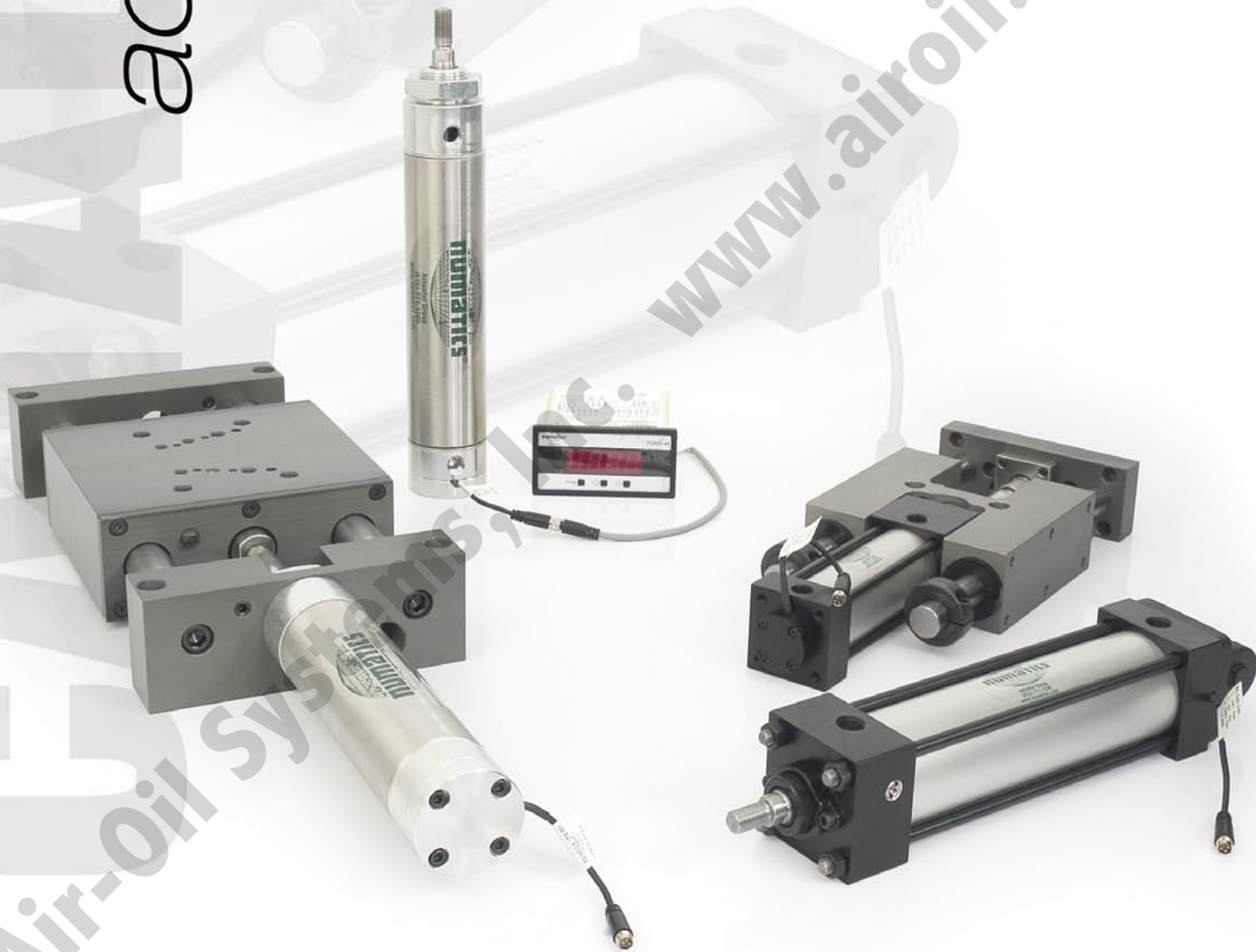


actuators

ACCU Actuators

*Position Feedback Actuators, Slides,
Gantries, and Accessories*



numatics®

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The **Accu A Series** is an aluminum NFPA Interchangeable cylinder line that contains an internal Linear Resistive Transducer (LRT). It is ideal for applications where traditional magnetic position sensing is not acceptable. Additionally, the Accu A Series is conducive where variations in cylinder stroke and speed are required or where an application calls for continuous position monitoring.

Tube

The tube is hard coat anodized on the I.D. The hard coating is an electro-chemical process, which produces a very dense surface of aluminum oxide. This surface has extreme hardness (60 RC.), excellent wear and corrosion resistance, and low coefficient of friction.

End Caps

The end caps are accurately machined from (6061-T6) solid aluminum bar stock. They are anodized for corrosion resistance. Additionally, a recess on the piston-mating surface (at both ends) enables the air to work on a larger piston area for effortless break-away.

Rod Bushing

The A Series includes a graphite filled, cast iron rod bushing that is extra long in length. Graphite filled offers the best bearing surface when using a hard chrome plated piston rod. Cast iron provides maximum resistance against wear. The added length adds superior alignment and support of the piston rod as well as provides maximum load bearing support.

Rod Seal

The carboxylated nitrile with Teflon® compound rod seal is self-lubricating and durable. The rounded lip design ensures proper sealing and long life.

Rod Wiper

The standard rod wiper construction is a highly durable polyurethane.

Piston Rod

High strength steel (100,000 psi minimum yield) piston rod has a ground, polished, and chrome plated surface. This surface provides maximum life for both the rod bushing and the seals.

Bushing Retainer

The bushing retainer allows cartridge removal (cylinder repair) without complete disassembly.

Tie Rods

The tie rods are 100,000 psi minimum yield steel for maximum holding power. They are roll formed for superior strength and engagement.

Piston Seal

The piston seal is a low friction carboxylated nitrile seal. The carboxylated nitrile is a Teflon® compound that is used for self-lubricating. The U-cup seals are pressure activated and wear compensating.

Wear Band

The wear band is a stable, lubricating strip located on the piston. We separate the load bearing points by locating the wear band at the rear of the piston. This maximizes column strength at full extension.

Piston

The solid aluminum alloy piston is strong and durable.

Cushion Seal

The floating cushion seal design enables rapid stroke reversal by providing instantaneous full flow to the piston. Each cushion has a flush, retained adjustment needle.

Tube End Seal

The tube end seals are compression type and reusable.

Ports

Our enhanced port design enables the cylinder to work more efficiently. Through the use of precise machining depths and tool shape, we are able to smooth the flow path into and out of the cylinder.



Linear Resistive Transducer (LRT) Probe

The LRT is an anodized aluminum probe with a reinforced threaded flange and thread seal. The probe processes infinite resolution, with a non-linearity of ± 1 percent of full stroke. Furthermore, the probe is rated for 10 million cycles. Typical probe input is 10VDC (maximum voltage is 28VDC and maximum current draw is less than 2mA), input impedance required is 1 Mohm. The probe temperature rating is -40° to 250° F. Maximum velocity is 50"/sec.

Linear Resistive Transducer (LRT) Wiper

The LRT wiper is precision molded assembly that is rated for more than 1000 linear miles of travel.

3 Pin Connector

The customer friendly connector is supplied as standard on all Accu A Series cylinders. The connector has a universal 8 mm, 3 pin, Nano male connection.

Teflon® is a registered trademark of DuPont.

Standard Specifications:

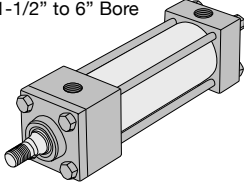
- Meets NFPA mounting dimension specifications
- Bore sizes from 1-1/2" through 8"
- Piston rod diameters from 5/8" to 1-3/4"
- Cylinder nominal pressure rating is 100 psi air
- Standard temperature -10° F to 165° F
- Probe Standard Temperature -40° F to 250° F
- NPTF ports
- Multitude of mounting options
- Continuous position sensing
- Easily repairable
- Extremely accurate:
 - Infinite resolution, linearity of ± 1 percent of full stroke, $\pm .001$ " mechanical repeatability
- Electronic controllers available for dual set points and scalable analog output applications
- Quick connect (IP65) standard on all models



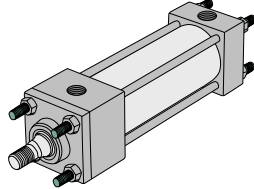
ACCU A Series Position Feedback Actuators

Standard ACCU A Series Mounts Centerline Mounts

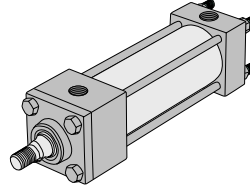
X0 Mount
Basic No Mount
1-1/2" to 6" Bore



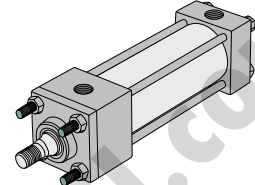
X1 Mount
Extended Tie Rods – Both Ends



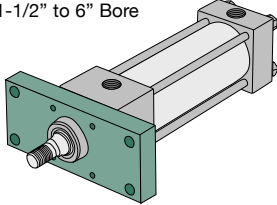
X2 Mount
Extended Tie Rods – Cap End



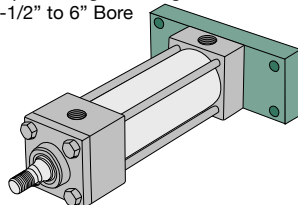
X3 Mount
Extended Tie Rods – Head End



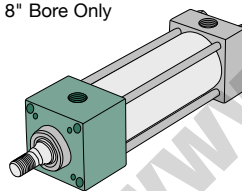
F1 Mount
Head Rectangular Flange
1-1/2" to 6" Bore



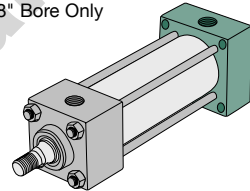
F2 Mount
Cap Rectangular Flange
1-1/2" to 6" Bore



E3 Mount
Head Square
8" Bore Only

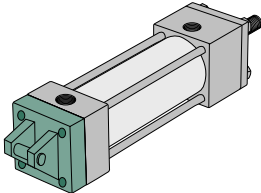


E4 Mount
Head Square
8" Bore Only

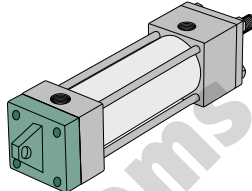


Pivot Mounts

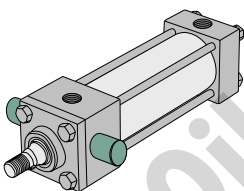
P2 Mount
Detachable Clevis



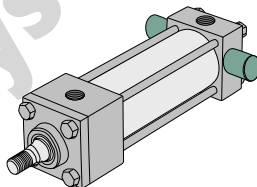
P4 Mount
Detachable Eye



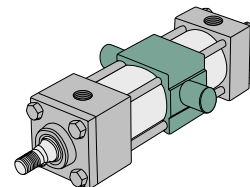
T1 Mount
Head Trunnion



T2 Mount
Cap Trunnion

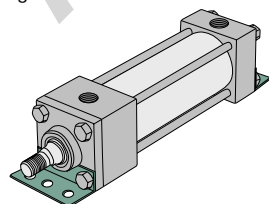


T4 Mount
Intermediate Trunnion

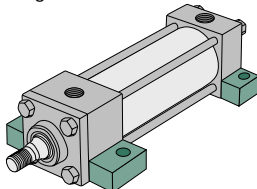


Foot Mounts

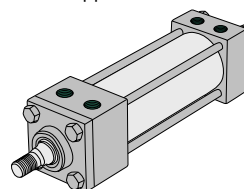
S1 Mount
Angle Mount



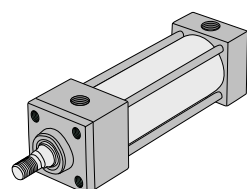
S2 Mount
Side Lugs



S4 Mount
Bottom Tapped



SN Mount
Sleeve Nut





How to Order

X0 AAS K - 01 A 3 C - F AA 2 - 4

Mount

- X0* = Standard No Mount
- X1 = Extended Tie Rods Both Ends
- X2 = Extended Tie Rod Cap End
- X3 = Extended Tie Rod Head End
- F1* = Front Flange
- F2* = Rear Flange
- E3** = Head Square Flange
- E4** = Cap Square Flange
- P2 = Detachable Clevis
- P4 = Detachable Eye
- T1 = Head Trunnion
- T2 = Cap Trunnion
- T4*** = Mid Trunnion
- S1 = Angle Mount
- S2 = Side Lug Mount
- S4 = Bottom Tapped
- SN* = Sleeve Nut
- * 1-1/2" - 6" bores
- ** 8" bore only
- ***Must specify XI dimension

Type

AAS = ACCU A Series

Bore

- K = 1-1/2" R = 4"
- L = 2" T = 5"
- M = 2-1/2" U = 6"
- P = 3-1/4" W = 8"

Standard Full Inches of Stroke

- 01 = 1" Stroke
- 02 = 2" Stroke
- 03 = 3" Stroke
- 04 = 4" Stroke
- 06 = 6" Stroke
- 08 = 8" Stroke
- 12 = 12" Stroke
- 18 = 18" Stroke (maximum)

Note: Non-standard stroke lengths increase lead time.

Fractional Inches of Stroke

- A = 0" I = 1/2"
- B = 1/16" J = 9/16"
- C = 1/8" K = 5/8"
- D = 3/16" L = 11/16"
- E = 1/4" M = 3/4"
- F = 5/16" N = 13/16"
- G = 3/8" O = 7/8"
- H = 7/16" P = 15/16"

Note: Transducer output in full inch increments and not all fractional combinations are valid. Additionally, fractional inch strokes will not have 0-10V output..

Rod End Codes

- 1 = Style #1 Standard Male Thread
- 2 = Style #2 Optional Male Thread
- 3 = Style #3 Optional Female Thread
- 4 = Special Standard Rod Diameter (must specify threads)
- 5 = Special Oversize Rod Diameter (must specify threads)
(must specify threads)
- 6 = #1 Oversize Rod Diameter
- 7 = #2 Oversize Rod Diameter
- 8 = #3 Oversize Rod Diameter
- U = Male Coupling Rod End Standard Rod Diameter
- V = Male Coupling Rod End Oversized Rod Diameter

Position of the Connector Cable

- 1 = Position 1
- 2 = Position 2
- 3 = Position 3
- 4 = Position 4

Magnet

- 0 = No Magnet
- 2 = Reed Magnet

Options

- AA = No Options
- BA** = Bumpers Both Ends
- BC** = Bumper Cap Only
- BH** = Bumper Head
- CT = Composite Tube
- CZ = Composite Bushing
- LP = Profile Tubing
- MA = Metallic Rod Scraper
- NA = Nickel Plated
- RB = Rod Boot
- PA = Polypak Rod Seal
- SA = Stainless Steel Piston Rod
- SS = Stainless Piston Rod and Tie Rods
- ST = Stainless Tie Rods
- 1A* = Rod Extension
- 2A* = Thread Extension
- 12* = Rod and Thread Extension
- 3A = Studded Rod End

* Specify length.

**Bumpers add .062" to OAL (per bumper).

Consult factory for information regarding combination options.
Note: LB Option - Low breakaway seals are standard.

Head Cushion and Position

Position	1	2	3	4	Fixed
No Cushion	A	A	A	A	A
Head Only	F	G	H	J	W

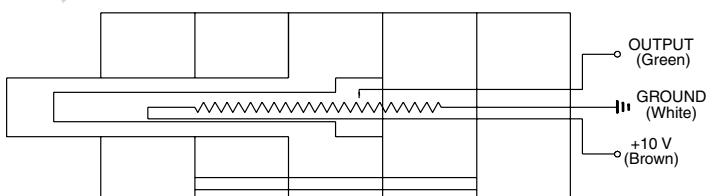
Note: Cushions are not available on the cap end of the cylinder.

