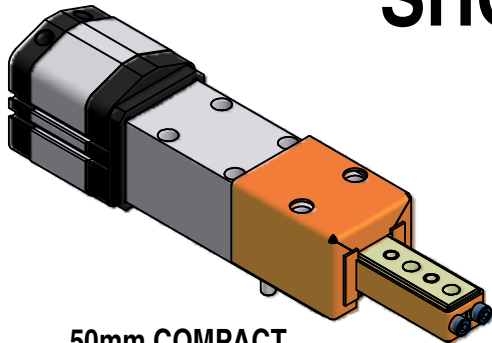
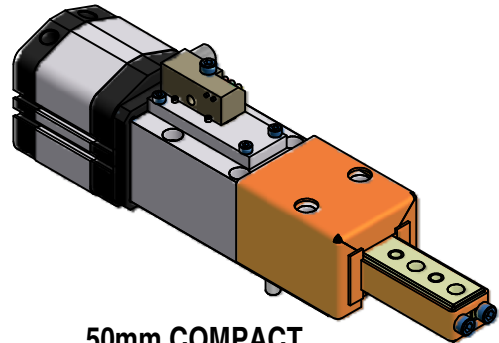


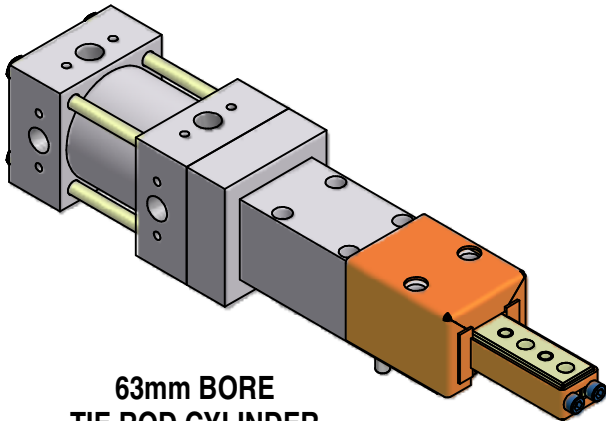
WP2 SERIES *GOLD LINE* SHOT PINS



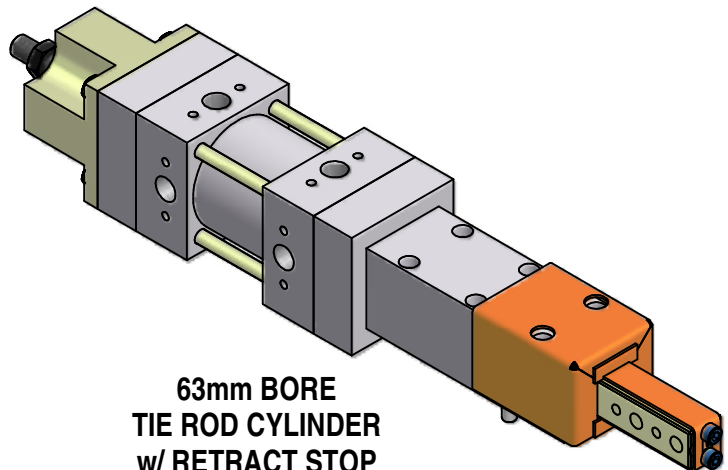
50mm COMPACT
CYLINDER



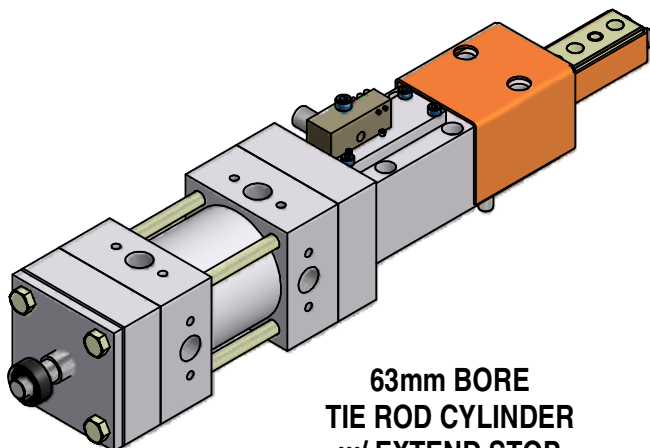
50mm COMPACT
CYLINDER
w/ WORLD SWITCH



63mm BORE
TIE ROD CYLINDER



63mm BORE
TIE ROD CYLINDER
w/ RETRACT STOP
RAM SHOWN 90°



63mm BORE
TIE ROD CYLINDER
w/ EXTEND STOP
& WORLD SWITCH

REVISED: 11/10/2009

ORDERING INFORMATION

WP
2
N
025
A
01
0
D
00
1
A
0
00

Series

WP

Ram Size

2 24mm square

Stroke

025 025, 050

Coupler

A Rap (shortens nominal cylinder stroke by 2mm)
 B Rigid

Cylinder Options (Sheet 3/5)

