

P5TT/P5TD SeriesTwin Rod Cylinders

Catalog AU03-1836/US



MARNING

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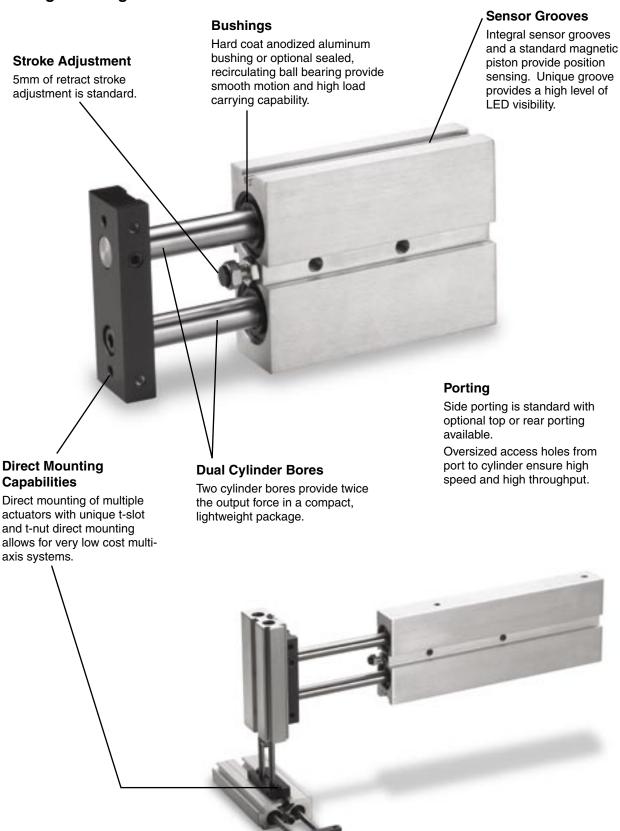
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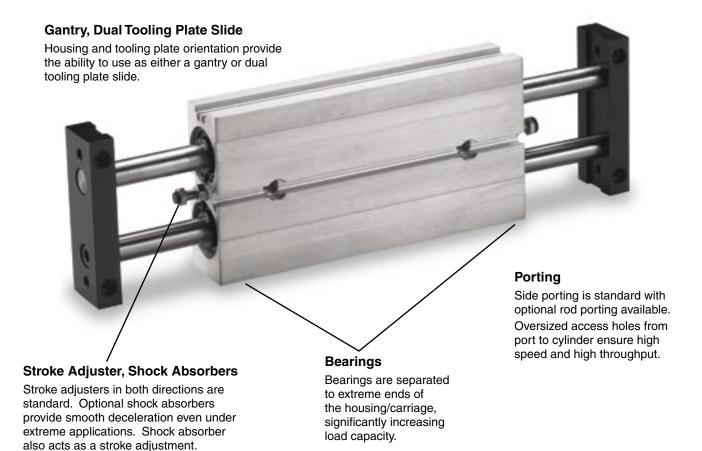


P5TT - Single Tooling Plate Version





P5TD - Dual Tooling Plate Version



Typical Applications

Conveyor equipment

- Conveyor stops
- · High speed rejects

Packaging machinery

- Labeling
- Pushers
- Inserting
- Bag opening (with Parker vacuum solution)
- Positioning/centering

Assembly machinery

- Light duty pick-and-place
- High speed pick-and-place
- Clamping



Compatible with Parker IPS Structural Framing

P5TT and P5TD units bolt directly to Parker IPS structural framing using standard fasteners.

Consult factory for additional details.



P5TT/P5TD Series Twin Rod Cylinders

The addition of the twin rod cylinder to the already successful P5T family provides a complete line of compact, short stroke actuators. The twin rod is available in 6, 10, 16, 20, 25 and 32mm bore sizes with strokes up to 200mm.

Internal bumpers are provided for the extend stroke, and an adjustable retract bumper-stop is standard. A unique T-slot allows for a wide range of mounting options including the ability to direct mount multiple axis automated systems without requiring a transition plate. This T-slot also allows for integration with Parker IPS structural aluminum products.

The twin rod cylinder is available in both a single and a dual tooling plate version. The single tool plate version is available with two hard coat anodized aluminum bushings (plain bearing) or two recirculating ball bearings. The dual tool plate design, which can be used as either a gantry or a dual tooling plate base slide, contains four plain or recirculating bearings.

The porting on the twin rod cylinder is designed to allow maximum flow rates to each cylinder bore. The high flow rates are ideal for high speed applications and for increased throughput. Ports are located on the side as standard; top or rear are optional. Rod porting is also available on the dual tooling plate version.

A magnetic piston is standard and can be detected through the use of Parker's new miniature sensors. The position of the sensor groove allows for maximum visibility of the sensor LED even when viewed from extreme angles relative to the actuator's mounting surface.

SPECIFICATIONS

- Maximum operating pressure: 150 psi (air)
- Standard stroke lengths to 200mm
- Six bore sizes sizes: 6, 10, 16, 20, 25 and 32 mm
 - 6mm and 10mm only available with the single tooling plate version
- Stroke tolerance: +0.8, -0.0mm (+.030, -.000 inch)
- Operating temperature range (cylinder):

Standard seals -18°C to +74°C (0° to 165°F) Fluorocarbon seals* -18°C to +121°C (0° to 250°F)

■ Filtration requirement: 40 micron filtered, dry air

Quick Reference Data

							Unit Weight								
			Force (Dutnut	Force (Output		Single	Tool Plate	•		Double	uble Tool Plate		
Cylinder	Piston Rod Diameter	Maximum Stroke	on Exte	ension	on Reti	on Retraction at 80 psi		Base		Per Inch	•		Per 25mm	Per Inch	
Bore	(mm)	(mm)	N	lbs	N	lbs	N	lbs	N	lbs	N	lbs	N	lbs	
6	4	50	31	7	17	4	0.7	0.15	0.4	0.08	N/A	N/A	N/A	N/A	
10	6	75	87	19	55	12	1.2	0.26	0.4	0.10	N/A	N/A	N/A	N/A	
16	8	150	222	50	166	37	1.8	0.40	0.6	0.14	3.6	0.80	0.8	0.18	
20	10	200	347	78	260	58	3.4	0.77	0.9	0.20	5.9	1.32	1.2	0.26	
25	12	200	542	122	417	94	5.2	1.16	1.3	0.29	8.7	1.95	1.7	0.39	
32	16	200	888	199	666	150	10.1	2.26	2.1	0.47	17.8	4.00	2.8	0.65	

