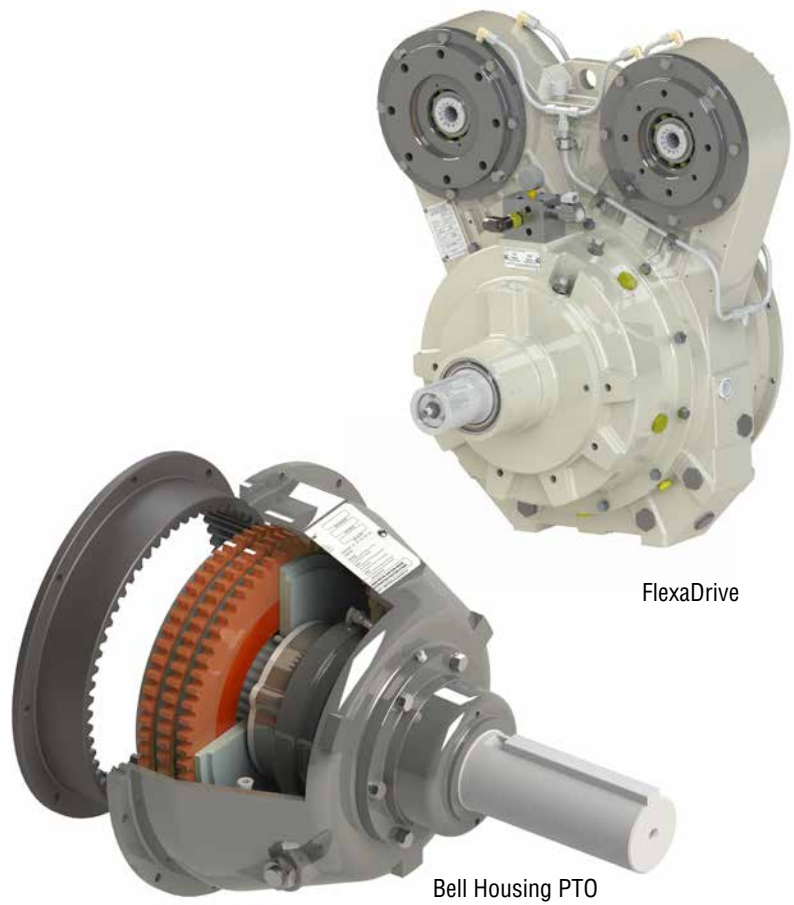


# Logan Bell Housing PTO Clutches and FlexaDrive™, Multiple Pump Drive Systems



- Mobile Equipment
- Oil & Gas
- Marine
- Agriculture
- Hybrid Vehicles
- Industrial
- Rock Crushing
- Water Jetting



FlexaDrive

Bell Housing PTO

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, Rock Crushing, Tunnel Boring and Snow Removal Equipment, Hydro Excavation and Water Jetting 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.

## 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.

## 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. (216 Nm) 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.



