

SP. No.

Yamatake Corporation

製品仕様書 SPECIFICATIONS

CATALOG LISTING

1 L X 7 0 0 1 - 2 3

1 ACTUATOR TYPE

Code	Actuator type
1	Standard roller lever
2	Without lever
3	Adjustable. roller lever

2 CONDUIT

Code	Conduit
~	G1/2 screw
C	M20x1.5 screw

3 CONTACT MATERIAL AND ELECTRICAL RATING

Code	Contact material	Electrical rating
~	Silver	AC-12 5A-250V DC-12 0.8A-125V DC-12 0.4A-250V
K	Gold plated	AC-12 0.1A-125V DC-12 0.1A-30V

6 00
5 03
4 03
3 02
2 01
頁 改番

作成DR. SAKIYAMA 11.27.'08		尺度 SCALE C/D	記入のない公差 TOL. UNLESS NOTED ~
検図CHK. SATO 11.28.'08	形 番 MODEL	1LX700*-**	
認可 APPD SUDO 11.29.'08	名 称 NAME	EXPLOSION PROOF SWITCH	
日付 DATE 11.29.'08	図 番 NO.	改番 REV.	1/6
改番 REV.	来 歴 RECORD	: 日付 DATE	担 当 BY
			検 閲 APPD.
			AD15635E

1. STANDARDS

・Conform to: **NECA C 4508**

 Approved by:


EN60079-0 : 2006 (Electrical apparatus for explosive gas atmospheres - Part 0: General requirements)

EN60079-1 : 2007 (Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures 'd')

EN60079-7 : 2007 (Explosive atmospheres - Part 7: Equipment protection by increased safety 'e')



II 2 G Ex d e IIC T6

 KEMA 09ATEX0107



0344

・Hazardous area classification : Category 2 G (Zone 1)

2. STRUCTURE

・Type of contact: **Two-circuit double-break**

・Protective structure: **IP67 (IEC 60529)
(JIS C 0920)**

・Shape of terminal: **Screw (M4 pan head screw with square washer)**

・Shape of contact: **Rivet**

3. ELECTRICAL CHARACTERISTICS

・Insulation resistance and dielectric strength:

Property Parts measured	Insulation resistance (with 500Vdc megger)	Dielectric strength (50/60Hz, for 1 minute)
Between terminals of same polarities	100 MΩ min.	600 Vac
Between each terminal and non-live metal part	100 MΩ min.	2000 Vac
Between each terminal and earth	100 MΩ min.	2000 Vac

・Contact resistance

Silver contacts:

50 mΩ max. (initial) Measured by the voltage drop method at 6 to 8 Vdc 1A.

Gold plated contacts:

100 mΩ max. (initial) Measured by the voltage drop method at 6 to 8 Vdc 0.1A.

・Minimum contact operating current

Silver contacts: **10mA-24V, 20mA-12V**

Gold plated contacts: **10mA- 5V**

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認可APPD SUDO 11,29,'08	名 称 NAME	EXPLOSION PROOF SWITCH	
改番 REV. 01	来歴 RECORD	日付 DATE 7, 7,'09	担当 検閲 BY APPD. SATO H.SASAKI
頁	改番	日付 DATE 11,29,'08	図 番 NO. AD15635E
		改番 REV. 01	2/6

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4. MECHANICAL CHARACTERISTICS (Value at 38.1mm long lever)

- Actuator strength: Withstands **5** times as high as O.F. in the operating direction for 1 minute.
- Terminal strength: Withstands **1.5N · m** tightening torque applied for 1 minute.
- Shock: At **200 m/s²**, contact misoperation shall be 1ms max. in the free position and in the total travel position.
- Vibration: With a vibration of peak-to-peak amplitude of 1.5mm and frequency of 10 to 55Hz for 2 continuous hours, misoperation of the contact shall be 1ms max. in the free position and total travel position.
- Allowable operating speed: **1.0 mm/s to 0.5 m/s**
 At the lowest speed, contact instability shall be 0.1s max.
 At the highest speed, the actuator shall not be damaged.
- Mechanical operating frequency: **120 cycles/minute max.**



5. LIFE

- Mechanical life: **4000 k cycles min.** at 70 to 100% of the rated O.T.
- Electrical life: Operating frequency of 20 cycles/minute max. \triangle

Contact material	Condition	Operation cycle
Silver	5A-250 Vac 0.8A-125 Vdc 0.4A-250 Vdc	200k cycles min.
	(1A-250 Vac) (0.2A-125 Vdc) (0.1A-250 Vdc)	(500k cycles min.) \triangle
Gold plated	0.1A-125 Vac 0.1A- 30 Vdc	2000k cycles min.