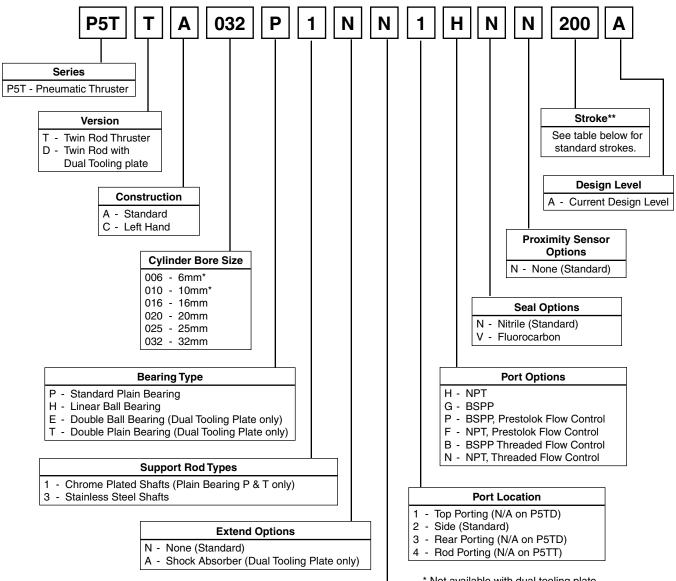
*NOTE: Dual tool plate/base unit will have force output in both directions equal to the above retraction force.



^{*} See fluorocarbon seal option for high temperature applications.

Model Number Code

Example: P5TTA032P1NN1HNN200A



Retract Options

- N None (Standard)
- A Shock Absorber (Dual Tooling Plate only)
- * Not available with dual tooling plate.
- ** Consult factory for reduced lead times on specific stroke lengths. Additional stroke lengths available upon request.

Model		Standard Strokes (mm)																	
P5TT006	10		20	25	30		40		50										
P5TT010	10	15	20	25	30	35	40	45	50	60	70	75							
P5TT016	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100				
P5TT020	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100				
P5TT025	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100				
P5TT032	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100				
P5TD016	10		20		30		40		50			75			100	125	150		
P5TD020	10		20		30		40		50			75			100	125	150	175	200
P5TD025	10		20		30		40		50			75			100	125	150	175	200
P5TD032	10		20		30		40		50			75			100	125	150	175	200



Engineering Data

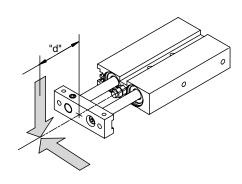
Horizontal Load Capacity & Deflection

The plots on these two pages illustrate the side load vs. actuator stroke. Applied loads will cause a slight deflection of the support rod/piston rods. The graphs include the weight of the support rods and tooling plate and are based on a bearing life equivalent to 10 million cycles of dynamic loading.

Increasing the dynamic load or actuation speed will reduce service life. For static loads, multiply the information in the graph by 1.5.

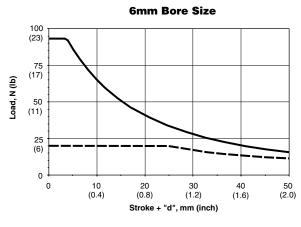
Bearing life is not related to seal life. NOTE: Actuator bearing life may vary depending on the severity of the follow-

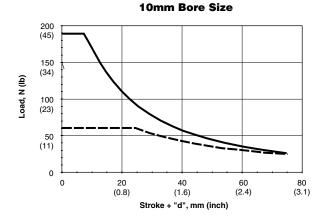
- ing variables:
 Acceleration
- Vibration
- Velocity
- Orientation

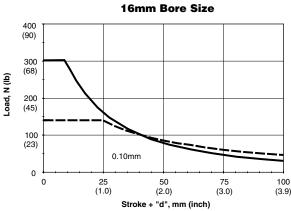


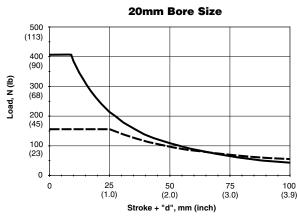
Plain Bearing
Linear Ball Bearing

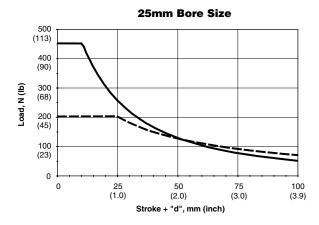
Single Tooling Plate

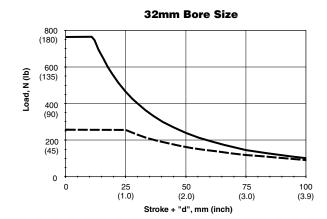






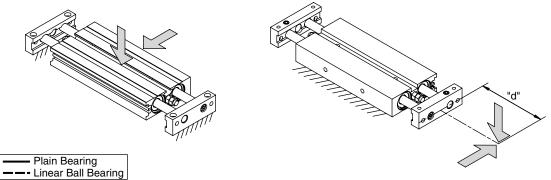






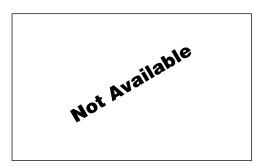


Horizontal Load Capacity



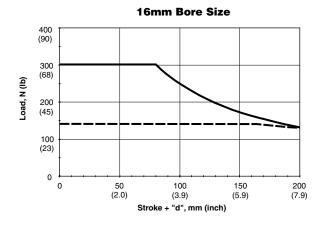
Dual Tooling Plate

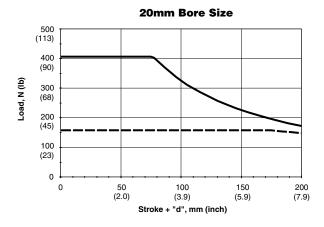
6mm Bore Size

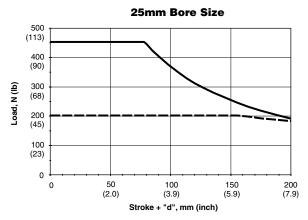


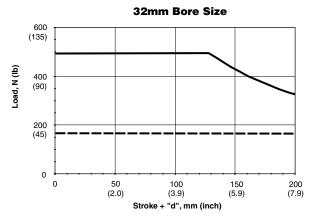
10mm Bore Size













Torque Capacity with Torsional Loading

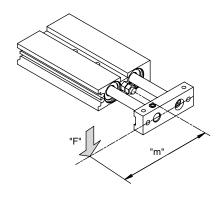
Torsional loading occurs when an offcenter load is applied to the unit.

