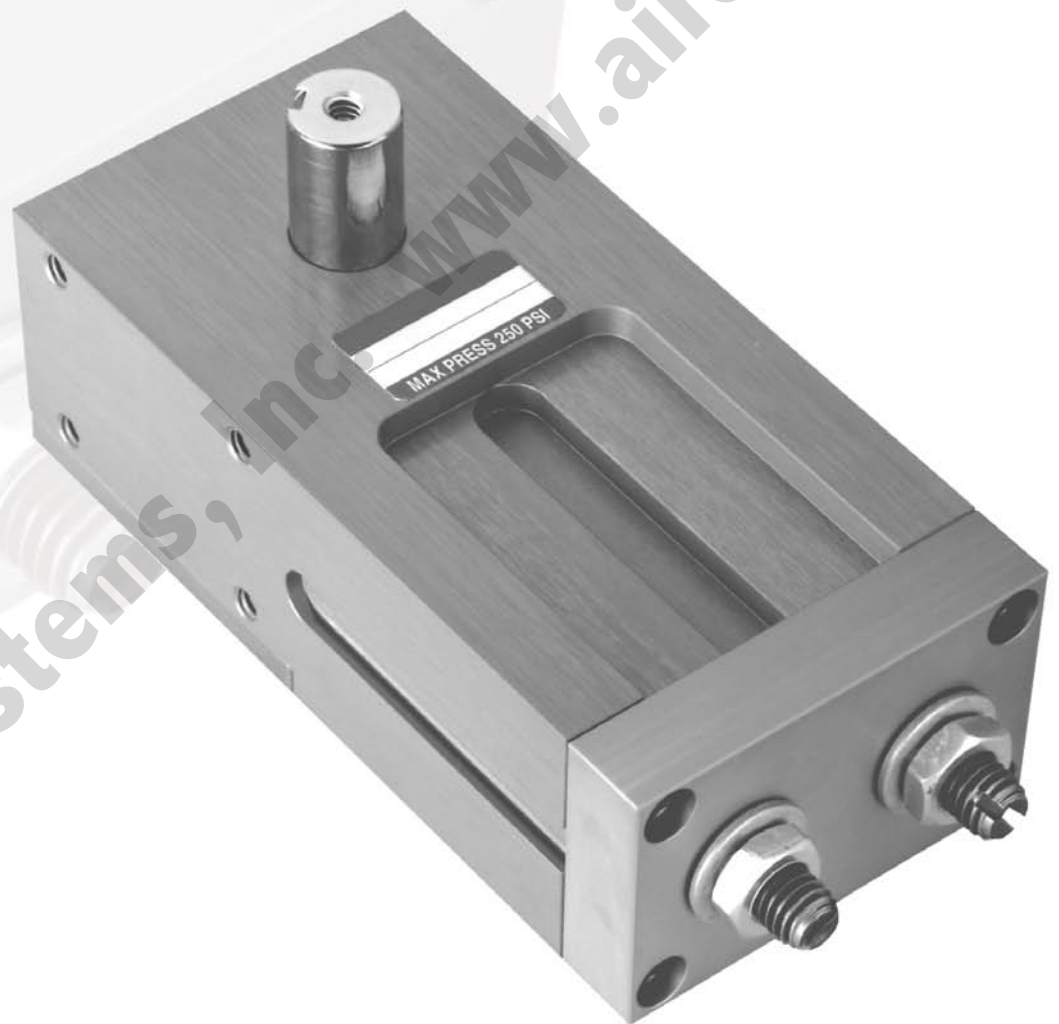


actuators

**RW** Series  
90 Degree Rotary Actuators



**numatics**

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**NUMATICS®**

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Air-Oil Systems, Inc. [www.airoil.com](http://www.airoil.com)



### RW-Series Rotary Actuator: Designed to handle real world rotary actuator applications.

The RW-Series Rotary Actuator design utilizes two independent piston cylinders. Each piston has a crank arm attached to a crankshaft. As the piston strokes in its bore, the crankshaft rotates. Pressurizing the opposite bore reverses rotation. This unique design has many features and benefits over conventional rotary actuators.

