Honeywell

MICRO SWITCH™ Compact Limit Switches

NGC Series

002409

Issue 2

Datasheet

DESCRIPTION

Honeywell's MICRO SWITCH™ Compact Limit Switches, NGC Series, are a configurable platform of medium-duty switches that allow the customer to choose SPDT (single pole, double throw) or DPDT (double pole, double throw) circuitry while maintaining the same housing and mounting footprint throughout the NGC Series. MICRO SWITCH™ NGC Series can be configured more than 380,000 ways, carries global approvals, and are sealed to IP67 for potential use in indoor and outdoor applications.

VALUE TO CUSTOMERS

- **Cost-effective:** Provides a single source for a compact SPDT and DPDT limit switch, which can help minimize the Original Equipment Manufacturer's sourcing expenses by simplifying their supply chain
- **Versatile:** Durable packaging allows for use in many harsh indoor or outdoor applications, providing performance confidence
- **Configurable:** Allows design engineers to standardize on a single footprint while meeting a variety of electrical requirements
- **Application support:** Customers with a global footprint can count on Honeywell for regional support for new applications and troubleshooting

DIFFERENTIATION

- With two times the vibration (10 g) and shock (50 g) ratings of comparable competitive devices, the NGC Series can be implemented in the harshest of environmental conditions, providing enhanced reliability and repeatability
- Broader current capacity (10 A) than comparable devices allows for potential use in a wider set of applications, making platform standardization an easier task

FEATURES

- SPDT or DPDT configurable circuitry
- Snap-action, positive-break contacts
- Silver alloy and gold plated contact options
- UL, CE, cUL, and CCC approvals
- NEMA 1, 4, 12, 13; IP67 sealing
- Metal and plastic housing options
- Cable and connector terminations
- Variety of heads and actuator levers

POTENTIAL INDUSTRIAL APPLICATIONS

- Boom position detection
- Elevators and escalators
- Machine tools
- Mobile light towers
- Packaging equipment
- Rail doors
- Scissor lifts

PORTFOLIO

The NGC Series joins the 14CE, 914CE, LS, and E6/V6 Series of Medium-Duty Limit Switches. Honeywell also offers a portfolio of MICRO SWITCH™ Heavy-Duty Limit Switches and Global Limit Switches.

