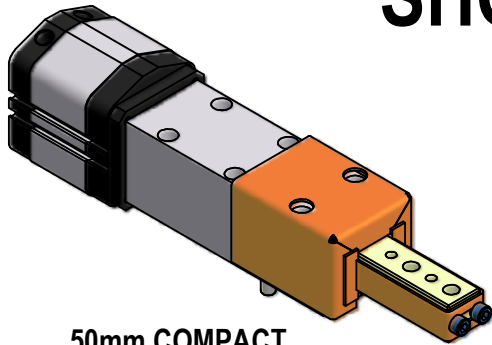
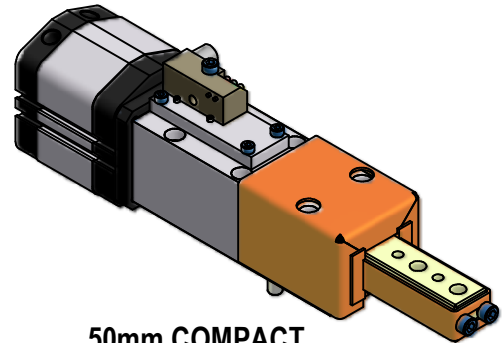


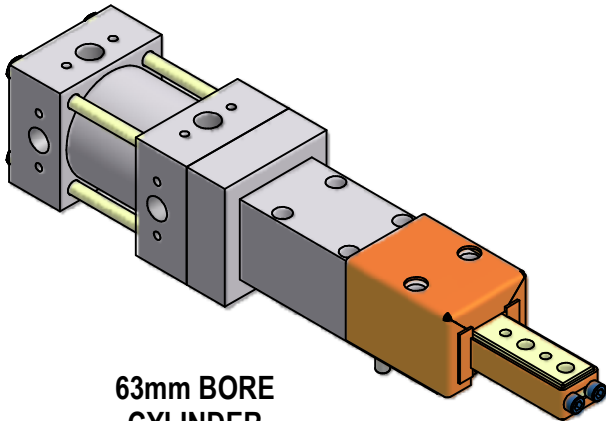
## WP2 SERIES *GOLD LINE* SHOT PINS



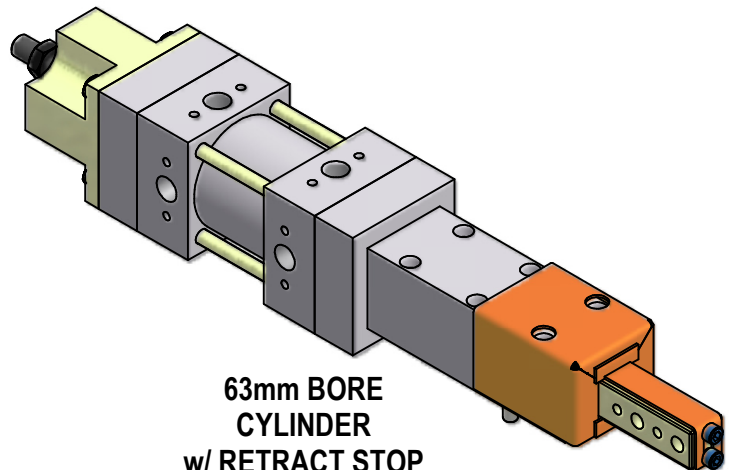
50mm COMPACT  
CYLINDER



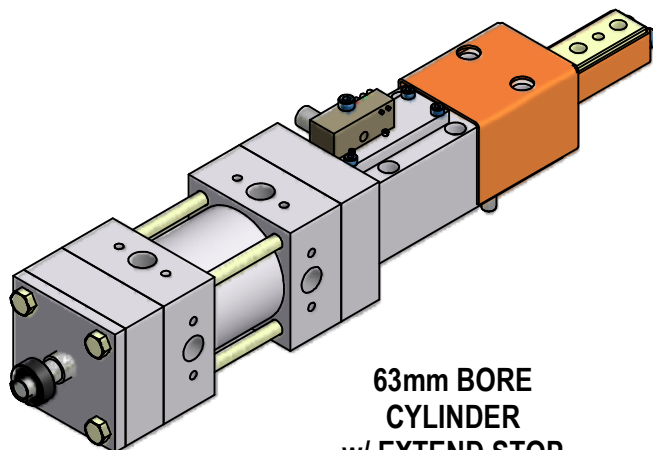
50mm COMPACT  
CYLINDER  
w/ WORLD SWITCH