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



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

## Where used:

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

## 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





# Bell Housing PTO – Series Description

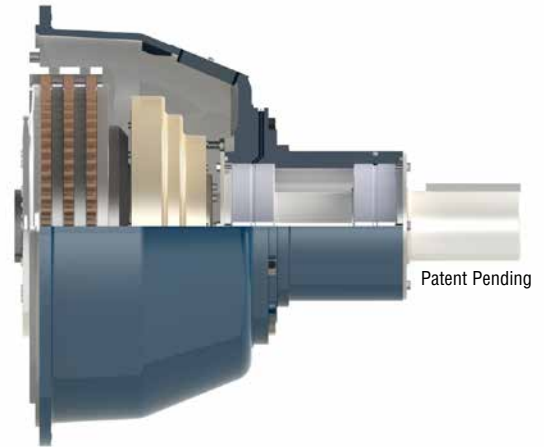
## Generation III

For in-line or side load applications

### Advantages:

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

Generation III – Over Shaft Actuation



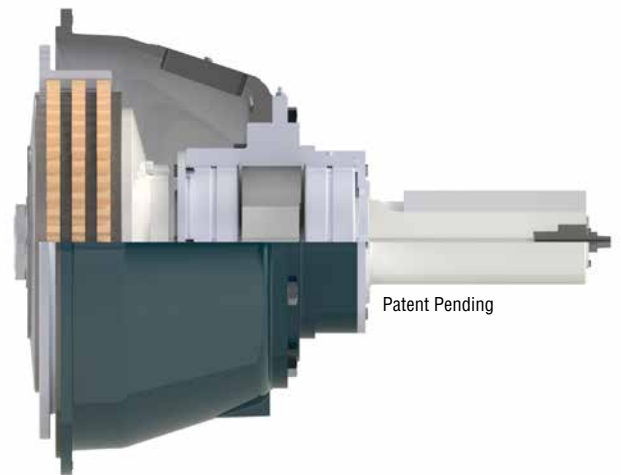
## Generation II

For heavy duty side load applications

### Advantages:

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

Generation II – Through Shaft Actuation



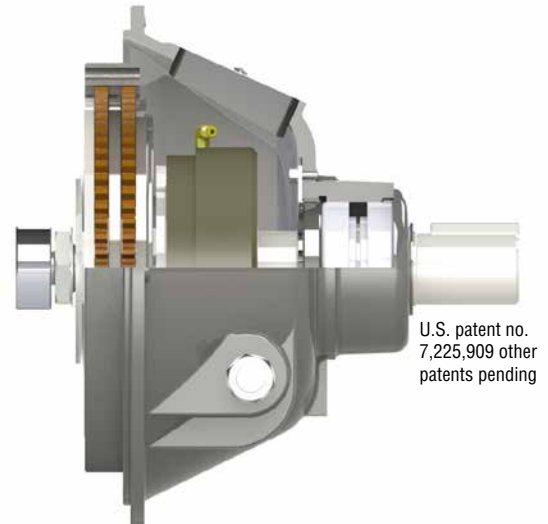
## Generation I

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



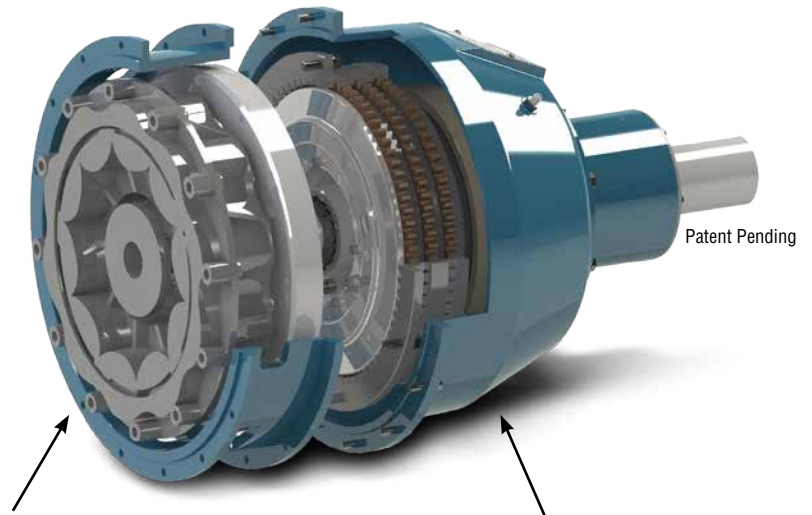


## Generation II and III For applications requiring an integral torsional coupling

Pictured: Generation III – Over Shaft Actuation

### Advantages:

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



Integral Torsional Coupling

Logan Gen II or Gen III  
Bell Housing PTO™

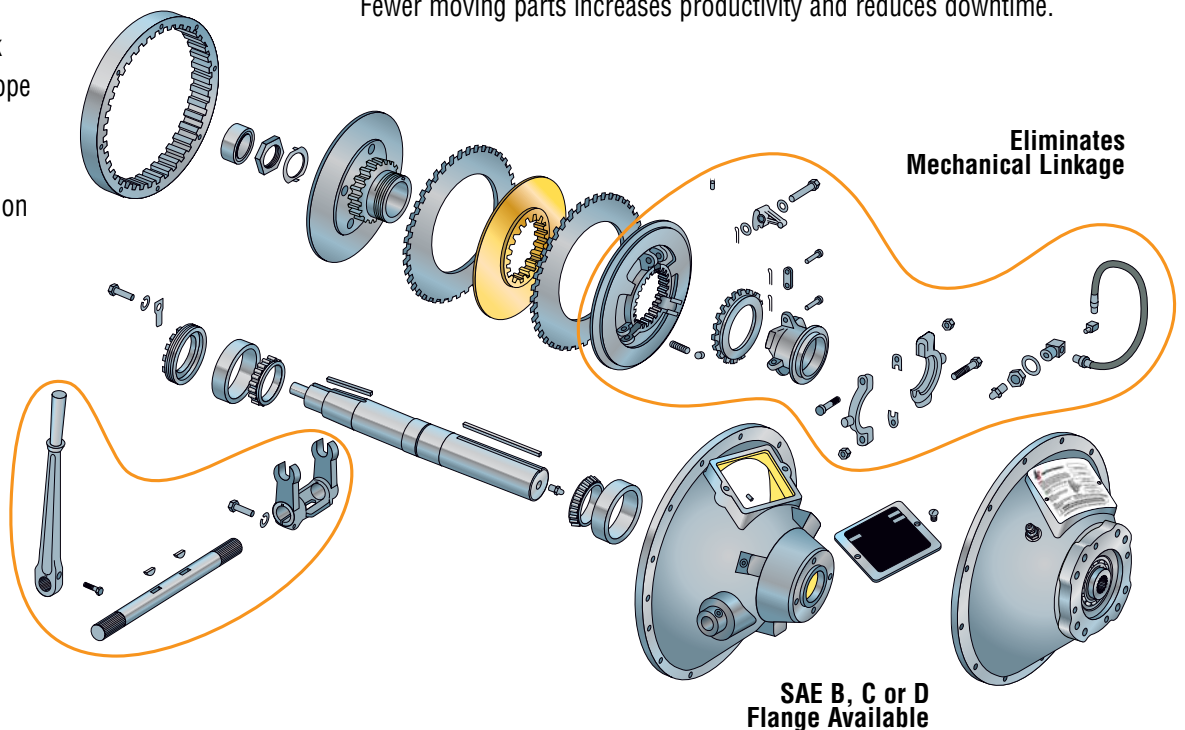
Patent Pending

## Logan vs. Mechanical

### Logan Features:

- Air or Fluid Actuated
- Self-Adjusting™ Disc Pack
- High Torque, Small Envelope
- Available with or Without Pilot Bearings
- Remote Softstart™ 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.



Eliminates  
Mechanical Linkage

SAE B, C or D  
Flange Available



# Logan Bell Housing PTO Specifications

Logan Quick Reference Chart. Consult factory for other sizes.

Clutch Model Number	Clutch Size Flywheel Diameter (in)	SAE Bell Housing Size	In-Line or Side Load	No. of Clutch Discs	Pneumatic Actuation Nominal Rated Input Torque @ 100 PSI (6.9 Bar)		Hydraulic Actuation Nominal Rated Input Torque @ 200 PSI (13.8 Bar)		Maximum Breakaway Torque		HP Range	
					Lbs. - Ft.	Nm	Lbs. - Ft.	Nm	Lbs. - Ft.	Nm	CLASS IV	
											HP	kW
LC-106	6.5	6, 5, 4	BOTH	1	200	271	200	271	285	386	27	20
LC-107	7.5	6, 5, 4	BOTH	1	221	300	221	300	315	427	30	22
LC-108	8	5, 4, 3	BOTH	1	228	309	228	309	325	441	30	22
LC-110	10	4, 3, 2, 1	BOTH	1	434	589	434	589	620	841	55	41
LC-111	11.5	3, 2, 1	BOTH	1	480	650	480	650	685	929	61	45
LC-211	11.5	3, 2, 1	BOTH	2	963	1305	963	1305	1375	1865	122	91
LC-311	11.5	3, 2, 1	BOTH	3	1446	1960	1446	1960	2065	2800	183	136
LC-211 Gen II	11.5	3, 2, 1	SIDE LOAD	2	1610*	2183*	1610*	2183*	2300*	3119*	184	137
LC-211 Gen III	11.5	3, 2, 1	SIDE LOAD	2	963	1305	963	1305	1375	1865	122	91
LC-311 Gen III	11.5	3, 2, 1	BOTH	3	1446	1960	1446	1960	2065	2800	183	136
LC-114	14	1, 0	BOTH	1	900	1220	900	1220	1285	1742	99	74
LC-214	14	1, 0	BOTH	2	1799	2439	1799	2439	2570	3485	197	147
LC-314	14	1, 0	BOTH	3	2702	3664	2702	3664	3860	5234	296	221
LC-214 Gen II	14	1, 0	SIDE LOAD	2	2062**	2796**	2062**	2796**	2949**	3999**	206	153
LC-314 Gen II	14	1, 0	SIDE LOAD	3	3094**	4195**	3094**	4195**	4420**	5993**	309	231
LC-314 Gen III	14	1, 0	BOTH	3	2702	3664	2702	3664	3860	5234	296	221
LC-218 Gen III	18	0, 00	BOTH	2	4977	6749	4977	6749	7117	9650	450	336
LC-318 Gen III	18	0, 00	BOTH	3	7473	10,133	7473	10,133	10,675	14,475	676	504
LC-318 Gen II	18	0, 00	SIDE LOAD	3	7838**	10,628**	7838**	10,628**	11,208**	15,198**	709	529

\* 320 PSI ACTUATION PRESSURE \*\* 435 PSI ACTUATION PRESSURE

Clutch Model Number	Maximum Operating Speed (RPM)	DUTY SERVICE CLASSIFICATION Maximum Clutch Ratings Based On Maximum Torque @ 200 PSI								Maximum Net Weight	
		CLASS I		CLASS II		CLASS III		CLASS IV		Lbs.	Kg
		HP	kW	HP	kW	HP	kW	HP	kW		
LC-106	3000	106	79	53	40	35	26	27	20	53	24
LC-107	3000	118	88	59	44	39	29	30	22	55	25
LC-108	3000	121	90	61	45	40	30	30	22	72	33
LC-110	2850	219	163	110	82	73	54	55	41	115	52
LC-111	2850	242	180	121	90	81	60	61	45	141	64
LC-211	2850	486	362	243	181	162	121	122	91	155	70
LC-311	2850	730	544	365	272	243	181	183	136	185	84
LC-211 Gen II	2600	736	549	368	274	245	183	184	137	190	86
LC-211 Gen III	2700	486	362	243	181	162	121	122	91	209	95
LC-311 Gen III	2700	730	544	365	272	243	181	183	136	237	108
LC-114	2500	394	294	197	147	131	98	99	74	255	116
LC-214	2500	788	588	394	294	263	196	197	147	340	154
LC-314	2500	1184	883	592	441	395	294	296	221	388	176
LC-214 Gen II	2300	825	615	412	307	275	205	206	153	430	195
LC-314 Gen II	2300	1238	923	619	461	413	308	309	231	475	216
LC-314 Gen III	2400	1184	883	592	441	395	294	296	221	410	186
LC-218 Gen III	2100	1801	1343	900	671	600	447	450	336	765	347
LC-318 Gen III	2100	2704	2016	1352	1008	901	672	676	504	842	382
LC-318 Gen II	2100	2837	2116	1419	1058	946	705	709	529	820	372

\* 320 PSI ACTUATION PRESSURE \*\* 435 PSI ACTUATION PRESSURE

## 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.

Logan Clutch Corporation® • (440) 808-4258 • 1-800-5-CLUTCH • Fax (440) 808-0003 • www.loganclutch.com • sales@loganclutch.com

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# Logan Bell Housing PTO Hydraulic and Pneumatic Power Packs



