

- Robust design for arduous in-cab applications
- Return-to-center
- Optional mechanical over-press feature at either ends of travel
- Low under-panel depth of 21mm
- Hall-effect sensor technology
- Rated for 1 million cycles of life
- Dual-redundant electronic architecture
- Outputs with sense and voltage span options
- Dual supply to ensure a high level of signal integrity
- Designed to allow contamination (liquid or dust) to pass through the mechanism without causing any damage
- Electronics sealed to IP67



The JC040 is a proportional rocker for use in joystick grips and other in-cab human-machine interfaces. Two robust, return-to-center operating options are available: a  $\pm 25^\circ$  movement from center; or a  $\pm 20^\circ$  movement with an over-press feature, which can be included in both directions of movement or just one, used to indicate a different mode of machine operation. In all versions, a compact mechanical design means the required under-panel space is just 21mm.

The rocker utilizes non-contacting, Hall-effect sensing technology that eliminates contact wear and provides for long-life integrity of the output signal, giving rise to a minimum operating life of 1 million cycles.

Safety is enhanced via a fully dual-redundant electronic architecture made up of two power supplies and two sensing circuits, the outputs of which can be set to positive or negative ramps or a combination of both. Electronic robustness is assured with the enclosure sealing rated to IP67.





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## CONFIGURATION & ORDERING CODES

