

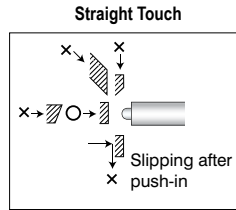


Precision Limit Switches

Precision Touch Limit Switches

Features

- Slim design (from M5) allows side-by-side installation
- Long-stroke and water-resistant models available
- 5 micron (μm) repeat accuracy
- Stainless steel housing
- Metal bearing
- Straight-touch and straight needle touch available



O indicates correct target approach and orientation.
X indicates approach and orientation that should be avoided.



CSJ055A-L



CS067A-CL

Precision Touch Limit Switches Selection Chart

| Part Number | Price | Drawing Link | Actuator/ Head Type* | Barrel Type | Barrel Diameter/ Thread* | Stroke | Switching Output | Contact Force | Connection Type |
|-------------------------------|---------|---------------------|------------------------------|-------------|--------------------------|--------|------------------|---------------|-------------------|
| Straight Touch | | | | | | | | | |
| CSJ055A | \$49.50 | PDF | Ø 2mm plunger, SR 1.5 mm | Threaded | M5×0.5 | 2.8mm | (1) N.O. | 1N | Cable, 3m [9.8ft] |
| CSJ055A-L | \$59.00 | PDF | Ø 2mm plunger, SR 1.5mm | | | 2.8mm | (1) N.O. | 1N | |
| CSJS50A | \$49.50 | PDF | Ø 2mm plunger SR 1.5mm | Smooth | Ø 5mm | 2.8mm | (1) N.O. | 1N | |
| CSJS50A-L | \$59.00 | PDF | Ø 2mm plunger, SR 1.5mm | | | Ø 5mm | 2.8mm | (1) N.O. | |
| CS065A-L | \$66.00 | PDF | Ø 2mm plunger, SR 1.5mm | Threaded | M6×0.5 | 2.8mm | (1) N.O. | 1N | |
| CSS60A-L | \$62.00 | PDF | Ø 2mm plunger, SR 1.5mm | Smooth | Ø 6mm | 2.8mm | (1) N.O. | 1N | |
| CSS60B-L | \$62.00 | PDF | Ø 2mm plunger, SR 1.5mm | | | 2.8mm | (1) N.C. | 1N | |
| CS067A | \$56.00 | PDF | Ø 2mm plunger, SR 1.5mm | Threaded | M6×0.75 | 2.8mm | (1) N.O. | 1N | |
| CS067A-B | \$61.00 | PDF | Ø 2mm plunger, Ø 4mm flat | | | 2.8mm | (1) N.O. | 1N | |
| CS067A-L | \$66.00 | PDF | Ø 2mm plunger, SR 1.5mm | | | 2.8mm | (1) N.O. | 1N | |
| CS067B | \$56.00 | PDF | Ø 2mm plunger, SR 1.5mm | | | 2.8mm | (1) N.C. | 1N | |
| CS067B-L | \$66.00 | PDF | Ø 2mm plunger, SR 1.5mm | | | 2.8mm | (1) N.C. | 1N | |
| CS067A-BL | \$72.00 | PDF | Ø 2mm plunger, Ø 4mm flat | | | 2.8mm | (1) N.O. | 1N | |
| CSS80A-L | \$62.00 | PDF | Ø 3.5mm plunger, SR 3mm | Smooth | Ø 8mm | 2.8mm | (1) N.O. | 1N | |
| CS087A-L | \$66.00 | PDF | Ø 3.5mm plunger, SR 3mm | Threaded | M8×0.75 | 2.8mm | (1) N.O. | 1N | |
| CSK087A | \$64.00 | PDF | Ø 3.5mm plunger, SR 3mm | | | 5mm | (1) N.O. | 1N | |
| CSK087A-L | \$74.00 | PDF | Ø3.5mm plunger, SR 3mm | | | 5mm | (1) N.O. | 1N | |
| CSK087B-L | \$74.00 | PDF | Ø 3.5mm plunger, SR 5mm | | | 5mm | (1) N.C. | 1N | |
| CSP087A-AL | \$86.00 | PDF | Ø 5.5mm plunger, 2mm round | | | 2.8mm | (1) N.O. | 1N | |
| CSP087B-AL | \$86.00 | PDF | Ø 5.5mm plunger, 2mm round | | | 2.8mm | (1) N.C. | 1N | |
| Straight Needle Contact Touch | | | | | | | | | |
| CSJ055A-CL | \$66.00 | PDF | needle plunger, 1.5mm flat | Threaded | M5×0.5 | 2.8mm | (1) N.O. | 1N | Cable, 3m [9.8ft] |
| CS065A-CL | \$74.00 | PDF | needle plunger, 1.5mm flat | | M6×0.5 | 2.8mm | (1) N.O. | 1N | |
| CS067A-CL | \$91.00 | PDF | needle plunger, 1.5mm flat | | M6×0.75 | 2.8mm | (1) N.O. | 1N | |
| Spring Plunger | | | | | | | | | |
| SP080A-L | \$56.00 | PDF | Ø 2.5mm plunger SR 1.25mm | Threaded | M8×1.25 mm | 3mm | (1) N.O. | 8N | Cable 2m [6.56ft] |

* Ø = diameter, SR = surface radius

-L: LED indicator (mounted in cable 120mm from the switch)



Precision Limit Switches

| Precision Touch Limit Switches Specifications | | | | | | |
|---|--|-------|-----|-----|-------|---------------------------------------|
| Type | Straight Touch Switches | | | | | |
| Series | CS | CSJ | CSS | CSK | CSP | SP |
| Environmental | | | | | | |
| Degree of Protection | IP65 | | | | IP67 | IP40 |
| Temperature Range | Operating: 0 to 80°C [32 to 176°F] (Ice-free) | | | | | |
| Mechanical Ratings | | | | | | |
| Enclosure Material | Stainless Steel | | | | | |
| Pretravel | 0.3 mm | | | | | 2.2 mm |
| Torque (for nuts on threaded barrels, set screws on smooth barrels) | 4 N•m | 2 N•m | N/A | N/A | 7 N•m | L1 10N•m L2 5•Nm |
| Vibration | 10–55Hz total amplitude 1.5 for X, Y, Z each direction | | | | | |
| Shock | 300 m/s² for X, Y, Z each direction | | | | | |
| Repeat Accuracy | 5 micron (µm) * | | | | | Both On-Off, Off-On 0.01mm (range) |
| Recommended Minimum Operating Speed | 50mm (1.96 in)/minute | | | | | |
| Electrical Ratings | | | | | | |
| Contact Life | 10 million operations | | | | | 3 million (spring) |
| Contact Voltage | 5–24VDC | | | | | |
| Steady Current Rating | 10mA or less | | | | | |
| Max In-rush Current Rating | 20mA without LED indicator, 10mA with LED indicator | | | | | |
| Connection Type | Cable: 3m (2m for SP series) Oil resistant Ø2.8/ 2 cores, Tensile strength 30N, minimum bending R7 | | | | | |
| Indicating | -L models: LED indicator (mounted in cable 120mm from the switch) | | | | | |

* At operating speed 50-200 mm/minute. Operating speed slower than 10 mm/min is not recommended.

Circuit Diagrams

| Without LED | With LED (-L models) |
|-------------------------------|--|
| <p>Normally open (N.O.)</p> | <p>Normally open (N.O.)</p> <p>LED Normally Off</p> |
| <p>Normally closed (N.C.)</p> | <p>Normally closed (N.C.)</p> <p>LED Normally On</p> |

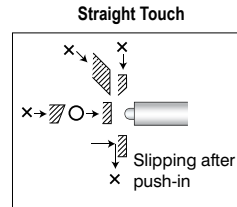


Precision Limit Switches

Precision Straight Touch Limit Switches

Features

- Ultra-small design (M5 or Ø5)
- 3 micron (µm) repeat accuracy
- No movement differential
- Dustproof / water-resistant (IP67) models available
- Stainless steel housing
- Metal bearing



O indicates correct target approach and orientation.

X indicates approach and orientation that should be avoided.

