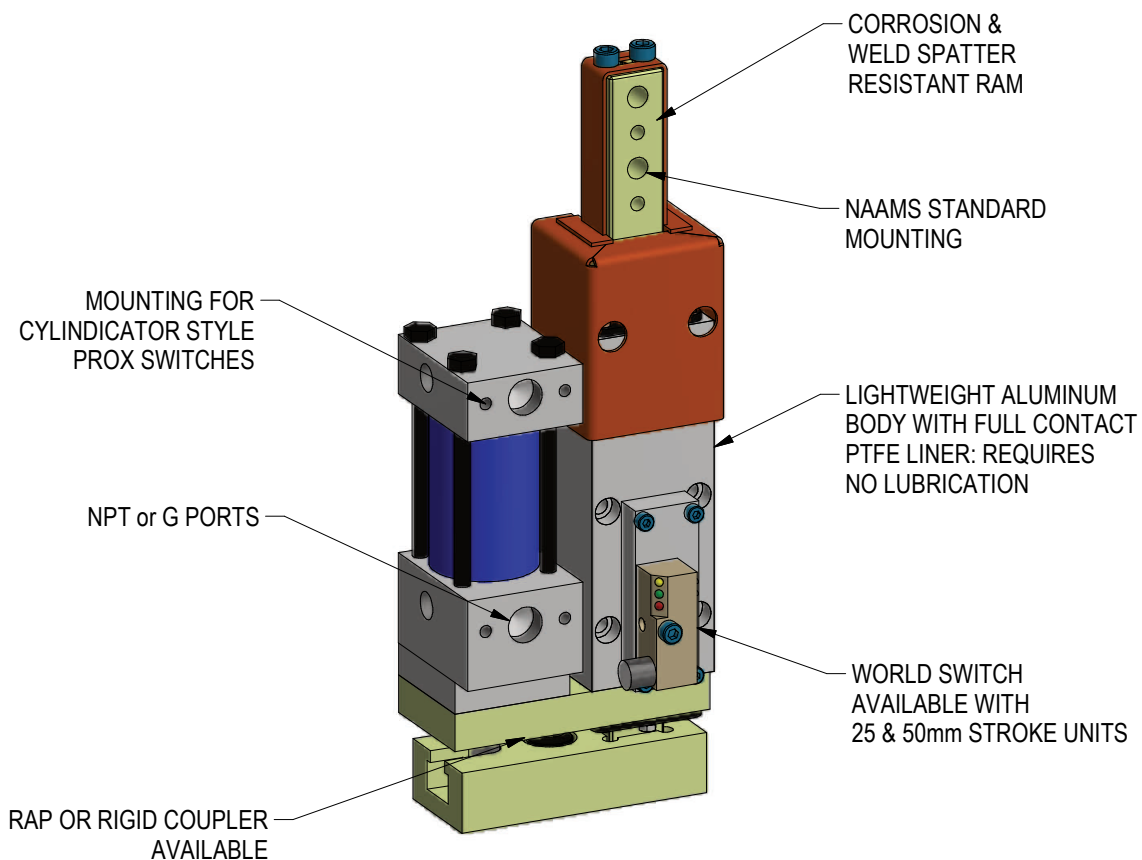


## SB2 SERIES GOLD LINE SIDE-BY-SIDE SHOT PIN



### SHOT PIN APPLICATIONS:

RETRACTABLE LOCATING PINS  
PART STOPS  
PROBE SLIDES,  
WEDGE LOCKS  
STRAIGHT CLAMPS

REVISED: 3/1/19

# ORDERING INFORMATION

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

S	B	2	N					0							
---	---	---	---	--	--	--	--	---	--	--	--	--	--	--	--

**Series**  
SB

**Ram Size**  
2 24mm square

**Stroke (Sheet 3)**  
025 025, 050, 075, 100

**Coupler**  
A Rap (shortens ram retract stroke by 2mm)  
B Rigid

**Cylinder Options (Sheet 4)**  
01 Pneumatic Single Rod (NPT Ports)  
02 Pneumatic Single Rod (G Ports)

**Ram Style (Sheet 5)**  
D 4 Hole - Large  
L 4 Hole - Medium

**Switch Options (Sheet 7)**  
00 See switch chart

**Shroud**  
0 No Shroud  
1 Shroud

**Cylinder Position (Sheet 4)**

A	C1	Prox at X1
B	C2	Prox at X1
C	C3	Prox at X1
D	C1	Prox at X2
E	C2	Prox at X2
F	C1	Prox at X3
G	C3	Prox at X3
H	C2	Prox at X4
J	C3	Prox at X4