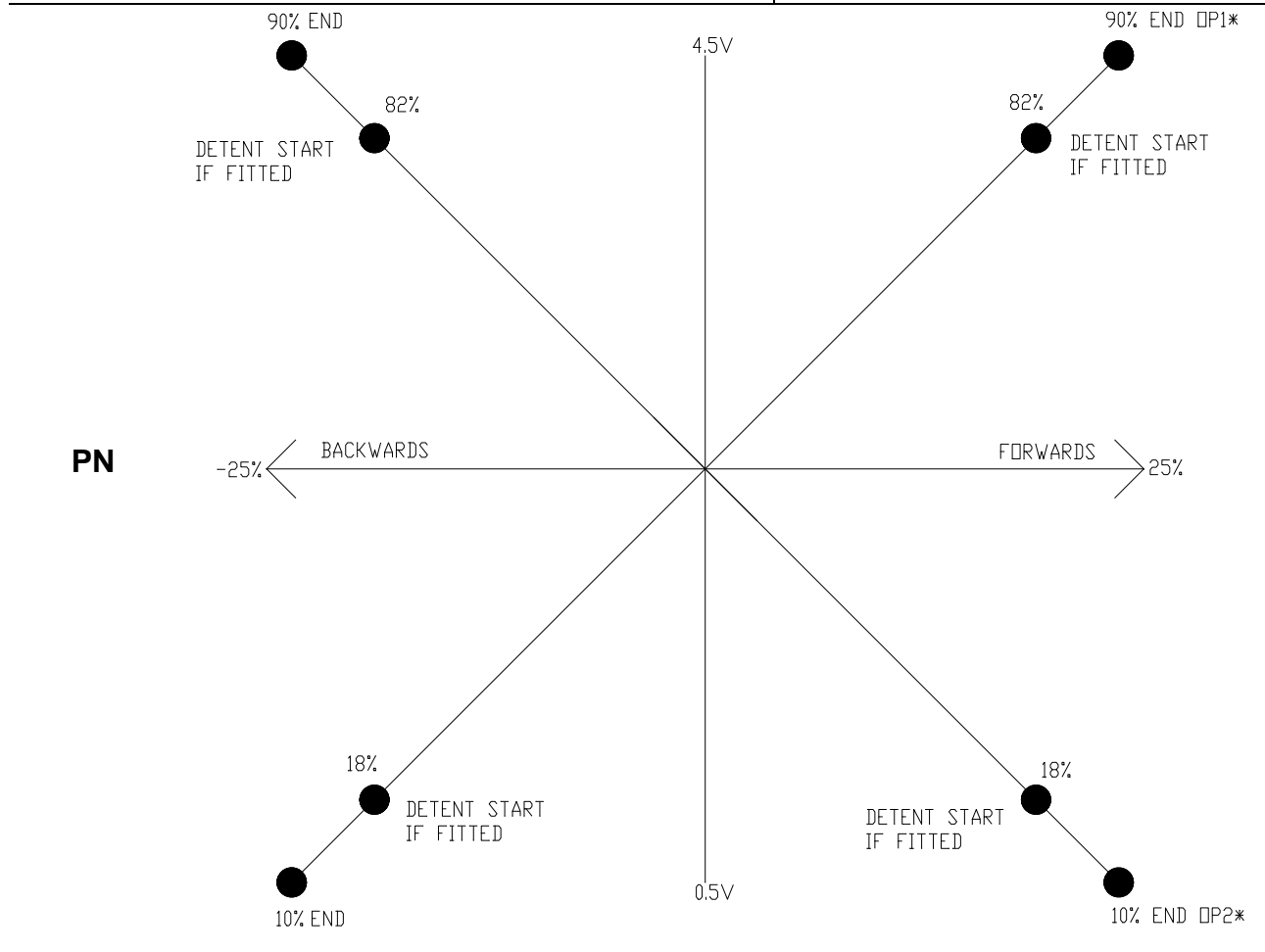
JC040-GEN-XX-XX-400

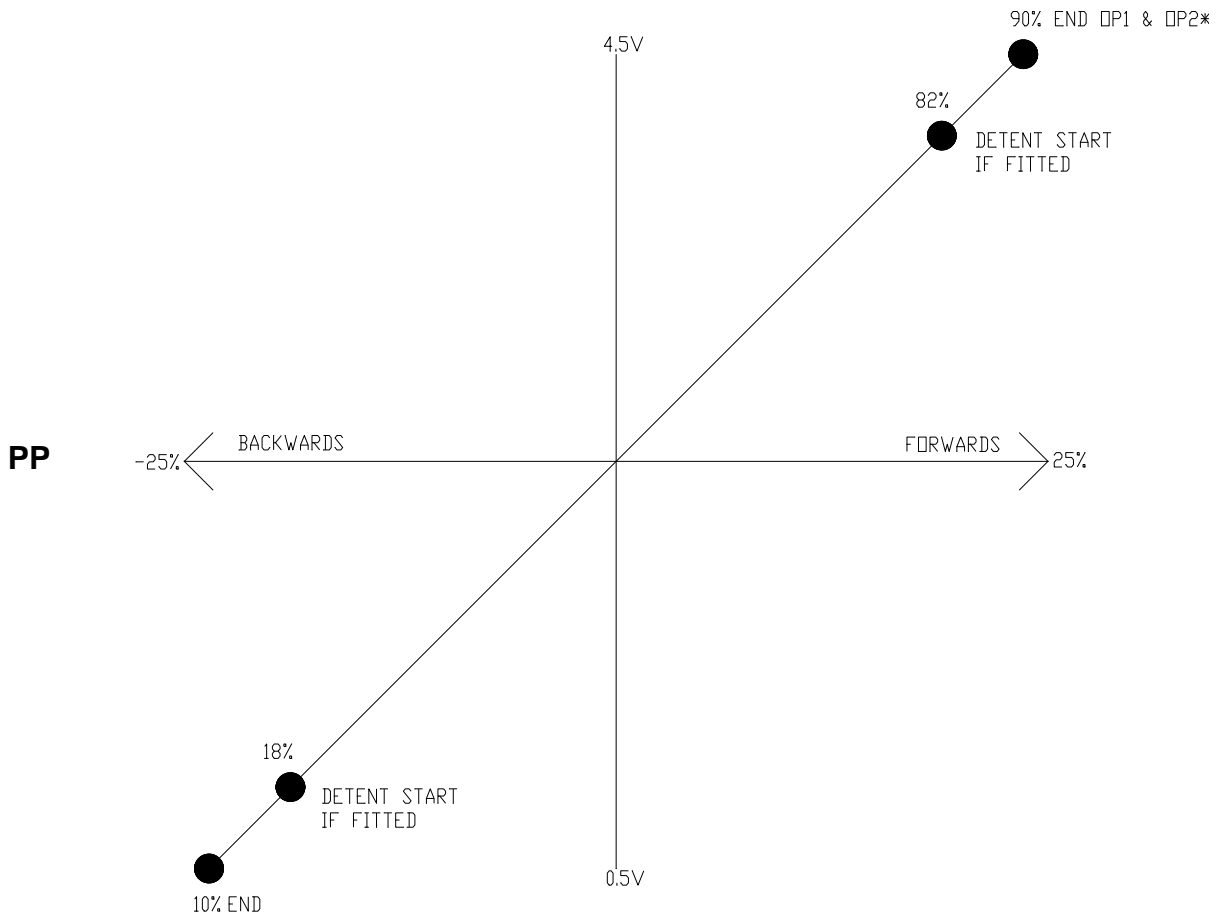
Type	Output Sense	Detent		Cable Length (mm)
JC040-GEN	XX	XX		XXX
	PN	00	No Detent	400
	PP	1F	Forward Position	
		1B	Backward Position	
		2D	Both Fitted	

