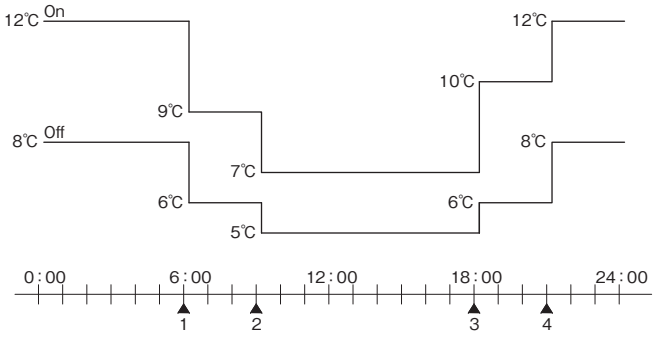
- Change the set temperature (ON / OFF) at the specified time.
- Stop the control at the specified time.

[Program example 1]

Change the set temperature four times a day at the specified time.

Item1:6:00 OFF 6°C / ON 9°C
Item2:9:00 OFF 5°C / ON 7°C
Item3:18:00 OFF 6°C / ON 10°C
Item4:21:00 OFF 8°C / ON 12°C

This program performs the following operations.

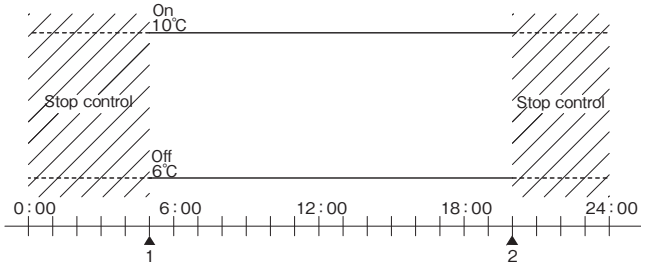


[Program example 2]

Stop control in the night (20:00 to 5:00)

Item1:5:00 OFF 6°C / ON 9°C
Item2:20:00 OFF 5°C / ON 7°C

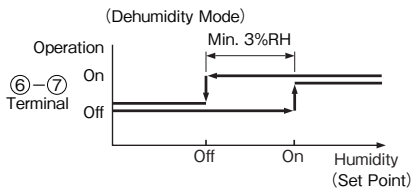
This program performs the following operations.

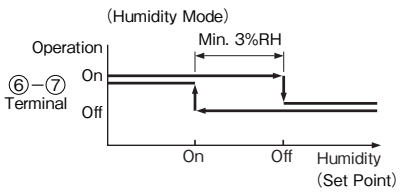


※This model can combine the settings of program example 1 and 2.
In this case also a combination of up to 4 points within 24 hours.

Type BLE – Digital humidistats

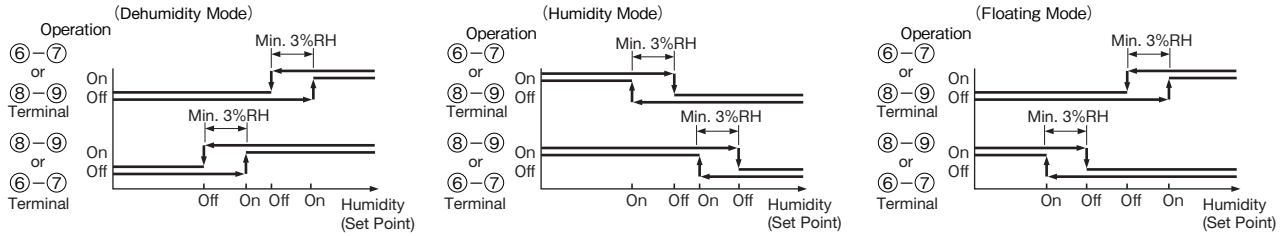
Standard (1 Step) model





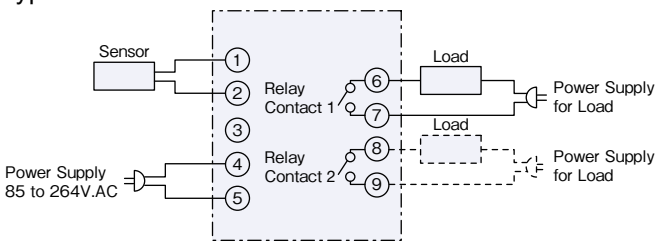
- Free to set On/Off set point independently within the range.
- When Off set point is changed, On set point automatically shifts. (Diff. remains same)
- When On set point is changed, Off set point remains unchanged. (Diff. changes)

