SB4 & SB6 SERIES GOLD LINE
SIDE-BY-SIDE SHOT PINS

STEEL RAM WITH WEAR RESISTANT COATING

NAAMS STANDARD MOUNTING

MOUNTING FOR CYLINDICATOR STYLE PROX SWITCHES (NOT INCLUDED)

NPT or G PORTS

LIGHTWEIGHT ALUMINUM BODY

FULL CONTACT FILLED PTFE LINER REQUIRES NO LUBRICATION

RAP OR RIGID COUPLER AVAILABLE
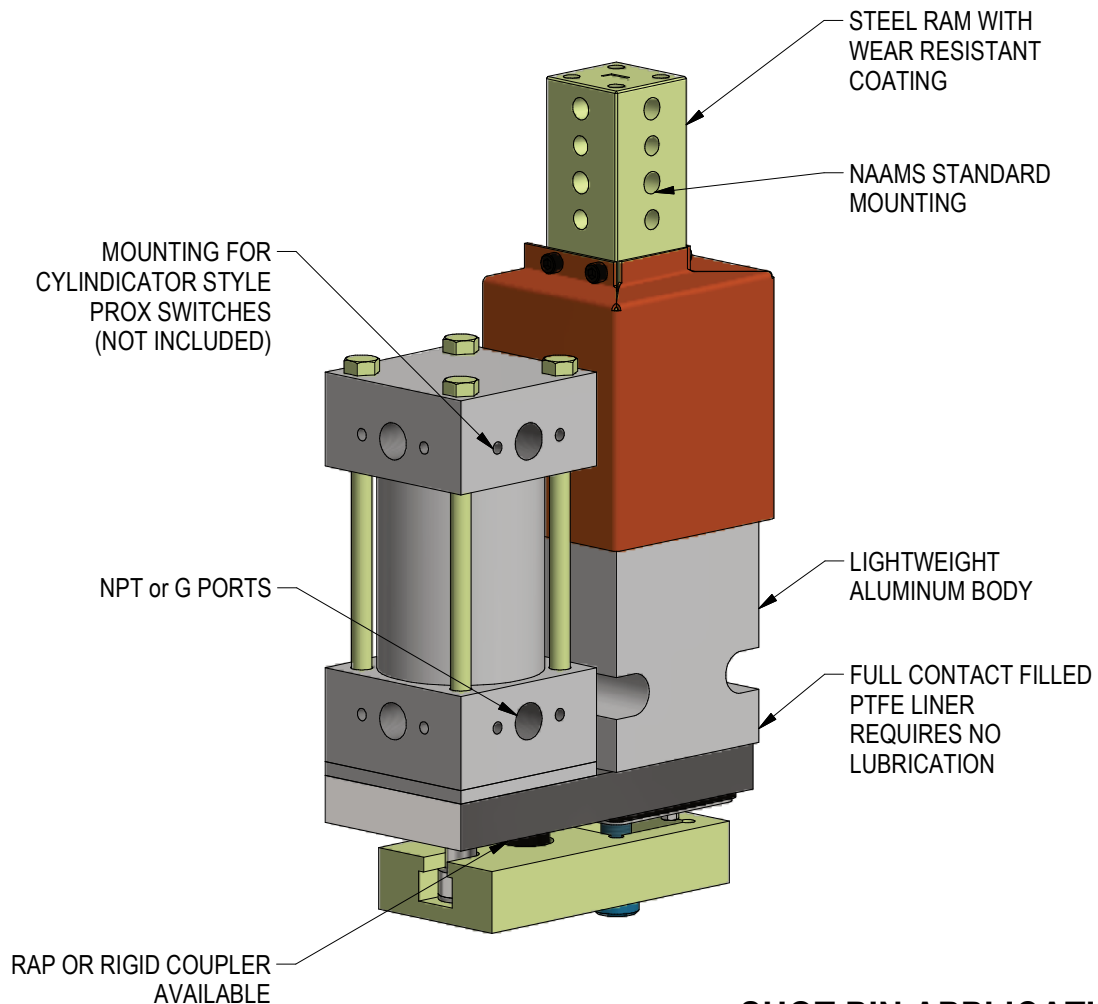
SHOT PIN APPLICATIONS:

