

# 3000 P.S.I. Rated Tie-Rod

## 3 / 7 Warranty

3 year warranty on standard products means you can confidently utilize equipment year after year. RoyalPlate Plus® rods are warranted against rust and corrosion for 7 years.

## RoyalPlate Plus® Plating – A & B Versions

Prevents rust and corrosion more than twice as long as hard chrome plating and gas nitride treated steel bar.

## Flexible Configurations

Cylinders are easily configured by available options such as port size and location, stroke length, pin size and paint color.

## Exceptional Paint Performance

Aircraft quality two-part chemical cure polyester urethane paint will not fade and will outperform powder coating for the life of the cylinder.



# Prince



# Standard Tie-Rod Options

## TIE-ROD MODEL CODE IDENTIFICATION MATRIX

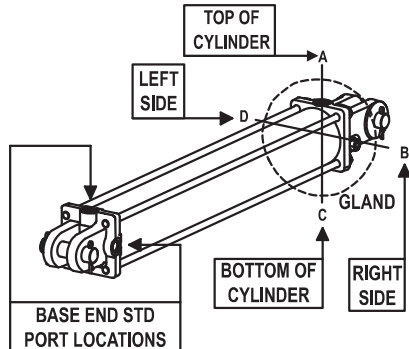
### MODEL CODE SYSTEM F 350 160 ABAAA07B

**MODELS:**  
 B=B SERIES-3000 PSI w/ROYAL PLATE  
 A=ASAE VERSION OF B SERIES  
 w/ROYAL PLATE (8" & 16" Strokes  
 only, 8" stroke not available  
 in 4.5" & 5" bore size.)  
 F=F SERIES - 3000 PSI with Chrome  
 E=ASAE VERSION OF F SERIES  
 with Chrome

**BORE SIZE:**  
 200=2.00" Bore 400=4.00" Bore  
 250=2.50" Bore 450=4.50" Bore  
 300=3.00" Bore 500=5.00" Bore  
 350=3.50" Bore

**STROKE:** (Inches)  
 First two digits are in inches  
 Consult Prince for over 48"

**GLAND PORT LOCATIONS:** (See Pictorial Below)  
 A=(Top Port, STD)  
 B=(R. Side Port)  
 C=(Bottom Port)  
 D=(L. Side Port)



PORT LOCATION DETERMINED FROM VIEWING  
 CYLINDER FROM BASE END.

(See Table Below) **PORT STYLE & SIZE:**

CODE	PORT TYPE & SIZE	CYLINDER BORE SIZE (Inch)						
		2.00	2.50	3.00	3.50	4.00	4.50	5.00
A	#6 SAE ORB (9/16-18)	O	O	O	O	O	O	O
B	#8 SAE ORB (3/4-16)	S	S	S	S	S	S	O
C	#10 SAE ORB (7/8-14)						S	S
D	NPTF 3/8	O	O	O	O	O	O	O
E	NPTF 1/2	O	O	O	O	O	O	O
F	NPTF 3/4							O

Table Identifiers: (For Tables Above)

S-STANDARD O-OPTIONAL BLANK-NOT AVAILABLE

**CARTON & DECAL CODE**  
 A=No carton-Std decals, Installed  
 B=Carton-Std decals, Installed (STD)  
 C=No carton-Std decals, Loose  
 D=Carton-Std decals, Loose  
 E=No carton-Std decals, customer I.D. decal, Installed

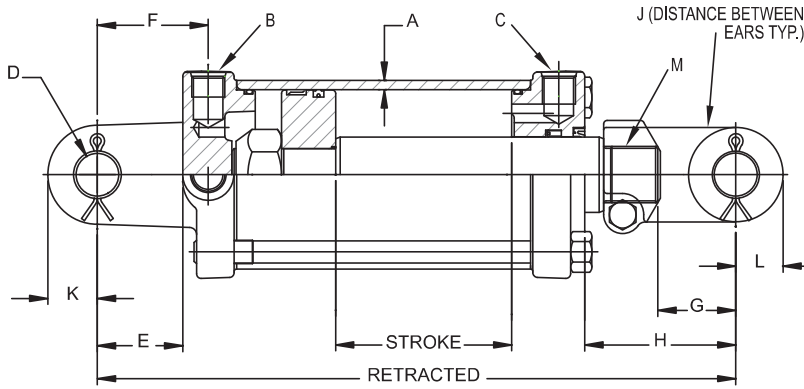
**PAINT:**  
 00=No Paint  
 01=Gloss Red  
 03=Highway Yellow  
 07=Gloss Black (STD)

