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CATALOG-R



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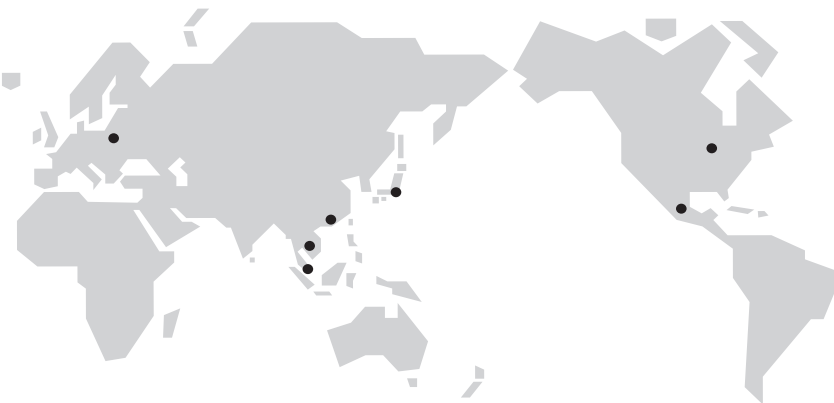


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AUTOMATIC CONTROLS

Catalog-edition-**R**

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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 :

$$\begin{aligned} ^\circ\text{C} &= 5/9 (^\circ\text{F} - 32) \\ ^\circ\text{F} &= 9/5 \times ^\circ\text{C} + 32 \end{aligned}$$

°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	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	°C	↓	°F
0.056	0.1	0.18	3.33	6	10.8
0.111	0.2	0.36	3.89	7	12.6
0.278	0.5	0.90	4.44	8	14.4
0.56	1	1.8	5.00	9	16.2
1.11	2	3.6	5.56	10	18.0
1.67	3	5.4	6.11	11	19.8
2.22	4	7.2	6.67	12	21.6
2.78	5	9.0	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 show conversion from kgf/cm² to MPa.

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

kgf/cm²	↓	MPa	kgf/cm²	↓	MPa	kgf/cm²	↓	MPa	kgf/cm²	↓	MPa
0	0	0	214.141	21	2.05940	520.057	51	5.00139	825.973	81	7.94339
1.01972	0.1	0.009806	224.338	22	2.15746	530.254	52	5.09946	836.170	82	8.04145
2.03944	0.2	0.019613	234.535	23	2.25553	540.451	53	5.19752	846.367	83	8.13952
3.05916	0.3	0.029420	244.732	24	2.35360	550.648	54	5.29559	856.564	84	8.23759
4.07888	0.4	0.039226	254.930	25	2.45166	560.846	55	5.39366	866.762	85	8.33565
5.09860	0.5	0.049033	265.127	26	2.54973	571.043	56	5.49172	876.959	86	8.43372
6.11832	0.6	0.058839	275.324	27	2.64780	581.240	57	5.58279	887.156	87	8.53179
7.13804	0.7	0.068646	285.521	28	2.74586	591.437	58	5.68786	897.353	88	8.62985
8.15776	0.8	0.078453	295.718	29	2.84393	601.634	59	5.78592	907.550	89	8.72792
9.17748	0.9	0.088259	305.916	30	2.94199	611.832	60	5.88399	917.748	90	8.82598
10.1972	1	0.09807	316.113	31	3.04006	622.029	61	5.98206	927.945	91	8.92405
20.3944	2	0.19613	326.310	32	3.18313	632.226	62	6.08012	938.142	92	9.02212
30.5916	3	0.29420	336.507	33	3.23619	642.423	63	6.17819	948.339	93	9.12018
40.7888	4	0.39227	346.704	34	3.33426	652.620	64	6.27626	958.536	94	9.21825
50.9860	5	0.49033	356.902	35	3.43233	662.818	65	6.37432	968.734	95	9.31632
61.1832	6	0.58840	367.099	36	3.53039	673.015	66	6.47239	978.931	96	9.41438
71.3804	7	0.68647	377.296	37	3.62846	683.212	67	6.57046	989.128	97	9.51245
81.5776	8	0.78453	387.493	38	3.72653	693.409	68	6.66852	999.325	98	9.61052
91.7748	9	0.88260	397.690	39	3.82459	703.606	69	6.76659	1000.52	99	9.70858
101.972	10	0.98066	407.888	40	3.92266	713.804	70	6.86465	1019.72	100	9.80665
112.169	11	1.07873	418.085	41	4.02073	724.001	71	6.96272	1529.58	150	14.70997
122.366	12	1.17680	428.282	42	4.11879	734.198	72	7.06079	2039.44	200	19.6133
132.563	13	1.27486	438.479	43	4.21686	744.395	73	7.15885	2549.30	250	24.51662
142.760	14	1.37293	448.676	44	4.31493	754.592	74	7.25692	3059.16	300	29.41995
152.958	15	1.47100	458.874	45	4.41299	764.790	75	7.35499	3569.02	350	34.32327
163.155	16	1.56906	469.071	46	4.51106	774.987	76	7.45305	4078.88	400	39.2266
173.352	17	1.66713	479.268	47	4.60913	785.184	77	7.55112	4588.74	450	44.12992
183.549	18	1.76520	489.465	48	4.70719	795.381	78	7.64919	5098.60	500	49.03325
193.746	19	1.96133	499.662	49	4.80526	805.578	79	7.74725			
203.944	20	1.96133	509.860	50	4.90332	815.776	80	7.84532			

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

kgf/cm ²	↓	psi	kgf/cm ²	↓	psi	kgf/cm ²	↓	psi	kgf/cm ²	↓	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	1046	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

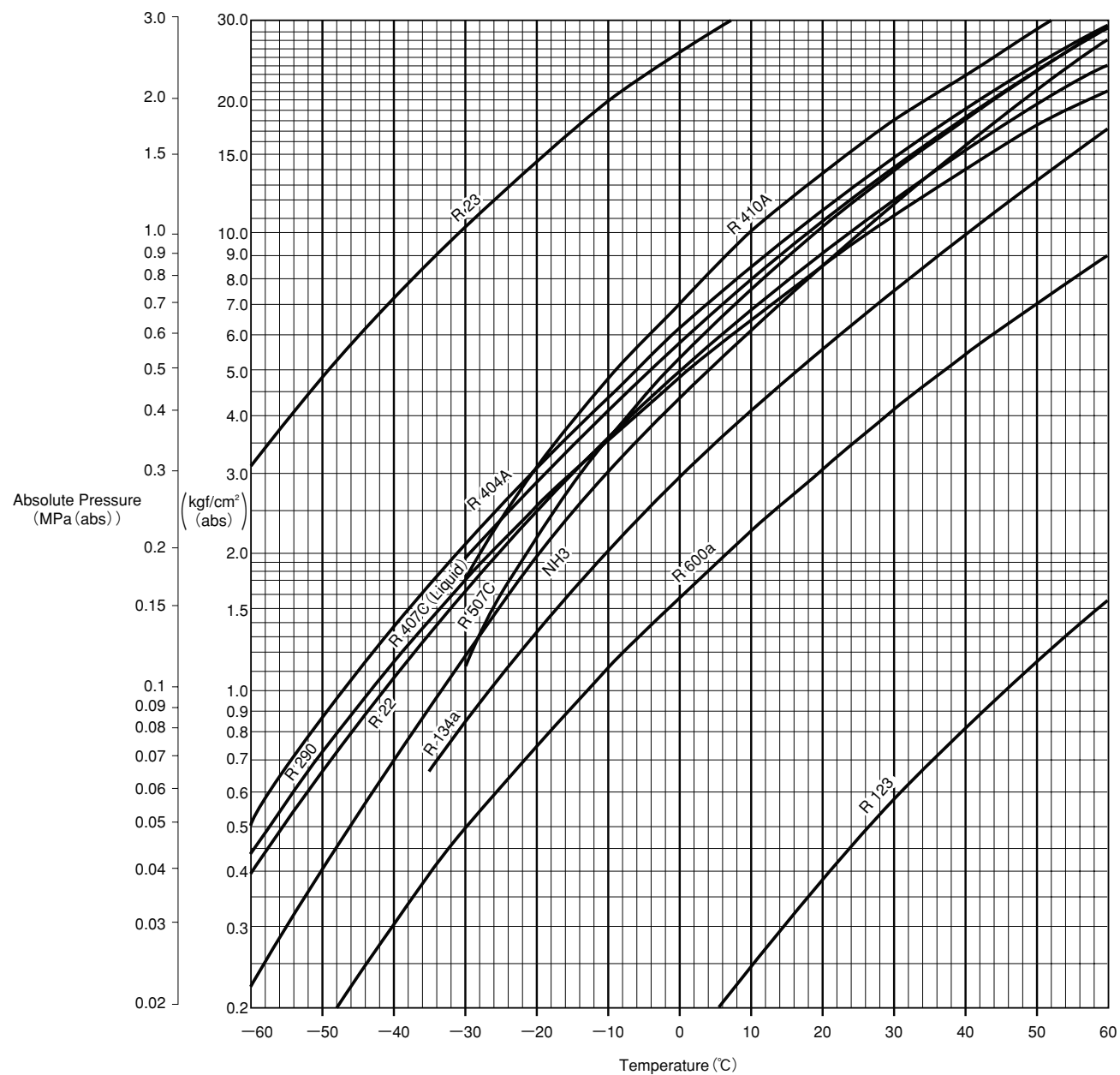
(MPa ↔ MPa (abs) ↔ cmHg_v ↔ kgf/cm²(abs))

MPa	MPa (abs)	cmHg _v	kgf/cm ² (abs)	MPa	MPa (abs)	cmHg _v	kgf/cm ² (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

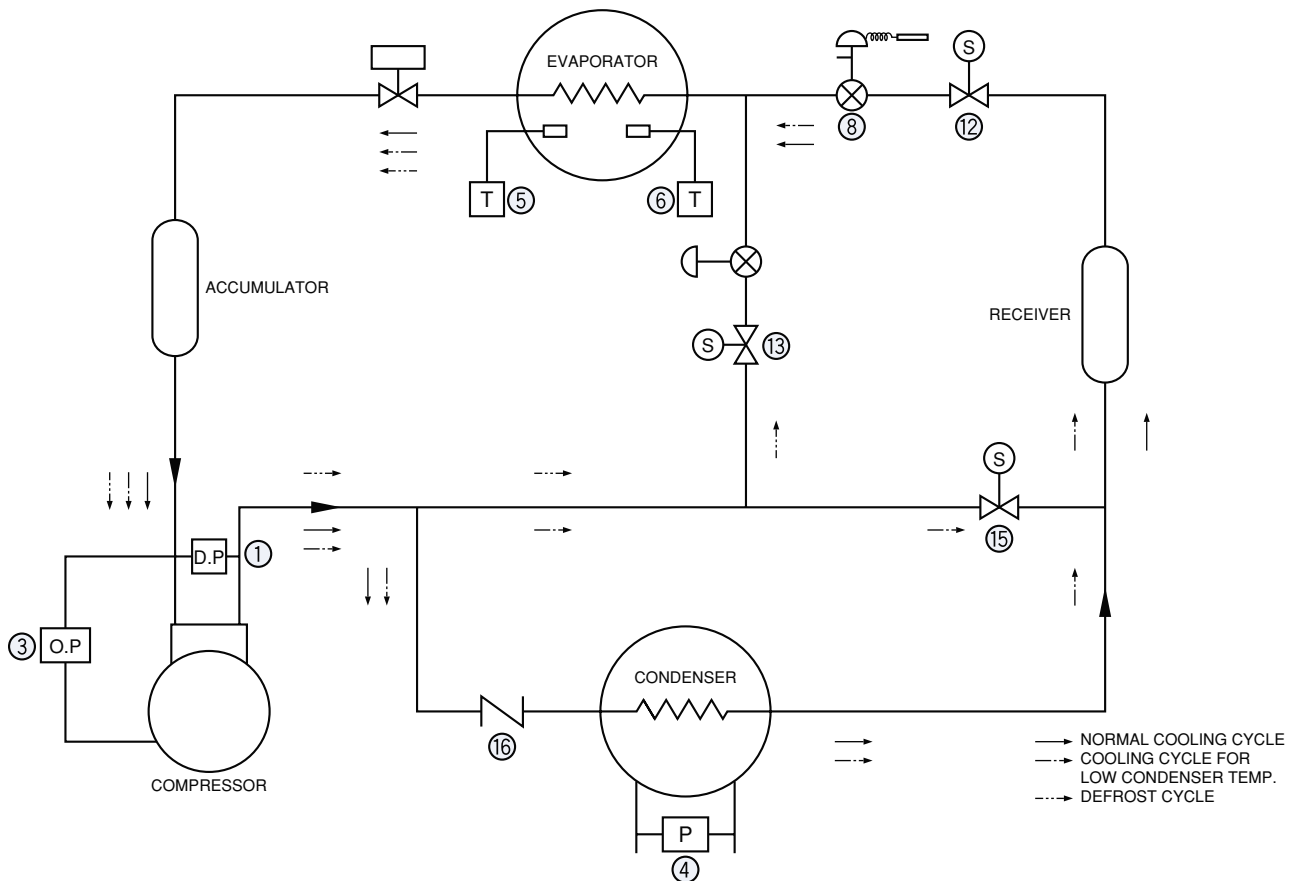
1 kg=2.20462 lb, 1mm=0.03937 inch
 1 U.S. Refrigeration Ton=12,000 Btu/h=3,024 kcal/h
 1 kgf/cm²=98.0667 kPa=0.980667 bar

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



3. APPLICATION EXAMPLES

1). Refrigeration System with Hot Gas Defrosting



① Dual Pressure Controls
Type DNS



② Pressure Controls
Type SNS



③ Oil Protection Controls
Type ONS



④ Differential Pressure Controls
Type WNS



⑤ Temperature Controls
Type TNS



⑥ Temperature Controls
Type ALS



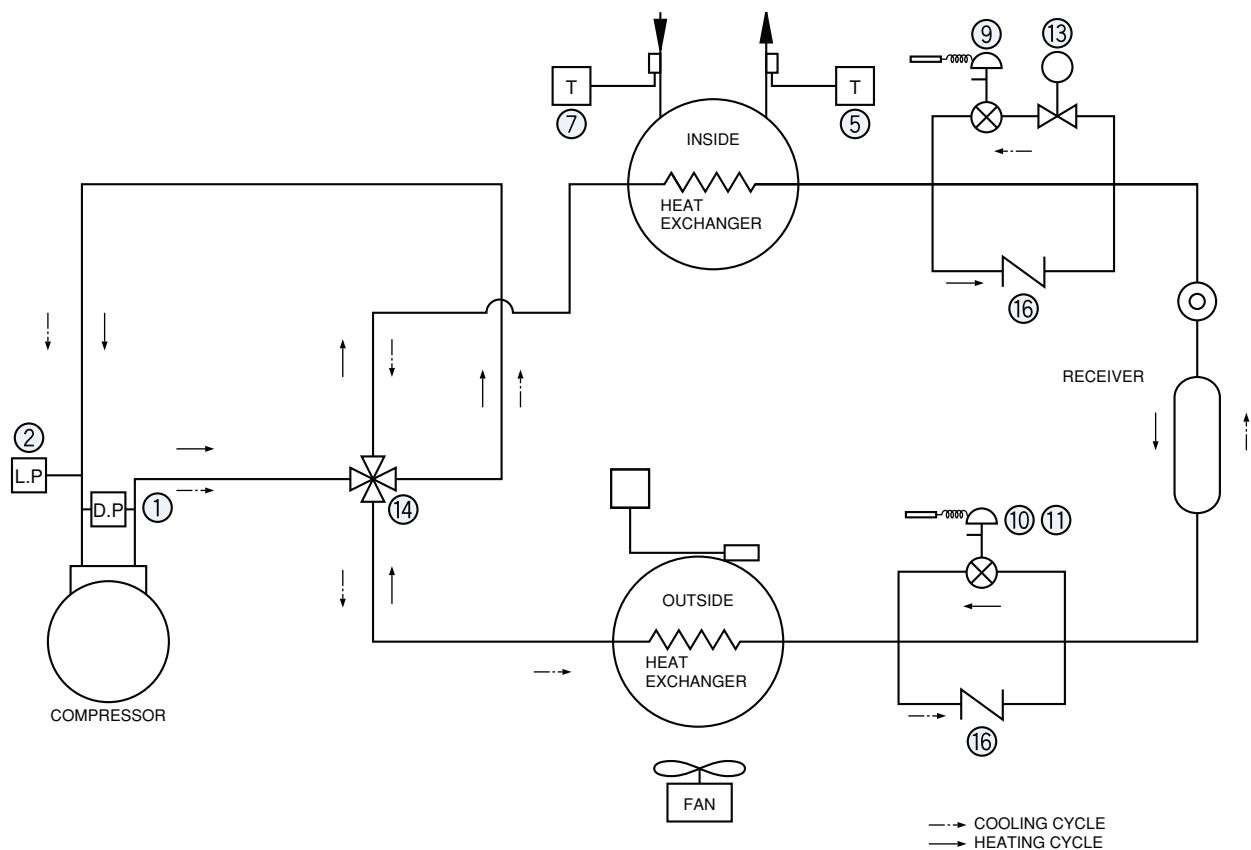
⑦ Electronic Step Thermostat
Type DSE



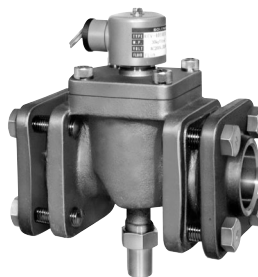
⑧ Thermostatic Expansion Valve
Type ATX



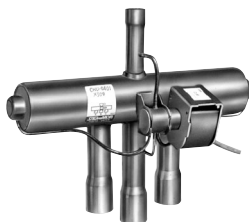
2). Heat Pump System...Chiller



- ⑨ Thermostatic Expansion Valve Type RCX...B ⑩ Thermostatic Expansion Valve Type WHX ⑪ Thermostatic Expansion Valve Type BHX ⑫ Solenoid Valve Type REV...E



- ⑬ Solenoid Valve Type REV...B ⑭ 4-Way Reversing Valve Type STF ⑮ Solenoid Valve Type NEV ⑯ Check 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		
	Pressure Controls	Temperature Controls	Solenoid Valve
CE	ANS(W), DNS(W), FNS(W), HNS(W), ONS(W), SNS(W), WNS(W), ETB, FTB, HTB, LTB, ACB, LCB, CFE, XSK, NSK	BNS(W), CNS(W), TNS(W), TNE	GEV, IEV, JEV, NEV, REV, SEV, WEV, AMV, GMV, HMV, RMV, VHV, STF, BPV
	Flow Switch	Defrost Controls	Fan Speed Controller
	FQS	DDE	RGE, XGE
UL	Pressure Controls	Temperature Controls	Solenoid Valve
	DNS, HNS, SNS, WNS, ETB, FTB, HTB, LTB, ACB, XSK, NSK	CNS, TNS, EWS, FWS, LWS, RWS	NEV, TEV, VPV VHV, STF
	Flow Switch	Digital Thermostats	Expansion Valve
	FQS	TNE	AKV, SKV, UKV, VKV
CSA	Pressure Controls	Fan Speed Controller	Solenoid Valve
	DNS, SNS, ETB, FTB, HTB, LTB, ACB	RGE, XGE	NEV, REV, WEV
IECEE	Pressure Controls	Fan Speed Controller	
	ETB, FTB, LTB, HTB, ACB	XGE	
DIN	DNS, SNS, ACB	—	
VDE	Pressure Controls	Solenoid Valve	
	ETB, FTB, HTB, LTB, ACB	NEV, VPV, STF	
NEMKO	Pressure Controls	Temperature Controls	
	DNS, HNS, SNS	CNS, TNS	

Standard for marine

	Type Number	
	Pressure Switch	Temperature Switch
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	9–10
Type ACB, LCB & HCB	
SMALL PRESSURE CONTROLS	11–12
Type LTB, ETB, HTB & FTB	
SINGLE FUNCTION PRESSURE CONTROLS	13–14
Type SNS & HNS	
PRESSURE CONTROLS WITH NARROW DIFFERENTIAL ..	15–16
Type FNS & ANS	
DUAL PRESSURE CONTROLS	17–18
Type DNS	
OIL PROTECTION CONTROLS	19–20
Type ONS	
DIFFERENTIAL PRESSURE CONTROLS	21
Type WNS	
DIGITAL PRESSURE SWITCHES	22
Type CFE	
PRESSURE SENSORS	23–25
Type NSK & XSK	

SMALL PRESSURE CONTROLS (DISC TYPE)

High Volume OEM Item

Type ACB, LCB & HCB

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 HCB...High working pressure



Type ACB



Type ACB



Type HCB

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

UL recognized (available upon request for Type ACB)

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
								⑦	
								⑧	
SPST (Low Cut)	Open	Fan Control	①	0.03					
		Water Proof	Low Pressure Cut Out	②		0.06			
1/4" Solder				④					

Type HCB

Catalog No.	Setting		Max. Pressure	Contact Functions	Pressure Connections	Terminal Construction	Application	Wt. (kg)
	Off	On						
HCB	2.5±0.3 {25.5±3}	2.0±0.3 {20.4±3}	8.0 {80}	SPST	Male M10	Direct Coupler	High Working Pressure	0.044

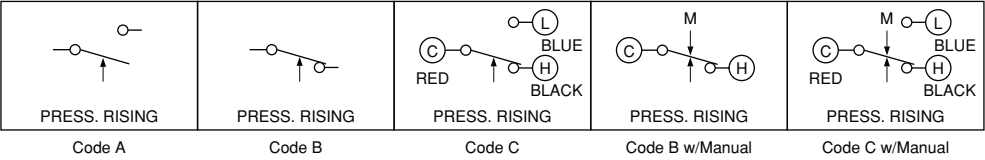
ELECTRICAL RATINGS

Type ACB, LCB & HCB

Category of Ratings			M Rating			L Rating			T Rating
Rated Voltage (V)		Power Factor (cos ϕ)	125V.AC	250V.AC	12V.DC	125V.AC	250V.AC	12V.DC	12/24V.DC
Rated Amps. (A)									
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

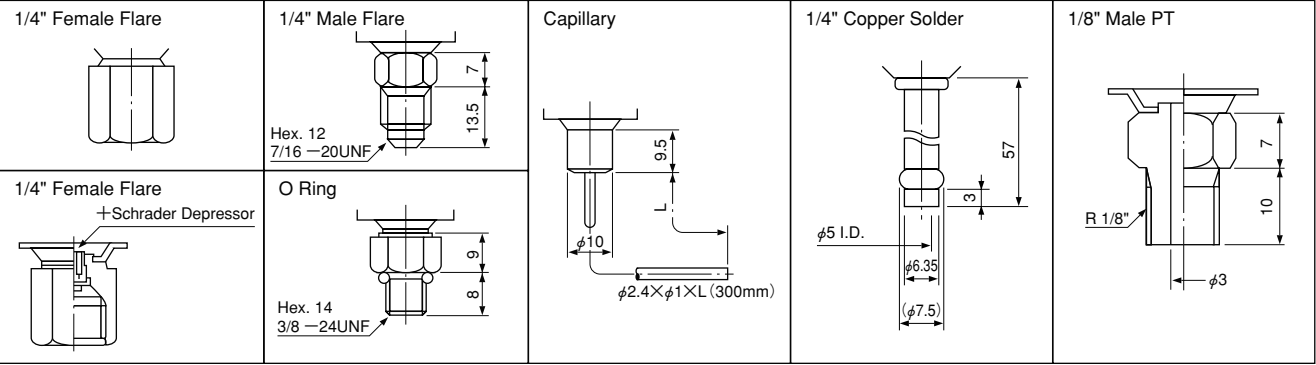
Type ACB, LCB & HCB



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

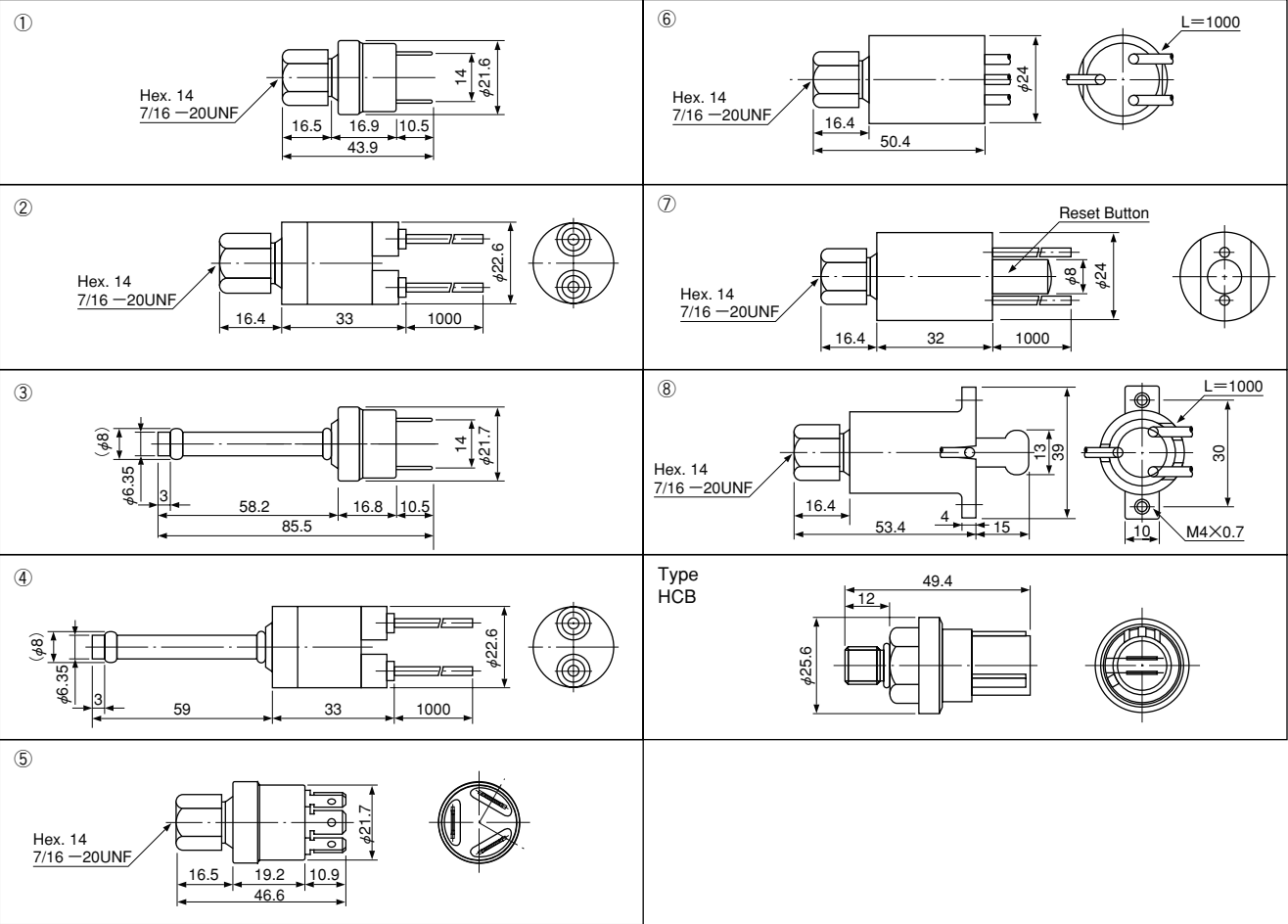
PRESSURE CONNECTIONS

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		Differential		Factory Setting		Max. Working Pressure	Pressure Connections	* Electrical Ratings	Wt. (kg)			
		Min.	Max.			On	Off							
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	

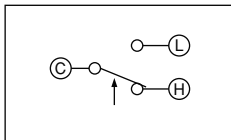
* Refer to Electrical Ratings Table in the list below.

ELECTRICAL RATINGS

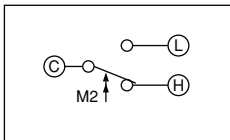
Rated Voltage (V) Rated Amps. (A)		Terminal	Power Factor (cos ϕ)	H Rating		M Rating		L Rating	
				125V.AC	250V.AC	125V.AC	250V.AC	125V.AC	250V.AC
Non-Inductive Current		C-L	1	1 to 10	1 to 10	1 to 3	0.5 to 1.5	0.02 to 2	0.02 to 1
Inductive Current	Full Load		0.75	1 to 6	1 to 6	1 to 2	0.5 to 1		
	Locked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

CONTACT FUNCTIONS

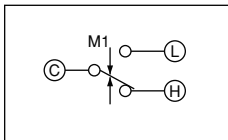
Type LTB & HTB



Type ETB (M2 : Manual Reset)



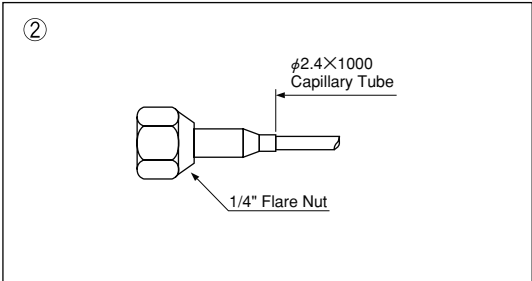
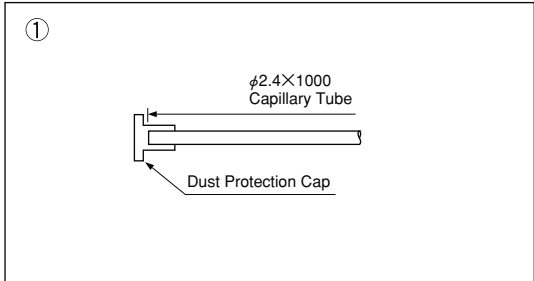
Type FTB (M1 : Manual Reset)



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

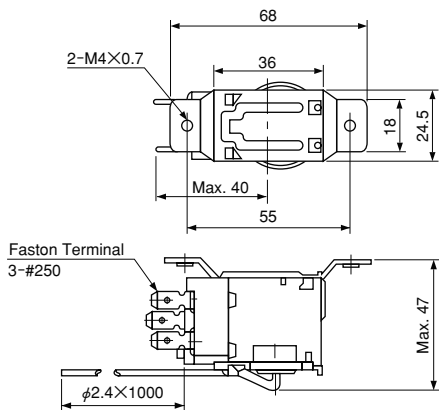
PRESSURE CONNECTIONS



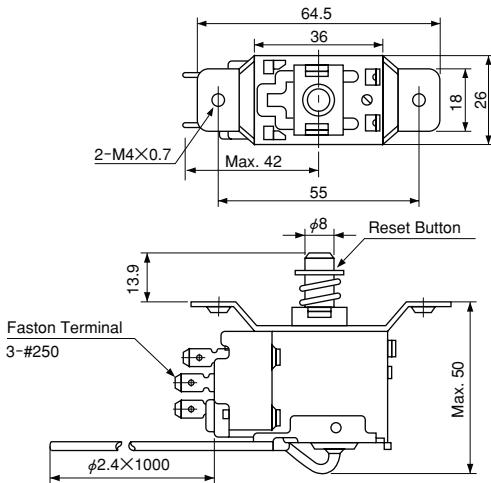
• 1/4" Solder Connection is also available upon request.

DIMENSIONS

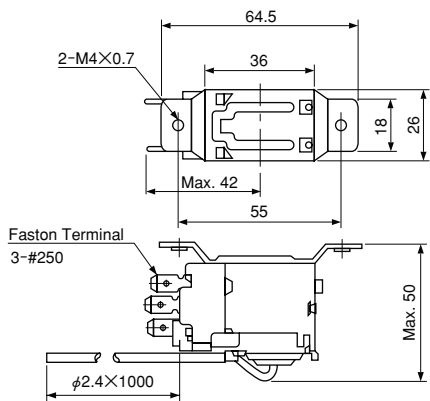
Type LTB



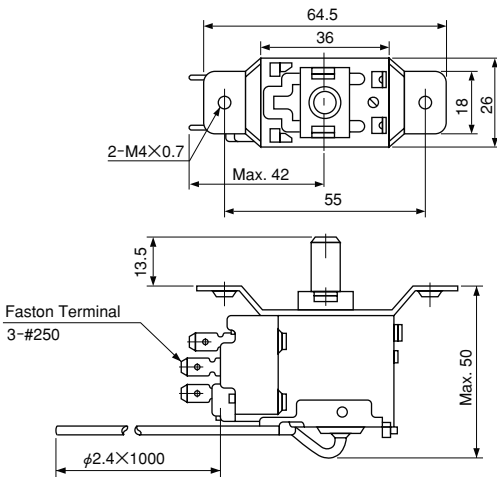
Type ETB



Type HTB



Type FTB



Unit: mm

SINGLE FUNCTION PRESSURE CONTROLS

Type SNS & HNS

SAGINOMIYA

GENERAL DESCRIPTION

- For use with fluorinated refrigerants as well as with air and water. (Allowable fluid temp.: -20 to 120°C)
- Type SNS for universal application.
- Type HNS for high pressure safety cut out.
- 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).
- Stainless steel models are available upon request.

CE mark applicable (available upon request)

UL recognized (available upon request)



Type SNS



Type HNS

TYPE NUMBER SELECTION (SPECIFICATIONS)

Type SNS—Automatic Reset Type

Unit: MPa {kgf/cm²}

Type SNS Automatic Reset Type								Unit: mm (kg/cm ²)	
Catalog No.	Range		Differential		Factory Setting		Max. Working Pressure	Contact Function	Wt. (kg)
	Min.	Max.	Min.	Max.	Off (On)	On (Off)			
SNS-C101X	−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	0.33
SNS-C102X	−0.02 {−20cmHg}	0.2 {2}	0.025 {0.25}	0.15 {1.5}			0.5 {5}		
SNS-C103X	−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	−0.06 {−50cmHg}	0.4 {4}	0.04 {0.4}		0.1 {1}	0.2 {2}	1.5 {15}		
SNS-C106X	−0.06 {−50cmHg}	0.6 {6}	0.06 {0.6}	0.4 {4}	0.2 {2}	0.3 {3}			
SNS-C110X	0.1 {1}	1 {10}	0.1 {1}	0.3 {3}	0.4 {4}	0.6 {6}	3 {30}		
SNS-C120X	0.5 {5}	2 {20}	0.2 {2}	0.5 {5}	1.2 {12}	1.5 {15}			
SNS-C130X		3 {30}	0.3 {3}	1 {10}	2 {20}	2.5 {25}	3.3 {33}		
SNS-C135X	1 {10}	3.5 {35}	0.5 {5}	1.5 {15}	2.5 {25}	3 {30}	3.8 {38}		

Type SNS—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			
SNS-C102XM2	-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	0.33
SNS-C106XM2	-0.06 {-50cmHg}	0.6 {6}		0.2 {2}		1.5 {15}		
SNS-C130XM2	0.5 {5}	3 {30}		2 {20}		3.3 {33}		

* Based on the 1-3 terminal connection.

Type HNS—Automatic Reset Type

Unit: MPa {kgf/cm²}

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

* Based on the 1-3 terminal connection.

Type HNS—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 4	0.24

* Based on the 1-3 terminal connection.

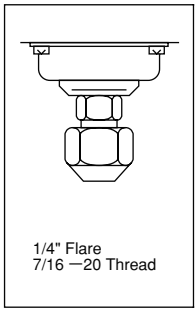
• Enclosure: IP20

• Drip Proof Models: Available upon request. (Refer to Pages 46, 47.)