## 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.

**The Logan SoftStart™** feature is available for engagement speeds above engine idle speed.

## Pneumatic Power Packs

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

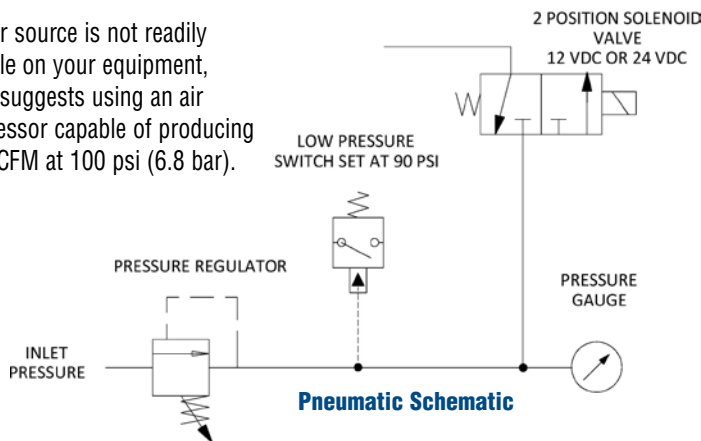


Pneumatic Power Pack

## 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).



Pneumatic Schematic

## Hydraulic 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.



Hydraulic Power Pack with SoftStart™ Manifold

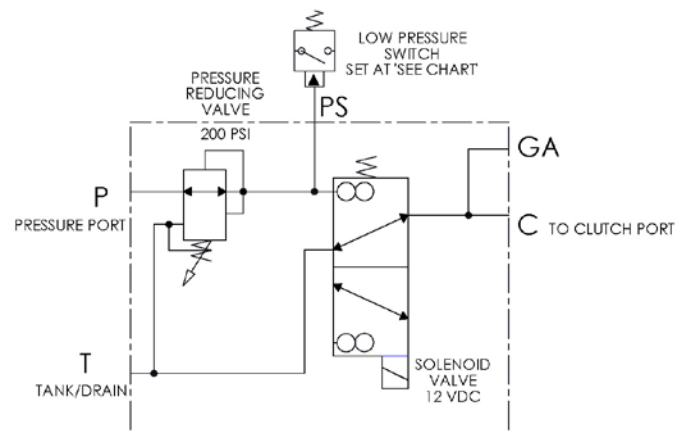
## Hydraulic Actuation

**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).



## Logan SoftStart™ 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



# NEW! Logan FlexaDrive™ 700-2 2-Position Pump Drive System for Engines up to 700 HP (522 kW)

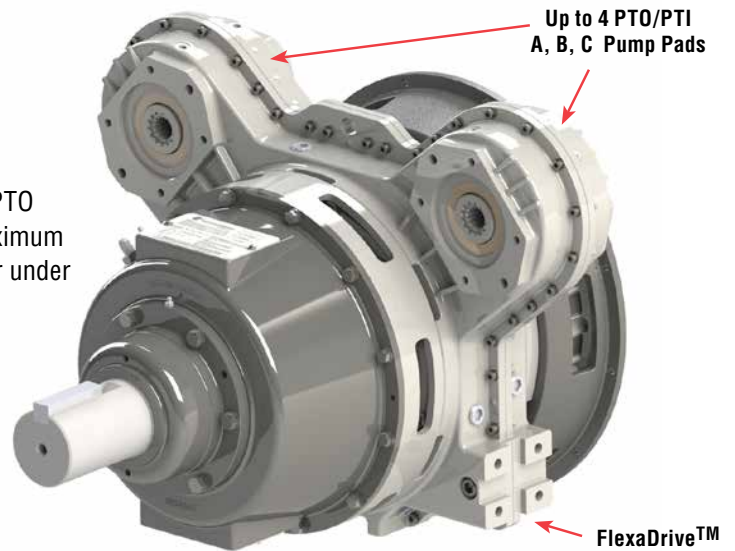
## Logan FlexaDrive™ Series Description:

The Logan FlexaDrive multiple pump drive system is a self-contained gearbox with integral flexible coupling, providing full engine power between your engine (power take-off) and transmission. Three (3) different models, with up to five (5) pump drive towers offer up to ten (10) PTO/PTI pump pads with bi-directional rotation for engines ranging from 200 HP (150 kW) to 5000 HP (3700 kW) at a maximum of 2000 RPM (custom configuration available). Various step-up gear ratios are available for direct drive PTO's. An integral Flexible coupling is part of the system to dampen torsional vibration. Logan FlexaDrives mount to all standard SAE flywheel housings ranging from No. 3 to No. 00.

## 2-Position Pump Drive System For Engines up to 700 HP (522 kW)

The Logan 2-Position Pump Drive is outfitted with up to four (4) PTI / PTO pads, and can accommodate up to 730 HP (544 kW) Engines, with maximum Speeds up to 2600 RPM, and a maximum of 160 HP (120kW) per tower under continuous duty.

- Input Housing SAE No. 1 – No. 3
- Output Housing SAE No. 3
- Pump Pads SAE A – SAE C
- Continuously Rated – Total 300 HP (225 Kw)
- Continuously Rated – Per Tower 160HP (120 Kw)
- Integrated Reservoir



Logan 700-2 FlexaDrive with Logan 1150 Series Clutch

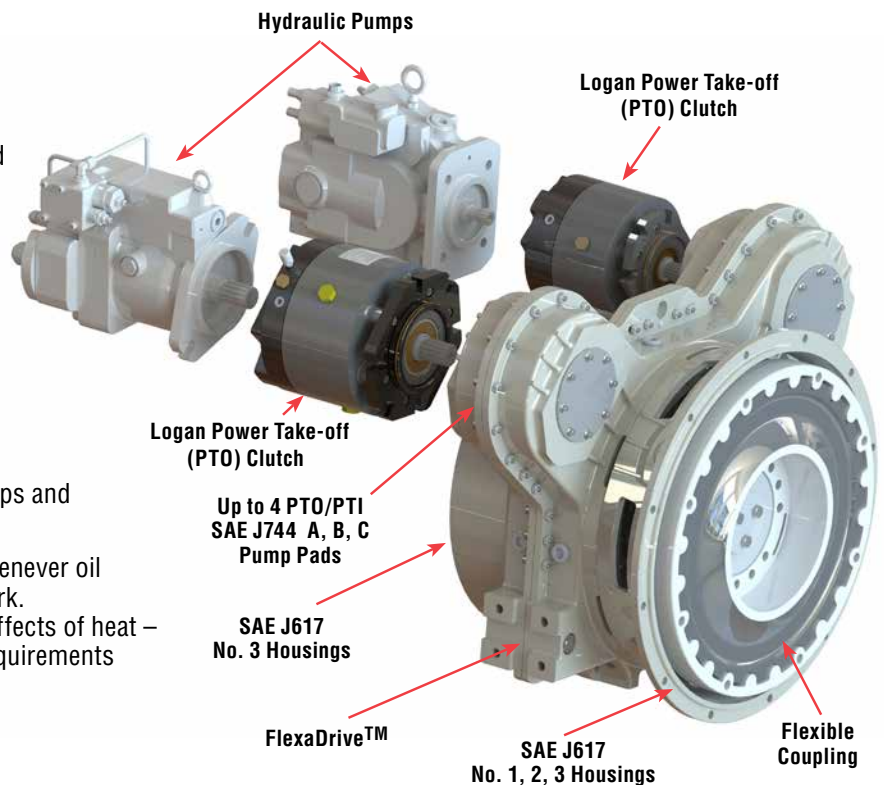
## Logan Direct Drive Power Take-off (PTO) Clutches

### How They Work:

Direct Drive PTO's are self-contained, fluid or air activated clutches, positioned between a live PTO pad and hydraulic pump.

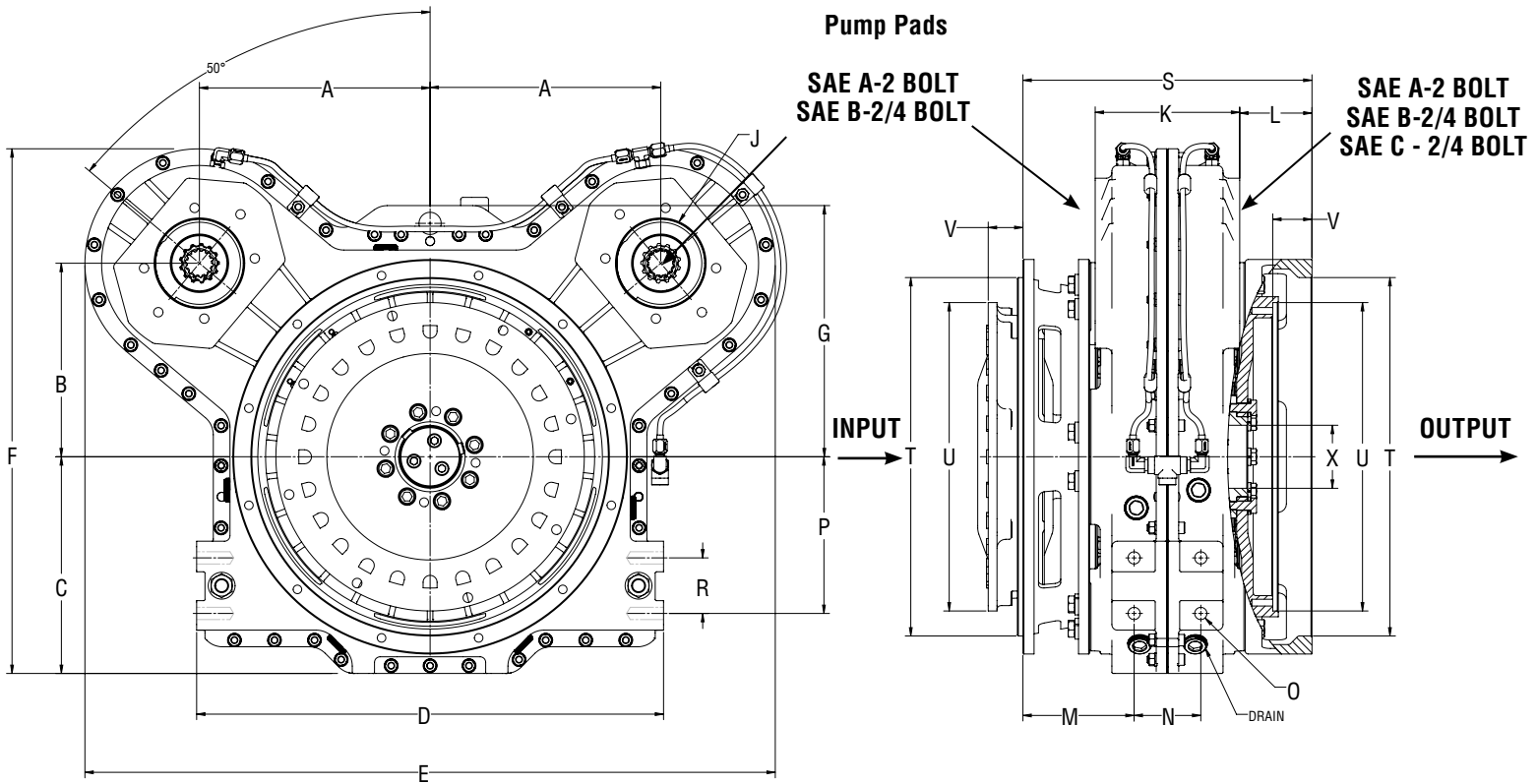
### PTO Clutch Advantages:

- Reduces fuel consumption and CO2 emissions by engaging drives and pumps only when required
- Better Engine Starts: Reduces horsepower draw and cranking power required during machine start-up by disconnecting the hydraulic system from the engine
- Reduced ambient noise through intermittent use of pumps and equipment
- Cooler running hydraulic systems: Heat is generated whenever oil dumps from high to low pressure without producing work. Disconnecting the PTO Clutch reduces the destructive effects of heat – lowering maintenance costs and hydraulic oil service requirements
- Extends the life of drive systems and components
- Standard PTO clutches available in B, B-B, C, C-C, and other popular sizes





# NEW! Logan FlexaDrive™ 700-2 Series 2-Position Pump Drive System for Engines up to 700 HP (522 kW)



## OPERATING PARAMETERS FLEXA DRIVE™ 700-2

SPEED	MAX INPUT POWER	TOTAL HEADS CAPACITY*	SINGLE HEAD CAPACITY*	GEAR RATIO	OIL CAPACITY
2200 RPM MAX.	700 HP / 522 kW	300 HP / 224 kW	160 HP / 120 kW	1:1; 1:1.16; 1:1.25	3 Gal. / 11.6 L

## FlexaDrive™ Dimensions

A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R
7.768	11.094	9.75	21	25.836	25.994	12.958	5	SAE J744	6.5	3.05	5.0	3	8XM16	7.05	2.5
UNITS															
197.31	281.79	247.65	533.4	656.24	660.25	329.13	127	SAE J744	165.11	77.47	127	76.2	8XM16	179.07	63.5

INPUT HOUSING		INPUT FLYWHEEL		OUTPUT HOUSING	S [in/mm]	T [in/mm]	U [in/mm]	V [in/mm]	X [in/mm]	WEIGHT * [Lbs./kg]
J617	SAE 2 / SAE 3	J620	SAE 11.5"	SAE 3	11.300/287.02	16.125/409.58	13.875/352.42	1.56/39.62	2.8346/72	470/215
	SAE 1		SAE 14"		12.800/325.12	20.125/511.18	18.375/466.72	1.00/25.4	-	501/227

**OUTPUT:** MOUNTING AVAILABLE FOR SAE J617 HOUSINGS AND SAE J620 FLYWHEELS AND FOR ANY CUSTOMER SPECIFIED DRIVE SHAFT.

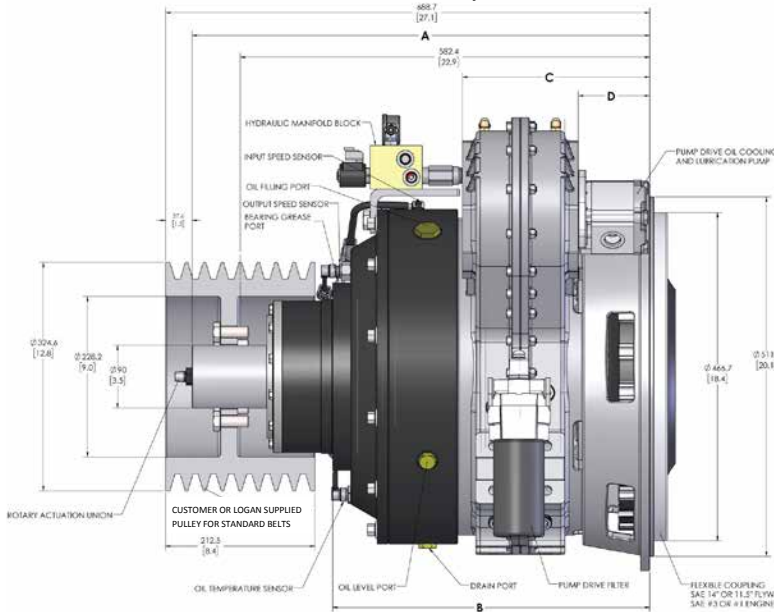
\* Weight without oil. Weight of oil approx. 50 Lbs./23 kg.

\*\* Torque through main shaft

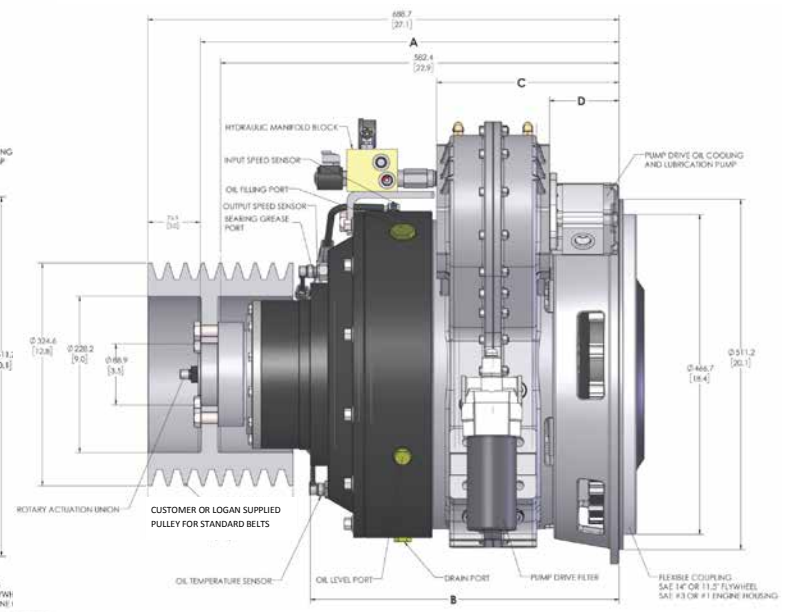


# Logan FlexaDrive™ LFD 700-2 with LC1350D4 Clutch with Shaft or Flange Output

Logan Clutch FlexaDrive LFD 700-2 with LC1350D4 Clutch  
- Shaft Output



Logan Clutch FlexaDrive LFD 700-2 with LC1350D4 Clutch  
- Flange Output

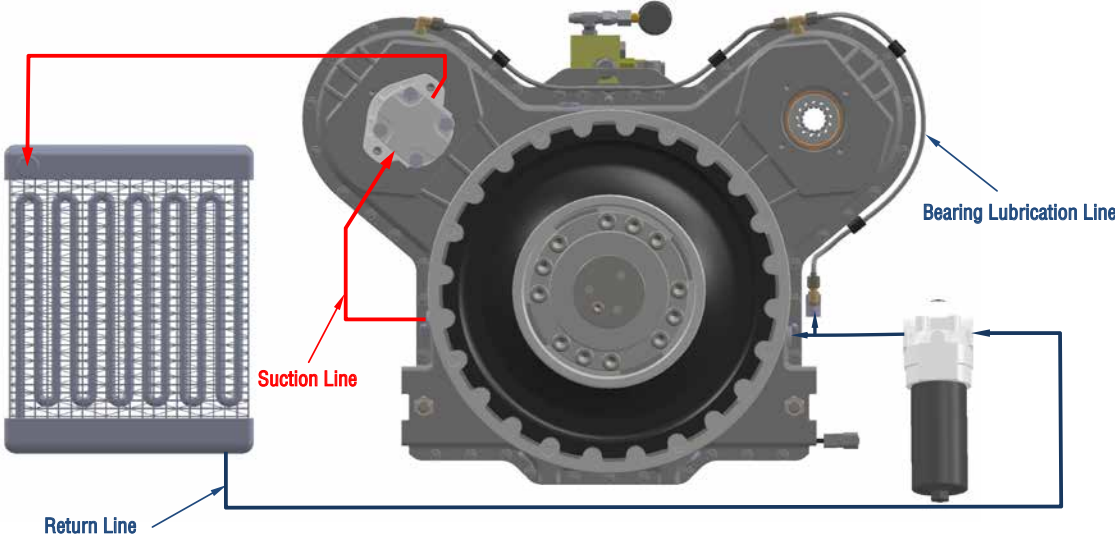
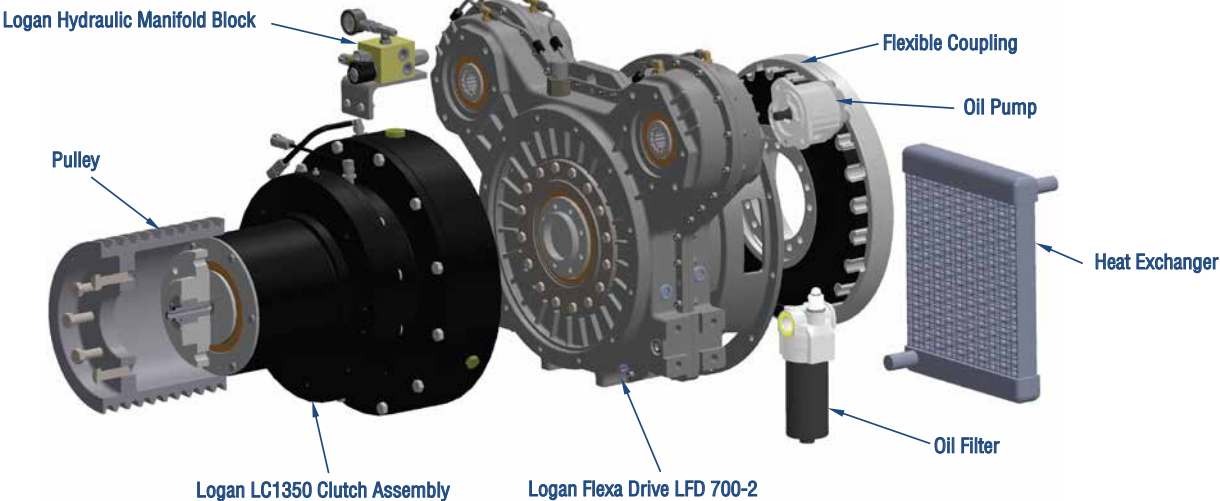


