NGC SERIES

MICRO SWITCH Compact Limit Switches



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

FEATURES

- SPDT or DPDT configurable circuitry
- Snap-action, positive-break contacts
- Silver alloy and gold-plated contact options
- UL, CE, cUL, and CCC approvals
- Conforms to IEC 60947-5-1, IEC 61373, EN45545-2 (metal variants with M12 connectors only)
- NEMA 1, 4, 12, 13; IP67 sealing
- Metal and plastic housing options
- Low and high temperature variants
- 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

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

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.

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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 Top roller lever arm 					
Terminations (SPDT)	Normal cable (refer to table 4) PUR cable (refer to table 4) Special application cable (refer to table 4) Railway cable (refer to table 4) Connector, 4-pin male, M12 thread Connector, 5-pin male, M12 thread						
Terminations (DPDT)	Normal cable (refer to table 4) PUR cable (refer to table 4) Special application cable (refer to table 4) Railway cable (refer to table 4)						
Material approval standard	(only applicable for product with non-halogen ca DIN5510-2-2009 (flammability rating: S3; smok 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 75 °C [-13 °F to 167 °F] (for extended	operating temperature options, see Table 3)					
Storage temperature	-40 °C to 85 °C [-40 °F to 185 °F]						
Mechanical endurance	1NC/1NO: 5,000,000 cycles min. at 120 CPM 2NC/2NO: 5,000,000 cycles min. at 60 CPM – fc For wedge actuation: 500,000 cycles min. at 60 (Applicable only for Head type C, L, P, Q, S, and T						
Electrical life	see table 3						
Contact bounce limit	50 msec max., use proper signal filter accordingl	у					
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 1500 Vac between all terminals to enclsoure afte						
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 ap	plication, per IEC 61373 Class I Car B type					
Vibration	10 g as per IEC 60068-2-6, frequency range 10 railway application per IEC 61373 Class I Car B t						
Approvals	UL (UL508), cUL, CE (IEC 60947-5-1), CCC (GB:	14048.5-2008)					
Conforming to standards	IEC 60947-5-1, IEC 61373, EN45545-2 HL 3 (m	netal variants with M12 connectors only)					

	SPDT 1	NO/1NC			DPDT 2	SPDT and DPDT		
ас		dc		a	C	d	c	gold-plated contacts
A300 Ue (volts)	AC15 le (amps)	Q300 Ue (volts)	DC13 le (amps)	C300 Ue (volts)	AC15 le (amps)	R300 Ue (volts	DC13 le (amps)	
120	6	125	0.55	240	0.75	250	0.1	30 mVdc
240	3	250	0.27		·	·		10 mA resistive
Per IEC 6094	7-5-1 and UL	508						

Table 2. Electrical Rating and Utilization Category

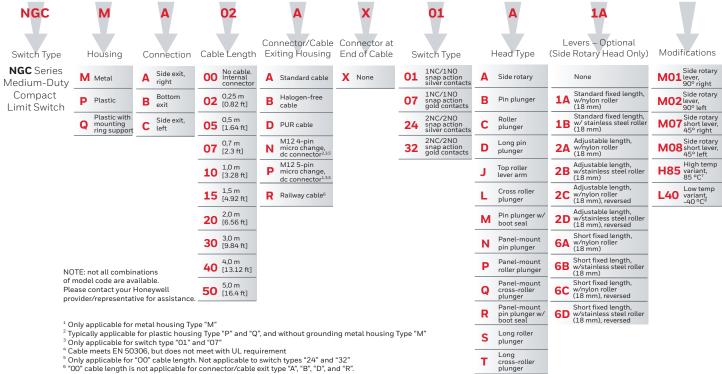
Table 3. Electgrical Life Expectancy at Illustrated Load

Switch Type	Voltage	Current	Life
SPDT (01) silver contact ¹	110 Vdc	1A	500,000
DPDT (24) silver contact ¹	110 Vdc	1 A	500,000
DPDT (24) silver contact ²	24 Vdc	15 mA	1,500,000
DPDT (32) gold-plated contact ²	30 mVdc	10 mA	50,000
SPDT (07) gold-plated contact ²	30 mVdc	10 mA	50,000

¹15 cycles/minute max. Applicable to NC circuit only. All loads resistive. Life mentioned are min. life.