Port Size and Location

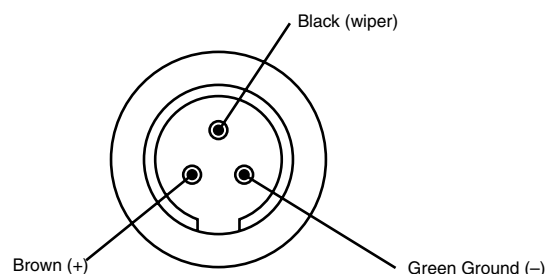
Position	1/8"	1/4"	3/8"	1/2"	3/4"
1	B	C	D	E	F
2	H	I	J	K	L
3	N	O	P	Q	R
4	T	U	V	W	X

Note: Some ports are not available on smaller bore sizes.

MLRT Circuit Diagram



Connector Pin Assignments



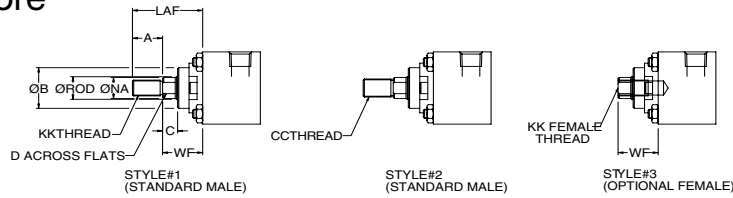


ACCU A Series Position Feedback Actuators

Standard and Optional Rod Ends

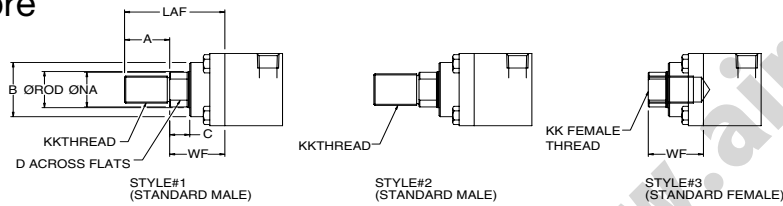
1-1/2" - 2-1/2" Bore

5/8" Rod

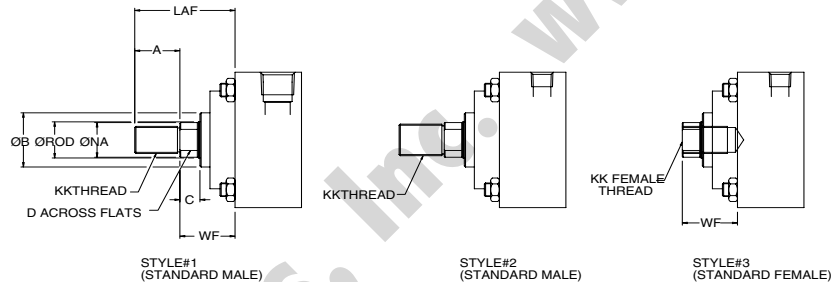


1-1/2" - 2-1/2" Bore

1" Rod



3-1/4"-8" Bore

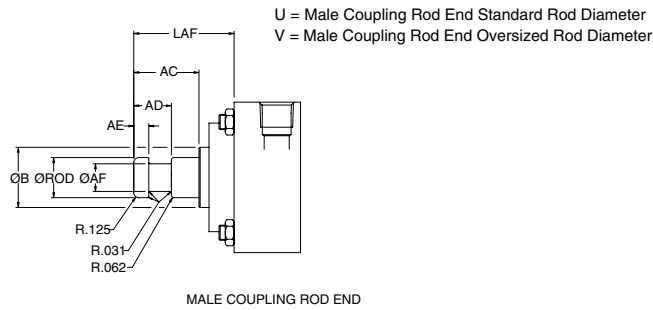


Dimensions

BORE	ROD DIAMETER	KK	CC	A	B	C	D	NA	LAF	WF
1-1/2	0.625	7/16 - 20	1/2 - 20	0.750	1.125	0.375	0.500	0.585	1.750	1.000
	1.00	3/4 - 16	7/8 - 14	1.125	1.400	0.500	0.813	0.960	2.500	1.375
2	0.625	7/16 - 20	1/2 - 20	0.750	1.125	0.375	0.500	0.585	1.750	1.000
	1.00	3/4 - 16	7/8 - 14	1.125	1.500	0.500	0.813	0.960	2.500	1.375
2-1/2	0.625	7/16 - 20	1/2 - 20	0.750	1.125	0.375	0.500	0.585	1.750	1.000
	1.00	3/4 - 16	7/8 - 14	1.125	1.500	0.500	0.813	0.960	2.500	1.375
3-1/4	1.00	3/4 - 16	7/8 - 14	1.125	1.500	0.500	0.813	0.960	2.500	1.375
	1.375	1 - 14	1 1/4 - 12	1.625	2.000	0.625	1.125	1.313	3.250	1.625
4	1.00	3/4 - 16	7/8 - 14	1.125	1.500	0.500	0.813	0.960	2.500	1.375
	1.375	1 - 14	1 1/4 - 12	1.625	2.000	0.625	1.125	1.313	3.250	1.625
5	1.00	3/4 - 16	7/8 - 14	1.125	1.500	0.500	0.813	0.960	2.500	1.375
	1.375	1 - 14	1 1/4 - 12	1.625	2.000	0.625	1.125	1.313	3.250	1.625
6	1.375	1 - 14	1 1/4 - 12	1.625	2.000	0.625	1.125	1.313	3.250	1.625
	1.750	1 1/4 - 12	1 1/2 - 12	2.000	2.375	0.750	1.500	1.688	3.875	1.875
8	1.375	1 - 14	1 1/4 - 12	1.625	2.000	0.625	1.125	1.313	3.250	1.625
	1.750	1 1/4 - 12	1 1/2 - 12	2.000	2.375	0.750	1.500	1.688	3.875	1.875



Male Coupling Rod Ends



Dimensions

BORE	ROD DIAMETER	B	AC	AD	AE	AF	LAF
1-1/2	0.625	1.125	1.125	0.625	0.250	0.375	1.750
	1.00	1.500	1.625	0.938	0.375	0.688	2.500
2	0.625	1.125	1.125	0.625	0.250	0.375	1.750
	1.00	1.400	1.625	0.938	0.375	0.688	2.500
2-1/2	0.625	1.125	1.125	0.625	0.250	0.375	1.750
	1.00	1.500	1.625	0.938	0.375	0.688	2.500
3-1/4	1.00	1.500	1.500	0.938	0.375	0.688	2.375
	1.375	2.000	1.750	1.062	0.375	0.875	2.750
4	1.00	1.500	1.500	0.938	0.375	0.688	2.375
	1.375	2.000	1.750	1.062	0.375	0.875	2.750
5	1.00	1.500	1.500	0.938	0.375	0.688	2.375
	1.375	2.000	1.750	1.062	0.375	0.875	2.750
6	1.375	2.000	1.750	1.062	0.375	0.875	2.750
	1.750	2.375	2.000	1.313	0.500	1.125	3.125

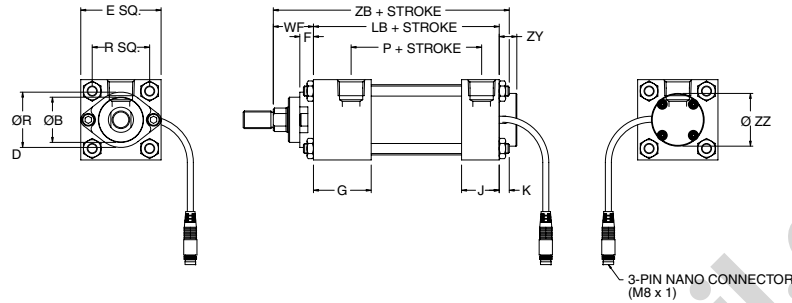


ACCU A Series Position Feedback Actuators

XO Mount – Basic No Mount

1 1/2" -2 1/2" Bore

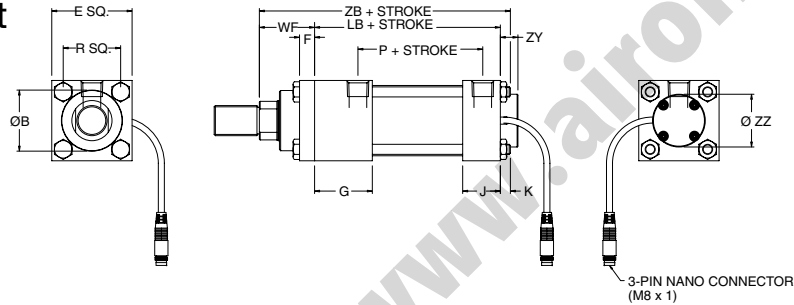
5/8" Rod



XO Mount- Basic No Mount

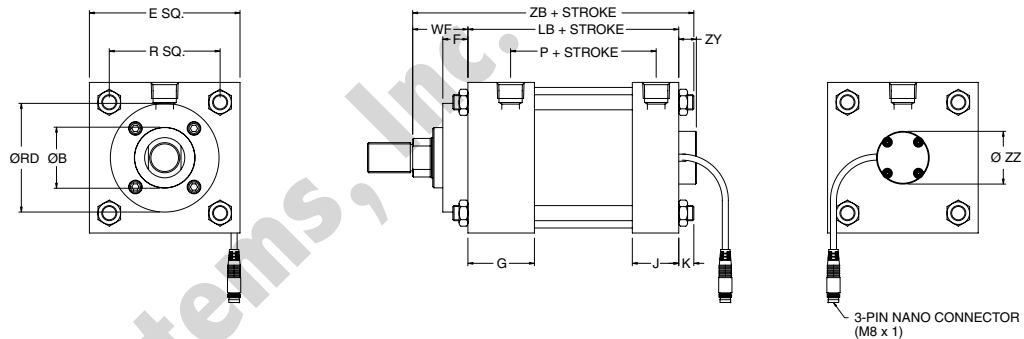
1 1/2" - 2" Bore

1" Rod



XO Mount- Basic No Mount

3 1/4" - 6" Bore



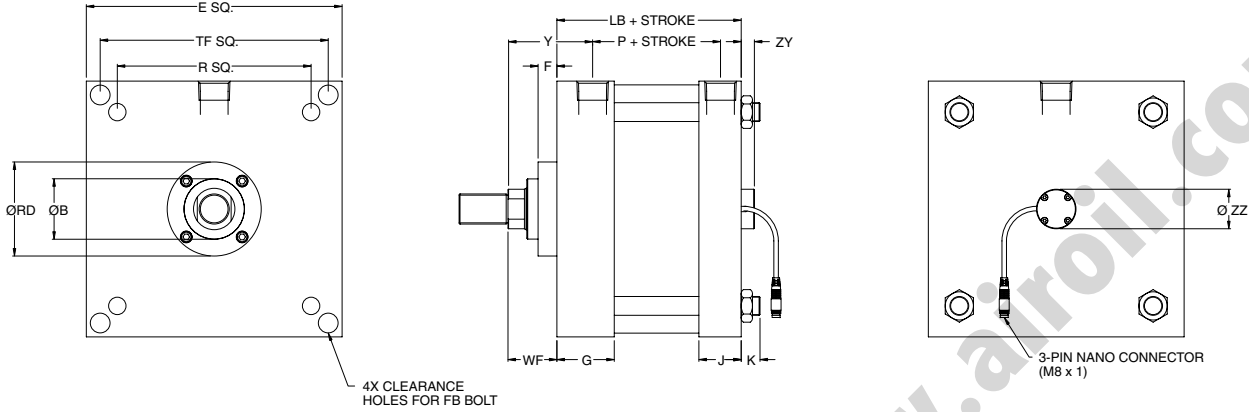
Dimensions

BORE	ROD DIAMETER	B	E	F	G	J	K	LB	P	R	RD	WF	ZB	ZY	ZZ
1-1/2	0.625	1.125	2.000	0.375	1.500	1.000	0.250	3.625	2.250	1.430	1.375	1.000	4.875	0.438	1.313
	1.00	1.400	2.000	0.375	1.500	1.000	0.250	3.625	2.103	1.430	N/A	1.375	5.250	0.438	1.313
2	0.625	1.125	2.500	0.375	1.500	1.000	0.313	3.625	2.250	1.840	1.375	1.000	4.938	0.438	1.313
	1.00	1.500	2.500	0.375	1.500	1.000	0.313	3.625	2.250	1.840	N/A	1.375	5.313	0.438	1.313
2-1/2	0.625	1.125	3.000	0.375	1.500	1.000	0.313	3.750	2.375	2.190	1.375	1.000	5.062	0.438	1.313
	1.00	1.500	3.000	0.375	1.500	1.000	0.313	3.750	2.375	2.190	N/A	1.375	5.438	0.438	1.313
3-1/4	1.00	1.500	3.750	0.625	1.750	1.250	0.375	4.250	2.625	2.760	2.706	1.375	6.000	0.438	1.313
	1.375	2.000	3.750	0.625	1.750	1.250	0.375	4.250	2.625	2.760	3.125	1.625	6.250	0.438	1.313
4	1.00	1.500	4.500	0.625	1.750	1.250	0.375	4.250	2.625	3.320	2.706	1.375	6.000	0.438	1.313
	1.375	2.000	4.500	0.625	1.750	1.250	0.375	4.250	2.625	3.320	3.125	1.625	6.250	0.438	1.313
5	1.00	1.500	5.500	0.625	1.750	1.250	0.500	4.500	2.875	4.100	2.706	1.375	6.375	0.438	1.313
	1.375	2.000	5.500	0.625	1.750	1.250	0.500	4.500	2.875	4.100	3.125	1.625	6.625	0.438	1.313
6	1.375	2.000	6.500	0.625	2.000	1.500	0.500	5.000	3.125	4.880	3.125	1.625	7.125	0.438	1.313
	1.750	2.375	6.500	0.750	2.000	1.500	0.500	5.000	3.125	4.880	3.788	1.875	7.375	0.438	1.313

1 1/2, 2, & 2-1/2 (with 1" rod) RD dimension is not available. Retainer is full face.