## Clutch Dimensions and Specifications

Clutch Dimensions and Specifications							
							<b>LPTO 704135</b>
Nominal Design Torque							3000 Lb.Ft. (4070 Nm)
Maximum Allowable Power							475 HP (345kW)
Maximum Allowable Operating Speed							2250 RPM
Engine Housing Size							SAE #2, #1** or #0*
Flywheel Size							SAE 18"*, 14" or 11-1/2"
Total Heads - HP (kW)							300 (223) <b>Continuous Power Rating</b>
Single Head - HP (kW)							160 (120) <b>Continuous Power Rating</b>
Pump Head Gear Ratio							1:1, 1:1.16, 1:1.26
Clutch Model	Weight	A	B	C	D	Shaft	Keyway
<b>LFD700-2 LC1350D4</b>	650 Lbs. (295 kg)	24.1 (611.8)	17.8 (451)	10.5 (266.7)	4.00 (101.6)	<b>FLANGE MOUNT</b>	
<b>LFD700-2 LC1350D4</b>	650 Lbs. (295 kg)	25.6 (651.1)	17.8 (451)	10.5 (266.7)	4.00 (101.6)	03.542-3.543 (89.97-89.99)	4.00 (102)

# Logan FlexaDrive™ LFD 700-2 with LC1350D4 Clutch

## Typical arrangement with pulley and coolant system





# NEW! Logan FlexaDrive™ 1000-2 2-Position Pump Drive System for Engines up to 1000 HP (745kW)

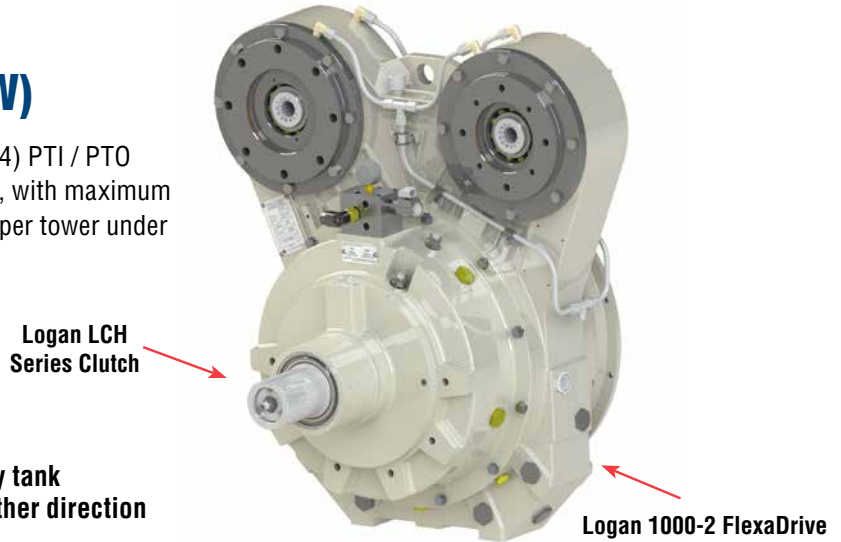
## Logan FlexaDrive™ Series Description:

The Logan FlexaDrive multiple pump drive system is a self-contained gearbox with integral flexible coupling, providing full engine power between your engine (power take-off) and transmission. Three (3) different models, with up to five (5) pump drive towers offer up to ten (10) PTO/PTI pump pads with bi-directional rotation for engines ranging from 200 HP (150 kW) to 5000 HP (3700 kW) at a maximum of 2000 RPM (custom configuration available). Various step-up gear ratios are available for direct drive PTO's. An integral Flexible coupling is part of the system to dampen torsional vibration. Logan FlexaDrives mount to all standard SAE flywheel housings ranging from No. 3 to No. 00.

## 2-Position Pump Drive System For Engines up to 1000 HP (745 kW)

The Logan 2-Position Pump Drive is outfitted with up to four (4) PTI / PTO pads, and can accommodate up to 1000 HP (745 kW) Engines, with maximum speeds up to 2200 RPM, and a maximum of 160 HP (120kW) per tower under continuous duty.

- Input Housing SAE No. 1 – No. 3
- Output Housing SAE No. 1 - No. 3
- Pump Pads SAE A – SAE D
- Continuously Rated – Total 300 HP (225Kw)
- Continuously Rated – Per Tower 160 HP (120Kw)
- Integrated Reservoir - Eliminates need for secondary tank
- Pump Drive Towers can be positioned up to 45° in either direction



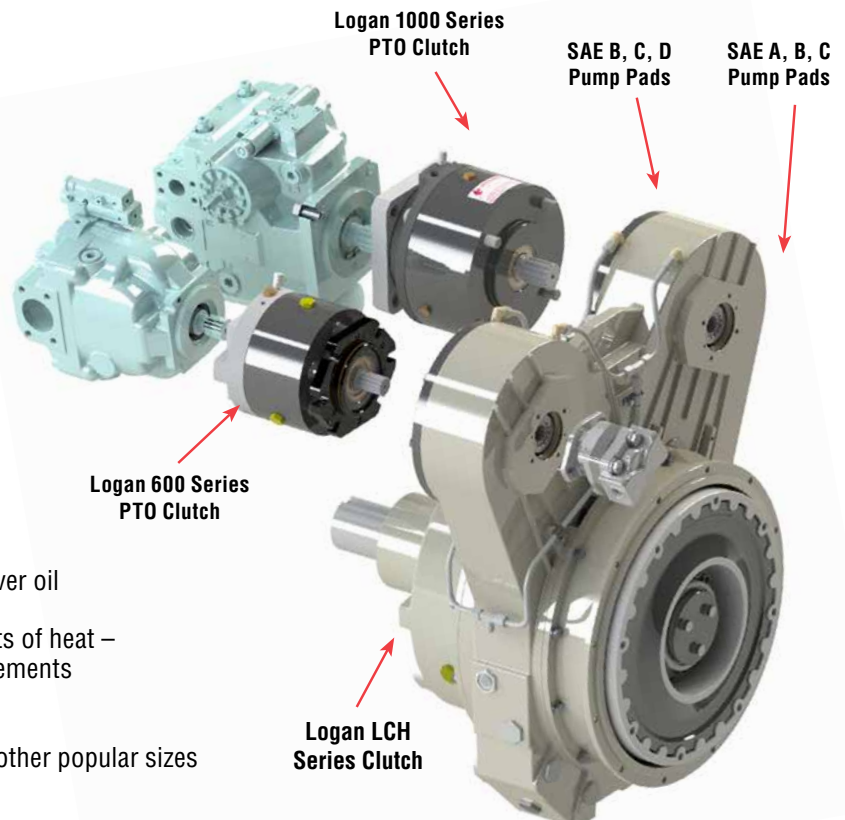
## Logan Direct Drive Power Take-off (PTO) Clutches

