OTHER CONTROL EQUIPMENT

FLOW SENSORS
High Volume OEM Item

Type ELK

SAGINOMIYA

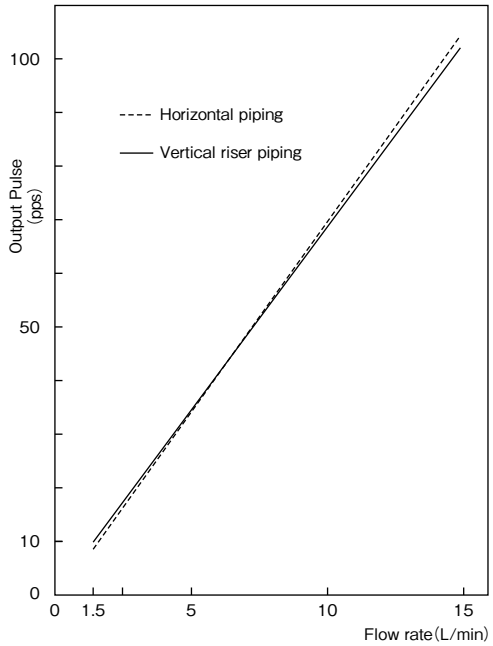
GENERAL DESCRIPTION

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

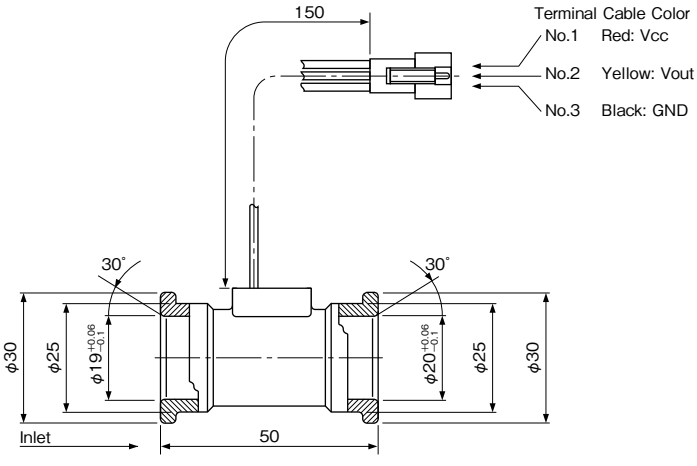
SPECIFICATIONS

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

FLOW RATE–OUTPUT PULSE CHARACTERISTICS



DIMENSIONS



Unit: mm

FLOW SWITCHES

Type FQS

SAGINOMIYA

GENERAL DESCRIPTION

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

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

SPECIFICATIONS

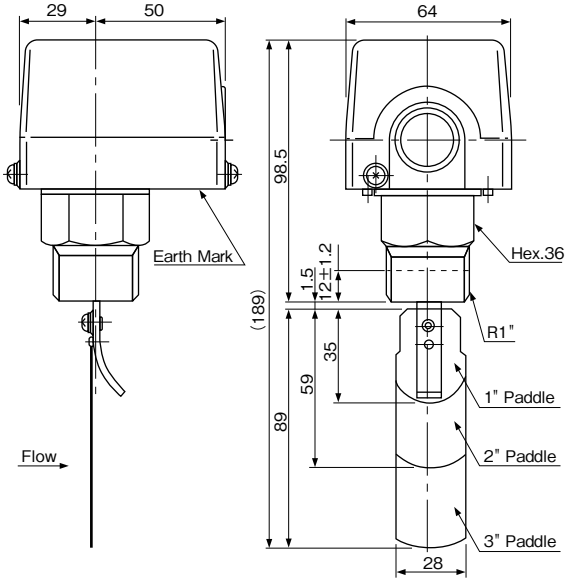
Catalog No.	Paddle Size	Connection		Max.Working Pressure MPa{kgf/cm²}	Fluid Temp. (°C)	Max. Flow Velocity (m/s)	Wt. (kg)
		Size	Style				
FQS–U30G	3"	1"	R	0.98 {10}	5 to 80	2	0.6

