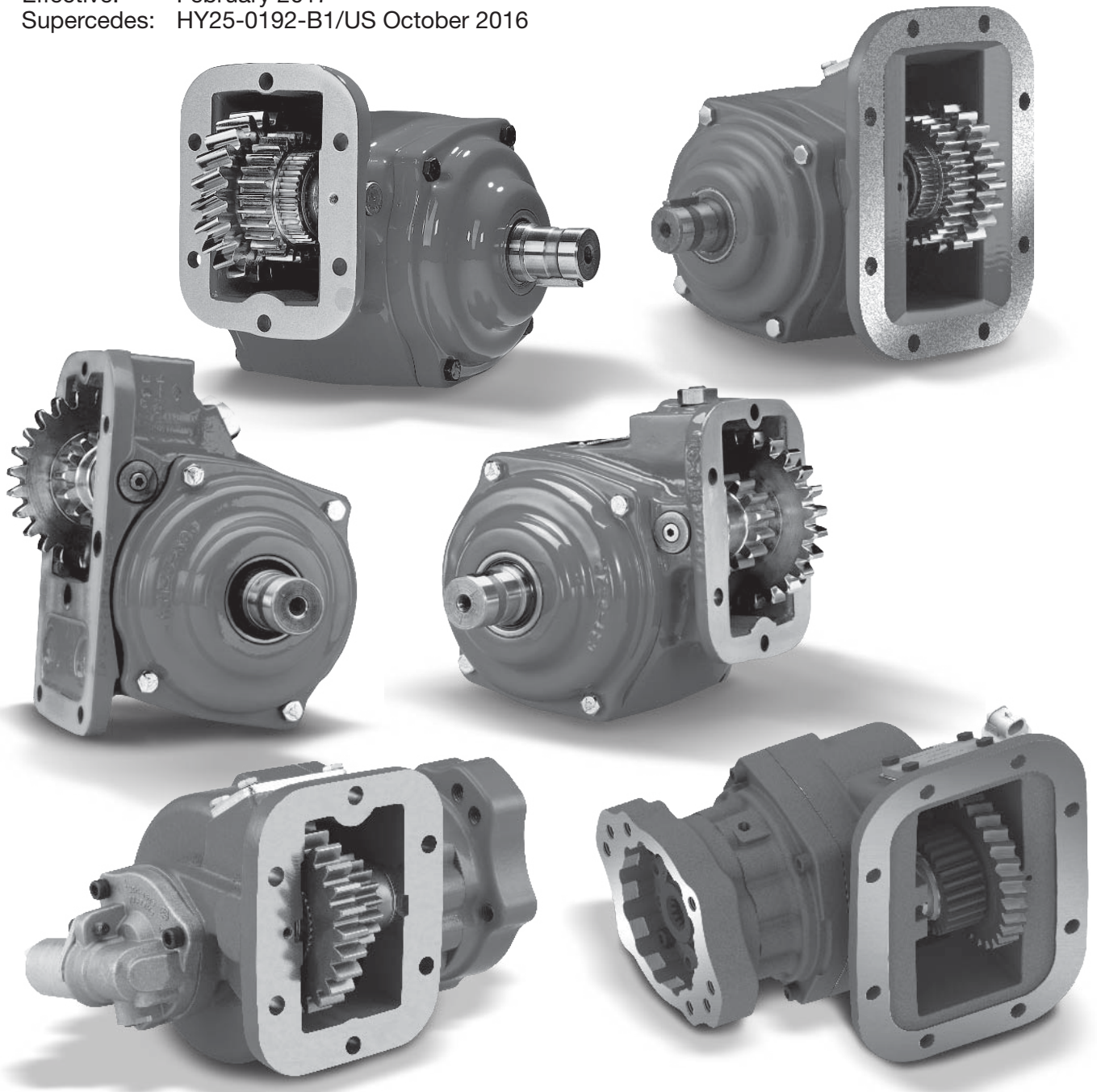


Effective: February 2017
Supercedes: HY25-0192-B1/US October 2016



Power Take-Offs Crossover

230/231 Series
270/271 Series to 272/282 Series
236/238 Series



ENGINEERING YOUR SUCCESS.

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Offer of Sale 21



WARNING — User Responsibility

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Offer of Sale

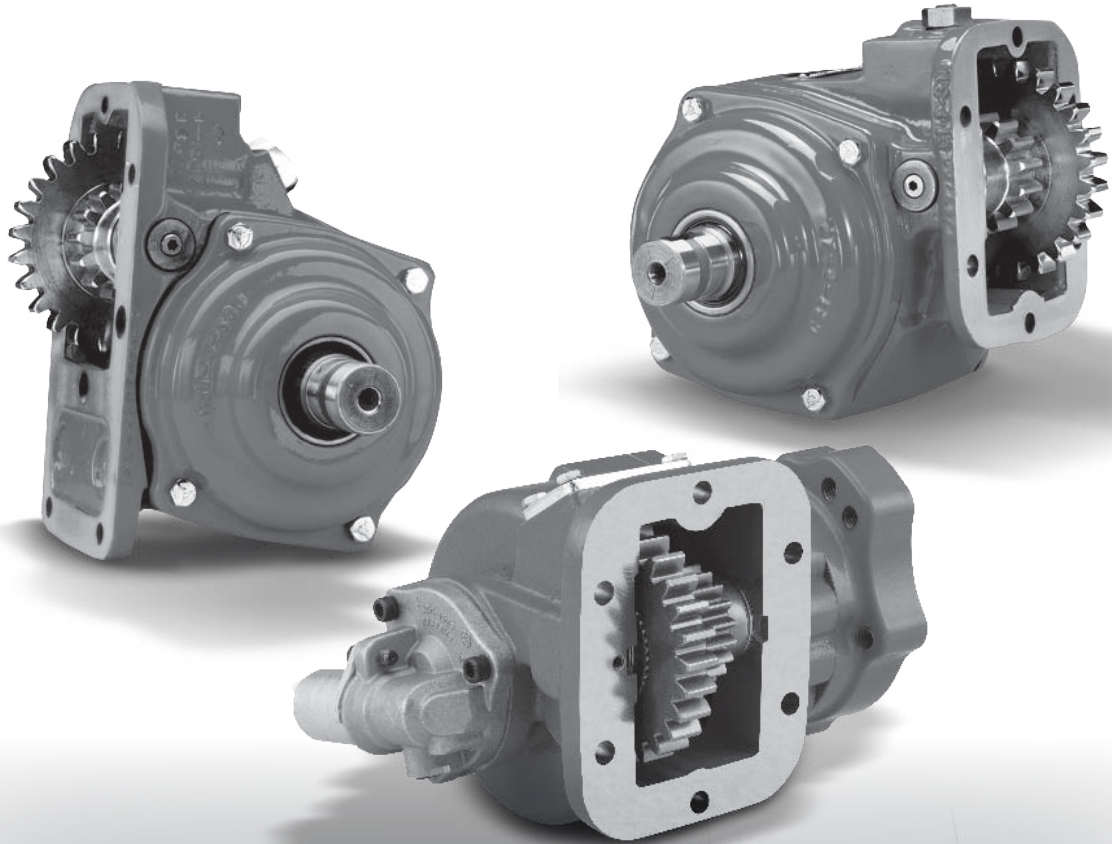
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Patent Information

The Chelsea® Power Take-Off or its components shipped with this owner's manual may be manufactured under one or more of the following U.S. patents:
7,159,701 7,007,565 6,962,093 1,326,036 60,321,840.7 9494227 B2
Other patents pending.

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230/231 Series to 272 Series



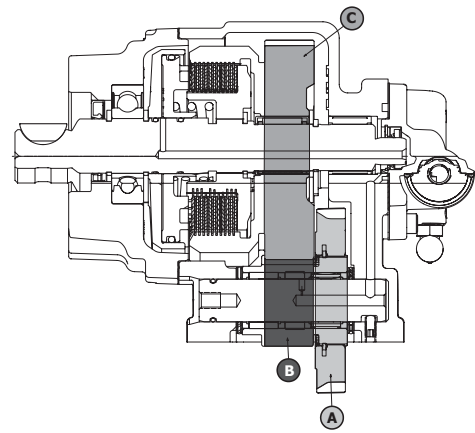
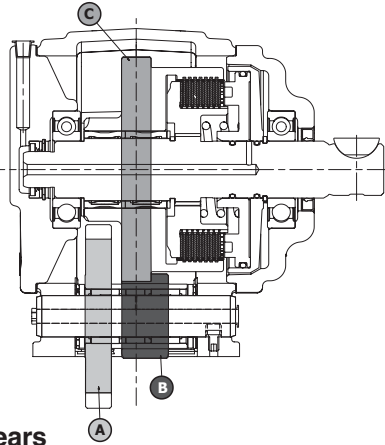
Model Series		Mounting Code		Ratio		Input Gear		Lube		Shift		Arr.		Output	
Legacy	New	230 231	272	230 231	272	230 231	272	230 231	272	230 231	272	230 231	272	230 231	272
230 231	272	X (230)	X	A	A	AH	AJ	X	X	A	A	3	3	XD	XD
		G (230)	G	B	B	AJ		P	P	N (230)	R	4	N/A	XE	RE
		M (231)	M	D	C	AK	AK	N/A	R	P	P	5	5	XK	RK
		G (231)	N	K	D, G	DA	DA	N/A	S	Q	Q	6	N/A	XP	N/A
		N/A	K	Q	M	DB	N/A	N/A	W	S	N/A			XR	XR
		N/A	L	U (230)	N/A	HV	HV	N/A	V	T	N/A			XX	XV
		N/A	Z	N/A	K	N/A	ES	N/A	Y	V	V			XY	RY
		N/A	A	N/A	P	N/A	FN			J (230)	4			AF	RF
		N/A	D	N/A	S	N/A	JK			N/A	1			RA	RK
		N/A	R			N/A	JW			N/A	2			RB	RB/RK
						N/A	KU			N/A	3			RF	RF
						N/A	KN			N/A	J			BD	BD
														BA	BD
														N/A	AB
														N/A	AC
														N/A	RS
														N/A	RZ
														N/A	SD
														N/A	SV

N/A = Not Available

See Chelsea Application Catalog HY25-3000/US for specific applications.