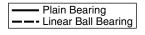
The graphs on these two pages show torsional load capacity for both single and dual tooling plate models.

Torque = $F \times m$

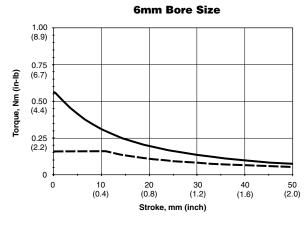
NOTE: Actuator bearing life may vary depending on the severity of the following variables:

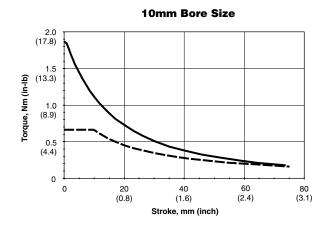
- Acceleration
- Velocity
- Vibration
- Orientation

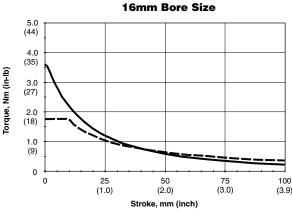


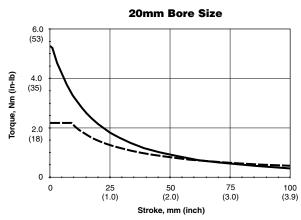


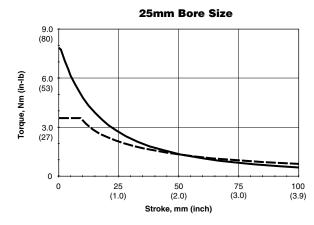
Single Tooling Plate

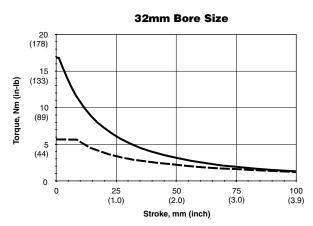






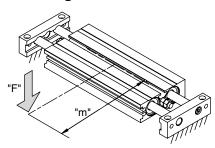


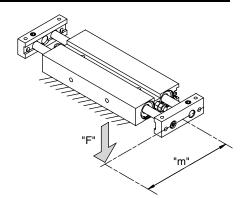






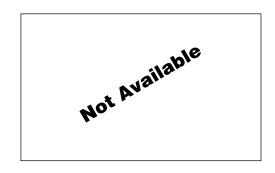
Torque Capacity with Torsional Loading





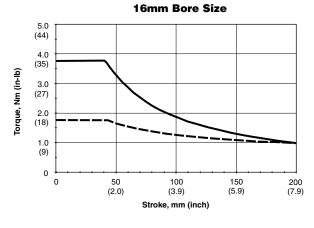
Plain Bearing
Linear Ball Bearing

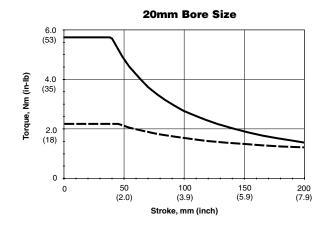
Dual Tooling Plate

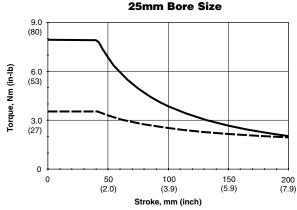


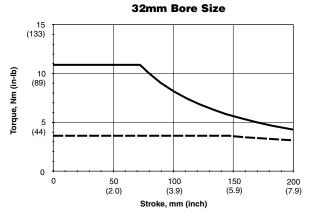
6mm Bore Size













Maximum Vertical Load Capacity and Allowable Load Eccentricity

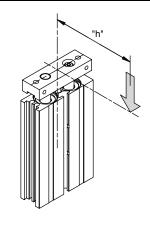
An eccentric load is defined as a load applied in the same direction as the motion of the cylinder, however acting at some distance (eccentricity "h") from the center of the tooling plate.

The graphs on this page illustrate the maximum suggested eccentric load based on the indicated stroke length.

Capacities are based on bearing and shafts only.

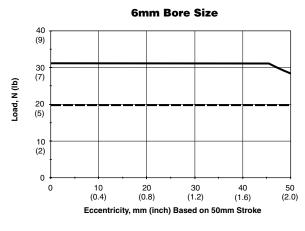
NOTE: Actuator bearing life may vary depending on the severity of the following variables:

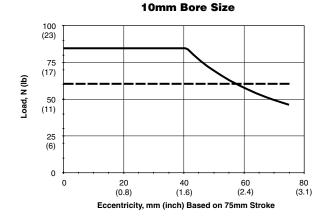
- Velocity
- Vibration
- Orientation
- Environment (dust, moisture, etc.)

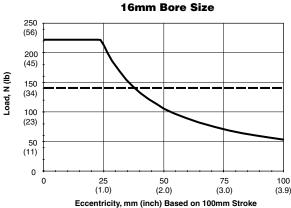


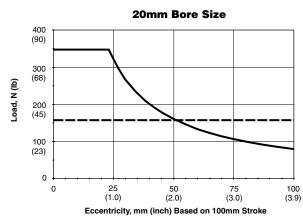
Plain Bearing
Linear Ball Bearing

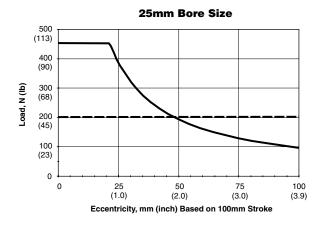
Single Tooling Plate

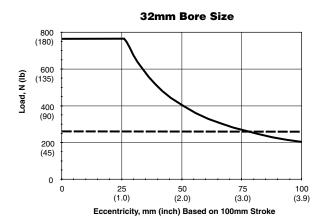










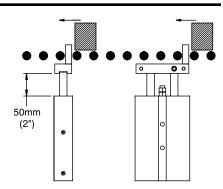




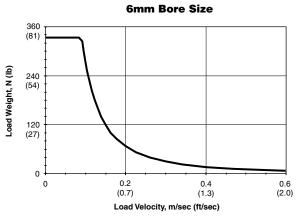
Stopping Capacity with Single Tooling Plate Version

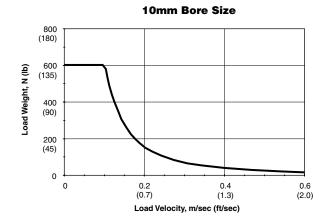
The P5TT may be used in conveyor stopping applications. Maximum capacity will vary with actuator stroke. The graphs on this page illustrate the maximum stopping or impact capacity for the P5TT based on a stroke of 50mm (2") and assuming that the load is moving perpendicularly to the support rods.

