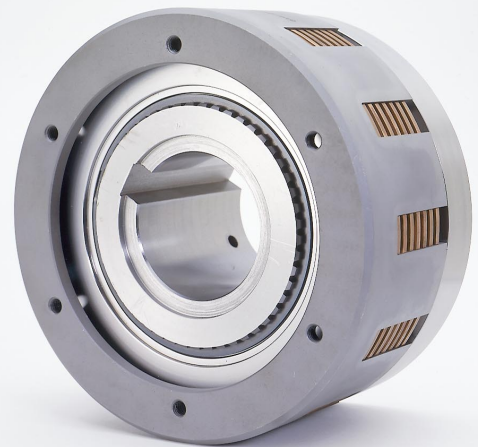


# Multiple Disc Clutches, Brakes and Clutch Brakes

Hydraulic / Pneumatic Actuated

- Machine Tools
- Industrial
- Construction
- Agriculture
- Marine
- Mining
- Rail
- Oil Field
- Lawn & Turf Equipment



**Logan Clutch Corporation**®  
manufacturers of clutches and brake products

# Logan Multiple Disc Clutches and Brakes

## Simple, Compact, High Torque Design

Logan Fluid or Air actuated clutches, brakes, and clutch-brake combinations are used in a wide variety of Machine Tool, Industrial, Marine, Municipal, Mining and Off-Highway applications. Our attention to quality and service, along with the ability to modify standard units to meet specific customer needs, has led to the success and growth of Logan Clutch Corporation.

The Standard Logan product line is described in this catalog. It consists of three series of clutches and brakes with design features that are beneficial to their installation, operation and maintenance. Each series has model sizes with friction discs ranging in diameter from 2.5 inches (64 mm) to 8 inches (203 mm). All models can be furnished with standard lug or gear toothed friction discs. An overview of their torque capacities and typical configurations can be viewed on pages 7 and 8.

## Clutch Applications

When used as a clutch, the hub is keyed to the drive's shaft. The drive cup is attached to a bearing mounted gear, sprocket or sheave, which can freewheel about the same shaft. The hub or the drive cup can be the driving or driven member.

The above arrangement is used to transmit torque between two parallel shafts. When torque must be transmitted between in-line shafts, one half of a flexible coupling is used to connect the bearing mounted drive cup to the other shaft.

## Brake Applications

When S and P units are used as a brake, their hub is keyed to the shaft to be stopped. The drive cup is held stationary by the drive's supporting frame. The R series allows either it's hub or drive cup to be the stationary member. An external cylinder port is provided when the hub is held stationary.

## Operation

Pressurizing the cylinder with fluid or air forces the piston to clamp and lock the friction and separator discs. Torque is transmitted through the interfaces between hub and separator disc splines, separator and friction discs, and friction disc tangs and drive cup slots. When pressure is removed, the release springs separate the separator discs and maintain a running clearance between separator and friction discs.

## Lubrication

**R and S Series:** Logan R and S Series Clutches and brakes are designed primarily for wet operation within gear boxes and transmissions. They can be partially submerged in an oil sump or an oil splash or spray can be directed on the outside diameter of the disc pack. This wet operation aids in dissipating the thermal energy generated at the disc friction interfaces.

S series units require lubrication of the cylinder and thrust bearings. Usually, the oil splash or spray directed at the disc pack provides sufficient lubrication. Lube ports are available for specific applications.

**P Series:** P series clutch bearings are greased and sealed and do not require external lubrication. Torque ratings are based on dry operating conditions.

## Convenient to Maintain

Logan Clutches and brakes do not require linkages, levers, or adjusting collars. At drive system service time, in-stock disc pack kits, seal kits, and bearing repair kits, along with factory installation data sheets make maintenance quick and easy. Factory reconditioning is also available.

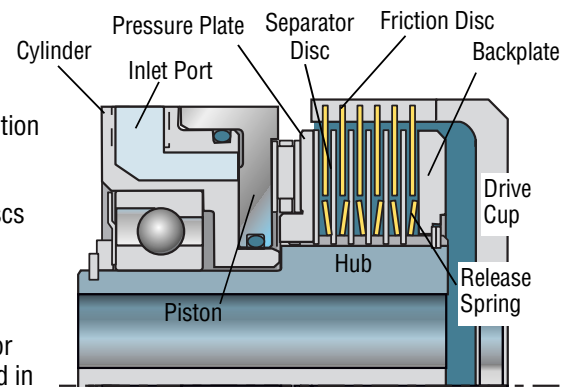
### Standard Features

- Maximum Torque / Minimum Envelope
- Hydraulic or Pneumatic Actuation
- Wet or Dry Operation
- Fast Engagement / Quick Release
- Minimal Freewheeling Drag
- Compact Design
- Custom Bore Diameters / Keyways

### Options

- Modified Standards for Specific Design Requirements
- Increased Torque and RPM Capability
- Geared Friction Disc and Drive Cup Interface
- Custom Drive Cups
- Forced Cooling & Thrust Bearing Lubrication
- Mounted for Use as a Power-Applied Brake

## Logan Clutch Components



Typical S Series clutch



S 450 Series clutch with splined bore and lube port for increased lubrication.

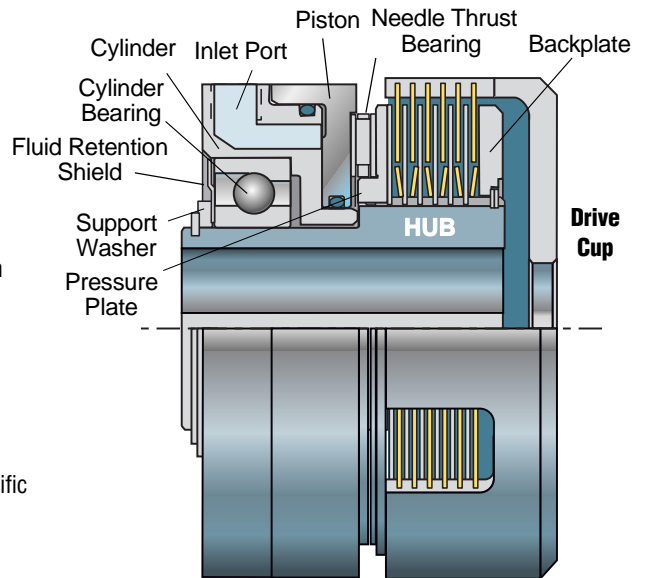


## Stationary Cylinder for Precise Alignment

The actuating cylinder and piston in the S series design do not rotate. They are bearing supported on the mounting hub and are held stationary by the external connection to the inlet port. This bearing allows the separator discs and hub, and the shaft on which it mounts, to rotate about the cylinder and piston. A thrust bearing permits relative motion between the stationary piston and rotating separator discs. Because both bearings require lubrication, it is important to utilize lube ports provided and/or direct an oil spray or splash at bearing surfaces.