See pages 4 & 5 for option details.

Gear Chart



Input Gears

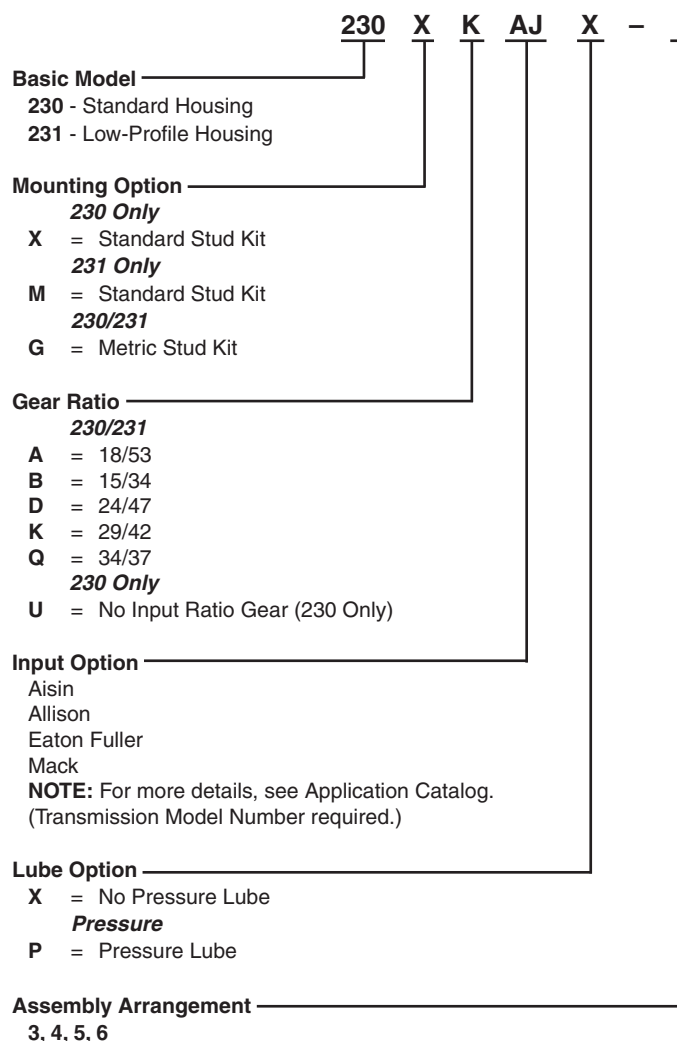
230/231 Series Input Gear					272 Series Input Gear					
Input Designator	Part Number	Teeth "A"	Teeth "B"	Helix Angle	Input Designator	Assembly	N.S.S.			
							Input Gear	Teeth "A"	Input Ratio	Teeth "B"
230/231*AAH	5-P-546	25	18	Spur	272*AAJ	5-P-1510-1X	5-P-1510	25	5-P-1498	19
230/231*AAJ	5-P-567									
230/231*AAK	5-P-548	25	18	Spur	272*AAK	5-P-1517-1X	5-P-1517	25	5-P-1498	19
230/231*AHV	5-P-1295	27	18	Spur	272*AHV	5-P-1516-1X	5-P-1516	27	5-P-1498	19
230*ADA	5-P-1370	27	18	Spur	272*ADA	5-P-1511-1X	5-P-1511	27	5-P-1498	19
230/231*BAH	5-P-547	25	15	Spur	272*BAJ	5-P-1510-2X	5-P-1510	25	5-P-1499	22
230/231*BAJ	5-P-568									
230/231*BHV	5-P-1296	27	15	Spur	272*BHV	5-P-1516-2X	5-P-1516	27	5-P-1499	22
230*BDA	5-P-1371	27	15	Spur	272*BDA	5-P-1511-2X	5-P-1511	27	5-P-1499	22
230/231*DAJ	5-P-695	25	24	Spur	272*CAJ	5-P-1510-3X	5-P-1510	25	5-P-1500	25
230/231*DAK	5-P-807	25	24	Spur	272*CAK	5-P-1517-3X	5-P-1517	25	5-P-1500	25
230/231*DHV	5-P-1297	27	20	Spur	272*CHV	5-P-1516-3X	5-P-1516	27	5-P-1500	25
230*DDA	5-P-1372	27	24	Spur	272*CDA	5-P-1511-3X	5-P-1511	27	5-P-1500	25
230/231*KAJ	5-P-769	25	29	Spur	272*DAJ	5-P-1510-4X	5-P-1510	25	5-P-1501	28
					272*GAJ	5-P-1510-5X	5-P-1510	25	5-P-1502	31
231*KAK	5-P-881	25	29	Spur	272*DAK	5-P-1517-4X	5-P-1517	25	5-P-1501	28
					272*GAK	5-P-1517-5X	5-P-1517	25	5-P-1502	31
230*KDA	5-P-843	27	29	Spur	272*DDA	5-P-1511-4X	5-P-1511	27	5-P-1501	28
					272*GDA	5-P-1511-5X	5-P-1511	27	5-P-1502	31
230/231*KHV	5-P-1417	27	29	Spur	272*DHV	5-P-1516-4X	5-P-1516	27	5-P-1501	28
					272*GHV	5-P-1516-5X	5-P-1516	27	5-P-1502	31
230/231*QAJ	5-P-770	25	34	Spur	272*MAJ	5-P-1510-7X	5-P-1510	25	5-P-1504	35
230*QDA	5-P-844	27	34	Spur	272*MDA	5-P-1511-7X	5-P-1511	27	5-P-1504	35
230*UAJ	5-P-1144	25	N/A	Spur	N/A					
230*UDB	5-P-995	43	N/A	Spur	N/A					

N.S.S. = Not Sold Separately

N/A = Not Available

Output Gears

230/231 Series			272 Series		
Ratio Designator	Part Number	No. Teeth "C"	Ratio Designator	Part Number	No. Teeth "C"
230/231*A	2-P-473	53	272*A	2-P-925	53
230/231*B	2-P-481	34	272*B	2-P-926	50
230/231*D	2-P-606	47	272*C	2-P-927	47
230/231*K	2-P-638	42	272*D	2-P-928	44
			272*K	2-P-926	41
230/231*Q	2-P-639	37	272*M	2-P-933	37
230*UAJ	2-P-640	17	272*D	N/A	
230*UDB	2-P-748	29	272*D	N/A	

**Output Option****Driveline Output**

- XD = 1-1/4" Rd Standard Shaft
³ XX = 1-1/4" Tapered Output Shaft w/ Keyway
 BD = 1-1/4" Round Shaft w/Brake
 (Manual Transmission)
 BA = 1-1/4" Round Shaft w/Brake
 (Automatic Transmission)

Pump Mount

- XE = SAE "A" 2 or 4-Bolt Flange,
 SAE "A" Shaft (5/8" - 9T)
³ XP = SAE "A" 2-Bolt Flange,
 SAE "B" Shaft (7/8" - 13T)
 XK = SAE "B" 2 or 4-Bolt Flange,
 SAE "B" Shaft (7/8" - 13T)
³ AF = SAE "B" 2 or 4-Bolt Flange,
 SAE "BB" Shaft (1" - 15T)
 XY = DIN 5462 8T
³ RA = Rotatable SAE "B" 2-Bolt Flange,
 SAE "B" Shaft (7/8" - 13T)
 RB = Rotatable SAE "B" 4-Bolt Flange,
 SAE "B" Shaft (7/8" - 13T)
 RF = Rotatable SAE "B" 2-Bolt Flange,
 SAE "BB" Shaft (1" - 15T)
 XR = Chelsea Special SAE "B" Shaft (7/8" - 13T)

Shift Option

- ¹ A = Manual Air Shift
¹ P = 12 Volt Electric Over Air
¹ Q = 24 Volt Electric Over Air
 N = 12V Electronic Overspeed Ctrl
 J = 24V Electronic Overspeed Ctrl
 S = Air Shift with PTO/Dump Pump Combo Valve
 w/ Kick Out w/ Neutral Spring Return
 T = Air Shift with PTO/Dump Pump Combo Valve
 w/o Kickout & Neutral Spring Return
 V = Air Shift Less Installation Kit

¹ Includes mounting parts³ Available in 3 & 5 assembly only

Approximate Weight: 49 lbs. [22 kg]

Specifications Chart	230*A	230*B	230*D	230*K	230*Q
Intermittent Torque Rating lbs-ft [Nm] (w/ Pressure Lube)	300 [407]	300 [407]	300 [407]	300 [407]	300 [407]
Intermittent Torque Rating lbs-ft [Nm] (w/ Standard Lube)	250 [339]	250 [339]	250 [339]	250 [339]	250 [339]
HP Rating for Intermittent Service					
At 500 RPM of Output Shaft HP [Kw] (w/ Pressure Lube)	29 [21]	29 [21]	29 [21]	29 [21]	29 [21]
At 500 RPM of Output Shaft HP [Kw] (w/ Standard Lube)	24 [18]	24 [18]	24 [18]	24 [18]	24 [18]
At 1000 RPM of Output Shaft HP [Kw] (w/ Pressure Lube)	57 [43]	57 [43]	57 [43]	57 [43]	57 [43]
At 1000 RPM of Output Shaft HP [Kw] (w/ Standard Lube)	48 [36]	48 [36]	48 [36]	48 [36]	48 [36]

Approximate Weight: 49 lbs. [22 kg]

