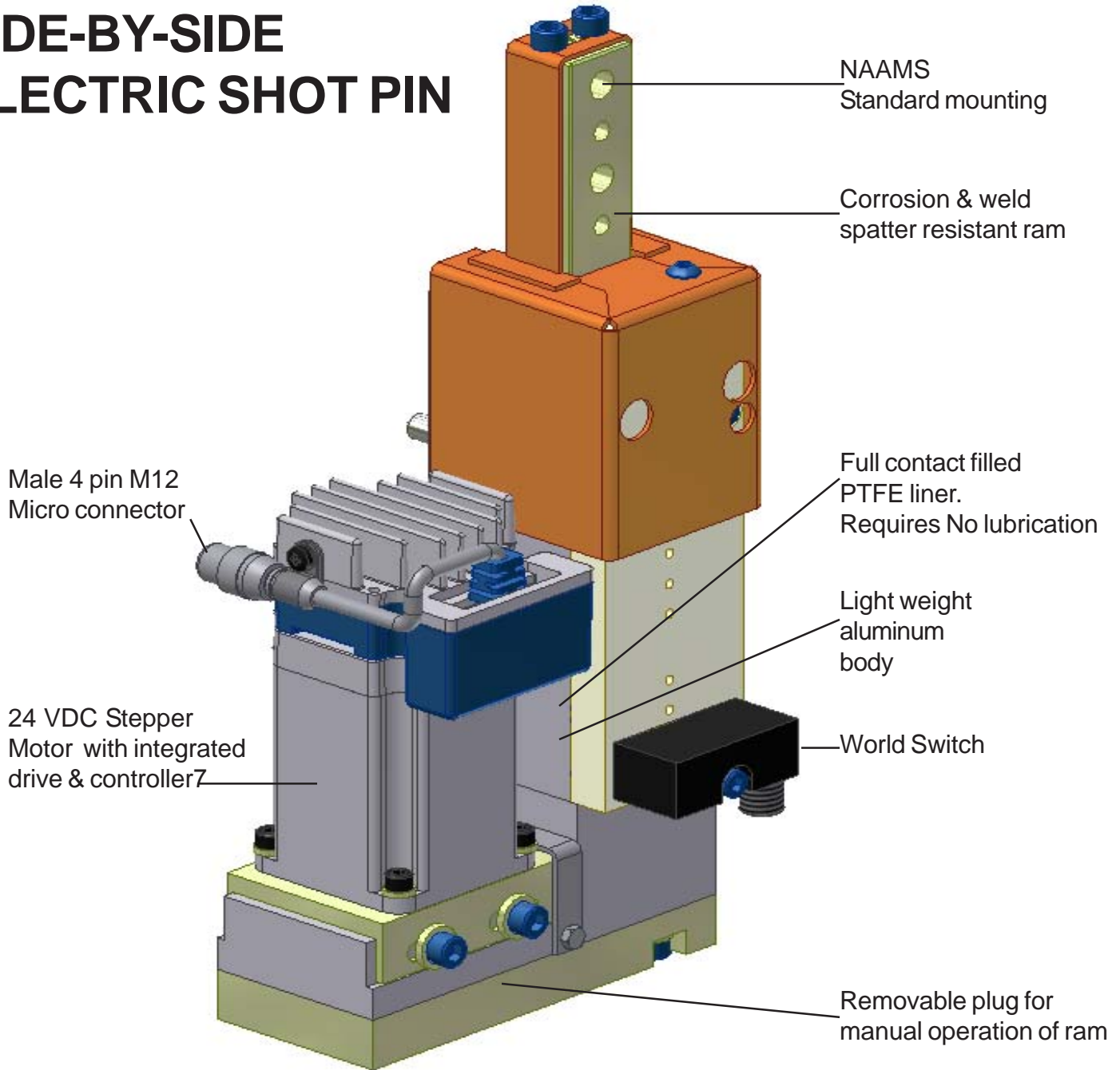


SERIES "EB" SIDE-BY-SIDE ELECTRIC SHOT PIN



ORDERING INFORMATION

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

Series (Sheet 1)

EB

Ram Size

- 2** 2 (24mm square)
- 4** 4 (40mm square)

Stroke (See Note 1)

- 025** 025 or 050 (EB2N)
025, 050 or 075 (EB4N)

Drive Option

- 0** Standard Hi-Lead Drive

Actuator

- 20** 24V DC Motor with Drive (EB2N Only) (Sheet 5)
- 25** 24/48V DC Motor (EB4N Only) (Sheet 6)
(For EB4N Order Drive Separate - Sheet 9)

Stop

- A** None
- B** Fixed Extend Stop

Ram Style (See Supplemental Ram sht for other non-std ram options)

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

Switch

- AE** See Switch Chart

Motor Position (See Actuator sheet)

- A** C1 Position
- B** C3 Position

Ram Rotation (Sheet 4)

- 0** No Rotation
- 9** 90° Rotation (EB2N Only)

Note 1: Stroke is determined by switch position unless hard stop is ordered.