RETRACTABLE LOCATING PINS
PART STOPS
PROBE SLIDES
WEDGE LOCKS
STRAIGHT CLAMPS

REVISED: 3/30/21

ORDERING INFORMATION

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

| S | B | | N | | | | | 0 | | 0 | 0 | | | 0 | | |

Ram Size
- **4** — 40mm square
- **6** — 60mm square

Stroke
- **025** — 025, 050, 075, 100, 125, 150, 175, 200

Coupler
- **A** — Rap: shortens ram retract stroke by 2mm on SB4 shortens ram retract stroke by 3mm on SB6
- **B** — Rigid

Cylinder Options
- **01** — Pneumatic Single Rod (NPT Ports)
- **02** — Pneumatic Single Rod (G Ports)
- **13** — Pneumatic Single Rod Locking Cylinder (NPT ports)
- **14** — Pneumatic Single Rod Locking Cylinder (G ports)

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

Shroud
- **0** — No Shroud
- **1** — Shroud

Cylinder Position
- **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

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)
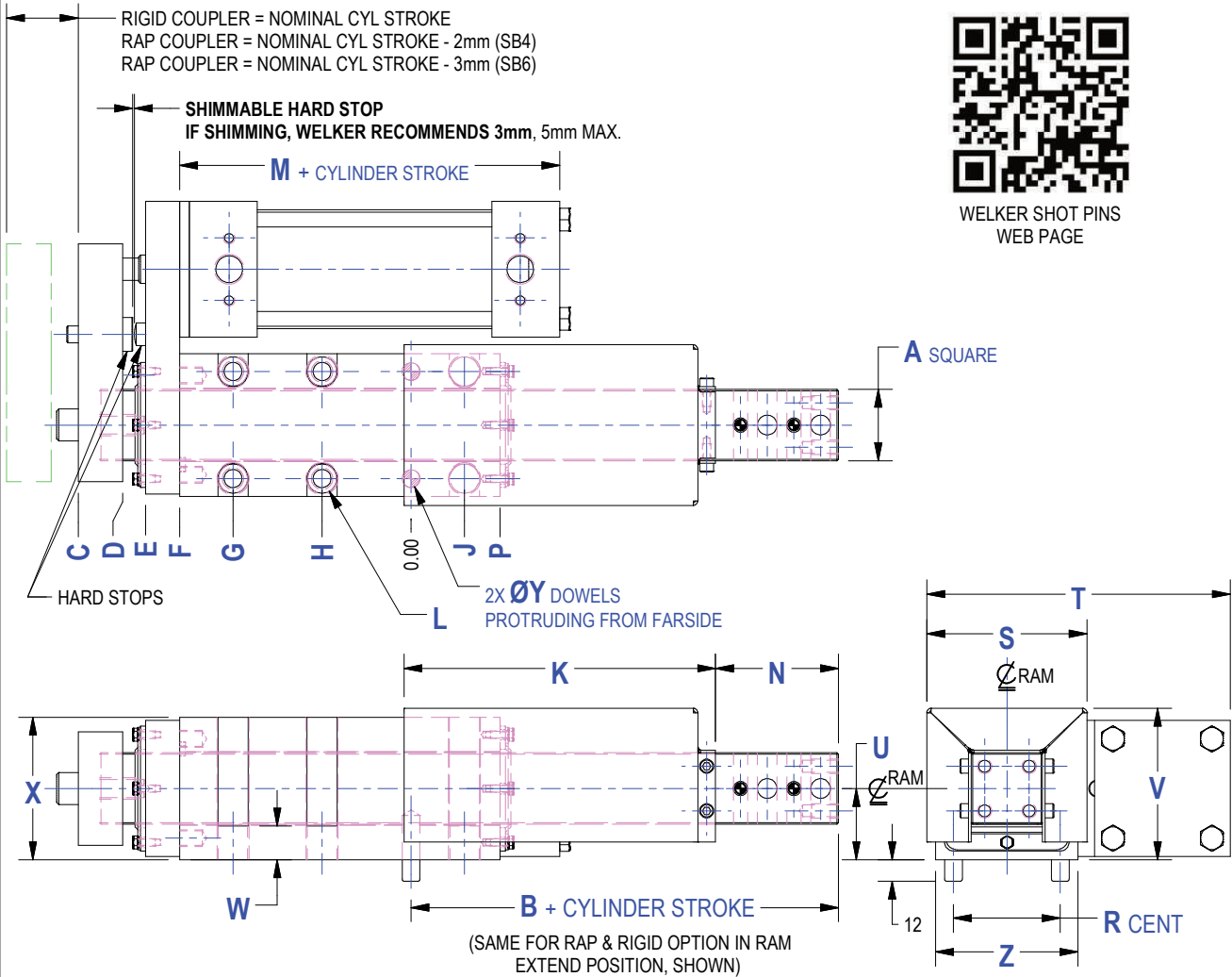
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SHEET 2