(See Chart Below)

Stop Options (Sheet 5)

0 None
 E Extend Stop
 R Retract Stop
 (E or R Req's requires double rod cylinder Not Available on Cylinder 31 & 31)

Ram Style (Sheet 6)

D 4 Hole - Large
 L 4 Hole - Medium
 (see supplemental ram sheet for other non-standard ram options)

Switch Options (Sheet 7)

(See Switch Charts on Page 7)

Shroud

0 No Shroud
 1 Shroud

Cylinder Prox (or "G" Port) Position (Sheet 3)

A X1 Position
 B X2 Position
 C X3 Position
 D X4 Position

Ram Rotation (Sheet 6)

0 0° Rotation
 9 90° Rotation

Standard Options - All other options may affect price and delivery

WP2 Cylinder Options

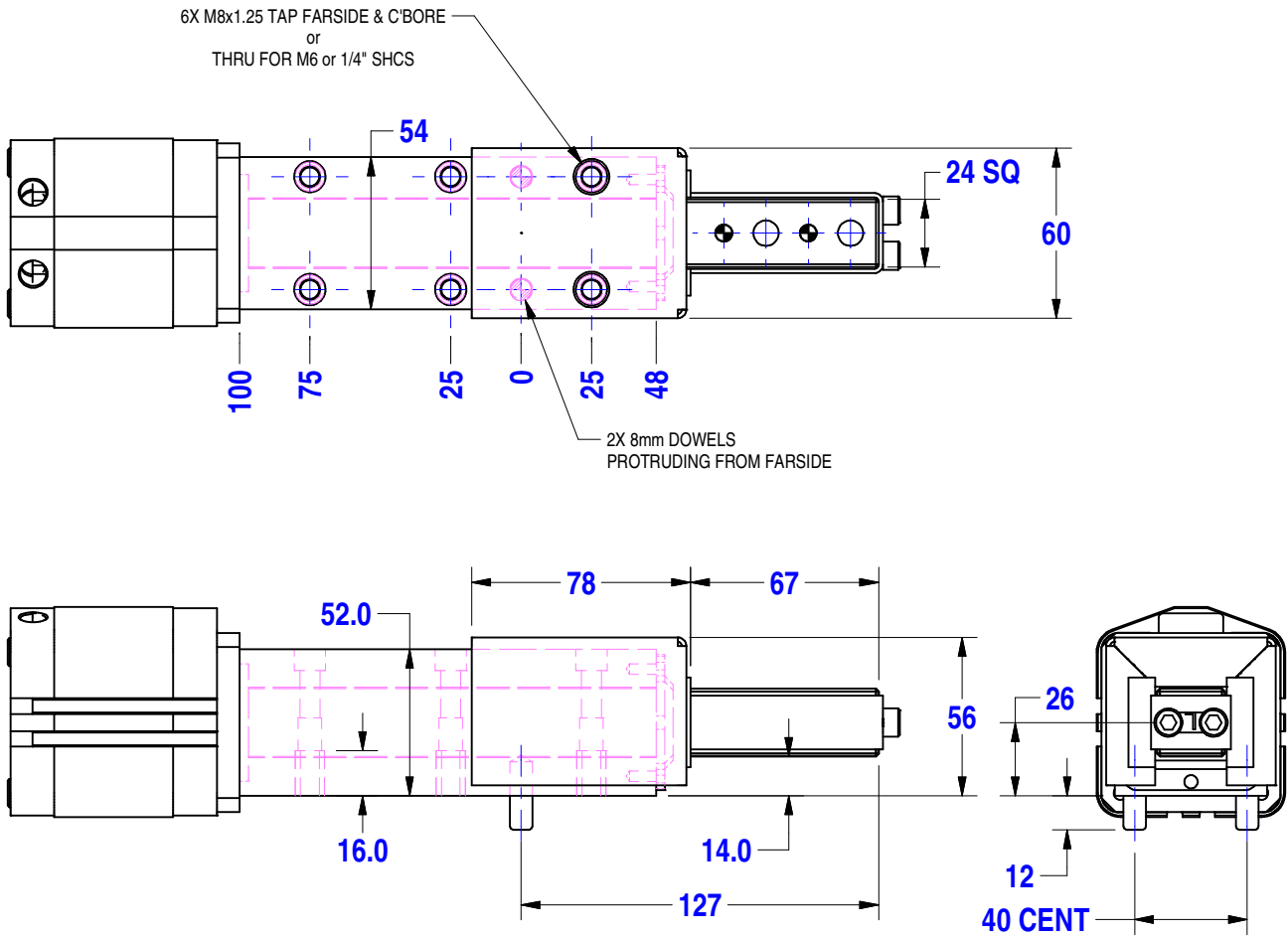
- 30 Pneumatic - 50mm Compact - Single Rod (NPT Ports)
- 31 Pneumatic - 50mm Compact - Single Rod (G Ports)
- 01 Pneumatic - 63mm Bore Tie Rod - Single Rod (NPT Ports)
- 02 Pneumatic - 63mm Bore Tie Rod - Single Rod (G Ports)
- 03 Pneumatic - 63mm Bore Tie Rod - Double Rod (NPT Ports)
- 04 Pneumatic - 63mm Bore Tie Rod - Double Rod (G Ports)