### Features

- Hydraulic or Pneumatic Actuation
- Wet Operation
- Stationary Cylinder and Piston
- Fast Response / Lower Inertia
- Easy Installation
- Minimal Actuating Flow
- Positive Disengagement
- Can be Modified to Meet Specific Application Requirements



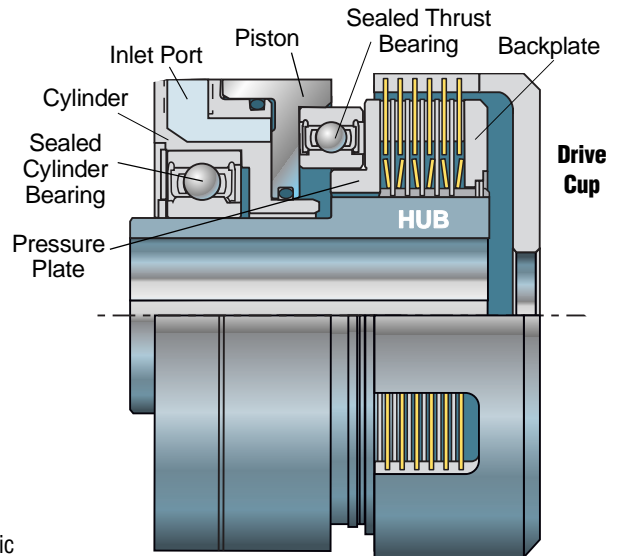
## Sealed Ball Bearings for Positive Lubrication

The P series design is similar to the S series, which is designed for wet operation. The difference between the two models occurs in the bearings. P Series bearings are pre-lubricated and sealed and do not require external lubrication.

Torque ratings are based on the P Series disc pack operating in dry conditions—thus requiring lower actuation pressure to achieve relatively high rates of torque.

### Features

- Hydraulic or Pneumatic Actuation
- Sealed Pre-lubricated Bearings
- Dry Applications
- Stationary Cylinder and Piston
- Fast Response / Lower Inertia
- Easy Installation
- Minimal Actuating Flow
- Positive Disengagement
- Can be Modified to Meet Specific Application Requirements



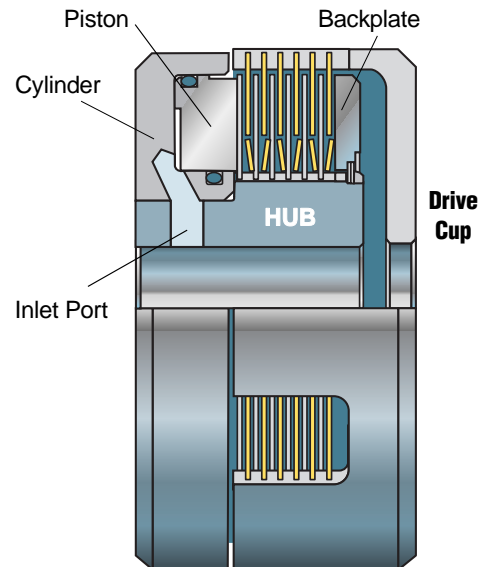
## High Torque / Small Envelope

The R series design provides maximum torque within a small envelope. In the R Series design, the piston and actuating cylinder, which is integral with the mounting hub, rotate. Bearings are not required. The shaft on which the hub mounts is rifled and cross drilled to provide passage for the actuating media. A press fit or cap seals are necessary to prevent media pressure loss due to seepage past the hub and shaft interface.

Although the R series design can withstand high rotational speeds, consideration must be given to disengaging and freewheeling speeds when the units are hydraulically actuated. Review the maximum disengaging speed for each standard model (see page 6).

### Features

- Hydraulic or Pneumatic Actuation
- Does Not Require Bearings
- Short Axial Length
- Fast Response
- Minimal Drag, Positive Disengagement
- Light Weight
- Maximum Torque
- Minimal Actuating Flow
- Can be Modified to Meet Specific Application Requirements





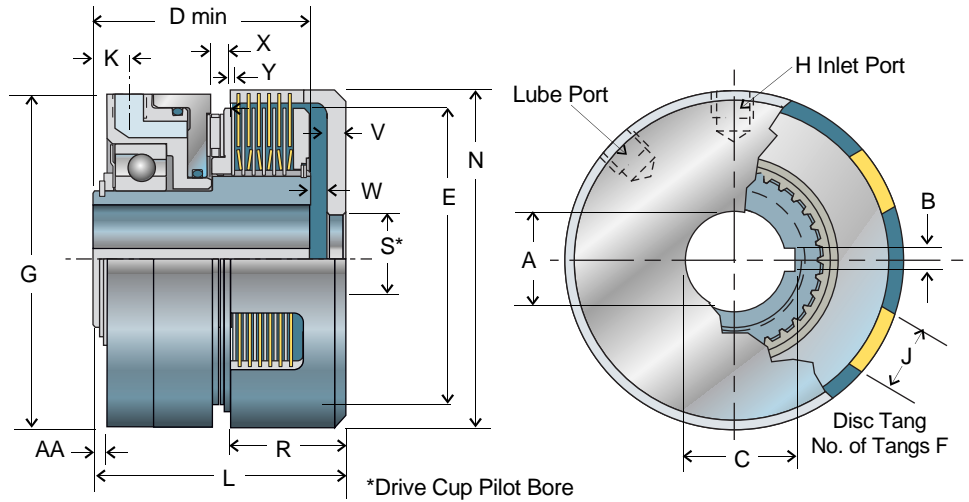
## Hydraulic / Pneumatic Clutch for Wet Operation

**Operation:** Pressurizing the cylinder with fluid or air forces the piston to clamp and lock the friction and separator discs, and release springs. Torque is transferred through the clutch to the drive cup. When pressure is removed, the release springs separate the separator discs and maintain a running clearance between separator and friction disc surfaces. Torque ratings are based on wet operation.