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GENERAL DIMENSIONS

ON SB SERIES SHOT PINS THE RAM EXTEND POSITION (DIM B + STROKE) 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
SB4 RAP OPTION SHORTENS RAM RETRACT BY 2mm. SB6 RAP OPTION SHORTENS RAM RETRACT BY 3mm

RIGID COUPLER = NOMINAL CYL STROKE
RAP COUPLER = NOMINAL CYL STROKE - 2mm (SB4)
RAP COUPLER = NOMINAL CYL STROKE - 3mm (SB6)

SHIMMABLE HARD STOP
IF SHIMMING, WELKER RECOMMENDS 3mm, 5mm MAX.

M + CYLINDER STROKE

A SQUARE

WELKER SHOT PINS
WEB PAGE

C D E F G H J P
HARD STOPS
L
0.00
2X **ØY** DOWELS
PROTRUDING FROM FARSIDE

K **N**
X ₵ RAM **U** ₵ RAM **V**
W
B + CYLINDER STROKE
(SAME FOR RAP & RIGID OPTION IN RAM
EXTEND POSITION, SHOWN)
12 **Z** **R** CENT
T **S**

Series	Strokes (25mm increments)	Nominal Ram	A	B	C	D	E	F	G	H	J	K	L
SB4	25, 50	40	39.997 / 39.987	140	137	112	99	80	N/A	50	30	110	4X M12 x 1.75 Tap thru & Ø17.0 C'Bore as shown for M10 or 3/8"
SB4	75	40	39.997 / 39.987	140	187	162	149	130	100	50	30	110	6X M12 x 1.75 Tap thru & Ø17.0 C'Bore as shown for M10 or 3/8"
SB4	100	40	39.997 / 39.987	140	187	162	149	130	100	50	30	175	6X M12 x 1.75 Tap thru & Ø17.0 C'Bore as shown for M10 or 3/8"
SB4	125	40	39.997 / 39.987	140	287	262	249	230	150	50	30	175	6X M12 x 1.75 Tap thru & Ø17.0 C'Bore as shown for M10 or 3/8"
SB4	150-200	40	39.997 / 39.987	140	287	262	249	230	150	50	30	230	6X M12 x 1.75 Tap thru & Ø17.0 C'Bore as shown for M10 or 3/8"
SB6	25-200	60	60.000 / 59.987	200	303	265	249	230	180	60	60	280	6X M12 x 1.75 Tap thru & Ø17.0 C'Bore as shown for M10 or 3/8"

	M	N	P	R	S	T	U	V	W	X	Y	Z
SB4	113.6	69	50	60	90	170.4	40	85	19	80	10	80
SB6	127.9	70	90	100	135	255.4	60	127	30	120	12	120

SHOT PIN UNIT WEIGHT PER STROKE								
UNIT	25	50	75	100	125	150	175	200
SB4	23.9 lbs	25.1 lbs	27.7 lbs	30.6 lbs	37.3 lbs	38.8 lbs	40.0 lbs	41.2 lbs
SB6	100.6 lbs	103.3 lbs	106.0 lbs	108.9 lbs	112.8 lbs	115.5 lbs	118.0 lbs	120. 7 lbs