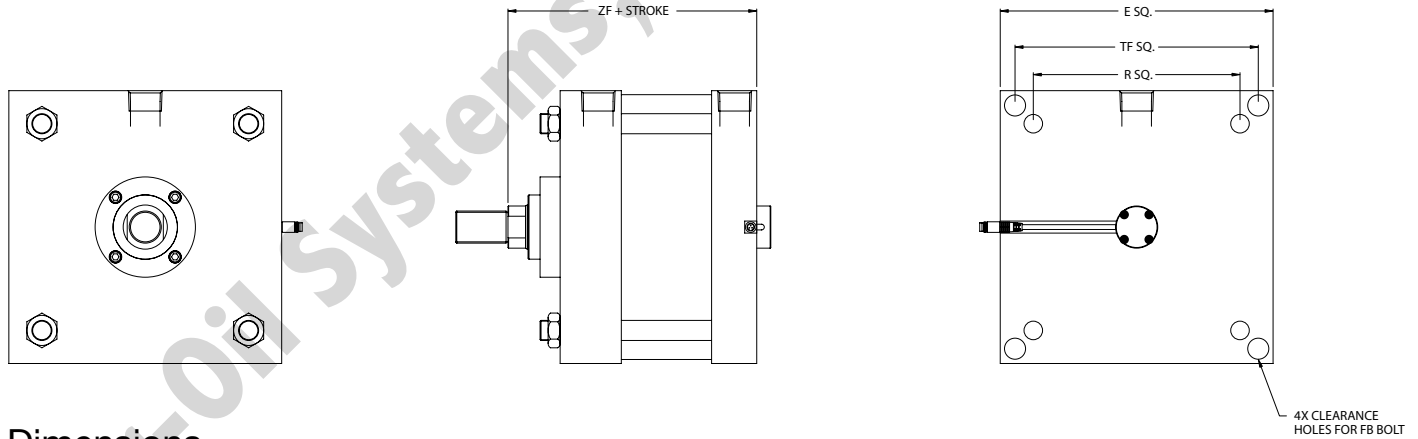
E3 Mount – Head Square Mount 8" Bore



Dimensions

BORE	ROD DIAMETER	B	E	G	J	F	K	P	R	Y	FB	LB	RD	TF	WF	ZY	ZZ
8	1.375	2.000	8.500	2.000	1.500	0.630	0.630	3.250	6.440	2.810	0.630	5.125	3.130	7.580	1.625	0.438	1.313
	1.750	2.375	8.500	2.000	1.500	0.750	0.630	3.250	6.440	3.060	0.630	5.125	3.790	7.580	1.875	0.438	1.313

E4 Mount – Cap Square Mount 8" Bore



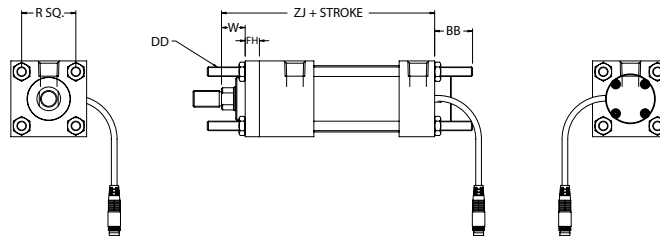
Dimensions

BORE	ROD DIAMETER	E	R	FB	TF	ZF
8	1.375	8.500	6.440	0.625	7.580	6.750
	1.750	8.500	6.440	0.625	7.580	7.000

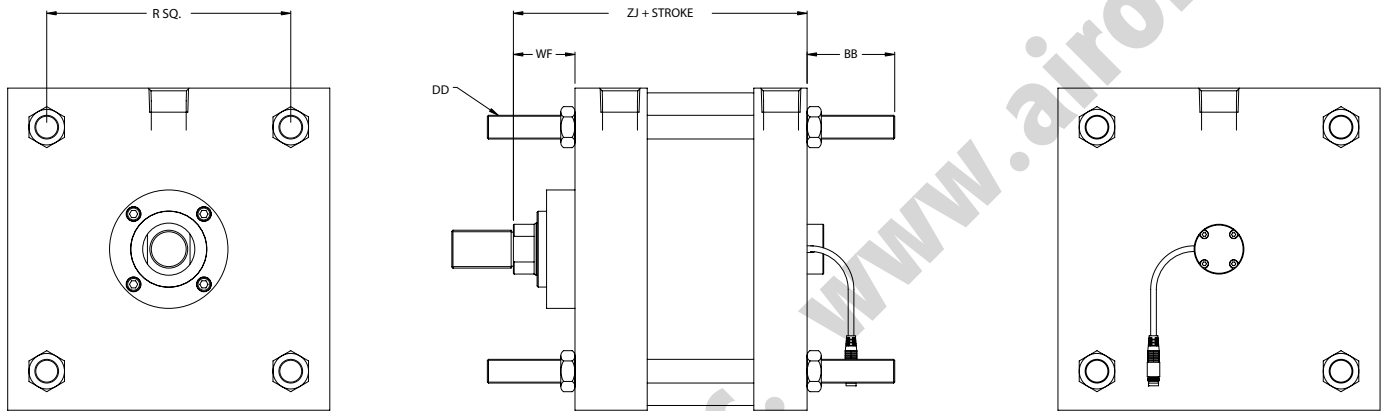


ACCU A Series Position Feedback Actuators

X1 Mount – Extended Tie Rods - Both Ends 1-1/2" - 6" Bore



8" Bore

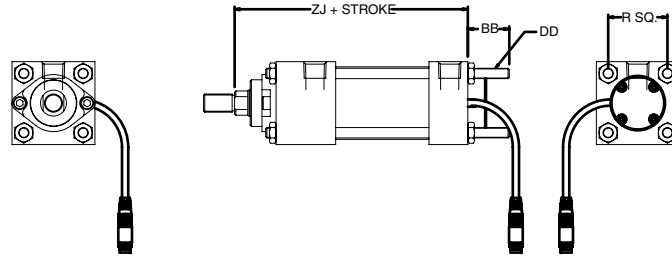


Dimensions

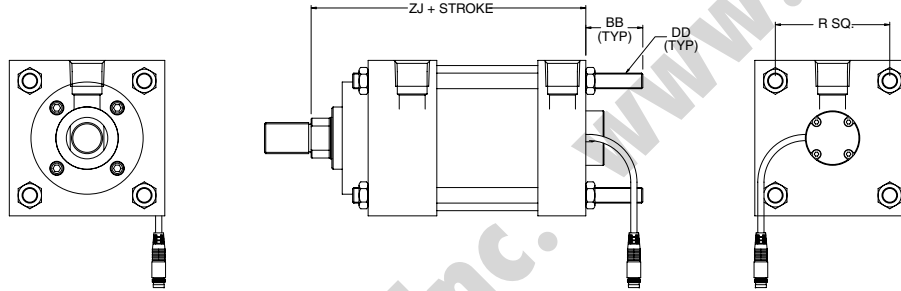
BORE	ROD DIAMETER	R	W	BB	DD	FH	WF	ZJ
1-1/2	0.625	1.430	0.625	1.000	1/4-28	0.375	N/A	4.625
	1.00	1.430	1.000	1.000	1/4-28	0.375	N/A	5.000
2	0.625	1.840	0.625	1.125	5/16-24	0.375	N/A	4.625
	1.00	1.840	1.000	1.125	5/16-24	0.375	N/A	5.000
2 1/2	0.625	2.190	0.625	1.125	5/16-24	0.375	N/A	4.750
	1.00	2.190	1.000	1.125	5/16-24	0.375	N/A	5.125
3 1/4	1.00	2.760	0.750	1.375	3/8-24	0.625	N/A	5.625
	1.375	2.760	1.000	1.375	3/8-24	0.625	N/A	5.875
4	1.00	3.320	0.750	1.375	3/8-24	0.625	N/A	5.625
	1.375	3.320	1.000	1.375	3/8-24	0.625	N/A	5.875
5	1.00	4.100	0.750	1.813	1/2-20	0.625	N/A	5.875
	1.375	4.100	1.000	1.813	1/2-20	0.625	N/A	6.125
6	1.375	4.880	0.875	1.813	1/2-20	0.750	N/A	6.625
	1.750	4.880	1.125	1.813	1/2-20	0.750	N/A	6.875
8	1.375	6.440	N/A	2.310	5/8-18	N/A	1.625	6.750
	1.750	6.440	N/A	2.310	5/8-18	N/A	1.875	7.000



X2 Mount – Extended Tie Rods - Cap End 1-1/2" - 2-1/2" Bore



X2 Mount – Extended Tie Rods - Cap End 3-1/4" - 8" Bore



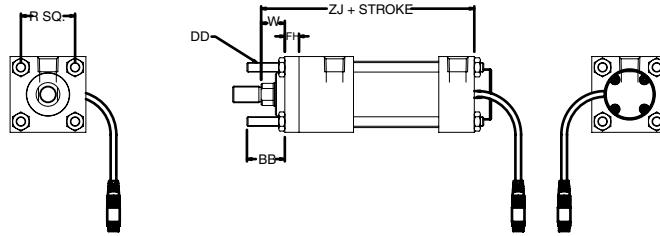
Dimensions

BORE	ROD DIAMETER	R	BB	DD	ZJ
1-1/2	0.625	1.430	1.000	1/4-28	4.625
	1.00	1.430	1.000	1/4-28	5.000
2	0.625	1.840	1.125	5/16-24	4.625
	1.00	1.840	1.125	5/16-24	5.000
2-1/2	0.625	2.190	1.125	5/16-24	4.750
	1.00	2.190	1.125	5/16-24	5.125
3-1/4	1.00	2.760	1.375	3/8-24	5.625
	1.375	2.760	1.375	3/8-24	5.875
	1.00	3.320	1.375	3/8-24	5.625
4	1.375	3.320	1.375	3/8-24	5.875
	1.00	4.100	1.813	1/2-20	5.875
5	1.375	4.100	1.813	1/2-20	6.125
	1.375	4.880	1.813	1/2-20	6.625
6	1.750	4.880	1.813	1/2-20	6.875
	1.375	6.440	2.310	5/8-18	6.750
8	1.750	6.440	2.310	5/8-18	7.000

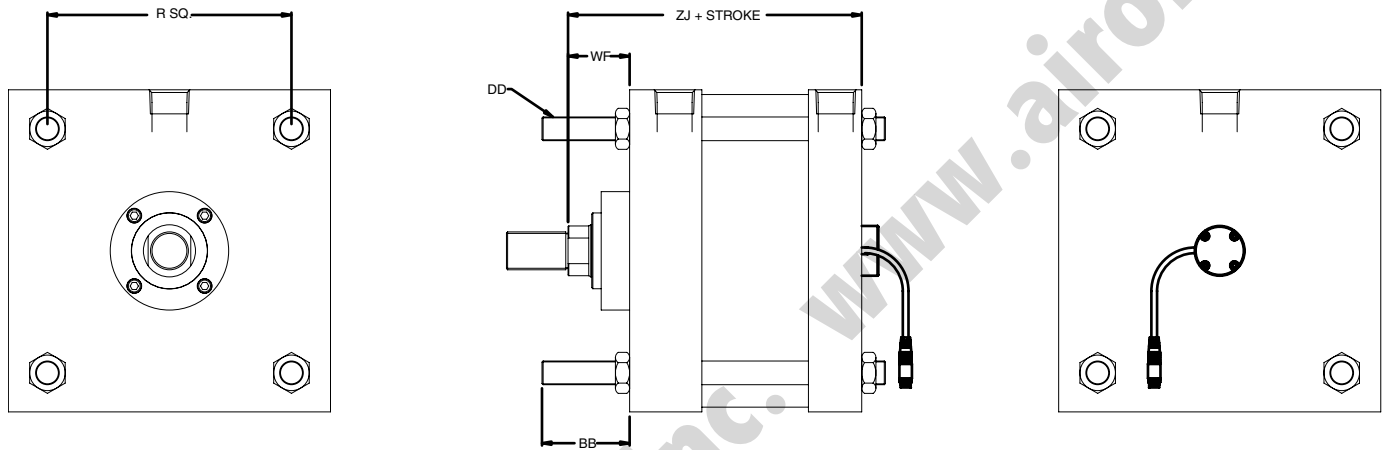


ACCU A Series Position Feedback Actuators

X3 Mount – Extended Tie Rods - Head End 1-1/2" - 6" Bore



8" Bore

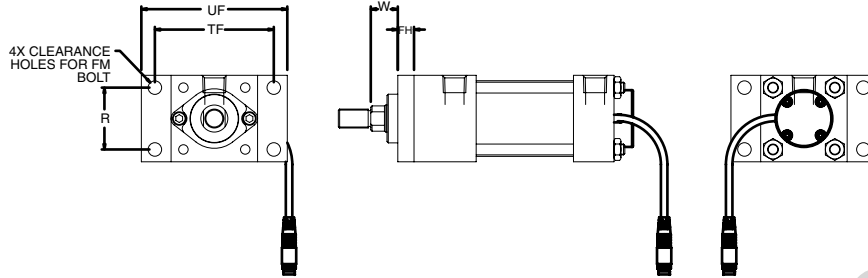


Dimensions

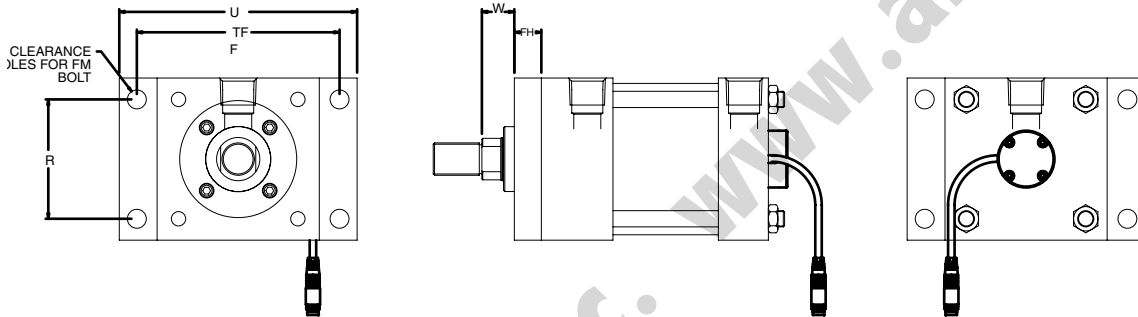
BORE	ROD DIAMETER	R	W	BB	DD	FH	WF	ZJ
1-1/2	0.625	1.430	0.625	1.000	1/4-28	0.375	N/A	4.625
	1.00	1.430	1.000	1.000	1/4-28	0.375	N/A	5.000
2	0.625	1.840	0.625	1.125	5/16-24	0.375	N/A	4.625
	1.00	1.840	1.000	1.125	5/16-24	0.375	N/A	5.000
2-1/2	0.625	2.190	0.625	1.125	5/16-24	0.375	N/A	4.750
	1.00	2.190	1.000	1.125	5/16-24	0.375	N/A	5.125
3-1/4	1.00	2.760	0.750	1.375	3/8-24	0.625	N/A	5.625
	1.375	2.760	1.000	1.375	3/8-24	0.625	N/A	5.875
4	1.00	3.320	0.750	1.375	3/8-24	0.625	N/A	5.625
	1.375	3.320	1.000	1.375	3/8-24	0.625	N/A	5.875
5	1.00	4.100	0.750	1.813	1/2-20	0.625	N/A	5.875
	1.375	4.100	1.000	1.813	1/2-20	0.625	N/A	6.125
6	1.375	4.880	0.875	1.813	1/2-20	0.750	N/A	6.625
	1.750	4.880	1.125	1.813	1/2-20	0.750	N/A	6.875
8	1.375	6.440	N/A	2.310	5/8-18	N/A	1.625	6.750
	1.750	6.440	N/A	2.310	5/8-18	N/A	1.875	7.000



F1 Mount – Head Rectangular Flange 1-1/2" - 2 1/2" Bore



F1 Mount 3 1/4" - 8" Bore



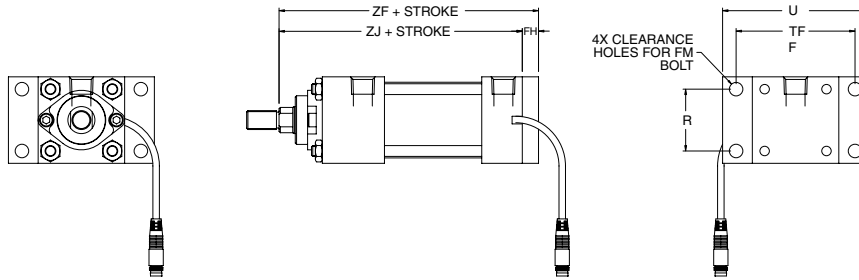
Dimensions

BORE	ROD DIAMETER	R	W	FB	FH	TF	UF
1-1/2	0.625	1.430	0.625	0.250	0.375	2.750	3.375
	1.00	1.430	1.000	0.250	0.375	2.750	3.375
2	0.625	1.840	0.625	0.313	0.375	3.375	4.125
	1.00	1.840	1.000	0.313	0.375	3.375	4.125
2-1/2	0.625	2.190	0.625	0.313	0.375	3.875	4.625
	1.00	2.190	1.000	0.313	0.375	3.875	4.625
3-1/4	1.00	2.760	0.750	0.375	0.625	4.688	5.500
	1.375	2.760	1.000	0.375	0.625	4.688	5.500
4	1.00	3.320	0.750	0.375	0.625	5.438	6.250
	1.375	3.320	1.000	0.375	0.625	5.438	6.250
5	1.00	4.100	0.750	0.500	0.625	6.625	7.625
	1.375	4.100	1.000	0.500	0.625	6.625	7.625
	1.375	4.880	0.875	0.500	0.750	7.625	8.625
6	1.750	4.880	1.125	0.500	0.750	7.625	8.625