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

ELECTRICAL RATINGS

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

DIMENSIONS



Unit: mm

OPERATION ADJUSTMENT RANGE TABLE

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

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

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

DRAIN PUMPS
High Volume OEM Item

Type SDP

SAGInoMIYA

GENERAL DESCRIPTION

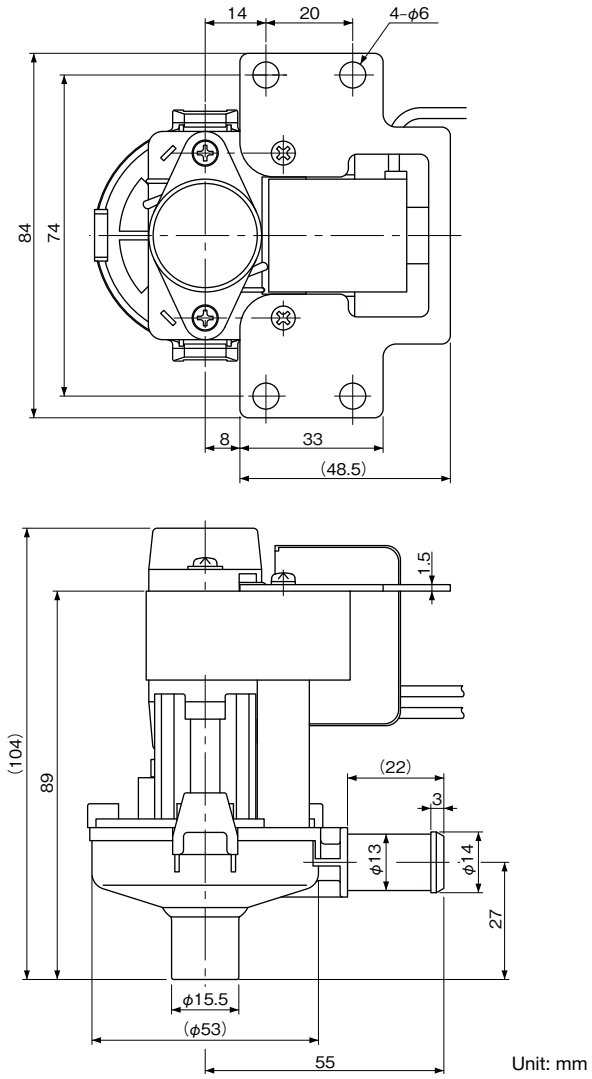
- Drain pump which can exhaust drain water in accumlating at indoor unit.
- By adopting a high durable and power motor, this realizes much higher durability, low noise and high pump head.
- Fluid: Drain water
- Fluid temperature: 0 to 35°C (No frozen water)
- Ambient temperature: −10 to 45°C
- Motor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

SPECIFICATIONS

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

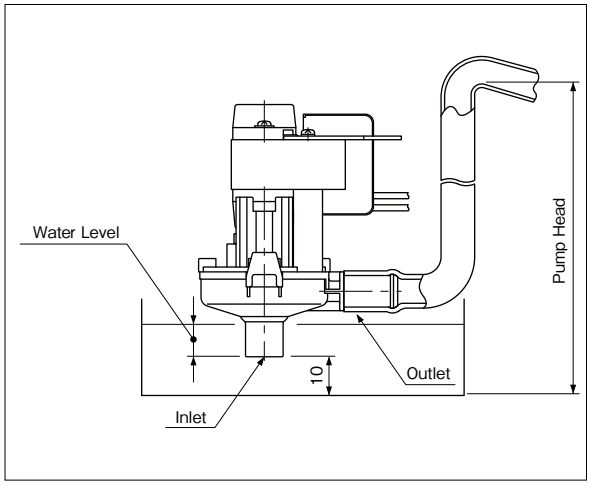
DIMENSIONS

Type SDP–14



Unit: mm

NOTE FOR USE



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

CONDENSER FAN SPEED CONTROLLERS

Type RGE

SAGINOMIYA

GENERAL DESCRIPTION

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

CE mark applicable

c SP us listed (available upon request)

