UB2 SERIES GOLD LINE SHOT PIN

NO LUBRICATION REQUIRED

- NPT OR G PORTS*
- INTEGRATED PNEUMATIC CYLINDER
- SHROUD*
- NAAMS STANDARD MOUNTING
- CORROSION & WELD SPATTER RESISTANT RAM

- SOLID STATE CYLINDER SWITCH*
- INTEGRATED WORLD SWITCH* WITH SWITCH GUARD
- RAP OR RIGID COUPLER*
- POSITION HOLD DETENT*
- LIGHTWEIGHT ALUMINUM BODY

ALUMINUM RAM UNIT AVAILABLE

*OPTIONAL

SHOT PIN APPLICATIONS
- RETRACTABLE LOCATING PINS
- STRAIGHT CLAMPS
- SMALL PART METERS

RELEASED 5/19/20

Welker Engineered Products  1401 Piedmont, Troy MI 48083  (800) 229-0890  www.welkerproducts.com
ORDERING INFORMATION

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

Material
N Aluminum body, steel ram
A Aluminum body & ram

Stroke
025 025, 050, & 075mm Stroke

Coupler
A Rap (shortens nominal cyl stroke by 2mm) Rap only available with Actuator 01 or 02
B Rigid

Actuator
01 Pneumatic - Single Rod - NPT
02 Pneumatic - Single Rod - G Port
03 Pneumatic - Double Rod - NPT Port**
04 Pneumatic - Double Rod - G Port**
**Requires Option E, G, P, S or T

Options
0 None
E Adjustable Extend Stop* Not available with Detent option
G Fixed Extend Stop*
M Loose body for manual operation, Requires Actuator Option 01 or 02
P Loose body for manual operation with Palm Button*
S Loose body for manual operation with Extend Stop ("E") Not available with Detent option
T Loose body for manual operation with Fixed Stop ("G")*
*Requires Actuator Option 03 or 04
NOTE: Options E, G, S & T will shorten stroke

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

Switch
00 No Switch
LX See Cylinder Switch Chart
AE See World Switch Chart. Available on 25mm & 50mm stroke units only.

Shroud
0 No Shroud
1 Shroud, steel

Standard Options - All other options may affect price and delivery.

Recommended Applications:
Closures
Instrument Panel
Seating

The following uses are NOT recommended for the UB2, please see the Welker UB4N Shot Pin for these applications:
Framing
Underbodies
Multiple Pins
Pins greater than 20mm diameter

Detent
(Steel ram only)
0 None
D Detent Not available with Adjustable Extend Stop options E or S

Ram Rotation
0 0° Rotation
9 90° Rotation

Port Position
A P1 Port Position
B P2 Port Position
C P3 Port Position
D P4 Port Position

Manual Operation Note
Options M, P, S, T:
Loose body units are not held to industry standard tolerances

NOTE: Options E, G, S & T will shorten stroke

ENGINEERED PRODUCTS
248-528-2020 www.welkerproducts.com

SHEET 2

(Do not scale drawing)
GENERAL DIMENSIONS

SINGLE ROD CYLINDER

P1

P2

P3

P4

P = PORT POSITION

2X 1/8" NPT OR G1/8 PORTS FARSIDE

50mm BORE PNEUMATIC CYLINDER

2X Ø8.0 P.F. DOWELS ≤ 12.0

4X M8x1.25 TAP ≤ 16 NEARSIDE & C’BORE FOR M6 OR 1/4" SHCS FARSIDE

DOUBLE ROD CYLINDER WITH EXTEND STOP "E"

NOT AVAILABLE WITH DETENT OPTION

PRE-SET TO:
STROKE - 5mm

RAM IN EXTENDED POSITION WILL BE SHORT OF STROKE

1/2-20 THREADED ADJUSTABLE STOP
MAX ADJ. +/-4.0
CLAMP SCREW MUST BE TIGHTENED AFTER ADJUSTMENT

29 + STROKE

UNIT WEIGHTS (WEIGHTS SHOWN WILL VARY WITH OPTIONS)

<table>
<thead>
<tr>
<th>ACTUATOR</th>
<th>RAM</th>
<th>25mm STROKE</th>
<th>50mm STROKE</th>
<th>75mm STROKE</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/02</td>
<td>STEEL</td>
<td>6.5 LBS</td>
<td>7.5 LBS</td>
<td>8.2 LBS</td>
</tr>
<tr>
<td>01/02</td>
<td>ALUMINUM</td>
<td>4.5 LBS</td>
<td>5.9 LBS</td>
<td>6.7 LBS</td>
</tr>
<tr>
<td>03/04</td>
<td>STEEL</td>
<td>10.8 LBS</td>
<td>11.3 LBS</td>
<td>11.8 LBS</td>
</tr>
<tr>
<td>03/04</td>
<td>ALUMINUM</td>
<td>8.8 LBS</td>
<td>9.7 LBS</td>
<td>10.3 LBS</td>
</tr>
</tbody>
</table>
OPTIONS

DOUBLE ROD CYLINDER WITH EXTEND STOP "G"

STROKE - 5mm

RAM IN EXTENDED POSITION WILL BE
5mm SHORT OF STROKE

32 + STROKE

DOUBLE ROD CYLINDER WITH PALM BUTTON OPTION "P"

LOOSE BODY FOR MANUAL OPERATION

ALUMINUM BUTTON
WITH KNURLED EDGE

RAM IS MOVABLE BY HAND

40 + STROKE

Manual Operation Note:
Loose body units are
not held to industry
standard tolerances

