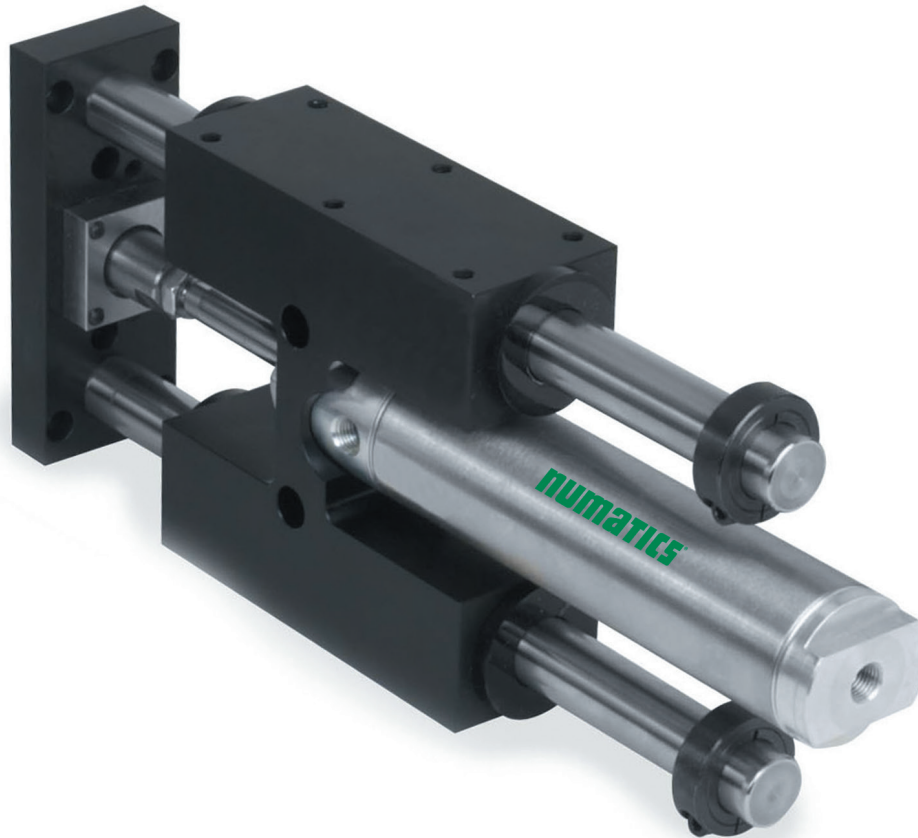


# numatics®

## SH Series

Linear Slides



[www.numatics.com](http://www.numatics.com)

SH Series Linear Slides

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## Our SH-Series Linear Slides are available with a wide range of options...

### A. Body:

Hardcoat Anodized Aluminum(6061-T6511) .....lightweight, durable,  
high strength to weight ratio.  
Standard Dowel Location Holes .....allows precision mounting.  
Multi-Surface Mounting Holes ..... flexible, easy access for mounting.

### B. Air Cylinder:

Standard 440 C Stainless Steel Body and Rod ..... corrosion resistant.  
Standard w/ Magnetic Piston ..... sensing applications (Hall, Reed or Prox)  
added as required.

### C. Alignment Coupler:

Isolates Piston Rod from side loading .....maximize life of cylinder,  
360 degrees of float.

### D. Tooling Plate:

NuMate™ Universal Mounting Pattern ..... standardized mounting  
system, eliminates custom transition plates.  
Holes Drilled/Tapped and C'bored from the opposite side..... easy mounting.  
Standard Dowel Locating Holes ..... precision mounting.

### E. Guide Shafts:

Hardened Steel to Rc 60 - 65 ..... long life.  
Hardened Stainless Steel to Rc 50 - 55 ..... long life.  
Precision Ground & Polished to 15μRMS ..... smooth cycling/  
low breakaway.  
Pilot Mounted to Tooling Plate..... maximum rigidity.  
Large Diameters.....increased load capacity.

### F. Bearings: (Three Choices)

Four Precision Linear Ball Bearings  
Sealed with Rod Wipers..... safe guarding against dirt & contamination.  
Self-Aligning .....reducing wear, maximizing both.  
load capacity and long life.

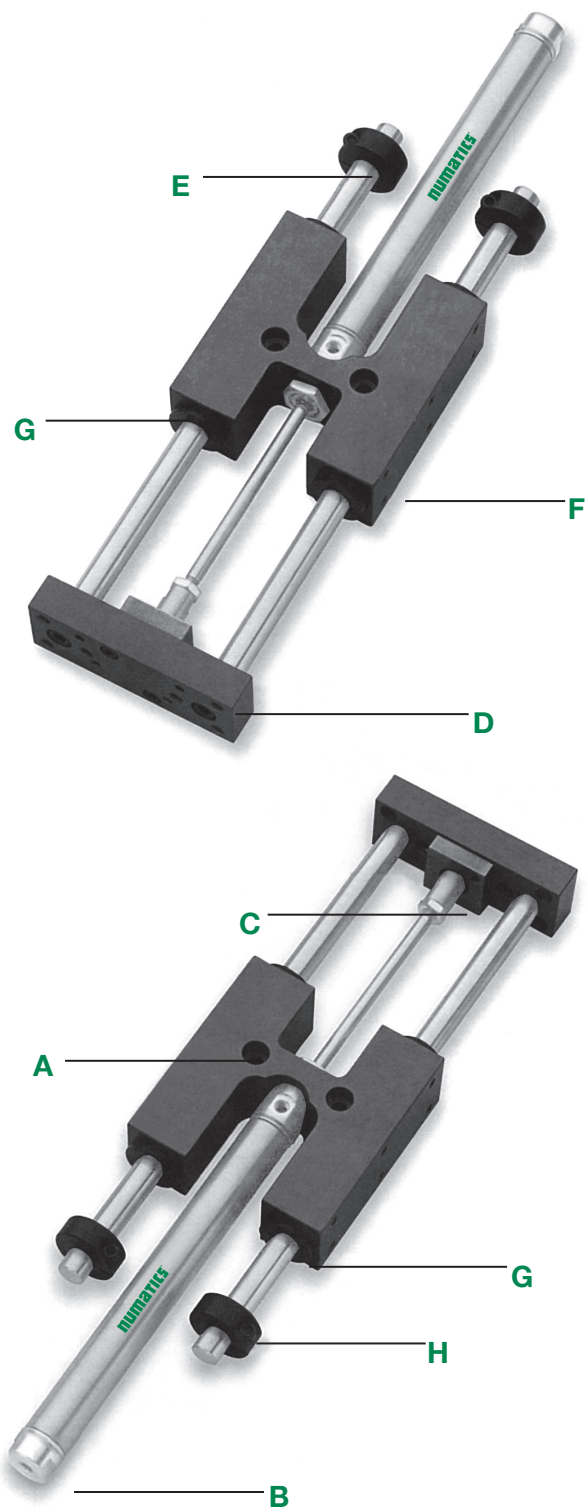
Four Sintered Bronze Sleeve Bearings  
Oil Impregnated.....self lubricating.  
High Pv Rating ..... long service life.  
Four Frelon® Compounded PTFE  
Low Friction .....longest wear life.  
Maintenance Free.....self lubricating.

### G. Bumpers: (Standard)

Polyurethane Material .....durable and long lasting.  
Integrated into body Design .....reduces shock loading on extend & retract.  
Preliminary Rod Wiper.....removes larger contamination from Guide Shafts.

### H. Adjustable Shaft Collars: (Standard)

Extend Stroke Adjustment.....flexibility.



## How to Order

**SH 075 03 LB 1 3 C S 3**

**Bore Size**

031 = 5/16"  
056 = 9/16"  
075 = 3/4"  
106 = 1-1/16"  
150 = 1-1/2"  
200 = 2"  
250 = 2-1/2"  
300 = 3"

**Standard Stroke (inches)**

|             |          |
|-------------|----------|
| X5 = 1/2"   | 09 = 9"  |
| 01 = 1"     | 10 = 10" |
| X9 = 1-1/2" | 11 = 11" |
| 02 = 2"     | 12 = 12" |
| 03 = 3"     | 13 = 13" |
| 04 = 4"     | 14 = 14" |
| 05 = 5"     | 15 = 15" |
| 06 = 6"     | 16 = 16" |
| 07 = 7"     | 17 = 17" |
| 08 = 8"     | 18 = 18" |

**Bearing Option**

LB = Linear Ball  
TB\* = PTFE  
BB = Sintered Bronze  
\* Supplied Standard with 440 C Stainless Steel Guide Rods, Stop Collars and Hardware.

**Cylinder Type**

1 = Buna-N Seals\*\*\*  
2 = FKM Seals (no magnet)  
4 = FKM Seals with magnet\*\*\*  
\*\*\* Magnet not available on SH031

**Shock Option**  
**Shock Hardware Only**

1 = Extend  
2 = Retract  
3 = Extend/Retract  
4 = No Shock Hardware

**Hardware & Shocks**

A = Extend  
B = Retract  
C = Extend/Retract

**Mounting Option**

S = Std. Mount  
B = Base Mount  
A = Angle Mount

**Sensing Position**

A = Single Pos. Extend  
B = Single Pos. Retract  
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  
7 = 8mm Threaded Barrel Prox Bracket\*

Quick Disconnect Cord Set

Z = Hall Effect PNP (Sourcing)  
Y = Hall Effect NPN (Sinking)  
X = Reed Switch

\* Bracket only - does not include switch

## Ordering Example

Part Number: SH07503LB13CS3\*

Part Description: 3/4 inch Bore by 3 inch stroke with Linear Ball Bearing, Standard Seals, Two Position Reed Switches, Standard Mount, Shock Hardware on Extend and Retract, Shocks not included.

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

## Additional Sensors and Shocks

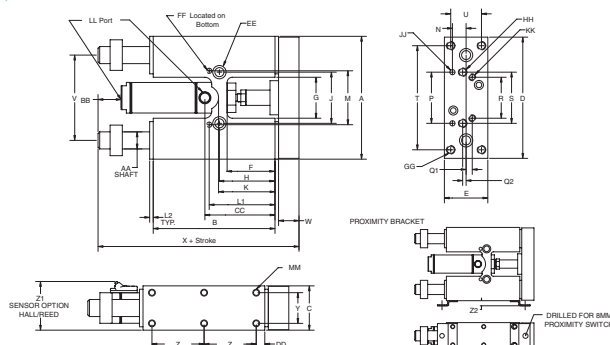
| Switch Description           | Standard Part No. | Quick Disconnect Part Number |
|------------------------------|-------------------|------------------------------|
| Hall Effect - PNP (Sourcing) | PNP-FL2-00-U      | PNP-QDS-M8-U                 |
| Hall Effect - NPN (Sinking)  | NPN-FL2-00-U      | NPN-QDS-M8-U                 |
| Reed Switch                  | REED-FL2-00       | REED-QDS-M8U                 |
| 90° 5 meter cable            | -                 | PXC 90                       |
| Straight 5 meter cable       | -                 | PXC ST                       |

\*Bands and tracks required for mounting.