**CLEVIS PIN INSTALLATION & RETAINER OPTIONS:**  
 A=Cotter Pins & Clevis Pin(s) Shipped Loose (STD)  
 B=Cotter Pins & Clevis Pin(s) Installed  
 C=No Retainers, Clevis Pin(s) Shipped Loose if Selected

AVAILABLE CLEVIS PIN OPTIONS	CYLINDER BORE SIZE (Inch)						
	2.00	2.50	3.00	3.50	4.00	4.50	5.00
1.00"Ø PIN	S	S	S	S			
1.00"Ø HARDENED PIN	O	O	O	O	S		
1.25"Ø HARDENED PIN					O	S	S

**CLEVIS PIN OPTIONS & AVAILABILITY:** (See Table Above)  
 A=2-1.00"Ø Pins  
 B=Reserved  
 C=2-1.00"Ø Hardened Pins  
 D=2-1.25"Ø Hardened Pins  
 E=1-1.00"Ø Pin  
 F=Reserved  
 G=1-1.00"Ø Hardened Pin  
 H=1-1.25"Ø Hardened Pin  
 J= No Pins

**END FITTING OPTIONS:** (See Table Above)  
 A=Ø1.00" Pin Holes, Both Ends  
 B=Ø1.00" Base End Pin Hole, No Rod Clevis  
 C=Ø1.00" Pin Holes, Both Ends, Stroke Control Assy \*  
 D=Ø1.25" Pin Holes, Both Ends  
 E=Ø1.25" Base End Pin Hole, No Rod Clevis  
 \*(ASAE Version 2.0-3.5" Bore with 8" stroke only)



**FEATURES:**

- Heavy duty, high strength tie-rods
- Induction hardened piston rods plated with RoyalPlate Plus® (piston rods on 2" bore not hardened)
- Ductile iron piston, butt, gland & clevis
- Urethane u-cup & metal encased wiper 2 1/2" bore & larger models
- Crown seal on piston
- Pins & cotter pins (Hardened pins on 4", 4 1/2" & 5" models)
- Standard color is gloss black
- Stroke control may be installed on 8" strokes (2" - 3.5" bore, A models only)
- Side ports available on request
- Nylon piston bearing ring on 4", 4 1/2" & 5" bore models
- 3000 PSI continuous operating pressure

**2 INCH BORE CYLINDERS**

E & F Series Chrome Rod	A & B Series Royal Plate Rod	Stroke	Wt	Column Load (lbs)	Retract	Tare Dist. (H)	Standard Dimensions of 2 Inch Bore Cylinders
* F200040ABAAA07B	B200040ABAAA07B	4"	17	9425 lbs	14 1/4	3 1/2	Note: 1 1/8" rod diameter Outside Sq. Dim. Butt - 2.875, Gland 2.875 A 3/16" cylinder tube wall thickness B, C SAE 3/4 -16 extend & retract ports D 1.015" clevis pin hole size E, F 1 7/8" base clevis throat depth with 2 7/16" from pin center to port center G 1 13/16" rod clevis throat depth J 1.06" min. distance between ears at pin center line K 15/16" base clevis ear radius L 1 1/8" rod clevis ear radius M 1 1/8" - 12 UNF-3 piston rod clevis thread size
* F200060ABAAA07B	B200060ABAAA07B	6"	19	9425 lbs	16 1/4	3 1/2	
F200080ABAAA07B	B200080ABAAA07B	8"	20	9425 lbs	18 1/4	3 1/2	
* E200080ABAAA07B	A200080ABAAA07B	8"	21	9425 lbs	20 1/4	ASAE 5 1/2	
* F200100ABAAA07B	B200100ABAAA07B	10"	22	9425 lbs	20 1/4	3 1/2	
* F200120ABAAA07B	B200120ABAAA07B	12"	23	9425 lbs	22 1/4	3 1/2	
* F200140ABAAA07B	B200140ABAAA07B	14"	25	9425 lbs	24 1/4	3 1/2	
* F200160ABAAA07B	B200160ABAAA07B	16"	28	9425 lbs	26 1/4	3 1/2	
* E200160ABAAA07B	A200160ABAAA07B	16"	28	7630 lbs	31 1/2	ASAE 8 3/4	
* F200180ABAAA07B	B200180ABAAA07B	18"	28	9200 lbs	28 1/4	3 1/2	
* F200200ABAAA07B	B200200ABAAA07B	20"	30	7760 lbs	30 1/4	3 1/2	
* F200240ABAAA07B	B200240ABAAA07B	24"	33	5730 lbs	34 1/4	3 1/2	
* F200300ABAAA07B	B200300ABAAA07B	30"	37	3910 lbs	40 1/4	3 1/2	

