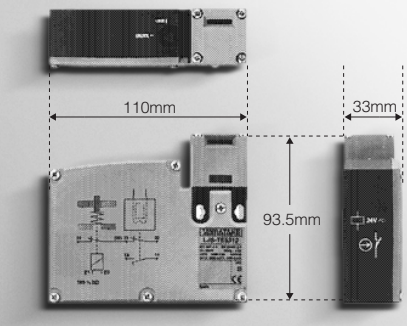
Plastic Safety Interlock Switches with Solenoid Lock

LJS-TE Series

Plastic safety interlock switches with solenoid lock.



For details on dimensions, see relevant drawings.

- **UL/CSA/CE markings**
- **⊖Forced contact-opening mechanism** (N.C. contact only)
- **Superior IP67 seal**
- **Double-insulation structure with plastic housing** (no grounding line connection required)

E SAFETY INTERLOCK SWITCHES
E
CLICK

ORDER GUIDE

● Body

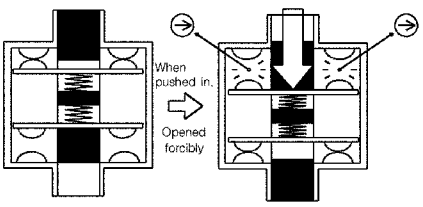
Contact type	Lock method	Catalog listing
N.C. × 2	Locked when solenoid is not energized.	**LJS-TE7312**
N.C. × 1 + N.O. × 1		**LJS-TE5312**
N.C. × 2	Locked when solenoid is energized.	**LJS-TE7512**
N.C. × 1 + N.O. × 1		**LJS-TE5512**

● Tongued key

Shape		Catalog listing
Straight type		**LJS-Z11**
Right angle type		**LJS-Z12**
Adjustable type		**LJS-Z13**

INTERNAL SWITCH

The internal switch of the **LJS-TE** 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.

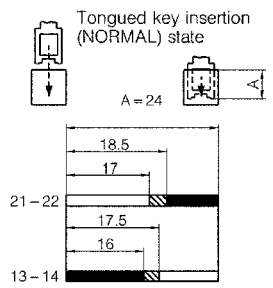
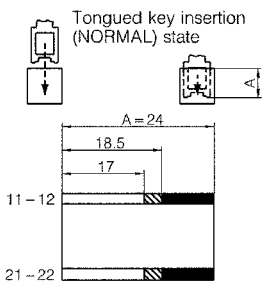
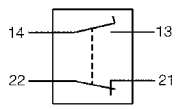
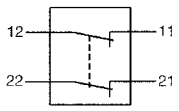


PERFORMANCE

Catalog listing			LJS-TE□312	LJS-TE□512
Standards	Conformed standards		Product related: IEC 60947-5-1, EN 60947-5-1 ⊖ Machine related: IEC 60204-1, EN 60204-1, EN 1088	
	Approved standards		UL/CSA	
Structure	Protective structure		IP67 (JIS C 0920), (IEC 60529)	
	Electrical shock protection		class II (IEC 60536)	
	Internal switch		Slow action	
	Lock method		Locked when solenoid is not energized.	Locked when solenoid is energized.
Electrical performance	Body	Electrical rating (Note)	AC-15: B300 (Ue=240V, Ie=1.5A or Ue=120V, e=3A) DC-13: Q300 (Ue=250V, Ie=0.27A or Ue=125V, Ie=0.55A)	
		Rated energizing current (Ith)	6A	
		Short-circuit protective device	Breaking fuse 10A type gG (gI)	
		Rated insulation voltage (Ui)	500V IEC 60947-1, 300V UL 508/CSA	
		Conditional rated short-circuit current	1,000A	
		Rated impulse withstanding voltage (Uimp)	4,000V	
	Solenoid coil	Load factor	100%	
		Rated energizing current	AC/DC 24V	
		Allowable voltage variation range	−20%, +10%	
		Electrical life	Average life: 20,000hrs.	
		Power consumption	Rush: 10VA, Retention: 10VA	
Mechanical performance	Impact resistance		100m/s² (11ms) IEC 60068-2-27	
	Vibration resistance		50m/s² (10 to 500Hz) IEC 60068-2-6	
	Tongued key operating speed		0.01m/s to 0.5m/s	
	Mechanical operation frequency		10 operations/min.	
Life	Mechanical life		1million operations or more	
	Electrical life		1million operations or more	
Environmental conditions	Operating temperature range		−25 to +60°C (No freezing allowed.)	
	Operating humidity range		85%RH or less	
Recommended tightening torque	Body		0.49 to 0.69N-m (M4 screw)	
	Cover		0.5N-m (M3 round head screw)	
	Head		0.5N-m (M3 round head screw)	
	Terminal: Body		0.8N-m (M3.5 binding machine screw)	
	Terminal: Solenoid and auxiliary switch		0.5N-m (M3 binding machine screw)	