## Mounting Kits and Shocks

| Series Slide | Base Mount | Angle Mount | Shock Absorber |
|--------------|------------|-------------|----------------|
| SH031        | MB031      | AB031       | -              |
| SH056        | MB056      | AB056       |                |
| SH075        | MB075      | AB075       | SK075          |
| SH106        | MB106      | AB106       | SK106          |
| SH150        | MB150      | AB150       | SK150          |
| SH200        | MB200      | AB200       | SK200          |
| SH250        | -          | AB250       | SK250          |
| SH300        | -          | -           | SK300          |

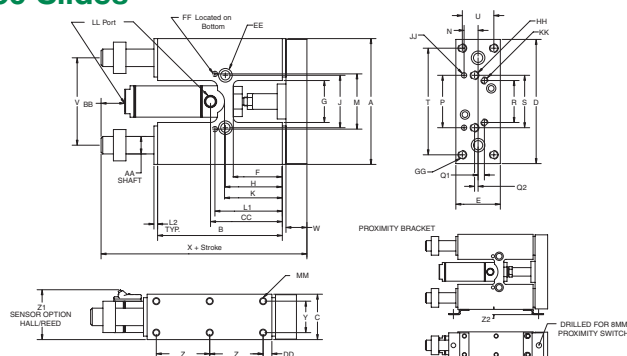
## SH031, SH056, SH075, SH106 Slides



|    | SH031                                                           | SH056                                                           | SH075                                                            | SH106                                                            |
|----|-----------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|
| A  | 2.00                                                            | 2.87                                                            | 4.12                                                             | 4.50                                                             |
| B  | 2.00                                                            | 3.00                                                            | 3.97                                                             | 4.45                                                             |
| C  | 0.62                                                            | 1.00                                                            | 1.25                                                             | 1.62                                                             |
| D  | 1.95                                                            | 2.81                                                            | 4.06                                                             | 4.44                                                             |
| E  | 0.58                                                            | 0.95                                                            | 1.19                                                             | 1.58                                                             |
| F  | 0.75                                                            | 1.00                                                            | 1.31                                                             | 1.75                                                             |
| G  | 0.75                                                            | 1.00                                                            | 1.25                                                             | 1.50                                                             |
| H  | 0.90                                                            | 1.25                                                            | 1.59                                                             | 2.03                                                             |
| J  | 1.00                                                            | 1.25                                                            | 1.50                                                             | 1.87                                                             |
| K  | 1.06                                                            | 1.50                                                            | 1.66                                                             | 2.31                                                             |
| L1 | 1.12                                                            | 1.56                                                            | 1.96                                                             | 2.40                                                             |
| L2 | 0.06                                                            | 0.12                                                            | 0.12                                                             | 0.12                                                             |
| M  | 0.999/1.001                                                     | 1.373/1.375                                                     | 1.881/1.813                                                      | 1.873/1.875                                                      |
| N  | 0.21                                                            | 0.31                                                            | 0.37                                                             | 0.50                                                             |
| P  | 0.999/1.001                                                     | 1.373/1.375                                                     | 1.881/1.813                                                      | 1.873/1.875                                                      |
| Q1 | -                                                               | 0.18                                                            | 0.31                                                             | 0.22                                                             |
| Q2 | Center Line                                                     | Center Line                                                     | Center Line                                                      | 0.12                                                             |
| R  | -                                                               | 1.00                                                            | 1.25                                                             | 1.50                                                             |
| S  | 1.00                                                            | 1.25                                                            | 1.50                                                             | 1.87                                                             |
| T  | -                                                               | 2.37                                                            | 3.37                                                             | 3.81                                                             |
| U  | -                                                               | 0.62                                                            | 0.81                                                             | 1.12                                                             |
| V  | 1.56                                                            | 2.00                                                            | 2.75                                                             | 3.12                                                             |
| W  | 0.31                                                            | 0.50                                                            | 0.62                                                             | 0.75                                                             |
| X  | 3.06                                                            | 4.44                                                            | 5.68                                                             | 6.31                                                             |
| Y  | 0.43                                                            | 0.62                                                            | 0.81                                                             | 1.12                                                             |
| Z  | 0.50                                                            | 1.18                                                            | 1.68                                                             | 1.90                                                             |
| Z1 | N/A                                                             | 1.32                                                            | 1.53                                                             | 1.88                                                             |
| Z2 | N/A                                                             | .312                                                            | .312                                                             | .312                                                             |
|    | SH031                                                           | SH056                                                           | SH075                                                            | SH106                                                            |
| AA | 0.250 Nom.                                                      | 0.375 Nom.                                                      | 0.500 Nom.                                                       | 0.625 Nom.                                                       |
| BB | 0.31                                                            | 0.50                                                            | 0.62                                                             | 0.81                                                             |
| CC | 1.06                                                            | 1.68                                                            | 2.03                                                             | 2.50                                                             |
| DD | 0.50                                                            | 0.31                                                            | 0.31                                                             | 0.31                                                             |
| EE | C'Bored for #6 SHCS, Tapped # 10-32 x .28 DP From Opposite side | C'Bored for #10 SHCS, Tapped 1/4-28 x .50 DP From Opposite side | C'Bored for 1/4 SHCS, Tapped 5/16-24 x .62 DP From Opposite side | C'Bored for 5/16 SHCS, Tapped 3/8-24 x .75 DP From Opposite side |
| FF | 0.0937/0.0947 x 0.18DP                                          | 0.125/0.126 x 0.25DP                                            | 0.1875/0.1885 x .37DP                                            | 0.1875/0.1885 x .37DP                                            |
| GG | N/A                                                             | #10-32 thru, C'Bored for #6 SHCS From Opposite Side             | 1/4-20 thru, C'Bored for #10 SHCS From Opposite Side             | 5/16-18 thru, C'Bored for 1/4 SHCS From Opposite Side            |
| HH | #6-32 thru                                                      | #10-32 thru, C'Bored For #6 SHCS From Opposite Side             | 1/4-20 thru, C'Bored For #10 SHCS From Opposite Side             | 5/16-18 thru, C'Bored For 1/4 SHCS From Opposite Side            |
| JJ | 0.0937/0.0947 x 0.18DP                                          | 0.125/0.126 x 0.25DP                                            | 0.1875/0.1885 x .37DP                                            | 0.1875/0.1885 x .37DP                                            |
| KK | -                                                               | #6-32 x .25DP                                                   | #10-32 x .37DP                                                   | 1/4-20 x .50DP                                                   |
| LL | #10-32                                                          | #10-32                                                          | 1/8 NPTF                                                         | 1/8 NPTF                                                         |
| MM | #5-40 x .18 DP*                                                 | #6-32 x .20 DP                                                  | #10-32 x .28 DP                                                  | 1/4-20 x .37 DP                                                  |

Information subject to change without notice. For ordering information or regarding your local sales office visit [www.numatics.com](http://www.numatics.com).

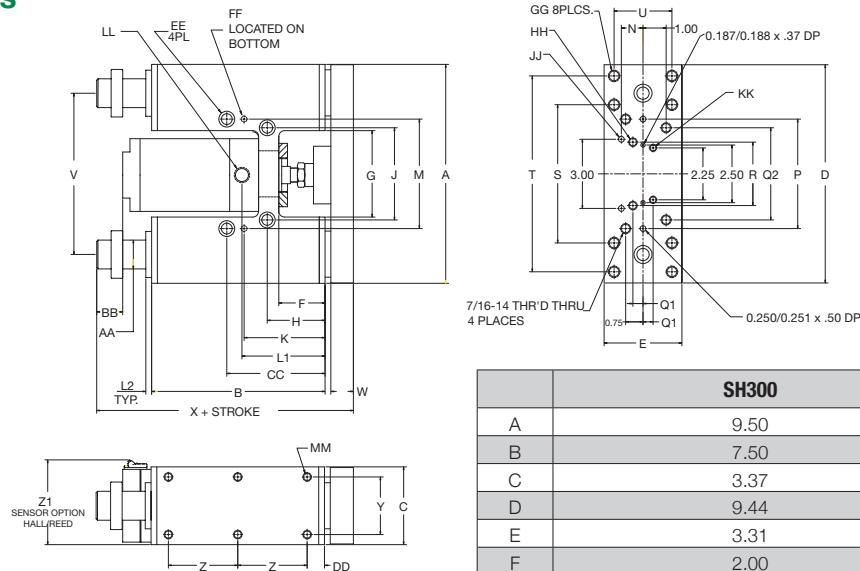
## SH150, SH200, SH250 Slides



|    | SH150       | SH200       | SH250       |
|----|-------------|-------------|-------------|
| A  | 5.25        | 6.50        | 6.50        |
| B  | 4.95        | 6.50        | 6.50        |
| C  | 2.00        | 2.50        | 2.87        |
| D  | 5.18        | 6.44        | 6.44        |
| E  | 1.93        | 2.44        | 2.44        |
| F  | 1.93        | 2.50        | 2.50        |
| G  | 2.00        | 2.50        | 2.50        |
| H  | 2.25        | 2.87        | 2.81        |
| J  | 2.25        | 2.75        | 2.75        |
| K  | 2.68        | 3.37        | 3.37        |
| L1 | 2.68        | 3.37        | 3.31        |
| L2 | 0.18        | 0.25        | 0.25        |
| M  | 2.499/2.501 | 2.99/3.001  | 2.999/3.001 |
| N  | 0.56        | 0.62        | 0.62        |
| P  | 2.499/2.501 | 2.999/3.001 | 2.999/3.001 |
| Q1 | 0.31        | 0.37        | 0.37        |
| Q2 | 0.12        | 0.12        | 0.12        |
| R  | 1.87        | 2.25        | 2.25        |
| S  | 2.25        | 2.75        | 2.75        |
| T  | 4.25        | 5.25        | 5.25        |
| U  | 1.43        | 1.87        | 1.87        |
| V  | 3.75        | 4.56        | 4.56        |
| W  | 0.81        | 0.87        | 0.87        |
| X  | 7.16        | 8.75        | 8.75        |
| Y  | 1.43        | 1.87        | 1.87        |
| Z  | 2.12        | 2.62        | 2.62        |
| Z1 | 2.25        | 2.75        | 3.21        |
| Z2 | 0.312       | .312        | .312        |

|    | SH150                                                                   | SH200                                                                    | SH250                                                                    |
|----|-------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|
| AA | 0.750 Nom.                                                              | 1.000 Nom.                                                               | 1.000 Nom.                                                               |
| BB | 0.87                                                                    | 1.00                                                                     | 1.00                                                                     |
| CC | 3.00                                                                    | 3.71                                                                     | 3.71                                                                     |
| DD | 0.37                                                                    | 0.62                                                                     | 0.62                                                                     |
| EE | C'Bored for 5/16 SHCS,<br>Tapped 3/8-24 x 0.75 DP<br>From Opposite side | C'Bored for 3/8 SHCS,<br>Tapped 7/16-20 x 0.875 DP<br>From Opposite side | C'Bored for 3/8 SHCS,<br>Tapped 7/16-20 x 0.875 DP<br>From Opposite side |
| FF | 0.1875/0.1885 x 0.37DP                                                  | 0.250/0.251 x 0.50DP                                                     | 0.250/0.251 x 0.50DP                                                     |
| GG | 5/16-18 thru, C'Bored<br>for 1/4 SHCS From<br>Opposite Side             | 3/8-24 thru, C'Bored<br>for 5/16 SHCS From<br>Opposite Side              | 3/8-24 thru, C'Bored<br>for 5/16 SHCS From<br>Opposite Side              |
| HH | 5/16-18 thru, C'Bored<br>For 1/4 SHCS From<br>Opposite Side             | 3/8-24 thru, C'Bored<br>For 5/16 SHCS From<br>Opposite Side              | 3/8-24 thru, C'Bored<br>For 5/16 SHCS From<br>Opposite Side              |
| JJ | 0.1875/0.1885 x 0.37DP                                                  | 0.250/0.251 x 0.50DP                                                     | 0.250/0.251 x 0.50DP                                                     |
| KK | 5/16-18 x 0.62DP                                                        | 5/16-18 x 0.62DP                                                         | 5/16-18 x 0.62DP                                                         |
| LL | 1/8 NPTF                                                                | 1/4 NPTF                                                                 | 1/4 NPTF                                                                 |
| MM | 1/4-20 x 0.37 DP                                                        | 5/16-18 x 0.50 DP                                                        | 5/16-18 x 0.50 DP                                                        |

