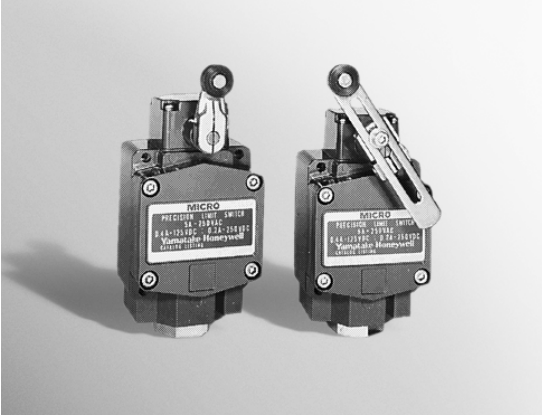


Waterproof Vertical Type Limit Switches

VCL Series

2 sets of SPDT built-in switches enable use as a 2-point detection switch or multi-circuit control switch.



- On the 2-point detection (center-neutral) switch, two different internal switches operate according to the direction (CW or CCW) of actuator rotation
- A single switch can detect two points (valve upper/lower limit, fully open/closed, etc.)
- On the multi-circuit control type, the two switches operate simultaneously according to actuator rotation
- High sensitivity (P.T.=10°, M.D.=3°)



ORDER GUIDE

Model selection guide: I II III IV Example: VCL-5001-K

I	II	III	IV	Description	O.F. (N)	P.T. (°)	M.D. (°)
Basic catalog listing	Operation method	Actuator shape	Custom specifications				
VCL-				Large water-proof vertical type limit switches			
	50			2-point detection (center-neutral) type	Max. 15.7	Max. 10	Max. 3
	51			Multi-circuit simultaneous control type			
		01		Roller lever (lever length = 30mm)			
		03		Adjustable roller lever			
			Blank	Standard load type, silver contact			
			-K	Low current load type, gold alloy cross point contact			
			-H	Heat-resistant type (100°C)			
			-L	Cold-resistant type (-40°C)			

• Contact operation

	Center-neutral				Simultaneous	
	Contact configuration and terminal No.					
	CCW operation	Free position	CW operation	CCW operation	Free position	CW operation
Switch 1	COM1 N.C.1 N.O.1	COM1 N.C.1 N.O.1	COM1 N.C.1 N.O.1	COM1 N.C.1 N.O.1	COM1 N.C.1 N.O.1	COM1 N.C.1 N.O.1
Switch 2	COM2 N.C.2 N.O.2	COM2 N.C.2 N.O.2	COM2 N.C.2 N.O.2	COM2 N.C.2 N.O.2	COM2 N.C.2 N.O.2	COM2 N.C.2 N.O.2

- Head mounting direction:
- Only two directions (front and rear) can be set on a center-neutral type. When the direction is set to the rear, operation of switches 1 and 2 is reversed.
 - The head can be set in all four directions on a simultaneous operation type.

PERFORMANCE

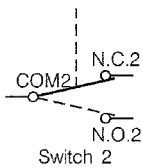
	Item	Details	
External standards	Conformed standards	JIS C 4508	
Structure	Contact type	Single-Pole Double-Throw (SPDT)	
	Contact shape	Standard load type: Pure silver rivet, Low current load type: Gold alloy cross point	
	Terminal shape	Screw (M4 binding head machine screw with toothed washer)	
	Protective structure	IP67 (IEC60529, JIS C 0920)	
	Electrical performance	Electrical rating	Standard load type
Low current load type			125Vac-0.1A, 30Vdc-0.1A
Dielectric strength		Between non-continuous terminals: 600V, 50/60Hz for 1 minute Between each terminal and non-conducting metal part: 2,000V, 50/60Hz for 1 minute Between each terminal and ground: 2,000V, 50/60Hz for 1 minute	
Insulation resistance		Max. 100MΩ (by 500Vdc megger)	
Initial contact resistance		Max. 100mΩ (6 to 8Vdc, energizing current 1A, measured by voltage drop method)	
Recommended min. contact operating voltage/current		24Vac/dc-10mA, 12Vac/dc-20mA	
Temperature rise		Max. 30°C Terminal temperature measured by thermoelectric thermometer after energizing by rated current	
Mechanical performance		Actuator strength	Withstand load 5 times O.F. (operating direction for 1 minute)
	Terminal strength	Withstand tightening torque strength of 1.2N-m for 1 minute	
	Impact resistance*	200m/s ² , Contact release of 1ms max. at free position and operating limit positions	
	Vibration resistance*	Frequency 10 to 55Hz, 1.5mm peak-to-peak amplitude for 2 continuous hours Contact release of 1ms max. at free position and operating limit positions or operating limit position	
	Allowable operating speed	0.32mm/s to 0.5m/s Min. speed: Unstable state of contacts 0.1s max. Max. speed: Actuator damage not allowed	
	Mechanical operating frequency	Max. 120 operations/minute	
Life	Mechanical life	Min. 2 million operations	
	Electrical life	Min. 100,000 operations (250Vac-3A resistive load)	
Environmental conditions	Operating temperature range	-10 to +70°C	
	Operating humidity range	98%RH max.	
Recommended tightening torque	Body	5 to 6N-m (M5 hexagon socket head bolt)	
	Terminal	1.3 to 1.7N-m (M4 binding head machine screw with toothed washer)	
	Operation head	0.8 to 1.2N-m (M3.5 screw)	
	Actuator	4 to 5.2N-m (M5 screw)	

Note: Items marked by * are values for catalog listing **VCL-5001**. Unmarked items are values common to all models in the **VCL-5000** Series.