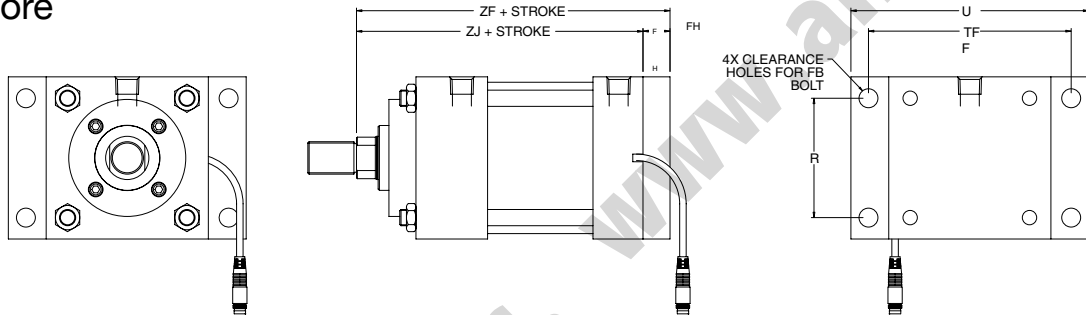


ACCU A Series Position Feedback Actuators

F2 Mount – Cap Rectangular Flange 1-1/2" - 2-1/2" Bore



F2 Mount – Cap Rectangular Flange 3-1/4" - 6" Bore



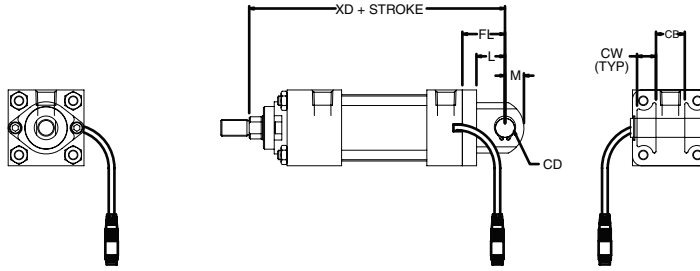
Dimensions

BORE	ROD DIAMETER	R	FB	FH	TF	UF	ZF	ZJ
1-1/2	0.625	1.430	0.250	0.375	2.750	3.375	5.000	4.625
	1.00	1.430	0.250	0.375	2.750	3.375	5.375	5.000
2	0.625	1.840	0.313	0.375	3.375	4.125	5.000	4.625
	1.00	1.840	0.313	0.375	3.375	4.125	5.375	5.000
2-1/2	0.625	2.190	0.313	0.375	3.875	4.625	5.125	4.750
	1.00	2.190	0.313	0.375	3.875	4.625	5.500	5.125
3-1/4	1.00	2.760	0.375	0.625	4.688	5.500	6.250	5.625
	1.375	2.760	0.375	0.625	4.688	5.500	6.500	5.875
4	1.00	3.320	0.375	0.625	5.438	6.250	6.250	5.625
	1.375	3.320	0.375	0.625	5.438	6.250	6.500	5.875
5	1.00	4.100	0.500	0.625	6.625	7.625	6.500	5.875
	1.375	4.100	0.500	0.625	6.625	7.625	6.750	6.125
6	1.375	4.880	0.500	0.750	7.625	8.625	7.375	6.625
	1.750	4.880	0.500	0.750	7.625	8.625	7.625	6.875



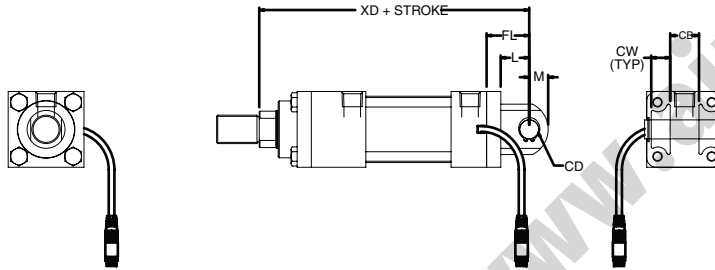
P2 Mount – Detachable Clevis 1 1/2" - 2 1/2" Bore

5/8" Rod

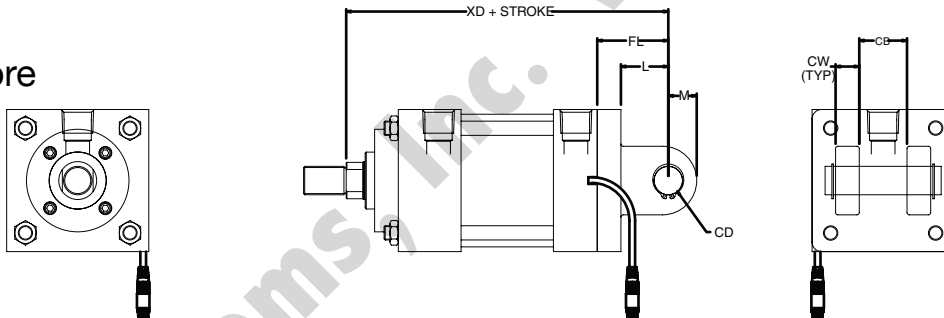


P2 Mount 1 1/2" - 2 1/2" Bore

1" Rod



P2 Mount 3-1/4" - 8" Bore



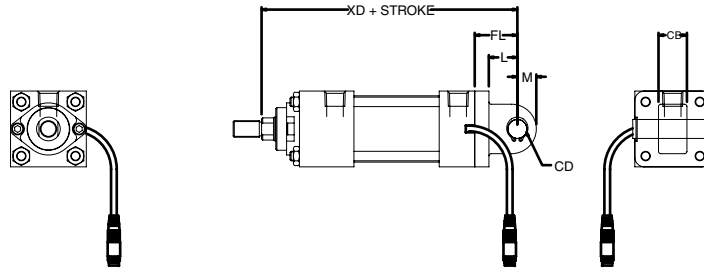
Dimensions

BORE	ROD DIAMETER	L	M	CB	CD	CW	FL	XD
1-1/2	0.625	0.750	0.500	0.750	0.500	0.500	1.125	5.750
	1.00	0.750	0.500	0.750	0.500	0.500	1.125	6.125
2	0.625	0.750	0.500	0.750	0.500	0.500	1.125	5.750
	1.00	0.750	0.500	0.750	0.500	0.500	1.125	6.125
2-1/2	0.625	0.750	0.500	0.750	0.500	0.500	1.125	5.875
	1.00	0.750	0.500	0.750	0.500	0.500	1.125	6.250
3-1/4	1.00	1.250	0.750	1.250	0.750	0.625	1.875	7.500
	1.375	1.250	0.750	1.250	0.750	0.625	1.875	7.750
	1.00	1.250	0.750	1.250	0.750	0.625	1.875	7.500
4	1.375	1.250	0.750	1.250	0.750	0.625	1.875	7.750
	1.00	1.250	0.750	1.250	0.750	0.625	1.875	7.750
5	1.375	1.250	0.750	1.250	0.750	0.625	1.875	8.000
	1.00	1.250	0.750	1.250	0.750	0.625	1.875	7.750
6	1.375	1.500	1.000	1.500	1.000	0.750	2.250	8.875
	1.750	1.500	1.000	1.500	1.000	0.750	2.250	9.125
8	1.375	1.500	1.000	1.500	1.000	0.750	2.250	9.000
	1.750	1.500	1.000	1.500	1.000	0.750	2.250	9.250

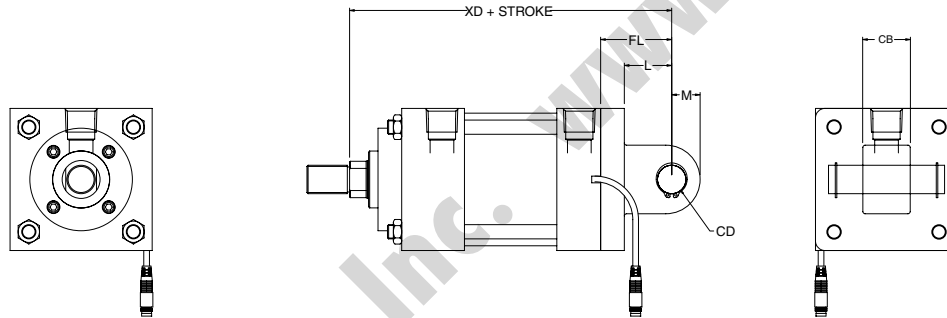


ACCU A Series Position Feedback Actuators

P4 Mount – Detachable Eye 1-1/2" - 2-1/2" Bore, P4 Mount



3-1/4" - 8" Bore, P4 Mount

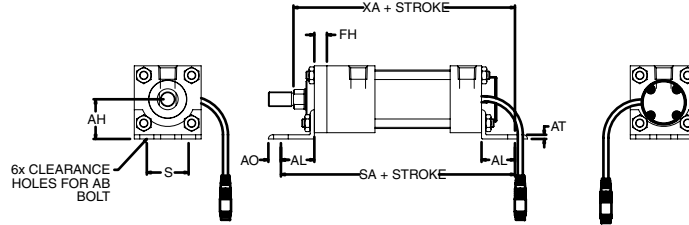


Dimensions

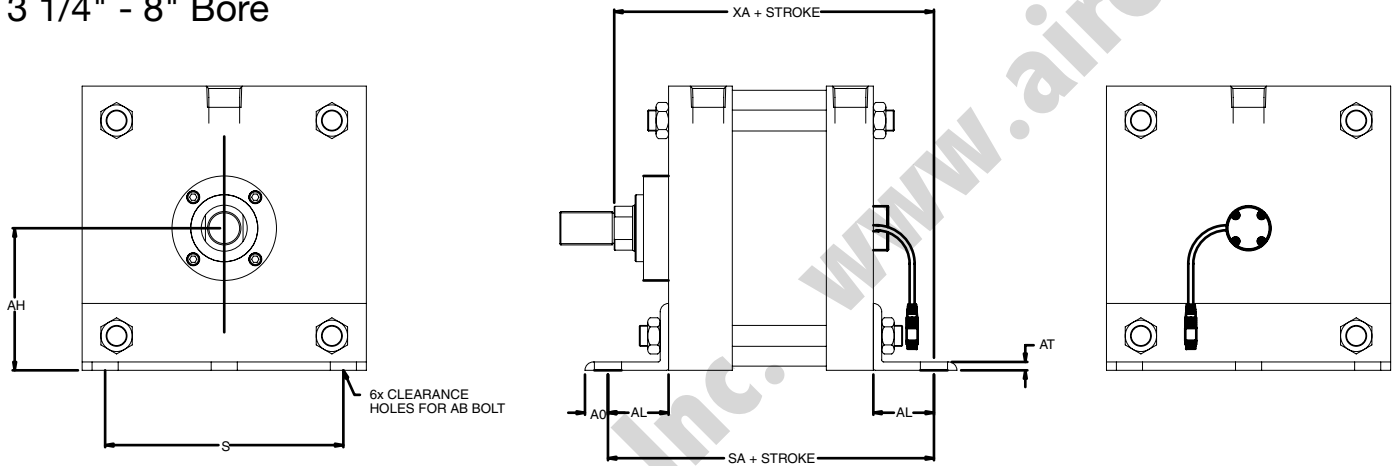
BORE	ROD DIAMETER	L	M	CB	CD	FL	XD
1-1/2	0.625	0.750	0.500	0.750	0.500	1.125	5.750
	1.00	0.750	0.500	0.750	0.500	1.125	6.125
2	0.625	0.750	0.500	0.750	0.500	1.125	5.750
	1.00	0.750	0.500	0.750	0.500	1.125	6.125
2-1/2	0.625	0.750	0.500	0.750	0.500	1.125	5.875
	1.00	0.750	0.500	0.750	0.500	1.125	6.250
3-1/4	1.00	1.250	0.750	1.250	0.750	1.875	7.500
	1.375	1.250	0.750	1.250	0.750	1.875	7.750
	1.00	1.250	0.750	1.250	0.750	1.875	7.500
4	1.375	1.250	0.750	1.250	0.750	1.875	7.750
	1.00	1.250	0.750	1.250	0.750	1.875	7.750
5	1.375	1.250	0.750	1.250	0.750	1.875	8.000
	1.00	1.250	0.750	1.250	0.750	1.875	7.750
6	1.375	1.500	1.000	1.500	1.000	2.250	8.875
	1.750	1.500	1.000	1.500	1.000	2.250	9.125
8	1.375	1.500	1.000	1.500	1.000	2.250	9.000
	1.750	1.500	1.000	1.500	1.000	2.250	9.250



S1 Mount – Angle Mount 1-1/2" - 2 1/2" Bore



S1 Mount- Angle Mount 3 1/4" - 8" Bore



Dimensions

BORE	ROD DIAMETER	S	AB	AH	AL	AO	AT	FH	SA	XA
1-1/2	.625	1.250	0.375	1.188	1.000	0.375	0.125	0.375	6.000	5.625
	1.00	1.250	0.375	1.188	1.000	0.375	0.125	0.375	6.000	6.000
2	.625	1.750	0.375	1.438	1.000	0.375	0.125	0.375	6.000	5.625
	1.00	1.750	0.375	1.438	1.000	0.375	0.125	0.375	6.000	6.000
2-1/2	.625	2.250	0.375	1.625	1.000	0.375	0.125	0.375	6.125	5.750
	1.00	2.250	0.375	1.625	1.000	0.375	0.125	0.375	6.125	6.125
3-1/4	1.00	2.750	0.500	1.938	1.250	0.500	0.125	0.625	7.375	6.875
	1.375	2.750	0.500	1.938	1.250	0.500	0.125	0.625	7.375	7.125
4	1.00	3.500	0.500	2.250	1.250	0.500	0.125	0.625	7.375	6.875
	1.375	3.500	0.500	2.250	1.250	0.500	0.125	0.625	7.375	7.125
5	1.00	4.250	0.625	2.750	1.375	0.625	0.188	0.625	7.875	7.250
	1.375	4.250	0.625	2.750	1.375	0.625	0.188	0.625	7.875	7.500
6	1.375	5.250	0.750	3.250	1.375	0.625	0.188	0.750	8.500	8.000
	1.750	5.250	0.750	3.250	1.375	0.625	0.188	0.750	8.500	8.250
8	1.375	7.130	0.750	4.250	1.810	0.690	0.250	N/A	8.750	8.560
	1.750	7.130	0.750	4.250	1.810	0.690	0.250	N/A	8.750	8.810



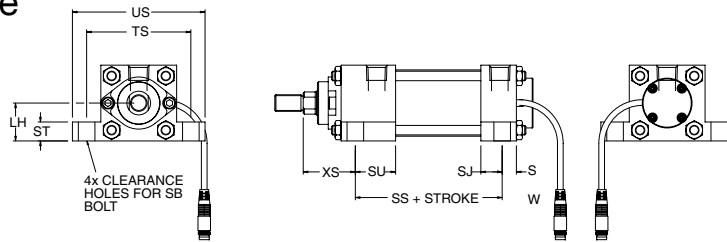
ACCU A Series Position Feedback Actuators

