



Chelsea[®] Power Take-Offs

P.T.O. General Information

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



ENGINEERING YOUR SUCCESS.

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Chelsea P.T.O. Series Information

Mechanical Six Bolt P.T.O.s

Single Gear 6-Bolt	
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Two Gear 6-Bolt	
221	1
442	2
447	2
660	3
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Mechanical Eight Bolt P.T.O.s

Single Gear 8-Bolt	
812	5
Two Gear 8-Bolt	
489	5
680	6
823	6
880	7
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Powershift ('Shift on the Go') Six & Eight Bolt P.T.O.s

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236	10
243	11
250	11
270/271	12
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Powershift ('Shift on the Go') Ten Bolt P.T.O.s

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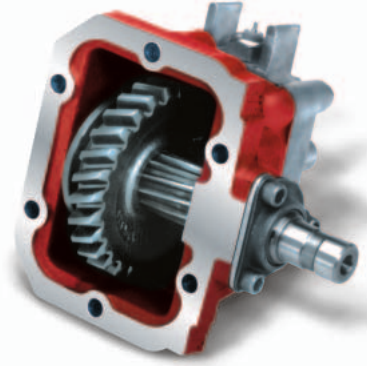
IMPORTANT: This publication provides general information about our products. Please refer to the Application Catalog and Owner's Manuals for Installation Instructions and Safety Information.

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Mechanical Six Bolt Power Take-Offs

100 Series

- Single speed, low torque applications
- Compact size for tight areas
- Sturdy cast iron housing
- Available for most transmissions



Specifications Chart – 100 Series

	100*R
Standard Output Shaft Size	————— 7/8" Round —————
Intermittent Torque Rating (Lbs. ft.)	125
Intermittent Torque Rating (N.m.)	169
Horsepower Rating for Intermittent Service	
At 500 R.P.M. of Output Shaft (HP)	12
At 1000 R.P.M. of Output Shaft (HP)	24
At 500 R.P.M. of Output Shaft (Kw)	9
At 1000 R.P.M. of Output Shaft (Kw)	18
Approximate Weight:	————— 10 lbs. [4.5 kg] —————

221 Series

- Low speed, heavy duty applications on both Manual and Automatic transmissions
- Available with both a standard housing or a special low-profile housing
- Pressure Lube option
- Wide range of pump flanges



Specifications Chart – 221 Series

	221*C	221*E	221*L
Standard Output Shaft Size	————— 1-1/4" Round w/key —————		
Intermittent Torque Rating (Lbs. ft.)	250	250	200
Intermittent Torque Rating (N.m.)	339	339	271
Horsepower Rating for Intermittent Service			
At 500 R.P.M. of Output Shaft (HP)	24	24	19
At 1000 R.P.M. of Output Shaft (HP)	48	48	38
At 500 R.P.M. of Output Shaft (Kw)	18	18	14
At 1000 R.P.M. of Output Shaft (Kw)	36	36	28
Approximate Weight:	————— 30 lbs. [13.6 kg] —————		

Mechanical Six Bolt Power Take-Offs

442 Series

- Engineered to work with virtually all existing transmission applications
- Economical workhorse features a cast iron housing
- Tapered cone bearings for high torque rating and long service life
- Slip fit idler pin for easy interchange from one transmission to another
- Easy to set backlash
- Wide range of shift and output options



Specifications Chart – 442 Series

	442*A	442*B	442*C	442*F	442*H	442*L	442*Q	442*R	442*S	442*U	442*W	442*X
Standard Output Shaft Size	1-1/4" Round w/key											
Intermittent Torque Rating (Lbs. ft.)	250	250	250	250	250	250	225	225	200	195	175	140
Intermittent Torque Rating (N.m.)	339	339	339	339	339	339	305	305	271	264	237	190
Horsepower Rating for Intermittent Service												
At 500 R.P.M. of Output Shaft (HP)	24	24	24	24	24	24	21	21	19	19	17	13
At 1000 R.P.M. of Output Shaft (HP)	48	48	48	48	48	48	43	43	38	37	33	27
At 500 R.P.M. of Output Shaft (Kw)	18	18	18	18	18	18	16	16	14	14	12	10
At 1000 R.P.M. of Output Shaft (Kw)	36	36	36	36	36	36	32	32	28	28	25	20
Approximate Weight:	21 lbs. [9.5 kg]											

447 Series

- Eliminates interference problems inside transmission/P.T.O. opening
- One-piece input/ratio gear
- Pressure Lube option
- Wide range of shift and output options



Specifications Chart – 447 Series

	447*Q	447*R	447*S	447*U	447*W
Standard Output Shaft Size	1-1/4" Round w/key				
Intermittent Torque Rating (Lbs. ft.)	225	225	200	195	175
Intermittent Torque Rating (N.m.)	305	305	271	264	237
Horsepower Rating for Intermittent Service					
At 500 R.P.M. of Output Shaft (HP)	21	21	19	19	17
At 1000 R.P.M. of Output Shaft (HP)	43	43	38	37	33
At 500 R.P.M. of Output Shaft (Kw)	16	16	14	14	12
At 1000 R.P.M. of Output Shaft (Kw)	32	32	28	28	25
Approximate Weight:	21 lbs. [9.5 kg]				

Mechanical Six Bolt Power Take-Offs

660 Series

- Flexible design works with most popular transmission applications
- Designed for higher torque applications such as pneumatic blowers
- Several speed ratios to choose from
- Wide range of shift and output options



Specifications Chart – 660 Series

	660*F	660*Q	660*S
Standard Output Shaft Size	1-1/4" Round w/key		
*Intermittent Torque Rating At 1500 R.P.M. or less (Lbs. ft.)	375	375	325
*Intermittent Torque Rating At 1500 R.P.M. or less (N.m.)	508	508	441
Horsepower Rating for Intermittent Service			
At 500 R.P.M. of Output Shaft (HP)	36	36	31
At 1000 R.P.M. of Output Shaft (HP)	71	71	62
At 1500 R.P.M. of Output Shaft (HP)	107	107	93
At 500 R.P.M. of Output Shaft (Kw)	27	27	23
At 1000 R.P.M. of Output Shaft (Kw)	53	53	46
At 1500 R.P.M. of Output Shaft (Kw)	80	80	69
Approximate Weight:	28.2 lbs. [12.8 kg]		

*Above 1500 R.P.M.: Call for Approval

P.T.O. Options Chart – 6-Bolt P.T.O.s

Mechanical Six Bolt Series		100	221	290	442	447	660
Lubrication							
X	Standard	x	x	x	x	x	x
P	Pressure		x		x	x	x
W	Wet Spline		x				
Shifting							
A	Air	x	x	x	x	x	x
C	Heavy Duty Bracket Less Cable	x	x		x	x	x
H	Less Wire Shift		x	x	x	x	x
M	Constant Mesh		x		x	x	x
P	Electric/Air 12V	x	x	x	x	x	x
S	P.T.O./Dump Pump Combo	x	x	x	x	x	x
T	P.T.O. & Pump Valve Less Kick Out & Neutral Spring Return				x	x	x
V	Air Shift Less Installation Kit	x	x	x	x	x	x
W	Wire	x	x		x	x	x
X	Wire, Less Cable & Knob		x		x	x	x
Output							
AA	Special Pump for Europe		x	x	x	x	x
AF	S.A.E. "B" 2 or 4 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth)		x (w)	x	x	x	x
AK	S.A.E. "B" 2 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)		x	x	x	x	x
AZ	Non Standard Flange, "C" Shaft (1-1/4" 14 - Tooth)		x	x	x	x	x
GA	Rotatable "B" 2 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) (Greaseable)		x		x	x	x
GB	Rotatable "B" 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) (Greaseable)		x		x	x	x
GE	Rotatable S.A.E. "A" 2 or 4 Bolt Flange, "A" Shaft (5/8" 9 - Tooth) (Greaseable)		x		x	x	x
GF	S.A.E. "B" 2 or 4 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth) (Greaseable)		x		x	x	x
GH	Rotatable "B" 2 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth) (Greaseable)		x	x	x	x	x
GJ	Rotatable "B" 4 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth) (Greaseable)		x	x	x	x	x
GK	S.A.E. "B" 2 or 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) (Greaseable)		x		x	x	x
GP	S.A.E. "A" 2 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) (Greaseable)		x		x	x	x
GQ**	S.A.E. "B" 2 or 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) (Greaseable)		x		x	x	x
GR	Chelsea Special Pump Mount, "B" Shaft (7/8" 13 - Tooth) (Greaseable)		x		x	x	x
GY	DIN 5462 Pump Mounting (Greaseable)		x		x	x	x
GZ	Non Standard Flange, "C" Shaft (1-1/4" 14 - Tooth) (Greaseable)		x		x	x	x
LA	S.A.E. "B" 2 Bolt Flange w/Lube Pump (Same as AK)		x		x	x	x
LB	S.A.E. "A" 2 Bolt Flange w/Lube Pump (Same as XP)		x		x	x	x
LC	S.A.E. "A" 2 Bolt Flange w/Lube Pump (Same as XQ)		x		x	x	x
LD	1-1/4" Round Shaft w/Lube Pump (Same as XD)		x		x	x	x
LF	S.A.E. "B" 2 or 4 Bolt Flange w/Lube Pump (Same as XK)		x		x	x	x
RA	Rotatable "B" 2 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)		x	x	x	x	x
RB	Rotatable "B" 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)		x	x	x	x	x
RC	Rotatable "A" 2 Bolt Flange, "A" Shaft (5/8" 9 - Tooth)		x	x	x	x	x
RD	Rotatable "A" 2 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)		x	x	x	x	x
RE	Rotatable "B" 4 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth)		x	x	x	x	x
RF	Rotatable "B" 2 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth)		x	x	x	x	x
RY	Rotatable DIN 5462 Pump Flange			x	x	x	x
SQ	S.A.E. "B" 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)				x		
XA	7/8" Round Shaft w/key	x					
XD	1-1/4" Round Shaft		x	x	x	x	x
XE	S.A.E. "A" 2 or 4 Bolt Flange, "A" Shaft (5/8" 9 - Tooth)		x	x	x	x	x
XG	Non Standard S.A.E. "B" 2 Bolt Flange, Non Standard Shaft (3/4" w/ 3/16" key)		x	x	x	x	x
XJ	Non Standard S.A.E. "A" 2 Bolt Flange, Non Standard Shaft (3/4" w/ 3/16" key)		x	x	x	x	x
XK	S.A.E. "B" 2 or 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)		x	x	x	x	x
XQ**	S.A.E. "B" 2 or 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)		x		x	x	x
XR	Non Standard Flange, "B" Shaft (7/8" 13 - Tooth)		x	x	x	x	x
XV	1-1/4" Rd. w/1310 Series Flanges				x		x
XX***	1-1/4" S.A.E. Tapered Shaft w/ keyway		x	x	x	x	x
XY	DIN 5462 Pump Mounting		x	x	x	x	x

(w) = Available as a Wet Spline Output

** XQ/GQ same as XK/GK except flange rotated 90°

*** Order companion (3-1-604) separately

Check the current price book for available options.

Mechanical Eight Bolt Power Take-Offs

812 Series

- Only Single gear 8-Bolt P.T.O. in the industry
- High torque for extra heavy duty applications
- Ideal for Chelsea 912 Series split shaft applications
- Rotatable pump flanges available

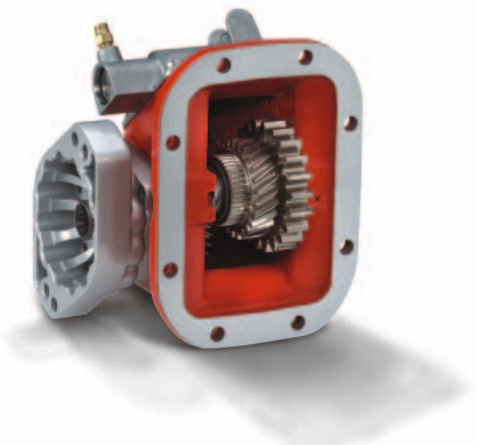


Specifications Chart – 812 Series

	812*R
Standard Output Shaft Size	————— 1-1/4" Round w/key —————
Intermittent Torque Rating (Lbs. ft.)	400
Intermittent Torque Rating (N.m.)	542
Horsepower Rating for Intermittent Service	
At 500 R.P.M. of Output Shaft (HP)	38
At 1000 R.P.M. of Output Shaft (HP)	76
At 500 R.P.M. of Output Shaft (Kw)	28
At 1000 R.P.M. of Output Shaft (Kw)	57
Approximate Weight:	————— 50 lbs. [22.7 kg] —————

489 Series

- 442 Series family, but with an 8-Bolt mounting flange
- No adapter plate needed
- Less installation time, less expense and less chance of leakage
- Wide range of shifters options and pump flanges