Table 1. Specifications

Characteristic	Parameter
Description	compact, medium-duty limit switches
Actuators	**Side Rotary Configurations** • Side rotary • Side rotary (short) • Side rotary with adjustable length roller lever • Reversed side rotary (short) • Reversed side rotary with adjustable length roller lever **Plunger Configurations** • Pin plunger (standard 4,8 mm [0.19 in] and long 7,4 mm [0.29 in]) • Roller plunger (standard 15,3 mm [0.60 in] and long 17,85 mm [0.70 in]) • Cross roller plunger (standard 15,3 mm [0.60 in] and long 17,85 mm [0.70 in]) • Pin plunger with boot seal • Panel-mount pin plunger • Panel-mount roller plunger • Panel-mount cross roller plunger • Panel-mount pin plunger with boot seal
Terminations (SPDT)	Normal cable, 0,75 mm^2 (18 AWG) cable PUR cable, 0,75 mm^2 (18 AWG) cable Special application cable, 4 & 5 x 0,75 mm^2 (18 AWG) non-halogen cable Connector, 4-pin male, M12 thread Connector, 5-pin male, M12 thread
Terminations (DPDT)	Normal cable, 0,50 mm^2 (20 AWG) cable PUR cable, 0,50 mm^2 (20 AWG) cable Special application cable, 8 & 9 x 0,50 mm^2 (20 AWG) non-halogen cable Connector, 4-pin male, M12 thread Connector, 5-pin male, M12 thread
Material approval standard	(only applicable for product with non-halogen cable) DIN5510-2-2009 (flammability rating: S3; smoke rating: > SRI; welt rating: ST2; toxic gas rating: FED(TZUL=15min)< 1)
Switching options	SPDT, DPDT; snap action contacts (1NC/1NO, 2NC/2NO)
Sealing	NEMA 1, 4, 12, 13; IP67 per IEC 60529 suitable for outdoor applications
Contacts	snap action, positive break standard: silver alloy; gold: gold-plated
Operating temperature	-25 °C to 70 °C [-13 °F to 158 °F]
Storage temperature	-40 °C to 85 °C [-40 °F to 185 °F]
Mechanical endurance	1NC/1NO: 5 M cycles min. at 120 CPM 2NC/1NO: 5 M cycles min. at 60 CPM
Electrical life	1 A 110 Vdc 500,000 cycles applicable only for NC circuit
Thermal current	1NC/1NO: 10 A; 2NC/2NO: 5 A
Rated insulation voltage (Ui)	1NC/1NO: 400 V as per IEC 60947-5-1 2NC/2NO: 250 V as per IEC 60947-5-1
Dielectric strength	1890 Vac for metal housing; 2890 Vac for plastic housing 1500 Vac between all terminals to enclsoure after durability test
Impulse voltage	1NC/1NO: 2500 Vdc as per IEC 60947-5-1 2NC/2NO: 1500 Vac as per IEC 60947-5-1
Pollution degree	3 (III)
Humidity	95 %RH max.
Operating speed	0,3 mm/s to 2 m/s
Switching frequency	1NC/1NO: 120 cpm max. 2NC/2NO: 60 cpm max.
Shock	50 g for 11 μs as per IEC 60068-2-27; railway application, per IEC 61373 Class I Car B type
Vibration	10 g as per IEC 60068-2-6, frequency range 10 Hz to 500 Hz; railway application per IEC 61373 Class I Car B type
Approvals	UL (UL508), cUL, CE (IEC 60947-5-1), CCC (GB14048.5-2008)
Conforming to IEC Standards	IEC 60947-5-1, IEC 61373

MICRO SWITCH™ Compact Limit Switches, NGC Series

Table 2. Electrical Ratings

Circuitry/contacts	Rating, Rated Voltage & Current
1NC/1NO (silver-alloy contacts)	A300 AC15: 120 V 6 A; 240 V 3 A per IEC 60947-5-1 and UL 508 Q300 DC13: 125 Vdc 0.55 A; 250 Vdc 0.27 A per IEC 60947-5-1 an UL 508
1NC/1NO (gold-plated contacts)	low level current: 30 mVdc 10 mA resistive
2NC/2NO (silver-alloy contacts)	C300 AC15: 0.75 A 250 Vac per IEC 60947-5-1 R300 DC13: 0.1 A 250 Vdc per IEC 60947-5-1
2NC/2NO (gold-plated contacts)	low level current: 30 mVdc 10 mA resistive

Figure 1. Product Nomenclature and Order Guide

NOTE: not all combinations of model code are available.
Please contact your Honeywell provider/representative for assistance.

[1] Only applicable for Head Type "A"
[2] Only applicable for Lever Types "1, 2, 6"
[3] Only applicable for Lever Types "2, 6"

Common Part Numbers

NGCMB10AX01A1A
NGCMB10AX01B
NGCMB10AX01L
NGCMB10AX01M
NGCMB10AX01N
NGCMB10AX01P
NGCMB10AX01Q
NGCMB10AX01R
NGCMB10AX07A1A
NGCMB10AX24A1A
NGCMB10AX24C
NGCPA00NX01A1A
NGCMA00PX01A1A
NGCPA00NX01C
NGCPB10AX01A1A
NGCPB10AX01B
NGCPB10AX01C
NGCPB10AX01L
NGCPB10AX01M
NGCPB10AX01N
NGCPB10AX01P
NGCPB10AX01Q
NGCPB10AX01R
NGCPB10AX07A1A
NGCPB10AX24C
NGCMB10AX01A1B
NGCMA10AX01C
NGCMA10AX01M
NGCMB10AX01C
NGCPB10AX24A1A
NGCMB10AX07C
NGCMB10AX32C
NGCMA10AX01A1A
NGCPB10AX07C
NGCPB10AX24C