Single-phase type

Three-phase type

SPECIFICATIONS

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

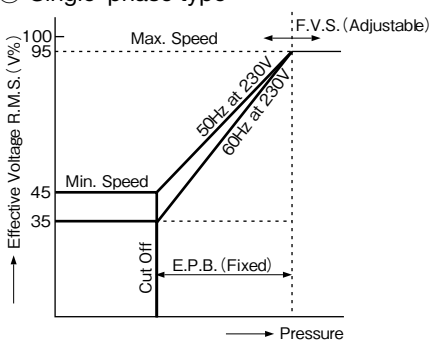
TYPE NUMBER SELECTION

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

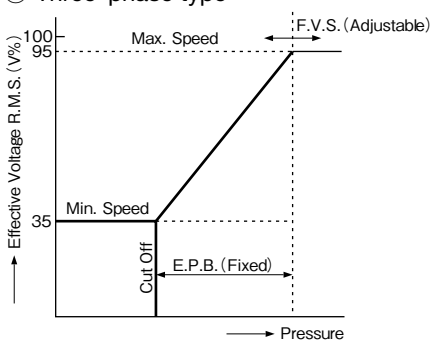
* 1: The pressure at which the control delivers 95% output effective voltage (VRMS).
* 2: Pressure width where effective voltage corresponds to the minimum speed or causes cut off operation
・ Min. speed: Fan motor will be kept running at the specific value (V%) when pressure band increase more than E.P.B.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

OPERATION

① Single-phase type



② Three-phase type

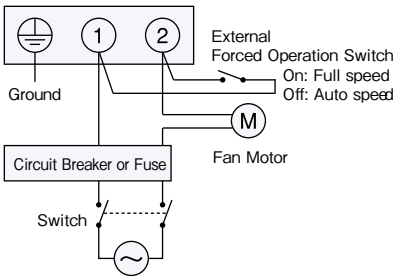


The operating characteristic may vary according to the voltage, frequency, and fan motor characteristics.

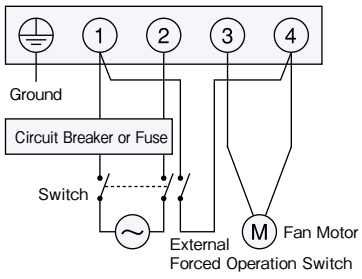
WIRING

Single-phase type

for 2A (RGE−Z1)

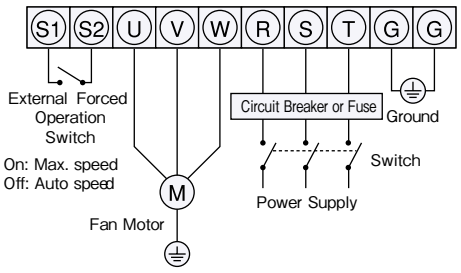


for 4A, 6A, 8A (RGE−Z1)