**Ram Rotation**  
0 No Rotation  
9 90° Rotation

**Shim Whole (mm) See note**

0	None
1	1mm
2	2mm
3	3mm
4	4mm
5	5mm

**Note: Due to cylinder switch limitations, shimming past 5mm is not recommended. When "00" is ordered, a 6mm shim set will be shipped loose with all pneumatic units.**

**Shim Quarter (mm) See note**

0	None
A	0.25mm
B	0.50mm
C	0.75mm

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

(DO NOT SCALE DRAWING)

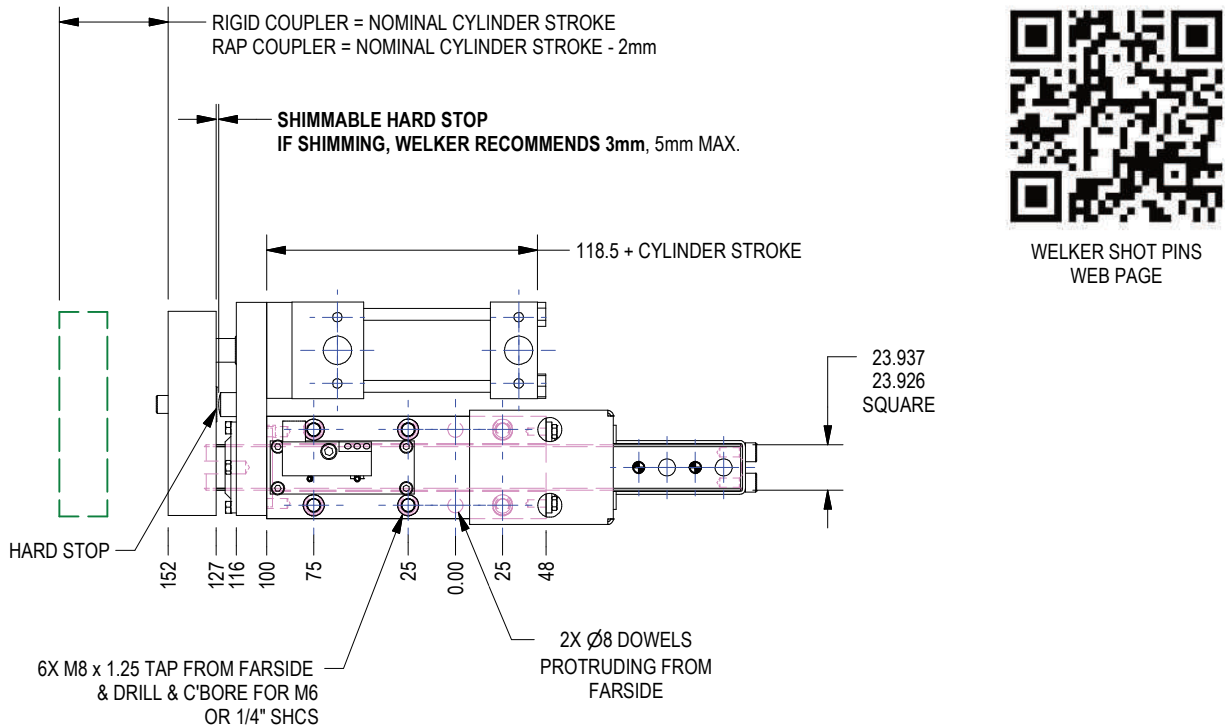


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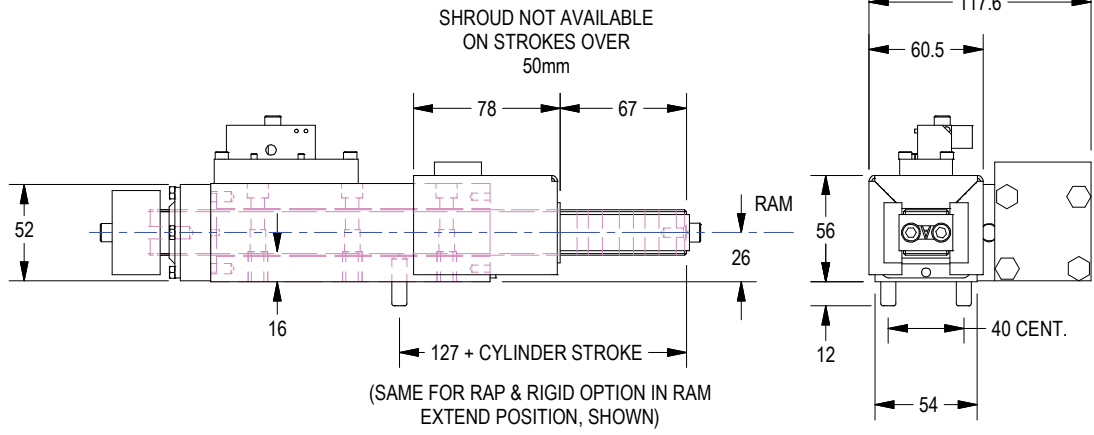
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# GENERAL DIMENSIONS

ON SB SERIES SHOT PINS THE DIMENSION FOR RAM EXTEND POSITION IS THE SAME FOR RAP OR RIGID OPTION.  
 REMOVAL OF RIGID COUPLER CONVERTS UNIT TO RAP OPTION. SEE WEBSITE FOR DATA SHEET AND VIDEO [www.welkerproducts.com](http://www.welkerproducts.com)  
 SB2 RAP OPTION SHORTENS RAM RETRACT BY 2mm.



WELKER SHOT PINS  
 WEB PAGE