(DO NOT SCALE DRAWING)



ENGINEERED PRODUCTS

GENERAL DIMENSIONS



(DO NOT SCALE DRAWING)



ENGINEERED PRODUCTS

CYLINDER INFORMATION

W P 2 N 0 2 5 A **0 1** 0 D 0 0 1 **A** 0 0 0

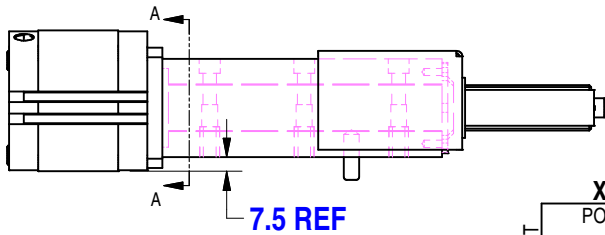
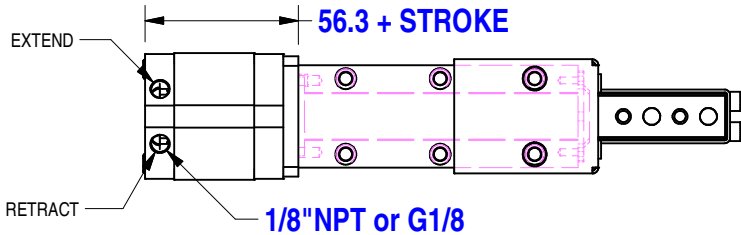
Cylinder Options
See Chart (Sheet 1)

Cylinder Prox (or "G" Port) Position

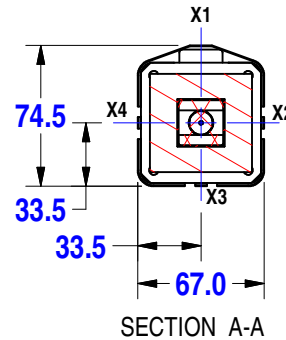
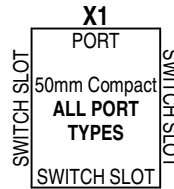
- A X1 Rotation (Default for 01 & 03)
- B X2 Rotation
- C X3 Rotation
- D X4 Rotation

50mm COMPACT (30,31) SINGLE ROD CYLINDER

(3.0 SQ. IN. PUSH, 2.5 SQ. IN. PULL FORCE)

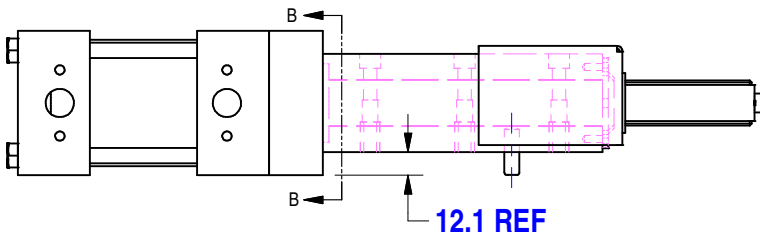
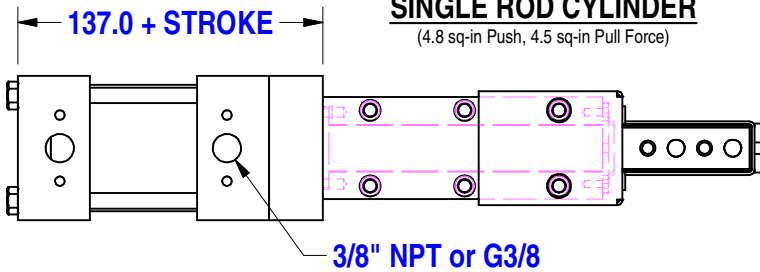


50mm COMPACT CYLINDERS
X1 OPTION DESIGNATES LOCATION OF THE PORT. TO ROTATE THE PORT LOCATION 90° CLOCKWISE, ORDER THE X2 OPTION.