2 Step model



WIRING DIAGRAM

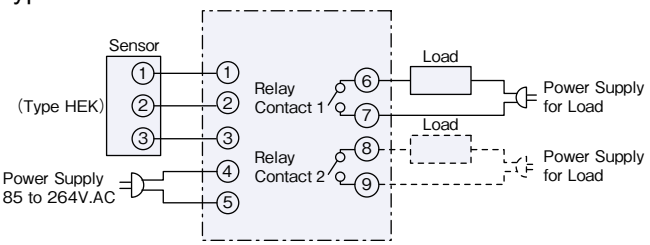
Type ALE



⑥–⑦(Control output): Standard (1 Step) model, 2 Step model,
1 Step model + Hi/Lo limit with time delay model,
and 1 Step model + Programmable model

⑧–⑨(Control output): 2 Step model
(Alarm output) : 1 Step model + Hi/Lo limit with time delay model

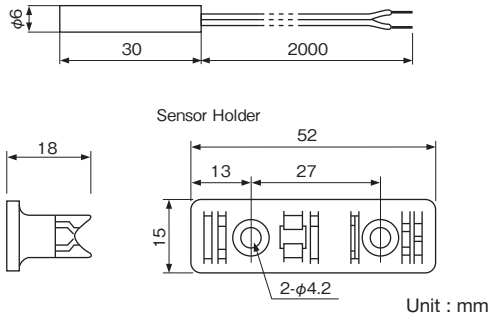
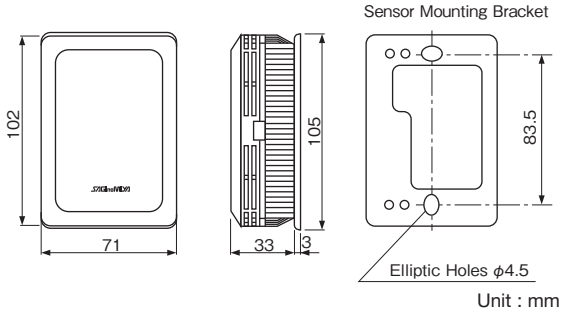
Type BLE



⑥–⑦(Control output): Standard (1 Step) model and 2 Step model

⑧–⑨(Control output): 2 Step model

ACCESSORIES

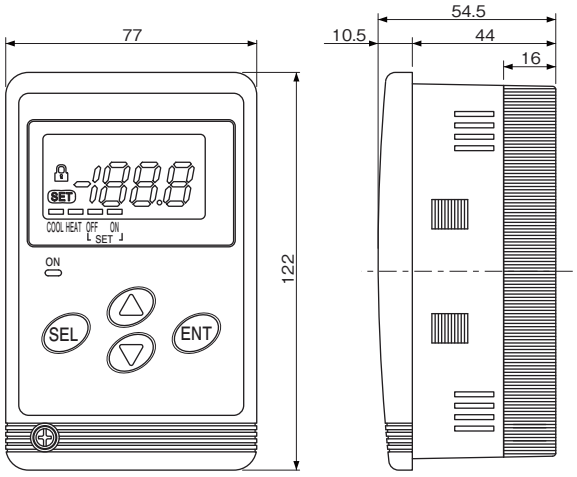
Sensor Part No.	Applicable Model	Dimension	Remarks
TEK–83H601 (Temperature) Lead Wire:Black	ALE–SD21–011 ALE–SD22–011 ALE–SD23–011 ALE–SD24–011	 Unit : mm	• Ambient temp. on usage: −40 to 110°C • When the sensor is in use under the condition of dew, water dripping or outdoor, the sensor should be vertically installed with lead wire outlet downward. • Sensor holder is supplied as standard.
TEK–83H609 (Temperature) Lead Wire:Blue	ALE–SD11–011 ALE–SD12–011 ALE–SD13–011 ALE–SD14–011		• Ambient temp. on usage: −55 to 80°C • When the sensor is in use under the condition of dew, water dripping or outdoor, the sensor should be vertically installed with lead wire outlet downward. • Sensor holder is supplied as standard.
HEK–I1R001 (Humidity)	BLE–SD11–011 BLE–SD12–011	 Unit : mm	• Designed to accord room interior. • Designed to be installed where certain air flow runs and the room humidity is represented. • Depending on load or other conditions, humidity control may become difficult.

