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ELECTROMAGNETIC CLUTCHES & BRAKES

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LIMITED

jbj TECHNIQUES LIMITED

VIDEO

USP: *Analyse industry applications & provide proficient solutions to the mechanical power transmission and hydraulics industries.*

PRODUCT SPECIFICATION: team of design engineers to assist in design process, simple or complex, standard or bespoke.

PROMPT PRODUCT SUPPLY: large stocks for next day delivery on many items.

MACHINE SHOP: full machining services for bespoke designs and prompt turnaround.

BELLHOUSINGS / COUPLINGS
- » bellhousings
- » wet mount bellhousing (NEW)
- » spider couplings
- » gear couplings
- » all steel gear couplings (ATEX)
- » 'JXL' couplings (ATEX)
- » tyre couplings (ATEX)
- » torque limiting couplings
- » torsional couplings
- » magnetic couplings (ATEX)
- » disc couplings (ATEX)
- » grid couplings
- » S-flex couplings

- » hydraulic adaptors
- » dampers
- » foot brackets

CLUTCHES / GEARBOXES
- » clutches & gearboxes
- » planetary gearboxes
- » splitter gearboxes
- » power take-off units

PUMPS / MOTORS
- » gear pumps
- » 2 stage gear pumps
- » helical gear pumps Elika®
- » internal gear pumps
- » load sensing gear pumps
- » vane pumps
- » screw pumps
- » hydraulic motors (ATEX)
- » axial piston motors (ATEX)
- » gear motors
- » pneumatic motors (ATEX)
- » pneumatic starters

FLANGES / SEALS
- » port flanges / pipe flanges
- » 'QM' replaceable seal

FLOW / HYDRAULIC PRESSURE
- » flow dividers
- » mini power packs
- » pressure intensifiers

COOLING / HEAT EXCHANGE
- » air - oil coolers
- » off-line cooling
- » bellhousing coolers
- » water - oil coolers
- » plate heat exchangers

RESERVOIRS / LEVEL INDICATORS
- » fluid reservoirs / tanks
- » fluid level indicators
- » hygroscopic breathers
- » fluid power accessories

MISCELLANEOUS
- » hydraulic generator (NEW)

High quality mechanical and fluid power products are always available straight from our comprehensively stocked warehouse, but, we are more than that! If you need more, be it the smallest drive component through to complex drive line component packages, then speak to our experienced sales team who will provide a solution based upon your application requirements.

www.jbj.co.uk/**electromagnetic-clutches**.html

Contents

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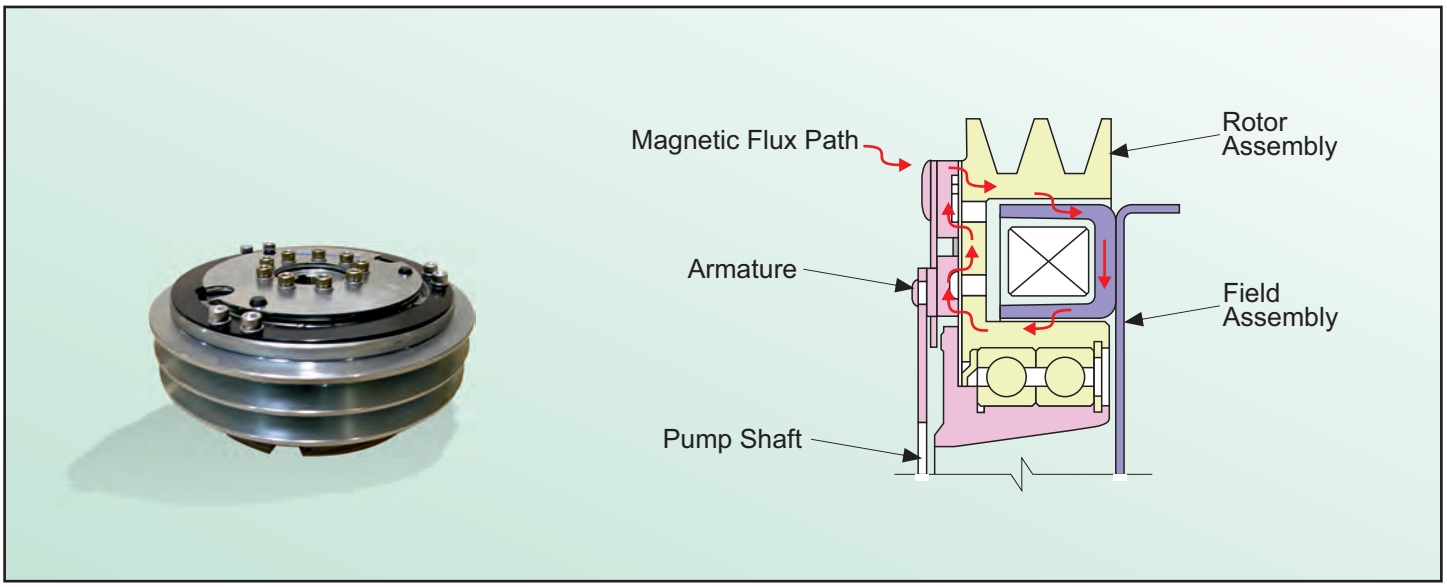


Ogura mobile electric clutches provide reliable performance in many long life applications where electromagnetic clutches are key. They were primarily designed as air conditioning compressor clutches, but now are also used as clutches for hydraulic pumps (clutch pump), water pump clutches, electromagnetic fan clutches and clutches for vacuum pumps. The units that are used to clutch hydraulic pumps and to clutch water pumps are typically used for tow trucks, marine winch drives and boom trucks in the utilities industry. Water pumps are typically driven by our clutches from a gas engine on such equipment as pressure washers, street sweepers and carpet cleaning trucks. Additionally, pump clutches are often used in vacuum pump and compressor applications such as refrigeration and waste removal trucks as well as mobile service trucks, or engine compartment applications where the clutch engages a compressor mounted in the engine compartment of a service truck. Ogura mobile clutches range in size from 78.64 to 2033.73 Nm (58 to 1500 ft.lb.) and feature numerous pulley configurations including v-belt and poly-v as well as universal hub mounts. The user can choose from a straight, splined or tapered bore to match the corresponding pump shaft. Many of our pump and compressor clutch configurations are interchangeable with both Pitts and Warner Electric.

Mobile clutches are made up of three major sub-assemblies.:

Field assembly This is the coil and backing flange which provides the magnetic flux that makes the clutch engage.

Rotor assembly This includes the pulley and the bearing and is normally the input of the clutch.

Armature assembly This includes the armature disc, springs and hub and is normally the output.

The field is mounted to a stationary member such as a support bracket of a pump. The rotor is driven by the belt from the engine and rotates constantly. When the clutch is energized, the armature pulls against the rotor and drives the shaft of the pump.

Engagement of the armature to the rotor is caused by the magnetic attraction between these two elements. The section below shows how the magnetic field is created when direct current is applied to the field. The magnetic flux is transferred from the field into the rotor and then into the armature. The slots in the rotor and the armature are called banana slots. These slots allow the flux to contact the rotor and the armature in more than just two places. [A normal magnet has only two points (north and south) of attraction.] By making multiple points of flux connection, the torque of a clutch can be increased. The diagram above shows a standard mobile clutch. It has two flux paths. This is called a double flux, or a four-pole design. To disengage the clutch, the voltage going to the coil is simply turned off. Once the voltage is released, the springs between the armature and the hub pull the armature away from the rotor, creating an air gap so no contact is made.

Auto air conditioning compressors

Air compressor and vacuum pumps

Hydraulic pumps

Water pumps

Advantages of use:

» Reduced horsepower consumption from the engine.
» Extended pump life.
» Lower operator cost.
» Simple installation.
» Operator convenience/safety.
» Cold weather starting.

Mobile Clutches: 78.64 to 237.27 Nm (58 to 175 lb-ft).

These are flange mounted, normally a two piece construction clutch typically mounted directly on to the pumps.

Solid forged rotor.

A one piece solid forged rotor means no chance of internal parts separation. Our rotors also have an even wall thickness around the coil which gives optimum flux distribution, maximizing torque.

Different coil voltages available.

Although 12 volt is the most common, 24 volts can also be made available. Depending upon the quantity, other specialty voltages can be made

High temperature, longer life grease.

All models include our special long life grease which has shown a significant improvement in life over other standard high temperature greases.

E-coating.

Where possible, all parts in the clutch are e-coated to give maximum corrosion protection.

High temperature epoxy coil.

To help prevent failure from both vibration and outside contaminants, all coils are sealed in the coil shell with a high temperature epoxy coating.

Forged machined pulley

All models in this section use a heavy duty machined pulley. A stronger pulley resists damage due to abusive environments.

Mobile Clutch Weights & Measurements

(Metric)

OGURA INDUSTRIAL CORP.

