

NOHKEN FQ Float Type Level Sensor



NOHKEN FQ Float Type Level Sensor Instruction Manual

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NOHKEN FQ Float Type Level Sensor



Specifications

- **Product Type:** General Product
- **Operating Temperature:** Refer to the manual or specification sheet
- **Operating Pressure:** Refer to the manual or specification sheet
- **Switch Rating:** Refer to the manual or specification sheet
- **Warranty:** 1 year from the date of original factory shipment

Product Usage Instructions

Handling and Storage

Avoid strong shock and rough handling of the product. Damage may occur from dropping, falling, throwing, knocking, lugging, etc.

Operating Conditions

Ensure to follow the specified operating temperature, pressure, and switch rating to prevent malfunction, damage, fire, or injury. Refer to the manual or specification sheet for details.

Pre-Usage Checks

Conduct an operation test before actual usage to ensure proper functioning. If a serious accident is anticipated due to a malfunction, consider installing an alternative product operating principle.

Read and understand this manual for safe usage.

- This manual describes the product of standard specification. Read the other manual for the product of explosion-proof specification.
- This manual describes the handling, inspection, and adjustment of the product which model is mentioned on the cover page. Read and understand this manual before handling it.
- Follow the additional document and/or direction, submitted by NOHKEN INC. and our distributor or agent, even if the terms are mentioned in this manual.
- Save this manual in the proper place so it is available to refer to immediately.

- The specification of the product mentioned in this manual may not be satisfied by the condition of the environment and usage. Check and consider carefully before using.
- Contact to sales office at NOHKEN INC. for any questions or comments about this manual and product.

The following are the descriptions of the terms in this manual.

WARNING: Indicates a potentially hazardous situation that, if not paid attention to, could result in death, serious injury, or serious disaster.

CAUTION: Indicates a hazardous situation which, if not paid attention to, may result in minor or moderate injury or damage to the device.

CAUTION: Indicates prohibited matter. The explanation with this mark shall be followed.

WARNING: Indicates instructed matter. The explanation with this mark shall be followed.

WARNING

- This product is not explosion-proof construction. Do not install this product in a place where the flammable gas or vapor occurs.
- If installed, the flammable gas or vapor may be ignited, and serious disaster may occur. Use the product of explosion-proof construction in this case.
- Do not modify or disassemble the product. Otherwise, the product and connected device may malfunction, be damaged, fired, or minor injuries, and electric shock may occur. (Follow the additional document and/or direction, submitted by NOHKEN INC. and our distributor or agent.)
- Turn off the power, before wiring and inspection. Otherwise, electric leakage, a fire caused by short circuits, and electric shock may occur.
- Ensure the wire is properly connected. The product and connected device may malfunction, damage, fire, or minor injury and electric shock may occur due to improper wiring.
- Turn off the power immediately, if the smoke, strange smell, and sound occur.
- Do not use it until the problem is solved.

CAUTION

- Avoid strong shock and rough handling of this product. The product may be damaged by strong shocks such as dropping, falling, throwing, knocking, lugging, etc.
- Follow the specifications of operating temperature, operating pressure, switch rating, etc. Otherwise, the product and connected device may malfunction, be damaged, fired, or minor injury and electric shock may occur. Check the manual or specification sheet.
- Operation test shall be done before practical usage. If a serious accident is expected to occur due to a malfunction of the product, the other operating principle of the product shall be installed in parallel.

CAUTION: Check and deeply consider the chemical compatibility of the material of the product in advance. The part especially the float, which is very thin, may be malfunctioned by minor corrosion.

Check and deeply consider the chemical compatibility of the material of the product in advance.

Hold the stem very close to the mounting point, when carrying, installing, and removing. If the terminal box, it may be taken off from the flange or plug, and the product may be damaged by dropping.