Switch Options				
	Order Number S01 EXTEND (E) or S01 RETRACT (R)	Part Number	Manufacturer	Description
World Switches	00	NONE		
	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
	BE or BR	Ni2-Q6.5-ADZ32-0.1-FSB 5.4X4/S304	Turck	4-Wire, 5-Pin, A C/DC 1/2-20 (N.O.) Quick Disconnect
	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
	DE or DR	NBN2-F581-100S6-E8-V1	Pepperl & Fuchs	3-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect
	EE or ER	BES-Z02KR2-PSC20F-P100-S04-V	Balluff	3-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect
	FE or FR	871D-MW2GP100A-D4	Allen Bradley	4-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect
	HE or HR	Ni2-Q6.5-0.1M-BDS-2AP6X3-H1141/S34	Turck	3-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect
	JE or JR	IN5374	Efector	4-Wire, 4-Pin, DC M12 X 1 (PNP) Quick Disconnect

NOTE: The S01 sensor displays an amber LED and the S02 sensor displays the red LED.

Actuator	Series	Voltage	Force	Speed
20	EB2N	24 VDC	100 lbf	1in/sec
25	EB4N	24 VDC	250 lbf	1 in/sec (High Speed 24V)
25	EB4N	48 VDC	250 lbf	2 in/sec (High Speed 48V)
25	EB4N	24 VDC	TBD	0.5 in/sec (Low Speed 24V)
25	EB4N	48 VDC	TBD	1 in/sec (Low Speed 48V)

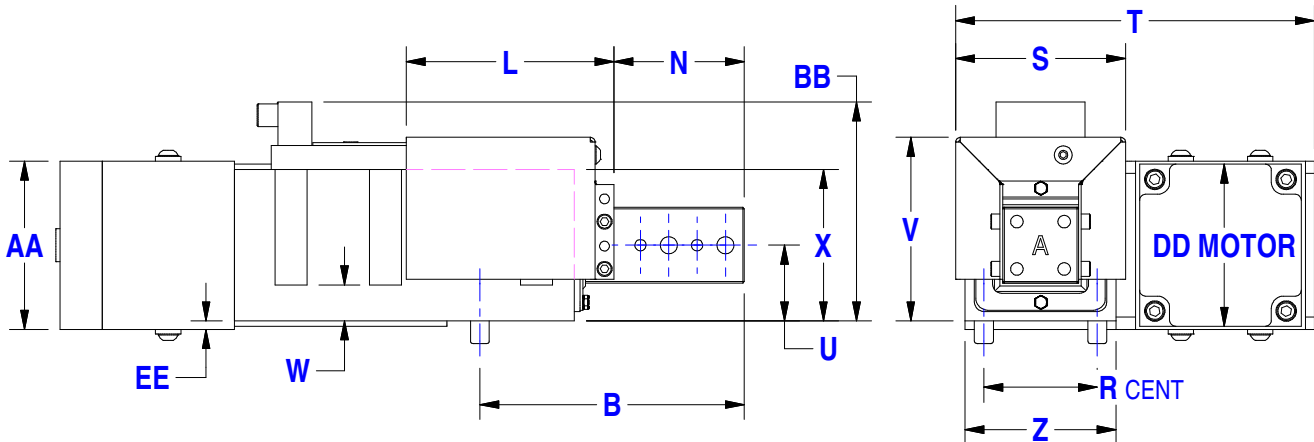
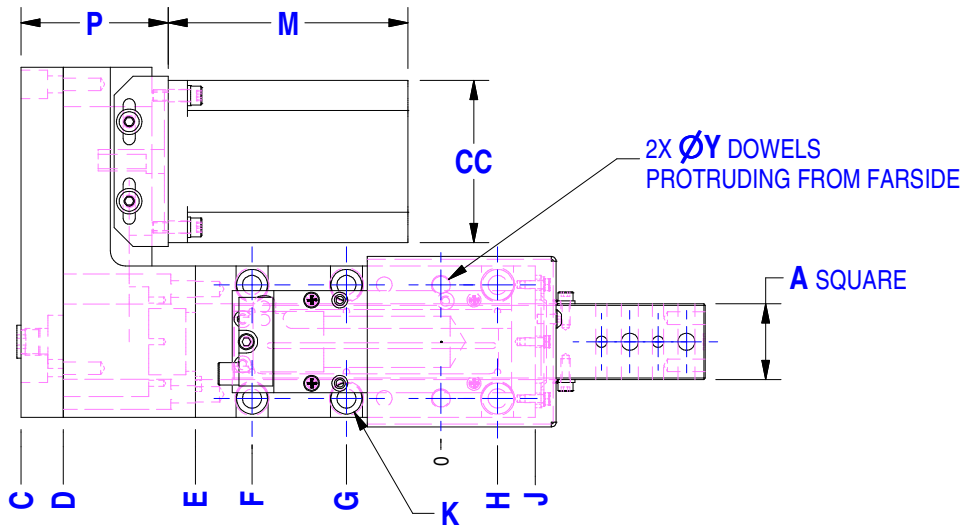
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GENERAL DIMENSIONS



