

# 05

LEVEL  
CONTROL  
VALVE

# LEVEL CONTROL VALVE

YAW-3S  
YAW-3F  
YAWEL-1

## 05 Level Control Valve

**SAMYANG**  
SYSTEM GROUP



### ■ Level Control Valve

Developed based on extensive experience, the water level control valves ensure easy maintenance, offer good durability, and prevent water hammers. They feature an outstanding performance and a wide array of functions that satisfy user needs.

#### Level control valve

Type	Size	Applicable pressure (kgf/cm <sup>2</sup> g)	Materials		End connection	Page
			Body	Disc, seat		
YAW-3S	32(1¼")~40(1½")	Max. 10	GC200	NBR, CAC406	KS PT SCREW	125
YAW-3F	50(2")~150(6")				KS 10K RF FLANGE	
YAW-ST	32(1¼")~150(6")		STS		KS PT SCREW KS 10K FF FLANGE	128
YAWEL-1	200A~300(12")		GC200		KS 10K RF FLANGE	129

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YAW-3S Type



YAW-3F Type

## YAW-3S, 3F Level Control Valve

The type YAW-3S and 3F water level control valves were developed for the exclusive purpose of controlling the water level of a wide array of water tanks. They are optimal water level control valves that have a simple structure and are small sized and lightweight, thereby ensuring easy handling and installation.

### Features

- Embedded strainer prevents various foreign substances into the pipeline.
- No external pipeline, kept warm easily & no concerns of freezing damage.
- Large capacity make suitable for apartment water & elevated tanks.
- EM mark acquired.

### Specifications

Type	YAW-3S	YAW-3F
Size	32A~40A	50A~150A
Applicable pressure	Maximum 1.0MPa	
Minimum differential pressure in the inlet and outlet side of the valve	0.034MPa	
Fluid temperature	5~80℃	
Function	On and off operation by a pilot solenoid valve	
Solenoid valve	AC220V, 50/60HZ	
Applicable fluid	Drinking water, fresh water, industrial water, agricultural water	
End connection	KS PT SCREW	KS 10K FF FLANGE
Materials	Body	GC200
	Disc, seat	NBR, CAC406
Hydraulic test pressure	1.5MPa	

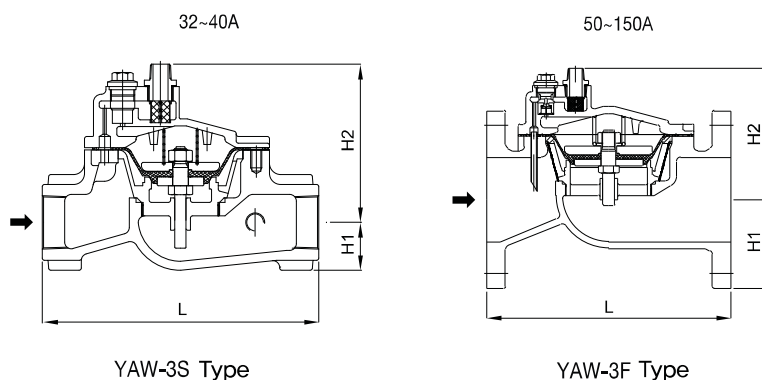
► Install a strainer (40 MESH or more) on the leaflet during installation of the valve.

### Dimensions

(mm)

Size	L	H1	H2	Cv	Weight(kg)	Notes
32A(1¼")	248	43	135	30	14	Screwed type
40A(1½")	248	43	135	35	15	
50A(2")	248	77.5	135	40	17	
65A(2½")	270	87.5	138	62	22	Flanged type
80A(3")	270	92.5	138	90	22	
100A(4")	288	105	148	140	27	
125A(5")	400	125	225	220	60	
150A(6")	400	140	225	315	69	