Mobile Clutch Dimensions												
Part Number	Static Torque (Nm)	Bore Size	Key Way (inches)	Voltage & Watt (V/W)	Pulley Diameter (mm)	Clutch Width (mm)	Groove Width (mm)	Groove Angle (degrees)	Groove Height (mm)	Groove to Gauge (mm)	Groove to Groove (mm)	Weight (kgs)
503272	78.64	*Taper	.16 X .11 (w)	12/46	127.0	61.98	12.70	36	13.21	4.88	15.75	2.723
521792	78.64	5/8"	3⁄16 X 3⁄32	12/45	127.0	65.02	12.70	36	13.21	4.88	15.75	2.723
332334	101.69	*Taper	.16 X .11 (w)	12/40	177.8	52.83	12.70	36	14.22	4.60	15.75	3.629
332639	101.69	*Taper	.16 X .11 (w)	12/40	152.4	59.69	12.70	36	13.21	4.75	15.75	3.175
501075	101.69	*Taper	.16 X .11 (w)	24/45.6	177.8	52.58	12.70	36	13.72	4.60	15.75	3.629
501076	101.69	*Taper	.16 X .11 (w)	24/30	152.4	58.93	12.70	36	13.21	4.75	15.75	3.175
501999	101.69	*Taper	.16 X .11 (w)	12/43.3	177.8	45.47	12.70	36	13.72	4.60	15.75	4.990
502001	101.69	*Taper	.16 X .11 (w)	12/43.3	177.8	45.47	15.49	35	14.22	12.75	-	4.082
502286	101.69	5/8"	3⁄16 X 3⁄32	12/47	152.4	59.69	12.70	36	13.21	7.90	15.75	3.175
511646	101.69	3/4"	3⁄16 X 3⁄32	12/47	177.8	52.83	12.70	36	14.22	0.36	15.75	3.629
512368	101.69	16.5 mm	5 X 2.3 mm	12/44	177.8	45.97	12.70	36	13.72	24.11	-	4.082
513297	101.69	3/4"	3⁄16 X 3⁄32	12/44	177.8	52.83	12.70	36	14.22	22.05	-	3.629
517166	101.69	3/4"	3⁄16 X 3⁄32	12/40	152.4	59.69	12.70	36	13.21	7.90	15.75	3.175
520441	101.69	*Taper	.16 X .11 (w)	12/44	187.2	45.47	12.70	36	14.22	4.90	15.75	4.990
520886	101.69	16.5 mm	5 X 2.3 mm	12/44	177.8	52.07	12.70	36	14.22	22.05	-	4.082
520887	101.69	20 mm	6 X 2.8 mm	12/44	177.8	52.07	12.70	36	14.22	22.05	-	4.082
520888	101.69	16.5 mm	5 X 2.3 mm	12/44	177.8	52.07	12.70	36	14.22	22.05	15.75	4.082
520889	101.69	20 mm	6 X 2.8 mm	12/44	177.8	52.07	12.70	36	14.22	22.05	15.75	4.082
521491	101.69	24 mm	8 X 4.3 mm	12/47	177.8	51.56	12.70	36	13.72	22.05	-	4.082
521680	101.69	*Taper	.16 X .11 (w)	12/48	152.4	59.95	K-6	40	3.05	9.80	3.56	4.082
522146	101.69	5/8"	3⁄16 x 3⁄32	12/43	177.8	45.72	12.70	36	13.72	8.36	15.75	3.629
522850	101.69	24 mm	8 X 4.3 mm	12/47	177.8	53.09	12.70	36	13.72	17.15	15.75	4.082
522886	101.69	24 mm	8 X 4.3 mm	24/45.6	177.8	53.09	12.70	36	13.97	17.15	15.75	4.082
526531	101.69	*Taper	.16 X .11 (w)	12/48	152.4	62.99	K-6	40	3.05	12.80	3.56	4.082
534818	101.69	*Taper	.16 x .11 (w)	12/47	134.9	59.69	K-6	40	3.05	12.80	3.56	3.629
535104	101.69	24 mm	8 X 4.3 mm	24/45.6	177.8	58.42	12.70	36	13.72	22.05	-	4.082
511645	122.02	3/4"	3⁄16 x 3⁄32	12/47	152.4	59.69	12.70	36	13.21	8.10	15.75	3.175
512010	122.02	*Taper	.16 X .11 (w)	12/47	152.4	59.69	12.70	36	13.21	4.75	15.75	3.175
515376	122.02	*Taper	.16 X .11 (w)	12/47	138.9	58.67	K-8	40	3.05	11.20	3.56	3.629
520226	122.02	*Taper	.16 X .11 (w)	12/47	152.4	59.94	K-6	40	3.05	14.78	3.56	4.082
526299	122.02	*Taper	.16 X .11 (w)	12/47	150.1	58.93	K-8	40	3.05	14.58	3.56	4.082
512606	122.02	*Taper	.16 X .11 (w)	12/47	177.8	52.83	12.70	36	14.22	4.60	15.75	3.629
517162	122.02	3/4"	3⁄16 x 3⁄32	12/47	177.8	52.83	12.70	36	14.22	8.36	15.75	3.629
509191	135.58	*Taper	3⁄16 x 3⁄32	12/60	187.2	58.42	12.70	36	14.22	4.90	15.75	4.990
509190	237.29	*Taper	.16 X .11 (w)	12/50	198.6	52.32	11.94	7.0	188.21	6 X 1/4 - 20 UNC	-	6.804
523543	237.29	24 mm	8 X 4.3 mm	12/50	198.4	53.09	11.94	7.0	188.21	6 X 1/4 - 20 UNC	-	6.804

*Taper is standard automotive 1:4 ratio. Gauge line diameter is 21.36 mm. Weight is approximate.

Non standard sizes available on request. Please contact jbj Techniques Ltd. technical office, telephone: +44 (0)1737 767493 or email: info@jbj.co.uk

8000 Series Mobile Clutch Dimensions (metric)													
Part Number	Static Torque (Nm)	Bore ID	Key Way (inches)	Voltage & Watt (V/W)	Overall Diameter (mm)	Overall Length (mm)	Output Hub Side Pilot (mm)	Mounting Flange Side Pilot (mm)	Groove Width /Output Hub Bolt Holes (in)	Hub Bolt (inches)	I/O Lockup Bolts (inches)	Field Mount (inches)	Field Bolt PCD (mm)
80001708*	271.16	1	¼ (x 2)	12/66	209.04	94.996	50.04 ID	39.88 OD 145.03 OD	0.597/36°	-	2 x ⅜	2 x 0.68 slots 4 x 0.50 slots	120.65
80002657*	271.16	1	¼ (x 2)	12/66	180.98	113.50	60.33 ID 97.54 OD	82.55 ID	4 x ⅜	3.125	2 x ⅜	6 x 7/16 slots	120.65
80002712*	271.16	1	¼ (x 2)	12/66	180.98	113.50	60.33 ID 97.54 OD	101.6 ID	4 x ⅜	3.125	2 x ⅜	4 x ½ 13UNC 2B	127.00 146.05
80003931*	271.16	spline	-	12/66	180.98	113.50	60.33 ID 97.54 OD	101.6 ID	4 x ⅜	3.125	2 x ⅜	4 x ½ 13UNC 2B	127.00 146.05
80004265*	271.16	taper	5/32	12/66	180.98	80.5²	60.33 ID 97.54 OD	46.86 ID	4 x ⅜	3.125	2 x ⅜	3 x 0.190 holes 6 x 0.250 holes	55.58 61.90
80002309*	542.33	1.75	⅜	12/68	261.11	118.36	69.85 ID	127.00 OD	4 x 7/16	3.750	2 x ⅜	8 x ⅜ 16UNC x ⅝	158.75
80004243*	542.33	spline	-	12/68	261.11	118.36	69.85 ID	127.00 OD	4 x 7/16	3.750	2 x ⅜	8 x ⅜ 16UNC x ⅝	158.75
80004331*	542.33	1.25	5/16	12/68	261.11	118.36	69.85 ID	127.00 OD	4 x 7/16	3.750	2 x ⅜	8 x ⅜ 16UNC x ⅝	158.75
80005215**	949.07	1.75	⅜	24/85	294.89	134.87	69.85 ID	127.00 OD 219.96 OD	4 x 7/16	3.750	2 x ½	8 x ⅜ 16UNC x ⅝	158.75
80002327*	1355.82	1.75	⅜	12/100	315.98	134.87	69.85 ID	127.00 OD	4 x 7/16	3.750	2 x ½	8 x ⅜ 16UNC x ⅝	158.75
80004332	1355.82	spline	-	12/100	315.98	134.87	69.85 ID	127.00 OD	4 x 7/16	3.750	2 x ½	8 x ⅜ 16UNC x ⅝	158.75
80004333	1355.82	1.25	5/16	12/100	315.98	134.87	69.85 ID	127.00 OD	4 x 7/16	3.750	2 x ½	8 x ⅜ 16UNC x ⅝	158.75
80005158	1355.82	spline	-	12/100	315.98	134.87	69.85 ID	127.00 OD	4 x 7/16	3.750	2 x ½	8 x ⅜ 16UNC x ⅝	158.75
80002328	1355.82	1.75	⅜	24/100	315.98	134.87	69.85 ID	127.00 OD	4 x 7/16	3.750	2 x ½	8 x ⅜ 16UNC x ⅝	158.75
80005180*	1355.82	spline	-	12/100	315.98	141.22	81.92 OD	127.00 OD	8 x M10	3.996	2 x ½	8 x 7/16 16-2B x 1	180.98
80004213*	2033.73	spline	-	12/170	381.00	131.76	95.25 ID 152.40 OD	152.40 OD	8 x 1/2	4.750	2 x 3/8	8 x 7/16 16-2B x 1	180.98

*24V version is also available

**Only 24V version is available.

Burnishing.

To achieve full torque, new clutches need to have an initial wear-in period. Depending upon the inertia and speed, the wear-in period can be anywhere from 30 to 100 engagements. Burnishing should be undertaken at a reduced rpm and at a reduced clutch load. For high inertia loads do not cycle the clutch more than 4 times per minute.

