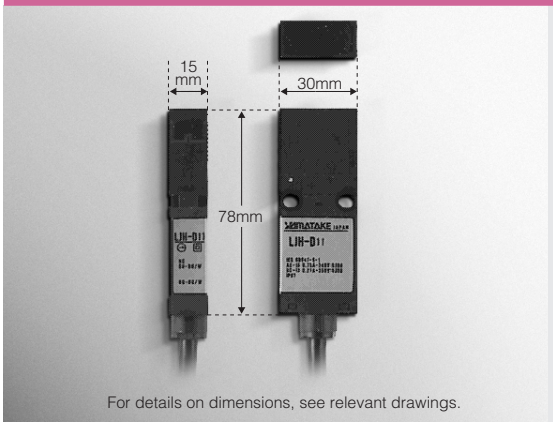
Compact Plastic Safety Interlock Switches UL CSA CE BG

LJH Series

Compact plastic safety interlock switches.



For details on dimensions, see relevant drawings.

- **Forced contact-opening mechanism** (N.C. contact only)
- **Safety interlock switch conforming to EN 60947-5-1, UL 508, and CSA 22.2.14**
- **Compact size (78 x 30 x 15mm) ensures installation anywhere**
- **Special key can be inserted either vertically or horizontally**
- **Pre-wire cable**

E SAFETY INTERLOCK SWITCHES
E
CLICK

APPLICATIONS

- Machine tools
- Semiconductor manufacturing systems
- Electronics component inserting machines, such as chip mounters
- Food processing machines (filling machines and packing machines)
- General industrial machines
- Printing machines
  For safety doors of above machines and systems
- Fence opening of engine machining, welding, and assembly lines

ORDER GUIDE

● Body

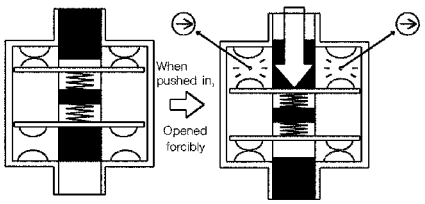
Cable length	Contact type	Catalog listing
1m	N.C. × 1 + N.O. × 1	**LJH-D11**
3m		**LJH-D13**
5m		**LJH-D15**
1m	N.C. × 2	**LJH-D21**
3m		**LJH-D23**
5m		**LJH-D25**

● Tongued key

Shape	Catalog listing
Straight type	**LJH-X1**
L type	**LJH-X2**
Horizontal/Vertical adjustment type (counterclockwise)	**LJH-X5**
Horizontal/Vertical adjustment type (clockwise)	**LJH-X6**

INTERNAL SWITCH

The internal switch of the **LJH** Series has the N.C./N.O. electrically independent contact (Zb) structure.
Additionally, the contact forced open structure is used to forcibly open the contact (N.C. contact only) even if the contact is fused accidentally.
As the switch is pushed in, the contact is opened forcibly.



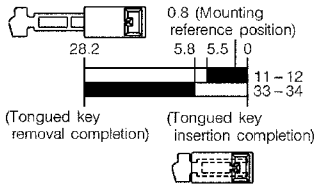
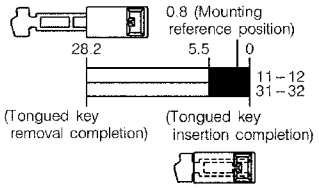
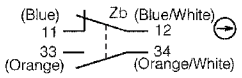
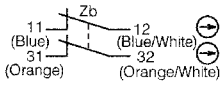
PERFORMANCE

Standards	Conformed standards	Product related: IEC 60947-5-1 Machine related: IEC 60204-1, EN 60204-1, ISO 14119, EN 1088
	Approved standards	GS-ET-15 (BG)/UL/CSA
Structure	Protective structure	IP67 (IEC 60529)
	Electrical shock protection	Class II (IEC 60536)
	Contamination degree of operating environment	Contamination degree 3
	Internal switch	Slow action
Electrical performance	Electrical rating	See separate Table 1.
	Insulation resistance	Between conducting part and non-conducting part: 100MΩ or more (by 500Vdc Megger) Between different pole conducting parts: 100MΩ or more (by 500Vdc Megger)
	Contact resistance	300mΩ or less. (Initial value, 1m cable)
	Rated energizing current (Ith)	2.5A
	Short-circuit protective device	Breaking fuse, 250V/10A
	Rated insulation voltage (Ui)	300V
	Conditional rated short-circuit current	50A
	Rated impulse withstanding voltage (Uimp)	4,000V
Mechanical performance	Impact resistance	Incorrect operation: 300m/s^2 Durability: 1,000m/s^2
	Vibration resistance	Incorrect operation: 5 to 55Hz, Peak amplitude: 0.5mm or more Durability: 30Hz, Peak amplitude: 1.5mm or more
	Tongued key operating speed	0.05 to 1.0m/s
	Direct circuit operating stroke	8mm or more
	Direct circuit operating force	60N or more (Tongued key removal)
	Operating frequency	20 operations/min.
Life	Mechanical life	1,000,000 operations or more, operating frequency: 20 operations/min.
	Electrical life	100,000 operations or more, operating frequency: 20 operations/min.
Environmental conditions	Operating temperature range	−25 to +70°C (No freezing allowed.)
	Storage temperature range	−40 to +80°C (No freezing allowed.)
	Operating humidity range	45 to 85%RH (No dew condensation allowed.)
Recommended tightening torque	Boby	1.0 to 1.5N-m (M4 hexagon socket head cap bolt)

● Table 1.