Series	Strokes (25mm increments)	Nominal Ram	A	B	C	D	E	F	G	H	J	K
EB2	25, 50	24	23.937 23.926	127	161	145	100	75	25	25	48	6X M8 x 1.25 Tap farside & C'Bore & thru for M6 or 1/4" SHCS
EB4	25,50	40	39.998 39.987	140	222	200	130	100	50	30	50	6X M12 x 1.75 Tap thru & Ø17.0 C'Bore as shown for M10 or 3/8"
EB4	75	40	39.998 39.987	140	272	250	180	100	50	30	50	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	W	X	Y	Z	AA	BB	CC	DD	EE
EB2	78	116	67	45	40	60	133	26	69	44	52	8	54	57	88	56	75	2.6
EB4	110	127	69	78	60	90	185	40	97	19	80	10	80	90	116	86	86	4.5

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STROKE OPTIONS

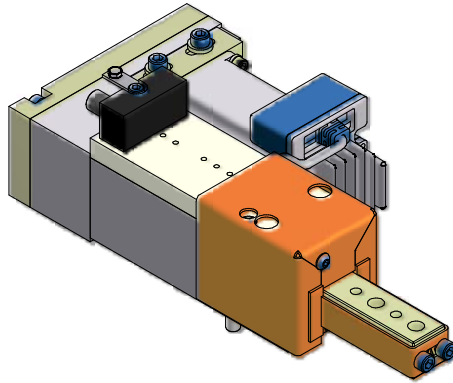
E B 2 N 0 2 5 0 2 0 A A A E 1 A 0 0 0

Ram Size

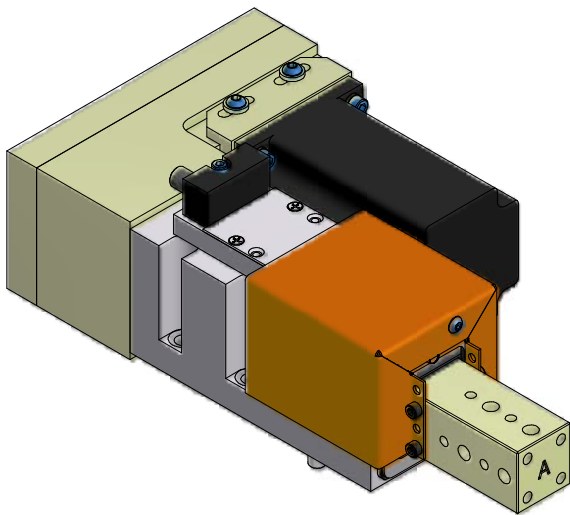
- 2 2 (24mm square)
- 4 4 (40mm square)