8000 Series Mobile Clutch Dimensions (inch/pound, Imperial)													
Part Number	Static Torque (lbs. ft.)	Bore ID (inches)	Key Way (inches)	Voltage & Watt (V/W)	Overall Diameter (inches)	Overall Length (inches)	Output Hub Side Pilot (in)	Mounting Flange Side Pilot (in)	Groove Width /Output Hub Bolt Holes (in)	Hub Bolt (inches)	I/O Lockup Bolts (inches)	Field Mount (inches)	Field Bolt PCD (in)
80001708*	200	1	¼ (x 2)	12/66	8.230	3.740	1970 ID	1.570 OD 5.710 OD	0.597/36°	-	2 x ⅜	2 x 0.68 slots 4 x 0.50 slots	4.75
80002657*	200	1	¼ (x 2)	12/66	7.125	4 15/32	2.375 ID 3.840 OD	3.250 ID	4 x ⅜	3.125	2 x ⅜	6 x 7/16 slots	4.75
80002712*	200	1	¼ (x 2)	12/66	7.125	4 15/32	2.375 ID 3.840 OD	4.000 ID	4 x ⅜	3.125	2 x ⅜	4 x ½ 13UNC 2B	5.00 5.75
80003931*	200	spline	-	12/66	7.125	4 15/32	2.375 ID 3.840 OD	4.000 ID	4 x ⅜	3.125	2 x ⅜	4 x ½ 13UNC 2B	5.00 5.75
80004265*	200	taper	5/32	12/66	7.125	3.17	2.375 ID 3.840 OD	1.845 ID	4 x ⅜	3.125	2 x ⅜	3 x 0.190 holes 6 x 0.250 holes	2.188 2.437
80002309*	400	1.75	⅜	12/68	10.28	4.66	2.750 ID	5.000 OD	4 x 7/16	3.750	2 x ⅜	8 x ⅜ 16UNC x ⅝	6.25
80004243*	400	spline	-	12/68	10.28	4.66	2.750 ID	5.000 OD	4 x 7/16	3.750	2 x ⅜	8 x ⅜ 16UNC x ⅝	6.25
80004331*	400	1.25	5/16	12/68	10.28	4.66	2.750 ID	5.000 OD	4 x 7/16	3.750	2 x ⅜	8 x ⅜ 16UNC x ⅝	6.25
80005215**	700	1.75	⅜	24/85	11.61	5.31	2.750 ID	5.000 OD 8.660 OD	4 x 7/16	3.750	2 x ½	8 x ⅜ 16UNC x ⅝	6.25
80002327*	1,000	1.75	⅜	12/100	12.44	5.31	2.750 ID	5.000 OD	4 x 7/16	3.750	2 x ½	8 x ⅜ 16UNC x ⅝	6.25
80004332	1,000	spline	-	12/100	12.44	5.31	2.750 ID	5.000 OD	4 x 7/16	3.750	2 x ½	8 x ⅜ 16UNC x ⅝	6.25
80004333	1,000	1.25	5/16	12/100	12.44	5.31	2.750 ID	5.000 OD	4 x 7/16	3.750	2 x ½	8 x ⅜ 16UNC x ⅝	6.25
80005158	1,000	spline	-	12/100	12.44	5.31	2.750 ID	5.000 OD	4 x 7/16	3.750	2 x ½	8 x ⅜ 16UNC x ⅝	6.25
80002328	1,000	1.75	⅜	24/100	12.44	5.31	2.750 ID	5.000 OD	4 x 7/16	3.750	2 x ½	8 x ⅜ 16UNC x ⅝	6.25
80005180*	1,000	spline	-	12/100	12.44	5.56	3.225 OD	5.000OD	8 x M10	3.996	2 x ½	8 x 7/16 14-2B x 1	7.125
80004213*	1,500	spline	-	12/170	15.00	5 3/16	3.750 ID 6.000 OD	6.000 OD	8 x 1/2	4.750	2 x 3/8	8 x 7/16 14-2B x 1	7.125

*24V version is also available

**Only 24V version is available.

Burnishing.

To achieve full torque, new clutches need to have an initial wear-in period. Depending upon the inertia and speed, the wear-in period can be anywhere from 30 to 100 engagements. Burnishing should be undertaken at a reduced rpm and at a reduced clutch load. For high inertia loads do not cycle the clutch more than 4 times per minute.

8000 Series Mobile Clutch Dimensions (inch/pound, Imperial)													
Part Number	Static Torque (lbs. ft.)	Bore ID (inches)	Key Way (inches)	Voltage & Watt (V/W)	Overall Diameter (inches)	Overall Length (inches)	Output Hub Side Pilot (in)	Mounting Flange Side Pilot (in)	Groove Width /Output Hub Bolt Holes (in)	Hub Bolt (inches)	I/O Lockup Bolts (inches)	Field Mount (inches)	Field Bolt PCD (in)
80001708*	200	1	¼ (x 2)	12/66	8.230	3.740	1970 ID	1.570 OD 5.710 OD	0.597/36°	-	2 x ⅜	2 x 0.68 slots 4 x 0.50 slots	4.75
80002657*	200	1	¼ (x 2)	12/66	7.125	4 15/32	2.375 ID 3.840 OD	3.250 ID	4 x ⅜	3.125	2 x ⅜	6 x 7/16 slots	4.75
80002712*	200	1	¼ (x 2)	12/66	7.125	4 15/32	2.375 ID 3.840 OD	4.000 ID	4 x ⅜	3.125	2 x ⅜	4 x ½ 13UNC 2B	5.00 5.75
80003931*	200	spline	-	12/66	7.125	4 15/32	2.375 ID 3.840 OD	4.000 ID	4 x ⅜	3.125	2 x ⅜	4 x ½ 13UNC 2B	5.00 5.75
80004265*	200	taper	5/32	12/66	7.125	3.17	2.375 ID 3.840 OD	1.845 ID	4 x ⅜	3.125	2 x ⅜	3 x 0.190 holes 6 x 0.250 holes	2.188 2.437
80002309*	400	1.75	⅜	12/68	10.28	4.66	2.750 ID	5.000 OD	4 x 7/16	3.750	2 x ⅜	8 x ⅜ 16UNC x ⅝	6.25
80004243*	400	spline	-	12/68	10.28	4.66	2.750 ID	5.000 OD	4 x 7/16	3.750	2 x ⅜	8 x ⅜ 16UNC x ⅝	6.25
80004331*	400	1.25	5/16	12/68	10.28	4.66	2.750 ID	5.000 OD	4 x 7/16	3.750	2 x ⅜	8 x ⅜ 16UNC x ⅝	6.25
80005215**	700	1.75	⅜	24/85	11.61	5.31	2.750 ID	5.000 OD 8.660 OD	4 x 7/16	3.750	2 x ½	8 x ⅜ 16UNC x ⅝	6.25
80002327*	1,000	1.75	⅜	12/100	12.44	5.31	2.750 ID	5.000 OD	4 x 7/16	3.750	2 x ½	8 x ⅜ 16UNC x ⅝	6.25
80004332	1,000	spline	-	12/100	12.44	5.31	2.750 ID	5.000 OD	4 x 7/16	3.750	2 x ½	8 x ⅜ 16UNC x ⅝	6.25
80004333	1,000	1.25	5/16	12/100	12.44	5.31	2.750 ID	5.000 OD	4 x 7/16	3.750	2 x ½	8 x ⅜ 16UNC x ⅝	6.25
80005158	1,000	spline	-	12/100	12.44	5.31	2.750 ID	5.000 OD	4 x 7/16	3.750	2 x ½	8 x ⅜ 16UNC x ⅝	6.25
80002328	1,000	1.75	⅜	24/100	12.44	5.31	2.750 ID	5.000 OD	4 x 7/16	3.750	2 x ½	8 x ⅜ 16UNC x ⅝	6.25
80005180*	1,000	spline	-	12/100	12.44	5.56	3.225 OD	5.000OD	8 x M10	3.996	2 x ½	8 x 7/16 14-2B x 1	7.125
80004213*	1,500	spline	-	12/170	15.00	5 3/16	3.750 ID 6.000 OD	6.000 OD	8 x 1/2	4.750	2 x 3/8	8 x 7/16 14-2B x 1	7.125

*24V version is also available

**Only 24V version is available.

Burnishing.

To achieve full torque, new clutches need to have an initial wear-in period. Depending upon the inertia and speed, the wear-in period can be anywhere from 30 to 100 engagements. Burnishing should be undertaken at a reduced rpm and at a reduced clutch load. For high inertia loads do not cycle the clutch more than 4 times per minute.

Mobile Clutches [78 to 237 Nm (58 to 175 lb-ft) torque] Installation Procedure

1. This installation assumes the most common form of mounting, mounting to a pump bracket or direct mounting to a pump face. The pump can be hydraulic, water, a vacuum, or a compressor. These clutches consist of two major subassemblies: the field and the rotor/armature assembly.

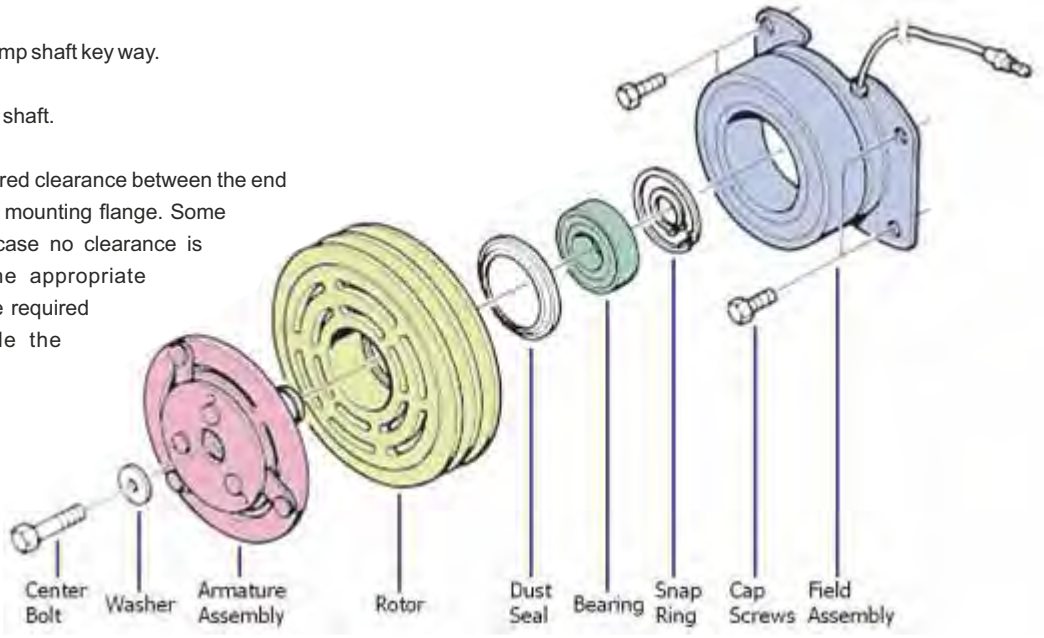
2. Attach the field to the customer-supplied mounting bracket or pump face. Use the four ¼" cap screws supplied with the clutch. Tighten each screw to 10.85 Nm (8ft-lbs), taking care not to strip the heads. The flange should be perpendicular to the pump shaft within 0.003" TIR at a 152.4 mm (6") diameter.