Rated operating voltage (Ue)		30V	125V	250V
AC	Resistive load (AC-12)	—	2.5 A	1.5 A
	Inductive load (AC-15)	—	1.5 A	0.75A
DC	Resistive load (DC-12)	2.5A	1.1 A	0.55A
	Inductive load (DC-13)	2.3A	0.55A	0.27A

CONTACT OPERATION

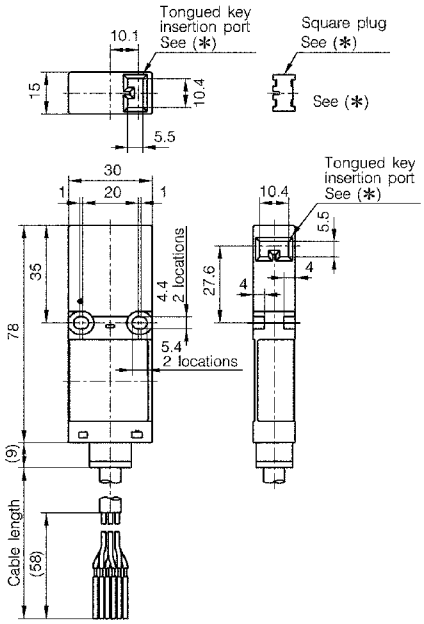
Catalog listing	LJH-D1□	LJH-D2□
Contact operation diagram (Stroke: mm) ■ : Electrical continuity		
Circuit diagram		

EXTERNAL DIMENSIONS

(unirt: mm)

● Switch body

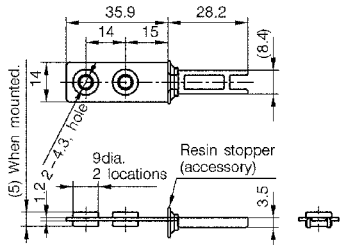
LJH-D□



* Seal the unused port for tongued key with a square plug.

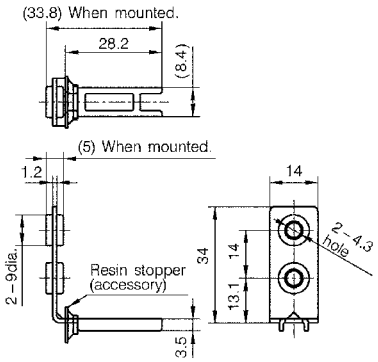
• Special tongued key

LJH-X1



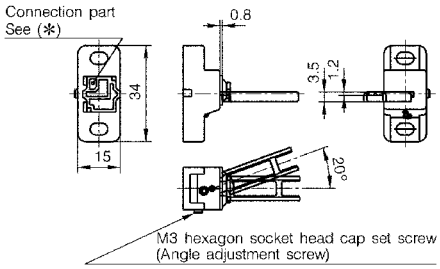
LJH-X2

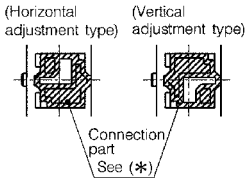
(unirt: mm)



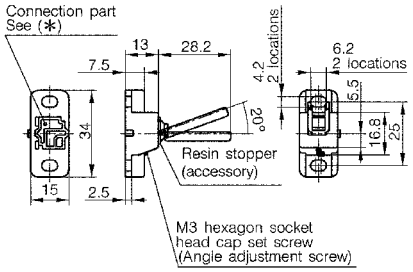
LJH-X5

• Horizontal adjustment type





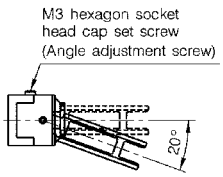
• Vertical adjustment

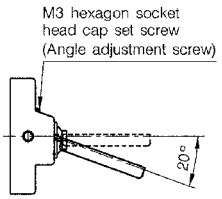


* For the movable direction of the horizontal/vertical adjustment type tongued key, the movable direction of the tongued key (horizontal/vertical adjustment type) can be changed by changing the mounting direction of the connection part (white part) on the back.
Mount the connection part corresponding to the customer's application.
(See the Fig. on the left.)
Additionally, carefully handle the connection part so that it is not lost.
If the connection part is lost, the switch does not function correctly.

LJH-X6

The difference between **LJH-X6** and **LJH-X5** is that the assembly orientation of the metallic part at the top of the tongued key is reversed 180°.





