

## D2SW

### Sealed Subminiature Basic Switch



- High quality, watertight switch meets IP67 (IEC 529) requirements (lead wire types) and IP50 (terminal types)
- Monoblock construction assures high sealing capability and is ideal for applications where water spray or dust is prevalent
- Perfect for automotive, vending, factory machines, etc. which require environmentally resistive capabilities
- Wide operating temperature range of -40°C to 85° C
- ROHS Compliant

| Part               | Rated Resistive Load - Switch | Actuator types     | Contact form | Operating Force | Seal type | Termination Style           | Service Life - Electrical (Min. @ Rated Loads) |
|--------------------|-------------------------------|--------------------|--------------|-----------------|-----------|-----------------------------|------------------------------------------------|
| <b>D2SW-01DS</b>   | 0.1A @ 125VAC/0.1A @ 30VDC    | Pin plunger        | SPDT         | 180g            | IP67      | Through-Hole PCB - Straight | 200,000 ops                                    |
| <b>D2SW-01HS</b>   | 0.1A @ 125VAC/0.1A @ 30VDC    | Pin plunger        | SPDT         | 180g            | IP67      | Solder                      | 200,000 ops                                    |
| <b>D2SW-01MS</b>   | 0.1A @ 125VAC/0.1A @ 30VDC    | Pin plunger        | SPDT         | 180g            | IP67      | Lead Wires - Bottom exit    | 200,000 ops                                    |
| <b>D2SW-01TS</b>   | 0.1A @ 125VAC/0.1A @ 30VDC    | Pin plunger        | SPDT         | 180g            | IP67      | 110 Quick Connect           | 200,000 ops                                    |
| <b>D2SW-01L1DS</b> | 0.1A @ 125VAC/0.1A @ 30VDC    | Hinge lever        | SPDT         | 60g             | IP67      | Through-Hole PCB - Straight | 200,000 ops                                    |
| <b>D2SW-01L1HS</b> | 0.1A @ 125VAC/0.1A @ 30VDC    | Hinge lever        | SPDT         | 60g             | IP67      | Solder                      | 200,000 ops                                    |
| <b>D2SW-01L1MS</b> | 0.1A @ 125VAC/0.1A @ 30VDC    | Hinge lever        | SPDT         | 60g             | IP67      | Lead Wires - Bottom exit    | 200,000 ops                                    |
| <b>D2SW-01L1TS</b> | 0.1A @ 125VAC/0.1A @ 30VDC    | Hinge lever        | SPDT         | 60g             | IP67      | 110 Quick Connect           | 200,000 ops                                    |
| <b>D2SW-01L2DS</b> | 0.1A @ 125VAC/0.1A @ 30VDC    | Hinge roller lever | SPDT         | 60g             | IP67      | Through-Hole PCB - Straight | 200,000 ops                                    |
| <b>D2SW-01L2HS</b> | 0.1A @ 125VAC/0.1A @ 30VDC    | Hinge roller       | SPDT         | 60g             | IP67      | Solder                      | 200,000 ops                                    |

|                    |                            |                        |      |     |      |                             |             |
|--------------------|----------------------------|------------------------|------|-----|------|-----------------------------|-------------|
|                    | @ 30VDC                    | lever                  |      |     |      |                             |             |
| <b>D2SW-01L2MS</b> | 0.1A @ 125VAC/0.1A @ 30VDC | Hinge roller lever     | SPDT | 60g | IP67 | Lead Wires - Bottom exit    | 200,000 ops |
| <b>D2SW-01L2TS</b> | 0.1A @ 125VAC/0.1A @ 30VDC | Hinge roller lever     | SPDT | 60g | IP67 | 110 Quick Connect           | 200,000 ops |
| <b>D2SW-01L3DS</b> | 0.1A @ 125VAC/0.1A @ 30VDC | Simulated roller lever | SPDT | 60g | IP67 | Through-Hole PCB - Straight | 200,000 ops |
| <b>D2SW-01L3HS</b> | 0.1A @ 125VAC/0.1A @ 30VDC | Simulated roller lever | SPDT | 60g | IP67 | Solder                      | 200,000 ops |
| <b>D2SW-01L3MS</b> | 0.1A @ 125VAC/0.1A @ 30VDC | Simulated roller lever | SPDT | 60g | IP67 | Lead Wires - Bottom exit    | 200,000 ops |
| <b>D2SW-01L3TS</b> | 0.1A @ 125VAC/0.1A @ 30VDC | Simulated roller lever | SPDT | 60g | IP67 | 110 Quick Connect           | 200,000 ops |