Seal Kits: Seal Kit for A, B, E, F & SAE-320XX Cylinder Models = PMCK-B200000  
 Universal Seal Kit for SAE-90XX, SAE-320XXX, A, B, E & F Cylinder Models = 240040022

**2.5 INCH BORE CYLINDERS**

E & F Series Chrome Rod	A & B Series Royal Plate Rod	Stroke	Wt	Column Load (lbs)	Retract	Tare Dist. (H)	Standard Dimensions of 2.5 Inch Bore Cylinders
* F250060ABAAA07B	B250060ABAAA07B	6"	22	14730 lbs	16 1/4	3 3/4	Note: 1 1/4" rod diameter Outside Sq. Dim. Butt - 3.375, Gland 3.375 A 3/16" cylinder tube wall thickness B, C SAE 3/4 -16 extend & retract ports D 1.015" clevis pin hole size E, F 1 7/8" base clevis throat depth with 2 3/8" from pin center to port center G 1 13/16" rod clevis throat depth J 1.06" min. distance between ears at pin center line K 15/16" base clevis ear radius L 1 1/8" rod clevis ear radius M 1 1/8" - 12 UNF-3 piston rod clevis thread size
F250080ABAAA07B	B250080ABAAA07B	8"	25	14730 lbs	18 1/4	3 3/4	
* E250080ABAAA07B	A250080ABAAA07B	8"	25	14730 lbs	20 1/4	ASAE 5 3/4	
* F250100ABAAA07B	B250100ABAAA07B	10"	26	14730 lbs	20 1/4	3 3/4	
* F250120ABAAA07B	B250120ABAAA07B	12"	28	14730 lbs	22 1/4	3 3/4	
* F250140ABAAA07B	B250140ABAAA07B	14"	30	14730 lbs	24 1/4	3 3/4	
* F250160ABAAA07B	B250160ABAAA07B	16"	25	14730 lbs	26 1/4	3 3/4	
* E250160ABAAA07B	A250160ABAAA07B	16"	34	11520 lbs	31 1/2	ASAE 9	
* F250180ABAAA07B	B250180ABAAA07B	18"	34	13880 lbs	28 1/4	3 3/4	
* F250200ABAAA07B	B250200ABAAA07B	20"	36	11720 lbs	30 1/4	3 3/4	
* F250240ABAAA07B	B250240ABAAA07B	24"	41	8670 lbs	34 1/4	3 3/4	
* F250300ABAAA07B	B250300ABAAA07B	30"	47	5930 lbs	40 1/4	3 3/4	

Seal Kits: Seal Kit for A, B, E, F & SAE-325XX Cylinder Models = PMCK-B250000  
 Universal Seal Kit for SAE-91XX, SAE-325XXX, A, B, E & F Cylinder Models = 240040023