Precision Straight Touch Limit Switches Selection Chart

| Part Number | Price | Drawing Link | Actuator/Head Type* | Barrel | Barrel Diameter/Thread* | Stroke | Switching Output | Contact Force | Connection Type |
|----------------------------|----------|---------------------|-----------------------------|----------|-------------------------|--------|------------------|---------------|-------------------------|
| PT5M1WA | \$102.00 | PDF | Ø 1.5mm plunger, SR 2mm | Threaded | M5×0.5 | 1.5mm | (1) N.O. | 0.5N | Core wire, 0.5m [1.6ft] |
| PT5M3WA | \$79.00 | PDF | Ø 1.5mm plunger, SR 2mm | | | 1.5mm | (1) N.O. | 0.5N | |
| PT5M3WB | \$79.00 | PDF | Ø 1.5mm plunger, SR 2mm | | | 1.5mm | (1) N.C. | 0.5N | |
| PT5M3CB | \$94.00 | PDF | Ø1.5mm plunger, SR 2mm | | | 1.5mm | (1) N.C. | 0.5N | Cable, 2m [6.5ft] |
| PT5M3CB-L | \$95.00 | PDF | Ø 1.5mm plunger, SR 2mm | | | 1.5mm | (1) N.C. | 0.5N | |
| PT5S3CB-L | \$89.00 | PDF | Ø 1.5mm plunger, SR 2mm | Smooth | Ø 5 mm | 1.5mm | (1) N.C. | 0.5N | |
| PTP5M3CB-B | \$111.00 | PDF | Ø 1.5mm plunger, Ø 3mm flat | Threaded | M5×0.5 | 1.5mm | (1) N.C. | 0.8N | |
| PTP5M3CB-L | \$103.00 | PDF | Ø 11.5mm plunger, SR 2mm | Threaded | | 1.5mm | (1) N.C. | 0.8N | |
| PTP5S3CB-L | \$97.00 | PDF | Ø 1.5mm plunger, SR 2mm | Smooth | Ø 5 mm | 1.5mm | (1) N.C. | 0.8N | |

* Ø = diameter, SR = surface radius

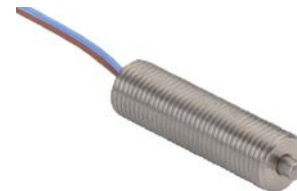
-L: LED indicator (mounted in cable 120mm from the switch)



PT5M1WA



PT5M3WA



PT5M3WB



PT5M3CB



PTP5M3CB-L



PTP5S3CB-L



PTP5M3CB-B



PTP5M3CB-L



PTP5S3CB-L



Precision Limit Switches

| Precision Straight Touch Limit Switches Specifications | | |
|---|--|----------|
| Series | PT5x3xx | PTP5x3CB |
| Environmental | | |
| Degree of Protection | IP40 | IP67 |
| Temperature Range | Operating: 0 to 80°C [32 to 176°F] (Ice-free) | |
| Mechanical Ratings | | |
| Enclosure Material | 303 Stainless Steel | |
| Pretravel | 0* (PT5M3WA and PT5M1WA about 0.3 mm) | |
| Torque (for nuts on threaded barrels, set screws on smooth barrels) | 1 N·m | |
| Vibration | 10–55 Hz total amplitude 1.5 for X, Y, Z each direction | |
| Shock | 300 m/s² for X, Y, Z each direction | |
| Electrical Ratings | | |
| Contact Life | 3 million operations | |
| Repeat Accuracy | Both On–Off, Off–On: 0.003 mm** | |
| Recommended Minimum Operating Speed | 50 mm/minute | |
| Contact Voltage | 5–24 VDC | |
| Steady Current Rating | 10mA or less | |
| Max In-rush Current Rating | 20mA without LED indicator, 10mA with LED indicator | |
| Connection Type | PTxxxWx: Core-wire cable, 0.5m (×2) Oil resistant Ø 0.6 Tensile strength 15N. PTxxxCB: Cable, 2m Oil-resistant Ø2.8/2 cores Tensile strength 30N, Minimum bending R7. | |
| Indicating | -L models: LED indicator (mounted in cable 120mm from the switch) | |

* Adjust the installed location of the switch by the signal switching point.

** At operating speed 50-200 mm/minute. Operating speed slower than 10 mm/min is not recommended.

Circuit Diagrams

| Without LED | With LED (-L models) |
|-------------------------------|-------------------------------|
| <p>Normally open (N.O.)</p> | |
| <p>Normally closed (N.C.)</p> | <p>Normally closed (N.C.)</p> |



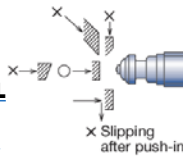
Precision Limit Switches

High Precision Touch Limit Switches

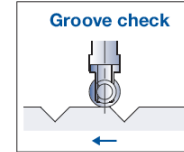
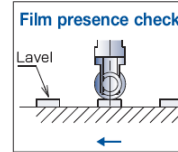
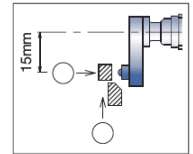
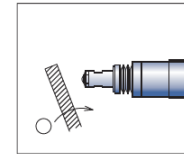
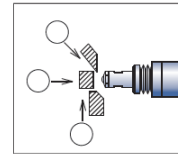
Features

- 0.5 micron (μ m) repeat accuracy
- No movement differential
- No temperature drift
- Dustproof / water-resistant (IP67)
- LED indicator
- Stainless steel housing

P085DB-AL
P10DB-A
P10DA-AL
P10DB-AL
P10DLB-AL



O indicates correct target approach and orientation.
 X indicates approach and orientation that should be avoided.



P10DHA-TML
P10DHB-TML
P10DHLTB-TML

High Precision Touch Limit Switches Selection Chart

| Part Number | Price | Drawing Link | Actuator/Head Type* | Barrel Type | Barrel Diameter/Thread | Stroke | Switching Output | Contact Force | Connection Type |
|----------------------------------|----------|---------------------|-----------------------------|-------------|------------------------|--------|------------------|---------------|---------------------|
| Straight Touch | | | | | | | | | |
| P085DB-AL | \$163.00 | PDF | Ø 5.5mm plunger, 2mm round | Threaded | M8×0.5 | 3mm | (1) N.C. | 1N | Cable 3m [9.8ft] |
| P10DB-A | \$142.00 | PDF | Ø8.5mm plunger, 2mm round | Threaded | M10×0.5 | 3mm | (1) N.C. | 1N | |
| P10DB-AL | \$163.00 | PDF | Ø 8.5mm plunger, 2mm round | Threaded | M10×0.5 | 3mm | (1) N.C. | 1N | |
| P10DA-AL | \$163.00 | PDF | Ø 8.5mm plunger, 2mm round | Threaded | M10×0.5 | 3mm | (1) N.O. | 1N | |
| P10DLB-AL | \$164.00 | PDF | Ø 8.5mm plunger, 2mm round | Threaded | M10×0.5 | 10mm | (1) N.C. | 1N | |
| Straight Touch With Ball Bearing | | | | | | | | | |
| P10DHA-TML | \$343.00 | PDF | Ø 2.5mm plunger, 8mm roller | Threaded | M14×0.5 | 3mm | (1) N.O. | 1N | Cable 3m [9.8ft] |
| P10DHB-TML | \$343.00 | PDF | Ø 2.5mm plunger, 8mm roller | Threaded | M14×0.5 | 3mm | (1) N.C. | 1N | |
| P10DHLTB-TML | \$377.00 | PDF | Ø 2.5mm plunger, 8mm roller | Threaded | M14×0.5 | 10mm | (1) N.C. | 1N | |

* Ø = diameter, SR = surface radius

-xL: LED indicator (mounted in cable 120mm from the switch)