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

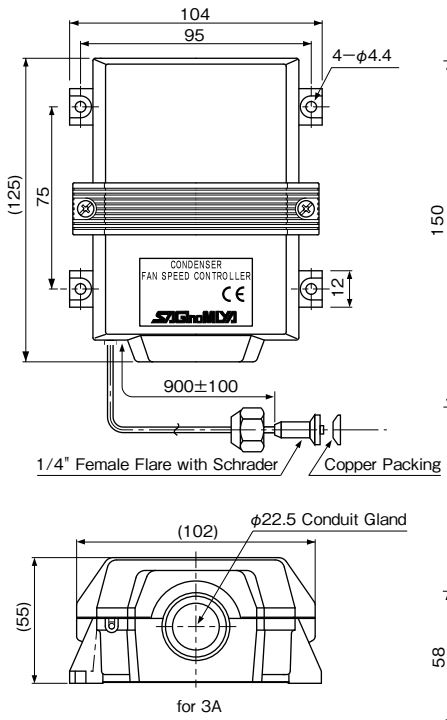
Three-phase type



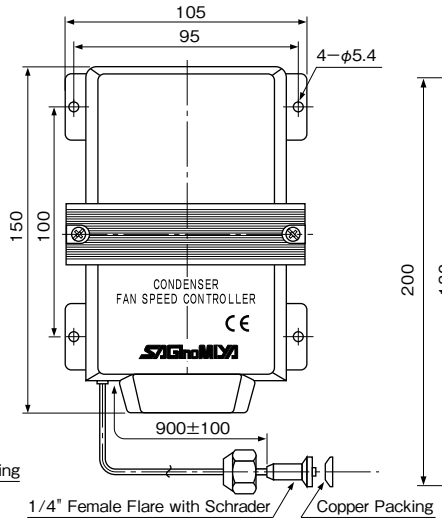
Use a forced operation switch with non-voltage contact signal.