Figure 2. Connector Dimensions and Pin-Out Identification

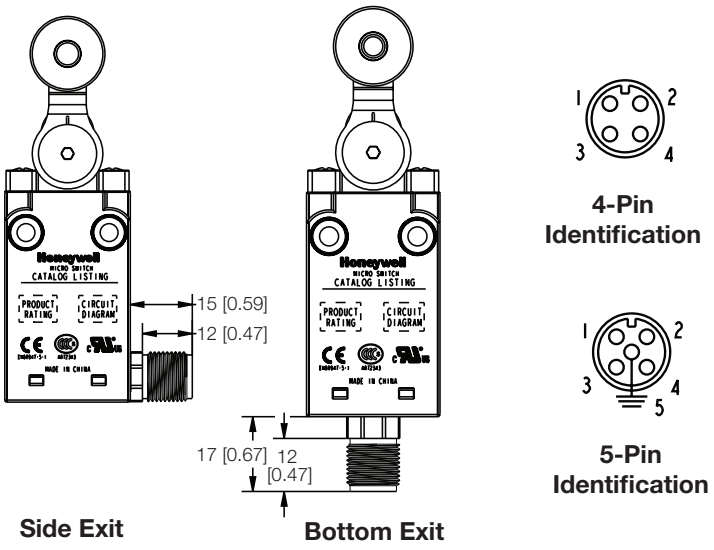
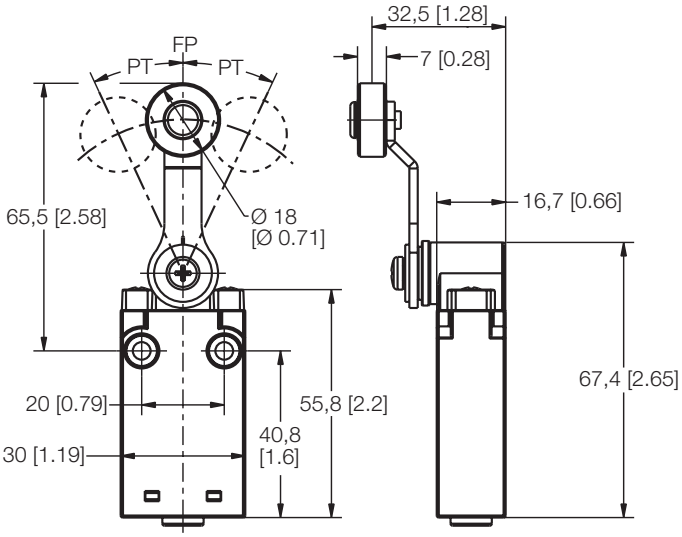
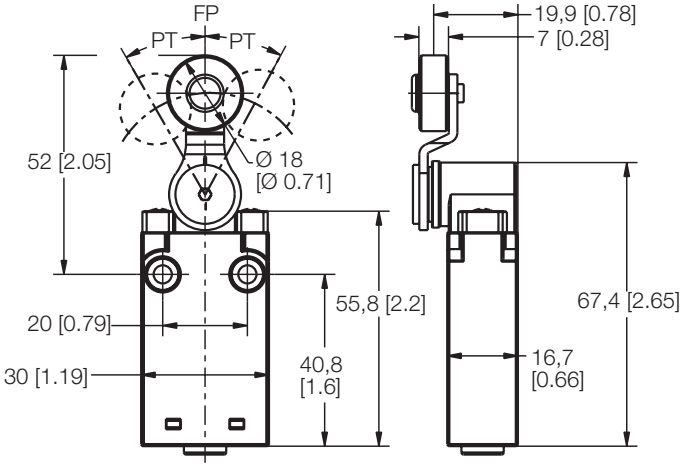