S2 Mount – Side Lugs

1-1/2" - 2 1/2" Bore

S2 Mount

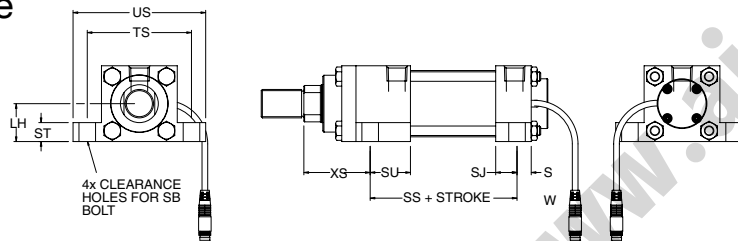
5/8" Rod



S2 Mount

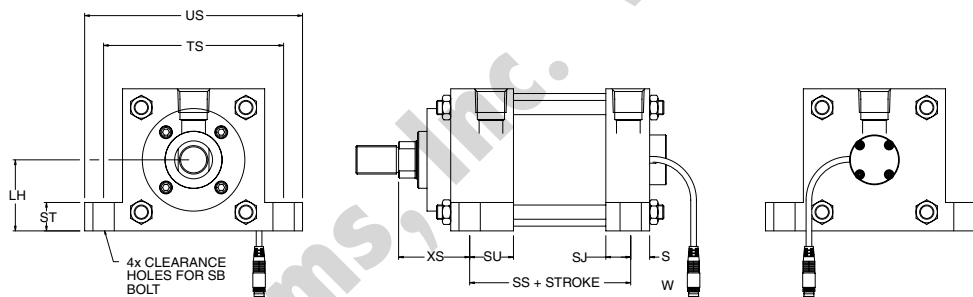
1-1/2" - 2 1/2" Bore

1" Rod



1-1/2" - 8" Bore

S2 Mount

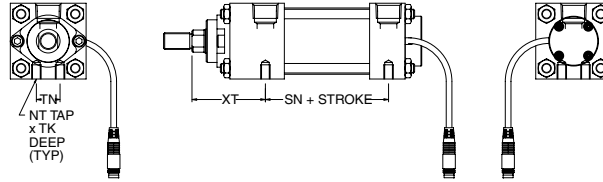


Dimensions

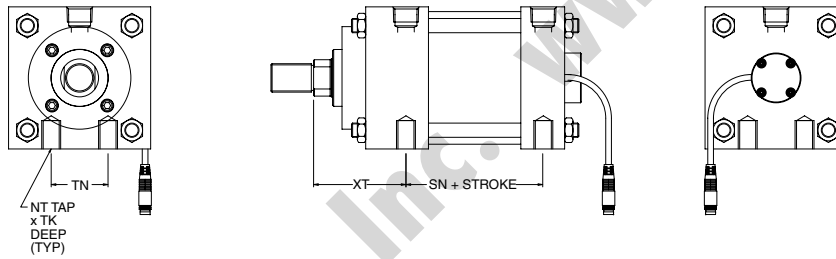
BORE	ROD DIAMETER	LH	SB	SJ	SS	ST	SU	SW	TS	US	XS
1-1/2	0.625	1.000	0.375	0.625	2.875	0.500	1.125	0.375	2.750	3.500	1.375
	1.00	1.000	0.375	0.625	2.875	0.500	1.125	0.375	2.750	3.500	1.750
2	0.625	1.250	0.375	0.625	2.875	0.500	1.125	0.375	3.250	4.000	1.375
	1.00	1.250	0.375	0.625	2.875	0.500	1.125	0.375	3.250	4.000	1.750
2-1/2	0.625	1.500	0.375	0.625	3.000	0.500	1.125	0.375	3.750	4.500	1.375
	1.00	1.500	0.375	0.625	3.000	0.500	1.125	0.375	3.750	4.500	1.750
3-1/4	1.00	1.875	0.500	0.750	3.250	0.750	1.250	0.500	4.750	5.750	1.875
	1.375	1.875	0.500	0.750	3.250	0.750	1.250	0.500	4.750	5.750	2.125
	1.00	2.250	0.500	0.750	3.250	0.750	1.250	0.500	5.500	6.500	1.875
4	1.375	2.250	0.500	0.750	3.250	0.750	1.250	0.500	5.500	6.500	2.125
	1.00	2.750	0.750	0.563	3.125	1.000	1.063	0.688	6.875	8.250	2.063
5	1.375	2.750	0.750	0.563	3.125	1.000	1.063	0.688	6.875	8.250	2.313
	1.375	3.250	0.750	0.813	3.625	1.000	1.313	0.688	7.875	9.250	2.313
6	1.750	3.250	0.750	0.813	3.625	1.000	1.313	0.688	7.875	9.250	2.563
	1.375	4.250	0.750	0.813	3.750	1.000	1.313	0.688	9.880	11.250	2.310
8	1.750	4.250	0.750	0.813	3.750	1.000	1.313	0.688	9.880	11.250	2.560



S4 Mount – Bottom Tapped 1-1/2" - 2-1/2" Bore



S4 Mount 3-1/4" - 8" Bore



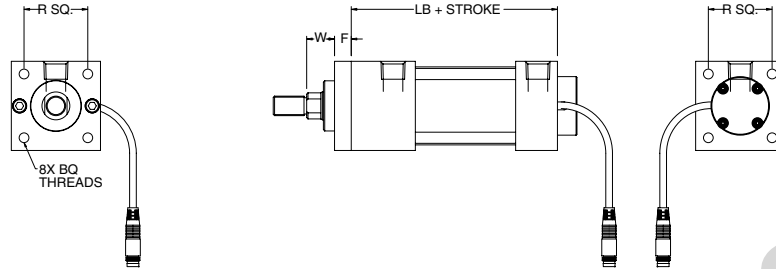
Dimensions

BORE	ROD DIAMETER	NT	SN	TK	TN	XT
1-1/2	0.625	1/4-20	2.250	0.375	0.625	1.938
	1.00	1/4-20	2.250	0.313	0.625	2.313
2	0.625	5/16-18	2.250	0.500	0.875	1.938
	1.00	5/16-18	2.250	0.500	0.875	2.313
2-1/2	0.625	3/8-16	2.375	0.625	1.250	1.938
	1.00	3/8-16	2.375	0.625	1.250	2.313
3-1/4	1.00	1/2-13	2.625	0.750	1.500	2.438
	1.375	1/2-13	2.625	0.750	1.500	2.688
4	1.00	1/2-13	2.625	0.750	2.063	2.438
	1.375	1/2-13	2.625	0.750	2.063	2.688
5	1.00	5/8-11	2.875	1.000	2.688	2.438
	1.375	5/8-11	2.875	1.000	2.688	2.688
6	1.375	3/4-10	3.125	1.125	3.250	2.813
	1.750	3/4-10	3.125	1.125	3.250	3.063
8	1.375	3/4-10	3.250	1.130	4.500	2.810
	1.750	3/4-10	3.250	1.130	4.500	3.060



**ACCU A Series
Position Feedback Actuators**

**SN Mount – Sleeve Nut
1-1/2" - 6" Bore**

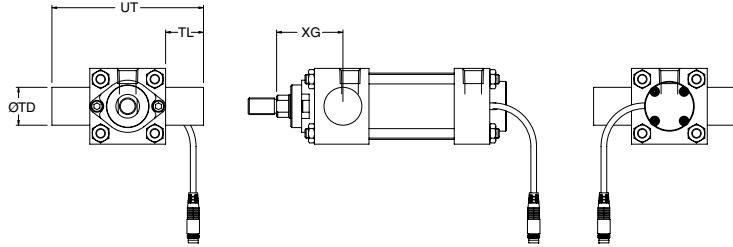


Dimensions

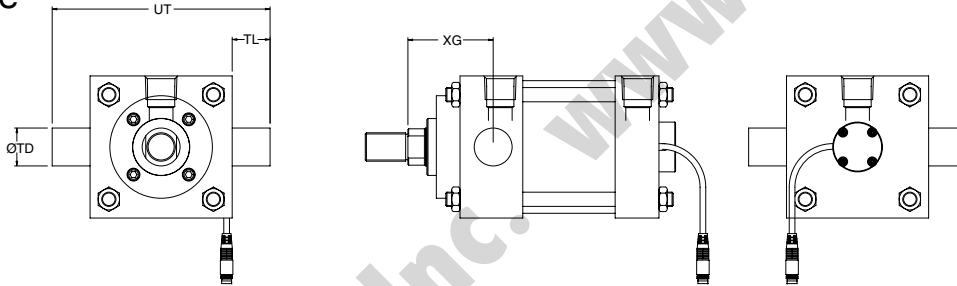
BORE	ROD DIAMETER	F	R	W	BQ	LB
1-1/2	0.625	0.375	1.430	0.625	1/4-28	3.625
	1.00	0.375	1.430	1.000	1/4-28	3.625
2	0.625	0.375	1.840	0.625	5/16-24	3.625
	1.00	0.375	1.840	1.000	5/16-24	3.625
2-1/2	0.625	0.375	2.190	0.750	5/16-24	3.750
	1.00	0.375	2.190	1.000	5/16-24	3.750
3-1/4	1.00	0.625	2.760	0.750	3/8-24	4.250
	1.375	0.625	2.760	1.000	3/8-24	4.250
4	1.00	0.625	3.320	0.750	3/8-24	4.250
	1.375	0.625	3.320	1.000	3/8-24	4.250
5	1.00	0.625	4.100	0.750	1/2-20	4.500
	1.375	0.625	4.100	1.000	1/2-20	4.500
6	1.375	0.625	4.880	0.875	1/2-20	5.000
	1.750	0.750	4.880	1.125	1/2-20	5.000



T1 Mount – Head Trunnion 1-1/2" - 2-1/2" Bore



T1 Mount 3-1/4" - 8" Bore



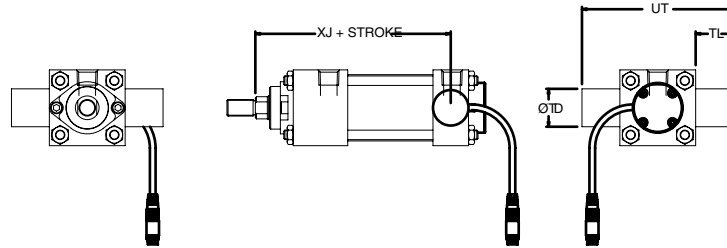
Dimensions

BORE	ROD DIAMETER	TD	TL	UT	XG
1-1/2	0.625	1.000	1.000	4.000	1.750
	1.00	1.000	1.000	4.000	2.125
2	0.625	1.000	1.000	4.500	1.750
	1.00	1.000	1.000	4.500	2.125
2 1/2	0.625	1.000	1.000	5.000	1.750
	1.00	1.000	1.000	5.000	2.125
3 1/4	1.00	1.000	1.000	5.750	2.250
	1.375	1.000	1.000	5.750	2.500
4	1.00	1.000	1.000	6.500	2.250
	1.375	1.000	1.000	6.500	2.500
5	1.00	1.000	1.000	7.500	2.250
	1.375	1.000	1.000	7.500	2.500
6	1.375	1.375	1.375	9.250	2.625
	1.750	1.375	1.375	9.250	2.875
8	1.375	1.375	1.380	11.250	2.630
	1.750	1.375	1.380	11.250	2.880

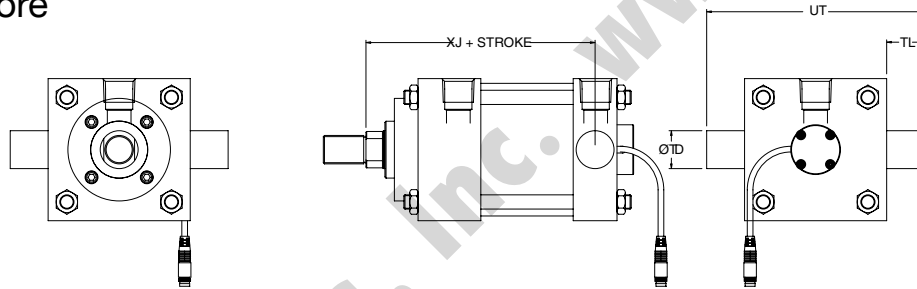


**ACCU A Series
Position Feedback Actuators**

**T2 Mount – Cap Trunnion
1-1/2" - 2-1/2" Bore**



**T2 Mount
3-1/4" - 8" Bore**

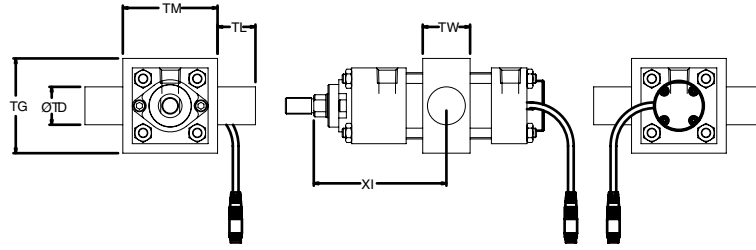


Dimensions

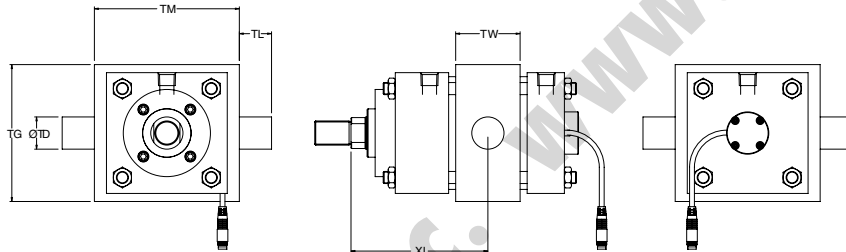
BORE	ROD DIAMETER	TD	TL	UT	XJ
1-1/2	0.625	1.000	1.000	4.000	4.125
	1.00	1.000	1.000	4.000	4.500
2	0.625	1.000	1.000	4.500	4.125
	1.00	1.000	1.000	4.500	4.500
2-1/2	0.625	1.000	1.000	5.000	4.250
	1.00	1.000	1.000	5.000	4.625
3-1/4	1.00	1.000	1.000	5.750	5.000
	1.375	1.000	1.000	5.750	5.250
4	1.00	1.000	1.000	6.500	5.000
	1.375	1.000	1.000	6.500	5.250
5	1.00	1.000	1.000	7.500	5.250
	1.375	1.000	1.000	7.500	5.500
6	1.375	1.375	1.375	9.250	5.875
	1.750	1.375	1.375	9.250	6.125
8	1.375	1.375	1.380	11.250	6.000
	1.750	1.375	1.380	11.250	6.250



T4 Mount – Intermediate Trunnion 1-1/2" - 2-1/2" Bore



T4 Mount 3-1/4" - 8" Bore



Customer must specify "XI" length.

