Logan Self-Adjusting Bell Housing PTO Clutches

Hydraulic / Pneumatic




- Industrial
- Marine
- Agriculture
- Off-Road
- Mobile Equipment
- Hybrid Vehicles

Logan Clutch Corporation®
manufacturers of clutches and brake products

Family owned and operated since 1975, Logan offers a complete line of fluid / air actuated multiple disc clutches, brakes, PTO Clutches and clutch discs for a variety of wet and dry clutch and brake applications.

Markets include: Machine Tool, Industrial, Marine, Irrigation, Rail, Oil Field, and Off-Highway industries.

Applications include: Pump Drives, Trenchers, Tunnel Boring and Snow Removal Equipment, Single and Multi-Speed Transmissions, Marine Transmissions, Work Boats, Escort Vessels, Marine Z-drives, Machine Tools, Screw Machines, Conventional and High Performance friction and steel clutch discs.

Logan Sales, Engineering and Customer service personnel are available to answer questions regarding catalog specs, parts and service details, and inquiries regarding your specific design requirements. We certainly thank you for your interest, and look forward to being of further service.

Logan Self-Adjusting Bell Housing PTO Clutches

Bell Housing Series Description:

Logan Air / Fluid actuated Bell Housing PTO clutches are self-adjusting and designed to mount directly to a diesel or gasoline engine's flywheel.

The friction disc packs are designed for dry operation. Actuation is accomplished through either a stationary cylinder-piston arrangement, or through internal shaft and clutch passages.

The clutch is bored and keyseated for shaft mounting. Torque is transferred from the disc pack to a geared drive ring which is attached to the engine's flywheel.

U.S. patent no. 7,225,909
other patents pending

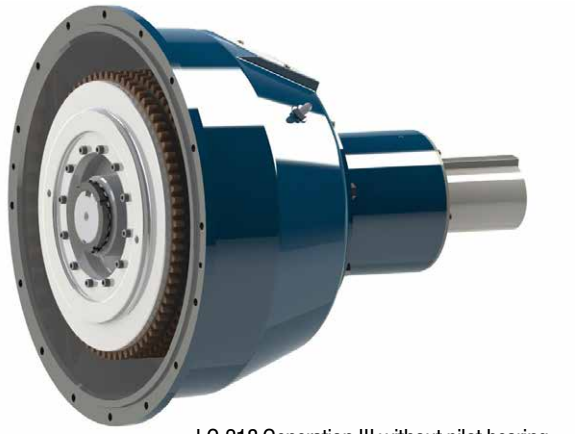
Standard LC-311 with pilot bearing, and over shaft actuation for in-line or side load applications

Logan Clutches – How They Work

Pressurizing the cylinder, forces the piston to clamp and lock the friction and steel separator discs. When pressure is removed, release springs separate the friction and steel discs, maintaining a running clearance when disengaged.

Push Button Actuation - Eliminates Mechanical Linkages

Self-adjusting piston travel compensates for any disc wear, eliminating the need for mechanical adjustment (i.e. levers, linkages, and yokes). The amount of hydraulic or pneumatic pressure applied regulates the amount of torque transmitted through the clutch. Push-button, remote activation from a control panel, marine wheelhouse or cab is now possible.



LC-318 Generation III without pilot bearing, and over shaft actuation for in line or side load applications

Standard Specifications:

Standard Logan Bell Housing PTO's are available in No. 00 to No. 7 Size SAE Bells with input torque ratings from 159 lb. ft. (216Nm) to over 7,473 Lb. Ft. (10133 Nm). Logan uses a 1.4 factor of safety in our torque specifications.

Air / Fluid operating pressures range from 100 (6,9 bar) to 200 psi (13,8 bar) for Generation I and Generation III models; and 320 psi. (23 bar) for Generation II Models.

Operating speeds range from 1 to 3,000 RPM.

Modified Standards:

Higher horsepower, torque ranges, speeds, actuation pressures, and design configurations are available to meet customer's specific design requirements.

Where used:

- Hybrid Drive Systems
- Industrial Drives / Gensets
- Mobile Equipment
- Blowers, Vacuums, Fans
- Snow Removal Equipment
- Marine Propulsion / Auxiliary drives
- Tree and Brush Chippers

Advantages:

- Air or Fluid Actuated for Remote Activation
- Self Adjusting Disc Pack – Flow Control Engagement
- Eliminates Mechanical Linkages, Hand Levers, and Yokes
- Available with or without Pilot Bearing
- Heavy-Duty Side Load Models Available
- Modified Standards Available

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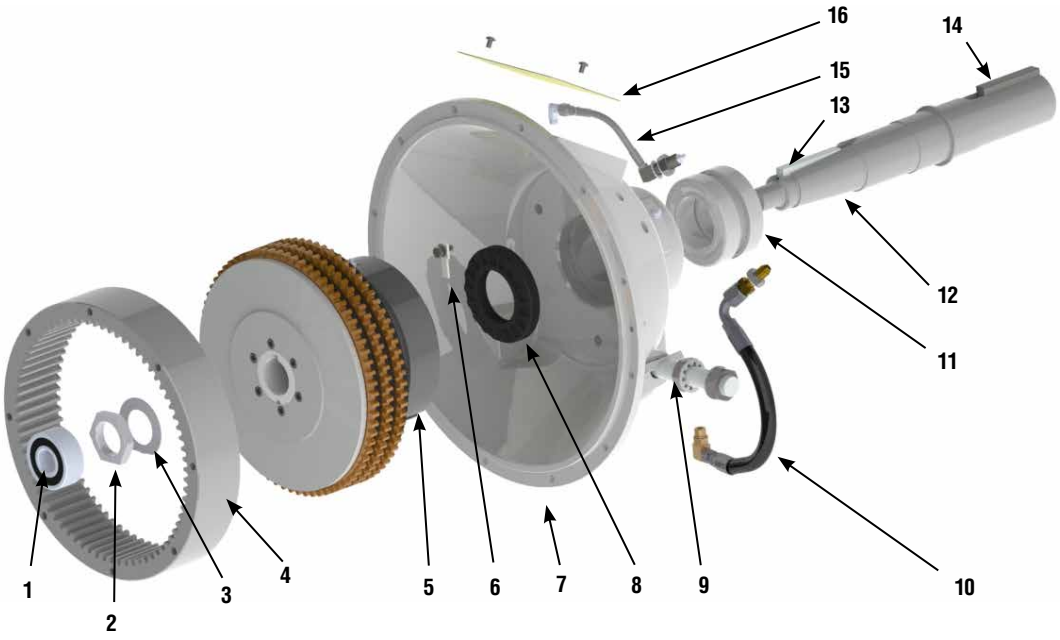
Bell Housing PTO Models/Component Parts

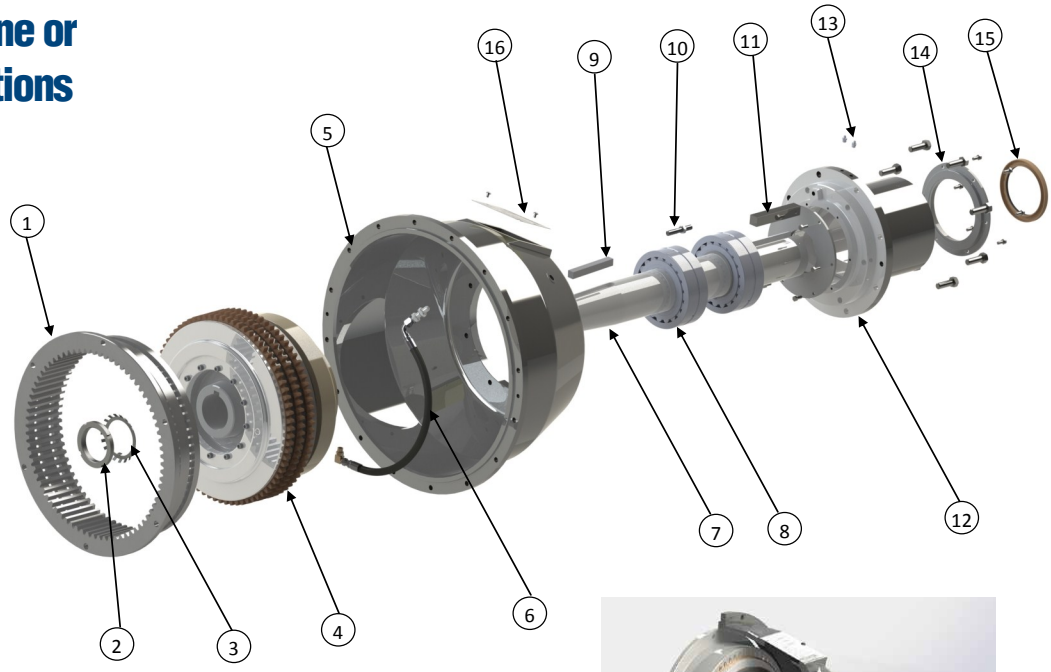
Generation I Design for in-line or side load applications

ITEM NO.	QTY.	DESCRIPTION
1	1	Pilot Bearing
2	1	Locknut
3	1	Lock Washer
4	1	Drive Ring
5	1	Clutch Assembly
6	1	Lock Bracket
7	1	Bell Housing
8	1	Bearing Nut
9	1	Anti-Rotation Pin
10	1	Actuation Hose Assembly
11	2	Tapered Roller Bearing
12	1	Shaft
13	1	Clutch Key
14	1	Shaft Key
15	1	Lubrication Hose Assembly
16	1	Name Plate Assembly



Generation III Design for in-line or heavy duty side load applications

ITEM NO.	QTY.	DESCRIPTION
1	1	Drive Ring
2	1	Locknut
3	1	Lock Washer
4	1	Clutch Assembly
5	1	Bell Housing
6	1	Actuation Hose Assembly
7	1	Shaft
8	2	Spherical Roller Bearing
9	1	Clutch Key
10	1	Anti-Rotation Pin
11	1	Shaft Key
12	1	Bearing Housing
13	2	Lube Fitting
14	1	Housing Plate
15	1	Shaft Seal
16	1	Name Plate Assembly



Generation II Design for heavier duty side load applications, with through shaft activation

Generation II with support bracket

* Clutch body components not shown.

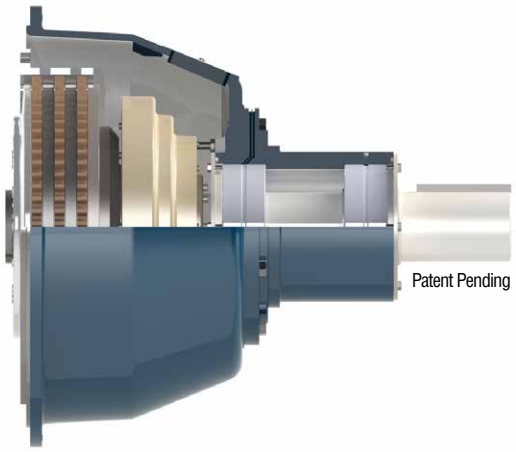
Bell Housing PTO – Series Description

Generation III
For in-line or heavy duty side load applications

Advantages:

- Air or Fluid Actuated
- No Pilot Bearing
- Self-Adjusting Disc Pack
- Ideal for In-Line and Heavy-Duty Side Load Applications
- Release Springs in Disc Pack Maintain Running Clearance During Disengagement
- Remote Actuation

Generation III – Over Shaft Actuation

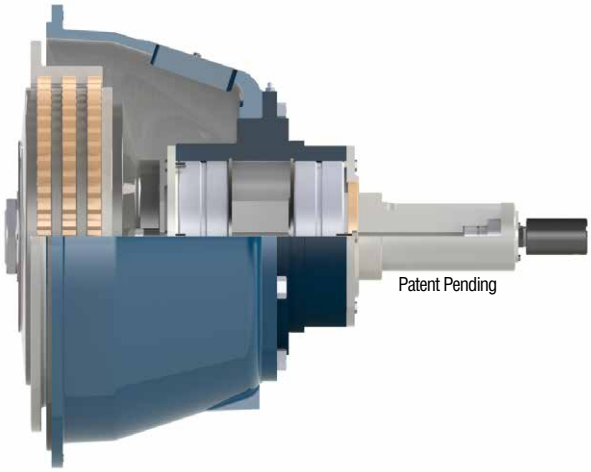


Generation II
For heavier duty side load applications

Advantages:

- Air or Fluid Actuated
- No Pilot Bearing
- Self-Adjusting Disc Pack
- Increased Torque via Higher Actuation Pressure
- Ideal for Heavier-Duty Side Load Applications
- Release Springs in Disc Pack Maintain Running Clearance During Disengagement
- Remote Actuation

Generation II – Through Shaft Actuation

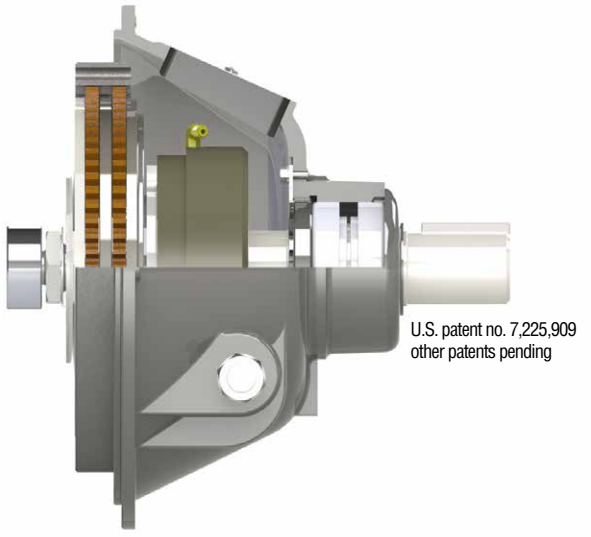


Generation I
For in-line or side load applications

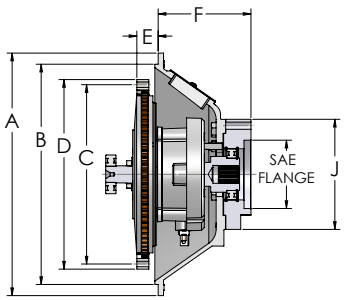
Advantages:

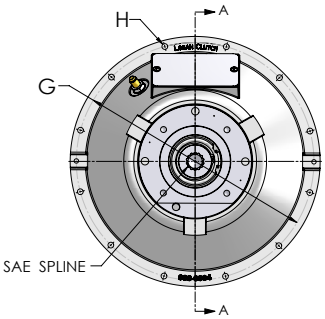
- Air or Fluid Actuated
- Self-Adjusting Disc Pack
- High Torque, Small Envelope
- Remote Actuation
- Field Retrofits w/ Existing Mechanical PTO's

Generation I – Over Shaft Actuation



Bell Housing PTO - Pump Mount Series





Pump Mount Series Description:

Bell Housing pump-mount PTO's are air or fluid actuated and designed to mount on to an SAE No. 1 to No. 3 flywheel. Torque ranges are from 200 to 1,620 lb. ft. Horsepower Ranges from 100 to 375 HP.

Standard Specifications:

Single pump units are available in No. 1 to No. 3 size SAE Bells with input torque ranges from 200 lb. ft. (271 Nm) to over 1620 lb. ft. (2196 Nm).

Air/Fluid operating pressures range from 100 (6,9 bar) to 200 psi (13,8 bar) for standard models.

Operating speeds are up to 2,850rpm.

Pump Mount Flanges:

Pump mount PTO's are available from SAE B to SAE D flanges.

Pump Mount Shafts:

PTO shafts are available in B, B-B, C, C-C, D,E, and F configurations.

Modified Standards are available to meet specific customer needs.

QUICK REFERENCE CHART

Model Number	SAE Housing Size	Max. Input Speed (RPM)	Torque Capacity @100 PSi (Lbs.-Ft.)	Torque Capacity @200 PSi (Lbs.-Ft.)	HP Range	Max. Pump Capacity @1500 PSI (GPM)
LC-110-PM	3	2850	200	400	100	100
LC-111-PM	3	2850	225	455	175	175
LC-111-PM	2	2850	225	455	175	175
LC-211-PM	3	2850	450	900	300	300
LC-211-PM	2	2850	450	900	300	300
LC-311-PM	2, 3	2850	665	1330	375	375
LC-214-PM	1	2500	810	1620	375	375

Dimensions (Inches)

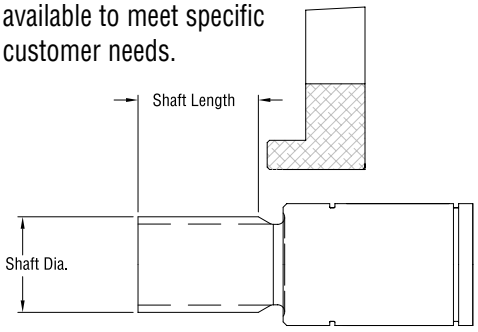
Model No.	A	B	C	D	E	F	G	H
LC-110-PM	17.75	16.125	11.625	12.375	2.125	6.79	16.875	12 x .406
LC-111-PM	17.75	16.125	13.125	13.875	1.56	6.79	16.875	12 x .406
LC-111-PM	19.25	17.625	13.125	13.875	1.56	10.16	18.375	12 x .406
LC-211-PM	17.75	16.125	13.125	13.875	1.56	10.16	16.875	12 x .406
LC-211-PM	19.25	17.625	13.125	13.875	1.56	10.16	18.375	12 x .406
LC-311-PM	17.75	16.125	13.125	13.875	1.56	10.16	16.875	12 x .406
LC-214-PM	21.75	20.125	17.25	18.375	1	10.16	20.875	12 x .531

Pump Mount Flanges SAE J744 / ANSI B96.6-1972

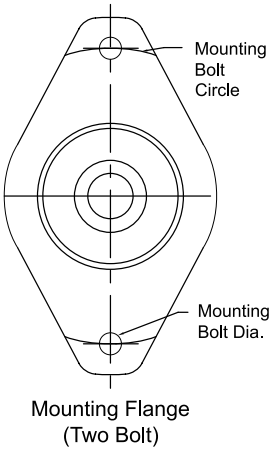
SAE Flange Code	Pilot Dia.	Mounting Bolt Circle	Mtg. Holes	Mount Hole Dia.	ANSI Flange Code
SAE B	4.000	5.000	4	0.562	101-2
SAE B	4.000	5.750	2	0.562	101-2
SAE C	5.000	6.375	4	0.562	127-4
SAE C	5.000	7.125	2	0.688	127-2
SAE D	6.000	9.000	4	0.812	152-4

Pump Mount Shafts SAE J744 / ANSI B96.6-1972

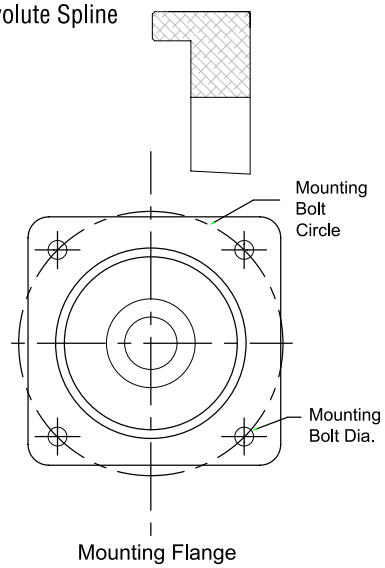
SAE Shaft Code	Shaft Dia.	Shaft Length	Spline Specifications		ANSI Shaft Code
B	0.875	1.312	13T	16/32 DP	22-4
B-B	1.000	1.500	15T	16/32 DP	25-4
C	1.250	1.875	14T	12/24 DP	32-4
C-C	1.500	2.125	17T	12/24 DP	38-4
D,E	1.750	2.625	13T	8/16 DP	44-4
F	2.000	3.125	15T	8/16 DP	50-4



30° Involute Spline



Mounting Flange
(Two Bolt)



Mounting Flange
(Four Bolt)

Bell Housing PTO's for Single and Double Pump Drives

Logan PTO clutches are designed to retrofit within existing bell housings of popular pump drive manufacturers such as:

- Funk
- Twin Disc®
- Durst
- Gear Products
- Marco

Complete Logan PTO clutches are available as original equipment or as a field retrofit.

Funk 2800 series, single direct drive pump SAE#3 housing and B pad (retrofitted with Logan LC-110 hydraulic clutch)

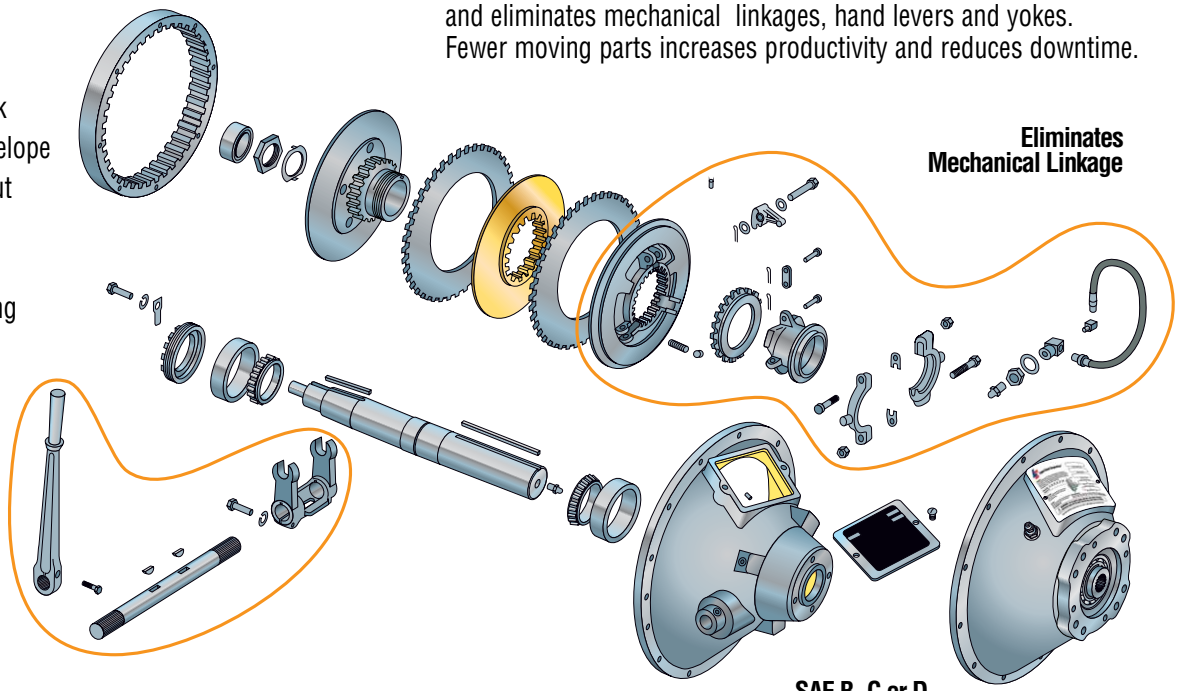
Funk 2800 series, double direct drive pump SAE#3 housing and B pad (retrofitted with Logan LC-211 hydraulic clutch)

Logan Vs. Mechanical

Logan Features:

- Air or Fluid Actuated
- Self-Adjusting Disc Pack
- High Torque, Small Envelope
- Available with or Without Pilot Bearings
- Remote Actuation
- Field Retrofits w/ Existing Mechanical PTO's

Advantages: Logan clutch engagement is smooth and positive, and eliminates mechanical linkages, hand levers and yokes. Fewer moving parts increases productivity and reduces downtime.



Twin Disc is registered trade mark of Twin Disc Inc.

Bell Housing PTO - Selection Procedures

Selection Procedures

I Calculate the torque requirement for the application using one of the following formula

$$\text{Torque (Lb./In.)} = \frac{\text{HP x 63025}}{\text{RPM}} \quad \text{or} \quad \text{Tc (Nm.)} = \frac{\text{HP x 9550}}{\text{RPM}}$$

II Identify the service factor which best identifies your application from the duty service classification table on page 5.

III Adjust the torque requirement using the selected service factor.

$$\text{Clutch Torque Capacity (Tc)} = \frac{\text{Gross Torque Capacity (T)}}{\text{Safety Factor (SF)}}$$

$$T = Tc \times SF$$

IV. Identify maximum side-load requirements using formula on page 12.

V. Determine if the model will:
1) Accommodate the shaft and key
2) Operate at the required speed
3) Fit within the available space
4) Accommodate allowable side load

VI. Determine the Drive Ring Mounting

VII. Complete the Application Fact Sheet online at www.loganclutch.com. Call, e-mail, or Fax your application and place your order.