### How They Work:

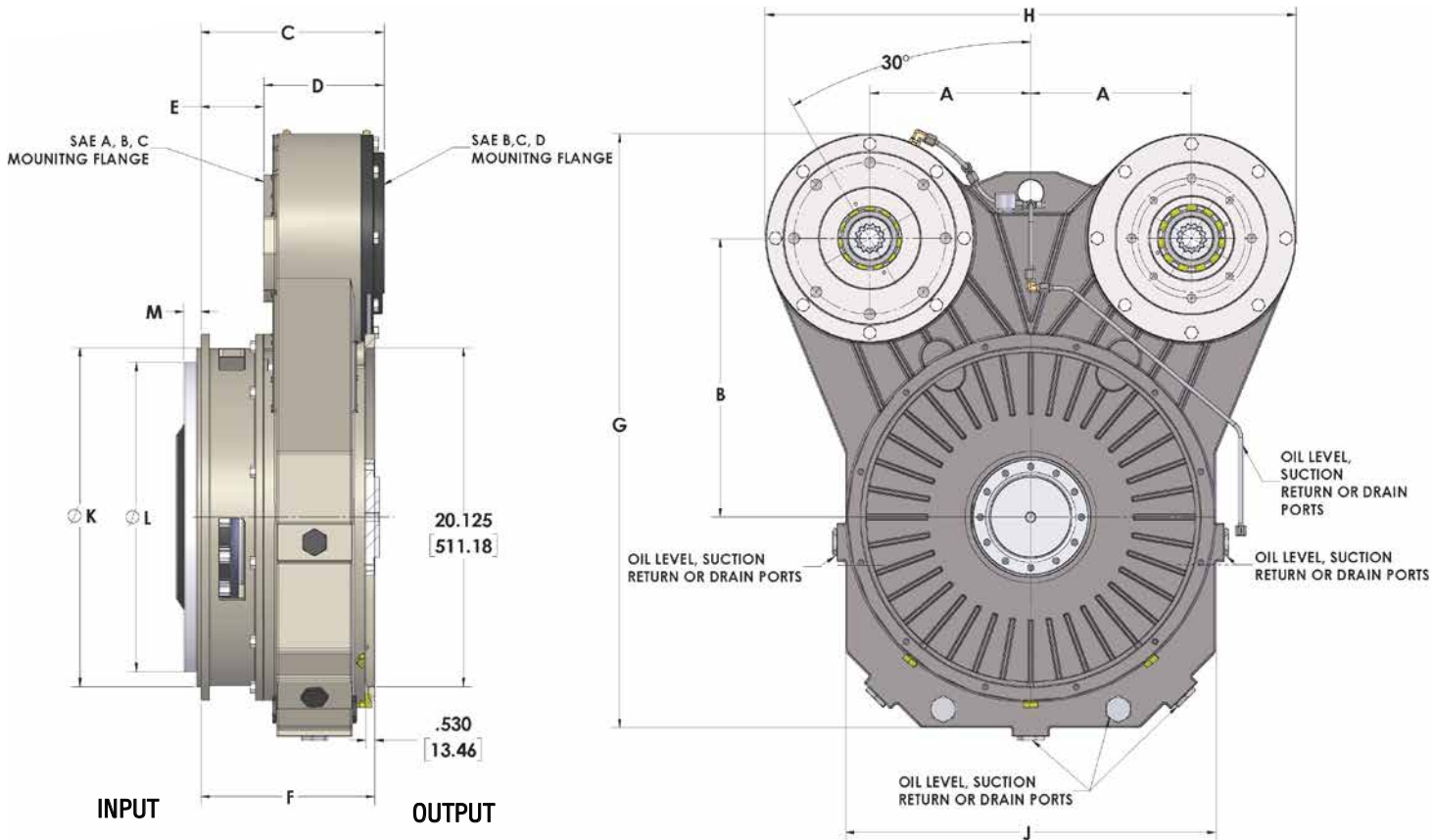
Direct Drive PTO's are self-contained, fluid or air activated clutches, positioned between a live PTO pad and hydraulic pump.

### PTO Clutch Advantages:

- Reduces fuel consumption and CO2 emissions by engaging drives and pumps only when required
- Better Engine Starts: Reduces horsepower draw and cranking power required during machine start-up by disconnecting the hydraulic system from the engine
- Reduced ambient noise through intermittent use of pumps and equipment
- Cooler running hydraulic systems: Heat is generated whenever oil dumps from high to low pressure without producing work. Disconnecting the PTO Clutch reduces the destructive effects of heat – lowering maintenance costs and hydraulic oil service requirements
- Extends the life of drive systems and components
- Standard PTO clutches available in A, B, B-B, C, C-C, D and other popular sizes



# NEW! Logan FlexaDrive™ 1000-2 2-Position Pump Drive System for engines up to 1000 HP (745kW)



## OPERATING PARAMETERS FLEXA DRIVE™ 1000-2

<b>SPEED</b> 2200 RPM MAX.	<b>MAX INPUT POWER</b> 1000 HP / 745 kW	<b>TOTAL HEADS CAPACITY*</b> 300 HP / 224 kW	<b>SINGLE HEAD CAPACITY*</b> 160 HP / 120 kW	<b>GEAR RATIO</b> 1:1; 1:1.16; 1:1.25	<b>OIL CAPACITY</b> 3.8 Gal. / 11.4 L
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## FlexaDrive™ 1000-2 Dimensions

A	B	C	D	E	F	G	H	J
9.55	16.54	10.88	6.88	3.75	10.33	35.24	31.50	22.00
UNITS in/mm								
242.6	420.2	276.2	174.6	92.3	262.38	895.2	800.2	558.8

INPUT HOUSING		INPUT FLYWHEEL		K [in/mm]	L [in/mm]	M [in/mm]	WEIGHT * [Lbs./kg]
FlexaDrive™ 1000-2	J617	SAE 0	J620	SAE 18"	25.50/647.7	22.50/571.50	708/322
		SAE 1		SAE 14"	21.125/539.75	18.375/466.73	685/310
		SAE 2		SAE 11.5"	17.625/447.67	13.875/352.43	663/300
		SAE 3		SAE 11.5"	16.125/409.57	13.875/352.43	655/297

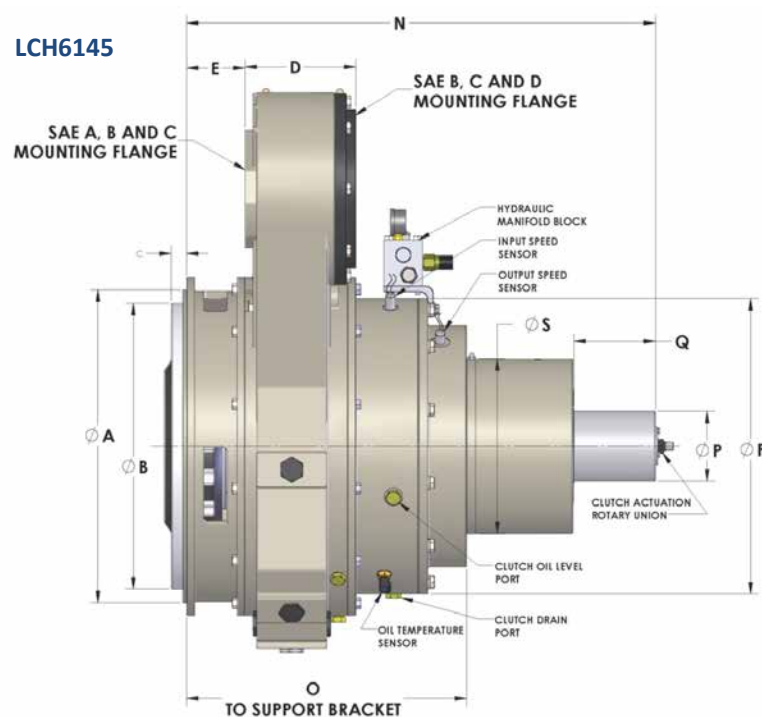
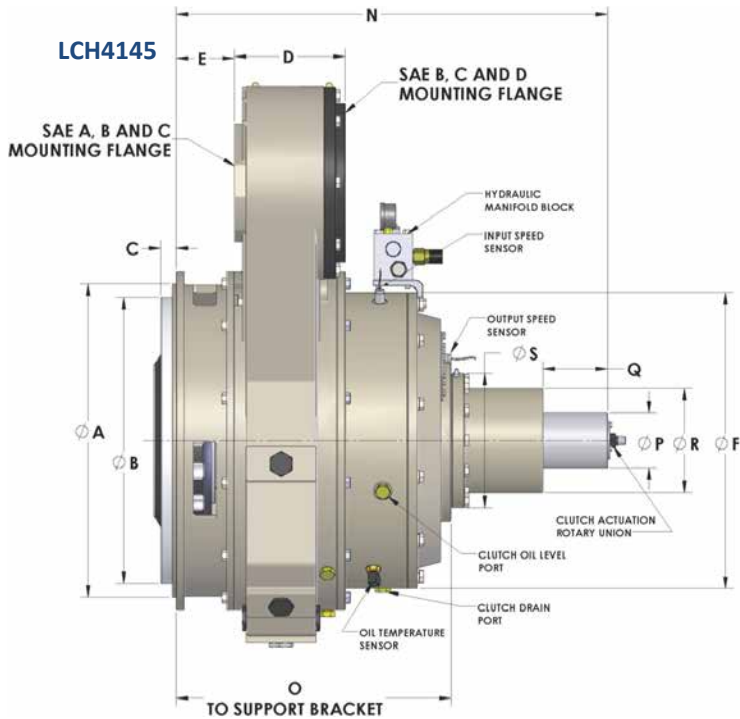
**OUTPUT:** MOUNTING AVAILABLE FOR SAE J617 HOUSINGS AND SAE J620 FLYWHEELS AND FOR ANY CUSTOMER SPECIFIED DRIVE SHAFT.

