

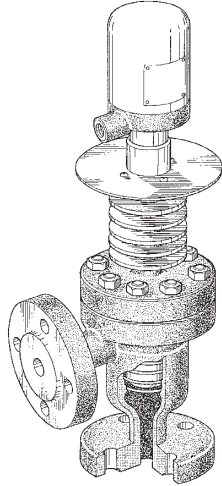
# Level switch

Level switch is used for transmitting the liquid level.

Model SLG



Model SLDI



Model SLS



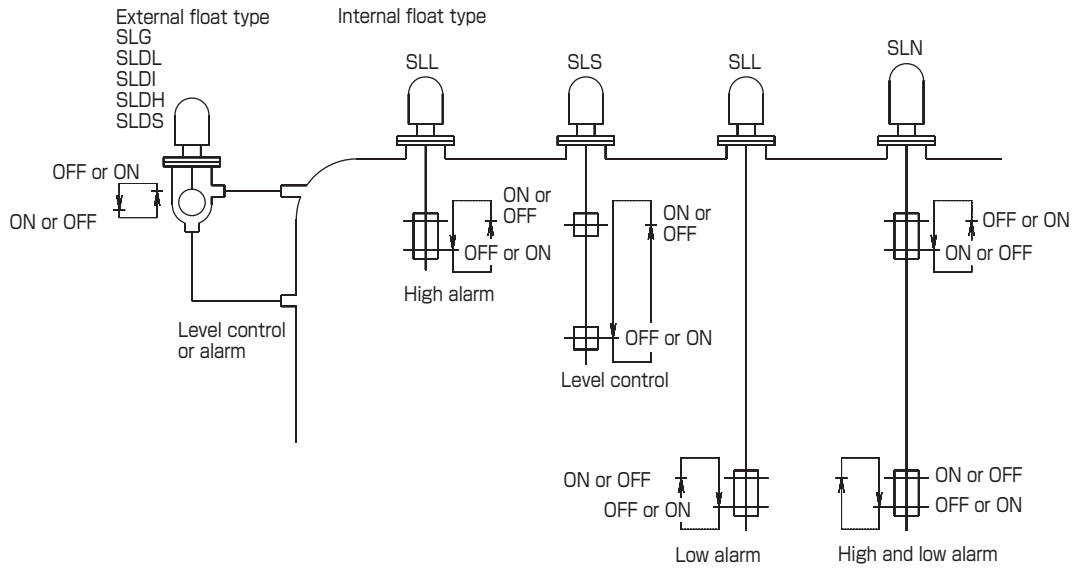
Model SLL



Model SLN



## Installation example



## Operating

Liquid level is detected by float.  
The switch mechanism transmit the pre-setted level.

Tolerance and differential (mm)

Model	Tolerance	Differential
SLS	Within ±10	(150 – 5550) ±20
SLL		55 ±20
SLN		10 <sup>+15</sup> / <sub>-5</sub>
SLG	Within ±5	10 <sup>+15</sup> / <sub>-5</sub>
SLDL	Within ±7	20 ±10
SLDI		
SLDH		
SLDS		

# Level switch

## Specifications of body and float

Float	Switch housing	Model <sup>(2)</sup> ( <sup>3</sup> )	Fluid			Size and connection	Material	
			Max. press. (MPa)	Max. temp. (°C) <sup>(5)</sup>	Min. specific gravity		Body	Float
Internal float	Splash proof type <sup>(1)</sup> Water tight type	SLS○	1.0	100	0.8	100A Flanged JIS10K	Cast iron Carbon steel	Stainless steel
		SLL○						
		SLN□						
External float	Splash proof type <sup>(1)</sup> Water tight type	SLG○	1.0	183	0.85	25A – Flanged JIS10K	Cast iron	Stainless steel
			2.0	215	0.85 <sup>(4)</sup>	25A – Flanged JIS20K or 25A – Socket weld	Cast steel	
		SLDL○	2.0	215	0.8		25A – Socket weld <sup>(6)</sup>	
		SLDI○	6.3	279	0.75	Carbon steel		
		SLDH○	10.0	310	0.7			
		SLDS○	14.3	337.3	0.618			

Note : (1) Complied with JIS C 0920

(2) Switch model is applied on ○ and □. 3 or 4 for ○ and 6 or 8 for □.