HP = Horsepower
RPM = Clutch shaft speed
T = Required Torque (Lb./ Ft., Nm, Lb./in)
Tc = Clutch Torque (Lb./ Ft., Nm, Lb./in)
t = Time to stop (seconds)
SF = Service Factor
PSI = Pressure (Air/Hydraulic)
GPM = Gallons Per Minute

Torque & Horsepower Formulas

$$\text{HP} = \frac{\text{T(Lb./Ft.) x RPM}}{5250} \qquad \text{Torque (Lb./Ft.)} = \frac{\text{HP x 5250}}{\text{RPM}}$$

$$\text{HP} = \frac{\text{T(Lb./In.) x RPM}}{63025} \qquad \text{Torque (Lb./In.)} = \frac{\text{HP x 63025}}{\text{RPM}}$$

$$\text{kW} = \frac{\text{T(Nm.) x RPM}}{9550} \qquad \text{Torque (Nm.)} = \frac{\text{kW x 9550}}{\text{RPM}}$$

$$\text{HP} = \frac{\text{GPM x PSI}}{1714 \times .85}$$

Quick reference for approximate HP:
1 HP is required for each 1 GPM @ 1500 psi.

Torque Conversion Calculators	**Multiplier**
Newton meters (Nm.) to Pound inches (lb. in.)	8.851
Pound inches (lb. in.) to Newton meters (Nm.)	0.113
Newton meters (Nm.) to Pounds feet (lb. ft.)	0.738
Pounds feet (lb. ft.) to Newton meters (Nm)	1.356

Horsepower Conversion Calculators	**Multiplier**
Horsepower (HP) to kW (Kilowatt)	.7457
Kilowatt (kW) to Horsepower (HP)	1.341

Volume	**Multiplier**
Gallons (G) to Liters (L)	3.785
Liters (L) to Gallons (G)	.2642

Measurement Conversion Table	**Multiplier**
Millimeters (mm) to Inches (in)	.03937
Inches (in) to Millimeters (mm)	25.4

Weight Conversion Table	**Multiplier**
Pounds (lbs.) to Kilograms (Kg.)	0.453
Kilograms (Kg.) to Pounds (lbs.)	2.205

Pressure Conversion Table	**Multiplier**
Bar to pounds per square inch (psi)	14.5
Pounds per square inch (psi) to Bar	0.068

Logan Bell Housing PTO Specifications

Logan Quick Reference Chart. Consult factory for other sizes.

Logan Clutch Model No.	Clutch Size Flywheel (Diameter)	Available SAE Housing Sizes	Number of Clutch Discs	In-Line or Side Load	Maximum Input Torque @100 PSI (7bar) with 1.4 Safety factor		Maximum Input Torque @200 PSI (13.8 bar) with 1.4 Safety factor		Breakaway / Static Torque at Maximum psi./bar		HP Range	
					lbs.-ft.	Nm	lbs.-ft.	Nm	lbs.-ft.	Nm	Class I Light Duty	Class IV Heavy Duty
LC-106	6.5"	6,5,4	1	Both	200	271	200	271	285	386	106	27
LC-107	7.5"	6,5,4	1	Both	221	300	221	300	315	427	118	30
LC-108	8"	5,4,3	1	Both	228	309	228	309	325	441	121	30
LC-110	10"	4,3,2,1	1	Both	434	589	434	589	620	841	219	55
LC-111	11.5"	3,2,1	1	Both	480	650	480	650	685	929	242	61
LC-211	11.5"	3,2,1	2	Both	963	1305	963	1305	1375	1865	486	122
LC-211 Gen. II	11.5"	3,2,1	2	Both	1610 *	2183 *	1610 *	2183 *	2300 *	3119 *	1051	263
LC-311	11.5"	3,2,1	3	Both	1446	1960	1446	1960	2065	2800	730	183
LC-114	14"	1,0	1	Both	900	1220	900	1220	1285	1742	394	99
LC-214	14"	1,0	2	Both	1799	2439	1799	2439	2570	3485	788	197
LC-314	14"	1,0	3	Both	2702	3664	2702	3664	3860	5234	1184	296
LC-314 Gen. II	14"	1,0	3	Both	3094 **	4195 **	3094 **	4195 **	4420 **	5993 **	1768	442
LC-318 Gen III	18"	1,0	3	Both	7473	10133	7473	10133	10675	14475	2704	676

* 320 Actuation Pressure (23 Bar) ** 435 psi Actuation pressure (30 bar)

Model No.	Duty Service Classification Maximum Clutch Ratings based on Maximum Torque Pressure								Maximum Speed RPM	Approx. Net Weight	
	Class 1		Class 2		Class 3		Class 4				
	HP	kW	HP	kW	HP	kW	HP	kW		Lbs.	kg
LC-106	106	79	53	40	35	26	20	15	3000	53	24
LC-107	118	88	59	44	39	29	27	20	3000	55	25
LC-108	121	90	61	45	40	30	31	23	3000	72	33
LC-110	219	163	110	82	73	54	48	36	2850	115	52
LC-111	242	180	121	90	81	60	62	46	2850	141	64
LC-211	486	362	243	181	162	121	122	91	2850	155	70
LC-211 Gen. II	658	491	361	269	240	179	180	134	2600	190	86
LC-311	730	544	365	272	243	181	190	142	2850	185	84
LC-114	394	294	197	147	131	98	99	74	2400	255	116
LC-214	788	588	394	294	263	196	197	147	2500	373	169
LC-314	1184	883	592	441	395	294	296	221	2500	486	221
LC-314 Gen. II	1768	1318	884	659	589	439	442	330	2300	475	216
LC-318 Gen III	2704	2016	1352	1008	901	672	676	504	2350	816	370

Duty Service Classifications

Class 1: Light Duty
The Clutch is used as a connect/disconnect clutch for light loads with minimum slip. The engagement cycle ranges from 1 to 10 times per hour. The clutch operates at an ambient temperature. Applications include machines of all types with uniform loads. For example: generators, blowers, vacuums, pumps, feeders, etc. Refer to input torque from Class 1 table.

Class 2: Normal Duty
The Clutch is used as a connect/disconnect clutch for light to medium loads with a maximum 2-second slip prior to engagement. The engagement cycle ranges from 1 to 10 times per hour. A normal duty application may increase the external surface temperature of the clutch 50°F / 28°C above ambient. Applications include machines of all types with moderate, pulsating loads. For example: Centrifugal or reciprocating compressors (3 or more cylinders), reciprocating pumps, hoists, rotary kilns, dryers, etc. Reference input torque from Class 2 table.

Class 3: Moderate to Heavy Duty
The Clutch is used as a connect/disconnect for medium loads, with a maximum 3-second slip prior to engagement. The engagement cycle ranges from 1 to 10 times per hour. A medium duty application may increase the external surface temperature of the clutch 100°F / 56°C above ambient. Applications include machines of all types with moderate, pulsating loads. For example: Centrifugal or reciprocating compressors (single or 2 cylinder), reciprocating pumps, hoists, rotary kilns, dryers etc. Refer to input torque from Class 3 table.

Class 4: Heavy Duty
The Clutch is used as a connect-disconnect for heavy duty, large inertia loads. Maximum allowable slip time is 4-seconds to start a heavy load and no more than 10-seconds of slip time prior to full engagement. The engagement cycle is 1 to 5 times per hour. A heavy duty application may increase the external surface temperature of the clutch 150°F/ 83°C above ambient. Applications include machines of all types with heavy loads. For example: Mud Pumps, Crushers, Brush Chippers and severe impact loads or speed vibrations and reversing type machinery. Refer to input torque from Class 4 table.

A. Horsepower (Kw) ratings can be increased using modified friction discs.

B. Contact Logan if your application requires a higher speed.

C. Complete a Logan application fact sheet and submit to Logan to confirm your application requirements.

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Bell Housing PTO - Dimensional Data

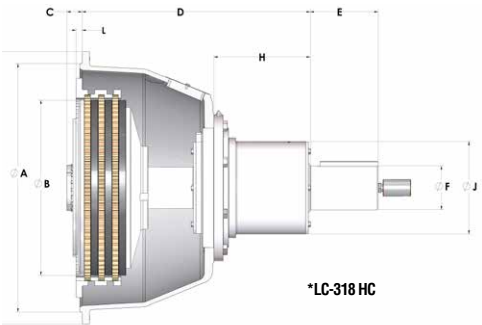
Envelope Dimensional Details

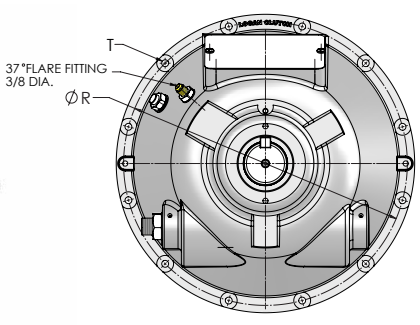
Model No.	Units	D	SHAFT			B	C	H	J	Pilot Bearing "U"		L	K
		Housing Length	Dia. F +0.0000 -0.001	E Length	G Keyway	Clutch Dia.				Dia. +0.0000 +0.0005	Width +0.000 +0.005		Drive Ring No.
LC-106	in	5.563	1.438	3.500	.375 x .187	6.500	2.813	0.875	4.500	2.0472	0.5856	1.188	016-0340
	mm	141.3	36.5	88.9	9.5 x 4.7	165.1	71.4	22.2	114.3	52.0	14.9	30.2	
LC-107	in	5.563	1.438	3.500	.375 x .187	7.500	2.813	0.875	4.500	2.0472	0.5856	1.188	016-0341
	mm	141.3	36.5	88.9	9.5 x 4.7	190.5	71.4	22.2	114.3	52.0	14.9	30.2	
LC-108	in	7.063	1.750	6.000	.500 x.25	8.000	3.938	2.344	5.000	2.4409	0.6643	2.438	016-0342
	mm	179.4	44.5	152.4	12.7 x 6.3	203.2	100.0	59.5	127.0	62.0	16.9	61.9	
LC-110	in	8.625	2.250	5.500	.625 x .312	10.000	3.938	3.750	5.750	2.8346	1.1825	2.125	016-0335
	mm	219.1	57.2	139.7	15.8 x 7.9	254.0	100.0	95.3	146.1	72.0	30.0	54.0	
LC-111	in	9.250	2.250	6.500	.625 x .312	11.500	3.938	3.750	5.750	2.8346	1.1825	1.563	016-0312
	mm	235.0	57.2	165.1	15.8 x 7.9	292.1	100.0	95.3	146.1	72.0	30.0	39.7	
LC-211	in	9.625	2.500	6.500	.625 x .312	11.500	3.938	3.000	6.500	2.8346	1.1825	1.563	016-0320
	mm	244.5	63.5	165.1	15.8 x 7.9	292.1	100.0	76.2	165.1	72.0	30.0	39.7	
LC-211 Gen II.	in	10.500	2.500	5.500	.625 x .312	11.500	2.650	5.560	6.700	Does Not Require		1.563	016-0320
	mm	266.7	63.5	139.7	15.8 x 7.9	292.1	67.3	141.2	170.2	Pilot Bearing		39.7	
LC-311	in	9.625	2.500	6.500	.625 x .312	11.500	3.938	3.000	6.500	2.8346	1.1825	1.563	016-0359
	mm	244.5	63.5	165.1	15.8 x 7.9	292.1	100.0	76.2	165.1	72.0	30.0	39.7	
LC-114	in	12.125	3.000	8.500	.750 x .375	14.000	3.938	3.438	6.656	3.1496	1.3700	1.000	016-0343
	mm	308.0	76.2	215.9	19 x 9.5	355.6	100.0	87.3	169.1	80.0	34.8	25.4	
LC-214	in	13.750	3.500	10.000	.825 x .437	14.000	3.938	3.375	7.500	3.1496	1.3700	1.000	016-0344
	mm	349.3	88.9	254.0	20.9 x 11.1	355.6	100.0	85.7	190.5	80.0	34.8	25.4	
LC-314	in	14.500	3.938	10.000	1 x .500	14.000	3.938	3.375	7.500	3.1496	1.3700	1.000	016-0345
	mm	368.3	100.0	254.0	25.4 x 12.7	355.6	100.0	85.7	190.5	80.0	34.8	25.4	
LC-314 Gen II	in	114.215	3.937	10.000	1 x .500	14.000	2.200	4.337	8.500	Does Not Require		1.000	016-0345
	mm	14.215	3.937	10.000	1 x .500	14.000	2.200	4.337	8.500	Pilot Bearing		1.000	
LC-318	in	23.52	4.50	7.00	1"x1"	18.00	1.57	8.43	9.50	Does Not Require		0.63	016-0478
	mm	597.4	114.3	177.8	25.4x25.4	457.2	39.9	214.2	241.3	Pilot Bearing		15.9	
LC-318 HC	in	22.77	4.50	7.00	1"x1"	18.00	1.57	9.68	9.84	Does Not Require		0.63	016-0478
	mm	552.9	114.3	177.8	25.4x25.4	457.2	39.9	245.9	25	Pilot Bearing			