Figure 3. Side Rotary A1A/A1B Dimensions



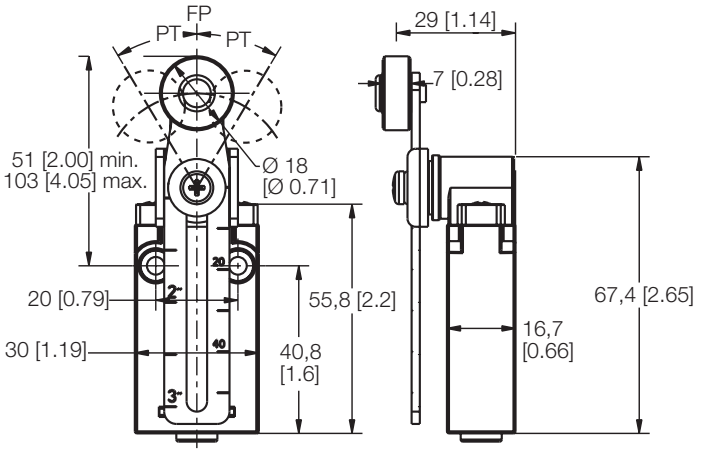
Type A1A/A1B • Side Rotary

Figure 4. Side Rotary A6A/A6B Dimensions



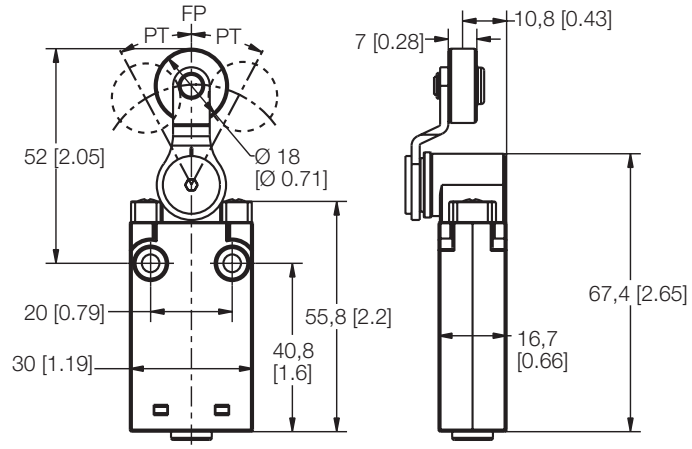
Type A6A/A6B • Side Rotary (Short)

Figure 5. Side Rotary A2A/A2B Dimensions



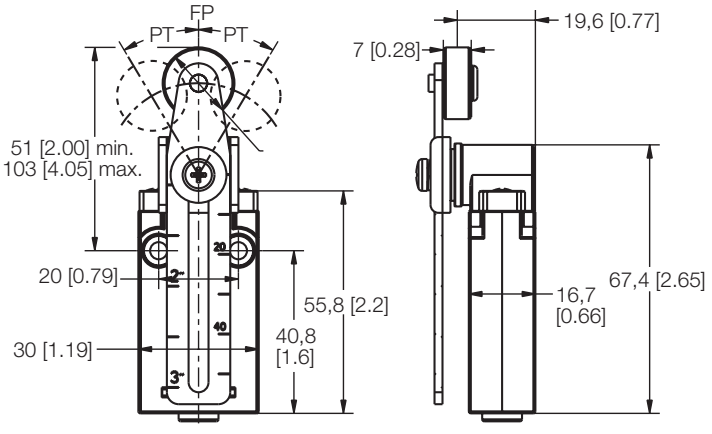
Type A2A/A2B • Side Rotary with Adjustable Length Roller Lever

