WP6 SERIES SHOT PIN

STROKES: 025, 050, 075, 100, 125, 150, 175, 200mm
PNEUMATIC OR HYDRAULIC CYLINDER

SOLID STATE CYLINDER SWITCH AVAILABLE WITH 100mm BORE PNEUMATIC CYLINDERS.

ALUMINUM 100mm PNEUMATIC WELKER CYLINDER, TIE ROD AND HYDRAULIC CYLINDERS ALSO AVAILABLE

LIGHTWEIGHT ALUMINUM BODY

RAP OR RIGID COUPLER

60mm SQUARE RAM STEEL WITH WEAR RESISTANT COATING

METAL SHROUD

NAAMS STANDARD MOUNTING
ORDERING INFORMATION

NOTE: ALL BOXES MUST BE FILLED IN FOR A COMPLETE PART NUMBER

<table>
<thead>
<tr>
<th>Stroke</th>
<th>025 025, 050, 075, 100, 125, 150, 175, 200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coupler</td>
<td>A Rap (shortens nominal cylinder stroke by 3mm)</td>
</tr>
<tr>
<td></td>
<td>Rap only available with Actuator Options 01, 02, 30 or 31</td>
</tr>
<tr>
<td></td>
<td>B Rigid</td>
</tr>
<tr>
<td>Cylinder</td>
<td>01 Pneumatic 100mm Tie Rod Single Rod (NPT Ports)</td>
</tr>
<tr>
<td></td>
<td>02 Pneumatic 100mm Tie Rod Single Rod (G Ports)</td>
</tr>
<tr>
<td></td>
<td>03 Pneumatic 100mm Tie Rod Double Rod (NPT Ports)</td>
</tr>
<tr>
<td></td>
<td>04 Pneumatic 100mm Tie Rod Double Rod (G Ports)</td>
</tr>
<tr>
<td></td>
<td>09 Hydraulic 80mm Bore Single Rod (SAE Ports)</td>
</tr>
<tr>
<td></td>
<td>10 Hydraulic 80mm Bore Single Rod (G Ports)</td>
</tr>
<tr>
<td></td>
<td>11 Hydraulic 80mm Bore Double Rod (SAE Ports)</td>
</tr>
<tr>
<td></td>
<td>12 Hydraulic 80mm Bore Double Rod (G Ports)</td>
</tr>
<tr>
<td></td>
<td>30 Pneumatic 100mm Welker Single Rod (NPT Ports)</td>
</tr>
<tr>
<td></td>
<td>31 Pneumatic 100mm Welker Single Rod (G Ports)</td>
</tr>
<tr>
<td></td>
<td>32 Pneumatic 100mm Welker Double Rod (NPT Ports)</td>
</tr>
<tr>
<td></td>
<td>33 Pneumatic 100mm Welker Double Rod (G Ports)</td>
</tr>
</tbody>
</table>

Stop Options

| Stop Options | 0 None |
|              | E Adjustable Extend Stop* \_NOTE: Stop Option E will shorten stroke |
|              | G Fixed Extend Stop* \_NOTE: Stop Option G will shorten stroke |

Ram Style

| Ram Style | D 4 Hole - Large |
|           | L 4 Hole - Medium |

Switch

| Switch | 00 No Switch |
|        | LX See Cylinder Switch Chart below. Only available with Cylinder Options 30, 31, 32, 33 |

Shroud

| Shroud | 0 No Shroud |
|        | 1 Shroud |

Cylinder Prox (or "G" Port) Position

| Cylinder Prox (or "G" Port) Position | A X1 Position |
|                                      | B X2 Position |
|                                      | C X3 Position |
|                                      | D X4 Position |

Standard Options - All other options may affect price and delivery

<table>
<thead>
<tr>
<th>Switch</th>
<th>Part Number</th>
<th>Manufacturer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L3</td>
<td>SWITCH L3*</td>
<td>Welker</td>
<td>4-Wire, 4-Pin, DC (PNP) M12 X 1 Quick Disconnect</td>
</tr>
<tr>
<td></td>
<td>L3 switch is weld field immune, comparable to World Switches. Dual sensor switch, 1 per cylinder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L5</td>
<td>MK5113</td>
<td>ifm Efector</td>
<td>3-Wire, 4-Pin, DC (NPN) M12 X 1 Quick Disconnect</td>
</tr>
<tr>
<td></td>
<td>Single sensor switch, 2 switches per cylinder</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Standard Switch Option - All other options may affect price and delivery