SHEET 3

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STROKE OPTIONS

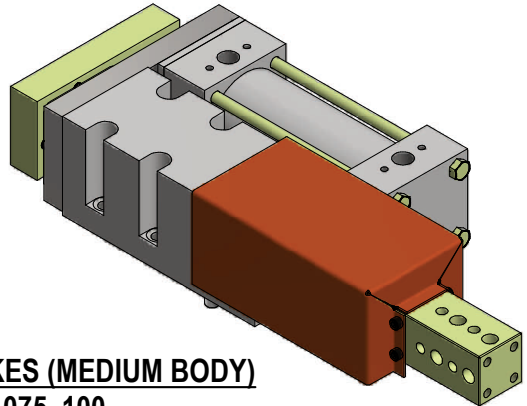| S	B	4	N	0	2	5	A	0	1	0	D	0	0	1	A	0	0	0

Ram Size
4   **4** (40mm square)
6   **6** (60mm square)

Stroke
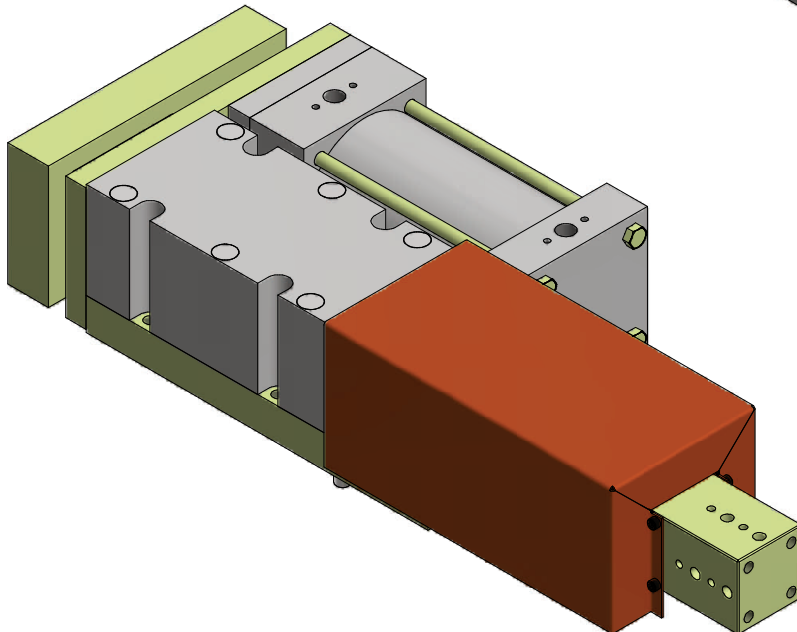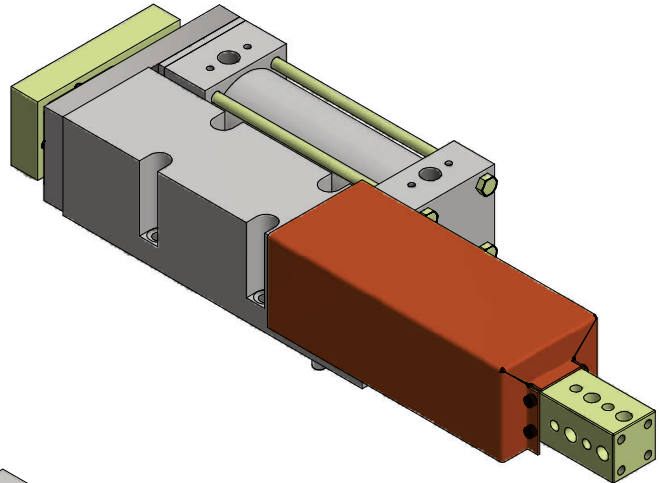**025** 025, 050, 075, 100, 125, 150, 175, 200
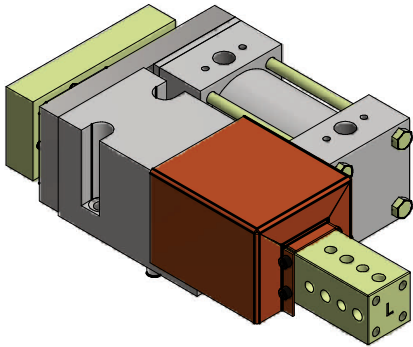
SB4 STROKES (SHORT BODY)
025, 050