#### A. Body:

Hardcoat Anodized Aluminum ..... Lightweight, durable,  
High strength to weight ratio,  
Teflon® impregnated inside and out

Multiple mounting surfaces ..... Flexible, easy access mounting

#### B. Output Shaft:

Hardened electroless nickel ..... Corrosion and wear resistance

Oversized diameter ..... Increased strength and rigidity,  
Supported by both roller and thrust bearings

Hollow shaft ..... Reduced weight, thru shaft access

#### C. Stroke Adjustment:

C.W. and C.C.W. Adjustment ..... Infinite adjustment  
in both directions of rotation,  
Easy access, secured by jam nut

#### D. Sensor Mounting Channel:

Machined into body ..... Accepts Numatics Motion Control  
dovetail switches (world switch),  
Easy access, easy adjustment

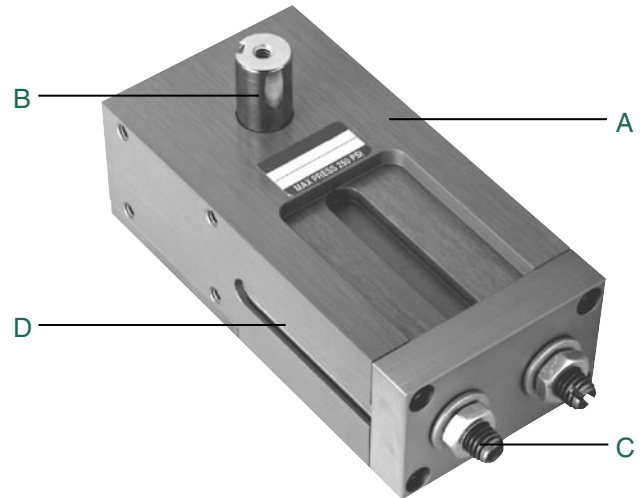
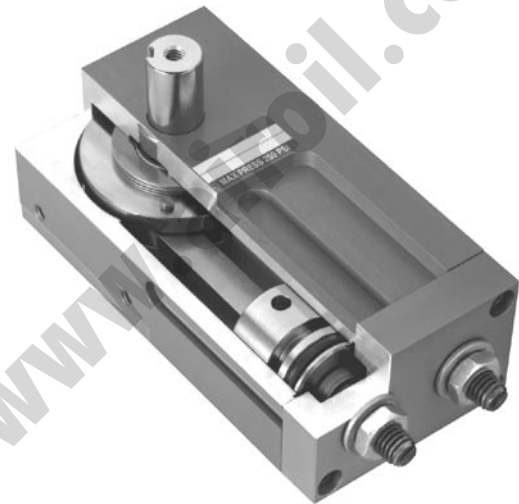
Magnetic piston is standard on all models.

Permanently lubricated seals are standard on all models, no lube required.  
Viton compound for high temperature applications, optional.

Factory lubricated, fluorinated grease. (Non-toxic, non-migrating and no chlorine, silicones or chlorofluorocarbons (CFCs).) Cleanroom applied.

#### Additional options:

- Shock absorbers
- Double output shaft





## RW Series

### How to Order

**RW 030 A 1 A E Z C 1**

#### Bore Sizes

030 = 30 in.-lb.  
075 = 75 in.-lb.  
125 = 125 in.-lb.

#### Rotation

A = 90°

#### Seal Option

1 = Buna-N  
2 = Viton

#### Shaft Option

A = Standard Single Shaft End  
B\* = Single Shaft Tapped NPTF Port  
C\* = Single Shaft Tapped "G" Port  
X\* = Double Shaft Tapped "G" Port  
Y\* = Double Shaft Tapped NPTF Port  
Z = Additional Double Shaft End  
\*Tapped both ends.

#### Shock Options

1 = Shocks Yes  
2 = Shocks No

#### Sensing Position

A = Single Position CW  
B = Single Position CCW  
C = Two Position  
D = No Sensing

#### Sensing Type

Standard Cord Set  
1 = Hall Effect - PNP (sourcing)  
2 = Hall Effect - NPN (sinking)  
3 = Reed Switch  
6 = No Sensing  
Quick Disconnect Cord Set  
Z = Hall Effect - PNP (sourcing)  
Y = Hall Effect - NPN (sinking)  
X = Reed Switch

See page 7.

#### Example order:

Part Number: RW030A1AEZC1\*

Part Description: RW rotary with 30 inlb torque, 90° rotation, standard seals, standard single output shaft, Hall PNP quick disconnect sensing, two positions, with shocks.

\*When entering an order, DO NOT use spaces or dashes. Follow example above.