Dimensions

BORE	ROD DIAMETER	TD	TG	TL	TM	TW	XI (MIN)
1-1/2	0.625	1.000	2.500	1.000	2.500	1.250	3.125
	1.00	1.000	2.500	1.000	2.500	1.250	3.500
2	0.625	1.000	3.000	1.000	3.000	1.500	3.250
	1.00	1.000	3.000	1.000	3.000	1.500	3.625
2-1/2	0.625	1.000	3.500	1.000	3.500	1.500	3.250
	1.00	1.000	3.500	1.000	3.500	1.500	3.625
3-1/4	1.00	1.000	4.250	1.000	4.500	2.000	4.125
	1.375	1.000	4.250	1.000	4.500	2.000	4.375
4	1.00	1.000	5.000	1.000	5.250	2.000	4.125
	1.375	1.000	5.000	1.000	5.250	2.000	4.375
5	1.00	1.000	6.000	1.000	6.250	2.000	4.125
	1.375	1.000	6.000	1.000	6.250	2.000	4.375
6	1.375	1.375	7.000	1.375	7.625	2.500	4.875
	1.750	1.375	7.000	1.375	7.625	2.500	5.125
8	1.375	1.375	9.500	1.380	9.750	2.500	4.880
	1.750	1.375	9.500	1.380	9.750	2.500	5.130

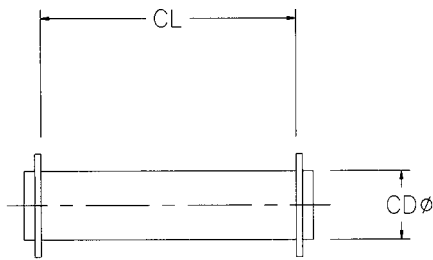


ACCU A Series Position Feedback Actuators

Accessories

Accessories Guide

ROD THREAD	ROD CLEVIS	EYE BRACKET	PIVOT PIN	ROD EYE	CLEVIS BRACKET	BORE
7/16-20	A500-301	A500-101	A500-401	A500-201	A500-001	1 1/2, 2, 2 1/2
1/2-20	A500-302	A500-101	A500-401	A500-202	A500-001	1 1/2, 2, 2 1/2
3/4-16	A500-303	A500-102	A500-402	A500-203	A500-002	3 1/4, 4, 5
7/8-14	A500-304	A500-102	A500-403	-	-	-
1-14	A500-305	A500-103	A500-403	A500-204	A500-003	6
1 1/4-12	A500-306	A500-104	A500-404	A500-205	-	-
1 1/2-12	A500-307	A500-105	A500-405	A500-206	-	-

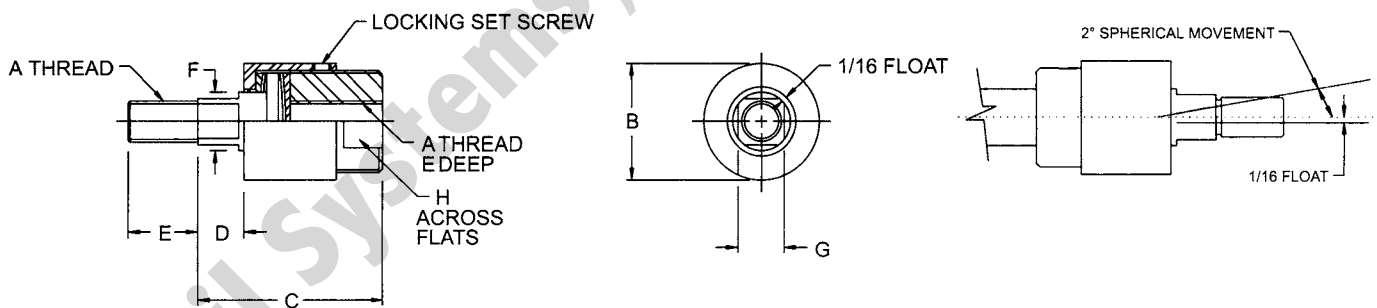


Included with mount codes P1, P2, P3 and P4

Pivot Pin

PART NO.	CD	CL
A500-401	0.500	1.875
A500-402	0.750	2.625
A500-403	1.000	3.125
A500-404	1.375	4.125
A500-405	1.750	5.125

Rod Couplers



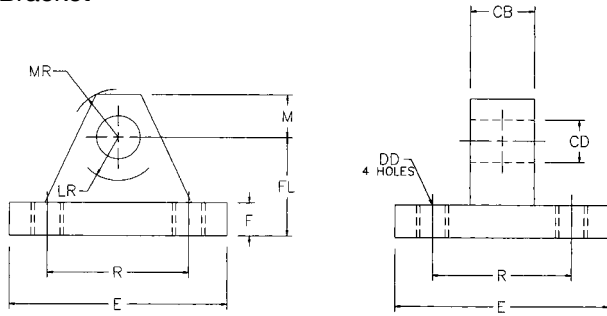
Standard Couplers

PART NUMBER		A	B	C	D	E	F	G	H	MAXIMUM PULL LOAD
STANDARD	NICKEL									
A500-603	B500-603	7/16-20	1 1/4	2	1/2	3/4	5/8	1/2	1	2,535
A500-604	B500-604	1/2-20	1 1/4	2	1/2	3/4	5/8	1/2	1	3,500
A500-605	B500-605	5/8-18	1 1/4	2	1/2	3/4	5/8	1/2	1	4,700
A500-606	B500-606	3/4-16	1 3/4	2 5/16	1/2	1 1/8	31/32	12/16	1 1/2	8,750
A500-607	B500-607	7/8-14	1 3/4	2 5/16	1/2	1 1/8	31/32	12/16	1 1/2	9,750
A500-608	B500-608	1-14	2 1/2	2 15/16	1/2	1 5/8	1 3/8	1 5/32	2 1/4	16,125
A500-609	B500-609	1 1/4-12	2 1/2	2 15/16	1/2	1 5/8	1 3/8	1 5/32	2 1/4	19,600
N35-1001	N35-1004	1 1/2-12	3 1/4	4 3/8	13/16	2 1/4	1 3/4	1 1/2	3	34,000

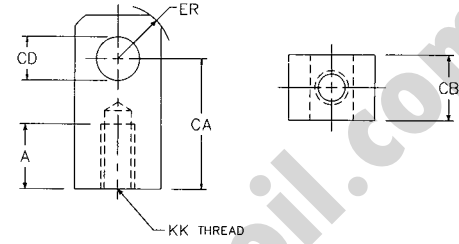


Accessories

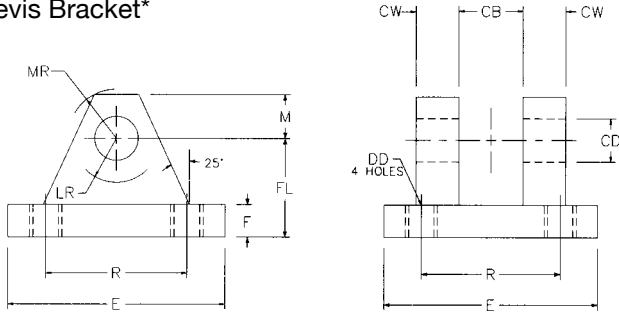
Eye Bracket*



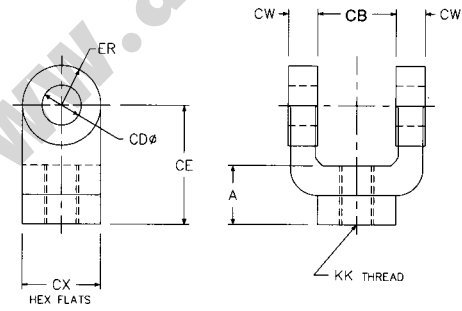
Rod Eye*



Clevis Bracket*



Rod Clevis*



*Order pivot pin separately.

Dimensions

PART NO.	A	CA	CB	CD	CE	CW	CX	DD	E	ER	F	FL	KK	LR	M	MR	R
Clevis Bracket																	
A500-001	-	-	0.750	0.500	-	0.500	-	3/8-24	2.500	-	0.375	1.125	-	0.500	0.500	0.563	1.625
A500-002	-	-	1.250	0.750	-	0.625	-	1/2-20	3.500	-	0.625	1.875	-	1.063	0.750	1.063	2.563
A500-003	-	-	1.500	1.000	-	0.750	-	5/8-18	4.500	-	0.750	2.250	-	1.250	1.000	1.125	3.250
Eye Bracket																	
A500-101	-	-	0.750	0.500	-	-	-	0.406	2.500	-	0.375	1.125	-	0.750	0.500	0.563	1.630
A500-102	-	-	1.250	0.750	-	-	-	0.531	3.500	-	0.625	1.875	-	1.250	0.750	0.875	2.560
A500-103	-	-	1.500	1.000	-	-	-	0.656	4.500	-	0.750	2.250	-	1.500	1.000	1.250	3.250
A500-104	-	-	2.000	1.375	-	-	-	0.656	5.000	-	0.875	3.000	-	2.125	1.375	1.625	3.810
A500-105	-	-	2.500	1.750	-	-	-	0.906	6.500	-	0.875	3.125	-	2.250	1.750	2.125	4.950
Rod Clevis																	
A500-301	0.750	-	0.750	0.500	1.500	0.500	1.000	-	-	0.500	-	-	7/16-20	-	-	-	-
A500-302	0.750	-	0.750	0.500	1.500	0.500	1.000	-	-	0.500	-	-	1/2-20	-	-	-	-
A500-303	1.125	-	1.250	0.750	2.375	0.625	1.250	-	-	0.750	-	-	3/4-16	-	-	-	-
A500-304	1.625	-	1.500	1.000	3.125	0.750	1.500	-	-	1.000	-	-	7/8-14	-	-	-	-
A500-305	1.625	-	1.500	1.000	3.125	0.750	1.500	-	-	1.000	-	-	1-14	-	-	-	-
A500-306	2.000	-	2.000	1.375	4.125	1.000	2.000	-	-	1.375	-	-	1 1/4-12	-	-	-	-
A500-307	2.250	-	2.500	1.750	4.500	1.250	2.375	-	-	1.750	-	-	1 1/2-12	-	-	-	-
Rod Eye																	
A500-201	0.750	1.500	0.750	0.500	-	-	-	-	-	0.625	-	-	7/16-20	-	-	-	-
A500-202	0.750	1.500	0.750	0.500	-	-	-	-	-	0.625	-	-	1/2-20	-	-	-	-
A500-203	1.125	2.063	1.250	0.750	-	-	-	-	-	0.875	-	-	3/4-16	-	-	-	-
A500-204	1.625	2.813	1.500	1.000	-	-	-	-	-	1.188	-	-	1-14	-	-	-	-
A500-205	2.000	3.438	2.000	1.375	-	-	-	-	-	1.563	-	-	1 1/4-12	-	-	-	-
A500-206	2.250	4.000	2.500	1.750	-	-	-	-	-	2.000	-	-	1 1/2-12	-	-	-	-



ACCU A Series Position Feedback Actuators

Accu A Series Piston Rod Assembly How To Order

AAS92 – K 1 N 0 – 01A – AA

Type

AAS92 = ACCU A Series
Piston Rod Assembly

Bore

K = 1-1/2"
L = 2"
M = 2-1/2"
P = 3-1/4"
R = 4"
T = 5"
U = 6"
W = 8"

Rod Code

1 = Style # 1 Std.
Rod Diameter
2 = Style # 2 Std.
Rod Diameter
3 = Style # 3 Std.
Rod Diameter
4 = Special Rod End Std.
Rod Diameter
5 = Special Rod End Ovs.
Rod Diameter
6 = Style # 1 Ovs.
Rod Diameter
7 = Style # 2 Ovs.
Rod Diameter
8 = Style # 3 Ovs.
Rod Diameter
U = Male Coupling Rod End Ovs.
Rod Diameter
V = Male Coupling Rod End Ovs.
Rod Diameter

Options

AA = No Option
BH = Bumpered Head End
NA = Nickel Plated
SA = Stainless Rod
1A = Rod Extension
2A = Thread Extension
3A = Rod Stud
EB = Bumper Seals

Full and Fractional
Strike 01A = 1.00"

Magnet

0 = No Magnet
2 = Reed Magnet

Cushion

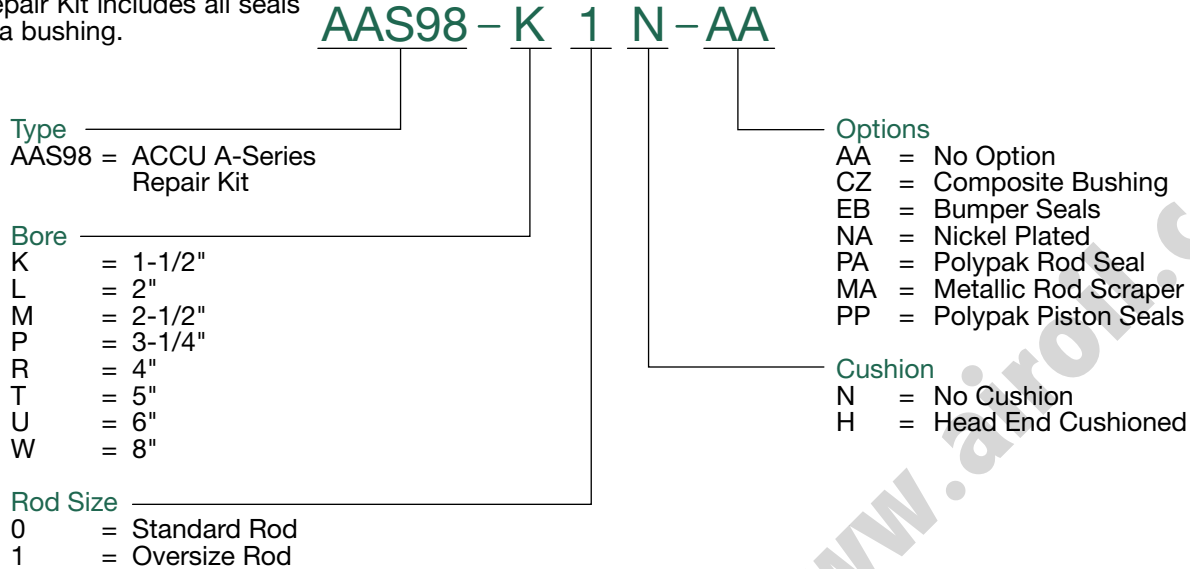
N = No Cushion
H = Head End Cushioned

Note: Options listed are ones that apply to a piston rod assembly only.
Model number is set up to use option code supplied with original cylinder or with any above.



Repair Kit How To Order

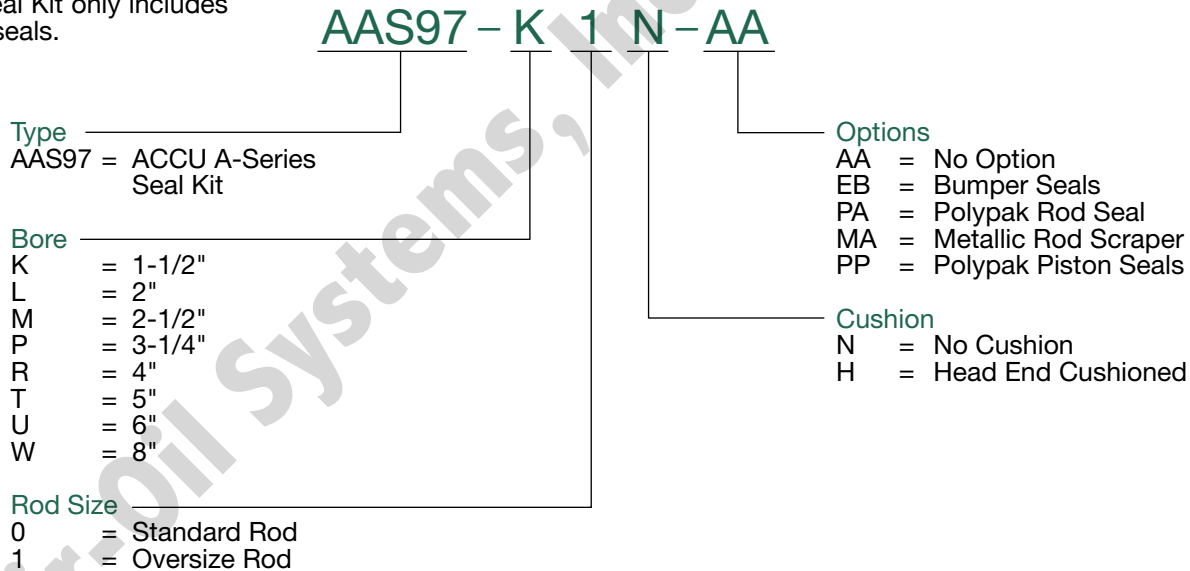
A Repair Kit includes all seals and a bushing.



Note: Options listed are ones that apply to a repair kit only. Model number is set up to use option code supplied with original cylinder or with any above.

