

IEC Flameproof Approval Limit Switch

Model VCX7000

OVERVIEW

This compact vertical limit switch can be used in hydrogen gas environment.

FEATURE

- VCX7000 receives following approvals.
 - KEMA / ATEX Flameproof approval (Europe)
 - TIIS Flameproof approval (Japan)
 - NEPSI Flameproof approval (China)
- Light but durable casing made with aluminum die cast.
- Anti-rust and baked finish assures corrosion resistance performance against corrosive environment.
- Corrosion proof aluminum die cast option is also available.
- Center neutral model detects both open and close position of the valve by independent 2 switches.

Note) This specification sheet is prepared for the application of Yamatake's control valve accessory usage.



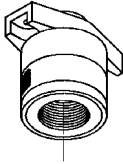
Convention	Explosion-proof structure	Approval No.
KEMA	Ex II 2G Ex de II C T6	KEMA 08ATEX0080
TIIS	Ex de II C T6	TC18291
NEPSI	Ex de II C T6	GYJ081147

MODEL SLECTION

- Switch

Action	Actuator	Contact	Japan, China	Europe
			TIIS or NEPSI approval	KEMA Approval, CE Marking
Center neutral	Std. lever	Silver	Increased safety conduit type cable entry	Elec. Conduit : G3/4
			Model No.	Model No.
2-circuit simultaneous	Std. lever	Silver	VCX-7001-J	VCX-7001
Center neutral	Std. lever	Silver	Increased safety packing type cable entry	
			Model No.	
2-circuit simultaneous	Std. lever	Silver	VCX-7001-R	
			VCX-7101-J	VCX-7101
			VCX-7001-R	
			VCX-7101-R	

• Increased safety packing connector (Combining with VCX7*0*-R)

Shape	Model number	Elec. connection	Applicable cable diameter	Model number	Elec. connection	Applicable cable diameter
	2PA-JEX108L	G 1/2	φ 7.5 to 8.5	2PA-JEX208L	G3/4	φ 7.5 to 8.5
	2PA-JEX109L		φ 8.5 to 9.5	2PA-JEX209L		φ 8.5 to 9.5
	2PA-JEX110L		φ 9.5 to 10.5	2PA-JEX210L		φ 9.5 to 10.5
	2PA-JEX111L		φ 10.5 to 11.5	2PA-JEX211L		φ 10.5 to 11.5
	2PA-JEX112L		φ 11.5 to 12.5	2PA-JEX212L		φ 11.5 to 12.5
	2PA-JEX113L		φ 12.5 to 13.5	2PA-JEX213L		φ 12.5 to 13.5

PERFORMANCE

Standards	Conformed standard		NECA C 4508
	Recognition standard	KEMA	EN60079-0: 2006 (explosionproof electrical equipment regulations)
			EN60079-1: 2007 (pressure-tight, explosion proofing "d")
			EN60079-7: 2007 (increased safety explosion-proofing "d")
	NEPSI	GB3836.1-2000, GB3836.2-2000, GB3836.3-2000	
Structure	Circuitry		Single-pole, double-throw (SPDT) ×2
	Terminal shape		M3.5 angle washer assembled pan head screw
	Contact shape		Silver
	Protective structure		IP67 (IEC60529, JIS C 0920)
Electrical Performance	Electrical rating		Refer to another table 1
	Withstand voltage	Across same-polarity terminal : 600 V AC, 50/60 Hz, for 1minute	
		Across different-polarity terminal : 2000 V AC, 50/60 Hz, for 1minute	
		Across terminals and electrically non-live metals 2000 V AC, 50/60 Hz, for 1 minute	
		Across terminals and earth 2000 V AC, 50/60 Hz, for 1 munute	
	Insulating resistance		Max. 100 MΩ (by 500 V DC Megger)
Initial contact resistance		Silver: Min. 50m Ω (measured by fall-of potential method 6 to 8 V DC, energizing current 1 A)	
Recommended min. contact voltage/current		Silver: 24 V-10mA 12 V, 12 V-20 mA	
Mechanical Performance	Actuator strength		5 times O.F. (operation force) (1minute in operating direction)
	Terminal strength		Withstand tightening torque of 0.5 N·m {5.1 kgf·cm}
	Shock resistance		200 m/s ² Contact separation at free position and total travel position 1 ms max.
	Vibration resistance		Amplitude 1.5 mm, frequency 10 to 55 Hz, 2 hours continuous Contact separation at free position and total travel position 1 ms max.
	Allowable operating speed		0.3 mm/s to 0.5 m/s Min speed: Unstable state of contacts 0.1 s max. Max. speed: Actuator damage not allowed
	Mechanical operating frequency		Max.120 operations/minute
Life	Mechanical life		Min. 2 million operations. Over-travel operation must be 70 to 100% of rated value.
	Electrical life		Silver: Min. 30 thousand operations. 5 A to 250 VAC, 0.4 A to 125 VDC, 0.2 A to 250 VDC
Environmental Conditions	Standard ambient temp. rating		-10 to 70°C (no freezing nor condensation allowed)
	Environmental category		IIC T6
Recommended Tightening Torque	Body		5 to 6 N·m (M5 hexagon socket head cap screw)
	Cover		5 to 6 N·m (M5 hexagon socket head cap screw with spring washer)
	Head		1.3 to 1.7 N·m (M4 head fixing screw with spring washer)
	Terminals		0.8 to 1.2 N·m (M3.5 head fixing screw with spring washer)
	Lever		4 to 5.2 N·m (M5 hexagon socket head cap screw)
	Internal earth		0.4 to 0.6 N·m (M3 bind head screw with spring washer)
	External earth		1.3 to 1.7 N·m (M4 bind head screw with spring washer)
Applicable Lead Diameters	Terminals	Strand leads	0.5 mm ² to 1.5 mm ²
		Single leads	0.5 mm ² to 1.5 mm ²
	Internal earth		M3 Insulated crimp terminal
	External earth		M4 Insulated crimp terminal