3. Install the customer-supplied key into the pump shaft key way.

4. Mount the rotor/armature assembly onto the shaft.

a) Straight-bore type: First, establish the required clearance between the end of the armature hub and the face of the field mounting flange. Some models have these two aligned, in which case no clearance is required. Check the part drawing for the appropriate specification. A shaft step or a spacer will be required to set this proper clearance. Then slide the rotor/armature assembly onto the pump shaft.

b) Taper-bore or set-screw type: Slide the rotor/armature assembly onto the pump shaft, taking care to properly align both the shaft and hub key ways.



5. Secure the rotor/armature assembly.

a) Centre-bolt type: Install and securely tighten the centre bolt and washer supplied with most models [recommended torque: 27.12 to 40.67 Nm (20~30ft-lbs)].

b) Set-screw type: The set screws can be accessed through openings in the field mounting flange. If there is no shaft step or spacer to position the hub, slide the rotor/armature assembly onto the shaft until it contacts the field. Then back off the assembly approximately 2.54 mm (0.1") and tighten the set screws.

6. After installing the assembly, turn the pulley by hand to verify that there is no contact between the pulley and the field. If contact is noticed, reinstall the rotor/armature assembly or refer to the 'Noisy Clutch section' of the 'Troubleshooting guide' online.

7. Connect the lead wire(s) to the electric circuit. Check the lead wire polarity if the clutch coil has a diode (only possible on two-wire fields). All single-wire fields are grounded at the factory. If the field support is not properly grounded, it is a good practice to attach a wire from the ground terminal on the field to the equipment to provide a sure ground. Possible interference with proper grounding is a painted surface in the connection.

8. Engage and disengage the clutch several times while manually rotating the pulley to ensure it is functioning properly. If full torque is required immediately, the clutch should be burnished. This involves cycling the clutch at a reduced speed not more than 4 times per minute so the surfaces can mate together. In most applications, 20~50 cycles are required for burnishing.

Troubleshooting

For problems during installation or operation, please refer to the troubleshooting section on the website. If you still have questions, please contact us directly for assistance.

Contamination.

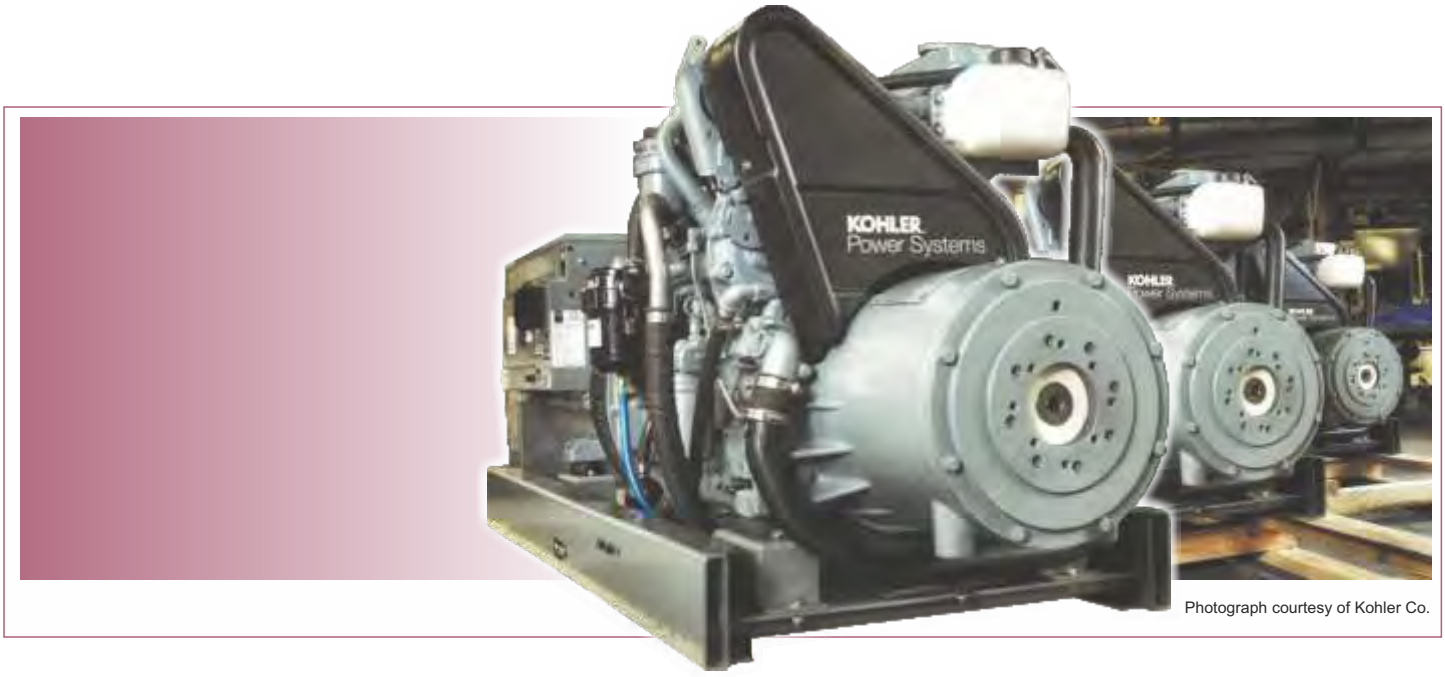
Care should be taken so that contaminants such as oil, grease, etc. do not come in contact with the working faces of the unit. In some cases it may be necessary to provide a cover or baffle to prevent this. Oil and grease on the friction surfaces should be removed by wiping with a small amount of environmentally friendly grease solvent. However, depending on the permeability of the grease or oil, it may be impossible to remove completely, so if the unit shows signs of slippage it needs to be replaced.

MMC Clutch Series for Marine & Hydraulic Pump Applications

MMC series electromagnetic clutches are designed for use with hydraulic pumps, many of which are used in marine winch drives. Typically flange or plate mounted, they engage and disengage the pump.

- Torque ratings from 271 to 2033 Nm (*200 to 1500 lb-ft*) .
- Solid forged rotor & pulley or hub.
- Direct drive or pulley drive.
- 12 & 24 VDC available.
- "TC" and "B" type pump mounts.
- Straight or splined bore.
- High temp, long life grease.
- Bidirectional operation.
- One piece design.
- Plated for corrosion protection.
- High temperature epoxy coil.

Reduced power consumption | Simple installation | Extended pump life | Cold weather starting



Photograph courtesy of Kohler Co.

8000 Series (MMC) Clutch 271 to 2033 Nm (200 to 1500 lb-ft) .
General Installation Instruction and Service Guideline.

Proper assembly, installation, and maintenance will assure optimal application performance and extended life. Please read the instructions on the following pages carefully prior to assembly and operation.

If your clutch is supplied as part of preassembled equipment, please refer to the manufactures recommendations for specific maintenance and service information.

A. Installation.

1. A mounting bracket is required to support the clutch. This is normally supplied to the original manufacturer or through a mobile hydraulics distributor. If your clutch did not come with a mounting bracket, this must be purchased and/or fabricated first for proper installation. All bolts used for the installation should be torqued based upon the grade bolt you are using.

2. Mount the clutch to the bracket with the bolts provided from the OEM or distributor that sold you the bracket. For some MMC-28 series 271 Nm (200 lb-ft) clutches the bolts go through the u-shaped slots on the clutch, and the bracket supporting the clutch is tapped. Other 28 series have a 4-bolt pattern where the back of the clutch field is tapped with a half inch space 13 UNC-2B thread. For MMC-60 & 140 series 542 & 1355 Nm (400 & 1000 lb-ft) clutches the support bracket has a through hole and the back of the clutch assembly has 8 holes that require a 3/8"-16 UNC by 5/8" deep. The MMC-210 series 2033 Nm (1500 lb-ft) clutches have 8 holes, 7/16" 14-2B thread 1 inch deep. The bolt should be long enough to go through the support bracket and go approximately half an inch into the clutch.

3. Loosely position the clutch/bracket assembly on the mounting platform.

4. If necessary, drill required holes in platform to correspond to the foot mount bracket on the clutch.

5. Loosely install mount bracket bolts, nuts, lock washers, Re-check alignment, and tighten all bolts.

6. Mount pump to foot bracket on opposite side from clutch. (NOTE: lubrication and cleanliness of the pump shaft and clutch bore is important. Thoroughly clean these areas if any contamination.) Apply a thin coating of molybdenum disulfide grease on the shaft and in the bore of the clutch. Wipe away any excess grease and make sure no grease gets on armature or rotor assembly. Do not use anti-seize compounds as this will wear down clutch spline. Use mounting bolts long enough to engage at least three-fourths of the threads in the mounting bracket. Always use lock washers.

7. For universal joint input, connect universal joint companion flange to the four holes in the clutch face (or other direct inline coupling. Make sure driveline yoke ears are in phase. If not, remove u-joint, separate joint at the spline and rotate 90 degrees. Shaft misalignment must be less than 3º angularly with a shaft concentricity run out of no more than .003 thousandths of an inch.

8. For belt input, make sure the pulley on the clutch is in alignment with the driving pulley, install belt and tighten based upon belt manufacturer's recommendations. Install drive line between clutch and power source. Install bolts, nuts and lock washers and torque to specified limits.

9. Connect clutch to either 12v or 24v power supply. When voltage/current is connected, the clutch will become engaged and with no current/voltage going to the clutch, the clutch will be disengaged. The clutch coil is not polarized, so it does not matter which wire is connected to positive and/or negative. Use of a surge protector is recommended in the Clutch electrical circuit. One is supplied with each clutch at no charge. It is a good idea to replace the surge protector when replacing the clutch. (Information on the surge protector circuit follows below.)

10. If full torque is required of the clutch should be burnished. Burnishing involves running the clutch at around 1,000 to 1,200rpm and cycling the clutch four times per minute at a reduced load. This should be done for 30-50 cycles.

B. Additional Information.

1. CAUTION: At the moment of engagement, the clutch must accelerate all related inertial load of the clutch components and other components being put into rotary motion. The larger the clutch and related components the higher the inertia load. Higher R.P.M. engagement of the clutch creates and excessive shock load and may cause breakage of the springs and/or clutch slippage and ultimate clutch failure. Please refer to these recommendations regarding maximum clutch engagement R.P.M.