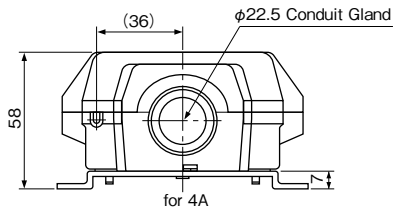
DIMENSIONS

Single-phase type

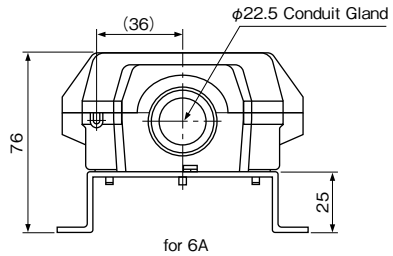


for 3A

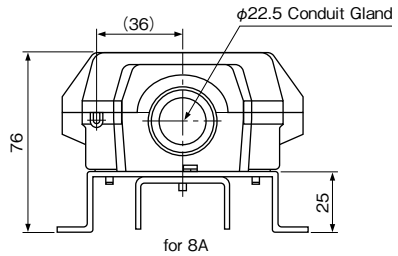




for 4A

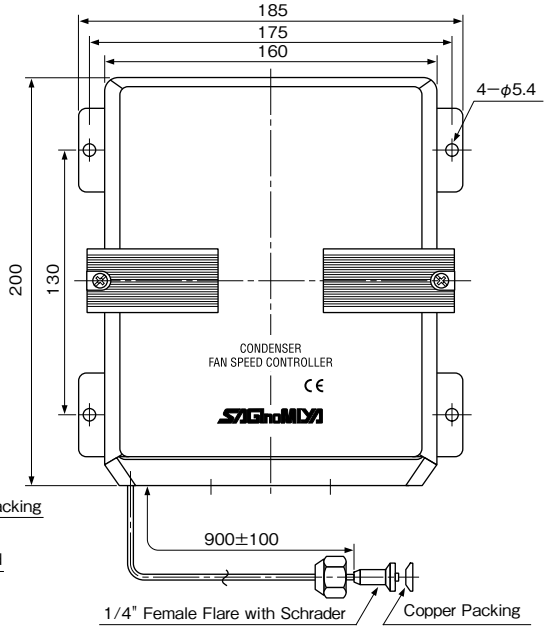


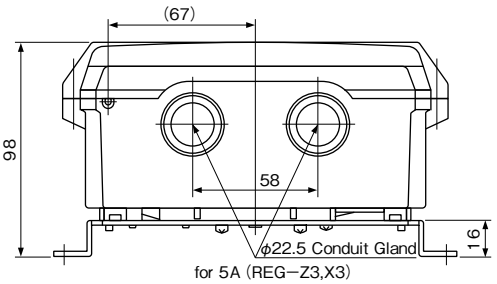
for 6A



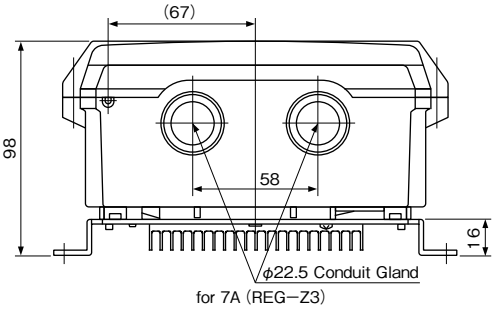
for 8A

Three-phase type





for 5A (REG−Z3,X3)



for 7A (REG−Z3)

Unit: mm

CONDENSER FAN SPEED CONTROLLERS

Type XGE

SAGInoMIYA

GENERAL DESCRIPTION

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

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

SPECIFICATIONS

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

TYPE NUMBER SELECTION

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

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

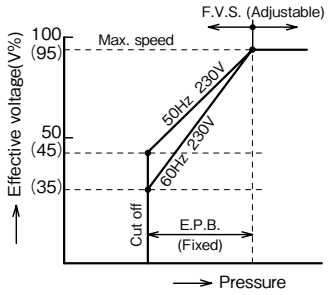
Min. speed: Fan motor will be kept running at the specific value(V%) when pressure band increase

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

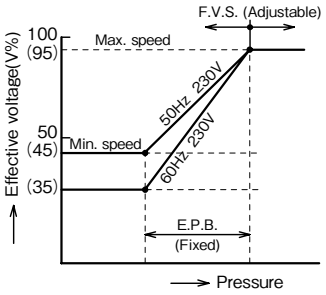
*2 E.P.B.: EFFECTIVE PROPORTIONAL BAND
Pressure width where effective voltage corresponds to the min. speed or causes cut off operation.

OPERATION

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

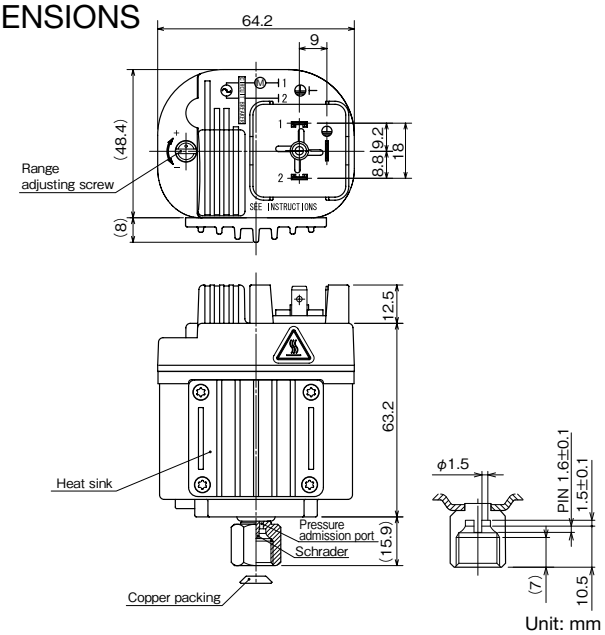


XGE–4MC–7 and XGE–6MC–7 (Min. speed type)



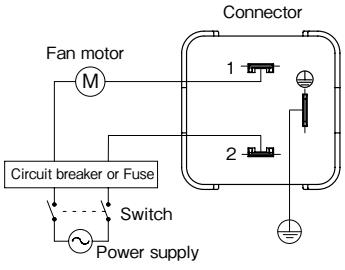
*The operating characteristic may vary according to the voltage, frequency, and fan motor characteristics.