² 30 cycles/minute max. All loads resistive. Life mentioned are min. life.

Figure 1. Product Nomenclature and Order Guide



⁶ "On't applicable for "OO" cable length. Not applicable to switch types "24" and "32" ⁶ "OO" cable length is not applicable for connector/cable exit type "A", "B", "D", and "R".

Not applicable to switch types "24" and "32"

⁷ DIN 5510-2-2009 does not apply to NGC variant with suffix modification code "H85". Also applicable only for connector/cable types "B", "R", "N", and "P". See table 3 ⁸ Modification code "L40" is a -40 °C variant. Only applicable to connector/cable types "B", "R", "N", and "P". See table 3

Connector/Cable type	Standard NG (with modifie	iC Series cation code, none)	High Temp N (with modifie	IGC Series cation code, H85)		Low Temp NGC Series (with modification code, L40)		
	Tmin	Tmax	Tmin	Tmax	Tmin	Tmax		
Α	-25 °C	75 °C	-	-	-	-		
В	-25 °C	75 °C	-25 °C	85 °C	-40 °C	75 °C		
D	-25 °C	75 °C	_	-	-	_		
R	-25 °C	75 °C	-25 °C	85 °C	-40 °C	75 °C		
N	-25 °C	75 °C	-25 °C	85 °C	-40 °C	75 °C		
P	-25 °C	75 °C	-25 °C	85 °C	-40 °C	75 °C		

Table 4. Connector/Cable Type Temperature Options^{10, 11}

Figure 2. Connector Dimensions and Pin-Out Identification

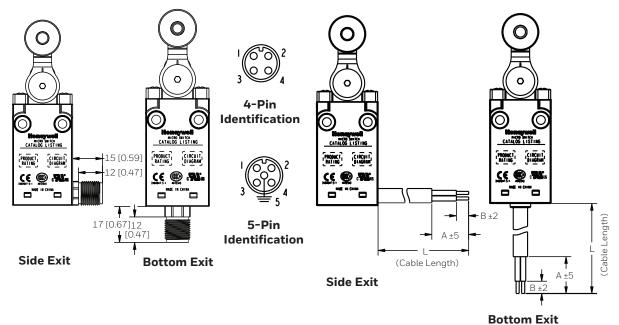


Table 5. Cable Descriptions

	Cable Descrip	tion					
Listing	Length (L) min.	Jacket strip length (A)	Insulation strip length (B)	NGCP*01* NGCP*07* (01 or 07 switch type)	NGCM*01* NGCM*07* (01 or 07 switch type)	NGCP*24* NGCP*32* (24 or 32 switch type)	NGCM*24* NGCM*32* (24 or 32 switch type)
NGC*00*	no cable (inter	nal connector)					
NGC*02*	0,25 m [9.8 in]	23 mm [0.91 in]	5 mm [0.20 in]				
NGC*05*	0,5 m [19,7]	32 mm [1.26]	17 mm [0.67 in]				
NGC*07*	0,7 m [27.6 in]	32 mm [1.26]	17 mm [0.67 in]				
NGC*10*	1 m [39.37 in]	23 mm [0.91 in]	5 mm [0.20 in]			00.0040	
NGC*15*	1,5 m [59 in]	23 mm [0.91 in]	5 mm [0.20 in]	18 AWG or 4 x 0.75 mm ²	18 AWG or 5 x 0.75 mm ²	20 AWG or 8 x 0,5 mm ²	20 AWG or 9 x 0,5 mm ²
NGC*20*	2 m [78.74 in]	23 mm [0.91 in]	5 mm [0.20 in]				0 x 0,0 mm
NGC*30*	3 m [9.84 ft]	23 mm [0.91 in]	5 mm [0.20 in]				
NGC*40*	4 m [13.12 ft]	23 mm [0.91 in]	5 mm [0.20 in]				
NGC*50*	5 m [16.4 ft]	23 mm [0.91 in]	5 mm [0.20 in]				