Specifications Chart	231*A	231*B	231*D	231*K	231*Q
Intermittent Torque Rating lbs-ft [Nm] (w/ Pressure Lube)	250 [339]	250 [339]	250 [339]	250 [339]	250 [339]
Intermittent Torque Rating lbs-ft [Nm] (w/ Standard Lube)	225 [305]	225 [305]	225 [305]	225 [305]	225 [305]
HP Rating for Intermittent Service					
At 500 RPM of Output Shaft HP [Kw] (w/ Pressure Lube)	24 [18]	24 [18]	24 [18]	24 [18]	24 [18]
At 500 RPM of Output Shaft HP [Kw] (w/ Standard Lube)	21 [16]	21 [16]	21 [16]	21 [16]	21 [16]
At 1000 RPM of Output Shaft HP [Kw] (w/ Pressure Lube)	48 [36]	48 [36]	48 [36]	48 [36]	48 [36]
At 1000 RPM of Output Shaft HP [Kw] (w/ Standard Lube)	43 [32]	43 [32]	43 [32]	43 [32]	43 [32]

272 X B FN P - B 5 X D

Basic Model _____
272

Mounting Option _____
 X = Standard Stud Kit
 G = Metric Stud Kit
 K = Standard Mount w/o Stud Kit
 Z = Deep Mount
 L = Deep Mount w/o Stud Kit
 M = Low-Profile w/ Standard Stud Kit
 N = Low-Profile w/ Metric Stud Kit
 A = Aisin Only (Non-Dodge/Ram)
 D = Dodge/Aisin
 R = RAM/Aisin

Gear Ratio _____
 A = 19/53
 B = 22/50
 C = 25/47
 D = 28/44
 G = 31/41
 K = 33/39
 M = 35/37
 P = 37/35
 S = 39/33

Input Gear Designator _____
 Aisin
 Allison
 EATON Fuller
 Mack
NOTE: For more details, see Application Catalog.
 (Transmission Model Number required.)

Lube Option _____
 X = No Pressure Lube
Pressure
 P = Pressure Lube
⁵ R = Valve Cap Rotated 120°
⁵ S = Valve Cap Rotated 240°
Wet Spline
⁵ W = Wet Spline
⁵ V = Valve Cap Rotated 120° w/ Wet Spline
⁵ Y = Valve Cap Rotated 240° w/ Wet Spline

⁵ Automatically pressure lubed
⁶⁴ Hyd shift PTOs only

Output Option _____
Driveline Output
 XD = Rd Standard Shaft (1-1/4" - 5/16" Key)
 XV = 1410 Series Companion Flange
 BD = Drag Brake - Rd Standard Shaft (1-1/4" - 5/16" Key)
 BV = Drag Brake - 1410 Series Companion Flange
⁶⁴SD = Smart Start - Rd Standard Shaft (1-1/4" - 5/16" Key)
⁶⁴SV = Smart Start - 1410 Series Companion Flange
 AB = DIN 120 Flange
 AC = DIN 100 Flange
Pump Mount
 RE = Rotatable SAE "A" 2-Bolt Flange,
 SAE "A" Shaft (5/8" - 9T)
 RK = Rotatable SAE "B" 2 or 4-Bolt Flange,
 SAE "B" Shaft (7/8" - 13T)
 RB = Rotatable SAE "B" 4-Bolt Flange,
 SAE "B" Shaft (7/8" - 13T)
 RF = Rotatable SAE "B" 2 or 4-Bolt Flange,
 SAE "BB" Shaft (1" - 15T)
 RZ = Rotatable SAE "B" 2 or 4-Bolt Flange,
 SAE "C" Shaft (1-1/4" - 14T)
 RS = Rotatable SAE "C" 2 or 4-Bolt Flange,
 SAE "C" Shaft (1-1/4" - 14T)
 RY = Rotatable ISO 7653 Flange,
 DIN 5462 Shaft
 XR = Chelsea Special (Cloverleaf),
 SAE "B" Shaft (7/8" - 13T)

Assembly Arrangement
 3 = Right side - bulge down
 Left side - bulge up
 5 = Left side - bulge down
 Right side - bulge up

Shift Option _____
Hydraulic
 B = 12V Elec/Hyd - Integral
 D = 24V Elec/Hyd - Integral
 E = 12V Elec/Hyd w/o Installation Kit - Integral
 N = 24V Elec/Hyd w/o Installation Kit - Integral
 K = 12V Elec/Hyd w/ EOC
 L = 24V Elec/Hyd w/ EOC
 G = 12V Elec/Hyd Remote Valve w/o EOC
 H = 24V Elec/Hyd Remote Valve w/o EOC
Air
 A = Manual Air Shift
 V = Manual Air Shift w/o Installation Kit
 1 = 12V Elec/Air - Integral
 2 = 24V Elec/Air - Integral
 J = 12V Elec/Air w/ EOC - Integral
 3 = 24V Elec/Air w/ EOC - Integral
 P = 12V Elec/Air Remote
 Q = 24V Elec/Air Remote
 R = 12V Elec/Air Remote w/ EOC
 4 = 24V Elec/Air Remote w/ EOC

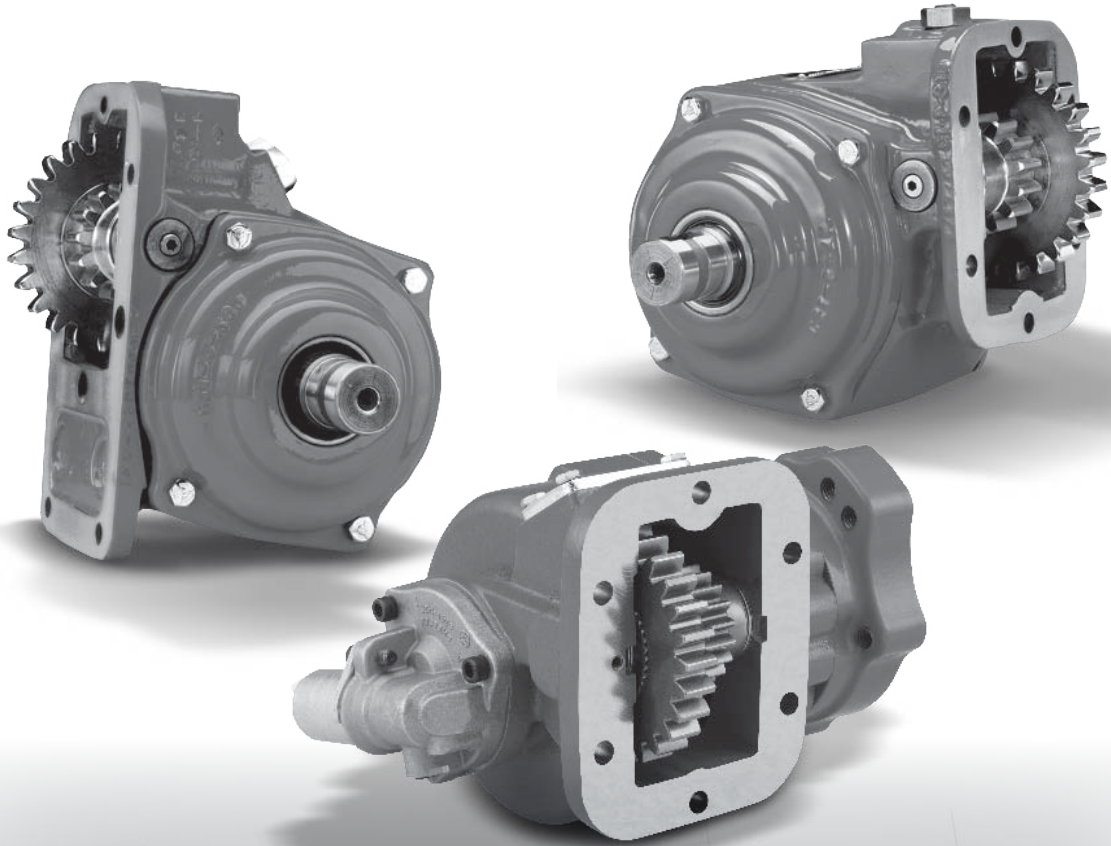
Specifications Chart

Approximate Weight: 49 lbs. [22 kg]

	272*A	272*B	272*C	272*D	272*G	272*K	272*M	272*P	272*S
Intermittent & Continuous Torque Rating lbs-ft [Nm]	300 [407]	300 [407]	300 [407]	300 [407]	300 [407]	300 [407]	300 [407]	300 [407]	300 [407]
HP Rating for Intermittent & Continuous Service									
At 500 RPM of Output Shaft HP [Kw]	29 [21]	29 [21]	29 [21]	29 [21]	29 [21]	29 [21]	29 [21]	29 [21]	29 [21]
At 1000 RPM of Output Shaft HP [Kw]	57 [43]	57 [43]	57 [43]	57 [43]	57 [43]	57 [43]	57 [43]	57 [43]	57 [43]

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270/271 Series to 272 Series

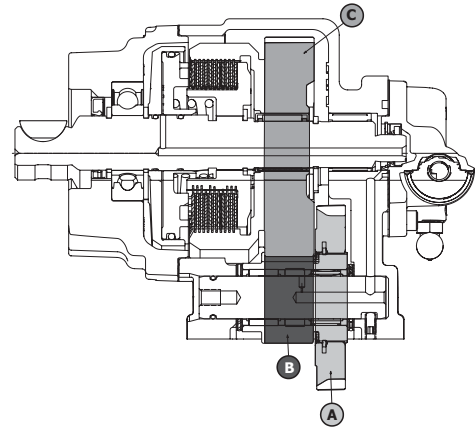
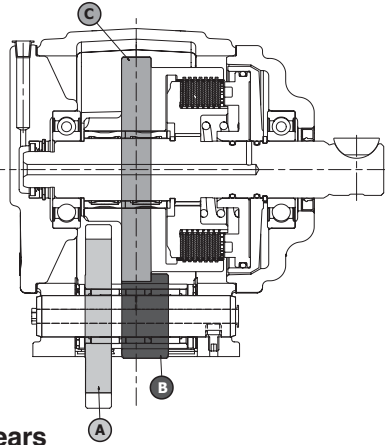


