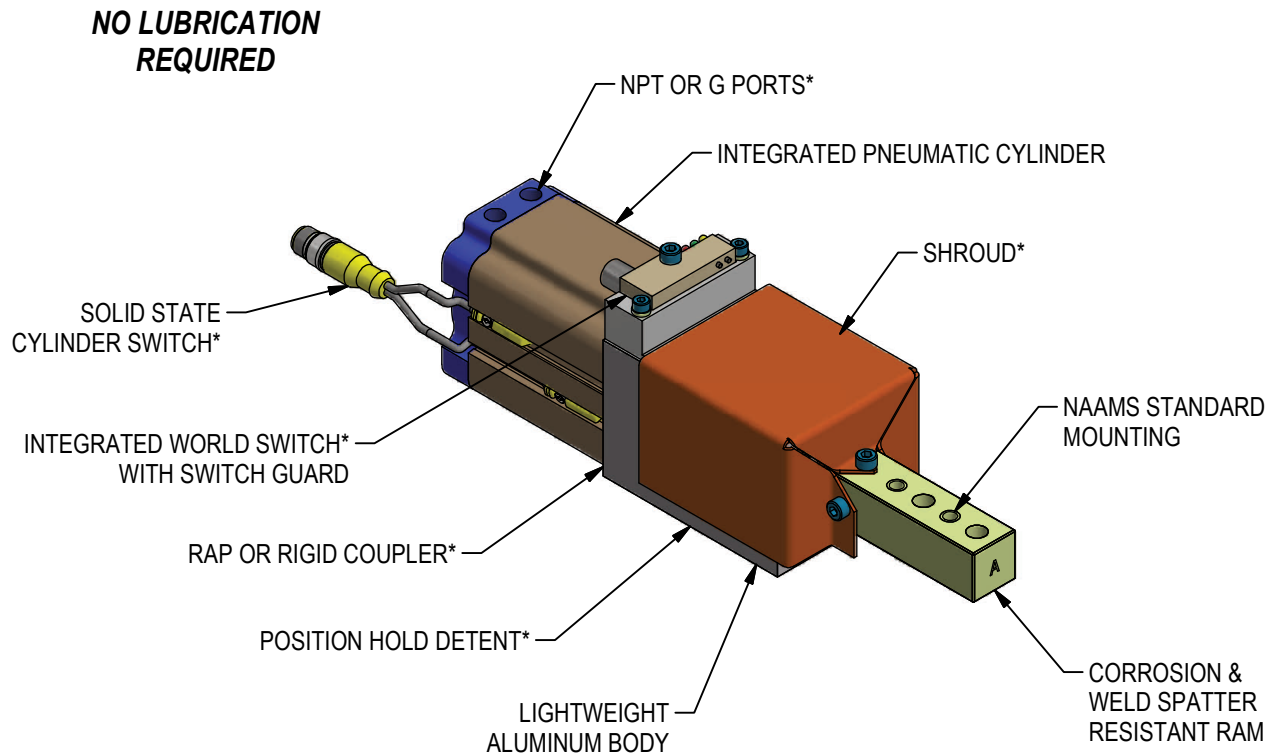


## UB2 SERIES GOLD LINE SHOT PIN



**ALUMINUM RAM UNIT AVAILABLE**

\*OPTIONAL

### SHOT PIN APPLICATIONS

RETRACTABLE LOCATING PINS  
STRAIGHT CLAMPS  
SMALL PART METERS

RELEASED 5/19/20

# ORDERING INFORMATION

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

U	B	2																		0
---	---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	---

**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

**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

**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

(DO NOT SCALE DRAWING)