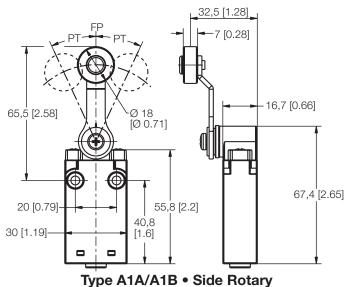
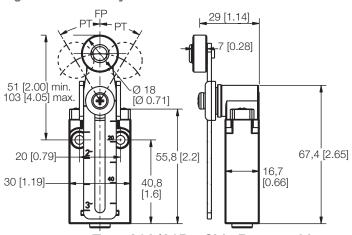


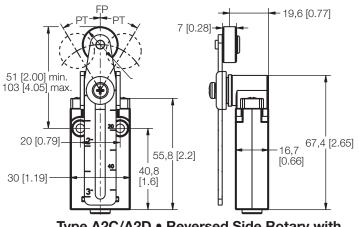
Figure 3. Side Rotary A1A/A1B Dimensions



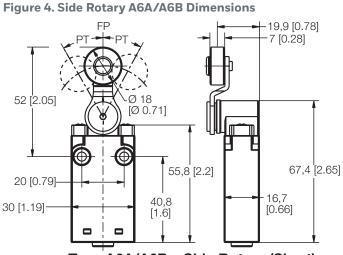


Type A2A/A2B • Side Rotary with Adjustable Length Roller Lever

Figure 7. Side Rotary A2C/A2D Dimensions

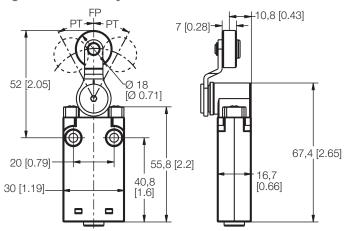


Type A2C/A2D • Reversed Side Rotary with Adjustable Length Roller Lever



Type A6A/A6B • Side Rotary (Short)

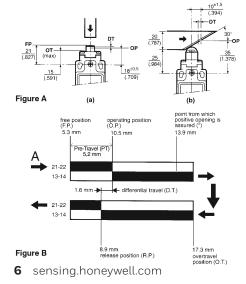




Type A6C/A6D • Reversed Side Rotary (Short)

Table 5. Side Rotary Operating Characteristics

Actua- tion	Catalog Listing	Connec- tor/ Cable Exit	Switch Type	Circuit Diagram	Bar Charts	Differen- tial Travel max.	Operating Force/ Torque max.	Release Force/ Torque max.
	NGCP****X01A**	А						
	NGCP****X01A**	В	01	Blue Brown				
	NGCP****X01A**	D		13 — 14				
	NGCP****X07A**	А		Black/Zb Black				
	NGCP****X07A**	В	07	White				
	NGCP****X07A**	D			0° 25° 45° 65° 21-22			
	NGCP****X01A**	N	01	1662^2 364^4				
	NGCP****X07A**	N	07	$3 \bigcirc 4 \bigoplus 21 \bigcirc 21 \bigcirc 22 \\ 1 \bigcirc 2b \bigcirc 2$				2,5 Ncm [0.22
	NGCM****X01A**	А			21-22	15°	18 Ncm [1.59 in-lb]	
	NGCM****X01A**	В	01	Blue Blue Brown 13 – 14 21 – 22 Black White Zb Black	Contact Closed Contact Open Positive Opening			in-lb]
	NGCM****X01A**	D						
	NGCM****X07A**	А						
	NGCM****X07A**	В	07	Green/Yellow				
<u> </u>	NGCM****X07A**	D						
Side Rotary	NGCM****X01A**	Р	01					
	NGCM****X07A**	P	07	$3 \bigoplus_{5}^{4} \bigoplus_{1}^{21} \underbrace{Zb}_{2}^{221}$ $\oplus \text{ Green/Yellow}$				
	NGCP****X24A**	A						
	NGCP****X24A**	В	24	P L	0° 26.5° 45° 65°			
	NGCP****X24A**	D		Orange Blue Brown Red	White-Violet			
	NGCP****X32A**	А		Gray-Black White-Violet	Brown-Red			
	NGCP****X32A**	В	32	→ P _{2 Zb}	DT-			
	NGCP****X32A**	D			White-Violet Gray-Black	10.50	17 Ncm	2,1 Ncm
	NGCM****X24A**	А			Brown-Red	16.5°	[1.5 in-lb]	[0.19 in-lb]
	NGCM****X24A**	В	24	Orange Blue	Orange-Blue Contact Closed			
	NGCM****X24A**	D		Brown Red Gray Black	Contact Open			
	NGCM****X32A**	А		White Violet	 Positive Opening 			
	NGCM****X32A**	В	32	Green/Yellow				
	NGCM****X32A**	D						