Model Series		Mounting Code		Ratio		Input Gear		Lube		Shift		Arr.		Output	
Legacy	New	270 271	272	270 271	272	270 271	272	270 271	272	270 271	272	270 271	272	270 271	272
270 271	272	X	X	A	A	AH	AJ	X	X	B	G	3	3	XD	XD
		G (270)	G	B	B	AJ		P	P	D	H	4	N/A	XE	RE
		G (271)	N	D	C	AK	AK	N/A	R	K	K	5	5	XK	RK
		A	A	K	D, G	HV	HV	N/A	S	L	L	6	N/A	XP	N/A
		M (271)	M	Q	M	KU	KU	N/A	W	S	N/A			XR	XR
		D	D	N/A	K	N/A	DA	N/A	V	T	N/A			XX	XV
		R	R	N/A	P	N/A	ES	N/A	Y	N/A	B			XY	RY
		N/A	Z	N/A	S	N/A	FN			N/A	D			AF	RF
		N/A	K			N/A	JK			N/A	E			RA	RK
		N/A	L			N/A	JW			N/A	N			RB	RB/RK
														RF	RF
														BA	BD
														N/A	AB
														N/A	AC
														N/A	RS
														N/A	RZ
														N/A	SD
														N/A	SV
														N/A	BV

N/A = Not Available

See Chelsea Application Catalog HY25-3000/US for specific applications.

See pages 10 & 11 for option details.

Gear Chart

Input Gears

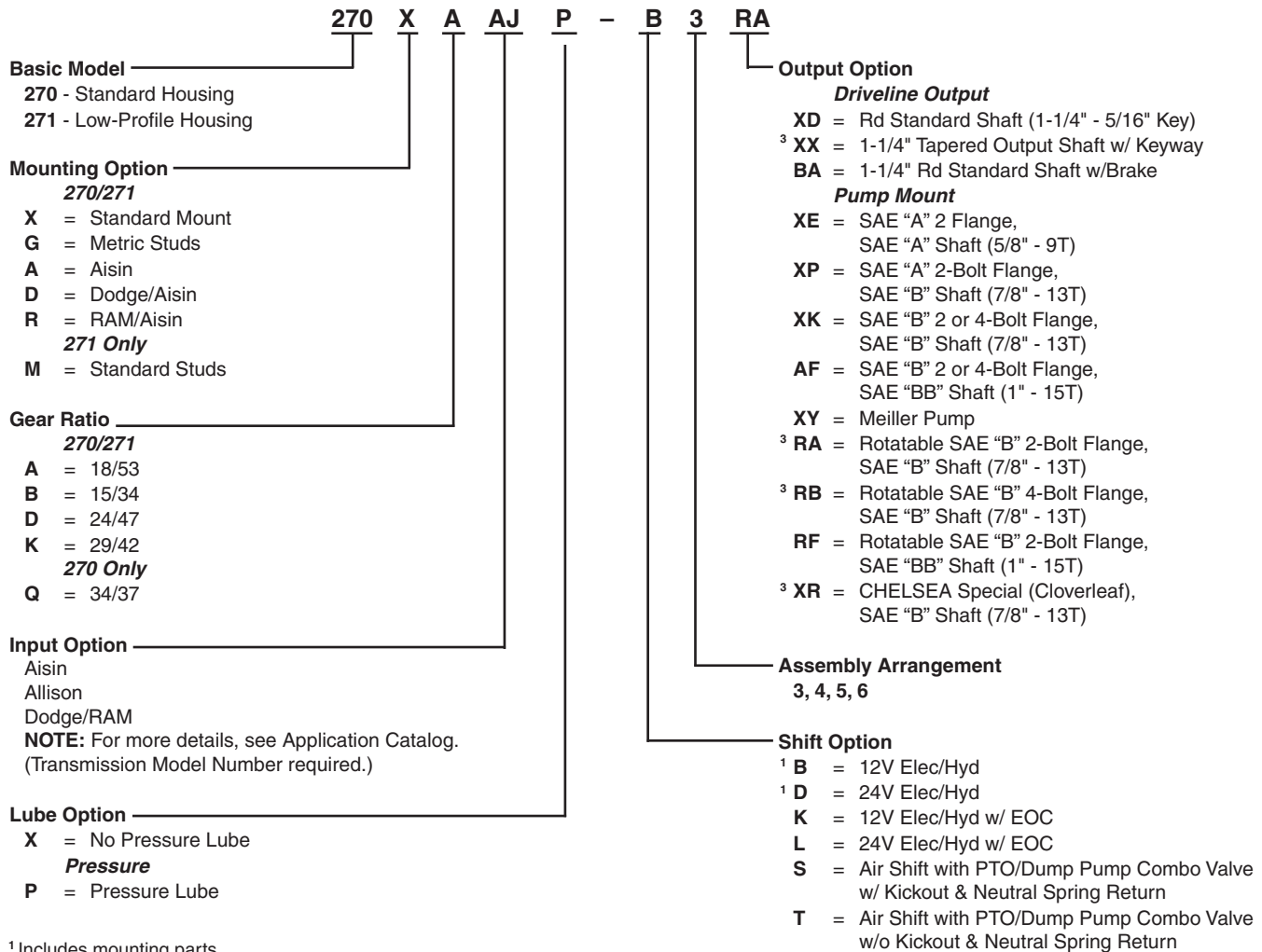
270/271 Series					272 Series					
Gear Designator	Part Number	Teeth "A"	Teeth "B"	Helix Angle	Gear Designator	Assembly	N.S.S.			
							Input Gear	Teeth "A"	Input Ratio	Teeth "B"
270/271*AAH	5-P-546	25	18	Spur	272*AAJ	5-P-1510-1X	5-P-1510	25	5-P-1498	19
270/271*AAJ	5-P-567	25	18	Spur						
270/271*AAK	5-P-548	25	18	Spur	272*AAK	5-P-1517-1X	5-P-1517	25	5-P-1498	19
270/271*AHV	5-P-1295	27	18	Spur	272*AHV	5-P-1516-1X	5-P-1516	27	5-P-1498	19
270*AKU	5-P-1353	36	18	Spur	272*AKU	5-P-1515-1X	5-P-1515	36	5-P-1498	19
270/271*BAH	5-P-547	25	15	Spur	272*BAJ	5-P-1510-2X	5-P-1510	25	5-P-1499	22
270/271*BAJ	5-P-568	25	15	Spur						
270/271*BHV	5-P-1296	27	15	Spur	272*BHV	5-P-1516-2X	5-P-1516	27	5-P-1499	22
270*BFR	5-P-961	35	15	Spur	N/A					
270*BKU	5-P-1354	36	15	Spur	272*BKU	5-P-1515-2X	5-P-1515	36	5-P-1499	22
270/271*DAJ	5-P-695	25	24	Spur	272*CAJ	5-P-1510-3X	5-P-1510	25	5-P-1500	25
270/271*DAK	5-P-807	25	24	Spur	272*CAK	5-P-1517-3X	5-P-1517	25	5-P-1500	25
270/271*DHV	5-P-1297	27	24	Spur	272*CHV	5-P-1516-3X	5-P-1516	27	5-P-1500	25
270*DFR	5-P-960	35	24	Spur	N/A					
270*DKU	5-P-1355	36	24	Spur	272*CKU	5-P-1515-3X		36	5-P-1500	25
270/271*KAJ	5-P-769	25	29	Spur	272*DAJ	5-P-1510-4X	5-P-1510	25	5-P-1501	28
					272*GAJ	5-P-1510-5X	5-P-1510	25	5-P-1502	31
270/271*KAK	5-P-881	25	29	Spur	272*DAK	5-P-1517-4X	5-P-1517	25	5-P-1501	28
					272*GAK	5-P-1517-5X	5-P-1517	25	5-P-1502	31
270*KFR	5-P-949	35	29	Spur	N/A					
270/271*KHV	5-P-1417	27	29	Spur	272*DHV	5-P-1516-4X	5-P-1516	27	5-P-1501	28
					272*GHV	5-P-1516-5X	5-P-1516	27	5-P-1502	31
270*KKU	5-P-1356	36	29	Spur	272*DKU	5-P-1515-4X	5-P-1515	36	5-P-1501	28
					272*GKU	5-P-1515-5X	5-P-1515	36	5-P-1502	31
270*QKU	5-P-1359	36	34	Spur	272*MKU	5-P-1515-7X	5-P-1515	36	5-P-1504	35

N.S.S. = Not Sold Separately

N/A = Not Available

Output Gears

230/231 Series			272 Series		
Ratio Designator	Part Number	No. Teeth "C"	Ratio Designator	Part Number	No. Teeth "C"
270/271*A	2-P-473	53	272*A	2-P-925	53
270/271*B	2-P-481	34	272*B	2-P-926	50
270/271*D	2-P-606	47	272*C	2-P-927	47
270/271*K	2-P-638	42	272*D	2-P-928	44
			272*G	2-P-929	44
270/271*Q	2-P-639	37	272*M	2-P-933	37

¹ Includes mounting parts³ Available in 3 & 5 assembly only

Specifications Chart	Approximate Weight: 49 lbs. [22 kg]				
	270*A	270*B	270*D	270*K	270*Q
Intermittent Torque Rating lbs-ft [Nm] (w/ Pressure Lube)	300 [407]	300 [407]	300 [407]	300 [407]	300 [407]
Intermittent Torque Rating lbs-ft [Nm] (w/ Standard Lube)	250 [339]	250 [339]	250 [339]	250 [339]	250 [339]
HP Rating for Intermittent Service					
At 500 RPM of Output Shaft HP [Kw] (w/ Pressure Lube)	29 [21]	29 [21]	29 [21]	29 [21]	29 [21]
At 500 RPM of Output Shaft HP [Kw] (w/ Standard Lube)	24 [18]	24 [18]	24 [18]	24 [18]	24 [18]
At 1000 RPM of Output Shaft HP [Kw] (w/ Pressure Lube)	57 [43]	57 [43]	57 [43]	57 [43]	57 [43]
At 1000 RPM of Output Shaft HP [Kw] (w/ Standard Lube)	48 [36]	48 [36]	48 [36]	48 [36]	48 [36]

