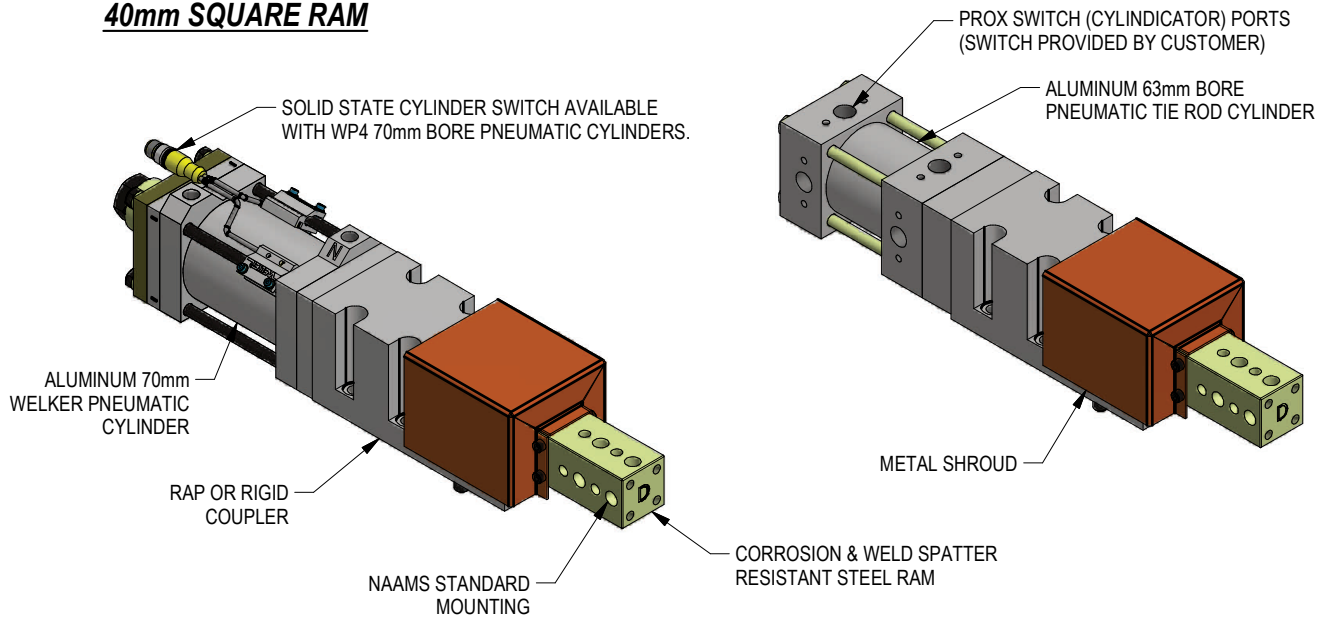


WP4 & 6 SERIES *GOLD LINE* SHOT PINS

STROKES: 025, 050, 075, 100, 125, 150, 175, 200mm
PNEUMATIC OR HYDRAULIC CYLINDER

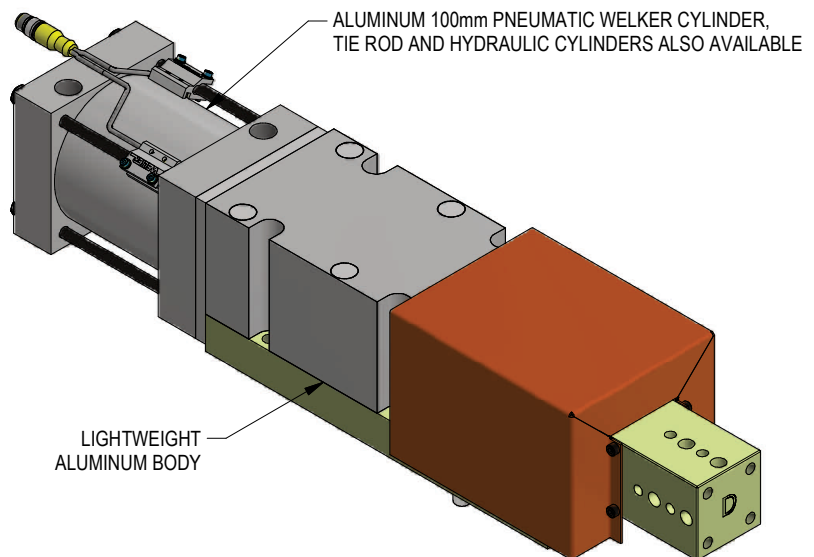
WP4

40mm SQUARE RAM



WP6

60mm SQUARE RAM



REVISED: 7/22/21

ORDERING INFORMATION

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

W	P		N											0	0	0
---	---	--	---	--	--	--	--	--	--	--	--	--	--	---	---	---

Series _____

WP

Ram Size _____

- 4 4 (40mm square)
- 6 6 (60mm square)

Stroke _____

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

Coupler _____

- A Rap (shortens nominal cylinder stroke by 2mm-WP4)
(shortens nominal cylinder stroke by 3mm-WP6)
Rap only available with Actuator Options 01, 02, 30 or 31
- B Rigid

Cylinder (See charts below) _____

Stop Options _____

- 0 None
- E Adjustable Extend Stop* **NOTE: Stop Option E will shorten stroke**
- G Fixed Extend Stop* **NOTE: Stop Option G will shorten stroke**
*Requires double rod cylinder. Not available on Hydraulic Cylinders.