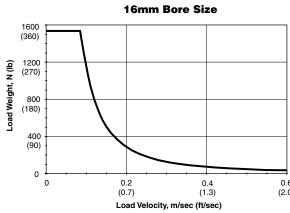
Care should be taken to ensure that the support rods are not damaged during this type of loading. The load should be centered on the tooling plate.

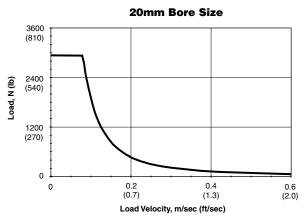


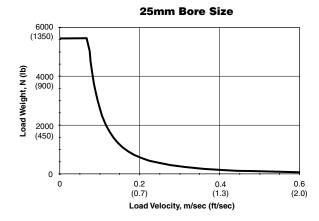
Single Tooling Plate

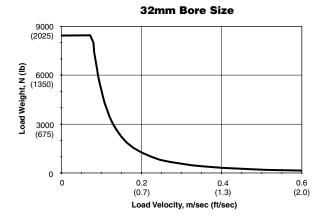














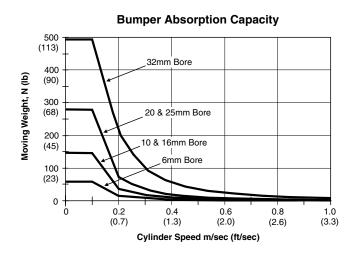
Engineering Data

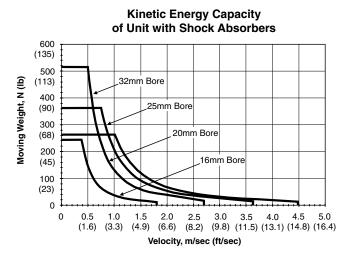
Kinetic Energy

The first chart below illustrates the stopping capacity of the standard bumpers. The second chart shows the stopping capacity of a P5TD with shock absorbers. The kinetic energy values given in the shock absorber chart are at 6 cycles per minute (16mm bore) and 33 cycles per minute (20, 25 and 32mm bores). If the cycle rate is greater, use the calculations on page 13 to determine shock capabilities.

The correct actuator sizing is based on the weight of the load and the speed at which the load is moving. To ensure safe and proper operation, do not operate above the given line on each chart.

NOTE: These charts are to be used only to determine the stopping capacity of each guided cylinder. Other charts may need to be consulted depending upon the applied loading.





NOTES:

- 1. Bumper absorption capacity values are the same for single and dual tooling plate versions.
- 2. The moving weight is defined as the weight of the housing and the object being moved. See page 13 for base and stroke weights. (Moving weight = base weight + stroke weight + weight of object being moved)



Kinetic Energy

Steps to sizing a guided cylinder with shocks:

1) Determine the "Moving Weight", W.

Use Table 1 to determine the "Kinetic Energy Weight" of a given slide. This value should be added to the weight of the load the slide will be carrying.

Moving Weight (lbs) =

Kinetic Energy Weight (lbs) + Weight of Load (lbs)

- 2) Determine the velocity of the load, V (ft/second)
- 3) Determine the cylinder force output at the operating pressure, Fcylinder (lbs)
- 4) Detemine the Kinetic Energy of the load:

$$KE = 0.2 \times W \times V^2$$
 (lb-in)

5) Determine the Energy per Cycle, Ecycle (lb-in):

This value should be less than the value listed in table 2

6) Determine the Energy per Hour: Ehour (in-lbs)

 $E_{hour} = 2 \times E_{cycle} \times \#$ of cycles in one hour (a cycle is defined as the extension and retraction of the slide)

This value should be less than the value listed in table 2

7) Determine the Effective Weight of the load

$$W_{\text{effective}} = \frac{E_{\text{cycle}}}{0.2 \times V^2}$$

This value should be between the values listed in table 2

Example:

A P5TD25-100 with standard support rods and shock absorbers will be carrying a load of 20 lbs at a velocity of 36 in/second (cycling 1000 times per hour) while operating at 80psi. Is this unit properly sized?

- 1) Moving Weight = $[0.92 + (4 \times 0.19)] + 20$ lbs = 21.68 lbs
- 2) V = 36 in/second = 3 ft/second
- 3) Fcylinder = 94 lbs
- 4) KE = $0.2 \times 21.68 \times 3.0^2 = 39.0$ lb-in
- 5) Ecycle = $39.0 + (94 \times 0.49) = 85.1$ lb-in
- 6) Ehour = $2 \times 85.1 \times 1000 = 170,000$ lb-in

7) Weffective =
$$\frac{85.1 \text{ lb-in}}{0.2 \times (3.0)^2}$$
 = 47.3 lbs

The shock will dissipate the energy of the load.