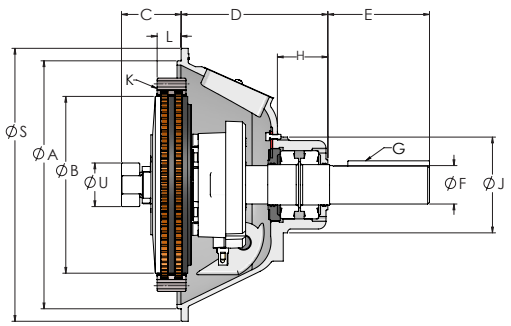
Housing Specifications

SAE Housing No.	Units	A +0.000 -0.005	R B.C.	S Dia.	T Holes No.	T Holes Dia.
6	in	10.500	11.250	12.125	8	0.406
	mm	266.7	285.8	308.0		10.3
5	in	12.375	13.111	14.000	8	0.406
	mm	314.3	333.0	355.6		10.3
4	in	14.250	15.000	15.875	12	0.406
	mm	362.0	381.0	403.2		10.3
3	in	16.125	16.875	17.750	12	0.406
	mm	409.6	428.6	450.9		10.3

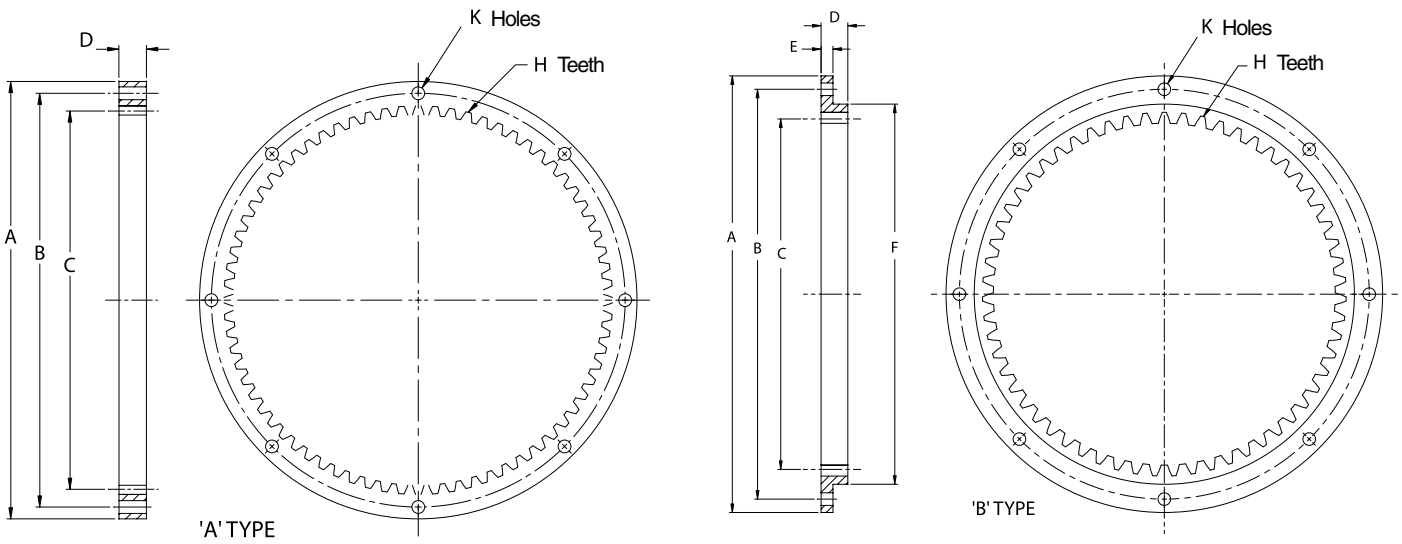
SAE Housing No.	Units	A +0.000 -0.005	R B.C.	S Dia.	T Holes No.	T Holes Dia.
2	in	17.625	18.375	19.250	12	0.406
	mm	447.7	466.7	489.0		10.3
1	in	20.125	20.875	21.750	12	0.469
	mm	511.2	530.2	552.5		11.9
0	in	25.500	26.750	28.000	16	0.531
	mm	647.7	679.5	711.2		13.5
00	in	31.00	33.50	35.00	16	0.531
	mm	767.4	850.9	889.0		13.5







Bell Housing PTO - Dimensional Data



Dynamically Balanced Driving Rings

Model No.	Units	Type Ring	A +0.000 -0.001	B	C (Nominal)	D	E	F	K Holes		H Teeth		Approx. Weight Lb./Kg.
									No.	Size	No.	P	
LC-106	in	A	8.500	7.875	7.000	0.625			6	0.328	42	6/8	2.750
	mm		215.9	200.0	177.8	15.9				8.3			1.2
LC-107	in	A	9.500	8.750	7.813	0.625			8	0.328	47	6/8	3.375
	mm		241.3	222.3	198.4	15.9				8.3			1.5
LC-108	in	A	10.375	9.625	8.500	0.625			6	0.406	51	6/8	4.250
	mm		263.5	244.5	215.9	15.9				10.3			1.9
LC-110	in	A	12.375	11.625	10.500	0.875			8	0.406	63	6/8	7.000
	mm		314.3	295.3	266.7	22.2				10.3			3.2
LC-111	in	A	13.875	13.125	12.000	0.875			8	0.406	72	6/8	8.000
	mm		352.4	333.4	304.8	22.2				10.3			3.6
LC-211 Gen I. & Gen II.	in	A	13.875	13.125	12.000	1.875			8	0.406	72	6/8	18.000
	mm		352.4	333.4	304.8	47.6				10.3			8.2
LC-211	in	A	13.875	13.125	12.000	1.875			8	0.406	72	6/8	18.000
	mm		352.4	333.4	304.8	47.6				10.3			8.2
LC-311	in	A	13.875	13.125	12.000	2.750			8	0.406	72	6/8	26.000
	mm		352.4	333.4	304.8	69.9				10.3			11.8
LC-114	in	B	18.375	17.250	14.750	1.125	0.500	16.000	8	0.531	59	4/5	16.500
	mm		466.7	438.2	374.7	28.6	12.7	406.4		13.5			7.5
LC-214	in	B	18.375	17.250	14.750	2.375	0.500	16.000	8	0.531	59	4/5	3.4
	mm		466.7	438.2	374.7	60.3	12.7	406.4		13.5			1.5
LC-314 Gen I. & Gen II.	in	B	18.375	17.250	14.750	3.375	0.500	16.000	8	0.531	59	4/5	32.625
	mm		466.7	438.2	374.7	85.7	12.7	406.4		13.5			14.8
LC-314	in	B	18.375	17.250	14.750	3.375	0.500	16.000	8	0.531	59	4/5	32.625
	mm		466.7	438.2	374.7	85.7	12.7	406.4		13.5			14.8
LC-318 Gen.III	in	B	22.500	21.375	18.750	4.250	0.625	20.125	6	0.656	75	4/5	56.750
	mm		571.5	542.9	476.3	108.0	15.9	511.2		16.7			25.8
LC-318 HC	in	B	22.500	21.375	18.750	5.750	0.625	20.125	6	0.656	75	4/5	61.000
	mm		571.5	542.9	476.3	146.1	15.9	511.2		16.7			27.7

Adapter Rings for Housing / Drive Ring / Flywheel

From SAE Engine Housing	To SAE Engine Housing
1	2
0	1
00	0

From SAE Flywheel	To SAE Flywheel
18"	11.50"
21"	18"

Standard PTO's - Allowable Side Pull Loads / Load Classifications

THE FOLLOWING GENERAL FORMULA SHOULD BE USED
AS A GUIDELINE FOR DETERMINING THE ACTUAL APPLIED LOAD:

$$\text{SIDE LOAD} = \frac{126{,}000 \times \text{Horsepower}}{\text{Shaft RPM} \times \text{Sheave Diameter}} \times \text{Load Factor}$$

WHERE LOAD =
Actual Applied Load (Lbs.)

SHAFT RPM =
Shaft Speed (Rev./Min.)

DIAMETER =
Pitch Dia. (in.) of Sheave, etc.

LOAD FACTOR:
1.0 For Chain or Gear Drive
2.5 For all V-Belts
3.5 For Flat Belts
For Reciprocating Compressors and Other Severe Shock Drives, MULTIPLY ABOVE FACTORS by 2.1

Note: Modified Standards Available. See Page 11.

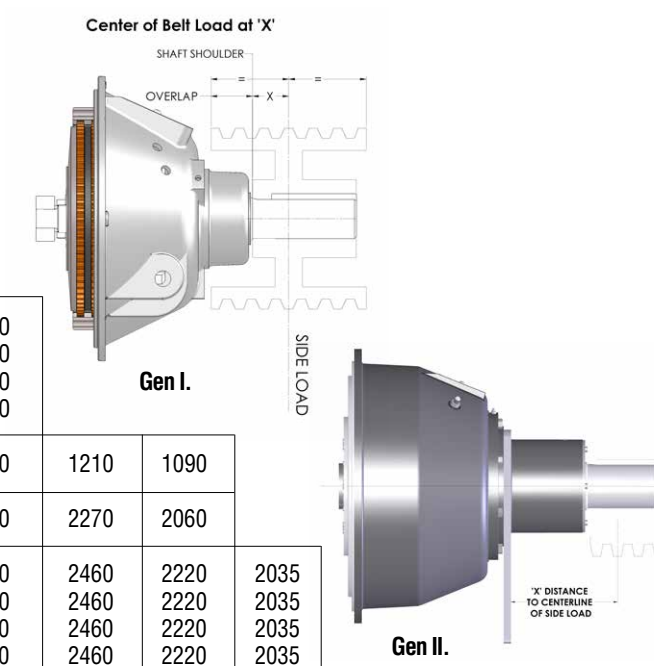
Load Classifications Based Upon AGMA Load Characteristics:

Prime Mover	Duration of Service	Driven Machine Load Classifications		
		Uniform	Moderate Shock	Heavy Shock
Electric Motor	Up to 3 hours per day	1.00	1.25	1.50
	3-10 hours per day	1.00	1.25	1.75
	Over 3 hours per day	1.25	1.50	2.00
Multi-cylinder internal combustion engine	Up to 3 hours per day	1.00	1.25	1.75
	3-10 hours per day	1.25	1.50	2.00
	Over 3 hours per day	1.50	1.75	2.25
Multi-cylinder internal combustion engine with high torque rise	Up to 3 hours per day	1.50	1.75	2.25
	3-10 hours per day	1.75	2.00	2.50
	Over 3 hours per day	2.00	2.25	2.75
Single cylinder internal combustion engine	Up to 3 hours per day	1.25	1.50	2.00
	3-10 hours per day	1.50	1.75	2.25
	Over 3 hours per day	1.75	2.00	2.50

All clutch engagements to be with prime mover below 1000 RPM.
High inertia loads may require a larger clutch.