| Part              | Rated Resistive Load - Switch | Actuator types     | Contact form | Operating Force | Seal type | Termination Style           | Service Life - Electrical (Min. @ Rated Loads) |
|-------------------|-------------------------------|--------------------|--------------|-----------------|-----------|-----------------------------|------------------------------------------------|
| <b>D2SW-3DS</b>   | 3A @ 125VAC/3A @ 30VDC        | Pin plunger        | SPDT         | 180g            | IP67      | Through-Hole PCB - Straight | 200,000 ops                                    |
| <b>D2SW-3HS</b>   | 3A @ 125VAC/3A @ 30VDC        | Pin plunger        | SPDT         | 180g            | IP67      | Solder                      | 200,000 ops                                    |
| <b>D2SW-3MS</b>   | 3A @ 125VAC/3A @ 30VDC        | Pin plunger        | SPDT         | 180g            | IP67      | Lead Wires - Bottom exit    | 200,000 ops                                    |
| <b>D2SW-3TS</b>   | 3A @ 125VAC/3A @ 30VDC        | Pin plunger        | SPDT         | 180g            | IP67      | 110 Quick Connect           | 200,000 ops                                    |
| <b>D2SW-3L1DS</b> | 3A @ 125VAC/3A @ 30VDC        | Hinge lever        | SPDT         | 60g             | IP67      | Through-Hole PCB - Straight | 200,000 ops                                    |
| <b>D2SW-3L1HS</b> | 3A @ 125VAC/3A @ 30VDC        | Hinge lever        | SPDT         | 60g             | IP67      | Solder                      | 200,000 ops                                    |
| <b>D2SW-3L1MS</b> | 3A @ 125VAC/3A @ 30VDC        | Hinge lever        | SPDT         | 60g             | IP67      | Lead Wires - Bottom exit    | 200,000 ops                                    |
| <b>D2SW-3L1TS</b> | 3A @ 125VAC/3A @ 30VDC        | Hinge lever        | SPDT         | 60g             | IP67      | 110 Quick Connect           | 200,000 ops                                    |
| <b>D2SW-3L2DS</b> | 3A @ 125VAC/3A @ 30VDC        | Hinge roller lever | SPDT         | 60g             | IP67      | Through-Hole PCB - Straight | 200,000 ops                                    |
| <b>D2SW-3L2HS</b> | 3A @ 125VAC/3A @ 30VDC        | Hinge roller lever | SPDT         | 60g             | IP67      | Solder                      | 200,000 ops                                    |

|                   |                              |                              |      |     |      |                                    |                |
|-------------------|------------------------------|------------------------------|------|-----|------|------------------------------------|----------------|
| <b>D2SW-3L2MS</b> | 3A @<br>125VAC/3A<br>@ 30VDC | Hinge<br>roller<br>lever     | SPDT | 60g | IP67 | Lead Wires<br>- Bottom<br>exit     | 200,000<br>ops |
| <b>D2SW-3L2TS</b> | 3A @<br>125VAC/3A<br>@ 30VDC | Hinge<br>roller<br>lever     | SPDT | 60g | IP67 | 110 Quick<br>Connect               | 200,000<br>ops |
| <b>D2SW-3L3DS</b> | 3A @<br>125VAC/3A<br>@ 30VDC | Simulated<br>roller<br>lever | SPDT | 60g | IP67 | Through-<br>Hole PCB -<br>Straight | 200,000<br>ops |
| <b>D2SW-3L3HS</b> | 3A @<br>125VAC/3A<br>@ 30VDC | Simulated<br>roller<br>lever | SPDT | 60g | IP67 | Solder                             | 200,000<br>ops |
| <b>D2SW-3L3MS</b> | 3A @<br>125VAC/3A<br>@ 30VDC | Simulated<br>roller<br>lever | SPDT | 60g | IP67 | Lead Wires<br>- Bottom<br>exit     | 200,000<br>ops |
| <b>D2SW-3L3TS</b> | 3A @<br>125VAC/3A<br>@ 30VDC | Simulated<br>roller<br>lever | SPDT | 60g | IP67 | 110 Quick<br>Connect               | 200,000<br>ops |