Figure 6. Side Rotary A6C/A6D Dimensions



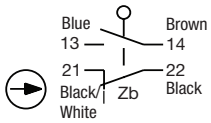
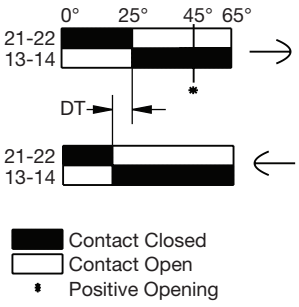
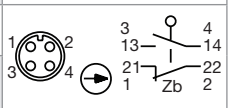
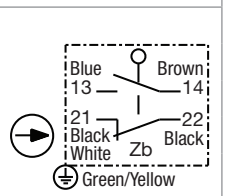
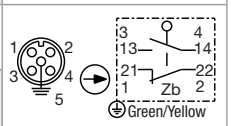
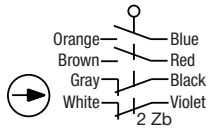
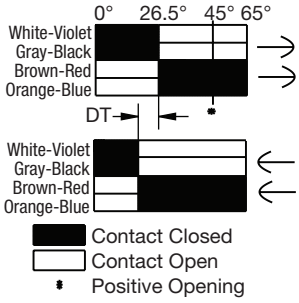
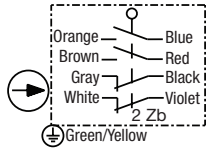
Type A6C/A6D • Reversed Side Rotary (Short)

Figure 7. Side Rotary A2C/A2D Dimensions



Type A2C/A2D • Reversed Side Rotary with Adjustable Length Roller Lever

Table 2. Side Rotary Operating Characteristics

Actuation	Catalog Listing	Connector/ Cable Exit	Switch Type	Circuit Diagram	Bar Charts	Differential Travel max.	Operating Force/ Torque max.	Release Force/ Torque max.
Side Rotary	NGCP*****X01A**	A	01			15°	18 Ncm [1.59 in-lb]	2,5 Ncm [0.22 in-lb]
	NGCP*****X01A**	B						
	NGCP*****X01A**	D						
	NGCP*****X07A**	A	07					
	NGCP*****X07A**	B						
	NGCP*****X07A**	D						
	NGCP*****X01A**	N	01					
	NGCP*****X07A**	N	07					
	NGCM*****X01A**	A	01					
	NGCM*****X01A**	B						
	NGCM*****X01A**	D						
	NGCM*****X07A**	A	07					
	NGCM*****X07A**	B						
	NGCM*****X07A**	D						
	NGCM*****X01A**	P	01					
	NGCM*****X07A**	P	07					
	NGCP*****X24A**	A	24			16.5°	17 Ncm [1.5 in-lb]	2,1 Ncm [0.19 in-lb]
	NGCP*****X24A**	B						
	NGCP*****X24A**	D						
	NGCP*****X32A**	A	32					
	NGCP*****X32A**	B						
	NGCP*****X32A**	D						
	NGCM*****X24A**	A	24					
	NGCM*****X24A**	B						
	NGCM*****X24A**	D						
	NGCM*****X32A**	A	32					
	NGCM*****X32A**	B						
	NGCM*****X32A**	D						

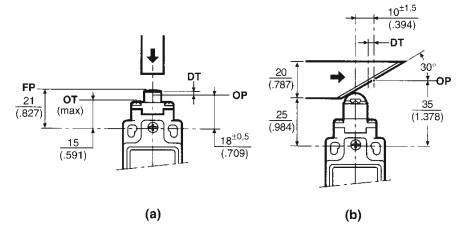


Figure A

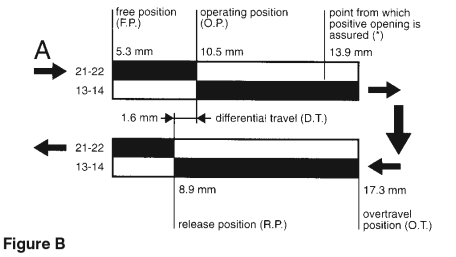


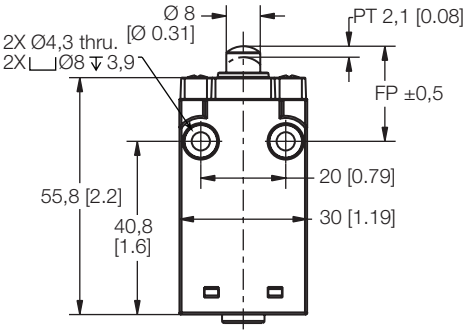
Figure B

How to read and understand the bar chart information

The following example relates to a unit which has a snap action basic and which has a roller pin plunger actuator. Follow the black arrows and the black strip on the chart. The black strip indicates that there is a circuit between the terminals whose numbers are shown on the left and when white there is no circuit.