Maximum Allowable Side Load (lbs.-ft.) At "X" Distance, Inches (See Sketch)

PTO	RPM	1	2	3	4	5	6	7	8	9	10	11	12	13
LC-106 LC-107	1000 2000 3000	835 665 585	625 595 525	475 475 475										
LC-108	1000 - 3000	1495	1110	885	735	630								
LC-110 LC-111	1000 1200 1800 2400	2790 2630 2330 2140	2600 2450 2170 1990	2240 2240 2030 1865	1840 1840 1840 1750	1570 1570 1570 1570								
LC-211 LC-311	1000 1200 1800 2400	4540 4370 3900 3550	3395 3395 3395 3395	2710 2710 2710 2710	2255 2255 2255 2255	1930 1930 1930 1930	1690 1690 1690 1690							
LC-114	1000 - 2200	3390	2600	2120	1780	1535	1350	1210	1090					
LC-214	1000 - 2200	5980	4700	3880	3290	2870	2540	2270	2060					
LC-314	1000 1500 2000 2200	6170 5350 5025 4850	5120 5120 4750 4650	4200 4200 4200 4200	3570 3570 3570 3570	3100 3100 3100 3100	2740 2740 2740 2740	2460 2460 2460 2460	2220 2220 2220 2220	2035 2035 2035 2035				
LC-318	1000 1500 2000 2200	13450 12800 12140 11600	12380 11790 11180 10680	11480 10930 10360 9900	10690 10180 9650 9220	10010 9530 9030 8630	9410 8960 8500 8110	8880 8450 8010 7650	8400 8000 7580 7240	7900 7600 7200 6880	7580 7220 6850 6540	7240 6890 6530 6240	6900 6590 6240 5970	6620 6310 5980 5710
LC-211 Gen II.	1000 - 2600	4830	4500	3850	3350	2700	2220	2020						
LC-314 Gen II.	1000 1500 2000 2200	7700 7450 7140 6980	7200 7000 6710 6560	6760 6615 6340 6200	6390 6250 5990 5860	6080 5950 5700 5580	5810 5680 5440 5330	5550 5420 5200 5090	5300 5180 4970 4860	5040 4920 4720 4620				
LC318 Gen II.	1000 1500 2000 2200	13450 12800 12140 11600	12380 11790 11180 10680	11480 10930 10360 9900	10690 10180 9650 9220	10010 9530 9030 8630	9410 8960 8500 8110	8880 8450 8010 7650	8400 8000 7580 7240	7900 7600 7200 6880	7580 7220 6850 6540	7240 6890 6530 6240	6900 6590 6240 5970	6620 6310 5980 5710



Logan Bell Housing PTO Hydraulic and Pneumatic Schematics

Hydraulic Actuation

Operation: Logan Bell Housing PTO's require a 3-way normally closed operating valve with a system flow rate of 2 gpm (7.5 liters) to ensure proper response time during clutch actuation; (if the solenoid is not activated, fluid will not pass through the valve).

Gen. I and Gen. III Actuation: A pressure switch must be installed in the inlet line to ensure that a minimum of 150 psi (10.3 bar) and a maximum of 250 psi (17.2 bar) is available prior to clutch engagement. Pressures exceeding 250 psi (17.2 bar) may cause back plate deflection and premature clutch failure. A 20-micron filter element should also be installed in the supply line, before the valve, to minimize excessive dirt, oil and moisture.

Gen. II Actuation: A pressure switch must be installed in the inlet line to ensure that a minimum of 275 psi (10.3 bar) and a maximum of 350 psi (17.2 bar) is available prior to clutch engagement.

Note: If a hydraulic source is not readily available on your equipment, Logan suggests using a hydraulic pump capable of producing 2 gpm at 250 psi (17.2 bar) for Gen I and Gen II clutches. For Gen. II Clutches we recommend a 2 gpm pump at 350 psi. (24 bar).

Pneumatic Actuation

Operation: Logan Bell Housing PTO's require a 3-way normally closed operating valve to function properly, (if the solenoid is not activated, air will not pass through the valve). A pressure switch must be installed in the inlet line to ensure that a minimum of 100 psi (6.8 bar) is available prior to clutch engagement. A 20-micron filter element should also be installed before the switch to minimize excessive dirt, oil and moisture.

If an air source is not readily available on your equipment, Logan suggests using an air compressor capable of producing 0.14 SCFM at 100 psi (6.8 bar).

Logan Hydraulic or Pneumatic Start-up Kits

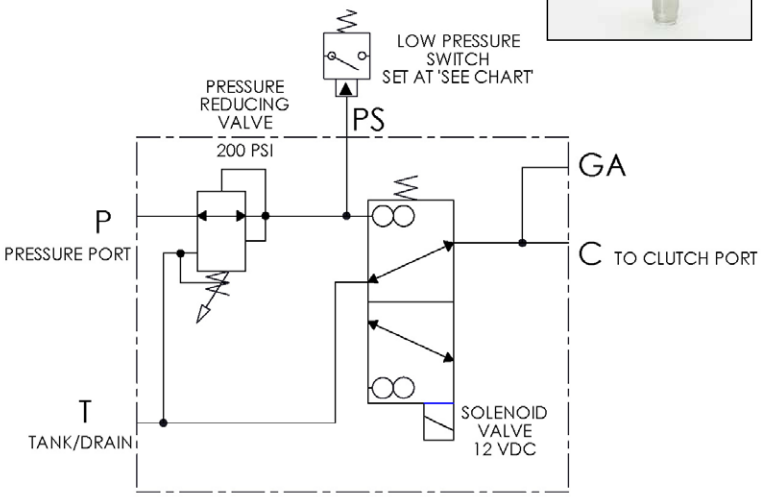
The Logan Hydraulic or Pneumatic Start-up kits are designed to simplify Logan clutch installation and to ensure reliable and accurate engagement of the Logan PTO.

Pneumatic Valving: Logan offers a solenoid activated, normally closed, 3-way directional control valve with a 3/64" inlet and outlet port. Valves are available in 12 or 24 volt DC.

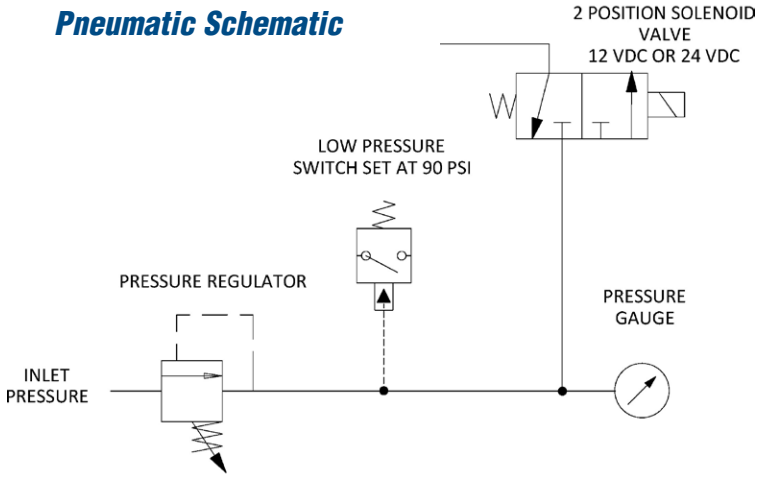
Hydraulic Power Packs: For vehicles that are not equipped with an air or fluid source, Logan does offer a power pack kit. Consult Logan factory for more details.

Hydraulic Schematic

Manifolds: Logan offers fluid and air actuated valve manifolds complete with gauge and pressure switch to ensure reliable and accurate engagement of the Logan PTO



Pneumatic Schematic



Manifolds: Logan offers fluid and air actuated valve manifolds complete with gauge and pressure switch to ensure reliable and accurate engagement of the Logan PTO

Power Packs: Logan Hydraulic Power Packs are available for machines not equipped with a fluid source, and can be operated by a 12 or 24 VDC power supply.

Helpful Hints When Using Logan Bell Housing

System Pressure: Over or Under Pressurization
The catalog rated torque capacity of Logan Clutches is directly proportional to the operating pressure.

Maintaining the lowest pressure possible to transmit the desired torque will enable the clutch to run cooler and extend the lifespan of the internal working bearings (if applicable) and other components. A pressure regulating valve should be specified in the system to prevent over or under-pressurization of any Logan Clutch PTO. The Logan warranty does not cover clutch failure due to over or under-pressurization.

The highest pressure values in the torque tables are the suggested maximum ratings for Logan Clutches.

Clutch Shaft Bearing lubrication: Consult your maintenance manual for correct service intervals. Main clutch shaft carrier bearings are factory greased for the first 100 hours of operation. A small amount of grease at the inner & outer bearing shaft seals of the clutch shaft carrier bearings is normal.

After 100 hours of operation, remove cover plate, pump in approximately 5 ½ cu in./ 90ml of fresh No. 2 Lithium based grease. Rotate the shaft (by hand if possible) until fresh grease is seen coming thru seals covering bearings on main shaft. Use a cloth to clean up any excess grease. Re-install the cover plate and run the clutch for 10 minutes at 50% of rated speed. Remove cover plate and clean up any extra grease from inside of housing. Replace cover plate and operate normally.

CAUTION: Do not over-grease bearings. Excessive grease may cause bearing overheating and premature failure. In addition, discs and opposing surfaces must also be free of any grease in order to avoid clutch slippage or reduced torque.

Clutch Break-in: For initial start up, with the power source operating at 700 to 1000 rpm, cycle/engage the clutch at a rate of once every 10-15 seconds for 10-20 cycles, not exceeding 50% of rated torque capacity. In severe duty applications, allow additional clutch engagements at moderate loads and reduced RPM's before applying maximum torque and RPM. Torque values are based upon dry disc packs having full contact between surfaces.

Torsional Damping Devices for Logan Products: Special consideration should be given to torsional compatibility when incorporating any Logan product into an application.

Noise, vibration, damage and premature failure of Logan PTO's can be directly attributed to incorrectly specified torsional damping devices. It is the buyer's responsibility to specify this option, which can result in additional cost and a possible increase in installation length. Logan accepts no liability for torsional clutch failure. Finite element analysis or field testing for torsional compatibility rests solely with the assembler and user.

Logan Clutch Corporation reserves the right to modify product specifications and designs without notice and without incurring obligations. All rotating components present a potentially hazardous condition and should be guarded in accordance with OSHA requirements and other applicable laws, regulations and industrial standards.

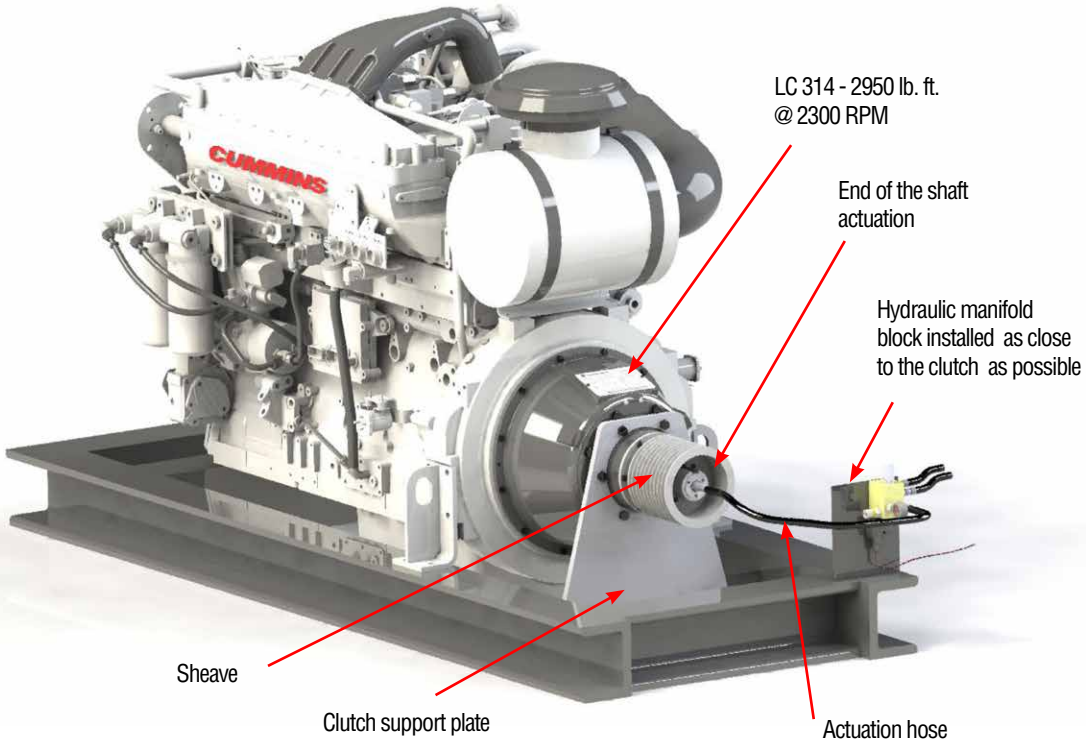
Logan can accept no liability for personal injury, loss of life, or damage or loss of property due to the failure of the buyer or user to improperly apply Logan Products.