# Snap Action Switch

## D2SW

### Watertight Miniature Snap Action Switch

- High-quality watertight miniature snap action switch — meets IP67 (IEC 529) requirements (for lead wire types) and IP50 (for terminal types)
- Monoblock construction assures high sealing capability and is ideal for dusty places or where water is sprayed
- Wide operating temperature range of -40°C to 85°C
- Perfect for the automobile, agriculture machinery, automatic vending machine, refrigerator, ice-manufacturing, bath equipment, hot-water supply, air conditioner, and factory machine industries, which require highly environment-resistant capabilities
- RoHS Compliant



### Ordering Information

| Actuator                                                                                                      | Terminal             | Model      |             |
|---------------------------------------------------------------------------------------------------------------|----------------------|------------|-------------|
|                                                                                                               |                      | Model 3 A  | Model 0.1 A |
| Pin plunger<br>            | Solder terminals     | D2SW-3HS   | D2SW-01HS   |
|                                                                                                               | Tab terminals (#110) | D2SW-3TS   | D2SW-01TS   |
|                                                                                                               | PCB terminals        | D2SW-3DS   | D2SW-01DS   |
|                                                                                                               | With lead wires      | D2SW-3MS   | D2SW-01MS   |
| Hinge lever<br>            | Solder terminals     | D2SW-3L1HS | D2SW-01L1HS |
|                                                                                                               | Tab terminals (#110) | D2SW-3L1TS | D2SW-01L1TS |
|                                                                                                               | PCB terminals        | D2SW-3L1DS | D2SW-01L1DS |
|                                                                                                               | With lead wires      | D2SW-3L1MS | D2SW-01L1MS |
| Simulated roller lever<br> | Solder terminals     | D2SW-3L3HS | D2SW-01L3HS |
|                                                                                                               | Tab terminals (#110) | D2SW-3L3TS | D2SW-01L3TS |
|                                                                                                               | PCB terminals        | D2SW-3L3DS | D2SW-01L3DS |
|                                                                                                               | With lead wires      | D2SW-3L3MS | D2SW-01L3MS |
| Hinge roller lever<br>     | Solder terminals     | D2SW-3L2HS | D2SW-01L2HS |
|                                                                                                               | Tab terminals (#110) | D2SW-3L2TS | D2SW-01L2TS |
|                                                                                                               | PCB terminals        | D2SW-3L2DS | D2SW-01L2DS |
|                                                                                                               | With lead wires      | D2SW-3L2MS | D2SW-01L2MS |

**Note: 1.** The standard lengths of the lead wires (AWG22) of models incorporating them are 30 cm (12 in).

# Specifications

## ■ Characteristics

|                              |                 | D2SW-3                                                                                                                                       | D2SW-01                                                            |
|------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| Operating speed (see note 2) |                 | 0.1 mm to 1 m/second (at pin plunger)                                                                                                        |                                                                    |
| Operating frequency          | Mechanical      | 300 operations/min.                                                                                                                          |                                                                    |
|                              | Electrical      | 60 operations/min.                                                                                                                           |                                                                    |
| Insulation resistance        |                 | 100 MΩ min. (at 500 VDC)                                                                                                                     |                                                                    |
| Contact resistance           |                 | 50 mΩ max. (initial value)                                                                                                                   |                                                                    |
| Dielectric strength          |                 | 1,000 VAC, 50/60 Hz for 1 min. between contacts of the same polarity                                                                         | 600 VAC, 50/60 Hz for 1 min. between contacts of the same polarity |
|                              |                 | 1,500 VAC, 50/60 Hz for 1 min. between current-carrying metal parts and ground, and between each terminal and noncurrent-carrying metal part |                                                                    |
| Inrush current               | NO              | 10 A                                                                                                                                         | —                                                                  |
|                              | NC              | 20 A                                                                                                                                         | —                                                                  |
| Vibration resistance         | Malfunction     | 10 to 55 Hz, 1.5 mm double amplitude                                                                                                         |                                                                    |
| Shock resistance             | Malfunction     | 300 m/s <sup>2</sup> (approx. 30 g)                                                                                                          |                                                                    |
| Life expectancy              | Mechanical      | 5,000,000 operations min.                                                                                                                    |                                                                    |
|                              | Electrical      | 200,000 operations min.<br>(3 A at 125 VAC)<br>100,000 operations min.<br>(2 A at 250 VAC)                                                   | 200,000 operations min.                                            |
| Ambient temperature          | Operating       | -40° to 85°C (with no icing)                                                                                                                 |                                                                    |
| Ambient humidity             | Operating       | 95% max.                                                                                                                                     |                                                                    |
| Enclosure rating             |                 | Reference to IP67 IEC 529 (lead wire type) and IP50 (terminal type)                                                                          |                                                                    |
| Weight                       | Terminal model  | 2 g                                                                                                                                          |                                                                    |
|                              | Lead wire model | 10 g                                                                                                                                         |                                                                    |