## SH300 Slides

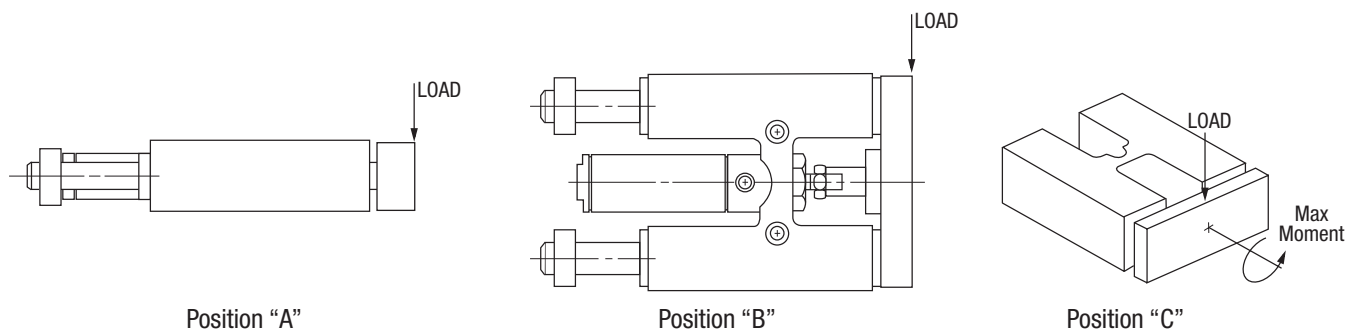


|    | SH300         |
|----|---------------|
| A  | 9.50          |
| B  | 7.50          |
| C  | 3.37          |
| D  | 9.44          |
| E  | 3.31          |
| F  | 2.00          |
| G  | 3.75          |
| H  | 2.50          |
| J  | 4.00          |
| K  | 3.50          |
| L1 | 3.59          |
| L2 | 0.25          |
| M  | 4.749 / 4.751 |
| N  | 0.94          |
| P  | 4.749 / 4.751 |
| Q1 | 0.43          |
| Q2 | 4.00          |
| R  | 2.75          |
| S  | 6.00          |
| T  | 8.50          |
| U  | 2.50          |
| V  | 7.00          |
| W  | 0.97          |
| X  | 10.10         |
| Y  | 2.50          |
| Z  | 3.00          |
| Z1 | 3.73          |
| Z2 | 0.312         |

|    | SH300                                                                   |
|----|-------------------------------------------------------------------------|
| AA | 1.250 Nom.                                                              |
| BB | 1.12                                                                    |
| CC | 4.25                                                                    |
| DD | 0.75                                                                    |
| EE | C'Bored for 7/16 SHCS,<br>Tapped 1/2-20 x 0.75 DP<br>From opposite side |
| FF | 0.250 / 0.251 x 0.50DP                                                  |
| GG | 1/2-13 thru,<br>C'Bored for 3/8-16 SHCS<br>From opposite side.          |
| HH | 1/2-13 thru, C'Bored for<br>3/8-16 SHCS<br>From opposite side.          |
| JJ | 0.250 / 0.251 x 0.50DP                                                  |
| KK | 5/16-18 x 0.50DP                                                        |
| LL | 3/8 NPTF                                                                |
| MM | 3/8-16 x 0.57 DP                                                        |

## Maximum Dynamic Load and Deflection Ratings

## Positions A, B &amp; C Linear Bearing Option



| SH056         |                      |                       |                       |                     | SH075                |                       |                       |                     | SH106                |                       |                       |                     |
|---------------|----------------------|-----------------------|-----------------------|---------------------|----------------------|-----------------------|-----------------------|---------------------|----------------------|-----------------------|-----------------------|---------------------|
| Stroke Inches | Max. Load A&B (lbs.) | Deflection A (Inches) | Deflection B (Inches) | Max. Load C (Inlb.) | Max. Load A&B (lbs.) | Deflection A (Inches) | Deflection B (Inches) | Max. Load C (Inlb.) | Max. Load A&B (lbs.) | Deflection A (Inches) | Deflection B (Inches) | Max. Load C (Inlb.) |
| 1             | 30.9                 | 0.001                 | 0.001                 | 30.9                | 55.0                 | 0.001                 | 0.001                 | 55.0                | 97.0                 | 0.001                 | 0.001                 | 97.0                |
| 2             | 24.8                 | 0.002                 | 0.001                 | 24.8                | 45.8                 | 0.001                 | 0.001                 | 45.8                | 82.0                 | 0.002                 | 0.002                 | 82.0                |
| 3             | 20.1                 | 0.004                 | 0.003                 | 20.1                | 39.2                 | 0.003                 | 0.002                 | 39.2                | 71.1                 | 0.004                 | 0.003                 | 71.1                |
| 4             | 15.4                 | 0.007                 | 0.005                 | 15.4                | 34.3                 | 0.005                 | 0.004                 | 34.3                | 62.7                 | 0.006                 | 0.005                 | 62.7                |
| 5             | 9.4                  | 0.008                 | 0.006                 | 9.4                 | 30.5                 | 0.008                 | 0.006                 | 30.5                | 54.1                 | 0.009                 | 0.007                 | 54.1                |
| 6             | 8.2                  | 0.011                 | 0.009                 | 8.2                 | 27.5                 | 0.012                 | 0.010                 | 27.5                | 48.8                 | 0.013                 | 0.010                 | 48.8                |
| 7             | 7.2                  | 0.016                 | 0.012                 | 7.2                 | 24.3                 | 0.017                 | 0.013                 | 24.3                | 41.3                 | 0.019                 | 0.015                 | 41.3                |
| 8             | 6.5                  | 0.021                 | 0.016                 | 6.5                 | 21.2                 | 0.021                 | 0.017                 | 21.2                | 36.8                 | 0.022                 | 0.018                 | 36.8                |
| 9             | 5.7                  | 0.026                 | 0.021                 | 5.7                 | 19.8                 | 0.028                 | 0.022                 | 19.8                | 30.6                 | 0.023                 | 0.019                 | 30.6                |
| 10            | 5.0                  | 0.031                 | 0.024                 | 5.0                 | 18.2                 | 0.035                 | 0.028                 | 18.2                | 25.9                 | 0.026                 | 0.020                 | 25.9                |
| 11            | 4.1                  | 0.032                 | 0.026                 | 4.1                 | 16.8                 | 0.043                 | 0.034                 | 16.8                | 22.1                 | 0.029                 | 0.023                 | 22.1                |
| 12            | 3.1                  | 0.032                 | 0.025                 | 3.1                 | 14.1                 | 0.046                 | 0.037                 | 14.1                | 20.0                 | 0.033                 | 0.026                 | 20.0                |

| SH150         |                      |                       |                       |                     | SH200/SH250          |                       |                       |                     | SH300                |                       |                       |                     |
|---------------|----------------------|-----------------------|-----------------------|---------------------|----------------------|-----------------------|-----------------------|---------------------|----------------------|-----------------------|-----------------------|---------------------|
| Stroke Inches | Max. Load A&B (lbs.) | Deflection A (Inches) | Deflection B (Inches) | Max. Load C (Inlb.) | Max. Load A&B (lbs.) | Deflection A (Inches) | Deflection B (Inches) | Max. Load C (Inlb.) | Max. Load A&B (lbs.) | Deflection A (Inches) | Deflection B (Inches) | Max. Load C (Inlb.) |
| 1             | 136.4                | 0.001                 | 0.001                 | 136.4               | 232.7                | 0.001                 | 0.001                 | 232.7               | 339.0                | 0.001                 | 0.001                 | 339.0               |
| 2             | 116.7                | 0.001                 | 0.001                 | 116.7               | 200.0                | 0.001                 | 0.001                 | 200.0               | 297.6                | 0.001                 | 0.001                 | 297.6               |
| 3             | 95.8                 | 0.003                 | 0.002                 | 95.8                | 176.2                | 0.002                 | 0.002                 | 176.2               | 265.7                | 0.002                 | 0.001                 | 265.7               |
| 4             | 86.2                 | 0.004                 | 0.003                 | 86.2                | 153.6                | 0.003                 | 0.003                 | 153.6               | 235.6                | 0.003                 | 0.002                 | 235.6               |
| 5             | 75.4                 | 0.007                 | 0.005                 | 75.4                | 136.6                | 0.004                 | 0.004                 | 136.6               | 210.8                | 0.004                 | 0.003                 | 210.8               |
| 6             | 65.0                 | 0.009                 | 0.007                 | 65.0                | 110.3                | 0.005                 | 0.004                 | 110.3               | 190.0                | 0.005                 | 0.003                 | 190.0               |
| 7             | 59.3                 | 0.012                 | 0.010                 | 59.3                | 97.3                 | 0.006                 | 0.005                 | 97.3                | 170.0                | 0.006                 | 0.004                 | 170.0               |
| 8             | 53.3                 | 0.015                 | 0.012                 | 53.3                | 86.0                 | 0.008                 | 0.007                 | 86.0                | 154.0                | 0.008                 | 0.005                 | 154.0               |
| 9             | 47.3                 | 0.018                 | 0.015                 | 47.3                | 76.1                 | 0.010                 | 0.008                 | 76.1                | 137.8                | 0.009                 | 0.006                 | 137.8               |
| 10            | 40.1                 | 0.021                 | 0.017                 | 40.1                | 68.2                 | 0.011                 | 0.009                 | 68.2                | 123.7                | 0.010                 | 0.007                 | 123.7               |
| 11            | 35.7                 | 0.023                 | 0.019                 | 35.7                | 57.5                 | 0.012                 | 0.010                 | 57.5                | 109.9                | 0.012                 | 0.008                 | 109.9               |
| 12            | 29.1                 | 0.024                 | 0.020                 | 29.1                | 48.7                 | 0.013                 | 0.011                 | 48.7                | 96.9                 | 0.012                 | 0.009                 | 96.9                |
| 13            | 25.0                 | 0.026                 | 0.021                 | 25.0                | 40.7                 | 0.014                 | 0.012                 | 40.7                | 82.8                 | 0.013                 | 0.010                 | 82.8                |
| 14            | 22.1                 | 0.028                 | 0.022                 | 22.1                | 30.8                 | 0.013                 | 0.011                 | 30.8                | 72.4                 | 0.014                 | 0.011                 | 72.4                |
| 15            | 19.5                 | 0.030                 | 0.024                 | 19.5                | 22.1                 | 0.011                 | 0.009                 | 22.1                | 62.9                 | 0.015                 | 0.013                 | 62.9                |
| 16            | 16.6                 | 0.030                 | 0.024                 | 16.6                | 17.6                 | 0.011                 | 0.009                 | 17.6                | 54.2                 | 0.015                 | 0.013                 | 54.2                |
| 17            | 14.0                 | 0.030                 | 0.024                 | 14.0                | 15.0                 | 0.009                 | 0.007                 | 15.0                | 46.3                 | 0.015                 | 0.013                 | 46.3                |
| 18            | 10.1                 | 0.026                 | 0.021                 | 10.1                | 12.0                 | 0.007                 | 0.006                 | 12.0                | 39.1                 | 0.015                 | 0.013                 | 39.1                |

\* SH031 Series not offered in Linear Ball Bearing Option.