Ram Style _____

- D 4 Hole - Large
- L 4 Hole - Medium

Switch _____

- 00 No Switch
- LX See Cylinder Switch Chart below. Only available with Cylinder Options 30, 31, 32, 33

Shroud _____

- 0 No Shroud
- 1 Shroud

Cylinder Prox (or "G" Port) Position _____

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

WP4 Cylinder Options

- 01 Pneumatic 63mm Tie Rod Single Rod (NPT Ports)
- 02 Pneumatic 63mm Tie Rod Single Rod (G Ports)
- 03 Pneumatic 63mm Tie Rod Double Rod (NPT Ports)
- 04 Pneumatic 63mm Tie Rod Double Rod (G Ports)
- 09 Hydraulic 40mm Bore Single Rod (SAE Ports)
- 10 Hydraulic 40mm Bore Single Rod (G Ports)
- 11 Hydraulic 40mm Bore Double Rod (SAE Ports)
- 12 Hydraulic 40mm Bore Double Rod (G Ports)
- 30 Pneumatic 70mm Welker Single Rod (NPT Ports)
- 31 Pneumatic 70mm Welker Single Rod (G Ports)
- 32 Pneumatic 70mm Welker Double Rod (NPT Ports)
- 33 Pneumatic 70mm Welker Double Rod (G Ports)

WP6 Cylinder Options

- 01 Pneumatic 100mm Tie Rod Single Rod (NPT Ports)
- 02 Pneumatic 100mm Tie Rod Single Rod (G Ports)
- 03 Pneumatic 100mm Tie Rod Double Rod (NPT Ports)
- 04 Pneumatic 100mm Tie Rod Double Rod (G Ports)
- 09 Hydraulic 80mm Bore Single Rod (SAE Ports)
- 10 Hydraulic 80mm Bore Single Rod (G Ports)
- 11 Hydraulic 80mm Bore Double Rod (SAE Ports)
- 12 Hydraulic 80mm Bore Double Rod (G Ports)
- 30 Pneumatic 100mm Welker Single Rod (NPT Ports)
- 31 Pneumatic 100mm Welker Single Rod (G Ports)
- 32 Pneumatic 100mm Welker Double Rod (NPT Ports)
- 33 Pneumatic 100mm Welker Double Rod (G Ports)

Standard Options - All other options may affect price and delivery

	Switch	Part Number	Manufacturer	Description
Cylinder Switches	L3	SWITCH L3* L3 sw itch is w eld field immune, comparable to World Sw itches. Dual sensor sw itch, 1 per cylinder	Welker	4-Wire, 4-Pin, DC (PNP) M12 X 1 Quick Disconnect
	L5	MK5113 Single sensor sw itch, 2 sw itches per cylinder	ifm Efector	3-Wire, 4-Pin, DC (NPN) M12 X 1 Quick Disconnect

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

*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.

(DO NOT SCALE DRAWING)



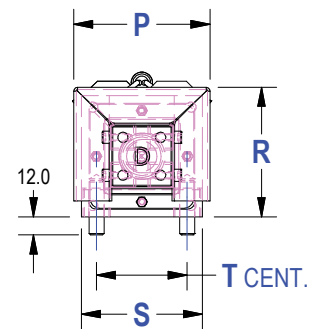
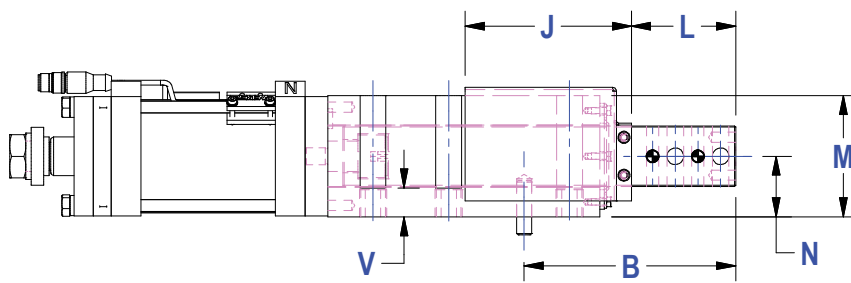
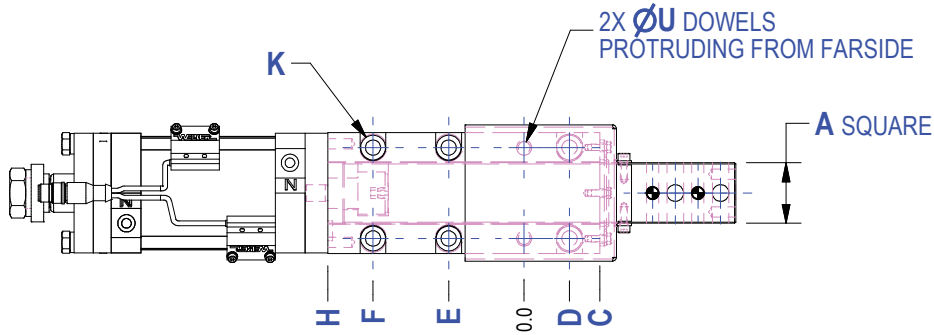
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GENERAL DIMENSIONS