Note: 1. Data shown are of initial value.

2. The operating speed value shown is for pin plunger models. For hinge lever models, contact OMRON.

## ■ Operating Characteristics

| Characteristics | Part number           |                           |                           |                           |                       |
|-----------------|-----------------------|---------------------------|---------------------------|---------------------------|-----------------------|
|                 | Terminal model        |                           |                           |                           | Lead wire model       |
|                 | D2SW-3□S<br>D2SW-01□S | D2SW-3L1□S<br>D2SW-01L1□S | D2SW-3L3□S<br>D2SW-01L3□S | D2SW-3L2□S<br>D2SW-01L2□S | D2SW-3MS<br>D2SW-01MS |
| OF max.         | 180 g                 | 60 g                      | 60 g                      | 60 g                      | 180 g                 |
| RF min.         | 30 g                  | 6 g                       | 6 g                       | 6 g                       | 30 g                  |
| PT max.         | 0.6 mm                | —                         | —                         | —                         | 0.6 mm                |
| OT min.         | 0.5 mm                | 1.0 mm                    | 1.0 mm                    | 1.0 mm                    | 0.5 mm                |
| MD max.         | 0.1 mm                | 0.8 mm                    | 0.8 mm                    | 0.8 mm                    | 0.1 mm                |
| FP max.         | —                     | 13.6 mm                   | 15.5 mm                   | 19.3 mm                   | —                     |
| OP              | 8.4±0.3 mm            | 8.8±0.8 mm                | 10.7±0.8 mm               | 14.5±0.8 mm               | 8.4±0.3 mm            |

## ■ Ratings

### D2SW-3

| Rated Voltage | Non-inductive load (A) |    |           |       | Inductive load |       |            |       |
|---------------|------------------------|----|-----------|-------|----------------|-------|------------|-------|
|               | Resistive load         |    | Lamp load |       | Inductive load |       | Motor load |       |
|               | NC                     | NO | NC        | NO    | NC             | NO    | NC         | NO    |
| 125 VAC       | 3 A                    |    | 1 A       | 0.5 A | 1 A            | 0.5 A | 1 A        | 0.5 A |
| 250 VAC       | 2 A                    |    | 0.5 A     | 0.3 A | 0.5 A          | 0.3 A | 0.5 A      | 0.3 A |
| 30 VDC        | 3 A                    |    | 1 A       |       | 1 A            |       | 1 A        |       |

### D2SW-01

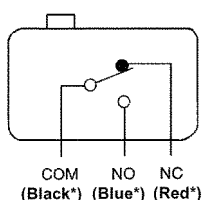
| Rated Voltage | Non-inductive load |    |           |    | Inductive load |    |            |    |
|---------------|--------------------|----|-----------|----|----------------|----|------------|----|
|               | Resistive load     |    | Lamp load |    | Inductive load |    | Motor load |    |
|               | NC                 | NO | NC        | NO | NC             | NO | NC         | NO |
| 125 VAC       | 0.1 A              |    | —         |    | —              |    | —          |    |
| 30 VDC        | 0.1 A              |    | —         |    | —              |    | —          |    |

- Note:**
1. The above current ratings are the values of the steady-state current.
  2. Inductive load has a power factor of 0.7 min. (AC) and a time constant of 7 ms max. (DC).
  3. Lamp load has an inrush current of 10 times the steady-state current.
  4. Motor load has an inrush current of 6 times the steady-state current.