ELECTRICAL RATINGS

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

PRESSURE CONNECTIONS



Refer to Pages 43, 44

Standard

CONTACT FUNCTIONS

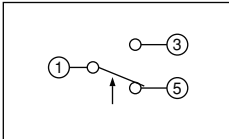


Diagram 1

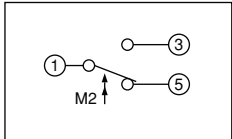


Diagram 2

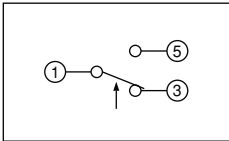


Diagram 3

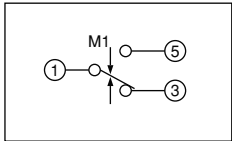


Diagram 4

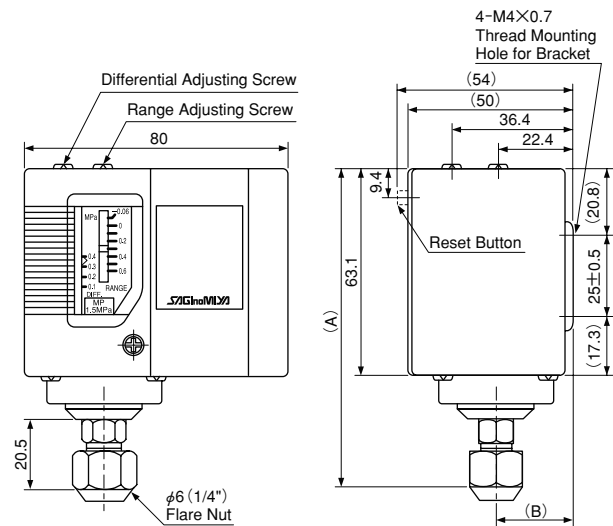
	Diagram 1 & 2	Diagram 3 & 4
1	Common Terminal	Common Terminal
3	Close on Pressure Increase	Open on Pressure Increase
5	Close on Pressure Decrease	Open on Pressure Decrease

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

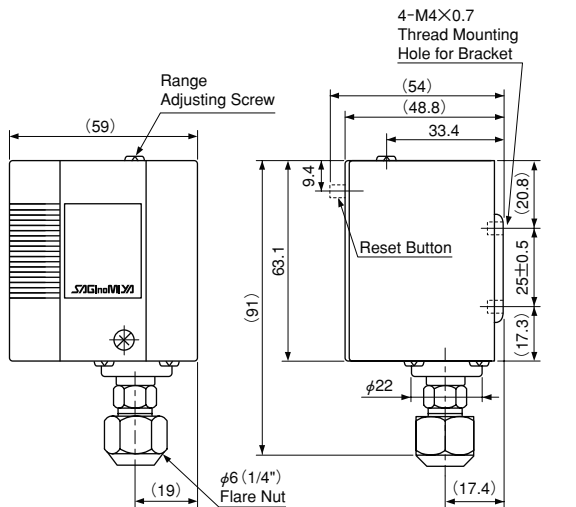
DIMENSIONS

Standard Model

Type SNS



Type HNS



Unit: mm

Catalog No.	Unit: mm	
	A	B
SNS-C101X	113.3	22.4
SNS-C102X	99.7	
SNS-C103X		
SNS-C104X		
SNS-C106X	96.8	
SNS-C110X		
SNS-C120X	95.9	18.4
SNS-C130X	93.5	
SNS-C135X		
SNS-C102XM2	99.7	22.4
SNS-C106XM2	96.8	
SNS-C130XM2	93.5	18.4

PRESSURE CONTROLS WITH NARROW DIFFERENTIAL

Type FNS & ANS

SAGInoMIXA

GENERAL DESCRIPTION

- For use with fluorinated refrigerants as well as with air and water. (Allowable fluid temp.: -20 to 120°C)
- 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

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-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}	

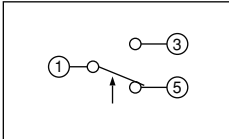
• Enclosure: IP20

• Drip Proof Models: Available upon request. (Refer to Pages 46, 47.)

ELECTRICAL RATINGS

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

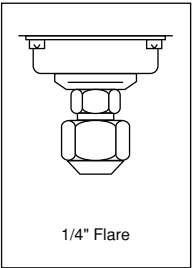
CONTACT FUNCTIONS



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

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

PRESSURE CONNECTIONS



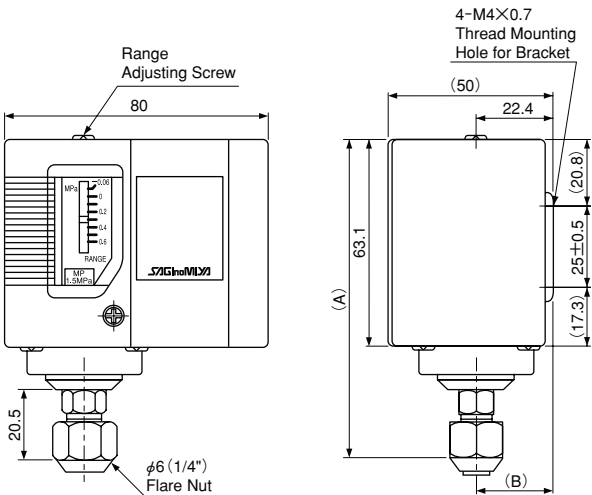
Standard

Refer to Pages 43, 44

DIMENSIONS

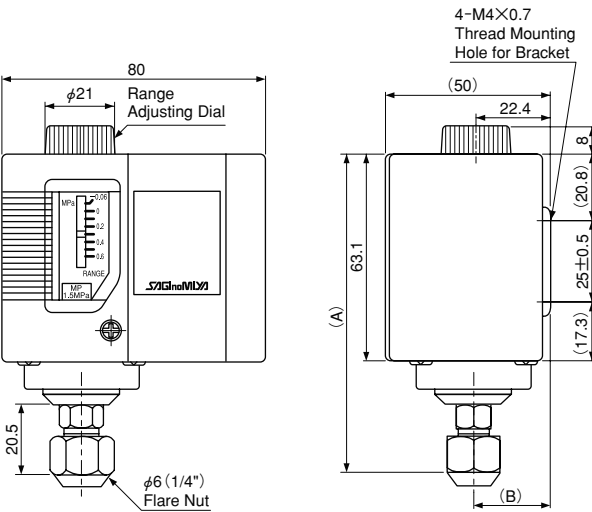
Standard Model

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

DUAL PRESSURE CONTROLS

Type DNS

SAGINOMIYA

GENERAL DESCRIPTION

- For use with fluorinated refrigerants as well as with air and water. (Allowable Fluid Temp.: -20 to 120°C)
- Various contact functions are available.
- Available drip proof enclosure for marine application or explosion proof enclosure for special application.
- Mounting bracket is supplied as standard.
- IP44 with upper lid (option).
- Stainless steel models are available upon request.

CE mark applicable (available upon request)

UL recognized (available upon request)



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	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 1	0.49
	High Side	0.8 {8}	3 {30}	Approx. 0.4 fixed {Approx. 4 fixed}		2 {20}	1.6 {16}	3.3 {33}		
DNS-D306X	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	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 3	
	High Side	0.8 {8}	3 {30}	Approx. 0.4 fixed {Approx. 4 fixed}		2 {20}	1.6 {16}	3.3 {33}		
DNS-D606X	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	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 2	0.49
	High Side	0.8 {8}	3 {30}	Automatic operation on pressure rise, and manual reset.		2 {20}	manual reset	3.3 {33}		
DNS-D306XM	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 rise, and manual reset.		2 {20}	manual reset	3.3 {33}		
DNS-D604XM	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	
	High Side	0.8 {8}	3 {30}	Automatic operation on pressure rise, and manual reset.		2 {20}	manual reset	3.3 {33}		
DNS-D606XM	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 rise, and manual reset.		2 {20}		3.3 {33}		
DNS-D606XMM	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 5	
	High Side	0.8 {8}	3 {30}	Automatic operation on pressure rise, and manual reset.		2 {20}		3.3 {33}		

• Enclosure: IP20

• Drip Proof Models: Available upon request. (Refer to Pages 46, 47.)

ELECTRICAL RATINGS

Rated Voltage (V) Rated Amps. (A)		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

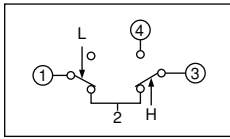


Diagram 1

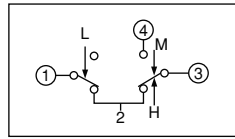


Diagram 2

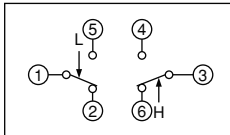


Diagram 3

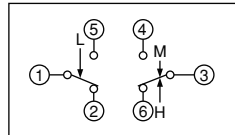


Diagram 4

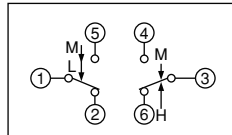
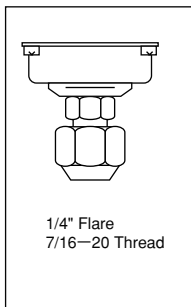


Diagram 5

↓ 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

PRESSURE CONNECTIONS

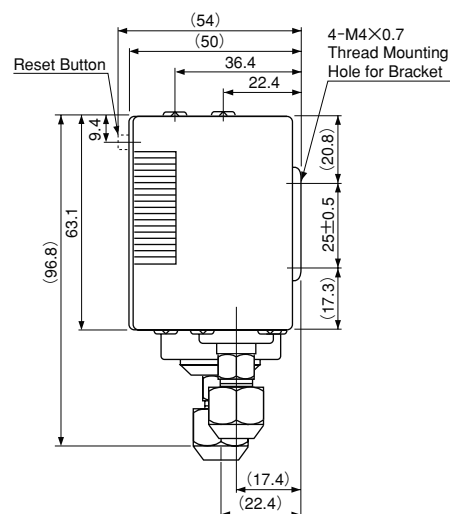
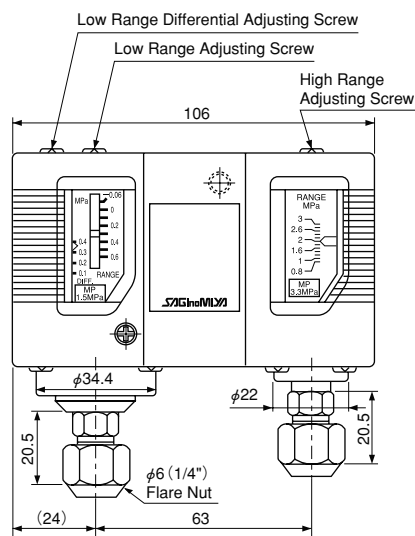


Standard

Refer to Pages 43, 44

DIMENSIONS

Standard Model



Unit: mm

OIL PROTECTION CONTROLS

Type ONS

SAGINO MIYA

GENERAL DESCRIPTION

- Provides dependable protection against major break-down 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)



TYPE NUMBER SELECTION (SPECIFICATIONS)

Unit: MPa {kgf/cm²}

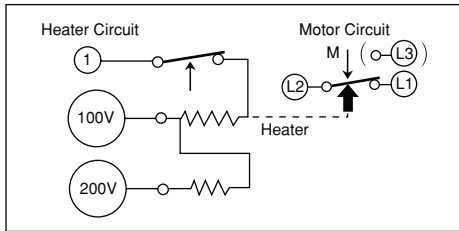
Catalog No.	Range		Differential	Timer Specification			Connection	Wt. (kg)
	Min.	Max.		Delay Time(sec.)	Timer Voltage	Timer Circuit		
ONS-C106XQ1	0.05 {0.5}	0.35 {3.5}	Approx. 0.05 fixed { Approx. 0.5 fixed }	45	100/200V. AC	Standard (SPST) without Alarm Contact	1/4" Flare Nut	0.55
ONS-C106XQ2				90				
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	Standard (SPST) without Alarm Contact	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. $H_p \geq L_p$: 1.5 MPa {15 kgf/cm²}, H_p represents oil pump discharge pressure and L_p crank case pressure.
- Enclosure: IP20
- Drip Proof Models: Available upon request. (Refer to Pages 46, 47.)

ELECTRICAL RATINGS

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

CONTACT FUNCTIONS

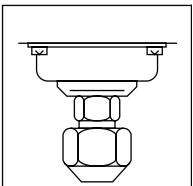


↑ : Operating direction of pressure increase
↑↑ : Operating direction of timer when energized
M ↓ : Operating direction of manual reset
(L3: Alarm Contact provided with a lead wire approx.)
φ 3.5×100mm with a soldered terminal.

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

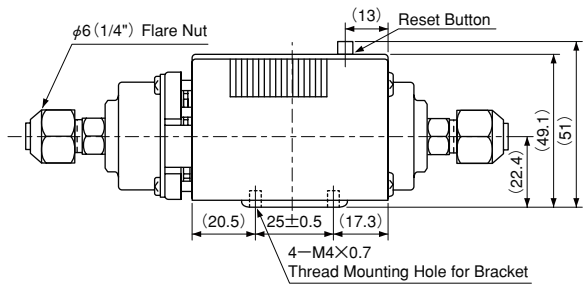
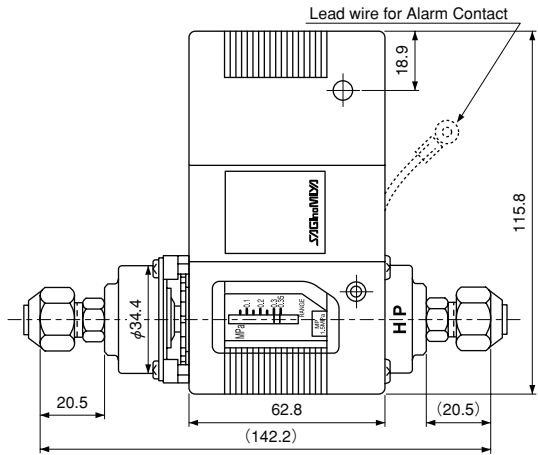


1/4" Flare
7/16 —20 Thread

Standard

Refer to Pages 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)



TYPE NUMBER SELECTION (SPECIFICATIONS)

For water, air and fluorinated refrigerant.

Unit: MPa {kgf/cm²}

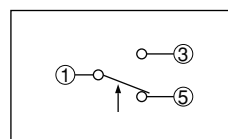
Catalog No.	Range		Differential		Factory Setting		Max. Working Pressure	Limit of Press. Differential (HP > LP)	Wt. (kg)
	Min.	Max.	Min.	Max.	Off	On			
WNS-C102X	0.03 {0.3}	0.2 {2}	0.03 {0.3}	0.15 {1.5}	0.05 {0.5}	0.02 {0.2}	0.5 {5}	0.5 {5}	0.43
WNS-C106X	0.05 {0.5}	0.35 {3.5}	0.05 {0.5}	0.25 {2.5}	0.1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

- Allowable Fluid Temp.: -20 to 120°C
- HP.....High Side Press. LP.....Low Side Press.
- Enclosure: IP20
- Drip proof models: Available upon request. (Refer to Pages 46, 47.)
- Please contact us if other range models are needed.

ELECTRICAL RATINGS

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

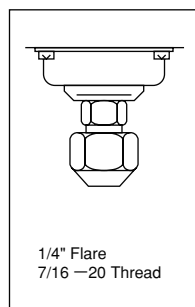
CONTACT FUNCTIONS



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

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

PRESSURE CONNECTIONS

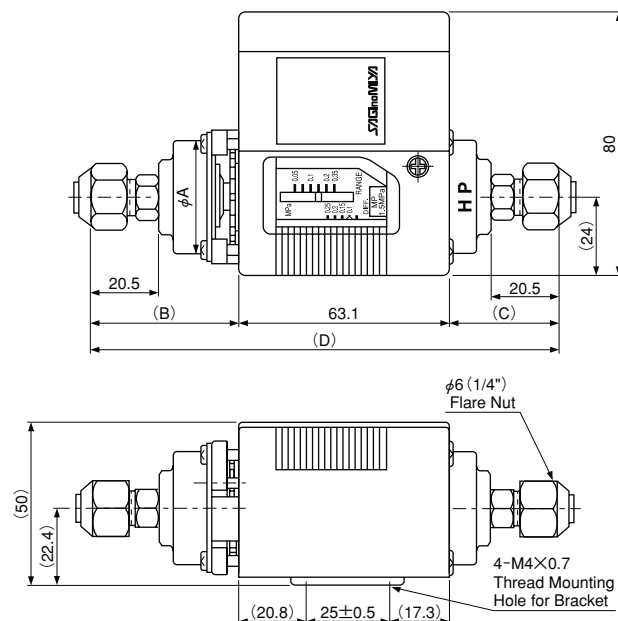


Standard

Refer to Pages 43, 44

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

DIMENSIONS



Unit: mm

DIGITAL PRESSURE SWITCHES

Type CFE

SAGINO MIYA

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)



TYPE NUMBER SELECTION (SPECIFICATIONS)

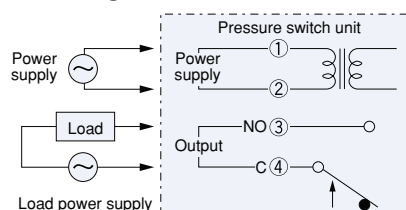
Unit: MPa

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	0.3
CFE-SC35B-001	0	3.5	0.02	±0.12	5.5	
CFE-SC50B-001	0	5.0	0.02	±0.15	38.5 bar	
CFE-SC10B-101	-0.95 bar	9.95 bar	0.05 bar	±0.3 bar	55 bar	
CFE-SC35B-102	0 bar	35 bar	0.2 bar	±1.2 bar		
CFE-SC50B-102	0 bar	50 bar	0.2 bar	±1.5 bar		

COMMON SPECIFICATIONS

Supply voltage: 230V. AC±10% 50/60Hz
 Output contact rating: 125/250V. AC 1A(cos φ = 1) SPST
 On delay timer: 0 to 240 sec (step=1sec.)
 Ambient temp. range: -10 to 60°C
 Storage temperature range: -20 to 70°C
 Fluid: Refrigerants (excluding ammonia), water, air.
 Pressure connection: 1/4" male flare
 Enclosure: IPX2

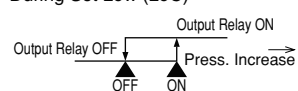
WIRING



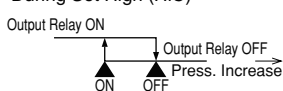
OPERATION

OPERATION PATTERN

During Set Low (LoC)

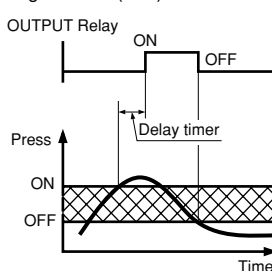


During Set High (HiC)

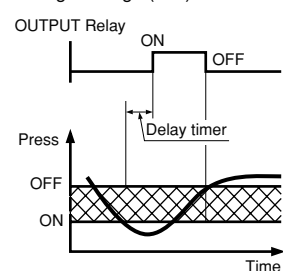


DELAY TIMER OPERATION PATTERN

During Set Low (LoC)



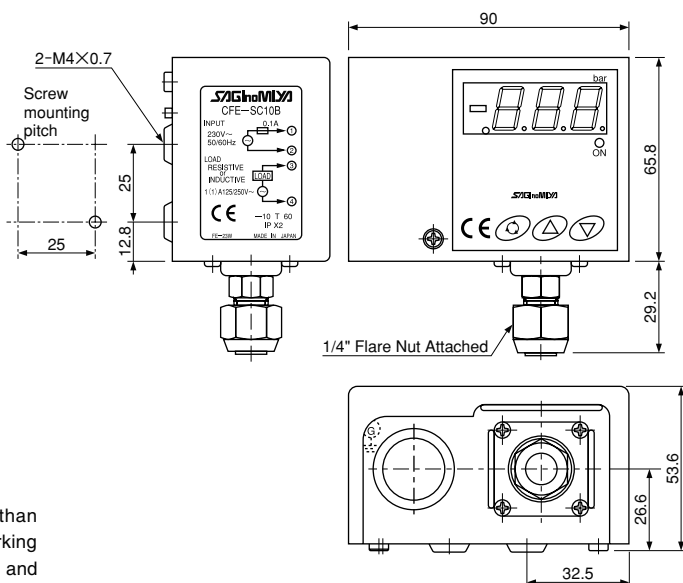
During Set High (HiC)



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

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

DIMENSIONS



Unit: mm

PRESSURE SENSORS

High Volume OEM Item (Type NSK)

Type NSK & XSK

SAGINOMIYA

GENERAL DESCRIPTION

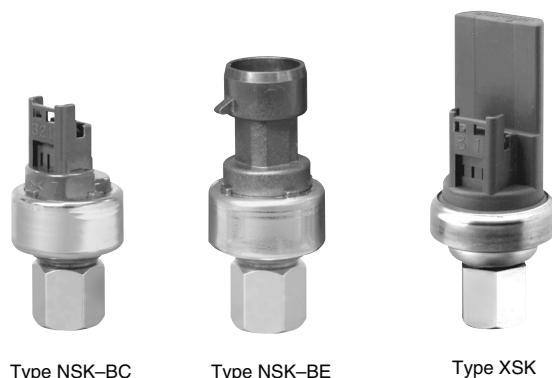
- High reliability and accuracy
- Double diaphragm structure
- Diffusion silicone chip pressure sensor

COMMON 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-BD)
 -20 to 70°C (Type XSK)

CE mark applicable (available upon request)

UL recognized (available upon request)



Type NSK-BC

Type NSK-BE

Type XSK

TYPE NUMBER SELECTION (SPECIFICATIONS)

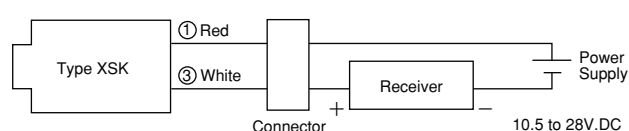
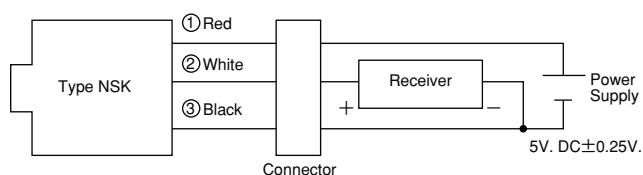
Unit: MPa {bar}

Catalog No.	Pressure Range	Supply Voltage	Output	* Accuracy	Current Consumption	Load Resistance	Airtight Pressure	Wt. (kg)
NSK-BC010I-103	0 to 1 {0 to 10}	5V. DC $\pm$ 0.25V	0.5 to 4.5V. DC	$\pm$ 2.5% F.S.	Max. 10mA	Min. 10 K Ω	3.85 {38.5}	0.04
NSK-BC020I-103	0 to 2 {0 to 20}							
NSK-BC030I-103	0 to 3 {0 to 30}							
NSK-BC035I-103	0 to 3.5 {0 to 35}			$\pm$ 2.0% F.S.			5.5 {55}	
NSK-BC050I-103	0 to 5 {0 to 50}			$\pm$ 2.5% F.S.				
NSK-BE010I-103	0 to 1 {0 to 10}	5V. DC $\pm$ 0.25V	0.5 to 4.5V. DC	$\pm$ 2.5% F.S.	Max. 10mA	Min. 10 K Ω	3.85 {38.5}	0.04
NSK-BE020I-103	0 to 2 {0 to 20}							
NSK-BE030I-103	0 to 3 {0 to 30}							
NSK-BE035I-103	0 to 3.5 {0 to 35}			$\pm$ 2.0% F.S.			5.5 {55}	
NSK-BE050I-103	0 to 5 {0 to 50}			$\pm$ 2.5% F.S.				
NSK-BD010D-103	0 to 1 {0 to 10}	5V. DC $\pm$ 0.25V	0.5 to 4.5V. DC	$\pm$ 2.5% F.S.	Max. 10mA	Min. 10 K Ω	3.85 {38.5}	0.07
NSK-BD020D-103	0 to 2 {0 to 20}							
NSK-BD030D-103	0 to 3 {0 to 30}							
NSK-BD035D-103	0 to 3.5 {0 to 35}			$\pm$ 2.0% F.S.			5.5 {55}	
NSK-BD050D-103	0 to 5 {0 to 50}			$\pm$ 2.5% F.S.				
XSK-AC10I-194	-0.05 to 1 {-0.5 to 10}	10.5 to 28V. DC	4 to 20mA	$\pm$ 3% F.S.	—	Max. 100 Ω at 12V. DC Max. 500 Ω at 24V. DC	3.85 {38.5}	0.09
XSK-AC20I-194	0 to 2 {0 to 20}							
XSK-AC30I-194	0 to 3 {0 to 30}							
XSK-AC35I-194	0 to 3.5 {0 to 35}						5.5 {55}	
XSK-AC50I-194	0 to 5 {0 to 50}							

* Included non linearity hysteresis, and temperature drift

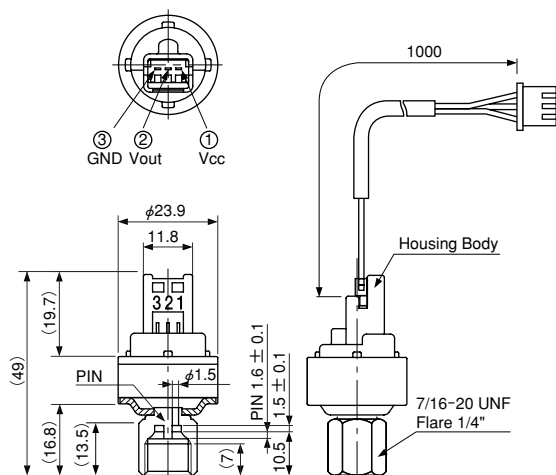
• Enclosure IP66

WIRING

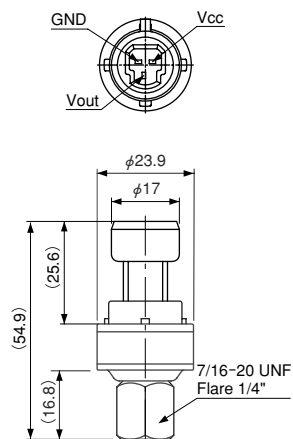


DIMENSIONS

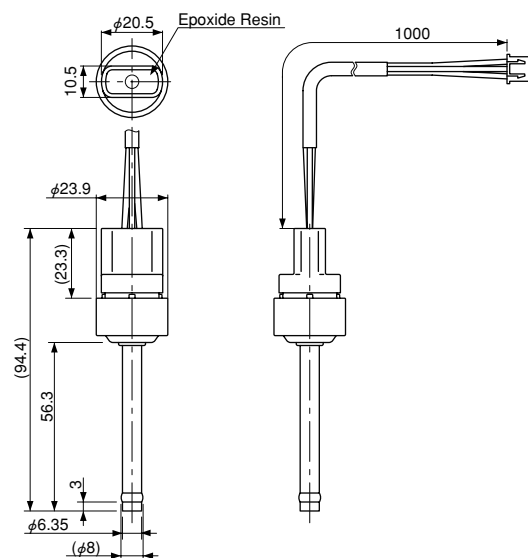
Type NSK-BC (Molex connector)



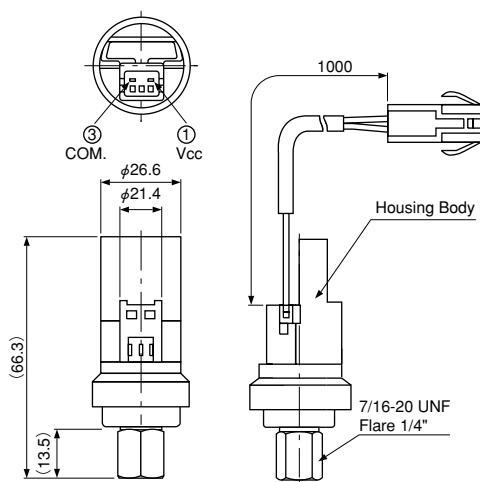
Type NSK-BE (Packard connector)



Type NSK-BD (Lead wire direct Connector)



Type XSK (Molex connector)



Unit: mm

ACCESSORY

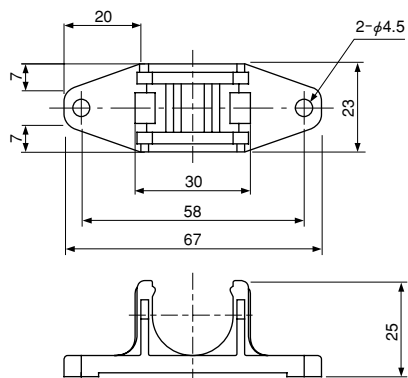
- Lead wire with connector is supplied as standard accessory expect for NSK-BE type.

OPTIONAL PARTS

Bracket

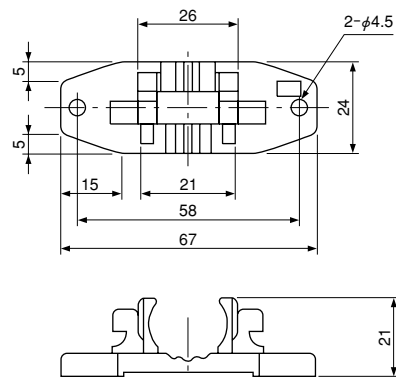
- NSK

Type No. NSK-PP02



- XSK

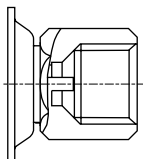
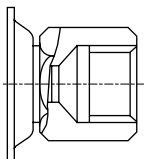
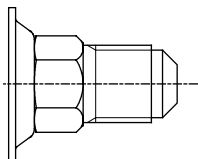
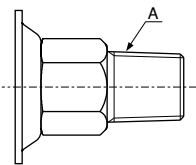
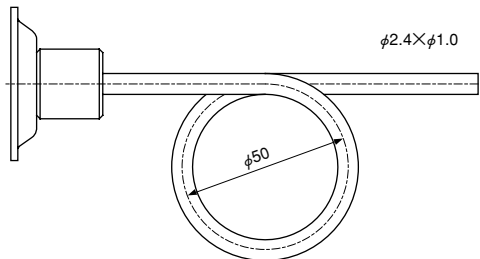
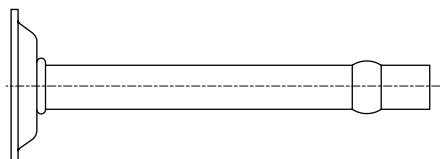
Type No. YSK-PP02



Unit: mm

PRESSURE CONNECTIONS

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

7/16–20UNF Female Flare 1/4" with schrader depressor	7/16–20UNF Female Flare 1/4"	7/16–20UNF Male Flare 1/4"										
												
R (NPT)		Capillary Tube (Type NSK)										
 <table><tr><th>A</th><th>Type</th></tr><tr><td>1/8"</td><td>NSK</td></tr><tr><td></td><td>XSK</td></tr><tr><td>1/4"</td><td>XSK</td></tr><tr><td>3/8"</td><td>XSK</td></tr></table>		A	Type	1/8"	NSK		XSK	1/4"	XSK	3/8"	XSK	
A	Type											
1/8"	NSK											
	XSK											
1/4"	XSK											
3/8"	XSK											
1/4" Copper Solder (Type NSK-BD)												
												

TEMPERATURE & HUMIDITY CONTROLS

TEMPERATURE CONTROLS	27–28
Type LWS, FWS, RWS & EWS	
TEMPERATURE CONTROLS	29–30
Type TNS, CNS & INS	
TEMPERATURE CONTROLS	31
Type ALS & BLS	
PROPORTIONAL TEMPERATURE CONTROLS	32
Type PWS	
ROOM THERMOSTATS	33–34
Type WRS	
ROOM THERMOSTATS	35
Type LRS	
ROOM HUMIDISTATS	36
Type AHS	
DIGITAL THERMOSTATS & DIGITAL HUMIDISTATS	37–39
Type ULE & FLE	
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Type TNE	
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Type DDE	

TEMPERATURE CONTROLS

REMOTE / DIRECT SENSING

Type LWS, FWS, RWS & EWS

SAGINOMIYA

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	φ 9.5×100	-20 to 70	60	0.45
		060				-5	60					90	
		090				25	90					120	
		120				40	120	2.5	8	φ 9.5×70		150	
		160				95	160					185	
		200				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)		φ 9.5×100		60	
		060				-5	60					90	
		090				25	90			φ 9.5×85		120	
		120				40	120					150	
		160				95	160	2.5 (Fixed)		φ 9.5×70		185	
		200				135	200					230	
		240				175	240					265	

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

• Knob assembly and control plate are supplied as standard accessories.

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) Option L2 (L=2m) L3 (L=3m) L5 (L=5m)	—35	30	2	7	Max. φ 37×58	—20 to 70	60	0.52	
		060				—5	60					90		
		090				25	90					120		
		120				40	120					150		
		030	F (Fixed)			—35	30	2.5	8			60		
		060										90		
		090										120		
		120										150		
		030										2 (Fixed)		60
		060												90
090	120													
120	2.5 (Fixed)	150												

Unit: °C

Unit: °C

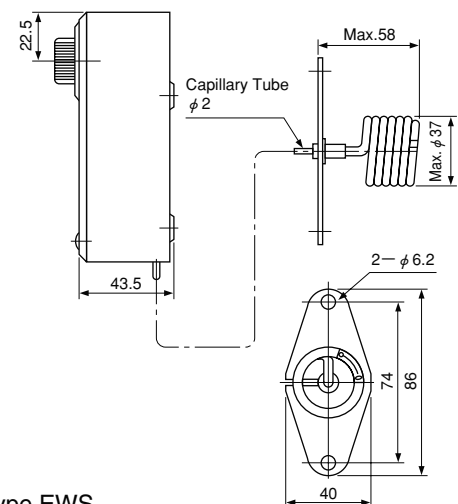
Unit: °C

Unit: °C

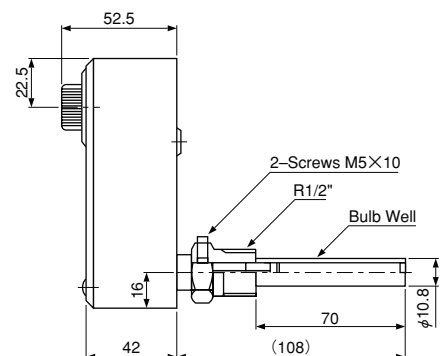
CONTACT STYLE

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

Type LWS



Type EWS



Unit: mm

TEMPERATURE CONTROLS

GENERAL PURPOSE

Type TNS, CNS & INS

SAGINOMIYA

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 temp. control with manual reset.
- Narrow and adjustable temp. diff. 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)		φ A	B		
TNS-C100X	—25	0	Bottom 4.5	15	—18	—15	70	6	80	Ts>TB	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	Ts<TB	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			Ts≡TB	
TNS-C1034XC	—20	35			16	20	70				
TNS-C1070XC	15	70			36	40	115				
TNS-C114XQ009	—30	15	Bottom 5	15	—8	—5	120	Capillary Tube Type		Ts>TB	
TNS-C114XQ010					Capillary Coil Type						
TNS-C134XQ009	—5	35	Top 2		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 pages 46, 47.)
- 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		φ A	B		
CNS-C115X	-35	-15	Bottom 4	-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	Top 3	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		Manual Reset	* Factory Setting		Limit Temp.	Bulb Size (mm)		Usage Condition	Wt. (kg)
	Min.	Max.		Off	On		φ A	B		
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		Manual Reset	* Factory Setting		Limit Temp.	Bulb Size (mm)		Usage Condition	Wt. (kg)
	Min.	Max.		Off	On		φ A	B		
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				

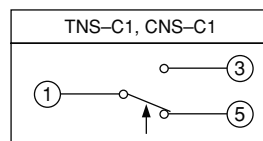
* Based on the 1–3 terminal connection.