Stroke

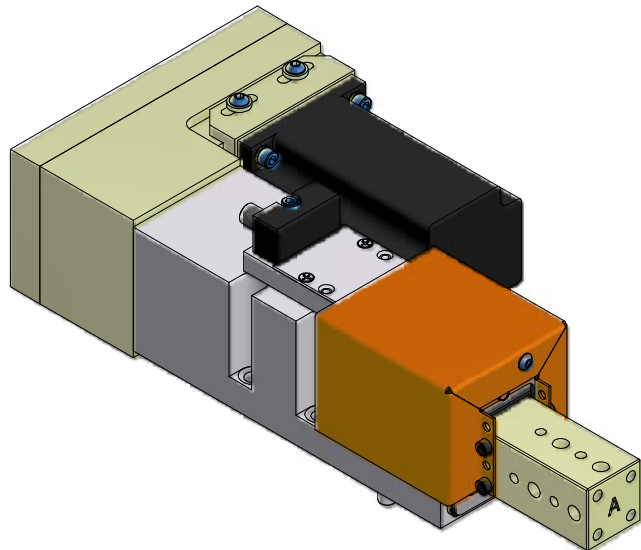
- 025 025 or 050 (EB2N)
- 025, 050 or 075 (EB4N)



EB2 STROKES
025, 050



EB4 STROKES (SHORT BODY)
025, 050



EB4 STROKES (MEDIUM BODY)
075

(DO NOT SCALE DRAWING)



RAM OPTIONS

EB **2** N 0 2 5 0 2 0 A **D** A E 1 A **0** 0 0

Ram Size

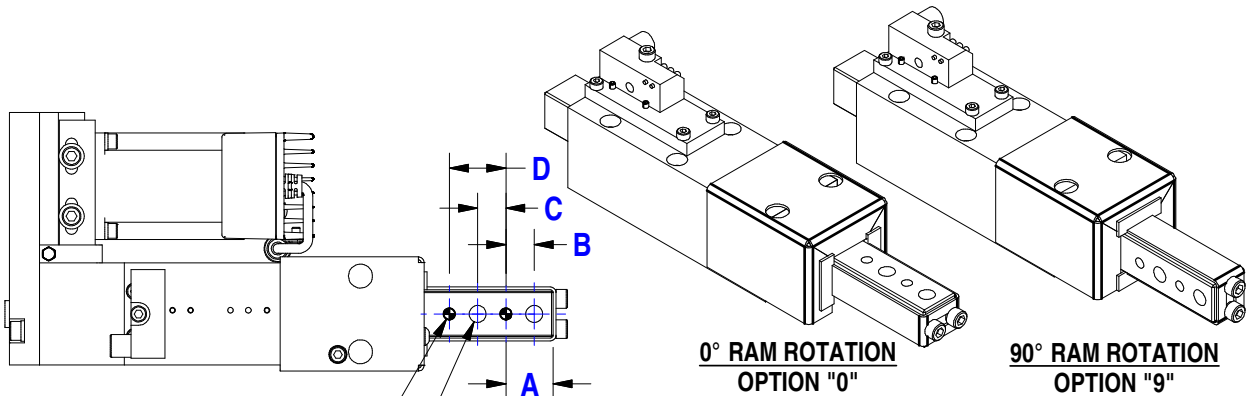
- 2 2 (24mm square)
- 4 4 (40mm Square)

Ram Style

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

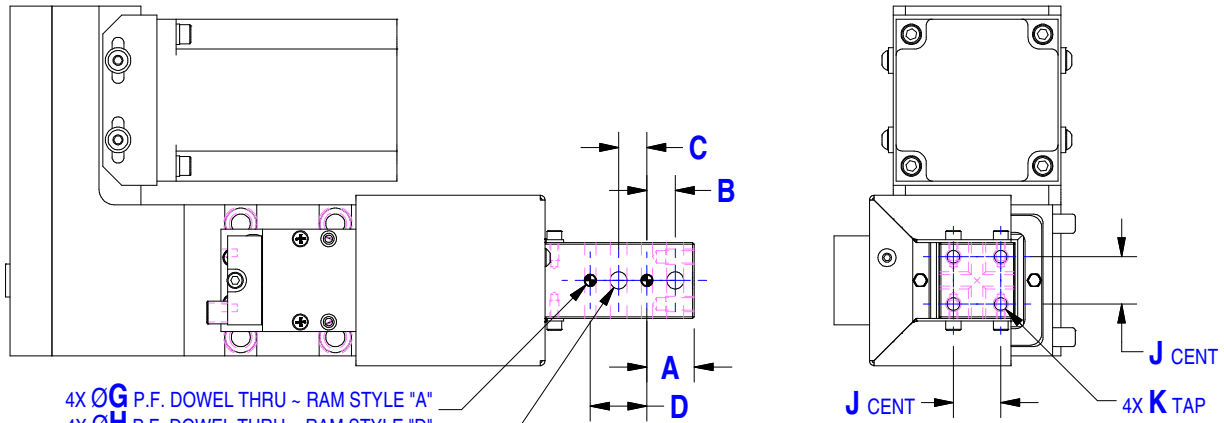
Ram Rotation

- 0 No Rotation
- 9 90° Rotation (EB2N Only)