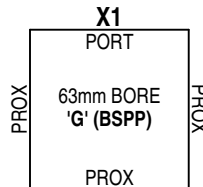
63mm TIE ROD (01,02) SINGLE ROD CYLINDER

(4.8 sq-in Push, 4.5 sq-in Pull Force)

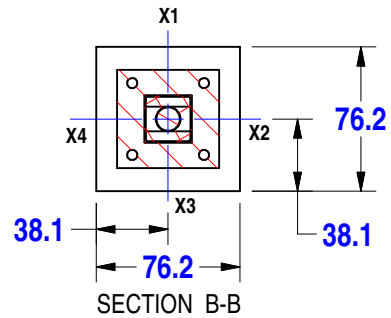


63mm NPT PORT TYPE
FOR CYLINDER OPTIONS 01 & 03, THE CYLINDER IS PORTED AND PROX READY ON ALL SIDES. USE 'X1' AS DEFAULT

63mm "G" PORT CYLINDERS
X1 OPTION DESIGNATES LOCATION OF THE PORT. TO ROTATE THE PORT LOCATION 90° CLOCKWISE, ORDER THE X2 OPTION.



PROX READ DEPTH
63mm BORE CYLINDERS
26mm (1.025") READ DEPTH



(DO NOT SCALE DRAWING)



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CYLINDER INFORMATION

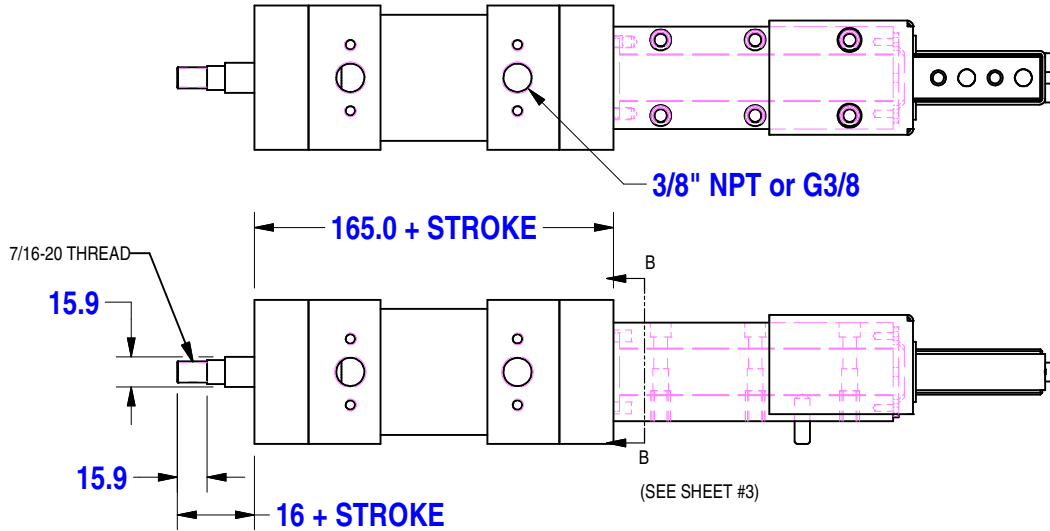
W P 2 N 0 2 5 A 0 1 0 D 0 0 1 A 0 0 0

Cylinder Options
See Chart

Cylinder Prox (or "G" Port) Position

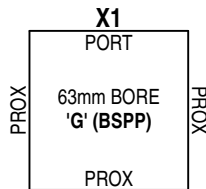
- A X1 Rotation (Default for 01 & 03)
- B X2 Rotation
- C X3 Rotation
- D X4 Rotation

63mm BORE (03,04) DOUBLE ROD CYLINDER



63mm NPT PORT TYPE
FOR CYLINDER OPTIONS 01 & 03, THE CYLINDER IS PORTED AND PROX READY ON ALL SIDES. USE 'X1' AS DEFAULT

63mm "G" PORT CYLINDERS
X1 OPTION DESIGNATES LOCATION OF THE PORT. TO ROTATE THE PORT LOCATION 90° CLOCKWISE, ORDER THE X2 OPTION.