WELKER SHOT PINS
WEB PAGE



Series	Strokes (25mm increments)	Bore	Nominal Ram	A	B	C	D	E	F	H	J	K
WP4	25,50	63	40	39.998 39.987	140	50	30	50	100	130	110	6X M12 x 1.75 Tap thru & Ø17.0 C'Bore as shown for M10 or 3/8"
WP4	75	63	40	39.998 39.987	140	50	30	50	100	180	110	6X M12 x 1.75 Tap thru & Ø17.0 C'Bore as shown for M10 or 3/8"
WP4	100, 125	63	40	39.998 39.987	140	50	30	50	150	230	175	6X M12 x 1.75 Tap thru & Ø17.0 C'Bore as shown for M10 or 3/8"
WP4	150-200	63	40	39.998 39.987	140	50	30	50	150	330	230	6X M12 x 1.75 Tap thru & Ø17.0 C'Bore as shown for M10 or 3/8"
WP6	25-100	100	60	60.000 59.987	200	90	60	60	180	230	180	6X M12 x 1.75 Tap thru & Ø17.0 C'Bore as shown for M10 or 3/8"
WP6	125, 150	100	60	60.000 59.987	200	90	60	60	180	390	280	6X M12 x 1.75 Tap thru & Ø17.0 C'Bore as shown for M10 or 3/8"
WP6	175, 200	100	60	60.000 59.987	200	90	60	60	180	440	280	6X M12 x 1.75 Tap thru & Ø17.0 C'Bore as shown for M10 or 3/8"

	L	M	N	P	R	S	T	U	V
WP4	69	80	40	90	85	80	60	10	19
WP6	70	120	60	134	127	120	100	12	30

Shot Pin Unit Weight (Weights shown are approximate and will vary with options)



Stroke:	25	50	75	100	125	150	175	200
WP4: Cylinder Option 01/02	18.0 lbs	18.5 lbs	21.6 lbs	25.0 lbs	25.4 lbs	28.7 lbs	29.2 lbs	29.7 lbs
WP6: Cylinder Option 01/02	75.0 lbs	75.8 lbs	76.5 lbs	77.3 lbs	78.1 lbs	78.9 lbs	79.6 lbs	80.4 lbs

(DO NOT SCALE DRAWING)

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WP4 70mm BORE WELKER PNEUMATIC CYLINDER INFORMATION

WP 4 N 0 2 5 A 3 1 0 D 0 0 1 A 0 0 0

Cylinder Options

- 30 70mm Bore Single Rod (NPT Ports)
- 31 70mm Bore Single Rod (G Ports)
- 32 70mm Bore Double Rod (NPT Ports)
- 33 70mm Bore Double Rod (G Ports)

Stop Options

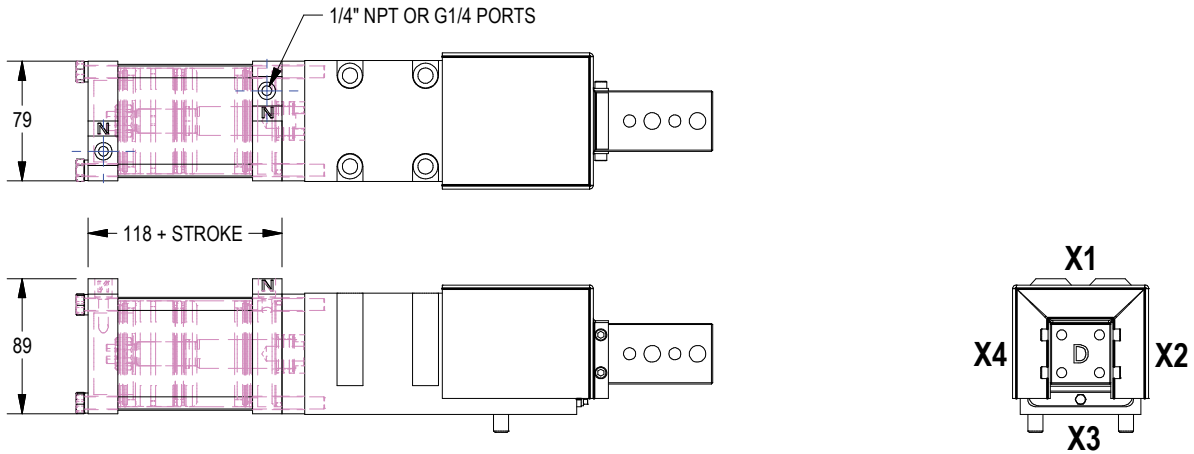
- 0 None
- E Adjustable Extend Stop**
- G Fixed Extend Stop**