Logan Installation and Operator's Maintenance Manuals:

Routine maintenance helps keep your Logan Clutch in the best possible condition. Maintenance helps your clutch last longer and run more efficiently. Always reference your Logan Operator's manual to help preserve your clutches performance, value, and reliability. - See more at www.loganclutch.com

Logan Bell Housing PTO's – Heavy Duty Side Loads

LC 314 Generation II Hydraulic Actuation Layout

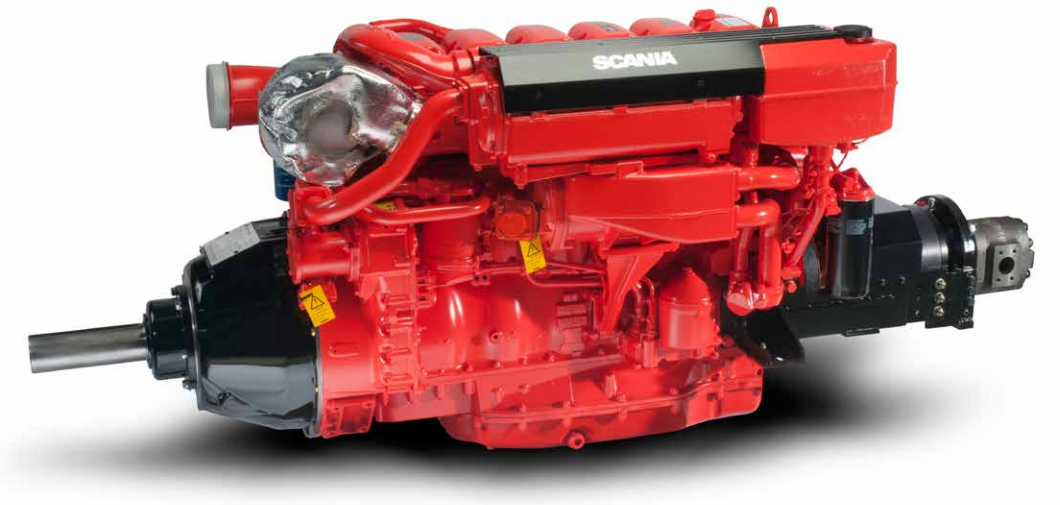


In this example, the customer has developed a skid mounted drive system, with a Heavy-duty side load requirement. Logan Engineers specified a Generation II LC-314 due to its spread bearing design. The Logan Gen. II handles 50% more side load than a standard Gen. I 314 Design. Also, the Gen II does not require a pilot bearing, which is prone to failure in heavy duty side-load applications.

The Logan Gen. II LC-314 transmits a maximum 4300 lb. ft. of torque (5830 Nm) @ 320 psi. (23 bar), providing ample safety factor in this application which only requires 2950 lb. ft. (3999 Nm).

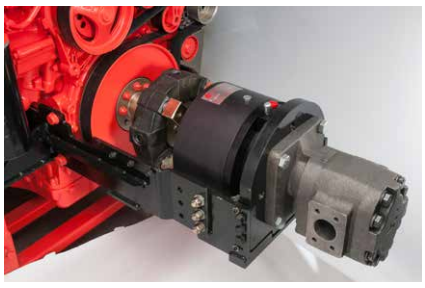
Bell Housing PTO's - Power Generation

Standard Logan Bell Housing PTO's are available in No. 00 to No.7 size SAE Bells. This application required a Logan LC-314 (No. 01 Size Bell), Clutch for main propulsion and a Logan SAE Direct Drive PTO (1000 series) to drive an auxiliary pump with an SAE C spline off the front of the engine.



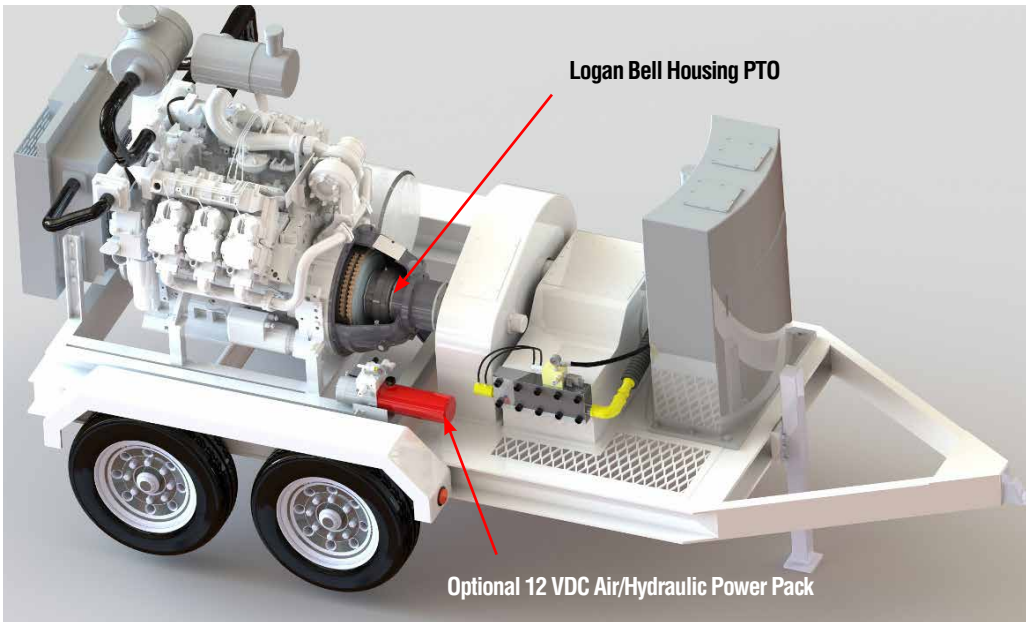
Scania D13 Series 650 HP (478 kW) pictured with Logan LC-314 Bell PTO 2702 lb. ft. (3664 Nm) for main propulsion and Logan front PTO 1000 series clutch,1590 lb. ft. (2155NM) to drive an auxiliary pump

Fluid /Air Actuated, and Self Adjusting



Logan Front PTO's act as connect/ disconnect for auxiliary pumps

Bell Housing PTO's - Waterblasting Systems



Trailor mounted waterjet system outfitted with 200 HP engine and LC 311 PTO 1446 lb. ft. (1960 Nm) @ 200 psi (13.8 bar)

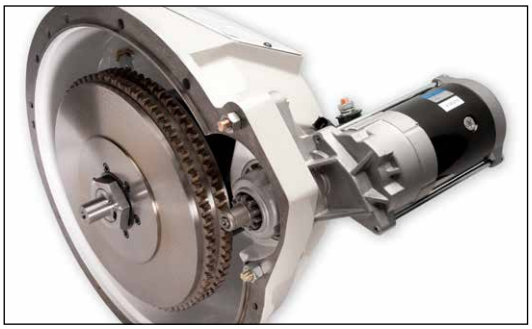
Cut away view of Logan LC-311 disc pack

Trailer or skid mounted blasting systems can range in size from 50 to 500 HP, with required speeds up to 3,000 RPM on smaller units. With SAE size bells from No. 7 up to No. 0, and torque ranges from 159 lb. ft. (216 Nm) to over 6,000 lb. ft. (8236 Nm) Logan Bell Housing PTO's are properly sized to handle even the toughest demands in system torque and HP.

Bell Housing PTO's – Hybrid Electric Propulsion Systems

A Logan LC-211 acts as a connect-disconnect between a 205 HP Isuzu 4HK1-TC Diesel Engine and hybrid electric propulsion system, enabling this city bus to operate in zero emission mode 25% of the time.

Logan PTO's are effective and reliable solutions for integrating and diesel engine with an auxiliary power unit (APU) in a battery dominate hybrid electric propulsion systems into medium to heavy-duty fleet vehicle applications where greater fuel efficiency and significant emission reductions are the goal.



Logan LC-211 with starter motor integral to the bell housing casting

Compact design makes it easy to switch from diesel to hybrid electric propulsion

Bell Housing PTO – Tree and Brush Chippers / Recycling

Tree and Brush Chippers

Frequent mechanical PTO clutch overhauls can take a chipper out of service for several hours or an entire day, resulting in lost revenue and increased operating expenses.

Logan self-adjusting PTO's eliminate the need for mechanical adjustment, ensuring more uptime and less downtime since mechanical linkages, lever arms, yokes and collars are no longer required.

Logan PTO Clutch mounts directly to engine's SAE flywheel

Features:

- Air or Fluid Actuated
- High Torque, Small Envelope
- Available with or without Pilot Bearings
- Remote Actuation

Advantages:

- Smooth Engagement – Quick Release
- Self-Adjusting Disc Pack
- Eliminates Mechanical Linkages, Hand Levers and Yokes
- Reduces Downtime - Fewer Moving Parts

LC-311 PTO transmits 1,803 lb. ft. (2444 Nm) @ 200 psi (13,9 bar)

Feed / discharge system has 20" (50.8 cm) chipping capacity

Shredder driven by 170 hp John Deere 6068T with Logan LC-211 transmits 963 lb. ft. (1305 Nm) @ 200 psi (13,8 bar)

Wood Shredders / Recycling

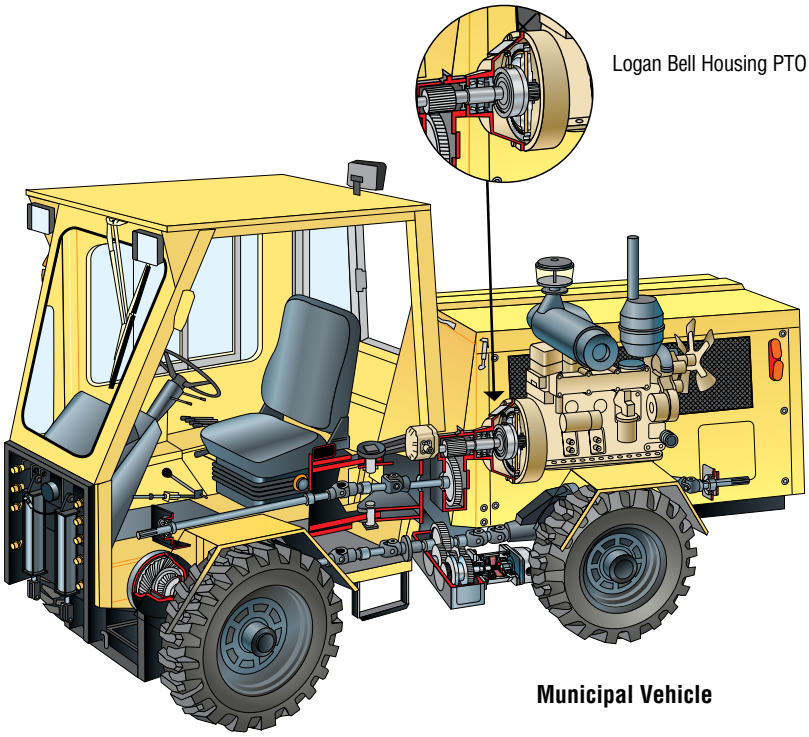
Since shredder /recyclers are capable of processing pallets, brush, logs, bark, sawmill waste, scrap framing lumber, plywood and drywall – right at the work site; you need a tough clutch to handle the diverse operating conditions. And, since Logan clutches are designed to transmit maximum torque within a very small envelope, shredding and processing is simple and efficient - bringing projects in on time and within competitive operating budgets.

Bell Housing PTO – Municipal Service Vehicles / Attachments

Municipal Service Vehicles

Flail cutter attachment for clearing brush and small trees

Snow Thrower Attachment powered by Logan PTO



Municipal Vehicle

With 480 lb. ft. of torque (650 Nm) @ 200 psi (13,8 bar), the Logan LC-111 Bell Housing PTO transmits almost twice the typical torque required 262 lb. ft. (355 Nm) to power this Municipal service vehicle / tractor and its attachments.