Table 1

Model	Base Weight kg (lb)	Stroke Adder N/mm (lb/in)	Shock Stroke mm (in)
P5TD16	0.21 (0.47)	0.02 (0.09)	10.2 (0.40)
P5TD20	0.30 (0.67)	0.02 (0.13)	12.4 (0.49)
P5TD25	0.42 (0.92)	0.03 (0.19)	12.4 (0.49)
P5TD32	0.98 (2.16)	0.05 (0.29)	12.4 (0.49)

Table 2

Model	Total Energy per Cycle N-m (lb-in)	Total Energy per Hour N-m (in-lb)	Effective Weight kg (lb)	Velocity Range m/sec (ft/sec)
P5TD16	4.0	5,991	6 - 57	0.06 - 1.0
	(35)	(53,000)	(13 - 125)	(0.2 - 3.3)
P5TD20	17.0	33,909	0.91 - 91	0.5 - 12
	(150)	(300,000)	(2 - 200)	(6 - 144)
P5TD25	17.0	33,909	0.91 - 91	0.5 - 12
	(150)	(300,000)	(2 - 200)	(6 - 144)
P5TD32	17.0	33,909	0.91 - 91	0.5 - 12
	(150)	(300,000)	(2 - 200)	(6 - 144)

P5TT Series Single Tooling Plate A + STROKE --HH V_{MIN}^{MAX} 2X AA TAP THRU (ACCEPTS W SHCS 2X BB TAP THRU DD ADJUSTABLE FROM OPPOSITE SIDE) ☐ FOR CC SHCS STOPPER BOLT Z ф S 4X W TAP SS DEEP Н 2X F (STD) $\emptyset D$ GG ·UU

Bore	Α	В	С	D	Е	F	Н	N	Р
6	45 (1.77)	37 (1.46)	16 (0.63)	4 (0.16)	10.0 (0.39)	M5X0.8	2.75 (0.11)	5.5 (0.22)	35 (1.38)
10	55 (2.17)	46 (1.81)	17 (0.67)	6 (0.24)	8.0 (0.32)	M5X0.8	4 (0.16)	8 (0.31)	44 (1.73)
16	60 (2.36)	58 (2.28)	20 (0.79)	8 (0.31)	8.0 (0.32)	M5X0.8	5 (0.20)	10 (0.39)	56 (2.20)
20	70 (2.76)	64 (2.52)	25 (0.98)	10 (0.39)	8.0 (0.32)	M5X0.8	6 (0.24)	12 (0.47)	62 (2.44)
25	72 (2.83)	80 (3.15)	30 (1.18)	12 (0.47)	9.0 (0.35)	1/8" NPT	6 (0.24)	12 (0.47)	78 (3.07)
32	82 (3.23)	98 (3.86)	38 (1.50)	16 (0.63)	10.0 (0.39)	1/8" NPT	8 (0.31)	16 (0.63)	96 (3.78)

Bore	M, mm (inch) at various strokes*											
6		10	-50									
	10+1/2 str	oke in mm (0.394+1/2 st	troke in in.)								
10	10-25	30-50	55-75									
10	30 (1.18)	50 (1.97)										
16	10-25	10-25 30-50 55-80										
10	25 (0.98)	35 (1.38)	45 (1.77)	55 (2.17)								
20	10-25	30-50	55-100									
20	30 (1.18)	40 (1.57)	60 (2.36)									
25	10-25	30-50	55-100									
25	30 (1.18)	40 (1.57)	60 (2.36)									
32	10-25											
32	40 (1.57) 50 (1.97) 70 (2.76)											

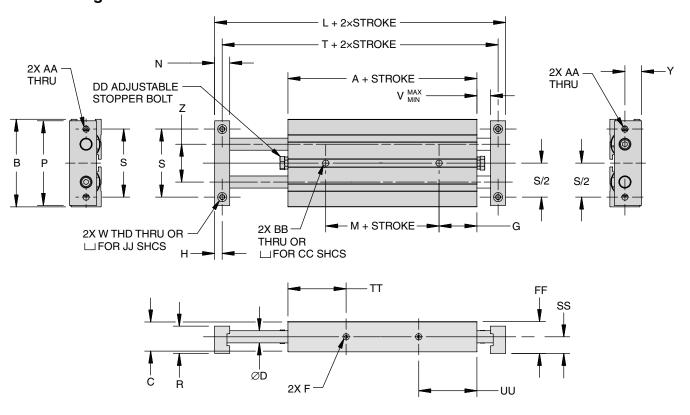
*Consult factory for longer strokes.

Bore	R	S	V MIN	V MAX	W	Y	Z	AA	BB	CC	DD	GG	НН	SS	TT	UU
6	14 (0.55)	28 (1.10)	8 (0.31)	13 (0.51)	M3X0.5	7 (0.28)	16 (0.63)	M3X0.5	NA	МЗ	M3X0.5	9 (0.35)	13 (0.51)	6 (0.24)	22.5 (0.89)	11 (0.43)
10	15 (0.59)	35 (1.38)	9 (0.35)	14 (0.55)	M3X0.5	7.5 (0.30)	22 (0.87)	M4X0.7	M4X0.7	МЗ	M4X0.7	8.5 (0.83)	20 (0.79)	7 (0.28)	30 (1.18)	8 (0.31)
16	18 (0.71)	45 (1.77)	9 (0.35)	14 (0.55)	M4X0.7	9 (0.35)	25 (0.98)	M5X0.8	M5X0.8	M4	M4X0.7	10 (0.39)	30 (1.18)	8 (0.31)	38.5 (1.52)	8 (0.31)
20	23 (0.91)	50 (1.97)	12 (0.47)	17 (0.67)	M4X0.7	11.5 (0.45)	28 (1.10)	M5X0.8	M6X1.0	M5	M5X0.8	12.5 (0.49)	30 (1.18)	6 (0.24)	45 (1.77)	8 (0.31)
25	28 (1.10)	60 (2.36)	12 (0.47)	17 (0.67)	M5X0.8	14 (0.55)	35 (1.38)	M6X1.0	M8X1.25	M6	M5X0.8	15 (0.59)	30 (1.18)	8 (0.31)	46 (1.81)	9 (0.35)
32	36 (1.42)	75 (2.95)	14 (0.55)	19 (0.75)	M5X0.8	18 (0.71)	44 (1.73)	M6X1.0	M8X1.25	M6	M6X1.0	19 (0.75)	30 (1.18)	8 (0.31)	56 (2.20)	10 (0.39)

All dimensions in mm (in)



P5TD Series Dual Tooling Plate



Bore	Α	В	С	D	F	G	Н	L	М	N	Р	R	S	Т
16	95 (3.74)	58 (2.28)	20 (0.79)	8 (0.31)	M5X0.8	25 (0.98)	5 (0.20)	133 (5.24)	45 (1.77)	10 (0.39)	56 (2.20)	18 (0.71)	45 (1.77)	123 (4.84)
20	110 (4.33)	64 (2.52)	25 (0.98)	10 (0.39)	M5X0.8	30 (1.18)	6 (0.24)	158 (6.22)	50 (1.97)	12 (0.47)	62 (2.44)	23 (0.91)	50 (1.97)	146 (5.75)
25	112 (4.41)	80 (3.15)	30 (1.18)	12 (0.47)	1/8" NPT	30 (1.18)	6 (0.24)	160 (6.30)	52 (2.05)	12 (0.47)	78 (3.07)	28 (1.10)	60 (2.36)	148 (5.83)
32	133 (5.24)	98 (3.86)	38 (1.50)	16 (0.63)	1/8" NPT	30 (1.18)	8 (0.31)	193 (7.60)	73 (2.87)	16 (0.63)	96 (3.78)	36 (1.42)	75 (2.95)	177 (6.97)