Port Position

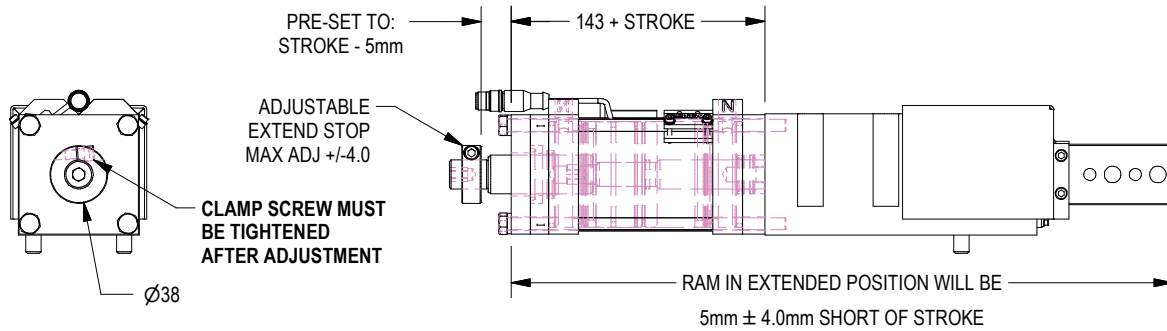
- A X1 Rotation
- B X2 Rotation
- C X3 Rotation
- D X4 Rotation

**Requires double rod cylinder

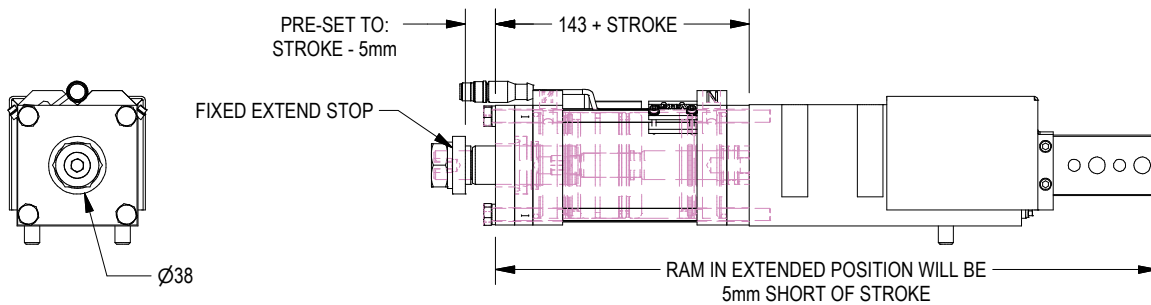
SINGLE ROD CYLINDER



DOUBLE ROD CYLINDER WITH EXTEND STOP OPTION "E"



DOUBLE ROD CYLINDER WITH EXTEND STOP OPTION "G"



RECOMMENDED OPERATING PRESSURE

PNEUMATIC: 60-80 PSI, FLOW CONTROLS NOT REQUIRED

(DO NOT SCALE DRAWING)

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ENGINEERED PRODUCTS

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WP6 100mm BORE WELKER PNEUMATIC CYLINDER INFORMATION

WP6N025A**310**D001**A**000

Cylinder Options

- 30** 100mm Welker Single Rod (NPT Ports)
- 31** 100mm Welker Single Rod (G Ports)
- 32** 100mm Welker Double Rod (NPT Ports)
- 33** 100mm Welker Double Rod (G Ports)