**Lubrication:** S Series clutches and brakes are designed primarily for wet operation within gearboxes and transmissions. They can be partially submerged in an oil sump or an oil splash or spray can be directed at disc pack and bearing surfaces. Lube ports are also available.

### Features

- Maximum Torque / Minimum Envelope
- Hydraulic or Pneumatic Actuation
- Fast Engagement / Quick Release
- Stationary Cylinder and Piston
- Modified Standards for Specific Design Requirements



S Series Dimensions										
Model	Units	E	G	F	J	N	R	S	V	W
250	in	2.50	2.91	6	.610	2.81	1.215	1.000	0.22	0.125
	mm	64	74	6	15.5	70	30.9	25.4	5.6	3.2
300	in	3.00	3.31	6	.734	3.31	1.270	1.000	0.22	0.156
	mm	76	84	6	18.7	84	32.3	25.4	5.6	4.0
350	in	3.50	3.81	6	.734	3.88	1.328	1.000	0.22	0.188
	mm	89	97	6	18.7	98	33.7	25.4	5.5	4.8
400	in	4.00	4.38	6	.734	4.38	1.58	1.000	0.25	0.188
	mm	102	111	6	18.7	111	40	25.4	6	4.8
450	in	4.50	4.88	6	.797	4.88	1.656	1.000	0.28	0.219
	mm	114	124	6	20.2	124	42.1	25.4	7	5.6
550	in	5.50	6.00	12	.609	6.00	1.859	2.000	0.31	0.188
	mm	140	152	12	15.5	152	47.2	50.8	8	4.8
600	in	6.00	6.56	12	.609	6.56	2.000	2.000	0.38	0.188
	mm	152	167	12	15.5	167	50.8	50.8	10	4.8
700	in	7.00	7.63	12	.734	7.69	2.172	2.000	0.38	0.281
	mm	178	194	12	18.7	195	55.2	50.8	10	7.1
800	in	8.00	8.63	12	.734	8.69	2.406	2.500	0.38	0.344
	mm	203	219	12	18.7	221	61.1	63.5	10	8.7
900	in	9.00	9.75	12	1.250	9.87	2.969	2.500	0.44	0.500
	mm	229	248	12	31.8	251	75.4	63.5	11.2	12.7

Model	Units	A max. <sup>1</sup>	A max. <sup>2</sup>	D	H <sup>3</sup>	K	L max.	X min.	Y	AA
250	in	0.625	0.563	2.254	1/16-27	0.26	2.604	0.188	0.047	0.03
	mm	16	14	57.3		7	66.1	4.8	1.2	0.7
300	in	1.031	0.969	2.260	1/16-27	0.23	2.641	0.188	0.047	0.02
	mm	26	25	57.4		6	67.1	4.8	1.2	0.5
350	in	1.188	1.125	2.380	1/8-27	0.29	2.792	0.246	0.058	0.03
	mm	30	29	60.5		7	70.9	6.2	1.5	0.7
400	in	1.718	1.594	2.625	1/8-27	0.29	3.063	0.249	0.080	0.03
	mm	44	40	66.7		7	77.8	6.3	2.0	0.7
450	in	1.813	1.750	2.875	1/8-27	0.34	3.380	0.262	0.087	0.04
	mm	46	44	73.0		9	85.9	6.7	2.2	1.0
550	in	2.313	2.188	3.255	1/4-18	0.37	3.761	0.337	0.083	0.04
	mm	59	56	82.7		9	95.5	8.6	2.1	1.0
600	in	2.625	2.500	3.440	1/4-18	0.36	4.008	0.344	0.099	0.02
	mm	67	64	87.4		9	101.8	8.7	2.5	0.4
700	in	3.125	2.938	3.780	1/4-18	0.41	4.441	0.414	0.108	0.04
	mm	79	75	96.0		10	112.6	10.5	2.7	1.0
800	in	3.375	3.250	4.222	1/4-18	0.49	4.946	0.355	0.155	0.05
	mm	86	83	107.2		12	125.6	9.0	3.9	1.1
900	in	3.937	3.750	4.800	3/8-18	0.54	5.743	0.388	0.130	0.04
	mm	100	95	121.9		14	145.9	8.7	3.3	0.9

### Notes:

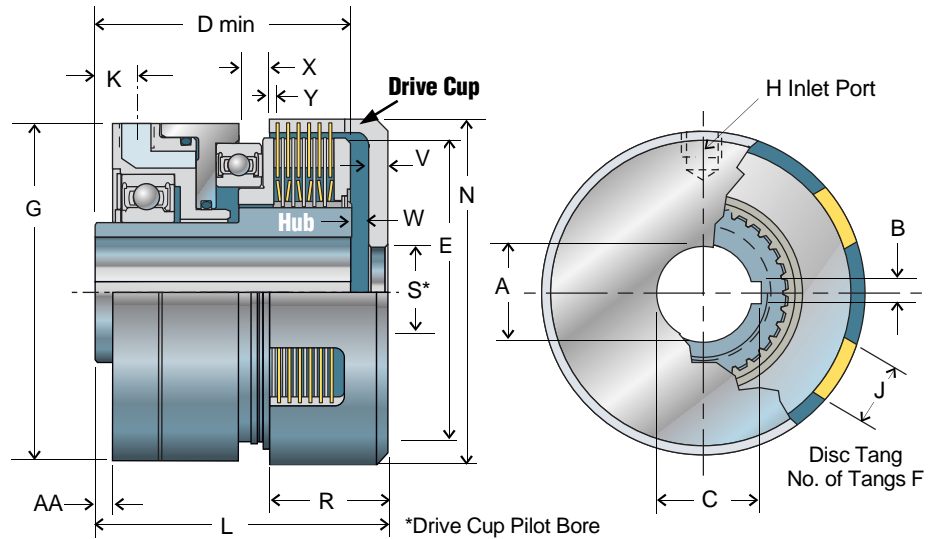
Unless otherwise noted, upper value units are inches; lower value units are millimeters.