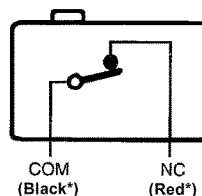
## ■ Contact Form

\* Indicates lead wire color

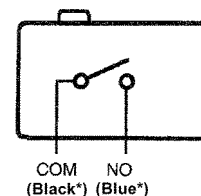
**SPTD**  
(standard)



**SPST-NC**  
(Consult Omron for ordering information)



**SPST-NO**  
(Consult Omron for ordering information)



## ■ Approvals

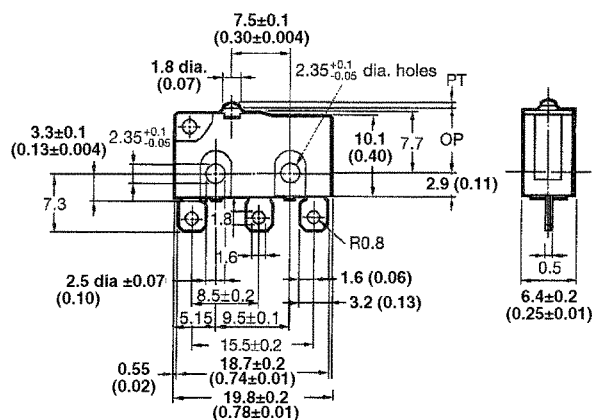
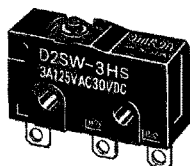
UL (File No. E41515), CSA (File No. LR21642-388), EN 61058-1

# Dimensions

Unit: mm (inch)

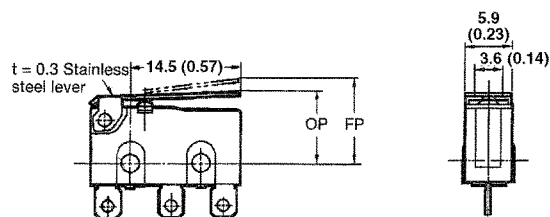
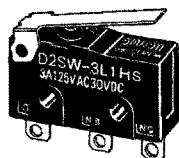
## Pin Plunger

D2SW-3□S  
D2SW-01□S



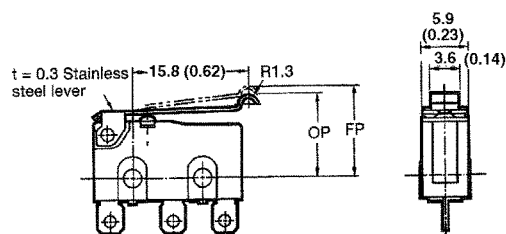
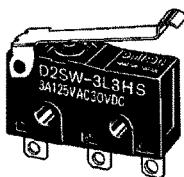
## Hinge Lever

D2SW-3L1□S  
D2SW-01L1□S



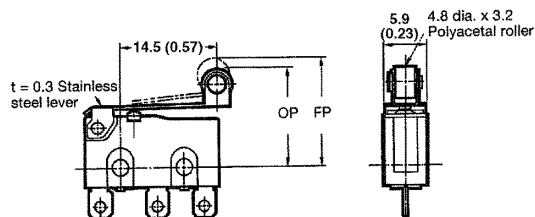
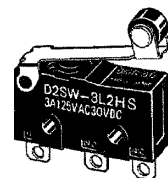
## Simulated Roller Lever

D2SW-3L3□S  
D2SW-01L3□S



## Hinge Roller Lever

D2SW-3L2□S  
D2SW-01L2□S

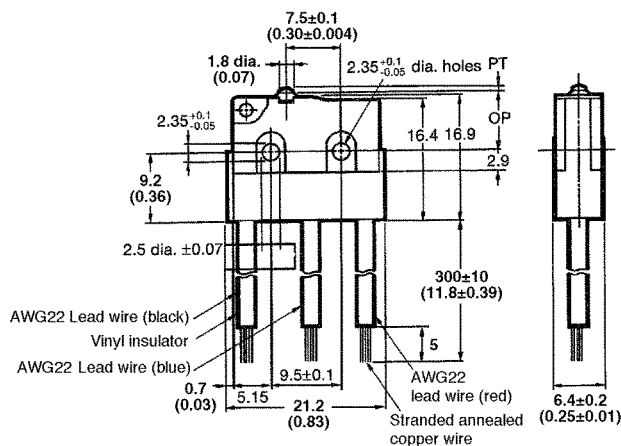
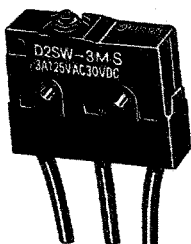


**Note:** 1. Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

2. The above illustrations and dimensions are for models with solder terminals. Refer to "Terminals" for models with tab (#110) and PCB terminals. The dimensions not described are the same as those of models with pin plungers.