P085DB-AL



P10DB-A



P10DB-AL



P10DA-AL



P10DLB-AL



P10DHA-TML



P10DHB-TML



P10DHLTB-TML



Precision Limit Switches

High Precision Touch Limit Switches

| High Precision Touch Limit Switches Specifications | | | | |
|---|---|--|---------------------|--------|
| Series | P08 | P10 | P10DH | P10DHL |
| Environmental | | | | |
| Degree of Protection | IP67 | | | |
| Temperature Range | Operating: 0 to 80°C [32 to 176°F] (Ice-free) | | | |
| Mechanical Ratings | | | | |
| Enclosure Material | 303 Stainless Steel | | | |
| Pretravel | 0* | P10DA / P10DHA: 0.2 mm P10DB / P10DHB: 0* | | 0* |
| Torque (for nuts on threaded barrels, set screws on smooth barrels) | 4 N•m (2.95 lb•ft) | 8 N•m (5.90 lb•ft) | 10 N•m (7.38 lb•ft) | |
| Vibration | 10–55Hz total amplitude 1.5 for X, Y, Z each direction | | | |
| Shock | 300 m/s² for X, Y, Z each direction | | | |
| Repeat Accuracy | Both On–Off, Off–On: 0.0005 mm (range)** | | | |
| Recommended Minimum Operating Speed | 50mm/minute | | | |
| Electrical Ratings | | | | |
| Contact Life | 3 million operations | | | |
| Contact Voltage | 5–24VDC | | | |
| Steady Current Rating | 10mA or less | | | |
| Max In-rush Current Rating | 20mA without LED indicator, 10mA with LED indicator | | | |
| Connection Type | Cable: 3m Oil resistant Ø5/2 cores (P08: Ø4/2 cores), tensile strength 30N, minimum bending R7, 20AWG | | | |
| Indicating | -AL: LED indicator (mounted in cable 120mm from the switch) | | | |

* Adjust the installed location of the switch by the signal switching point.

** At operating speed 50-200 mm/minute. Operating speed slower than 10 mm/min is not recommended.

Circuit Diagrams

| Without LED | With LED (-AL models) |
|-------------------------------|-------------------------------|
| <p>Normally open (N.O.)</p> | <p>Normally open (N.O.)</p> |
| <p>Normally closed (N.C.)</p> | <p>Normally closed (N.C.)</p> |



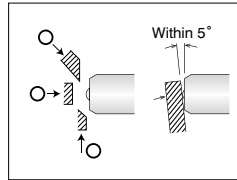
Precision Limit Switches

Ball Plunger Limit Switches

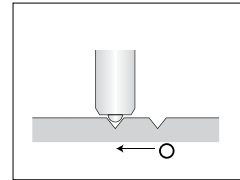
Features

- Indexing positioning ball plunger combined with touch switch for confirmation signal
- Dual function reduces number of components required
- 10 micron (μm) repeat accuracy
- Angled/Sliding Touch
- Higher contact force ideal for indexing

Angled/Sliding Touch



Indexing Touch



O indicates correct target approach and orientation.

Ball Plunger Limit Switches Selection Chart

| Part Number | Price | Drawing Link | Actuator/Head Type* | Barrel Type | Barrel Diameter/Thread* | Stroke | Switching Output | Contact Force | Connection Type |
|--------------------------------------|---------|---------------------|---------------------|-------------|-------------------------|--------|------------------|---------------|-----------------------------|
| Indexing/Angled/Sliding Touch | | | | | | | | | |
| BP060A-F | \$51.00 | PDF | Ø 3mm ball plunger | Threaded | Ø M6×1.0 | 0.8mm | (1) N.O. | 1N | Cable 2m [6.5 ft] |
| BP060A-L | \$61.00 | PDF | Ø 3mm ball plunger | | | 0.8mm | (1) N.O. | 8-13N | |
| BP060A-LF | \$61.00 | PDF | Ø 3mm ball plunger | | | 0.8mm | (1) N.O. | 1N | |
| BP080A-L | \$73.00 | PDF | Ø 4mm ball plunger | | Ø M8×1.25 | 1.0mm | (1) N.O. | 10-16N | |
| BP080A-LF | \$73.00 | PDF | Ø 4mm ball plunger | | | 1.0mm | (1) N.O. | 1N | |
| BP100A-L | \$76.00 | PDF | Ø 5mm ball plunger | | Ø M10×1.5 | 1.2mm | (1) N.O. | 15-20N | |
| BP100A-LF | \$76.00 | PDF | Ø 5mm ball plunger | | | 1.2mm | (1) N.O. | 1N | |
| BP4SWA | \$86.00 | PDF | Ø 3mm ball plunger | Smooth | Ø 4mm | 0.8mm | (1) N.O. | 1N | Core wire 0.5m [1.64 ft] |
| BP5MWA | \$80.00 | PDF | Ø 3mm ball plunger | Threaded | M5×0.5 | 1mm | (1) N.O. | 1N | |

* Ø = diameter



[**BP060A-F**](#)



[**BP060A-L**](#)



[**BP080A-L**](#)



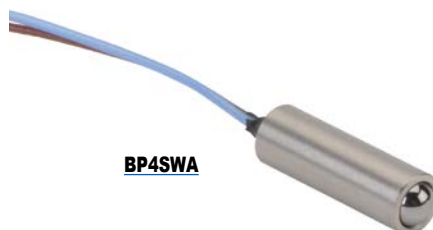
[**BP080A-LF**](#)



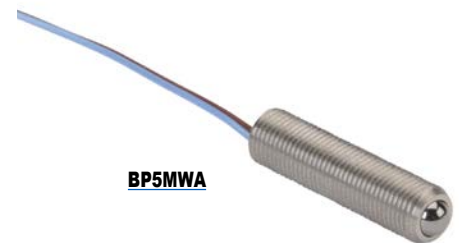
[**BP100A-L**](#)



[**BP100A-LF**](#)



[**BP4SWA**](#)



[**BP5MWA**](#)



Precision Limit Switches

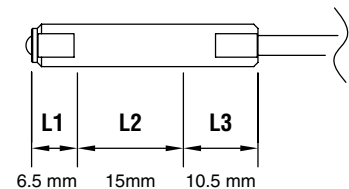
| Ball Plunger Limit Switches Specifications | | | | | |
|---|---|--------|--------|--|--------|
| Series | BP060A | BP080A | BP100A | BP4SWA | BP5MWA |
| Environmental | | | | | |
| Degree of Protection | IP40 | | | | |
| Temperature Range | Operating: 0 to 80°C [32 to 176°F] (Ice-free) | | | | |
| Mechanical Ratings | | | | | |
| Enclosure Material | 303 Stainless Steel | | | | |
| Pretravel | 0.3 mm | | | | |
| Torque (for nuts on threaded barrels, set screws on smooth barrels) | See Torque Limit Figure | | | NA | 1 N•m |
| Vibration | 10–55Hz total amplitude 1.5 for X, Y, Z each direction | | | | |
| Shock | 300 m/s² for X, Y, Z each direction | | | | |
| Repeat Accuracy | Both On–Off, Off–On: 0.01 mm (range)(axial direction)* | | | | |
| Recommended Minimum Operating Speed | 50mm/minute | | | | |
| Electrical Ratings | | | | | |
| Contact Life | 3 million operations | | | 1 million operations | |
| Contact Voltage | 5–24VDC | | | | |
| Steady Current Rating | 10mA or less | | | | |
| Max In-rush Current Rating | 10mA (limit current to protect LED indicator) | | | 20mA | |
| Connection Type | Cable: 2m Oil resistant Ø2.8/2 cores, Tensile strength 30N, minimum bending R7. | | | Core wire cable: 0.5m (×2), Oil resistant, Ø0.66, Tensile strength 15N | |
| Indicating | -L and -LF models: LED indicator (mounted in cable 120mm from the switch) | | | N/A | |

* At operating speed 50-200 mm/minute. Operating speed slower than 10 mm/min is not recommended.