### Replacement Components and Kits

#### Shock Retro Fit Kits\*

MODEL NO.	PART NO.
RW030	RW030SK
RW075	RW075SK
RW125	RW125SK

#### Replacement Shocks

MODEL NO.	PART NO.
RW030	SK030
RW075	SK106
RW125	SK150

\*Kits include hardware and shocks.

#### RW Rotary Seal Kit with Shock Option

SERIES	BUNA SEALS	VITON SEALS
RW030	RWSKB-030SK	RWSKV-030SK
RW075	RWSKB-075SK	RWSKV-075SK
RW125	RWSKB-125SK	RWSKV-125SK

#### Sensing Kits

STANDARD CORD SET SWITCH	PART NO.
Hall Effect PNP (Sourcing)	HPNPS31
Hall Effect NPN (Sinking)	HNPNS32
Reed Switch	RSS02
QUICK DISCONNECT CORD SET	PART NO.
Hall Effect PNP (Sourcing)	HPNPQ31
Hall Effect NPN (Sinking)	HNPNQ32
Reed Switch	RSQ02
90° 5 meter cable	PXC90
Straight 5 meter cable	PXCST

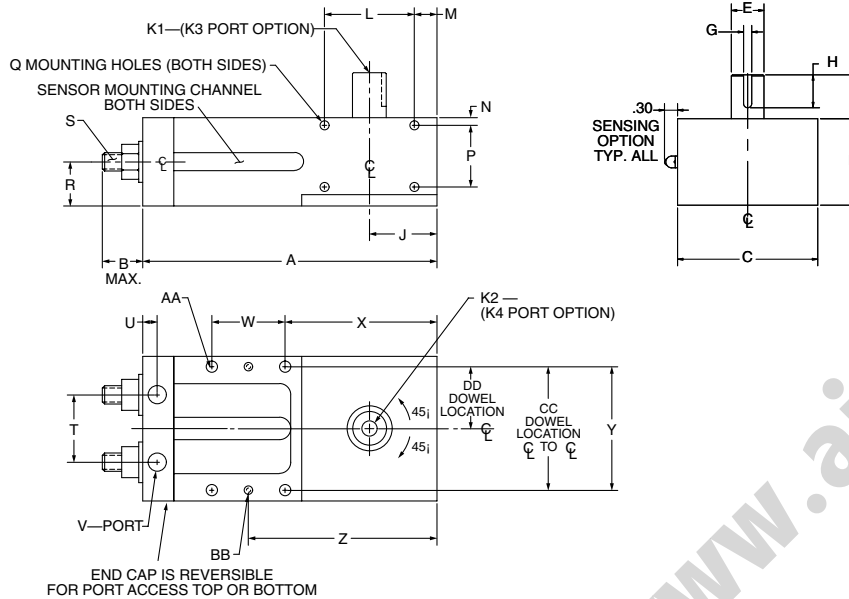
\*All mounting hardware included with sensors.

#### RW Rotary Seal Kit

SERIES	BUNA SEALS	VITON SEALS
RW030	RWSKB-030	RWSKV-030
RW075	RWSKB-075	RWSKV-075
RW125	RWSKB-125	RWSKV-125



### RW Series Dimensions



	RW030	RW075	RW125
A	4.75	6.53	7.95
B	0.79	0.82	0.82
C	2.44	3.22	3.88
D	1.60	1.97	2.40
E	0.4995/0.4990	0.7495/0.7490	0.9995/0.9990
F	0.75	1.00	1.50
G	0.125 X 0.070/0.074 DP	0.1875 X 0.106/0.110 DP	0.250 X 0.141/0.145 DP
H	0.65	0.75	1.25
J	1.17	1.50	1.94
K1	# 10-32 TAPPED	1/4-20 TAPPED	3/8-16 TAPPED
K2	0.159 THRU	.339 DIA. X 1.75 DP	7/16 DIA X 2.45 DP
K3	NO OPTION	OPTIONAL 1/8 NPT OR 1/8 G-PORT	OPTIONAL 1/4 NPT OR 1/4 G-PORT
K4	OPTIONAL # 10-32 TAPPED	OPTIONAL 1/8 NPT OR 1/8 G-PORT	OPTIONAL 1/4 NPT OR 1/4 G-PORT
L	1.88	2.00	2.56
M	0.45	0.50	0.66
N	0.15	0.17	0.25
P	1.00	1.38	1.70
Q	# 10-32	1/4 - 20	1/4-20
R	0.80	0.99	1.20
S	3/8 - 24	7/16-14	7/16-14
T	1.13	1.50	2.00
U	0.20	0.37	0.37
V	#10-32	1/8 NPTF	1/8 NPTF
W	1.13	1.63	2.25
X	2.64	3.38	4.13
Y	2.00	2.75	3.25
Z	3.209/3.211	4.187/4.189	5.374/5.376
AA	#10-32	1/4 - 20	5/16-18
BB	0.124/0.125	0.187/0.188	0.187/0.188
CC	1.9995/2.0005	2.7495/2.7505	3.2495/3.2505
DD	0.9995/1.0005	1.3745/1.3755	1.6245/1.6255