**REQUIRES A MIN 5.5 BAR (80 PSI)**

SHOT PIN WEIGHT BY STROKE			
25mm	50mm	75mm	100mm
11.1 lbs	11.9 lbs	12.2 lbs	12.9 lbs

(DO NOT SCALE DRAWING)

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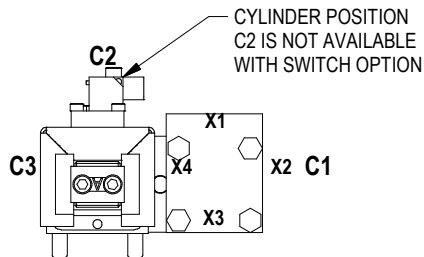
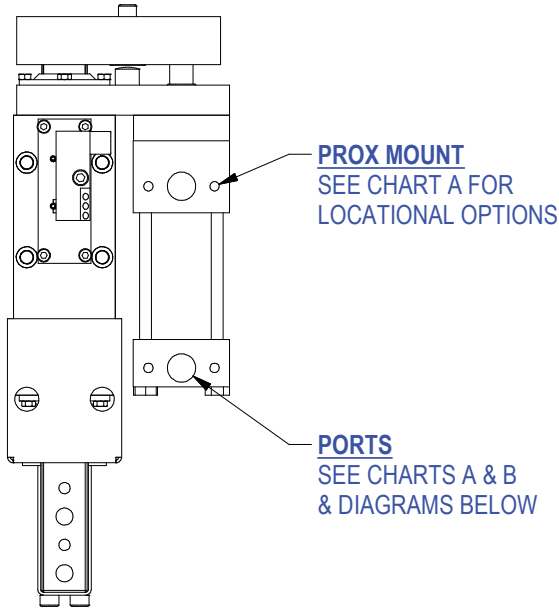
# CYLINDER INFORMATION

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

**Ram Size**  
2 24mm square

**Cylinder Options**  
01 Pneumatic Single Rod (NPT Ports)  
02 Pneumatic Single Rod (G Ports)

**Cylinder Position**  
See Cylinder Position Chart A Below



SEE DIAGRAMS BELOW FOR EXAMPLES OF PROX/PORTS OF ALL CYLINDERS

## CHART A

Code	Cylinder & Port/Prox Location
A	C1 & X1 (shown)
B	C2 & X1
C	C3 & X1
D	C1 & X2
E	C2 & X2
F	C1 & X3
G	C3 & X3
H	C2 & X4
J	C3 & X4

Select the position of the cylinder (C1, C2 or C3)  
The X position for this cylinder is the PROX location, select this value (X1 thru X4).  
If ordering with world switch option, cylinder position C2 is not available. Find the preferred combination code in Chart A.