63mm BORE  
CYLINDER



63mm BORE  
CYLINDER  
w/ RETRACT STOP  
RAM SHOWN 90°



63mm BORE  
CYLINDER  
w/ EXTEND STOP  
& WORLD SWITCH

# ORDERING INFORMATION

WP
2
N
0
2
5
A
0
1
0
A
0
0
1
A
0
0
0

**Series** \_\_\_\_\_  
**WP**

**Ram Size** \_\_\_\_\_  
**2** 24mm square

**Stroke** \_\_\_\_\_  
**025** 025, 050

**Coupler** \_\_\_\_\_  
**A** Rap (shortens nominal cylinder stroke by 2mm)  
**B** Rigid

**Cylinder Options (Sheet 3/5)** \_\_\_\_\_  
 (See Chart Below)

**Stop Options (Sheet 5)** \_\_\_\_\_  
**0** None  
**E** Extend Stop  
**R** Retract Stop  
 (E or R Req's requires double rod cylinder Not Available on Cylinder 31 & 31)

**Ram Style (Sheet 6)** \_\_\_\_\_  
 (See Ram Style Chart on Page 6)

**Switch Options (Sheet 7)** \_\_\_\_\_  
 (See Swtich Charts on Page 7)

**Shroud** \_\_\_\_\_  
**0** No Shroud  
**1** Shroud

**Cylinder Prox (or "G" Port) Position (Sheet 3)** \_\_\_\_\_  
**A** X1 Position  
**B** X2 Position  
**C** X3 Position  
**D** X4 Position