The product is 50cm or longer

- The product shall be kept horizontally. The product and other goods be damaged, and minor injury may occur by falling.
- Earth terminal shall be grounded to JIS Class D ground (earth resistance less than 100Ω). If not grounded, electric shock may occur by any accident.
- Provide an arrester or surge absorber to avoid electrical impacts such as lightning and static electricity. If not provided, the product and connected device may malfunction, be damaged, and be fired, or minor injury and electric shock may occur.
- In the case of connecting inductive or lamp load to the product. Provide a protective circuit to the load to avoid overvoltage and current. If not provided, the contact may be damaged.

INTRODUCTION

- **A)** This manual specifies the specification of the general product. If you order a special product, some details of the specification may be different from the manual.
- **B)** We are glad to suggest and advise for Model selection and chemical resistance of the material, but a final decision has to be made by the customer.
- **C)** This manual has been prepared with close attention. Ask the sales office at NOHKEN INC. for any questions or comments about the contents of this manual.
- **D)** For replacement parts
The quality of the product has frequently improved, so the same spare part may not be supplied. In this case, a replacement part or product may be supplied. Ask the sales office at NOHKEN INC. for details.
- **E)** The contents of this manual are subject to change at any time without notice due to the improvement of the product.

WARRANTY

WARRANTY & DISCLAIMER

- **A)** NOHKEN INC. warrants this product against defects in design, material, and workmanship for 1(one) year from the date of original factory shipment.
- **B)** The warranty only covers the damage to products. The secondary and third kind disasters are not covered by NOHKEN INC.
- **C)** NOHKEN INC. shall not be liable for the following.
 - **C-a)** Do not follow the description and directions in this manual.
 - **C-b)** Damage due to improper installation, wiring, usage, maintenance, inspection, storing, etc.
 - **C-c)** Repair and modification are done by the person who is not an employee of NOHKEN INC. and our distributor or agent.
 - **C-d)** Improper parts are used and replaced.
 - **C-e)** The damage occurred by the device or machine except for our products.
 - **C-f)** Improper usage. (See "Proper of usage" in chapter 1 of this manual)
 - **C-g)** Force Majeure including, but not limited to, fire, earthquake, tsunami, lightning, riots, revolution, war, radioactive pollution, acts of God, acts of government or governmental authorities, compliance with law,

regulation, and order.

THE TERMS OF WARRANTY AND DISCLAIMER SHALL IN NO WAY LIMIT YOUR REGAL LIGHT.

PURPOSE OF USE

The Quick Float Model FQ series designed for level detection of sewage, wastewater, and high viscosity of liquid as slurry, used a reed switch.

SPECIFICATION

odel

2. 1 Model

FQ□□□-□

66 : Small type (Refer to Fig. 1)

88 : Basic type (Refer to Fig. 2)