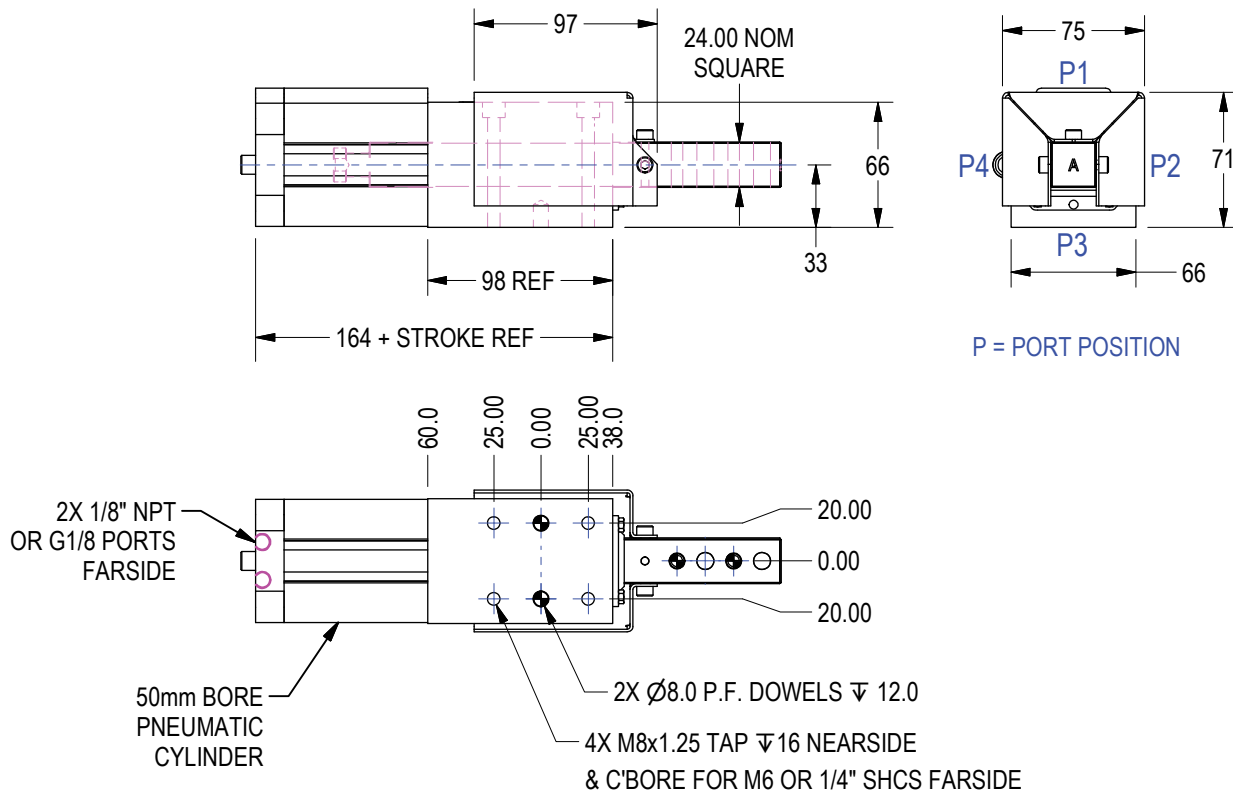


ENGINEERED PRODUCTS

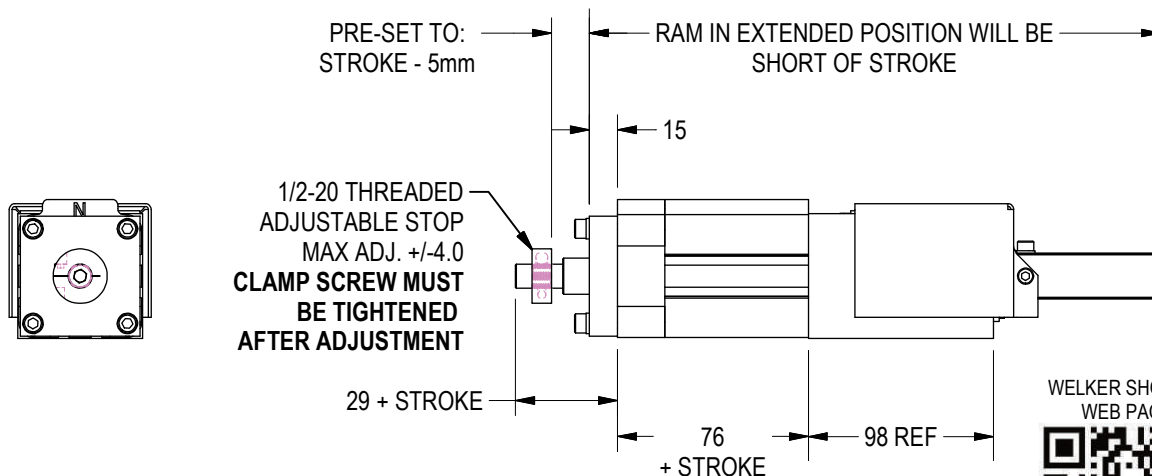
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# GENERAL DIMENSIONS

## SINGLE ROD CYLINDER



## DOUBLE ROD CYLINDER WITH EXTEND STOP "E" NOT AVAILABLE WITH DETENT OPTION



UNIT WEIGHTS (WEIGHTS SHOWN WILL VARY WITH OPTIONS)				
ACTUATOR	RAM	25mm STROKE	50mm STROKE	75mm STROKE
01/02	STEEL	6.5 LBS	7.5 LBS	8.2 LBS
01/02	ALUMINUM	4.5 LBS	5.9 LBS	6.7 LBS
03/04	STEEL	10.8 LBS	11.3 LBS	11.8 LBS
03/04	ALUMINUM	8.8 LBS	9.7 LBS	10.3 LBS