All tapped holes are 1.5 x dia. minimum.



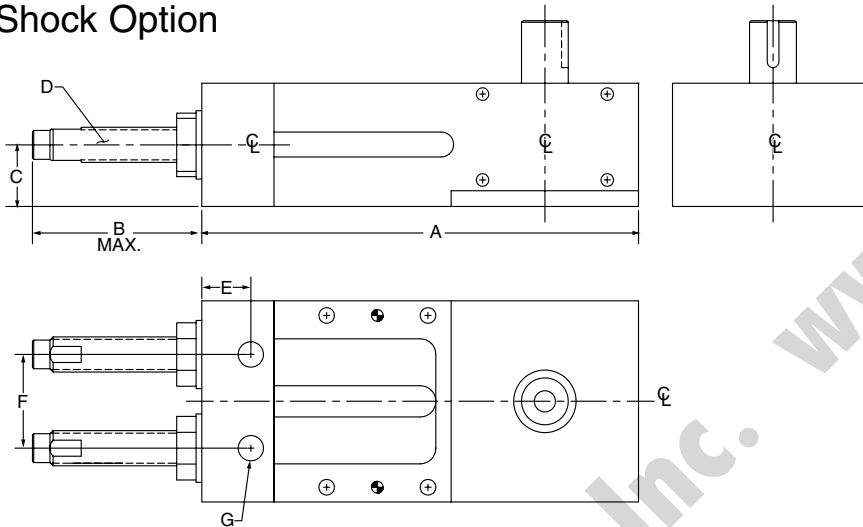
## RW Series

### RW Series

MODEL	TORQUE @ 100PSI	DYNAMIC THRUST LOAD	DYNAMIC RADIAL LOAD	DISPLACEMENT PER DEGREE	UNIT WEIGHT	MAXIMUM PRESSURE
RW030	30 inlb (3.4 N-m)	646 lbf (2875 N)	197 lbf (877 N)	0.007 cuin. (0.115 cc)	1.75	250 psi
RW075	82 inlb (9.2 N-m)	1034 lbf (4600 N)	357 lbf (1589 N)	0.020 cuin. (0.335 cc)	4.20	250 psi
RW125	133 inlb (15.0 N-m)	1330 lbf (5917 N)	518 lbf (2307 N)	0.033 cuin. (0.538 cc)	7.00	250 psi

Typical breakaway 5.0 psi. Backlash max. ± 1/4 degree.

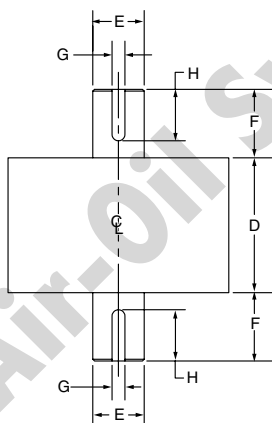
### Shock Option



### Shock Option

	RW030	RW075	RW125
A	5.56	7.00	8.42
B	2.72	2.72	2.69
C	0.80	0.99	1.20
D	SK030	SK106	SK150
E	0.91	0.84	0.84
F	1.13	1.50	2.00
G	#10-32	1/8 NPTF	1/8 NPTF

### Dual Output Shaft



	RW030	RW075	RW125
D	1.60	1.97	2.40
E	0.4995/0.4990	0.7493/0.7488	0.9995/0.9990
F	0.75	1.00	1.50
G	0.125 X 0.070/0.074 DP	0.1875 X 0.106/0.110 DP	0.250 X 0.141/0.145 DP
H	0.65	0.75	1.25