## CHART B

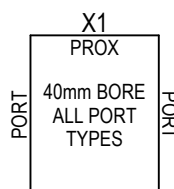
Nominal Ram	Pneumatic Bore	Pneumatic Port Size	Prox Port Reed Depth
24	*40	1/4" NPT or G1/4	26mm

\* REQUIRES A MINIMUM OF 5.5 BAR (80 PSI)

FLOW CONTROLS NOT REQUIRED

### "NPT & ALL 40mm BORE PORT TYPES"

X1 OPTION DESIGNATES LOCATION OF THE PROX. TO ROTATE THE PROX LOCATION 90° CLOCKWISE, ORDER THE X2 OPTION, OTHER ROTATIONS AVAILABLE (SEE CHART A).



(DO NOT SCALE DRAWING)



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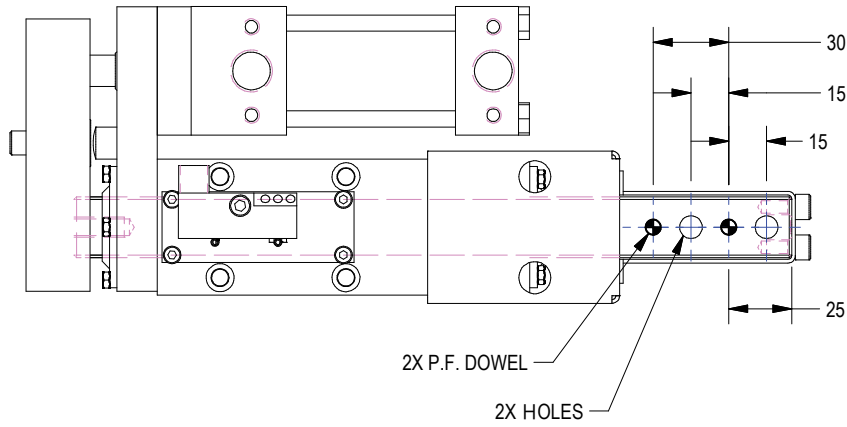
# RAM OPTIONS

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

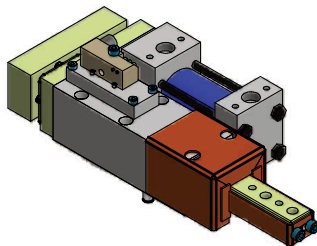
**Ram Size**  
2 24mm square

**Ram Style**  
See chart

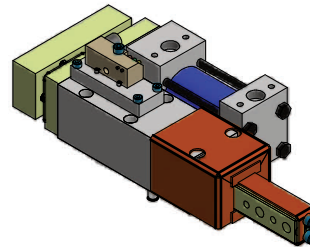
**Ram Rotation**  
0 No Rotation  
9 90° Rotation



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



**0° RAM ROTATION**  
OPTION "0"



**90° RAM ROTATION**  
OPTION "9"

(DO NOT SCALE DRAWING)



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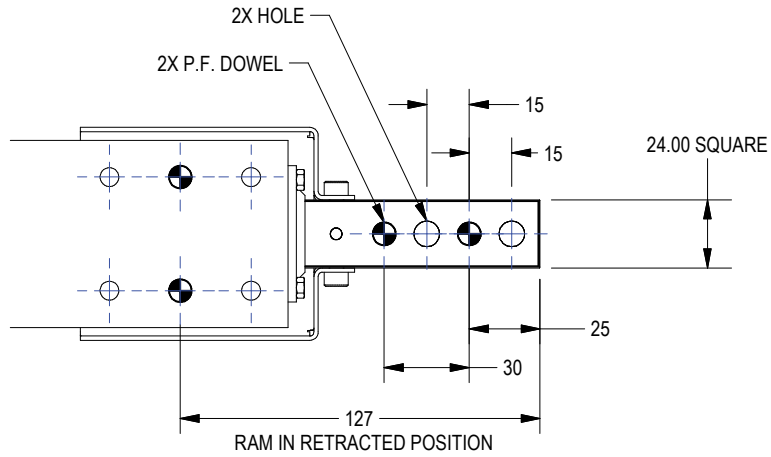
# SB2 SUPPLEMENTAL RAM OPTIONS