Customer to specify dimensions A, B and C. Hub bore dimension A not to exceed maximum allowable bore.

1. Maximum allowable hub bore with standard rectangular key.
2. Maximum allowable hub bore with standard square key.
3. American National Pipe Thread.

S Series Torque and Speed Capacities @ 150 PSI (10.3) BAR			
Model	Unit	Torque	Max. RPM
250	Ft. lbs.	91	5000
	Nm	123	
300	Ft. lbs.	131	4300
	Nm	178	
350	Ft. lbs.	208	3200
	Nm	282	
400	Ft. lbs.	279	2700
	Nm	378	
450	Ft. lbs.	404	2400
	Nm	548	
550	Ft. lbs.	725	2000
	Nm	983	
600	Ft. lbs.	1015	1900
	Nm	1376	
700	Ft. lbs.	1519	1600
	Nm	2060	
800	Ft. lbs.	1863	1400
	Nm	2526	
900	Ft. lbs.	3127	1300
	Nm	4240	

\* See the chart on page 7 for incremental torque ratings. Modified standards available for specific design requirements.



## Hydraulic/Pneumatic Clutch For Dry Operation

**Operation:** Pressurizing the cylinder with fluid or air forces the piston to clamp and lock the friction and separator discs, and release springs. Torque is transferred through the clutch to the drive cup. When pressure is removed, the release springs separate the separator discs and maintain a running clearance between separator and friction disc surfaces. Torque ratings are based on dry operation – thus requiring low actuation pressure to achieve high rates of torque.

**Lubrication:** P Series clutches and brakes are designed primarily for dry operation. Bearings are greased and sealed and do not require external lubrication.

### Features

- Maximum Torque / Minimum Envelope
- Hydraulic or Pneumatic Actuation
- Fast Engagement / Quick Release
- Stationary Cylinder and Piston
- Modified Standards for Specific Design Requirements

### P Series Dimensions

Model	Units	E	G	F	J	N	R	S	V	W
350	in	3.50	3.81	6	0.734	3.88	1.328	1.000	0.22	0.188
	mm	89	97		18.7	98	33.7	25.4	5.5	4.8
450	in	4.50	4.88	6	0.797	4.88	1.656	1.000	0.28	0.219
	mm	114	124		20.2	124	42.1	25.4	7	5.6
550	in	5.50	6.00	12	0.609	5.94	1.859	2.000	0.31	0.188
	mm	140	152		15.5	151	47.2	50.8	8	4.8
600	in	6.00	6.56	12	0.609	6.56	2.000	2.000	0.38	0.188
	mm	152	167		15.5	167	50.8	50.8	10	4.8
700	in	7.00	7.63	12	0.734	7.69	2.172	2.000	0.38	0.281
	mm	178	194		18.7	195	55.2	50.8	10	7.1
800	in	8.00	8.63	12	0.734	8.69	2.406	2.500	0.38	0.344
	mm	203	219		18.7	221	61.1	63.5	10	8.7

Model	Units	A max. <sup>1</sup>	A max. <sup>2</sup>	D	H <sup>3</sup>	K	L	X	Y	AA
350	in	1.188	1.125	2.870	1/8-27	0.45	3.282	0.338	0.058	0.19
	mm	30	29	72.9		11	83.4	8.6	1.5	4.8
450	in	1.813	1.750	3.312	1/8-27	0.37	3.817	0.346	0.087	0.07
	mm	46	44	84.1		9	97.0	8.8	2.2	1.7
550	in	2.313	2.188	3.820	1/4-18	0.37	4.326	0.489	0.083	0.04
	mm	59	56	97.0		9	109.9	12.4	2.1	1.1
600	in	2.625	2.500	4.010	1/4-18	0.36	4.578	0.494	0.099	0.02
	mm	67	64	101.9		9	116.3	12.6	2.5	0.5
700	in	3.125	2.938	4.375	1/4-18	0.39	5.036	0.551	0.108	0.01
	mm	79	75	111.1		10	127.9	14.0	2.7	0.3
800	in	3.375	3.250	4.820	1/4-18	0.46	5.544	0.411	0.155	0.01
	mm	86	83	122.4		12	140.8	10.4	3.9	0.3

P Series Torque and Speed Capacities @ 100 PSI (6.9) BAR			
Model	Unit	Torque	<sup>4</sup> Max. RPM
350	Ft. lbs.	323	3600
	Nm	438	
450	Ft. lbs.	629	2700
	Nm	853	
550	Ft. lbs.	1139	2200
	Nm	1544	
600	Ft. lbs.	1609	2000
	Nm	2182	
700	Ft. lbs.	2416	1600
	Nm	3276	
800	Ft. lbs.	3609	1500
	Nm	4894	

### Notes:

Unless otherwise noted, upper value units are inches; lower value units are millimeters.

Customer to specify dimensions A, B and C. Hub bore dimension A not to exceed maximum allowable bore.