Note. Category used AC-15: Solenoid load
DC-13: Solenoid load
Ue: Rated operating voltage
Ie: Rated operating current

CONTACT OPERATION

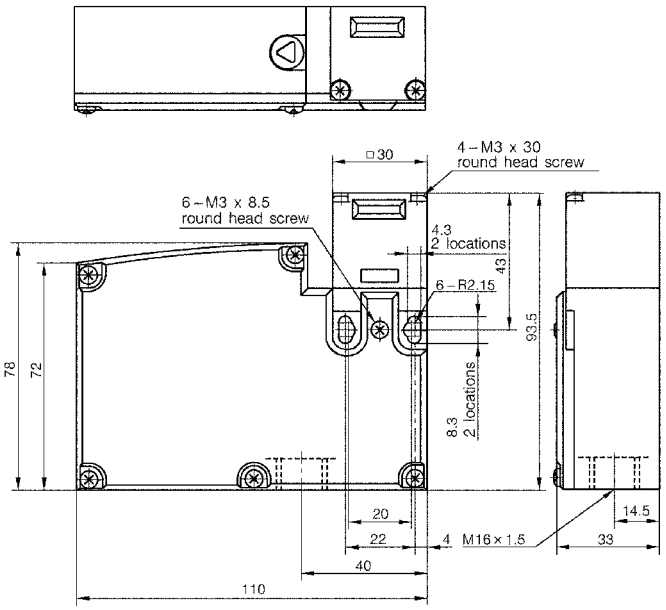
Catalog listing	LJS-TE5312, LJS-TE5512	LJS-TE7312, LJS-TE7512
: Contact close : Contact open : Transient state		
Circuit diagram		

OPERATING CHARACTERISTICS AND EXTERNAL DIMENSIONS

(unit: mm)

● Body

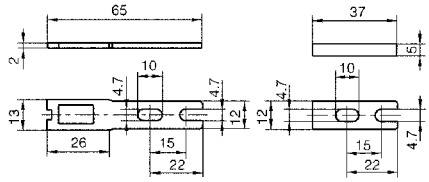
Tongued key removal strength (when locked)	500N
Forced opening force (Min.)	15N



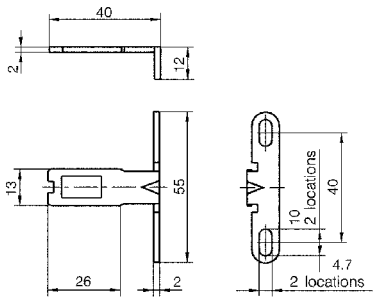
● Tongued key

(unit: mm)

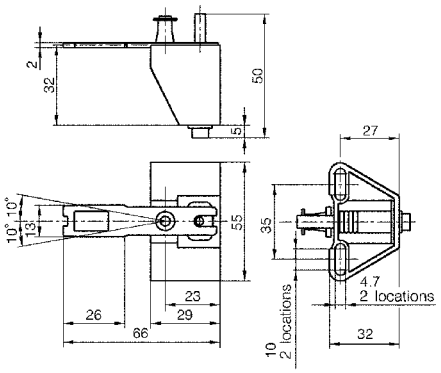
LJS-Z11



LJS-Z12



LJS-Z13

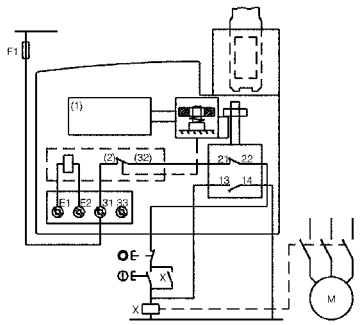


CIRCUIT EXAMPLES

• **Example of circuit in category 1 of EN 954-1**

Example of circuit, in which a protective fuse is used to prevent the N.C. contact from being closed due to damaged cable or intentional change.