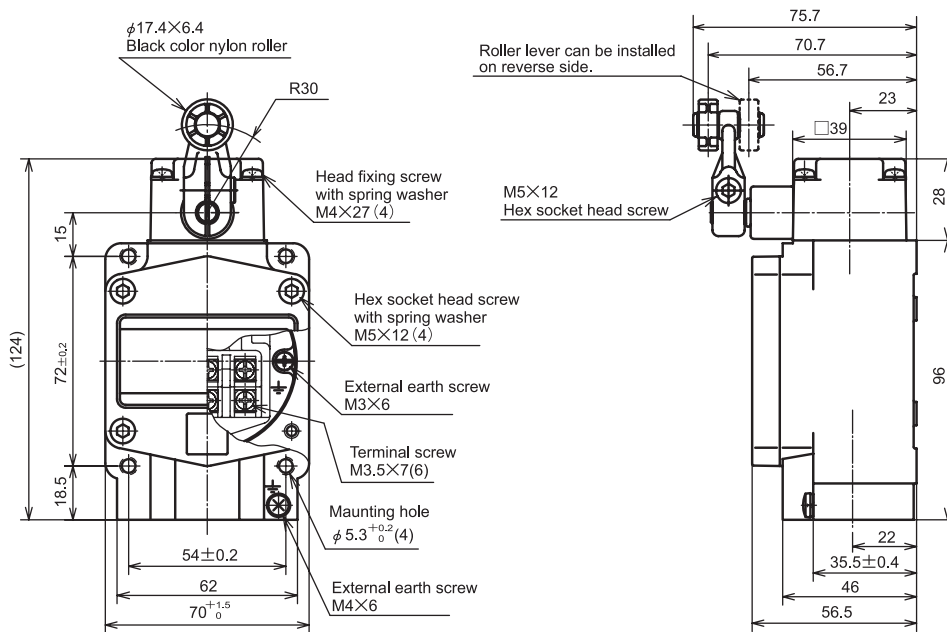
Table 1 Attached table 1. Electrical rating

Model No.	VCX-7_0_-J	VCX-7_0_
Contact material	VCX-7_0_-R	
Silver	5A-250VAC	AC-12: 5A-250V
	0.4A-125VDC	DC-12: 0.4A-125V
	0.2A-250VDC	DC-12: 0.2A-250V

Circuit composition

Operation mode	Circuit diagram		
	Counterclockwise	Free position	Clockwise
Center-neutral	C21 — NC22 — NO24	C21 — NC22 — NO24	C21 — NC22 — NO24
	C11 — NC12 — NO14	C11 — NC12 — NO14	C11 — NC12 — NO14
2-circuit Simultaneous	C21 — NC22 — NO24	C21 — NC22 — NO24	C21 — NC22 — NO24
	C11 — NC12 — NO14	C11 — NC12 — NO14	C11 — NC12 — NO14

DIMENSIONS




*The dimensional tolerances without indication is ± 0.8 .

Operation mode	Center neutral	2-circuit Simultaneous*
O.F. (N max)		15.7
R.F. (N min)		2.2
P.T. ($^\circ$ max)	10	12
M.D. ($^\circ$ max)		3
O.T. ($^\circ$ min)		35

Note : Simultaneity of internal switch is max. 3° .

Figure 1 The outside / performance characteristics / external dimension

Table 2 Attached table 1. Electrical rating

Shape	Model number	Electrical connection	Applicable cable diameter
	2PA-JEX108L	G 1/2	φ 7.5 to 8.5
	2PA-JEX109L		φ 8.5 to 9.5
	2PA-JEX110L		φ 9.5 to 10.5
	2PA-JEX111L		φ 10.5 to 11.5
	2PA-JEX112L		φ 11.5 to 12.5
	2PA-JEX113L		φ 12.5 to 13.5
	2PA-JEX208L	G 3/4	φ 7.5 to 8.5
	2PA-JEX209L		φ 8.5 to 9.5
	2PA-JEX210L		φ 9.5 to 10.5
	2PA-JEX211L		φ 10.5 to 11.5
	2PA-JEX212L		φ 11.5 to 12.5
	2PA-JEX213L		φ 12.5 to 13.5

Increased safety packing connector is used by combination with explosion proof switch for increased safety packing cable entry.

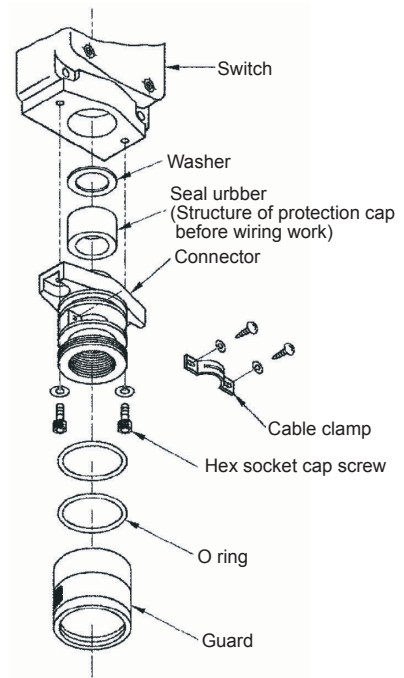


Figure 2 Exploded view of increased safety packing connector

Specifications are subject to change without notice.

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Yamatake Corporation
Advanced Automation Company

1-12-2 Kawana, Fujisawa-shi
Kanagawa-ken 251-8522 Japan

URL:<http://www.azbil.com>

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