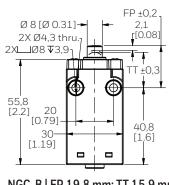


How to read and understand the bar chart information

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.

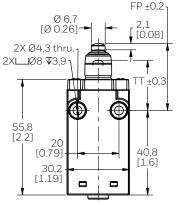
Look at Figures A and B as examples. Actuator type used for test is the linear Cam travel type (b) shown left. The start point is at the arrow marked "A" (See fig. B). This shows the free position to be 5.3 mm from the vertical center line of the unit. At this stage there is a circuit between the terminals 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



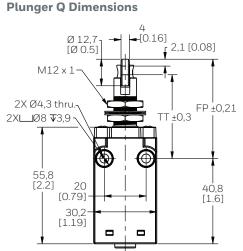
NGC_B | FP 19,8 mm; TT 15,9 mm NGC_D | FP 22,4 mm; TT 18,5 mm Pin Plunger

Figure 11. Pin Plunger with Boot Seal M Dimensions



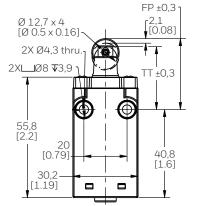
NGC_M | FP 32,3 mm; TT 28,4 mm Pin Plunger with Boot Seal

Figure 14. Panel-Mount Cross Roller



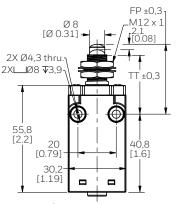
NGC_Q | FP 47,5 mm; TT 43,6 mm Panel-Mount Cross Roller Plunger

Figure 9. Roller Plunger C & S Dimensions



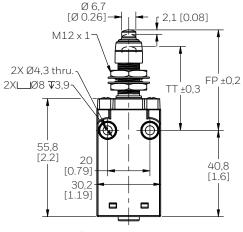
NGC_C | FP 30,3 mm; TT 26,4 mm NGC_S | FP 32,85 mm; TT 28,95 mm Roller Plunger

Figure 12. Panel-Mount PIn Plunger N Dimensions



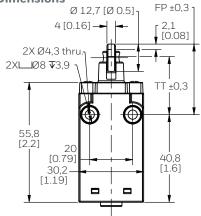
NGC_N | FP 36,5 mm; TT 32,6 mm Panel Mount Pin Plunger

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



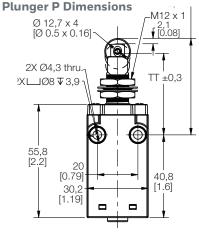
NGC_R | FP 47,5 mm; TT 43,6 mm Panel-Mount Pin Plunger with Boot Seal

Figure 10. Cross Roller Plunger L & T Dimensions



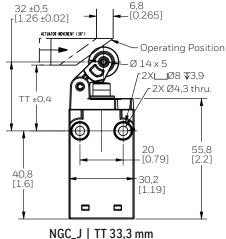
NGC_L | FP 30,3 mm; TT 26,4 mm NGC_T | FP 32,85 mm; TT 28,95 mm Cross Roller Plunger