Specifications Chart	Approximate Weight: 49 lbs. [22 kg]				
	271*A	271*B	271*D	271*K	
	Intermittent Torque Rating lbs-ft [Nm] (All Lube Types)	250 [339]	250 [339]	250 [339]	250 [339]
	HP Rating for Intermittent Service				
	At 500 RPM of Output Shaft HP [Kw] (All Lube Types)	24 [18]	24 [18]	24 [18]	24 [18]
	At 1000 RPM of Output Shaft HP [Kw] (All Lube Types)	48 [36]	48 [36]	48 [36]	48 [36]

		272	X	B	FN	P	-	B	5	X	D		
Basic Model 272												Output Option	
Mounting Option												Driveline Output	
X = Standard Stud Kit												XD = Rd Standard Shaft (1-1/4" - 5/16" Key)	
G = Metric Stud Kit												XV = 1410 Series Companion Flange	
K = Standard Mount w/o Stud Kit												BD = Drag Brake - Rd Standard Shaft (1-1/4" - 5/16" Key)	
Z = Deep Mount												BV = Drag Brake - 1410 Series Companion Flange	
L = Deep Mount w/o Stud Kit												⁶⁴ SD = Smart Start - Rd Standard Shaft (1-1/4" - 5/16" Key)	
M = Low-Profile w/ Standard Stud Kit												⁶⁴ SV = Smart Start - 1410 Series Companion Flange	
N = Low-Profile w/ Metric Stud Kit												AB = DIN 120 Flange	
A = Aisin Only (Non-Dodge/Ram)												AC = DIN 100 Flange	
D = Dodge/Aisin												Pump Mount	
R = RAM/Aisin												RE = Rotatable SAE "A" 2-Bolt Flange, SAE "A" Shaft (5/8" - 9T)	
												RK = Rotatable SAE "B" 2 or 4-Bolt Flange, SAE "B" Shaft (7/8" - 13T)	
												RB = Rotatable SAE "B" 4-Bolt Flange, SAE "B" Shaft (7/8" - 13T)	
												RF = Rotatable SAE "B" 2 or 4-Bolt Flange, SAE "BB" Shaft (1" - 15T)	
												RZ = Rotatable SAE "B" 2 or 4-Bolt Flange, SAE "C" Shaft (1-1/4" - 14T)	
												RS = Rotatable SAE "C" 2 or 4-Bolt Flange, SAE "C" Shaft (1-1/4" - 14T)	
												RY = Rotatable ISO 7653 Flange, DIN 5462 Shaft	
												XR = Chelsea Special (Cloverleaf), SAE "B" Shaft (7/8" - 13T)	
												Assembly Arrangement	
												3 = Right side - bulge down Left side - bulge up	
												5 = Left side - bulge down Right side - bulge up	
												Shift Option	
												Hydraulic	
												B = 12V Elec/Hyd - Integral	
												D = 24V Elec/Hyd - Integral	
												E = 12V Elec/Hyd w/o Installation Kit - Integral	
												N = 24V Elec/Hyd w/o Installation Kit - Integral	
												K = 12V Elec/Hyd w/ EOC	
												L = 24V Elec/Hyd w/ EOC	
												G = 12V Elec/Hyd Remote Valve w/o EOC	
												H = 24V Elec/Hyd Remote Valve w/o EOC	
												Air	
												A = Manual Air Shift	
												V = Manual Air Shift w/o Installation Kit	
												1 = 12V Elec/Air - Integral	
												2 = 24V Elec/Air - Integral	
												J = 12V Elec/Air w/ EOC - Integral	
												3 = 24V Elec/Air w/ EOC - Integral	
												P = 12V Elec/Air Remote	
												Q = 24V Elec/Air Remote	
												R = 12V Elec/Air Remote w/ EOC	
												4 = 24V Elec/Air Remote w/ EOC	

Gear Ratio

A = 19/53
B = 22/50
C = 25/47
D = 28/44
G = 31/41
K = 33/39
M = 35/37
P = 37/35
S = 39/33

Input Gear Designator

Aisin
Allison
Eaton Fuller
Mack

NOTE: For more details, see Application Catalog.
(Transmission Model Number required.)

Lube Option

X = No Pressure Lube

Pressure

P = Pressure Lube

⁵ R = Valve Cap Rotated 120°

⁵ S = Valve Cap Rotated 240°

Wet Spline

⁵ W = Wet Spline

⁵ V = Valve Cap Rotated 120° w/ Wet Spline

⁵ Y = Valve Cap Rotated 240° w/ Wet Spline

⁵ Automatically pressure lubed

⁶⁴ Hyd shift PTOs only

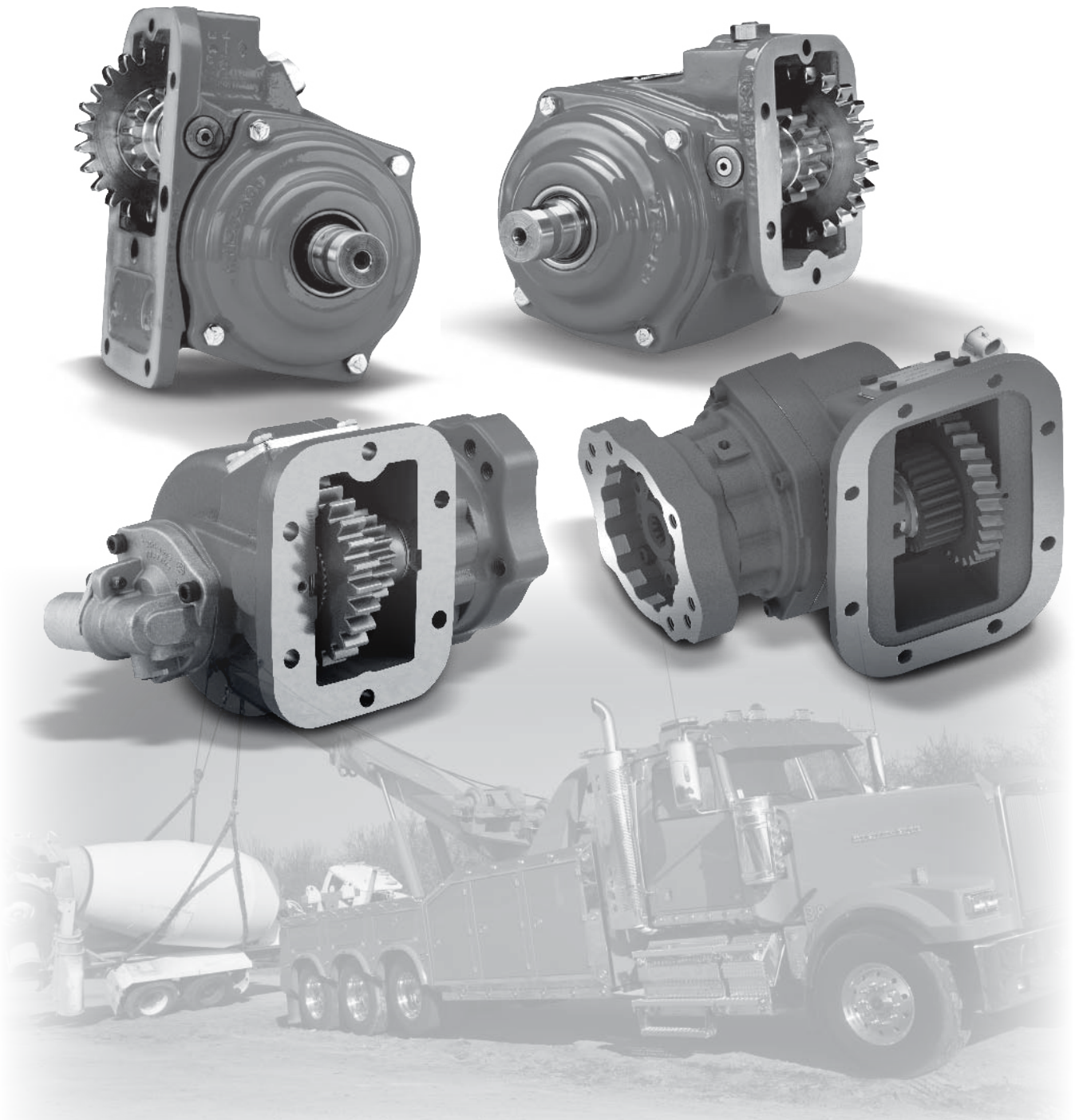
Specifications Chart

Approximate Weight: 49 lbs. [22 kg]

	272*A	272*B	272*C	272*D	272*G	272*K	272*M	272*P	272*S
Intermittent & Continuous Torque Rating lbs-ft [Nm]	300 [407]	300 [407]	300 [407]	300 [407]	300 [407]	300 [407]	300 [407]	300 [407]	300 [407]
HP Rating for Intermittent & Continuous Service									
At 500 RPM of Output Shaft HP [Kw]	29 [21]	29 [21]	29 [21]	29 [21]	29 [21]	29 [21]	29 [21]	29 [21]	29 [21]
At 1000 RPM of Output Shaft HP [Kw]	57 [43]	57 [43]	57 [43]	57 [43]	57 [43]	57 [43]	57 [43]	57 [43]	57 [43]

[illegible]