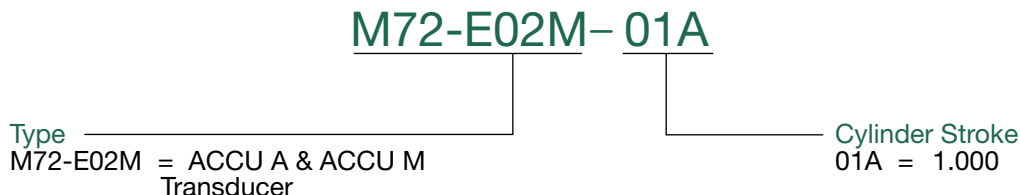
Seal Kit How To Order

A Seal Kit only includes the seals.



Note: Options listed are ones that apply to a seal kit only. Model number is set up to use option code supplied with original cylinder or with any above.

Transducer Kit How To Order





NOTES

Air-Oil Systems, Inc. www.airoil.com



The **Accu M Series** is a stainless steel body air cylinder that contains an internal Linear Resistive Transducer (LRT). It is ideal for applications where traditional magnetic position sensing is not acceptable. Additionally, the Accu M Series is conducive where variations in cylinder stroke and speed are required or where an application calls for continuous position monitoring.

Piston Rod

The type 303 stainless steel piston rod is ground, polished, and roller burnished for a hard, mirror finish that will ensure long, corrosion-free longevity. (Note: The 1-1/16" bore is chrome plated 1050 steel.)

Rod Thread

Roll-formed rod threads (at both ends) ensure a durable customer-end connection as well as piston to rod connection.

Rod Bushing

Oil impregnated sintered bronze rod bushing provides excellent wear resistance and anti-friction qualities for smooth operation and long life.

End Caps

The end caps are made from a high strength aluminum alloy.

Ports

Unrestricted (full-flow) ports in conjunction with rectangular slots on the piston-mating surface (at both ends) enable the air to work on a larger piston area for effortless breakaway (even at low pressures).

Tube

The type 304 stainless steel tube, drawn and polished to a micro-inch finish on the I.D., enables low friction and longevity.

Crimp

The cylinder body is attached to the end caps using innovative assembly equipment that ensures a consistent and reliable double rolled-in crimp.

Piston

High strength aluminum alloy piston. Piston rod connections are threaded (roll-formed threads), sealed with Loctite Threadlocker®, torqued, and staked for a solid, leak-proof connection.

Threadlocker® is a registered trademark to the Loctite Corporation.

Piston Seals

Low friction Buna N "U" cup piston seals are wear compensating for millions of maintenance free cycles.

Rod Seal/Wiper

The low friction Buna N "U" cup rod seal is wear compensating to ensure longevity.

Cylinder Lubrication

Pre-lubricated with our specially formulated oil based compound for extensive maintenance free performance.

Linear Resistive Transducer (LRT) Probe

The LRT is an anodized aluminum probe with a reinforced threaded flange and thread seal. The probe processes infinite resolution, with a non-linearity of ± 1 percent of full stroke.



Furthermore, the probe is rated for 10 million cycles. Typical probe input is 10VDC (maximum voltage is 28VDC and maximum current draw is less than 2mA), input impedance required is 1 Mohm. The probe temperature rating is -40° to 250° F. Maximum velocity is 50"/sec.

Linear Resistive Transducer (LRT) Wiper

The LRT wiper is precision molded assembly that is rated for more than 1000 linear miles of travel.

3 Pin Connector

The customer friendly connector is supplied as standard on all Accu A Series cylinders. The connector has a universal 8 mm, 3 pin, Nano male connection.

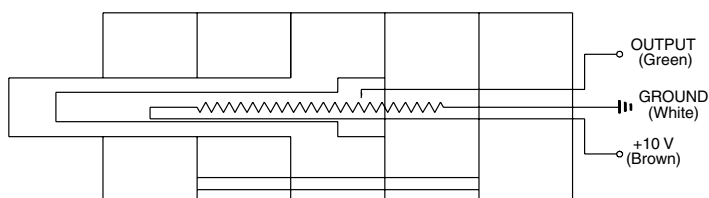
Standard Specification:

- 303 stainless steel piston rods are standard (except 1-1/16" bore)
- 304 stainless steel cylinder tube
- Aluminum head and caps
- Nominal pressure rating is 100 psi air
- Seven bore sizes – 1-1/16" – 3"
- Rod wipers
- Cylinder standard temperature -10°F to +165°F
- Probe Standard Temperature -40°F to 250°F
- Continuous position sensing
- Extremely accurate:
 - Infinite resolution, linearity of ± 1 percent of full stroke, $\pm .001$ " mechanical repeatability
- Electronic controllers available for dual set points and scalable analog output applications
- Quick connect (IP65) standard on all models

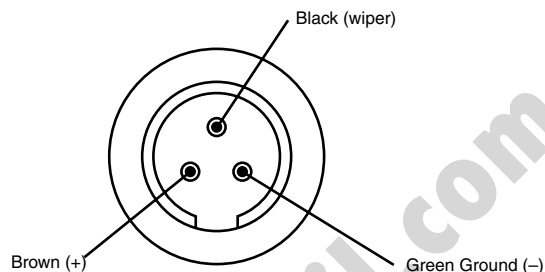


ACCU M Series Position Feedback Actuators

MLRT Circuit Diagram

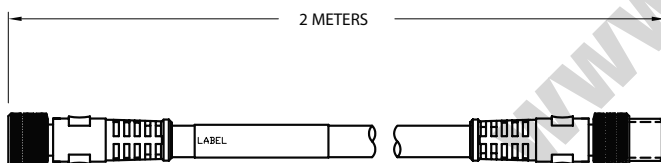


Connector Pin Assignments

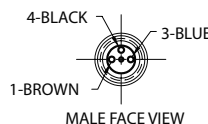
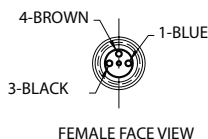


Note: Control Module Units sold separately can have scalable output of 4-20 mA or 0-10 VDC and input of 120 VAC or 12-24 VDC.

Connector Cable part number N99-1120



NOTE: SPECIAL CRISS-CROSS WIRING



How To Order

10 AM 1-06 A-01

Cylinder Bore

- 10 = 1-1/16"
- 15 = 1-1/2"
- 20 = 2"
- 25 = 2-1/2"
- 30 = 3"

Cylinder Type

AM = ACCU M Series

Cylinder Mounting

- 1 = Front Nose
- 2 = Rear Pivot
- 5 = Block Mount

Options

- 00 = No Options (or leave blank)
- 01 = Bumpers
Note: Bumpers add .125" to OAL per end.

Fractional Inches of Stroke

- A = 0"
- I = 1/2"

"Standard" Full Inches of Stroke

- 01 = 1" Stroke
- 02 = 2" Stroke
- 03 = 3" Stroke
- 04 = 4" Stroke
- 06 = 6" Stroke
- 08 = 8" Stroke
- 12 = 12" Stroke
- 18 = 18" Stroke (Maximum)

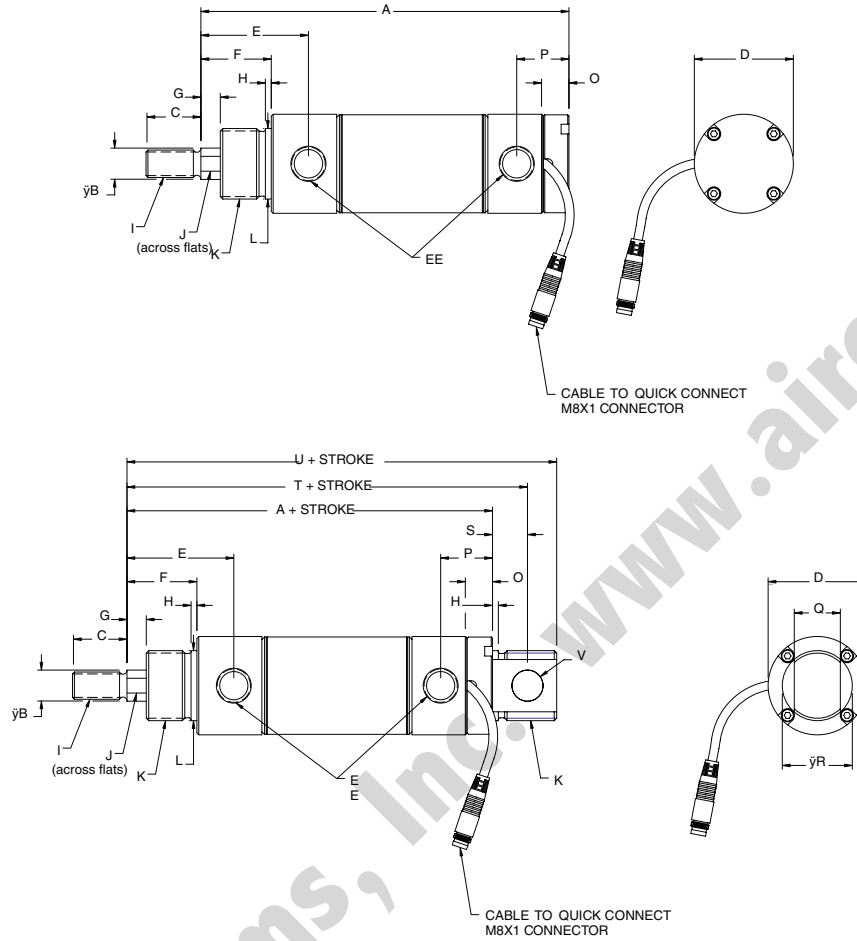
Note: Transducer is only available in full inch stroke increments.

Note: Non-standard stroke lengths will increase lead time.

Consult factory for fractional stroke information.



Cylinder Dimensions

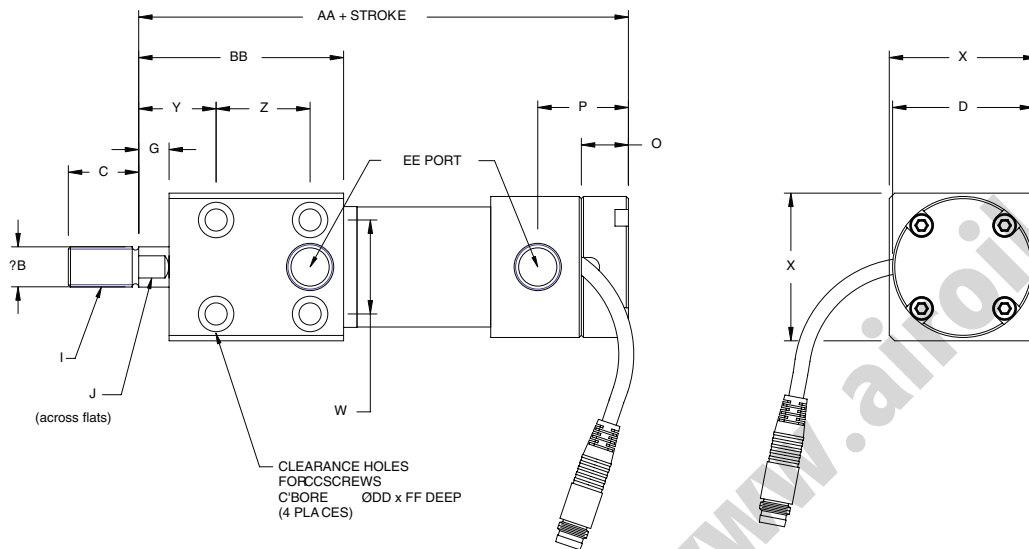


	1-1/16" Bore	1.5" Bore	2" Bore	2.5" Bore	3" Bore
A	4.59	4.88	5.46	6.41	6.78
B	0.38	0.50	0.63	0.75	0.75
C	0.63	0.88	1.00	1.25	1.25
D	1.312	1.56	2.08	2.63	3.16
E	1.75	1.72	1.92	2.25	2.16
F	1.06	1.13	1.188	1.50	1.438
G	0.31	0.31	0.38	0.44	0.44
H	0.09	0.09	0.13	0.13	0.19
I	5/16-24 UNF	7/16-20 UNF	1/2-20 UNF	5/8-18 UNF	5/8-18 UNF
J	0.31	0.44	0.50	0.63	0.63
K	7/8-14 UNF	1 1/8-12 UNF	1 1/4-12 UNF	1 3/8-12 UNF	1 1/2-12 UNF
L	0.875	1.125	1.375	1.500	1.625
O	0.44	0.41	0.50	0.56	0.63
P	0.84	0.83	0.93	1.13	1.47
Q	0.38	0.63	0.75	0.875	0.88
R	0.875	1.125	1.375	1.50	1.825
S	0.47	0.56	0.56	0.75	0.81
T	5.06	5.44	6.02	7.16	7.59
U	5.34	5.91	6.46	7.78	8.22
V	0.25	0.38	0.38	0.50	0.50
EE	1/8 NPTF	1/4 NPTF	1/4 NPTF	3/8 NPTF	3/8 NPTF



ACCU M Series Position Feedback Actuators

Block Mount Cylinder Dimensions



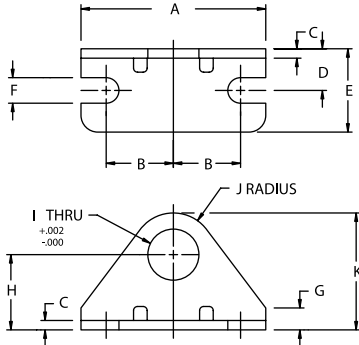
ACCU-M BLOCK MOUNT DIMENSIONS

BORE	B	C	D	G	J	I	O	P	W	X	Y	Z	AA	BB	CC	DD	EE	FF
1 1/16	0.38	0.63	1.31	0.31	0.31	3/8-24	0.44	0.84	0.88	1.38	0.75	0.88	4.59	1.94	#10	0.33	1/8 NPTF	0.20
1 1/2	0.50	0.88	1.56	0.31	0.44	7/16-20	0.41	0.83	1.25	1.75	0.69	0.75	4.88	2.06	1/4	0.41	1/4 NPTF	0.25
2	0.63	1.00	2.08	0.38	0.50	1/2-20	0.50	0.93	1.44	2.25	0.75	1.00	5.72	2.71	3/8	0.58	1/4 NPTF	0.39
2 1/2	0.75	1.25	2.63	0.44	0.63	5/8-18	0.56	1.13	1.88	2.75	0.88	1.25	6.41	2.88	7/16	0.69	3/8 NPTF	0.45
3	0.75	1.25	3.16	0.44	0.63	5/8-18	0.63	1.47	2.25	3.25	0.94	1.38	6.78	2.75	1/2	0.77	3/8 NPTF	0.52



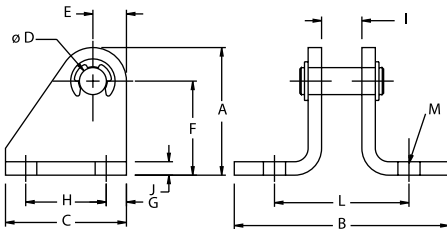
Accessories

Nose Mounting Brackets



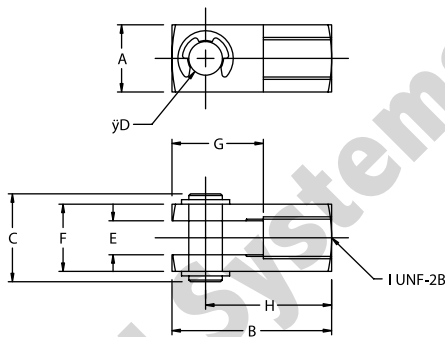
BORE	A	B	C	D	E	F	G	H	I	J	K	PART #
1-1/16	2.13	0.781	0.16	0.66	1.16	0.28	0.32	1.00	0.88	0.75	1.75	M117013
1-1/2	2.75	1.06	0.19	0.81	1.44	0.34	0.38	1.25	1.13	0.91	2.19	M117012
2	3.13	1.13	0.25	1.00	1.63	0.34	0.63	1.50	1.38	1.00	2.50	M117009
2-1/2	3.75	1.44	0.25	1.00	1.63	0.34	0.75	1.75	1.50	1.25	3.00	M117010
3	4.38	1.75	0.25	1.00	1.63	0.34	0.89	1.89	1.63	1.25	3.14	M117011