N.C.+N.O. (**LJS-TE5312**)

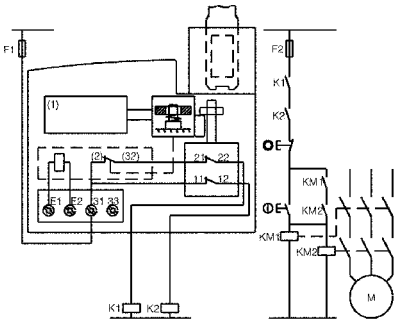


(1) Solenoid
(2) Auxiliary contact
E1-E2: Solenoid power supply (Non-polarity)
13-44: Contact used for redundancy and signal

● **Example of circuit in category 3 of EN 954-1**

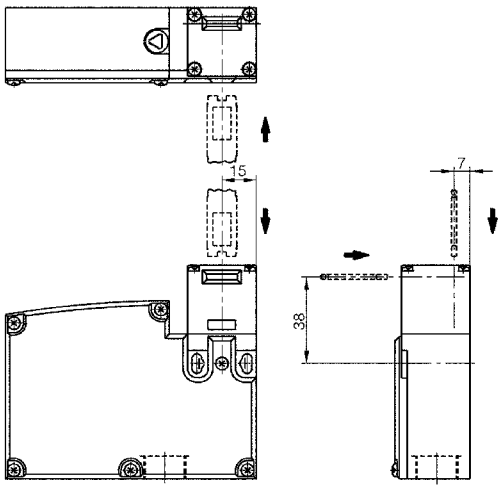
Example of circuit, in which the switch contact has redundancy without monitor.

N.C.+N.C. (**LJS-TE7312**)



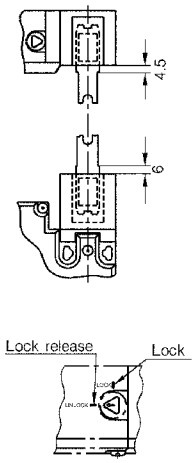
(1) Solenoid
(2) Auxiliary contact
E1-E2: Solenoid power supply (Non-polarity)
11-12: Contact used as redundancy

● Diagram of tongued key position



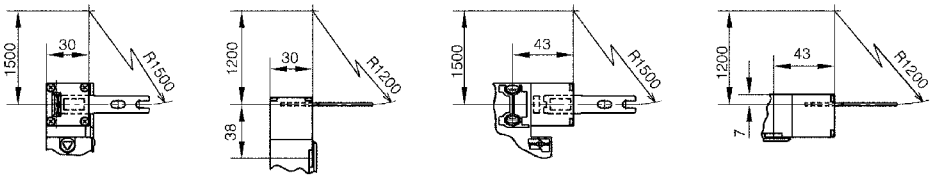
● Diagram of tongued key insertion position

(unit: mm)

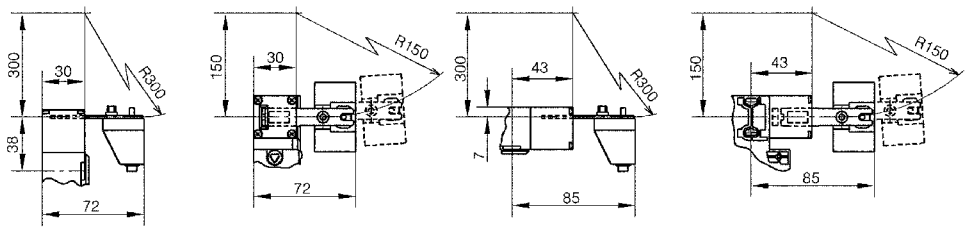


● Actuation radius of tongued key

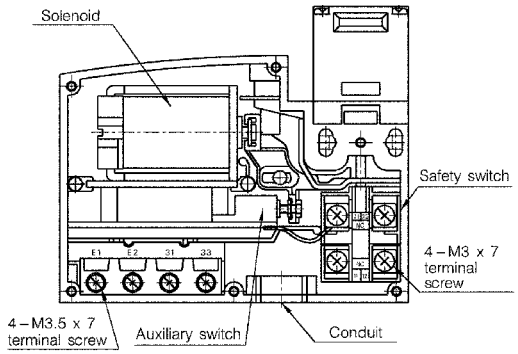
LJS-Z11/Z12



LJS-Z13

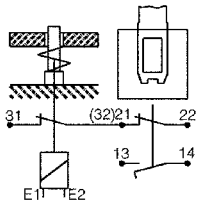


STRUCTURAL DIAGRAM

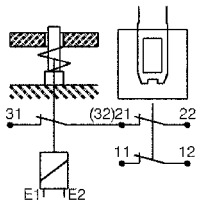


GENERAL CIRCUIT DIAGRAMS

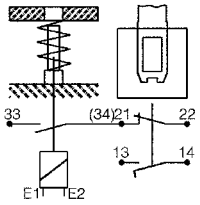
LJS-TE5312



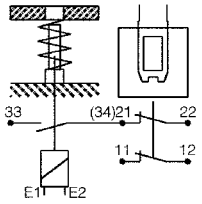
LJS-TE7312



LJS-TE5512



LJS-TE7512



HANDLING PRECAUTIONS

● Mounting the switch

- 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.