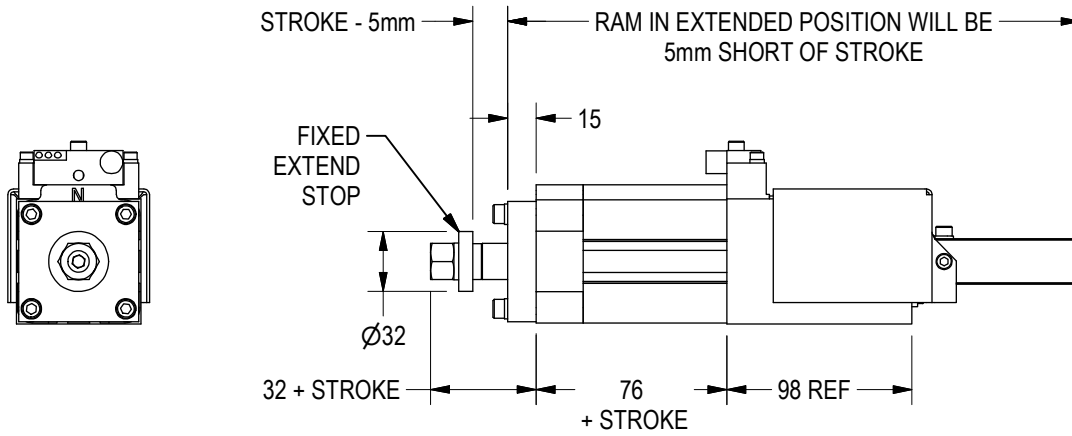
WELKER SHOT PIN  
WEB PAGE



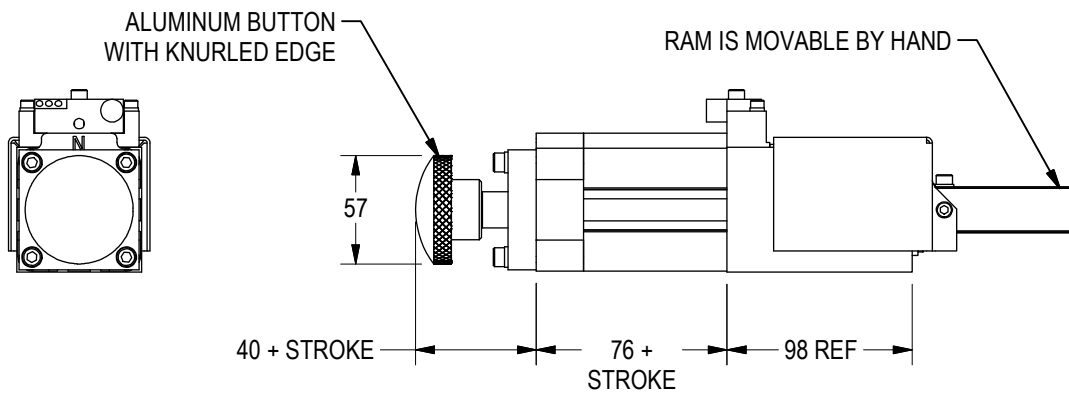
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# OPTIONS

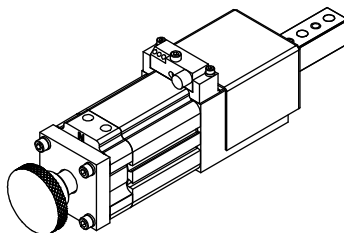
## DOUBLE ROD CYLINDER WITH EXTEND STOP "G"



## DOUBLE ROD CYLINDER WITH PALM BUTTON OPTION "P" LOOSE BODY FOR MANUAL OPERATION



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



(DO NOT SCALE DRAWING)