DIMENSIONS



Unit: mm

WIRINGS



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

ACCESSORIES (XGE-1 Plug parts set)

- Plug
- Gasket
- Plug fixing screw
- Plastic bag

TEMPERATURE RECORDERS

Type AKM & BKM

SAGInoMIYA

GENERAL DESCRIPTION

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

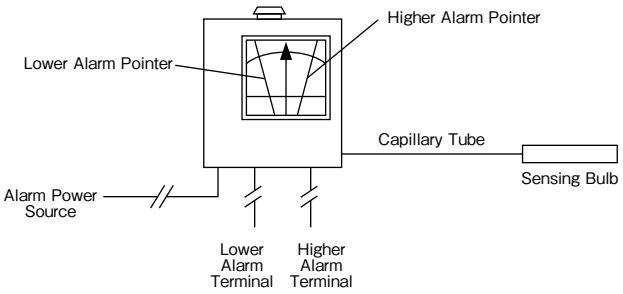
TYPE NUMBER SELECTION (SPECIFICATIONS)

Unit: °C

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

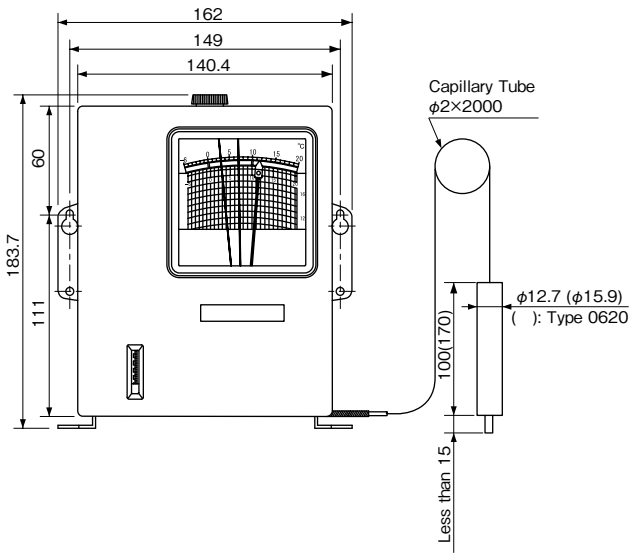
・ Alarm Contact: Each one on upper and lower limit pointer, 100V. AC1A, 200V. AC 0.5A.

WIRINGS



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

DIMENSIONS



Unit: mm

CO_2 REFRIGERANT APPLICATIONS
High Volume OEM Item

Type CCB, HSK, HPV, UKV–J & JKV

SAGINOMIYA

GENERAL DESCRIPTION

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


Type CCB


Type HSK


Type HPV


Type UKV–J

● PRESSURE CONTROL for High Pressure [Type CCB]

SPECIFICATIONS

Unit: MPa {kgf/cm²}

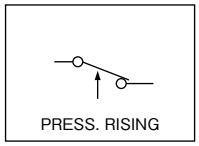
Catalog No.	Setting		Max. Pressure	Contact Function	Pressure Connection	Terminal Construction	Application	Wt. (kg)
	on	off						
CCB– ＊＊＊＊	10 {100}	15 {150}	15 {150}	SPST (High Cut)	1/4" Solder	Open	High Pressure Cut Out	0.07

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

ELECTRICAL RATINGS

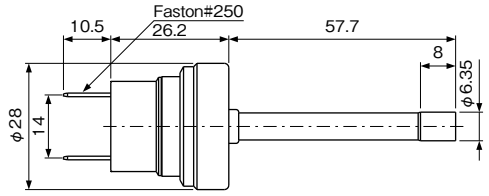
Category of Ratings			T Rating		M Rating	
Rated Voltage (V) / Rated Amps. (A)		Power Factor (cos φ)	24V. DC	12V. DC	120V. AC	240V. AC
Non-Inductive Current		1	0.01 to 0.05		1 to 6	
Inductive Current	Full Load	0.75	–	–	–	–
	Locked Rotor	0.45				