PROX READ DEPTH
63mm BORE CYLINDERS
26mm (1.025") READ DEPTH

(DO NOT SCALE DRAWING)



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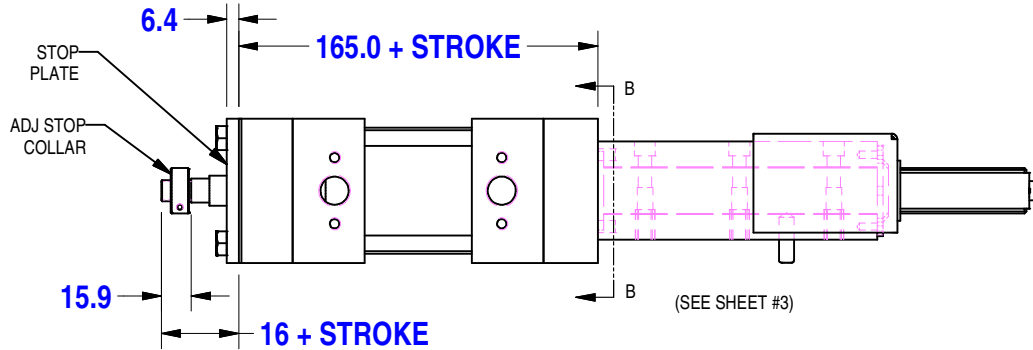
CYLINDER INFORMATION

W P 2 N 0 2 5 A 0 1 0 D 0 0 1 A 0 0 0

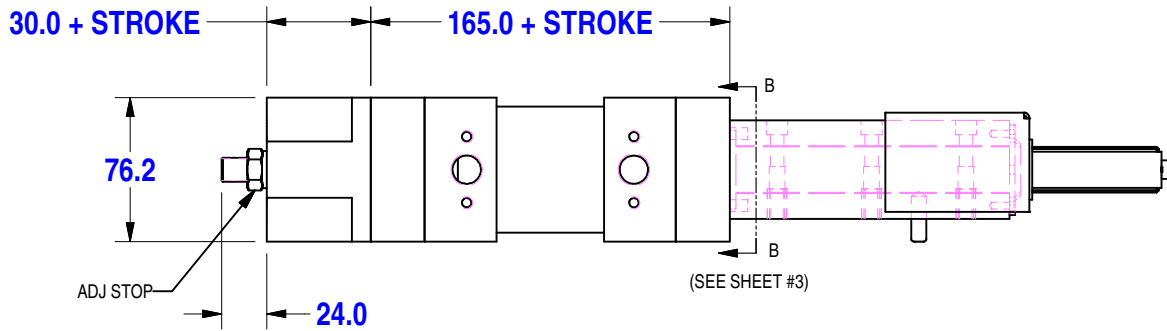
Stop Option

- 0 None
 - E Extend Stop
 - R Retract Stop
- E or R Req's requires double rod cylinder

EXTEND STOP (E)



RETRACT STOP (R)



(DO NOT SCALE DRAWING)



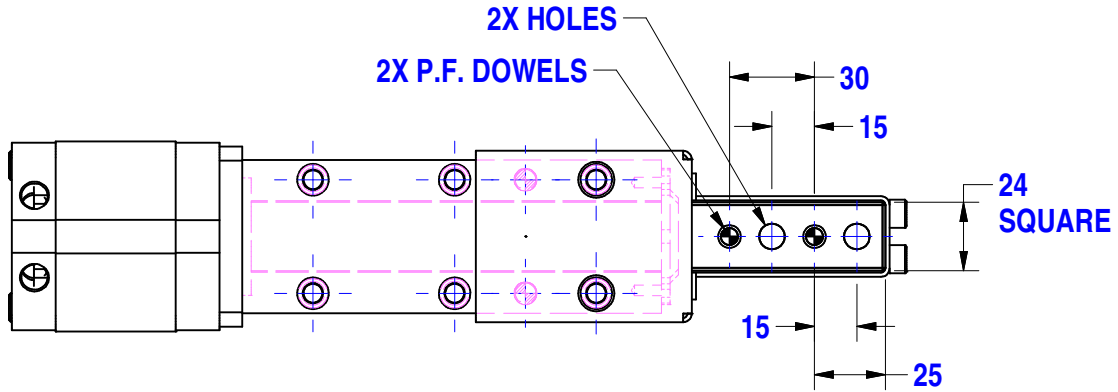
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RAM OPTIONS