**3 INCH BORE CYLINDERS**

E & F Series Chrome Rod	A & B Series Royal Plate Rod	Stroke	Wt	Column Load (lbs)	Retract	Tare Dist. (H)	Standard Dimensions of 3 Inch Bore Cylinders
* F300060ABAAA07B	B300060ABAAA07B	6"	26	21210 lbs	16 1/4	3 3/4	Note: 1 3/8" rod diameter Outside Sq. Dim. Butt - 3.875, Gland 3.875 A 3/16" cylinder tube wall thickness B, C SAE 3/4 -16 extend & retract ports D 1.015" clevis pin hole size E, F 1 7/8" base clevis throat depth with 2 7/16" from pin center to port center G 1 13/16" rod clevis throat depth J 1.06" min. distance between ears at pin center line K 1 1/16" base clevis ear radius L 1 1/8" rod clevis ear radius M 1 1/8" - 12 UNF-3 piston rod clevis thread size
F300080ABAAA07B	B300080ABAAA07B	8"	29	21210 lbs	18 1/4	3 3/4	
* E300080ABAAA07B	A300080ABAAA07B	8"	29	21210 lbs	20 1/4	ASAE 5 3/4	
* F300100ABAAA07B	B300100ABAAA07B	10"	30	21210 lbs	20 1/4	3 3/4	
* F300120ABAAA07B	B300120ABAAA07B	12"	33	21210 lbs	22 1/4	3 3/4	
* F300140ABAAA07B	B300140ABAAA07B	14"	35	21210 lbs	24 1/4	3 3/4	
F300160ABAAA07B	B300160ABAAA07B	16"	29	21210 lbs	26 1/4	3 3/4	
* E300160ABAAA07B	A300160ABAAA07B	16"	40	16730 lbs	31 1/2	ASAE 9	
* F300180ABAAA07B	B300180ABAAA07B	18"	40	20120 lbs	28 1/4	3 3/4	
* F300200ABAAA07B	B300200ABAAA07B	20"	42	17010 lbs	30 1/4	3 3/4	
* F300240ABAAA07B	B300240ABAAA07B	24"	47	12620 lbs	34 1/4	3 3/4	
* F300300ABAAA07B	B300300ABAAA07B	30"	54	8640 lbs	40 1/4	3 3/4	
* F300360ABAAA07B	B300360ABAAA07B	36"	61	6290 lbs	46 1/4	3 3/4	
* F300480ABAAA07B	B300480ABAAA07B	48"	75	3760 lbs	58 1/4	3 3/4	

Seal Kits: Seal Kit for A, B, E, F & SAE-330XX Cylinder Models = PMCK-B300000  
 Universal Seal Kit for SAE-92XX, SAE-330XXX, A, B, E & F Cylinder Models = 240040024

\* Frequently stocked items

## 3.5 INCH BORE CYLINDERS

E & F Series Chrome Rod	A & B Series Royal Plate Rod	Stroke	Wt	Column Load (lbs)	Retract	Tare Dist. (H)	Standard Dimensions of 3.5 Inch Bore Cylinders
F350080ABAAA07B	B350080ABAAA07B	8"	35	28860 lbs	18 ¼	3 ¾	Note: 1 ¾" rod diameter Outside Sq. Dim. Butt - 4.313, Gland 4.313 A 3/16" cylinder tube wall thickness B, C SAE ¾ -16 extend & retract ports D 1.015" clevis pin hole size E, F 1 7/8" base clevis throat depth with 27/16" from pin center to port center G 1 13/16" rod clevis throat depth J 1.06" min. distance between ears at pin center line K 1 1/4" base clevis ear radius L 1 1/4" rod clevis ear radius M 1 5/16" - 12 UNF-3 piston rod clevis thread size
*E350080ABAAA07B	A350080ABAAA07B	8"	35	28860 lbs	20 ¼	ASAE 5 ¾	
*F350100ABAAA07B	B350100ABAAA07B	10"	37	28860 lbs	20 ¼	3 ¾	
*F350120ABAAA07B	B350120ABAAA07B	12"	39	28860 lbs	22 ¼	3 ¾	
*F350140ABAAA07B	B350140ABAAA07B	14"	42	28860 lbs	24 ¼	3 ¾	
F350160ABAAA07B	B350160ABAAA07B	16"	35	24700 lbs	26 ¼	3 ¾	
*E350160ABAAA07B	A350160ABAAA07B	16"	46	16900 lbs	31 ½	ASAE 9	
*F350180ABAAA07B	B350180ABAAA07B	18"	47	20400 lbs	28 ¼	3 ¾	
*F350200ABAAA07B	B350200ABAAA07B	20"	49	17240 lbs	30 ¼	3 ¾	
*F350240ABAAA07B	B350240ABAAA07B	24"	54	12780 lbs	34 ¼	3 ¾	
*F350300ABAAA07B	B350300ABAAA07B	30"	62	8760 lbs	40 ¼	3 ¾	
*F350360ABAAA07B	B350360ABAAA07B	36"	69	6370 lbs	46 ¼	3 ¾	
*F350480ABAAA07B	B350480ABAAA07B	48"	85	3800 lbs	58 ¼	3 ¾	