- T_s ...Ambient temp. of switch body. • T_B ...Sensing bulb temp.
- Enclosure: IP20

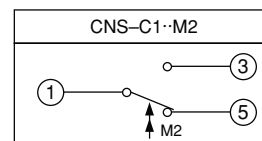
ELECTRICAL RATINGS

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

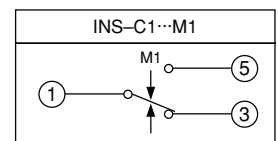
CONTACT FUNCTIONS



TNS & CNS Automatic Reset Type



CNS Manual Reset Type



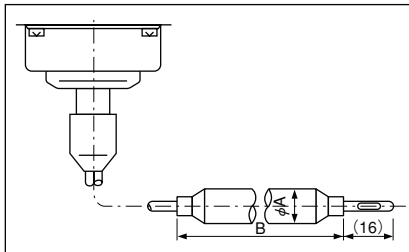
INS Manual Reset Type

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

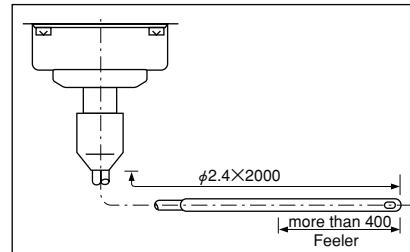
- ↑: Operating direction on temp. increase at High temp. side
- ↓M1, ↑M2: Operating direction on manual reset

SENSING ELEMENT STYLE

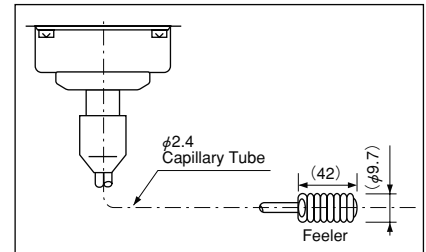
Sensing Bulb Type



Capillary Tube Type



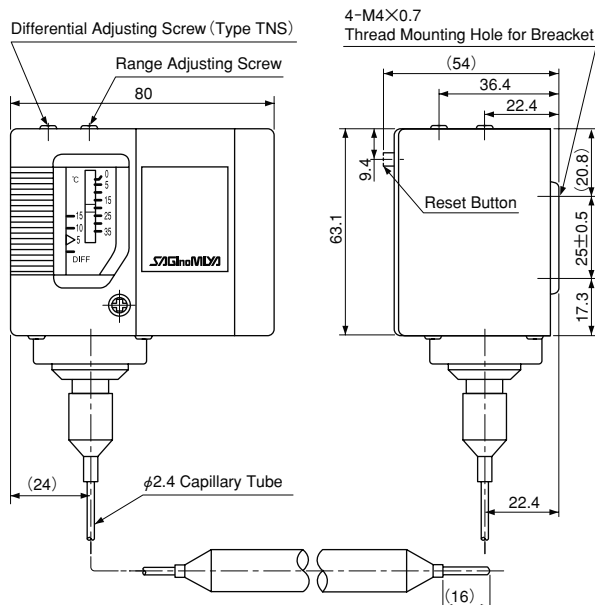
Capillary Coil Type



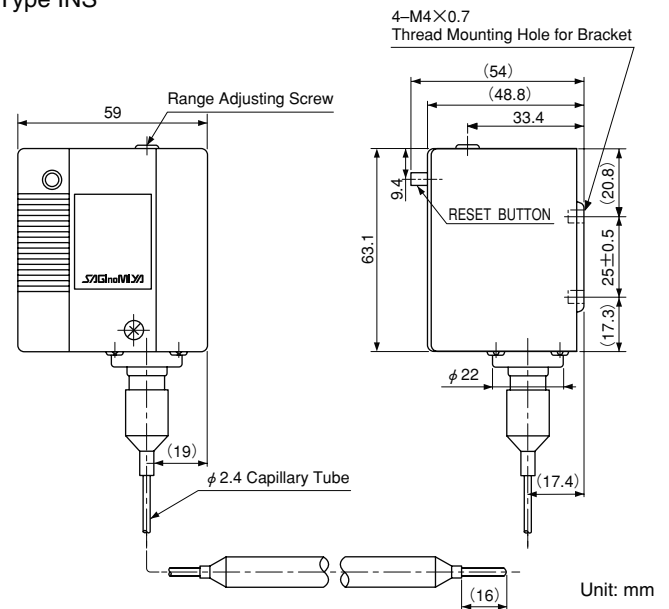
Standard: 1000mm Capillary tube. Other capillary length are available upon request.

DIMENSIONS

Type TNS, CNS



Type INS



Unit: mm

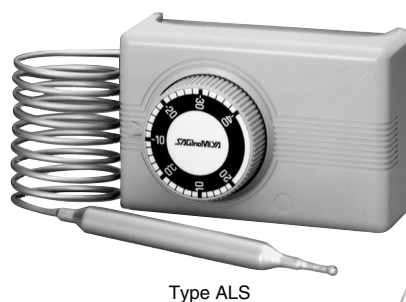
TEMPERATURE CONTROLS

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.	Blub Size (mm)	Capillary Tube Length (mm)	Wt. (kg)
	Min.	Max.					
BLS-C1020L1	-20	20	Approx. 2.0 (Fixed)	60	φ 10×100	φ 2.4×1000	0.3
ALS-C1011L1	-60	-10	Approx. 2.5 (Fixed)	80			
ALS-C1020L1	-40	20		110			
ALS-C1050L1	-10	50		150			
ALS-C1090L1	40	90					

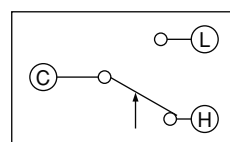
• When order model with earth terminal, add a suffix "x" to Catalog No.

• Other capillary length is available upon request.

ELECTRICAL RATINGS

Rated Voltage (V)		Power Factor (cos ϕ)	125V. AC	250V. AC	450V. AC	24V. DC	125V. DC
Rated Amps. (A)							
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

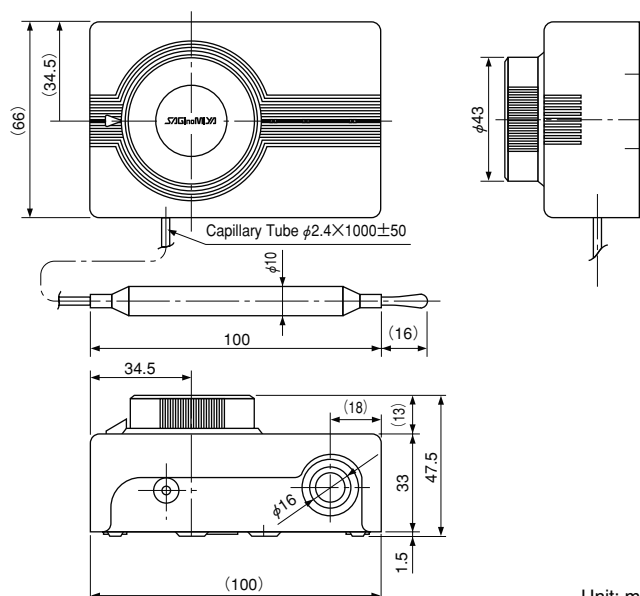
CONTACT FUNCTIONS



Arrow Mark indicates direction of operation on temperature increase.

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

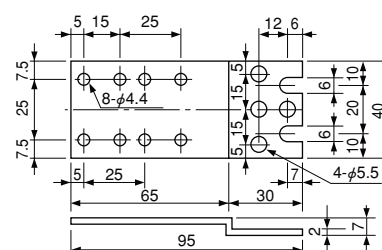
DIMENSIONS



Unit: mm

ACCESSORY

Mounting Bracket



Part No.	ALS-AE02
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PROPORTIONAL TEMPERATURE CONTROLS

Type PWS

SAGINO MIYA

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.

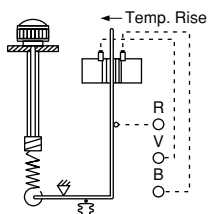


TYPE NUMBER SELECTION (SPECIFICATIONS)

Unit: °C

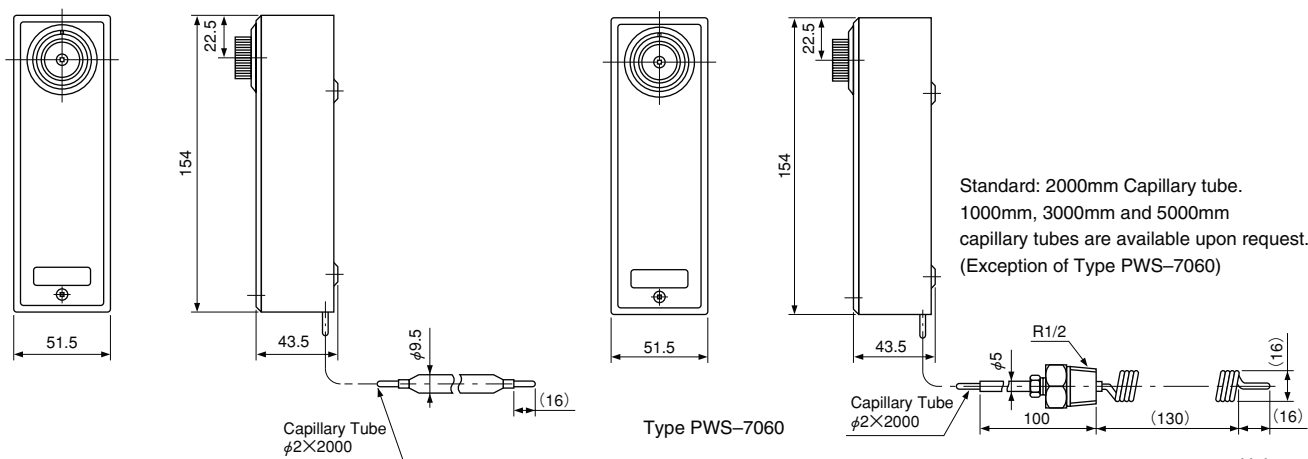
Catalog No.	Construction	Adjustable Temp. Range	Proportional Band		Usage Condition	Max. Ambient Temp.		Wt. (kg)
			Min.	Max.		At Switch Body	At Sensing Bulb	
PWS-7034	With One Potentiometer	-10 to 35	2.5	14	$T_s \cong T_B$	-20 to 70	60	0.52
PWS-7054		10 to 55					80	
PWS-7074		30 to 75					100	
PWS-7094		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



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					

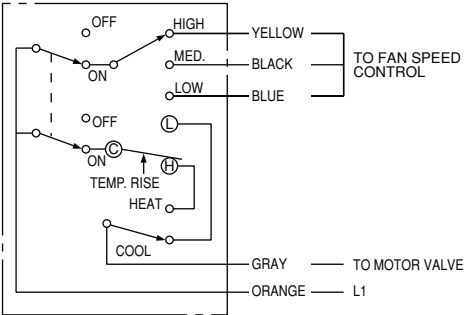
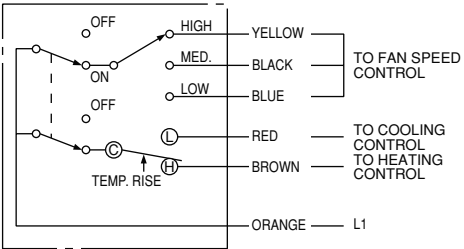
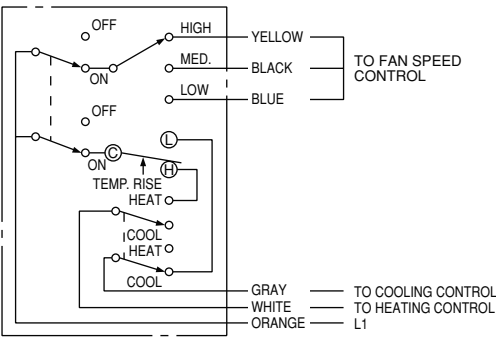
- Change over switch of HEAT-COOL on WRS-C130X1 is only for changing switch mechanism of room thermostat itself between HIGHCUT (HEATING) and LOWCUT (COOLING) according to system requirement.
- Please refer to the application sample and wiring diagram.

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

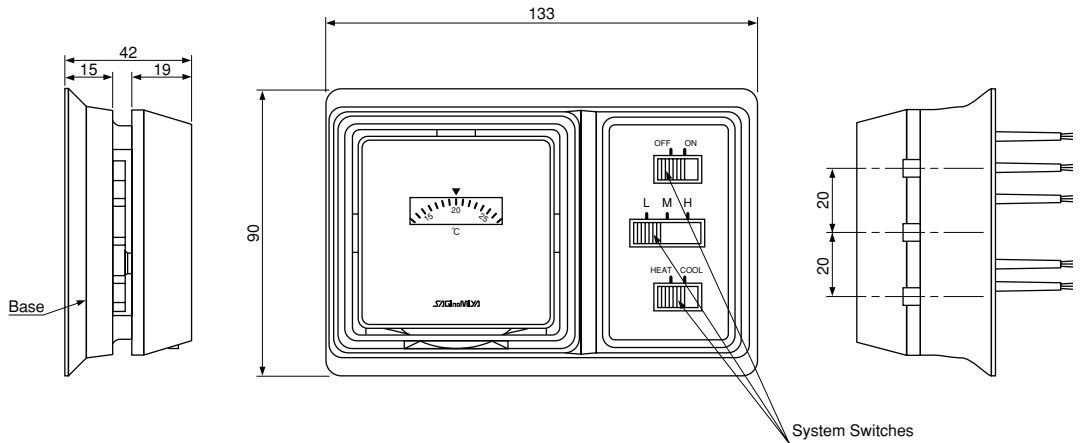
Minimum contact capacity: 50mA

CONTACT FUNCTIONS

Type	Internal Wiring
WRS-C130X1	
WRS-C130X2	
WRS-C130X7	

Arrow indicates temp. rise.

DIMENSIONS



Unit: mm

ROOM THERMOSTATS

Type LRS

SAGINOMIYA

GENERAL DESCRIPTION

- High quality room thermostat for heating or cooling.
- Used for low or line voltage.
- Precise and narrow differential.
- Ambient temperature: -20 to 50°C



SPECIFICATIONS

Unit: $^{\circ}\text{C}$

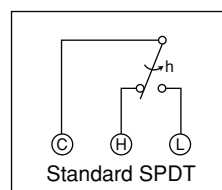
Catalog No.			Range		Differential	Ambient Temp. On Use.
Type	Contact Type	Temp.	Min.	Max.		
LRS-	C1	30	10	30	Approx. 1.5 (Fixed)	-20 to 50

ELECTRICAL RATINGS

Rated Voltage (V)		Power Factor (cos ϕ)	125V.AC	250V. AC	24V. DC
Rated Amps. (A)					
Non-Inductive Current		1	6	3	2
Inductive Current	Full Load	0.75			1
	Locked Rotor	0.45	24	12	10

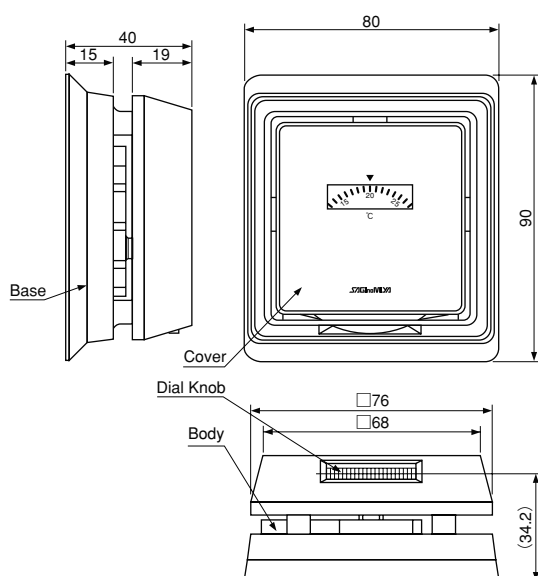
Minimum contact capacity: 50mA

CONTACT FUNCTIONS



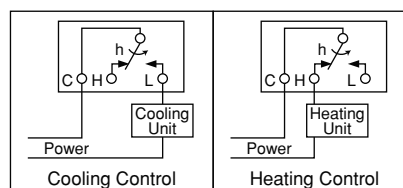
Arrow indicates temp. rise.

DIMENSIONS



Unit: mm

APPLICATION SAMPLES



Arrow indicates temp. rise.

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

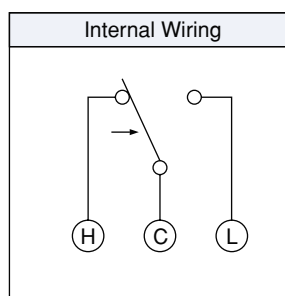
Catalog No.	Contact	Range		Differential	Ambient Temp. on Use (°C)	Wt. (kg)
		Min.	Max.			
AHS-C1090	SPDT	30	90	Approx. 5	10 to 40	0.17

ELECTRICAL RATINGS

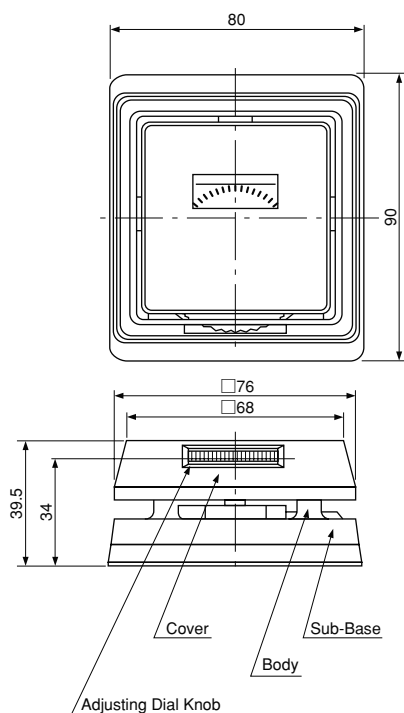
Rated Voltage (V)		Power Factor (cos ϕ)	125V. AC	250V. AC	24V. DC
Rated Current (A)					
Non-Inductive Current		1.0	4.5	2	1
Inductive Current	Full Load	0.75	3	1.5	0.4
	Locked Rotor	0.45	12	6	2

Minimum Contact Capacity: 50mA

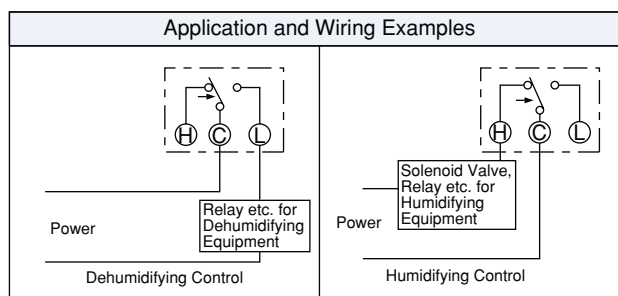
CONTACT FUNCTIONS



DIMENSIONS



Unit: mm



Arrow mark indicates humidity increase.

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 $\triangle/\nabla$ keypads
- Either for wall or panel mounting.
- Power source voltage: 85 to 264V. AC 50/60Hz
- Relay output: 250V. AC, 6A (cos ϕ = 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				2 Step		
ULE-SD23-011				Hi/Lo Limit with time delay		

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

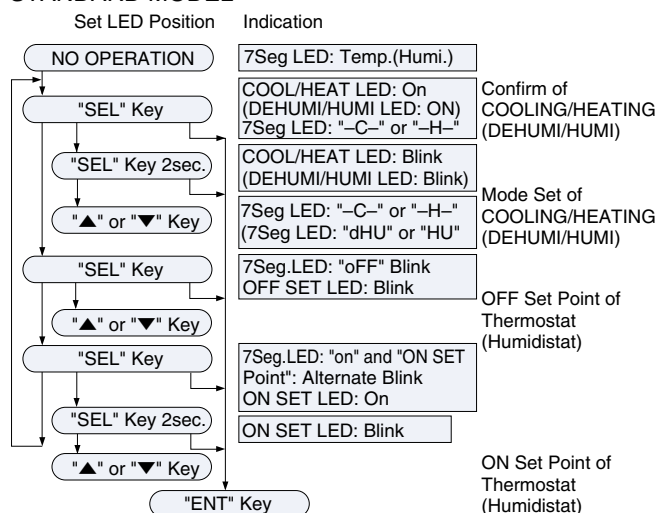
Type FLE Digital Humidistat

Unit: %RH

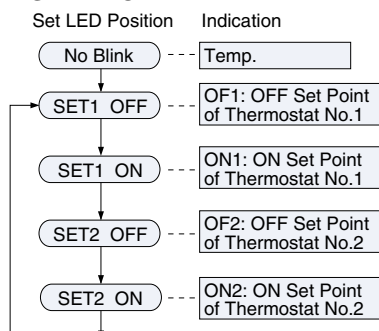
Catalog No.	Humidity Set Range	Differential	Humidity Indication	Calibration	Sensor Part No.	Wt. (kg)
FLE-SD11-011	30 to 90	Min. 3	20 to 99	±10	HEK-11R001	0.3

MODE & SETTING

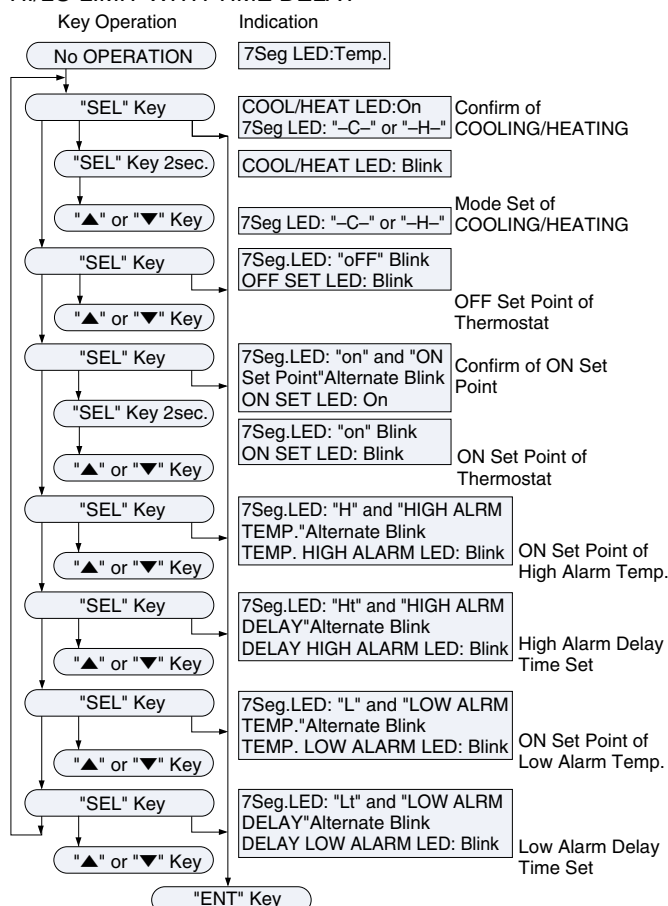
STANDARD MODEL



2 STEP MODEL

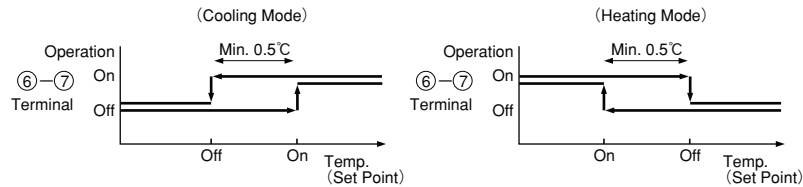


HI/LO LIMIT WITH TIME DELAY



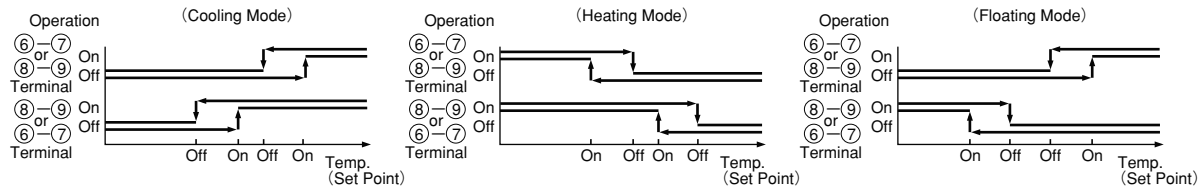
OPERATION

ULE-DIGITAL THERMOSTAT STANDARD MODEL

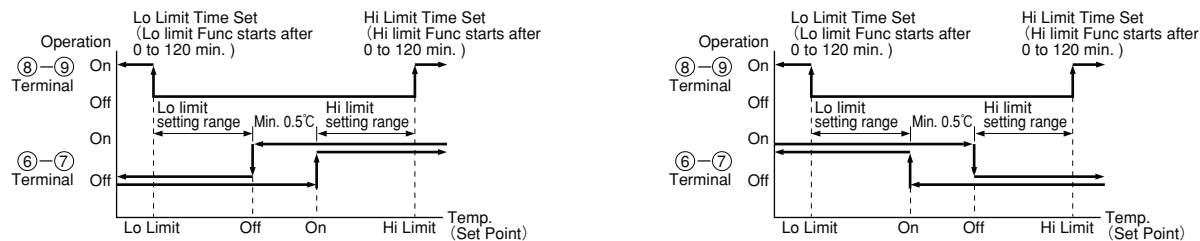


- Free to set On/Off set point independently within the range.
- When Off set point is changed, On set point automatically shifts. (Diff. remains same)
- When On set point is changed, Off set point remains unchanged. (Diff. changes)

2 STEP MODEL

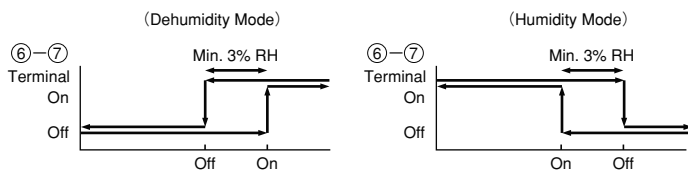


Hi/Lo LIMIT W/TIMER MODEL



- Hi/Lo limit output is reset manually (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.

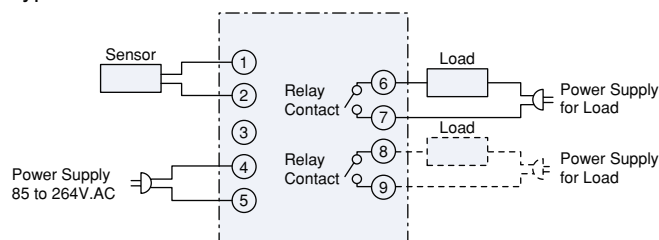
FLE-DIGITAL HUMIDISTAT



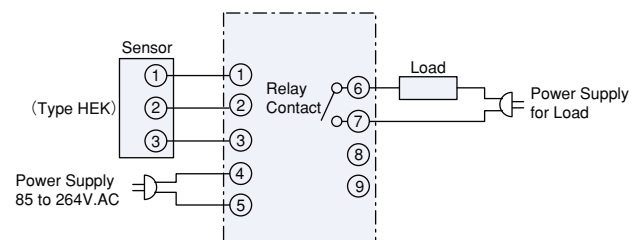
- Free to set On/Off set point independently within the range.
- When Off set point is changed, On set point automatically shifts. (Diff. remains same)
- When On set point is changed, Off set point remains unchanged. (Diff. changes)

WIRING DIAGRAM

Type ULE



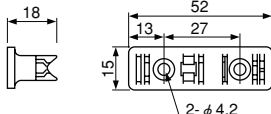
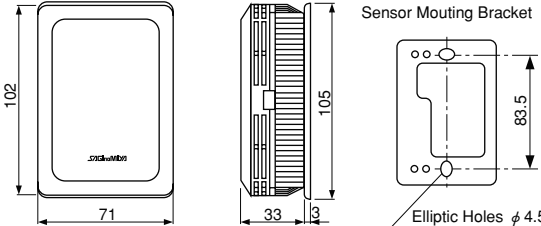
Type FLE



(6-7): STANDARD, 2 STEP & Hi/Lo Model Control Output

(8-9): 2 STEP Control Output Hi/Lo Limit Alarm Output

SENSORS STANDARD

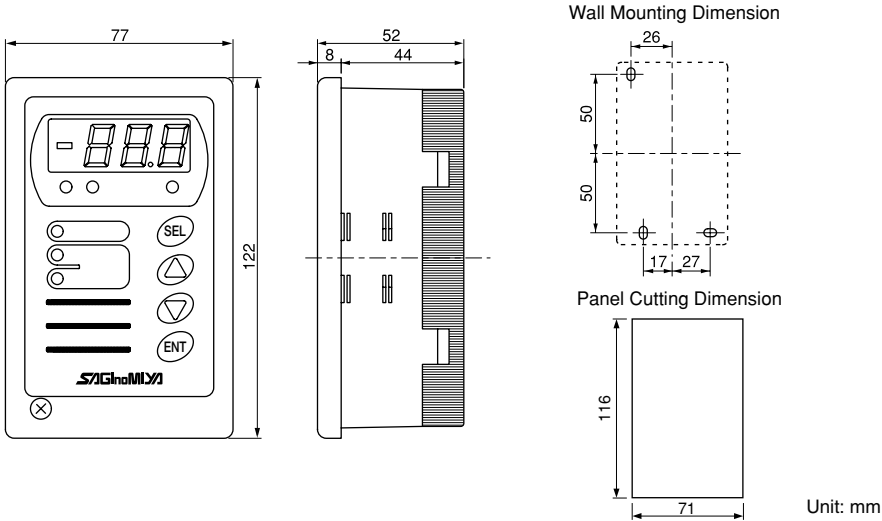
Sensor Part No.	Applicable Model	Dimension	Remarks
TEK-83H601 (Temperature)	ULE-SD21-011 ULE-SD22-011 ULE-SD23-011		- Ambient temp. on usage: -40 to 110°C - When the sensor is in use under the condition of dew, water dripping or outdoor, the sensor should be vertically installed with lead wire outlet downward. - Sensor holder is supplied as standard.
Lead Wire:Black			
TEK-83H609 (Temperature)	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.
Lead Wire:Blue			
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.)

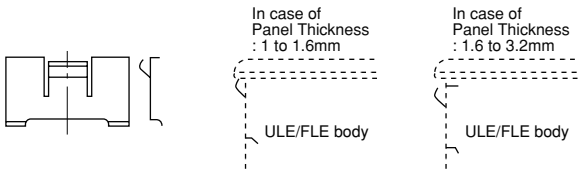
- Direct immersion sensor with nipple.....TEK-83N
- Wall mounting sensorTEK-83R
- Surface temp. sensorTEK-83E
- Direct immersion sensor with terminal cover.....TEK-83B
- Bulb wellTEK-00N

DIMENSIONS

Type ULE, FLE



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

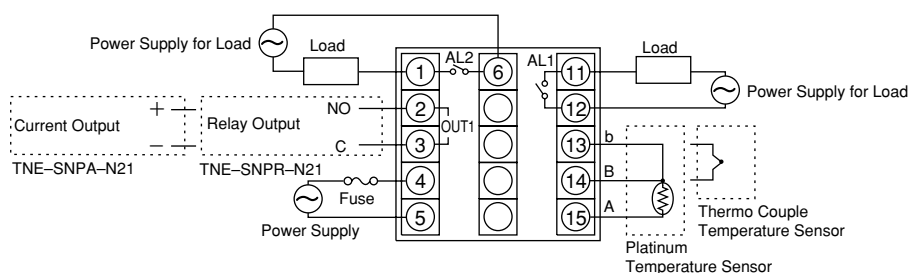
- Indicator: temp. ... 7Seg. Green LED 4 digit
- Temp. set point ... 7Seg. Red LED 4 digit
- Control output ... Red LED×3



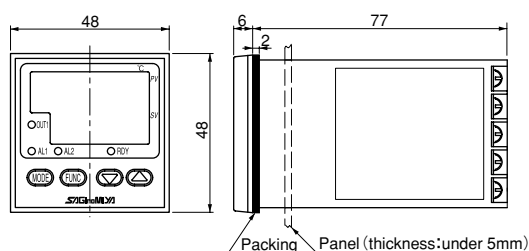
TYPE NUMBER SELECTION (SPECIFICATIONS)

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)		

WIRING DIAGRAM

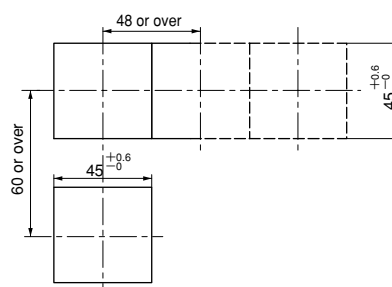


DIMENSIONS



MOUNTING SIZE

Panel Cutout Size



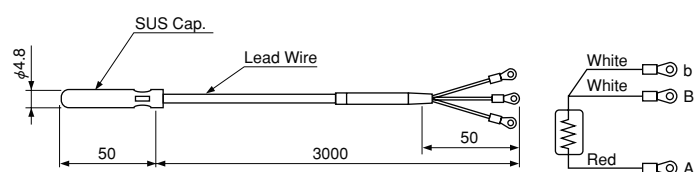
ACCESSORY

Fixing Bracket



OPTIONAL PARTS

Platinum Temperature Sensor (Type: PEK-02H001)



Unit: mm

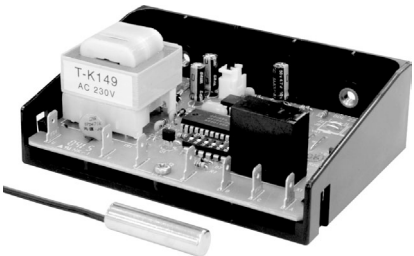
DEFROST CONTROLS
High Volume OEM Item

Type DDE

SAGInoMIYA

GENERAL DESCRIPTION

- Microprocessor based defrost controls for heat pump air conditioner and various refrigeration units.
- Def. initiation temp. ... -15 to 5°C (factory set)
- Def. termination temp. ... 5 to 15°C (factory set)
- Time cycle ... 30, 40, 50, 60, 90, 120, 150, 180 min.
(field adjustable ... heat pump model)
2, 2.5, 3, 4, 6, 8, 12, 24 hrs
(field adjustable ... display case and cold room)
- Time safe ... 10, 15, 20, 30, 40, 50, 60, 80 min.
(field adjustable for all models)
- Voltage ... 230 V. AC
- Contact capacity ... 5 Amp. at 250 V. AC ($\cos \phi = 1$)



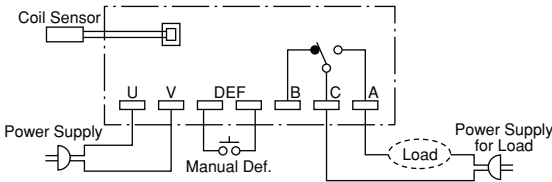
CE mark applicable (available upon request)

TYPE NUMBER SELECTION (SPECIFICATIONS)

Unit: $^{\circ}\text{C}$

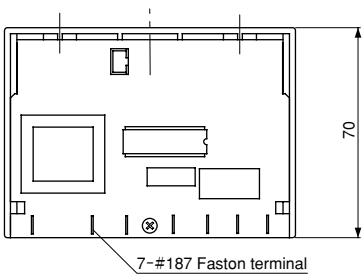
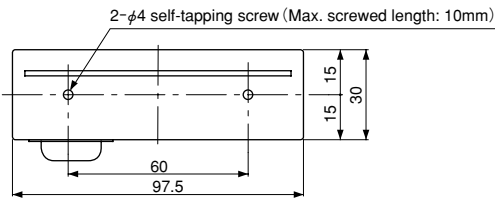
Application	Catalog No.	Operating Temp.		Time Cycle	Time Safe	Volt (V)	Wt. (kg)
		Def. Init.	Def. Termi.				
Heat Pump	DDE-KBA1-201	-5	10	60 min.	10 min.	230	0.2
Heat Pump	DDE-KBA1-202			30 min.			
Display Case	DDE-KBB1-203	-3	5	12 Hr.	50 min.		
Cold Room	DDE-KBB1-204			6 Hr.	30 min.		