W P 2 N 0 2 5 A 0 1 0 **D** 0 0 1 A **0** 0 0

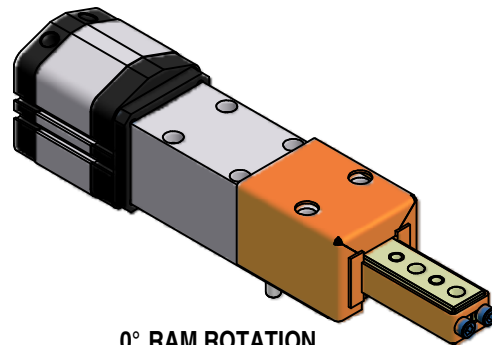
Ram Style
See Chart Below

Ram Rotation
0 0° Rotation
9 90° Rotation

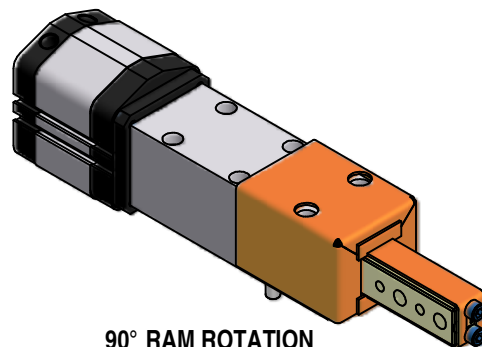


Ram Style	DOWELS	HOLES
A*	6.0 THRU	9.0 THRU
D	8.0 THRU	11.0 THRU
E*	6.0 THRU	M8 TAPS
G*	8.0 THRU	M10 TAP THRU
J*	10.0 THRU	11.0 THRU
L	8.0 THRU	9.0 THRU

**SPECIAL ORDER ONLY*
NOT SUBJECT TO STANDARD
PRICE OR DELIVERY



0° RAM ROTATION
OPTION "0"



90° RAM ROTATION
OPTION "90"

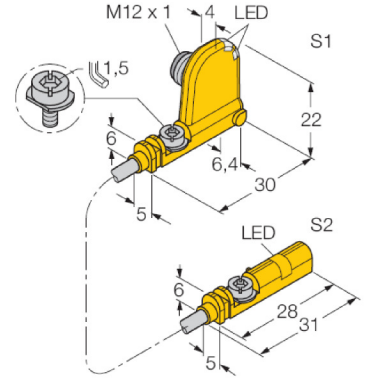
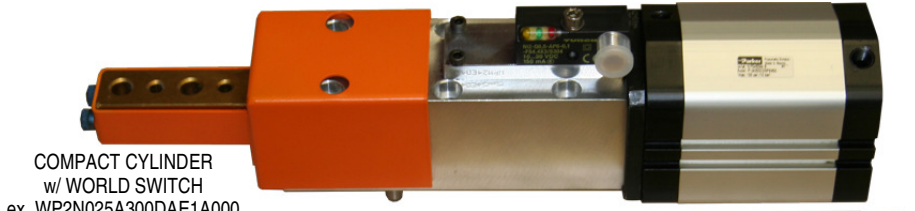
(DO NOT SCALE DRAWING)