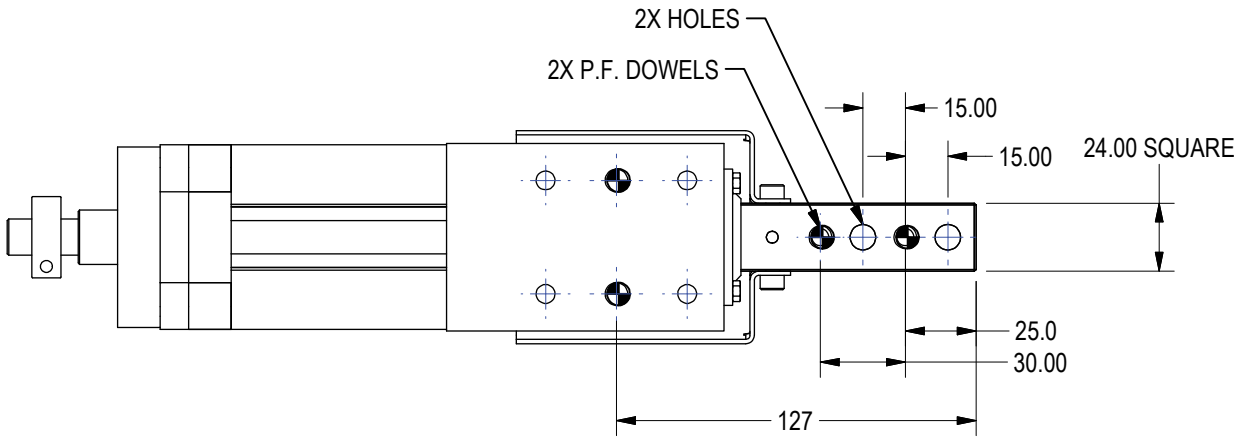
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# STANDARD RAM OPTIONS

U B 2 N 0 2 5 A 0 1 0 **D** 0 0 1 A **0** 0 0

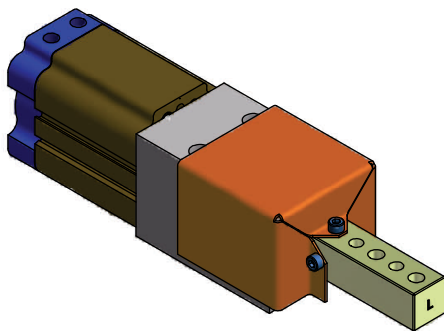
**Ram Style**  
See Chart Below

**Ram Rotation**  
0 0° Rotation (shown)  
9 90° Rotation

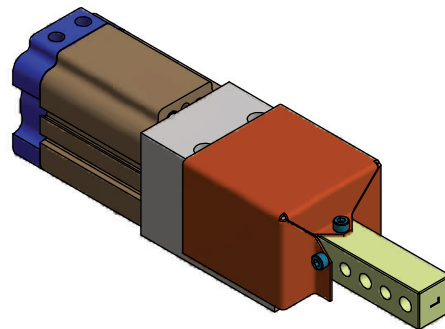


RAM STYLE	DOWELS	HOLES
D	8.0mm THRU	11.0mm THRU
L	8.0mm THRU	9.0mm THRU

SEE SUPPLEMENTAL RAM SHEET FOR NON-STANDARD OPTIONS



**0° RAM ROTATION**  
**OPTION: 0**



**90° RAM ROTATION**  
**OPTION: 9**

(DO NOT SCALE DRAWING)

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# SWITCH OPTIONS

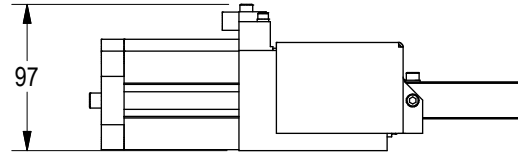
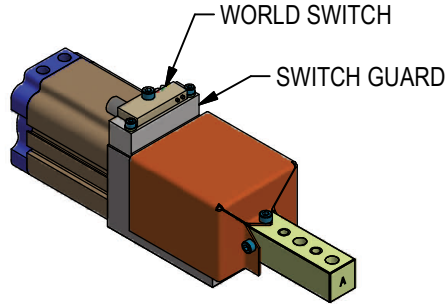
U
B
2
N
0
2
5
A
0
1
0
D
0
0
1
A
0
0
0