Clutch Model	Torque Rating Nm (lb-ft)	Maximum Engagement RPM	Maximum Operating RPM
MMC28	271.164 (200)	2,500	3,600
MMC60	542.327 (400)	1,800	3,000
MMC100	949.073 (700)	1,500	2,500
MMC140	1355.818 (1000)	1,200	2,500
MMC210	2033.727 (1500)	1,200	1,800

2. Soft Start: Ogura does offer a soft start clutch controller for applications where the rapid engagement of the clutch is undesirable. Please contact your factory representative for information. Higher speed engagements are also possible but depending on the value of the inertial loads, life may be reduced.

3. Ball bearings: The unit is supplied with oversized dual bearings permanently sealed and lubricated ball bearings. They are designed for years of use in Marine engine bay environments.

4. Air Gaps: The Air gap between the Rotor and the armature are set at the factory and no adjustment is possible or necessary. That said, a periodic checking of the air gaps is suggested. With each engagement of the clutch there is some wear increasing this air gap. For all 8000 series clutches, the preset factory air gap is from 0.015" - 0.028".

Repair or user serviceable parts:

There are no user or serviceable parts in the 8000 series clutches. We are attaching a parts list and exploded view for your reference only. Please allow only an authorized Ogura warranty service centre to repair or replace worn or damaged clutches.

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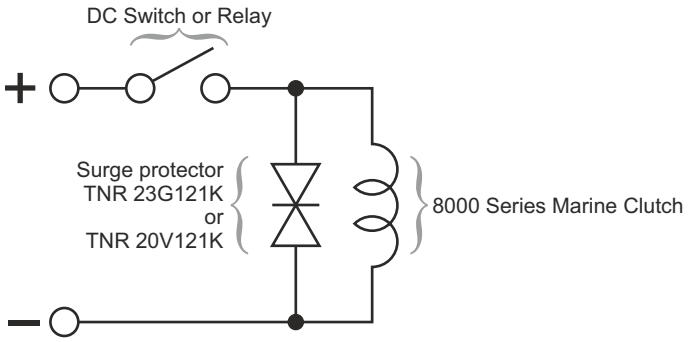
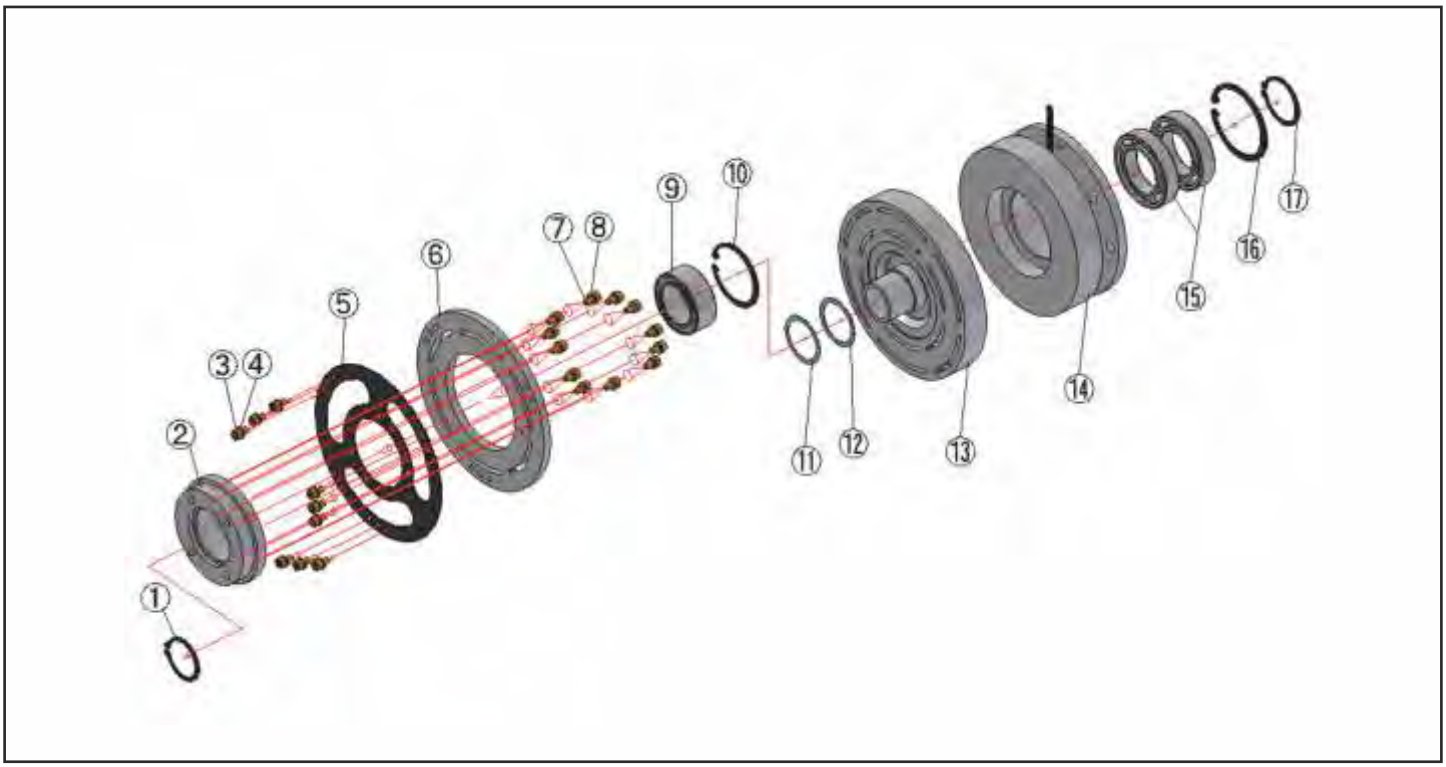


Use of the Surge Protector in the insulation is optional. The surge protector is not for the protection of the clutch, but for the protection of the customer's clutch control circuitry.
In general, each time you turn off the clutch, there is an inductive "surge" of power (voltage) back from the clutch coil into the power circuit, switch and relay. This is a brief (tens of milliseconds) voltage that can cause arcing at the switch or relay contacts. Repeated arcing at these contacts can cause the switch or relay to prematurely fail over time. The use of a surge protector can extend the life of the switch or relay.

In addition, the switch or surge "noise" can sometimes be heard as a "pop" over radios. The surge protector will eliminate or greatly reduce this noise.

Installation.

The surge protector needs to be connected to the clutch leads after the switch. The protector can be anywhere along the two clutch leads. Most of the time it's installed at the beginning of the clutch lead and can sometimes be connected right with the customer's terminal and terminal housing.



NO.	PARTS NAME	QTY
1	Retaining rings	1
2	Armature hub	1
3	Hexagon socket head cap screws	9
4	Plain washers	9
5	Plate spring	1
6	Armature	1
7	Hexagon socket head cap screws	12
8	Spring washers	12
9	Ball bearings	1
10	Retaining rings	1
11	Shim	Proper
12	Shim	Proper
13	Rotor assembly	1
14	Field	1
15	Ball bearings	2
16	Retaining rings	1
17	Retaining rings	1

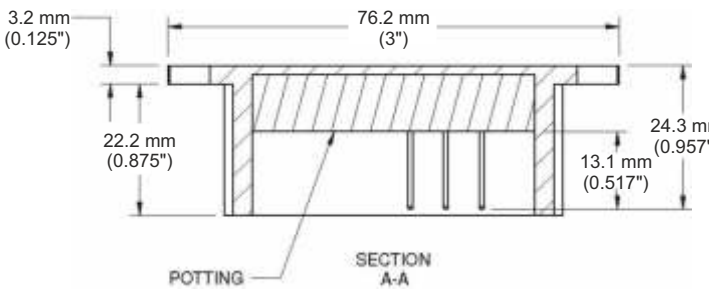
Warranty

Products are warranted against defects in Material and Workmanship for a period of 12 months from date of shipment, when applied in proper applications within specified ratings. This Warranty covers repair or replacement, FOB Somerset New Jersey. There is no further warranty or implied representation as to any product. The company shall not be liable for any consequential damage caused by improper application or installation of its product.

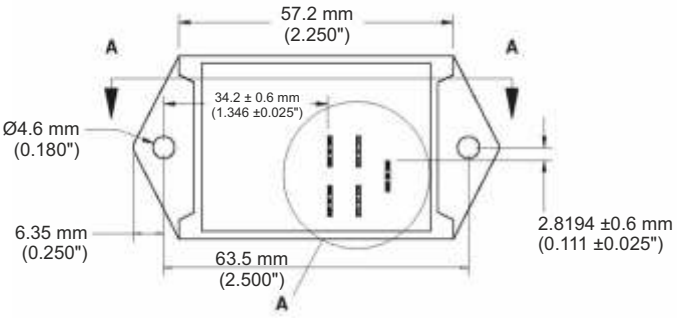
The patented Softstart Clutch Controller offers a simple solution to all of these issues!

- » Mechanical Life: The Softstart lessens forces to mechanical parts and improves the life of bolts, decks, brackets and other mechanical parts.
- » Belt Life: Reduce wear and breakage for belts and improve the quality & reputa-tion of the equipment.
- » Engine Stall: The Softstart eliminates engine stalling and RPM droop by utilizing closed loop RPM monitoring while engaging the electric clutch.
- » Mechanical Jolt: Smooth engagement means less jolt to the equipment and customers.
- » Engine Cost Savings: The Softstart Clutch enables OEM's to reduce equipment engine size to save money.