SWITCH OPTIONS

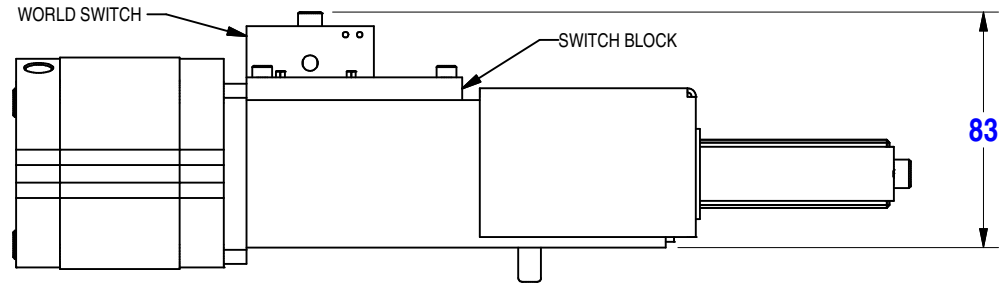
W P 2 N 0 2 5 A 0 1 0 D 0 0 1 A 0 0 0

Switch
 00 See Chart Below



	Order Number S01 (E)XTEND or S01 (R)ETRACT	Part Number	Manufacturer	Description	Distributor Phone Number
World Switches	00	NONE			
	99	Switch Ready		Customer Supplied Sw itch. Prepared for sw itches AE/AR - JE/JR only	
	AE or AR	Ni2-Q6.5-AP6-0.1-FS 4.4X3/S304	Turck	3-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect	MC ² 248-295-2040
	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.) Quick Disconnect	MC ² 248-295-2040
	CE or CR	Ni2-Q6.5-AN6-0.1-FS 4.4X3/S304	Turck	3-Wire, 4-Pin, DC M12 X 1 (NPN) Quick Disconnect	MC ² 248-295-2040
	DE or DR	NBN2-F581-100S6-E8-V 1	Pepperl & Fuchs	3-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect	GrayBar 734-957-5500
	EE or ER	BES-Z02KR2-PSC20F-P100-S04-V	Balluff	3-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect	E & E 800-854-3577
	FE or FR	871D-MW2GP100A-D4	Allen Bradley	4-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect	McNaughton 248-399-7500
	HE or HR	Ni2-Q6.5-0.1M-BDS-2AP6X3-H1141/S34	Turck	3-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect	MC ² 248-295-2040
	JE or JR	IN5374	Efector	4-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect	Efector 800-441-8246
L0 (Cylinder Switch)	BIM-UNT-0.1-UNT-2AP6X3-H1141	Turck	4-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect	MC ² 248-295-2040	

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



FOR COMPACT CYLINDERS
 OPTIONS 30 & 31 ONLY

TURCK SOLID STATE SENSOR (OPTION L0)
 TO BE FIELD MOUNTED BY CUSTOMER.

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SUPPLEMENTAL RAM OPTIONS

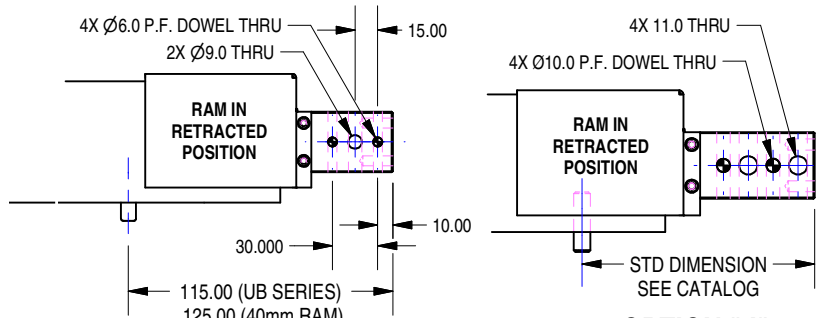
SPECIAL ORDER ONLY - NOT SUBJECT TO STANDARD PRICE OR DELIVERY

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

- | | | | |
|--|---|-----------------------|---|
| Series | Ram Size | Ram Options | Ram Rotation |
| EB Electric Side-By-Side
SB Pneumatic Side-By-Side
WP In Line
UB In Line w/Integrated Cyl
(40mm Ram) | 2 2 (24mm square)
where noted
4 4 (40mm square)
6 6 (60mm square) | See Ram Options Chart | 0 No Rotation
9 90° Rotation
(Ram Option "H") |