WIRING DIAGRAM



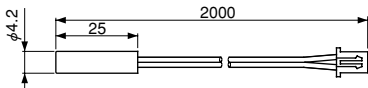
DIMENSIONS

Type DDE



Unit: mm

SENSOR



PRESSURE & TEMPERATURE CONTROLS INFORMATION

CONNECTION & ACCESSORIES	43-45
DRIP PROOF & WATER PROOF CONTROLS	46-47
Series NS-W & NS-P	

CONNECTION & ACCESSORIES

NS PRESSURE CONTROLS NOMENCLATURE

Catalog No. is decided according to the specifications.

Example: SNS – C1 30 X M2 N W G Q

I II III IV

I N=SUS Bellows

II W=Drip Proof, P=Water Proof

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"	8	3/8"	10	1/2"	10.5
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			
Capillary			L1 (Stand.)	L2			

Unit: mm

(B) Flare

Technical drawing of a flare connection. Dimensions labeled: A (flared diameter), B (base diameter), C (height from base to top), D (inner diameter), E (total height), F (height from base to start of flare), and G (height from base to end of flare). Labels include Hex. C and Hex. B.

Size	A	B	C	D	E	F	G
ϕ 1/4	ϕ 6.5	17	12	7/16-20 UNF	0	20.5	26
ϕ 8	ϕ 8.2	22	17	5/8-18 UNF	5	24.5	36
ϕ 3/8	ϕ 9.7						
ϕ 10	ϕ 10.2						
ϕ 1/2	ϕ 12.9	24	22	3/4-16 UNF	5	27.5	40

(U) Union

Technical drawing of a union connection. Dimensions labeled: A (diameter), 27 (height), 40 (total height), 5 (flange thickness), Hex. 22 (top flange), and Hex. 30 (bottom flange).

Size	A
ϕ 6 Copper	ϕ 6.5
ϕ 8 Copper	ϕ 8.5
ϕ 10 Copper	ϕ 10.5
ϕ 10.5 Steel	ϕ 11.0

Pipe Thread

(G) Female

Technical drawing of a female pipe thread connection. Dimensions labeled: A (thread diameter), B (hex diameter), C (height), and Hex. B (hex label).

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

Technical drawing of a male pipe thread connection. Dimensions labeled: A (thread diameter), B (hex diameter), C (height), and Hex. B (hex label).

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)

Technical drawing of a copper pipe direct connection. Dimensions labeled: A (diameter), B (base diameter), C (height), D (inner diameter), E (total height), F (height from base to start of flare), Hex. C (top flange), and D Thread (thread).

Size	A	B	C	D	E	F
ϕ 6	6.2	14	14	M12	23	33
ϕ 8	8.2	17	14	M14	23	33
ϕ 10	10.2	19	17	M16	23	34

Steel Pipe (Connector Option)

Technical drawing of a steel pipe connector option. Dimensions labeled: (60.5) (total height), (48.5) (height to connector), G Connection (connector type), Hex. 17 (top flange), M16 (thread), 10.7 (diameter), and Hex. 19 (bottom flange).

K3

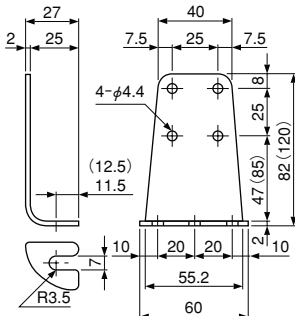
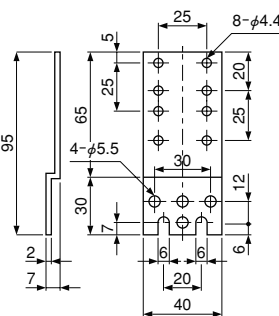
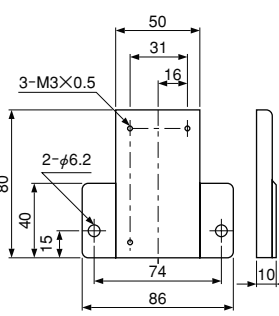
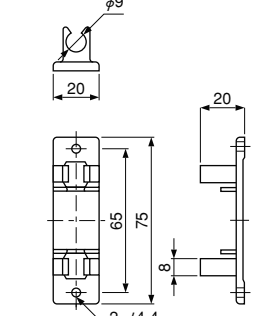
(L) Capillary

Diagram showing a capillary tube assembly. Labels include 1/4" Flare Nut and ϕ 2.4 X L Capillary Tube.

Type	L
L1	1000
L2	2000

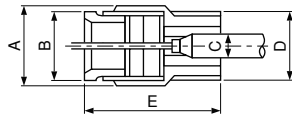
ACCESSORIES

Mounting Brackets

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

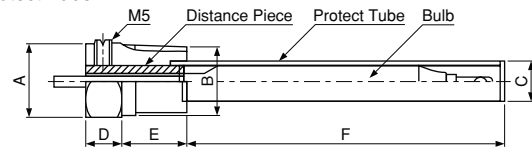
Insert Holder, Protect Tube (For Temperature Controls)

Insert Holder



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

Protect Tube



Size	Max Press.	Torque	A	B	D	E
1/2"	Static	12N · m	Hex. 24	R1/2	10	20
3/4"	Press. 3MPa	or less	Hex. 30	R3/4	10	22

Insert Holder

Controls Catalog No.		Size	Parts No.	Size C
NS	TNS-C100 to C134	1/2"	TNS-AB01	φ 6
	CNS-C115 (M2) to C134 (M2)	3/4"	TNS-AB09	
	TNS-C1070	1/2"	TNS-AB04	φ 12.7
	TNS-C1010C to C1070C	3/4"	TNS-AB07	
	TNS-C1100 to C1150	1/2"	TNS-AB17	φ 12.7 Heat Proof
		3/4"	TNS-AB18	
	INS-C1070M1	1/2"	TNS-AB02	φ 9.5
		3/4"	TNS-AB05	
	INS-C1120M1, C1150M1	1/2"	TNS-AB15	φ 9.5 Heat Proof
		3/4"	TNS-AB16	
WS	LWS-C1030 to C1094 PWS-7034 to 7094	1/2"	LWS-AB02	φ 9.5
		3/4"	LWS-AB05	
	LWS-C1120 to C1240 PWS-7120	1/2"	LWS-AB15	φ 9.5 Heat Proof
		3/4"	LWS-AB16	
LS	ALS-C1011 to C1050 BLS-C1020	1/2"	ALS-AB03	φ 10
		3/4"	ALS-AB06	
	ALS-C1090	1/2"	ALS-AB10	φ 10 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	φ 8×95
		3/4"	TNS-AC35	TNS-AC56	
	TNS-C1070 to C1150 TNS-C1010C to C1070C	1/2"	TNS-AC05	TNS-AC12	φ 15×115
		3/4"	TNS-AC09	TNS-AC14	
	INS-C1070M1 to C1150M1	1/2"	TNS-AC02	TNS-AC11	φ 12×95
		3/4"	TNS-AC06	TNS-AC13	
	LWS-C1030 to C1090	1/2"	LWS-AC15	LWS-AC21	φ 12×110
		3/4"	LWS-AC17	LWS-AC23	
	LWS-C1120 to C1160 PWS-7120	1/2"	LWS-AC19	LWS-AC25	φ 12×80
		3/4"	LWS-AC20	LWS-AC26	
WS	LWS-C1200 to C1240	1/2"	LWS-AC48	LWS-AC50	φ 12×80 Heat Proof
		3/4"	LWS-AC49	LWS-AC51	
	LWS-C1034 to C1094 PWS-7034 to 7094	1/2"	LWS-AC16	LWS-AC22	φ 12×140
		3/4"	LWS-AC18	LWS-AC24	
	EWS-C1080 to C1160	1/2"	EWS-AC27	—	φ 10.8×70
			—	EWS-AC28	φ 12×75
	ALS-C1011 to C1090 BLS-C1020	1/2"	ALS-AC03	ALS-AC36	φ 12×105
		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: $\phi 20\text{mm}$

Semi standard gland size: $\phi 15\text{mm}$

- To order, specify catalog No. with "W" or "P".

Example: Type SNS-C106X Standard model

Type SNS-C106XW Drip proof model

Type SNS-C106XP Water proof model

- DNS-W/-P

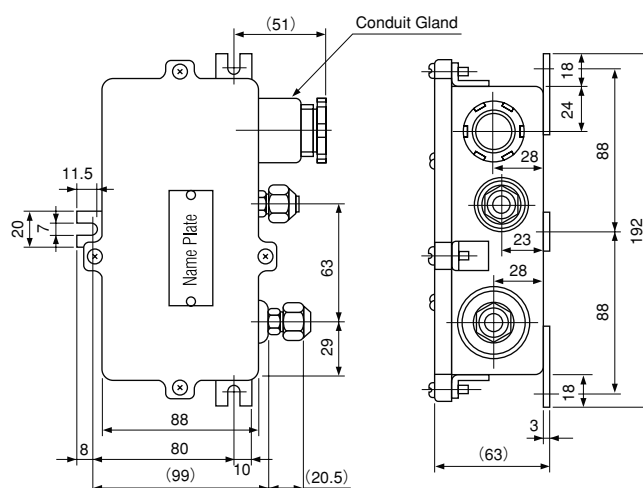
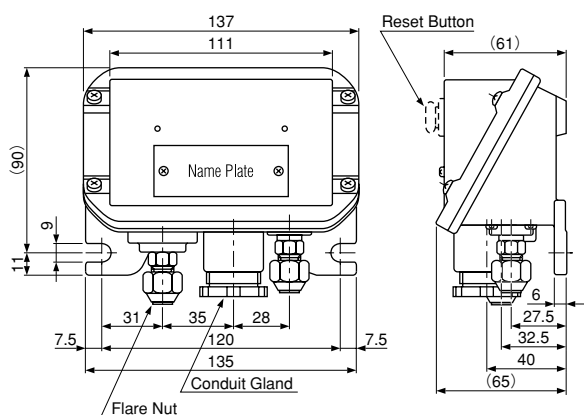
Drip proof model of dual pressure controls.
for specifications, refer to
page 17,18.

Weight: Approx. 1.4kg



Type DNS-W

DNS-P



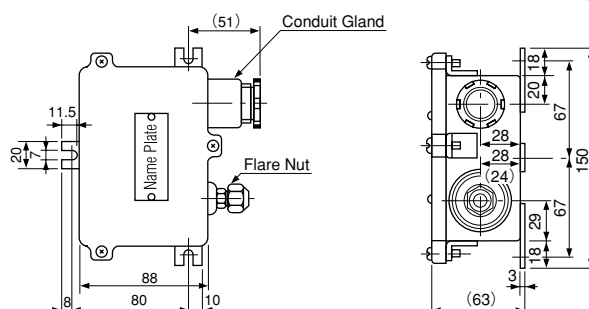
- SNS-W/-P, FNS-W/-P, ANS-W/-P

Drip proof model of single function pressure controls.
For specifications, refer to
Pages 13-16.

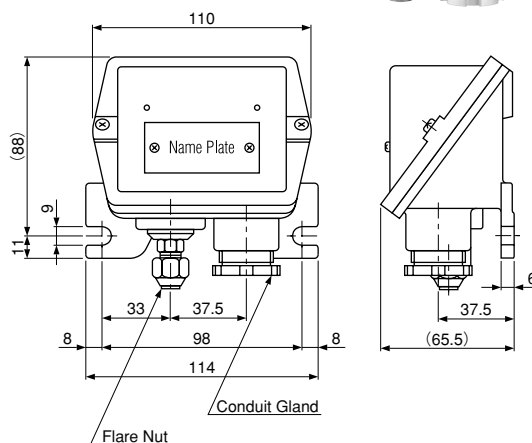
Weight: Approx. 1.1kg



SNS-W, FNS-W, ANS-W



SNS-P, FNS-P, ANS-P



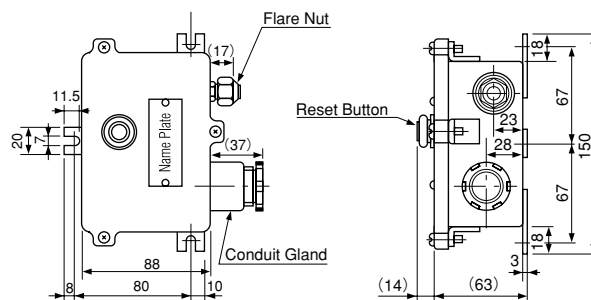
Unit: mm

• **HNS-W**

Drip proof model of high pressure controls.
For specifications, refer to pages 13,14.
Weight: Approx. 1.0kg



HNS-W

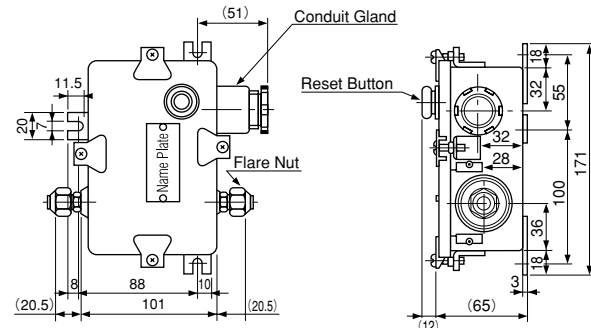


• **ONS-W**

Drip proof model of oil protection controls.
For specifications, refer to pages 19,20.
Weight: Approx. 1.3kg



ONS-W

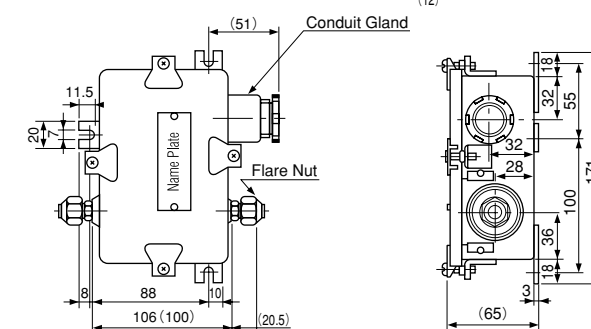


• **WNS-W**

Drip proof model of differential pressure controls.
For specifications, refer to page 21.
Weight: Approx. 1.3kg



WNS-W

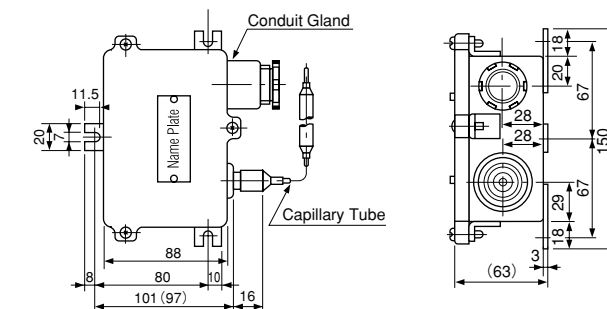


• **TNS-W/-P, CNS-W/-P, INS-W**

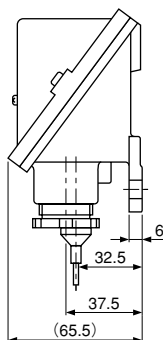
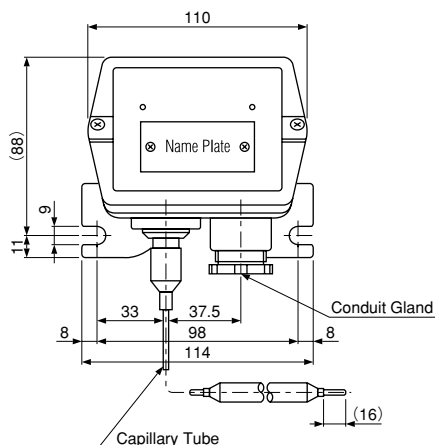
Drip proof model of temperature controls.
For specifications, refer to pages 29,30.
Weight: Approx. 1.3kg



TNS-W



TNS-P,
CNS-P



Unit: mm

EXPANSION VALVES

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EXPANSION VALVES

GENERAL INFORMATION

SAGINOMIYA

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: 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: Saginomiya's all purpose special charge combines the best properties of gas and liquid charges. The charge provides accurate control even if valve body 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 | g) Length of Capillary Tube |
| b) Normal Temperature and Minimum Temperature | h) External or Internal Evaporator |
| c) Detailed Application | i) Pressure Drop at Evaporator |
| d) Refrigerant | j) MOP (Maximum Operating Pressure) |
| e) Valve Location | k) Two Stage Compressor System or not |
| f) Capacity (Condensing & Evaporating Temperature) | |

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. allowable 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 last three figures indicate nominal capacity.

The first and second figures indicate inlet and outlet pipe size respectively.

III : Connection..... B—Flare Nut Connection, D—Solder Connection

IV : Kind of refrigerant..... M=R134a, H=R22

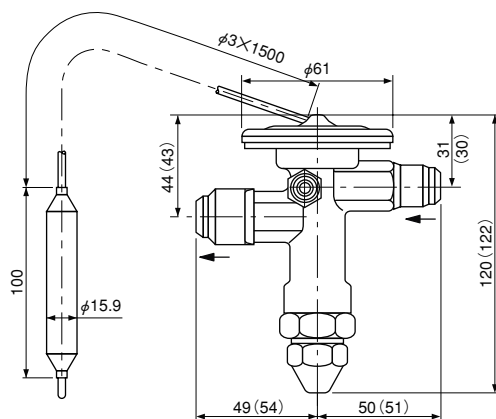
V : Kind of charge..... S=S—charge

TYPE NUMBER SELECTION (SPECIFICATIONS)

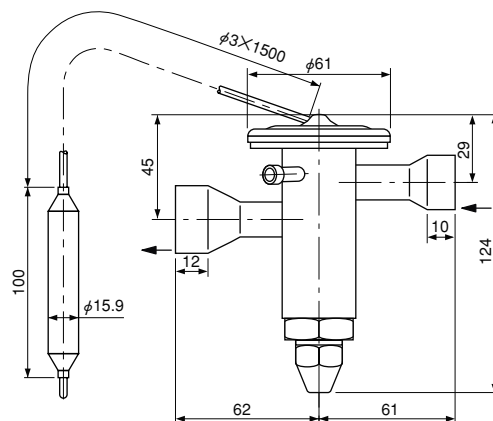
Catalog No.					Capacity (U.S.R.T.) {kW}		Connection			Capil. Tube Length (mm)	Wt. (kg)							
Type	Model	Connection	Refrigerant	Charge	R134a	R22	Inlet	Outlet	Equalizer									
BHX—	45030	B (Flare) or D (Solder)	M (R134a)	S (Special)	3.6 {12.7}	4.8 {16.9}	1/2"	5/8"	1/4"	ϕ 3 × 1500	0.85							
	45040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

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

DIMENSIONS



Type BHX—45030B to 45050B
(BH—56070B to 56140B)



Type BHX—57070D to 71140D

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. allowable 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: $\frac{\text{TCX}}{\text{I}} - \frac{2307}{\text{II}} \frac{\text{D}}{\text{III}} \frac{\text{H}}{\text{IV}} \frac{\text{C}}{\text{V}}$

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

II : Model..... The last two figures indicate nominal capacity.

The first and second figures indicate inlet and outlet pipe size respectively.

III : Connection..... D-Solder Connection

IV : Kind of Refrigerant..... H=R 22

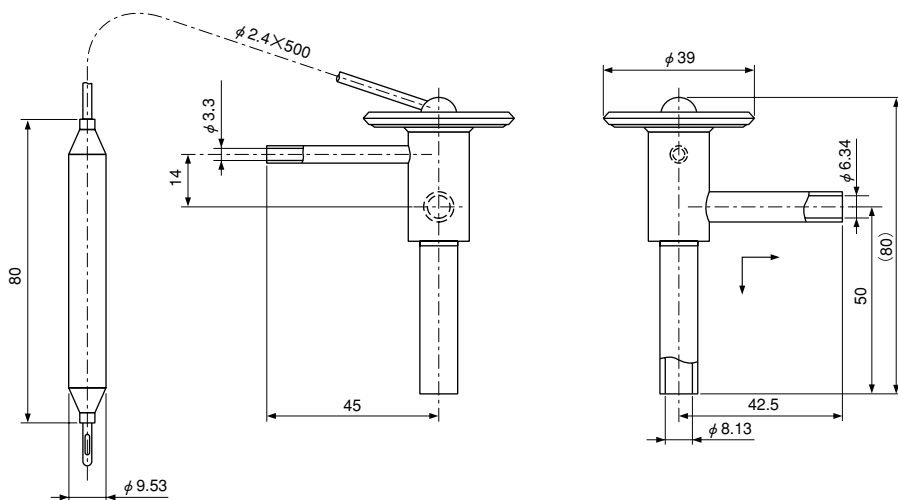
V : Kind of Charge..... C=C-charge

TYPE NUMBER SELECTION (SPECIFICATIONS)

Catalog No.					Capacity (U.S.R.T.) {kW}	Connection (mm)			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}	φ 6.34	φ 8.13	φ 3.3	φ 2.4 × 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

EXPANSION VALVES

Type QCX & RCX

SAGINOMIYA

GENERAL DESCRIPTION

- Application: Refrigeration display case, commercial refrigerator, freezer, air conditioning, reefer, 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.
- Charge: SL—charge for freezer with -20°C MOP.
C—charge for refrigeration
SA—charge for air conditioner with 18°C MOP.
- Max. allowable 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
- Superheat change: 4 to 5°C (C, SL—charge)
3 to 4°C (SA—charge)



Type QCX-B



Type QCX-D



Type RCX-B



Type RCX-D

Charge		A Zone	R Zone	F Zone	MOP (°C)	Temp. Condition
		Evaporating Temp. (°C)				Body 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: QCX - 0234 B U SA
I II III IV V

I : Type..... QCX—Internal equalizer type, RCX—External equalizer type

II: Model..... The last and third figures indicate inlet and outlet pipe size respectively.
The first two figures indicate nominal capacity.

III: Connection..... B—Flare Connection D—Solder Connection

IV: Kind of refrigerant..... M=R134a, H=R22, R407C, U=R404A, V=R410A

V: Kind of charge..... SL=SL—charge, C=C—charge, SA=SA—charge

TYPE NUMBER SELECTION (1) (SPECIFICATIONS)

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		
					E.T. -5°C	E.T. -30°C				
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]]	ϕ 2.4 × 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}				
		R404A	0234B[D]USL	—	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}					
		R404A	0234B[D]UC	—	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}					
		R407C	0334B[D]HC	—	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]DMC	R134a	0.24 {0.85}	—				
			0434B[D]DMC		0.36 {1.28}					
			0634B[D]DMC		0.61 {2.13}					
			1034B[D]DMC		0.96 {3.38}					
			1234B[D]DMC		1.21 {4.27}					
			1834B[D]DMC		1.82 {6.40}					
			2434B[D]DMC		2.43 {8.54}					
			3634B[D]DMC		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)

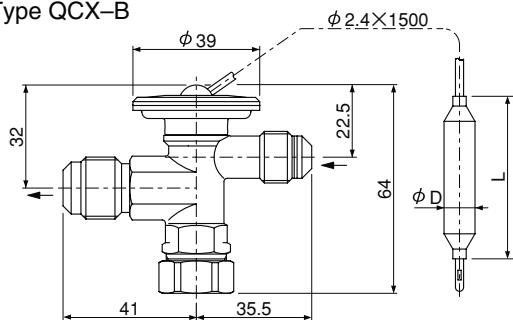
TYPE NUMBER SELECTION (1) (SPECIFICATIONS)

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		
					E.T. -5°C	E.T. -30°C				
A Zone	Air Conditioning -40 to 10°C (SA: R22, R404A, R407C)	QCX- RCX-	0334B[D]HSA 0534B[D]HSA 0834B[D]HSA 1234B[D]HSA 1634B[D]HSA 2434B[D]HSA 3134B[D]HSA 4734B[D]HSA	R22	0.31 {1.10}	—	3/8" Flare [B]	1/2" Flare [B]	ϕ 2.4 × 1500	0.28 (QCX-***34B) 0.24 (QCX-***34D) 0.29 (RCX-***34B) 0.24 (RCX-***34D)
					0.47 {1.65}					
					0.78 {2.75}					
					1.25 {4.41}					
					1.57 {5.51}					
					2.35 {8.26}					
					3.13 {11.0}					
					4.69 {16.5}					
		0234B[D]USA 0334B[D]USA 0534B[D]USA 0834B[D]USA 1034B[D]USA 1534B[D]USA 2034B[D]USA 3034B[D]USA	R404A	0.20 {0.70}	—					
				0.30 {1.05}						
				0.49 {1.74}						
				0.78 {2.76}						
				0.99 {3.48}						
				1.48 {5.22}						
				1.98 {6.95}						
				2.96 {10.4}						
		0334B[D]HSA 0534B[D]HSA 0834B[D]HSA 1234B[D]HSA 1634B[D]HSA 2434B[D]HSA 3134B[D]HSA 4734B[D]HSA	R407C	0.32 {1.13}	—					
				0.48 {1.70}						
				0.81 {2.84}						
				1.29 {4.54}						
				1.61 {5.67}						
				2.42 {8.51}						
				3.21 {11.3}						
				4.83 {17.0}						
	Air Conditioning -45 to 10°C (SA:R410A)			R410A	0.35 {1.22}	—				
					0.52 {1.83}					
					0.86 {3.04}					
					1.37 {4.82}					
					1.73 {6.08}					
					2.59 {9.12}					
					3.44 {12.1}					
					5.18 {18.2}					

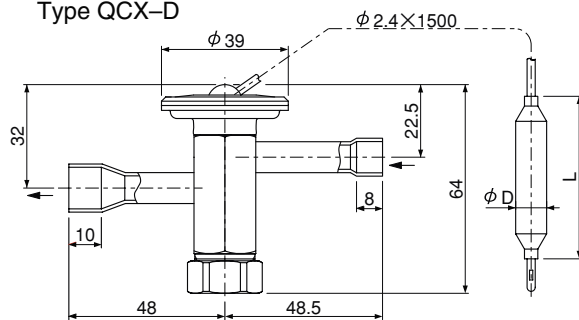
• External equalizer for RCX: 1/4" flare (for all flare outlet bodies) , 1/4" solder[ID] (for all solder outlet bodies)

DIMENSIONS

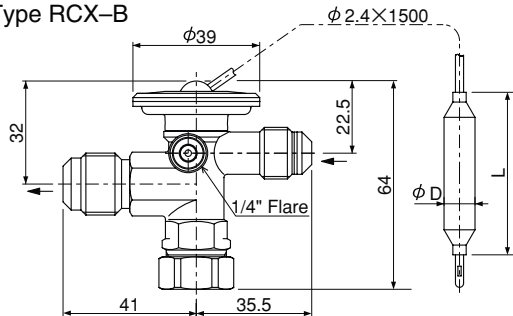
Type QCX-B



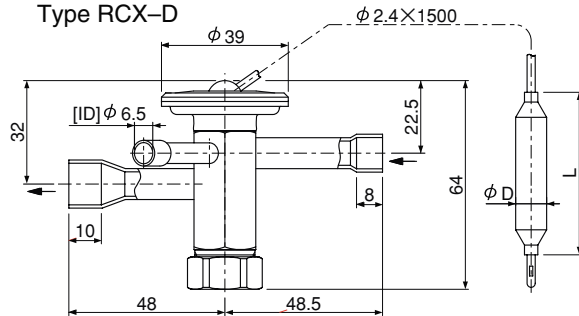
Type QCX-D



Type RCX-B



Type RCX-D



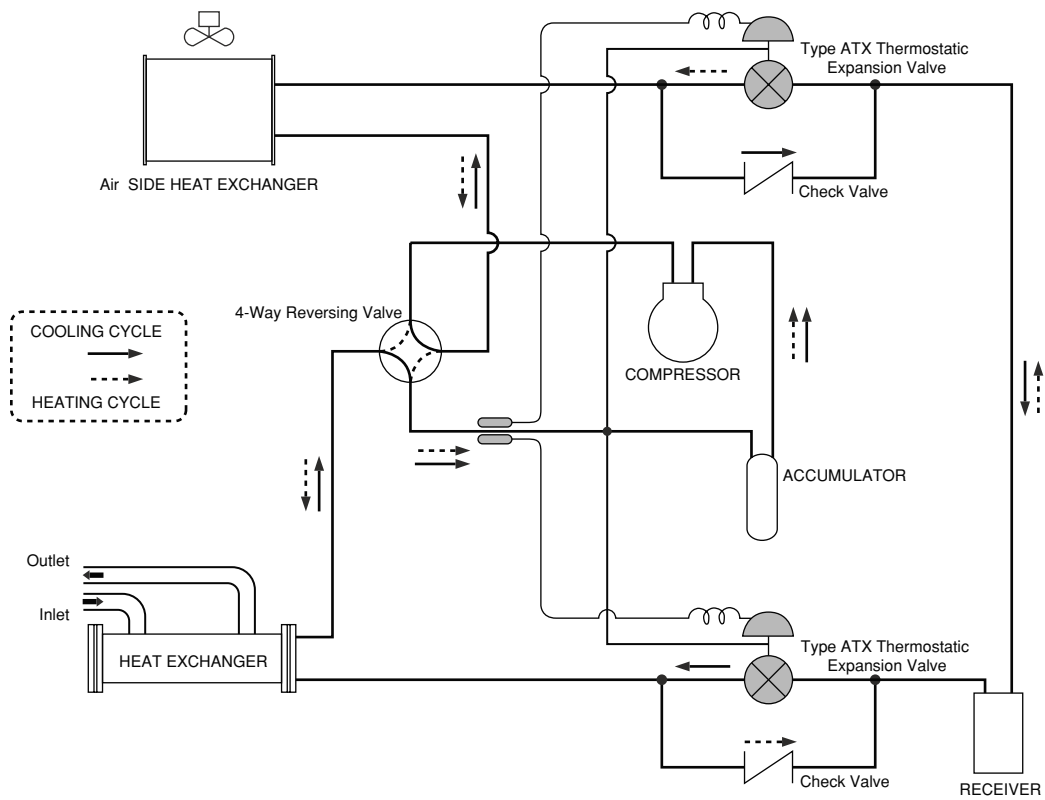
	D	L
SA	12.7	80
C	9.5	50
SL	12.7	80

Unit: mm

SYSTEM EXAMPLE

Heat Pump Chiller System

- In case of using QCX/RCX 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

- Application: General refrigeration and air conditioning systems.

* Note: S-charge valve for low temperature (−40 to 10°C, −30 to 10°C for R134a), unloading, heat pump applications, or hot gas defrost system. CY-charge valve for extreme low temp. (−70 to −40°C) application.

- Charge: L (Liquid) charge for refrigeration application.
G (Gas) charge for cooling application with 20°C (standard) MOP.
S (Special) charge for all purpose with 20°C (standard) MOP.
C (Cross) charge, CL (Cross low) charge and CY (Extreme low) charge for low temp application.
SL (Special low) charge for low temp application with −20°C (standard) MOP.
- Max. allowable pressure:
1.4 MPa {14kgf/cm²} (G, L, C, CL-charge)
2.8 MPa {28kgf/cm²} (S, CY, SL-charge)
3.3 MPa {33kgf/cm²} (S-charge for R407C)
..... (C, CL-charge for R410A)
- Adjustable range of static superheat:
3 to 13°C (G, L, C, CL-charge)
1 to 7°C (S, SL-charge for R404A)
..... (C, CL-charge for R410A)
0 to 8°C (S-charge except R404A)
0 to 13°C (CY-charge)
- Superheat change:
4 to 5°C (S, SL, CL-charge)
3 to 4°C (G, L, C-charge)
8 to 12°C (CY-charge)
- Rugged diaphragm element: Best for heat pump units.



Type ATX-B



Type ATX-D

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 last three figures indicate nominal capacity.

The first and second figures indicate inlet and outlet pipe size respectively.

III: Connection..... B—Flare Nut Connection, D—Solder Connection

IV: Kind of refrigerant..... M=R134a, H=R22, U=R404A, P=R407C, V=R410A

V: Kind of charge..... G=G-charge, L=L-charge, C=C-charge, CL=CL-charge, CY=CY-charge, S=S-charge, SL=SL-charge

SYSTEM EXAMPLE

- In case of using ATX in heat pump circuits, refer to page 56.

TYPE NUMBER SELECTION (SPECIFICATIONS)

Catalog No.					Capacity (U.S.R.T.) {kW}						Connection		Wt. (kg)
Type	Model	Connection	Refrigerant	Charge	R22	R134a	R404A	R407C	R404A(SL)	R410A	Inlet	Outlet	
ATX-	34006	B(Flare) or D(Solder)	M (R134a)	S (R134a R22 R404A R407C)	1.0 {3.51}	0.7 {2.46}	0.7 {2.46}	1.0 {3.51}	0.3 {1.16}	1.10 {3.85}	3/8" [3/8"OD]	1/2" [1/2"OD]	1.2 (B) 1.1 [D]
	34013				2.1 {7.39}	1.6 {5.63}	1.5 {5.27}	2.2 {7.74}	0.8 {2.90}	2.32 {8.14}			
	34023				3.6 {12.7}	2.8 {9.85}	2.7 {9.49}	3.7 {13.0}	1.4 {4.78}	3.98 {14.0}			
	34035				5.5 {19.3}	4.2 {14.8}	4.0 {14.1}	5.7 {20.0}	2.0 {7.19}	6.05 {21.3}			
	34045	D (Solder)	H (R22)	SL (R404A) G L (R22) C,CL (R407C) R22 (R410A)	7.0 {24.8}	5.4 {19.0}	5.1 {17.9}	7.2 {25.3}	2.6 {9.23}	7.77 {27.3}	5/8" OD or 7/8" ID	7/8" OD or 1-1/8" ID	1.3
	57060				9.7 {34.1}	7.2 {25.4}	6.8 {23.9}	10.0 {35.1}	3.7 {12.9}	10.7 {37.6}			
	57080				13.0 {45.7}	9.6 {33.7}	9.1 {32.0}	13.4 {47.1}	4.9 {17.3}	14.3 {50.3}			
	71110				17.8 {62.6}	13.2 {46.4}	12.5 {44.0}	18.3 {64.3}	6.9 {24.4}	19.6 {69.0}			
	71140				22.6 {79.4}	16.8 {59.1}	16.0 {56.3}	23.3 {81.9}	8.7 {30.7}	24.9 {87.4}	1" OD or 1-1/4" ID	1" OD or 1-1/4" ID	1.5
	71160				26.0 {91.6}	19.2 {67.5}	18.2 {64.0}	26.8 {94.2}	10.0 {35.0}	28.6 {101}			
	12220				35.8 {126}	26.4 {92.8}	25.1 {88.3}	36.9 {130}	13.7 {48.2}	39.4 {139}			
	12270				43.5 {154}	32.4 {114}	30.8 {108}	44.8 {158}	16.9 {59.3}	48.2 {170}			
	12330				53.4 {187}	39.6 {140}	37.6 {132}	55.0 {193}	20.6 {72.4}	58.6 {206}			
	12420				67.6 {237}	50.4 {177}	47.9 {168}	69.6 {245}	27.6 {97.1}	74.2 {261}			
	12500				81.0 {285}	60.0 {211}	57.0 {200}	83.4 {293}	33.0 {116}	89.2 {314}			

* Capillary tube length: 2000mm for S-charge valve as standard.