**Ram Rotation (Sheet 6)** \_\_\_\_\_  
**0** 0° Rotation  
**9** 90° Rotation

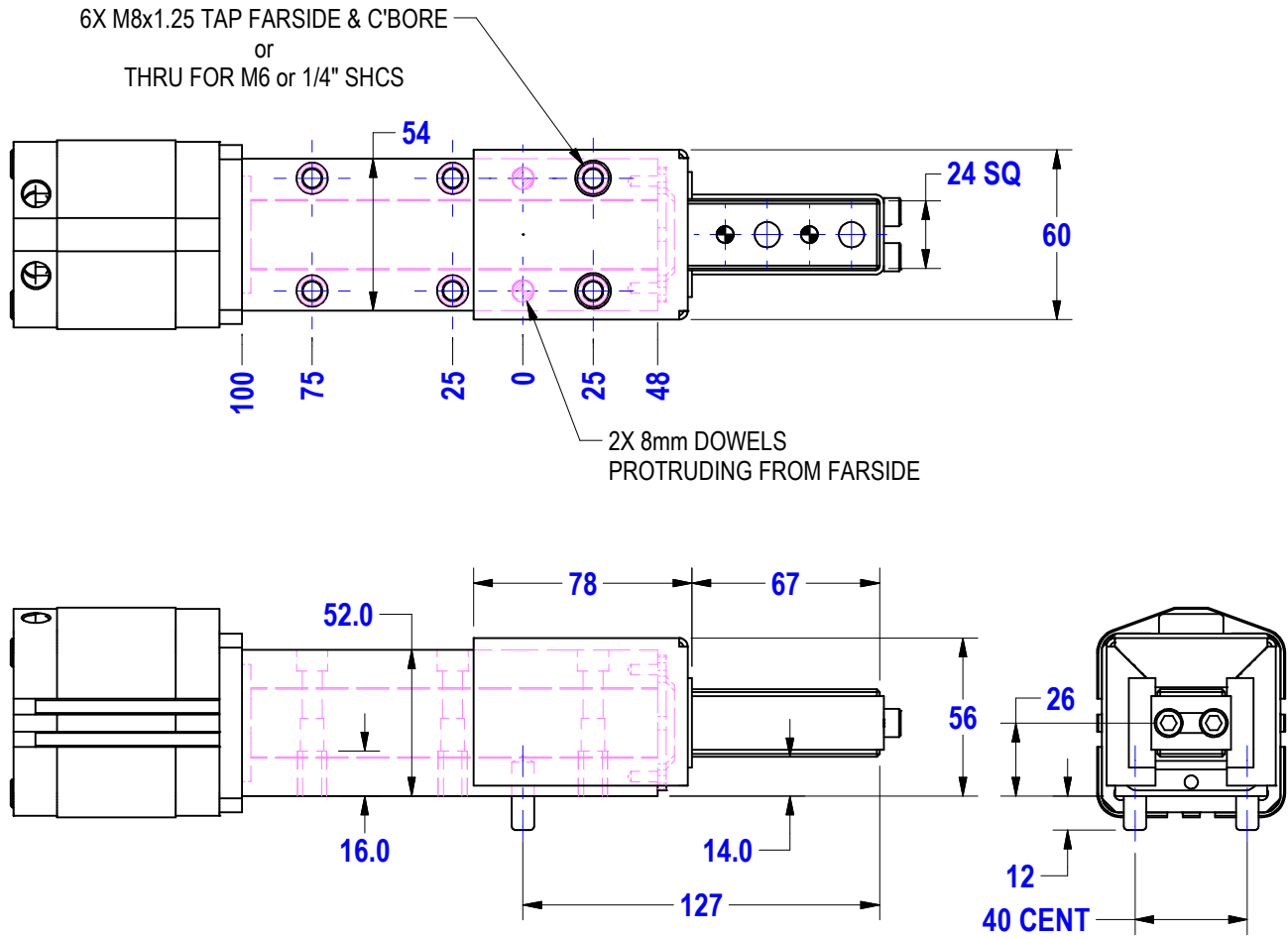
**WP2 Cylinder Options**

- 01** Pneumatic - 63mm Bore - Single Rod (NPT Ports)
- 02** Pneumatic - 63mm Bore - Single Rod (G Ports)
- 03** Pneumatic - 63mm Bore - Double Rod (NPT Ports)
- 04** Pneumatic - 63mm Bore - Double Rod (G Ports)
- 30** Pneumatic - 50mm Compact - Single Rod (NPT Ports)
- 31** Pneumatic - 50mm Compact - Single Rod (G Ports)

(DO NOT SCALE DRAWING)



# GENERAL DIMENSIONS



(DO NOT SCALE DRAWING)



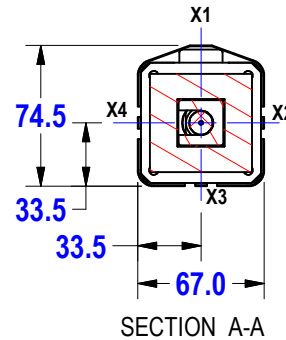
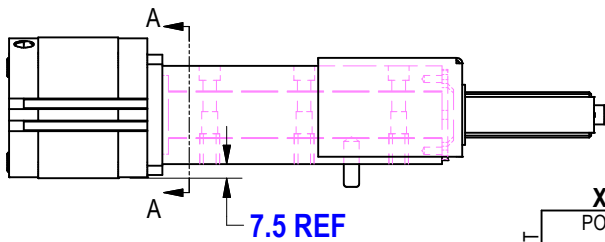
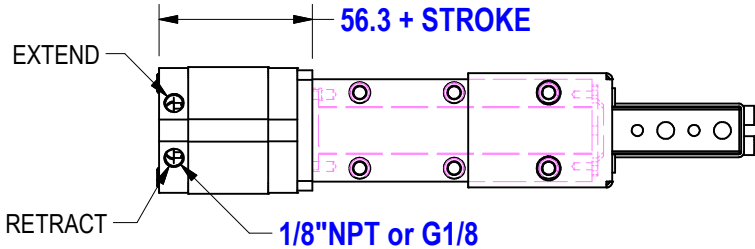
# CYLINDER INFORMATION

W
P
2
N
0
2
5
A
0
1
0
A
0
0
1
A
0
0
0

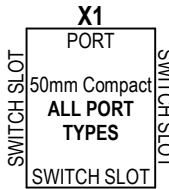
**Cylinder Options**  
See Chart (Sheet 1)

**Cylinder Prox (or "G" Port) Position**  
**A** X1 Rotation (Default for 01 & 03)  
**B** X2 Rotation  
**C** X3 Rotation  
**D** X4 Rotation