### Dimensional drawing

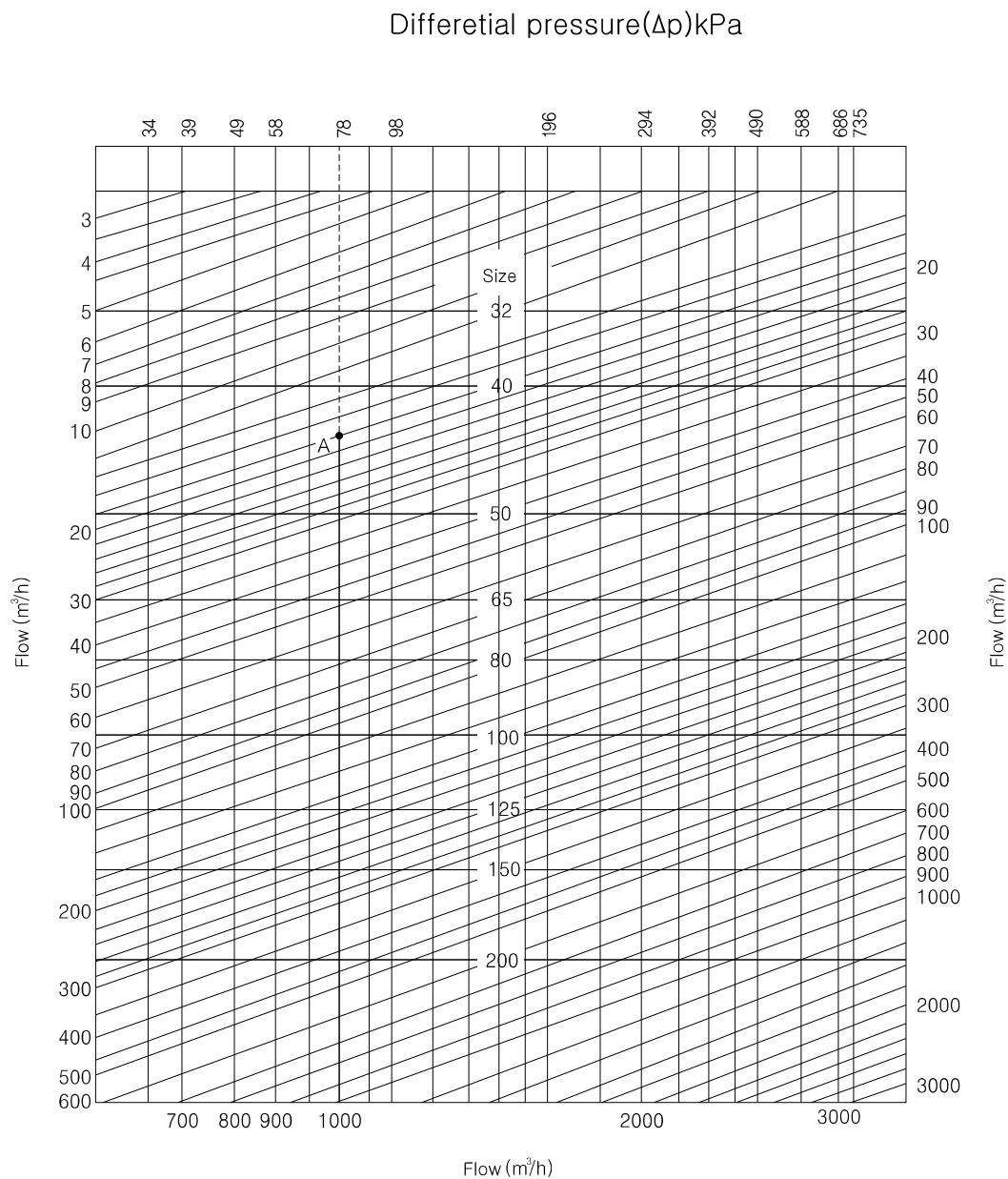


YAW-3S Type

YAW-3F Type

## YAW-3S, 3F Level Control Valve

Chart on selecting a size



## How to select the size of valve by the chart

Example) If the supply pressure is 3 kg/cm<sup>2</sup>g,

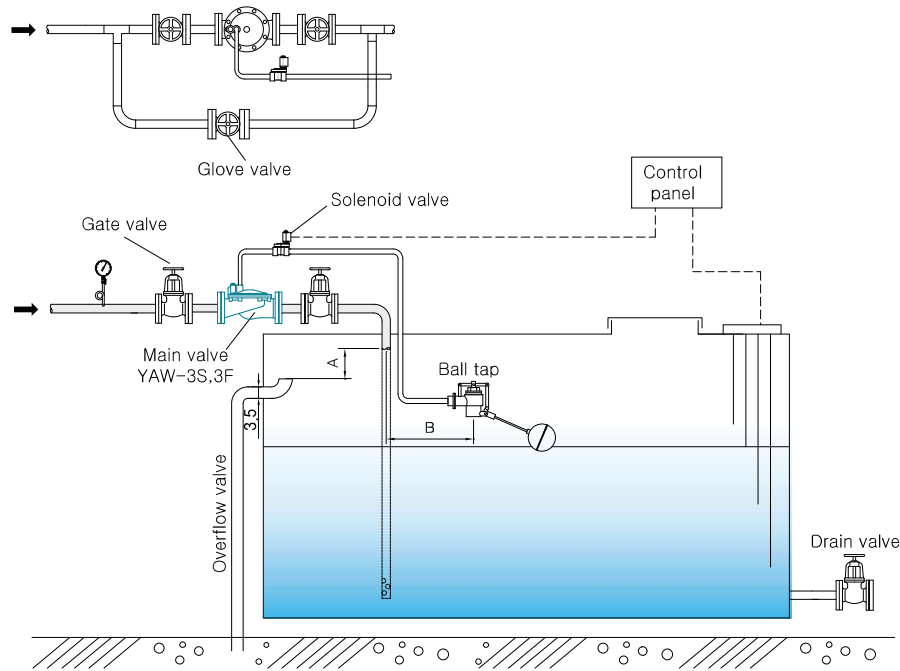
Back pressure is 2,2 kgf/cm<sup>2</sup>g,

Flow is 18 m<sup>3</sup>/h,

Then the differential pressure is 0,8 kgf/cm<sup>2</sup>g. Since  $\Delta P$  is at the point of intersection between the line of 0,8 kgf/cm<sup>2</sup>g and a flow of 18 m<sup>3</sup>/h, the valve's size should be selected as 50 in order to avoid harmful stress on the pipeline.

## Type YAW-3S, 3F Level Control Valve

### Application Diagram (Example)



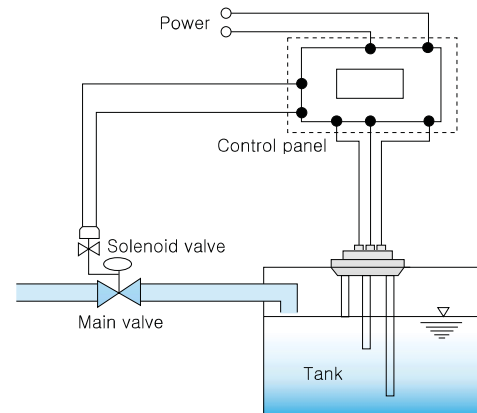
### Cautions for pipeline installation

1. A bypass pipeline must be installed.
2. In case of installation in an underground water tank, install a pump or sufficiently pump out water to prevent damages caused by water overflow.
3. The distance of "A" should be at least 1.5 times (minimum 50 mm) the pipe diameter.
4. In case of installation of a ball tap, make the distance of "B" as long as possible (minimum 1 m) to prevent damage to the ball tap resulting from irregular water waves. The ball tap should be installed in close proximity to a manhole for easy repair and inspections.
5. The overflow pipeline should be connected to an underground drainage system. (Prevents damage caused by overflow.)
6. In terms of the end connection between the valve's body and ball tap, a union should be used to ensure easy disassembly and inspection

### Cautions for operation

1. Between installation and operation, completely remove foreign substances within the pipeline by blowing them out through the bypass pipeline.
2. If the main valve is not operating due to a power failure or breakdown of the ball tap, use the valve by opening the ball valve and consult Samyang technicians for further instructions. (The ball valve should be closed unless there is an emergency situation.)

Diagram 2, Solenoid valve connecting circuit



## YAW-ST

YAW-ST Type level control valve has been developed to control level of water for all types of water tank. With a simple and compact structure, it is easy to handle and install which makes it the best type of level control valve.

### Features

- Strainers are built in to prevent the inflow of various impurities in the piping.
- Since there is no external piping, it is easy to keep warm, so there is no concern about freezing.
- Its large capacity makes it suitable for high-rise buildings, artificial reservoirs and high-priced water tanks.