6. ENVIRONMENTAL CHARACTERISTICS \triangle

- Operating temperature: **-10 to +60 °C** (no freezing)
- Operating humidity: **45 to 85 %RH**
- Storage temperature: **-10 to +60 °C**
- Storage humidity: **98 %RH max.** (stored with sealing plug)

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認可APPD SUDO 11.29.'08	名称 NAME	EXPLOSION PROOF SWITCH	
日付 DATE 11.29.'08	図番 NO.	AD15635E	改番REV. 3/6 02

02	ADDED	9, 1,'09	SATO	H.SASAKI
01	ADDED	7, 7,'09	SATO	H.SASAKI
改番 REV.	来歴 RECORD	: 日付 DATE	担当 BY	検閲 APPD.

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7. RECOMMENDED TIGHTENING TORQUE

For mounting the switch on a panel:	5 to 6 N·m	(M5 hex. socket head cap screw)
For mounting the lever on the switch:	4 to 5.2 N·m	(M5 hex. socket head cap screw)
For mounting the terminal on the switch:	1.3 to 1.7 N·m	(M4 pan head screw with square washer)
For mounting the cover on the housing:	5 to 6 N·m	(M5 hex. socket head cap screw with spring lock washer)
For mounting the head on the housing:	1.3 to 1.7 N·m	(M4 pan head screw with spring lock washer)
For tightening the inner earth terminal screw:	1.3 to 1.7 N·m	(M4 binding head screw with spring lock washer)
For tightening the outer earth terminal screw:	1.3 to 1.7 N·m	(M4 binding head screw with spring lock washer)

8. APPLICABLE WIRE SIZE

- Terminal: Stranded 0.5 to 1.5mm² or Solid 0.5 to 1.5mm²
- Inner earth terminal: Use insulated crimp terminal for M4 screw.
- Outer earth terminal: Use crimp terminal for M4 screw, suitable for the wire of 4mm² max.