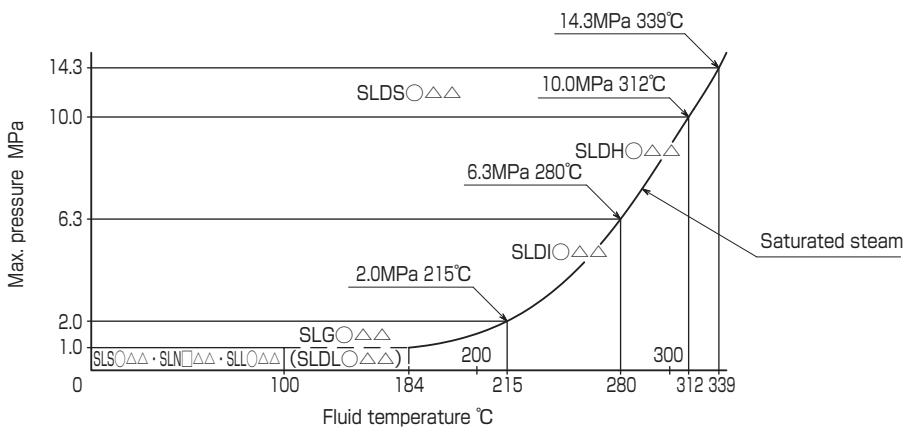
(3) "3" means one(1) micro-switch SPDT built-in, "4" means two(2) micro-switches built-in, "6" means two(2) stage micro-switches built-in, "8" means two (2) × two(2) stage micro-switch built-in.

(4) Above 0.8 is available.

(5) Max. temperature shows for fluid.

(6) Flange connection for SLDI and SLDH is available on request.

## Max.fluid pressure and temperature



Switch model is applied on ○ and □.  
3 or 4 for ○ and 6 or 8 for □.

△△ apply SA, MA, HA, MAR, HAR (for alternative current), SD or MD (for direct current) as following table which is depending on ambient temperature.

## Max. temperature of switch mechanism

Following table shows for splash proof and water tight switch housing.

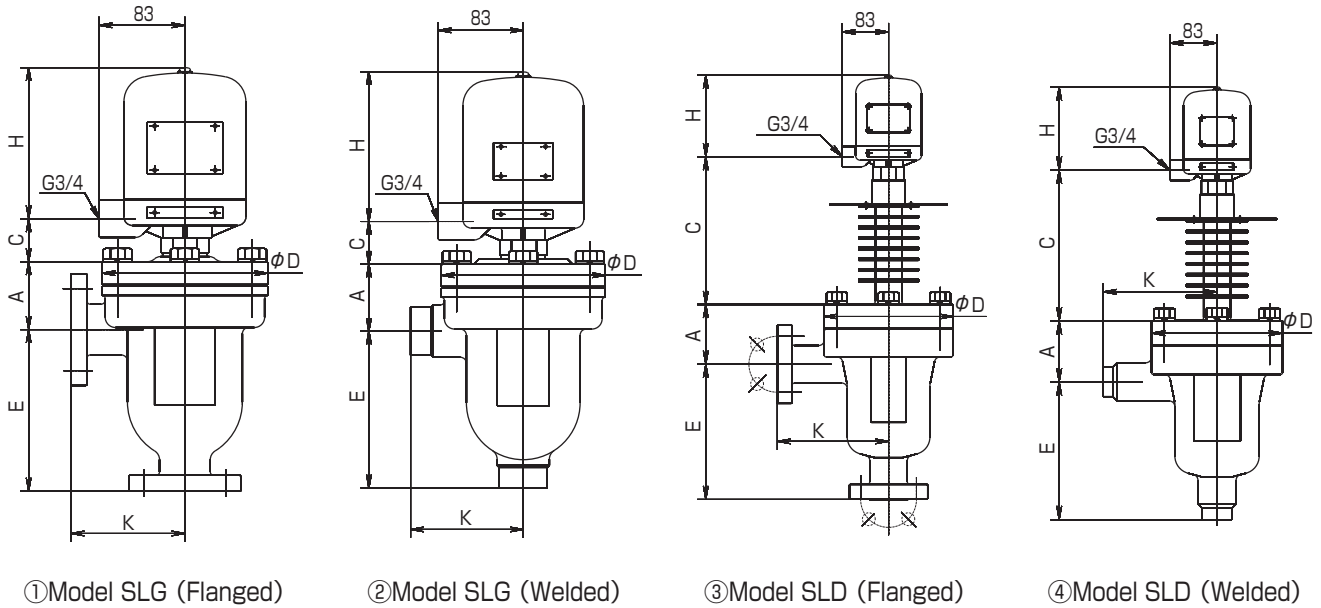
Ambient temperature °C	100	150	215	280	312	339
60	SLG○MA SLDL○MA SLL○MA SLS○MA SLN□MA	SLG○HA SLDL○HA	SLG○HAR SLDL○HAR	SLDI○HA	SLDH○HA	SLDS○HA
45	SLG○SA SLDL○SA SLL○SA SLS○SA SLN□SA	SLG○MA SLDL○MA	SLG○MAR SLDL○MAR	SLDI○MA	SLDH○MA	SLDS○MA
0						