Figure 13. Panel-Mount Roller



NGC_P | FP 47,5 mm; TT 43,6 mm Panel-Mount Roller Plunger

Figure 16. Top Roller Lever Arm J Dimensions



Top Roller Lever Arm

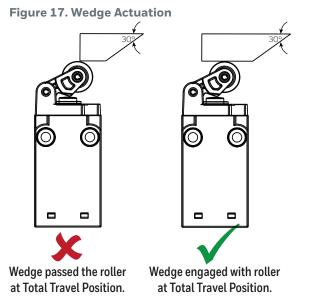
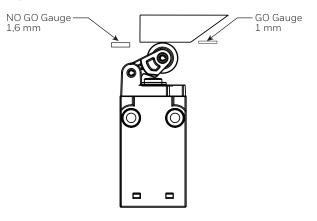


Figure 18. Final Installation Check at TTP



NOTE: Strictly adhere to installation instruction mentioned in Figures 1 to 18. Failure to comply with these could result in a functional issue.

Table 6. Plunger Operating Characteristics

Actu- ation	Catalog Listing	Connector/ Cable Exit	Switch Type	Circuit Diagram	Bar Charts	Differ- ential Travel max.	Oper- ating Force/ Torque max.	Re- lease Force/ Torque max.
	NGCP****X01 B/C/D/L/M/N/P/Q/R/S/T	А						
	NGCP****X01 B/C/D/L/M/N/P/Q/R/S/T	В	01	O1 Blue Brown				
	NGCP****X01 B/C/D/L/M/N/P/Q/R/S/T	D		13 - 14				
	NGCP****X07 B/C/D/L/M/N/P/Q/R/S/T	А		Black/Zb Black				
	NGCP****X07 B/C/D/L/M/N/P/Q/R/S/T	В	07	White				
	NGCP****X07 B/C/D/L/M/N/P/Q/R/S/T	D			1 274 274			
	NGCP****X01 B/C/D/L/M/N/P/Q/R/S/T	Ν	01	160^2 30^4 $13-4^4$ 14	13-14 13-14 13-14 13-14			
	NGCP****X07 B/C/D/L/M/N/P/Q/R/S/T	Ν	07	$3 \xrightarrow{21} 4 \xrightarrow{21} \frac{1}{Zb} \xrightarrow{22} \frac{1}{2}$	2,1	1,2 mm	11 N [2.47 lb]	3 N [0.67 lb]
	NGCM****X01 B/C/D/L/M/N/P/Q/R/S/T	А			4,0	[0.047 in]		
	NGCM****X01 B/C/D/L/M/N/P/Q/R/S/T	В	01	Blue Brown 13 - 14 Black Zb Black White Zb Black Green/Yellow				
	NGCM****X01 B/C/D/L/M/N/P/Q/R/S/T	D			Contact Closed			
	NGCM****X07 B/C/D/L/M/N/P/Q/R/S/T	А	07		Contact Open Positive Opening			
	NGCM****X07 B/C/D/L/M/N/P/Q/R/S/T	В			_			
Plung-	NGCM****X07 B/C/D/L/M/N/P/Q/R/S/T	D						
er Head	NGCM****X01 B/C/D/L/M/N/P/Q/R/S/T	Ρ	01					
	NGCP****X07 B/C/D/L/M/N/P/Q/R/S/T	Р	07	3 4 21 22 1 Zb 2 Green/Yellow				
	NGCP****X24 B/C/D/L/M/N/P/Q/R/S/T	А						
	NGCP****X24 B/C/D/L/M/N/P/Q/R/S/T	В	24	9				
	NGCP****X24 B/C/D/L/M/N/P/Q/R/S/T	D		Orange Blue Brown Red	olet cck Blue cck Blue			
	NGCP****X32 B/C/D/L/M/N/P/Q/R/S/T	А		Gray Black White Violet	Orange-Vite-Vite-Vite-Vite-Vite-Vite-Vite-Vit			
	NGCP****X32 B/C/D/L/M/N/P/Q/R/S/T	В	32	2 2 Zb				
	NGCP****X32 B/C/D/L/M/N/P/Q/R/S/T	D			2,1	1,4 mm	9,5 N	2,2 N
	NGCM****X24 B/C/D/L/M/N/P/Q/R/S/T	А		, <u>-</u>	4,0	[0.051 lb]	[2.14 lb]	[0.49 lb]
	NGCM****X24 B/C/D/L/M/N/P/Q/R/S/T	В	24	Orange Blue				
	NGCM****X24 B/C/D/L/M/N/P/Q/R/S/T	D		Brown Red Gray Black	Contact Closed Contact Open			
	NGCM****X32 B/C/D/L/M/N/P/Q/R/S/T	А		White Z Zb	Positive Opening			
	NGCM****X32 B/C/D/L/M/N/P/Q/R/S/T	В	32	Green/Yellow				
	NGCM****X32 B/C/D/L/M/N/P/Q/R/S/T	D						