• Capacity: Based on condensing temp. 38°C and evaporating temp. 5°C. (-30°C for SL-charge).

• External equalizer : 1/4" flare (for all flare outlet bodies) solder[D] (for all solder outlet bodies)

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	$\phi 3$ × 2000	1.2 (Flare)
	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}					

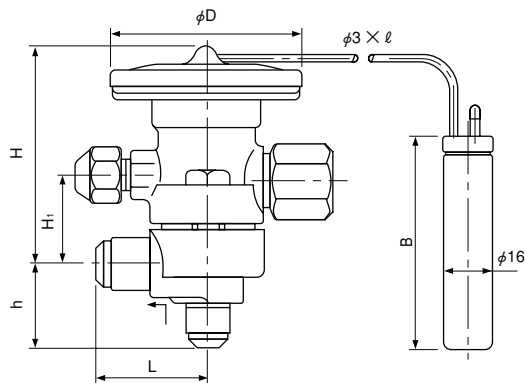
• Capacity: Based on condensing temp. 40°C and evaporating temp. —60°C, sub-cooling 50°C.

• Contact the company for more detailed information.

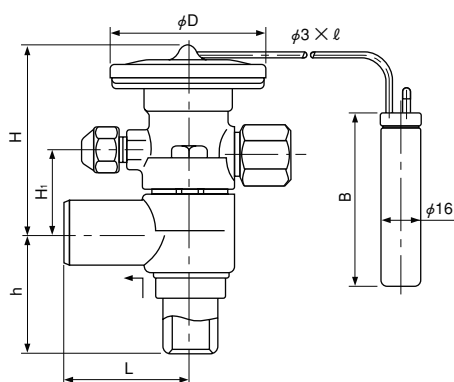
• External equalizer : 1/4" flare (for all flare outlet bodies) solder[D] (for all solder outlet bodies)

DIMENSIONS

Type ATX-B



Type ATX-D

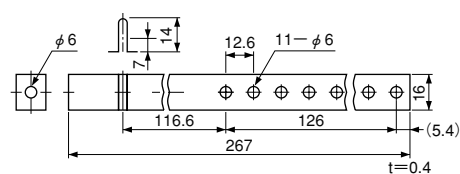


Unit: mm

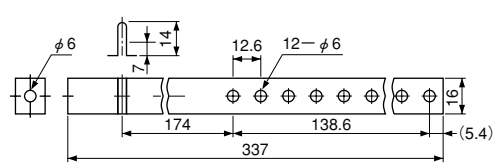
Catalog No.			Unit: mm							
Type	Model	Connection	L	H	H ₁	h	ϕD	ℓ	B	
ATX-	34006	B (Flare) D (Solder)	38	77	31	30	64	1500	76	
	34013									
	34023									
	34035									
	34045	D (Solder)	51	80	34	52	68	3000	100	
	57060									
	57080									
	71110									
	71140									
	71160									
	12220									
	12270									
	12330									
	12420									
	12500									

• S,CY,SL-Charge C,CL-Charge for R410A : $\phi D=68$, $\ell=2000$, $B=100$

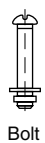
ACCESSORY Sensing Bulb Mounting Band



Type ATX-34006 to 71160



Type ATX-12220 to 12500



Bolt

EXPANSION VALVES

Type WHX

SAGINOMIYA

GENERAL DESCRIPTION

- Application: Refrigeration display case, commercial refrigerator, freezer, air conditioning, reefer, etc.
- Charge: SL—charge for freezer with -20°C MOP.
C,CL—charge for refrigeration
SA—charge for air conditioner with 18°C MOP.
- Max. allowable pressure: 1.9 MPa {19kgf/cm²}
- Adjustable range of superheat: 1 to 7°C
- Superheat change: 5 to 6°C (SL, C, CL—charge)
4 to 5°C (SA—charge)



VALVE NOMENCLATURE

Catalog No. is decided according to the specifications.

Example: WHX – 3430 B H SL
I II III IV V

I : Type ... WHX—Thermostatic expansion valve for general use

II: Model ... The last two figures indicate Nominal capacity.

The first and second figures indicate inlet and outlet pipe size respectively.

III: Connection ... B—Flare Nut Connection

IV: Kind of refrigerant ... M=R134a, H=R22, U=R404A, P=R407C

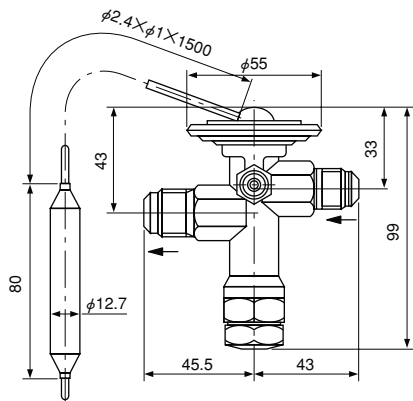
V: Kind of charge ... C=C—charge, CL=CL—charge, SA=SA—charge, SL=SL—charge

TYPE NUMBER SELECTION (SPECIFICATIONS)

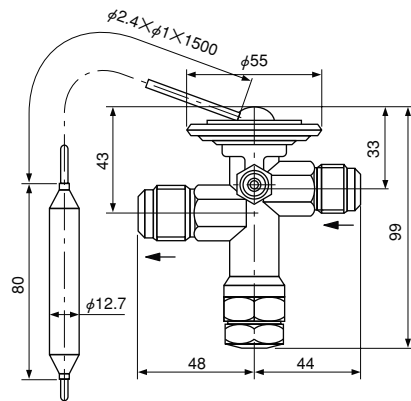
Application		Catalog No.		Capacity (U.S.R.T.) {kW}				Connection			Capil. Tube Length (mm)	Wt. (kg)				
				R22	R134a	R404A	R407C	Inlet	Outlet	Equalizer						
F Zone	Freezing -25 to -60°C	WHX-	3430BHSL	3.4 {12.0}	-	-	-	3/8"	1/2"	1/4" Flare	ϕ 2.4 × 1500	0.6				
			4540BHSL	4.5 {15.8}				1/2"	5/8"			0.67				
			4550BHSL	5.6 {19.7}				3/8"	1/2"			0.6				
			3430BUSL	-		2.21 {7.78}		1/2"	5/8"			0.67				
			4540BUSL			2.95 {10.4}		3/8"	1/2"			0.6				
			4550BUSL			3.69 {13.0}		1/2"	5/8"			0.67				
R Zone	Refrigeration 0 to -30°C(C: R134a, R22) 0 to -40°C(C: R404A) -10 to -40°C (CL: R22, R407C)		3430BMC	-	3.6 {12.7}	-		3/8"	1/2"			0.6				
			4540BMC		4.8 {16.9}			1/2"	5/8"			0.67				
			4550BMC		6.0 {21.1}			3/8"	1/2"			0.6				
			3430BHC (CL)	4.8 {16.9}	-			3/8"	1/2"			0.6				
			4540BHC (CL)	6.4 {22.5}				1/2"	5/8"			0.67				
			4550BHC (CL)	8.0 {28.1}				3/8"	1/2"			0.6				
			3430BUC	-	3.4 {12.0}			3/8"	1/2"			0.6				
			4540BUC		4.6 {16.0}			1/2"	5/8"			0.67				
			4550BUC		5.7 {20.0}			3/8"	1/2"			0.6				
			3430BPCL	-	4.94 {17.4}			3/8"	1/2"			0.6				
			4540BPCL		6.57 {23.1}			1/2"	5/8"			0.67				
			4550BPCL		8.24 {28.9}			1/2"	5/8"			0.67				
			A Zone	Air conditioning 10 to -20°C	3430BMSA			4.8 {16.9}	-			-	3/8"	1/2"	0.6	
					4540BMSA			6.4 {22.5}					1/2"	5/8"	0.67	
					4550BMSA			8.0 {28.1}					3/8"	1/2"	0.6	
					3430BMSA			-					3.6 {12.7}	1/2"	5/8"	0.67
					4540BMSA								4.8 {16.9}	3/8"	1/2"	0.6
					4550BMSA								6.0 {21.1}	1/2"	5/8"	0.67
3430BPC	-	4.94 {17.4}			3/8"	1/2"	0.6									
4540BPC		6.57 {23.1}			1/2"	5/8"	0.67									
4550BPC		8.24 {28.9}			3/8"	1/2"	0.67									

• Capacity: Based on condensing temp. 38°C and evaporating temp. -5°C for R & A zone, -30°C for F zone.

DIMENSIONS

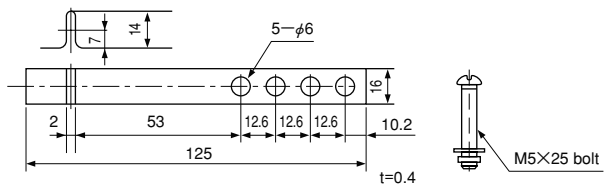


Type WHX-3430B

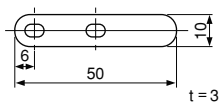


Type WHX-4540B, 4550B

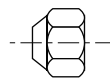
ACCESSARY



Sensing Bulb Mounting Band



Superheat Adjusting Handle



Flare Nut

Unit: mm

ELECTRONIC EXPANSION VALVES

High Volume OEM Item (Type UKV, SKV, VKV, AKV)

Type UKV, SKV, 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, SKV, VKV, AKV)



Type UKV



Type PKV



Type AKV

COMMON SPECIFICATIONS

Max. working pressure: 4.2 MPa {42kgf/cm²}

Valve operating pulse range: 0 to 480 pulse, 1–2 phase Excitation.

TYPE NUMBER SELECTION (SPECIFICATIONS)

Type UKV

Catalog No.	Port Size (ϕ mm)	Capacity (U.S.R.T.) {kW}					Connection (Solder) (mm)		Operating Pressure Differential (MPa) {kgf/cm ² }	Valve shut press on, A to B flow direction (MPa) {kgf/cm ² }	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}	ϕ 6.35 OD	ϕ 6.35 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}				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}	ϕ 7.94 OD	ϕ 7.94 OD	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	

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

• Please contact us if other capacity models are needed.

Type SKV

Catalog No.	Port Size (ϕ mm)	Capacity (U.S.R.T.) {kW}					Connection (Solder) (mm)		Operating Pressure Differential (MPa) {kgf/cm ² }	Valve shut press on, A to B flow direction (MPa) {kgf/cm ² }	Wt. (kg)
		R22	R134a	R404A	R407C	R410A	B side	A side			
SKV-16D	1.6	2.3 {8.2}	1.8 {6.4}	1.7 {5.8}	2.4 {8.5}	2.8 {9.7}	ϕ 7.94 OD	ϕ 7.94 OD	0 to 3.5 {0 to 35}	2.5 {25} or less	0.09
SKV-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	

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

Type VKV

Catalog No.	Port Size (ϕ mm)	Capacity (U.S.R.T.) {kW}					Connection (Solder) (mm)		Operating Pressure Differential (MPa) {kgf/cm ² }	Valve shut press on, A to B flow direction (MPa) {kgf/cm ² }	Wt. (kg)
		R22	R134a	R404A	R407C	R410A	B side	A side			
VKV-20D	2.0	3.5 {12.4}	2.7 {9.7}	2.5 {8.7}	3.6 {12.7}	4.1 {14.5}	ϕ 7.94 OD	ϕ 7.94 OD	0 to 3.5 {0 to 35}	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}	5.0 {17.4}	7.2 {25.4}	8.3 {29.1}	ϕ 9.52 OD	ϕ 12.7 OD	0 to 2.5 {0 to 25}	1.5 {15} or less	0.15
VKV-32D	3.2	8.2 {28.8}	6.4 {22.5}	5.8 {20.3}	8.4 {29.6}	9.6 {33.9}				1.0 {10} or less	

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

Type PKV

Catalog No.	Port Size (ϕ mm)	Capacity (U.S.R.T.) {kW}					Connection (Flare)		Operating Pressure Differential (MPa) {kgf/cm ² }	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

Catalog No.	Port Size (ϕ mm)	Capacity (U.S.R.T.) {kW}					Connection (Solder) (mm)		Operating Pressure Differential (MPa) {kgf/cm ² }	Valve shut press on, A to B flow direction (MPa) {kgf/cm ² }	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}	ϕ 15.88 OD	ϕ 15.88 OD	0 to 2.5 {0 to 25}	0.7 {7} or less	0.4

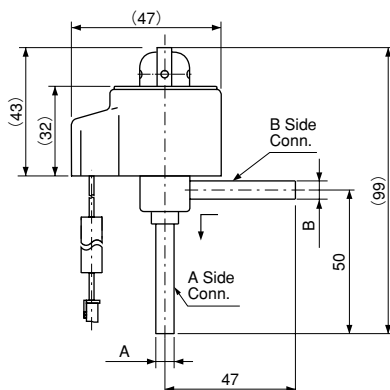
• Capacity: Based on CT=38°C, ET=5°C, SC=0°C and SH=0°C

Coil

Valve Type	Rated Voltage & Current	Wt.(kg)
Type UKV	12V DC...260mA/Phase	0.13
Type SKV		0.14
Type VKV, PKV		0.15
Type AKV	12V DC...375mA/Phase	0.4

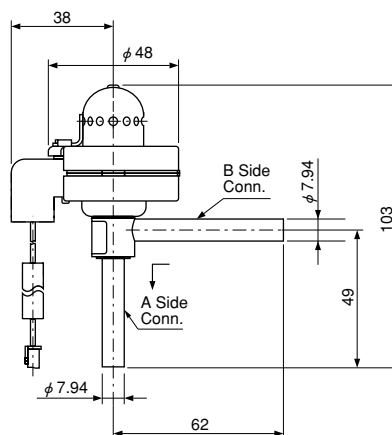
DIMENSIONS

Type UKV

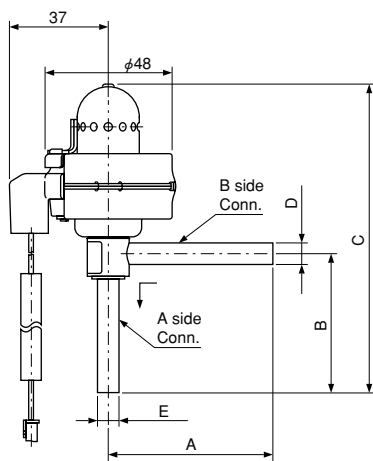


Catalog No.	A	B
UKV-18D	ϕ 6.35	
UKV-25D		
UKV-30D	ϕ 7.94	
UKV-32D		

Type SKV

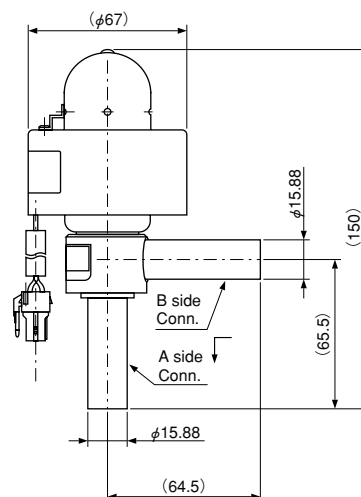


Type VKV

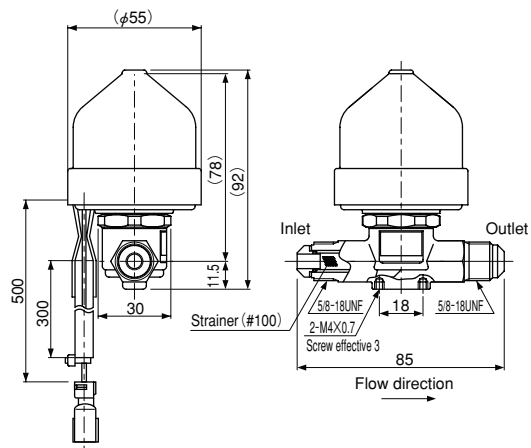


Catalog No.	A	B	C	D	E
VKV-20D	64	49	112	ϕ 7.94	
VKV-25D					
VKV-30D					
VKV-32D	66	64	130	ϕ 9.52	ϕ 12.7

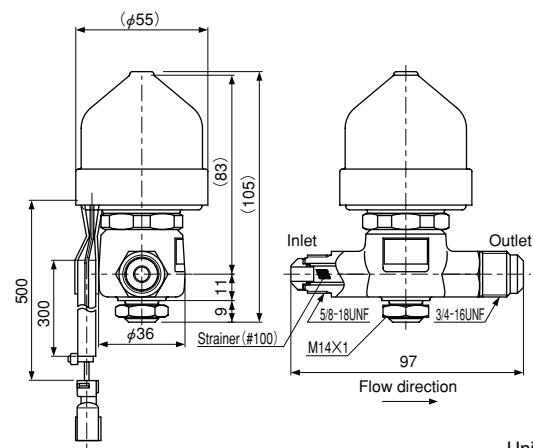
Type AKV



Type PKV-14BS to 24BS



Type PKV-30BS



Unit: mm

PULSE CONVERTERS

Type LNE

SAGInoMIXA

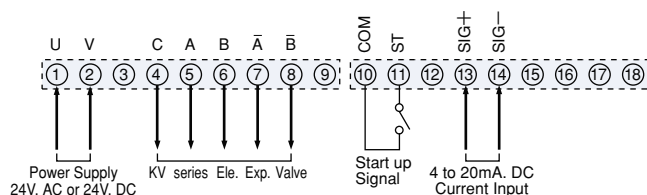
GENERAL DESCRIPTION

- Can be used for all types of SKV, 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.

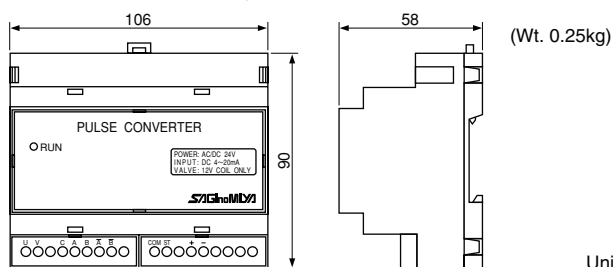
Input	Start up input	No voltage contact signal
	Current input	4 to 20mA. DC
Output	0 to 480 pulse	For SKV, VKV, PKV & AKV
Sampling time		0.1, 1, 5, and 10 sec.



WIRING



DIMENSIONS (Type: LNE-ZN20-020)



SOLENOID VALVES & CONTROL VALVES

SOLENOID VALVES FOR REFRIGERANT	65
Type NEV, TEV & VPV	
SOLENOID VALVES FOR REFRIGERANT	66
Type SEV	
SOLENOID VALVES FOR REFRIGERANT	67–68
Type REV & UEV	
SOLENOID VALVES FOR WATER (BRINE)	69
Type WEV	
BI-FLOW SOLENOID VALVES	70
Type BPV	
3-WAY SOLENOID VALVES	71
Type IEV	
4-WAY REVERSING VALVES	72–74
Type STF & VHV	
MOTORIZED BALL VALVES	75–76
Type MJV	
DAMPER & VALVE MOTOR ACTUATORS	77–78
Type EGK & WGK	
2-WAY & 3-WAY CONTROL VALVES	79–81
Type NVK	

SOLENOID VALVES FOR REFRIGERANT

High Volume OEM Item

Type NEV, 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

TYPE NUMBER SELECTION (SPECIFICATIONS)

Unit: MPa {kgf/cm²}

Catalog No.	Port Size (mm)	Cv	Connection		O.P.D.		Max. Working Pressure	Operation	Wt. (kg)	
			Copper Tube O.D.	Style	Min.	Max.				
NEV-L202DXF	1.8	0.06	1/4"	Solder	0	2.06 {21}	3.3 {33.7}	Normal Open	0.06	
NEV-152DXF	1.5	0.07						Normal Close	0.04	
NEV-202DXF	1.9	0.09							0.08	
NEV-603DXF	5.8	0.65	5/16"		0.14					
NEV-803DXF	7.8	1.5	3/8"		0.26					
NEV-1204DXF	11.0	3.0	1/2"							
TEV-1220D	1.2	0.037	1/4"		0	2.7 {27.6}	3.3 {33.7}	Normal Open	0.04	
TEV-1620DQ2	1.6	0.07				1.7 {17.3}				
TEV-1920D	1.9	0.1								
VPV-L202D	1.8	0.06	1/4"		0	2.06 {21}	4.15 {42.3}	Normal Open	0.06	
VPV-122D	1.2	0.04				3.6 {36.7}		Normal Close	0.04	
VPV-152D	1.5	0.07				2.75 {28}				
VPV-202DQ50	1.9	0.09				3.6 {36.7}				
VPV-603D	5.8	0.65	5/16"		0.005 {0.05}	3.6 {36.7}			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)
- Ambient temperature: -20 to 50°C
- Allowable fluid temperature: -30 to 120°C (type NEV, VPV), -30 to 110°C (type TEV)

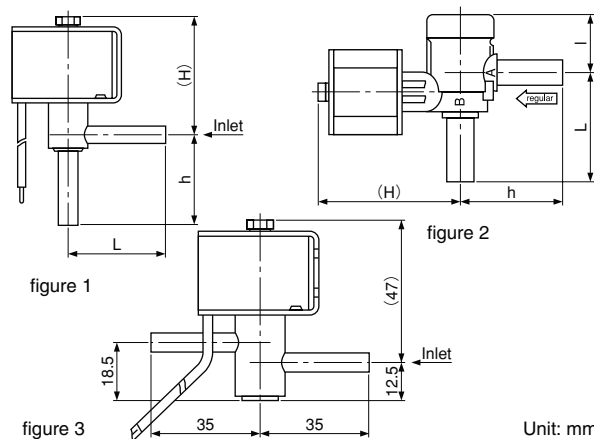
ELECTRICAL RATING OF SOLENOID COILS

Type	Rated Voltage		Tolerance (%)	Voltampere		Power Consumption (W)	Insulation Class	Wt. (kg)
				Running	Inrush			
NEV	24V. AC	50/60Hz	±10	11/9	33/27	7/6	Class B Molded	0.14
	100V. AC							
	110V. AC							
	120V. AC							
	200V. AC							
	220V. AC							
	230V. AC							
TEV	240V. AC							
	100V. AC	50/60Hz	±10	9/7	22/16	5/4	Class B Molded	0.1
	200V. AC							
	220V. AC							
	240V. AC							
VPV	24V. AC	50/60Hz	±10	13/10	36/30	8/7	Class B Molded	0.14
	100V. AC							
	120V. AC							
	200V. AC							
	220V. AC							
	230V. AC							
	240V. AC							

Current (A)=Voltampere / Rated Voltage

* IEC compliance

DIMENSIONS



Unit: mm

Catalog No.		Unit: mm				Form
		L	H	h	l	
VPV-	122D	35	43	33	—	figure 1
	152D					
	202D					
NEV-VPV-	603D	36.5	55	36	22.5	figure 2
	803D	41.5	53.5	38.5		
	1204D	61.5	57.5	61.5		
	L202D	—	—	—		
TEV-	1220D	35	40	33	—	figure 1
	1620DQ2					
	1920D					

SOLENOID VALVES FOR REFRIGERANT

Type SEV

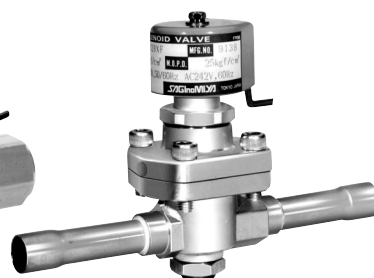
SAGINOMIYA

GENERAL DESCRIPTION

- Pilot operated, 2-way, normally closed valve.
- For non-corrosive refrigerant (liquid or gas) in refrigeration units. Also available for air application.
- Can operate under no pressure difference. (SEV-502 and 603)
- Can install horizontally and vertically. (Coil should be located above the axis of pipe line.)



Type SEV-B



Type SEV-D

TYPE NUMBER SELECTION (SPECIFICATIONS)

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 Press.	Body Test Press.	Fluid Temp. (°C)	Ambient Temp. (°C)	Wt. (kg)
			R134a	R22	Copper pipe (O.D.)	Style	Min.	Max.					
SEV-502BXF	5	0.51	2.1	2.3	1/4"	Flare	0	2.45 {25} for AC	X: 2.94 {30}	X: 4.41 {45}	-40 to 125	-30 to 50	0.4
SEV-502BYF													
SEV-603BXF	6	0.80	3.3	3.6	3/8"								0.007 {0.07}
SEV-603BYF													
SEV-1004BXF	10	1.75	7.3	7.8	1/2"								
SEV-1004BYF													
SEV-1205BXF	12	2.9	12.1	13.0	5/8"								
SEV-1205BYF													
SEV-1506BXF	15	4.5	18.8	20.1	3/4"								
SEV-1506BYF													
SEV-502DXF	5	0.53	2.2	2.4	1/4"	Solder	0	1.96 {20} for DC	Y: 4.2 {42}	Y: 6.3 {63}			0.3
SEV-502DYF													
SEV-603DXF	6	0.83	3.5	3.8	3/8"								0.007 {0.07}
SEV-603DYF													
SEV-1004DXF	10	2.0	8.3	8.9	1/2"								
SEV-1004DYF													
SEV-1205DXF	12	3.5	14.6	15.6	5/8"								
SEV-1205DYF													
SEV-1506DXF	15	5.3	22.1	23.7	3/4"								
SEV-1506DYF													

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

• Weight includes a coil

• Enclosure IP34 (SEV-W:Drip proof model)

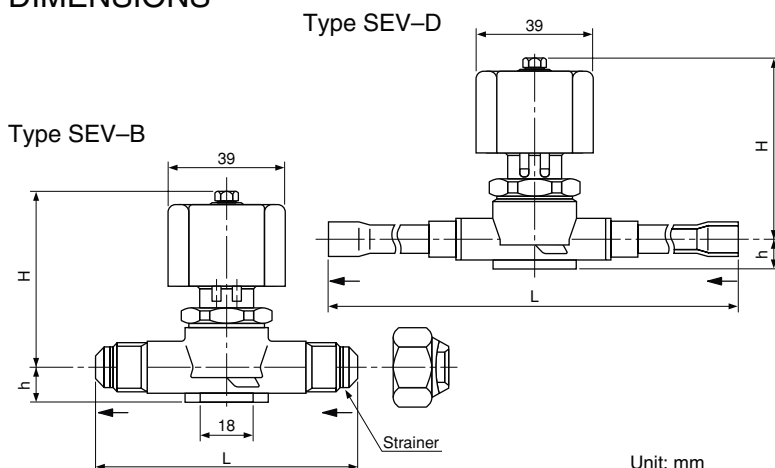
ELECTRICAL RATING OF SOLENOID COILS

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	15/11	45/33	7/6	* Class B Molded
12V. DC, 24V. DC, 100V. DC	—		—	—	10	

Current (A)=Voltampere / Rated Voltage

* IEC compliance

DIMENSIONS



Unit: mm

Catalog No.		Unit: mm		
		L	H	h
SEV-	502B	85	58	11.5
	603B			
	1004B	105	85	20.5
	1205B	115	88	22
	1506B	135	95	25
	502D	270	58	10.5
	603D			
	1004D	160	85	20.5
	1205D	180	88	22
	1506D	190	95	25

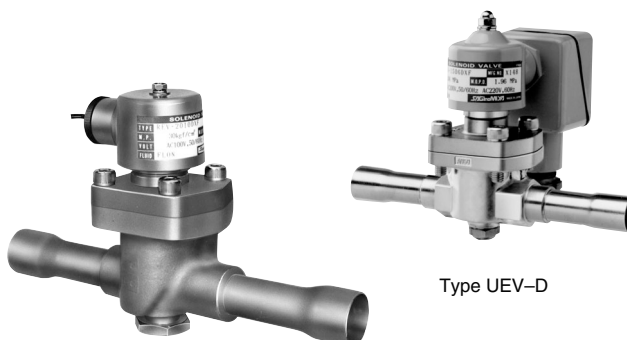
SOLENOID VALVES FOR REFRIGERANT

Type REV & UEV

SAGINOMIYA

GENERAL DESCRIPTION

- Pilot operated, 2-way, normally closed valve (Type REV) and normally opened valve (Type UEV).
- 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 REV-D

Type UEV-D

TYPE NUMBER SELECTION (SPECIFICATIONS)

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-703BX[Y]F	7	1.0	3/8"		—	Flare	0.007 {0.07}	2.45 {25}	2.94 {30} [4.2{42}]	0.6												
REV-1004BX[Y]F	10	2.0	1/2"							0.9												
REV-1205BX[Y]F	12	3.5	5/8"							1.1												
REV-1506BX[Y]F	15	5.3	3/4"							1.5												
REV-1003GX[Y]F	10	2.0	3/8"							1.0												
REV-1204GX[Y]F	12	3.5	1/2"							1.3												
REV-1506GX[Y]F	15	5.3	3/4"							1.7												
REV-703DX[Y]F	7	1.0	3/8"							0.5												
REV-1004DX[Y]F	10	2.0	1/2"			0.8																
REV-1205DX[Y]F	12	3.5	5/8"			0.9																
REV-1506DX[Y]F	15	5.3	3/4"			1.1																
REV-2007DX[Y]F	20	9.0	7/8"			Solder				0.007 {0.07}	2.45 {25}	2.94 {30} [4.2{42}]	1.6									
REV-2010DX[Y]F			1"											1.6								
REV-2011DX[Y]F			1-1/8"																			
REV-2511DXF	25	13.8	1-1/8"										Flange	0.007 {0.07}	2.45 {25}	2.94 {30} [4.2{42}]	2.2					
REV-2512DXF			1-1/4"																			
REV-2513DXF			1-3/8"																			
REV-3213DXF	32	19.4	1-3/8"														Flange	0.007 {0.07}	2.45 {25}	2.94 {30} [4.2{42}]	3.2	
REV-3214DXF			1-1/2"																			
REV-3215DXF			1-5/8"																			
REV-2006EXF	20	9.0	7/8"	1-1/8"	3/4"	*	0.007 {0.07}	2.45 {25}	2.94 {30} [4.2{42}]												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									
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"																			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"			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"			Solder				0.007 {0.07}	1.96 {20}	2.94{30}		1.6								
UEV-2010DXF			1"																			
UEV-2011DXF			1-1/8"																			

* With companion flange, specify copper tube O.D. size when order.

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

• Ambient temperature: -30 to 40°C, allowable fluid temperature: -40 to 125°C (REV), -40 to 120°C (UEV)

• Weight includes a coil

• Enclosure IP34 (REV-W, 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	* Class B Molded
	12V.DC, 24V.DC 48V.DC, 100V.DC	—	±10	—	—	
UEV	24V.AC, 100V.AC, 110V.AC 200V.AC, 220V.AC, 240V.AC	50/60Hz	+10 -15	17/14	43/35	

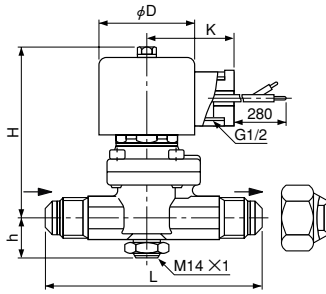
Specify voltage & frequency when order.

* IEC compliance

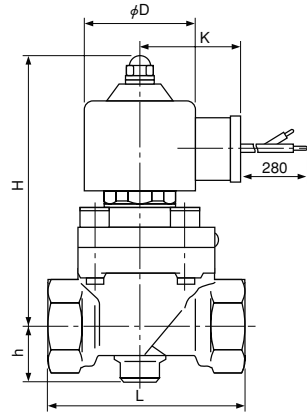
Current (A)=Voltampere / Rated Voltage

DIMENSIONS

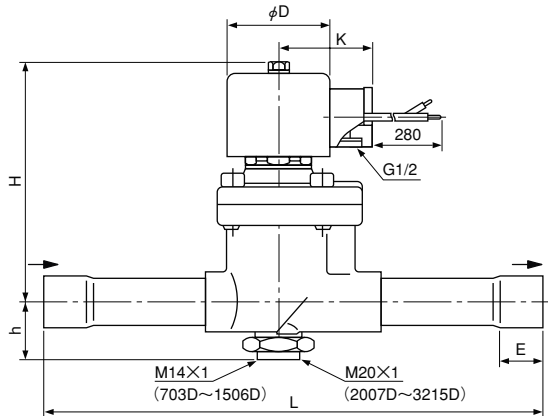
Type REV-B, UEV-BX



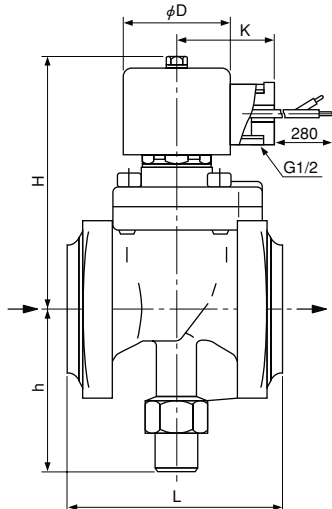
Type REV-G, UEV-GX



Type REV-D, UEV-DX



Type REV-EX



Unit: mm

Catalog No.		Unit: mm					
		L	H	h	E	ϕ D	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.	Fluid	Port Size (mm)	Cv Value	Connection		O.P.D.		Max. Working Pressure	Wt. (kg)
				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
WEV-2006GL		20	7.8	3/4"					0.8
WEV-2510GL		25	10.4	1"					1.1
WEV-3212GL		32	17.6	1-1/4"		0.03 {0.3}			1.6
WEV-4014GL		40	26	1-1/2"					2.4
WEV-5020GL		50	42	2"					3.6
WEV-1504FL		B (glycol, Warm Water)	15	4.3		1/2"			*
WEV-2006FL	20		7.8	3/4"	Flange (Round Type)	2.6			
WEV-2510FL	25		10.4	1"		3.7			
WEV-3212FL	32		17.6	1-1/4"		0.03 {0.3}	5.0		
WEV-4014FL	40		26	1-1/2"			5.7		
WEV-5020FL	50		42	2"			7.7		
WEV-6524FL	65		65	2-1/2"		0.03 {0.3}	12.8		
WEV-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

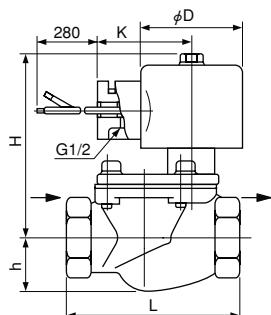
Rated Voltage		Tolerance (%)	Voltampere (VA)		Power Consumption (W)	Insulation Class
			Running	Inrush		
24V.AC, 100V.AC, 110V.AC 200V.AC, 220V.AC, 240V.AC	50/60Hz	±10	18/14	57/47	9/8	* Class B Molded
12V.DC, 24V.DC 48V.DC, 100V.DC	—		—	—	11	

Specify voltage & frequency when order.