SB4 STROKES (MEDIUM BODY)
075, 100

SB4 STROKES (LONG BODY)
125, 150, 175, 200

SB6 STROKES
025, 050, 075, 100, 125, 150, 175, 200

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SHEET 4

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CYLINDER INFORMATION

| S | B | **4** | N | 0 | 2 | 5 | A | **0** | **1** | 0 | D | 0 | 0 | 1 | **A** | 0 | 0 | 0 |

Ram Size
4   40mm square
6   60mm square

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

Cylinder Position
See Cylinder Position
Chart A Below
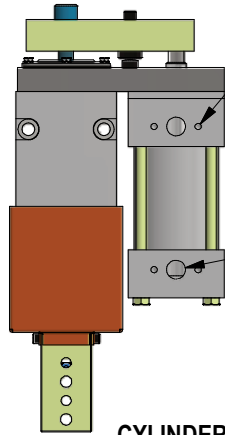
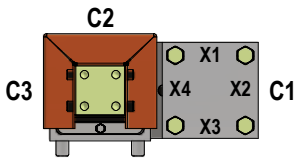
PROX* MOUNTS
LOCATED ON
NON-PORT SIDES

*CYLINDICATOR STYLE
PROX SWITCHES ARE
NOT INCLUDED*

PORTS
SEE CHARTS A, B &
DIAGRAMS BELOW

CYLINDER POSITIONS: C1, C2, or C3
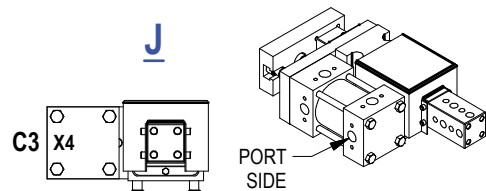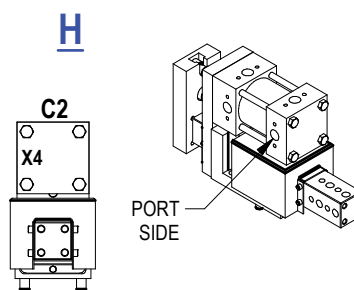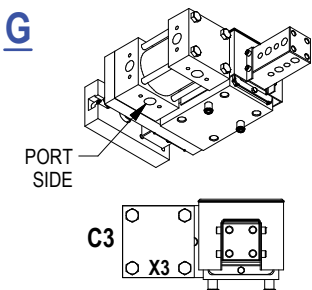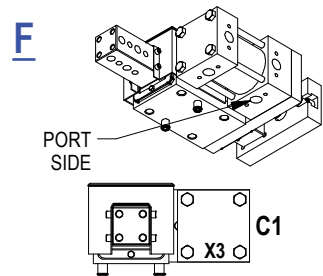**PORT LOCATIONS: X1, X2, X3, or X4**

CHART A

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

CHART B

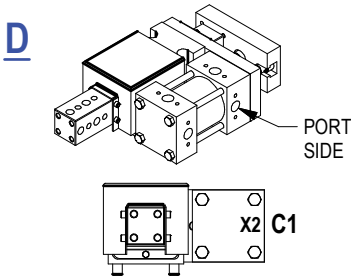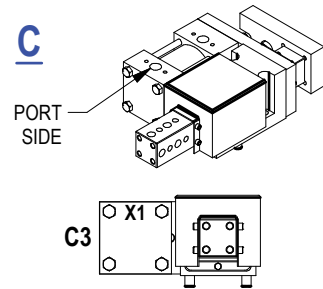| UNIT	Nominal Ram	Pneumatic Bore	Pneumatic Port Size	Prox* Port Read Depth
SB4	40	63	3/8" NPT or G3/8	26mm
SB6	60	100	1/2" NPT or G1/2	32mm

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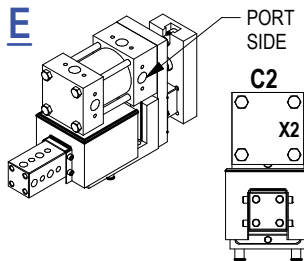
A

B

C

D

E

F

G

H

J

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SHEET 5

SB LOCKING CYLINDER INFORMATION

| S | B | **6** | N | 0 | 2 | 5 | A | **1** | **3** | 0 | D | 0 | 0 | 1 | **A** | 0 | 0 | 0 |

Ram Size
4   40mm square
6   60mm square

Cylinder Options
13   Pneumatic Single Rod Locking Cylinder (NPT Ports)
14   Pneumatic Single Rod Locking Cylinder (G Ports)