**Switch:** See charts below

00 No Switch

## WORLD SWITCH\*

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



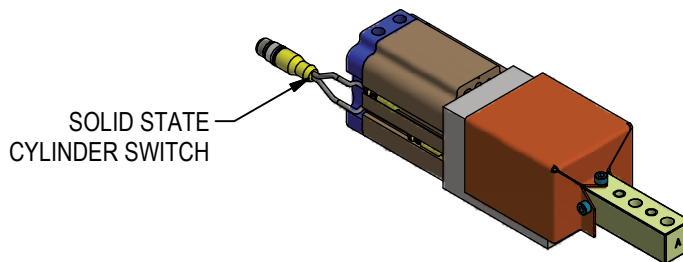
\*WORLD SWITCHES INCLUDE SWITCH GUARD

	Order Number SO1 (E)XTEND or SO1 (R)ETRACT	Part Number	Manufacturer	Description
<b>World Switches</b> <i>Note: Available with 25mm and 50mm stroke units only</i>	99	Switch Ready		Customer Supplied Switch. Prepared for switches below :
	AE or AR	Ni2-Q6.5-AP6-0.1-FS 4.4X3/S304	Turck	4-Wire, 4-Pin, DC M12 X 1 (PNP)
	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.)
	CE or CR	Ni2-Q6.5-AN6-0.1-FS 4.4X3/S304	Turck	4-Wire, 4-Pin, DC M12 X 1 (NPN)
	DE or DR	NBN2-F581-100S6-E8-V1	Pepperl & Fuchs	4-Wire, 4-Pin, DC M12 X 1 (PNP)
	JE or JR	IN5374	Efector	3-Wire, 4-Pin, DC M12 X 1 (PNP)
	ZE or ZR	WWS001A	Welker	4-Wire, 4-Pin, DC M12 X 1 (PNP)
	Order Number	Part Number	Manufacturer	Description
<b>Cylinder Switches</b>	L3	SWITCH L3 ~ Weld field immune, comparable to World Switches	Welker	4-Wire, 4-Pin, DC M12 X 1 (PNP)
	L5	MK5113 (This is a single sensor switch: 2 switches are installed per cylinder)	if m Efector	3-Wire, 4-Pin, DC M12 X 1 (NPN)

ALL SWITCHES QUICK DISCONNECT

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

## SOLID STATE CYLINDER SWITCH



(DO NOT SCALE DRAWING)



# DETENT OPTION

U
B
2
N
0
2
5
A
0
1
0
D
L
3
1
A
0
0
0

**Detent**  
(Steel ram only)

0 None  
D Detent

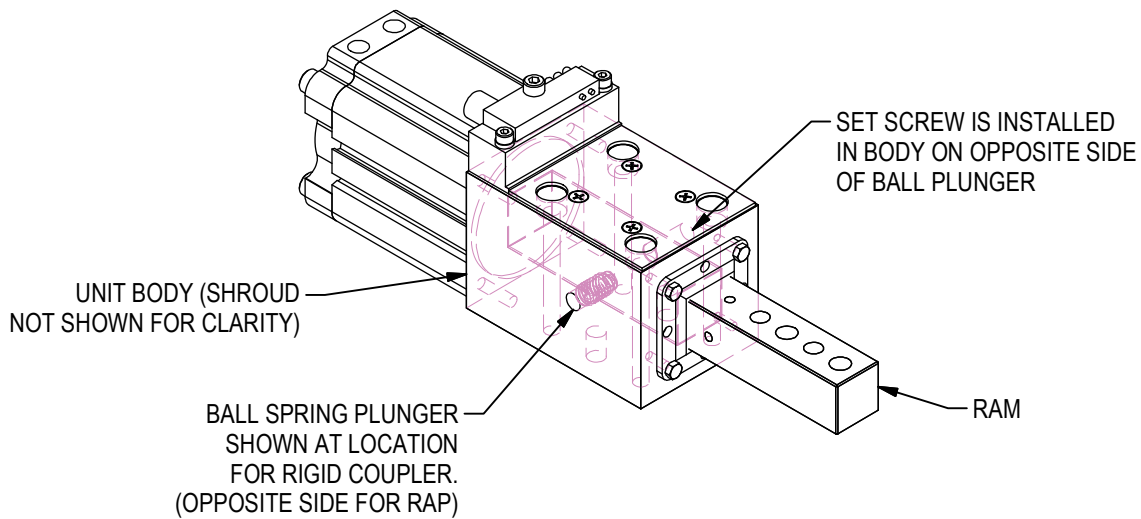
**NOT AVAILABLE WITH ADJUSTABLE STOP OPTIONS E OR S**

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.

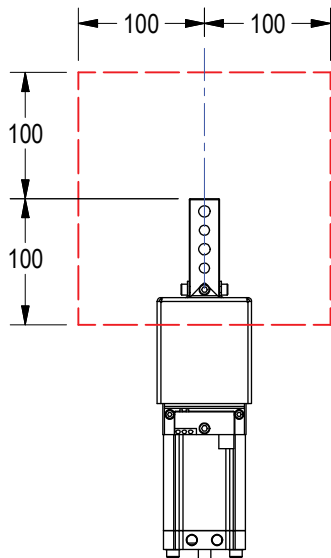
DETENT IS NOT DESIGNED TO HOLD GEO LOCATION WITH LOSS OF AIR PRESSURE.

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.

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## 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  $\pm .015"$  (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  $\pm .002"$  (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  $\pm .005"$  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.