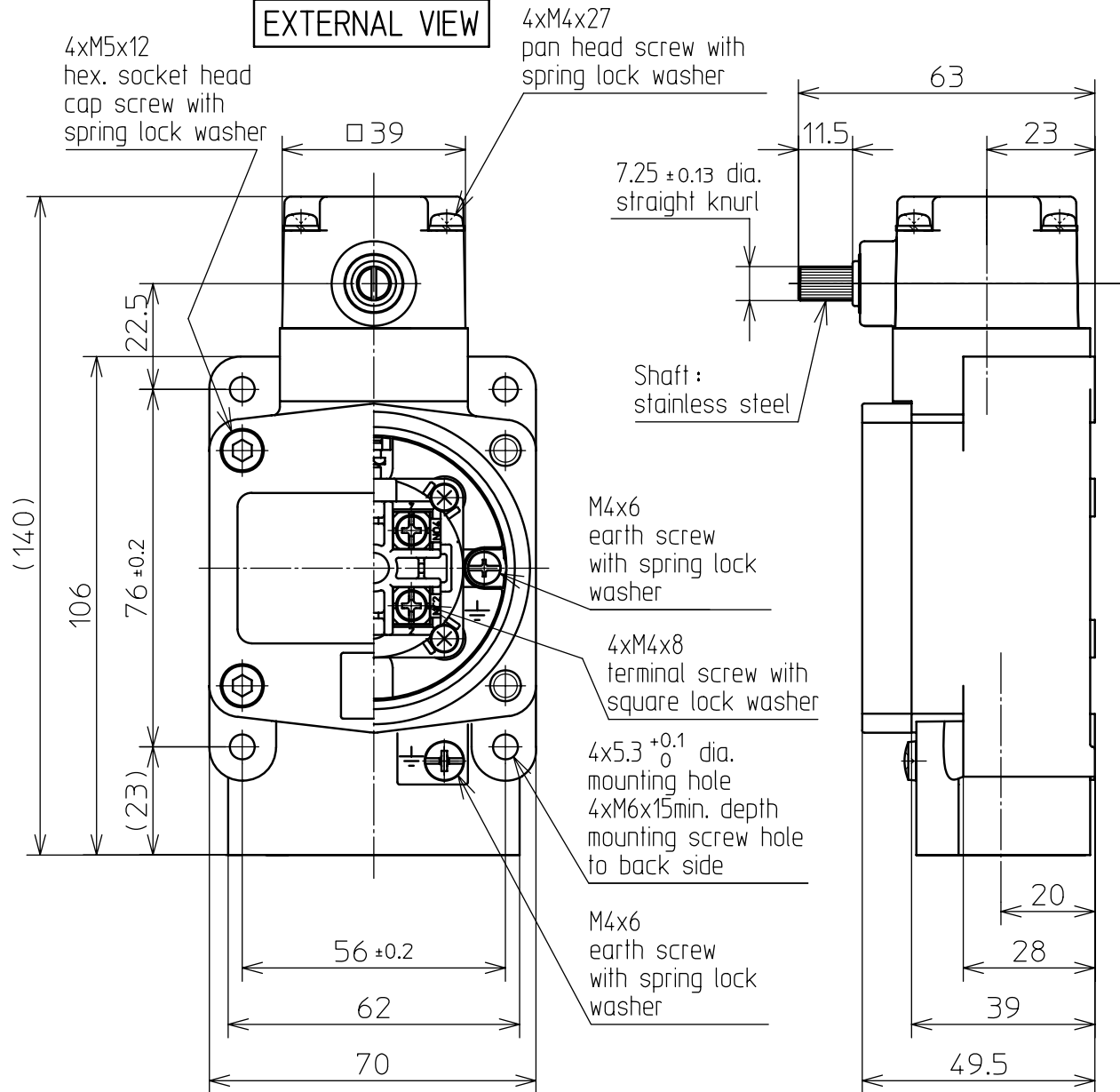
作成DR. SAKIYAMA 11,27,'08		尺度 SCALE UN	記入のない公差 TOL. UNLESS NOTED ~
検図CHK. SATO 11,28,'08	形番 MODEL	1LX700*-**	
認可APPD SUDO 11,29,'08	名称 NAME	EXPLOSION PROOF SWITCH	
改番 REV. 03	来歴 RECORD CHANGED	日付 DATE 12,22,'09	担当 検閲 K.URAKI SATO
日付 DATE 11,29,'08	図番 NO.	AD15635E	改番 REV. 4/6 03

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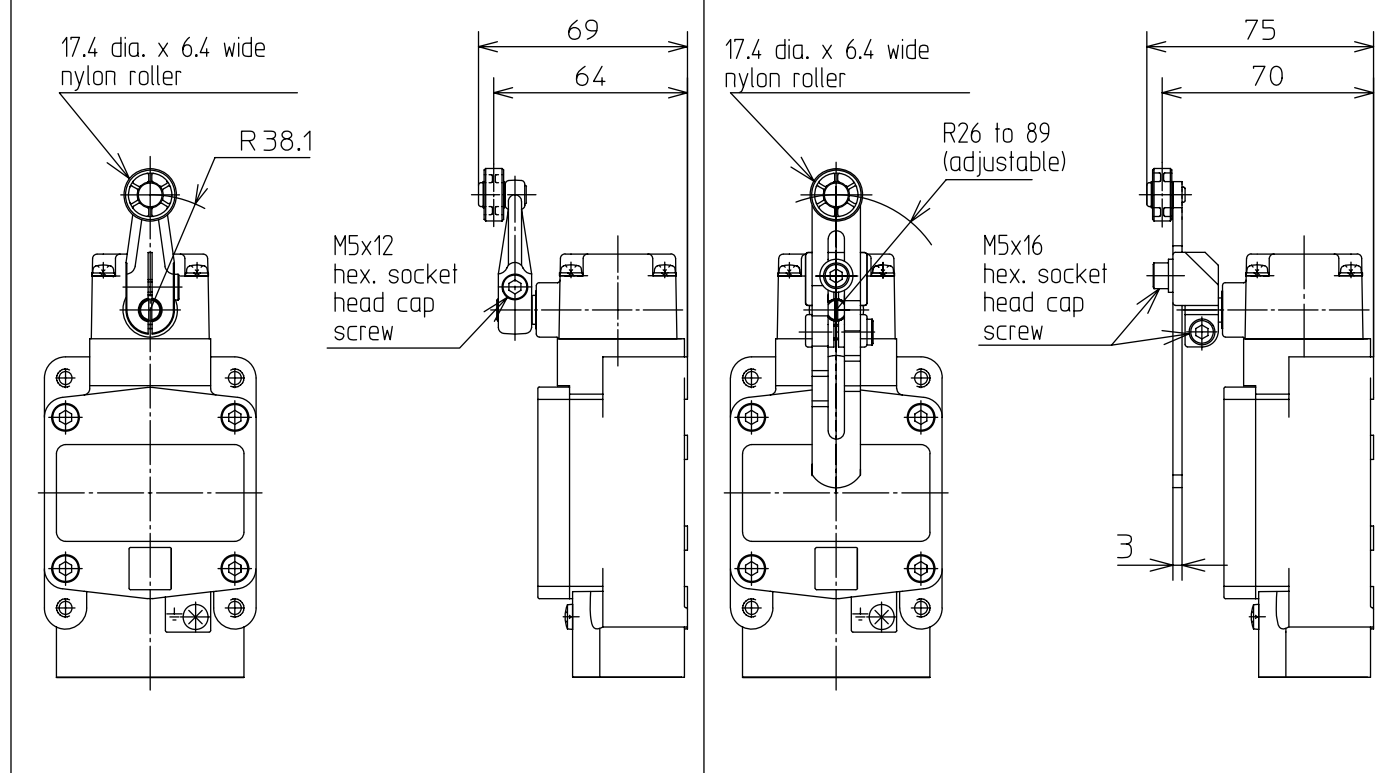
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SPECIFICATIONS