236/238 Series to 272/282 Series



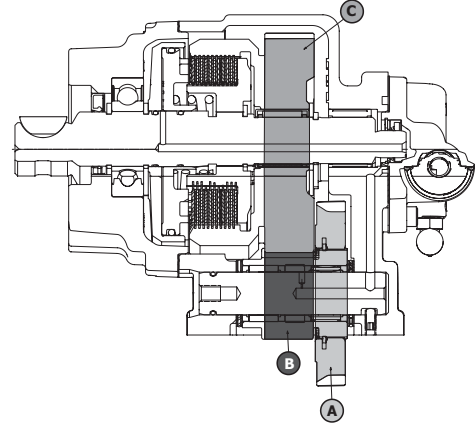
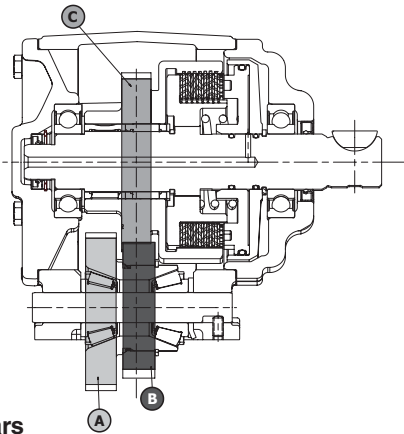
Model Series		Mounting Code		Ratio		Input Gear		Lube		Shift		Arr.		Output	
Legacy	New	236 238	272 282	236 238	272 282	236 238	272 282	236 238	272 282	236 238	272 282	236 238	272 282	236 238	272 282
236	272	X	X	A (236)	A (272)	AH	AJ	X	X	A	A	3	3	XD	XD
238	282	G	G	A (238)	B (282)	DA	DA	P	P	P	P	4	N/A	XE	RE
		K	K	D	D, G	DB (236)	N/A	N/A	R	Q	Q	5	5	XK	RK
		L (236)	L	K	M	ES (236)	ES	N/A	S	S	N/A	6	N/A	XP	N/A
		Z	Z	Q	S	FN (236)	FN	N/A	W	T	N/A			XR	XR
		E (238)	N/A	U	T (282)	JK (236)	JK	N/A	V	V	V			XX	XV
		N/A	A	N/A	K	JW (236)	JW	N/A	Y	N/A	J			XY	RY
		N/A	D	N/A	P	N/A	KN			N/A	1			AF	RF
		N/A	R	N/A	S	N/A	HV			N/A	2			RA	RK
						N/A	AJ			N/A	3			RB	RB/RK
						N/A	AK			N/A	4			RF	RF
										N/A	R			BD	BD
														N/A	BV
														N/A	AB
														N/A	AC
														N/A	RS
														N/A	RZ
														N/A	SD
														N/A	SV

N/A = Not Available

See Chelsea Application Catalog HY25-3000/US for specific applications.

See pages 18 & 19 for option details.

Gear Chart



Input Gears

236 Series						272 Series					
Gear Designator	Part Number	Teeth "A"	Part Number	Teeth "B"	Helix Angle	Gear Designator	Assembly	N.S.S.			
								Input Gear	Teeth "A"	Input Ratio	Teeth "B"
236*AAH	5-P-1486†	22	N/A	21	Spur	272*BAJ	5-P-1510-2X	5-P-1510	25	5-P-1499	22
236*ADA	5-P-1487†	23	N/A	21	Spur	272*BDA	5-P-1511-2X	5-P-1511	27	5-P-1499	22
236*DAH	5-P-1004	22	5-P-1378	28	Spur	272*DAJ	5-P-1510-4X	5-P-1510	25	5-P-1501	28
						272*GAJ	5-P-1510-5X	5-P-1510	25	5-P-1502	31
236*DDA	5-P-1037	23	5-P-1378	28	Spur	272*DDA	5-P-1511-4X	5-P-1511	27	5-P-1501	28
						272*GDA	5-P-1511-5X	5-P-1511	27	5-P-1502	31
236*DES	5-P-1059	22	5-P-1378	28	LH	272*DES	5-P-1512-4X	5-P-1512	23	5-P-1501	25
						272*GES	5-P-1512-5X	5-P-1512	23	5-P-1502	28
236*DFN	5-P-1070	26	5-P-1378	28	LH	272*DFN	5-P-1509-4X	5-P-1509	28	5-P-1501	28
						272*GFN	5-P-1509-5X	5-P-1509	28	5-P-1502	31
236*DJK	5-P-1261	24	5-P-1378	28	LH	272*BJK	5-P-1513-2X	5-P-1513	26	5-P-1499	22
						272*DJK	5-P-1513-4X	5-P-1513	26	5-P-1501	28
236*D JW	5-P-1319	23	5-P-1378	28	LH	272*BJW	5-P-1514-2X	5-P-1514	25	5-P-1499	22
						272*D JW	5-P-1514-4X	5-P-1514	25	5-P-1501	28
236*KAH	5-P-1004	22	5-P-1379	32	Spur	272*MAJ	5-P-1510-7X	5-P-1510	25	5-P-1504	35
236*KDA	5-P-1037	23	5-P-1379	32	Spur	272*MDA	5-P-1511-7X	5-P-1511	27	5-P-1504	35
236*KES	5-P-1059	22	5-P-1379	32	LH	272*KES	5-P-1512-6X	5-P-1512	23	5-P-1503	33
236*KFN	5-P-1070	26	5-P-1379	32	LH	272*MFN	5-P-1509-7X	5-P-1509	28	5-P-1504	37
236*KJK	5-P-1261	24	5-P-1379	32	LH	272*GJK	5-P-1513-5X	5-P-1513	26	5-P-1502	31
236*K JW	5-P-1319	23	5-P-1379	32	LH	272*G JW	5-P-1514-5X	5-P-1514	25	5-P-1502	31
236*QAH	5-P-1004	22	5-P-1380	38	Spur	272*SAJ	5-P-1510-9X	5-P-1510	25	5-P-1506	39
236*QDA	5-P-1037	23	5-P-1380	38	Spur	272*SDA	5-P-1511-9X	5-P-1511	27	5-P-1506	39
236*QFN	5-P-1070	26	5-P-1380	38	LH	272*SFN	5-P-1509-9X	5-P-1509	28	5-P-1506	39
236*QJK	5-P-1261	24	5-P-1380	38	LH	272*MJK	5-P-1513-7X	5-P-1513	26	5-P-1504	35
236*Q JW	5-P-1319	23	5-P-1380	38	RH	272*M JW	5-P-1514-7X	5-P-1514	25	5-P-1504	35
236*UJK	5-P-1261	24	5-P-1381	40	LH	272*SJK	5-P-1513-9X	5-P-1513	26	5-P-1506	39
236*U JW	5-P-1319	23	5-P-1381	40	LH	272*S JW	5-P-1514-9X	5-P-1514	25	5-P-1506	39

N.S.S. = Not Sold Separately

N/A = Not Available

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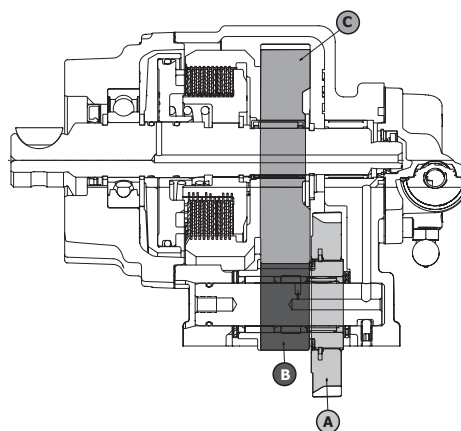
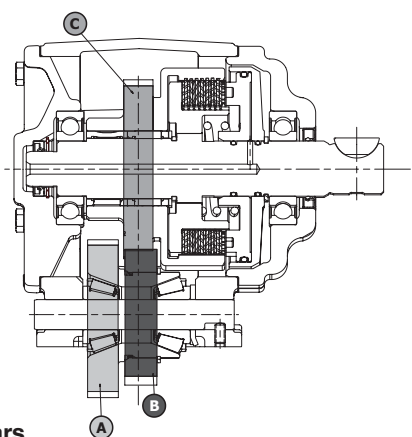
†One piece gear

LH = Left Hand

RH = Right Hand

NOTE: 236 only crossover to 272 and 238 only crossover to 282

Gear Chart



Input Gears

238 Series						282 Series					
Gear Designator	Part Number	Teeth "A"	Part Number	Teeth "B"	Helix Angle	Gear Designator	Assembly	N.S.S.			
								Input Gear	Teeth "A"	Input Ratio	Teeth "B"
238*AAH	5-P-1486†	22	N/A	21	Spur	282*BAJ	5-P-1510-2X	5-P-1510	25	5-P-1478	22
238*ADA	5-P-1487†	23	N/A	21	Spur	282*BDA	5-P-1511-2X	5-P-1511	27	5-P-1478	22
238*DAH	5-P-1004	22	5-P-1378	28	Spur	282*DAJ	5-P-1510-4X	5-P-1510	25	5-P-1479	28
						282*GAJ	5-P-1510-5X	5-P-1510	25	5-P-1480	31
238*DDA	5-P-1037	23	5-P-1378	28	Spur	282*DDA	5-P-1511-4X	5-P-1511	27	5-P-1479	28
						282*GDA	5-P-1511-5X	5-P-1511	27	5-P-1480	31
238*KAH	5-P-1004	22	5-P-1379	32	Spur	282*MAJ	5-P-1510-7X	5-P-1510	25	5-P-1482	35
238*KDA	5-P-1037	23	5-P-1379	32	Spur	282*MDA	5-P-1511-7X	5-P-1511	27	5-P-1482	35
238*QAH	5-P-1004	22	5-P-1380	38	Spur	282*SAJ	5-P-1510-9X	5-P-1510	25	5-P-1484	39
238*QDA	5-P-1037	23	5-P-1380	38	Spur	282*SDA	5-P-1511-9X	5-P-1511	27	5-P-1484	39
238*UAH	5-P-1004	22	5-P-1381	40	Spur	282*TAJ	5-P-1510-10X	5-P-1510	25	5-P-1497	41
238*UDA	5-P-1037	23	5-P-1381	40	Spur	282*TDA	5-P-1511-10X	5-P-1511	27	5-P-1497	41