Maximum load and deflection ratings, 100% at tool plate mounting face



## Maximum Dynamic Load and Deflection Ratings

### Positions A, B & C Bronze Bearing and PTFE Bearing Options

| SH031*        |                      |                       |                       |                     | SH056                |                       |                       |                     | SH075                |                       |                       |                     |
|---------------|----------------------|-----------------------|-----------------------|---------------------|----------------------|-----------------------|-----------------------|---------------------|----------------------|-----------------------|-----------------------|---------------------|
| Stroke Inches | Max. Load A&B (lbs.) | Deflection A (Inches) | Deflection B (Inches) | Max. Load C (Inlb.) | Max. Load A&B (lbs.) | Deflection A (Inches) | Deflection B (Inches) | Max. Load C (Inlb.) | Max. Load A&B (lbs.) | Deflection A (Inches) | Deflection B (Inches) | Max. Load C (Inlb.) |
| 0.5           | 5.0                  | 0.001                 | 0.001                 | 5.0                 | N/A                  | N/A                   | N/A                   | N/A                 | N/A                  | N/A                   | N/A                   | N/A                 |
| 1             | 4.5                  | 0.001                 | 0.001                 | 4.5                 | 20.1                 | 0.001                 | 0.001                 | 20.1                | 35.7                 | 0.001                 | 0.001                 | 35.7                |
| 1.5           | 4.0                  | 0.001                 | 0.001                 | 4.0                 | N/A                  | N/A                   | N/A                   | N/A                 | N/A                  | N/A                   | N/A                   | N/A                 |
| 2             | 3.5                  | 0.001                 | 0.001                 | 3.5                 | 16.1                 | 0.001                 | 0.001                 | 16.1                | 29.8                 | 0.001                 | 0.001                 | 29.8                |
| 3             | 2.7                  | 0.002                 | 0.002                 | 2.7                 | 13.0                 | 0.003                 | 0.002                 | 13.0                | 25.4                 | 0.002                 | 0.001                 | 25.4                |
| 4             | 1.9                  | 0.004                 | 0.003                 | 1.9                 | 10.1                 | 0.004                 | 0.003                 | 10.1                | 22.3                 | 0.003                 | 0.003                 | 22.3                |
| 5             | 1.1                  | 0.004                 | 0.003                 | 1.1                 | 6.2                  | 0.005                 | 0.004                 | 6.2                 | 19.8                 | 0.005                 | 0.004                 | 19.8                |
| 6             | 0.5                  | 0.004                 | 0.003                 | 0.5                 | 5.3                  | 0.007                 | 0.006                 | 5.3                 | 17.8                 | 0.008                 | 0.006                 | 17.8                |
| 7             | N/A                  | N/A                   | N/A                   | N/A                 | 4.6                  | 0.010                 | 0.008                 | 4.6                 | 15.7                 | 0.011                 | 0.009                 | 15.7                |
| 8             | N/A                  | N/A                   | N/A                   | N/A                 | 4.2                  | 0.013                 | 0.011                 | 4.2                 | 13.7                 | 0.014                 | 0.011                 | 13.7                |
| 9             | N/A                  | N/A                   | N/A                   | N/A                 | 3.7                  | 0.017                 | 0.013                 | 3.7                 | 12.8                 | 0.018                 | 0.014                 | 12.8                |
| 10            | N/A                  | N/A                   | N/A                   | N/A                 | 3.2                  | 0.020                 | 0.016                 | 3.2                 | 11.8                 | 0.023                 | 0.018                 | 11.8                |
| 11            | N/A                  | N/A                   | N/A                   | N/A                 | 2.6                  | 0.021                 | 0.017                 | 2.6                 | 10.9                 | 0.028                 | 0.022                 | 10.9                |
| 12            | N/A                  | N/A                   | N/A                   | N/A                 | 1.9                  | 0.020                 | 0.016                 | 1.9                 | 9.1                  | 0.030                 | 0.024                 | 9.1                 |
| SH106         |                      |                       |                       |                     | SH150                |                       |                       |                     | SH200/SH250          |                       |                       |                     |
| Stroke Inches | Max. Load A&B (lbs.) | Deflection A (Inches) | Deflection B (Inches) | Max. Load C (Inlb.) | Max. Load A&B (lbs.) | Deflection A (Inches) | Deflection B (Inches) | Max. Load C (Inlb.) | Max. Load A&B (lbs.) | Deflection A (Inches) | Deflection B (Inches) | Max. Load C (Inlb.) |
| 1             | 48.5                 | 0.001                 | 0.001                 | 48.5                | 68.2                 | 0.001                 | 0.001                 | 68.2                | 116.3                | 0.001                 | 0.001                 | 116.3               |
| 2             | 41.1                 | 0.001                 | 0.001                 | 41.0                | 58.3                 | 0.001                 | 0.001                 | 58.3                | 100.0                | 0.001                 | 0.001                 | 100.0               |
| 3             | 35.5                 | 0.002                 | 0.002                 | 35.5                | 51.0                 | 0.001                 | 0.001                 | 51.0                | 88.1                 | 0.001                 | 0.001                 | 88.1                |
| 4             | 31.3                 | 0.003                 | 0.002                 | 31.3                | 43.1                 | 0.002                 | 0.002                 | 43.1                | 76.8                 | 0.001                 | 0.001                 | 76.8                |
| 5             | 27.0                 | 0.005                 | 0.003                 | 27.0                | 37.7                 | 0.003                 | 0.003                 | 37.7                | 68.3                 | 0.002                 | 0.002                 | 68.3                |
| 6             | 24.4                 | 0.006                 | 0.005                 | 24.4                | 32.5                 | 0.004                 | 0.004                 | 32.5                | 55.1                 | 0.003                 | 0.003                 | 55.1                |
| 7             | 20.6                 | 0.008                 | 0.006                 | 20.6                | 29.6                 | 0.006                 | 0.005                 | 29.6                | 48.6                 | 0.003                 | 0.003                 | 48.6                |
| 8             | 18.4                 | 0.010                 | 0.008                 | 18.4                | 26.6                 | 0.008                 | 0.006                 | 26.6                | 43.0                 | 0.004                 | 0.003                 | 43.0                |
| 9             | 15.3                 | 0.012                 | 0.009                 | 15.3                | 23.6                 | 0.009                 | 0.007                 | 23.6                | 38.0                 | 0.005                 | 0.004                 | 38.0                |
| 10            | 12.9                 | 0.013                 | 0.010                 | 12.9                | 20.0                 | 0.010                 | 0.008                 | 20.0                | 34.1                 | 0.006                 | 0.005                 | 34.1                |
| 11            | 11.0                 | 0.014                 | 0.011                 | 11.0                | 17.8                 | 0.012                 | 0.009                 | 17.8                | 28.7                 | 0.006                 | 0.005                 | 28.7                |
| 12            | 10.1                 | 0.016                 | 0.013                 | 10.1                | 14.5                 | 0.012                 | 0.010                 | 14.5                | 24.3                 | 0.007                 | 0.006                 | 24.3                |
| 13            | N/A                  | N/A                   | N/A                   | N/A                 | 12.5                 | 0.013                 | 0.010                 | 12.5                | 20.3                 | 0.007                 | 0.006                 | 20.3                |
| 14            | N/A                  | N/A                   | N/A                   | N/A                 | 11.0                 | 0.014                 | 0.011                 | 11.0                | 15.4                 | 0.007                 | 0.006                 | 15.4                |
| 15            | N/A                  | N/A                   | N/A                   | N/A                 | 9.7                  | 0.015                 | 0.012                 | 9.7                 | 11.0                 | 0.006                 | 0.005                 | 11.0                |
| 16            | N/A                  | N/A                   | N/A                   | N/A                 | 8.3                  | 0.015                 | 0.012                 | 8.3                 | 8.8                  | 0.005                 | 0.004                 | 8.8                 |
| 17            | N/A                  | N/A                   | N/A                   | N/A                 | 7.0                  | 0.015                 | 0.012                 | 7.0                 | 7.5                  | 0.004                 | 0.003                 | 7.5                 |
| 18            | N/A                  | N/A                   | N/A                   | N/A                 | 5.0                  | 0.013                 | 0.011                 | 5.0                 | 6.0                  | 0.004                 | 0.003                 | 6.0                 |
| SH300         |                      |                       |                       |                     |                      |                       |                       |                     |                      |                       |                       |                     |
| Stroke Inches | Max. Load A&B (lbs.) | Deflection A (Inches) | Deflection B (Inches) | Max. Load C (Inlb.) |                      |                       |                       |                     |                      |                       |                       |                     |
| 1             | 170.5                | 0.001                 | 0.001                 | 170.5               |                      |                       |                       |                     |                      |                       |                       |                     |
| 2             | 149.8                | 0.001                 | 0.001                 | 149.8               |                      |                       |                       |                     |                      |                       |                       |                     |
| 3             | 132.5                | 0.001                 | 0.001                 | 132.5               |                      |                       |                       |                     |                      |                       |                       |                     |
| 4             | 117.5                | 0.001                 | 0.001                 | 117.5               |                      |                       |                       |                     |                      |                       |                       |                     |
| 5             | 105.0                | 0.002                 | 0.001                 | 105.0               |                      |                       |                       |                     |                      |                       |                       |                     |
| 6             | 95.4                 | 0.002                 | 0.002                 | 95.4                |                      |                       |                       |                     |                      |                       |                       |                     |
| 7             | 85.2                 | 0.003                 | 0.002                 | 85.2                |                      |                       |                       |                     |                      |                       |                       |                     |
| 8             | 77.7                 | 0.004                 | 0.003                 | 77.7                |                      |                       |                       |                     |                      |                       |                       |                     |
| 9             | 69.0                 | 0.005                 | 0.004                 | 69.0                |                      |                       |                       |                     |                      |                       |                       |                     |
| 10            | 62.3                 | 0.005                 | 0.004                 | 62.3                |                      |                       |                       |                     |                      |                       |                       |                     |
| 11            | 55.1                 | 0.006                 | 0.005                 | 55.1                |                      |                       |                       |                     |                      |                       |                       |                     |
| 12            | 48.0                 | 0.006                 | 0.005                 | 48.0                |                      |                       |                       |                     |                      |                       |                       |                     |
| 13            | 41.7                 | 0.007                 | 0.006                 | 41.7                |                      |                       |                       |                     |                      |                       |                       |                     |
| 14            | 36.0                 | 0.007                 | 0.006                 | 36.0                |                      |                       |                       |                     |                      |                       |                       |                     |
| 15            | 31.5                 | 0.008                 | 0.007                 | 31.5                |                      |                       |                       |                     |                      |                       |                       |                     |
| 16            | 27.9                 | 0.008                 | 0.007                 | 27.9                |                      |                       |                       |                     |                      |                       |                       |                     |
| 17            | 23.0                 | 0.009                 | 0.008                 | 23.0                |                      |                       |                       |                     |                      |                       |                       |                     |
| 18            | 19.5                 | 0.009                 | 0.008                 | 19.5                |                      |                       |                       |                     |                      |                       |                       |                     |