Circuit Diagrams

| Without LED | With LED |
|-----------------------------|---|
| <p>Normally open (N.O.)</p> | <p>Normally open (N.O.)</p> <p>LED Normally Off</p> |

Torque Limits



| Tightening Torque for Case Screws and Nuts | | | | | | |
|--|--------|----------------------|--------|----------------------|--------|----------------------|
| Applicable Models | L1 | | L2 | | L3 | |
| | Length | Tightening Torque | Length | Tightening Torque | Length | Tightening Torque |
| BP060A | 6.5mm | 2.5 N•m [1.84 lb•ft] | 15mm | 5 N•m [3.68 lb•ft] | 10.5mm | 2.5 N•m [1.84 lb•ft] |
| BP080A | 8mm | 5 N•m [3.68 lb•ft] | 21.5mm | 10 N•m [7.37 lb•ft] | 5.5mm | 5 N•m [3.68 lb•ft] |
| BP100A | 6.5mm | 15 N•m [11.06 lb•ft] | 22.5mm | 25 N•m [18.44 lb•ft] | 9mm | 15 N•m [11.06 lb•ft] |

Caution: Use the lower torque (i.e. torque corresponding to L1 and L3) while tightening the bolt between lengths L1 and L2 or L2 and L3 in the picture. Please make sure to use a locknut if the bolt is likely to shift in position due to the vibrational impacts.



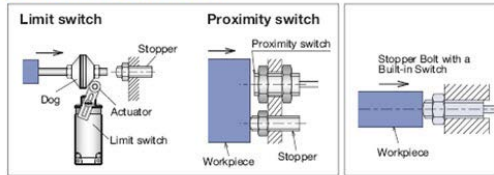
Precision Limit Switches

Stopper Bolt Precision Limit Switches

Overview

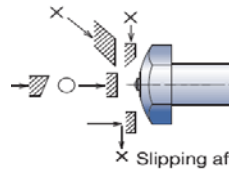
Stopper bolt precision limit switches incorporate a mechanical stop along with the limit switch function, eliminating the need for a separate mechanical stop in many situations. They can also absorb the high-impact forces required to stop a load.

Stopper Bolt Limit Switches can reduce parts count
 conventional switches stopper bolt switch



Features

- 2 tasks with one device
- Housing a high-accuracy built-in switch in a stopper bolt
- Provides higher contact force ideal for indexing/positioning
- 10 micron (μm) repeat accuracy
- No movement differential
- Stainless steel housing



O indicates correct target approach and orientation.

X indicates approach and orientation that should be avoided.

Stopper Bolt Precision Limit Switches Selection Chart

| Part Number | Price | Drawing Link | Actuator/Head Type* | Barrel Type | Barrel Diameter/Thread | Stroke | Switching Output | Contact Force | Connection Type |
|----------------------------|---------|---------------------|---|-------------|------------------------|--------|------------------|---------------|--------------------------|
| STP100UA-L | \$90.00 | PDF | Ø 5.5mm plunger with upward cover Ø 5mm | Threaded | M10×1.5 | 0.7mm | (1) N.O. | 4N | Cable 2m [6.56 ft] |
| STP100DA-L | \$90.00 | PDF | Ø 5.5mm plunger with downward cover Ø 5mm | Threaded | M10×1.5 | 0.7mm | (1) N.O. | 4N | |
| STS060PA | \$45.00 | PDF | Ø 1.5mm plunger, 3.4mm flat | Threaded | M6×1.0 | 0.7mm | (1) N.O. | 2N | |
| STS060PA-L | \$55.00 | PDF | Ø 1.5mm plunger, 3.4mm flat | Threaded | M6×1.0 | 0.7mm | (1) N.O. | 2N | |
| STS080PA-L | \$73.00 | PDF | Ø 1.5mm plunger, 4.5mm flat | Threaded | M8×1.25 | 0.7mm | (1) N.O. | 2N | |
| STS100PA-L | \$76.00 | PDF | Ø 1.5mm plunger, 4.5mm flat | Threaded | M10×1.5 | 0.7mm | (1) N.O. | 2N | |
| STE060PA-L | \$59.00 | PDF | Ø 1.5mm plunger, 3.4mm flat with hex | Threaded | M6×1.0 | 0.7mm | (1) N.O. | 2N | |
| STE080PA-L | \$79.00 | PDF | Ø 1.5mm plunger, 4.5mm flat with hex | Threaded | M8×1.25 | 0.7mm | (1) N.O. | 2N | |
| STE100PA-L | \$79.00 | PDF | Ø 1.5mm plunger, 4.5mm flat with hex | Threaded | M10×1.5 | 0.7mm | (1) N.O. | 2N | |

* Ø = diameter

STP Series (Stopper With Protective Cover)



[STP100UA-L](#)



[STP100DA-L](#)



[STS060PA](#)

STS Series (Straight Stopper Bolt)



[STS060PA-L](#)



[STS080PA-L](#)



[STS100PA-L](#)

STE Series (Hexagonal Stopper Bolt)



[STE060PA-L](#)



[STE080PA-L](#)



[STE100PA-L](#)



Precision Limit Switches

Stopper Bolt Precision Limit Switches Specifications

| Series | STP | STS | STE |
|---|---|--------|-----|
| Environmental | | | |
| Degree of Protection | IP67** | IP65** | |
| Temperature Range | Operating: 0 to 80°C [32 to 176°F] (Ice-free) | | |
| Mechanical Ratings | | | |
| Enclosure Material | Stainless steel | | |
| Torque (for nuts on threaded barrels, set screws on smooth barrels) | See Torque Limit Figure | | |
| Vibration | 10–55Hz total amplitude 1.5 for X, Y, Z each direction | | |
| Shock | 300 m/s² for X, Y, Z each direction | | |
| Repeat Accuracy | Both On-Off, Off-On/ 0.01 (range) (At operating speed 50-200mm/min) *2 | | |
| Recommended Minimum Operating Speed | 50mm (1.96in)/minute | | |
| Withstand Load | 5000N | | |
| Electrical Ratings | | | |
| Contact Life | 10 million (No bungle caused by vibration and use under contact rating) | | |
| Impact resistance | 0.4J | | |
| Contact Voltage | 5–24VDC | | |
| Steady Current Rating | 10mA or less | | |
| Max In-rush Current Rating | 20mA without LED indicator, 10mA with LED indicator | | |
| Connection Type | Standard length 2m [6.56 ft] oil resistant 2.8 / 2 cores, 26AWG Tensile strength 30N, minimum bending R7 | | |
| Indicating | -L models: LED indicator (mounted in cable 120mm from the switch) | | |

* At operating speed 50-200 mm/minute. Operating speed slower than 10 mm/min is not recommended.

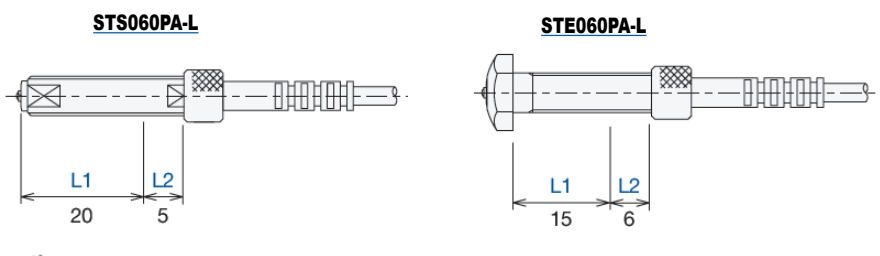
** At normal temperature (0–80°C [32–176°F]).

Circuit Diagram

| Without LED | With LED (-L models) |
|-----------------------------|-----------------------------|
| <p>Normally open (N.O.)</p> | <p>Normally open (N.O.)</p> |

Torque Limits

| Applicable models | Tightening torque |
|-------------------|--|
| STS060PA-L | L1: 5 N•m [3.68 lb•ft] L2: 2.5 N•m [1.84 lb•ft] |
| STE060PA-L | |
| STS060PA | |
| STS080PA-L | 10 N•m [7.38 lb•ft] |
| STE080PA-L | 10 N•m [7.38 lb•ft] |
| STS100PA-L | 25 N•m [18.44 lb•ft] |
| STE100PA-L | 25 N•m [18.44 lb•ft] |
| STP100UA-L | 25 N•m [18.44 lb•ft] |
| STP100DA-L | 25 N•m [18.44 lb•ft] |





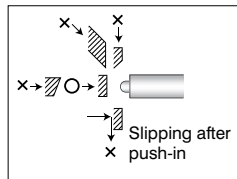
Precision Limit Switches

Low Contact Force Limit Switches: CSFN / CS / CSJ

Features

- 0.1N and 0.5N contact force
- 5 micron (µm) and 10 micron (µm) repeat accuracy
- Stainless steel housing
- Metal bearing
- Straight-touch and straight needle touch available

Low Contact Force Straight Touch

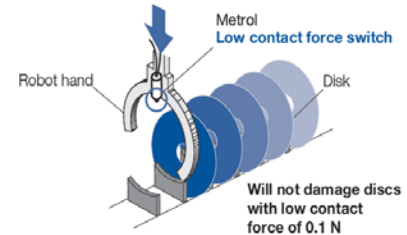


O indicates correct target approach and orientation.