Bore	V MAX	V MIN	w	Y	Z	AA	ВВ	СС	DD	FF	JJ	SS	TT	UU
16	9 (0.35)	14 (0.55)	M4X0.7	11 (0.43)	25 (0.98)	M5X0.8	M5X0.8	M4	M4X0.7	21 (0.83)	МЗ	11 (0.43)	38.5 (1.52)	38.5 (1.52)
20	12 (0.47)	17 (0.67)	M4X0.7	13.5 (0.53)	28 (1.10)	M5X0.8	M6X1.0	M5	M5X0.8	26 (1.02)	МЗ	13.5 (0.53)	44.5 (1.75)	44.5 (1.75)
25	12 (0.47)	17 (0.67)	M5X0.8	16 (0.63)	35 (1.38)	M6X1.0	M8X1.25	M6	M5X0.8	31 (1.22)	M4	16 (0.63)	46 (1.81)	46 (1.81)
32	14 (0.55)	19 (0.75)	M5X0.8	20 (0.79)	44 (1.73)	M6X1.0	M8X1.25	M6	M6X1.0	39 (1.54)	M4	20 (0.79)	56 (2.20)	56 (2.20)

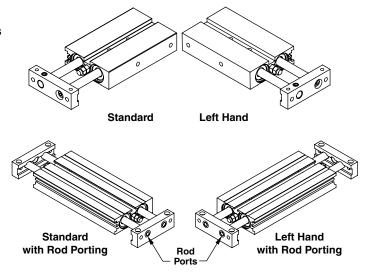
All dimensions in mm (in)



Options

Left Hand Option (C)

Space limitations can require side porting or switch grooves to be located on the opposite face from standard. Ordering the left hand option creates a mirror image of the standard unit by switching the location of the ports and switch grooves.



Bearing Type (P, H, E, T)

The Single Tool Plate version comes standard with two bearings (one per piston rod). The Dual Tool Plate version includes four bearings (two per piston rod).

Bearing options include:

- Plain Bearing Two hard coat aluminum bearings available on Single Tooling Plate Version only
- **Double Plain Bearing** Four hard coat aluminum bearings available on the Dual Tooling Plate Version only
- Linear Ball Bearing Two recirculating ball bearings with integral rod wipers to aid in resisting contamination and containing factory installed lubrication, available on Single Tooling Plate Version only
- Double Ball Bearing Four recirculating ball bearings with integral rod wipers to aid in resisting contamination and containing factory installed lubrication, available on the Dual Tooling Plate Version only

Application Requirement	Ball Bearing	Composite
Friction	Low	Higher
Precision over Life of Bearing	Constant	Variable
Static Load Capacity	Good	Excellent
Washdown Compatibility	Poor	Excellent

For bushing load capacities, reference the Engineering Data pages of this catalog.

Support Rod Types (1, 3)

The support rod (or piston rod) can be supplied in two styles available on both the single and dual tooling plate versions:

- · Chrome plated carbon steel
- · Stainless steel



Options

Extend and Retract Options (N, A)

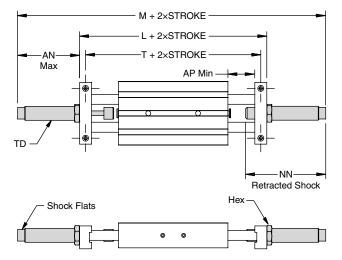
Single tooling plate versions (P5TT) come standard with a stroke adjuster for the retract position.

Dual tooling plate versions (P5TD) come standard with a stroke adjuster for the extend and retract position. Optional shock absorbers replace the standard stopper bolts.

Shock Absorbers (A)

Adjustable shock absorbers are provided when this option is specified. Shock absorbers dissipate kinetic energy over a wide range of velocities and weights. Cylinder stroke is adjusted by threading the shock absorber in or out.

Shock Absorber Adjustment Procedure: Proper adjustment is important to maximize a shock absorber's performance. With a range of zero to ten, shocks are factory pre-set at five. Cycle the slide to impact the shock absorber. Rotate the shock's adjustment knob to achieve smooth deceleration. Adjusting towards zero increases resistance. If the initial impact is too hard, rotate the knob towards ten to lessen the resistance. If the final setting is less than one, a larger shock and/or slide should be considered. Tighten the adjusting knob set screw to maintain resistance.

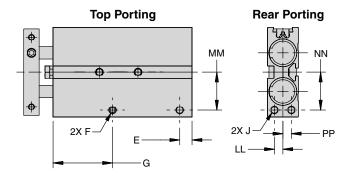


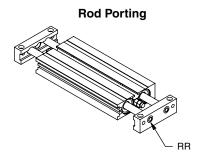
Bore	L	Т	М	NN	AN Max	AP Min	TD	Hex size	Shock Flats	Shock Stroke
16	133 (5.24)	123 (4.84)	246 (9.69)	74 (2.91)	56.5 (2.22)	9 (0.35)	M12X1.0	14 (0.55)	NA	10.1 (0.40)
20	158 (6.22)	146 (5.75)	273 (10.75)	80 (3.15)	57.5 (2.26)	12 (0.47)	M14X1.5	17 (0.67)	12.7 (0.50)	12.4 (0.49)
25	160 (6.30)	148 (5.83)	275 (10.83)	80 (3.15)	57.5 (2.26)	12 (0.47)	M14X1.5	17 (0.67)	12.7 (0.50)	12.4 (0.49)
32	193 (7.60)	177 (6.97)	296 (11.65)	80 (3.15)	57.5 (2.26)	14 (0.55)	M14X1.5	17 (0.67)	12.7 (0.50)	12.4 (0.49)



Port Location (1, 3, 4)

Side porting is standard. Top (1) or rear (3) porting is available on single tooling plate models. A rod porting option (4) is available on dual tooling plate models.