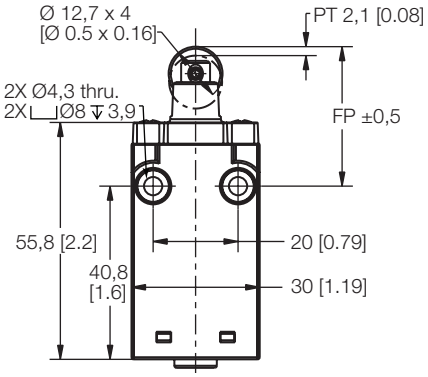
Look at Figures A and B as examples. Actuator type used for test is the linear Cam travel type (b) shown left. The start point is at the arrow marked “A” (See fig. B). This shows the free position to be 5.3 mm from the vertical center line of the unit. At this stage there is a circuit between the terminals 21-22 but no circuit between terminals 13-14. The unit can be actuated until it reaches the operating position which is 10,5 mm from the center line – a travel distance of 10,5 – 5,3 = 5,2 mm from the free position. At this point the circuit arrangement changes – no circuit between 21-22 but making a circuit between 13-14. If, however, the contacts of terminals 21-22 weld together and will not separate, a mechanical safety feature will take effect if the switch is travelled past the point from which positive opening is assured, 13,9 mm. As the switch returns it reaches the release position at 8.9 mm from the center line. The circuit will change back to the original state and the difference between the operating position and the release position gives what is known as the differential travel i.e. 10,5 – 8,9 = 1,6 mm. The asterisk (*) indicates the point from which the positive opening is assured.

Figure 8. Pin Plunger B & D Dimensions



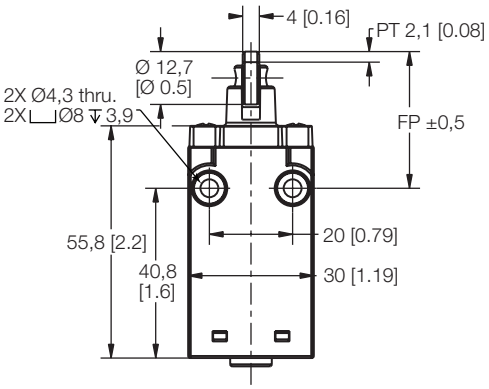
NGC_B | FP 19,8 mm
NGC_D | FP 22,4 mm
Pin Plunger

Figure 9. Roller Plunger C & S Dimensions



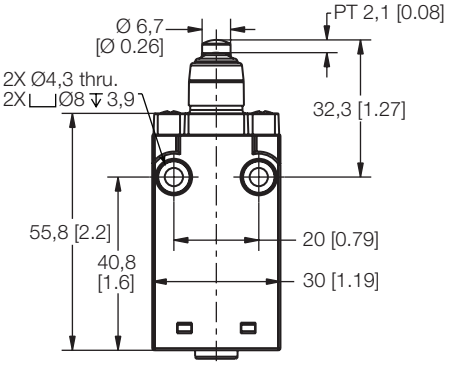
NGC_C | FP 30,3 mm
NGC_S | FP 32,85 mm
Roller Plunger