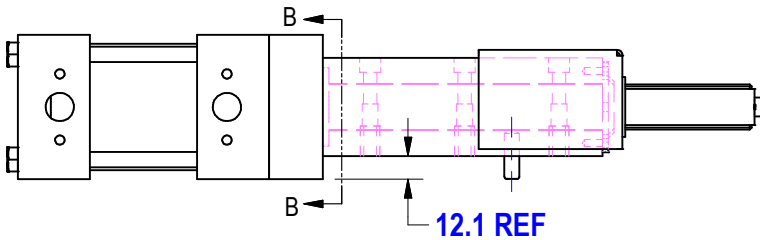
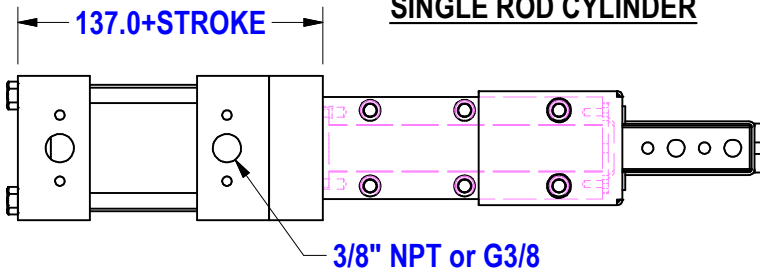
## 50mm COMPACT (30,31) SINGLE ROD CYLINDER



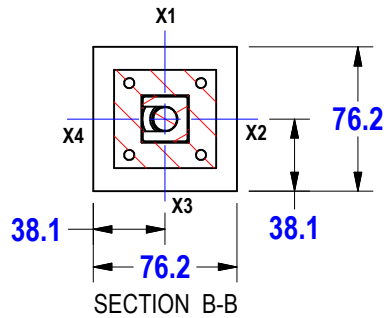
**50mm COMPACT CYLINDERS**  
X1 OPTION DESIGNATES LOCATION OF THE PORT. TO ROTATE THE PORT LOCATION 90° CLOCKWISE, ORDER THE X2 OPTION.



## 63mm TIE-ROD (01,02) SINGLE ROD CYLINDER

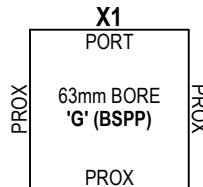


**PROX READ DEPTH**  
63mm BORE CYLINDERS  
26mm (1.025") READ DEPTH



**63mm NPT PORT TYPE**  
FOR CYLINDER OPTIONS 01 & 03, THE CYLINDER IS PORTED AND PROX READY ON ALL SIDES. USE 'X1' AS DEFAULT

**63mm "G" PORT CYLINDERS**  
X1 OPTION DESIGNATES LOCATION OF THE PORT. TO ROTATE THE PORT LOCATION 90° CLOCKWISE, ORDER THE X2 OPTION.



(DO NOT SCALE DRAWING)

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# CYLINDER INFORMATION

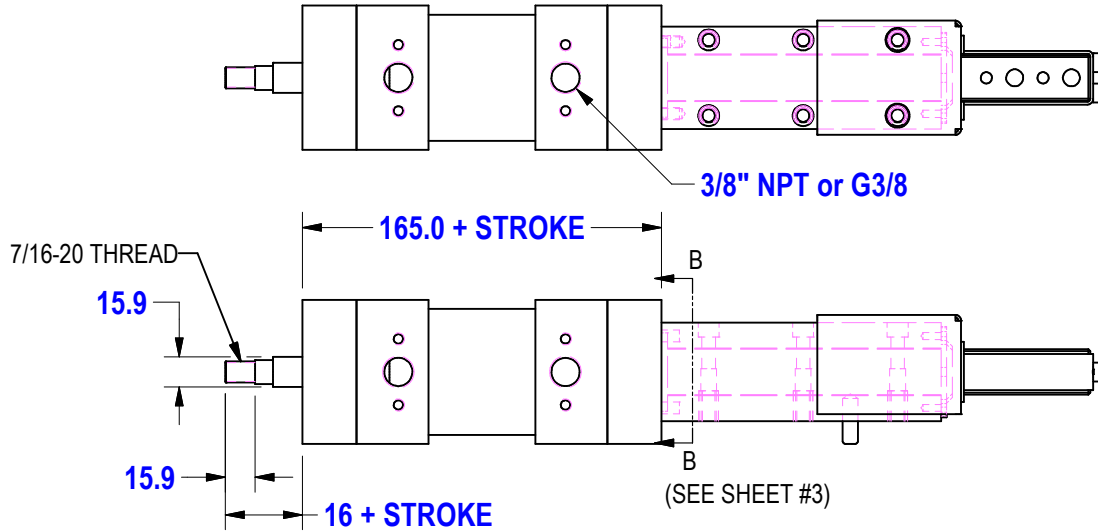
W P 2 N 0 2 5 A 0 1 0 A 0 0 1 A 0 0 0

**Cylinder Options**  
See Chart

**Cylinder Prox (or "G" Port) Position**

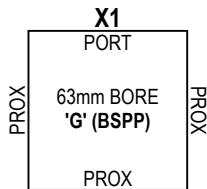
- A X1 Rotation (Default for 01 & 03)
- B X2 Rotation
- C X3 Rotation
- D X4 Rotation