Pivot Mounting Brackets



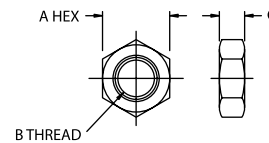
BORE	A	B	C	D	E	F	G	H	I	J	L	PART #
1-1/16	1.19	2.00	1.13	0.25	0.31	0.88	0.19	0.75	0.38	0.13	1.25	M129003
1-1/2	1.75	2.88	1.50	0.38	0.38	1.38	0.25	1.00	0.63	0.25	2.00	M129005
2	1.75	3.00	1.50	0.38	0.38	1.38	0.25	1.00	0.63	0.25	2.13	M229005
2-1/2	2.25	3.88	1.75	0.50	0.50	1.75	0.25	1.25	0.88	0.25	2.63	M229006
3	2.25	3.88	1.75	0.50	0.50	1.75	0.25	1.25	0.88	0.25	2.63	M229006

Rod Clevises



BORE	A	B	C	D	E	F	G	H	I	PART #
1-1/16	0.50	1.19	0.68	0.25	0.25	0.50	0.68	0.94	5/16-24	M127004
1-1/2	0.75	1.69	1.03	0.38	0.38	0.75	0.94	1.31	7/16-20	M127005
2	0.75	1.69	1.03	0.38	0.38	0.75	0.94	1.31	1/2-20	M127006
2-1/2	1.00	2.75	1.28	0.50	0.50	1.00	1.50	2.25	5/8-18	M127007
3	1.00	2.75	1.28	0.50	0.50	1.00	1.50	2.25	5/8-18	M127007

Mounting Nuts



PART #	A	B	C
M18-004	0.50	5/16-24	0.19
M190003	0.687	7/16-20	0.25
M190004	0.750	1/2-20	0.31
M190005	0.938	5/8-18	0.38
M190007	1.312	7/8-14	0.48
M190015	1.688	1 1/8-12	0.61
M190009	1.875	1 1/4-12	0.50
M190012	2.06	1 3/8-12	0.50
M190013	2.25	1 1/2-12	0.84

Transducer Kit How To Order

M72-E02M-01A

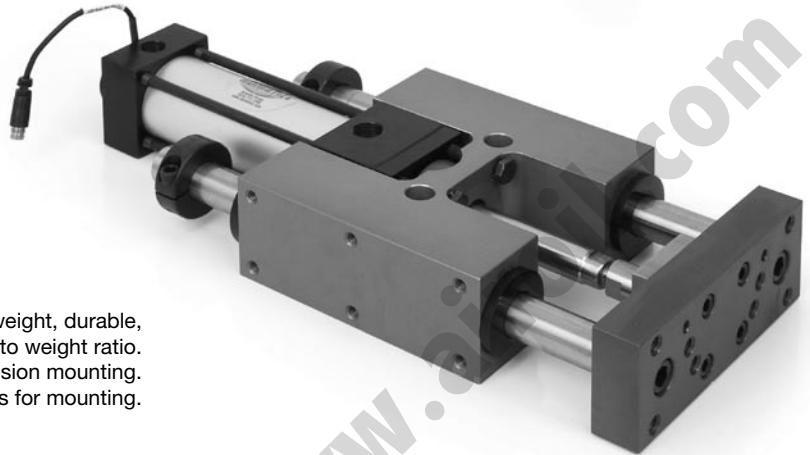
Type
M72-E02M = ACCU A & ACCU M
Transducer

Cylinder Stroke
01A = 1.000



ACCU Slide Series

The **Accu Slide Series** is a pneumatic slide that is driven by a cylinder that contains an internal Linear Resistive Transducer (LRT). It enables position feedback capability for applications where space is limited and when a load must be guided to prevent rotation.



A. Body:

Hardcoat Anodized Aluminum(6061-T6511) lightweight, durable,
high strength to weight ratio.
Standard Dowel Location Holes..... allows precision mounting.
Multi-Surface Mounting Holes flexible, easy access for mounting.

B. Air Cylinder:

Standard Stainless Steel Body and Rod corrosion resistant.
Standard w/ Magnetic Piston..... sensing applications (Hall, Reed or Prox)
added as required.

C. Alignment Coupler:

Isolates Piston Rod from side loading.....maximize life of cylinder,
360 degrees of float.

D. Tooling Plate:

NuMate™ Universal Mounting Pattern standardized mounting
system, eliminates custom transition plates.
Holes Drilled/Tapped and C'bored from the
opposite side..... easy mounting.
Standard Dowel Locating Holes..... precision mounting.

E. Guide Shafts:

Hardened Steel to Rc 60 - 65..... long life.
Hardened Stainless Steel to Rc 50 - 55 long life.
Precision Ground & Polished to 15uRMS smooth cycling/
low breakaway.
Pilot Mounted to Tooling Plate maximum rigidity.
Large Diameters increased load capacity.

F. Bearings: (Three Choices)

Four Precision Linear Ball Bearings
Sealed with Rod Wipers safe guarding against dirt & contamination.
Self-Aligning reducing wear, maximizing both.
load capacity and long life.
Four Sintered Bronze Sleeve Bearings
Oil Impregnatedself lubricating.
High Pv Rating..... long service life.
Four Frelon® Compounded Teflon®
Low Friction.....longest wear life.
Maintenance Free.....self lubricating.

G. Bumpers: (Standard)

Polyurethane Material..... durable and long lasting.
Integrated into body Design..... reduces shock loading on extend & retract.
Preliminary Rod Wiper..... removes larger contamination from Guide Shafts.

H. Adjustable Shaft Collars: (Standard)

Extend Stroke Adjustment flexibility.



ACCU Gantry Series

The **Accu Gantry Series** is a pneumatic gantry slide that is driven by a cylinder that possesses an internal Linear Resistive Transducer (LRT). It enables position feedback capability for applications that require fundamental gantry motion.



The design centers around a moving carriage between two fixed tool bars. The carriage is supported and guided by four bearings and two hardened guide shafts.

A. Carriage:

Hardcoat Anodized Aluminumlightweight, high durability.
 NuMate™ Direct Mounting Pattern Numate is a patented mounting system eliminating the need for adaptor/transition plates.
 Slide, gantries and grippers mount directly to the GS gantry.

B. Air Cylinder:

Standard Stainless Steel Body and Rodcorrosion resistant.
 Standard Magnetic Piston sensing options Reed, Hall, Prox sensors, able to be added in field.

C. Alignment Coupler:

360 Degrees of Floatisolates cylinder, eliminates destructive side load, maximizes life.

D. Tool Bars:

Standard Dowel Locating Hole and Slot accurate mounting and positioning.
 Standard Tapped Holes for Shock Absorbers accepts industry standard shocks.

E. Guide Shafts: (Two Choices)

Hardened Steel hardness Rc 60-65, long life.
 Hardened Stainless Steel hardness Rc 50-55, corrosion resistant.
 Precision Ground and Polished 15u RMS smooth cycling, low breakaway.
 Large Diameter increased load capacity.
 Pilot Mounted to Tool Bar maximum rigidity, increased strength.

F. Bearings: (Two Choices)

Four Linear Ball Bearings greatest load capacity, self-lubricating, built-in seals and wipers, self-aligning.
 Four Frelon® Compounded Teflon® self-lubricating, self-aligning, long service life, ideal for cleanroom.

G. Stroke Adjustment Screws:

Standard Extend and Retract fine adjustment for carriage travel.



Digital Displays

Digital Displays come in a variety of sizes, shapes and colors, but their importance to an overall operation remains consistently important. Local indication is a very important tool for all associates on the shop floor. The main purpose of a Digital Display is to give a numeric reading proportional to a machine's performance or operation. This is a very important communication piece to the controller to alert the operator of a problem with the machinery.

There are several features of the Digital Displays. These units can be used for several products (Linear and Pressure Transducers for example). They can be configured to send an analog output signal to a PLC. This is critical when you want the PLC to cut a machine off once a certain reading is achieved. Digital Displays can also be configured with relay outputs to turn an alarm on or trigger a warning signal once a certain reading is achieved. The relays can be used to turn a machine off as well. This is a very important safety feature.

It is very important to have a Digital Display on your machines because it gives the controller some feedback to the machine's performance. It can warn the controller of sub-standard operation or a potential hazardous situation. Digital Displays are your machine's way of communication and as you all know, good communication is the key to success.



Air-Oil Systems, Inc. www.air-oil.com



TDRO-40 Panel Meter 4 Digit 0.56" in a 1/8 DIN Case

An economical smart programmable meter with optional relay with isolated 4 to 20 mA and 0-10 VDC retransmission or control loop output capability for measurement and control applications.

Specifications

Input Specs:	IR03 Input Module
A/D Converter:	14 bit single slope
Accuracy:	±(0.05% of reading + 2 counts)
Temp. Coeff.:	100 ppm/°C (Typical)
Warm Up Time:	2 minutes
Conversion Rate:	5 conversions per second (Typical)
Display:	4 digit 0.56" Red LED display (Range – 1999 to 9999 counts)
Polarity:	Assumed positive. Displays – negative
Decimal Selection:	Front panel button selectable, X•X•X•X•
Positive Overrange:	Top segments of digital display flash
Negative Overrange:	Bottom segments of digital display flash
Relay Output:	Two 5 Amp Form A relays and two 10 Amp Form C, or 5 Amp Form A relays (optional)
Analog Output:	Isolated 16 bit user scalable mA or V
AIC (mA out) (opt)	4-20 mA @ 0 to 500 Ω max loop resistance
AIV (volts out) (opt)	0-10 DC @ 500 Ω or higher resistance
Power Supply:	AC/DC Auto sensing wide range supply
1-PS1 (std)	85-265 VAC/95-370 VDC @ 2.5W max 3.5W
2-PS2 (opt)	15-48 VAC/10-72 VDC @ 2.5W max 3.5W
Operating Temp.:	0 to 60°C
Storage Temp.:	-20 to 70°C
Relative Humidity:	95% (non-condensing)
Case Dimensions:	1/8 DIN, Bezel: 96x48mm (3.78"x1.89") Depth behind bezel: 117mm (4.61") Plus 11.8mm (0.47") for Right-angled connectors, or plus 20 mm (0.79") for straight-thru connector.
Weight:	6.5 oz., 8.5 oz. when packed

Software Features

- Three-button programming from the front panel (UP, DOWN and PROGRAM buttons).
- Three front panel selectable ranges.
- Front panel selectable four-level brightness control of digital display, and setpoint LEDs.
- Up to four programmable setpoints.
- Relay activation can be selected to occur above (HI) or below (LO) each setpoint.
- Hysteresis setting for all four setpoints. Delay on make and delay on break for SP1 and SP2.
- Peak and Valley. View and Reset.

TDBRO-40 – 101 Segment Bargraph with 4 Digit 0.32" LED in 9/64 DIN Case

Smart Tricolor digital bargraph with four fully programmable setpoints and optional relay with isolated 4 to 20 mA and 0-10 VDC retransmission or control loop output for monitoring measurement and control applications.

Specifications

Input Specs:	IR03 Input Module
A/D Converter:	14 bit single slope
Accuracy:	±(0.05% of reading + 2 counts)
Temp. Coeff.:	100 ppm/°C (Typical)
Warm Up Time:	2 minutes
Conversion Rate:	10 conversions per second (Typical)
Digital Display:	4 digit 0.31" LED red (Range – 1999 to 9999 counts)
Bargraph Display:	101 segment 4" tri-color vertical
Polarity:	Assumed positive. Displays – negative
Decimal Selection:	Front panel button selectable, X•X•X•X•
Positive Overrange:	Bargraph and Top segments of digital display flash
Negative Overrange:	First segment of Bargraph and Bottom segments of digital display flash
Relay Output:	Two 5 Amp Form A relays and two 10 Amp Form C relays (optional)
Analog Output:	Isolated 16 bit user scalable mA or V
AIC (mA out)(opt)	4-20 mA @ 0 to 500 Ω max loop resistance
AIV (volts out)(opt)	0-10 DC @ 500 Ω or higher resistance
Power Supply:	AC/DC Auto sensing wide range supply
1-PS1 (std)	85-265 VAC/95-370 VDC @ 2.5W max 4.2W
2-PS2 (opt)	15-48 VAC/10-72 VDC @ 2.5W max 4.2W
Operating Temp.:	0 to 60°C
Storage Temp.:	-20 to 70°C
Relative Humidity:	95% (non-condensing)
Case Dimensions:	9/64 DIN, Bezel: 36Wx144Hmm Depth behind bezel: 148mm (5.83") Plus 18mm (0.7") connectors.
Weight:	9.5 oz., 12 oz. when packed

Software Features

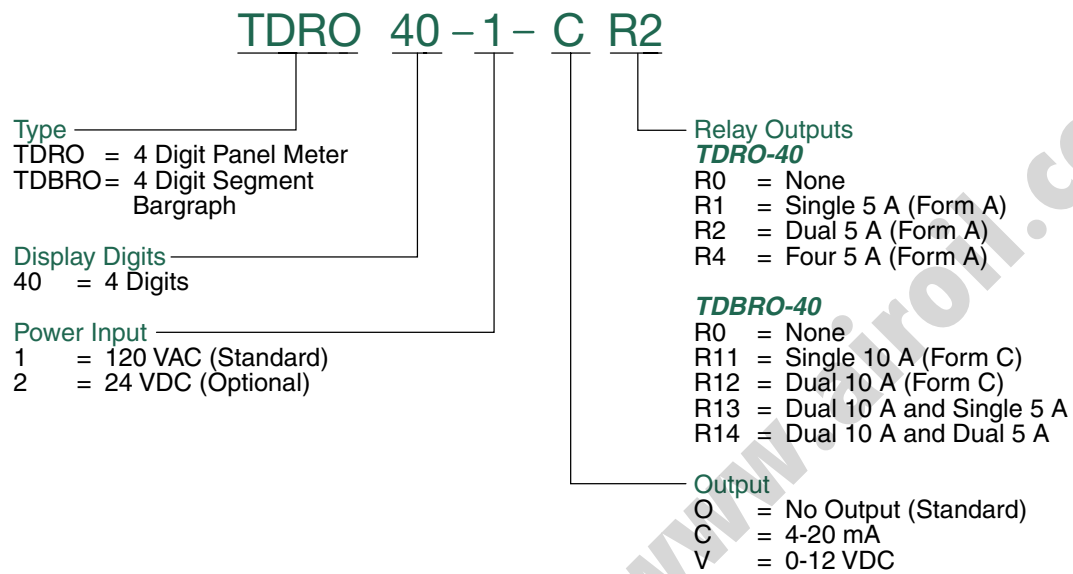
- Digital display and the 101 segment bargraph can be independently scaled.
- Bargraph center zero function.
- Four programmable setpoints. (optional)
- Adjustable delay-on-make and delay-on-break time for setpoints 1 and 2.
- Relay activation can be selected to occur above (HI) or below (LO) each setpoint.
- Digital display blanking.
- Decimal point setting.
- Four-level brightness control of bargraph, digital display, and setpoint LEDs.

Comprehensive Digital Display Manuals are available at www.numaticsactuator.com



Digital Displays

Digital Display – How To Order



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of Pneumatic Components



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