Figure 10. Cross Roller Plunger L & T Dimensions



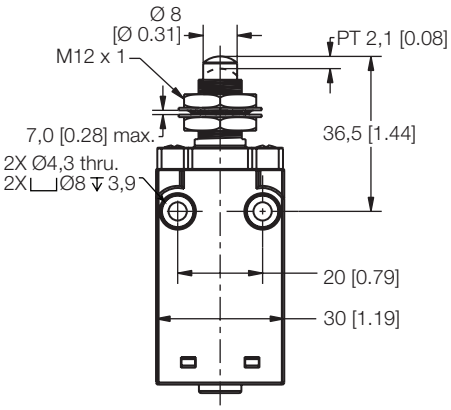
NGC_L | FP 30,3 mm
NGC_T | FP 32,85 mm
Cross Roller Plunger

Figure 11. Pin Plunger with Boot Seal M Dimensions



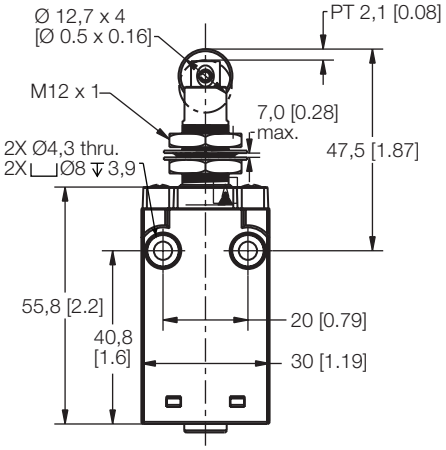
NGC_M
Pin Plunger with Boot Seal

Figure 12. Panel-Mount PIn Plunger N Dimensions



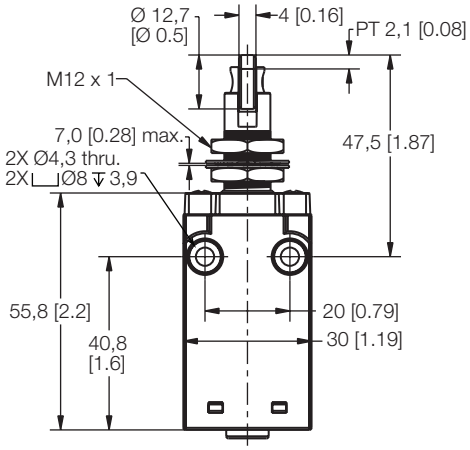
NGC_N
Panel-Mount Pin Plunger

Figure 13. Panel-Mount Roller Plunger P Dimensions



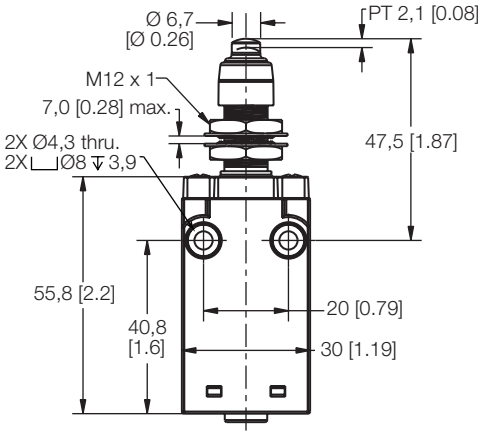
NGC_P
Panel-Mount Roller Plunger

Figure 14. Panel-Mount Cross Roller Plunger Q Dimensions



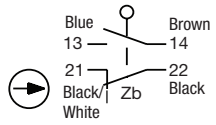
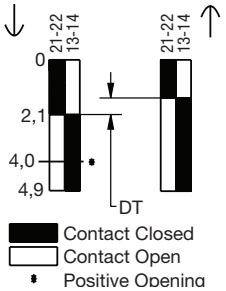
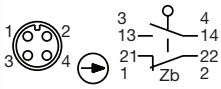
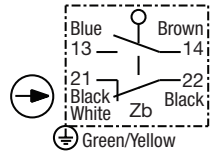
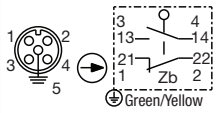
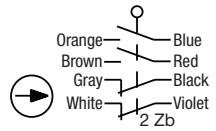
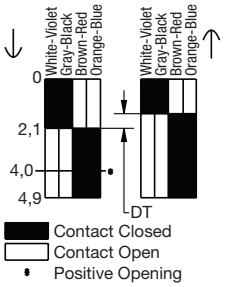
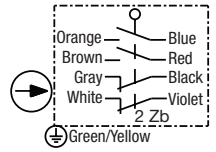
NGC_Q
Panel-Mount Cross Roller Plunger