88T : Heat proof type

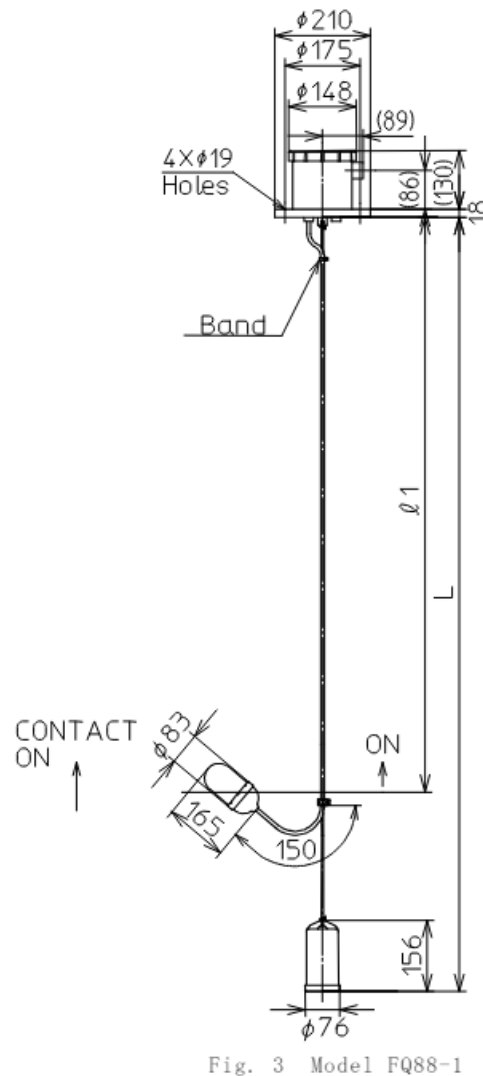
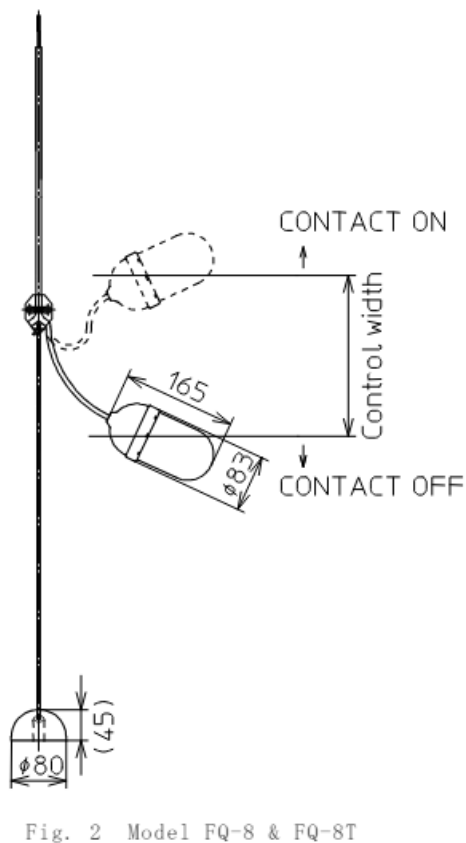
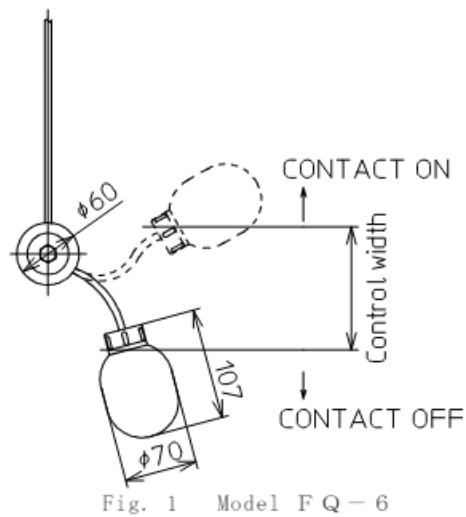
1 to 6 : Select number of float to match specified

NOTE : In case of a part of sensor, model are FQ-6, FQ-8 or FQ-8T.

Standard specification

Model		F Q 6 6	F Q 8 8	F Q 8 8 T
Contact rating	Max. contact rating	50 VA , 50 W		
	Max. working current	0.5 A AC, 0.5 A DC		
	Max. working voltage	300 V AC, 300 V DC		
Mechanical characteristics	Float withstand pressure	200 kPa Max.		
	Allowable impact	100 m/s ²	500 m/s ²	
	Buoyancy of float	Approx. 1.3 N	Approx. 1.2 N	
Operation characteristics	Control width ※1	0.27 to 1 m	0.33 to 4 m	
	Specific gravity	0.7 or more	0.9 or more	
	Life expectancy	2 × 10 ⁵ times or more. (When the cable is bent 180 degrees.)		
Working temperature		-10 to +50 ℃		-10 to +70 ℃
Construction		IP 45		
Materials	Terminal box	ABS		
	Flange	PVC		
	Float	PP (Float cap : ABS)		ABS
	Cable	PVC sheath		
	Anchor weight	PVC (Built-in Steel Structure)		
	Rope	PE		PP(Core: Glassfiber)
	Rope clip	PVC		
Others	Installation	Flange connection (JIS 10K 100A or equivalent, proviso 4 holes)		
	Cable inlet	G 3/4 or equivalent		