● Minimum radius of rotary door

• When the fixed type actuator (L type: Tongued key model **LJH-X2**) is used: (unit: mm)

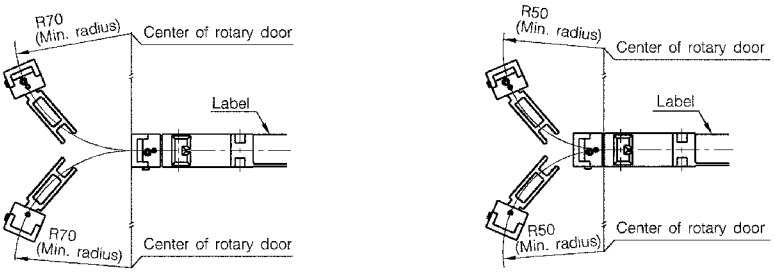
(1) The center of the rotary door is used as the reference for the tongued key mounting surface.

(2) The center of the rotary door is used as the reference for the safety switch contact surface.

• When the horizontal/vertical adjustment type actuator (tongued key model **LJH-X5** or **LJH-X6**) is used:

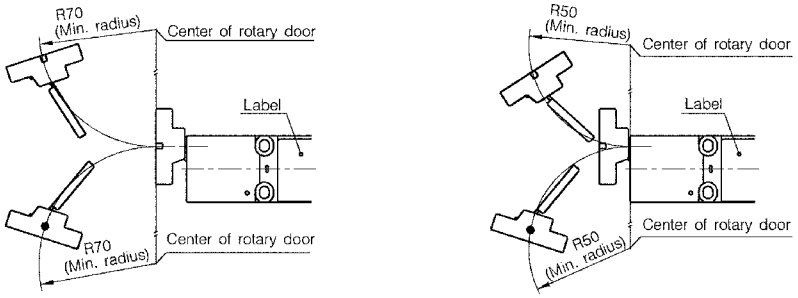
(1) The center of the rotary door is used as the reference for the tongued key mounting surface.

• Horizontal adjustment type



(2) The center of the rotary door is used as the reference for the safety switch contact surface.

• Vertical adjustment type

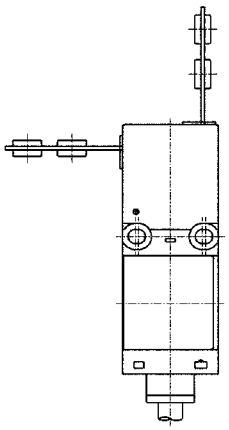


● Adjusting the angle of the horizontal/vertical adjustment type tongued key

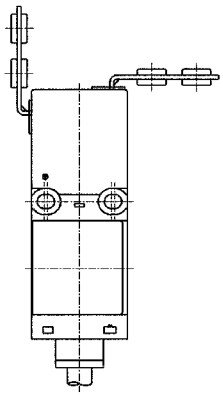
- The angle of the tongued key can be adjusted by setting the angle adjustment screw (M3 hexagon socket head cap bolt). For details, see page 2/2 of the product specification AD53840.
  Angle adjusting range: 0 to 20°C
- As the angle of the tongued key becomes larger, the applicable radius of the rotary door becomes smaller. After the tongued key has been mounted, open the door and make the adjustment so that the top of the tongued key is inserted into the tongued key insertion port of the safety switch.
- After the angle of the tongued key has been adjusted, take appropriate loose prevention measures, such as locking of the angle adjustment screw.

● Diagrams of tongued key positions

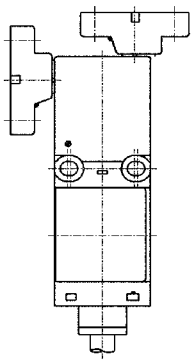
Straight type tongued key model
: **LJH-X1**



L-type tongued key model
: **LJH-X2**



Horizontal/Vertical adjustment type tongued key model
: **LJH-X5, LJH-X6**



Note 1. The resin stopper is a part intended for positioning of the tongued key. This stopper should be removed after the tongued key position has been locked.

Note 2. An appropriate tongued key is selected from **LJH-X1, LJH-X2, LJH-X5,** and **LJH-X6**.

HANDLING PRECAUTIONS

● Mounting

- Always tighten each part of the safety switch with the recommended tightening torque stated in the product specification. If any part is tightened excessively, this might cause damage to the screw and/or other parts. Additionally, insufficient tightening may lead to lowering of various characteristics, such as switch sealing ability.
- Regardless of the door type, do not use the safety switch for the door stopper.
  A mechanical door stopper is installed at the end of the door so that any excessive force is not applied to the safety switch.
- Do not apply any excessive impact to the safety switch by opening or closing the door carelessly. If any excessive impact is applied to the switch, this might cause the switch to malfunction.
- When the safety switch is operated in a place where a large amount of foreign matter or dust exists, appropriate measures, such as protective cover are taken to prevent foreign matter or dust from entering the safety switch through the tongued key insertion port. If a large amount of foreign matter or dust enters the safety switch, this may affect the mechanical part, resulting in malfunction.

● Tongued key

- Do not use any tongued key other than that specified. Operation with a tongued key other than that specified might cause the switch to break.
- Mount the tongued key in a place where it is not in contact with the operator's body when opening or closing the door. Failure to do so might cause personal injury.