Stop Options

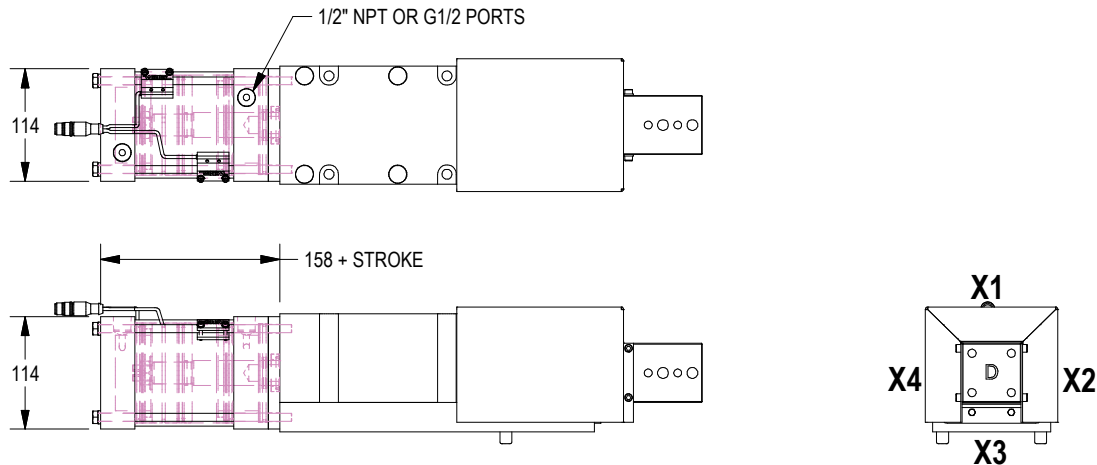
- 0** None
- E** Adjustable Extend Stop**
- G** Fixed Extend Stop**

Port Position

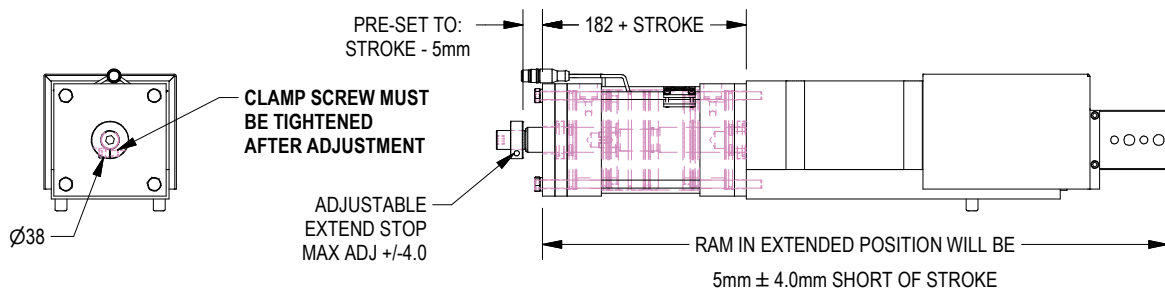
- A** X1 Rotation
- B** X2 Rotation
- C** X3 Rotation
- D** X4 Rotation

**Requires double rod cylinder

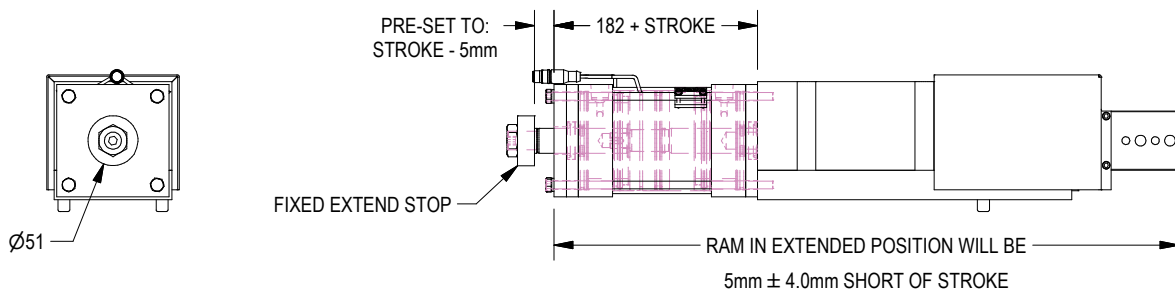
SINGLE ROD CYLINDER



DOUBLE ROD CYLINDER WITH EXTEND STOP OPTION "E"



DOUBLE ROD CYLINDER WITH EXTEND STOP OPTION "G"



(DO NOT SCALE DRAWING)

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RECOMMENDED OPERATING PRESSURE