Bore	E	F	G	J	LL	ММ	NN	PP	RR
6	10.0 (0.39)	M5X0.8	22.5 (0.89)	M3	2.5 (0.10)	14 (0.55)	14 (0.55)	4 (0.16)	NA
10	8.0 (0.32)	M5X0.8	30 (1.18)	МЗ	4 (0.16)	18.5 (0.73)	18.5 (0.73)	4 (0.16)	NA
16	8.0 (0.32)	M5X0.8	38.5 (1.52)	M5	5.5 (0.22)	24.5 (0.96)	24.5 (0.96)	5.5 (0.22)	M5X0.8
20	8.0 (0.32)	M5X0.8	45 (1.77)	M5	8 (0.31)	8 (0.31)	27.5 (1.08)	8 (0.31)	M5X0.8
25	9.0 (0.35)	1/8" NPT	46 (1.81)	M5	9 (0.35)	34 (1.34)	34 (1.34)	9 (0.35)	M5X0.8
32	10.0 (0.39)	1/8" NPT	56 (2.20)	1/8" NPT	12.5 (0.49)	42 (1.65)	42 (1.65)	12.5 (0.49)	1/8" NPT

Flow Controls (F, G)

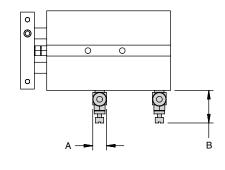
Right angle flow control valves allow adjustment of cylinder speed by metering exhaust air flow. Presto-Lok push-in or threaded ports provide 360° orientation capability.

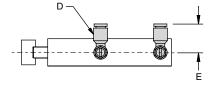
NPT Cylinder Ports

	Threaded (N)				Presto-lok (F)			
Bore	Α	B D		E	Α	В	D	E
6, 10, 16, 20	10.0 (0.39)	11.0 (0.43)	10-32	24.5 (0.96)	10.0 (0.39)	18 (0.71)	4mm tube	19.5 (0.77)
25, 32	17.0 (0.67)	33.0 (1.30)	1/8	20.5 (0.81)	17.0 (0.67)	33.0 (1.30)	5/32" tube	28.0 (1.10)



Bore	Threaded (B)			Presto-lok (P)				
Боге	Α	В	D	E	Α	В	D	E
6, 10, 16, 20	10.0 (0.39)	28.5 (1.12)	M5	17.5 (0.69)	10.0 (0.39)	18 (0.71)	4mm tube	19.5 (0.77)
25, 32	14.4 (0.57)	28.5 (1.12)	1/8	17.5 (0.69)	14.4 (0.57)	18.0 (0.71)	6mm tube	23.5 (0.93)





Fluorocarbon Seals (V)

Standard abrasion resistant nitrile seals should be used for general purpose applications with temperatures of -18 $^{\circ}$ C to +74 $^{\circ}$ C (0 $^{\circ}$ F to 165 $^{\circ}$ F).

Fluorocarbon seals are recommended for high temperature applications up to 121°C (250°F).

Option	Temperature Range
Shock Absorbers	0°C to +66°C (32°F to 150°F)
Bumpers	-18°C to +93°C (0°F to 200°F)
Piston Magnets	-18°C to +74°C (0°F to 165°F)
Switches	-10°C to +60°C (14°F to 140°F)

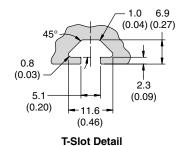


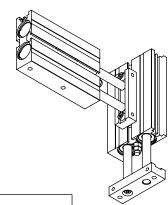
Twin Rod Cylinder **P5TT and P5TD Series**

T-Slot Mounting

T-slots provide quick and flexible direct mounting between thrust slides. Mounting kits include T-nuts and bolts. The table below lists kit numbers for recommended combinations of slides.

Order mounting kit separately.





			P5TT (y-axis)				
	Size	6	10	16	20	25	32
	6	NK-P5TT006	N/A	N/A	N/A	N/A	N/A
(is)	10	NK-P5TT010	NK-P5TT010	N/A	N/A	N/A	N/A
(x-axis)	16	NK-P5TT016	NK-P5TT016	NK-P5TT016	N/A	N/A	N/A
⊢	20	N/A	NK-P5TT020	NK-P5TT020	NK-P5TT020	N/A	N/A
P5T	25	N/A	N/A	NK-P5TT025	NK-P5TT025	NK-P5TT025	N/A
	32	N/A	N/A	N/A	NK-P5TT032	NK-P5TT032	NK-P5TT032

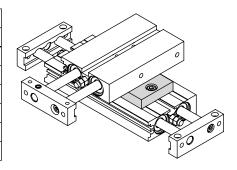
Transition Plate Mounting

Base and thrust slides may be mounted together using transition plates. Kits include transition plate and required hardware. The table below lists kit numbers for recommended combinations of slides.

Order plate kits separately.

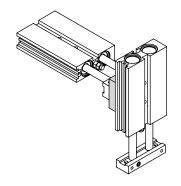
Thrust-Base Plate Kits

		P5TD				
	Size	16	20	25	32	
	6	TP2216-1-2106	N/A	N/A	N/A	
	10	TP2216-1-2110	TP2220-1-2110	N/A	N/A	
F	16	TP2216-1-2116	TP2220-1-2116	TP2225-1-2116	N/A	
P5T	20	N/A	TP2220-1-2120	TP2225-1-2120	TP2232-1-2120	
	25	N/A	N/A	TP2225-1-2125	TP2232-1-2125	
	32	N/A	N/A	N/A	TP2232-1-2132	



Thrust-Thrust Plate Kits

		P5TT				
	Size	16	20	25	32	
	6	TP2116-1-2106	N/A	N/A	N/A	
	10	TP2116-1-2110	TP2120-1-2110	N/A	N/A	
=	16	TP2116-1-2116	TP2120-1-2116	TP2125-1-2116	N/A	
P5	20	N/A	TP2120-1-2120	TP2125-1-2120	TP2132-1-2120	
	25	N/A	N/A	TP2125-1-2125	TP2132-1-2125	
	32	N/A	N/A	N/A	TP2132-1-2132	





P5TT and P5TD Series

Drop-In Solid State Sensors

- · Solid state sensors use GMR technology
- 5 different connection styles
- · Allow position sensing anywhere along cylinder
- · CE approved