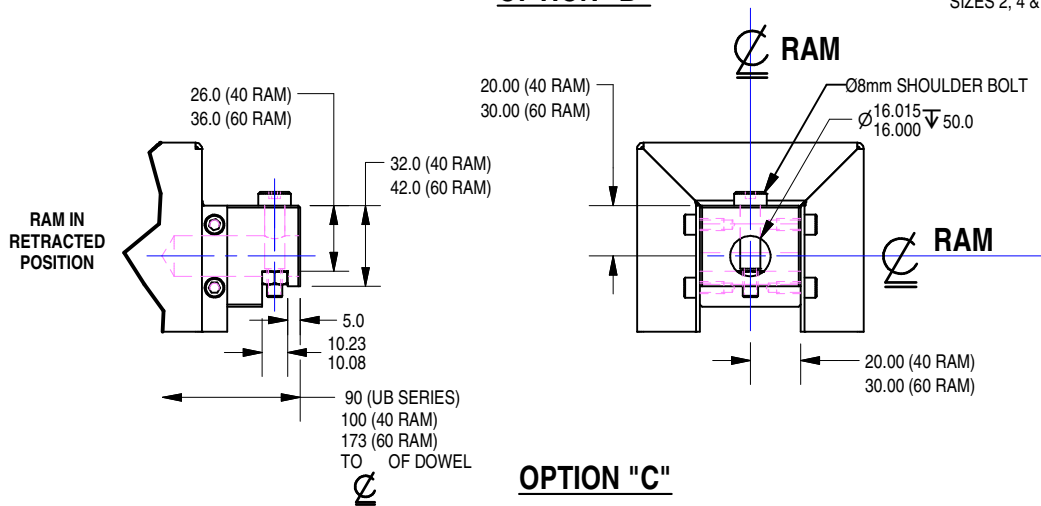
Ram Options

- A** 4 Hole - 6mm Dwls and 9mm Holes
- B** 3 Hole
- C** End Hole
- D** 4 Hole - Large (See Ram Options Sheet)
- E** 4 Hole - M8 Taps - 6mm Dwls
- F** 3 Hole - M8 Taps - 6mm Dwls
- G** 4 Hole - M10 Taps - 8mm Dwls
- H** 6 Hole
- J** 4 Hole - 10mm Dwls and 11mm Holes
- K** 3 Hole - 10mm Dwls and 11mm Holes
- L** 4 Hole - Medium (See Ram Options Sheet)

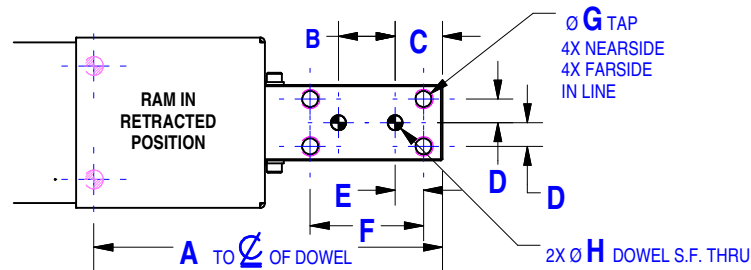


OPTION "B"

OPTION "J"
FOR ALL RAM SIZES 2, 4 & 6



OPTION "C"



OPTION "H"

(PLAN VIEW, 0° ROTATION SHN)

Nominal

Ram	A	B	C	D	E	F	ØG	ØH
40	155 (145 UB Series)	30	25	12.5	15.0	60.0	M10 X 1.5 X 20 DEEP or Clear for M8 Screw	8
60	290	95	30	17.5	15.0	125.0	M12 X 1.75 X 24 DEEP or Clear for M10 Screw	10

(DO NOT SCALE DRAWING)



ENGINEERED PRODUCTS

Welker Shot Pin Technical Information EB, SB, UB and WP Series

Body Mounting (except UB - see UB catalog)

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 and 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 while most hydraulic shot pin applications should use a rigid coupler.

Welker cylinders do not require lubrication. **WELKER DOES NOT MOUNT CUSTOMER SUPPLIED CYLINDERS TO SHOT PIN UNITS.** 24mm ram and 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). Welker does not supply cylindicator switches. Shot pins ordered with compact cylinders are cylinder switch ready. Cylinder switches are available though Welker. World switches are available though Welker for shot pins offering world switch capability.

Repeatability

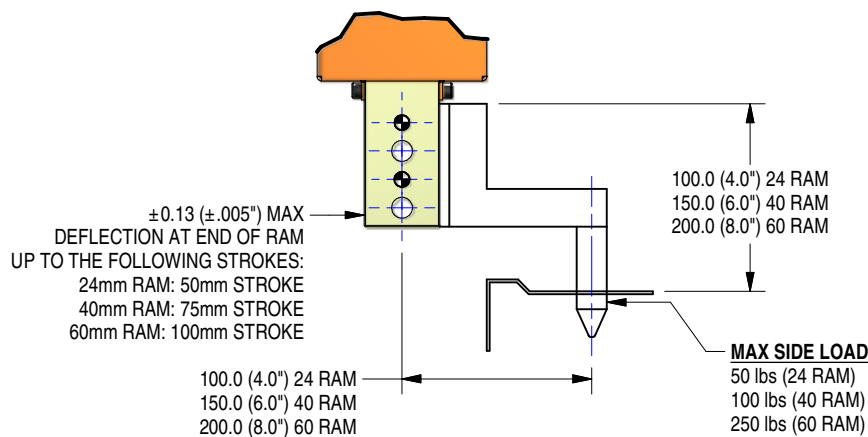
Shot pin units utilize a full contact bearing surface for high repeatability. Repeatability within $\pm .002"$ (0.05mm) part to part is achievable.

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.



SHEET 9

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