Outline drawing



OPERATING PRINCIPLE

- In case of a rising level, the float rises according to the liquid level as shown Fig. 4(1), and turns over quickly on the upper limit level of control width. Movable weight travels from top to bottom inside the float and touches with a permanent magnet. Magnetized movable weight makes the reed switch actuate.
- In case of a falling level also, the float turns over quickly on the lower limit of control width. Movable weight travels from bottom to top inside the float and separates from the permanent magnet. The reed switch loses its magnetic field and stops actuation. The level switch is not affected chattering of liquid such as movable weight travels on only both limits of control.
- Having a function of holding as the explanation described above allows feed water control or waste water control.

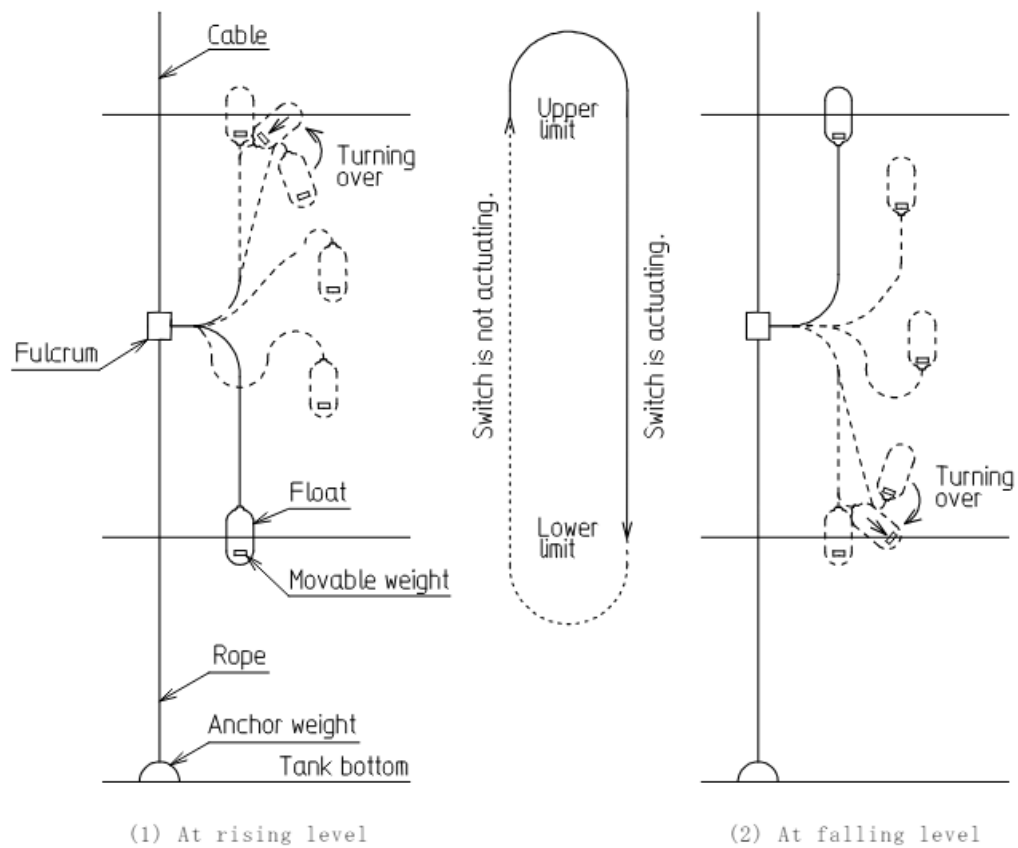


Fig. 4 Operating principle drawing

COMPONENT NAMES

EXTERNAL PARTS

1. Terminal box
2. Flange
3. Eyebolt
4. Fulcrum
5. Cable
6. Float
7. Rope
8. Anchor weight
9. Cable inlet
10. Cable clip

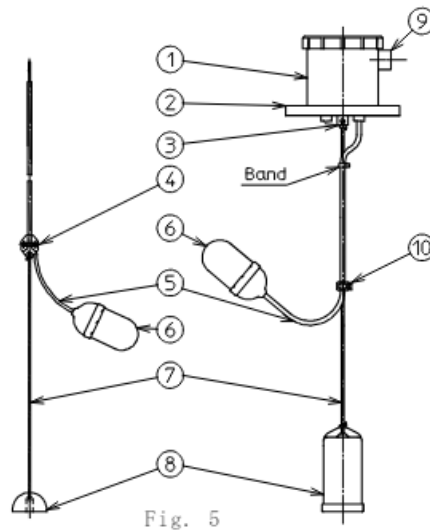


Fig. 5

Terminal Box Internal Parts

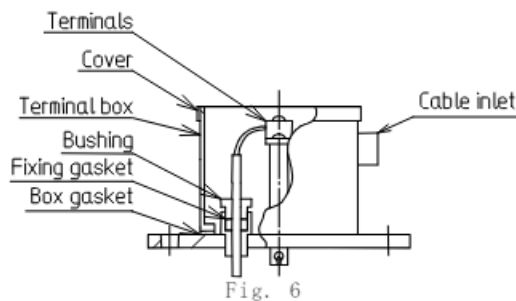


Fig. 6

INSTALLATION

Unpacking

The Quick Float Model FQ series has been thoroughly inspected and carefully packed at the factory to prevent damage during shipment.

When unpacking, exercise due care not to subject the instrument to mechanical shock. After unpacking, visually check the instrument exterior for damage.

Note: The following points ;

1. Do not bend and pull the cable extremely during installation.