CONTACT FUNCTION



DIMENSIONS

Type CCB



Unit: mm

● PRESSURE SENSOR for High Pressure [Type HSK]

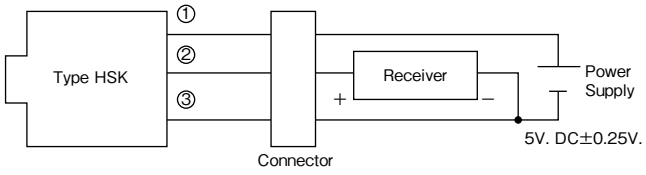
SPECIFICATIONS

Unit: MPa {kgf/cm²}

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

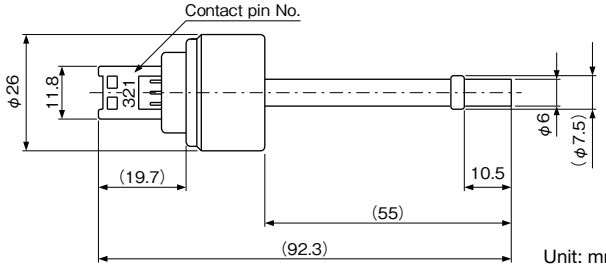
- Allowable fluid temperature: −30 to 120 °C
- Enclosure: IP66
- Ambient temperature: −30 to 100 °C

WIRING



DIMENSIONS

Type HSK



Unit: mm

SOLENOID VALVE for High Pressure [Type HPV]

TYPE NUMBER SELECTION (SPECIFICATIONS)

Unit: MPa {kgf/cm²}

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

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

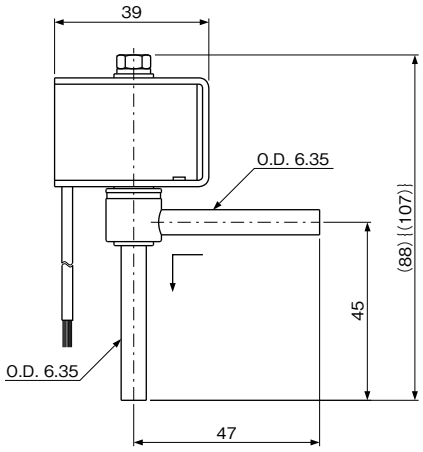
ELECTRICAL RATING OF SOLENOID COILS

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

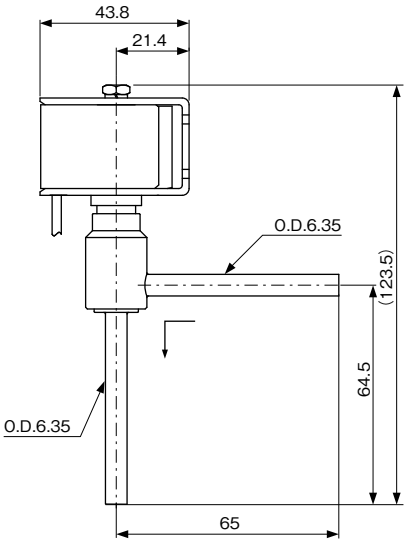
* IEC compliance

DIMENSIONS

Type HPV–102D {HPV–122D}

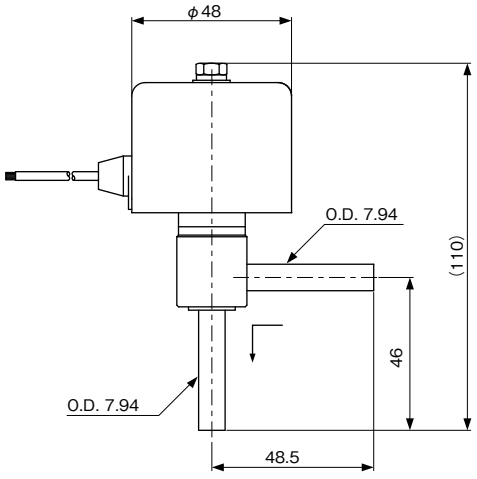


Type HPV–402D



Please contact us if other connection are required.