N.S.S. = Not Sold Separately

N/A = Not Available

†One piece gear

LH = Left Hand

RH = Right Hand

NOTE: 236 only crossover to 272 and 238 only crossover to 282

Gear Chart (Continued)

Ratio Gear Chart

236/238 Series					272 Series		
Ratio Designator	Part Number	No. Teeth "B"	Part Number	No. Teeth "C"	Ratio Designator	Part Number	No. Teeth "C"
236/238*A	N/A†	N/A†	2-P-473	53	272*B	2-P-926	50
236/238*D	5-P-1378	28	2-P-606	47	272*D	2-P-928	44
					272*G	2-P-929	41
236/238*K	5-P-1379	32	2-P-638	42	272*M	2-P-933	37
236/238*Q	5-P-1380	38	2-P-639	37	272*S	2-P-936	33
236*U	5-P-1381	40	2-P-810	34	N/A		
238*U	5-P-1381	40	2-P-810	34	282*T	2-P-937	31

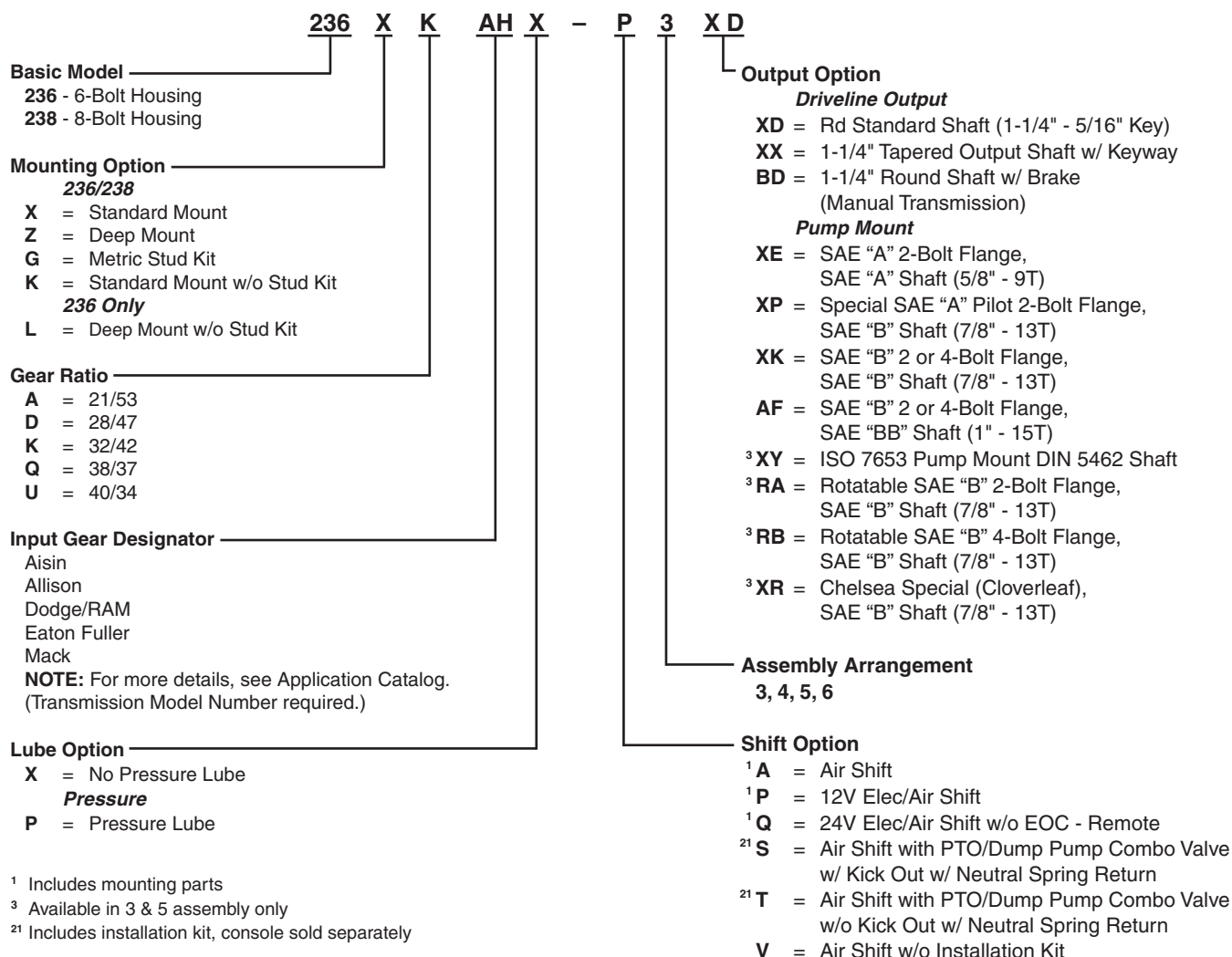
†1 piece gear

Input Gears w/o Available Crossover

236/238 Series				236/238 Series			
Gear Designator	Part Number	No. Teeth "A"	Helix Angle	Gear Designator	Part Number	No. Teeth "A"	Helix Angle
AB	5-P-1001	19	Spur	HG	5-P-1192	19	RH
AP	5-P-1006	21	LH	HH	5-P-1193	28	RH
AR	5-P-1008	21	LH	HL	5-P-1196	22	RH
AX	5-P-1010	22	LH	HM	5-P-1197	20	RH
BG	5-P-1015	23	LH	HR	5-P-1201	26	RH
BM	5-P-1020	22	LH	HS	5-P-1202	26	RH
BP	5-P-1022	26	RH	HY	5-P-1237	26	LH
BQ	5-P-1023	25	LH	JA	5-P-1243	27	LH
BR	5-P-1024	26	RH	JC	5-P-1247	27	RH
BS	5-P-1025	26	LH	JG	5-P-1256	28	LH
CB	5-P-1029	25	LH	JH	5-P-1257	29	LH
DB	5-P-1038	39	Spur	JL	5-P-1262	24	RH
DM	5-P-1045	17	LH	JM	5-P-1262	22	LH
DN	5-P-1046	19	LH	JN	5-P-1264	22	RH
DU	5-P-1050	28	LH	JP	5-P-1268	33	LH
EV	5-P-1060	40	Spur	JS	5-P-1310	20	LH
EW	5-P-1061	20	LH	JU	5-P-1316	25	LH
GQ	5-P-1150	26	LH	JY	5-P-1312	20	RH
GY	5-P-1184	21	RH	KA	5-P-1318	25	RH
HA	5-P-1186	22	RH	KB	5-P-1321	23	RH
HB	5-P-1187	23	RH	KX	5-P-1311	26	LH
HD	5-P-1189	25	RH	KY	5-P-1312	26	RH
HF	5-P-1191	17	RH				

LH = Left Hand

RH = Right Hand



Specifications Chart

Approximate Weight: 49 lbs. [22 kg]

	236/238*A	236/238*D	236/238*K	236/238*Q	236/238*U
Intermittent Torque Rating lbs-ft [Nm] (w/ Pressure Lube)	250 [339]	250 [339]	250 [339]	250 [339]	225 [305]
HP Rating for Intermittent Service					
At 500 RPM of Output Shaft HP [Kw] (w/ Pressure Lube)	24 [18]	24 [18]	24 [18]	24 [18]	21 [16]
At 1000 RPM of Output Shaft HP [Kw] (w/ Standard Lube)	48 [36]	48 [36]	48 [36]	48 [36]	43 [32]

	272	X	B	FN	P	-	B	5	X D	
Basic Model	272									Output Option
	282									Driveline Output
Mounting Option										XD = Rd Standard Shaft (1-1/4" - 5/16" Key)
272/282										XV = 1410 Series Companion Flange
X = Standard Mount										BD = Drag Brake - Rd Standard Shaft (1-1/4" - 5/16" Key)
Z = Deep Mount										BV = Drag Brake - 1410 Series Companion Flange
G = Metric Stud Kit										⁶⁴ SD = Smart Start - Rd Standard Shaft (1-1/4" - 5/16" Key)
K = Standard Mount w/o Stud Kit										⁶⁴ SV = Smart Start - 1410 Series Companion Flange
272 Only										AB = DIN 120 Flange
L = Deep Mount w/o Stud Kit										AC = DIN 100 Flange
M = Low-Profile w/ Standard Stud Kit										Pump Mount
N = Low-Profile w/ Metric Stud Kit										RE = Rotatable SAE "A" 2-Bolt Flange,
A = Aisin Only (Non-Dodge/Ram)										SAE "A" Shaft (5/8" - 9T)
D = Dodge/Aisin										RK = Rotatable SAE "B" 2 or 4-Bolt Flange,
R = RAM/Aisin										SAE "B" Shaft (7/8" - 13T)
282 Only										RB = Rotatable SAE "B" 4-Bolt Flange,
E = EATON Fuller Mount (Brazil)										SAE "B" Shaft (7/8" - 13T)
Gear Ratio										RF = Rotatable SAE "B" 2 or 4-Bolt Flange,
272 Only										SAE "BB" Shaft (1" - 15T)
A = 19/53										RZ = Rotatable SAE "B" 2 or 4-Bolt Flange,
272/282										SAE "C" Shaft (1-1/4" - 14T)
B = 22/50										RS = Rotatable SAE "C" 2 or 4-Bolt Flange,
C = 25/47										SAE "C" Shaft (1-1/4" - 14T)
D = 28/44										RY = Rotatable ISO 7653 Flange,
G = 31/41										DIN 5462 Shaft
K = 33/39										XR = Chelsea Special (Cloverleaf),
M = 35/37										SAE "B" Shaft (7/8" - 13T)
P = 37/35										Assembly Arrangement
S = 39/33										3 = Right side - bulge down
282 Only										Left side - bulge up
T = 41/31										5 = Left side - bulge down
Input Gear Designator										Right side - bulge up
Aisin										Shift Option
Allison										Hydraulic
EATON Fuller										B = 12V Elec/Hyd - Integral
Mack										D = 24V Elec/Hyd - Integral
NOTE: For more details, see Application Catalog.										E = 12V Elec/Hyd w/o Installation Kit - Integral
(Transmission Model Number required.)										N = 24V Elec/Hyd w/o Installation Kit - Integral
Lube Option										K = 12V Elec/Hyd w/ EOC
X = No Pressure Lube										L = 24V Elec/Hyd w/ EOC
Pressure										G = 12V Elec/Hyd Remote Valve w/o EOC
P = Pressure Lube										H = 24V Elec/Hyd Remote Valve w/o EOC
⁵ R = Valve Cap Rotated 120°										Air
⁵ S = Valve Cap Rotated 240°										A = Manual Air Shift
Wet Spline										V = Manual Air Shift w/o Installation Kit
⁵ W = Wet Spline										1 = 12V Elec/Air - Integral
⁵ V = Valve Cap Rotated 120° w/ Wet Spline										2 = 24V Elec/Air - Integral
⁵ Y = Valve Cap Rotated 240° w/ Wet Spline										J = 12V Elec/Air w/ EOC - Integral
⁵ Automatically pressure lubed										3 = 24V Elec/Air w/ EOC - Integral
⁶⁴ Hyd shift PTOs only										P = 12V Elec/Air Remote
										Q = 24V Elec/Air Remote
										R = 12V Elec/Air Remote w/ EOC
										4 = 24V Elec/Air Remote w/ EOC