2X ØG P.F. DOWEL THRU ~ RAM STYLE "A"
 2X ØH P.F. DOWEL THRU ~ RAM STYLE "D"

2X ØE THRU ~ RAM STYLE "A"
 2X ØF THRU ~ RAM STYLE "D"



4X ØG P.F. DOWEL THRU ~ RAM STYLE "A"
 4X ØH P.F. DOWEL THRU ~ RAM STYLE "D"

4X ØE THRU ~ RAM STYLE "A"
 4X ØF THRU ~ RAM STYLE "D"

Series	Nominal Ram	A	B	C	D	ØE	ØF	ØG	ØH	J	K
EB2	24	25	15	15	30	9.0	11.0	6.0 THRU	8.0 THRU	N/A	N/A
EB4	40	25	15	15	30	9.0	11.0	6.0 THRU	8.0 THRU	25	M8 X 1.25 - 15 DEEP

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SUPPLEMENTAL RAM OPTIONS

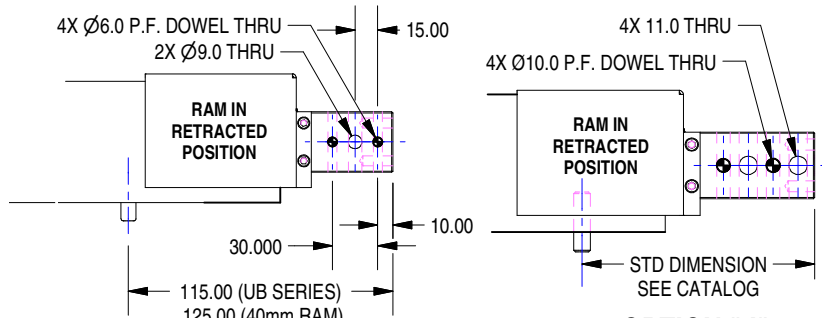
SPECIAL ORDER ONLY - NOT SUBJECT TO STANDARD PRICE OR DELIVERY

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") |

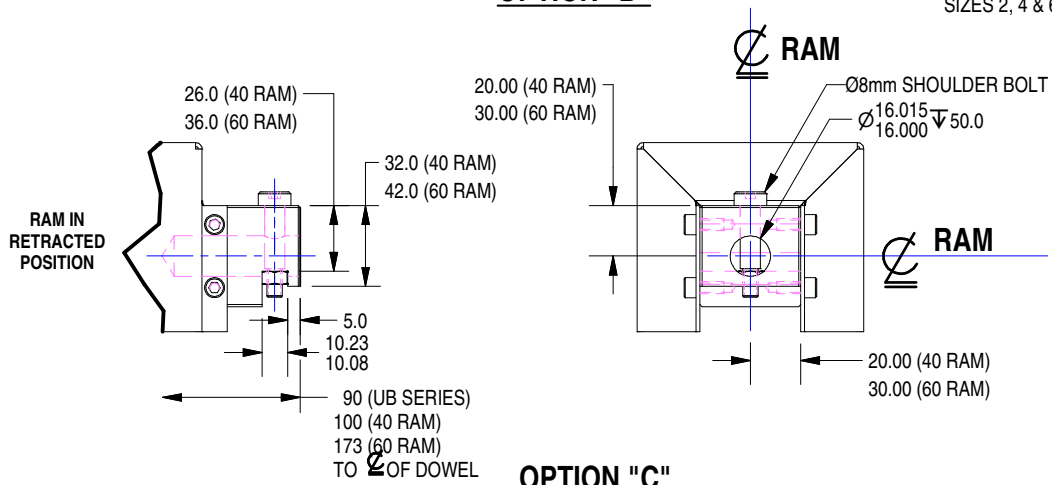
Ram Options

- 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)