2. Make sure that the Quick Float provides equipment according to ordering specifications.
3. During installation, care must be taken not to damage cables with sharp objects.

Assembly

- Usually, the Quick Float is set specified measuring length before shipment.
- When not specified, each parts are packed severally.

In that case, proceed to assemble as follows.

1. Fasten one end to the eyebolt on the flange and the anchor weight to another end of the rope according to a

2. Put in the cable into the flange from the wetted side, and then put the fixing gasket and the bushing into the cable. (Refer to Fig. 7)



- **(a)** In the case of



The diagram shows a side view of the pulley and band assembly. A horizontal line represents the center of the band. A vertical line represents the center of the pulley. The distance between these two lines is labeled 'Specified measuring level'. A dimension line indicates a distance of '100 mm' from the center of the pulley to the center of the band. A dimension line indicates a distance of 'L' from the center of the pulley to the center of the band. A dimension line indicates a distance of '150 mm' from the center of the pulley to the center of the band. The text 'L : 70mm (FQ6) 150mm (FQ8)' is shown below the diagram.

- **(c)** In case of upper and lower limit control.

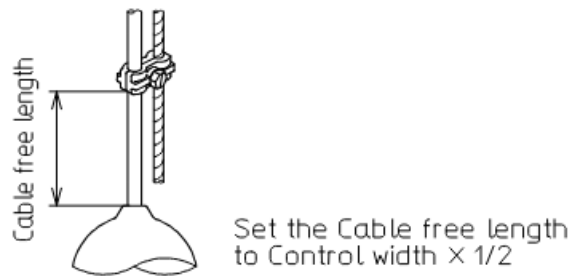


Fig. 11

Note: The following points ;

1. Cable-free length means the length from the bottom of the float to the clip set point.
2. The setting values of control width are 0.27 to 1 m at Model FQ66, and 0.33 to 4 m at Model FQ88 and FQ88T.