\* SH031 Series not offered in Linear Ball Bearing Option.  
Maximum load and deflection ratings, 100% at tool plate mounting face

Unit Weight Table

|                             | SH031 | SH056 | SH075 | SH106 | SH150 | SH200 | SH250 | SH300 |
|-----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Base Unit Weight (lbs.)     | 0.35  | 1.07  | 2.46  | 4.04  | 6.36  | 12.94 | 13.84 | 30.12 |
| Adder/Inch of stroke (lbs.) | 0.03  | 0.08  | 0.15  | 0.22  | 0.34  | 0.60  | 0.90  | 1.75  |

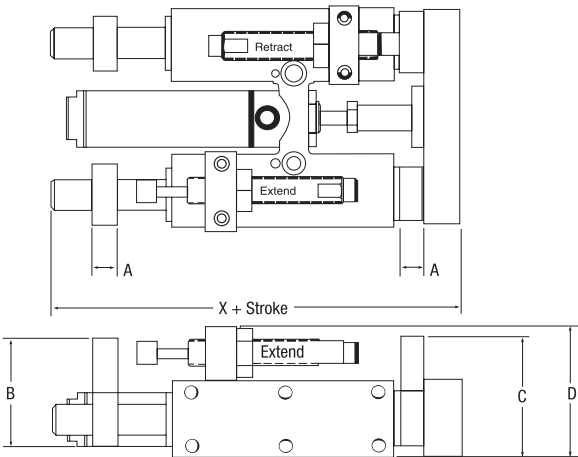
Add base weight to inch adder X stroke.    Sample weight calculation: Model SH075 W/6" stroke, 2.46 + (0.15 x 6) = 3.360 lbs.

Unit Output Force Table

|                      | SH031 | SH056 | SH075 | SH106 | SH150 | SH200 | SH250 | SH300 |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Extend Force (lbs.)  | 0.07  | 0.24  | 0.44  | 0.88  | 1.76  | 3.14  | 4.90  | 7.00  |
| Retract Force (lbs.) | 0.06  | 0.22  | 0.39  | 0.81  | 1.61  | 2.83  | 4.60  | 6.62  |

Multiply force factor X input pressure in PSI.    Sample output force calculation: Model SH150 extend force@ 70PSI, 1.76 x 70 = 123.2 lbs.

Shock Option

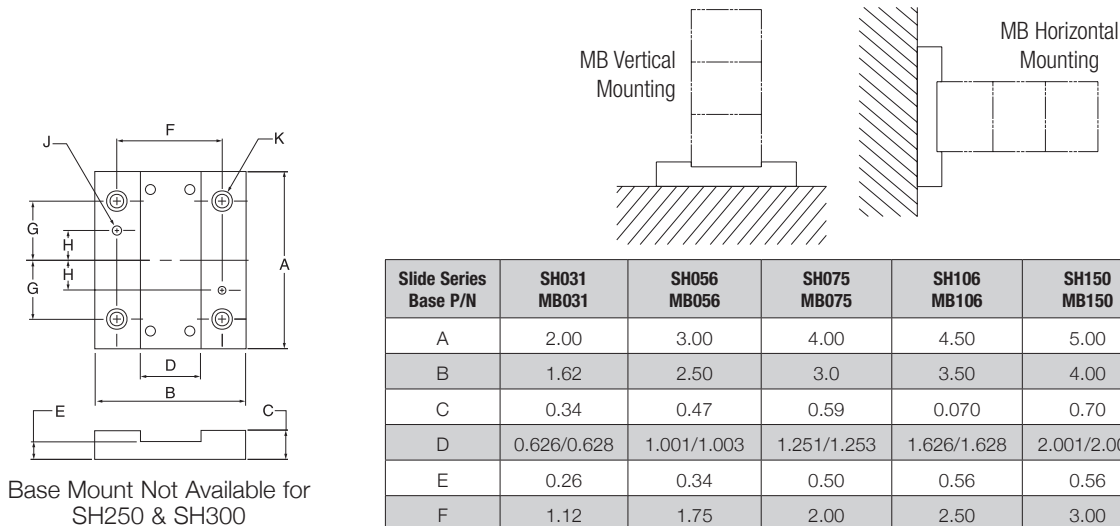


Dimensions

| Dimension | SH075 | SH106 | SH150 | SH200 | SH250 | SH300 |
|-----------|-------|-------|-------|-------|-------|-------|
| A         | 0.44  | 0.50  | 0.50  | 0.50  | 0.50  | 0.50  |
| B         | 2.00  | 2.25  | 2.75  | 3.25  | 3.52  | 5.50  |
| C         | 2.13  | 2.50  | 3.13  | 3.75  | 3.93  | 5.75  |
| D         | 2.38  | 2.75  | 3.25  | 3.88  | 4.25  | 5.87  |
| X         | 6.68  | 7.31  | 8.13  | 9.75  | 9.75  | 10.10 |

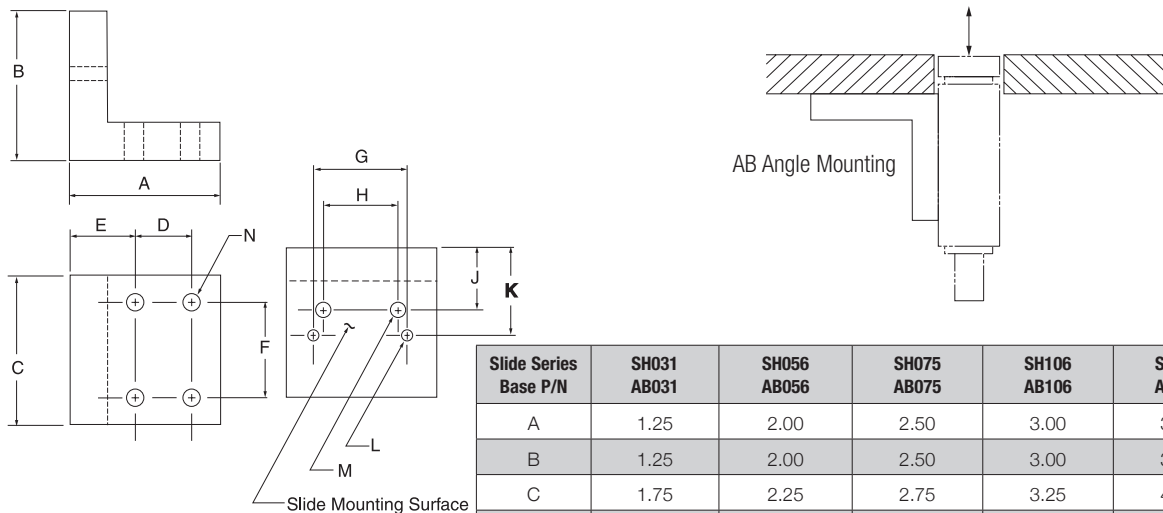
\* Shock Option available on SH075 series and larger.

## MB Series Base Mounting



| Slide Series Base P/N | SH031 MB031           | SH056 MB056            | SH075 MB075            | SH106 MB106             | SH150 MB150             | SH200 MB200            |
|-----------------------|-----------------------|------------------------|------------------------|-------------------------|-------------------------|------------------------|
| A                     | 2.00                  | 3.00                   | 4.00                   | 4.50                    | 5.00                    | 6.50                   |
| B                     | 1.62                  | 2.50                   | 3.0                    | 3.50                    | 4.00                    | 5.00                   |
| C                     | 0.34                  | 0.47                   | 0.59                   | 0.070                   | 0.70                    | 0.99                   |
| D                     | 0.626/0.628           | 1.001/1.003            | 1.251/1.253            | 1.626/1.628             | 2.001/2.003             | 2.501/2.503            |
| E                     | 0.26                  | 0.34                   | 0.50                   | 0.56                    | 0.56                    | 0.68                   |
| F                     | 1.12                  | 1.75                   | 2.00                   | 2.50                    | 3.00                    | 3.75                   |
| G                     | 0.75                  | 1.00                   | 1.50                   | 1.75                    | 2.00                    | 2.50                   |
| H                     | 0.37                  | 0.50                   | 0.75                   | 1.12                    | 1.25                    | 1.50                   |
| J                     | 0.125/0.126           | 0.156/0.0157           | 0.156/0.157            | 0.188/0.189             | 0.188/0.189             | 0.250/0.251            |
| K                     | Clearance for #8 SHCS | Clearance for #10 SHCS | Clearance for 1/4 SHCS | Clearance for 5/16 SHCS | Clearance for 5/16 SHCS | Clearance for 3/8 SHCS |

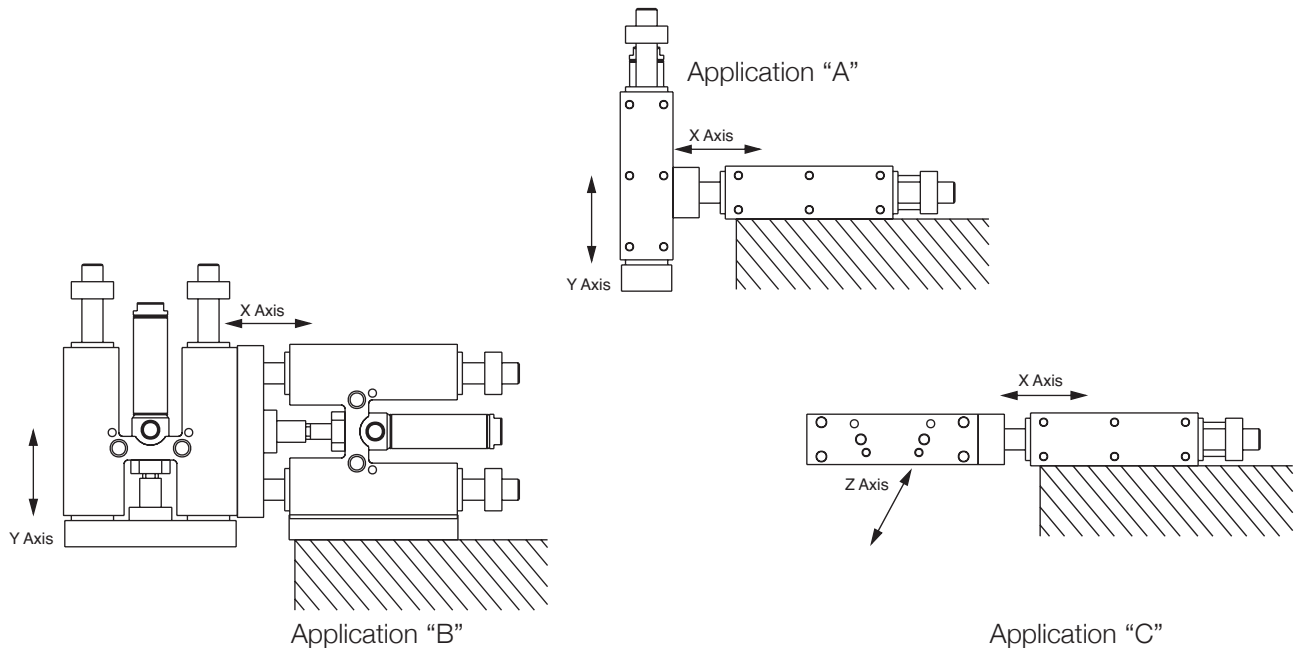
## AB Series Angle Mounting – Not Available on SH300