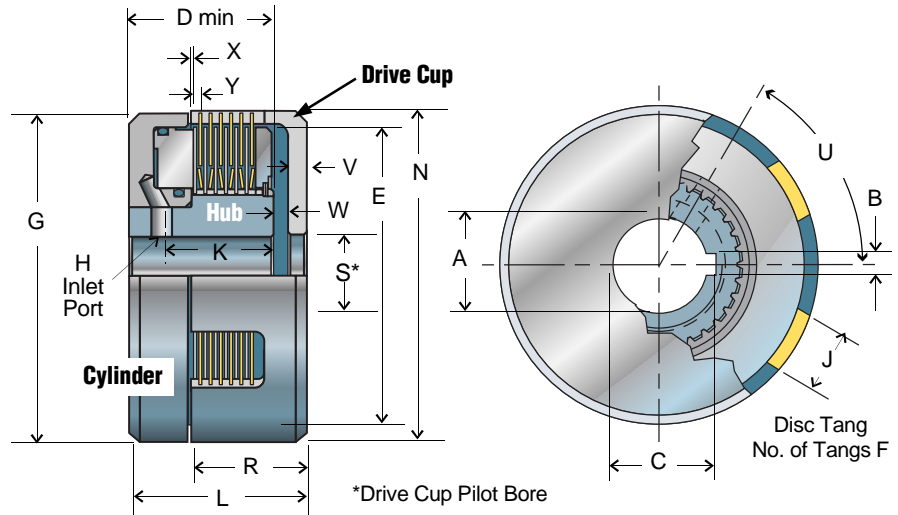
1. Maximum allowable hub bore with rectangular key.
2. Maximum allowable hub bore with square key.
3. American National Pipe Thread.
4. Consult Logan Clutch Corporation if your application requires greater torque capacity or higher speeds.

\* See the chart on page 7 for incremental torque ratings. Modified standards available for specific design requirements.

A fixed orifice pressure regulated valve should be specified in the system to prevent over-pressurization of any Logan Clutch. The Logan warranty does not cover clutch failure due to over-pressurization. The highest pressure values in the torque tables are maximum ratings for Logan Clutches.

All rotating components present a hazardous condition and should be guarded in accordance with OSHA requirements and other applicable laws, regulations and industrial standards.

Logan Clutch Corporation reserves the right to modify product specifications and designs without notice and without incurring obligations. Torque values are based upon disc packs having full contact between surfaces.



### High Torque / Small Envelope

**Operation:** Pressurizing the cylinder with fluid or air forces the piston to clamp and lock the friction and separator discs, and release springs. Torque is transferred through the clutch to the drive cup. When pressure is removed, the release springs separate the separator discs and maintain a running clearance between separator and friction disc surfaces.

**Mounting:** The shaft on which the clutch hub mounts is rifled and cross-drilled to provide passage for the actuating media. A press fit or cap seals are necessary to prevent media pressure loss due to seepage past the hub and shaft interface.

**Lubrication:** R Series clutches and brakes are designed for wet or dry operation.

### Features

- Maximum Torque / Minimum Envelope
- Hydraulic or Pneumatic Actuation
- Fast Engagement / Quick Release
- Modified Standards for Specific Design Requirements

R Series Dimensions										
Model	Units	E	G	F	J	N	R	S*	V	W
350	in	3.50	3.81	6	0.734	3.88	1.328	1.000	0.22	0.188
	mm	89	97	6	18.7	98	33.7	25.4	5.5	4.8
450	in	4.50	4.88	6	0.797	4.88	1.656	1.000	0.28	0.219
	mm	114	124	6	20.2	124	42.1	25.4	7	5.6
550	in	5.50	6.00	12	0.609	6.00	1.859	2.000	0.31	0.188
	mm	140	152	12	15.5	152	47.2	50.8	8	4.8
600	in	6.00	6.56	12	0.609	6.56	2.000	2.000	0.38	0.188
	mm	152	167	12	15.5	167	50.8	50.8	10	4.8
700	in	7.00	7.63	12	0.734	7.69	2.172	2.000	0.38	0.281
	mm	178	194	12	18.7	195	55.2	50.8	10	7.1
800	in	8.00	8.63	12	0.734	8.69	2.406	2.500	0.38	0.344
	mm	203	219	12	18.7	221	61.1	63.5	10	8.7
900	in	9.00	9.75	12	1.250	9.88	2.969	2.500	0.44	0.500
	mm	229	248	12	31.8	250	75.4	63.5	11	12.7

R Series Torque and Speed Capacities @ 150 PSI (10.3) BAR				
Model	Unit	Torque	Max. RPM	Disengaging <sup>5</sup>
350	Ft. lbs.	188	6700	2700
	Nm	255		
450	Ft. lbs.	369	4600	2500
	Nm	500		
550	Ft. lbs.	601	3800	1800
	Nm	815		
600	Ft. lbs.	874	3500	1500
	Nm	1185		
700	Ft. lbs.	1230	3000	1400
	Nm	1668		
800	Ft. lbs.	1711	2600	1300
	Nm	2320		
900	Ft. lbs.	2311	2300	1200
	Nm	3134		

Model	Units	A <sup>1</sup>	D	H	K	L	U <sup>2</sup>	X	Y
350	in	1.250	1.660	0.25	1.30	2.072	60°	0.063	0.067
	mm	32	42.2	6	33	52.6		1.6	1.7
450	in	1.781	1.970	0.25	1.63	2.475	60°	0.063	0.088
	mm	45	50.0	6	41	62.9		1.6	2.2
550	in	2.281	2.210	0.31	1.77	2.716	60°	0.063	0.094
	mm	58	56.1	8	45	69.0		1.6	2.4
600	in	2.656	2.435	0.38	1.94	3.00	60°	0.094	0.145
	mm	67	61.9	10	49	76.3		2.4	3.7
700	in	3.125	2.623	0.38	2.10	3.284	60°	0.063	0.099
	mm	79	66.6	10	53	83.4		note 3	1.6
800	in	3.500	3.115	0.44	2.48	3.839	60°	0.063	0.101
	mm	89	79.1	11	63	97.5		note 3	1.6
900	in	4.125	3.382	0.44	2.61	4.325	60°	0.078	0.134
	mm	104	85.9	11	66	109.9		note 4	2.0

### Notes:

Unless otherwise noted, upper value units are inches; lower value units are millimeters.

Customer to specify dimensions A, B and C. Hub bore dimension A not to exceed maximum allowable bore.

1. Maximum allowable hub bore with standard square key. Based upon maximum allowable actuating pressure of 200 psi. (13.8 bar). Larger bores are possible at lower actuating pressures.
2. Inlet Port location relative to key way.
3. Two Ports 180° apart.
4. Three Ports 120° apart.
5. Maximum speed at which release springs will overcome the centrifugal head due to fluid remaining in the actuating cylinder.