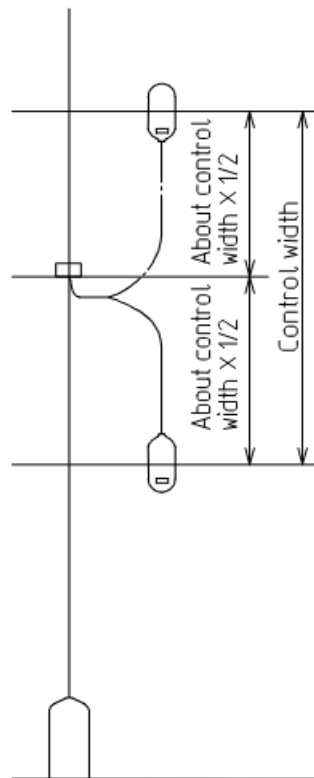


Fig. 12

3. Tighten the bushing so as not to lose and not to move the cable.
4. Bundle the cable and the rope with the band.
5. Cut the useless part of the cable and install compression terminals fitted to M3.5 screws to the end of lead wires.
6. Connect each lead wire to the terminals. Ex. In the case of the 3-point version, wiring is only ℓ_1 , ℓ_2 , and ℓ_3 .

Installation Location

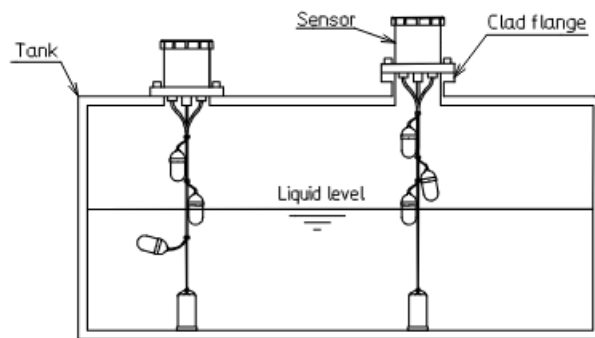
This sensor should be installed in an area where the following conditions :

1. Sensor should be installed in an area where the ambient temperature is -10°C to 50°C .
2. Low relative humidity and no exposure to moisture.
3. No corrosive gases (Such as NH_3 , SO_2 , Cl_2 , and so on).
4. No excessive vibration.

5. Provide ample space for maintenance/inspection.

Installation Method

This sensor is provided with JIS 10K 100A or another specified flange. Normally, it is installed on the mating flange which is compatible on the top of the tank.



Note: The following points ;

1. This unit should be located away from strong magnetic fields such as those produced by motors or solenoid valves.
2. Please use caution during installation. Hitting the Quick Float or pulling the cable may break the reed switches.
3. The size of the cable inlet is G3/4".

There are two ways to connect the sensor cable. One is fixing the cable with a cable gland. The other is connecting a conduit to the terminal box. In either case, adequate sealing should be provided to prevent water or dust ingress into the terminal box through the sensor cable.

Secure the cable using sealing material for the conduit connection, or a proper tool when the gland is used, to protect the terminal box inside from dust or water.

When water or moisture comes into the terminal box from the conduit, use putty to fill the inside of the conduit.

WIRING

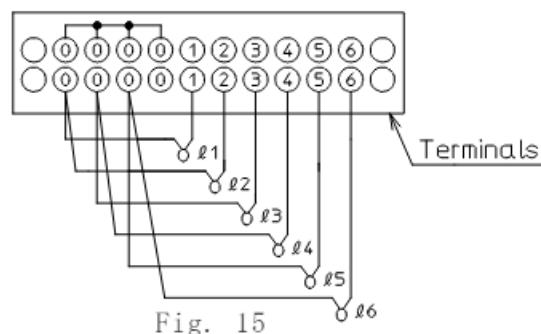


Fig. 15 denotes the wiring of the internal terminal box.

Note: The following points ;

1. Install compression terminals fitted to the M3.5 screw to the inner conductor.
2. The cable inlet must be properly fitted to preserve the protection category IP45 and to protect the sensor from rain, splashing water, and so on.

3. Reed switches are not designed for the direct starting of pumps, valves, and alarms. They are susceptible to damage from electric surges.

DO NOT EXCEED THE CONTACT RATINGS.

Contacts should be wired to relays or similar devices.