| Slide Series Base P/N | SH031 AB031     | SH056 AB056     | SH075 AB075      | SH106 AB106     | SH150 AB150     | SH200/SH250 AB200 |
|-----------------------|-----------------|-----------------|------------------|-----------------|-----------------|-------------------|
| A                     | 1.25            | 2.00            | 2.50             | 3.00            | 3.50            | 4.00              |
| B                     | 1.25            | 2.00            | 2.50             | 3.00            | 3.50            | 4.00              |
| C                     | 1.75            | 2.25            | 2.75             | 3.25            | 4.00            | 5.00              |
| D                     | 0.50            | 0.87            | 1.00             | 1.25            | 1.50            | 2.00              |
| E                     | 0.50            | 0.62            | 0.75             | 1.12            | 1.25            | 1.37              |
| F                     | 1.25            | 1.25            | 1.75             | 2.25            | 3.00            | 4.00              |
| G                     | 1.00            | 1.37            | 1.81             | 1.87            | 2.50            | 3.00              |
| H                     | 1.00            | 1.25            | 1.50             | 1.87            | 2.25            | 2.75              |
| J                     | 0.75            | 1.00            | 1.31             | 1.78            | 2.00            | 2.37              |
| K                     | 0.97            | 1.31            | 1.68             | 2.15            | 2.43            | 2.87              |
| L                     | 0.94            | 0.125           | 0.187            | 0.187           | 0.187           | 0.250             |
| M                     | For #10-32 SHCS | For 1/4-28 SHCS | For 5/16-24 SHCS | For 3/8-24 SHCS | For 3/8-24 SHCS | For 7/16-20 SHCS  |
| N                     | For #10 SHCS    | For 1/4 SHCS    | For 5/16 SHCS    | For 3/8 SHCS    | For 3/8 SHCS    | For 7/16 SHCS     |

### NuMate™ Direct Mount, Mounting System

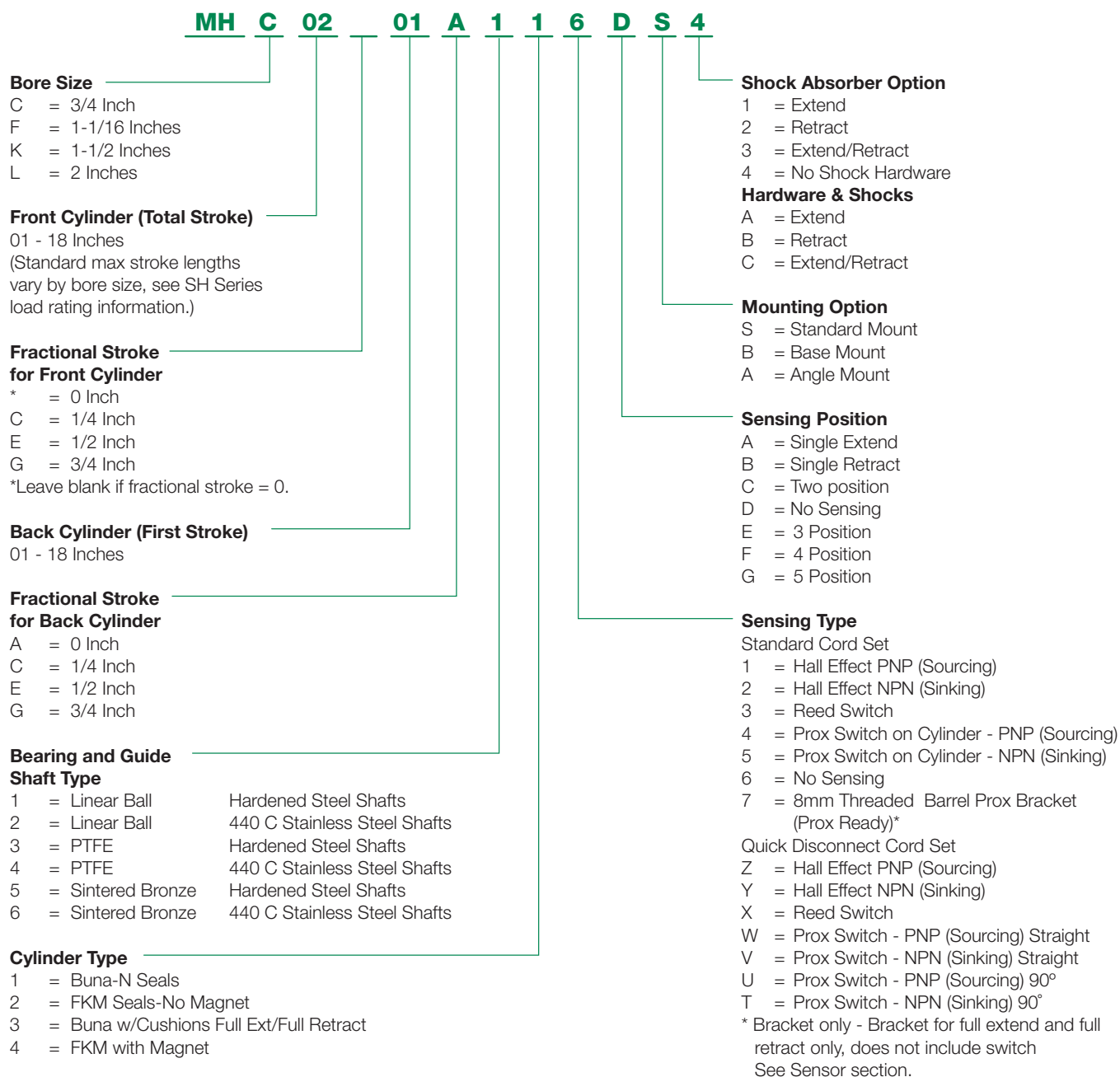
The NuMate™ mounting system provides a standard series of drilled, tapped and counterbored holes allowing each slide series to mount with each other and other slide series in various combinations without the use of adapters, transition plates or other costly methods. The NuMate™ mounting system also utilizes dowel hole locations for precision mountings. The NuMate™ mounting system is the most versatile mounting method of its kind, providing customers with a cost effective method for building modular component automation. The NuMate™ mounting system is consistent across the **Numatics** spectrum of products for automation.



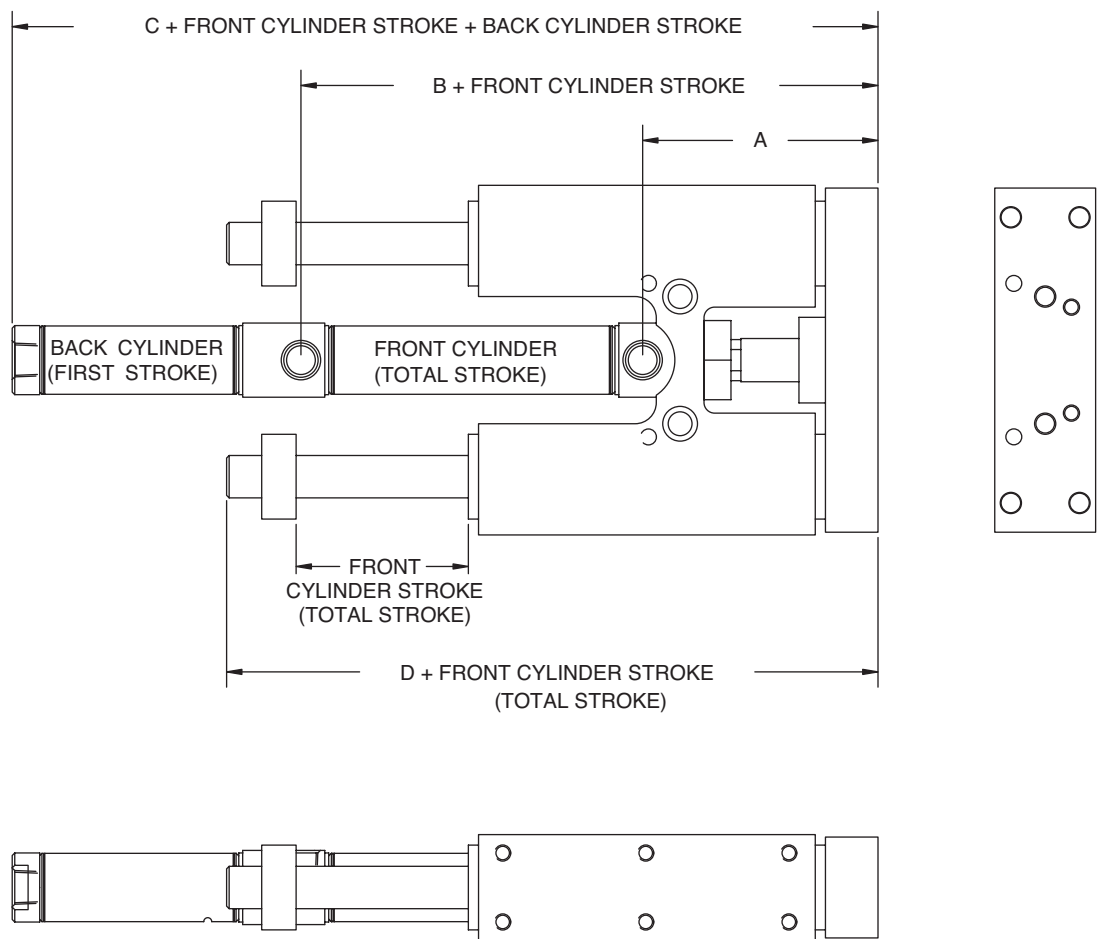
|              | Application A                    | Application B       | Application C       |
|--------------|----------------------------------|---------------------|---------------------|
| X-Axis Slide | Mating Y Axis Slide              | Mating Y Axis Slide | Mating Z Axis Slide |
| SH031        | SH031                            | -                   | -                   |
| SH056        | SH031<br>SH056                   | SH056               | SH056               |
| SH075        | SH056<br>SH075                   | SH075               | SH075               |
| SH106        | SH075<br>SH106                   | SH106               | SH106               |
| SH150        | SH106<br>SH150                   | SH150               | SH150               |
| SH200        | SH150<br>SH200                   | SH200               | SH200               |
| SH250        | SH150<br>SH200<br>SH250          | SH200<br>SH250      | SH200<br>SH250      |
| SH300        | SH150<br>SH200<br>SH250<br>SH300 | SH300               | SH300               |

## How to Order

### 3 Position Linear Slide



3 Position Linear Slide

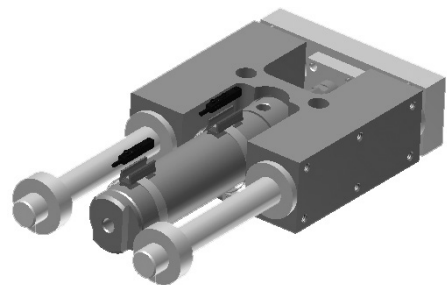


Dimensions: Inches

| SH Series | A    | B    | C     | D    |
|-----------|------|------|-------|------|
| SH075     | 2.78 | 4.81 | 7.21  | 5.68 |
| SH106     | 3.44 | 5.47 | 8.04  | 6.35 |
| SH150     | 3.86 | 5.99 | 8.80  | 7.16 |
| SH200     | 4.85 | 7.57 | 11.05 | 8.75 |

