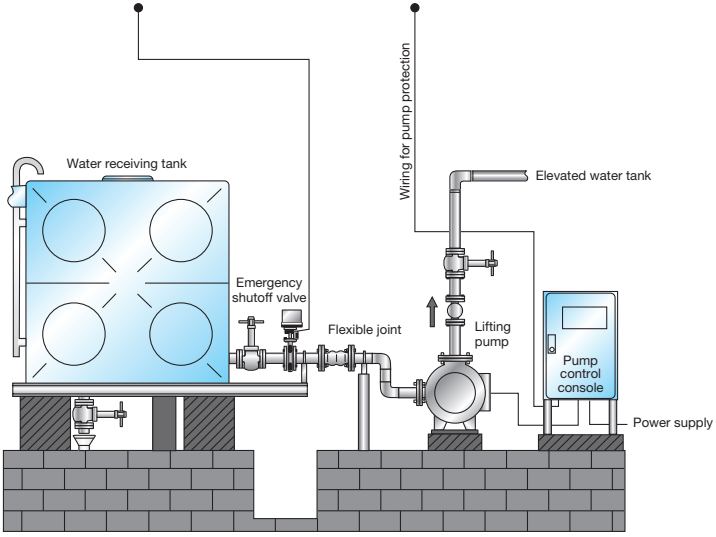
What is Emergency Shutoff System?

Step 0

If a piping system is damaged by a big earthquake, important water for living stored in a water receiving tank or gravity water tank will be lost. It is, therefore, necessary to prevent the interruption of lifelines and reserve water for living after the disaster. Additionally, national standards and guidelines stress the necessity of “emergency shutoff valves” for the purpose of preserving water. Yoshitake’s emergency shutoff system comprises an “emergency shutoff valve” and an “emergency shutoff valve control console” and is designed to automatically close the valve when the earthquake sensor inside the control console works. It is capable of supplying water for living reserved in the water receiving tank or gravity water tank even after a disaster.

MD-71 Emergency shutoff valve

KS-5 Emergency shutoff valve control console



Specifications and Structure of MD-71·MD-71-N

Step 1

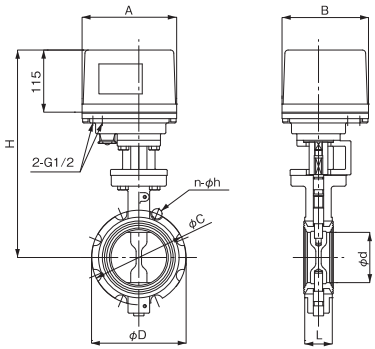
Specifications

Model		MD-71	MD-71-N (JWWA)
Application		City water	
Applicable pressure		0-1.0 MPa	
Applicable fluid temperature		5-60°C	
Installation posture		Can be installed in any posture, from upright to sideways to horizontal piping.	
Opening-closing time		50A and 65A: 4 or fewer seconds, 80A and 100A: 10 or fewer seconds, 125A and 150A: 15 or fewer seconds, 200A: 45 or fewer seconds	
Actuator	Rated voltage	24 V DC	
	Power consumption	50-100A: MAX. 80 VA 125-200A: MAX.120 VA	
	Ambient temperature	–20 – 55°C (no freeze condition)	
	Measure against dew condensation	Space heater contained	
	Manual operation	Manual operation mechanism provided	
	Protective structure	Outdoor rainproof structure (JIS C 0920 IP65)	
	Wire lead-in port	G 1/2	
Material	Body	FCD 450 or FC 300	
	Valve	Stainless steel	
	Seat	FKM	
Connection		JIS 10K flanged	

· Please contact us when using fluid is other than city water.

Dimensions (mm) and Weights (kg)

Nominal size	d	L	H	D	A	B	JIS 10K flanged		Weight
							C	n-h	
50A	52	41	332	115	175	160	120	4-19	7.7
65A	64	44	349	135	175	160	140	4-19	9.2
80A	78	44	356	145	175	160	150	8-19	9.7
100A	103	51	384	175	175	160	175	8-19	12
125A	129	54	406	206	175	160	210	8-23	15
150A	154	54	419	231	175	160	240	8-23	16
200A	205	64	501	290	217.5	175	290	12-23	30



· The shape of the 200A is partly different from the figure.

Cv Value and Calculation Formula

50A	65A	80A	100A	125A	150A	200A
159	266	457	860	1320	2020	3540

$$Cv = \frac{0.365\,V\sqrt{G}}{\sqrt{P}}$$

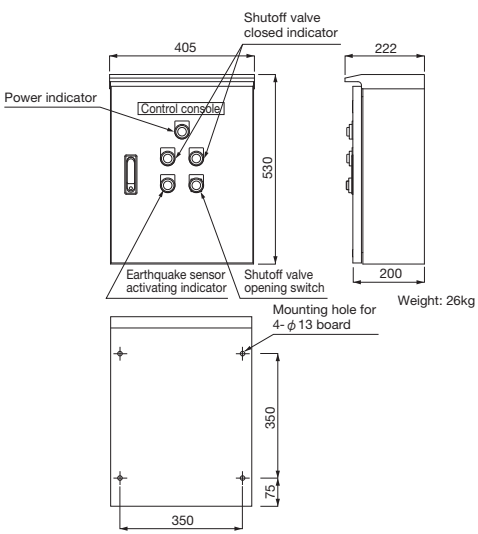
P1 : Inlet pressure [MPa·A]
P2 : Outlet pressure [MPa·A]
ΔP : P1-P2 [MPa]
G : Specific gravity (against water)
V : Max. flow rate of fluids [m^3/h]
Cv : Cv value of each nominal size