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### Specifications

Type	YAW-ST	
Size	32, 40A (Screw type)	50~150A (Flange type)
Applicable pressure	Below 1.0MPa	
Minimum differential pressure in the inlet and outlet side of the valve	0.03kPa	
Fluid Temperature	5~80℃	
Applicable fluid	Water	
Function	On and off operation by a pilot solenoid valve	
Power	AC220V, 50/60Hz	
End Connection	KS PT SCREW	KS 10K FF FLANGE
Materials	Body	STS
	Disc, Seat	NBR,CAC406
	Diaphragm	NBR
Hydraulic test pressure	1.5MPa	

► Strainer (over 40 Mesh) installation is required to ahead inlet when valve installing



YAW-ST Screwed Type



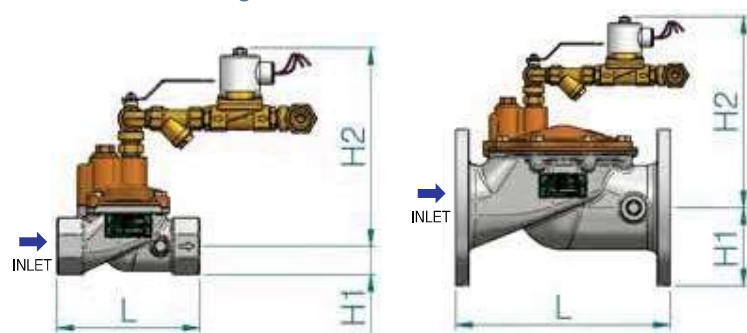
YAW-ST Flange Type

### Dimensions

(mm)

Size	L	H1	H2	Cv	Notes
32A(1¼")	160	32	222	30	Screw type
40A(1½")	160	32	222	35	
50A(2")	248	77,5	244	40	
65A(2½")	270	87,5	247	62	Flange type
80A(3")	270	92,5	247	90	
100A(4")	288	105	257	140	
125A(5")	400	125	336	220	
150A(6")	400	140	336	315	

### Dimensional drawing



Screwed Type(32, 40A)

Flange Type(50~150A)



## Type YAWEL-1 Level Control Valve

The type YAWEL-1 is a large capacity level control valve that supplies water by opening when the water level inside a water tank goes down to the level at which water supply is commenced. The valve closes when the water level rises to the level at which water supply is stopped. The valve thus features an outstanding performance in controlling the water level.

### Features

- Automatically opened & closed, without external power supply even large-diameter.
- No leakage with special rubber diaphragm & disc.
- Attached speed control valve (needle valve) can adjust main valve's opening & closing speed.
- Ensure easy repair & inspections structure.

### Specifications

Type		YAWEL-1
Applicable fluid		Fresh water, industrial water, agricultural water
Function		On and off operation by a pilot solenoid valve
Minimum differential pressure in the inlet and outlet side of the valve		Maximum 10 kgf/cm <sup>2</sup> g
Fluid temperature		5~80°C
Function		On - off operation by solenoid electronic valve
Solenoid Valve	Standard	200~350A : PT1"
	Power	AC220V, 50/60Hz
End connection		KS 10K RF FLANGE
Materials	Body	GC200
	Disc, seat	NBR, CAC406
	Diaphragm	NBR
Hydraulic test pressure		1.5MPa

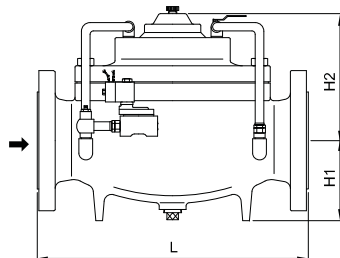
► Install a strainer (40 MESH or more) on the leaflet during installation of the valve.