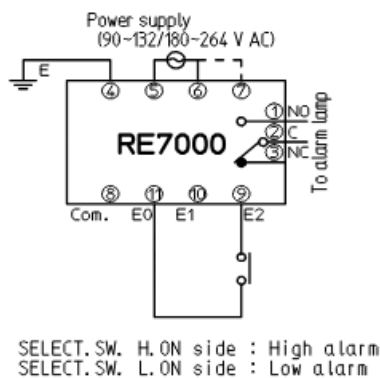
4. We recommend the use of our relay unit Model RE7000, RE7500.

The latching (holding relay) feature allows pumps, valves, and other devices to be turned on at one level and off at another. It also contributes to safety since it allows lower voltage and smaller currents to be used with the Quick Float. For the relay unit Model RE7000, and RE7500 refer to the Instruction Manual.

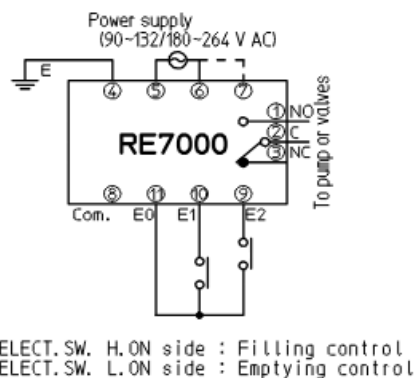
Model RE relay unit

- We recommend the use of our relay unit model RE. It is single level (alarm) and/or dual-level (empty/fill control) relay.
- The latching (holding relay) feature allows pumps, valves, and other devices to be turned on at one level and off at another. It also contributes to safety since it allows lower voltage and smaller currents to be used with the sensor.

· SINGLE LEVEL ALARM



· DUAL LEVEL EMPTY/FILL CONTROL



· SINGLE LEVEL ALARM

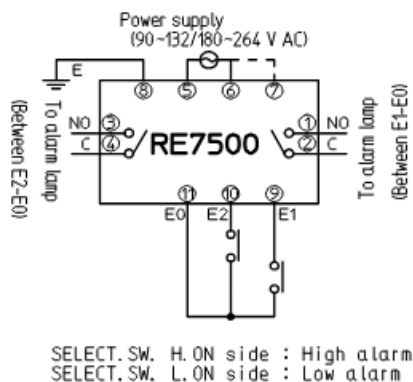


Fig. 16

For the relay unit Model RE, refer to the Instruction Manual.

Note: The following points:

1. Do not connect the plural relay unit to the identical switch. Otherwise, the relay unit may malfunction.

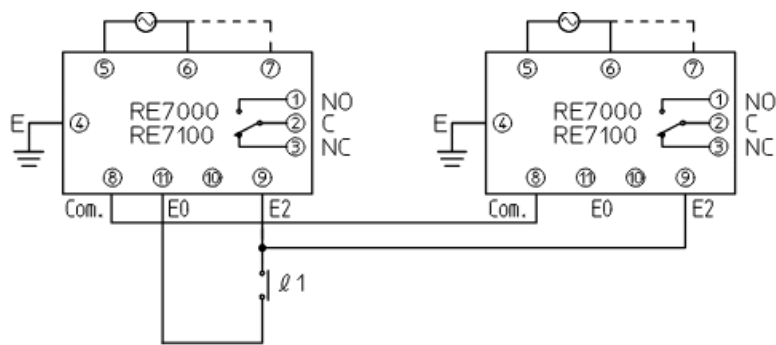


Fig. 17

2. Power supply must be connected in phase.

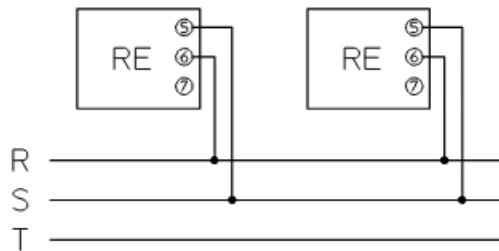


Fig. 18

3. To avoid malfunction, the wiring distance should be used within specifications. If the wiring distance exceeds specifications, the relay unit may malfunction by stray capacitance between cables or noise.