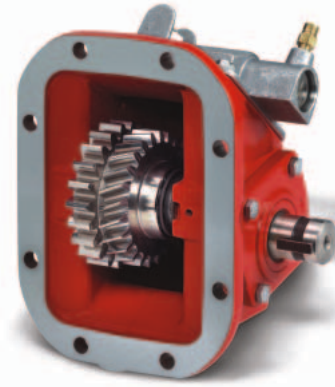
Specifications Chart – 489 Series

	489*A	489*C	489*F	489*H	489*L	489*Q	489*R	489*S	489*U	489*W	489*X
Standard Output Shaft Size	————— 1-1/4" Round w/key —————										
Intermittent Torque Rating (Lbs. ft.)	250	250	250	250	250	225	225	200	195	175	140
Intermittent Torque Rating (N.m.)	339	339	339	339	339	305	305	271	264	237	190
Horsepower Rating for Intermittent Service											
At 500 R.P.M. of Output Shaft (HP)	24	24	24	24	24	21	21	19	19	17	13
At 1000 R.P.M. of Output Shaft (HP)	48	48	48	48	48	43	43	38	37	33	27
At 500 R.P.M. of Output Shaft (Kw)	18	18	18	18	18	16	16	14	14	12	10
At 1000 R.P.M. of Output Shaft (Kw)	36	36	36	36	36	32	32	28	28	25	20
Approximate Weight:	————— 30 lbs. [13.6 kg] —————										

Mechanical Eight Bolt Power Take-Offs

680 Series

- Excellent coverage for transmissions with 8-Bolt openings
- Deep mount housing option for Mack applications
- Several speed ratios to choose from
- Wide range of shift and output options



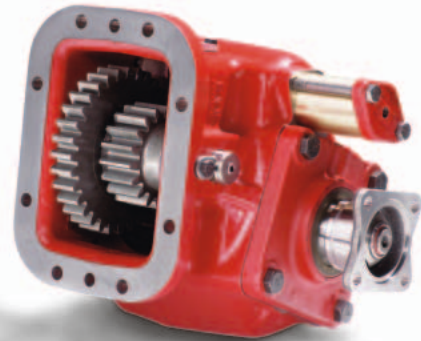
Specifications Chart – 680 Series

	680*F	680*Q	680*S
Standard Output Shaft Size	1-1/4" Round w/key		
*Intermittent Torque Rating At 1500 R.P.M. or less (Lbs. ft.)	375	375	325
*Intermittent Torque Rating At 1500 R.P.M. or less (N.m.)	508	508	441
Horsepower Rating for Intermittent Service			
At 500 R.P.M. of Output Shaft (HP)	36	36	31
At 1000 R.P.M. of Output Shaft (HP)	71	71	62
At 1500 R.P.M. of Output Shaft (HP)	107	107	93
At 500 R.P.M. of Output Shaft (Kw)	27	27	23
At 1000 R.P.M. of Output Shaft (Kw)	53	53	46
At 1500 R.P.M. of Output Shaft (Kw)	80	80	69
Approximate Weight:	28.2 lbs. [12.8 kg]		

*Above 1500 R.P.M.: Call for Approval

823 Series

- Robust design for High torque applications
- Lever shift standard
- Inspection cover for adjusting backlash
- Popular pump mounts available



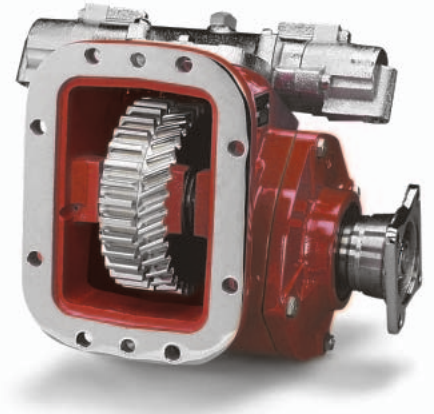
Specifications Chart – 823 Series

	823*B	823*D	823*G	823*J	823*M	823*R	823*T
Standard Output Shaft Size	1-1/2" 10 Spline w/1410 Flange						
Intermittent Torque Rating (Lbs. ft.)	500	500	500	500	500	400	350
Intermittent Torque Rating (N.m.)	678	678	678	678	678	542	475
Horsepower Rating for Intermittent Service							
At 500 R.P.M. of Output Shaft (HP)	48	48	48	48	48	38	33
At 1000 R.P.M. of Output Shaft (HP)	95	95	95	95	95	76	67
At 500 R.P.M. of Output Shaft (Kw)	36	36	36	36	36	28	25
At 1000 R.P.M. of Output Shaft (Kw)	71	71	71	71	71	57	50
Approximate Weight:	76 lbs. [34.5 kg]						

Mechanical Eight Bolt Power Take-Offs

880 Series

- Wide coverage for tough applications
- Speed ratios for high and low speed applications
- Removable shift cover for adjusting backlash
- Dual-pump output for mounting a pump on each end of the P.T.O.



Specifications Chart – 880 Series

	880*B	880*D	880*G	880*J	880*M	880*Q	880*R	880*T
Standard Output Shaft Size	1-1/2" 10 Spline w/1410 Flange							
Intermittent Torque Rating (Lbs. ft.)	500	500	500	500	500	450	400	350
Intermittent Torque Rating (N.m.)	678	678	678	678	678	610	542	475
Horsepower Rating for Intermittent Service								
At 500 R.P.M. of Output Shaft (HP)	48	48	48	48	48	43	38	33
At 1000 R.P.M. of Output Shaft (HP)	95	95	95	95	95	86	76	67
At 500 R.P.M. of Output Shaft (Kw)	36	36	36	36	36	32	28	25
At 1000 R.P.M. of Output Shaft (Kw)	71	71	71	71	71	64	57	50
Approximate Weight:	63 lbs. [28.6 kg]							

P.T.O. Options Chart – 8-Bolt P.T.O.s

P.T.O. Series		489	680	812	823	880
Lubrication						
X	Standard	x	x	x	x	x
P	Pressure	x	x		x	x
Shifting						
A	Air	x	x	x	x	x
C	Heavy Duty Bracket Less Cable	x	x			
D	Air Shift, Disengaged, Ship Loose					x
H	Less Wire Shift Cover	x	x			x
M	Constant Mesh	x	x		x	x
P	Electric/Air 12V	x	x	x		
S	P.T.O. & Combo Valve	x	x			
T	P.T.O. & Pump Valve Less Kick Out & Neutral Spring Return	x	x			
V	Air Shift Less Installation Kit	x	x	x	x	x
W	Wire	x	x	x		
X	Less Cable & Knob	x	x			
Y	Lever			x	x	x
Output						
AA	Special Pump for Europe	x	x			
AB	DIN 120 Flange				x	x
AC	DIN 100 Flange				x	
AF	S.A.E. "B" 2 or 4 Bolt Flange, "BB" Shaft (1.00" 15 -Tooth)	x	x			x
AK	S.A.E. "B" 2 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)	x	x	x		
AZ	Non Standard Flange, "C" Shaft (1-1/4" 14 - Tooth)	x	x			
GA	Rotatable "B" 2 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) (Greaseable)	x	x			
GB	Rotatable "B" 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) (Greaseable)	x	x			
GE	S.A.E. "A" 2 or 4 Bolt Flange, "A" Shaft (5/8" 9 - Tooth) (Greaseable)	x	x			
GF	S.A.E. "B" 2 or 4 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth) (Greaseable)	x	x			
GH	Rotatable "B" 2 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth) (Greaseable)	x	x			
GJ	Rotatable "B" 4 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth) (Greaseable)	x	x			
GK	S.A.E. "B" 2 or 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) (Greaseable)	x	x			
GP	S.A.E. "A" 2 Bolt Flange, "B" Shaft (7/8" 13 -Tooth) (Greaseable)	x	x			
GQ*	S.A.E. "B" 2 or 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) (Greaseable)	x	x			
GR	Chelsea Special Pump Mount, "B" Shaft (7/8" 13 - Tooth) (Greaseable)	x	x			
GS	S.A.E. "C" 2 or 4 Bolt Flange, "C" Shaft (1-1/4" 14 - Tooth) (Greaseable)					x
GS	S.A.E. "C" 4 Bolt Flange, "C" Shaft (1-1/4" 14 - Tooth) (Greaseable)				x	x
GY	DIN 5462 Pump Mounting (Greaseable)	x	x			
GZ	Non Standard Flange, "C" Shaft (1-1/4" 14 - Tooth) (Greaseable)	x	x			
LA	S.A.E. "B" 2 Bolt Flange w/Lube Pump (Same as AK)	x	x			
LB	S.A.E. "A" 2 Bolt Flange w/Lube Pump (Same as XP)	x	x			
LC	S.A.E. "A" 2 Bolt Flange w/Lube Pump (Same as XQ)	x	x			
LD	1-1/4" Round Shaft w/Lube Pump (Same as XD)	x	x			
LF	S.A.E. "B" 2 or 4 Bolt Flange w/Lube Pump (Same as XK)	x	x			x
LG	1 1/2" 10 Spline w/1410 & Lube Pump (Same as XV)				x	x
LH	S.A.E. "C" 2 or 4 Bolt Flange w/Lube Pump (Same as XS)				x	x
LJ	S.A.E. "C" 2 Bolt Flange w/ Lube Pump (Same as XU)				x	
PA	Special Rotatable S.A.E. "B" 2 Bolt Flange for Parker P Series Sculptured Pump, "B" Shaft (7/8" 13 - Tooth)	x				
PF	Special Rotatable S.A.E. "B" 2 Bolt Flange for Parker P Series Sculptured Pump, "BB" Shaft (1.00" 15 - Tooth)	x				

* XQ/GQ same as XK/GK except flange rotated 90°

Check the current price book for available options.

Continued on Next Page

P.T.O. Options Chart – 8-Bolt P.T.O.s

P.T.O. Series	489	680	812	823	880
Options					
RA	Rotatable "B" 2 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)	x	x	x	
RB	Rotatable "B" 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)	x	x	x	
RC	Rotatable "A" 2 Bolt Flange, "A" Shaft (5/8" 9 - Tooth)	x	x		
RD	Rotatable "A" 2 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)	x	x		
RE	Rotatable "B" 4 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth)	x	x		
RF	Rotatable "B" 2 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth)	x	x		
RY	Rotatable DIN 5462 Pump Flange	x	x		
SK	Double Pump S.A.E. "B" 2 & 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) & S.A.E. "C" 2 & 4 Bolt Flange, "C" Shaft (1-1/4" 14 - Tooth)				x
SQ	S.A.E. "B" 4 Bolt, "B" Shaft (7/8" 13 - Tooth)	x			
SS	Double Pump S.A.E. "C" 2 & 4 Bolt Flanges, "C" Shafts (1-1/4" 14 - Tooth)				x
XD	1-1/4" Round Shaft	x	x	x	
XE	S.A.E. "A" 2 or 4 Bolt Flange, "A" Shaft (5/8" 9 - Tooth)	x	x		
XG	Non Standard S.A.E. "B" 2 Bolt Flange, Non Standard Shaft (3/4" w/ 3/16" key)	x	x		
XJ	Non Standard S.A.E. "A" 2 Bolt Flange, Non Standard Shaft (3/4" w/ 3/16" key)	x	x		
XK	S.A.E. "B" 2 or 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)	x	x		x
XQ*	S.A.E. "B" 2 or 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)	x	x		
XR	1-1/2" 10 spline w/1410 Series Flange	x	x	x	
XS	S.A.E. "C" 4 Bolt Flange, "C" Shaft (1-1/4" 14 - Tooth)				x
XS	S.A.E. "C" 2 or 4 Bolt Flange, "C" Shaft (1-1/4" 14 - Tooth)				x
XU	S.A.E. "C" 2 Bolt Flange, "C" Shaft (1-1/4" 14 - Tooth)				x
XV	1-1/2" 10 Spline w/1410 Series Flange		x		x
XW	S.A.E. "C" 2 or 4 Bolt Wet Spline				x
XX	1-1/4" Tapered Shaft for Companion Flange 3-1-604	x	x	x	
XX	No Shaft				
XY	DIN 5462 Pump Mounting	x	x	x	x
YY	Double Pump DIN 80				x

Check the current price book for available options.