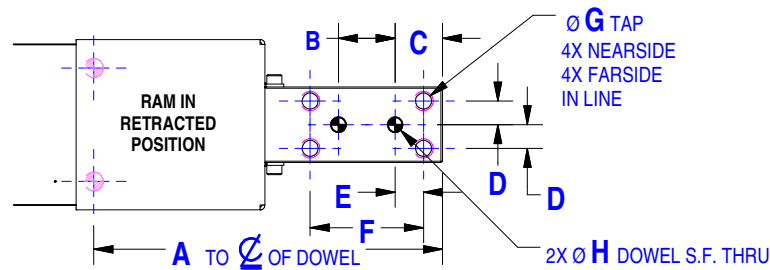


OPTION "B"

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

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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

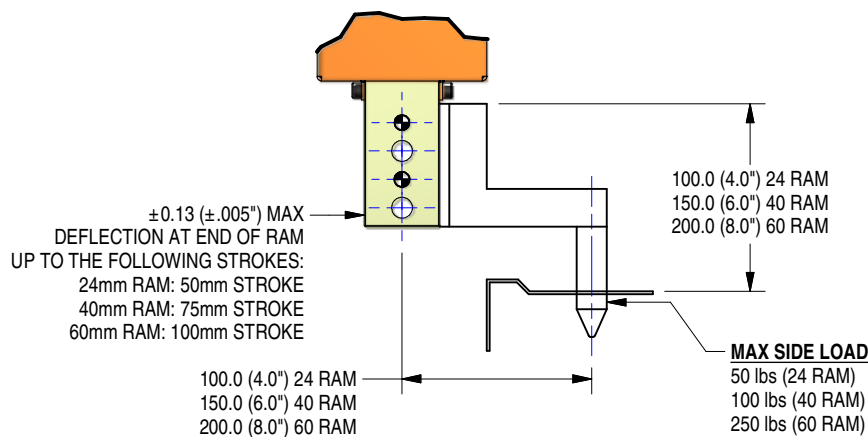
Shot pin units utilize a full contact bearing surface for high repeatability. Repeatability within $\pm .002"$ (0.05mm) part to part is achievable.

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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ACTUATOR INFORMATION

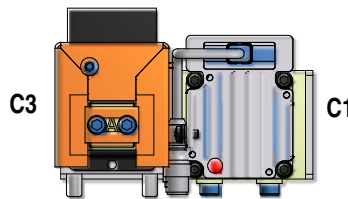
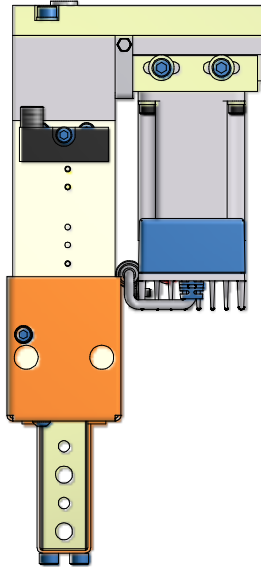
EB2N

E B **2** N 0 2 5 0 **2 0** A A A E 1 **A** 0 0 0

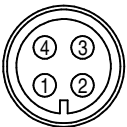
Ram Size
2 2 (24mm square)

Actuator Option
20 24V DC Motor with Drive

Cylinder Position
A Motor C1 Position
B Motor C3 Position



MALE 4-PIN
M12 MICRO
CONNECTOR



Pin	I/O Block Function	I/O Block Description	Signal
1	V+ (Aux Power) (2A)	Unswitched Control Power	+24Vdc To Shot Pin
2	Output B	Extend Ram	+24Vdc To Shot Pin
3	V- (Aux Power)	Aux Power Common	0Vdc From Shot Pin
4	Output A	Retract Ram	+24Vdc To Shot Pin

OUTPUT 2 OR 4 MUST BE MAINTAINED DURING DRIVE MOTION. LOSS OF THE OUTPUT WILL CAUSE DRIVE MOTION TO STOP. DURING SHOT PIN OPERATION, THE DRIVE OPERATES AT SPEED UNTIL OUTPUT IS LOST.

RAM POSITION IS CONTROLLED BY EXTERNAL CONTROLS. THE MOTION OUTPUT SHOULD BE MAINTAINED UNTIL IN POSITION, AS SENSED BY THE SWITCH. THE MOTION OUTPUT SHOULD THEN BE DROPPED, AND THE DRIVE WILL IMMEDIATELY STOP.