### OUTPUT SENSE

JC040-GEN-XX-XX-400

Code	Description
PN	Output 1: Positive slope Output 2: Negative slope
PP	Output 1: Positive slope Output 2: Positive slope





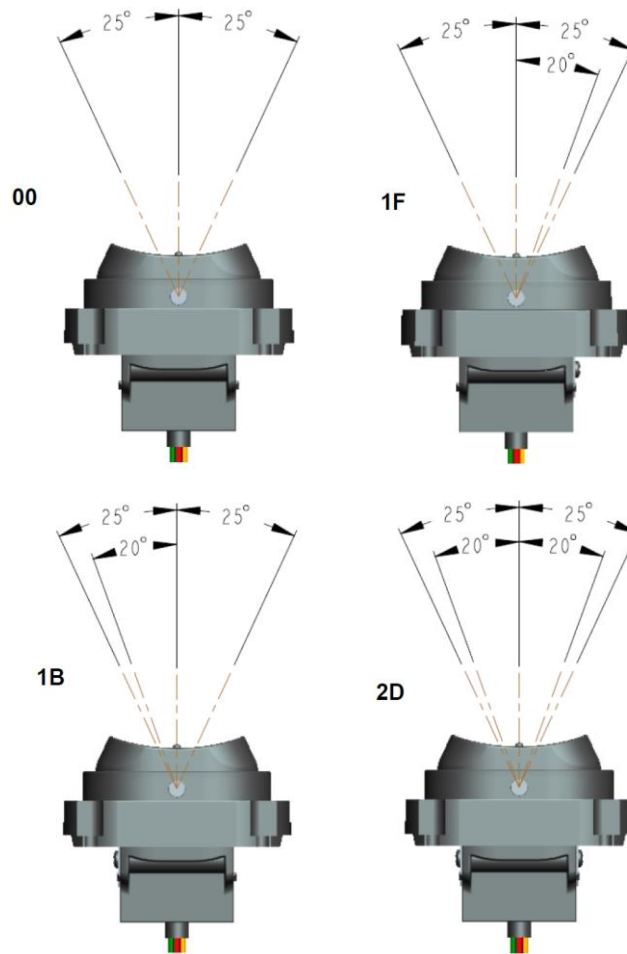
\* 10-90% of 5V supply

**DETENT**

JC040-GEN-XX-~~XX~~-400

Code	Description
00	No Detent
1F	1 Forward position detent
1B	1 Backward position detent
2D	Both detents fitted

The detents provide a snap feel at  $\pm 20^\circ$  (18% and 82% output voltage) that can be used in a control system to generate a specific response e.g. return to dig, rapid travel etc.