Powershift ('Shift on the Go') Six & Eight Bolt Power Take-Offs

230/231 Series

- Designed for both Manual and Automatic transmissions
- Electric-over-air shifting
- 231 offers low profile housing for avoiding clearance problems
- Pressure lubrication option available for both units
- Internal self adjusting shaft brake option (patent # 7159701)
- P.T.O./Dump pump combo valve shift option available



Series Specifications Chart – 230/231 Series

	230*A,B,D,K & Q w/Pressure Lube	230*A,B,D,K & Q w/Standard Lube	231*A,B,D,K & Q w/Pressure Lube	231*A,B,D,K & Q w/Standard Lube
Standard Output Shaft Size	1-1/4" Round w/key			
Intermittent Torque Rating (Lbs. ft.)	300	250	250	225
Intermittent Torque Rating (N.m.)	407	339	339	305
Horsepower Rating for Intermittent Service				
At 500 R.P.M. of Output Shaft (HP)	29	24	24	21
At 1000 R.P.M. of Output Shaft (HP)	57	48	48	43
At 500 R.P.M. of Output Shaft (Kw)	21	18	18	16
At 1000 R.P.M. of Output Shaft (Kw)	43	36	36	32
Approximate Weight:	49 lbs. [22 kg]			

236 Series

- Internal self adjusting shaft brake option (patent # 7159701)
- Wide selection of input gears for virtually all currently produced transmissions
- Helical gears and optional pressure lubrication to extend P.T.O. service life
- Inspection cove for adjusting backlash
- P.T.O./Dump pump combo valve shift option available



Series Specifications Chart – 236 Series

	236*D,K & Q	236*U
Standard Output Shaft Size	1-1/4" Round w/key	
Intermittent Torque Rating (Lbs. ft.)	250	225
Intermittent Torque Rating (N.m.)	339	305
Horsepower Rating for Intermittent Service		
At 500 R.P.M. of Output Shaft (HP)	24	21
At 1000 R.P.M. of Output Shaft (HP)	48	43
At 500 R.P.M. of Output Shaft (Kw)	18	16
At 1000 R.P.M. of Output Shaft (Kw)	36	32
Approximate Weight:	49 lbs. [22 kg]	

Powershift ('Shift on the Go') Six & Eight Bolt Power Take-Offs

243 Series

- Designed for Aisin and Mitsubishi transmissions
- Lightweight housing allows for maximum heat dissipation
- Controlled Compression Interface Gasket eliminates setting backlash
- Electronic Overspeed Control available

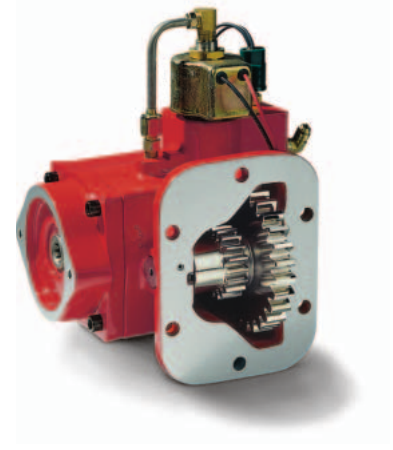


Series Specifications Chart – 243 Series

	243*G
Standard Output Shaft Size	————— 1" Round w/key —————
Intermittent Torque Rating (Lbs. ft.)	85
Intermittent Torque Rating (N.m.)	115
Horsepower Rating for Intermittent Service	
At 500 R.P.M. of Output Shaft (HP)	8
At 1000 R.P.M. of Output Shaft (HP)	16
At 500 R.P.M. of Output Shaft (Kw)	6
At 1000 R.P.M. of Output Shaft (Kw)	12
Approximate Weight:	————— 18 lbs. [8.1 kg] —————

250 Series

- Latest P.T.O. technology for Automatic transmission applications
- Patented Integral Solenoid Design (patent # 6151975)
- Fixed Compression Gasket eliminates setting of backlash
- Weather tight electrical connectors for secure under-the-vehicle connections



Series Specifications Chart – 250 Series

	250*D
Standard Output Shaft Size	————— 1" Round w/key —————
Intermittent Torque Rating (Lbs. ft.)	120
Intermittent Torque Rating (N.m.)	163
Horsepower Rating for Intermittent Service	
At 500 R.P.M. of Output Shaft (HP)	11
At 1000 R.P.M. of Output Shaft (HP)	23
At 500 R.P.M. of Output Shaft (Kw)	9
At 1000 R.P.M. of Output Shaft (Kw)	17
Approximate Weight:	————— 25 lbs. [11 kg] —————

Powershift ('Shift on the Go') Power Take-Offs

270/271 Series

- Designed for Automatic transmissions
- Electric-over-hydraulic shifting
- 271 offers low profile housing for avoiding clearance problems
- Pressure lubrication available for both units
- Internal self adjusting shaft brake option (patent # 7159701)
- P.T.O./Dump pump combo valve shift option available

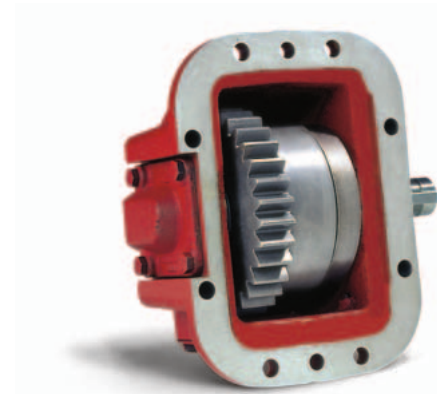


Series Specifications Chart – 270/271 Series

	270*A,B,D & K w/Pressure Lube	270*A,B,D & K w/Standard Lube	271*A,B,D & K All Lube Types
Standard Output Shaft Size	1-1/4"		
Intermittent Torque Rating (Lbs. ft.)	300	250	250
Intermittent Torque Rating (N.m.)	407	339	339
Horsepower Rating for Intermittent Service			
At 500 R.P.M. of Output Shaft (HP)	29	24	24
At 1000 R.P.M. of Output Shaft (HP)	57	48	48
At 500 R.P.M. of Output Shaft (Kw)	21	18	18
At 1000 R.P.M. of Output Shaft (Kw)	43	36	36
Approximate Weight:	49 lbs. [22 kg]		

800 Series

- Only Single Gear Powershift P.T.O. on the market today
- Compact size makes it a good solution when space is limited
- Electric-over-hydraulic shifting
- Pressure Lubrication standard



Series Specifications Chart – 800 Series

	800*M
Standard Output Shaft Size	1-1/8" Round w/key
Intermittent Torque Rating (Lbs. ft.)	250
Intermittent Torque Rating (N.m.)	339
Horsepower Rating for Intermittent Service	
At 500 R.P.M. of Output Shaft (HP)	24
At 1000 R.P.M. of Output Shaft (HP)	48
At 500 R.P.M. of Output Shaft (Kw)	18
At 1000 R.P.M. of Output Shaft (Kw)	36
Approximate Weight:	38 lbs. [17 kg]

Powershift ('Shift on the Go') Power Take-Offs

852 Series

- Designed for Heavy Duty applications
- Three speed ratios to choose from
- Pump flanges to fit most popular hydraulic pumps
- Pressure Lubrication standard



Series Specifications Chart – 852 Series

	852*B, G, J
Standard Output Shaft Size	— 1-1/2" 10 spline w/1410 flange —
Intermittent Torque Rating (Lbs. ft.)	500
Intermittent Torque Rating (N.m.)	678
Horsepower Rating for Intermittent Service	
At 500 R.P.M. of Output Shaft (HP)	48
At 1000 R.P.M. of Output Shaft (HP)	95
At 500 R.P.M. of Output Shaft (Kw)	36
At 1000 R.P.M. of Output Shaft (Kw)	71
Approximate Weight:	— 88 lbs. [40 kg] —

885 Series

- Designed for Heavy Duty applications such as pneumatic blowers
- Rugged cast iron housing
- Four speed ratios to choose from
- Pressure Lubrication available



Series Specifications Chart – 885 Series

	885*B, G, J, M
Standard Output Shaft Size	— 1-1/2" 10 spline w/1410 flange —
Intermittent Torque Rating (Lbs. ft.)	500
Intermittent Torque Rating (N.m.)	678
Horsepower Rating for Intermittent Service	
At 500 R.P.M. of Output Shaft (HP)	48
At 1000 R.P.M. of Output Shaft (HP)	95
At 500 R.P.M. of Output Shaft (Kw)	36
At 1000 R.P.M. of Output Shaft (Kw)	71
Approximate Weight:	— 88 lbs. [40 kg] —

P.T.O. Options Chart – Powershift P.T.O.s

P.T.O. Series		230/231	236	243	250	270/271	800	852	885
Lubrication									
X	Standard	x	x		x	x	x		x
P	Pressure	x	x	x		x	x	x	x
Shifting									
A	Air Shift (Pilot Valve)	x	x						x
B	Electric/Hydraulic 12V			x	x	x	x	x	
D	Electric/Hydraulic 24V			x	x	x	x	x	
F	No Valve							x	
J	Elec./Air 24V w/EOC	x							x
K	Elec./Hyd. 12V w/EOC			x		x	x	x	
L	Elec./Hyd. 24V w/EOC			x		x	x	x	
N	Elec./Air 12V w/EOC	x							x
P	Electric/Air 12V	x	x						x
Q	Electric/Air 24V	x	x						x
S	Air Shift w/P.T.O./Dump Pump Combo Valve	x	x			x			
T	Air Shift w/P.T.O./Dump Pump Combo Valve less Kick Out & Spring Return	x	x			x			
V	Air Shift, Less Installation Kit								x
Output									
AB	DIN 120								x
AD	S.A.E. "A" 2 Bolt			x					
AF	S.A.E. "BB" 2 Bolt	x	x			x			
BA	1-1/4" Round Shaft w/ Self Adjusting Shaft Brake (Automatic Transmissions)	x				x			
BD*	1-1/4" Round Shaft w/ Self Adjusting Shaft Brake (Manual Transmissions)	x	x						
RA	Rotatable "B" 2 Bolt	x	x			x			
RB	Rotatable "B" 4 Bolt	x	x			x			
RF	Rotatable "B" 2 Bolt	x	x			x			
XB	1" Round Shaft			x	x				
XC	1-1/8" Round Shaft						x		
XD	1-1/4" Round Shaft	x	x			x			
XE	S.A.E. "A" 2 Bolt	x	x	x	x	x			
XK	S.A.E. "B" 2 or 4 Bolt	x	x			x			
XP	S.A.E. "A" 2 Bolt	x	x			x			
XR	Chelsea Special	x	x			x			
XS	S.A.E. "C" 2 or 4 Bolt							x	x
XU	S.A.E. "C" 2 Bolt							x	
XV	1-1/2" 10 Spline w/1410 Flange							x	x
XX	1-1/4" Tapered Shaft w/ DIN 100 Flange	x	x			x			
XY	Special (DIN 5462)	x	x			x			
XZ	1-1/8" Tapered Shaft							x	
45	P16-45A-1D6			x					
65	P16-65A-1D6			x					
85	P16-85A-1D6			x					
00	P16-100A-1D6			x					
15	P16-115A-1D6			x					
45	P16-45C-1D6				x				
65	P16-65C-1D6				x				
85	P16-85C-1D6				x				
15	P16-115C-1D6				x				
508	CGP-P5C008-1AA				x				
510	CGP-P5C010-1AA				x				
513	CGP-P5C013-1AA				x				
519	CGP-P5C019-1AA				x				
1116	CGP-P11C016-1AC				x				
1121	CGP-P11C021-1AC				x				
1126	CGP-P11C026-1AC				x				
1129	CGP-P11C029-1AC				x				
1137	CGP-P11C037-1AC				x				
1449	CGP-P31C054-1AE				x				
1462	CGP-P31C061-1AE				x				

*Not For Use on Automatic Transmissions

Check the current price book for available options.

Powershift ('Shift on the Go') Ten Bolt Power Take-Offs

267 Series

- Constant Mesh (non-shiftable) P.T.O. that is ideal for applications requiring continuous power
- Three speed ratios and ten output options
- SuperTorque™ gears available for 20% higher intermittent torque ratings
- No backlash to adjust
- Wet Spline Output options available



Specifications Chart – 267 Series

	267*B	267*G	267*S	267SB	267SG	267SS
	SuperTorque™					
Standard Output Shaft Size	1-1/14"					
Intermittent Torque Rating (Lbs. ft.)	335	300	250	402	360	265
Intermittent Torque Rating (N.m.)	454	407	339	545	488	359
Horsepower Rating for Intermittent Service						
At 500 R.P.M. of Output Shaft (HP)	32	29	24	38	34	25
At 1000 R.P.M. of Output Shaft (HP)	64	57	48	77	69	50
At 500 R.P.M. of Output Shaft (Kw)	24	21	18	29	26	19
At 1000 R.P.M. of Output Shaft (Kw)	48	43	36	57	51	38
Approximate Weight:	35 lbs. [16 kg]					

269 Series

- Wet Spline design virtually eliminates spline fretting
- Increase shaft life by a factor of 10
- Two (2) Year Warranty
- Standard intermittent torque rating of 300 Lbs. ft. and 360 Lbs. ft. for SuperTorque™ gears
- P.T.O. output shaft speed of 96% (G ratio) on Allison MD transmissions. Three other speeds to choose from, see ALL-13 & 14 application pages
- Available with an "XY" output (DIN 5462) flange
- Specially designed to Direct Mount a Parker VP1 Series pump or similar style pump on Allison MD and HD transmissions



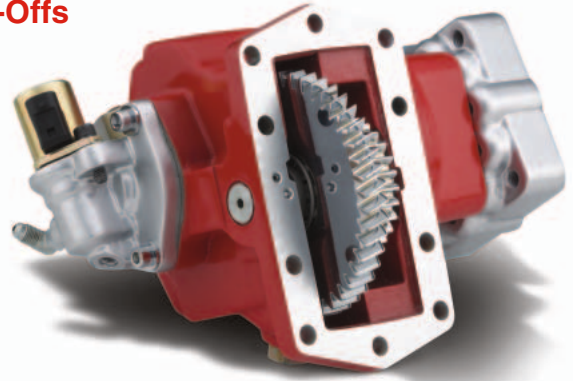
Specifications Chart – 269 Series

	269SB	269SD	269SG	269SM	269*B	269*D	269*G	269*M
	SuperTorque™							
Standard Output Shaft Size	DIN 5462/ISO 14 ("XY" Output)							
Intermittent Torque Rating (Lbs. ft.)	402	390	360	318	335	325	300	265
Intermittent Torque Rating (N.m.)	545	529	488	431	454	441	407	359
Horsepower Rating for Intermittent Service								
At 500 R.P.M. of Output Shaft (HP)	38	37	34	30	32	31	29	25
At 1000 R.P.M. of Output Shaft (HP)	77	74	69	61	64	62	57	50
At 500 R.P.M. of Output Shaft (Kw)		28	26	23	24	23	21	19
At 1000 R.P.M. of Output Shaft (Kw)		56	51	45	48	46	43	38
Approximate Weight:	35 lbs. [16 kg]							