IF A FIXED EXTEND STOP IS USED, THE DRIVE COMMAND MUST BE MAINTAINED UNTIL FULLY AGAINST THE STOP.

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ACTUATOR INFORMATION

EB4N

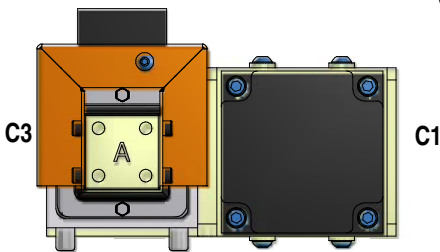
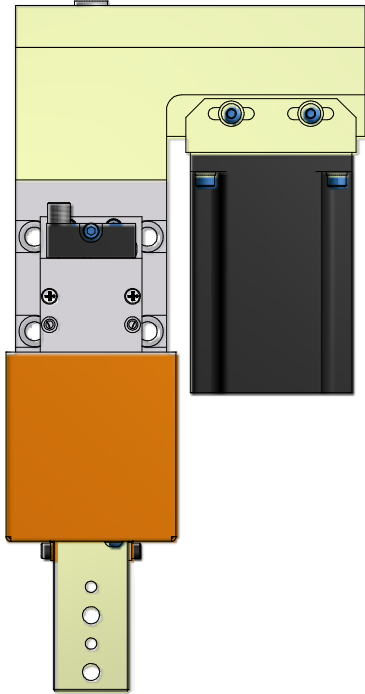


Ram Size
4 4 (40mm square)

Actuator Option
25 24/48V DC Motor

Cylinder Position
A Motor C1 Position
B Motor C3 Position

VIX DRIVE (ORDERED SEPARATELY)



MALE 5-PIN MINI CONNECTOR



Pin	I/O Block Function
1	A+
2	B-
3	GND
4	B+
5	B-

Power & Motor (X1)	
Pin	Function
10	24-48 DC +HV
9	0V / GND -HV
8	Earth PE
7	24V DC
6	0V (GND 24V DC)
5	Motor GND
4	Motor Phase (A+)
3	Motor Phase (A-)
2	Motor Phase (B+)
1	Motor Phase (B-)

Feedback, Digital Encoder (X2)	
Pin	Function
1	Feedback Enc. Z+
2	Feedback Enc. Z-
3	GND
4	Reserved
5	+5V Output
6	GND
7	Feedback Enc. A-
8	Feedback Enc. A+
9	Reserved
10	Motor Overtemp
11	Feedback Enc. B-
12	Feedback Enc. B+
13	Reserved
14	Reserved
15	Reserved

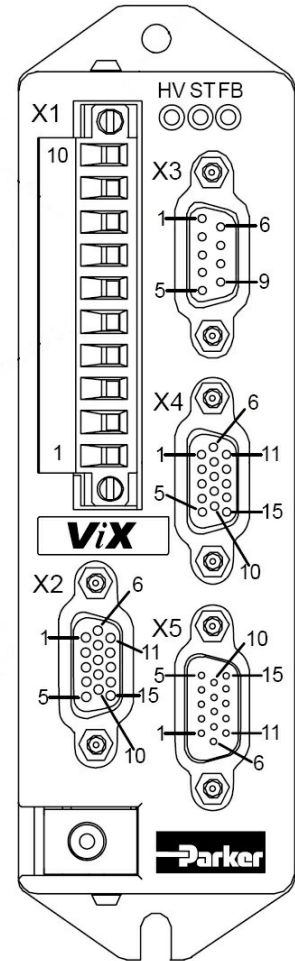
X2, X3 & X4 ARE NOT USED

WITH PRECONFIGURED SOFTWARE,
ONLY INPUTS 1-4 ARE USED
COMMON SIGNAL IS HIGH

Communications (X3)	
Pin	Function
1	Rx+/Tx+ (RS485)
2	Drive Reset
3	RS232 GND
4	RS232 Rx
5	RS232 Tx
6	Rx-/Tx- (RS485)
7	RS232 Tx (D Loop)
8	Do Not Connect
9	+5V Output

Control/Aux I/O (X4)	
Pin	Function
1	ANA 1+ In
2	ANA 1- In
3	0V
4	0V
5	+5V Output
6	Fault Output
7	Enc. A-/Step- In
8	Enc. B-/Dir- In
9	Enc. A- Out
10	Enc. B- Out
11	Energise/Shutdown
12	Enc. A+/Step+ In
13	Enc. B+/Dir+ In
14	Enc. A+ Out
15	Enc. B+ Out