Following sensors are available as option. (Ambient temperature sensors are available upon request.)

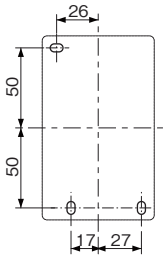
Direct immersion sensor with nipple TEK–83N
Wall mounting sensor TEK–83R
Surface temp. sensor TEK–83E
Direct immersion sensor with terminal cover TEK–83B
Bulb well TEK–00N

DIMENSIONS

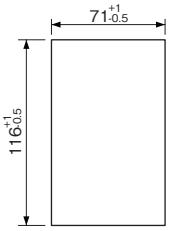
Type ALE, BLE



Wall Mount Installation Dimension



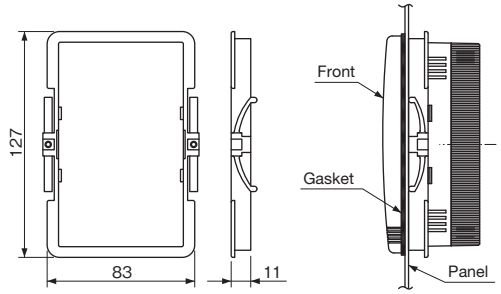
Panel Cut Dimension



Unit : mm

OPTIONAL PARTS

Type ALE-AA02 Panel Mount Bracket including Gasket



Unit : mm

APPENDIX

■Notice of our move to new premises

The sales headquarters of SAGINOMIYA SEISAKUSHO, INC. moved to a new location as mentioned below.

SAGINOMIYA SEISAKUSHO,INC.

Shinjuku Garden Tower 22F

8-2, Okubo 3-chome, Shinjuku-ku, Tokyo, 169-0072 Japan

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E-mail : inter@saginomiya.co.jp

URL : http://www.saginomiya-global.com/en/

■List of errata for AUTOMATIC CONTROLS CATALOG-S

・Page13

Incorrect：

Manual reset type

Unit: MPa {kgf/cm²}

＊1 Catalog No.	＊2 Refrigerant	Range Min.	Range Max.	Manual Reset	Factory Setting Off (On)	Factory Setting On (Off)	Max. Working Pressure	Contact Function	Wt. (kg)
SYS–C106X0M2	R404A, R407C R134a, R22	−0.06{−50cmHg}	0.1 {1}	Automatic operation on pressure decrease, and manual reset.	0.2 {2}	Manual Reset	1.65 {16.5}	Diagram 2	0.25
SYS–C130X0M2		0.5 {5}	0.2 {2}		1.5 {15}		3.3 {33}		

Correct：

Manual reset type

Unit: MPa {kgf/cm²}

＊1 Catalog No.	＊2 Refrigerant	Range Min.	Range Max.	Manual Reset	Factory Setting Off (On)	Factory Setting On (Off)	Max. Working Pressure	Contact Function	Wt. (kg)
SYS–C106X0M2	R404A, R407C R134a, R22	−0.06{−50cmHg}	0.6 {6}	Automatic operation on pressure decrease, and manual reset.	0.2 {2}	Manual Reset	1.65 {16.5}	Diagram 2	0.25
SYS–C130X0M2		0.5 {5}	3 {30}		1.5 {15}		3.3 {33}		

・Page46

Delete "0" at the end of type number.