PNEUMATIC: 60-80 PSI, FLOW CONTROLS NOT REQUIRED

WP4 & WP6 PNEUMATIC TIE ROD CYLINDER INFORMATION

WP **6** N 0 2 5 A **0 1 0** D 0 0 1 **A** 0 0 0

Ram Size
 4 40mm square
 6 60mm square

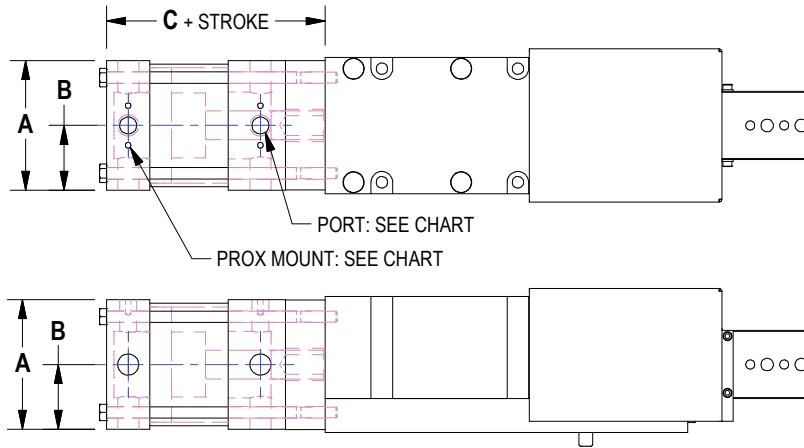
Cylinder Options
 01 Single Rod (NPT Ports)
 02 Single Rod (G Ports)
 03 Double Rod (NPT Ports)
 04 Double Rod (G Ports)

Stop Options
 0 None
 E Adjustable Extend Stop**
 G Fixed Extend Stop**

Cylinder Prox (or "G" Port) Position
 A X1 Rotation
 B X2 Rotation
 C X3 Rotation
 D X4 Rotation

**Requires double rod cylinder

SINGLE ROD CYLINDER



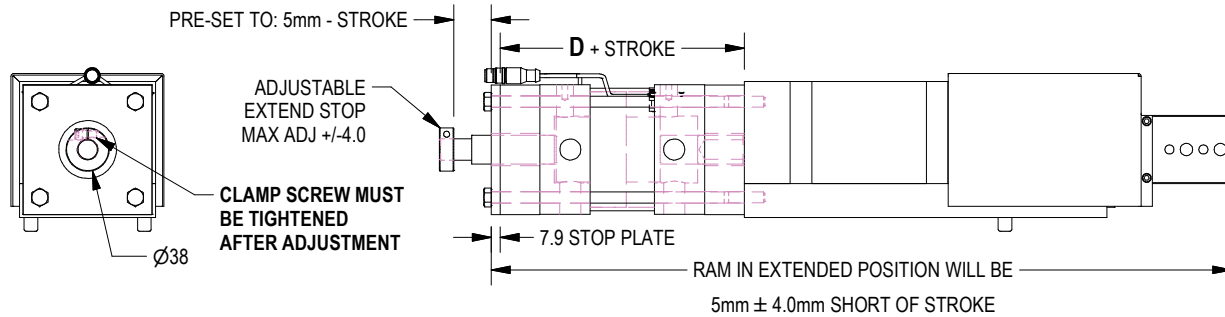
NPT PORT CYLINDERS

X1 OPTION DESIGNATES LOCATION OF THE PROX. TO ROTATE THE PROX LOCATION 90° CLOCKWISE, ORDER THE X2 OPTION. THE OTHER THREE SURFACES ARE THE SPECIFIED PORT.

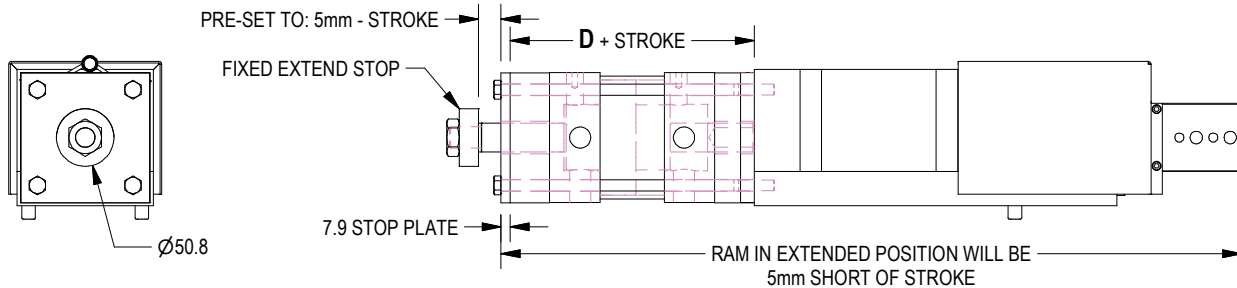
"G" PORT CYLINDERS

X1 OPTION DESIGNATES LOCATION OF THE PORT. TO ROTATE THE PORT LOCATION 90° CLOCKWISE, ORDER THE X2 OPTION. THE OTHER THREE SURFACES ACCEPT CYLINDER.