### Dimensions

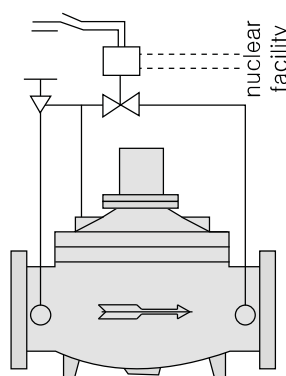
(mm)

Size	L	H1	H2	Cv	Weight(kg)
200(8")	640	210	390	640	205
250(10")	740	250	481	1000	440
300(12")	900	290	557	1440	516

### Dimensions drawing

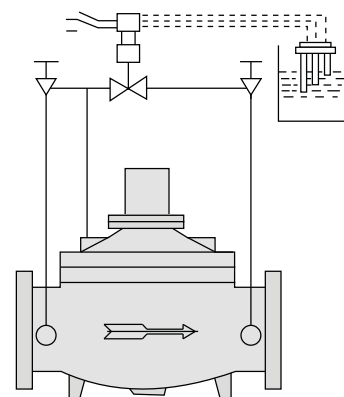


### Example of application



#### 1) Automatic control and remote operation

Because it has adopted a balance structure, even a large-diameter valve can be opened and closed with simple power switching operation. It can also offer a remote control function if applied with appropriate wiring.

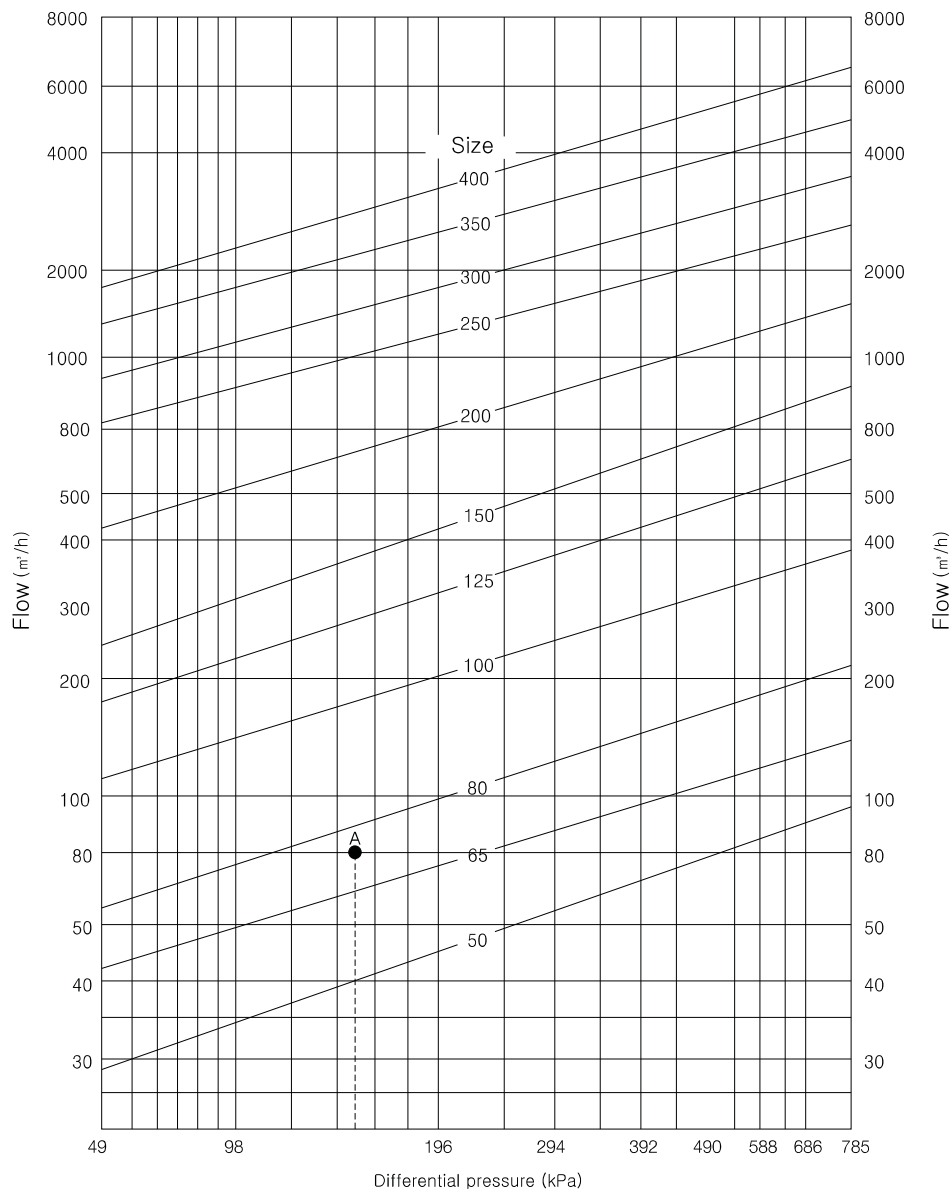


#### 2) Level control function

The valve can be used to maintain a constant water level for water tanks, settling tanks, pressure control tanks, and swimming pools.