X indicates approach and orientation that should be avoided.

CSFN105A-H6X must be mounted downward

Detects presence of HDD discs



Low Contact Force Limit Switches Selection Chart

| Part Number | Price | Drawing Link | Actuator/ Head Type* | Barrel Type | Barrel Diameter/Thread* | Stroke | Switching Output | Contact Force | Connection Type |
|---|---------|---------------------|--|-------------|-------------------------|-----------------|------------------|---------------|-------------------|
| Low Contact Force, Metal Bearing, Downward Mounting Only | | | | | | | | | |
| <u>CSFN105A-H6X</u> | \$51.00 | PDF | Ø 2mm plunger [0.079 in] SR 1.5 mm [0.059 in] | Threaded | M10x0.5 | 2mm [0.079in] | NPN, N.O. | 0.1N | 3m [9.8 ft] cable |
| Low Contact Force, Straight Touch, Metal Bearing | | | | | | | | | |
| <u>CS067A-LG</u> | \$67.00 | PDF | Ø 2mm plunger [0.079 in] SR 1.5 mm [0.059 in] | Threaded | M6x0.75 | 2.8mm [0.110in] | (1) N.O. | 0.5N | 3m [9.8 ft] cable |
| Low Contact Force, Straight Touch, Needle Contact | | | | | | | | | |
| <u>CSJ055A-CG</u> | \$58.00 | PDF | needle plunger Ø 1.5mm flat [0.059 in] | Threaded | M5x0.5 | 2.8mm [0.110in] | (1) N.O. | 0.5N | 3m [9.8 ft] cable |

Ø = diameter, SR = surface radius

* Must be mounted in a downward direction



CSFN105A-H6X



CS067A-LG



CSJ055A-CG



Precision Limit Switches

Low Contact Force Limit Switches Specifications

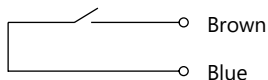
| Series | CSFN Metal Bearing | CS Custom Metal Bearing | CSJ Custom Needle Contact |
|---|--|---|---|
| Environmental | | | |
| Degree of Protection | IP40 | IP65 | |
| Temperature Range | Operating: 0 to 60°C [32 to 140°F] (Ice-free) | | Operating: 0 to 80°C [32 to 176°F] (Ice-free) |
| Mechanical Ratings | | | |
| Enclosure Material | Stainless Steel (mounting nuts are Ni-plated brass) | | |
| Pretravel | 0.4 mm [0.016 in] | 0.3 mm [0.012 in] | |
| Torque (for nuts on threaded barrels, set screws on smooth barrels) | 4 N•m [2.95 lb•ft] | 2 N•m [1.48 lb•ft] | N/A |
| Vibration | 10–55Hz total amplitude 1.5 for X, Y, Z each direction | | |
| Shock | 300 m/s² for X, Y, Z each direction | | |
| Repeat Accuracy | 0.01 mm (10 micron [μm]) * | 0.005 mm (5 micron [μm]) * | |
| Recommended Minimum Operating Speed | 50mm (1.96in)/minute | | |
| Electrical Ratings | | | |
| Contact Life | 10 million operations | | |
| Contact Voltage | 12–24VDC | 5–24VDC | |
| Steady Current Rating | 10mA or less | | |
| Max In-rush Current Rating | 10mA (limit current to protect LED indicator) | | |
| Connection Type | Cable: 3m PVC (polyvinyl chloride) oil resistant Ø4/3 cores, 30AWG Tensile strength 30N, minimum bending R7 | Cable: 3m PVC (polyvinyl chloride) oil resistant Ø2.8/2 cores, 26AWG Tensile strength 30N minimum bending R7 | |
| Indicating | -L: LED indicator (mounted in cable 120mm from the switch) | | |

* At operating speed 50-200 mm/minute. Operating speed slower than 10 mm (0.393 in)/min is not recommended.

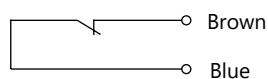
Circuit Diagrams

Without LED

Normally open (N.O.)

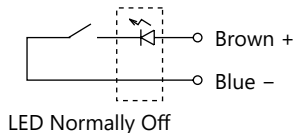


Normally closed (N.C.)

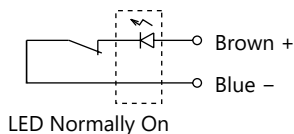


With LED

Normally open (N.O.)

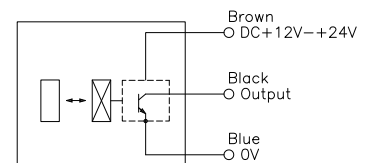


Normally closed (N.C.)



CSFN105A-H6X

Normally open (N.O.)
(NPN Open Collector)





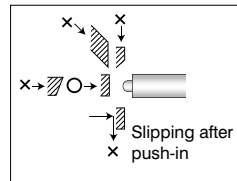
Precision Limit Switches

90-Degree Straight Touch Limit Switches

Features

- Slim design
- 90-degree cable orientation
- Long-stroke models available
- 5 micron (μm) repeat accuracy
- Stainless steel housing
- Metal bearing

90-Degree Straight Touch



O indicates correct target approach and orientation.
X indicates approach and orientation that should be avoided.

90-Degree Straight Touch Limit Switches Selection Chart

| Part Number | Price | Drawing Link | Actuator/ Head Type* | Barrel Type | Barrel Diameter/Thread* | Stroke | Switching Output | Contact Force | Connection Type |
|----------------------------|---------|---------------------|--|-------------|-------------------------|-----------------|------------------|---------------|----------------------|
| CSS60A-LR | \$62.00 | PDF | Ø 2mm plunger [0.079in] SR 1.5mm [0.059in] | Smooth | Ø 6mm | 2.8mm [0.110in] | (1) N.O. | 1N | Cable 3m [9.84ft] |
| CS065A-LR | \$74.00 | PDF | | Threaded | M6x0.5 | | (1) N.O. | | |
| CS067A-BLR | \$74.00 | PDF | Ø 2mm plunger [0.079in] Ø 4.5mm flat [0.1.77in] | | M6x0.75 | | (1) N.O. | | |
| CS067A-LR | \$72.00 | PDF | Ø 2mm plunger [0.079in] SR 1.5mm [0.059in] | | | | (1) N.O. | | |
| CS067B-LR | \$72.00 | PDF | (1) N.C. | | | | | | |
| CS087A-LR | \$72.00 | PDF | Ø 3.5mm plunger [0.138in] SR 3 mm [0.118in] | | M8x0.75 | | (1) N.O. | | |
| CSJ055A-LR | \$65.00 | PDF | Ø 2mm plunger [0.079in] SR 1.5 mm [0.059in] | M5x0.5 | (1) N.O. | | | | |
| CSJS50A-LR | \$65.00 | PDF | | Smooth | Ø 5mm | | (1) N.O. | | |
| CSK087A-LR | \$70.00 | PDF | Ø 3.5mm plunger [0.138in] SR 3 mm [0.118in] | Threaded | M8x0.75 | 5mm [0.197in] | (1) N.O. | | |
| CSK087B-LR | \$70.00 | PDF | | | | | (1) N.C. | | |

* Ø = diameter, SR = surface radius



[CSS60A-LR](#)



[CS065A-LR](#)



[CS067A-BLR](#)



[CS067A-LR](#)



[CS067B-LR](#)



[CS087A-LR](#)