Figure 15. Panel-Mount PIn Plunger With Boot Seal R Dimensions



NGC_R
Panel-Mount Pin Plunger with Boot Seal

Table 3. Plunger Operating Characteristics

Actuation	Catalog Listing	Connector/ Cable Exit	Switch Type	Circuit Diagram	Bar Charts	Differential Travel max.	Operating Force/ Torque max.	Release Force/ Torque max.
Plunger Head	NGCP*****X01 B/C/D/L/M/N/P/Q/R/S/T	A	01			1,2 mm [0.047 in]	11 N [2.47 lb]	3 N [0.67 lb]
	NGCP*****X01 B/C/D/L/M/N/P/Q/R/S/T	B						
	NGCP*****X01 B/C/D/L/M/N/P/Q/R/S/T	D						
	NGCP*****X07 B/C/D/L/M/N/P/Q/R/S/T	A	07					
	NGCP*****X07 B/C/D/L/M/N/P/Q/R/S/T	B						
	NGCP*****X07 B/C/D/L/M/N/P/Q/R/S/T	D						
	NGCP*****X01 B/C/D/L/M/N/P/Q/R/S/T	N	01					
	NGCP*****X07 B/C/D/L/M/N/P/Q/R/S/T	N	07					
	NGCM*****X01 B/C/D/L/M/N/P/Q/R/S/T	A	01					
	NGCM*****X01 B/C/D/L/M/N/P/Q/R/S/T	B						
	NGCM*****X01 B/C/D/L/M/N/P/Q/R/S/T	D						
	NGCM*****X07 B/C/D/L/M/N/P/Q/R/S/T	A	07					
	NGCM*****X07 B/C/D/L/M/N/P/Q/R/S/T	B						
	NGCM*****X07 B/C/D/L/M/N/P/Q/R/S/T	D						
	NGCM*****X01 B/C/D/L/M/N/P/Q/R/S/T	P	01					
	NGCP*****X07 B/C/D/L/M/N/P/Q/R/S/T	P	07					
	NGCP*****X24 B/C/D/L/M/N/P/Q/R/S/T	A	24			1,3 mm [0.051 in]	9,5 N [2.14 lb]	2,2 N [0.49 lb]
	NGCP*****X24 B/C/D/L/M/N/P/Q/R/S/T	B						
	NGCP*****X24 B/C/D/L/M/N/P/Q/R/S/T	D						
	NGCP*****X32 B/C/D/L/M/N/P/Q/R/S/T	A	32					
	NGCP*****X32 B/C/D/L/M/N/P/Q/R/S/T	B						
	NGCP*****X32 B/C/D/L/M/N/P/Q/R/S/T	D						
	NGCM*****X24 B/C/D/L/M/N/P/Q/R/S/T	A	24					
	NGCM*****X24 B/C/D/L/M/N/P/Q/R/S/T	B						
	NGCM*****X24 B/C/D/L/M/N/P/Q/R/S/T	D						
	NGCM*****X32 B/C/D/L/M/N/P/Q/R/S/T	A	32					
	NGCM*****X32 B/C/D/L/M/N/P/Q/R/S/T	B						
	NGCM*****X32 B/C/D/L/M/N/P/Q/R/S/T	D						

ADDITIONAL MATERIALS

The following associated literature is available on the Honeywell web site at sensing.honeywell.com:

- Product line guide
- Product part listing/nomenclature tree
- Product range guide
- Application note

⚠ WARNING
PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

⚠ WARNING
MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

Warranty/Remedy

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

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Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

Find out more

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