SPECIAL ORDER ONLY - NOT SUBJECT TO STANDARD PRICE OR DELIVERY

S B 2 N 0 2 5 A 0 1 0 A 0 0 1 A 0 0 0

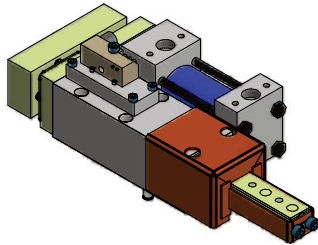
**Ram Style**  
See Chart Below

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

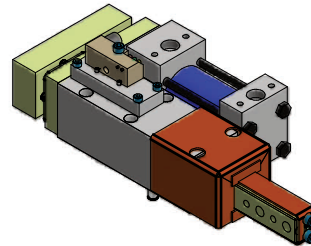


RAM STYLE	DOWELS	HOLES
A	6.0 THRU	9.0 THRU
D*	8.0 THRU	11.0 THRU
E	6.0 THRU	M8 TAPS
G	8.0 THRU	M10 TAP THRU
J	10.0 THRU	11.0 THRU
L*	8.0 THRU	9.0 THRU
M	8.0 THRU	M8 TAP THRU
N	10.0 THRU	M10 TAP THRU

\*STANDARD RAM



**0° RAM ROTATION**  
**OPTION: 0**



**90° RAM ROTATION**  
**OPTION: 9**

(DO NOT SCALE DRAWING)



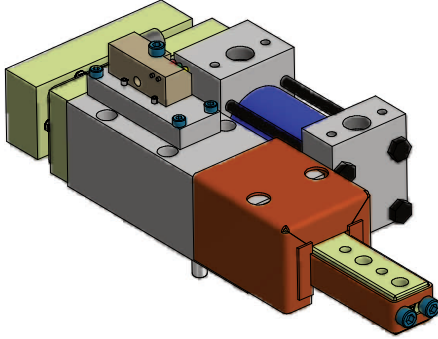
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# SWITCH OPTIONS

SB
2
N
025
A
01
0
D
DE
1
A
0
00

**Switch**  
00 See Chart Below



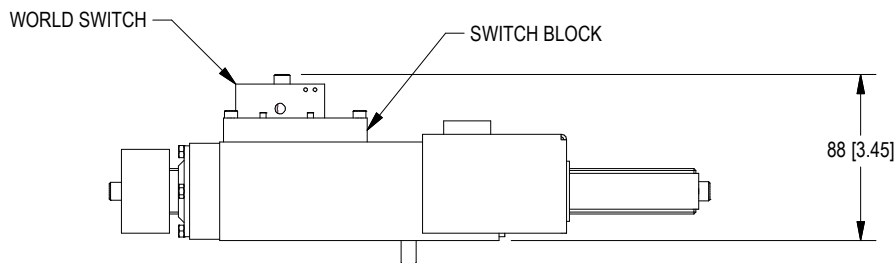
**NOTES:**

**THE WORLD SWITCH CAN ONLY BE USED WITH 25mm & 50mm STROKES.**

**CYLINDER POSITION C2 IS NOT AVAILABLE WITH SWITCH**

	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</i>	<b>99</b>	Switch Ready		Customer Supplied Sw itch. Prepared for sw itches below :
	<b>AE or AR</b>	Ni2-Q6.5-AP6-0.1-FS 4.4X3/S304	Turck	4-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect
	<b>BE or BR</b>	Ni2-Q6.5-ADZ32-0.1-FSB 5.4X4/S304	Turck	4-Wire, 5-Pin, AC/DC 1/2-20 (N.O.) Quick Disconnect
	<b>DE or DR</b>	NBN2-F581-100S6-E8-V1	Pepperl & Fuchs	4-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect
	<b>JE or JR</b>	IN5374	Eector	3-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect

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



(DO NOT SCALE DRAWING)

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# WELKER SB2 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 .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 units have a 2mm 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:** 24mm ram tie rod cylinders use prox switch (cylindicator) ports with 1.025" read depth (probe length). World switches are available.

**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.