Specifications and Structure of KS-5

■Specifications

Model		KS-5
Number of emergency shutoff valves to be controlled		2 *1
Supply power source		85-240 V AC, 50 / 60 Hz
Ambient temperature		–10 – 50°C
Backup power source		24 V DC
Backup time		Approx. 5 hours
Storage battery		Storage battery manufactured by Japan Storage Battery (PE 12 V 2.2)
Charging method		Constant charging method (float charging)
Measure against lightning		Surge absorber provided
Output terminal	For emergency shutoff valve control	24 V DC
	For pump protection	No-voltage c-contact (one c-contact) *2
	For earthquake sensor external warning	No-voltage a-contact (one a-contact) (ON contact when the earthquake sensor is working)
	For power external warning	No-voltage a-contact (one a-contact) (ON contact when the power inside the control console unusually drops)
Shutoff valve opening switch		Pushbutton switch for resetting provided
Earthquake sensor	Detection direction	All horizontal directions
	Set acceleration	200 Gal (equal to 5 upper in Japan Meteorological Agency's seismic intensity)
Installation location		Indoor and outdoor (equal to JIS C 0920 IP44)
Installation method		Wall-hang type

*1 Available with for controlling one, three or four emergency shutoff valve(s).
*2 It is different when controlling three or four emergency shutoff valves.



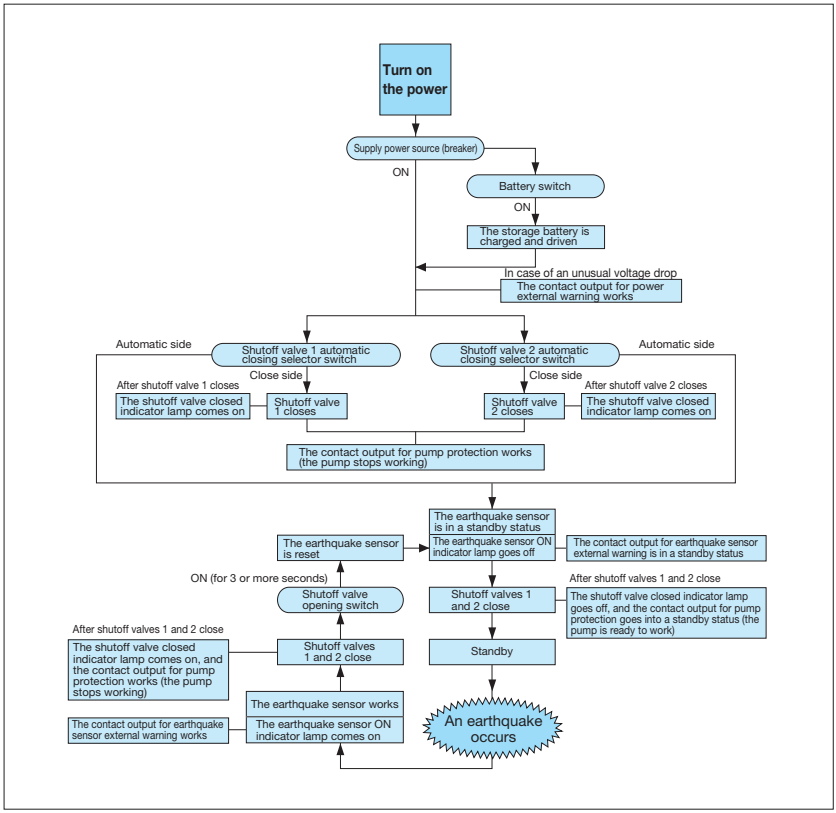
· The figure shown above is a control console for controlling two emergency shutoff valves. The shapes of control consoles for controlling one, three, and four emergency shutoff valves are slightly different.

Reference **What is Gal ...?**

One Gal is defined as an acceleration of 1 centimeter per second (1 cm/s) per second. That is, the gal can also be expressed as 1 centimeter per second squared (1 cm/s^2). In the International System of Units (SI), the unit of acceleration is meter per second squared (m/s^2), and 1 Gal is equal to 0.01 m/s^2. Although the gal is a non-SI unit, Japan's Measurement Law permits the use of Gal and Milligal (mGal) only for the measurement of gravitational acceleration as well as vibration acceleration regarding earthquakes.

Operation Flowchart (for Controlling Two Shutoff Valves)

Step 1



Features

1. An earthquake sensor (acceleration: 200 Gal) is installed inside the control console that automatically works in case of an earthquake (the shutoff valves close in intensity 5 upper).
2. The control console properly works with the backup power source even in case of a power failure.
3. The pump instantly stops when the shutoff valves close (this requires wiring between the interlock terminal of the emergency shutoff valve control console and that of the pump control console).
4. Resetting after a shutoff valve control is easy.(Just by pressing the shutoff valve opening switch.)
5. The control console can be manually operated.