\* Continuous Duty.

\*\* Weight without oil. Weight of oil approx. 25 Lbs./11.4 kg.



# Logan Clutch LPTO 1450 Series FlexaDrive™ Clutch Pump Drive Operating Parameters



## OPERATING PARAMETERS - FLEXA DRIVE™ 1000-2

<b>MAX SPEED</b> 2200 RPM MAX.	<b>MAX INPUT POWER</b> 1000 HP / 745 kW	<b>TOTAL HEADS CAPACITY*</b> 300 HP / 224 kW	<b>SINGLE HEAD CAPACITY*</b> 160 HP / 120 kW	<b>GEAR RATIO</b> 1:1; 1:1.16; 1:1.25	<b>OIL CAPACITY</b> 3.8 Gal. / 14.7 L
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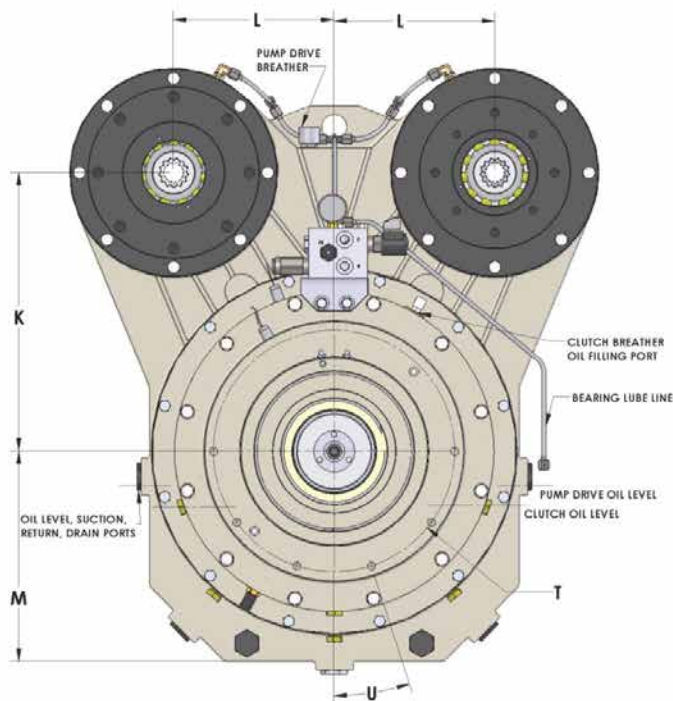
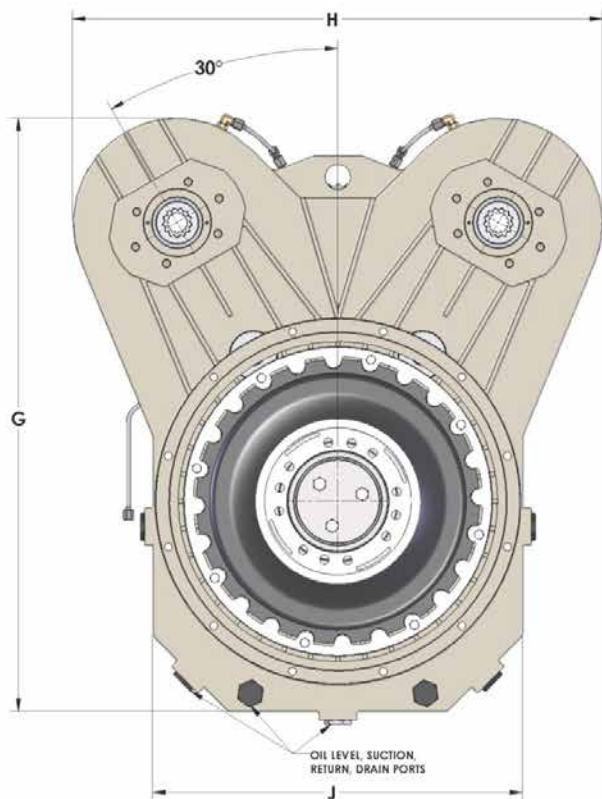
## OPERATING PARAMETERS - Clutch

	Max Speed	Nominal Design Torque	Actual Pressure	Oil Capacity	N	O	P	Q**	R	S	T	U
<b>LCH4145</b>	2200 RPM Max	3,000 Lb.Ft. (4,070 Nm)	225 PSI (15.5 bar)	0.8 Gal (3.0 L)	27.76 (705)	17.69 (449.4)	3.54 (95.3)	4.15 (105.4)	6.70 (170.2)	8.63 (219.1)	R4.73 (120.1)	18° 6xM14
<b>LCH6145</b>	2200 RPM Max	5,100 Lb.Ft. (7,000 Nm)	225 PSI (15.5 bar)	1.0 Gal (3.8 L)	30.14 (765.5)	18.00 (457.3)	4.50 (114.3)	5.25 (133.4)	11.20 (284.5)	11.25 (285.8)	R7.17 (182)	18° 6xM14

\*\*Shaft key size per customer specifications.



# Logan Clutch LPTO 1450 Series FlexaDrive™ Clutch Pump Drive Operating Parameters



**LPTO 1450 Series Dimensions in / mm**

LPTO 1450 Series Dimensions in / mm												Weight Lbs / kg
A*	B*	C*	D	E	F	G	H	J	K	L	M	
20.13 (17.63)	18.38 (13.87)	1.00 (1.56)	7.13	3.75	19.00	35.24	31.5	23.00	16.54	9.55	12.50	1200-1300
511.2 (447.7)	466.7 (352.4)	25.4 (39.62)	181	95.3	482.6	895.1	80.2	584.2	420.1	242.6	317.5	545-590

\*Dimensions for Input Housing SAE #1 (SAE #3) and flywheel flexible coupling SAE 14" (SAE 11.5"). Housing for SAE 0 engine mount available.

## Rock Crushing Equipment





# Logan Self-Adjusting™ Bell Housing PTO™ Clutches with Microprocessor Controls

## Microprocessor Control Solutions with LockUp Detection

Logan offers simple clutch controls for mobile equipment. Control capabilities range from monitoring the overall condition of the clutch: i.e. input speed, output speed, temperature, pressure, lock-up detection – to real time access to clutch condition and data via laptops, USB's, and smart phones with WiFi capabilities. An optional color LCD display is available for machines not equipped with a machine-operator interface.



The LC-318 transmits over 7500 lb. ft. (10,170 Nm) of torque @200 psi (13.8 bar)



Logan LCL-709 Color Display

## Logan Control System Advantages



### LCL-709 Color Display:



Logan LCL-709 Color Display

The optional LCL-709 is a solid-state color graphical microcontroller based display. Display provides communication messages through the J1939 network to equipment and to the display screen for simple man-machine interface.

### LCL-442 I/O Module:

The LCL-442 is a solid-state microprocessor based module. Delivered in a clear enclosure, this unit provides 10 inputs and 4 outputs I/O in a compact and economical package.



Logan LCL-442 I/O Module

Designed for use as a stand-alone unit or with the display, the LCL-442 is offered with LED indicators for each input, which simplifies troubleshooting in the field.

#### INPUTS / MONITORING:

- Input Speed
- Output Speed
- Temperature
- Thermal Overload Detection
- Pressure Transducer Status
- Local/Remote Engage/Disengage
- External Fault/ Prevent Run

#### COMMUNICATION:

- J1939 Communication
- WiFi Capable

#### OUTPUTS:

- Clutch Status: engaging, engaged, and disengaged
- CAN Messages
- Clutch Status Indicator
- Clutch ON/OFF with SoftStart™
- Brake ON/OFF

### LCL-T05 WiFi Module:

The LCL-T05 is a solid-state microprocessor based module, delivered in a Deutsch enclosure, with a WiFi wireless interface.



Logan LCL-T05 WiFi Module

LoganNet WiFi feature allows for monitoring the location, movement, status and health of a vehicle or fleet of vehicles. The data and parameter settings are available via any WiFi enabled smart phone, tablet or PC, without having to download a single piece of software. Also, download any data to your PC or USB memory device.

The LCL-T05 is configured with 2GB of data storage, enabling it to handle most OEM data logging applications.



# 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
- RJ Link
- Cotta
- Gear Products
- Marco

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

Twin Disc is registered trade mark of Twin Disc Inc.