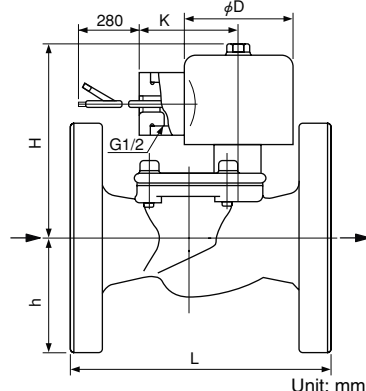
* IEC compliance

DIMENSIONS

Type WEV-G



Type WEV-F



Unit: mm

Catalog No.		Unit: mm				
		L	H	h	φ D	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

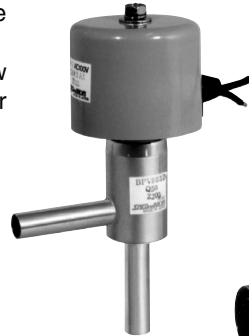
High Volume OEM Item

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



Type BPV-A



Type BPV-D

TYPE NUMBER SELECTION (SPECIFICATIONS)

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	Less Than 0.015		3/4"	0.015			0.9
	1706D			4.4	Less Than 0.015				1"	1.3	
	2210D		22	8.6	Less Than 0.02		1-1/2"		2.2		
	2514D		(25)	12				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

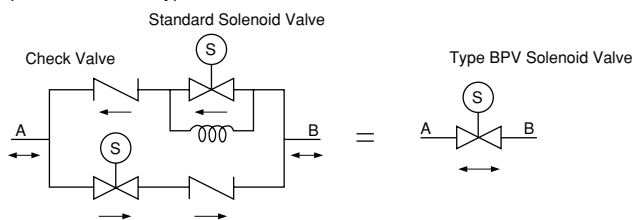
Port Size (mm)	Rated Voltage		Tolerance (%)	Voltampere (VA)		Power Consumption (W)	Insulation Class
				Running	Inrush		
7.8, 11	100V.AC, 200V.AC	50/60Hz	± 10	12/10	36/30	6/5	* Class B Molded
17, 22, (25)	220V.AC, 240V.AC			17/14	51/42	7.5/6	

• Current (A)=Voltampere / Rated Voltage

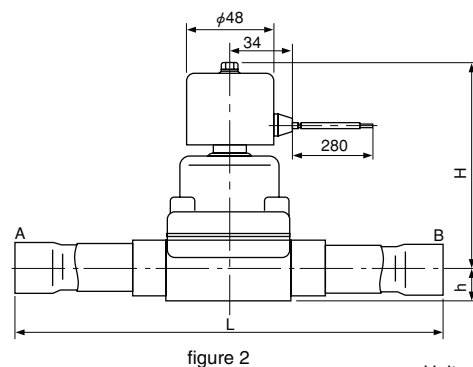
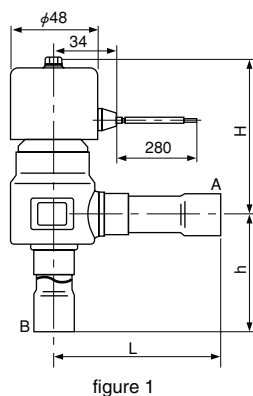
* IEC compliance

Function of Bi-flow Solenoid Valve

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



DIMENSIONS



Unit: mm

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

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)

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 Press.	Body Test Press.	Fluid Temp. (°C)	Ambient Temp. (°C)	Operation	Wt (kg)
			R134a	R22	Copper pipe (O.D.)	Style	Min.	Max.						
IEV-B1505DX	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-B2007DX	20	9.0	23	29	7/8"		0.29 {3.0}	2.06 {21}						2.6
IEV-B3211DX	30	25	65	79	1—1/8"						—20 to 125			
IEV-B3212DX					1—1/4"									
IEV-B3213DX					1-3/8"									
IEV-C3211DX			42	36	1—1/8"								switched	
IEV-C3212DX					1—1/4"									
IEV-C3213DX					1—3/8"									

* Nominal capacities are based on $\Delta P=0.014710$ 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	* Class B Molded
30				16/13	40/33	

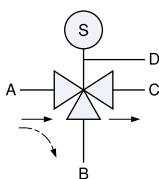
Current (A)=Voltampere / Rated Voltage

* IEC compliance

OPERATION

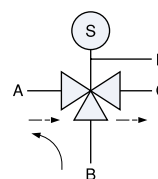
Type IEV-B

Energized : A→C
non Energized : A→B



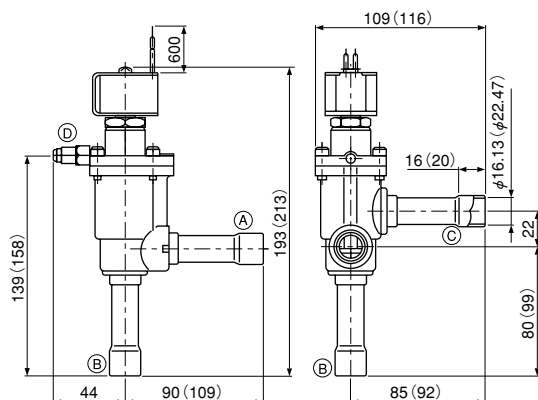
Type IEV-C

Energized : B→A
non Energized : A→C

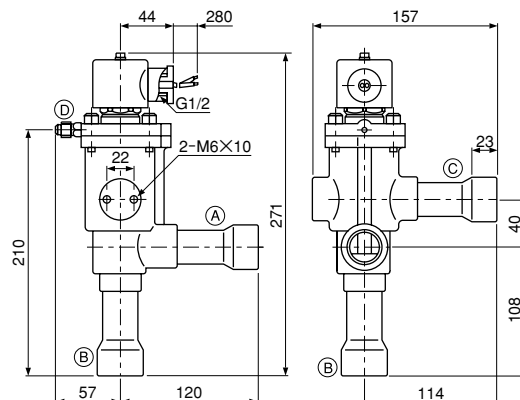


DIMENSIONS

Type IEV-B1505DX (B2007DX)



Type IEV-B3211DX ~ B3213DX, C3211DX ~ C3213DX



Unit: mm

4-WAY REVERSING VALVES

High Volume OEM Item (Type STF)

Type **STF & VHV**

SAGINOMIYA

GENERAL DESCRIPTION

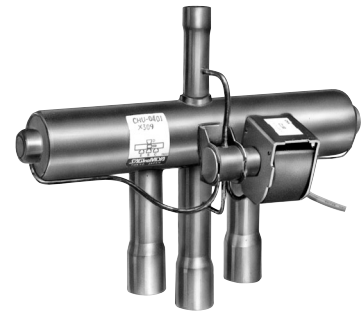
- Pilot operated 4-way reversing valves are suitable for heat pump applications on unitary, split system and window type air conditioners, etc.
- 4-way pilot valve adoption has an advantage of reliable changeover operation.
- Unique device for short cycle prevention is provided.
- Designed for instantaneous reversing and operations under small minimum pressure differential between the high and low side. Pressure drop across the valve, and valve leakage are minimized.
- Provided with drip proof resin encapsulated solenoid coil.

CE mark applicable (available upon request)

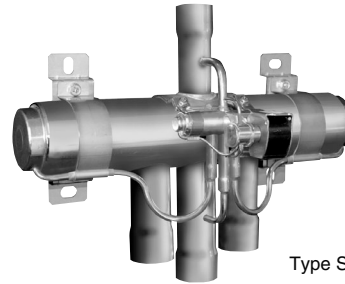
UL listed (available upon request)



Type STF-H01, H02



Type STF-04, 07, 20



Type STF-25, 30, 40, 50
VHV-60

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.

Catalog No.	Port Size (mm)	Capacity (R410A)		O.P.D. (MPa) {kgf/cm ² }		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-0301G	11.5	5.3 to 14.6	1.50 to 4.15			1/2"	5/8"	0.37
STF-0401G	15.5	8.3 to 29.2	2.36 to 8.30				3/4"	0.77
STF-0408G						3/4"	7/8"	1.32
STF-0712G	20	21 to 53	5.97 to 15.0			7/8"	1-1/8"	1.55
STF-1511G	23	39 to 59	11.1 to 16.7			1"	1-1/4"	3.4
STF-2011G	24	39 to 74	11.1 to 21.0			1-1/4"	1-1/2"	4.7
STF-2501G	28	52 to 94	14.8 to 26.7			1-1/2"	1-3/4"	9.1
STF-3001G	34	65 to 124	18.5 to 35.2				2-1/8"	9.4
STF-4001G	40	115 to 188	32.7 to 53.4					
STF-5001G	50	145 to 225	41.2 to 63.9			I.D. 1-5/8"		
VHV-6001	60	230 to 360	65.4 to 102					

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

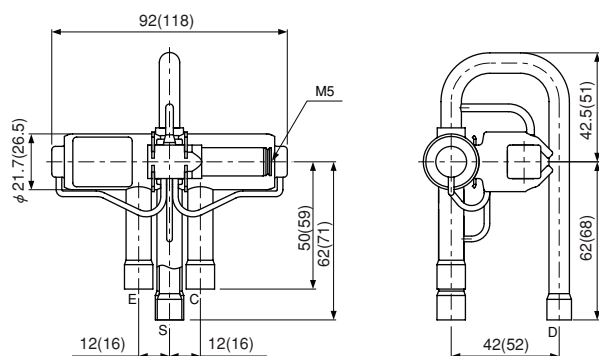
ELECTRICAL RATING OF SOLENOID COILS

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

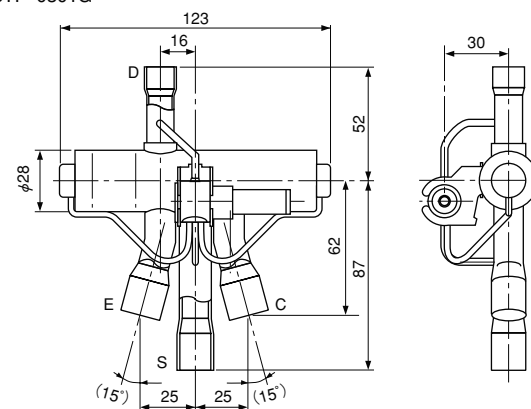
* IEC compliance

DIMENSION

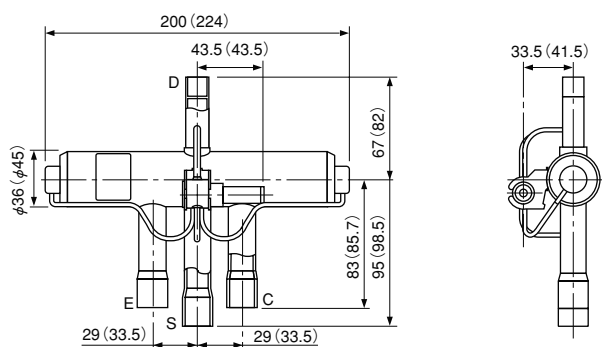
Type STF-H0104 (-H0202)



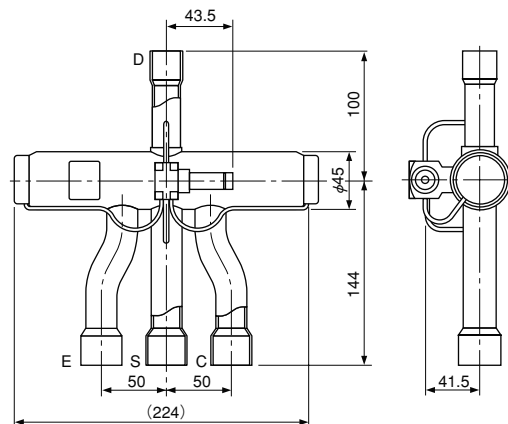
Type STF-0301G



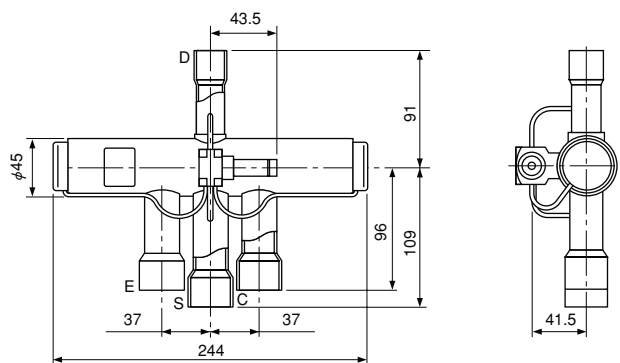
Type STF-0401G, -0408G (-0712G)



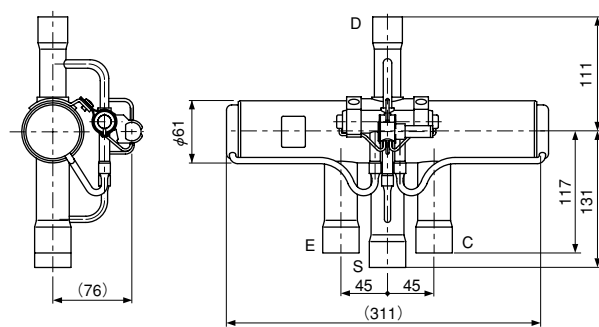
Type STF-1511G



Type -2011G

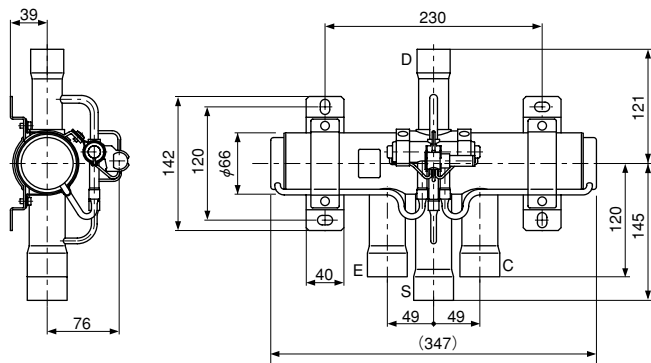


Type STF-2501G

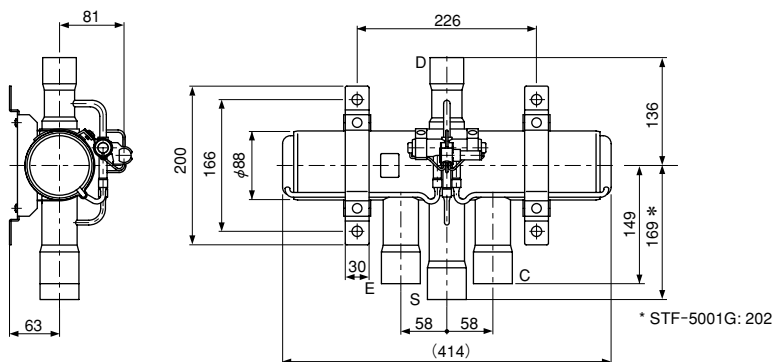


Unit: mm

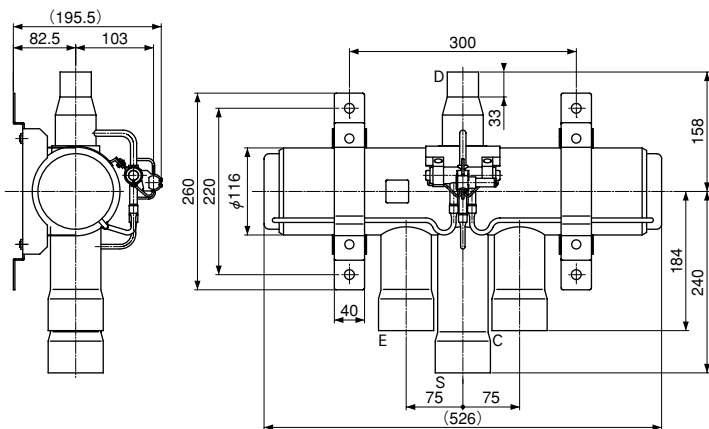
Type STF-3001G



Type STF-4001G, -5001G

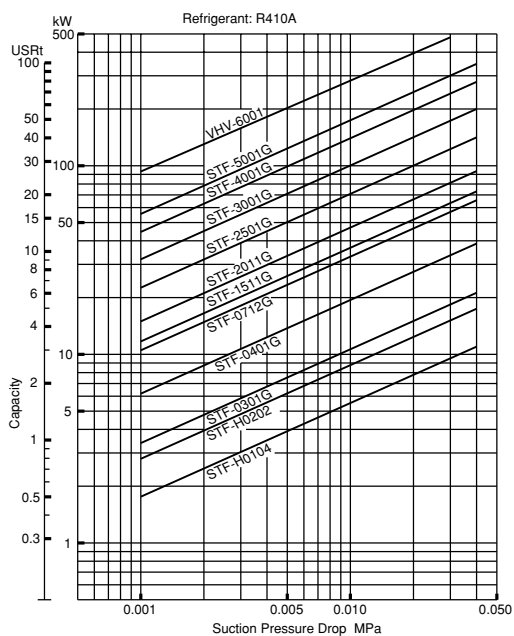
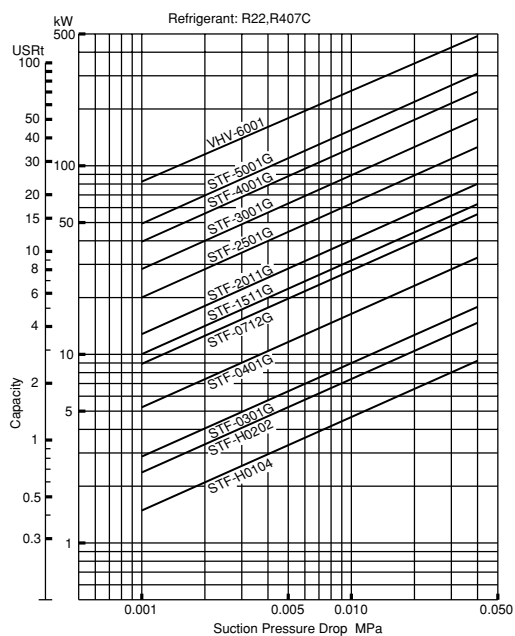


Type VHV-6001



Unit: mm

FLOW RATE (Capacity)



* 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 Storage Units



Type MJV

COMMON SPECIFICATIONS

Valve Type		Two-way Valve	Two-way Valve for Steam	Three-way Valve
Item				
VALVE PART	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	0～120℃	0～160℃	0～90℃
	Flow Characteristics	Equal Percentage		Corrected Linear
	Valve Leakage	Cv: 0.1% or less		—
	Material	Body:Bronze Casting, Seat Ring:Fluoro-resin,O-ring:Fuoroo 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 XXXXXX3)		
	Ambient Temperature	Operating Temp.:－10 to 50℃, Storage Temp.:－20 to 70℃		
	Timing	Approx. 52 sec.		
	INPUT SIGNAL	Resistance Input	0～135Ω	
		Current Input	DC 4～20mA(Input Impedance 250Ω)	
		Voltage Input	DC 1～5V(Input Impedance 100kΩ), DC 0～10V(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 (SPECIFICATIONS)

Two-way Valve

Catalog No.			Connection Rc(O.D.)	Cv Value	Max. Operation Press. Differential (MPa)	Torque (N·m)	Dimension			Wt. (kg)
Type	Model	Model					H	L	D	
MJV-	1504GQ1	70 (Resistance 0 to 135 Ω)	1/2	1	1	34.3	152	56	32	1.5
	1504GQ2			2						
	1504G			3.5						
	2006G	71 (4 to 20 mA)	3/4	6.5	0.8	49	155	69	42	1.7
	2510G	72 (1 to 5 VDC)	1	12		58.8	159	82	50	1.9
	3212G	73 (0 to 10 VDC)	1-1/4	20		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)	Torque (N·m)	Dimension			Wt. (kg)
Type	Model	Model					H	L	D	
MJV-	H1504GQ1	70(Resistance 0 to 135 Ω)	1/2	1	1	34.3	202	56	32	1.8
	H1504GQ2			2						
	H1504G			3.5						
	H2006G	71(4 to 20 mA)	3/4	6.5	0.8	49	205	69	42	2.0
	H2510G	72(1 to 5 VDC) 73(0 to 10 VDC)	1	12		58.8	209	82	50	2.2

Three-way Valve

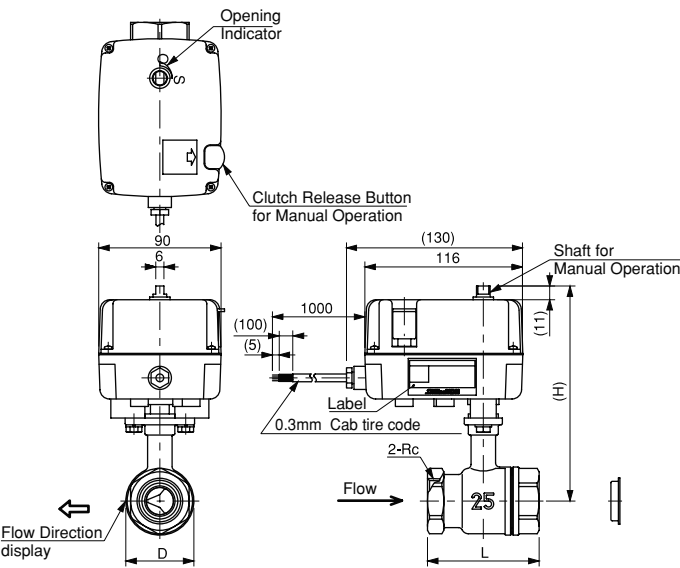
Catalog No.			Connection Rc(O.D.)	Cv Value	Max. Operation Press. Differential (MPa)	Torque (N m)	Dimension				Wt. (kg)
Type	Model	Model					H1	H2	H2	L	
MJV-	M1504G	70	1/2	3.5	0.1	34.3	152	30	56	32	1.6
	M2006G	(Resistance 0 to 135 Ω)	3/4	6.5		49	155	37	69	42	1.8
	M2510G	71	1	12		58.8	159	44	82	50	2.1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

Wiring

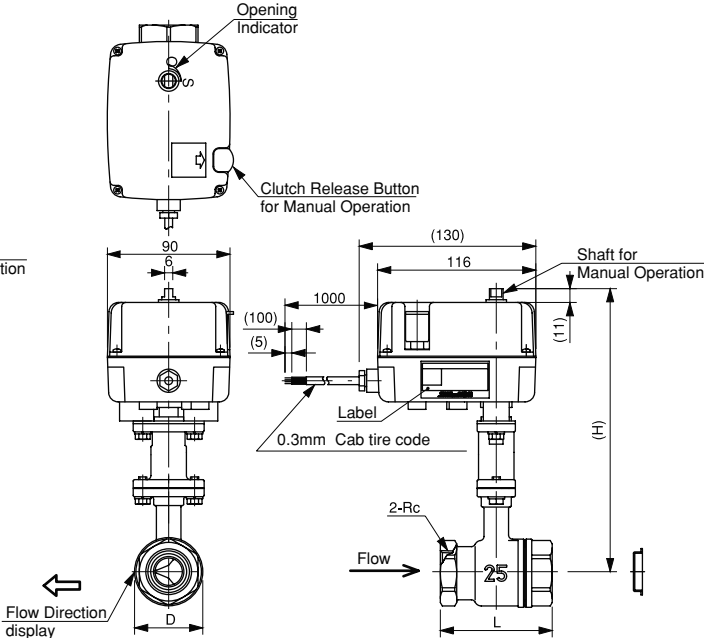
Resistance Input	Current Input	Voltage Input
① (Blue)COM. Input ② (Brown)0 to 135Ω ③ (Black) ④ (Red) Supply Voltage AC24V	① (Blue)COM. Input ② (Brown)4 to 20mA ③ (Black) ④ (Red) Supply Voltage AC24V	① (Blue)COM. Input ② (Brown)1 to 5V , 0 to 10V ③ (Black) ④ (Red) Supply Voltage AC24V

DIMENSIONS

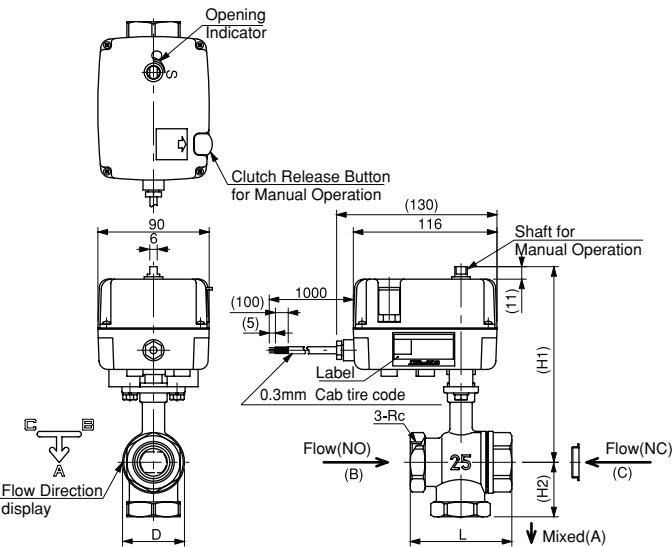
Two-way Valve



Two-way Valve for Steam



Three-way Valve

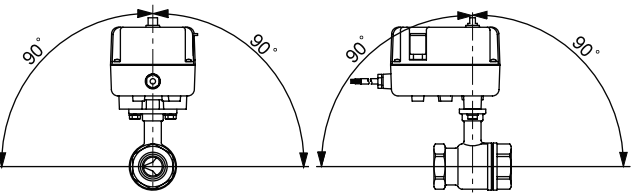


Manual Operation

- 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

Unit: mm

DAMPER & VALVE MOTOR ACTUATORS

Type EGK & WGK

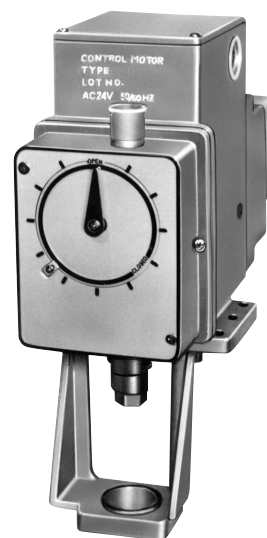
SAGINOMIYA

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 $\pm 10\%$, 50/60Hz

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

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

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

Model \ Function	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

Model \ Function	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 135 Ω from electric sensor (Example: Type PWS Thermostat).

* 4. Spring Return Type is so designed that actuator shaft returns to safe side on current failure.

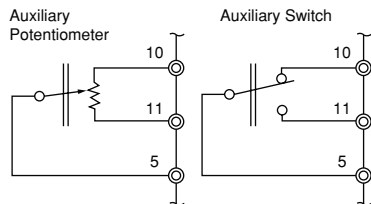
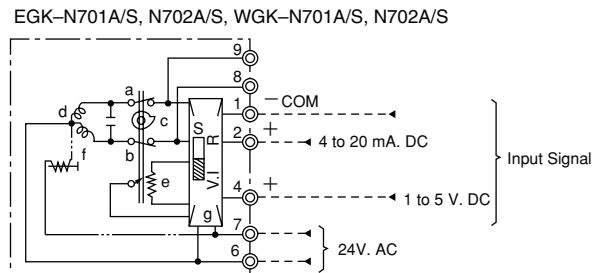
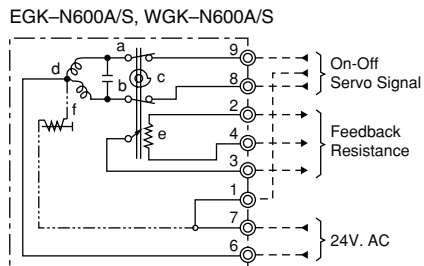
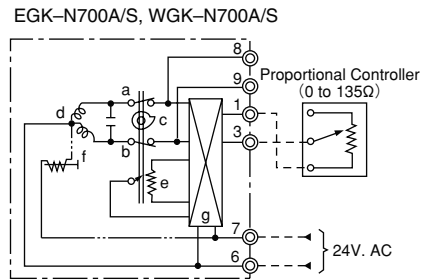
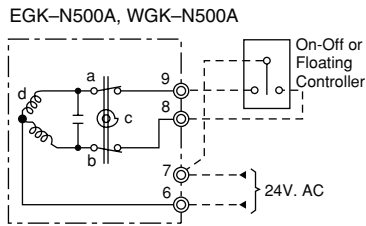
• Auxiliary potentiometer is to provide the signal between 0 and 135 Ω in accordance with motor angular rotation for output.

• Auxiliary switch provides the contact signal of S.P.D.T. for output.

• Enclosure: IP62

INTERNAL WIRINGS

- Check power supply to be 24V. AC $\pm 10\%$.
- 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-N□1□A/S
WGK-N□1□A/S

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

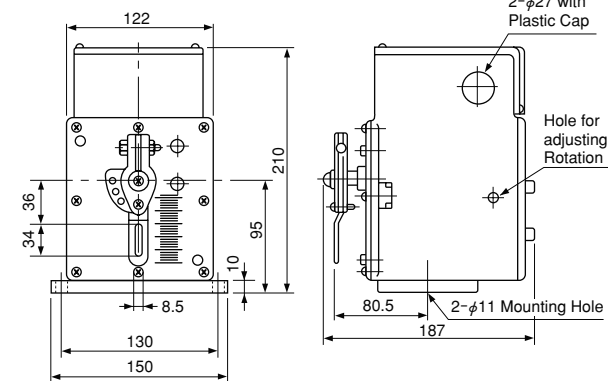
e: Feedback Potentiometer

f: Spring Return Releasing Magnet

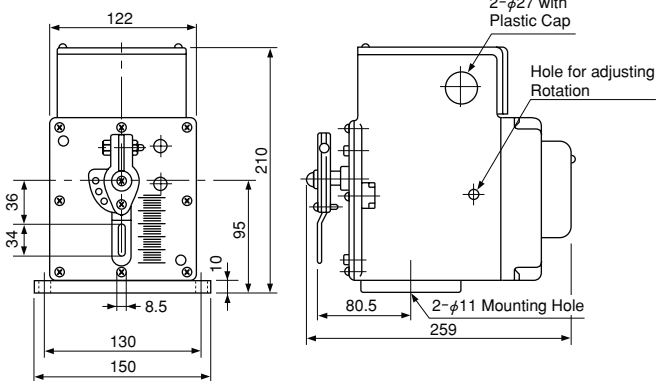
g: Balance Relay

DIMENSIONS

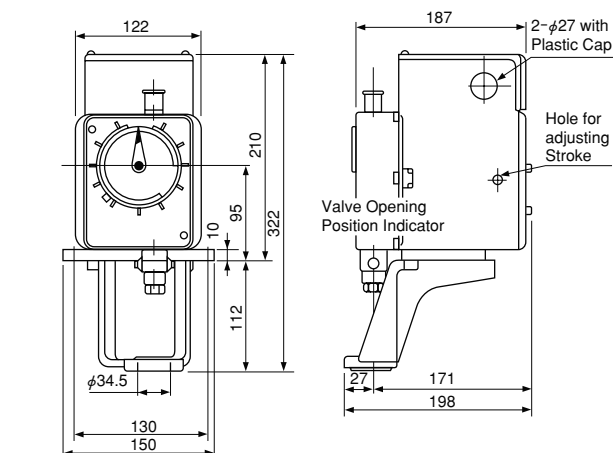
Type EGK-N...A



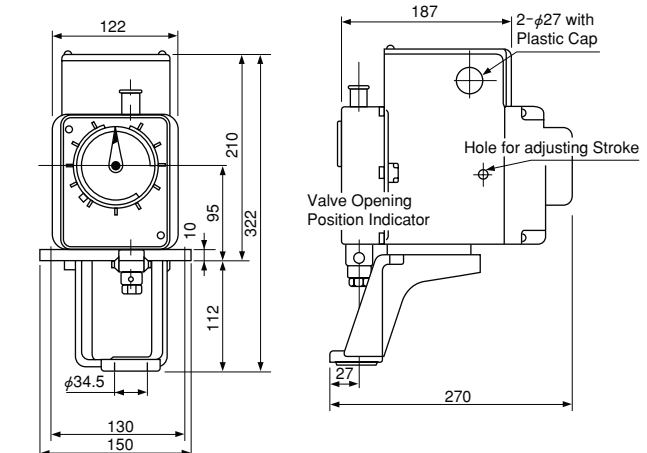
Type EGK-N...S



Type WGK-N...A



Type WGK-N...S



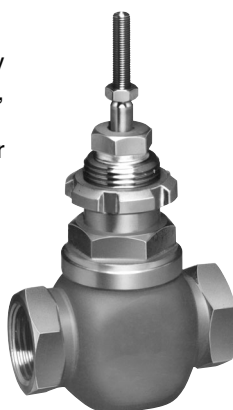
2-WAY & 3-WAY CONTROL VALVES

Type NVK

SAGINOMIYA

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
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/cm ² }		1.96MPa {20 kgf/cm ² }	0.98MPa {10 kgf/cm ² }
Fluid Temp. (°C)	0 to 200		0 to 250	0 to 200
Flow Characteristic	Equal Percentage			
Material of Body	CAC406 or CAC407	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/cm ² }	
Fluid Temp. (°C)	0 to 200	
Flow Characteristic	Equal Percentage	
Material of Body	CAC406 or CAC407	FC200
Material of Plug	SCS14	
Material of Seat Ring	SUS316	
Material of Stem	SUS304	