SIDE VIEW



TOP VIEW



Gas Version

Absolute Maximum Ratings - Model 3112300000

	Min.	Nom.	Max.	Units.
Operating Voltage	8	-	16	Volts
Max. on Resistance	-	-	0.05	Ohms
'On' Response Time	220	250	280	mS
Soft Start Ramp Time	900	1000	1100	mS

Tachometer Input (for closed loop versions)

	Min.	Nom.	Max.	Units.
Impedance	-	1.5	-	Mohms
Input Range	1000	-	4000	RPM*

***Note RPM Input spark pattern 1:1 (1 pulse per revolution, other patterns available).**

Protection

Load dump ISO 7637-2 test pulse 5A

	Min.	Nom.	Max.	Units.
Over current (13.8 VDC)	47	89	131	Amps

Diesel & Electric Version

Absolute Maximum Ratings - Model 3112800000

	Min.	Nom.	Max.	Units.
Operating Voltage	8	-	16	Volts
Max. on Resistance	-	-	0.05	Ohms
'On' Response Time	220	250	280	mS
Soft Start Ramp Time	900	1000	1100	mS

Alternator Tachometer (for closed loop versions)

	Min.	Nom.	Max.	Units.
Impedance	-	100	-	Kohms
Trigger (VIL)	-	-	3.3	Volts
Trigger (VIH)	4.7	-	-	Volts
Frequency Range	170	-	700	Hz*

*Note Other frequency ranges available

Protection

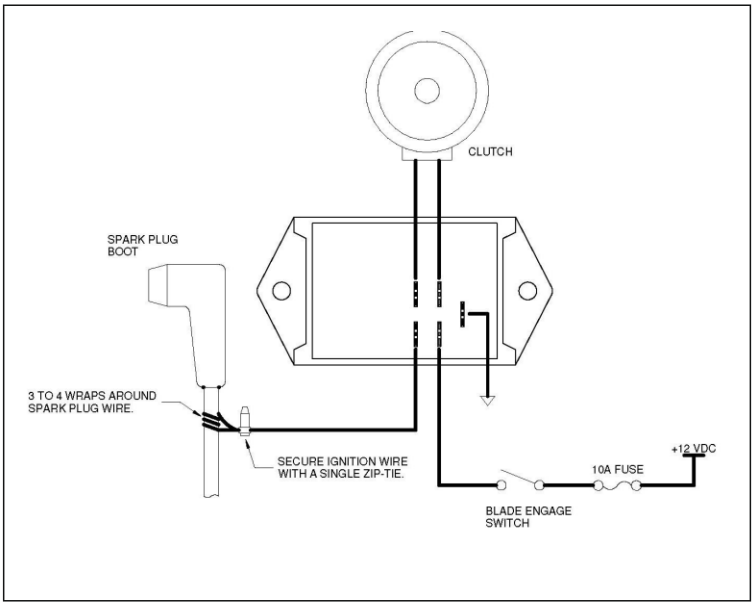
Load dump ISO 7637-2 test pulse 5A

	Min.	Nom.	Max.	Units.
Over current (13.8 VDC)	47	89	131	Amps

The patented 'SoftStart' controller senses the exact point at which the friction surfaces contact, then rapidly reduces the current to a level that allows the clutch to safely slip, but not release. Using engine RPM feedback, the patented controller adjusts the clutch current in a manner that drives the engine RPM to a fit a desired profile.

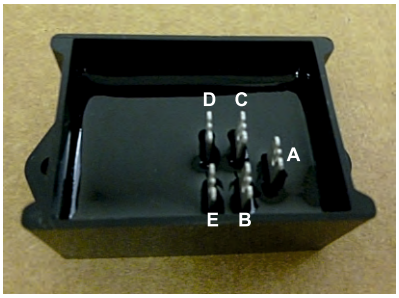
Design Features:

- Closed loop control for consistent performance throughout the entire clutch life.
- Precise current measurement for accurate and repeatable pull-in detection.
- Closed loop PWM current control unaffected by charging system voltage.
- One controller part number ~ Ratio-metric RPM control automatically scales to RPM at time of engagement.
  On-the-fly current calibration automatically adapts to different sized clutches.
- Default to open loop control if RPM signal is unavailable.
- Optional fixed current calibration possible for special applications.
- Optional open loop available (no tachometer feedback).
- Short circuit protected / Load dump protected.



Operating and Environment Specs:

- Operating Temperature Range: -40° to +70°C.
- Vibration: 20gs @ 10 to 80 Hz SAE J-1378.
- Shock 55gs SAE J-1378 (tested and passed to 150gs, nearly 3 times the SAE specification!)
- Humidity: 95% H SAE J-1378.
- Salt Spray Test: MIL-STD-202G, Method 101E (5% NaCl @ 35C, 48 hrs).
- Dust: Unit is 100% encapsulated ~ dust cannot enter.
- Immersion: ASAE EP455 5.6 level 2.
  Immerse controller in tap water at temperature of 18C +/- 5C to a component top surface depth of 460mm. Orient in each of 3 orthogonal planes for 5 min in each plane. Upon removal, immediately subject to a cold soak of 19°C for 30 min. Return to dry atmosphere of 25°C for 60 min. No impaired function, no water entry.
  Ultraviolet: Q-Sun Xe-1-UV Chamber to 720 Hours.
- Thermal Shock: Controller stabilized at 70°C for 30 min. Removed from oven and immediately immersed in 0C water mixed with UV sensitive dye for a minimum of 5 minutes - repeated for a total of 10 cycles. Controller stabilized at -40°C for 30 min. Removed from chamber and immediately immersed into 25°C water mixed with UV sensitive dye for a mini-mum of 5 min - repeated for a total of 10 cycles. No functional failures or ingress of water.
- Chemical: ASAE EP455.5.8.2 chemicals brush exposure.
- Chemical test: Apply with a brush over the normally exposed surface area. Repeat once per day for three days. Check for impaired function or detrimental corrosion during the test and at the end of a 100 hour minimum interval following exposure to test condition. No defect from wiping the surface with the following chemicals at room temperature: engine oil, transmission fluid, gasoline.



Electrical connection

Gas Powered, Diesel or Electric Versions PIN OUT

A Ground.
B +12VDC Supply.
C Clutch OUT +
D Clutch RETURN.
E RPM Tachometer trigger (for closed loop versions). Inductive for gas equipment, alternator output for diesel, other pickup options available.

OEM Options

- Other tachometer feedback (rotating shaft, controller interface, etc.).
- Open loop soft start version with no tachometer feedback.
- Voltage input options.
- Multiple clutch engagement and tachometer profiles.

Can handle almost all direct engine mount clutch requirements in the 3.73 kW (5 hp) to 29.83 kW (40 hp)load range.

Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Output	Ref. Pitch Dia. mm / inch	Number of Grooves	Weight kg / lbs
505894	149.14 / 110	3600	*Taper	12 / 50	Hub	2.75	UnivMt	4.99 / 11.00
515609	149.14 / 110	3600	1"	12 / 47	Hub	3.62	UnivMt	4.54 / 10.00
509812	149.14 / 110	3600	1"	12 / 50	Pulley	4.13	2/A	4.54 / 10.00
515294	149.14 / 110	3600	25 mm	12 / 47	Pulley	4.07	2/3V	5.44 / 12.00
535411	149.14 / 110	3600	1"	12 / 46.6	Hub	3.62	UnivMt	4.54 / 10.00
538567	149.14 / 110	3600	1"	12 / 45	Hub	4.49	UnivMt	tbc
538649	149.14 / 110	3600	1"	12 / 45	Pulley	3.90	1	tbc
516849	338.95 / 250	3600	1"	12 / 50	Pulley	4.65	2/A	7.26 / 16.00
519225	338.95 / 250	3600	1.125"	12 / 50	Hub	3.90	UnivMt	7.26 / 16.00
509044	338.95 / 250	3600	1.438"	12 / 50	Pulley	4.65	2/A	7.26 / 16.00
521325	338.95 / 250	3600	1.125"	12 / 50	Pulley	4.65	2/A	7.26 / 16.00
532747	542.33 / 400	3600	1.25"	12 / 68	Hub	0.00	N/A	tbc
535528	542.33 / 400	3600	1.125"	12 / 68	Pulley	4.24	3/B	8.16 / 18.00
538332	542.33 / 400	3600	1.438"	12 / 68	Pulley	4.69	3	tbc

These general purpose clutches are used in a variety of applications usually driven by petrol or diesel engines. Typically bearing mountedclutches, which can be used in a variety of mobile, agricultural, industrial and marine applications. Mounted on either the driving or driven shaft. Supplied with either pulley or universal mounting flange to mount a sprocket, coupling adaptor or customer's specialised pulley.

Remote Actuation.

The clutch can be engaged or disengaged from a remote location such as the cab in a truck or a control panel.

Safety.

In cases where the clutch is driving applications such as a stump grinder or a trencher, many times these can be fitted with an operator presence control so if the operator lets go of the handle, the clutch automatically disengages. Since electric clutches are not speed dependent, they can be engaged and disengaged at any point in their speed range.

Reduced Power Consumption from the Engine.

Since the clutch is only engaged when it is required to run, engine horsepower can be utilized for other functions when the clutch is not driving. This is particularly important if horsepower is required to perform an independent driving function or in applications such as fans or blowers that consume a lot of horsepower and do not need to run all the time the engine is running.

Simple Installation.

Since the clutch runs directly off the battery, all that is required is a basic switch to engage and disengage the clutch.

Operator Convenience.

Rather than a mechanical linkage which can cause an additional force required by an operator to engage a clutch, an electric clutch is engaged by a simple flip of a switch. Because the clutch is engaged electrically, this switch can be incorporated into a control panel so the operator does not have to be in the same location as the clutch when it engages.

Cold weather starting.
By using a clutch, the load is not engaged at start up. This allows the engine to come up to full efficiency before engaging the clutch. This helps to prevent engine stalling.

Solid Forged Rotor.
A one piece solid forged rotor means no chance of internal parts separation. Our rotors also have an even wall thickness around the coil which gives optimum flux distribution, maximizing torque.

Different Coil Voltages Available.
Although 12 volt is the most common, 24 volts can also be made available. Depending upon the quantity, other specialty voltages can be made.

High Temperature, Longer Life Grease.
All models include our special long life grease which has shown a significant improvement in life over other standard high temp greases.

E-coating.
Where possible, all parts in the clutch are e-coated to give maximum corrosion protection.

High Temperature Epoxy Coil.
To help prevent failure from both vibration and outside contaminants, all coils are sealed in the coil shell with a high temperature epoxy coating.

Forged Machined Pulley.
All models in this section use a heavy duty machined pulley. A stronger pulley resists damage due to abusive environments.