Remarks 1. SA is for normal temperature, HA is for medium temperature and HA is for high temperature.

2. For direct current, SD substitute for SA and MD substitute for MA.

# Type Level switch

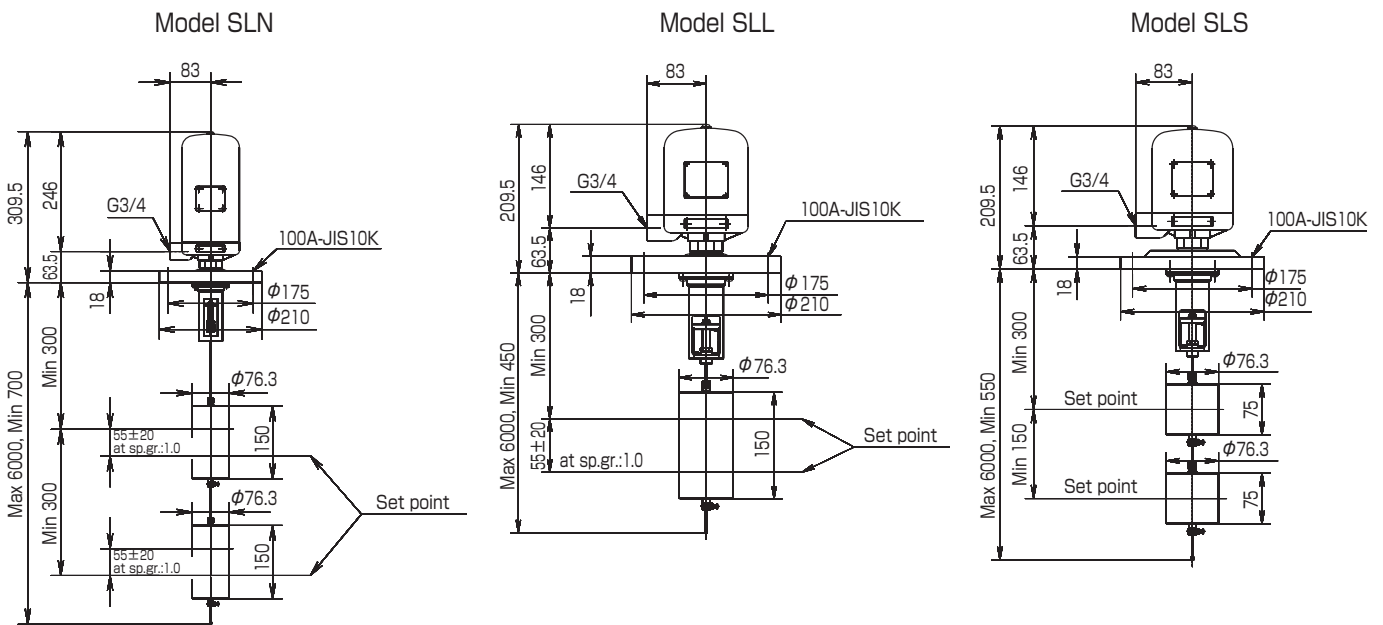
## ■ Dimensions for external float type



(mm)