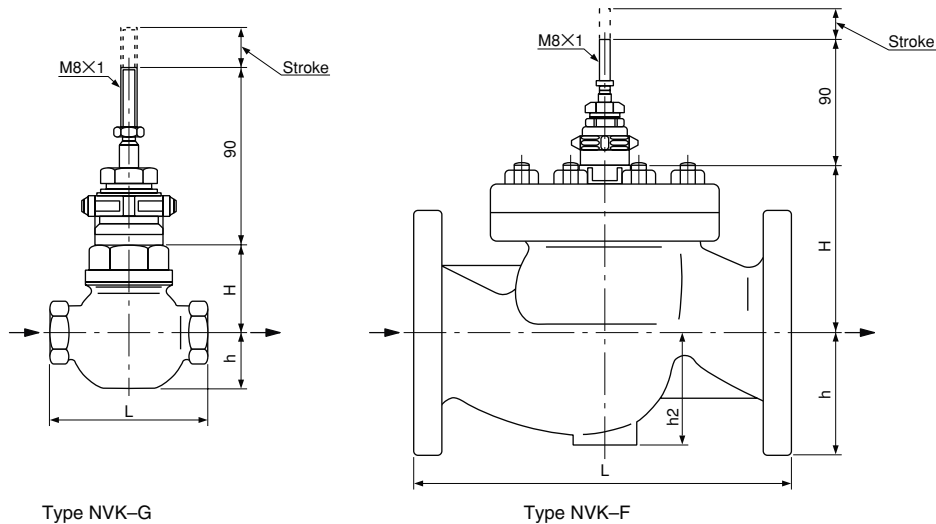
Type NVK 2-way valve

Catalog No.		Port Size (mm)	Connection		Cv	Stroke (mm)	Close off Rating MPa {kgf/cm ² }			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			0.66 {6.7}						
	1504GL				5			0.38 {3.9}						0.24 {2.4}
	2006GL	20	3/4"		8			0.14 {1.4}		90	48	29	0.95	
	2510GL	25	1"		12			0.61 {6.2}		0.09 {0.9}	105	50	30	1.6
	3212GL	32	1-1/4"		20		0.40 {4.1}	0.05 {0.5}		120	60	35	2.4	
	4014GL	40	1-1/2"		30		0.28 {2.9}	0.044 {0.45}		0.48 {4.9}	140	68	46	3.6
	5020GL	50	2"		45		0.19 {1.9}	0.028 {0.29}	0.31 {3.2}	276	125	87.5	19.9	
	6524FL	65	2-1/2"	70	30	0.12 {1.2}	—	0.2 {2}	298	149	92.5	25		
	8030FL	80	3"	110		0.67 {6.8}	0.67 {6.8}	352	169	105	36			
	10040FL	100	4"	180		0.48 {4.9}	0.48 {4.9}	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			0.66 {6.7}						
	1504FP				5			0.38 {3.9}						
	2006FP	20	3/4"		8			0.24 {2.4}		194		50	62.5	4
	2510FP	25	1"		12		1.57 {16}	0.14 {1.4}	197	50	62.5	5.7		
	3212FP	32	1-1/4"		20		0.95 {9.7}	0.14 {1.4}	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		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					254	114	(80)	13.5	
	5020FL	50	2"		45	30	0.98 {10}	0.81 {8.3}	0.98 {10}	276	129	(96)	18	
	6524FL	65	2-1/2"		70			0.66 {6.7}		298	156	(115)	28.5	
	8030FL	80	3"		110	40	—	—	0.98 {10}	352	187	(150)	46.5	
	10040FL	100	4"		180					403	208	(153)	63.3	
	12550FL	125	5"		260					451	225	(170)	90.6	
	15060FL	150	6"		380	45				543	278	(212)	167	
	20080FL	200	8"		630	45	0.69 {7}	0.83 {8.5}		673	319	(232)	251	
	250100FL	250	10"		960		0.49 {5}							

• 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



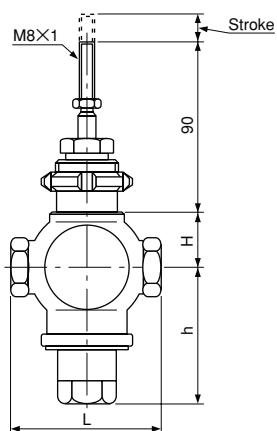
Unit: mm

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

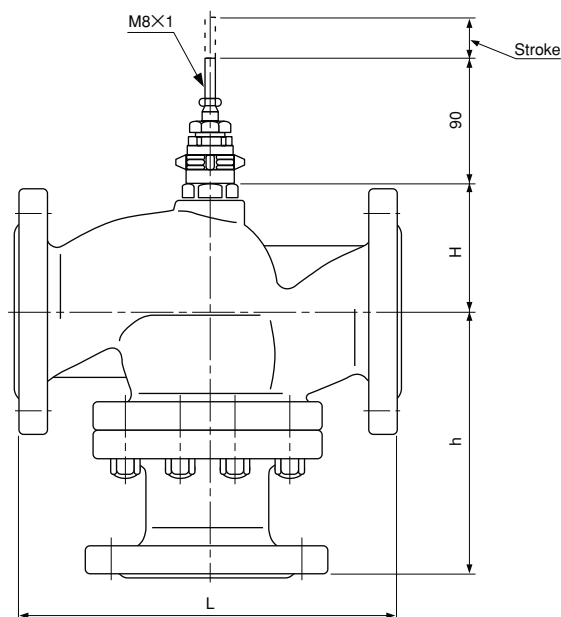
Catalog No.		Port Size (mm)	Connection		Cv	Stroke (mm)	Close off Rating MPa {kgf/cm ² }			Dimension (mm)			Wt. (kg)
			Tube O.D.	Style			WGK-N * A	WGK-N * S	WGK-N * L	L	H	h	
NVK-M	1504GL	15	1/2"	Rc	5	20	0.98 {10}	0.38 {3.9}	0.98 {10}	80	29	72	1.1
	2006GL	20	3/4"		8							73	1.12
	2510GL	25	1"		12					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}		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	83
Type ACV & BCV	
PRESSURE ACTUATED WATER REGULATING VALVES	84
Type VWR	
PRESSURE ACTUATED WATER REGULATING VALVES	85–86
Type CWR, AWR, GWR, MWR & SWR	
TEMPERATURE ACTUATED WATER REGULATING VALVES	87–88
Type OWR, HWR & XWR	
PRESSURE REGULATING VALVES	89–90
Type EPR	
PRESSURE REGULATING VALVES	91–92
Type SPR & DPR	
DIAPHRAGM TYPE STOP VALVES	93
Type ADV	

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)

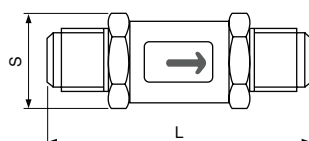
Type ACV

Catalog No.	Fluid	Port Size (mm)	Cv Value	Connection		Max. Working Pressure (MPa) {kgf/cm ² }	Allowable Liquid Temp. (°C)	Wt. (kg)	
				Copper Tube (O.D.)	Style			B	D
ACV-2B (D)	Fluorinated Refrigerants	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)	Air	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)	Inert Gas	16	6	3/4"				0.7	0.5

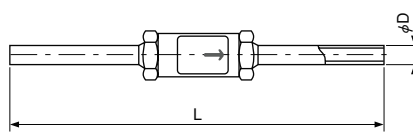
Type BCV

Catalog No.	Fluid	Port Size (mm)	Cv Value	Connection		Max. Working Pressure (MPa) {kgf/cm ² }	Allowable Liquid Temp. (°C)	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

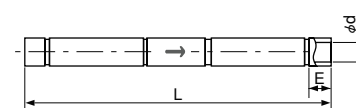
DIMENSIONS



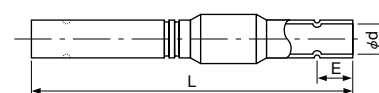
Type ACV-B



Type ACV-D



Type BCV-302DY to 804DY



Type BCV-1005DY to 1810DY

Type ACV

Catalog No.	Unit: mm		
	L	φ D	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	

Unit: mm

Type BCV

Catalog No.	Unit: mm		
	L	φ d	E
BCV-302DY	112	6.55	—
BCV-603DY	120	9.70	8
BCV-804DY	140	12.92	13
BCV-1005DY	160	16.09	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 VWR

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	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

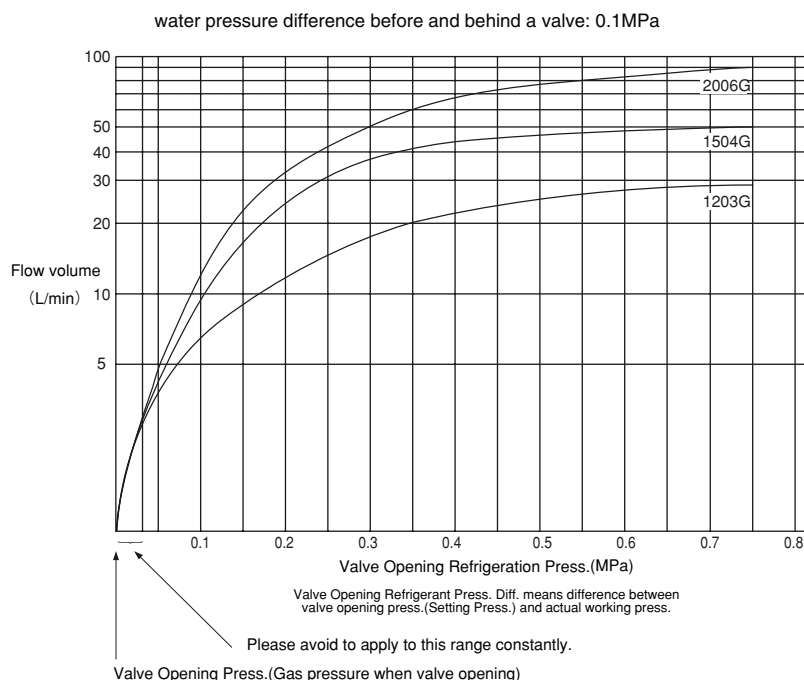
* Pressure at which valve starts opening.

• 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 multiplying by coefficient in compensation table.



ADJUSTMENT

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

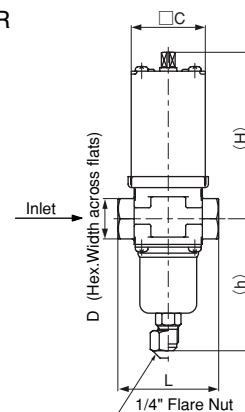
Catalog No.		Change in Press. Setting
VWR-	1203G	Approx. 0.2MPa
	1504G	
	2006G	

COMPENSATION COEFFICIENTS

Press. Drop Across Valve:MPa {kgf/cm ² }	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 VWR



Catalog No.		Unit: mm				
VWR-	1203G	D	L	H	h	□C
	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			1-1/2"	11.2								
	5020FLWR		Cast Iron	2"	R: 0.59 to 1.18 {6.0 to 12.0}	R: 0.74 {7.5}					17.8		
	5020FLWH			2-1/2"	H: 1.08 to 1.77 {11.0 to 18.0}	H: 1.23 {12.5}					21.6		
6524FLWR													
6524FLWH	Bronze		1-1/2"	Flange	0.59 to 1.77 {6.0 to 18.0}	0.74 {7.5}	11.2						
MWR-			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}
			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}

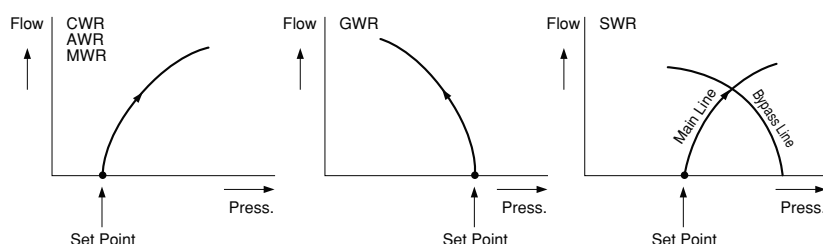
Catalog No.		Kind of Refrigerant	Valve Body Material	Connection		Press. Range	Max. Working Press.	Max. Water Temp. (°C)	Max. Water Press.	* Factory Setting	Wt. (kg)
				Size	Style						
SWR-	1504GLW	Fluorinated Refrigerants	Bronze	1/2"	Rc	0.59 to 1.77 {6 to 18}	1.96 {20}	60	0.98 {10}	0.74 {7.5}	1.1
	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 characteristic of valves is different as follows.



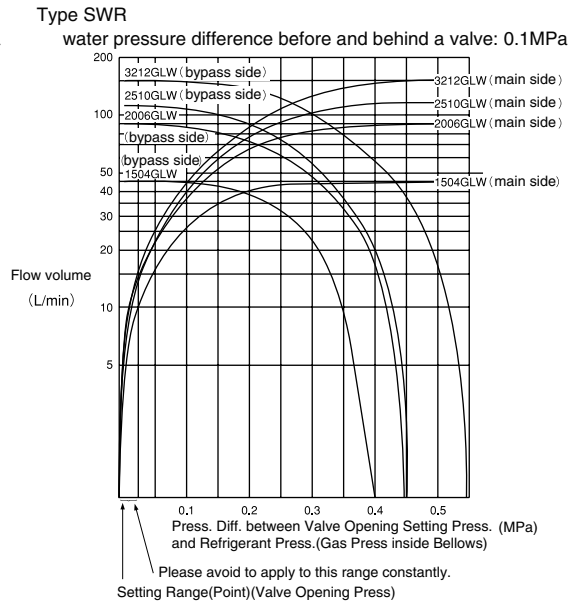
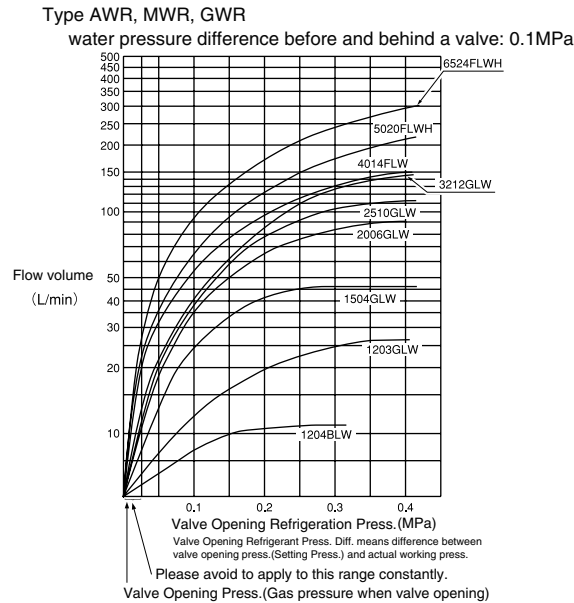
ADJUSTMENT

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

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

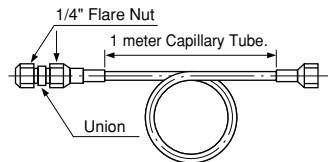
FLOW CAPACITY

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.



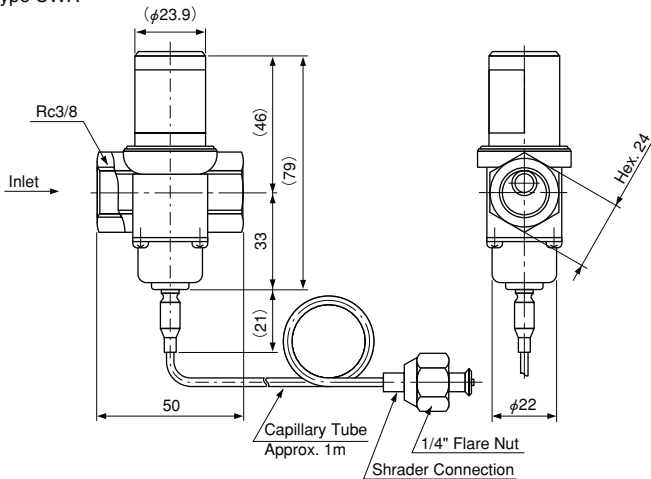
ACCESSORY

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



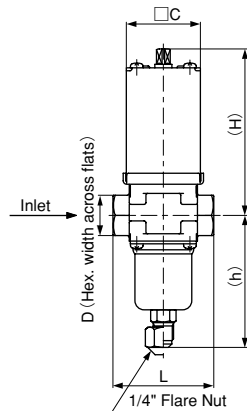
DIMENSIONS

Type CWR

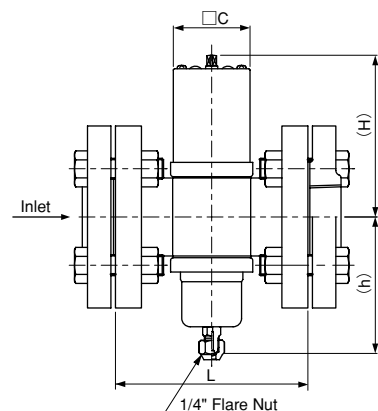


Catalog No.		Unit: mm					
		D	L	H	h	h ₁	□C
AWR-	1204BLW	—	100	90	70	—	40
	1203GLW	22	55	91	72		
AWR- GWR-	1504GLW	27	70	100	83		42
	2006GLW	32	80	104	87		
	2510GLW	40	90	116	97		
AWR- MWR- GWR-	3212GLW	50	100	121	102	—	59
	4014FLW	—	148	125	105		
	5020FLW	—	173	180	155		89
SWR-	6524FLW	—	179	180	155	—	
	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	

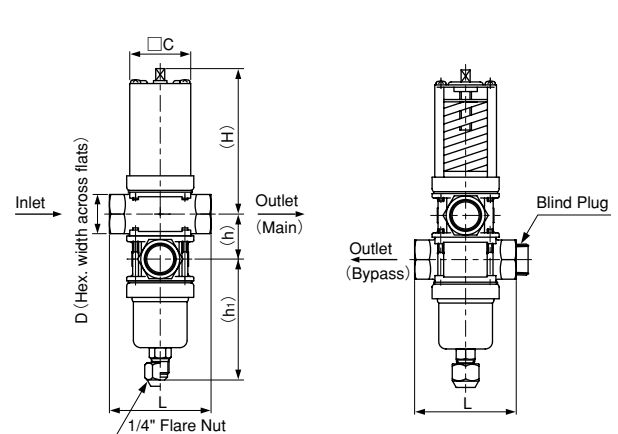
Type AWR, GWR-G



Type AWR, MWR, GWR-F



Type SWR



Unit: mm

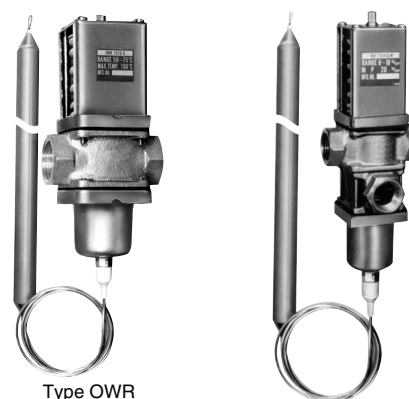
TEMPERATURE ACTUATED WATER REGULATING VALVES

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)
Capil. 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: MPa {kgf/cm²}

Unit: MPa (kg/cm ²)											
Catalog No.		Valve Body Material	Connection		Temp. Range (°C)	Max. Water Temp. (°C)	Max. Water Press.	Max. Bulb Temp. (°C)	Bulb Size (mm)	* Factory Setting (°C)	Wt. (kg)
			Size	Style							
OWR-HWR-	5004 G	Bronze	1/2"	Rc	30 to 50	60	0.98 {10}	80	φ 19×150	40	1.0
	5006 G		3/4"						1.2		
	5010 G		1"						2.0		
	5012 G		1-1/4"						2.2		
	5014 F	Cast Iron	1-1/2"	Flange	50 to 75			φ 32×350	60	11.5	
	5020 F		2"							18.3	
	5024 F		2-1/2"							22.2	
	7504 G	Bronze	1/2"	Rc	100			φ 19×150	60	1.0	
	7506 G		3/4"					1.2			
	7510 G		1"					2.0			
	7512 G		1-1/4"					2.2			
	7514 F	Cast Iron	1-1/2"	Flange	φ 32×350			60	11.5		
	7520 F		2"						18.3		
	7524 F		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: MPa {kgf/cm²}

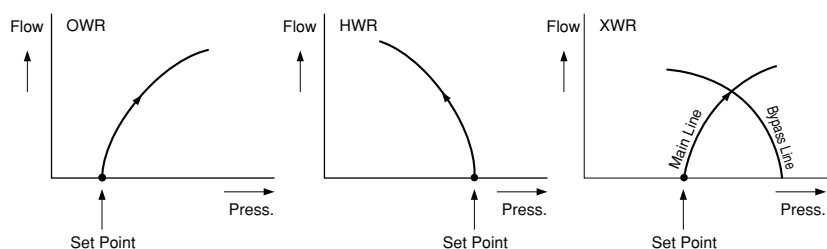
TEMPERATURE-SENSITIVE VALVES - WAT											Unit: MPa (kg/cm ²)
Catalog No.		Valve Body Material	Connection		Temp. Range (°C)	Max. Water Temp. (°C)	Max. Water Press.	Max. Bulb Temp. (°C)	Bulb Size (mm)	* Factory Setting (°C)	Wt. (kg)
			Style	Size							
XWR--	5004 G	Bronze	Rc	1/2"	30 to 50	60	0.98 {10}	80	φ 19×150	40	1.0
	5006 G			3/4"					1.5		
	5010 G			1"					2.5		
	5012 G			1-1/4"					3.0		
	7504 G			1/2"	50 to 75			100	φ 19×150	60	1.1
	7506 G			3/4"					1.5		
	7510 G			1"					2.5		
	7512 G			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 characteristic of valves is different as follows.



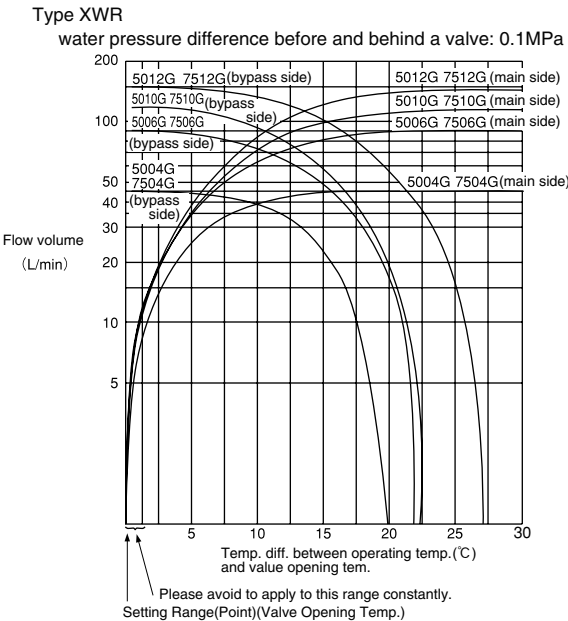
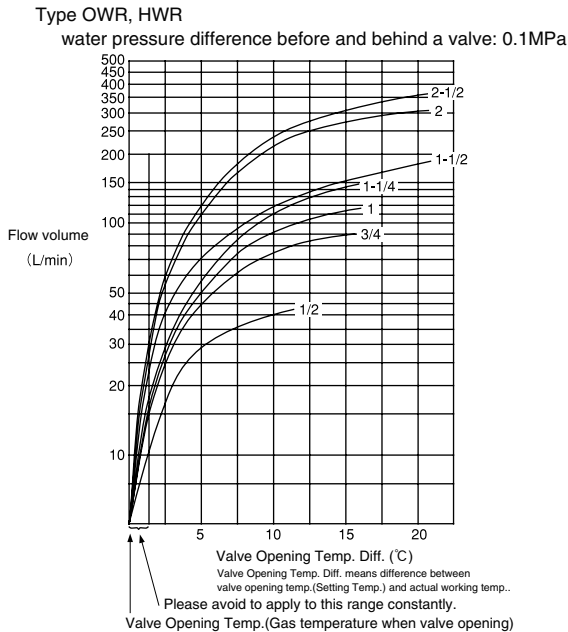
ADJUSTMENT

One full turn of adjusting screw changes pressure 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.

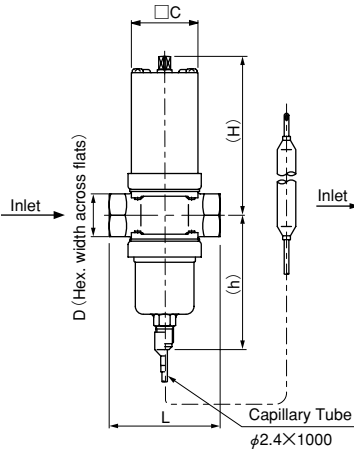


COMPENSATION COEFFICIENTS

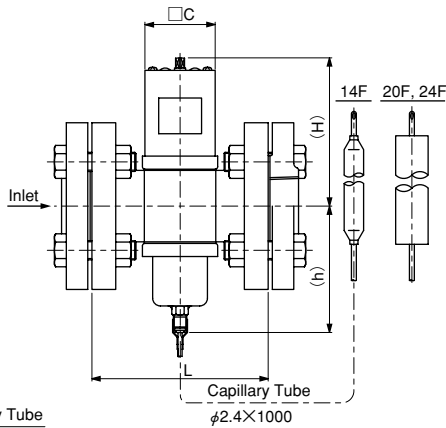
Press. Drop Across Valve:MPa {kg/cm ² }	Coefficient
0.2 {2}	1.4
0.1 {1}	1
0.03 {0.3}	0.55
0.05 {0.5}	0.7
0.07 {0.7}	0.8

DIMENSIONS

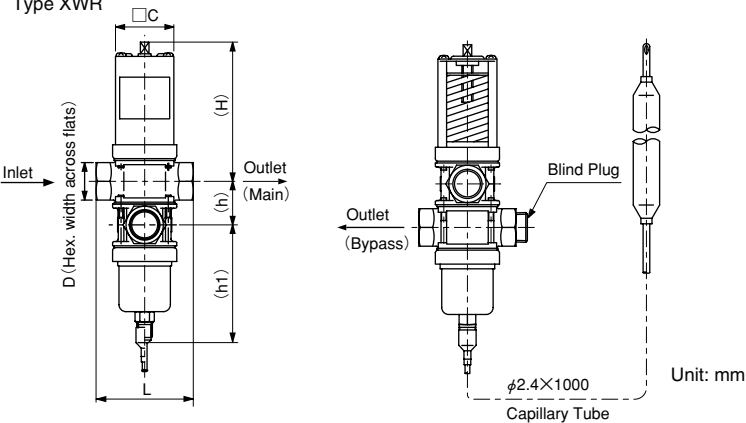
Type OWR, HWR-G



Type OWR-F, HWR



Type XWR



Catalog No.		Unit: mm				
		D	L	H	h	□C
OWR-HWR-	5004 G	27	70	100	83	42
	5006 G	32	80	104	87	
	5010 G	40	90	116	97	59
	5012 G	50	100	121	102	
	5014 F	—	148	125	105	89
	5020 F	—	173	180	155	
	5024 F	—	179	180	155	42
	7504 G	27	70	100	83	
	7506 G	32	80	104	87	59
	7510 G	40	90	116	97	
	7512 G	50	100	121	102	89
	7514 F	—	148	125	106	

Catalog No.		Unit: mm					
		D	L	H	h	h ₁	□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	
	7504G	27	70	100	31	83	42
	7506G	32	80	104	39	87	
	7510G	40	90	116	44	97	59
	7512G	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

COMMON SPECIFICATIONS

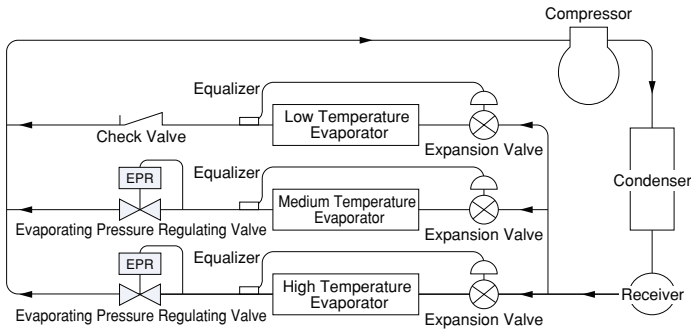
Operation	Direct Operation type
Specifications	
Max. Working Pressure	2.5MPa {25kgf/cm ² }
Max. Testing Pressure	3MPa {30kgf/cm ² }
Fulid Temp.	to 100°C
Pressure Adjustment	○ Increase 1604 to 05: 0.08MPa {Approx.0.82kgf/cm ² } /rotation 1905 to 07: 0.05MPa {Approx.0.51kgf/cm ² } /rotation
Manual Open	—

TYPE NUMBER SELECTION (SPECIFICATIONS)

Catalog No.		Equalization	Port size (mm)	Capacity (U.S.R.T.) {kW}			Adjusting Range (MPa) {kgf/cm²}	Connection		Factory Setting (MPa) {kgf/cm²}	Wt. (kg)
CT 38°C ΔP0.074MPa {0.75kgf/cm²} ET 5°C											
Type	Model			Valve Open 100%	Valve Open 70%	Valve Open 100%		Style	Copper Tube (O.D.)		
				R22	R134a	R404A					
EPR-	1604B	Internal	15	2.6 {9.1}	1.5 {5.3}	1.9 {6.7}	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}			Solder		3/4"
	1906B										
	1604D		15	2.6 {9.1}	1.5 {5.3}	1.9 {6.7}		12.7			0.2
	1605D							15.88			
	1905D		20	5.5 {19}	3.5 {12}	4.1 {14}		19.05	0.4		
	1906D							22.23			
1907D											

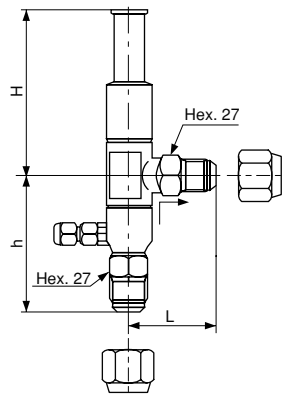
APPLICATION EXAMPLE

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.

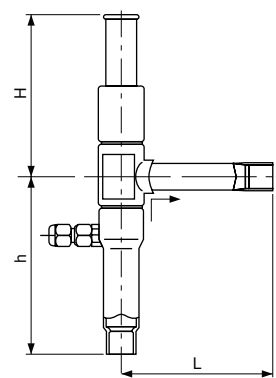


DIMENSIONS

Type EPR-B



Type EPR-D



Unit: mm

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
	1907D			

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

COMMON SPECIFICATIONS (Type SPR)

Specifications	Operation
Max. Working Pressure	Direct Operation type
Max. Testing Pressure	2.5MPa {25kgf/cm ² }
Fluid Temp.	3MPa {30kgf/cm ² }
	to 100°C
Pressure Adjustment	○ Increase 1604 to 05: Approx. 0.08MPa {0.82kgf/cm ² } /rotation 1905 to 07: Approx. 0.05MPa {0.51kgf/cm ² } /rotation 3011 to 13: Approx. 0.03MPa {0.31kgf/cm ² } /rotation
Manual Open	—

TYPE NUMBER SELECTION (SPECIFICATIONS)

Type SPR

Catalog No.		Fluid	Port Size (mm)	Capacity (U.S.R.T.) {kW}			Connection		Wt. (kg)
Type	Model			CT38°C ΔP0.049MPa {0.5kgf/cm²} ET—10°C					
				Valve Open 40%	Valve Open 70%	Valve Open 70%	Copper Tube (O.D.)	Style	
				R22	R134a	R404A			
SPR-	1604B	Fluorinated Refrigerants	15	1.4 {4.9}	0.9 {3.2}	1.1 {3.9}	1/2"	Flare	0.3
	1605B						5/8"		
	1905B						3/4"		
	1906B		20	3.0 {10.5}	1.8 {6.3}	2.5 {8.8}	1/2"	Solder	0.2
	1604D						5/8"		
	1605D						3/4"		
	1905D		20	3.0 {10.5}	1.8 {6.3}	2.5 {8.8}	7/8"		
	1906D						1-1/8"		
	1907D						1-3/8"		
	3011D		29	5.0 {17.6}	2.7 {9.5}	4.5 {15.8}	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...0.4MPa {4kgf/cm²}, R404A...0.5MPa {5kgf/cm²}

Type DPR

Catalog No.		Fluid	Port Size (mm)	* Factory Adjustable Range (MPa)	Connection (mm)		Max. Working Press. (MPa) {kgf/cm ² }	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

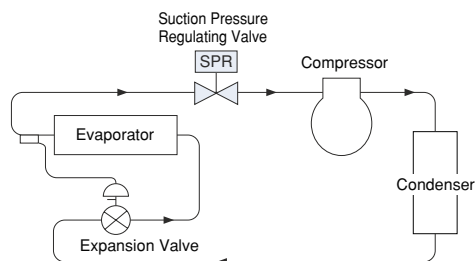
* Working pressure is factory set, please specify working pressure when order.

APPLICATION EXAMPLE

Suction pressure regulating valve type SPR

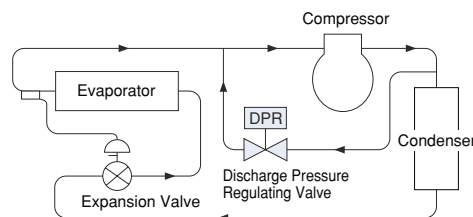
Suction pressure regulating valve is installed between compressor and evaporator in order to keep outlet pressure (suction pressure) under it's setting.

In case of rapid increase of load, suction pressure regulating valve could be used to prevent from overload of electric motor for compressor.



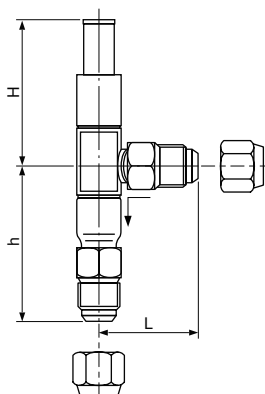
Discharge pressure regulating valve type DPR

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.