[CSJ055A-LR](#)



[CSJS50A-LR](#)



[CSK087A-LR](#)



[CSK087B-LR](#)



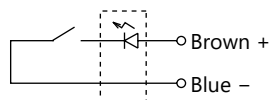
Precision Limit Switches

| 90-Degree Straight Touch Limit Switches Specifications | | | | |
|---|--|-----|--------------------|--------------------|
| Series | CS | CSS | CSJ | CSK |
| Environmental | | | | |
| Degree of Protection | IP65 | | | |
| Temperature Range | Operating: 0 to 80°C [32 to 176°F] (Ice-free) | | | |
| Mechanical Ratings | | | | |
| Enclosure Material | Stainless Steel | | | |
| Pretravel | 0.3 mm | | | |
| Torque (for nuts on threaded barrels, set screws on smooth barrels) | 4 N•m [2.95 lb•ft] | N/A | 2 N•m [1.48 lb•ft] | 7 N•m [5.16 lb•ft] |
| Vibration | 10–55Hz total amplitude 1.5 for X, Y, Z each direction | | | |
| Shock | 300 m/s² for X, Y, Z each direction | | | |
| Repeat Accuracy | 5 micron (µm) * | | | |
| Recommended Minimum Operating Speed | 50mm (1.96in)/minute | | | |
| Electrical Ratings | | | | |
| Contact Life | 10 million operations | | | |
| Contact Voltage | 5–24VDC | | | |
| Steady Current Rating | 10mA or less | | | |
| Max In-rush Current Rating | 10mA (limit current to protect LED indicator) | | | |
| Connection Type | Cable: 3m [9.84 ft], oil resistant, Ø2.8/2 cores, tensile strength 30N [6.74 lbf], minimum bending R7, 2-26AWG | | | |
| Indicating | -L: LED indicator (mounted in cable 120mm from the switch) | | | |

* At operating speed 50-200 mm/minute. Operating speed slower than 10 mm/min is not recommended.

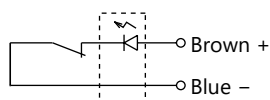
Circuit Diagrams

Normally open (N.O.)



LED Normally Off

Normally closed (N.C.)



LED Normally On



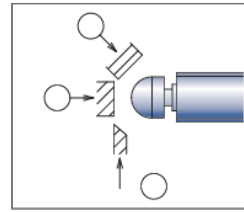
Precision Limit Switches

Sliding Angled Offset Touch Limit Switches

Features

- Metal and plastic hemisphere actuators
- 5 micron (μm) repeat accuracy
- Stainless steel housing

Sliding Angled Offset Touch



O indicates correct target approach and orientation.

Sliding Angled Offset Touch Limit Switches Selection Chart

| Part Number | Price | Drawing Link | Actuator/ Head Type* | Barrel Type | Barrel Diameter/Thread* | Stroke | Switching Output | Contact Force | Connection Type |
|------------------------------------|----------|----------------------------|-------------------------------------|-------------|-------------------------|--------------------|------------------|---------------|-----------------------|
| <u>CSHP085A-L</u> | \$174.00 | <u>PDF</u> | Ø 4.7mm plunger SR 3mm | Threaded | M8×0.5 | 2.8mm [0.110in] | (1) N.O. | 1N | Cable 2m [6.56 ft] |
| <u>CSHP085B-L</u> | \$174.00 | <u>PDF</u> | Ø 4.7mm plunger SR 3mm | Threaded | M8×0.5 | | (1) N.C. | 1N | |
| <u>CSH121A-A</u> | \$87.00 | <u>PDF</u> | Ø 10mm hemisphere SR 5mm | Threaded | M12x1 | | (1) N.O. | 1.5N | |
| <u>CSH121A-AL</u> | \$86.00 | <u>PDF</u> | Ø 10mm hemisphere SR 5mm | Threaded | M12x1 | | (1) N.O. | 1.5N | |
| <u>CSH121B-AL</u> | \$89.00 | <u>PDF</u> | Ø 10mm hemisphere SR 5mm | Threaded | M12x1 | | (1) N.C. | 1.5N | |
| <u>CSH121A-APL</u> | \$99.00 | <u>PDF</u> | Ø 10mm hemisphere SR 5mm plastic | Threaded | M12x1 | | (1) N.O. | 1.5N | |
| <u>CSH121B-APL</u> | \$99.00 | <u>PDF</u> | Ø 10mm hemisphere SR 5mm plastic | Threaded | M12x1 | | (1) N.C. | 1.5N | |

* Ø = diameter, SR = surface radius



[CSHP085B-L](#)



[CSH121A-A](#)



[CSH121A-AL](#)



[CSH121B-AL](#)



[CSH121A-APL](#)



[CSH121B-APL](#)



Precision Limit Switches

Sliding Angled Offset Touch Limit Switches Specifications

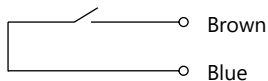
| Series | CSHP | CSH |
|---|---|---------------------|
| Environmental | | |
| Degree of Protection | IP67 | IP65 |
| Temperature Range | Operating: 0 to 80°C [32 to 176°F] (Ice-free) | |
| Mechanical Ratings | | |
| Enclosure Material | Stainless Steel | |
| Pretravel | 0.3 mm | |
| Torque (for nuts on threaded barrels, set screws on smooth barrels) | 4 N•m [2.95 lb•ft] | 12 N•m [8.85 lb•ft] |
| Vibration | 10–55Hz total amplitude 1.5 for X, Y, Z each direction | |
| Shock | 300 m/s² for X, Y, Z each direction | |
| Repeat Accuracy | 0.005mm (5 micron [μm]) * | |
| Recommended Minimum Operating Speed | 50mm [1.96in]/minute | |
| Electrical Ratings | | |
| Contact Life | 10 million operations | |
| Contact Voltage | 5–24VDC | |
| Steady Current Rating | 10mA or less | |
| Max In-rush Current Rating | 10mA (limit current to protect LED indicator) | |
| Connection Type | Cable: 2m [6.56ft] , oil resistant Ø2.8/2 cores, Tensile strength 30N [6.74 lbf], minimum bending R7, 2-26AWG | |
| Indicating | -L: LED indicator (mounted in cable 120mm from the switch) | |

* At operating speed 50-200 mm/minute. Operating speed slower than 10mm/min is not recommended.

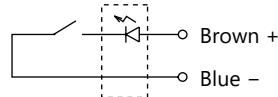
Circuit Diagrams

| Without LED | With LED |
|-------------|----------|
|-------------|----------|

Normally open (N.O.)

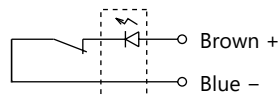


Normally open (N.O.)



LED Normally Off

Normally closed (N.C.)



LED Normally On



Precision Limit Switches

| Precision Mini Straight Touch Limit Switches Specifications | | |
|---|--|----------------|
| Type | Precision Angled | Precision Mini |
| Series | CSM | CSMP |
| Environmental | | |
| Degree of Protection | IP65 | IP67 |
| Temperature Range | Operating: 0 to 80°C [32 to 176°F] (Ice-free) | |
| Mechanical Ratings | | |
| Enclosure Material | 303 Stainless Steel | |
| Pretravel | 0.3 mm | |
| Torque (for nuts on threaded barrels, set screws on smooth barrels) | 8 N•m [5.901 lb•ft] | |
| Vibration | 10–55Hz total amplitude 1.5 for X, Y, Z each direction | |
| Shock | 300 m/s² for X, Y, Z each direction | |
| Repeat Accuracy | Both On–Off, Off–On: 0.003 mm* | |
| Recommended Minimum Operating Speed | 50mm [1.96in]/minute | |
| Electrical Ratings | | |
| Contact Life | 10 million operations | |
| Contact Voltage | 5–24VDC | |
| Steady Current Rating | 10mA or less | |
| Max In-rush Current Rating | 10mA (limit current to protect LED indicator) | |
| Connection Type | Core wire cable, 0.5 m (x2), oil resistant, Ø 0.6, tensile strength 15N, Cable: 2m, oil resistant Ø2.8/2 cores, tensile strength 30N [6.74 lbf], 2-26AWG | |
| Indicating | -L: LED indicator (mounted in cable 120mm from the switch) | |

* At operating speed 50-200 mm/minute. Operating speed slower than 10mm/min is not recommended.