TECHNICAL NOTES

1. If the sensor is installed in oily wastewater or high concentrations of acidic or alkaline wastewater, please periodically check the sensor does not deteriorate.
2. This sensor should be located away from excessive waves such as inlet and outlet, or strong magnetic fields such as those produced by motors or solenoid valves.
3. Tighten terminals so as not to cause trouble with miswiring.
4. Keep inside terminal box free from liquid, dust, metallic matter, and so on
5. Do not throw the sensor, and do not drop that during installation.
6. Do not damage or splice the cable.

MAINTENANCE/ INSPECTION

The following annual servicing tasks should be carried out on the sensor.

1. Visually check the sensor exterior for damage.
2. If sediment or other foreign matter is stained on wetted parts of the sensor, keep wetted parts of the sensor clean.
3. Connect the ohmmeter or electronic buzzer to terminals, and check the sensor actuation corresponding to float operation.

Re-install and re-wiring the sensor after maintenance/inspection by "5.4 Installation method" and "6. WIRING".

TROUBLESHOOTING

WARNING: Use the following chart to troubleshoot the malfunctioning sensor. If your remedies are unsuccessful, ask Nohken for repair and replacement.

Problems	Possible causes	Remedies
Liquids exceeds the actuation level, switch does not activate.	Miswiring.	Wire correctly.
	Sensor is not fixed on the rope.	Fix the rope clip.
	Float is damage.	Replace the sensor. №1
	Reed switch is damage.	Replace the sensor. №2
	Float does not move owing to cable hardening.	Replace the sensor. №1
	Setting for improper length of the measuring sensor.	Set the specified measuring length
	Affected by deposit.	Clean the sensor.
Liquids does not exceed the actuation level, switch activate.	Miswiring.	Wire correctly.
	Float does not move owing to cable hardening.	Replace the sensor. №1
	Reed switch is damage.	Replace the sensor.
	Setting for improper length of the measuring sensor.	Set the specified measuring length
Switch chatter.	Miswiring between sensor and relay.	Reconnect wiring correctly.

1. There are some liquids that are not compatible with PVC or ABS.

In assessing corrosion, key factors are concentration, liquid temperature, and the amount of time the sensor is immersed. Please check them.

2. The Reed switch was damaged over the current by miswiring, re-wiring correctly.

If the above remedies are unsuccessful, ask NOHKEN INC. to repair and replace them.

CONTACT

- **HEAD OFFICE:** 15-29, Hiroshiba-cho, Suita-city, Osaka 564-0052, Japan.
 - **TEL:** 06-6386-8141
 - **FAX:**06-6386-8140
- **TOKYO BRANCH OFFICE:** 15-29, Hiroshiba-cho, Suita-city, Osaka 564-0052, Japan.
 - **TEL:** 06-6386-8141
 - **FAX:**06-6386-8140
- **NAGOYA OFFICE:** 3-10-17, Uchiyama, Chikusa-ku, Nagoya-city, Aichi 464-0075, Japan.
 - **TEL:** 052-731-5751
 - **FAX:**052-731-5780
- **KYUSHU OFFICE:** 14-1, 2-chome, Asano, Kokurakita-ku, Kitakyushu-city, Fukuoka 802-0001, Japan.
 - **TEL:** 093-521-9830
 - **FAX:**093-521-9834

FAQ

- **Q: What is the warranty period for the product?**
 - A: The product is warranted against defects for 1 year from the original factory shipment date by

NOHKEN INC.


- **Q: Can I use this product in extreme environmental conditions?**

- A: The manual advises checking carefully before using the product in conditions that may not meet the specified environment and usage requirements.

- **Q: How should I proceed if I need replacement parts?**

- A: Replacement parts may vary due to product improvements. Contact NOHKEN INC. for details on replacement parts or products.

Documents / Resources

	<p>NOHKEN FQ Float Type Level Sensor [pdf] Instruction Manual</p> <p>FQ, FQ Float Type Level Sensor, Float Type Level Sensor, Type Level Sensor, Level Sensor, Sensor</p>
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References

- [User Manual](#)

[Manuals+](#), [Privacy Policy](#)

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