\* See the chart on page 7 for incremental torque ratings. Modified standards available for specific design requirements.

# Operating Parameters

R Series							
Model	(lb)	(lb-ft <sup>2</sup> )	Clutch Speed (RPM) <sup>2</sup>		Cylinder Volume <sup>3</sup>		Actuating Flow <sup>4</sup>
	(kg)	(kgm <sup>2</sup> )	Max.	Disengaging	new disc	worn disc	GPM (LPM)
350	3.8	0.04	6700	2700	0.8	1.2	2.0
	1.7	0.002			13	2.0	8
450	6.9	0.13	4600	2500	1.5	2.5	4.0
	3.1	0.01			25	41	15
550	13	0.34	3800	1800	2.0	3.8	5.2
	5.9	0.01			33	62	20
600	17	0.55	3500	1500	2.6	6.0	6.8
	7.7	0.02			43	98	26
700	24	1.07	3000	1400	3.3	8.5	8.6
	10.9	0.04			54	139	33
800	34	2.01	2600	1300	16.6	22.0	43.0
	15.4	0.08			272	361	163
900	48	3.51	2300	1200	16.0	21.0	42.0
	21.8	0.15			262	344	159

S Series						
Model	(lb)	(lb-ft <sup>2</sup> )	Max. Speed (RPM) <sup>5</sup>	Cylinder Volume <sup>3</sup>		Actuating Flow <sup>4</sup>
	(kg)	(kgm <sup>2</sup> )		new disc	worn disc	GPM (LPM)
250	2	0.004	5000	0.35	0.59	0.9
	0.9	0.0002		5.7	9.7	3.5
300	3	0.009	4300	0.44	0.74	1.2
	1.4	0.0004		7.2	12	4.6
350	5.4	0.02	3200	0.7	1.0	1.7
	2.4	0.001		11	16	6.4
400	7	0.04	2700	0.72	1.2	1.9
	3.2	0.002		12	20	7.2
450	10.7	0.09	2400	1.0	2.5	2.6
	4.9	0.004		16	41	10
550	18.4	0.22	2000	1.5	3.8	4.0
	8.3	0.01		25	62	15
600	24	0.35	1900	2.0	6.0	5.2
	10.9	0.01		33	98	20
700	35	0.67	1600	3.3	7.5	8.6
	15.9	0.03		54	123	33
800	51	1.24	1400	4.2	10.0	11.0
	23.1	0.05		69	164	42
900	68	2.36	1300	6.0	11.0	16.0
	30.8	0.10		98	180	61

P Series						
Model	(lb)	(lb-ft <sup>2</sup> )	Max. Speed (RPM) <sup>5</sup>	Cylinder Volume <sup>3</sup>		Actuating Flow <sup>4</sup>
	(kg)	(kgm <sup>2</sup> )		new disc	worn disc	GPM (LPM)
350	5.9	0.02	3600	0.8	1.2	1.8
	2.7	0.001		13	20	7
450	12.0	0.10	2700	1.5	2.5	2.6
	5.4	0.004		25	41	10
550	22.0	0.26	2200	2.0	3.8	4.0
	10.0	0.01		33	62	15
600	28.0	0.40	2000	2.6	6.0	5.2
	12.7	0.02		43	98	20
700	40.0	1.11	1600	3.3	7.3	8.6
	18.1	0.05		54	120	33
800	57.0	2.02	1500	4.0	12.0	11.0
	25.9	0.08		66	197	42

## Operating Parameter Notes:

Logan Seals / O-Rings are provided in a fluorocarbon elastomer having a 70 durometer. Operating temperature range is -15 to 400 degrees F (-26 to 204 degrees C).

- 1. Clutch weight:** Based upon minimum hub bore. Does not include drive cup and friction discs.
- 2. R Series:** Maximum speed in the R Series at which release springs will overcome the centrifugal head due to fluid remaining in the actuating cylinder. Modified springs are available for heavy duty applications.
- 3. Cylinder Volume:** Upper value units are cubic inches; lower value units are cubic centimeters.
- 4. Actuating Flow:** Based upon an actuating time of 0.1 second. Upper value units are gallons per minute; lower value units are liters per minute.
- 5. RPM:** For higher operating speeds, call Logan.

## Logan Outperforms Electromagnetic Clutches!

Logan has the design and manufacturing capability to replace existing and obsolete electromagnetic clutches with Logan technology.

### Logan vs. Electromagnetic Clutches

- Transmits more Torque and has higher RPM capabilities within the same envelope
- Eliminates residual DC magnetism in disc packs and bearings—reduces downtime
- Disc Pack, Bearing Kits and Seal Kits for Logan clutches are available from stock



View of a modified standard Logan S 300 Series clutch (right) which replaced an Ortlinghaus style electromagnetic clutch (left). The clutch, drive cup and disc pack were modified on the Logan S300 to fit within the existing Electromagnetic clutch envelope.



Side view showing identical axial length, and 3-disc pack Configuration of the Logan S300 and Ortlinghaus style clutch.

## Static Torque Ratings

### R Series Wet Operation

Model	PSI (Ratings in ft. lbs.)*						Bar (Ratings in Nm)					
	50	75	100	125	150	175	3.4	5.2	6.9	8.6	10.3	12.1
350	45	81	117	152	188	224	61	110	159	206	255	304
450	90	160	229	299	369	438	122	217	311	405	500	594
550	151	263	376	488	601	713	205	357	510	662	815	967
600	234	394	554	714	874	1034	317	534	751	968	1185	1402
700	345	566	788	1009	1230	1451	468	767	1069	1368	1668	1968
800	460	773	1085	1398	1711	2023	624	1048	1471	1896	2320	2743
900	233	753	1272	1792	2311	2831	316	1021	1725	2430	3134	3839