Powershift ('Shift on the Go') Ten Bolt Power Take-Offs

277 Series

- Exceeds the torque capacity of a 6-Bolt P.T.O. while offering the tighter sealing of a 10-Bolt pattern
- Five speed ratios and ten output options
- Combo Valve shift option available for P.T.O./Dump Pump systems
- SuperTorque™ gears available for 20% higher intermittent torque ratings
- Cartridge Valve Assembly for reduced interference
- Wet Spline Options available
- Shaft Brake option (patent # 7159701) available for product pump applications

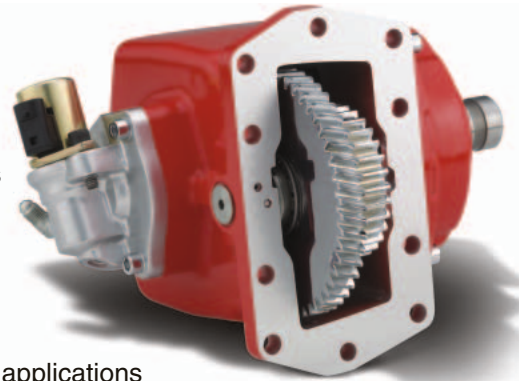


Specifications Chart – 277 Series

	277*B	277*D	277*G	277*M	277*S	277SB	277SD	277SG	277SM	277SS
						SuperTorque™				
Standard Output Shaft Size						1-1/4" Round w/key				
Intermittent Torque Rating (Lbs. ft.)	335	325	300	265	250	402	390	360	318	265
Intermittent Torque Rating (N.m.)	454	441	407	359	339	545	529	488	431	359
Horsepower Rating for Intermittent Service										
At 500 R.P.M. of Output Shaft (HP)	32	31	29	25	24	38	37	34	30	25
At 1000 R.P.M. of Output Shaft (HP)	64	62	57	50	48	77	74	69	61	50
At 500 R.P.M. of Output Shaft (Kw)	24	23	21	19	18	29	28	26	23	19
At 1000 R.P.M. of Output Shaft (Kw)	48	46	43	38	36	57	56	51	45	38
Approximate Weight:						49 lbs. [22 kg]				

278 Series

- Enhanced housing design for maximum transmission clearance when direct mounting a pump
- Six speed ratios and ten output options
- Combo Valve shift option available for P.T.O./Dump Pump systems
- Cartridge Valve Assembly for reduced interference
- SuperTorque™ gears available for 20% higher intermittent torque ratings
- Wet Spline Options Available
- Shaft Brake option (patent # 7159701) available for product pump applications



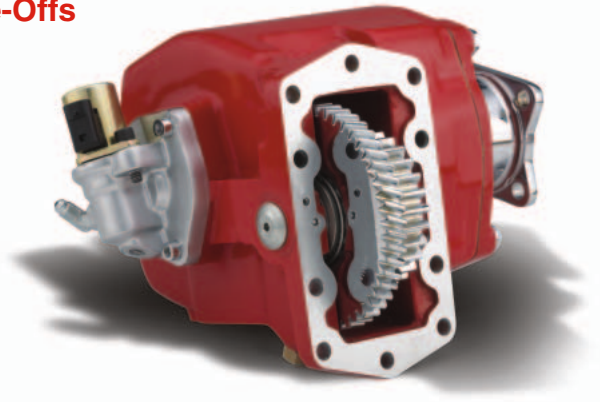
Specifications Chart – 278 Series

	278*B	278*D	278*G	278*M	278*S	278*T	278SB	278SD	278SG	278SM	278SS	278ST
							SuperTorque™					
Standard Output Shaft Size							1-1/4" Round w/key					
Intermittent Torque Rating (Lbs. ft.)	335	325	300	265	250	225	402	390	360	318	265	240
Intermittent Torque Rating (N.m.)	454	441	407	359	339	305	545	529	488	431	359	325
Horsepower Rating for Intermittent Service												
At 500 R.P.M. of Output Shaft (HP)	32	31	29	25	24	21	38	37	34	30	25	23
At 1000 R.P.M. of Output Shaft (HP)	64	62	57	50	48	43	77	74	69	61	50	46
At 500 R.P.M. of Output Shaft (Kw)	24	23	21	19	18	16	29	28	26	23	19	17
At 1000 R.P.M. of Output Shaft (Kw)	48	46	43	38	36	32	57	56	51	45	38	34
Approximate Weight:							49 lbs. [22 kg]					

Powershift ('Shift on the Go') Ten Bolt Power Take-Offs

859 Series

- Highest torque capacities of any P.T.O. offered for the Allison World transmissions
- P.T.O. Torque ratings from 285 to 575 Lbs. ft.
- Electronic Overspeed Control available to protect driven equipment from overspeeding
- Advanced gear design for increased tooth-contact ratio for quieter operation
- Cartridge Valve Assembly for reduced interference

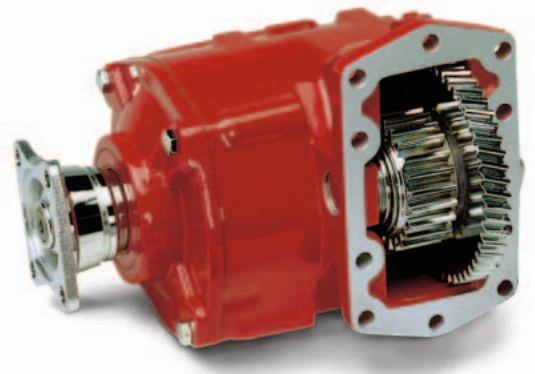


Specifications Chart – 859 Series

	859*G	859*J	859*M	859*R	859*S	859*T	859*W
Standard Output Shaft Size	1-1/2" Spline w/1410 flange						
Intermittent Torque Rating (Lbs. ft.)	575	525	490	415	385	350	285
Intermittent Torque Rating (N.m.)	780	712	664	563	522	475	386
Horsepower Rating for Intermittent Service							
At 500 R.P.M. of Output Shaft (HP)	55	50	47	40	37	33	27
At 1000 R.P.M. of Output Shaft (HP)	109	100	93	79	73	67	54
At 500 R.P.M. of Output Shaft (Kw)	41	37	35	30	27	25	20
At 1000 R.P.M. of Output Shaft (Kw)	82	75	70	59	55	50	41
Approximate Weight:	66 lbs. [30 kg]						

867 Series

- Constant Mesh (non-shiftable) P.T.O. that is ideal for applications requiring continuous power
- Four speed ratios and five output options
- Torque ratings from 350 to 575 Lbs. ft.



Specifications Chart – 867 Series

	867*G	867*M	867*R	867*T
Standard Output Shaft Size	1-1/2" Spline w/1410 flange			
Intermittent Torque Rating (Lbs. ft.)	575	490	415	350
Intermittent Torque Rating (N.m.)	780	664	563	475
Horsepower Rating for Intermittent Service				
At 500 R.P.M. of Output Shaft (HP)	55	47	40	33
At 1000 R.P.M. of Output Shaft (HP)	109	93	79	67
At 500 R.P.M. of Output Shaft (Kw)	41	35	30	25
At 1000 R.P.M. of Output Shaft (Kw)	82	70	59	50
Approximate Weight:	64 lbs. [29 kg]			

P.T.O. Options Chart - Allison World Transmissions

P.T.O. Series		267**	269	277/278	859	867
Lubrication						
P	Pressure Lub	x		x	x	x
R	Pressure Lube with Solenoid Cap Rotated 120 Degrees		x	x		
V	Rotated Valve Cap, Wet Spline			x		
W	Wet Spline	x	x	x	x	
Shifting						
B	12 Volt Electric/Hydraulic			x	x	
D	24 Volt Electric/Hydraulic			x	x	
G	12 Volt Electric/Hydraulic w/Remote Mounted Solenoid Valve			x	x	
H	24 Volt Electric/Hydraulic w/Remote Mounted Solenoid Valve			x	x	
K	12 Volt Electric/Hydraulic w/Electronic Overspeed Control			x	x	
L	24 Volt Electric/Hydraulic w/Electronic Overspeed Control			x	x	
M	Constant Engagement No Shifter	x	x			x
M	12 Volt w/o Installation Kit (Europe Only)			x	x	
N	24 Volt w/o Installation Kit (Europe Only)			x	x	
S	Air Shift w/P.T.O./Dump Pump Combo Valve			x		
T	Air Shift w/P.T.O./Dump Pump Combo Valve less Kick Out & Spring Return			x		
Output						
AB	DIN 120 Flange			x	x	
AC	DIN 100 Flange			x	x	
AF*	S.A.E. "B" 2 or 4 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth)	x (w)		x (w)		x (w)
AK*	S.A.E. "B" 2 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)	x (w)				
AZ	S.A.E. "B" 2 or 4 Bolt Flange, "C" Shaft (1.25" 14 - Tooth)	x			x	
BA	Shaft Brake w/ 1-1/4" Round Shaft			x	x	
BB	Shaft Brake, DIN 120				x	
BC	Shaft Brake, DIN 100				x	
GA	Rotatable "B" 2 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) (Greaseable)	x				
GB	Rotatable "B" 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) (Greaseable)	x				
GE	Rotatable S.A.E. "A" 2 or 4 Bolt Flange, "A" Shaft (5/8" 9 - Tooth) (Greaseable)	x				
GF	S.A.E. "B" 2 or 4 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth) (Greaseable)	x				
GH	Rotatable "B" 2 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth) (Greaseable)	x				
GJ	Rotatable "B" 4 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth) (Greaseable)	x				
GK	S.A.E. "B" 2 or 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) (Greaseable)	x				
GQ	S.A.E. "B" 2 or 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) (Greaseable)	x				
GR	Chelsea Special Pump Mount, "B" Shaft (7/8" 13 - Tooth) (Greaseable)	x				
GY	DIN 5462 Pump Mounting (Greaseable)	x				
GZ	Non Standard Flange, "C" Shaft (1-1/4" 14 - Tooth) (Greaseable)	x				
PA	Special Rotatable S.A.E. "B" 2 Bolt Flange for Parker P Series Sculptured Pump, "B" Shaft (7/8" 13 - Tooth)	x		x		
PF	Special Rotatable S.A.E. "B" 2 Bolt Flange for Parker P Series Sculptured Pump, "BB" Shaft (1.00" 15 - Tooth)	x		x		
RA	Rotatable "B" 2 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)	x		x		
RB	Rotatable "B" 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)	x		x		
RC	Rotatable "A" 2 Bolt Flange, "A" Shaft (5/8" 9 - Tooth)	x				
RD	Rotatable "A" 2 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)	x				
RE	Rotatable "B" 4 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth)	x				
RF	Rotatable "B" 2 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth)	x		x		
RG	Rotatable "B" 4 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth)			x		
RY	Rotatable DIN 5462 Pump Flange	x				
XD	S.A.E. "A" 2 or 4 Bolt Flange, "A" Shaft (5/8" 9 - Tooth)	x		x		
XE	S.A.E. "A" 2 or 4 Bolt Flange, "A" Shaft (5/8" 9 - Tooth)	x		x		
XK	S.A.E. "B" 2 or 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)			x		
XP	Special S.A.E. "A" Pilot 2 or 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)			x		
XQ	S.A.E. "B" 2 or 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)	x				
XR	Non Standard Flange, "B" Shaft (7/8" 13 - Tooth)	x		x		
XS	S.A.E. "C" 2 or 4 Bolt Flange, "C" Shaft (1.25" 14 - Tooth)				x	x (w)
XV	10 Tooth Straight Spline Shaft w/ 1410 Flange (3-1-3881)			x	x	x
XX	1-1/4" S.A.E. Tapered Shaft w/ keyway	x		x		
XY	DIN 5462 Pump Mounting	x	x (w)	x	x	x

* Must use the "W" Lube Option on the 267 Series for this Output

** Any 267 Series using a "3" Arrangement Requiring an S.A.E "B" Output Must use the "XQ" or "AK" Output Option Due to Interference Between the "XK" Flange and the Pressure Lube Fitting.

(w) Wet Spline Flange Option

Check the current price book for available options.