## 63mm BORE (03,04) DOUBLE ROD CYLINDER



**63mm NPT PORT TYPE**  
FOR CYLINDER OPTIONS 01 & 03, THE CYLINDER IS PORTED AND PROX READY ON ALL SIDES. USE 'X1' AS DEFAULT

**63mm "G" PORT CYLINDERS**  
**X1** OPTION DESIGNATES LOCATION OF THE **PORT**. TO ROTATE THE PORT LOCATION 90° CLOCKWISE, ORDER THE X2 OPTION.



**PROX READ DEPTH**  
**63mm BORE CYLINDERS**  
26mm (1.025") READ DEPTH

(DO NOT SCALE DRAWING)



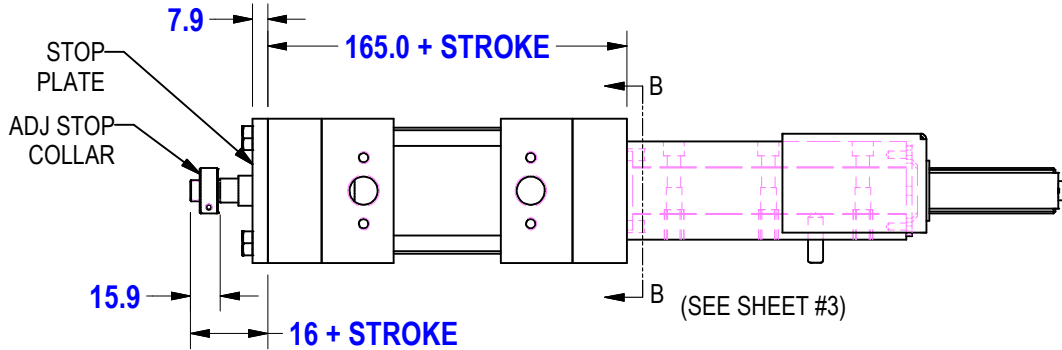
# CYLINDER INFORMATION

W P 2 N 0 2 5 A 0 1 0 A 0 0 1 A 0 0 0

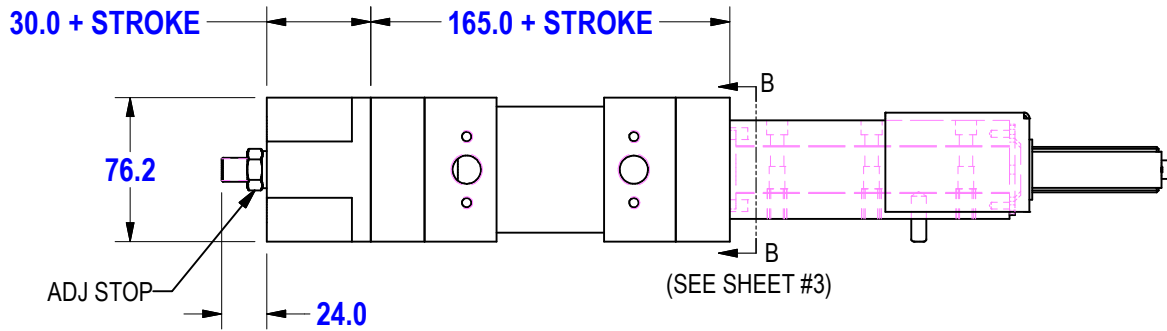
**Stop Option**

- 0 None
  - E Extend Stop
  - R Retract Stop
- E or R Req's requires double rod cylinder

## EXTEND STOP (E)



## RETRACT STOP (R)



(DO NOT SCALE DRAWING)