Circuit Diagrams

| Without LED | With LED |
|-----------------------------|---|
| <p>Normally open (N.O.)</p> | <p>Normally open (N.O.)</p> <p>LED Normally Off</p> |



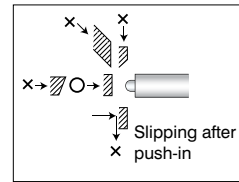
Precision Limit Switches

High-Vacuum Resistance Limit Switches

Features

- Can be used in 10⁻⁵ PA high-vacuum environments
- Switch body made using low outgassing material and adhesive

High Vacuum Resistance



O indicates correct target approach and orientation.

X indicates approach and orientation that should be avoided.

High-Vacuum Resistance Limit Switches Selection Chart

| Part Number | Price | Actuator/Head Type* | Barrel Type | Barrel Diameter/Thread | Stroke | Output Mode | Repeatability | Contact Force | Connection Type | Drawing Link |
|-----------------------------------|------------|---------------------------------------|-------------|------------------------|-----------------|-------------|---------------------|---------------|---|---------------------|
| <u>GN-BP5MA</u> | \$352.00 | Angled touch ball plunger SR 3mm | Threaded | M5x0.5 | 1.0mm [0.039in] | (1) N.O. | 0.01mm [0.00039in] | 1N | Cable direction: straight Polytetrafluoroethylene (PTFE) 0.5m [1.6ft] core wire, 27 AWG | PDF |
| <u>GN-BP5MA-R</u> | \$359.00 | Angled touch ball plunger SR 3mm | Threaded | M5x0.5 | 1.0mm [0.039in] | (1) N.O. | 0.01mm [0.00039 in] | 1N | Cable direction: 90° Polytetrafluoroethylene (PTFE) 0.5m [1.6ft] core wire, 27 AWG | PDF |
| <u>GN-PT5M3A</u> | \$257.00 | Straight touch Ø 1.5mm plunger SR 2mm | Threaded | M5x0.5 | 1.5mm [0.059in] | (1) N.O. | 0.003mm [0.00012in] | 0.5N | Cable direction: straight Polytetrafluoroethylene (PTFE) 0.5m [1.6ft] core wire, 27 AWG | PDF |
| <u>GN-PT5M3B</u> | \$257.00 | Straight touch Ø 1.5mm plunger SR 2mm | Threaded | M5x0.5 | 1.5mm [0.059in] | (1) N.C. | 0.003mm [0.00012in] | 0.5N | Cable direction: straight Polytetrafluoroethylene (PTFE) 0.5m [1.6ft] core wire, 27 AWG | PDF |
| <u>GN-BP161B</u> | \$1,252.00 | Angled touch Ø 2mm plunger SR 4mm | Threaded | M16x1 | 2.9mm [0.114in] | (1) N.C. | 0.01mm [0.00039in] | 1.5N | Cable direction: straight Polytetrafluoroethylene (PTFE) 0.5m [1.6ft] core wire, 27 AWG | PDF |
| <u>GN-CSK141B</u> | \$1,252.00 | Straight touch Ø 12mm plunger SR 4mm | Threaded | M14x1 | 5mm [0.197mm] | (1) N.C. | 0.01mm [0.00039in] | 0.8N | Cable direction: straight Polytetrafluoroethylene (PTFE) 0.5m [1.6ft] core wire, 27 AWG | PDF |

* Ø = diameter, SR = surface radius



GN-BP5MA



GN-BP5MA-R



GN-PT5M3A



GN-PT5M3B



GN-BP161B



GN-CSK141B



Precision Limit Switches

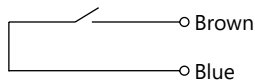
| High-Vacuum Resistance Limit Switches Specifications | |
|---|--|
| Series | GN |
| Environmental | |
| Compatible Vacuum | 10 ⁻⁵ PA |
| Degree of Protection | IP40 |
| Temperature Range | 120°C [248°F] (allowable baking temperature) |
| Mechanical Ratings | |
| Enclosure Material | 304 Stainless Steel |
| Pretravel | 0mm [0in]: (GN-PT5M3B, GN-CSK141B) * 0.2 mm [0.0079 in]: (GN-BP161B) 0.3 mm [0.0118 in]: (GN-BP5MA, GN-BP5MA-R, GN-PT5M3A) |
| Torque (for nuts on threaded barrels, set screws on smooth barrels) | 1 N•m [0.73 lb•ft] GN-PT5M3A, GN-PT5M3B, GN-BP5MA 10 N•m [7.37 lb•ft] GN-CSK141B 12 N•m [8.85 lb•ft] GN-BP161B |
| Vibration | 10–55Hz total amplitude 1.5 for X, Y, Z each direction |
| Shock | 300 m/s ² for X, Y, Z each direction |
| Electrical Ratings | |
| Contact Life | 3 million operations |
| Repeat Accuracy** | Both On-Off, Off-On: See Selection Table |
| Recommended Minimum Operating Speed | 50mm [1.96in] / minute |
| Contact Voltage | 5-24 VDC |
| Steady Current Rating | 10mA or less |
| Max In-rush Current Rating | 20mA |
| Connection Type | 0.5 m [19.69 in] Polytetrafluoroethylene (PTFE) core wire, 27AWG |
| Indicating | N/A |

* Adjust the installed location of the switch by the signal switching point.

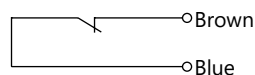
** At operating speed 50-200 mm/minute. Operating speed slower than 10 mm/min is not recommended.

Circuit Diagrams

Normally open (N.O.)



Normally closed (N.C.)





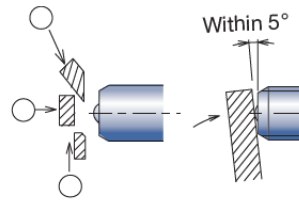
Precision Limit Switches

High Temperature: HT Series Limit Switches

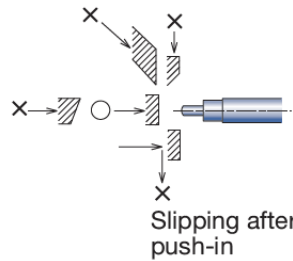
Features

- Plunger and ball plunger models
- Constructed using heat resistant parts and adhesives
- Heat resistant cable
- Operating temperature upper limit of 200°C [392°F]

High Temperature HT Series



O indicates correct target approach and orientation.
X indicates approach and orientation that should be avoided.



High Temperature Limit Switches Selection Chart

| Part Number | Price | Actuator/Head Type* | Barrel Type | Barrel Diameter/Thread | Stroke | Switching Output | Contact Force | Connection Type | Drawing Link |
|---|----------|-----------------------------|-------------|------------------------|--------|------------------|---------------|-------------------|--------------|
| Straight/Precision Touch | | | | | | | | | |
| HT-CS067A | \$259.00 | Ø2mm plunger, SR 1.5mm | Threaded | M6×0.75 | 2.8mm | (1) N.O. | 1N | Cable 2m [6.56ft] | PDF |
| Indexing/Angled/Sliding Touch/Ball Plunger | | | | | | | | | |
| HT-BP060A | \$235.00 | Ø 3mm ball plunger | Threaded | M6×1.0 | 0.8mm | (1) N.O. | 6-13N | Cable 2m [6.56ft] | PDF |
| Heat Resistant Stopper Bolt | | | | | | | | | |
| STS060A-HT2 | \$216.00 | 1.5mm plunger 3.4mm flat | Threaded | M6×1.0 | 0.7mm | (1) N.O. | 1N | Cable 2m [6.56ft] | PDF |
| STM82A-HT2 | \$211.00 | Ø 3mm plunger with boot | Threaded | M10×0.75 | 0.3mm | (1) N.O. | 1N | Cable 2m [6.56ft] | PDF |