\* Maximum recommended operating pressure 150 PSI (10.3) BAR

### S Series Wet Operation

Model	PSI (Ratings in ft. lbs.)*						Bar (Ratings in Nm)					
	50	75	100	125	150	175	3.4	5.2	6.9	8.6	10.3	12.1
250	22	39	57	74	91	109	30	53	77	100	123	148
300	32	57	82	106	131	156	43	77	111	144	178	212
350	52	81	130	169	208	247	71	110	176	229	282	335
400	63	117	171	225	279	333	85	159	232	305	378	452
450	102	178	253	329	404	480	138	241	343	446	548	651
550	192	325	459	592	725	858	260	441	622	803	983	1163
600	281	465	648	832	1015	1198	381	631	879	1128	1376	1624
700	427	700	973	1246	1519	1792	579	949	1319	1690	2060	2430
800	511	849	1187	1525	1863	2201	693	1151	1610	2068	2526	2985
900	854	1422	1990	2559	3127	3695	1158	1928	2698	3470	4240	5010

\* Maximum recommended operating pressure 150 PSI (10.3) BAR

### P Series Dry Operation

Model	PSI (Ratings in ft. lbs.)*					Bar (Ratings in Nm)				
	60	70	80	90	100	4.1	4.8	5.5	6.2	6.9
350	168	207	246	284	323	228	281	334	385	438
450	329	404	479	554	629	446	548	650	751	853
550	610	742	874	1006	1139	827	1006	1185	1364	1544
600	881	1063	1245	1427	1609	1195	1441	1688	1935	2182
700	1332	1603	1874	2145	2416	1806	2174	2541	2909	3276
800	1964	2376	2787	3198	3609	2663	3222	3779	4336	4894

\*P torque values based on dry operating conditions.

Maximum recommended operating pressure 100 PSI (6.9) BAR

*A fixed orifice pressure valve should be specified in the system to prevent over-pressurization of any Logan Clutch. The Logan warranty does not cover clutch failure due to over-pressurization. The highest pressure values in the torque tables are maximum ratings for Logan Clutches.*

### Example: Select a wet environment clutch

HP = 150

Clutch Speed = 800 RPM

Service Factor= 1.3

Available operating pressure = 150 psi.

$$T_c = \frac{150 \cdot 5250}{800} = 984 \text{ lb. ft.}$$

$$T = 984 \cdot 1.3 = 1280 \text{ lb. ft.}$$

Choose model 800 in the R or S series.

## Selection Procedure

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

$$T_c = \frac{HP \cdot 5250}{RPM}$$

$$T_b = \frac{WK^2 \cdot RPM}{307t}$$

- II. Identify which service factor best identifies your application from the suggested service factor table located at the bottom of this page.
- III. Adjust the torque requirement using the selected service factor.  
 $T = T_c \cdot SF$  or  $T = T_b \cdot SF$
- IV. Decide which series best fits your drive.
- V. Using the appropriate series torque pressure graph, determine the model size.
- VI. Determine if the Series and models can:
  - 1) Accommodate the shaft and key
  - 2) Operate at the required speed
  - 3) Fit within the available space
- VII. Determine the Drive Cup Mounting
- VIII. Call or fax Logan Clutch Corporation to review your selection and place your order. Application fact sheets are available online or from Logan Clutch.

HP = Horsepower

RPM = Clutch or Brake shaft speed

SF = Service Factor

T= Required Torque (lb ft.)

T<sub>b</sub> = Brake Torque (lb. ft.)

T<sub>c</sub> = Clutch Torque (lb. ft.)

t = Time to stop (seconds)

$WK^2$  = Total inertia to be stopped (lb.ft.<sup>2</sup>)

### Suggested Service Factor Table

Duty	SF
Small inertia Low Cycle Rate Non-pulsating Load	1.3 to 1.7
Large inertia Low Cycle Rate Non-pulsating Load	1.7 to 2.2
Large inertia High Cycle Rate Pulsating Load	2.2 to 3.2



## Clutch and Brake Drive Cups



Modified R Series Drive Cup with large diameter pilot bore and bolt circle pattern.



Modified S 550 Series Drive Cup with splined shaft.

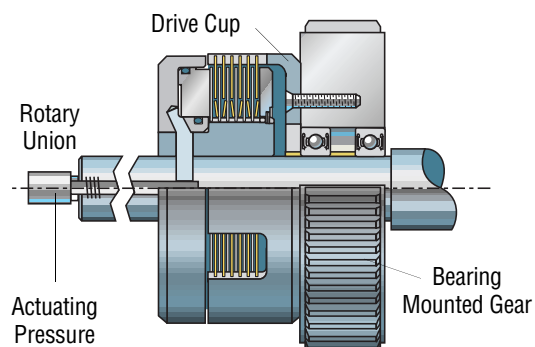
Logan Drive Cups are manufactured to perform in harsh conditions. Contact surfaces are heat treated to ensure long life. Standard cups are furnished with 1" and 2" diameter pilot bores. All models can be furnished with standard lug or gear toothed configurations.

- Bolt Circle patterns, bores and axial lengths can be modified to meet specific design requirements.
- Drive Cups can be designed and manufactured to be integral with shafts, gears, couplings and stationary members (when used as a brake cup).

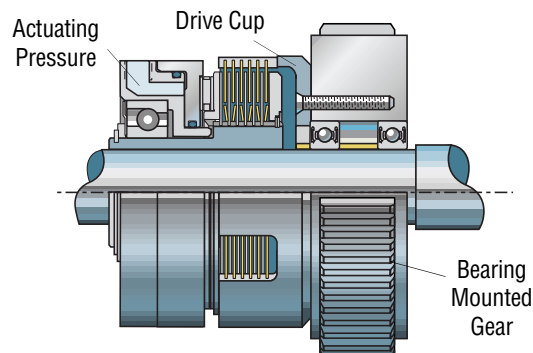


Typical R, S, P Series Geared Drive Cup with standard Pilot bore.