DOUBLE ROD CYLINDER WITH STOP OPTION "E"



DOUBLE ROD CYLINDER WITH STOP OPTION "G"



SERIES	NOMINAL RAM	PNEUMATIC BORE	A	B	C	D	PNEUMATIC PORTS	PROX READ DEPTH	PUSH	PULL
WP4	40	63	76	38	137	165	3/8" NPT or G3/8	26mm READ DEPTH	4.8 SQ.IN.	4.5 SQ.IN.
WP6	60	100	114	57	168	191	1/2" NPT or G1/2	32MM READ DEPTH	12.2 SQ.IN.	11.4 SQ.IN.

RECOMMENDED OPERATING PRESSURE

PNEUMATIC: 60-80 PSI, FLOW CONTROLS NOT REQUIRED
 CYLINDERS ARE SWITCH READY. SWITCHES ARE NOT SUPPLIED WITH THE CYLINDER.

(DO NOT SCALE DRAWING)

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WP4 & WP6 HYDRAULIC CYLINDER INFORMATION

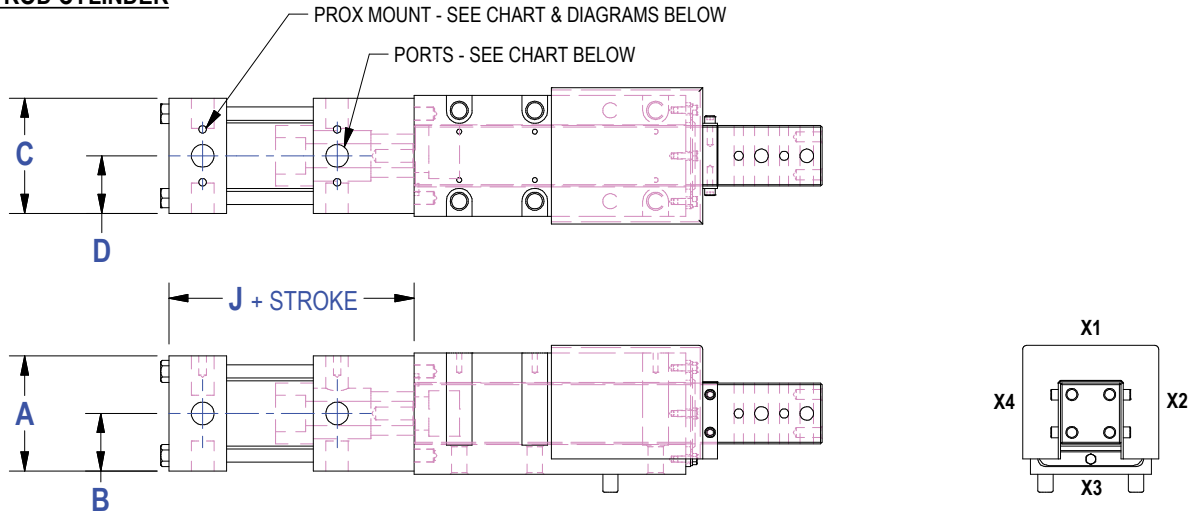
WP **4** N 0 2 5 B **0 9** 0 D 0 0 1 **A** 0 0 0

Ram Size
4 40mm square
6 60mm square

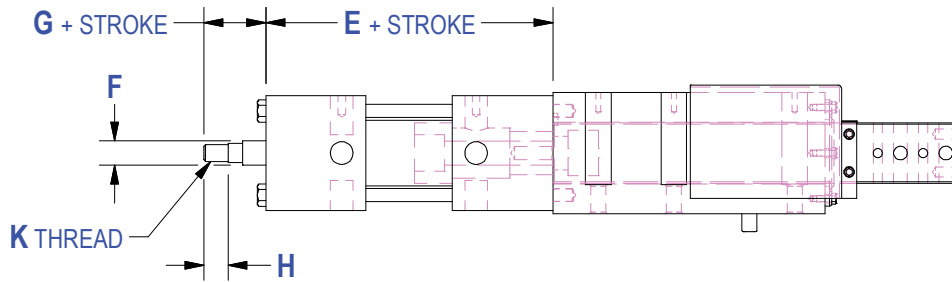
Cylinder Options
09 Single Rod (SAE Ports)
10 Single Rod (G Ports)
11 Double Rod (SAE Ports)
12 Double Rod (G Ports)

Cylinder Prox (or "G" Port) Position
A X1 Rotation
B X2 Rotation
C X3 Rotation
D X4 Rotation

SINGLE ROD CYLINDER

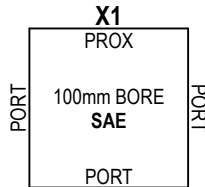


DOUBLE ROD CYLINDER



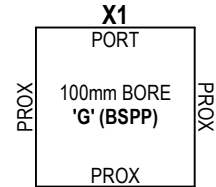
SAE PORT CYLINDERS

X1 OPTION DESIGNATES LOCATION OF THE **PROX**. TO ROTATE THE PROX LOCATION 90° CLOCKWISE, ORDER THE X2 OPTION. THE OTHER THREE SURFACES ARE THE SPECIFIED PORT.