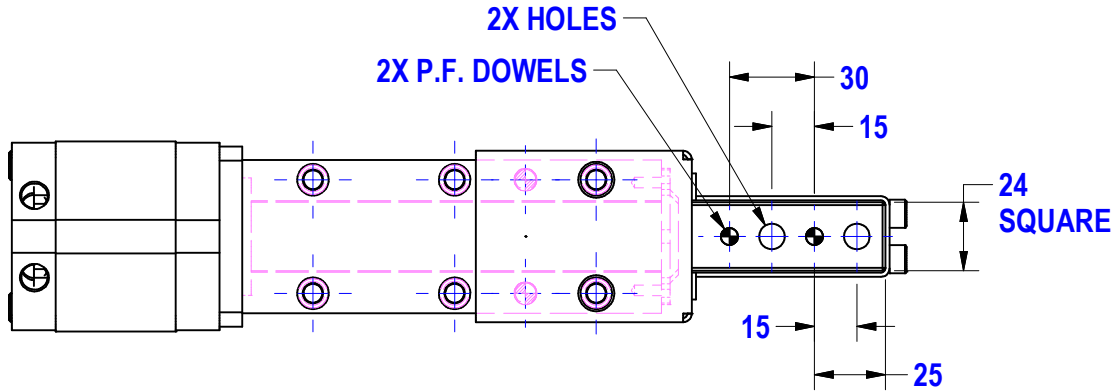
**WELKER**  
ENGINEERED PRODUCTS  
248-528-2020 www.e-welker.com

# RAM OPTIONS

W P 2 N 0 2 5 A 0 1 0 A 0 0 1 A 0 0 0

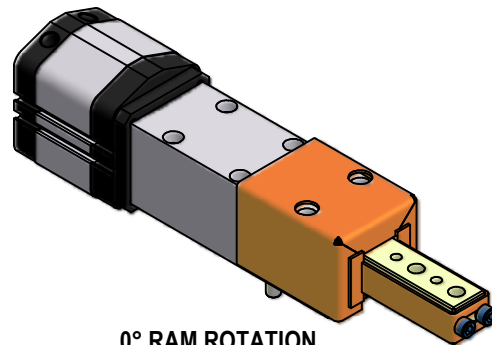
**Ram Style**  
See Chart Below

**Ram Rotation**  
0 0° Rotation  
9 90° Rotation

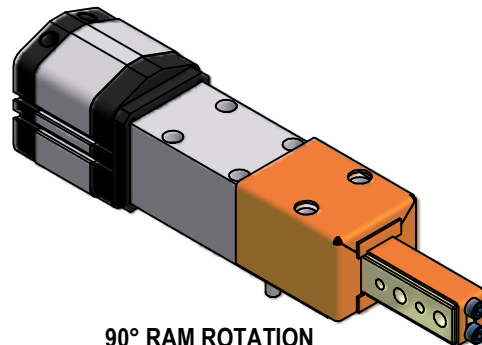


| Ram Style | DOWELS    | HOLES        |
|-----------|-----------|--------------|
| A         | 6.0 THRU  | 9.0 THRU     |
| D         | 8.0 THRU  | 11.0 THRU    |
| E*        | 6.0 THRU  | M8 TAPS      |
| G*        | 8.0 THRU  | M10 TAP THRU |
| J*        | 10.0 THRU | 11.0 THRU    |

*\*SPECIAL ORDER ONLY  
NOT SUBJECT TO STANDARD  
PRICE OR DELIVERY*



0° RAM ROTATION  
OPTION "0"



90° RAM ROTATION  
OPTION "90"

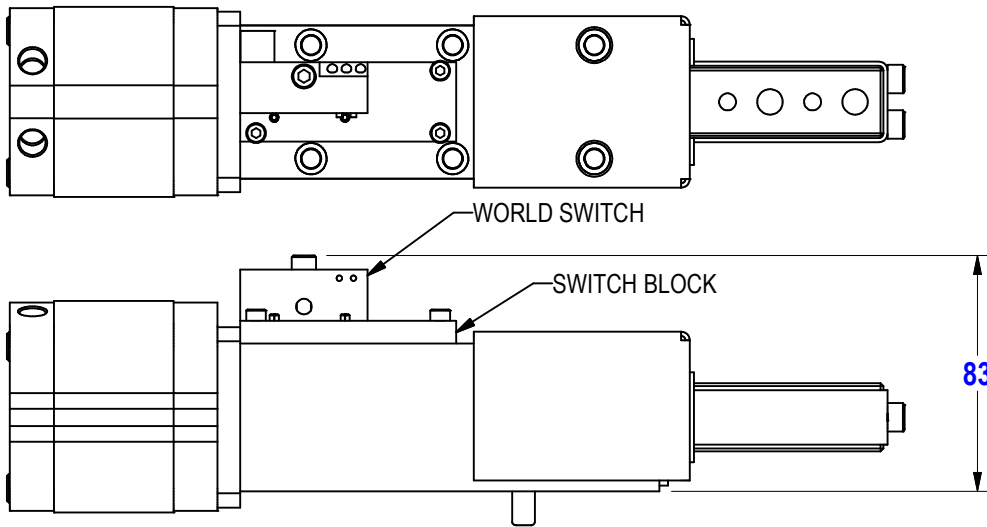
(DO NOT SCALE DRAWING)