Power Take-Offs for Ford Transmissions

246 Series

- The only Ford tested tough P.T.O. for the TorqShift™ transmission
- Operates in all gears
- Specially matched P.T.O. and pumps for superior work load capabilities
- One P.T.O. for 4 x 2 and 4 x 4 applications
- One wiring harness for both gas and diesel engines
- Speed Ratio of 154% of Engine Speed



Specifications Chart – 246 Series

246F

Standard Output Shaft Size

Intermittent Torque Rating (Lbs. ft.) 120

Intermittent Torque Rating (N.m.) 163

Horsepower Rating for Intermittent Service

At 1848 R.P.M. of Output Shaft (HP) 42

At 1848 R.P.M. of Output Shaft (Kw) 32

Approximate Weight: 20 lbs. [9 kg]

Chelsea CGP-P11 Series Pump Specifications for 4 x 4 or 4 x 2 Vehicles (3/4" 11 - Tooth Pump Spline)

Order Code	Chelsea Pump Model	Displacement in ³ /rev	GPM (1)	Pump (1) HP	Torque (1) ft-lbs	Cont. Pressure PSI	Max Speed RPM
16	CGP-P11A016-5FC	0.37	2.9	6.0	17.0	3500	4000
26	CGP-P11A026-5FC	0.61	4.9	10.0	28.3	3500	3600
32	CGP-P11A032-5FC	0.73	5.8	12.0	34.0	3500	3300
37	CGP-P11A037-5FC	0.85	6.8	14.0	39.7	3500	3300
42	CGP-P11A042-5FC	0.98	7.8	16.0	45.3	3500	3000
55	CGP-P11A055-5FC	1.28	10.3	17.9	51.0	3000	2800
61	CGP-P11A061-5FC	1.40	11.3	18.0	51.2	2750	2800
71	CGP-P11A071-5FC	1.65	13.2	18.1	51.4	2350	2400
82	CGP-P11A082-5FC	1.89	15.1	18.5	52.7	2100	2300

Chelsea FGP-P17 Series Pump Specifications for 4 x 2 Vehicles Only (7/8" 13 - Tooth Pump Spline)

Order Code	Chelsea Pump Model	Displacement in ³ /rev	GPM (1)	Pump (1) HP	Torque (1) ft-lbs	Cont. Pressure PSI	Max Speed RPM
50	FGP-P17A050-2AN	1.16	9.3	19.6	55.8	3625	3300
66	FGP-P17A066-2AN	1.53	12.2	25.8	73.4	3625	3100
87	FGP-P17A087-2AN	2.01	16.1	34.1	96.8	3625	3100
10	FGP-P17A100-2AN	2.32	18.6	39.2	111.5	3625	3000
14	FGP-P17A137-2AN	3.17	25.4	43.0	122.1	2900	2600

NOTE: FGP-P1 Pumps have a special housing design for mounting to the Ford TorqShift™ transmission.

Chelsea P16 Series Pump Specifications for 4 x 2 Vehicles Only (7/8" 13 - Tooth Pump Spline)

Order Code	Chelsea Pump Model	Displacement in ³ /rev	GPM (1)	Pump (1) HP	Torque (1) ft-lbs	Cont. Pressure PSI	Max Speed RPM
18	P16-180A-2D1	3.511	28.1	36.1	102.5	2200	2500
20	P16-200A-2D1	3.902	31.2	36.4	103.5	2000	2000

(1) GPM, Pump Input HP & Torque @ 1200 Engine RPM & 1848 P.T.O. Output Shaft RPM

P.T.O. Options Chart – Ford Transmissions

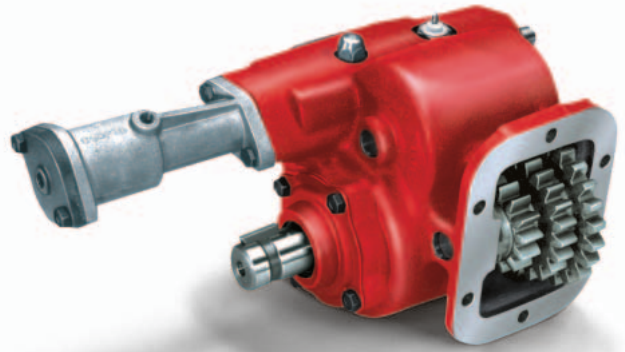
P.T.O. Series		246
Lubrication		
P	Pressure Lube	x
Shifting		
B	12 Volt Electric/Hydraulic	x
K	12 Volt Electric Overspeed Control	x
Output		
AD	S.A.E. "A" 2 Bolt Flange w/ 3/4" 11 - Tooth Splined	x
XD	1.25" Dia. Keyed Shaft	x
XE	S.A.E. "A" 2 Bolt Flange w/ 5/8" 9 - Tooth Splined	x
XP	S.A.E. "A" 2 Bolt Flange w/ 7/8" 13 - Tooth Splined	x
Pumps		
16	Hyd. Pump 2.9 G.P.M. @1200 R.P.M. w/ 3/4" 11 - Tooth Spline	x
26	Hyd. Pump 4.9 G.P.M. @1200 R.P.M. w/ 3/4" 11 - Tooth Spline	x
32	Hyd. Pump 3.8 G.P.M. @1200 R.P.M. w/ 3/4" 11 - Tooth Spline	x
37	Hyd. Pump 6.8 G.P.M. @1200 R.P.M. w/ 3/4" 11 - Tooth Spline	x
42	Hyd. Pump 7.8 G.P.M. @1200 R.P.M. w/ 3/4" 11 - Tooth Spline	x
55	Hyd. Pump 10.3 G.P.M. @1200 R.P.M. w/ 3/4" 11 - Tooth Spline	x
61	Hyd. Pump 11.3 G.P.M. @1200 R.P.M. w/ 3/4" 11 - Tooth Spline	x
71	Hyd. Pump 13.2 G.P.M. @1200 R.P.M. w/ 3/4" 11 - Tooth Spline	x
82	Hyd. Pump 15.1 G.P.M. @1200 R.P.M. w/ 3/4" 11 - Tooth Spline	x
50	Hyd. Pump 9.3 G.P.M. @1200 R.P.M. w/ 7/8" 13 - Tooth Spline (4 x 2 Only)	x
66	Hyd. Pump 12.2 G.P.M. @1200 R.P.M. w/ 7/8" 13 - Tooth Spline (4 x 2 Only)	x
87	Hyd. Pump 16.1 G.P.M. @1200 R.P.M. w/ 7/8" 13 - Tooth Spline (4 x 2 Only)	x
10	Hyd. Pump 18.6 G.P.M. @1200 R.P.M. w/ 7/8" 13 - Tooth Spline (4 x 2 Only)	x
14	Hyd. Pump 25.4 G.P.M. @1200 R.P.M. w/ 7/8" 13 - Tooth Spline (4 x 2 Only)	x
18	Hyd. Pump 28.1 G.P.M. @1200 R.P.M. w/ 7/8" 13 - Tooth Spline (4 x 2 Only)	x
20	Hyd. Pump 31.2 G.P.M. @1200 R.P.M. w/ 7/8" 13 - Tooth Spline (4 x 2 Only)	x

Check the current price book for available options.

Reversible Power Take-Offs

340 Series

- Single low-speed forward and reverse
- Removable cover plate for adjusting backlash
- Shift options include air and lever
- Variety of input gears to cover most applications
- 6-Bolt Mounting Pad



Specifications Chart – 340 Series

	340*F
Standard Output Shaft Size	————— 1-1/4" Round w/key —————
Intermittent Torque Rating (Lbs. ft.)	200
Intermittent Torque Rating (N.m.)	271
Horsepower Rating for Intermittent Service	
At 500 R.P.M. of Output Shaft (HP)	19
At 1000 R.P.M. of Output Shaft (HP)	38
At 500 R.P.M. of Output Shaft (Kw)	14
At 1000 R.P.M. of Output Shaft (Kw)	28
Approximate Weight:	————— 32 lbs. [15 kg] —————

352 Series

- Offers faster speeds than the 340 Series
- Designed with tapered roller bearings for maximum durability
- Shift options include wire, lever and air
- Same input gears as the 442 Series
- 6-Bolt Mounting Pad



Specifications Chart – 352 Series

	352*S
Standard Output Shaft Size	————— 1-1/4" Round w/key —————
Intermittent Torque Rating (Lbs. ft.)	140
Intermittent Torque Rating (N.m.)	190
Horsepower Rating for Intermittent Service	
At 500 R.P.M. of Output Shaft (HP)	13
At 1000 R.P.M. of Output Shaft (HP)	27
At 500 R.P.M. of Output Shaft (Kw)	10
At 1000 R.P.M. of Output Shaft (Kw)	20
Approximate Weight:	————— 37 lbs. [17 kg] —————

Reversible Power Take-Offs

863 Series

- Designed to fit transmissions with 8-Bolt openings
- Capable of up to 500 Ft. lbs of intermittent torque
- Designed for maximum duty reversible applications such as large-capacity winches
- Lever shift is standard



Specifications Chart – 863 Series

		863*B
Standard Output Shaft Size	————— 1-1/2" 10 spline w/1410 flange —————	
Intermittent Torque Rating (Lbs. ft.)	500	
Intermittent Torque Rating (N.m.)	678	
Horsepower Rating for Intermittent Service		
At 500 R.P.M. of Output Shaft (HP)	48	
At 1000 R.P.M. of Output Shaft (HP)	95	
At 500 R.P.M. of Output Shaft (Kw)	36	
At 1000 R.P.M. of Output Shaft (Kw)	71	
Approximate Weight:	————— 96 lbs. [44 kg] —————	

P.T.O. Options Chart – Reversible P.T.O.s

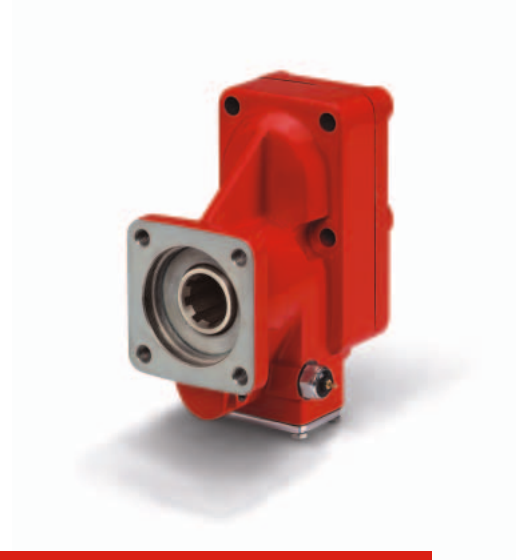
P.T.O. Series		340	352	863
Lubrication				
X	Standard	x	x	x
P	Pressure			x
Shifting				
A	Air	x	x	
C	Heavy Duty Bracket Less Cable			
G	Air Shift w/cyl. Location Opposite of Output	x	x	
V	"A" Shift, less installation kit	x		
W	Wire		x	
Y	Lever	x	x	x
Output				
LG	1-1/2" 10 Spline w/1410 & Self Lube			x
XD	1-1/4" Round Shaft	x	x	
XV	1-1/2" 10 Spline w/1410 Series Flange			x

Check the current price book for available options.

Rear Mount Power Take-Offs

522 Series

- Designed for the ZF Freedomline™ transmissions (US) and ZF, Eaton and Iveco transmissions (EU)
- Direct mount pump flanges available
- Installation is quick and easy
- Comes standard with 1410 Series output flange (US)



Specification Chart – 522 Series

	522*T	522*V
Standard Output Shaft Size	— 1-1/4" Round w/key —	
Intermittent Torque Rating (Lbs. ft.)	258	258
Intermittent Torque Rating (N.m.)	350	350
Horsepower Rating for Intermittent Service		
At 500 R.P.M. of the Output Shaft (HP)	25	25
At 1000 R.P.M. of the Output Shaft (HP)	49	49
At 500 R.P.M. of the Output Shaft (Kw)	18	18
At 1000 R.P.M. of the Output Shaft (Kw)	37	37
Approximate Weight:	—— 35lbs. [16 kg] ——	

541 Series

- Thrushaft® design for Eaton® Fuller® transmissions
- Three speed ratios available
- Two shift options available
- Direct mount pump flanges or driveshaft output options



Specifications Chart – 541 Series

	541*L	541*M	541*N
Standard Output Shaft Size	—— 1-1/2" 10 spline w/1410 flange ——		
Intermittent Torque Rating (Lbs. ft.)	400	350	300
Intermittent Torque Rating (N.m.)	542	475	407
Horsepower Rating for Intermittent Service			
At 500 R.P.M. of the Output Shaft (HP)	38	33	29
At 1000 R.P.M. of the Output Shaft (HP)	76	67	57
At 500 R.P.M. of the Output Shaft (Kw)	28	25	21
At 1000 R.P.M. of the Output Shaft (Kw)	57	50	43
Approximate Weight:	———— 37 lbs. [17 kg] ————		

NOTE: Transmissions must be ordered with the Thrushaft® or rear mount P.T.O. provision.

Rear Mount Power Take-Offs

CAT-D

- Direct Drive (non-shiftable) P.T.O. for Caterpillar®
This is ideal for applications requiring continuous power (125% of engine)
- Five Output Options - XV (1410 flange) Standard
- Up to 800 Lbs.-ft. Torque Available (maximum transmission output)
- Unique Design Permits Direct Mounting of Flange to the Transmission
- Wet Spine Outputs Available which Increases Spline Life by a Factor of 10



Specification Chart – CAT-D

CAT-D	
Standard Output Shaft Size	—— 1-1/2" 10 Spline w/1410 Series Flange ——
Intermittent Torque Rating (Lbs. ft.)*	800
Intermittent Torque Rating (N.m.)	1085
Horsepower Rating for Intermittent Service	
At 500 R.P.M. of the Output Shaft (HP)	76
At 1000 R.P.M. of the Output Shaft (HP)	152
At 500 R.P.M. of the Output Shaft (Kw)	57
At 1000 R.P.M. of the Output Shaft (Kw)	114
Approximate Weight:	———— 8.2 lbs. [3.7 kg] ————

NOTE: For the CAT-D, 800 Lbs.-ft. Torque rating is for both Intermittent and Continuous, "XV" Output Only.