Specifications Chart

Approximate Weight: 49 lbs. [22 kg]

	272*A	272*B 282*B	272*C 282*C	272*D 282*D	272*G 282*G	272*K 282*K	272*M 282*M	272*P 282*P	272*S 282*S	282*T
Intermittent & Continuous Torque Rating lbs-ft [Nm]	300 [407]	300 [407]	300 [407]	300 [407]	300 [407]	300 [407]	300 [407]	300 [407]	300 [407]	300 [407]
HP Rating for Intermittent & Continuous Service										
At 500 RPM of Output Shaft HP [Kw]	29 [21]	29 [21]	29 [21]	29 [21]	29 [21]	29 [21]	29 [21]	29 [21]	29 [21]	29 [21]
At 1000 RPM of Output Shaft HP [Kw]	57 [43]	57 [43]	57 [43]	57 [43]	57 [43]	57 [43]	57 [43]	57 [43]	57 [43]	57 [43]

This image shows a full page of blank white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page, providing a template for writing or drawing. There are no margins, text, or other markings present.

Parker Hannifin Corporation – Chelsea Division

Offer of Sale

The items described in this document and other documents and descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors ("Seller") are hereby offered for sale at prices to be established by Seller. 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 item described in its document, when communicated to Seller verbally, or in writing, shall constitute acceptance of this offer. All goods, services or work described will be referred to as "Products".

1. Terms and Conditions. Seller's willingness to offer Products, or accept an order for Products, to or from Buyer is subject to these Terms and Conditions or any newer version of the terms and conditions found on-line at www.parker.com/saleterms/. Seller objects to any contrary or additional terms or conditions of Buyer's order or any other document issued by Buyer.

2. Price Adjustments; Payments. Prices stated on Seller's quote or other documentation offered by Seller are valid for 30 days, and do not include any sales, use, or other taxes unless specifically stated. Unless otherwise specified by Seller, all prices are F.C.A. Seller's facility (INCOTERMS 2010). Payment is subject to credit approval and is due 30 days from the date of invoice or such other term as required by Seller's Credit Department, after which Buyer shall pay interest on any unpaid invoices at the rate of 1.5% per month or the maximum allowable rate under applicable law.

3. Delivery Dates; Title and Risk; Shipment. All delivery dates are approximate and Seller shall not be responsible for any damages resulting from any delay. Regardless of the manner of shipment, title to any products and risk of loss or damage shall pass to Buyer upon placement of the products with the shipment carrier at Seller's facility. Unless otherwise stated, Seller may exercise its judgment in choosing the carrier and means of delivery. No deferment of shipment at Buyer's request beyond the respective dates indicated will be made except on terms that will indemnify, defend and hold Seller harmless against all loss and additional expense. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's acts or omissions.

4. Warranty. Seller warrants that all products sold, other than the 590 Series, conform to the applicable Parker Chelsea standard specification for the lesser period of 2 years (24 Months) from date of service or 2-1/2 years (30 Months) from date of build (as marked on the product name plate). Seller warrants that the 590 Series will conform to the applicable Seller standard specification for the lesser period of 2 years (24 Months) from date of service or 2000 hours of usage. The prices charged for Seller's products are based upon the exclusive limited warranty stated above, and upon the following disclaimer: **DISCLAIMER OF WARRANTY: THIS WARRANTY COMPRISESTHE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS PROVIDED HEREUNDER. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING DESIGN, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

5. Claims; Commencement of Actions. Buyer shall promptly inspect all Products upon delivery. No claims for shortages will be allowed unless reported to the Seller within 10 days of delivery. No other claims against Seller will be allowed unless asserted in writing within 30 days after delivery. Buyer shall notify Seller of any alleged breach of warranty within 30 days after the date the defect is or should have been discovered by Buyer. Any action based upon breach of this agreement or upon any other claim arising out of this sale (other than an action by Seller for an amount due on any invoice) must be commenced within 12 months from the date of the breach without regard to the date breach is discovered.

6. LIMITATION OF LIABILITY. UPON NOTIFICATION, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE A DEFECTIVE PRODUCT, OR REFUND THE PURCHASE PRICE. IN NO EVENT SHALL SELLER BE LIABLE TO BUYER FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, USE OR LOSS OF USE OF THE PRODUCTS OR ANY PART THEREOF, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, EVEN IF SELLER HAS BEEN NEGLIGENT, WHETHER IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE OF THE PRODUCTS.

7. User Responsibility. The user, through its own analysis and testing, is solely responsible for making the final selection of the system and Product and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application and follow applicable industry standards and Product information. If Seller provides Product or system options, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products or systems.

8. Loss to 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, will be considered obsolete and may be destroyed by Seller after two consecutive years have elapsed without Buyer ordering the items 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. Special Tooling. A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture Products. 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 Products, 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.

10. Buyer's Obligation; Rights of Seller. To secure payment of all sums due or otherwise, Seller shall retain a security interest in the goods delivered and this agreement shall be deemed a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest.

11. Improper use and Indemnity. Buyer shall indemnify, defend, and hold Seller harmless from any claim, liability, damages, lawsuits, and costs (including attorney fees), whether for personal injury, property damage, patent, trademark or copyright infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, improper application or other misuse of Products purchased by Buyer from Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, plans, drawings, or specifications furnished by Buyer to manufacture Product; or (d) Buyer's failure to comply with these terms and conditions. Seller shall not indemnify Buyer under any circumstance except as otherwise provided.

12. Cancellations and Changes. Orders shall not be subject to cancellation or change by Buyer for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller may change product features, specifications, designs and availability with notice to Buyer.

13. Limitation on Assignment. Buyer may not assign its rights or obligations under this agreement without the prior written consent of Seller.

14. Force Majeure. Seller does not assume the risk 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, strikes or labor disputes, acts of any government or government agency, acts of nature, delays or failures in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller's reasonable control.

15. Waiver and Severability. Failure to enforce any provision of this agreement will not waive that provision nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidity of any provision of this agreement by legislation or other rule of law shall not invalidate any other provision herein. The remaining provisions of this agreement will remain in full force and effect.

16. Termination. Seller may terminate this agreement for any reason and at any time by giving Buyer thirty (30) days written notice of termination. Seller may immediately terminate this agreement, in writing, if Buyer: (a) commits a breach of any provision of this agreement (b) appoints a trustee, receiver or custodian for all or any part of Buyer's property (c) files a petition for relief in bankruptcy on its own behalf, or by a third party (d) makes an assignment for the benefit of creditors, or (e) dissolves or liquidates all or a majority of its assets.

17. Governing Law. This agreement and the sale and delivery of all Products hereunder shall be deemed to have taken place in and shall be governed and construed in accordance with the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to this agreement.

18. 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 Section. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets ("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 a Product sold pursuant to this Agreement 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 a Product 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 the Product, replace or modify the Product so as to make it noninfringing, or offer to accept return of the Product 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 Products 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 Product sold hereunder. The foregoing provisions of this Section shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

19. Entire Agreement. This agreement contains the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter are herein merged.

20. Compliance with Law, U. K. Bribery Act and U.S. Foreign Corrupt Practices Act. Buyer agrees to comply with all applicable laws and regulations, including both those of the United Kingdom and the United States of America, and of the country or countries of the Territory in which Buyer may operate, including without limitation the U. K. Bribery Act, the U.S. Foreign Corrupt Practices Act ("FCPA") and the U.S. Anti-Kickback Act (the "Anti-Kickback Act"), and agrees to indemnify and hold harmless Seller from the consequences of any violation of such provisions by Buyer, its employees or agents. Buyer acknowledges that they are familiar with the provisions of the U. K. Bribery Act, the FCPA and the Anti-Kickback Act, and certifies that Buyer will adhere to the requirements thereof. In particular, Buyer represents and agrees that Buyer shall not make any payment or give anything of value, directly or indirectly to any governmental official, any foreign political party or official thereof, any candidate for foreign political office, or any commercial entity or person, for the purpose of influencing such person to purchase products or otherwise benefit the business of Seller.

07/14



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