Installation of General Purpose Clutches Pre-Installation Checklist:

Engine Shaft Size.
Most of the time, general purpose clutches are mounted directly onto the engine shaft. If the installation is not on an engine shaft, please make sure that the tolerances are close enough to provide a snug fit between the bore of the clutch and the shaft (all engine manufactures should produce shafts within the required tolerances). Also, a standard rule of thumb is that the minimum amount of shaft engagement is the diameter of the shaft for one-piece designs (two-piece designs would require shaft engagement in both pieces). The shaft step radius needs to be smaller than the fillet on the clutch bearing or the clutch will not seat properly. If it does not, a spacer with a proper chamfer is required.

Direction of Rotation.
Clutches can operate either clockwise or counter-clockwise. They can be mounted with the pulley toward the engine or away from the engine. This mounting is critical because this determines which direction the leaf springs are oriented. If springs are not run in tension, they could suffer premature failure because they will be running in compression.

Torque Tab Restraint.
Prior to installation, it is critical to determine the torque tab placement. The function of the torque tab is to keep the lead wires from pulling out of the clutch due to the bearing drag. This torque tab should have a freedom of movement both axially and radially of about 1/16 of an inch. The simplest type of torque tab restraint is some type of U-bracket that captures the torque tab but does not grab it firmly. In heavy vibration applications, a larger surface area is required to prevent notching of the torque tab and the restraining pin or bracket.

Key Length and Height.
In many of the clutches, the key does not go all the way through the clutch. Therefore, the key length can only be as long as the keyway length within the rotor. Please check this before installation. In some clutches, the bearing inner race may be exposed on the top of the keyway. In this case, the key needs to be slightly undersized in this area so it does not force itself against the bearing inner race.

Installation Procedure.
1. Slide the clutch onto the shaft (for a two-piece clutch, slide the pieces on one at a time).
Please make sure that the key is in the proper location. Do not force the clutch onto the shaft because if the key is slightly off, this can damage the key or the clutch bore. The shaft should extend into the clutch enough to support each component. The clutch should be slid onto the shaft until the bearing inner race on the clutch contacts a step, washer, or drive pulley. In all cases, the mounting surfaces of these components need to be parallel to each other within 0.003" TIR. If these surfaces are not parallel, the clutch could become cocked on the shaft (this would show up as a wobbling pulley). The contact of these components to the bearing inner race can extend beyond the inner race because the seal is recessed (if you are using a washer, make sure it is not

cupped; otherwise this could dig into the bearing seal).
Please be sure to check the fillet on the ground drive pulley, washer, or clutch so that they do not interfere with the radius on the step in the engine crankshaft. On some of our clutches, the bearing is kept on the inner sleeve via a snap ring (pulley side). With this design, the rotor would then contact the appropriate step on the shaft.

2. A centre bolt and washer (customer-supplied) is then placed into the end of the tapped shaft and tightened down. The washer should be at least ¼" in thickness. Bolt tightening torque will vary depending on the bolt used in the application. This can be anywhere from 20 to 50 ft-lbs. If vibration is heavy, an adhesive may be required to prevent the bolt from becoming loose. The washer should contact the inner race of the bearing. It can extend beyond the inner race as long as it does not contact the outer race.

3. At this point, the torque tab should be held in the appropriate position. Please make sure that there is freedom of movement both axially and radially of about 1/16". Double check the installation by pushing and pulling against the back of the field to move it slightly from side to side. Under no circumstances should the torque tab be tightened down firmly. This will cause failure of the field bearings.

4. In order to get maximum torque, the clutch should be burnished. Burnishing is a procedure where the clutch is cycled 30 to 50 times at half the normal operating speed of the clutch. The cycle rate can be 2 to 6 cycles per minute depending on inertia. Please consult with your local representative to determine max cycle rate. Proper burnishing allows the wear surfaces to mate together to produce maximum torque. However, improper burnishing can damage the surfaces. Please take care to allow enough time between cycles so that the surfaces are not damaged.

Troubleshooting.

For problems during installation or operation, please refer to the troubleshooting section at the back of this publication. If you still have questions, please contact jbj Techniques Ltd technical office for assistance, tel: +44 (0)1737 767493 or email: info@jbj.co.uk

Contamination.

Care should be taken so that contaminants such as oil, grease, etc. do not come in contact with the working faces of the unit. In some cases it may be necessary to provide a cover or baffle to prevent this. Oil and grease on the friction surfaces should be removed by wiping with a small amount of environmentally friendly grease solvent. However, depending on the permeability of the grease or oil, it may be impossible to remove completely, so if the unit shows signs of slippage it needs to be replaced.

Torque Range: 0.226 to 0.79 Nm.
2 to 7 in-lbs.

Small clutches for use in copy machines, printers, and other peripheral devices. This one-piece assembly features a custom-molded gear or timing pulley designed to your specifications. Most clutches use a permanent magnet to disengage the armature when it is not in use.
All clutches are bi-directional.

Custom Moulded Gear.
The MIC assembly includes a custom-molded gear or timing pulley designed to your specifications.

One Piece Assembly.
The entire assembly is delivered pre-assembled, so it simply slides onto the shaft. There are no adjustments to make or gaps to set.

Bi-directional Operation.
The clutch has the ability to drive clockwise or counterclockwise.

Permanent Magnet Return.
All standard units come with a permanent magnet armature return attached to the inside of the gear. This provides a fast and smooth disengagement of the armature when power is released to the clutch coil.

Zero Backlash.
If needed the armature can incorporate a one-piece spring that eliminates backlash.

Long Life.
Special bushings allow for millions of operating cycles for most applications.

D-cut Bore.
The bore of the clutch is made to fit a D-cut shaft to simplify installation and eliminate the need for set screws.

Two Clutch Power Connection Options Available.
MIC clutches can come complete with a lead wire and a customer's specified terminal or the standard connector built into the clutch coil housing.

Model Number	Part Number	Static Torque Nm / in-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
MIC-2.5	0	0.0207 / 0.183	300	6 mm	24 / 3.4	D-cut	0.05 / 0.11
MIC-2.5T	0	0.0207 / 0.183	300	6 mm	24 / 3.4	D-cut	0.03 / 0.07
MIC-3.5T	0	0.0286 / 0.253	300	6 mm	24 / 3.7	D-cut	0.03 / 0.07
MIC-5T	0	0.0408 / 0.361	300	6 mm	24 / 3.7	D-cut	0.06 / 0.13
MIC-5	0	0.0415 / 0.367	300	8 mm	24 / 3.7	D-cut	0.09 / 0.20
MIC-8	0	0.0668 / 0.591	300	8 mm	24 / 3.7	D-cut	0.12 / 0.26

Torque Range: 2.7 to 7.9 Nm.
2 to 70 in-lbs.

Clutch designed for general industrial use. Clutches are designed with zero backlash armatures and a double ball bearing field support to provide longer life and better performance versus bushing style units.

AMC-E version now available - Newer E version is lower in cost, lighter in weight, is RoHS compliant and has a reduced wattage so energy consumption is lower, but still has equivalent performance to the AMC clutches.

Easy Mounting And Maintenance.
The clutch field is mounted to the rotor with ball bearings, providing easy installation and reducing maintenance requirements.

Zero Backlash.
By mounting the armature to the hub via leaf springs, backlash is minimized and armature rattle is eliminated.

Controllable Response Time.
Variations in acceleration or deceleration times and slip torque can be achieved by controlling the applied current.

Fast Response.
Elimination of splines provides faster response and high performance by overcoming friction in the armature and hub.

High Heat Dissipation.
The AM series units perform relentlessly year after year, even in heavy duty applications, due to their excellent heat dissipation.

Model Number	Part Number	Static Torque Nm / in-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
AMC-2.5	25144500	0.0207 / 0.183	3600	6 mm	24 / 3	2 x 7	0.14 / 0.30
AMC-2.5E	25373800	0.0207 / 0.183	3600	6 mm	24 / 2.8	2 x 7	0.12 / 0.26
AMC-5	25144600	0.0415 / 0.367	3600	6 mm	24 / 4	2 x 7	0.18 / 0.40
AMC-5E	25373900	0.0415 / 0.367	3600	6 mm	24 / 3.8	2 x 7	0.15 / 0.33
AMC-10	25144700	0.0837 / 0.741	3600	8 mm	24 / 6	2.5 x 9	0.27 / 0.60
AMC10-E	25375300	0.0837 / 0.741	3600	8 mm	24 / 5.7	3 x 9.4	0.27 / 0.60
AMC-20	25161600	0.1695 / 1.5	3600	10 mm	24 / 6.1	4 x 11.5	0.41 / 0.90
AMC20-E	25365800	0.1695 / 1.5	3600	10 mm	24 / 5.8	4 x 11.8	0.37 / 0.82
AMC-40	25144900	0.339 / 3	3600	12 mm	24 / 9	4 x 13.5	0.73 / 1.60
AMC-80	25145000	0.6779 / 6	3600	15 mm	24 / 11.5	5 x 17	1.04 / 2.30

Torque Range: 2.7 to 7.9 Nm.
2 to 70 in-lbs.

Brake designed for general industrial application units feature zero backlash, armature hub, and field assemblies that can accommodate bearings for additional shaft support.

AMB-E version now available - Newer E version is lower in cost, lighter in weight, is RoHS compliant and has a reduced wattage so energy consumption is lower, but still has equivalent performance to the AMC brakes.

Easy Mounting And Maintenance.
The brake flange mounts to the customer's machine via the four mounting holes. The bore of the brake can also be used to house a bearing which can reduce the overall length of the machine and cost because the brake body acts as as bearing housing.

Zero Backlash.
By mounting the armature to the hub via leaf springs, backlash is minimized and armature rattle is eliminated.

Controllable Response Time.
Variations in acceleration or deceleration times and slip torque can be achieved by controlling the applied current.

Fast Response.
Elimination of splines provides faster response and high performance by overcoming friction in the armature and hub.

High Heat Dissipation.
The AM series units perform relentlessly year after year, even in heavy duty applications, due to their excellent heat dissipation.