CAT-H

- Direct Drive (Patent Pending) - Powershift P.T.O. for Caterpillar®
- Output Speed - 125% of Engine
- Continuous Torque Rating of 335 Lbs.-ft.
- Five Output Options - "XD" Output Standard
- Unique Design for Maximum Clearance
- Lightest Weight Direct Drive Powershift - Does Not Exceed Caterpillar® Weight Limits
- Wet Spline Output Available which Increases Spline Life by a Factor of 10



Specifications Chart – CAT-H

CAT-H	
Standard Output Shaft Size	—— 1-1/4" Round Shaft w/key ——
Intermittent Torque Rating (Lbs. ft.)	335*
Intermittent Torque Rating (N.m.)	454
Horsepower Rating for Intermittent Service	
At 500 R.P.M. of the Output Shaft (HP)	32
At 1000 R.P.M. of the Output Shaft (HP)	64
At 500 R.P.M. of the Output Shaft (Kw)	24
At 1000 R.P.M. of the Output Shaft (Kw)	48
Approximate Weight:	———— 42.5 lbs. [19.3 kg] ————

NOTE: * For the CAT-H, 335 Lbs. ft. Torque Rating is for both Intermittent and Continuous, All Output Options.

P.T.O. Options Chart – Rear Mount P.T.O.s

P.T.O. Series		522	541	CAT-H	CAT-D
Mounting Designator					
AA	ZF 6S-850	x			
AB	Iveco 2845.6	x			
AC	ZF/Meritor Freedomliner™ Astronic	x			
AD	ZF 16S151/181/221	x			
AM	Eaton FS-4106	x			
AT	Fuller		x		
AU	Fuller		x		
BD	Fuller		x		
BJ	Fuller		x		
LA	Caterpillar® CX Series			x	x
Lubrication					
X	Standard	x	x	x	x
W	Wet Spline			x	x
Shifting					
A	Air	x	x		
B	12 Volt Elec/Air			x	
D	24 Volt Elec/Air			x	
F	ZMTEC Installation, "AC" Input Gear (Freedomline Transmissions)	x			
H	Less Shifter Kit	x			
M	Constant Mesh				x
P	12 Volt Elec/Air	x			
Q	24 Volt Elec/Air	x			
V	Air, Less Installation kit	x			
Y	Lever		x		
Output					
AF**	S.A.E. "B" 2 or 4 Bolt Flange, 1.00" 15 - Tooth Shaft			x	x
AZ**	S.A.E. "B" 2 or 4 Bolt Flange, 1.25" 14 - Tooth Shaft			x	x
XD	1-1/4" Round Shaft w/keyway	x		x	
XK**	S.A.E. "B" 2 or 4 Bolt Flange, 7/8" 13 - Tooth Shaft		x	x	x
XS**	S.A.E. "C" 2 or 4 Bolt Flange, 1.25" 14 - Tooth Shaft				x
XV**	1-1/2" 10 spline w/1410 Series Flange		x		x
XX*	1-1/4" S.A.E. Tapered Shaft w/keyway	x			
XY**	DIN 5462 Pump Mounting	x		x	x

* Order companion flange (3-1-604) separately

** Also Available as a Wet Spline "W" Option

Check the current price book for available options.

Dual Output Shaft Power Take-Off

452 Series

- Only dual shaft P.T.O. offered in the industry
- Designed for fuel delivery trucks and other applications requiring two single-rotation shafts
- Same gearing as the 442 Series
- Both standard and deep mounting options available



Specifications Chart – 452 Series

	452*S
Standard Output Shaft Size	—— 1-1/4" Round w/key ——
Intermittent Torque Rating (Lbs. ft.)	140
Intermittent Torque Rating (N.m.)	190
Horsepower Rating for Intermittent Service	
At 500 R.P.M. of the Output Shaft (HP)	13
At 1000 R.P.M. of the Output Shaft (HP)	27
At 500 R.P.M. of the Output Shaft (Kw)	10v
At 1000 R.P.M. of the Output Shaft (Kw)	20
Approximate Weight:	—— 37 lbs. [17 kg] ——

P.T.O. Options Chart – Dual Output Shaft P.T.O.s

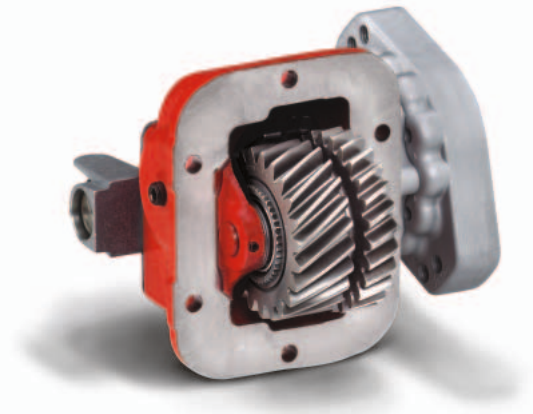
P.T.O. Series	452
Lubrication	
X Standard	x
Shifting	
W Single Shift Wire Control	x
Output	
DD 1-1/4" Round Dual Shafts	x

Check the current price book for available options.

Asia Pacific Power Take-Offs

429 Series

- 429 Series fits Mitsubishi MO50S5, MO60S6 and MO70S6 transmissions
- Three speed ratios and eight output options
- Five shift options
- Mounts directly to transmissions, no geared adapter needed



Specifications Chart – 429 Series

	429*Q
Standard Output Shaft Size	— 1-1/4" Round w/key —
Intermittent Torque Rating (Lbs. ft.)	175
Intermittent Torque Rating (N.m.)	237
Horsepower Rating for Intermittent Service	
At 500 R.P.M. of the Output Shaft (HP)	17
At 1000 R.P.M. of the Output Shaft (HP)	33
At 500 R.P.M. of the Output Shaft (Kw)	12
At 1000 R.P.M. of the Output Shaft (Kw)	25
Approximate Weight:	— 37 lbs. [17 kg] —

435 Series

- 435 Series fits the Hino LF06S and LJ06S transmissions
- Three speed ratios and seven output options
- Mounts directly to transmissions, no geared adapter needed
- Cast iron housing for strength and tapered cone bearings for increased load capacity



Specifications Chart – 435 Series

	435*S	435*U
Standard Output Shaft Size	— 1-1/4" Round w/key —	
Intermittent Torque Rating (Lbs. ft.)	175	175
Intermittent Torque Rating (N.m.)	237	237
Horsepower Rating for Intermittent Service		
At 500 R.P.M. of the Output Shaft (HP)	17	17
At 1000 R.P.M. of the Output Shaft (HP)	33	33
At 500 R.P.M. of the Output Shaft (Kw)	12	12
At 1000 R.P.M. of the Output Shaft (Kw)	25	25
Approximate Weight:	— 37 lbs. [17 kg] —	

P.T.O. Options Chart – Asia Pacific P.T.O.s

P.T.O. Series	429	435
Lubrication		
X Standard	x	x
Shifting		
A Air	x	x
P Electric/Air 12V	x	
W Wire		x
Output		
AZ Non Standard Flange, "C" Shaft (1-1/4" 14 - Tooth)		x
GA Rotatable "B" 2 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) (Greaseable)		x
GB Rotatable "B" 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) (Greaseable)		x
GH Rotatable "B" 2 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth) (Greaseable)		x
GJ Rotatable "B" 4 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth) (Greaseable)		x
GQ* S.A.E. "B" 2 or 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) (Greaseable)		x
GR Chelsea Special Pump Mount, "B" Shaft (7/8" 13 - Tooth) (Greaseable)		x
RA Rotatable "B" 2 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)	x	x
RB Rotatable "B" 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)	x	x
RE Rotatable "B" 4 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth)	x	x
RF Rotatable "B" 2 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth)	x	x
XD 1-1/4" Round Shaft	x	x
XE S.A.E. "A" 2 or 4 Bolt Flange, "A" Shaft (5/8" 9 - Tooth)	x	
XQ* S.A.E. "B" 2 or 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)	x	x
XR 1-1/2" 10 spline w/1410 Ser. Flange	x	x

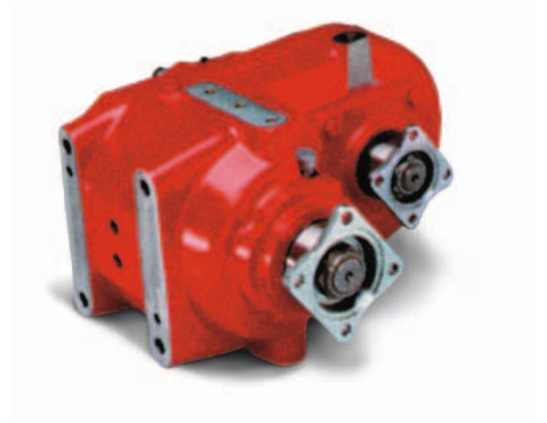
* XQ/GQ same as XK/GK except flange rotated 90°

Check the current price book for available options.

Split Shaft Power Take-Offs

901 Series

- Used on medium duty trucks that have applications requiring the torque capacity of an 8-Bolt P.T.O.
- Provides 100% of input speed
- Mount in any orientation with the P.T.O. shaft going to the front or rear of the truck
- Air and Lever shift available, along with three direct mount flanges

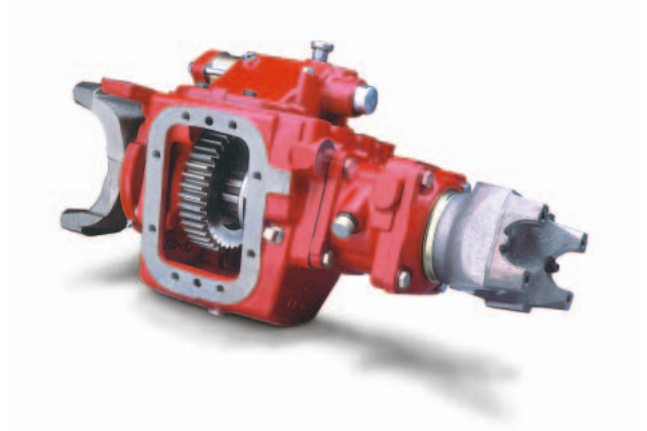


Specifications Chart – 901 Series

	901
Standard Output Shaft Size	— 1-3/4" 10 Spline —
Intermittent Torque Rating (Lbs. ft.)	500
Intermittent Torque Rating (N.m.)	678
Horsepower Rating for Intermittent Service	
At 500 R.P.M. of the Output Shaft (HP)	48
At 1000 R.P.M. of the Output Shaft (HP)	95
At 500 R.P.M. of the Output Shaft (Kw)	36
At 1000 R.P.M. of the Output Shaft (Kw)	71
Approximate Weight:	— 185 lbs. [84 kg] —

912 Series

- Three 8-Bolt openings that allow you to operate a variety of auxiliary equipment
- Wide variety of 6-Bolt, 8-Bolt, Powershift, and Reversible P.T.O.s fit the 912 Series
- Air and Lever shift available



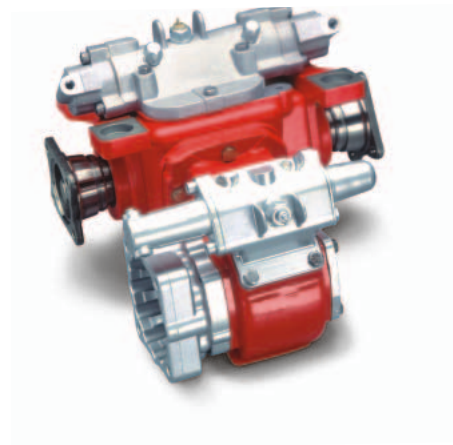
Specifications Chart – 912 Series

	912	
Standard Output Shaft Size	— 2-3/4" 10 Spline —	
Max Thru Torque Capacity	Lbs. ft	N.m.
w/ Diesel Engine		
Automatic Transmission	13,000	17,625
Manual Transmission	12,000	16,270
w/ Gas Engine		
Automatic Transmission	16,000	21,693
Manual Transmission	15,000	20,337
Approximate Weight:	— 130 lbs. [59 kg] —	

Split Shaft Power Take-Offs

941 Series

- Smaller version of the 912 Series with two 6-Bolt openings
- Designed for Class 3, 4, 5 and 6 trucks with automatic transmissions and no P.T.O. opening or trucks requiring additional P.T.O. openings
- Several 6-Bolt and Reversible P.T.O.s will fit on the 941 Series



Specifications Chart – 941 Series

		941	
Standard Output Shaft Size		—1-1/2" 12 Spline—	
Max Thru Torque Capacity		Lbs. ft	N.m.
w/ Diesel Engine			
Automatic Transmission		3,100	4,203
Manual Transmission		2,900	3,932
w/ Gas Engine			
Automatic Transmission		4,200	5,694
Manual Transmission		3,900	5,288
Approximate Weight:		— 60 lbs. [27 kg] —	

P.T.O. Options Chart – Split Shafts

P.T.O. Series	901	912	941
Shifting			
A Air	x	x	x
Y Lever	x	x	x
Input-Output Shaft			
C 1-3/4" 10 Spline	x		
G 2-3/4" Shaft w/1710 1/2 Rd. Yoke		x	
H 2-3/4" Shaft w/1810 1/2 Rd. Yoke		x	
J Without Flanges		x	x
K 1410 Series Flange			x
L 1550 Series Flange			x
M 2-3/4" Shaft w/1610 companion flange		x	
P Output shaft for Spicer 170-4-521-1X		x	
S Output shaft for Spicer 250-4-241-1X		x	
P.T.O. Output Shaft			
XV 1-1/2" 10 Spline	x		
XK S.A.E. "B" 2 or 4 Bolt	x		
XS S.A.E. "C" 4 Bolt	x		
XU S.A.E. "C" 2 Bolt	x		
XX No P.T.O. Shaft			x
XX Two 8-Bolt P.T.O. openings with air shift or three 8-Bolt openings		x	

Check the current price book for available options.