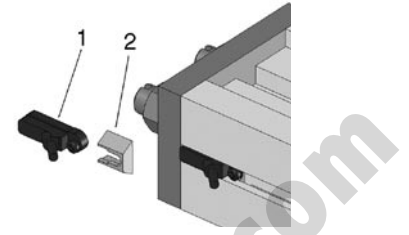
### Custom Options

- Gripper adapter plates quoted per application
- Corrosive resistant units
- Adapter plates to SH & GS series slides
- Consult factory for more information

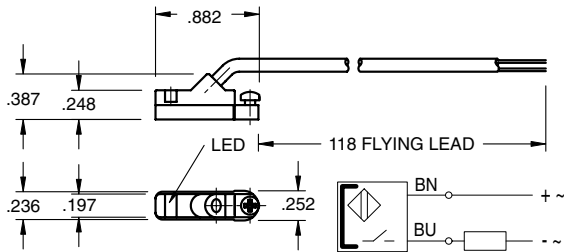


### RW Series Switch Information

	SWITCH OR BRACKET DESCRIPTION	STANDARD PART NO.	QUICK DISCONNECT PART NO.
1	Hall Effect - PNP (Sourcing)	HPNPS31	HPNPQ31
1	Hall Effect -NPN (Sinking)	HNPNS32	HNPNQ32
1	Reed Switch	RSS02	RSQ02
2	Dovetail Bracket	DSA	DSA



#### RSS02 – Reed Switch (AC/DC NO), flying lead



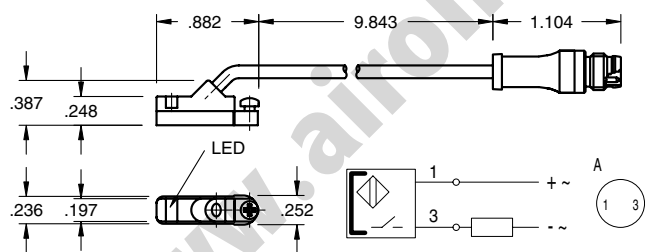
##### Sensing Data

Ambient temperature range $T_a$	(°F/°C)	-4 to 176 (-20 to 80)
Frequency of operating cycles $f$ at $U_e$	(kHz)	0.5
Turn on time $t$	(ms)	$\leq 0.25$
turn off time $t$	(ms)	0.03
LED function indication		yes

##### Electrical Data

Rated operational voltage $U_e$	(V)	3...130 AC/DC
Supply voltage $U_B$	(V)	3...130 AC/DC
Voltage drop $U_d$ at $I_e$ Stat./dyn.	(V)	3.5
Rated insulation voltage $U_i$	(V)	2750 DC (EN 60335-1)
Rated supply frequency	(Hz)	AC/DC
Rated operational current $I_e$	(mA)	50 (10W max.)
No-load supply current $I_o$ at $U_e$ d./und.	(mA)	0
Observe polarity for correct LED function		

#### RSQ02 – 8mm connector

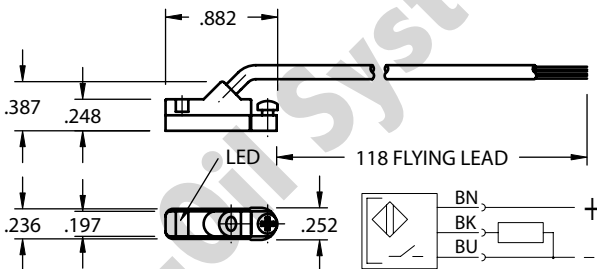


##### Mechanical Data

Housing material	Polyamide
Material of sensing face	Polyamide
Connection	PVC cable
Degree of Protection	IP 67
Rated shock: half-sinus, 50g, 11 ms	
Rated vibration environment: 10g, 10...2000 Hz, 90 min	



#### HPNPS31 – Electronic Switch (PNP NO), flying lead



##### Sensing Data

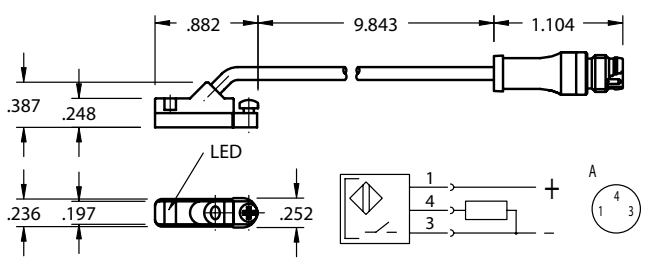
Ambient temperature range $t$	(°F/°C)	-13 to +158 (-25 to +70)
Temperature drift	(% of )	$\leq 0.3\%/^{\circ}\text{C}$
Frequency of operating cycles $f$ at $U_e$	(kHz)	10
Turn on time $t$	(ms)	.05
turn off time $t$	(ms)	.05
Utilization categories		DC13
Function–supply voltage indication		YES