## Type YAWEL-1 Level Control Valve

Chart on selecting a size



### How to determine the nominal diameter of a valve while viewing the diagram

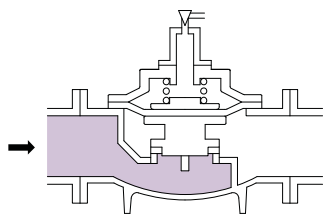
Example) If the primary pressure is 1,5 kg/cm²g, secondary pressure is 0 kg/cm²g, and flow is 80 m³/h, the differential pressure  $\Delta P$  is  $1,5 - 0 = 1,5$  (kg/cm²g) since the primary pressure is 1,5 kg/cm²g and secondary pressure is 0 kg/cm²g. Determine "A," the point of intersection between the differential pressure (1,5 kg/cm²g) and flow (80 m³/h). Now that point A is in between a size of 65 and 80, a diameter of 80 should be selected in order to avoid harmful stress on the pipeline.



## Type YAWEL-1 Level Control Valve

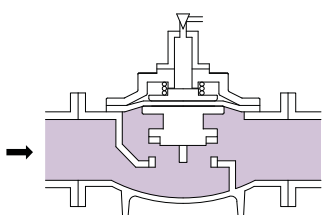
### How the valve works

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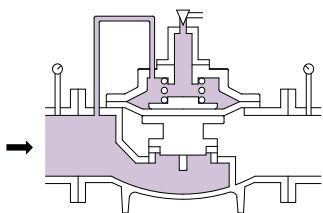
#### 1. At first, the valve is...

The level control valve consists of a main valve and an auxiliary valve. As shown in the diagram, the valve remains closed, by the main valve's weight and the spring's force, when the fluid is not flowing.



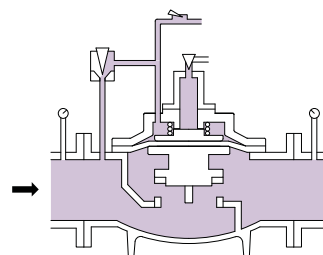
#### 2. When the fluid flows...

When the level control valve receives pressure, the main valve disc, which was closed, is slightly raised, resulting in the fluid passing through the inside of the valve. In other words, the pressure of the discharged fluid operates in the lower part of the diaphragm and completely opens the main valve.



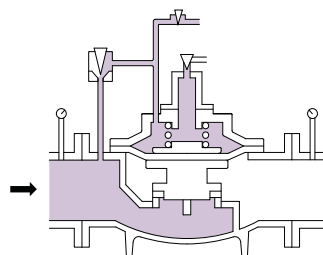
#### 3. When pressure is applied to the upper part of the diaphragm...

Once the fluid enters the upper part of the diaphragm through the copper tube that connects the inlet of the level control valve with the upper part of the diaphragm, the pressure level of the upper part and lower part of the diaphragm becomes the same. The main valve begins to close as balance is reached between the main valve's weight and the spring's force. In other words, the valve closes when pressure reaches the upper part of the diaphragm, and opens as the pressure disappears.



#### 4. When the valve begins to open...

Install a speed control valve in the middle of the copper tube so that one side of the copper tube is installed to two directions. If the speed control valve is adjusted so that the volume of fluid discharged from the discharge valve is larger than the volume of fluid that passed through the speed control valve, the discharge valve remains open. Then the pressure of the upper part of diaphragm goes down and the main valve opens.