Crank Shaft Power Take-Offs

2230U Series

- Allows the driver to shift 'on the go'
- Electric-over-air for reliable shifting
- 2230U Series run at 88% of engine speed
- Electronic Overspeed Control (EOC) available to protect driven equipment

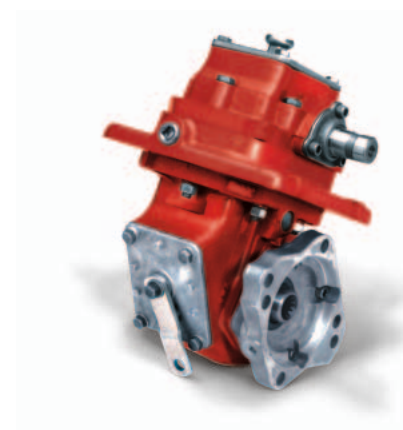


Specifications Chart – Crankshaft-Driven P.T.O.s

	2230U
Percent of Engine Speed	88%
Standard Output Shaft Size	—1-1/4" Round w/key —
Intermittent Torque Rating (Lbs. ft.)	225
Intermittent Torque Rating (N.m.)	305
Horsepower Rating for Intermittent Service	
At 500 R.P.M. of Output Shaft (HP)	21
At 1000 R.P.M. of Output Shaft (HP)	43
At 500 R.P.M. of Output Shaft (Kw)	16
At 1000 R.P.M. of Output Shaft (Kw)	32
Approximate Weight:	—88 lbs. [40 kg] —

2442 Series

- The economical 2442 Series is a manual shift P.T.O.
- Operator must stop the engine before shifting
- Available in 7 different speed ratios ranging from 39% to 123% of engine speed
- 10 shift options available



Specifications Chart – Crankshaft-Driven P.T.O.s

	2442*F	2442*L	2442*Q	2442*S	2442*U	2442*W	2442*X
Percent of Engine Speed	39%	50%	54%	74%	89%	104%	123%
Standard Output Shaft Size	—1-1/4" Round w/key —						
Intermittent Torque Rating (Lbs. ft.)	250	250	225	200	195	175	140
Intermittent Torque Rating (N.m.)	339	339	305	271	264	237	190
Horsepower Rating for Intermittent Service							
At 500 R.P.M. of Output Shaft (HP)	24	24	21	19	19	17	13
At 1000 R.P.M. of Output Shaft (HP)	48	48	43	38	37	33	27
At 500 R.P.M. of Output Shaft (Kw)	18	18	16	14	14	12	10
At 1000 R.P.M. of Output Shaft (Kw)	36	36	32	28	28	25	20
Approximate Weight:	—69 lbs. [31 kg] —						

P.T.O. Options Chart – Crank Shaft P.T.O.s

P.T.O. Series		2330U	2442
Shifting			
A	Air Shift	x	x
H	Less Wire Shift Cover		x
J	24V Electronic Overspeed Control	x	
N	12V Electronic Overspeed Control	x	
P	12V Electric Over Air w/o Overspeed Control	x	x
S	P.T.O. & Pump Combo Valve		x
V	Air Shift Less Installation Kit		x
W	Cable Shift		x
X	Less Cable and Knob		x
Output			
AA	Special Pump for England		x
AF	S.A.E. "B" 2 or 4 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth)	x	x
AK	S.A.E. "B" 2 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)		x
AZ	Non Standard Flange, "C" Shaft (1-1/4" 14 - Tooth)		x
GF	S.A.E. "B" 2 or 4 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth) (Greaseable)		x
GH	Rotatable "B" 2 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth) (Greaseable)		x
GJ	Rotatable "B" 4 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth) (Greaseable)		x
GK	S.A.E. "B" 2 or 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) (Greaseable)		x
GP	S.A.E. "A" 2 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) (Greaseable)		x
GQ*	S.A.E. "B" 2 or 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth) (Greaseable)		x
GR	Chelsea Special Pump Mount, "B" Shaft (7/8" 13 - Tooth) (Greaseable)		x
GY	DIN 5462 Pump Mounting (Greaseable)		x
GZ	Non Standard Flange, "C" Shaft (1-1/4" 14 - Tooth) (Greaseable)		x
LA	S.A.E. "B" 2 Bolt Flange w/Lube Pump (Same as AK)		x
LB	S.A.E. "A" 2 Bolt Flange w/Lube Pump (Same as XP)		x
LC	S.A.E. "A" 2 Bolt Flange w/Lube Pump (Same as XQ)		x
LD	1-1/4" Round Shaft w/Lube Pump (Same as XD)		x
LF	S.A.E. "B" 2 or 4 Bolt Flange w/Lube Pump (Same as XK)		x
RA	Rotatable "B" 2 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)	x	x
RB	Rotatable "B" 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)	x	x
RC	Rotatable "A" 2 Bolt Flange, "A" Shaft (5/8" 9 - Tooth)		x
RD	Rotatable "A" 2 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)		x
RE	Rotatable "B" 4 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth)		x
RF	Rotatable "B" 2 Bolt Flange, "BB" Shaft (1.00" 15 - Tooth)		x
RY	Rotatable DIN 5462 Pump Flange		x
XD	1-1/4" Round Shaft	x	x
XE	S.A.E. "A" 2 or 4 Bolt Flange, "A" Shaft (5/8" 9 - Tooth)		x
XG	Non Standard S.A.E. "B" 2 Bolt Flange, Non Standard Shaft (3/4" w/ 3/16" key)		x
XJ	Non Standard S.A.E. "A" 2 Bolt Flange, Non Standard Shaft (3/4" w/ 3/16" key)		x
XK	S.A.E. "B" 2 or 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)	x	x
XQ*	S.A.E. "B" 2 or 4 Bolt Flange, "B" Shaft (7/8" 13 - Tooth)		x
XR	Non Standard Flange, "B" Shaft (7/8" 13 - Tooth)	x	x
XX**	1-1/4" S.A.E. Tapped Shaft w/ keyway		x
XY	DIN 5462 Pump Mounting	x	x

* XQ/GQ same as XK/GK except flange rotated 90°

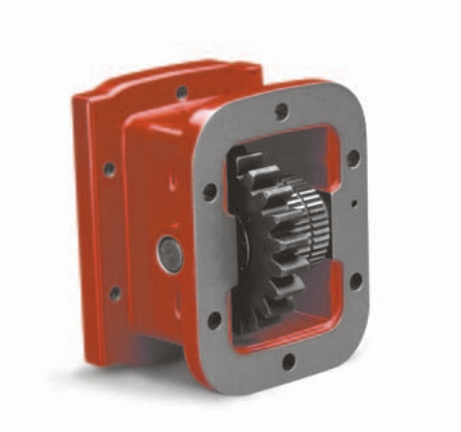
** Order companion (3-1-604) seperatly

Check the current price book for available options.

Kit-Style Geared Adapters

626 Series

- 6-Bolt P.T.O. to a 6-Bolt Transmission Opening
- Moves the P.T.O. straight out from the transmission
- Uses the same input gears as the 442 and 489 Series
- Uses the same mounting hardware and spacers used to mount a 442 Series to a specific application



628 Series

- 6-Bolt P.T.O. to a 8-Bolt Transmission Opening
- Moves the P.T.O. straight out from the transmission
- Uses the same input gears as the 442 and 489 Series
- Uses the same mounting hardware and spacers used to mount a 489 Series to a specific application



630 Series

- 6-Bolt P.T.O. to a 6-Bolt Transmission Opening
- Moves the P.T.O. down at a 30° angle, helping to eliminate interference problems
- Uses the same input gears as the 442 and 489 Series
- 630-02 used with Eaton UltraShift I-Brake for interference problems



645 Series

- 6-Bolt P.T.O. to a 6-Bolt Transmission Opening
- Moves the P.T.O. down at a 45° angle, helping to eliminate interference problems
- Uses the same input gears as the 442 and 489 Series



Kit-Style Geared Adapters – 626 Series

Adapter Input Gear				Gasket Pack & Stud Kit P.T.O. to Adapter		P.T.O. Input Gear			
Model No.	Part No.	Helix Angle	No. Teeth	Spacer	Stud Kit	P.T.O. Pitch Designator	Part No.	Helix Angle	No. Teeth
626*AB	5-P-1001	Spur	19	7-A-140	7170-3X	—**AB	5-P-1001	Spur	19
626*AH	5-P-1004	Spur	22	7-A-140	7170-3X	—**AH	5-P-1004	Spur	22
626*AP	5-P-1006	Left Hand	21	7-A-140	7170-3X	—**GX	5-P-1183	Right Hand	21
626*AR	5-P-1008	Left Hand	21	7-A-187	7170-3X	—**GY	5-P-1184	Right Hand	21
626*AW	5-P-1009	Left Hand	22	7-A-270	7170-4X	—**GZ	5-P-1185	Right Hand	22
626*BG	5-P-1015	Left Hand	23	7-A-140	7170-3X	—**HB	5-P-1187	Right Hand	23
626*BQ	5-P-1023	Left Hand	25	7-A-200	7170-4X	—**BP	5-P-1022	Right Hand	26
626*CB	5-P-1029	Left Hand	25	7-A-140	7170-3X	—**HD	5-P-1189	Right Hand	25
626*CD	5-P-1031	Left Hand	27	7-A-270	7170-4X	—**HE	5-P-1190	Right Hand	27
626*DA	5-P-1037	Spur	23	—	—	—**DA	5-P-1037	Spur	23
626*DU	5-P-1050	Left Hand	28	7-A-240	7170-4X	—**HH	5-P-1193	Right Hand	28
626*ED	5-P-1056	Left Hand	34	7-A-240	7170-4X	—**HK	5-P-1195	Right Hand	34
626*ES	5-P-1059	Left Hand	22	7-A-062	—	—**HL	5-P-1196	Right Hand	22
626*EV	5-P-1060	Spur	40	7-A-300	7170-4X	—**EV	5-P-1060	Spur	40
626*EW	5-P-1061	Left Hand	20	7-A-125	7170-3X	—**HM	5-P-1197	Right Hand	20
626*FC	5-P-1064	Left Hand	26	7-A-165	7170-3X	—**HP	5-P-1199	Right Hand	26
626*HY	5-P-1237	Left Hand	26	7-A-125	328170-94X	—**JB	5-P-1244	Right Hand	26
626*IT	KIT ADAPTER								
626*JK	5-P-1261	Left Hand	24	7-A-187	7170-3X	—**JL	5-P-1262	Right Hand	24
626*JM	5-P-1263	Left Hand	22	7-A-125	7170-3X	—**JN	5-P-1264	Right Hand	22
626*JU	5-P-1316	Left Hand	25	7-A-200	7170-4X	—**KA	5-P-1318	Right Hand	25
626*JW	5-P-1319	Left Hand	23	7-A-093	7170-3X	—**KB	5-P-1321	Right Hand	23
626*KX	5-P-1411	Left Hand	26	7-A-125	328170-94X	—**KY	5-P-1412	Right Hand	26

Kit-Style Geared Adapters – 628 Series

Adapter Input Gear				Gasket Pack & Stud Kit P.T.O. to Adapter		P.T.O. Input Gear			
Model No.	Part No.	Helix Angle	No. Teeth	Spacer	Stud Kit	P.T.O. Pitch Designator	Part No.	Helix Angle	No. Teeth
628*AB	5-P-1001	Spur	19	7-A-140	7170-3X	—**AB	5-P-1001	Spur	19
628*AH	5-P-1004	Spur	22	7-A-165	7170-3X	—**AH	5-P-1004	Spur	22
628*AR	5-P-1008	Left Hand	21	7-A-200	7170-3X	—**GY	5-P-1184	Right Hand	21
628*BG	5-P-1015	Left Hand	23	7-A-165	7170-3X	—**HB	5-P-1187	Right Hand	23
628*DA	5-P-1037	Spur	23	—	328170-76X	—**DA	5-P-1037	Spur	23
628*DU	5-P-1050	Left Hand	28	7-A-270	7170-5X	—**HH	5-P-1193	Right Hand	28
628*EV	5-P-1060	Spur	40	7-A-300	7170-5X	—**EV	5-P-1060	Spur	40
628*IT	KIT ADAPTER								

Check the current price book for available options.

