



Water flow relay

Mainly, this model is used for controlling of coolant and various industrial water.

It is simply handling and works certainly. Fr-10 type is small and compact, which does not have miss-working by attachment posture and it can be attached optional point of plumbing.



Structure and principle of working

It is constituted by plunger of inside of valve and switch on upper part of plunger. The switch working structure of Fr-10 is On and Off lead switch by magnet, Fr-3A and 6A is snap working for relay contact by suction plate and magnet. The fluid flows through pipe, when flow rate becomes high, plunger of Fr-10 moves arrow direction, Fr-3A, Fr-6A are pushed to upper part. At that time, the spring of Fr-3A and 6A are opposed and balanced to this strength therefore, plunger is stopped at the set point.

The contact point is moved at over the set value (relay contact close) by lead switch or suction plate.

On the other hand, on low flow rate, plunger is moved to opposite side of arrow by spring strength (Fr-10), Fr-3A and 6A are pushed down, then plunger is stopped according to flow rate. When the flow rate becomes less than set value (relay contact open), the magnet moves lead switch or suction plate to open for contact point.

Model	Screw shape	Pipe diameter
Fr-3A	Internal thread	25A(1B)
Fr-6A1		32A(1 4/1B)
Fr-6A2		40A(1 1/2B)
Fr-6A3		50A(2B)

Flunge(M5 × 6) type can be supplied

Diameter less than 1B can be supplied

Model	Pipe diameter	Joint (option)
Fr-10	15A(1/2B)	A. outside diameter ϕ 12 copper pipe
		B. outside diameter ϕ 6.35 inside diameter copper pipe
		C. inside diameter ϕ 9 rubber tube
		D. inside diameter ϕ 8 vinyl tube
		E. inside diameter ϕ 15 rubber tube

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Specifications (Fr-3A, 6A 1.2.3)

1. Standard rating

Model	Standard rating		Tolerance range	Pressure loss at contact point close	Durable pressure	Pipe diameter	Screw shape		
	relay contact close	relay contact open							
3A	5.0	2.0	± 0.5	Below 10	0.5	25A (1B)	internal thread		
	10.0	7.0							
	15.0	10.0							
	20.0	15.0	± 1.0	Below 15					
	30.0	25.0							
	40.0	35.0							
	50.0	45.0	± 3.0	Below20					
	60.0	55.0							
	70.0	65.0							
	80.0	75.0	± 3.0						
	90.0	85.0							
100.0	95.0								
6A1	40.0	35.0	± 3.0	Below20	0.5	32A (1 1/4B)	internal thread		
	60.0	55.0							
	80.0	75.0							
	100.0	95.0							
	120.0	110.0	± 5.0	Below30					
	150.0	140.0							
6A2	180.0	170.0	± 3.0	Below20	0.5	40A (1 1/2B)	internal thread		
	70.0	65.0							
	100.0	95.0							
	130.0	120.0							
	140.0	130.0						± 5.0	Below30
	170.0	160.0							
6A3	200.0	190.0	± 3.0	Below15	0.5	50A (2B)	internal thread		
	80.0	75.0							
	100.0	95.0							
	120.0	110.0							
	150.0	140.0						± 5.0	Below20
	180.0	170.0							
	200.0	190.0							

It can be supplied relay contact close minimum 3L/min maximum 300L/min.

Durable pressure, opposite relay contact etc, out of standard rating request, please contact to Shinagawa Corporation

2. Relay contact capacity : Relay circuit AC 220V, 2A

3. Insulation resistance DC500V 10MΩ

4. Insulation durable voltage DC1500V 1minute

5. lead wire : 3 lines (0.75m/m2) red· blue · yellow) 30 cm

Attention for treating

1. Please choose a place where does not have repeating big vibration and impact and install vertically.
2. Please do not take off the protection cover for contact point

Attention for usage

1. Please pay attention for scale using industrial water.
2. Please pay attention for no working of plunger by rubbish and iron powder in pipe.
3. Please avoid using big vibration and impact.
4. Pipe, which has sudden opening and closing (Solenoid valve) brakes plunger and body by phenomenon of water hummer, air hummer.
5. Please pay attention for the water viscosity on using antifreeze solution for fluid.

Installation circumstance Durable temperature

-10 ~ 45 (at working) -30 ~ -60 (at no working) Durable humidity 0 ~ 95%RH (45)

Specifications (Fr-10)

1. Standard rating

Standard rating		Tolerance range	Pressure loss at contact	Durable pressure	Pipe diameter	Screw shape
relay contact close	relay contact open					
1.0	0.5	± 3.0	Below 10	0.5	15A (1/2B)	external thread
2.0	1.0	± 0.5	Below 15			
3.0	2.0					
4.0	3.0					
5.0	3.0	± 1.0	Below20			
10.0	7.0					

It can be supplied relay contact close minimum 3L/min maximum 300L/min.

Durable pressure, opposite relay contact etc, out of standard rating request, please contact to Shinagawa Corporation

2. Relay contact capacity : Relay circuit AC 100V, 0.5A Maximum switch capacity AC10W

3. Insulation resistance DC500V 10MΩ

4. Insulation durable voltage DC1500V 1minute

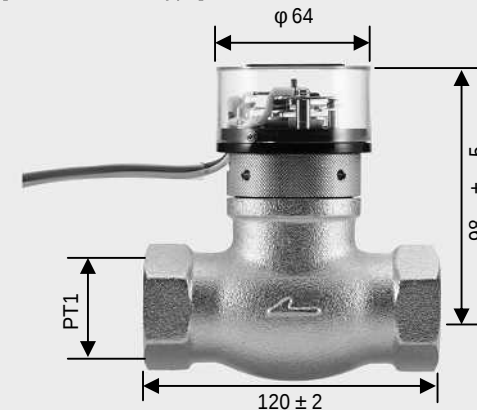
5. Option Nut, Joint, (A ~ E) Packing e.a 2

6. lead wire : parallel lines (0.75m/m2) red· blue · yellow) 30 cm

Attention for treating

1. When it is attached with a nut, please use a spanner for body. Please use spanner when it is taken off.
Conner part and circle part of body is connected by screw, please do not loose it
2. Please do not take off terminal stand (lead line drawer plate)

[Fr-3A,6A1·2·3 type]



[Fr-10 type]