Incorrect：SNS-C101X0 to C135X0

Correct：SNS-C101X to C135X

・Page73

Incorrect：

TYPE NUMBER SELECTION

Unit: MPa {kgf/cm²}

Catalog No.	Port Size (mm)	Cv Value	Connection Copper Tube O.D.	Connection Style	O.P.D. Min.	O.P.D. Max.	Max. Working Pressure	Operation	Wt. (kg)
TEV–S1220D	1.2	0.037	1/4"	Solder	0	2.7 {27.6}	4.3 {43.8}	Normal Close	0.04
TEV–S1620D	1.6	0.07							
TEV–S1920D	1.9	0.1				1.7 {17.3}			
VPV–L202D	1.8	0.07	1/4"		0	2.06 {21}		Normal Open	0.06
VPV–603D	5.8	0.65	5/16"		0.005 {0.05}	3.6 {36.7}		Normal Close	0.08
VPV–803DQ50	7.8	1.5	3/8"		0.01 {0.1}	2.75 {28}			0.14
VPV–1204DQ50	11.0	3.0	1/2"		0.015 {0.15}				0.26

Correct：

TYPE NUMBER SELECTION

Unit: MPa {kgf/cm²}

Catalog No.	Port Size (mm)	Cv Value	Connection Copper Tube O.D.	Connection Style	O.P.D. Min.	O.P.D. Max.	Max. Working Pressure	Operation	Wt. (kg)
TEV–S1220D	1.2	0.037	1/4"	Solder	0	3.6 {36.7}	4.3 {43.8}	Normal Close	0.025
TEV–S1620D	1.6	0.07							
TEV–S1920D	1.9	0.1				2.75 {28}			
VPV–L202D	1.8	0.07	1/4"		0	2.06 {21}		Normal Open	0.06
VPV–603D	5.8	0.65	5/16"		0.005 {0.05}	3.6 {36.7}		Normal Close	0.08
VPV–803DQ50	7.8	1.5	3/8"		0.01 {0.1}	2.75 {28}			0.14
VPV–1204DQ50	11.0	3.0	1/2"		0.015 {0.15}				0.26

CONSENT RELATED TO DISCLAIMERS

We, SAGINOMIYA SEISAKUSHO, INC., (hereinafter referred to as "Saginomiya"), truly appreciate your choosing Saginomiya's products (hereinafter referred to as "Products").
When the Products are used, this document as provided below shall be applicable except to the extent that there is anything to the contrary in any applicable estimate, agreement, catalogue, specification, etc.

●CONFIRMATION OF OPERATION

All customers using the Products (hereinafter referred to as "Customers") are requested to, after properly installing the Products, test the operation of the Products to confirm that all the systems in connection with the Products fully function.
In order to prevent the occurrence of bodily injury, fire accidents, serious damage, etc., in connection with the Customers' machinery or equipment due to improper installation of the Products, Saginomiya kindly requests the Customers to take the necessary safety measures by preparing safe designs such as a fail-safe design (*1) and a fire spread prevention design, as well as to make the proper adjustments for product reliability necessary for fault-tolerance (*2).

(*1) Fail-safe design: Design to ensure safety in the event of any mechanical failure
(*2) Fault-tolerance: Utilization of redundancy technology

Periodic Inspection of the Products
Be sure to confirm the proper operation of the Products and keep records of such operation at least once a year.

Saginomiya shall be held harmless and be indemnified by the Customers from any damages incurred due to the Customers failing to conduct the above operational procedures, provided, however, that, this shall not apply if the damages which the Customers incurred due to the defect of the Products caused by Saginomiya.

●RESTRICTIONS OF USE

The Products are designed and manufactured for the purpose of using them for cooling and heating and refrigerating appliances and air conditioning equipment or various industrial equipment, but are not designed and manufactured for the purpose of using the Products for any instrument or system related to human life or health purposes.
Therefore, the use of the Products in fields related to items (1) through (3) below is not intended whatsoever. Saginomiya shall be held harmless and be indemnified from any and all damages incurred by use of the Products under item (3).

(1) In any field related to nuclear power and radiation;
(2) In any field related to space or seafloor equipment;
(3) In any equipment or device requiring a high degree of reliance on such equipment or device with respect to which it is reasonably foreseeable that failure or malfunction of the equipment or device would either directly or indirectly cause serious damage to human life, health or property;

Also, when using the Products under the fields related to items (1) through (9) below (except for item (3), in relation to which the Products must never be used), please be sure to notify our Saginomiya's contact desk in charge of sales and obtain Saginomiya's prior written approval for such use. Saginomiya shall be held harmless and be indemnified from any and all damages incurred by use of the Products in relation to these fields if the Customers do not notify Saginomiya's contact desk and obtain Saginomiya's prior written approval.