Kit-Style Geared Adapters – 630 Series

Adapter Input Gear				Gasket Pack & Stud Kit P.T.O. to Adapter		P.T.O. Input Gear			
Model No.	Part No.	Helix Angle	No. Teeth	Spacer	Stud Kit	P.T.O. Pitch Designator	Part No.	Helix Angle	No. Teeth
630*AB	5-P-1001	Spur	19	7-A-140	7170-3X	—**AB	5-P-1001	Spur	19
630*AH	5-P-1004	Spur	22	7-A-140	7170-3X	—**AH	5-P-1004	Spur	22
630*AP	5-P-1006	Left Hand	21	7-A-140	7170-3X	—**GX	5-P-1183	Right Hand	21
630*AR	5-P-1008	Left Hand	21	7-A-187	7170-3X	—**GY	5-P-1184	Right Hand	21
630*BG	5-P-1015	Left Hand	23	7-A-140	7170-3X	—**HB	5-P-1187	Right Hand	23
630*BQ	5-P-1023	Left Hand	25	7-A-200	7170-4X	—**BP	5-P-1022	Right Hand	26
630*BS	5-P-1025	Left Hand	26	7-A-062	7170-4X	—**BR	5-P-1024	Right Hand	26
630*CD	5-P-1031	Left Hand	27	7-A-270	7170-4X	—**HE	5-P-1190	Right Hand	27
630*DA	5-P-1037	Spur	23	—	—	—**DA	5-P-1037	Spur	23
630*DU	5-P-1050	Left Hand	28	7-A-240	7170-4X	—**HH	5-P-1193	Right Hand	28
630*ED	5-P-1056	Left Hand	34	7-A-240	7170-4X	—**HK	5-P-1195	Right Hand	34
630*ES	5-P-1059	Left Hand	22	7-A-062	—	—**HL	5-P-1196	Right Hand	22
630*EV	5-P-1060	Spur	40	7-A-300	7170-4X	—**EV	5-P-1060	Spur	40
630*EW	5-P-1061	Left Hand	20	7-A-125	7170-3X	—**HM	5-P-1197	Right Hand	20
630*FN	5-P-1070	Left Hand	26	7-A-300	7170-4X	—**HR	5-P-1201	Right Hand	26
630*HY	5-P-1237	Left Hand	26	7-A-125	7170-1X	—**JB	5-P-1244	Right Hand	26
630*IT	KIT ADAPTER								
630*JK	5-P-1261	Left Hand	24	7-A-187	7170-3X	—**JL	5-P-1262	Right Hand	24
630*JM	5-P-1263	Left Hand	22	7-A-125	7170-3X	—**JN	5-P-1264	Right Hand	22
630*JU	5-P-1316	Left Hand	25	7-A-200	7170-4X	—**KA	5-P-1318	Right Hand	25
630*JW	5-P-1319	Left Hand	23	7-A-093	7170-3X	—**KB	5-P-1321	Right Hand	23
630*KX	5-P-1411	Left Hand	26	7-A-125	328170-94X	—**KY	5-P-1412	Right Hand	26

Check the current price book for available options.

Kit-Style Geared Adapters – 645 Series

Adapter Input Gear				Gasket Pack & Stud Kit P.T.O. to Adapter		P.T.O. Input Gear			
Model No.	Part No.	Helix Angle	No. Teeth	Spacer	Stud Kit	P.T.O. Pitch Designator	Part No.	Helix Angle	No. Teeth
645*AB	5-P-1001	Spur	19	7-A-140	7170-3X	—**AB	5-P-1001	Spur	19
645*AG	5-P-1003	Spur	22	7-A-140	7170-3X	—**AG	5-P-1003	Spur	22
645*AH	5-P-1004	Spur	22	7-A-140	7170-3X	—**AH	5-P-1004	Spur	22
645*AP	5-P-1006	Left Hand	21	7-A-140	7170-3X	—**GX	5-P-1183	Right Hand	21
645*AR	5-P-1008	Left Hand	21	7-A-187	7170-3X	—**GY	5-P-1184	Right Hand	21
645*AW	5-P-1009	Left Hand	22	7-A-270	7170-4X	—**GZ	5-P-1185	Right Hand	22
645*BQ	5-P-1023	Left Hand	25	7-A-200	7170-4X	—**BP	5-P-1022	Right Hand	26
645*CB	5-P-1029	Left Hand	25	7-A-140	7170-3X	—**HD	5-P-1189	Right Hand	25
645*CD	5-P-1031	Left Hand	27	7-A-270	7170-4X	—**HE	5-P-1190	Right Hand	27
645*DA	5-P-1037	Spur	23	—	—	—**DA	5-P-1037	Spur	23
645*DU	5-P-1050	Left Hand	28	7-A-240	7170-4X	—**HH	5-P-1193	Right Hand	28
645*ED	5-P-1056	Left Hand	34	7-A-240	7170-4X	—**HK	5-P-1195	Right Hand	34
645*ES	5-P-1059	Left Hand	22	7-A-062	—	—**HL	5-P-1196	Right Hand	22
645*EV	5-P-1060	Spur	40	7-A-300	7170-4X	—**EV	5-P-1060	Spur	40
645*EW	5-P-1061	Left Hand	20	7-A-125	7170-3X	—**HM	5-P-1197	Right Hand	20
645*FC	5-P-1064	Left Hand	26	7-A-165	7170-3X	—**HP	5-P-1199	Right Hand	26
645*FN	5-P-1070	Left Hand	26	7-A-300	7170-4X	—**HR	5-P-1201	Right Hand	26
645*GR	5-P-1157	Spur	23	7-A-062	—	—**GR	5-P-1157	Spur	23
645*HY	5-P-1237	Left Hand	26	7-A-125	328170-94X	—**JB	5-P-1244	Right Hand	26
645*IT	KIT ADAPTER								
645*JD	5-P-1248	Left Hand	20	7-A-200	7170-3X	—**JE	5-P-1249	Right Hand	20
645*JK	5-P-1261	Left Hand	24	7-A-187	7170-3X	—**JL	5-P-1262	Right Hand	24
645*JM	5-P-1263	Left Hand	22	7-A-125	7170-3X	—**JN	5-P-1264	Right Hand	22
645*JP	5-P-1268	Left Hand	33	7-A-187	7170-3X	—**JQ	5-P-1269	Right Hand	33
645*JS	5-P-1310	Left Hand	20	7-A-062		—**JY	5-P-1312	Right Hand	20
645*JU	5-P-1316	Left Hand	25	7-A-200	7170-4X	—**KA	5-P-1318	Right Hand	25
645*JW	5-P-1319	Left Hand	23	7-A-093	7170-3X	—**KB	5-P-1321	Right Hand	23
645*KJ	5-P-1405	Left Hand	33	—	328170-94X	—**KK	5-P-1406	Right Hand	33
645*KL	5-P-1407	Left Hand	29	7-A-200	7170-4X	—**KM	5-P-1408	Right Hand	29
645*KN	5-P-1383	Left Hand	27	7-A-270	7170-4X	—**KP	5-P-1384	Right Hand	27
645*KX	5-P-1411	Left Hand	26	7-A-125	328170-94X	—**KY	5-P-1412	Right Hand	26

Check the current price book for available options.

Shifter Options

Wire (Cable) Shift

- Chelsea wire shift system is economical, easy to install and easy to use
- Features a vinyl-covered stainless steel push/pull cable for maximum corrosion protection
- Standard cable length is 10 feet
- 15, 20, 25, and 30 foot long cables available

Air Shift

- Simple to install and easy to shift
- Chelsea Air shift covers feature heavy-duty seals and precisely machined pistons
- Shifter shaft cover provides protection against system contamination
- The DOT-required pressure protection valve is included with this option

Electric-Over-Air Shift (12 and 24 Volt)

- Available for both mechanically shifted (i.e. 442 Series) and air-shifted Powershift (i.e. 230/231 Series) Power Take-Offs
- Shift option for both types of P.T.O.s features a recessed rocker switch and solenoid combination to air actuates Power Take-Offs
- For mechanically shifted P.T.O.s, when the rocker switch is pressed, the solenoid shifts and allows air to move the shift rod and fork into the engaged position
- On air-actuated Powershift units, air is used to compress a clutch pack which in turn engages the P.T.O. and eliminates clash shifting
- The DOT-required pressure protection valve is included with this option

Electric-Over-Hydraulic Shift (12 and 24 Volt)

- This option is used for Chelsea Powershift Power Take-Offs mounted to automatic transmissions
- Pressurized fluid from the transmission main pressure port is used to compress the P.T.O. clutch pack
- Allows for clash free shifting

Electric Overspeed Control (12 and 24 Volt)

- This state of the art Chelsea shift option is used with Powershift P.T.O.s
- Protects auxiliary power equipment (P.T.O.s, pumps, and cylinders) by keeping the P.T.O. speed within owner-determined operational limits
- Unit combines solid-state components in a tamper-resistant housing for true reliability

P.T.O./Dump Pump Combo Valve

- Designed to make P.T.O./Dump Pump air shift applications easier
- Compact design features a safety interlock to prevent accidental P.T.O. engagement
- Controls are easy to operate
- Ideal for use in systems with Chelsea dump pumps, wet line reservoirs and P.T.O.s

Shifter Options – P.T.O./Dump Pump Combo Valves

Available for Hotshift & Mechanical Shift P.T.O.s

P.T.O./Dump Pump Combo Valve Features

Part Number	P.T.O. Kick Out	Spring Return to Neutral on Dump Valve Control	Manual Return to Neutral on Dump Valve	Safety Lock on P.T.O.	Detent Lock on Neutral	Smooth Descent	LED Light
Air Shift P.T.O.s							
329214X & -2X	x	x		x	x	x	x
329316X & -2X			x	x	x	x	x
Hydraulic Shift P.T.O.s							
329214-1X	x	x		x	x	x	x
329216-1X			x	x	x	x	x

Order Code	P.T.O. Models	Chelsea Part No.	Installation Kit	Description
Air Shift P.T.O.s				
S	442 & 489	329214X	328388-65X	Hoist-P.T.O. control valve that allows a smooth descent of the body in the “lower” position. Features automatic disengagement of the P.T.O. in “lower”. Lever on the control valve returns to neutral from the “raise” position when released (dead man’s handle).
S	230/231 & 236	329214-2X	328388-89X	
T	442 & 489	329316X	328388-72X	Hoist-P.T.O. control valve that allows a smooth descent of the body in the “lower” position. Requires manual disengagement of the P.T.O. in “lower”.
T	230/231 & 236	329316-2X	328388-90X	
Hydraulic Shift P.T.O.s				
S	277/278	329214-1X	328388-85X	Hoist-P.T.O. control valve that allows a smooth descent of the body in the “lower” position. Features automatic disengagement of the P.T.O. in “lower”. Lever on the control valve returns to neutral from the “raise” position when released (dead man’s handle).
S	270/271	329214-1X	328388-87X	
T	277/278	329216-1X	328388-86X	Hoist-P.T.O. control valve that allows a smooth descent of the body in the “lower” position. Requires manual disengagement of the P.T.O. in “lower”.
T	270/271	329216-1X	328388-88X	

Offer of Sale

The items described in this document and other documents or descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors are hereby offered for sale at prices to be established by Parker Hannifin Corporation, its subsidiaries and its authorized distributors. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any such items, when communicated to Parker Hannifin Corporation, its subsidiary or an authorized distributor ("Seller") verbally or in writing, shall constitute acceptance of this offer.

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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.

4. Warranty: Seller warrants that the items sold hereunder shall be free from defects in material or workmanship for a period of:

(A) All Power Take-Off units one (1) year from date of installation.

(B) Except 267, 277, 278, 242, 244, 246, 250, 251 and 859 series two (2) years from date of installation. **THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO ITEMS PROVIDED HEREUNDER. SELLER MAKES NO OTHER WARRANTY, GUARANTEE, OR REPRESENTATION OF ANY KIND WHATSOEVER. ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO, MERCHANTABILITY AND FITNESS FOR PURPOSE, WHETHER EXPRESS, IMPLIED, OR ARISING BY OPERATION OF LAW, TRADE USAGE, OR COURSE OF DEALING ARE HEREBY DISCLAIMED. NOTWITHSTANDING THE FOREGOING, THERE ARE NO WARRANTIES WHATSOEVER ON ITEMS BUILT OR ACQUIRED WHOLLY OR PARTIALLY, TO BUYER'S DESIGNS OR SPECIFICATIONS.**

5. Limitation Of Remedy: SELLER'S LIABILITY ARISING FROM OR IN ANY WAY CONNECTED WITH THE ITEMS SOLD OR THIS CONTRACT SHALL BE LIMITED EXCLUSIVELY TO REPAIR OR REPLACEMENT OF THE ITEMS SOLD OR REFUND OF THE PURCHASE PRICE PAID BY BUYER, AT SELLER'S SOLE OPTION. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES OF ANY KIND OR NATURE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOST PROFITS ARISING FROM OR IN ANY WAY CONNECTED WITH THIS AGREEMENT OR ITEMS SOLD HEREUNDER, WHETHER ALLEGED TO ARISE FROM BREACH OF CONTRACT, EXPRESS OR IMPLIED WARRANTY, OR IN TORT, INCLUDING WITHOUT LIMITATION, NEGLIGENCE, FAILURE TO WARN OR STRICT LIABILITY.

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7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid

by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property, Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity For Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify Buyer against allegations of infringement of U.S. Patents, U.S. Trademarks, copyrights, trade dress and trade secrets (hereinafter 'Intellectual Property Rights'). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If an item sold hereunder is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights. If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter 'Events of Force Majeure'). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

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 or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

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