* Ø = diameter, SR = surface radius



[HT-CS067A](#)



[HT-BP060A](#)



[STS060A-HT2](#)



[STM82A-HT2](#)



Precision Limit Switches

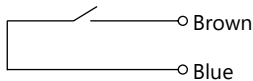
| High Temperature Limit Switches Specifications | | | | |
|--|---|---------------------------------|---|------------------|
| Part Number | HT-CS067A | HT-BP060A | STS060A-HT2 | STM82A-HT2 |
| Environmental | | | | |
| Degree of Protection | IP65** | IP40** | IP40** | IP65** |
| Temperature Range | Operating: 0 to 200°C [32 to 392°F] (Ice-free) | | | |
| Mechanical Ratings | | | | |
| Enclosure Material | Stainless Steel | | | |
| Pretravel | 0.3 mm (0.012 in) | 0.5 mm [0.020 in] from end face | 0.3 mm [0.012 in] from stopping face | Middle of stroke |
| Vibration | 10–55 Hz total amplitude 1.5 for X, Y, Z each direction | | | |
| Shock | 300 m/s² for X, Y, Z each direction | | | |
| Electrical Ratings | | | | |
| Contact Life | 3 million operations | | | |
| Repeat Accuracy | 0.01 mm [0.00039 in] * ** | | | |
| Recommended Minimum Operating Speed | 50mm [1.96in]/minute | | | |
| Contact Voltage | 5-24 VDC | | | |
| Steady Current Rating | 10mA or less | | | |
| Max In-rush Current Rating | 20mA | | | |
| Connection Type | Cable: 2m [6.56ft] heat-resistant Ø 2.8 2 cores, 24AWG | | Cable: 2m [6.56ft] heat-resistant Ø 2.8 2 cores, 26AWG | |
| Indicating | N/A | | | |

* At operating speed 50-200 mm [1.97-7.87 in]/minute. Operating speed slower than 10mm [0.39in]/min is not recommended.

** At normal temperature (0 to 80°C [32 to 176°F]).

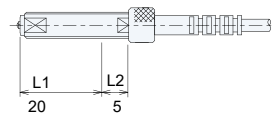
Circuit Diagrams

Normally open (N.O.)

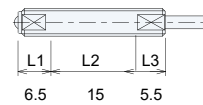


Torque Limits

Stopper Bolt



Ball Plunger



| Tightening Torque for Case Screws and Nuts | | | | | | |
|--|--------|----------------------|--------|--------------------|--------|--------------------|
| Applicable Models | L1 | | L2 | | L3 | |
| | Length | Tightening Torque | Length | Tightening Torque | Length | Tightening Torque |
| HT-CS067A | 6.5mm | 4 N•m [2.95 lb•ft] | — | — | — | — |
| HT-BP060A | 6.5mm | 2.5 N•m [1.84 lb•ft] | 15 mm | 5 N•m [3.68 lb•ft] | 5.5mm | 5 N•m [3.68 lb•ft] |
| STS060A-HT2 | 20mm | 5 N•m [3.68 lb•ft] | 5mm | 5 N•m [3.68 lb•ft] | — | — |
| STM82A-HT2 | 6.5mm | 10 N•m [7.376 lb•ft] | — | — | — | — |

Caution: Use the lower torque (i.e. torque corresponding to L1 and L3) while tightening the bolt between lengths L1 and L2 or L2 and L3 in the picture. Please make sure to use a locknut if the bolt is likely to shift in position due to the vibrational impacts.



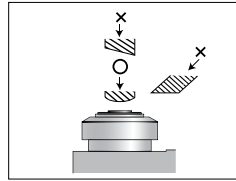
Precision Limit Switches

High Precision Touch and Tool Setter Limit Switches

Features

- Tool setter for blade positioning, wear detection, breakage, etc.
- 0.5 micron (μm) repeat accuracy
- No movement differential
- No temperature drift
- Dustproof / water-resistant (IP67)
- LED indicator

Tool Setter



O indicates correct target approach and orientation.

X indicates approach and orientation that should be avoided.

High Precision Touch and Tool Setter Limit Switches Selection Chart

| Part Number | Price | Drawing Link | Actuator/Head Type* | Mounting Direction | Mounting Hole | Stroke | Switching Output | Contact Force | Connection Type |
|--------------------------------------|----------|----------------------------|-------------------------------|--------------------|---------------|--------|------------------|---------------|-------------------|
| <u>P11DDB-DLD</u> | \$189.00 | <u>PDF</u> | Ø 16mm plunger, Ø5mm flat | downward | (2) Ø 4.6 | 3mm | (1) N.C. | 1.5N | Cable 3m [9.8ft] |
| <u>P11DDB-DULD</u> | \$205.00 | <u>PDF</u> | Ø 16mm plunger, Ø 5mm flat | upward | (2) Ø 4.6 | 3mm | (1) N.C. | 1.5N | Cable 3m [9.8ft] |
| <u>P11DMB-DULD</u> | \$189.00 | <u>PDF</u> | Ø 16mm plunger, Ø 5mm flat | upward | (2) M4 | 3mm | (1) N.C. | 1.5N | Cable 3m [9.8ft] |
| <u>P11EDB-DULD</u> | \$205.00 | <u>PDF</u> | Ø 16mm plunger, Ø 5mm flat | upward | (2) Ø 4.6 | 5mm | (1) N.C. | 1.5N | Cable 3m [9.8ft] |
| <u>P21EDBP-22-28</u> | \$697.00 | <u>PDF</u> | Ø 18.5mm plunger, Ø 10mm flat | upward | (2) Ø 4.6 | 5mm | (1) N.C. | 1.5N | Cable 5m [16.4ft] |

* Ø = diameter

-xxLD: LED indicator (attached to sensor)

[P21EDBP-22-28](#) includes M5 air inlet



[P11DDB-DLD](#)



[P11DDB-DULD](#)



[P11DMB-DULD](#)



[P11EDB-DULD](#)



[P21EDBP-22-28](#)



Precision Limit Switches

High Precision Touch and Tool Setter Limit Switches Specifications

| Series | P11 | P21 |
|---|---|--|
| Environmental | | |
| Degree of Protection | IP67 | |
| Temperature Range | Operating: 0 to 80°C [32 to 176°F] (Ice-free) | |
| Mechanical Ratings | | |
| Enclosure Material | Aluminum | |
| Pretravel | 0* | 1st signal 0*, 2nd signal 2.5 mm (0.098 in) |
| Torque (for nuts on threaded barrels, set screws on smooth barrels) | N/A | |
| Vibration | 10–55Hz total amplitude 1.5 for X, Y, Z each direction | |
| Shock | 300 m/s² for X, Y, Z each direction | |
| Repeat Accuracy | Both On–Off, Off–On: 0.0005 mm (range)** | |
| Recommended Minimum Operating Speed | 50mm [1.96in]/minute | |
| Electrical Ratings | | |
| Contact Life | 3 million operations | |
| Contact Voltage | 5–24VDC | |
| Steady Current Rating | 10mA or less | |
| Max In-rush Current Rating | 10mA (limit current to protect LED indicator) | |
| Connection Type | Cable: 3m (9.84 ft) oil resistant Ø5/2 cores (P08: Ø4/2 cores) Tensile strength 30N, minimum bending R7, 30AWG | Cable: 5m (16.40ft) oil resistant Ø3.7/4 cores (P08: Ø4/2 cores), Tensile strength 30N, minimum bending R7, 30AWG |
| Indicating | -L: LED indicator (mounted in cable 120mm from the switch) | |

* Adjust the installed location of the switch by the signal switching point.

** At operating speed 50-200 mm/minute. Operating speed slower than 10 mm/min is not recommended.

Circuit Diagrams

P21 Wiring

| Without LED | With LED |
|-------------------------------|--|
| <p>Normally closed (N.C.)</p> | <p>Normally closed (N.C.)</p> <p>LED Normally On</p> |

| With LED |
|---|
| <p>2-signal type (P21)</p> <p>First Signal</p> <p>Normally closed (N.C.)</p> <p>Second Signal</p> <p>Normally closed (N.C.)</p> |