Cylinder Position
See Cylinder Position
Chart A Below

180 + STROKE (SB4)
235 + STROKE (SB6)

PORTS
SEE CHARTS A & B
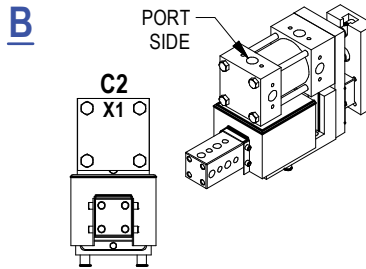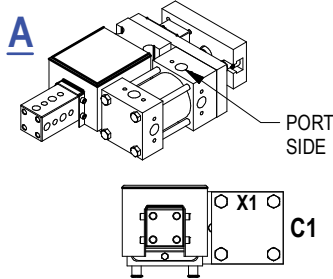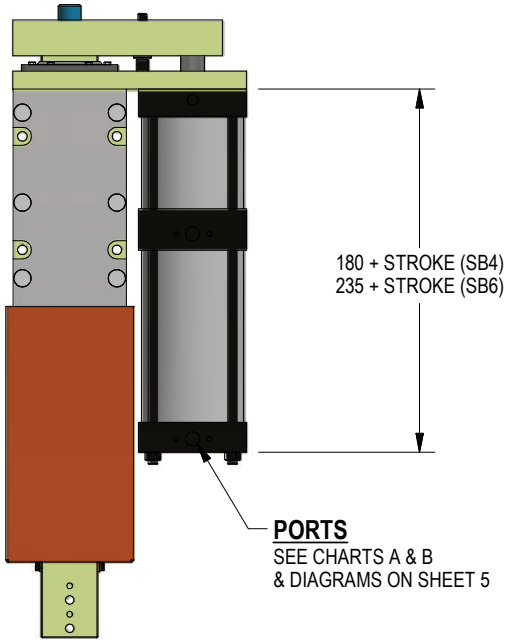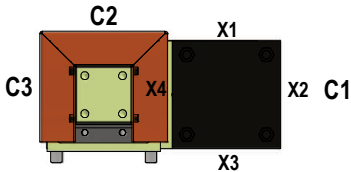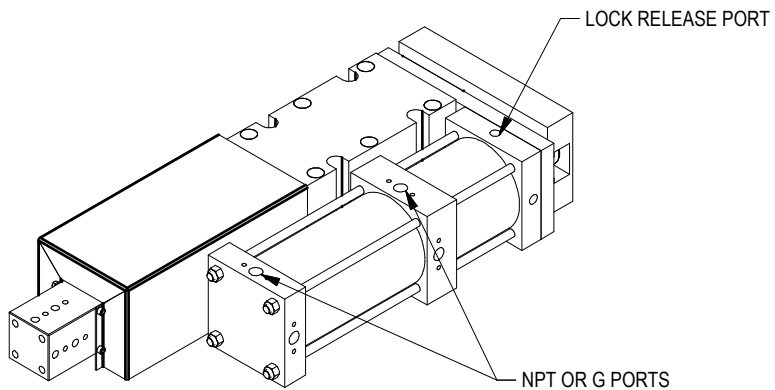& DIAGRAMS ON SHEET 5

C2
C3
X1
X4
X2 C1
X3

CHART A

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

*SEE DIAGRAMS ON SHEET 5
FOR CYLINDER & PORT LOCATIONS*

CHART B

UNIT	Nominal Ram	Pneumatic Bore	Pneumatic Port Size	Lock Release Port
SB4	40	63	3/8" NPT or G3/8	1/8" NPT or G1/8
SB6	60	100	1/2" NPT or G1/2	1/4" NPT or G1/4

LOCK RELEASE PORT

NPT OR G PORTS

UNIT WEIGHTS IN LBS. (WEIGHTS SHOWN ARE APPROXIMATE, VARY WITH OPTIONS)								
STROKE:	25mm	50mm	75mm	100mm	125mm	150mm	175mm	200mm
SB4	26.6	27.8	30.4	36	40	41.5	42.7	43.9
SB6	110.4	113.1	115.8	118.7	122.6	125.3	127.8	130.5