(Do Not Scale Drawing)
STANDARD RAM OPTIONS

Ram Style
See Chart Below

<table>
<thead>
<tr>
<th>RAM STYLE</th>
<th>DOWELS</th>
<th>HOLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>8.0mm THRU</td>
<td>11.0mm THRU</td>
</tr>
<tr>
<td>L</td>
<td>8.0mm THRU</td>
<td>9.0mm THRU</td>
</tr>
</tbody>
</table>

SEE SUPPLEMENTAL RAM SHEET FOR NON-STANDARD OPTIONS

0° RAM ROTATION
OPTION: 0

90° RAM ROTATION
OPTION: 9
SWITCH OPTIONS

UB2 N 025 A 010 D 001 A 000

Switch: See charts below

00 No Switch

WORLD SWITCH*

NOTE: AVAILABLE WITH 25mm AND 50mm STROKE UNITS ONLY

<table>
<thead>
<tr>
<th>Order Number</th>
<th>Part Number</th>
<th>Manufacturer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>99</td>
<td>Switch Ready</td>
<td>Customer Supplied Switch. Prepared for switches below:</td>
<td></td>
</tr>
<tr>
<td>AE or AR</td>
<td>N2-Q6.5-APG-0.1-FS 4.4X3/S304</td>
<td>Turck</td>
<td>4-Wire, 4-Pin, DC M12 X 1 (PNP)</td>
</tr>
<tr>
<td>BE or BR</td>
<td>N2-Q6.5-ADZ32-0.1-FSB 5.4X4/S304</td>
<td>Turck</td>
<td>4-Wire, 5-Pin, AC/DC 1/2-20 (N.O.)</td>
</tr>
<tr>
<td>CE or CR</td>
<td>N2-Q6.5-AN6-0.1-FS 4.4X3/S304</td>
<td>Turck</td>
<td>4-Wire, 4-Pin, DC M12 X 1 (PNP)</td>
</tr>
<tr>
<td>DE or DR</td>
<td>NBN2-F581-100S6-EB-V1</td>
<td>Pepperl &amp; Fuchs</td>
<td>4-Wire, 4-Pin, DC M12 X 1 (PNP)</td>
</tr>
<tr>
<td>JE or JR</td>
<td>IN5374</td>
<td>Efector</td>
<td>3-Wire, 4-Pin, DC M12 X 1 (PNP)</td>
</tr>
<tr>
<td>ZE or ZR</td>
<td>WWS001A</td>
<td>Welker</td>
<td>4-Wire, 4-Pin, DC M12 X 1 (PNP)</td>
</tr>
</tbody>
</table>

WORLD SWITCH INCLUDES SWITCH GUARD

**World Switch Notes:** Available with 25mm and 50mm stroke units only

<table>
<thead>
<tr>
<th>Order Number</th>
<th>Part Number</th>
<th>Manufacturer</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L3</td>
<td>SWITCH L3 ~ Weld field immune, comparable to World Switches</td>
<td>Welker</td>
<td>4-Wire, 4-Pin, DC M12 X 1 (PNP)</td>
</tr>
<tr>
<td>L5</td>
<td>MK5113 (This is a single sensor switch: 2 switches are installed per cylinder)</td>
<td>Efector</td>
<td>3-Wire, 4-Pin, DC M12 X 1 (PNP)</td>
</tr>
</tbody>
</table>

ALL SWITCHES QUICK DISCONNECT

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

SOLID STATE CYLINDER SWITCH

*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.
NOT AVAILABLE WITH ADJUSTABLE STOP OPTIONS E OR S

DETENT OPTION IS A BALL SPRING PLUNGER INSTALLED IN UNIT BODY TO ASSIST WITH HOLDING THE RAM IN EXTENDED POSITION (ONLY) WITH LOSS OF AIR PRESSURE.

DETENT IS NOT DESIGNED TO HOLD GEO LOCATION WITH LOSS OF AIR PRESSURE.

DETENT OPTION WILL CAUSE VISIBLE LINES IN THE RAM'S EXTERIOR COATING.

BALL SPRING PLUNGER IS A WEAR ITEM AND WILL NEED TO BE REPLACED AT RECOMMENDED INTERVALS.

NOTE: IF RAP/RIGID COUPLER IS SWITCHED IN THE FIELD, THE BALL PLUNGER AND SET SCREW MUST BE SWITCHED TO OPPOSITE SIDES.

DETENT OPTION EFFECTIVE WEIGHT LIMIT IS 11 LBF FOR VERTICAL APPLICATIONS.

MOUNTED TOOLING MUST BE WITHIN APPROVED APPLICATION RADIUS FROM END OF RAM.
Welker UB2 Shot Pin Technical Information

**Body Mounting:** UB2 shot pin units have bidirectional mounting capability. At all mounting locations, you have the option of mounting from the top using the counter-bored clearance holes with 6mm socket head cap screws or the same holes tapped M8 from the bottom. 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" (0.05mm).

**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 adjustable and repeatable "end of stroke" conditions, see extend stop options. Rap couplings cause the unit to be less than the nominal stroke of the cylinder. The 24mm ram units have a 2mm rap. The rap allows the cylinder to accelerate without load, acting like a slide hammer. The impact of the coupler helps free tooling from a bound condition, similar to a dowel puller. Most applications using a pneumatic shot pin should have rap couplings while most hydraulic shot pin applications should use a rigid coupler. Rigid couplers must be used on all extend and retract stop units.

Welker cylinders do not require lubrication.

**Switch:** UB2 is available with solid state cylinder switch or world switch.

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

**Wear:** Defined as 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.