*Note that some mid and low frequency DC resistance applications (i.e. aluminum resistance welding applications) may cause a fault. In these applications, it is recommended that the sensor be ignored/bypassed during the welding cycle.
GENERAL DIMENSIONS

6X M12 x 1.75 TAP THRU 
& Ø17.0 C'BORE
AS SHOWN FOR
M10 or 3/8" SHCS

2X Ø12 DOWELS
PROTRUDING FROM
FARSIDE

A SQUARE

Strokes
(25mm increments) | Bore | Nominal Ram | A | H | J
---|---|---|---|---|---
25-100 | 100 | 60 | 60.000 | 230 | 180
125, 150 | 100 | 60 | 60.000 | 390 | 280
175, 200 | 100 | 60 | 60.000 | 440 | 280

SHOT PIN UNIT WEIGHT*

<table>
<thead>
<tr>
<th>STROKE:</th>
<th>25</th>
<th>50</th>
<th>75</th>
<th>100</th>
<th>125</th>
<th>150</th>
<th>175</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>WP6: CYL OPTION 01/02</td>
<td>75.0 lbs</td>
<td>75.8 lbs</td>
<td>76.5 lbs</td>
<td>77.3 lbs</td>
<td>78.1 lbs</td>
<td>78.9 lbs</td>
<td>79.6 lbs</td>
<td>80.4 lbs</td>
</tr>
</tbody>
</table>

*WEIGHTS SHOWN ARE APPROXIMATE AND WILL VARY WITH OPTIONS

DO NOT SCALE DRAWING

ENGINEERED PRODUCTS

(800) 229-0890 www.welkerproducts.com

SHEET 3
WP6 100mm BORE WELKER PNEUMATIC CYLINDER INFORMATION

Cylinder Options
- 30 100mm Welker Single Rod (NPT Ports)
- 31 100mm Welker Single Rod (G Ports)
- 32 100mm Welker Double Rod (NPT Ports)
- 33 100mm Welker Double Rod (G Ports)

Stop Options
- 0 None
- E Adjustable Extend Stop**
- G Fixed Extend Stop**

**Requires double rod cylinder

Port Position
- A X1 Rotation
- B X2 Rotation
- C X3 Rotation
- D X4 Rotation

SINGLE ROD CYLINDER

1/2" NPT OR G1/2 PORTS

DOUBLE ROD CYLINDER WITH EXTEND STOP OPTION "E"

PRE-SET TO:
STROKE - 5mm

CLAMP SCREW MUST BE TIGHTENED AFTER ADJUSTMENT

ADJUSTABLE EXTEND STOP MAX ADJ +/-4.0

RAM IN EXTENDED POSITION WILL BE
5mm ± 4.0mm SHORT OF STROKE

DOUBLE ROD CYLINDER WITH EXTEND STOP OPTION "G"

PRE-SET TO:
STROKE - 5mm

FIXED EXTEND STOP

RAM IN EXTENDED POSITION WILL BE
5mm ± 4.0mm SHORT OF STROKE

RECOMMENDED OPERATING PRESSURE
PNEUMATIC: 60-80 PSI, FLOW CONTROLS NOT REQUIRED

(800) 229-0890 www.welkerproducts.com
WP6 PNEUMATIC TIE ROD CYLINDER INFORMATION

**Cylinder Options**
- 01 Single Rod (NPT Ports)
- 02 Single Rod (G Ports)
- 03 Double Rod (NPT Ports)
- 04 Double Rod (G Ports)