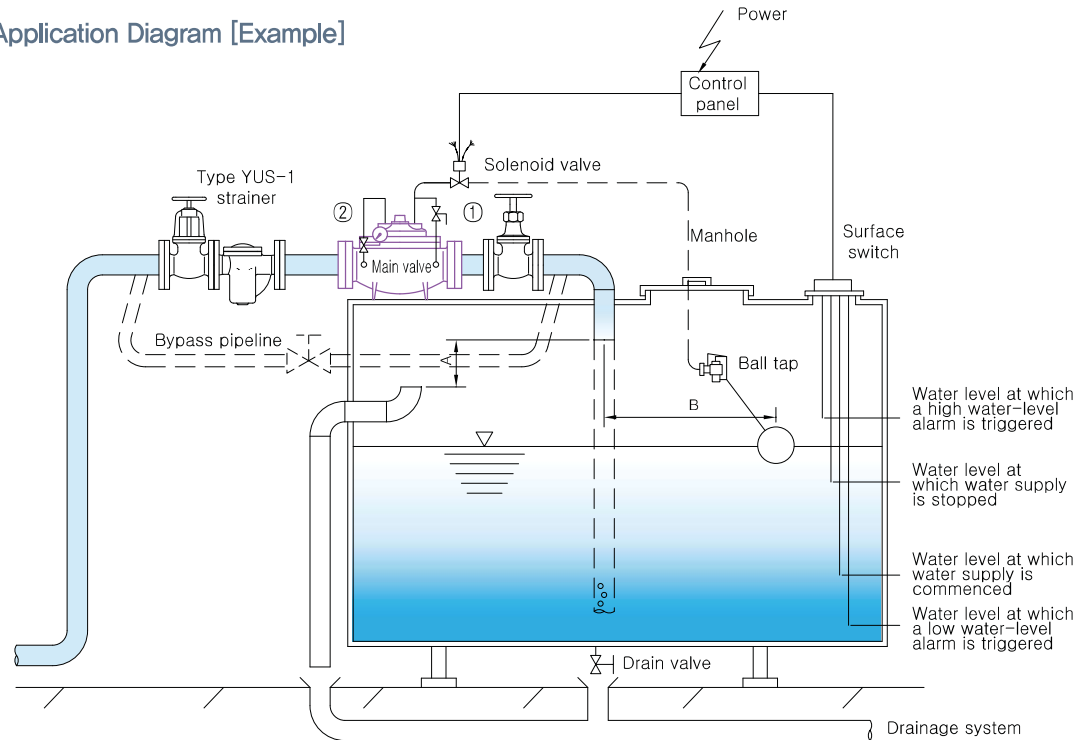


#### 5. Whether it can be automatically opened and closed...

Once the discharge valve is closed, pressure accumulates in the upper part of the diaphragm and the main valve closes. When the discharge valve is opened by adjusting it slightly, the force applied to the top and the bottom of the diaphragm reach a balance, and the opening of the main valve is automatically controlled.

## Type YAWEL-1 Level Control Valve

### Application Diagram [Example]



※ Be sure to pipe the secondary side piping of the water level control valve horizontally and downward.  
If the water purifier valve is installed on the floor and the secondary piping becomes the upward piping, damage to the valve or water hammer may lead to the primary piping rupture.

### Cautions for pipeline installation

1. A bypass pipeline must be installed.
2. A strainer should be installed on the inlet side of the main valve to prevent the breakdown of the valve resulting from foreign substances.
3. The distance of "A" should be at least 1.5 times (minimum 50 mm) the pipe diameter.
4. In case of installation of a ball tap, make the distance of "B" as long as possible (minimum 1 m) to prevent damage to the ball tap resulting from irregular water waves. The ball tap should be installed in close proximity to a manhole for easy repair and inspections.
5. The overflow pipeline should be connected to an underground drainage system. (Prevents damage caused by overflow.)
6. In terms of the end connection between the valve's body and ball tap, a union should be used to ensure easy disassembly and inspection.
7. The ball tap should be installed at a level lower than the overflow pipeline and higher than the water level at which the high water-level alarm is triggered.
8. Consult with Samyang if there is a need to install the level control valve below the water level within the tank.

### Cautions for operation

1. Between installation and operation, completely remove foreign substances within the pipeline by blowing them out through the bypass pipeline.
2. Since the needle valve ② was attached to adjust the opening and closing speed of the main valve, use it to adjust the opening and closing speed when there is a water hammer or pipeline vibration during operation.
3. If the main valve is not operating due to a power failure or breakdown of the ball tap, open and use the ball valve ① and consult Samyang technicians for further instructions. (The ball valve ① should be closed unless there is an emergency situation.)

Diagram 2. Solenoid valve connecting circuit