##### Electrical Data

Rated operational voltage $U_e$	(V)	24 DC
Supply voltage $U_B$	(V)	10...30 DC
incl. ripple	(% of $U_e$ )	15
Voltage drop $U_d$ at $I_e$ Stat./dyn.	(V)	1/-
Rated insulation voltage $U_i$	(V)	75 AC
Rated supply frequency	(Hz)	DC
Rated operational current $I_e$	(mA)	200
No-load supply current $I_o$ at $U_e$ d./und.	(mA)	25/13
Protected against polarity reversal		YES



#### HPNPQ31 – 8mm connector



##### Mechanical Data

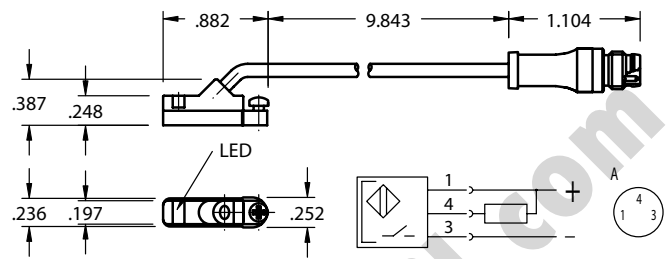
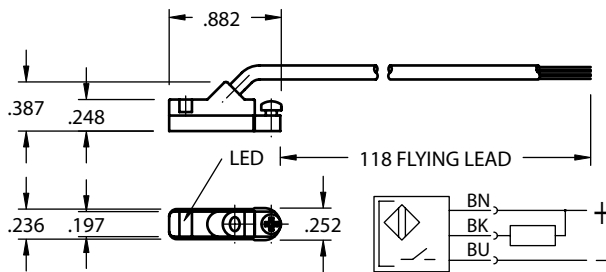
Housing material	Polyamide
Material of sensing face	Polyamide
Connection	PVC cable
Degree of Protection	IP 67
Rated shock: half-sinus, 30 g, 11 ms	
Rated vibration environment: 55 Hz, 1mm amplitude, 3 x 30	



## RW Series

### HNPNS32 – Electronic Switch (NPN NO), flying lead

### HNPNQ32 – 8mm connector



#### Sensing Data

Ambient temperature range $t_d$	(°F/°C)	-13 to +158 (-25 to +70)
Temperature drift	(% of $S_r$ )	$\leq 0.3\%/^{\circ}\text{C}$
Frequency of operating cycles $f$ at $U_e$	(kHz)	10
Turn on time $t$	(ms)	.05
turn off time $t$	(ms)	.05
Utilization categories		DC13
Function–supply voltage indication		YES

#### Electrical Data

Rated operational voltage $U_e$	(V)	24 DC
Supply voltage $U_B$	(V)	10...30 DC
incl. ripple	(% of $U_e$ )	15
Voltage drop $U_d$ at $I_e$ Stat./dyn.	(V)	1/-
Rated insulation volatage $U_i$	(V)	75 AC
Rated supply frequency	(Hz)	DC
Rated operational current $I_e$	(mA)	200
No-load supply current $I_o$ at $U_e$ d./und.	(mA)	25/13
Protected against polarity reversal		YES

#### Mechanical Data

Housing material	Polyamide
Material of sensing face	Polyamide
Connection	PVC cable
Degree of Protection	IP 67
Rated shock: half-sinus, 30 g, 11 ms	
Rated vibration environment: 55 Hz, 1mm amplitude, 3 x 30	

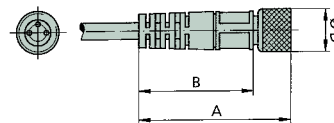


## Female Connectors for Reed Switches and Hall Effect Sensors

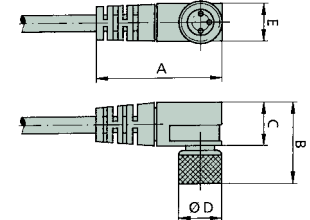
Dimensions (mm)

TYPE	ORDER CODE
Straight, 5 m Cable	PXCST
Elbow, 5 m Calbe	PXC90

### Straight Type



### Elbow Type





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of Pneumatic Components



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