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# SWITCH OPTIONS

W P 2 N 0 2 5 A 0 1 0 A 0 0 1 A 0 0 0

Switch  
00 See Chart Below



Order Number  
S01 (E)XTEND or  
S01 (R)ETRACT

Part Number

Manufacturer

Description

|                | 00       | NONE                               |                              |   |
|----------------|----------|------------------------------------|------------------------------|---|
| World Switches | AE or AR | Ni2-Q6.5-AP6-0.1-FS 4.4X3/S304     | Turck                        | 3-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect    |
|                | BE or BR | Ni2-Q6.5-ADZ32-0.1-FSB 5.4X4/S304  | Turck                        | 4-Wire, 5-Pin, AC/DC 1/2-20 (N.O.) Quick Disconnect |
|                | CE or CR | Ni2-Q6.5-AN6-0.1-FS 4.4X3/S304     | Turck                        | 3-Wire, 4-Pin, DC M12 X 1 (NPN) Quick Disconnect    |
|                | DE or DR | NBN2-F581-100S6-E8-V 1             | Pepperl & Fuchs              | 3-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect    |
|                | EE or ER | Z02KR2-PSC20F-P100-S04-V           | Balluff                      | 3-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect    |
|                | FE or FR | 871D-MW2GP100A-D4                  | Allen Bradley                | 4-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect    |
|                | HE or HR | Ni2-Q6.5-0.1M-BDS-2AP6X3-H1141/S34 | Turck                        | 3-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect    |
|                | JE or JR | IN5374                             | Efector                      | 4-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect    |
|                | *        | L0                                 | BIM-UNT-0.1-UNT-2AP6X3-H1141 | Turck   |

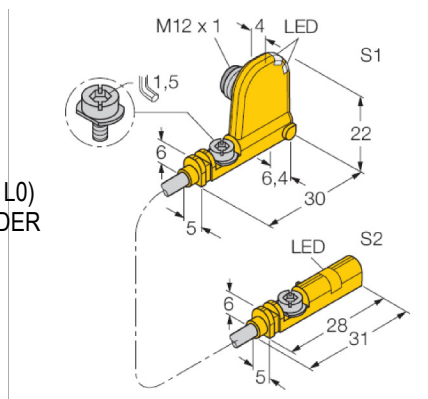
ALL SWITCHES AVAILABLE FOR ALL WP2N CYLINDER STYLES

\* COMPACT CYLINDER SWITCH

FOR COMPACT CYLINDERS  
OPTIONS 30 & 31 ONLY

TURCK MAGNETIC FIELD SENSOR (OPTION L0)  
TO BE FIELD MOUNTED IN COMPACT CYLINDER  
SLOTS BY CUSTOMER,  
WILL BE SHIPPED LOOSE

ORDERING THE L0 OPTION WILL  
NOT COME WITH THE SWITCH BLOCK



(DO NOT SCALE DRAWING)

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# Welker Shot Pin Technical Information

## EB, SB and WP Series

### Body Mounting

Square ram shot pin units have dual mounting capability. At all mounting locations, you have the option of mounting from the top using the counter-bored clearance holes or the same holes, tapped from the bottom. Using any four of the six holes, symmetrical about the centerline, is sufficient. Protruding mounting dowels are provided and are press fit into the body.

Square ram packages are high precision full contact plane bearing units and therefore must be mounted to a flat surface. **Mounting surfaces must be flat within .002" (0.95mm).**

### Ram Mounting

Square ram shot pin units use a standard NAAMS L-Block pattern with 15mm spacing. Spacing allows mounting of 3 and 4 hole pin retainers and L-blocks to the ram. Through holes can be tapped and fitted with standard thread inserts.