## ■ Pin Plunger

### Lead Wires

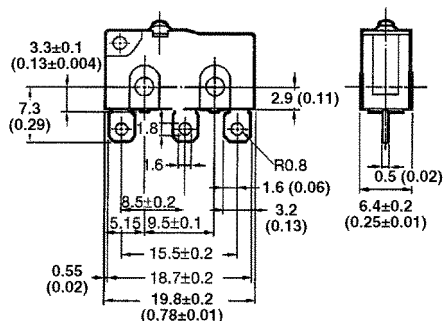


**Note:** 1. Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

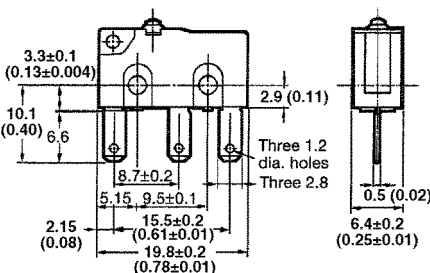
2. The above illustrations and dimensions are for models with pin plungers. The dimensions and operating characteristics of the actuators of models incorporating them are the same as those of the actuators of models with both actuators and terminals.

## ■ Terminals

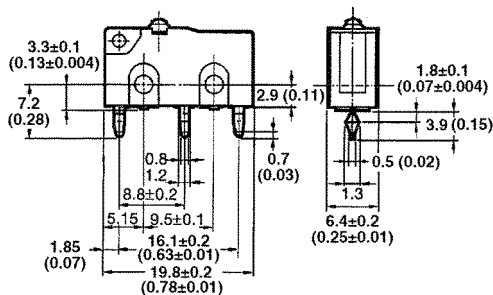
### Solder Terminals



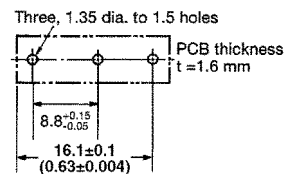
### Tab Terminals (#110)



### PCB Terminals



### PCB Mounting



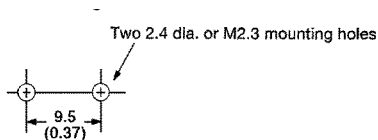
**Note:** Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

# Precautions

## ■ Mounting

Use two M2.3 mounting screws with spring washers to mount the switch. Tighten the screws to a torque of 0.23 to 0.26 N • m (2.3 to 2.7 kgf • cm)

### Mounting holes



When soldering a lead wire to a terminal of the D2SW, use a soldering iron with a maximum capacity of 60 W and do not take more than 5 seconds to solder the lead wire, otherwise the characteristics of the D2SW may be altered.

Make sure that there is no icing when using the D2SW at low ambient temperatures.

## ■ Operations

Make sure that the switching object is perfectly separated from the actuator when the switch is not operated and the actuator is pressed appropriately by the switching object when the switch is operated.

The switch should be set so that its stroke will be within the rated OT when the switch is operated.

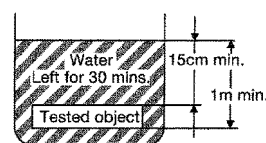
Install the switching object so that its moving direction is the same as that of the actuator.

Handle D2SW models with pin plungers with care so that the sealing rubber parts around the pin plungers will not be damaged.

## ■ Enclosure Ratings

The D2SW was tested under water and passed the following watertightness test, which however, does not mean that the D2SW can be used in the water. JIS C0929 (rules for testing the watertightness of electrical devices and materials), class 7 (watertightness test). Refer to the following illustration for the test method.

IEC Publication 529, class IP67. Refer to the following illustration for the test method.



**Note:** The object to be tested is left in the water for 30 minutes on condition that the distance between the surface of the water and the top of the object be 15 cm minimum, and the distance between the surface of the water and the bottom of the object be 1 m minimum.