**CABLE LENGTH**

JC040-GEN-XX-XX-400

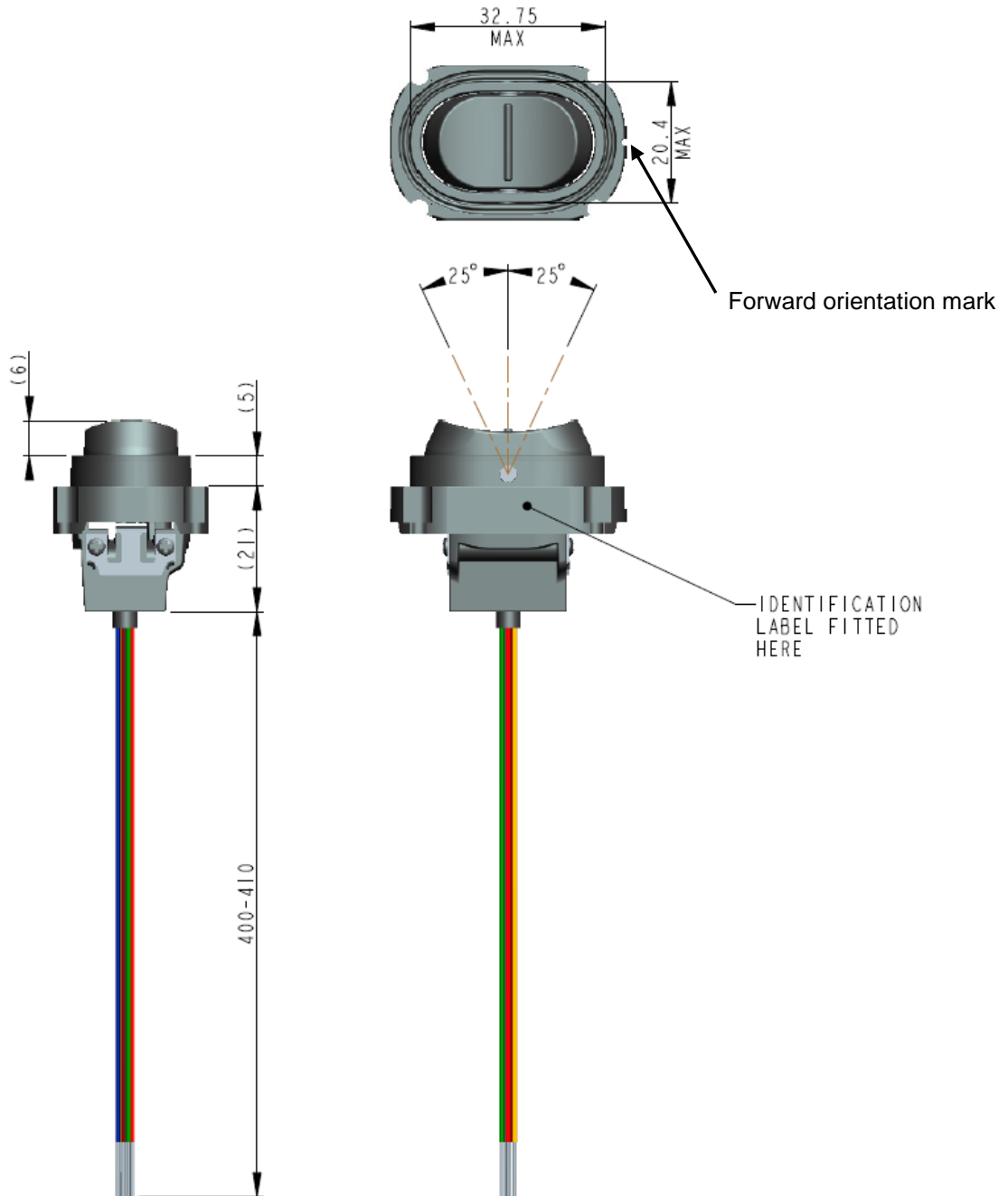
Code	Cable Length in mm
400	400



## INSTALLATION

### MECHANICAL

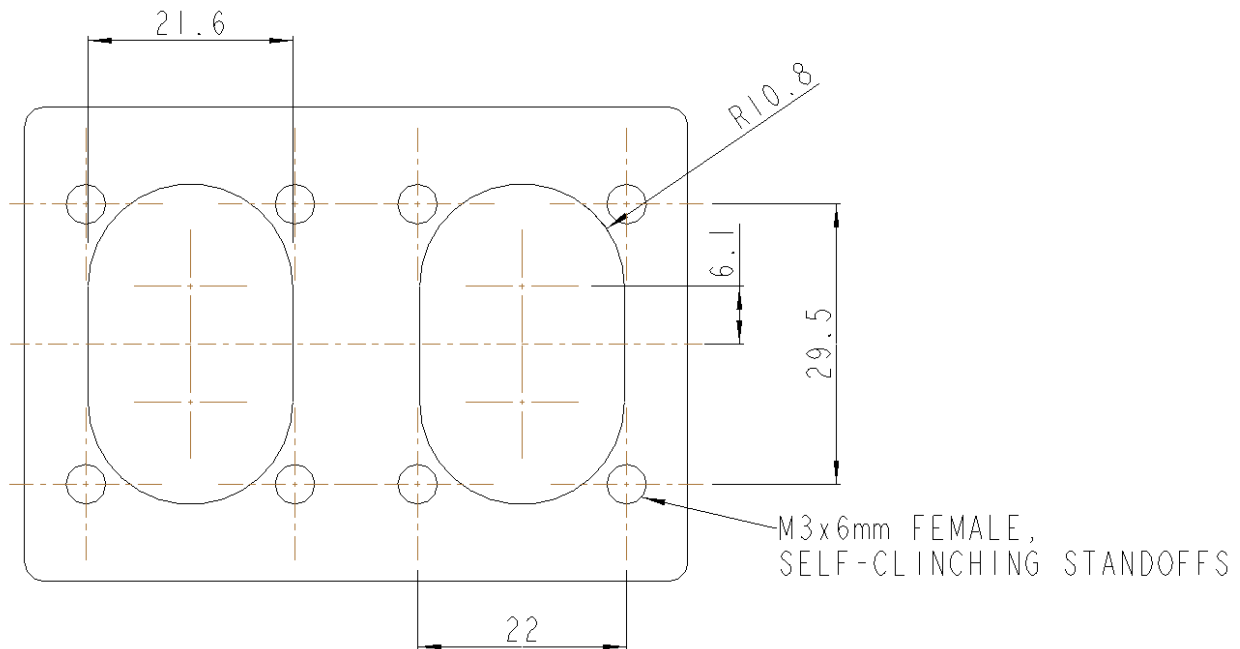
#### Dimensions





### Panel cut-out/Mounting Details

The following details show the hole that should be cut in the mounting panel

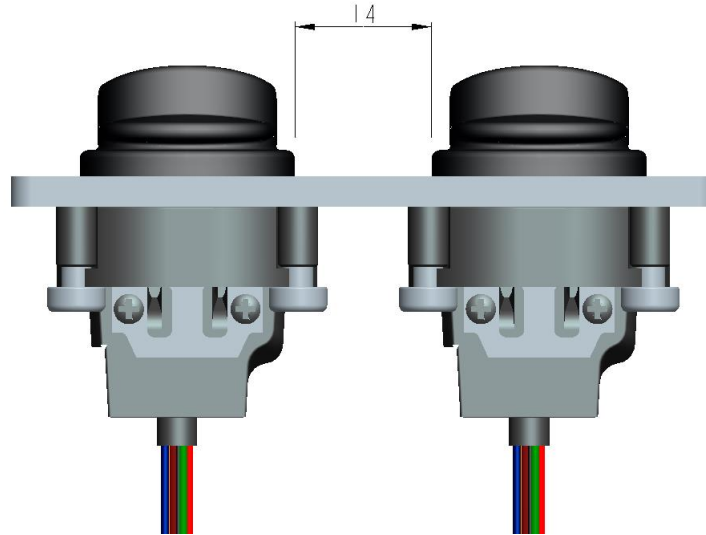


Curtiss Wright recommend that the JC040 rocker is mounted using a minimum of two M3 x 6mm female, self-clinching standoffs (e.g. PEM ref. CSS M3-6) fitted to the back of the panel at diametrically opposite positions. The standoffs are used in conjunction with two M3 x 6mm washer head screws. The screws should be tightened to a torque of 0.4Nm to 0.7Nm with a minimum panel thickness of 3 mm.