### Shrouds

Safety orange steel shrouds are available for additional protection. Shrouds prevent undesirable buildup of contamination from welding and machining applications. Welker specifically recommends shroud usage in mig, tig and arc welding applications. Shrouds should only be removed if clearance problems exist and conditions permit. Consult Welker.

### Wipers

The wiper is the only maintenance item on Welker pin units. It is a custom molded moly impregnated urethane wiper. Welker recommends changing the wiper yearly. Specific applications may require more or less frequent wiper service.

### Stroke

The stroke accuracy of shot pins is limited to that of the cylinder. Normal cylinder stroke accuracy is  $\pm .015"$  (0.38mm). For control of "end of stroke" repeatability, see extend and retract stop options for each series.

Rap couplings cause the unit to be less than the nominal stroke of the cylinder. The 24mm ram and 40mm ram units have a 2mm rap. The 60mm ram units have a 3mm rap. The rap allows the cylinder to begin moving before moving the ram. The impact of the coupler helps free tooling from a bound condition. Most applications using a pneumatic shot pin should have rap couplings while most hydraulic shot pin applications should use a rigid coupler.

Welker cylinders do not require lubrication. **WELKER DOES NOT MOUNT CUSTOMER SUPPLIED CYLINDERS TO SHOT PIN UNITS.** Standard 24mm ram and 40mm ram cylinders use prox switch (cylindicator) ports with 1.025" read depth (probe length). 60mm ram cylinders have prox switch (cylindicator) ports with 1.250" read depth (probe length). Welker does not supply proximity switches.

### Repeatability

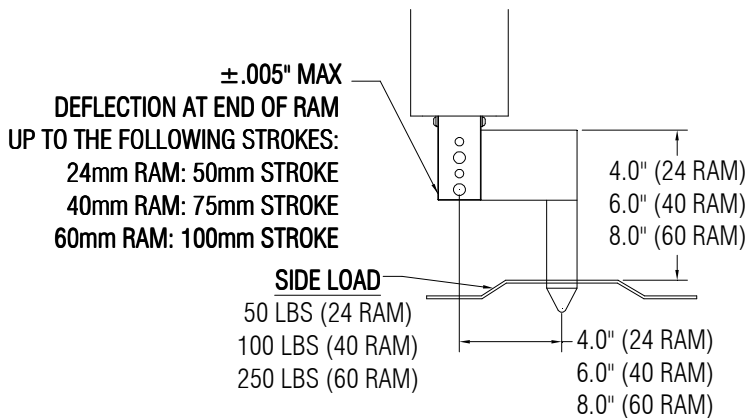
Shot pin units utilize a full contact bearing surface for high repeatability. Repeatability within  $\pm .002"$  (0.05mm) part to part is achievable.

### Wear

Wear equals variance in position under load over time. Shot pin tests indicate maximum wear of .002" wear at 3 million cycles.

### Loading and Deflection

Maximum deflection is  $\pm .005"$  and is measured at the **end of the ram** up to the specified strokes and up to the loads and distances as shown below. Longer extensions can be used at lower tolerances and loads. Pins mounted closer to the body exhibit less deflection. For applications with longer strokes and higher loads, consult Welker.



| <b>Theoretical Extend and Retract Force for Square Ram Shot Pins Shown</b> |                            |                            |                              |                              |
|--|----------------------------|----------------------------|------------------------------|------------------------------|
| <b>Bore Size</b>   | <b>60 psi (4 bar) Push</b> | <b>60 psi (4 bar) Pull</b> | <b>80 psi (5.5 bar) Push</b> | <b>80 psi (5.5 bar) Pull</b> |
| <b>40mm</b>  | 106 lbf<br>(472 N)         | 88 lbf<br>(391 N)          | 141 lbf<br>(627 N)           | 117 lbf<br>(520 N)           |
| <b>63mm</b>  | 188 lbf<br>(836 N)         | 170 lbf<br>(756 N)         | 251 lbf<br>(1117 N)          | 227 lbf<br>(1010 N)          |
| <b>100mm</b>   | 295 lbf<br>(1312 N)        | 276 lbf<br>(1228 N)        | 393 lbf<br>(1748 N)          | 368 lbf<br>(1637 N)          |