Milling machine equipped with 200 hp engine and LC211 PTO shown mounted on a wheel loader

Cold Planers /Grinding Attachments for Wheel Loaders and Backhoes

Cold Planers are designed to cut asphalt and concrete on streets and highways during the repair or resurfacing process.

With engine ranges from 70 to 213 HP, a Logan LC-211 is up to the task by transmitting up to 900 lb. ft. of torque (1220 Nm) @ 200 psi (13,8 bar).

Road grinding cutting depths may go up to 12 inches (30.48 cm) deep and widths up to 72" (182.88 cm) wide

Bell Housing PTO's – Heavy Duty Snow Blowers

Bell Housing PTO's for Airport Snow Blowers

Clearing airport runways is a top priority during winter storms. This heavy-duty snow blower, powered by a CAT C-18 Engine, and a Logan LC-314 Bell Housing PTO as part of the blower system – can cast 5,000 tons (4.535e6 Kg.) of snow per hour, over 200 ft. (60.96 meters). That's approximately 1.4 tons (1,270 kg) per second.

Logan LC-314 Bell Housing PTO transmits 2,430 lb. ft. (3296Nm) of torque @ 200 psi

Airport Snow Blower Attachment powered by Logan PTO

Bell Housing PTO's – Commercial Snow Blowers

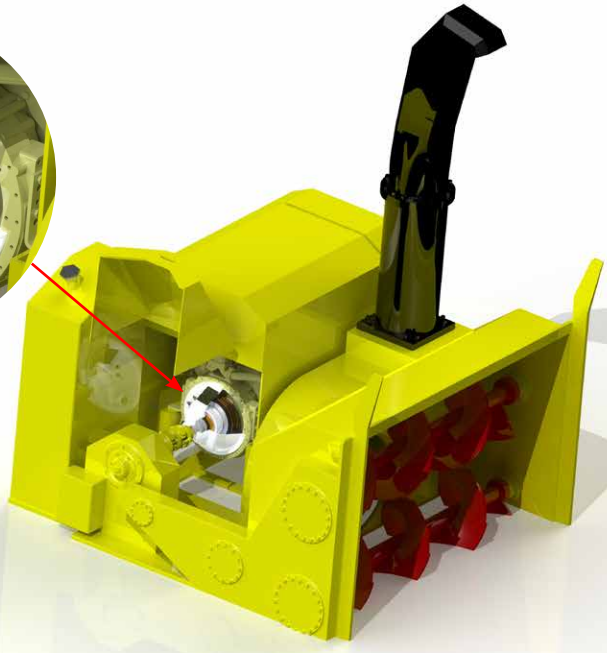
This Airport 700 HP Snow Blower is equipped with a Logan LC-318 Bell Housing PTO and is capable of clearing a 120" wide path of snow, moving 6000 tons of snow per hour

View of Logan LC-318 PTO and hydraulic manifold

The LC-318 transmits over 7000 lb. ft. (10,000 Nm) of torque @200 psi. (13.8 bar)

Municipal and Highway Loader Mount Snow Blowers

Logan LC-311 Bell Housing PTO
1446 lb. ft. (1960 Nm)



Close-up view of a typical single or two-stage Loader Mounted Snow Blower, which uses a Logan Bell PTO for the Direct drive. Since Logan Clutch engagement is smooth and positive, minimal break-in periods are required, enabling maximum torque transfer required to move heavy, wet snow up to a 175 ft. / 53 meter casting distance.

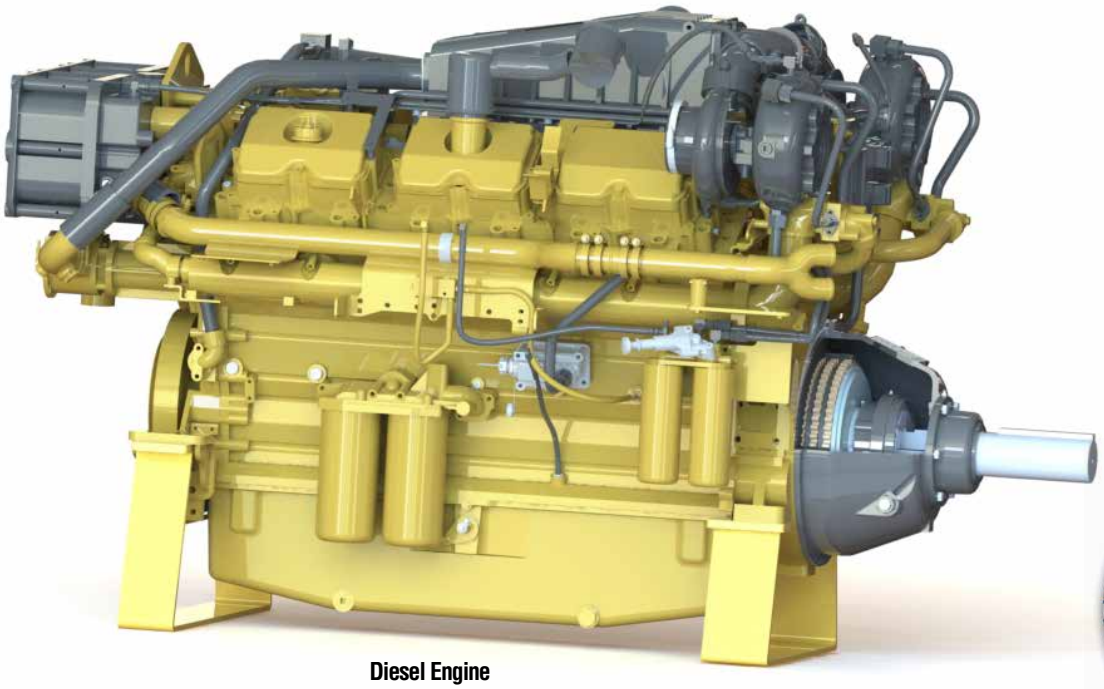
Municipal Loader using a Logan LC-314 Bell Housing PTO, which transmits 2702 lb. ft. (3664 Nm) of torque

Wheel Loader equipped with a Logan Bell PTO clears a parking lot

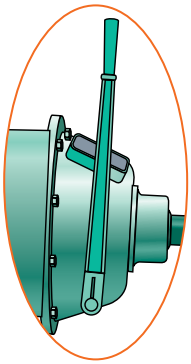
Two-Stage 3-Ribbon Snow Blower, which typically uses either a CAT C13 (415HP) or Cummins QSL-9 (350HP) style engine connected to a Logan LC-311 Bell Housing PTO enables up to 112" (2484.48 cm) cutting widths.

Wheel Loader Retrofitted with a self-adjusting Logan Bell PTO, originally used a mechanical, lever activated over center PTO

Bell Housing PTO - Marine Applications



Diesel Engine



Old Technology

Available with keyed shaft or SAE pump pad

Bell Housing PTO's – Marine Applications

Logan Air / Fluid actuated Bell Housing PTO's mount directly to a diesel engine's flywheel and are used as a connect / disconnect drive for main propulsion, or for generator sets which control fixed displacement or variable displacement pumps. Logan PTO's are suitable for tug boats, workboats, fishing boats, jet boats, patrol boats and pleasure craft.

Typical applications include:

- Generator sets
- Deck and cargo winches
- Bow thrusters
- Drag net reels
- Deck pressure washers
- FiFi pumps

Logan PTO Features:

- Air or Fluid actuated for maximum torque capacity
- Self adjusting disc pack – minimizes slippage
- Fast engagement – Quick release
- Eliminates Mechanical Linkages, Hand Levers, and Yokes
- Drive flange SAE or DIN

Advantages:

- Aids in the reduction of emissions, energy and fuel costs, and wear and tear on auxiliary attachments.
- The Logan PTO is perfect for mounting on the front and/or rear of the engine and provides more torque capacity than electromagnetic style clutches.
- Easily retrofits during repowering of vessels

Remote Actuation:

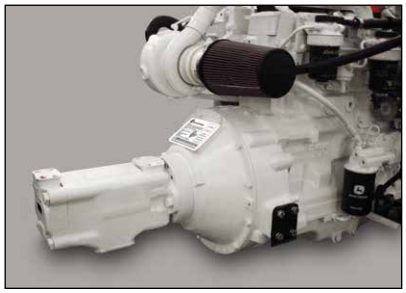
Since Logan clutches are Fluid or Air operated, and self-adjusting, actuation from a control panel, wheelhouse or bridge is now possible.

Mounting:

Logan PTO's are available with a keyed shaft or an SAE B, C, or D pump pad mount. Modified input / output splines are also available to meet customer's specific design requirements.

Agency Certification Available. ABS

Short axial length for confined space

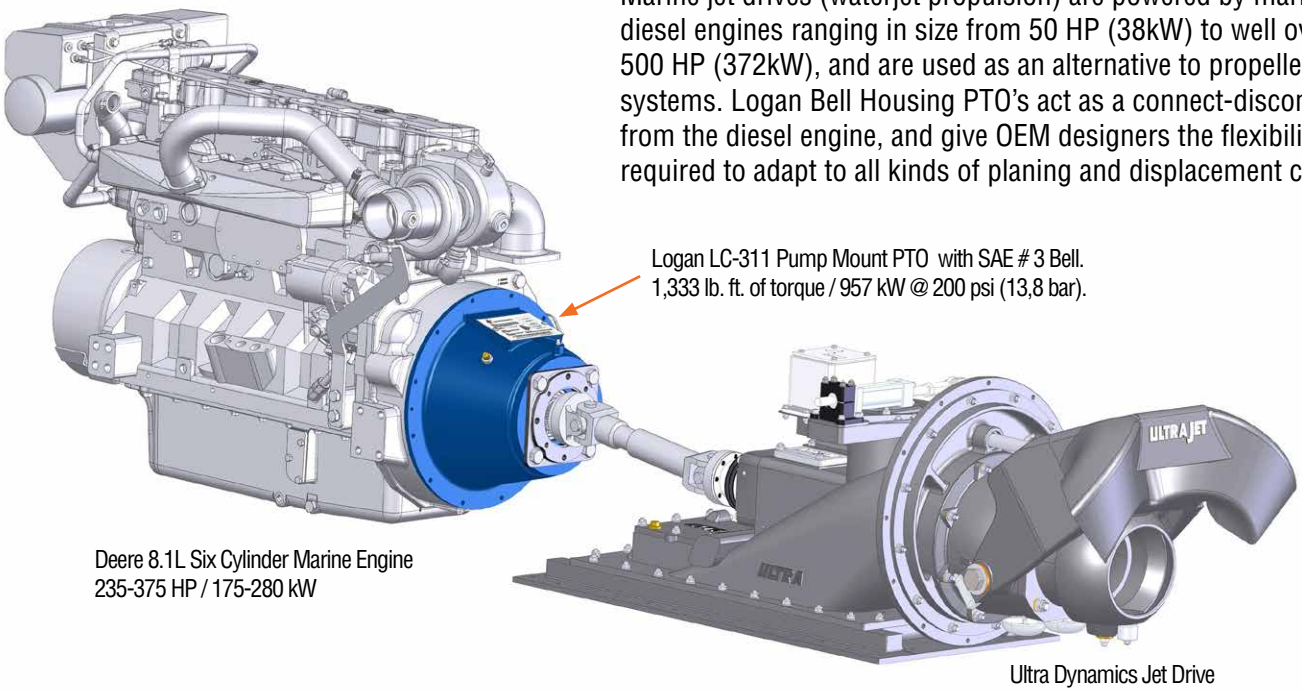


Operate pumps on-demand vs. continuously

Marine Applications

Bell Housing PTO's – Marine Jet Drives

Marine jet drives (waterjet propulsion) are powered by marine diesel engines ranging in size from 50 HP (38kW) to well over 500 HP (372kW), and are used as an alternative to propeller systems. Logan Bell Housing PTO's act as a connect-disconnect from the diesel engine, and give OEM designers the flexibility required to adapt to all kinds of planing and displacement craft.



Logan LC-311 Pump Mount PTO with SAE # 3 Bell.
1,333 lb. ft. of torque / 957 kW @ 200 psi (13,8 bar).