Type HPV–825DS



Unit: mm

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

TYPE NUMBER SELECTION (SPECIFICATIONS)

Unit: MPa {kgf/cm²}

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

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

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

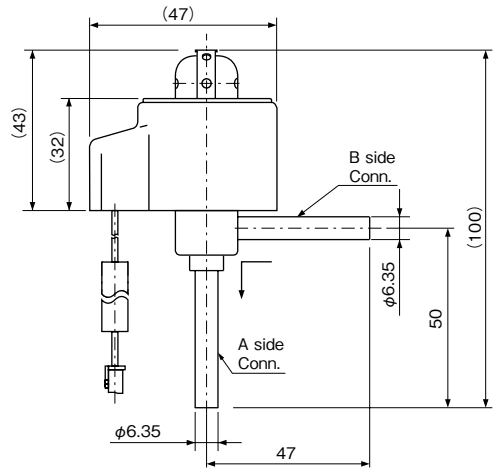
SPECIFICATIONS OF COIL

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

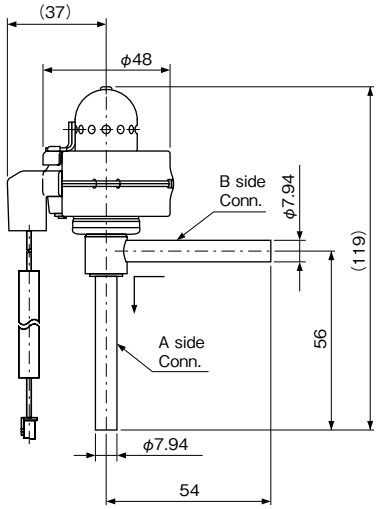
＊ IEC compliance

DIMENSIONS

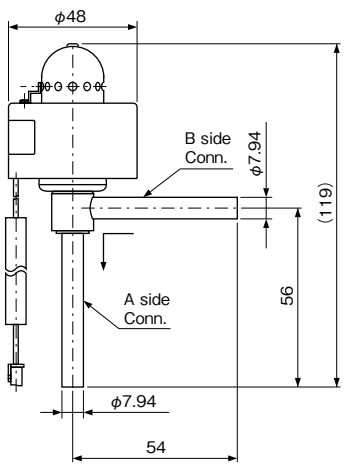
Type UKV–J



Type JKV–20D



Type JKV–24D



Unit: mm

CONTROL APPLIANCES FOR HOT WATER SUPPLY UNITS

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

SAGInoMIYA

GENERAL DESCRIPTION

• Control appliances for hot water supply unit

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

Type CRV

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

Type WSV

Type VSV

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

Type HEV

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

Type XJV

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

Type QJV

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

Type TCV

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

Type CAV

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

Type ELK

BELLOWS
High Volume OEM Item

Type HBL & WSL

SAGInoMIYA

Hydraulically-Formed Bellows | Type HBL etc...

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

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

Welding Bellows | Type WSL etc ...

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

Material example: Stainless steel, inconel, etc .

Welding Bellows for vacuum use 〈S bellows〉

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

• Applications

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

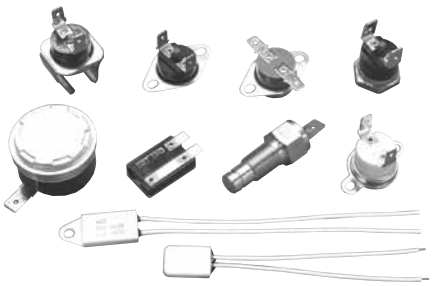
GENERAL DESCRIPTION

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

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

Type RKV

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



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