SH Series Slide

| Bore  | Bracket P/N |
|-------|-------------|
| SH056 | N199-1054   |
| SH075 | N199-1055   |
| SH106 | N199-1056   |
| SH150 | N199-1057   |
| SH200 | N199-1058   |
| SH250 | N199-1059   |
| SH300 | N199-1060   |

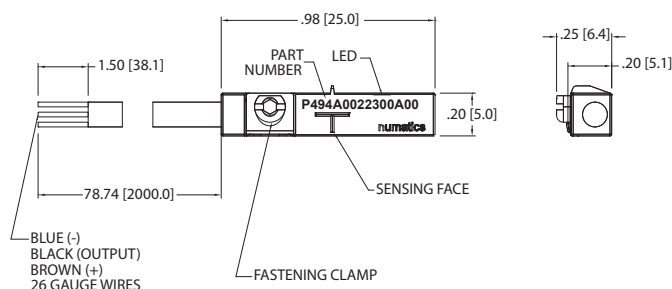


| Sensor Description | Standard Cord Set | Quick Disconnect |
|--------------------|-------------------|------------------|
| Reed Switch        | REED-FL2-00       | REED-QDS-M8U     |
| Hall PNP           | PNP-FL2-00-U      | PNP-QDS-M8-U     |
| Hall NPN           | NPN-FL2-00-U      | NPN-QDS-M8-U     |

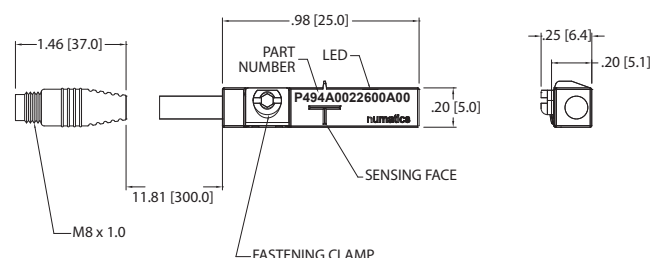
See page 15, 16, & 17 for sensor specifications

## Sensing Part Numbers

### PNP-FL2-00-U



### PNP-QDS-M8-U



| ELECTRICAL DESIGN                 | DC PNP                                                                                                                                                                                                                                                      |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OUTPUT                            | Normally Open                                                                                                                                                                                                                                               |
| OPERATING VOLTAGE                 | 10-30 VDC                                                                                                                                                                                                                                                   |
| CURRENT RATING                    | 100 mA                                                                                                                                                                                                                                                      |
| SHORT-CIRCUIT PROTECTION          | Yes                                                                                                                                                                                                                                                         |
| OVERLOAD PROTECTION               | Yes                                                                                                                                                                                                                                                         |
| REVERSE POLARITY PROTECTION       | Yes                                                                                                                                                                                                                                                         |
| VOLTAGE DROP                      | < 2.5 V                                                                                                                                                                                                                                                     |
| CURRENT CONSUMPTION               | < 12 mA                                                                                                                                                                                                                                                     |
| REPEATABILITY                     | < .2mm                                                                                                                                                                                                                                                      |
| POWER-ON DELAY TIME               | < 30 ms                                                                                                                                                                                                                                                     |
| SWITCH FREQUENCY                  | > 3000 Hz                                                                                                                                                                                                                                                   |
| AMBIENT TEMPERATURE               | -25°C to 85°C                                                                                                                                                                                                                                               |
| PROTECTION                        | IP 67, III                                                                                                                                                                                                                                                  |
| HYSTERESIS                        | 1.0mm                                                                                                                                                                                                                                                       |
| MAGNETIC SENSITIVITY              | 2.0 mT                                                                                                                                                                                                                                                      |
| TRAVEL SPEED                      | > 10 m/s                                                                                                                                                                                                                                                    |
| HOUSING MATERIAL                  | PA (Polyamide) Black; Fastening Clamp: Stainless Steel                                                                                                                                                                                                      |
| FUNCTION DISPLAY SWITCHING STATUS | Yellow LED                                                                                                                                                                                                                                                  |
| CONNECTION                        | Flying Leads, Pur Cable (2m Long, 3 x26 Gauge Wire)                                                                                                                                                                                                         |
| REMARKS                           | Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5<br>cULus - Class 2 Source Required                                                                                                                                                             |
| ACCESSORIES                       | Rubber Placeholder, Cable Clip, and Cut Sheet To Be Provided with Every Switch                                                                                                                                                                              |
| AGENCY APPROVALS                  |    |

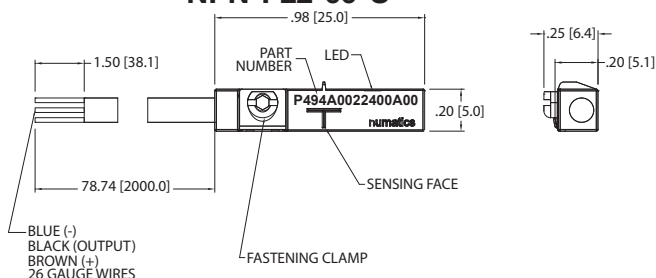
| ELECTRICAL DESIGN                 | DC PNP                                                                                                                                                                                                                                                            |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OUTPUT                            | Normally Open                                                                                                                                                                                                                                                     |
| OPERATING VOLTAGE                 | 10-30 VDC                                                                                                                                                                                                                                                         |
| CURRENT RATING                    | 100 mA                                                                                                                                                                                                                                                            |
| SHORT-CIRCUIT PROTECTION          | Yes                                                                                                                                                                                                                                                               |
| OVERLOAD PROTECTION               | Yes                                                                                                                                                                                                                                                               |
| REVERSE POLARITY PROTECTION       | Yes                                                                                                                                                                                                                                                               |
| VOLTAGE DROP                      | < 2.5 V                                                                                                                                                                                                                                                           |
| CURRENT CONSUMPTION               | < 12 mA                                                                                                                                                                                                                                                           |
| REPEATABILITY                     | < .2mm                                                                                                                                                                                                                                                            |
| POWER-ON DELAY TIME               | < 30 ms                                                                                                                                                                                                                                                           |
| SWITCH FREQUENCY                  | > 3000 Hz                                                                                                                                                                                                                                                         |
| AMBIENT TEMPERATURE               | -25°C to 85°C                                                                                                                                                                                                                                                     |
| PROTECTION                        | IP 67, III                                                                                                                                                                                                                                                        |
| HYSTERESIS                        | 1.0mm                                                                                                                                                                                                                                                             |
| MAGNETIC SENSITIVITY              | 2.0 mT                                                                                                                                                                                                                                                            |
| TRAVEL SPEED                      | > 10 m/s                                                                                                                                                                                                                                                          |
| HOUSING MATERIAL                  | PA (Polyamide) Black; Fastening Clamp: Stainless Steel                                                                                                                                                                                                            |
| FUNCTION DISPLAY SWITCHING STATUS | Yellow LED                                                                                                                                                                                                                                                        |
| CONNECTION                        | M8 Connector (Snap Fit) , Pur Cable (.3 m)                                                                                                                                                                                                                        |
| REMARKS                           | Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5<br>cULus - Class 2 Source Required                                                                                                                                                                   |
| ACCESSORIES                       | Rubber Placeholder, Cable Clip, and Cut Sheet To Be Provided with Every Switch                                                                                                                                                                                    |
| AGENCY APPROVALS                  |    |

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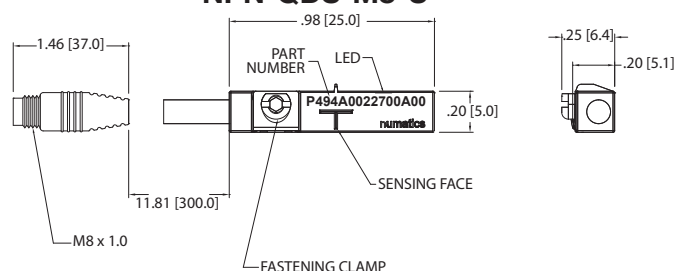
## Sensing Part Numbers

## NPN-FL2-00-U



|                                   |                                                                                                 |
|-----------------------------------|-------------------------------------------------------------------------------------------------|
| ELECTRICAL DESIGN                 | DC NPN                                                                                          |
| OUTPUT                            | Normally Open                                                                                   |
| OPERATING VOLTAGE                 | 10-30 VDC                                                                                       |
| CURRENT RATING                    | 100 mA                                                                                          |
| SHORT-CIRCUIT PROTECTION          | Yes                                                                                             |
| OVERLOAD PROTECTION               | Yes                                                                                             |
| REVERSE POLARITY PROTECTION       | Yes                                                                                             |
| VOLTAGE DROP                      | < 2.5 V                                                                                         |
| CURRENT CONSUMPTION               | < 12 mA                                                                                         |
| REPEATABILITY                     | < .2mm                                                                                          |
| POWER-ON DELAY TIME               | < 30 ms                                                                                         |
| SWITCH FREQUENCY                  | > 3000 Hz                                                                                       |
| AMBIENT TEMPERATURE               | -25°C to 85°C                                                                                   |
| PROTECTION                        | IP 67, III                                                                                      |
| HYSTERESIS                        | 1.0mm                                                                                           |
| MAGNETIC SENSITIVITY              | 2.0 mT                                                                                          |
| TRAVEL SPEED                      | > 10 m/s                                                                                        |
| HOUSING MATERIAL                  | PA (Polyamide) Black; Fastening Clamp: Stainless Steel                                          |
| FUNCTION DISPLAY SWITCHING STATUS | Yellow LED                                                                                      |
| CONNECTION                        | Flying Leads, Pur Cable (2m Long, 3 x26 Gauge Wire)                                             |
| REMARKS                           | Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5<br>cULus - Class 2 Source Required |
| ACCESSORIES                       | Rubber Placeholder, Cable Clip, and Cut Sheet To Be Provided with Every Switch                  |
| AGENCY APPROVALS                  | CE cULus RoHS                                                                                   |

## NPN-QDS-M8-U

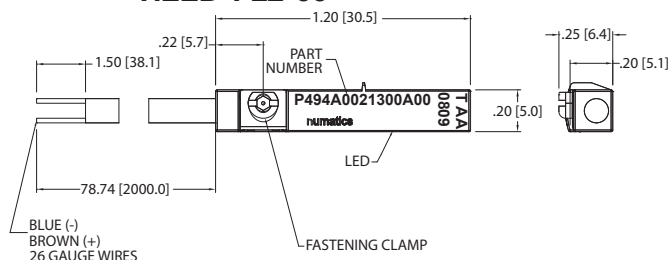


|                                   |                                                                                                 |
|-----------------------------------|-------------------------------------------------------------------------------------------------|
| ELECTRICAL DESIGN                 | DC NPN                                                                                          |
| OUTPUT                            | Normally Open                                                                                   |
| OPERATING VOLTAGE                 | 10-30 VDC                                                                                       |
| CURRENT RATING                    | 100 mA                                                                                          |
| SHORT-CIRCUIT PROTECTION          | Yes                                                                                             |
| OVERLOAD PROTECTION               | Yes                                                                                             |
| REVERSE POLARITY PROTECTION       | Yes                                                                                             |
| VOLTAGE DROP                      | < 2.5 V                                                                                         |
| CURRENT CONSUMPTION               | < 12 mA                                                                                         |
| REPEATABILITY                     | < .2mm                                                                                          |
| POWER-ON DELAY TIME               | < 30 ms                                                                                         |
| SWITCH FREQUENCY                  | > 3000 Hz                                                                                       |
| AMBIENT TEMPERATURE               | -25°C to 85°C                                                                                   |
| PROTECTION                        | IP 67, III                                                                                      |
| HYSTERESIS                        | 1.0mm                                                                                           |
| MAGNETIC SENSITIVITY              | 2.0 mT                                                                                          |
| TRAVEL SPEED                      | > 10 m/s                                                                                        |
| HOUSING MATERIAL                  | PA (Polyamide) Black; Fastening Clamp: Stainless Steel                                          |
| FUNCTION DISPLAY SWITCHING STATUS | Yellow LED                                                                                      |
| CONNECTION                        | M8 Connector (Snap Fit) , Pur Cable (.3 m)                                                      |
| REMARKS                           | Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5<br>cULus - Class 2 Source Required |
| ACCESSORIES                       | Rubber Placeholder, Cable Clip, and Cut Sheet To Be Provided with Every Switch                  |
| AGENCY APPROVALS                  | CE cULus RoHS                                                                                   |