Seal Kits: Seal Kit for A, B, E, F & SAE-335XX Cylinder Models = PMCK-B350000  
 Universal Seal Kit for SAE-93XX, SAE-335XXX, A, B, E & F Cylinder Models = 240040025

## 4 INCH BORE CYLINDERS

E & F Series Chrome Rod	A & B Series Royal Plate Rod	Stroke	Wt	Column Load (lbs)	Retract	Tare Dist. (H)	Standard Dimensions of 4 Inch Bore Cylinders
F400080ABACA07B	B400080ABACA07B	8"	48	37700 lbs	18 ¼	3 ¾	Note: 1 ¾" rod diameter Outside Sq. Dim. Butt - 5.063, Gland 5.063 A 3/16" cylinder tube wall thickness B, C SAE ¾ -16 extend & retract ports D 1.015" clevis pin hole size E, F 1 ¾" base clevis throat depth with 27/16" from pin center to port center G 1 7/8" rod clevis throat depth J 1.13" min. distance between ears at pin center line K 1 1/4" base clevis ear radius L 1 1/4" rod clevis ear radius M 1 1/2" - 12 UNF-3 piston rod clevis thread size
*E400080ABACA07B	A400080ABACA07B	8"	48	37700 lbs	20 ¼	ASAE 5 ¼	
*F400100ABACA07B	B400100ABACA07B	10"	50	37700 lbs	20 ¼	3 ¾	
*F400120ABACA07B	B400120ABACA07B	12"	54	37700 lbs	22 ¼	3 ¾	
*F400140ABACA07B	B400140ABACA07B	14"	57	37700 lbs	24 ¼	3 ¾	
F400160ABACA07B	B400160ABACA07B	16"	48	37700 lbs	26 ¼	3 ¾	
*E400160ABACA07B	A400160ABACA07B	16"	64	37700 lbs	31 ½	ASAE 8 ½	
*F400180ABACA07B	B400180ABACA07B	18"	64	37700 lbs	28 ¼	3 ¾	
*F400200ABACA07B	B400200ABACA07B	20"	68	37700 lbs	30 ¼	3 ¾	
*F400240ABACA07B	B400240ABACA07B	24"	75	33710 lbs	34 ¼	3 ¾	
*F400300ABACA07B	B400300ABACA07B	30"	85	22990 lbs	40 ¼	3 ¾	
*F400360ABACA07B	B400360ABACA07B	36"	95	16680 lbs	46 ¼	3 ¾	
*F400480ABACA07B	B400480ABACA07B	48"	116	9920 lbs	58 ¼	3 ¾	

Seal Kits: Seal Kit for A, B, E, F & SAE-340XX Cylinder Models = PMCK-B400000  
 Universal Seal Kit for SAE-94XX, SAE-340XXX, A, B, E & F Cylinder Models = 240040026