User I/O (X5)	
Pin	Function
1	0V
2	0V
3	0V
4	Output 2
5	Output 1
6	Input 5 (Not Used)
7	Input 4 (Voltage Select)
8	Input 3 (Speed Select)
9	Input 2 (Retract)
10	Input 1 (Extend)
11	+24V
12	+24V
13	+24V
14	Output 3
15	Reserved



OUTPUT MUST BE MAINTAINED DURING DRIVE MOTION. LOSS OF THE OUTPUT WILL CAUSE DRIVE MOTION TO STOP. DURING SHOT PIN OPERATION, THE DRIVE OPERATES AT SPEED UNTIL OUTPUT IS LOST.

RAM POSITION IS CONTROLLED BY EXTERNAL CONTROLS. THE MOTION OUTPUT SHOULD BE MAINTAINED UNTIL IN POSITION, AS SENSED BY THE SWITCH. THE MOTION OUTPUT SHOULD THEN BE DROPPED, AND THE DRIVE WILL IMMEDIATELY STOP.

IF A FIXED EXTEND STOP IS USED, THE DRIVE COMMAND MUST BE MAINTAINED UNTIL FULLY AGAINST THE STOP.

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ACCESSORIES

ViX Microstepping Drive/Controller

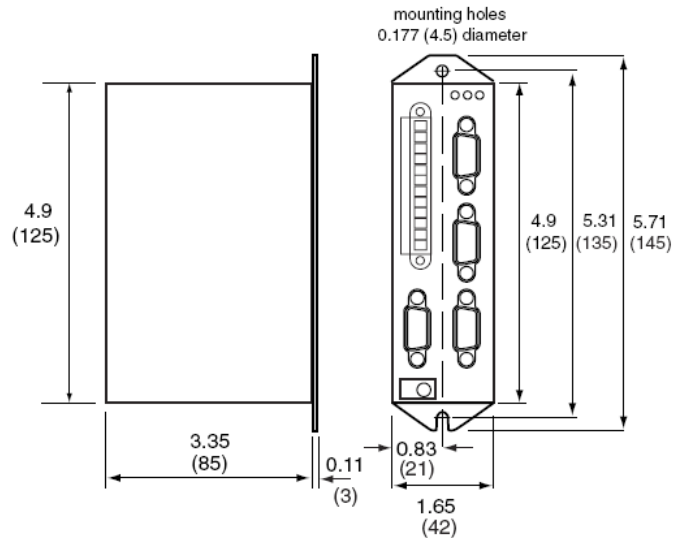
- Wizard-based configuration
- Up to 80 VDC bus voltage
- Compact size: 4.9 x 1.65 x 3.35 inches
- CE (EMC & LVD), UL compliant
- Standard RS232C ASCII interface
- Anti-resonance circuitry suppresses mid-range instability

This drive is required for the EB4N. This product ordered from Welker will come pre-installed with all necessary software installed.

Does NOT come with unit, MUST be ordered

seperate as:

VIX500IM



I/O Breakout Board

- 15 pin DB (Male)

This board is optional for the EB4N.

Does NOT come with unit, MUST be ordered

seperate as:

39170-2015

15 pin BD Male to 9 pin DB Female Cable

This cable is optional for the EB4N.

For use with Breakout Board.

Does NOT come with unit, MUST be ordered

seperate as:

XXXX

5pin Female Micro Fast Power Connector Cable

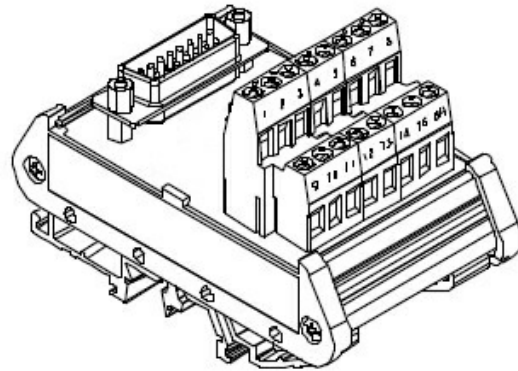
Motor cable

Does NOT come with unit, MUST be ordered

seperate as:

xxxx-(Lenght)

Lenght = TBD



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