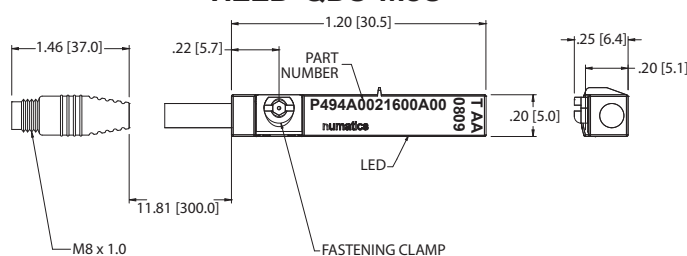
## Sensing Part Numbers

### REED-FL2-00



| ELECTRICAL DESIGN                 | AC/DC REED                                                                                                                                                                                                                                                                      |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OUTPUT                            | Normally Open                                                                                                                                                                                                                                                                   |
| OPERATING VOLTAGE                 | 5-120 VAC/DC                                                                                                                                                                                                                                                                    |
| CURRENT RATING                    | 100 mA*                                                                                                                                                                                                                                                                         |
| SHORT-CIRCUIT PROTECTION          | No                                                                                                                                                                                                                                                                              |
| OVERLOAD PROTECTION               | No                                                                                                                                                                                                                                                                              |
| REVERSE POLARITY PROTECTION       | Yes                                                                                                                                                                                                                                                                             |
| VOLTAGE DROP                      | < 5 V                                                                                                                                                                                                                                                                           |
| REPEATABILITY                     | ± .2mm                                                                                                                                                                                                                                                                          |
| MAKETIME INCLUDING BOUNCE         | < .6 ms                                                                                                                                                                                                                                                                         |
| BREAKTIME                         | < .1 ms                                                                                                                                                                                                                                                                         |
| SWITCHING POWER (MAX)             | 5 W                                                                                                                                                                                                                                                                             |
| SWITCH FREQUENCY                  | 1000 Hz                                                                                                                                                                                                                                                                         |
| AMBIENT TEMPERATURE               | -25°C to 70°C                                                                                                                                                                                                                                                                   |
| PROTECTION                        | IP 67, II                                                                                                                                                                                                                                                                       |
| HYSTERESIS                        | .9mm                                                                                                                                                                                                                                                                            |
| HOUSING MATERIAL                  | PA (Polyamide) Black; Fastening Clamp: Stainless Steel                                                                                                                                                                                                                          |
| FUNCTION DISPLAY SWITCHING STATUS | Yellow LED                                                                                                                                                                                                                                                                      |
| CONNECTION                        | Flying Leads, Pur Cable (2m Long, 2 x26 Gauge Wire)                                                                                                                                                                                                                             |
| REMARKS                           | <p>*External Protective Circuit for Inductive Load (Valve, Contactor, Etc..) Necessary. Conforms to 2008 NEC Section 725 III, Class 2 Circuits</p> <p>Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5.<br/>No LED Function in case of Polarity in DC Operation</p> |
| ACCESSORIES                       | Rubber Placeholder, Cable Clip, and Cut Sheet To Be Provided with Every Switch                                                                                                                                                                                                  |
| AGENCY APPROVALS                  |  <b>RoHS</b>                                                                                                                                                                                 |

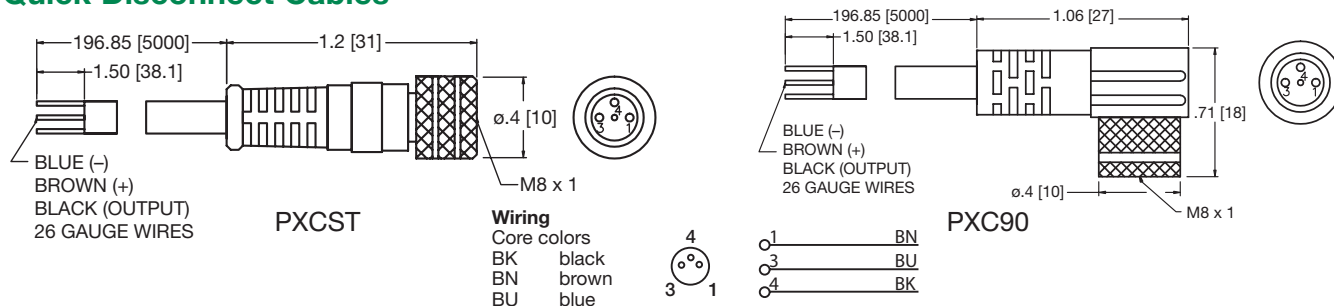
### REED-QDS-M8U



| ELECTRICAL DESIGN                 | AC/DC REED                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OUTPUT                            | Normally Open                                                                                                                                                                                                                                                                                                                                                                   |
| OPERATING VOLTAGE                 | *5-60 VDC / 5-50 VAC                                                                                                                                                                                                                                                                                                                                                            |
| CURRENT RATING                    | 100 mA                                                                                                                                                                                                                                                                                                                                                                          |
| SHORT-CIRCUIT PROTECTION          | No                                                                                                                                                                                                                                                                                                                                                                              |
| OVERLOAD PROTECTION               | No                                                                                                                                                                                                                                                                                                                                                                              |
| REVERSE POLARITY PROTECTION       | Yes                                                                                                                                                                                                                                                                                                                                                                             |
| VOLTAGE DROP                      | < 5 V                                                                                                                                                                                                                                                                                                                                                                           |
| REPEATABILITY                     | ± .2mm                                                                                                                                                                                                                                                                                                                                                                          |
| MAKETIME INCLUDING BOUNCE         | < .6 ms                                                                                                                                                                                                                                                                                                                                                                         |
| BREAKTIME                         | < .1 ms                                                                                                                                                                                                                                                                                                                                                                         |
| SWITCHING POWER (MAX)             | 5 W                                                                                                                                                                                                                                                                                                                                                                             |
| SWITCH FREQUENCY                  | 1000 Hz                                                                                                                                                                                                                                                                                                                                                                         |
| AMBIENT TEMPERATURE               | -25°C to 70°C                                                                                                                                                                                                                                                                                                                                                                   |
| PROTECTION                        | IP 67, II                                                                                                                                                                                                                                                                                                                                                                       |
| HYSTERESIS                        | .9mm                                                                                                                                                                                                                                                                                                                                                                            |
| HOUSING MATERIAL                  | PA (Polyamide) Black; Fastening Clamp: Stainless Steel                                                                                                                                                                                                                                                                                                                          |
| FUNCTION DISPLAY SWITCHING STATUS | Yellow LED                                                                                                                                                                                                                                                                                                                                                                      |
| CONNECTION                        | M8 Connector (Snap Fit), Pur Cable (.3m)                                                                                                                                                                                                                                                                                                                                        |
| REMARKS                           | <p>*External Protective Circuit for Inductive Load (Valve, Contactor, Etc..) Necessary. Conforms to 2008 NEC Section 725 III, Class 2 Circuits</p> <p>M8 Connector voltage limited to 5-60 vdc / 5-50 vac to conform with 2008 IEC 61076-2-104</p> <p>Clamping Screw with Combined Slot/Hexagon Socket Head AF 1.5.<br/>No LED Function in case of Polarity in DC Operation</p> |
| ACCESSORIES                       | Rubber Placeholder, Cable Clip, and Cut Sheet To Be Provided with Every Switch                                                                                                                                                                                                                                                                                                  |
| AGENCY APPROVALS                  |  <b>RoHS</b>                                                                                                                                                                                                                                                                               |

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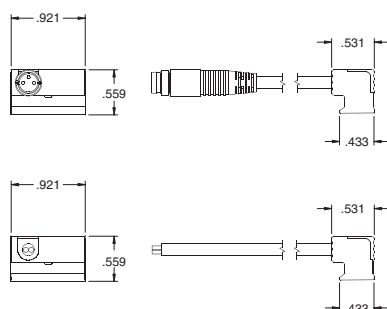
## Quick Disconnect Cables



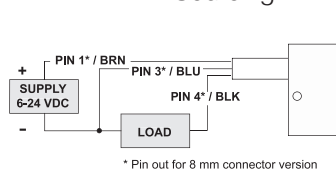
| Order Code | Type                                   | Operating Voltage | Current Rating | Cable Material | Protection | Connector |
|------------|----------------------------------------|-------------------|----------------|----------------|------------|-----------|
| PXCST      | Straight 5 m Cable (3 x 26 Gauge wire) | 60 AC/75 DC       | 3 A            | PUR            | IP 68, III | M8        |
| PXC90      | 90° 5 m Cable (3 x 26 Gauge wire)      | 60 AC/75 DC       | 3 A            | PUR            | IP 68, III | M8        |

## World Switch Hall Effect Part Numbers

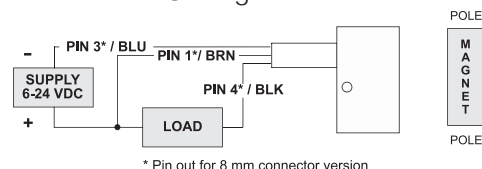
| P/N     | Switch Style | Electrical Design | Output        | Operating Voltage | Current Rating | Switching Power | Voltage Drop | NEMA IP Rating | Temperature Rating |
|---------|--------------|-------------------|---------------|-------------------|----------------|-----------------|--------------|----------------|--------------------|
| SH6-031 | Flying Lead  | DC PNP            | Normally Open | 6-24 VDC          | 0.3 Amps Max.  | 7.2 Watts Max.  | .5 Volts     | NEMA 6         | -25° to +75° C     |
| SH6-032 | Flying Lead  | DC PNP            | Normally Open | 6-24 VDC          | 0.3 Amps Max.  | 7.2 Watts Max.  | .5 Volts     | NEMA 6         | -25° to +75° C     |
| SH6-021 | M8 Connector | DC NPN            | Normally Open | 6-24 VDC          | 0.3 Amps Max.  | 7.2 Watts Max.  | .5 Volts     | NEMA 6         | -25° to +75° C     |
| SH6-022 | M8 Connector | DC NPN            | Normally Open | 6-24 VDC          | 0.3 Amps Max.  | 7.2 Watts Max.  | .5 Volts     | NEMA 6         | -25° to +75° C     |



## PNP Sourcing



## NPN Sinking







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