EXTERNAL VIEW

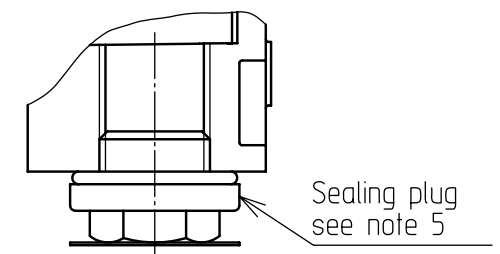
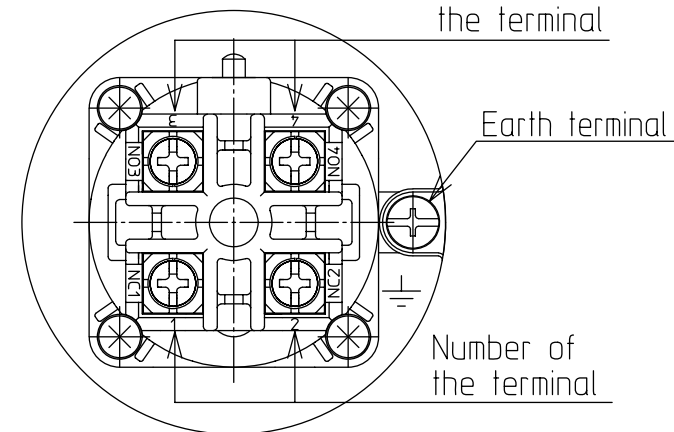


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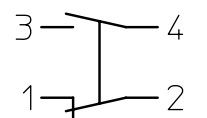
1LX700 3 -**



Terminal details

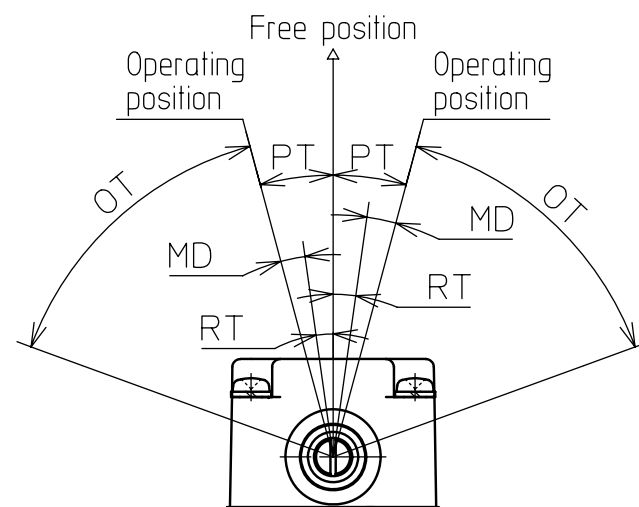


Circuit diagram



Characteristics

Operating force	12.8N max
Release force	1.1N min
Pretravel	15° max
Movement differential	7° max
Overtravel	55° min
Release travel	(5°)