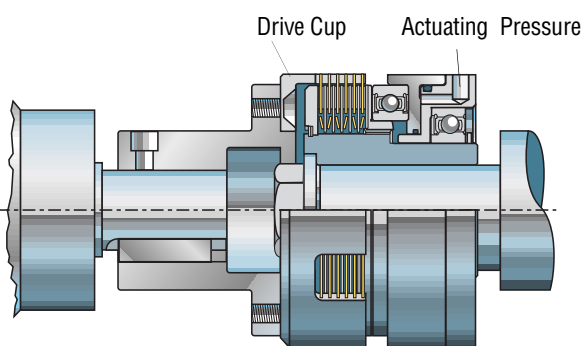
## Typical Clutch and Brake Installations



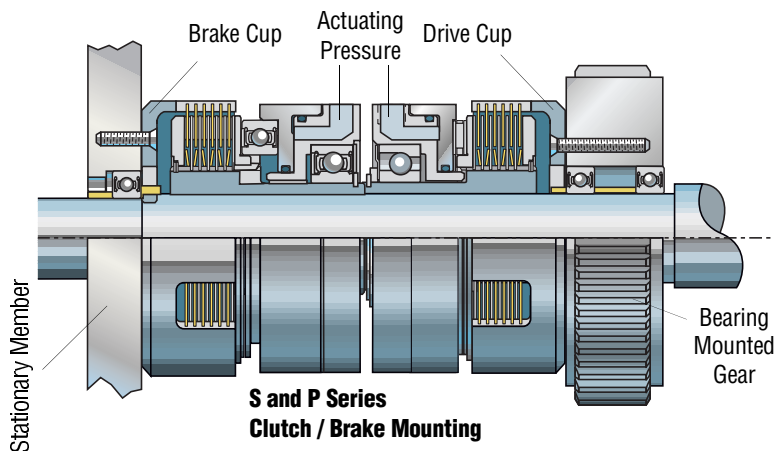
**R Series Clutch Mounting**



**Typical S and P Series Clutch Mounting**



**Typical S or P Series Dual Shaft Coupling**



**S and P Series Clutch / Brake Mounting**

## Logan Multiple Disc Clutch and Brake Applications

Logan also manufactures and stocks a wide variety of both friction faced and high carbon-steel discs for wet or dry clutch and brake applications. Logan incorporates the latest technology in friction facing material.

- Reduce tooling costs with existing Logan Tooling.
- Improve the quality of your existing friction or steel separator discs with improved friction material coefficients, heat treat specifications and mating disc surface finishes.
- Reduce costs and improve delivery by ordering small lots from existing Logan disc inventory.

Consider Logan when designing or improving upon your single or multiple disc clutch or brake applications.



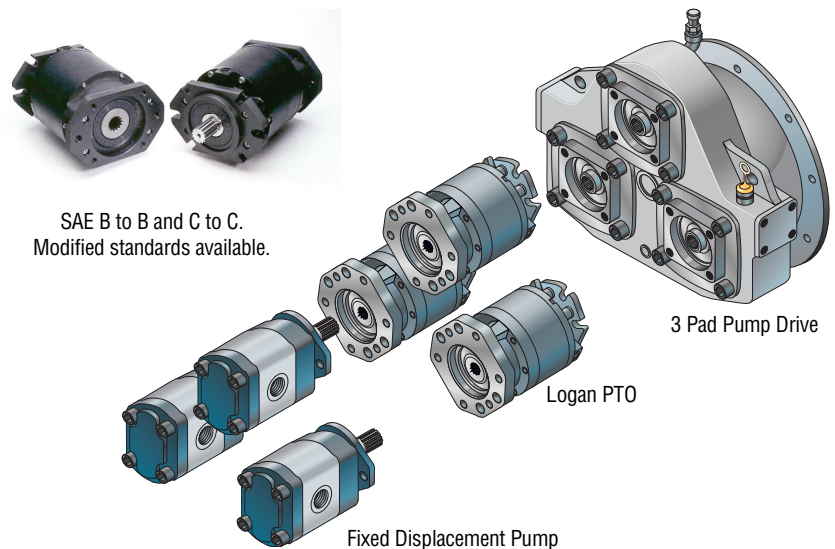
Friction faced and high-carbon steel separator discs

## Logan SAE PTO Clutches

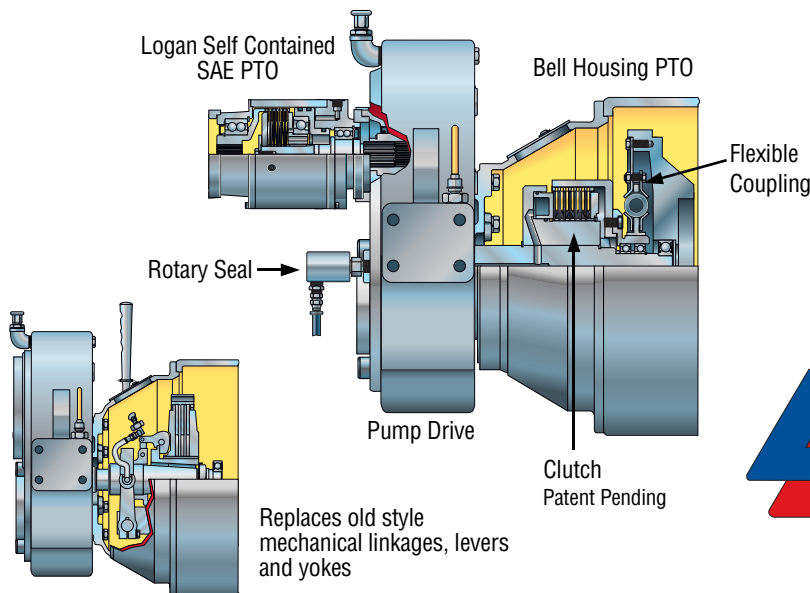
Logan PTO Series Clutches are designed to mount between the power take-off of an engine, multi-station pump drive, hydraulic motor or pump. OEM and Aftermarket designers can take advantage of energy savings and component longevity by utilizing Logan PTO's to drive Auxiliary attachments only when required.

### 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



## New! Logan Bell Housing PTO Clutches



- Self-adjusting Disc Pack – Minimize Slippage
- Eliminates Mechanical Linkages, Hand Levers, Yokes
- Air or Fluid Actuated – (air is ideal for cold start applications)
- Fast Engagement – Quick Release
- Remote Actuation
- Modified Standards Available



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