"G" PORT CYLINDERS

X1 OPTION DESIGNATES LOCATION OF THE **PORT**. TO ROTATE THE PORT LOCATION 90° CLOCKWISE, ORDER THE X2 OPTION. THE OTHER THREE SURFACES ACCEPT CYLINDRICATOR.



Series	Nominal											Ports	Prox Read Depth	
	Ram	Bore	A	B	C	D	E	F	G	H	J			K
WP4	40	40	76	38	76	38	165	16	16	16	137	7/16-20	SAE #6 OR G3/8	26mm READ DEPTH
WP6	60	80	114	57	114	57	191	29	29	25	168	3/4-16	SAE #8 OR G1/2	32mm READ DEPTH

RECOMMENDED OPERATING PRESSURE

HYDRAULIC: 200 PSI, FLOW CONTROLS NOT REQUIRED
 CYLINDERS ARE SWITCH READY. SWITCHES ARE NOT SUPPLIED WITH THE CYLINDER.

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STANDARD RAM OPTIONS

(See supplemental ram sheet for non-standard options)

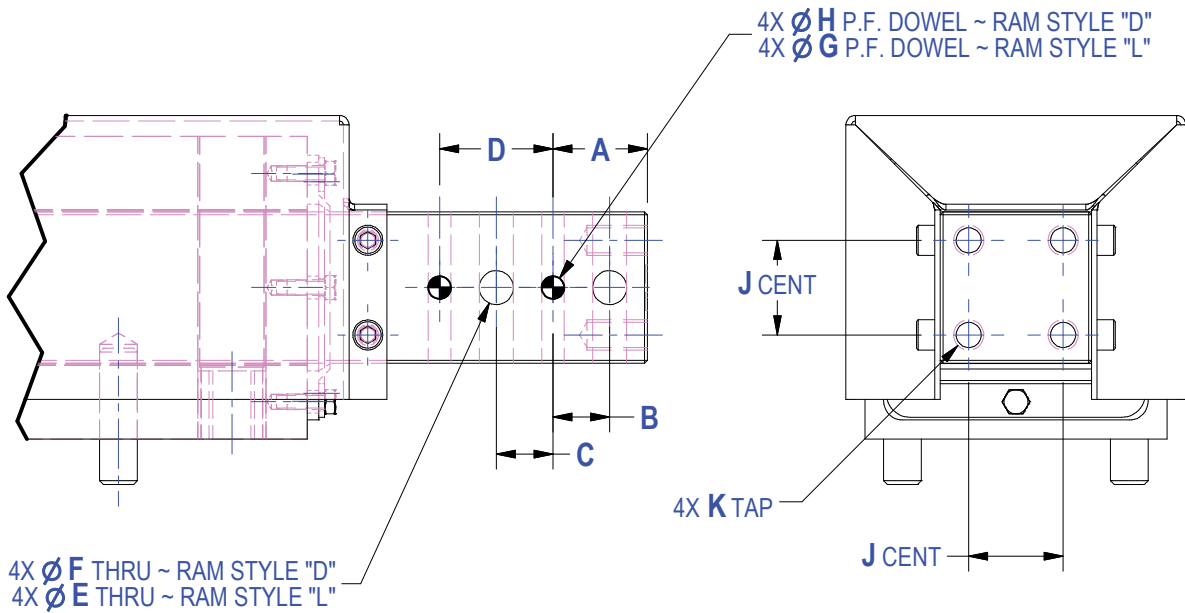
W P **4** N 0 2 5 A 3 1 0 **D** 0 0 1 A 0 0 0

Ram Size

- 4 40mm square
- 6 60mm square

Ram Style

- D 4 Hole - Large
- L 4 Hole - Medium



Series	Nominal										
	Ram	A	B	C	D	$\varnothing E$	$\varnothing F$	$\varnothing G$	$\varnothing H$	J	K
WP4	40	25	15	15	30	9.0	11.0	8.0 THRU	8.0 THRU	25	M8 X 1.25 - 15 DEEP
WP6	60	25	15	15	30	9.0	11.0	8.0 X 16.0 DEEP	8.0 X 16.0 DEEP	40	M10 X 1.5 - 20 DEEP

(DO NOT SCALE DRAWING)



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Welker WP4 & WP6 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" (0.05mm).**

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 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 have prox switch (cylindicator) ports with 26mm read depth (probe length). 60mm ram tie rod cylinders have prox switch (cylindicator) ports with 32mm read depth (probe length). Welker does not supply prox switches. Solid state cylinder switches available through Welker.

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.