- Notes
1. This switch actuates in either direction.
 2. In the mechanical characteristics "OF" and "RF" are the characteristics at 38.1mm lever length.
 3. Housing, cover and head are made of aluminum alloy and finished with gray paint.
 4. External screws are made of stainless steel.
 5. Do not remove the plug until the wiring work.
 6. Do not use wire insulated with silicone rubber. Doing so might result in contact failure.

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尺度SCALE	記入のない公差 TOL. UNLESS NOTED	± 0.8			
形番 MODEL	1LX700*-**				
名称 NAME	EXPLOSION PROOF SWITCH				
図番 NO.	AD15635E				改番REV. 00

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製品仕様書 SPECIFICATIONS

Terms and Conditions

We would like to express our appreciation for your purchase and use of Yamatake products.

You are required to acknowledge and agree upon the following terms and conditions for your purchase of Yamatake products (field instruments, control valves, and control products), unless otherwise stated in any separate document, including, without limitation, estimation sheets, written agreements, catalogs, specifications and instruction manuals.

1 Warranty period and warranty scope

1.1 Warranty period

Yamatake products shall be warranted for one (1) year from the date of your purchase of the said products or the delivery of the said products to a place designated by you.

1.2 Warranty scope

In the event that Yamatake product has any failure attributable to Yamatake during the aforementioned warranty period, Yamatake shall, without charge, deliver a replacement for the said product to the place where you purchased, or repair the said product and deliver it to the aforementioned place.

Notwithstanding the foregoing, any failure falling under one of the following shall not be covered under this warranty:

- (1) Failure caused by your improper use of Yamatake product
(noncompliance with conditions, environment of use, precautions, etc. set forth in catalogs, specifications, instruction manuals, etc.);
- (2) Failure caused for other reasons than Yamatake product;
- (3) Failure caused by any modification or repair made by any person other than Yamatake or Yamatake's subcontractors;
- (4) Failure caused by your use of Yamatake product in a manner not conforming to the intended usage of that product;
- (5) Failure that the state-of-the-art at the time of Yamatake's shipment did not allow Yamatake to predict; or
- (6) Failure that arose from any reason not attributable to Yamatake, including, without limitation, acts of God, disasters, and actions taken by a third party.

Please note that the term "warranty" as used herein refers to equipment-only-warranty, and Yamatake shall not be liable for any damages, including direct, indirect, special, incidental or consequential damages in connection with or arising out of Yamatake products.

2 Ascertainment of suitability

You are required to ascertain the suitability of Yamatake product in case of your use of the same with your machinery, equipment, etc. (hereinafter referred to as "Equipment") on your own responsibility, taking the following matters into consideration:

- (1) Regulations and standards or laws that your Equipment is to comply with.
- (2) Examples of application described in any documents provided by Yamatake are for your reference purpose only, and you are required to check the functions and safety of your Equipment prior to your use.
- (3) Measures to be taken to secure the required level of the reliability and safety of your Equipment in your use

Although Yamatake is constantly making efforts to improve the quality and reliability of Yamatake products, there exists a possibility that parts and machinery may break down.

You are required to provide your Equipment with fool-proof design, fail-safe design, anti-flame propagation design, safety design, or the like so that the said Equipment may satisfy the level of the reliability and safety required in your use, whereby preventing any occurrence of physical injuries, fires, significant damage, and so forth.

3 Precautions and restrictions on application

Yamatake products other than those explicitly specified as applicable (e.g. Yamatake Limit Switch For Nuclear Energy) shall not be used in a nuclear energy controlled area (radiation controlled area).

Any Yamatake products shall not be used for/with medical equipment.

In addition,

you are required to conduct a consultation with our sales representative and understand detail specifications, cautions for operation, and so forth by reference to catalogs, specifications, instruction manual, etc. in case that you intend to use Yamatake product for any purposes specified in (1) through (6) below.