Deere 8.1L Six Cylinder Marine Engine
235-375 HP / 175-280 kW

Ultra Dynamics Jet Drive

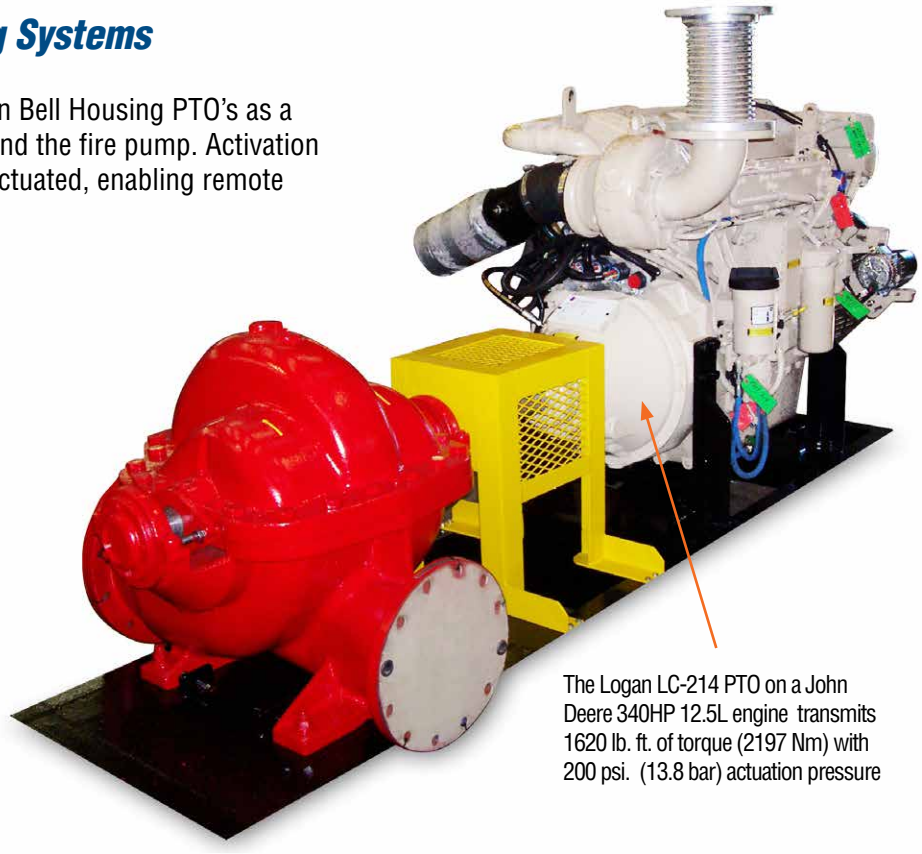
Bell Housing PTO's – Fire Fighting Systems

Fire pumps on Tugs and Workboats utilize Logan Bell Housing PTO's as a connect-disconnect between the diesel engine and the fire pump. Activation is simplified since Logan PTO's are fluid or air actuated, enabling remote engagement from the bridge or wheelhouse.

Logan PTO Features:

- Air / Fluid Actuated
- Eliminates Linkages, Yokes and Mechanical Hand Levers
- Self-Adjusting Disc Pack

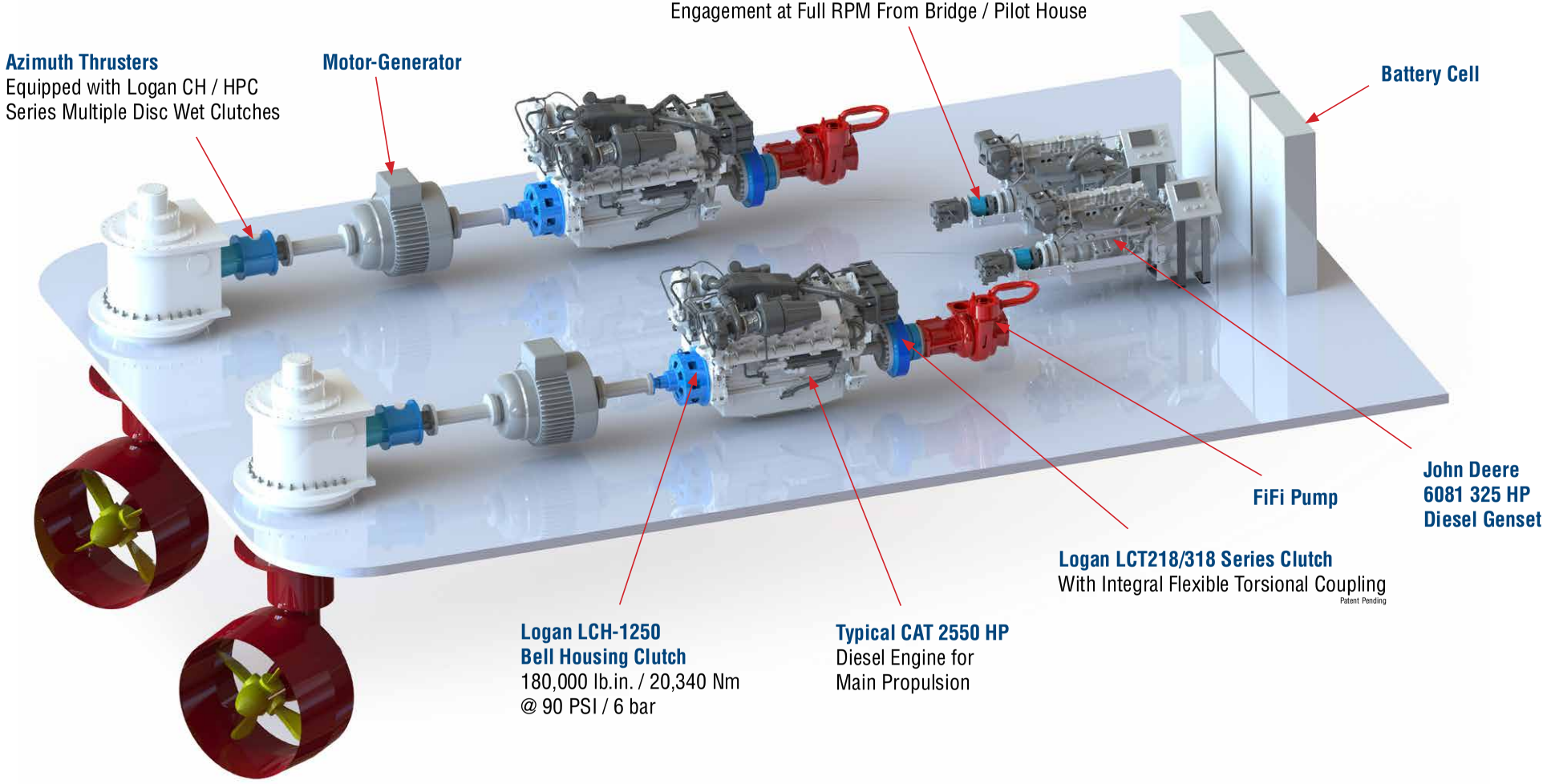
The pump system is capable of transmitting a 4" / 10cm diameter stream of water as far as 400 ft /122 meters



The Logan LC-214 PTO on a John Deere 340HP 12.5L engine transmits 1620 lb. ft. of torque (2197 Nm) with 200 psi. (13.8 bar) actuation pressure

Logan Clutches for Main Propulsion, Auxiliary Power Take-Off Drives / PTO, and FiFi Applications

Hybrid Tug Engine Room View



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Logan CH Series Air / Fluid Clutches and Brakes

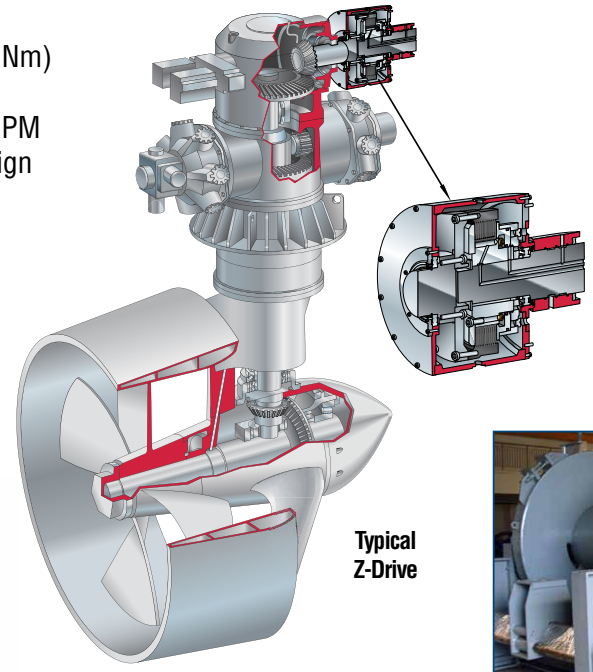
Features:

- Torque Ratings from 49,000 lb-in. (5532 Nm) to 1,280,000 lb-in (144,000 Nm)
- Standard operating speeds up to 2,200 RPM
- Modified Standards to Meet Specific Design Requirements

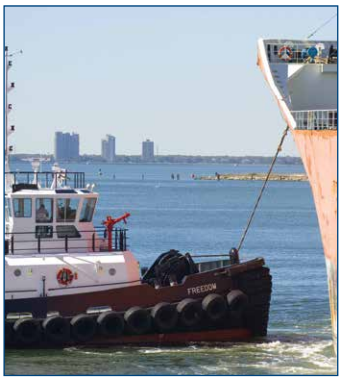
Advantages:

- High Torque, Small Envelope
- Fluid or Air Actuated
- Wet or Dry Operation
- Smooth Engagement – Quick Release

Logan CH Clutches



Typical Z-Drive



Render-Recover, Ship Assist Winches

Deck and Hawser Winches

Logan Direct Drive Front and Side Mount PTO Clutches

The Logan Direct Drive 100 Series PTO Transmits 33 HP/25kW with 100 psi. / 6.9 bar actuation pressure

- Air / Fluid actuated, compact design is suitable for most main and auxiliary internal combustion engines.
- Aids in reduction of emissions, fuel costs, and wear and tear on auxiliary attachments.

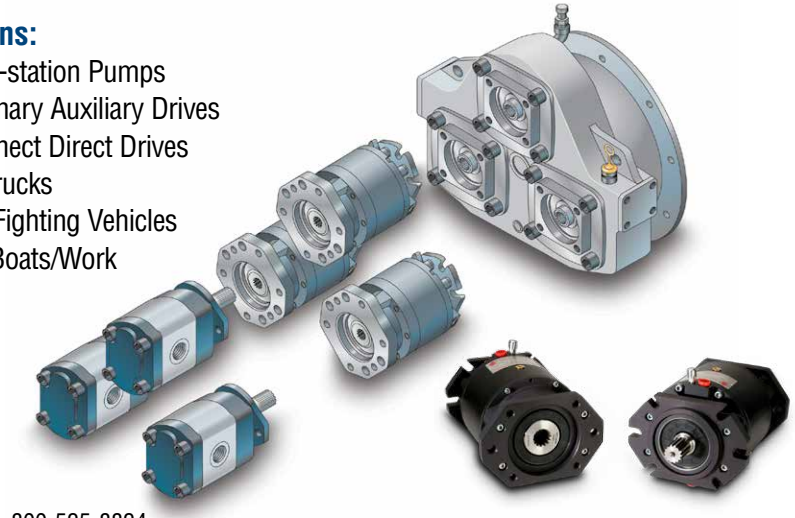
Front Mount PTO on Deere 4045TFM Transmits 520 lb. ft. with 100 psi / 6.9 Bar Actuation Pressure

Logan SAE Direct Drive PTO Clutches

Logan PTO Series Clutches are designed to mount between the power take-off of an engine, multi-station pump drive, hydraulic motor or pump. OEM and Aftermarket designers can take advantage of energy savings and component longevity by utilizing Logan PTO's to drive Auxiliary attachments only when required.

PTO Applications:

- Single and Multi-station Pumps
- Mobile or Stationary Auxiliary Drives
- Connect-Disconnect Direct Drives
- Municipal Fire Trucks
- Air Rescue Fire Fighting Vehicles
- Marine Fishing Boats/Work Boats/Winches



Available in all SAE / ISO Sizes
SAE A through E configurations
Modified Standards Available

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