Table 7. Top Roller Arm Operating Characteristics, Head Type J

Actu- ation	Catalog Listing	Connec- tor/ Cable Exit	Switch Type	Circuit Diagram	Bar Charts	Differ- ential Travel max.	Oper- ating Force/ Torque max.	Release Force/ Torque max.
	NGCP****X01 J	А						
	NGCP****X01 J	В	01	Blue Brown				
	NGCP****X01 J	D		13 — 14				
	NGCP****X07 J	А		Black/Zb Black				
	NGCP****X07 J	В	07	White				
	NGCP****X07 J	D						
	NGCP****X01 J	N	01	100^2 30^4 $13-4^1$	$\Box_{13^{-122}}^{21-22} - \Box_{13^{-122}}^{21-22} - \Box_{1$			1,2 N [0.27 lb]
	NGCP****X07 J	N	07	3 4 + 21 + 22 = 22	6,8		5,5 N [1.24 lb]	
	NGCM****X01 J	А			12,5 15,2 Contact Closed Contact Open Positive Opening	4 mm [0.157 in]		
	NGCM****X01 J	В	01	Blue Brown 13 – 14 21 – 22 Black Zb Black Zb Black Zb Green/Yellow				
	NGCM****X01 J	D						
	NGCM****X07 J	А						
	NGCM****X07 J	В	07					
Тор	NGCM****X07 J	D						
Roller Arm	NGCM****X01 J	Р	01					
	NGCP****X07 J	Р	07	3 € 4 € 1 Zb 2 Green/Yellow				
	NGCP****X24 J	A			style solution soluti			1,2 N
	NGCP****X24 J	В	24	. 9				
	NGCP****X24 J	D		Orange Blue Brown Brown				
	NGCP****X32 J	А		Gray Black White Violet	0 0 0 0 0 0 0 0 0 0 0 0 0 0			
	NGCP****X32 J	В	32	2 Zb				
	NGCP****X32 J	D			6,8	4,3 mm	4,5 N	
	NGCM****X24 J	А		·	12,5	[0.169 in]	[1.01 lb]	[0.27 lb]
	NGCM****X24 J	В	24	Orange Blue				
	NGCM****X24 J	D		Brown – – Red Gray – Black	Contact Closed Contact Open			
	NGCM****X32 J	А		White Violet	Positive Opening			
	NGCM****X32 J	В	32	Green/Yellow				
	NGCM****X32 J	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

FOR MORE INFORMATION

Honeywell Sensing and Internet of Things services its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing, or the nearest Authorized Distributor, visit sensing.honeywell.com or call:

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Latin America	+1 305 805 8188
Europe	+44 1344 238258
Japan	+81 (0) 3-6730-7152
Singapore	+65 6355 2828
Greater China	+86 4006396841

WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship during the applicable warranty period. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgment 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 that Honeywell, in its sole discretion, 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.

While Honeywell may provide application assistance personally, through our literature and the Honeywell web site, it is buyer's sole responsibility to determine the suitability of the product in the application.

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

A WARNING

- Consult with local safety agencies and their requirements when designing a machine-control link, interface and all control elements that affect safety.
- Strictly adhere to all installation instructions.

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

A 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.