No.	Model	Dimension				Body material	Size and connection
		E	A	K	D		
①	SLG○SA, MA	153	61.5	110	150	Cast iron	25A – JIS10K RF
	SLG○SA, MA, HA	155	65.5	128	160	Cast steel	25A – JIS20K RF
	SLDL○SA, MA, HA	180	65.5	135	170		25A – JIS20K RF
②	SLG○SA, MA, HA	153	65.5	110	160	Cast steel	Socket weld 25A – Sch40
	SLDL○SA, MA, HA	180	65.5	135	170		
③	SLDI○MA, HA	200	93	165	200	Cast steel	25A – JIS63K RF
	SLDH○MA, HA	242	108	200	230		25A ANSI1500 RF
④	SLDI○MA, HA	200	93	165	200	Cast steel	Socket weld 25A – Sch80
	SLDH○MA, HA	242	108	200	230		Socket weld 25A – Sch160
	SLDS○MA, HA	300	144	160	205	Carbon steel	Socket weld 25A – Sch160

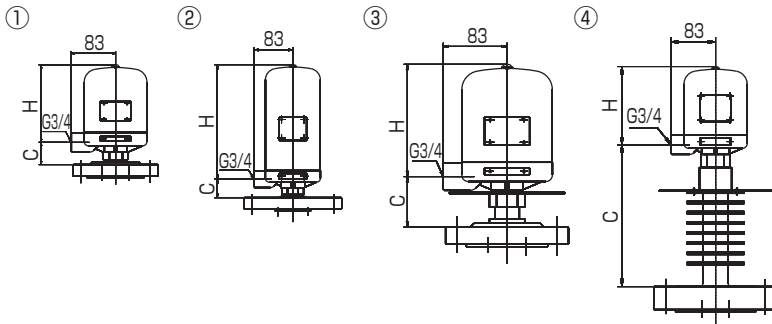
## ■ Dimensions for internal float type



# Level switch

## Dimensions for switch housing

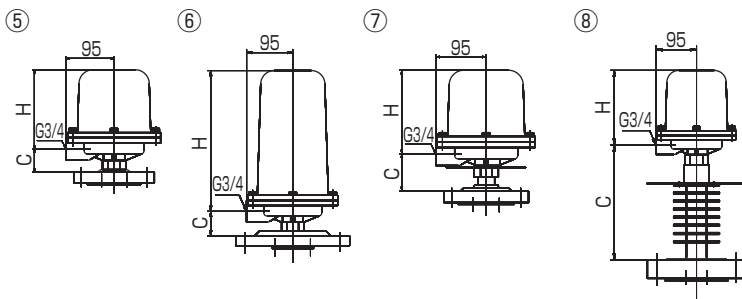
### 1. Splash proof type



● Splash proof type (For indoor)

Complied with JIS C 0920 : No indication of leakage at the test of vertical watering, for 180degrees area, 10minutes and at installed position.

### 2. Water tight type



● Water tight type (For outdoor)

Complied with JIS C 0920 : No indication of leakage at the test of watering from any direction, by the 12.5mm nozzle and 10m statcal head, 15minutes and at installed position.

Switch housing No.	Model (Splash proof type)	Dimension		Switch housing No.	Type (Water tight type)	Dimension	
		H	C			H	C
①	SLG○SA, MA, HA, 10K	146	45.5	⑤	SLG○SA, MA, HA, 10K	158	45.5
	SLG○SA, MA, HA, 20K		41.5		SLG○SA, MA, HA, 20K		41.5
	SLDLOSA, MA, HA		45.5		SLDLOSA, MA, HA		49.5
	SLLOSA, MA				SLLOSA, MA		
	SLSOSA, MA				SLSOSA, MA		
②	SLN□SA, MA	246	⑥	SLN□SA, MA	258		
③	SLG○MAR, HAR, 10K	146	69.5	⑦	SLG○MAR, HAR, 10K	158	73.5
	SLG○MAR, HAR, 20K		65.5		SLG○MAR, HAR, 20K		69.5
	SLDL○MAR, HAR		66.5		SLDL○MAR, HAR		
④	SLDI○MA, HA	146	264	⑧	SLDI○MA, HA	158	268
	SLDH○MA, HA	206			192	SLDH○MA, HA	
	SLDS○MA, HA				SLDS○MA, HA	196	

Remark : Switch model is applied on ○ and □. 3 or 4 for ○ and 6 or 8 for □.