## 4.5 INCH BORE CYLINDERS

E & F Series Chrome Rod	A & B Series Royal Plate Rod	Stroke	Wt	Column Load (lbs)	Retract	Tare Dist. (H)	Standard Dimensions of 4.5 Inch Bore Cylinders
F450080ACDDA07B	B450080ACDDA07B	8"	60	47710 lbs	20 ¼	4	Note: 2" rod diameter Outside Sq. Dim. Butt - 5.5, Gland 5.56 A 1/4" cylinder tube wall thickness B, C SAE 7/8 -14 extend & retract ports D 1.265" clevis pin hole size E, F 2 1/4" base clevis throat depth with 2 15/16" from pin center to port center G 2" rod clevis throat depth J 1.13" min. distance between ears at pin center line K 1 5/16" base clevis ear radius L 1 1/4" rod clevis ear radius M 1 1/2" - 12 UNF-3 piston rod clevis thread size
F450120ACDDA07B	B450120ACDDA07B	12"	69	47710 lbs	24 ¼	4	
F450140ACDDA07B	B450140ACDDA07B	14"	74	47710 lbs	26 ¼	4	
F450160ACDDA07B	B450160ACDDA07B	16"	80	47710 lbs	28 ¼	4	
E450160ACDDA07B	A450160ACDDA07B	16"	81	47710 lbs	31 ½	ASAE 7 ¼	
F450180ACDDA07B	B450180ACDDA07B	18"	83	47710 lbs	30 ¼	4	
F450200ACDDA07B	B450200ACDDA07B	20"	87	47710 lbs	32 ¼	4	
F450240ACDDA07B	B450240ACDDA07B	24"	97	44710 lbs	36 ¼	4	
F450300ACDDA07B	B450300ACDDA07B	30"	110	37530 lbs	42 ¼	4	
F450360ACDDA07B	B450360ACDDA07B	36"	124	27430 lbs	48 ¼	4	
F450480ACDDA07B	B450480ACDDA07B	48"	152	16470 lbs	60 ¼	4	

Seal Kits: Seal Kit for A, B, E, F & SAE-345XX Cylinder Models = PMCK-B450000  
 No Universal Seal Kit offered

## 5 INCH BORE CYLINDERS

E & F Series Chrome Rod	A & B Series Royal Plate Rod	Stroke	Wt	Column Load (lbs)	Retract	Tare Dist. (H)	Standard Dimensions of 5 Inch Bore Cylinders
*F500080ACDDA07B	B500080ACDDA07B	8"	72	58900 lbs	20 ¼	4	Note: 2" rod diameter Outside Sq. Dim. Butt - 5.875, Gland 5.875 A 1/4" cylinder tube wall thickness B, C SAE 7/8 -14 extend & retract ports D 1.265" clevis pin hole size E, F 1 ¾" base clevis throat depth with 2 5/8" from pin center to port center G 2" rod clevis throat depth J 1.13" min. distance between ears at pin center line K 1 3/8" base clevis ear radius L 1 1/4" rod clevis ear radius M 1 1/2" - 12 UNF-3 piston rod clevis thread size
*F500120ACDDA07B	B500120ACDDA07B	12"	83	58900 lbs	24 ¼	4	
F500140ACDDA07B	B500140ACDDA07B	14"	88	58900 lbs	26 ¼	4	
F500160ACDDA07B	B500160ACDDA07B	16"	96	58900 lbs	28 ½	4	
*E500160ACDDA07B	A500160ACDDA07B	16"	96	58900 lbs	31 ½	ASAE 7 ¼	
F500180ACDDA07B	B500180ACDDA07B	18"	98	58900 lbs	30 ¼	4	
*F500200ACDDA07B	B500200ACDDA07B	20"	103	58900 lbs	32 ¼	4	
*F500240ACDDA07B	B500240ACDDA07B	24"	113	54510 lbs	36 ¼	4	
*F500300ACDDA07B	B500300ACDDA07B	30"	129	37620 lbs	42 ¼	4	
*F500360ACDDA07B	B500360ACDDA07B	36"	144	27520 lbs	48 ¼	4	
*F500480ACDDA07B	B500480ACDDA07B	48"	175	16550 lbs	60 ¼	4	

Seal Kits: Seal Kit for A, B, E, F & SAE-350XX Cylinder Models = PMCK-B500000  
 Universal Seal Kit for SAE-95XX, SAE-350XXX, A, B, E & F Cylinder Models = 240040027

\* Frequently stocked items