### Panel Mounting Details - standard

There is a minimal spacing between two JC040 rockers to ensure there isn't any influence on one rockers output from the other rockers magnet. In a standard mounting configuration the gap is:



### ELECTRICAL CONNECTIONS

The JC040 is supplied with 6 wires with the colours and functions below

The wires are size 30 AWG (19/0.06), PTFE insulated and unshielded with a maximum outside diameter of 0.65mm

Wire Color	Function
Red	+5V to Output 1 Sensor
Blue	+5V to Output 2 Sensor
Brown	0V Output 1 Sensor
Black	0V Output 2 Sensor
Green	Output 1 Signal
Orange	Output 2 Signal





## SPECIFICATIONS

### ELECTRICAL

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SUPPLY VOLTAGE	5Vdc $\pm$ 0.5Vdc
OUTPUT VOLTAGE	10% to 90% of Supply Voltage
CENTER REFERENCE	48% to 52% of Supply Voltage
OVER-PRESS VOLTAGE (if fitted)	18% and 82% ( $\pm$ 2%)
TOLERANCE OF OUTPUT VOLTAGE AFTER LIFE (including temperature effects)	Reverse end of travel position: -3% to +2% Reverse detent position: -4% to +3% Centre position: -2.5% to +2% Forward detent position: -3% to +4% Forward end of travel position: -2% to +3%
OUTPUT SENSE	The dual outputs can be configured to have positive ramps or a combination of positive and negative ramps
CURRENT CONSUMPTION	< 19mA
NON-LINEARITY	< $\pm$ 0.4%
TRACKING ERROR	$\pm$ 2%
POWER ON SETTLEMENT TIME	Up to 15mS
OVER VOLTAGE PROTECTION	Up to 20V (-40° to +80°C)
SHORT CIRCUIT PROTECTION	Output to ground and output to supply
SUPPLY REVERSE POLARITY PROTECTION	-10Vdc (Continuous)
CONNECTION	6-way flying lead

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### MECHANICAL

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BREAKOUT FORCE	3Nm
OPERATING FORCE AT END OF TRAVEL – WITHOUT OVER-PRESS	6.5Nm
OPERATING FORCE AT START OF OVER-PRESS	6Nm
OPERATING FORCE TO ENGAGE OVER-PRESS	17Nm
MECHANICAL ANGLE	$\pm$ 25°
START OF OVER-PRESS	$\pm$ 20°
MECHANICAL LIFE	1 million cycles 200,000 cycles with over-press feature
WEIGHT	20g maximum

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**ENVIRONMENTAL & LEGISLATIVE**

OPERATING TEMPERATURE	-25°C to 80°C	
STORAGE TEMPERATURE	-40°C to 80°C	
ENVIRONMENTAL PROTECTION	The rocker has a design where contamination (liquid or dust) can pass through the mechanism without causing any damage and an IP67 protection of the electronics	
EMC IMMUNITY LEVEL	EN 61000-4-3: 2002	100V/m, 80MHz-1GHz and 1.4-2.7GHz
EMC EMISSIONS LEVEL	EN 61000-6-4: 2011	30MHz-1GHz
ESD IMMUNITY LEVEL	EN 61000-4-2, Level 2: 1995	4kV contact and air discharge
VIBRATION (SINUSOIDAL)	EN 60068-2-6: 2008	3gn, 10-200Hz, 1h per axis
VIBRATION (RANDOM)	EN 60068-2-64: 2008	3.6gn, 10-200Hz, 2h per axis
BUMP	EN 60068-2-27: 2008	25gn, 10ms, 500 bumps in each of 6 directions
FREE-FALL DROP	EN 60068-2-32: 1993	1.0m at level C, 1.2m at level E
SHOCK	EN 60068-2-27: 2008	50g, 6ms, half sine, 3 shocks in each of 6 directions
SALT SPRAY	EN 60068-2-11: 1999	
MTTFd	>700 years	

**IMPORTANT INFORMATION**

Whilst Curtiss-Wright Industrial Group - Penny & Giles has designed this joystick to meet a range of applications it is the responsibility of the customer to ensure it meets their specific requirement.

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