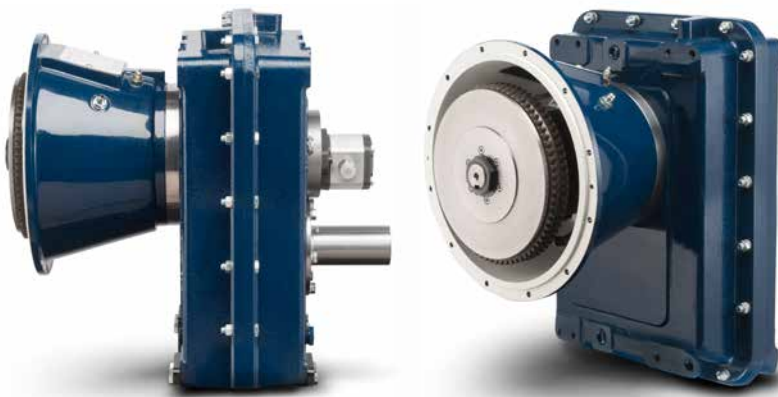


**Funk 2800 series, single direct drive pump SAE#3 housing and B pad (retrofitted with Logan LC-110 hydraulic clutch)**



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

## Logan Bell Housing PTO's – Gear Boxes / Drop Boxes



**Logan LC-211 Generation III Bell Housing PTO Attached to Gearbox / Drop Box**

Logan PTO Clutches can be incorporated into a gearbox or drop box application. Clutches are used to engage drive systems on the fly, or in situations where pumping or work stations require periodic, intermittent activation.

### Features:

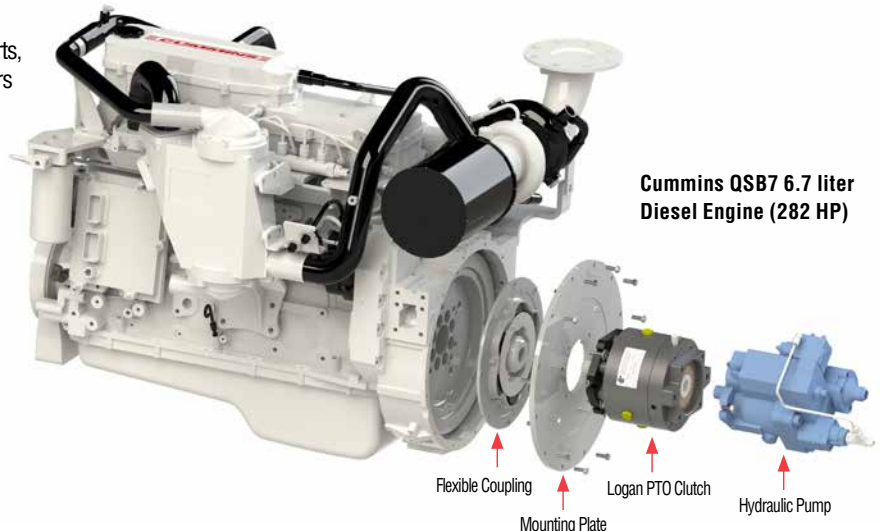
- Connect – disconnect for mobile equipment
- Air / Fluid actuation
- Self-adjusting disc pack eliminates linkages, yokes, lever arms
- SAE # 00 to SAE # 4 Housings

## Direct Drive PTO's – Flywheel Mounted with Integral Torsional Coupling

Power on demand – engage pump only when required. Ideal for cold starts, and connect - disconnect applications. Reduces fuel consumption, Lowers emissions, and reduces torsional vibration from the engine to the pump.

### Features:

- Connect – disconnect for hydraulic pumps
- Air / Fluid actuation
- Self-contained, corrosion resistant design
- SAE A thru F splines / ISO mounting flanges /bore and keyway configurations
- Torque ranges from 50 -2550 lb. ft. (pump flange and spline dictate size)
- Integrated torsional isolation coupling



**Cummins QSB7 6.7 liter Diesel Engine (282 HP)**

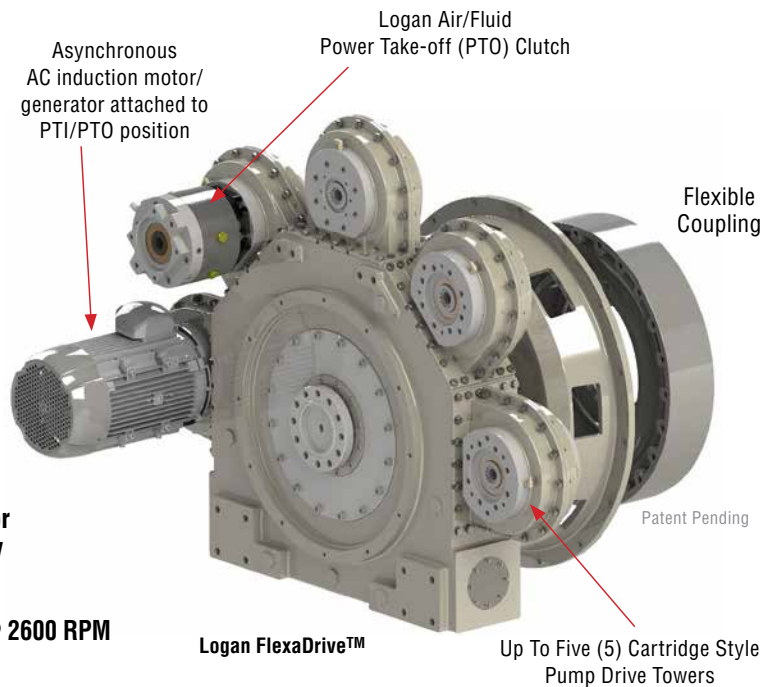
# Logan FlexaDrive™ Multiple Pump Drive Systems

## Logan FlexaDrive™ Systems:

The **Logan FlexaDrive** is a multiple pump drive system, sandwiched between your engine and clutch, or transmission, allowing up to ten (10) live PTO / PTI pumps pads for a wide range of requirements such as drive shafts, pumps, pulleys, and clutchable power take-offs.

## Logan FlexaDrive™ Advantages:

- Significantly reduces diesel engine operating hours, emissions, fuel consumption and engine maintenance
- Hybrid ready feature allows for variable speed motor generator(s) to provide low power propulsion during standby or transit
- Variable speed motor generator can act as a Genset or increase Bollard Pull during ship assists
- Up to ten (10) live PTO / PTI positions
- Up to five (5) cartridge style pump drive towers (up to 200 HP / 150 kW for each tower – 600 HP total) for current requirements and future scalability
- Flexible couplings in SAE 11.5", 14", 18" and 21" flywheel sizes
- For engine capacities from 200 HP (150 kW) up to 5000 HP (3700 kW) @ 2600 RPM
- Short axial length – Full torque transmission



## Logan LVC Series Clutches for Well Service Rigs / Oil & Gas



### Maximum Torque – Minimum Envelope – Reverse Compatibility

Air actuated, multiple disc, dry disc pack design for maximum torque transmission within short, axial envelope. Simplified cylinder-piston, o-ring design, eliminates air tube or bladder type leaks.



### For Draw Works Applications

The Logan LVC clutch cylinder-piston, and disc pack design provides more clamping force and torque transfer than competitor clutches – all within a design envelope that is reverse compatible and significantly lighter in weight than Twin Disc™, Wichita and WPT type PO Clutches.



### Lightweight Design – Ideal for overall rig weight reduction requirements

The Logan LVC design can reduce overall rig weight by several hundred pounds, which goes a long way when complying with state and federal on-highway load regulations during rig transport from job to job.

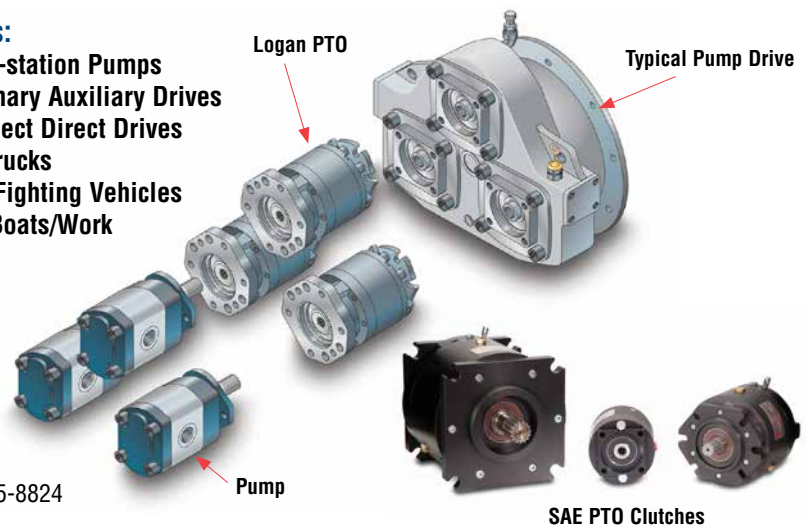
## Logan SAE Direct Drive PTO Clutches

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.

Standard PTO Clutches available in SAE B, B-B, C, C-C and DIN standards.

### 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/Winch



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