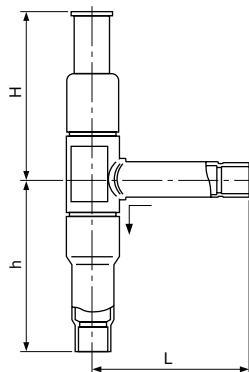


DIMENSIONS

Type SPR-B

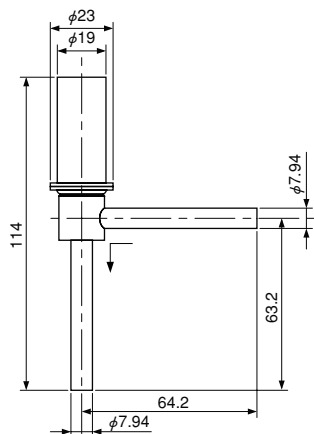


Type SPR-D



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

Type DPR



Unit: mm

DIAPHRAGM TYPE STOP VALVES

Type ADV

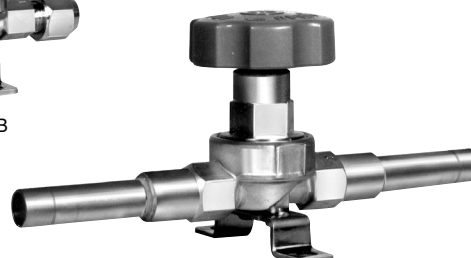
SAGINOMIYA

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



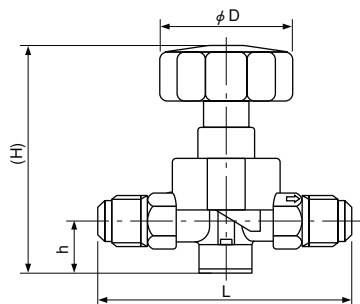
Type ADV-D

TYPE NUMBER SELECTION (SPECIFICATIONS)

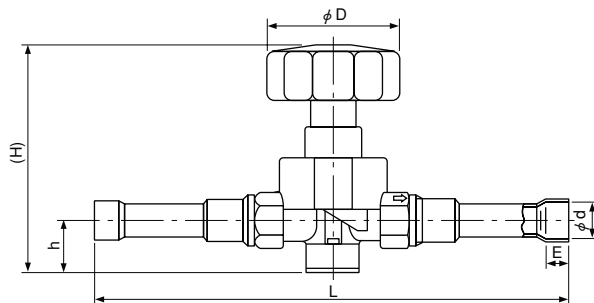
Unit: MPa {kgf/cm²}

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	φ D	φ d	E
ADV-	902BY	80	75	20	52	—	—
	903BY	85	75.5				
	1404BY	101	87.5	19.5	70		
	1605BY	128	98	23			
	1606BY	135	102	25	52	6.5	8
	902DY	165	75	20		9.65	
	903DY		75.5			12.95	10
	1404DY	190	87.5	19.5		16.15	12
	1605DY	200	98	23		19.3	14
	1606DY		102	25		22.45	
1607DY							

OTHER CONTROL EQUIPMENT

FLOW SENSORS	95
Type ELK	
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CONTROL APPLIANCES FOR HOT WATER SUPPLY UNITS	
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Type CCB, HSK, HPV, UKV-J & JKV	
CONTROL APPLIANCES FOR HOT WATER SUPPLY UNITS . . .	105–106
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Type RKV, SKM & Bi-METAL (No. 03, 05 & 24)	

FLOW SENSORS

High Volume OEM Item

Type **ELK**

SAGINOMIYA

GENERAL DESCRIPTION

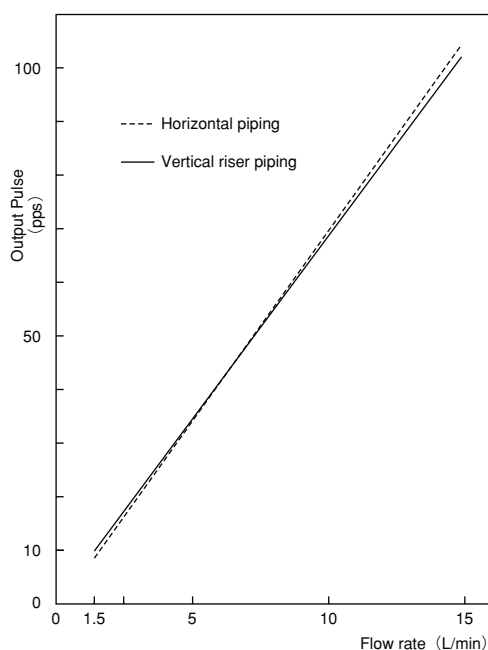
- Turbine type flow sensor having an impeller to rotate in proportion to flow rate.
- For burner On-Off of hot water supply system, accumulation of automatic hot water supply.
- Pulse output corresponding flow rate.
- Max. working pressure: 1MPa
- Fluid temperature: 0 to 80°C (No frozen)
- Rated voltage: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



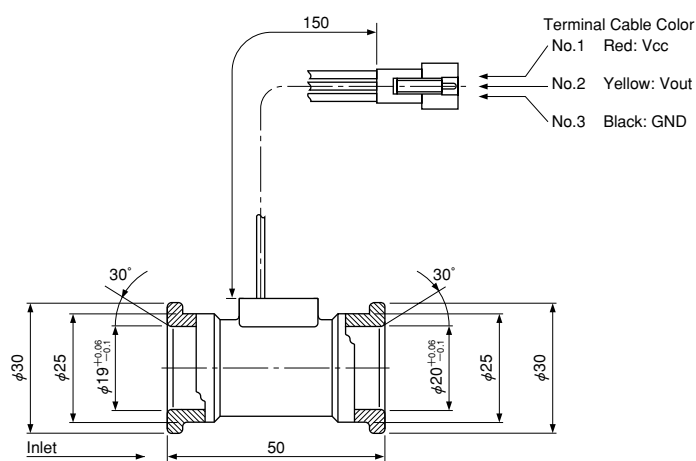
SPECIFICATIONS

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

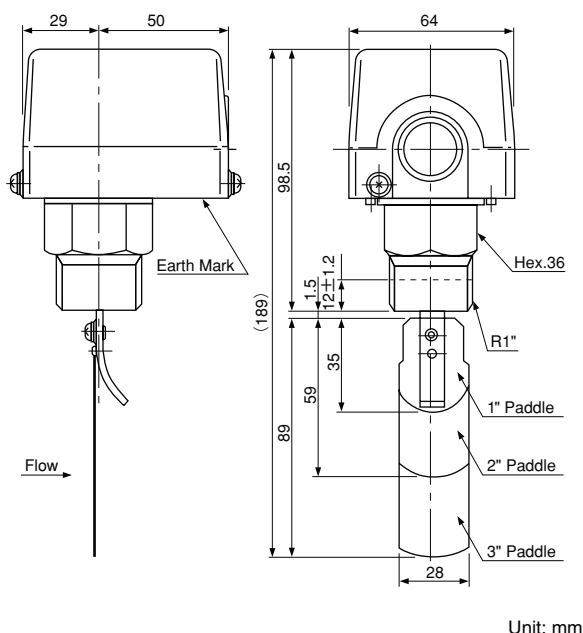
Catalog No.	Paddle Size	Connection		Max. Working Pressure MPa{kgf/cm ² }	Fluid Temp. (°C)	Max. Flow Velocity (m/s)	Wt. (kg)
		Size	Style				
FQS-U30G	3"	1"	R	0.98 {10}	5 to 80	2	0.6

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

ELECTRICAL RATINGS

Rated Voltage (V)		Power Factor (cos ϕ)	125V. AC	250V. AC
Rated Amps. (A)				
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 accumulating 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 temp.: 0 to 35°C (No frozen water)
- Ambient temperature: -10 to 45°C
- Motor coil insulation: Class "E" (IEC compliance)

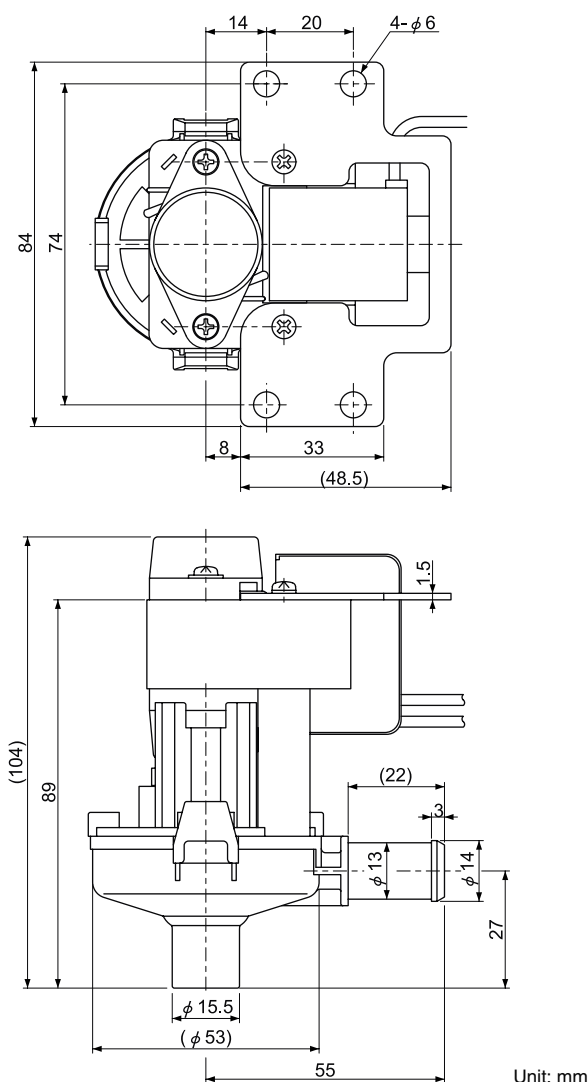


SPECIFICATIONS

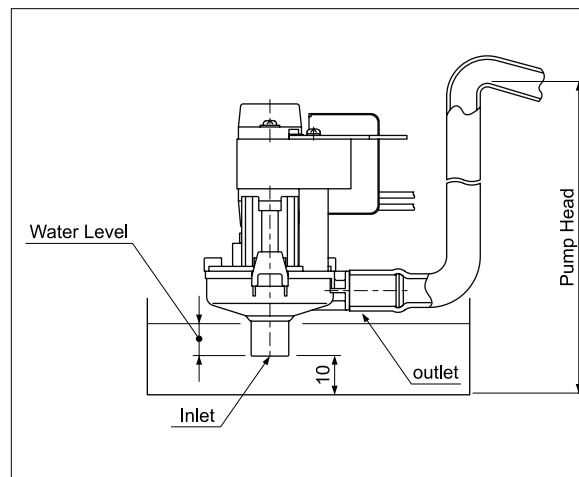
Catalg No.	Rated Voltage	Tolerance (%)	Power Consumption (50/60Hz)	Max. Flow	Pump Head (mm)	Sound Level	Wt. (kg)
SDP-14 * *	AC220 to 240V.AC 50/60Hz	±10	11.5/9.8W at 230V.AC	400cm ³ /min or more at Rated Voltage	200 to 1125	36dB (A) or less on no drain	0.50

DIMENSIONS

Type SDP-14



NOTE FOR USE



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

DRAIN PUMPS

High Volume OEM Item

Type MDP

SAGINOMIYA

GENERAL DESCRIPTION

- Drain pump which can exhaust drain water in accumulating at indoor unit.
- By adopting DC motor, this realizes more energy saving, much higher durability, compact and light weight.
- Fluid: Drain water
- Fluid temp.: 0 to 35°C (No frozen water)
- Ambient temperature: -10 to 45°C
- Motor coil insulation: Class "E" (IEC compliance)

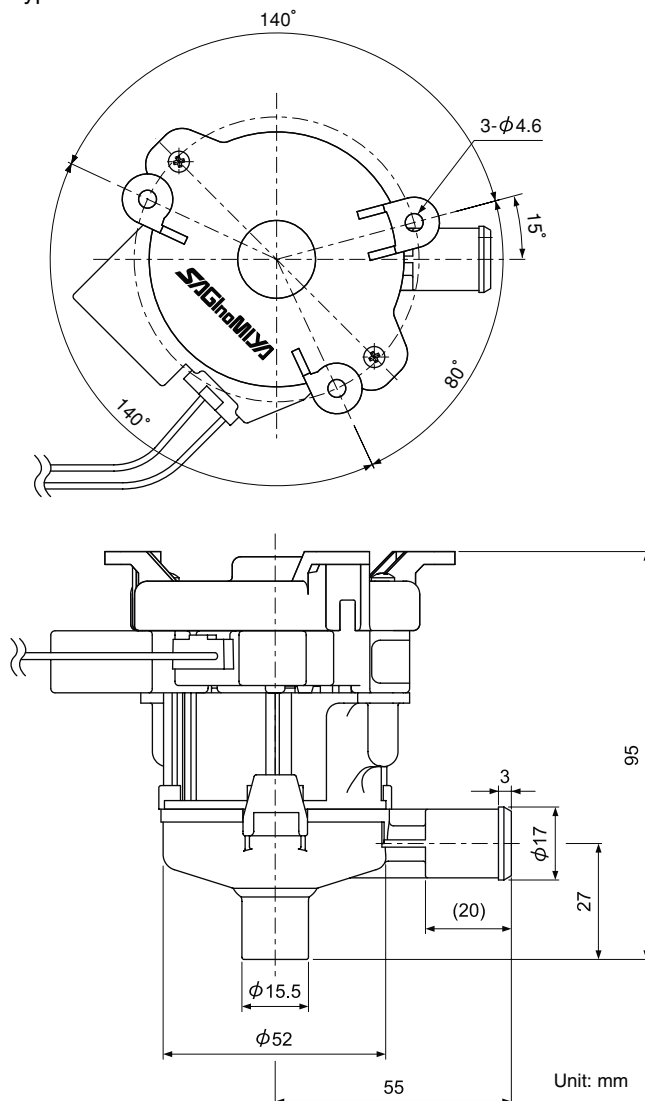


SPECIFICATIONS

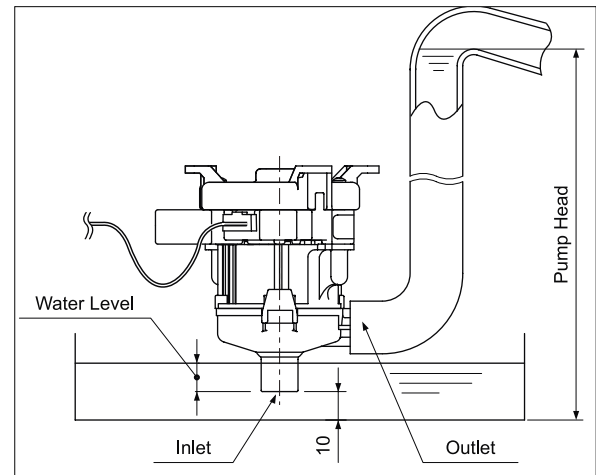
Catalog No.	Rated Voltage	Tolerance (%)	Power Consumption (Pump head:1125mm)	Max. Flow	Pump Head (mm)	Sound Level	Wt. (kg)
MDP-11 **	DC12V	±10	3W	400cm ³ /min or more at Rated Voltage	150 to 1125	36dB (A) or less on no drain	0.29

DIMENSIONS

Type MDP-11



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

SAGInoMILYA

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

UL listed (available upon request)



Single-phase type



Three-phase type

COMMON SPECIFICATIONS

Max. working pressure : 4.7MPa

Control method : Phase control

Enclosure : IP54

TYPE NUMBER SELECTION (SPECIFICATIONS)

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									
		Min.	Max.			Ampere					
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.	-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				
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				
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						
RGE-Z1Q6-7	3.2	1.6	3.9	Fixed 0.8	R410A		0.2 to 8A	Default setting: Cut Off			0.58
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.	-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				
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	Default setting: Min. Speed	-15 to 50		1.4
RGE-X3R6-7	3.2	1.6	3.9	Fixed 0.8	R410A						

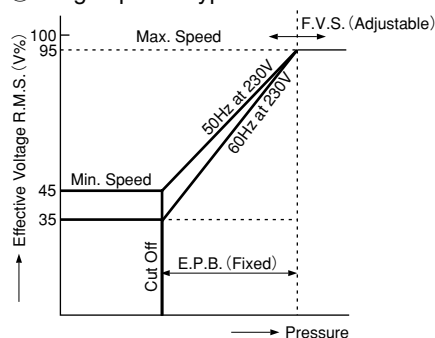
* 1: The pressure at which the control delivers 95% output effective voltage (VRMS).

* 2: Pressure width where effective voltage corresponds to the minimum speed or causes cut off operation

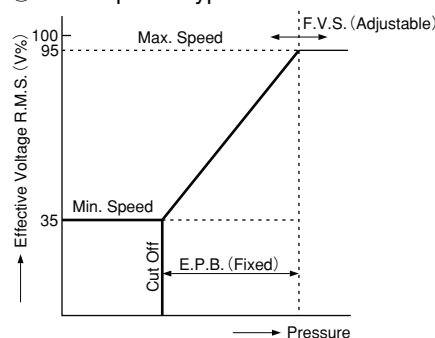
- Min. speed: Fan motor will be kept running at the specific value (V%) when pressure band increase more than E.P.B.
- Cut off: Fan motor will be stopped when pressure decrease to the specific value (V%) for R.M.S.
- For other pressure set values or min. speed/cut off set values, please contact us.

OPERATION

① Single-phase type



② Three-phase type

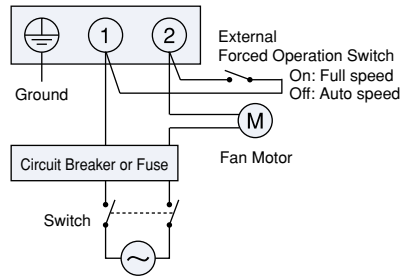


The operating characteristic may vary according to the voltage, frequency, and fan motor characteristics.

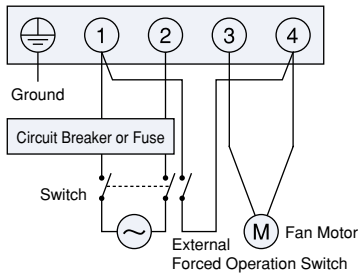
WIRING

Single-phase type

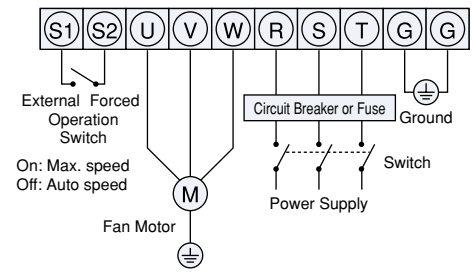
for 2A (RGE - Z1)



for 4A, 6A, 8A (RGE - Z1)



Three-phase type

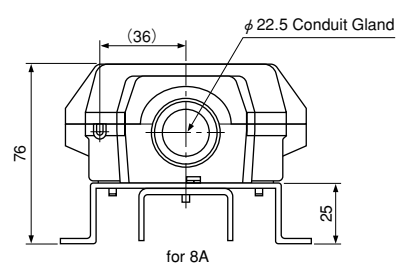
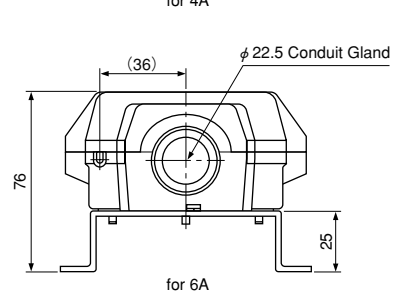
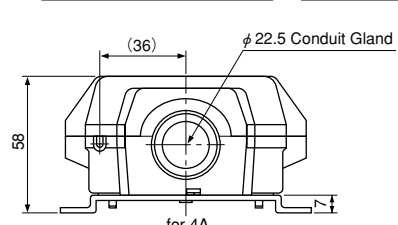
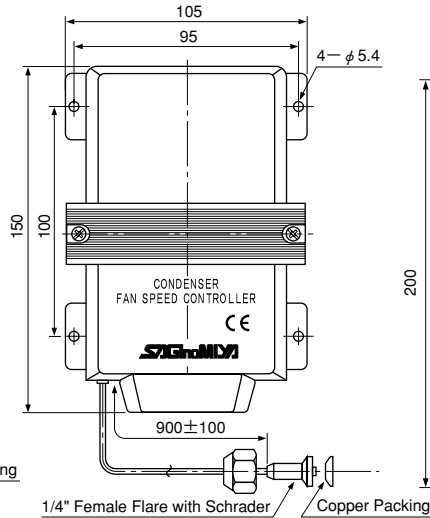
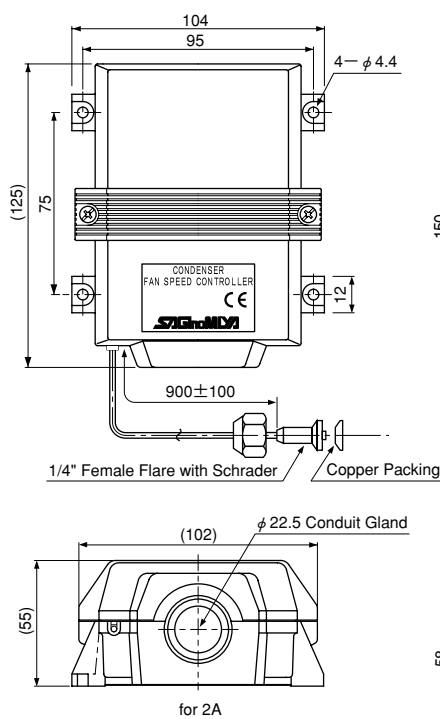


Apply external forced operation switches that afford to cut consumption current of fan motors.

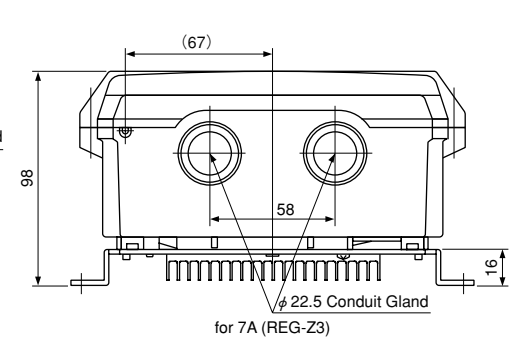
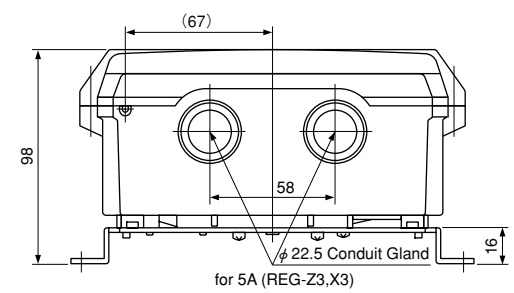
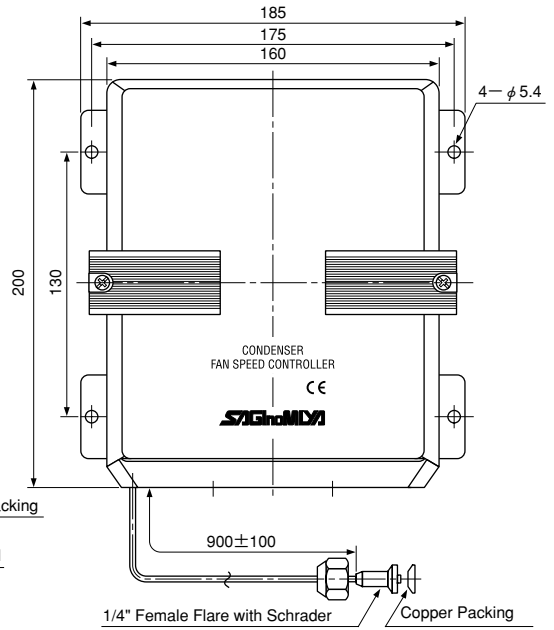
Use a forced operation switch with non-voltage contact signal.

DIMENSIONS

Single-phase type



Three-phase type



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



us listed (available upon request)



COMMON 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 (SPECIFICATIONS)

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

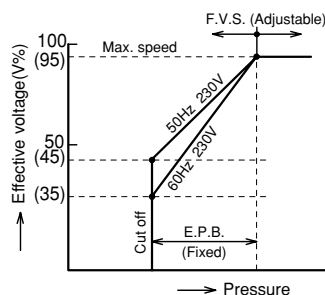
The pressure at which the control delivers 95% output effective voltage.

*2 E.P.B. : EFFECTIVE PROPORTIONAL BAND

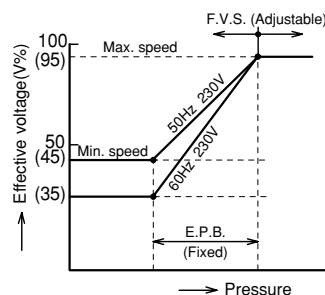
Pressure width where effective voltage corresponds to the min. speed or causes cut off operation.

OPERATION

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

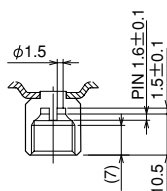
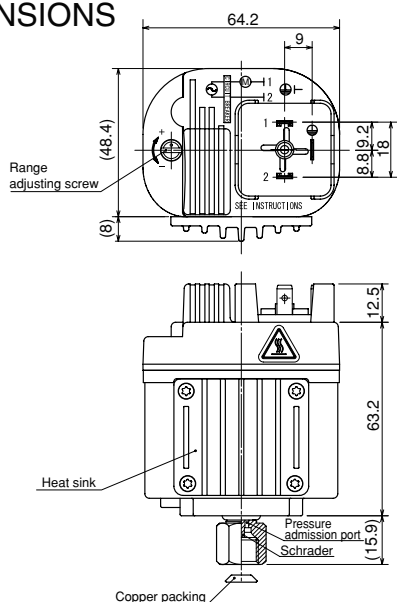


XGE-4MC-7 and XGE-6MC-7 (Min. speed type)



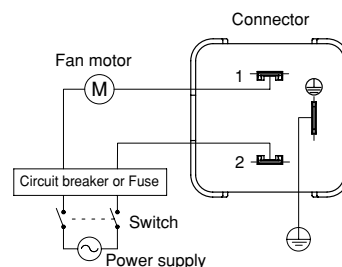
*The operating characteristic may vary according to the voltage, frequency, and fan motor characteristics.

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

SAGINO MIYA

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.



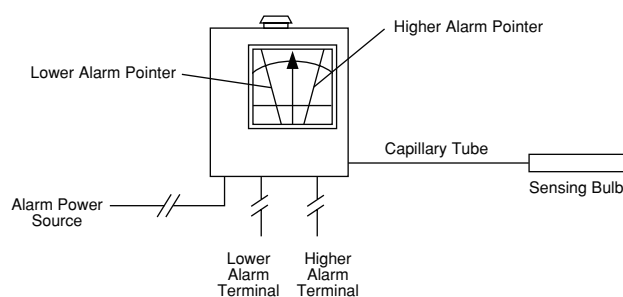
TYPE NUMBER SELECTION (SPECIFICATIONS)

Unit: °C

Catalog No.	Application Examples	Temp. Range		Indicating Accuracy	Recording Accuracy	Alarm Accuracy	Alarm Power Source	Catalog No. of Recording Paper	Wt. (kg)			
		Min.	Max.									
AKM-4014LH1X	For Refrigeration & Freezing	-40	14	±2	±0.5 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 : ±2 8 to 20 : ±2	2 to 8 : ±0.8 -6 to 2 : ±2 8 to 20 : ±2		100 to 120V. AC	BKM-0620X				
AKM-0620LH2X							200 to 240V. AC					

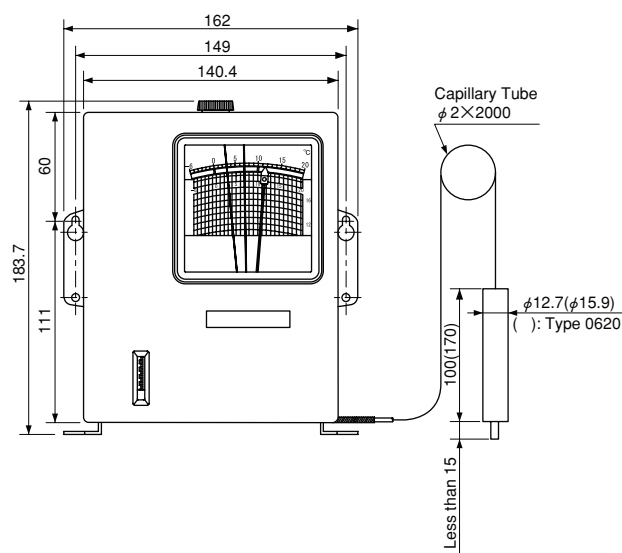
• Alarm Contact: Each one on upper and lower limit pointer, 100V. AC1A, 200V. AC 0.5A.

WIRINGS



- Standard capillary tube length: $\phi 2.0 \times 2000$ mm
(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

CONTROL APPLIANCES FOR HOT WATER SUPPLY UNITS BY CO₂ REFRIGERANT

High Volume OEM Item

Type CCB, HSK, HPV, UKV-J & JKV

SAGINOMIYA

GENERAL DESCRIPTION

- Used for CO₂ refrigerant applications.
- Available for extreme high pressure.



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-AA01	10 {100}	15 {150}	15 {150}	SPST (High Cut)	1/4" Solder	Open	High Pressure Cut Out	0.07

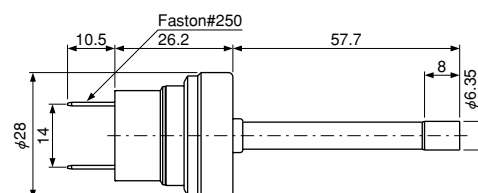
- Allowable fluid temperature: -30 to 100 °C
- Enclosure: IP20 (IP66 model: available upon request)

ELECTRICAL RATINGS

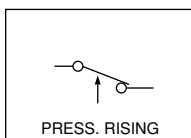
Category of Ratings			T Rating	
Rated Amps. (A)	Rated Voltage (V)	Power Factor (cos φ)	24V. DC	12V. DC
	Non-Inductive Current	1	0.01 to 0.05	
Inductive Current	Full Load	0.75	—	—
	Locked Rotor	0.45		

DIMENSIONS

Type CCB



CONTACT FUNCTION



● PRESSURE SENSOR for High Pressure [Type HSK]

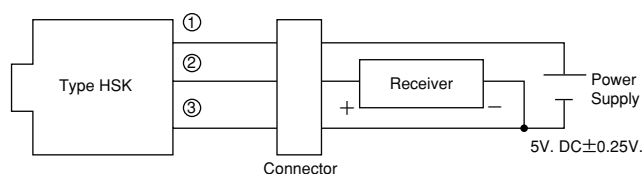
SPECIFICATIONS

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}	φ 6 Solder	0.07

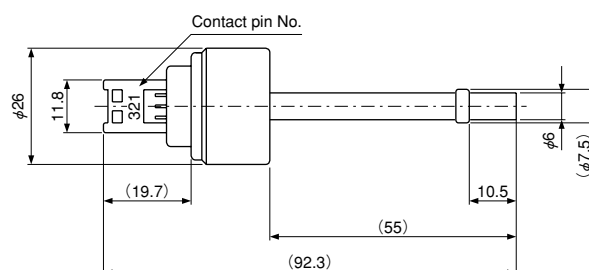
- Allowable fluid temperature: -30 to 120 °C
- Enclosure: IP66
- Ambient temperature: -30 to 100 °C

WIRING



DIMENSIONS

Type HSK



● 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

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

• Ambient temperature: -20 to 50 °C

• Allowable fluid temperature: -30 to 120 °C

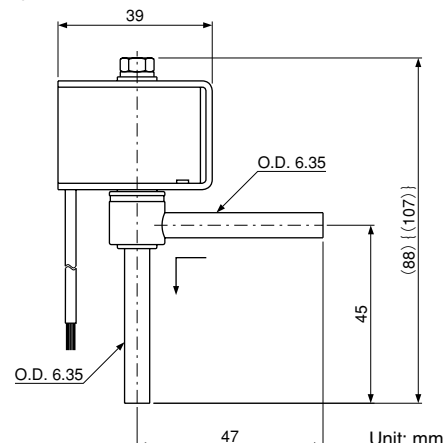
ELECTRICAL RATING OF SOLENOID COILS

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

* IEC compliance

DIMENSIONS

Type HPV-102D {HPV-122D}



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

TYPE NUMBER SELECTION (SPECIFICATIONS)

Unit: MPa {kgf/cm²}

Catalog No.	Port Size (φ mm)	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}	φ 6.35 OD	φ 6.35 OD	0.05
JKV-20D	2.0	0.12	4.2 {14.8}	6.1 {21.6}			φ 7.94 OD	φ 7.94 OD	0.2
JKV-24D	2.4	0.17	5.9 {20.7}	8.6 {30.4}			φ 7.94 OD	φ 7.94 OD	

*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

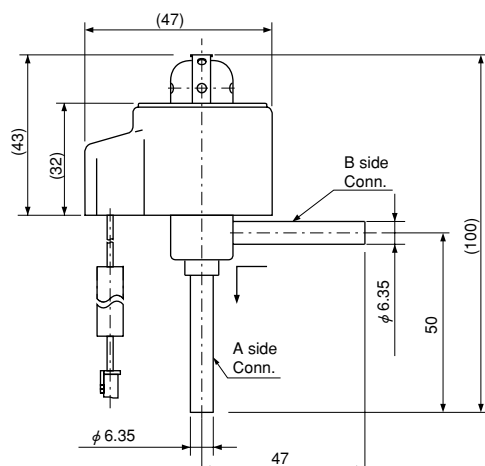
SPECIFICATIONS OF COIL

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

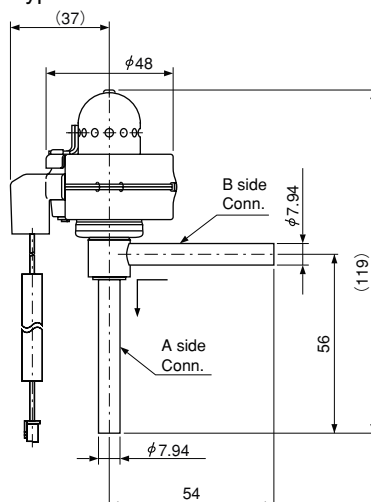
* IEC compliance

DIMENSIONS

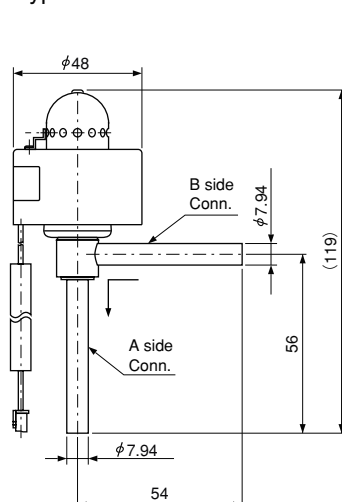
Type UKV-J



Type JKV-20D



Type JKV-24D



Unit: mm

CONTROL APPLIANCES FOR HOT WATER SUPPLY UNITS

Type **CRV, VSV, WSV, HEV, XJV, TCV, CAV, JSK, ELK**

SAGINOMIYA

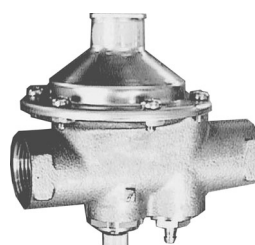
GENERAL DESCRIPTION

- Control appliances for hot water supply unit

- **Pressure Reducing Valve**

Type CRV

- This water valve can be connected directly to a water conduit.
- This valve is provided with a check device, a negative pressure operating device, and a strainer. (bronze casting type)
- A bronze casting type and a resin type are prepared as the body material.



Type CRV



Type CRV

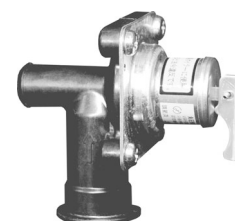
- **Relief Valve**

Type WSV, 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

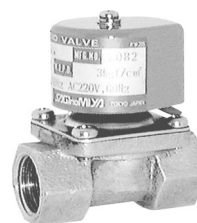


Type VSV

- **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

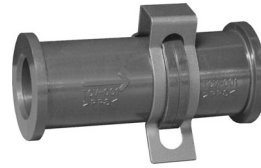
- This three-way mixed proportional valve applies to the cold and hot water of a fully automatic hot water supply unit.
- It controls the mixing ratio of cold water and hot water to produce an optimum mixed water temperature.



Type XJV

- 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

- Water Level Sensor
Type JSK

- This water level sensor adopts the semiconductor pressure sensor system.
- It is used for controlling the water level of a fully automatic bath.



Type JSK

- 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, hastelloy, 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, hastelloy, inconel, etc .



Welding Bellows for vacuum use 〈S series〉

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 industries.
Bellows assembled with fittings are also available.

OTHER CONTROLS & VALVES

Type RKV, SKM, 03, 05 & 24

SAGINOMIYA

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 refrigerator.



Type RKV

- TEMPERATURE RECORDER FOR REFRIGERATION CONTAINER

Type SKM

- For marine container and truck refrigeration
- Open type without enclosure or drip proof type with enclosure
- 31 days recording or 7 days recording

CE mark applicable (available upon request)

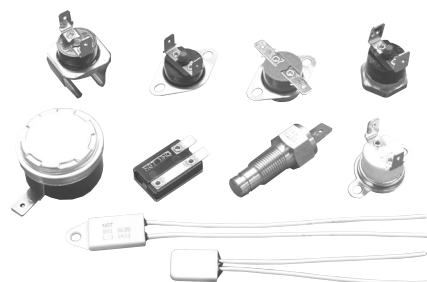


Type SKM

- 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.

GENERAL TERMS AND CONDITIONS OF SALE AND WARRANTY

■ WARRANTIES PERIOD OF GOODS

Products are warranted against defects in workmanship and materials for a period of one year from date of delivery.

■ LIMITATION OF LIABILITY

Saginomiya's liability for products shall be limited to repairing or replacing product only and followings are out of our warranties.

- Defect by buyer's unsuitable handling and/or use
- Remodeled and/or repaired by people other than Saginomiya
- Disaster, contingency and inevitable accident

Warranty herein shall be the warranty for product itself and does not include any consequential or incidental damage that arise out of a defect of product.



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.

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