(4) Transportation device (railroad, aviation, ship or vessel, vehicle equipment, etc.);
(5) Disaster-prevention or crime-prevention device;
(6) Facility or application directly related to medical equipment, burning appliances, electro thermal equipment, amusement rides and devices, facilities/applications associated directly with billing, or device using flammable fluid;
(7) Equipment requiring high reliance on supply systems such as electricity, gas, water, etc., in large-scale communication system, or in transportation or air traffic control system;
(8) Facilities that are to comply with regulations of governmental / public agencies or specific industries or
(9) Other machineries or equipment equivalent to those set forth in the above items (4) to (8) which require for high reliability and safety.

It is recommended to replace the Products within 5 to 10 years of delivery if no other duration of use is provided in the applicable specifications or instruction manual because the conditions and environment of use also have an impact on the Products.

●SCOPE OF WARRANTY

SAGINOMIYA WILL PROVIDE THE CUSTOMERS WITH REPLACEMENT OR REPAIRED THE PRODUCTS DELIVERED, FREE OF COST, ONLY WITHIN ONE YEAR OF DELIVERY TO THE CUSTOMER, IF FAILURE OCCURS IN THE CUSTOMERS' EQUIPMENT USING THE PRODUCTS DUE TO A DEFECT OF THE PRODUCTS; PROVIDED, HOWEVER, THAT IN ANY EVENT THE RATIO OF THE AMOUNT THAT SAGINOMIYA BEARS FOR THE DAMAGES INCURRED BY THE FAILURE OF THE PRODUCTS OR CUSTOMERS' EQUIPMENT SHALL NOT EXCEED THE PRICE OF THE PRODUCTS WE DELIVERED. IN ADDITION, SAGINOMIYA SHALL BE HELD HARMLESS AND BE INDEMNIFIED FROM ANY AND ALL DAMAGES INCURRED WHEN THE FAILURE OF THE CUSTOMERS' EQUIPMENT OCCURRED DUE TO ANY CAUSE SET FORTH BELOW.

(1) WHEN CAUSED BY INAPPROPRIATE HANDLING OR USE OF THE PRODUCTS BY THE CUSTOMERS (SUCH AS NOT COMPLYING WITH THE CONDITIONS, ENVIRONMENTAL SPECIFICATIONS OR CAUTIONS INDICATED IN ANY APPLICABLE CATALOGUE, SPECIFICATIONS, INSTRUCTION MANUAL, ETC.);
(2) WHEN FAILURE OCCURRED DUE TO ANY REASON OTHER THAN THE PRODUCTS;
(3) WHEN CAUSED BY MODIFICATION OR REPAIR OF THE PRODUCTS MADE BY ANYONE OTHER THAN SAGINOMIYA OR DESIGNEE OF SAGINOMIYA;
(4) WHEN CAUSED BY THE USE OF THE PRODUCTS IN VIOLATION OF THE ABOVE "RESTRICTIONS OF USE" OR "CONFIRMATION OF OPERATION";
(5) WHEN SUCH FAILURE WAS NOT REASONABLY FORESEEABLE AT THE TIME OF SAGINOMIYA'S SHIPMENT; OR
(6) BY ANY OTHER CAUSE NOT ATTRIBUTABLE TO SAGINOMIYA, SUCH AS AN ACT OF GOD, DISASTER, OR ACT OF ANY THIRD PARTY.

PLEASE NOTE THAT THE CUSTOMERS WILL NOT BE ENTITLED TO ANY OF THE ABOVE WARRANTY IF THE CUSTOMERS PURCHASED THE PRODUCTS FROM INTERNET AUCTION, ETC.

SAGINOMIYA
SEISAKUSHO,INC.

Revision1 (2014.12) 2014.10

⚠ WARNING

Failure to read and follow all instruction carefully before installing or operation the product could cause personal injury and/or property damage.

⚠ NOTES FOR SAFETY

Failure to read and follow all instruction carefully before installing or operating the product could cause personal injury and/or property damage.

Specifications are subject to change without notice.

2017.2

SAGINOMIYA SEISAKUSHO,INC.

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MrCool "World Class Quality"