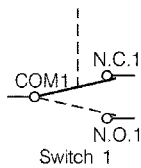
• Contact type

• Center-neutral type

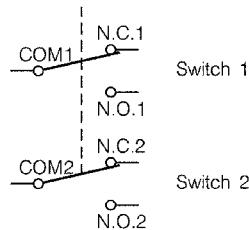
CCW operation



CCW operation



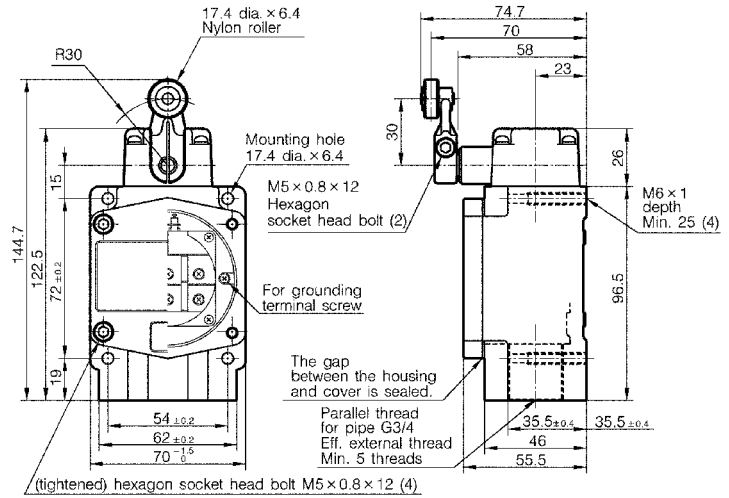
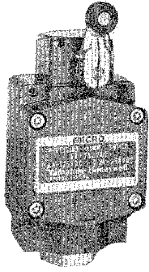
• 2-circuit simultaneous operation type



APPEARANCE, OPERATING CHARACTERISTICS AND EXTERNAL DIMENSIONS

(unit: mm)

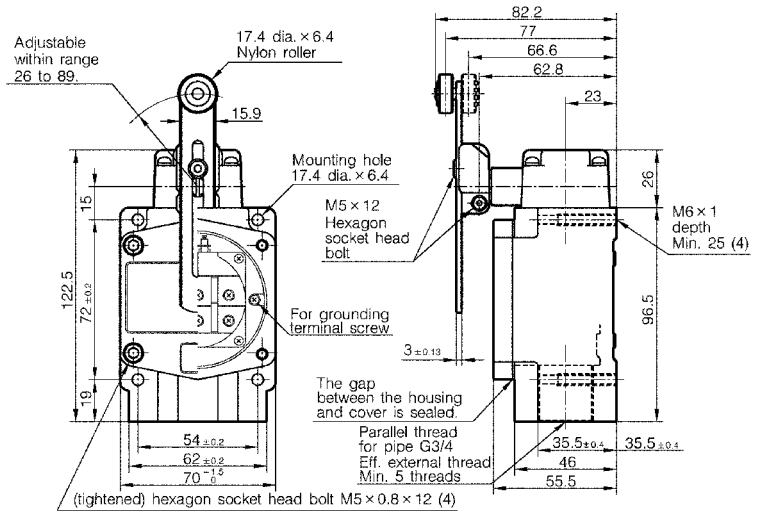
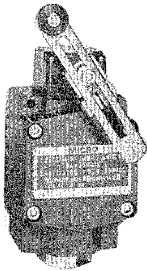
• Roller lever type



Model No.	Center-neutral	2-circuit simultaneous operation type
Catalog listing	VCL-5001	VCL-5101
O.F. (N max.)		15.7
R.F. (N min.)		2.2
P.T. (° max.)	10	12
M.D. (° max.)		3
O.T. (° min.)		35

Note: A G $\frac{3}{4}$ screw is threaded into the conduit section, and a blind stopper is assembled to ensure sealability up till wiring.

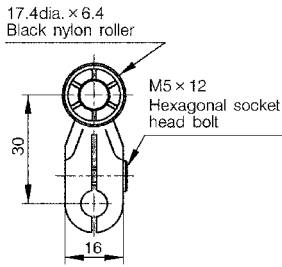
• Adjustable roller lever type



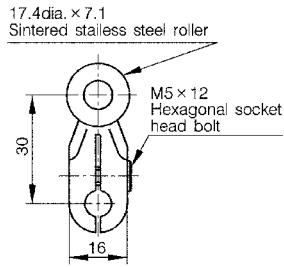
Model No.	Center-neutral	2-circuit simultaneous operation type
Catalog listing	VCL-5003	VCL-5103
O.F. (N max.)		15.7
R.F. (N min.)		2.2
P.T. (° max.)	10	12
M.D. (° max.)		3
O.T. (° min.)		35

Note: A G $\frac{3}{4}$ screw is threaded into the conduit section, and a blind stopper is assembled to ensure sealability up till wiring.

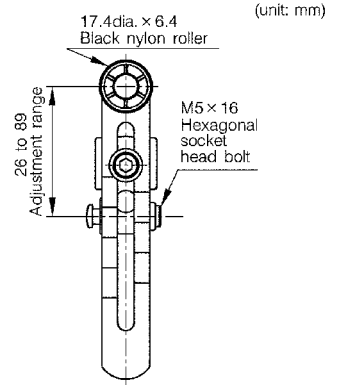
● Auxiliary actuators



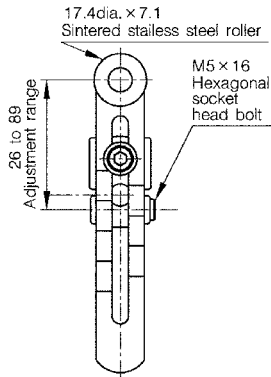
6PA-J105



LS-6PA51



6PA-J79



LS-6PA58

(unit: mm)