## Electrical rating

Connection : SPDT

Model	Max. temperature (°C) (¹)	Rating	
		Resistance load	Induction load
SA	70°C	AC125V, 250V:15A DC125V:0.5A DC250V:0.25A	AC125V, 250V:10A DC125V:0.05A DC250V:0.03A
MA	120°C	AC125V, 250V:15A DC125V:0.5A DC250V:0.25A	AC125V, 250V:15A DC125V:0.05A DC250V:0.03A
HA	260°C	AC125V, 250V:1A DC30V:1A DC125V:0.5A	AC125V, 250V:1A DC30V:1A DC125V:0.4A
SD(²)	70°C	DC125V:10A DC250V:3A	DC125V:6A DC250V:1.5A
MD(²)	120°C	DC125V:10A DC250V:3A	DC125V:6A DC250V:1.5A

SA, MA and HA use micro-switch for AC (available for DC).

SD and MD are large rating for DC.

DC switch mechanism for HA is not produced by FUSHIMAN.

Note (¹) : Affect on switch and not fluid temperature.

(²) : AC is available.

# Level switch

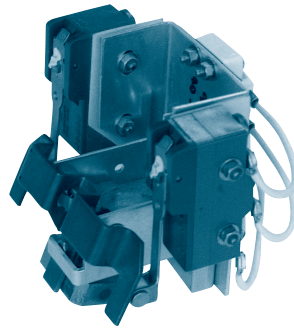
## Selection of level switch

- Internal float type (Installed on the top of tank)
  - SLS For level control Make start and stop the pump  
Large differential
  - SLL For level alarm Make alarm at high or low liquid level  
Differential : approx. 55mm
  - SLN For level alarm Make alarm at high and low liquid level  
Differential : approx. 55mm
- External float type (Installed on the side of tank)
 

<ul style="list-style-type: none"> <li>○SLG</li> <li>○SLDL</li> <li>○SLDI</li> <li>○SLDH</li> <li>○SLDS</li> </ul>	}	For level alarm	}	Make alarm at high or low liquid level
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## Selection of switch mechanism

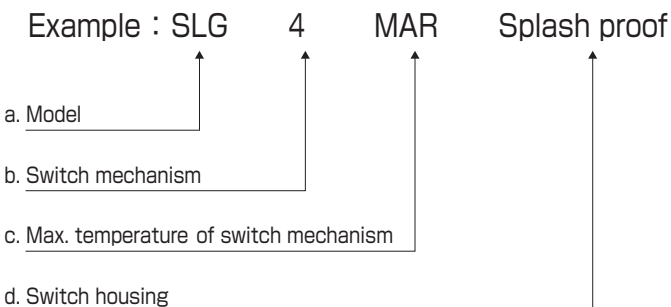
Switch model	Composition	Used for
③	Switch mechanism 1set with micro switch 1pc	SLG, SLDL, SLDI, SLDH, SLDS, SLS, SLL
④	Switch mechanism 1set with micro switch 2pcs	
⑥	Switch mechanism 2sets with micro switch 1pc	SLN
⑧	Switch mechanism 2sets with micro switch 2pcs	



## Selection depending on fluid temperature and ambient temperature

Please refer to "Max. fluid pressure and temperature" and "Electrical rating".

## Code selection



- Example Specification : Indoor, Install on the side of tank  
Liquid level, High alarm, Make pump stop  
2.0MPa, 214°C, Liquid specific gravity : 0.85,  
Ambient : room temperature
- Check external floating depending on installation, pressure, temperature and specific gravity.  
Select SLG from "Specifications of body and float" and "Max. fluid pressure and temperature".
  - Select 4 from "Selection of switch mechanism".
  - Select MAR from "Max. temperature of switch mechanism".
  - Select Splash proof depending on indoor installation.