Moreover, you are required to provide your Equipment with fool-proof design, fail-safe design, anti-flame propagation design and other designs of protection/safety circuit on your own responsibility to ensure the reliability and safety, whereby preventing problems caused by failure or nonconformity.

- (1) For use under such conditions or in such environments as not stated in technical documents, including catalogs, specification, and instruction manuals
- (2) For use of specific purposes, such as:

- * Nuclear energy/radiation related facilities
[For use outside nuclear energy controlled areas]
[For use of Yamatake Limit Switch For Nuclear Energy]
- * Machinery or equipment for space/sea bottom
- * Transportation equipment
[Railway, aircraft, vessels, vehicle equipment, etc.]
- * Antidisaster/crime-prevention equipment
- * Burning appliances
- * Electrothermal equipment
- * Amusement facilities

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				<p>(3) Supply systems such as electricity/gas/water supply systems, large-scale communication systems, and traffic/air traffic control systems requiring high reliability</p> <p>(4) Facilities that are to comply with regulations of governmental/public agencies or specific industries</p> <p>(5) Machinery or equipment that may affect human lives, human bodies or properties</p> <p>(6) Other machinery or equipment equivalent to those set forth in items (1) to (5) above which require high reliability and safety</p>		
		<p>4 Precautions against long-term use</p> <p>Use of Yamatake products, including switches, which contain electronic components, over a prolonged period may degrade insulation or increase contact-resistance and may result in heat generation or any other similar problem causing such product or switch to develop safety hazards such as smoking, ignition, and electrification.</p> <p>Although acceleration of the above situation varies depending on the conditions or environment of use of the products, you are required not to use any Yamatake products for a period exceeding ten (10) years unless otherwise stated in specifications or instruction manuals.</p>				
		<p>5 Recommendation for renewal</p> <p>Mechanical components, such as relays and switches, used for Yamatake products will reach the end of their life due to wear by repetitious open/close operations.</p> <p>In addition, electronic components such as electrolytic capacitors will reach the end of their life due to aged deterioration based on the conditions or environment in which such electronic components are used.</p> <p>Although acceleration of the above situation varies depending on the conditions or environment of use, the number of open/close operations of relays, etc. as prescribed in specifications or instruction manuals, or depending on the design margin of your machine or equipment, you are required to renew any Yamatake products every 5 to 10 years unless otherwise specified in specifications or instruction manuals.</p> <p>Field instruments (sensors such as pressure/flow/level sensors, regulating valves, etc.) will reach the end of their life due to aged deterioration of parts.</p> <p>For those parts that will reach the end of their life due to aged deterioration, recommended replacement cycles are prescribed. You are required to replace parts based on such recommended replacement cycles.</p>				
		<p>6 Other precautions</p> <p>Prior to your use of Yamatake products, you are required to understand and comply with specifications (e.g., conditions and environment of use), precautions, warnings/cautions/notices as set forth in the technical documents prepared for individual Yamatake products, such as catalogs, specifications, and instruction manuals to ensure the quality, reliability, and safety of those products.</p>				
		<p>7 Changes to specifications</p> <p>Please note that the descriptions contained in any documents provided by Yamatake are subject to change without notice for improvement or for any other reason.</p> <p>For inquires or information on specifications as you may need to check, please contact our branch offices or sales offices, or your local sales agents.</p>				
		<p>8 Discontinuance of the supply of products/parts</p> <p>Please note that the production of any Yamatake product may be discontinued without notice.</p> <p>For repairable products, we will, in principle, undertake repairs for five (5) years after the discontinuance of those products. In some cases, however, we cannot undertake such repairs for reasons, such as the absence of repair parts.</p> <p>For field instruments, we may not be able to undertake parts replacement for similar reasons.</p>				
		<p>9 Scope of services</p> <p>Prices of Yamatake products do not include any charges for services such as engineer dispatch service. Accordingly, a separate fee will be charged in any of the following cases:</p> <ol style="list-style-type: none"> (1) Installation, adjustment, guidance, and attendance at a test run (2) Maintenance, inspection, adjustment, and repair (3) Technical guidance and technical education (4) Special test or special inspection of a product under the conditions specified by you <p>Please note that we cannot provide any services as set forth above in a nuclear energy controlled area (radiation controlled area) or at a place where the level of exposure to radiation is equivalent to that in a nuclear energy controlled area.</p>				
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	REV.		RECORD	DATE	BY	APPD.