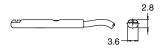
PNP Sensor Part No.	Wiring
P8S-MPFLX	3m flying leads
P8S-MPFTX	10m flying leads
P8S-MPSHX	0.2m lead with 8mm connector

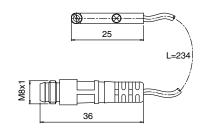
Solid State Sensor SPECIFICATIONS

Type	. Electronic
Output Function	. Normally Open
Sensor Output	. PNP
Operating Voltage	. 10 - 30VDC
Continuous Current	. ≤ 70 mA
Response Sensitivity	
Switching Frequency	
Power Consumption	
Voltage Drop	. ≤ 2.5 VDC
Ripple	. ≤ 10% of Operating Voltage
Hysteresis	. ≤ 1.5 mT (15 gauss)
Repeatability	. ≤ ±0.1 mm
EMC	. EN 60 947-5-2
Short-circuit Protection	. Yes
Power-up Pulse Suppression	. No
Reverse Polarity Protection	. Yes
Enclosure Rating	. IP 67
Shock and Vibration Stress	. 30g, 11 ms, 10 to 55 Hz, 1 mm

Operating Temperature Range -25°C to +75°C (-13°F to 167°F) Housing Material PA 12

Connector Cable...... PUR 3 x 0.09mm²





WIRING CONNECTION



Pin	Wire	Function
1	brown	+VDC
4	black	NO
3	blue	- VDC





Switches

Drop-In Reed Switches

Switch Part No.	Wiring
P8S-MRFLX	3m flying leads
P8S-MRFTX	10m flying leads
P8S-MRSHX	0.2m lead with 8mm connector

Reed Switch SPECIFICATIONS

TypeReed

Output FunctionNormally Open

Operating Voltage10 - 120 VAC, 10 - 30 VDC

Continuous Current≤ 500 mA max.

Hysteresis..... ≤ 0.7 mT (7 gauss)

Repeatability..... ≤ 0.1 mm EMC...... EN 60 947-5-2

Enclosure Rating IP 67

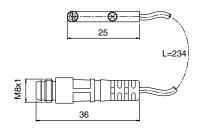
Operating Temperature Range -25°C to +75°C (-13°F to 167°F)

Housing MaterialPA 12

Connector Cable......PUR 3 x 0.09 mm²

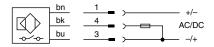
Connector......PUR cable w/8mm connector





WIRING CONNECTION

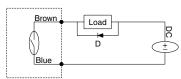
	Pin	Wire	Function
4	1	Brown	Operating Voltage
(• •) 3	2	Black	Output signal
	3	Blue	Not used



Circuit for Switching Contact Protection (Inductive Loads)

(Required for proper operation 24V DC)

Put Diode parallel to loads following polarity as shown below.



D: Diode: select a Diode with the breakdown voltage and current rating according to the load.

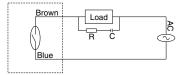
Typical Example—100 Volt, 1 Amp Diode CR: Relay coil (under 0.5W coil rating) (Recommended for longer life 125 VAC)

Put a resistor and capacitor in parallel with the load. Select the resistor and capacitor according to the load.

Typical Example:

CR: Relay coil (under 2W coil rating) R: Resistor 1 K Ω - 5 K Ω , 1/4 W

C: Capacitor 0.1 µF, 600 V



⚠ Caution

- Use an ampmeter to test reed switch current. Testing devices such as incandescent light bulbs may subject the reed switch to high in-rush loads.
- NOTE: When checking an unpowered reed switch for continuity with a digital ohmmeter the resistance reading will change from infinity to a very large resistance (2 M ohm) when the switch is activated. This is due to the presence of a diode in the reed switch.
- Anti-magnetic shielding is recommended for reed switches exposed to high external RF or magnetic fields.
- The magnetic field strength of the piston magnet is designed to operate with our switches. Other manufacturers' switches or sensors may not operate correctly in conjunction with these magnets.
- Use relay coils for reed switch contact protection.
- The operation of some 120 VAC PLC's (especially some older Allen-Bradley PLC's) can overload the reed switch. The switch may fail to release after the piston magnet has passed. This problem may be corrected by the placement of a 700 to 1K OHM resistor between the switch and the PLC input terminal. Consult the manufacturer of the PLC for appropriate circuit.
- Switches with long wire leads (greater than 15 feet) can cause capacitance build-up and sticking will result. Attach a resistor in series with the reed switch (the resistor should be installed as close as possible to the switch). The resistor should be selected such that R (ohms) >E/0.3.



P5TT and P5TD Series

8mm Cordset with Female Quick Connect

(order separately)

A female connector is available for all switches with the male 8mm quick connect option. The male plug will accept a snap-on or threaded connector. Cordset part numbers are listed below:

Cable Length	Threaded Connector	Snap-On Connector
5 meters	086620T005	086620S005
2 meters	086620T002	086620S002

Cordset Specifications:

Connector: Oil resistant polyurethane body

material, PA 6 (Nylon) contact carrier, spacings to VDE 0110 Group C,

(30 VAC / 36 VDC)

Contacts: Gold plated beryllium copper,

machined from solid stock

Coupling Method: Snap-Lock or chrome plated brass nut Cord Construction: Oil resistant black PUR jacket, non-

wicking, non-hygroscopic, 300V. Cable

end is stripped and tinned.

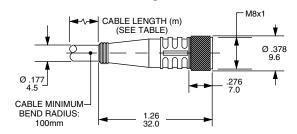
Conductors: Extra high flex stranding,

PVC insulation

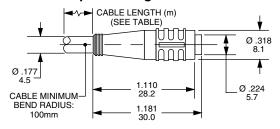
Temperature: -40 to 194°F (-40 to 90°C)
Protection: NEMA 1,3,4,6P and IEC IP67

Cable Length: 20 ft. (6m.)

Threaded Straight Connector



Snap-On Straight Connector





Twin Rod Cylinder **P5TT and P5TD Series**



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- 2. Payment: Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the Buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.
- 3. Delivery: Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.
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- 12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sale of the items sold hereunder of this Agreement may be brought by either party more than two (2) years after the cause of action accrues.



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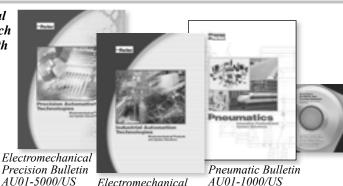
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