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

MINIMUM LOCK RELEASE PRESSURE: 60 PSI

SHEET 6

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STANDARD RAM OPTIONS
(See supplemental ram sheet for non-standard ram options)

| S B | 4 | N | 0 2 5 | A | 0 1 0 | D | 0 0 1 | A | 0 | 0 0 |

Ram Size
4　40mm square
6　60mm square

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

4X Ø **H** P.F. DOWEL ~ RAM STYLE "D"
4X Ø **G** P.F. DOWEL ~ RAM STYLE "L"

4X Ø **F** THRU ~ RAM STYLE "D"
4X Ø **E** THRU ~ RAM STYLE "L"

C
B
D　**A**
J CENT
J CENT
4X **K** TAP
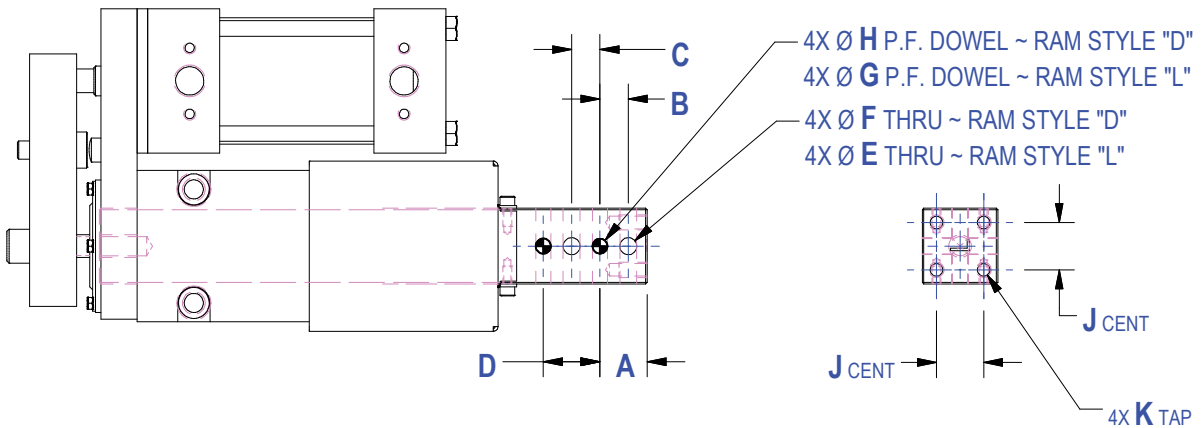
Series	Nominal Ram	A	B	C	D	ØE	ØF	ØG	ØH	J	K
SB4	40	25	15	15	30	9.0	11.0	8.0 THRU	8.0 THRU	25	M8 X 1.25 - 15 DEEP
SB6	60	25	15	15	30	9.0	11.0	8.0 X 16 DEEP	8.0 THRU	40	M10 X 1.5 - 20 DEEP

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WELKER SB SERIES 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 dowesl 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" (0.05mm).**

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. The 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. Rap coupler not available on hydraulic units.

Welker cylinders do not require lubrication.

Switch: 40mm ram tie rod cylinders use prox switch (cylindicator) ports with 1.025" read depth (probe length). 60mm ram tie rod cylinders have prox switch (cylindicator) ports with 1.250" read depth (probe length). *Prox switches (cylindicators) are NOT included.* Shot pins ordered with compact cylinders are cylinder switch ready. Cylinder switches are available though Welker. World switches are available through Welker for shot pins offering world switch capability.

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.

MOUNTED TOOLING MUST BE WITHIN
APPROVED APPLICATION RADIUS
FROM END OF RAM:
100 lbf @ R = 150.0mm (6.0") 40 RAM
250 lbf @ R = 200.0mm (8.0") 60 RAM

±0.13 (±.005") MAX
DEFLECTION AT END OF RAM
UP TO THE FOLLOWING STROKES:
40mm RAM: 75mm STROKE
60mm RAM: 100mm STROKE

MOUNTED TOOLING MUST BE WITHIN
APPROVED APPLICATION DISTANCE
FROM CENTER OF UNIT BODY
AND END OF RAM:
100 lbf @ D = 150.0mm (6.0") 40 RAM
250 lbf @ D = 200.0mm (8.0") 60 RAM

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