**Stop Options**
- 0 None
- E Adjustable Extend Stop**
- G Fixed Extend Stop**

**Cylinder Prox (or "G" Port) Position**
- A X1 Rotation
- B X2 Rotation
- C X3 Rotation
- D X4 Rotation

**SINGLE ROD CYLINDER**
- C + STROKE
- PORT: SEE CHART
- PROX MOUNT: SEE CHART

**DOUBLE ROD CYLINDER WITH STOP OPTION "E"**
- PRE-SET TO: 5mm - STROKE
- ADJUSTABLE EXTEND STOP
  MAX ADJ +/-4.0
- CLAMP SCREW MUST BE TIGHTENED AFTER ADJUSTMENT
- D + STROKE
- 7.9 STOP PLATE
- RAM IN EXTENDED POSITION WILL BE 5mm ± 4.0mm SHORT OF STROKE

**DOUBLE ROD CYLINDER WITH STOP OPTION "G"**
- PRE-SET TO: 5mm - STROKE
- FIXED EXTEND STOP
- D + STROKE
- 7.9 STOP PLATE
- RAM IN EXTENDED POSITION WILL BE 5mm SHORT OF STROKE

**NPT PORT CYLINDERS**
X1 OPTION DESIGNATES LOCATION OF THE PROX. TO ROTATE THE PROX LOCATION 90° CLOCKWISE, ORDER THE X2 OPTION. THE OTHER THREE SURFACES ARE THE SPECIFIED PORT.

**"G" PORT CYLINDERS**
X1 OPTION DESIGNATES LOCATION OF THE PORT. TO ROTATE THE PORT LOCATION 90° CLOCKWISE, ORDER THE X2 OPTION. THE OTHER THREE SURFACES ACCEPT CYLINDICATOR.

**Recommended Operating Pressure**
PNEUMATIC: 60-80 PSI, FLOW CONTROLS NOT REQUIRED. CYLINDERS ARE SWITCH READY (PROX PORT TYPE). SWITCHES ARE NOT SUPPLIED WITH THE CYLINDER.
WP6 HYDRAULIC CYLINDER INFORMATION

Cylinder Options
- 09 Single Rod (SAE Ports)
- 10 Single Rod (G Ports)
- 11 Double Rod (SAE Ports)
- 12 Double Rod (G Ports)

Cylinder Prox (or "G" Port) Position
- A X1 Rotation
- B X2 Rotation
- C X3 Rotation
- D X4 Rotation

SINGLE ROD CYLINDER

- PROX MOUNT - SEE CHART & DIAGRAMS BELOW
- PORTS - SEE CHART BELOW

DOUBLE ROD CYLINDER

- STROKE + 168
- STROKE + 29
- STROKE + 191

SAE PORT CYLINDERS
- X1 OPTION DESIGNATES LOCATION OF THE PROX, TO ROTATE THE PROX LOCATION 90° CLOCKWISE, ORDER THE X2 OPTION. THE OTHER THREE SURFACES ARE THE SPECIFIED PORT.

"G" PORT CYLINDERS
- X1 OPTION DESIGNATES LOCATION OF THE PORT, TO ROTATE THE PORT LOCATION 90° CLOCKWISE, ORDER THE X2 OPTION. THE OTHER THREE SURFACES ACCEPT CYLINDICATOR.

RECOMMENDED OPERATING PRESSURE
- HYDRAULIC: 200 PSI, FLOW CONTROLS NOT REQUIRED
- CYLINDERS ARE SWITCH READY (PROX PORT TYPE).
- SWITCHES ARE NOT SUPPLIED WITH THE CYLINDER.
STANDARD RAM OPTIONS
(See supplemental ram sheet for non-standard options)

- **Ram Style**
  - D: 4 Hole - Large
  - L: 4 Hole - Medium

- **Dimensions**
  - 4X Ø 8.0 P.F. Dowel ~ RAM STYLE "D"
  - 4X Ø 8.0 P.F. Dowel ~ RAM STYLE "L"
  - 4X M10 X 1.5 - 20 Deep Tap

**Note**: (Do Not Scale Drawing)
**Welker WP6 Shot Pin Technical Information**

**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 ±0.002” (0.05mm).**

**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 ± .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. 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. Rap coupler not available on hydraulic units.

Welker cylinders do not require lubrication.

**Switch:** 60mm ram tie rod cylinders have prox switch (cylinder) ports with 32mm read depth (probe length). Welker does not supply prox switches. Solid state cylinder switches available through Welker.

**Repeatability:** Shot pin units utilize a full contact bearing surface for high repeatability. Repeatability within ±.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 ±.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.