Model Number	Part Number	Static Torque Nm / in-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
AMB-2.5	25145100	0.0207 / 0.183	3600	6mm	24 / 3	2 mm width	0.14 / 0.30
AMB2.5-E	25376700	0.0207 / 0.183	3600	6mm	24 / 2.8	2 x 7	0.10 / 0.23
AMB-5	25145200	0.0415 / 0.367	3600	6mm	24 / 4	2 mm width	0.18 / 0.40
AMB5-E	25377700	0.0415 / 0.367	3600	6mm	24 / 3.85	2 x 7	0.14 / 0.31
AMB-10	25145300	0.0837 / 0.741	3600	8mm	24 / 6	2.5 mm width	0.27 / 0.60
AMB10-E	25378500	0.0837 / 0.741	3600	8mm	24 / 5.7	3 x 9.4	0.23 / 0.50
AMB-20	25161700	0.1695 / 1.5	3600	10mm	24 / 6.1	4 mm width	0.41 / 0.90
AMB20-E	25379300	0.1695 / 1.5	3600	10mm	24 / 5.8	4 x 11.8	0.29 / 0.64
AMB-40	25145500	0.339 / 3	3600	12mm	24 / 9	4 mm width	0.73 / 1.60
AMB-80	25145600	0.6779 / 6	3600	15mm	24 / 11.5	5 mm width	1.04 / 2.30

Torque Range: 5.4 to 59.7 Nm.
4 to 44 ft-lbs.

Clutch designed for general industrial applications. Units come standard with zero backlash armature. Units are normally produced in a high torque version but a lower torque is also available which reduces the overall length of the clutch by 15%. Options for this unit include an automatic air gap that adjusts as the clutch wears, a quiet armature option that reduces clutch engagement noise for application in hospitals or offices and a 1 piece designed option that simplifies mounting.

Fast Response.
The V series clutches are dry type single disc units. This ensures fast response in high speed, high cycle applications.

Zero Backlash.
The armature is mounted to the hub by special leaf springs to provide minimal backlash and no armature rattle.

High Torque Versions Available (H option).
Both standard units and high torque (H) versions are shown in the following data sheets. The high torque versions have identical diameters to the standard versions, however they are slightly longer to allow for a higher power coil.

Automatic Gap Adjustment (optional).
The air gap is automatically adjusted as the friction surfaces wear during the entire life of the unit, increasing longevity by 50%.

Compact Design.
The compact design of the V-series reduces mounting requirements during installation.

Quiet Armature (option S).
To help dampen the noise that sometimes occurs during engagement, Ogura has developed a quiet armature option that is available on all V series models.

One Piece Design (option P).
One piece design simplifies mounting.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
VF Cooling Fan	0	N/A	N/A	-	-	-	0.00
VCEH-0.6	23655100	6.915 / 5.1	7000	12 mm	24 / 14	4 x 1.8	0.59 / 1.30
VCEH-1.2	23655900	16.270 / 12	6000	15 mm	24 / 17	5 x 2.3	1.10 / 2.42
VCEHA-1.2	23660500	16.270 / 12	5500	15 mm	24 / 17	5 x 2.3	1.40 / 3.08
VCEH-1.2P	23674900	16.270 / 12	6000	15 mm	24 / 17	5 x 2.3	1.70 / 3.74
VCEH-2.5	23656700	29.828 / 22	5500	20 mm	24 / 25	6 x 2.8	2.22 / 4.90
VCEHA-2.5	23660600	29.828 / 22	5000	20 mm	24 / 25	6 x 2.8	2.60 / 5.73
VCEH-2.5P	23675700	29.828 / 22	5500	20 mm	24 / 25	6 x 2.8	2.80 / 6.17
VCEH-5	23657500	59.656 / 44	4500	25 mm	24 / 33	8 x 3.3	3.58 / 7.90
VCEHA-5	23660700	59.656 / 44	4000	25 mm	24 / 33	8 x 3.3	4.59 / 10.13
VCEH-5P	23646500	59.656 / 44	4500	25 mm	24 / 33	8 x 3.3	4.89 / 10.79
VCE-10	23784800	101.686 / 75	3600	30 mm	24 / 38	8 x 3.3	5.81 / 12.80
VCE-20	23784900	203.373 / 150	3000	40 mm	24 / 53	12 x 3.3	10.78 / 23.80

Torque Range: 6.8 to 59.7 Nm.
5 to 44 ft-lbs.

Brake designed for general industrial applications. Units come standard with zero backlash armature. Units are normally produced in a high torque version but a lower torque is also available which reduces the overall length of the clutch by 15%. Options for this unit include an automatic air gap that adjusts as the clutch wears, a quiet armature option that reduces clutch engagement noise for application in hospitals or offices and a 1 piece designed option that simplifies mounting.

Fast Response.
The V series clutches and brakes are dry type single disc units. This ensures fast response in high speed, high cycle applications.

Zero Backlash.
The armature is mounted to the hub by special leaf springs to provide minimal backlash and no armature rattle.

High Torque Versions Available (H series).
Both standard units and high torque (H) versions are shown in the following data sheets. The high torque versions have identical diameters to the standard versions, however they are slightly longer to allow for a higher power coil.

Automatic Gap Adjustment (optional).
The air gap is automatically adjusted as the friction surfaces wear during the entire life of the unit, increasing longevity by 50%.

Compact Design.
The compact design of the V-series reduces mounting requirements during installation.

Quiet Armature (Option S).
To help dampen the noise that sometimes occurs during engagement, Ogura has developed a quiet armature option that is available on all V series models.

One Piece Design (option P).
One piece design simplifies mounting.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
VF Cooling Fan	0	N/A	N/A				0.00
VBEH-0.6	23655500	6.915 / 5.1	7000	N/A	24 / 12	N/A	0.37 / 0.82
VBEH-1.2	23656300	14.914 / 11	6000	N/A	24 / 18	N/A	0.64 / 1.41
VBEHA-1.2	23660900	14.914 / 11	5500	15 mm	24 / 18	5x2.3	1.00 / 2.20
VBEH-1.2P	23675100	14.914 / 11	6000	15 mm	24 / 18	5x2.3	1.20 / 2.64
VBEH-2.5	23657100	29.828 / 22	5500	N/A	24 / 22	N/A	1.20 / 2.64
VBEHA-2.5	23661000	29.828 / 22	5000	20 mm	24 / 22	6x2.8	1.90 / 4.19
VBEH-2.5P	23675900	29.828 / 22	5500	20 mm	24 / 22	6x2.8	2.10 / 4.63
VBEH-5	23657900	59.656 / 44	4500	N/A	24 / 33	N/A	2.20 / 4.85
VBEHA-5	23661100	59.656 / 44	4000	25 mm	24 / 33	8x3.3	3.70 / 8.15
VBEH-5P	23676700	59.656 / 44	4500	25 mm	24 / 33	8x3.3	3.70 / 8.15
VBE-10	23785000	101.686 / 75	3600	N/A	24 / 38	-	3.72 / 8.20
VBE-20	23785100	203.373 / 150	3000	N/A	24 / 53	-	6.99 / 15.40

Torque Range: 5.4 to 199.3 Nm.
4 to 147 ft-lbs.

Brake is designed for general industrial use. Low inertia zero backlash armature can be bolted to your hub. Brake can be supplied with internal or external hub depending upon overall length restrictions.

Fast Response.
TM series brakes are dry type single disc units with no sliding parts. That means you can count on fast response time.

No Backlash Armature.
By mounting the armature to its hub by means of leaf springs, backlash is minimized and armature rattle is eliminated.

Compact Design.
The compact design of the TM series reduces mounting requirements and makes installation a snap.

Mounting Flexibility.
The TM series can be provided with a flange mount or bearing mount design.

Low Inertia.
Fast response and low inertia are due to the TM series low weight and compact design.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
TMB-0.6	23473300	6.101 / 4.5	5000	N/A	24 / 3	N/A	0.32 / 0.70
TMB-0.6HI	23476500	6.101 / 4.5	5000	12 mm	24 / 12	4 x 1.5	0.41 / 0.90
TMB-0.6H	23476400	6.101 / 4.5	5000	12 mm	24 / 12	4 x 1.5	0.41 / 0.90
TMB-1.2	23431500	12.202 / 9	5000	N/A	24 / 4	N/A	0.680 / 1.50
TMB-1.2H	23431600	12.202 / 9	5000	15 mm	24 / 15	5 x 2	0.907 / 2.00
TMB-1.2HI	23460300	12.202 / 9	5000	15 mm	24 / 15	5 x 2	0.907 / 2.00
TMB-2.5	23431700	24.405 / 18	4500	N/A	24 / 6	N/A	1.179 / 2.60
TMB-2.5H	23431800	24.405 / 18	4500	20 mm	24 / 22	5 x 2	1.588 / 3.50
TMB-2.5HI	23460400	24.405 / 18	4500	20 mm	24 / 22	5 x 2	1.588 / 3.50
TMB-5	23431900	50.165 / 37	4000	N/A	24 / 6.1	N / A	1.996 / 4.40
TMB-5H	23432000	50.165 / 37	4000	25 mm	24 / 33	7 x 3	2.723 / 6.00
TMB-5HI	23460500	50.165 / 37	4000	25 mm	24 / 33	7 x 3	2.723 / 6.00
TMB-10	23432100	101.686 / 75	3600	N/A	24 / 9	N/A	3.674 / 8.10
TMB-10H	23432200	101.686 / 75	3600	30 mm	24 / 38	7 x 3	4.990 / 11.00
TMB-10HI	23460600	101.686 / 75	3600	30 mm	24 / 38	7 x 3	4.990 / 11.00
TMB-20	23432300	203.373 / 150	3000	N/A	24 / 11.5	N/A	6.985 / 15.40
TMB-20H	23432400	203.373 / 150	3000	40 mm	24 / 53	10 x 3.5	9.662 / 21.30
TMB-20HI	23460700	203.373 / 150	3000	40 mm	24 / 53	10 x 3.5	9.662 / 21.30

Torque Range: 12.2 to 1000.6 Nm.
9 to 738 ft-lbs.

Brake designed for general industrial use. Suitable for high speed and high cycle applications. Brake has automatic wear adjustment mechanism which maintains proper air gap over life of the brake to maintain a consistent braking time.

Automatic Air Gap Adjustment.
As the armature and rotor wear, the air gap is automatically reset to maintain proper position, greatly extending overall life and helping to maintain time to stop requirements.

Easy Mounting.
Smaller units use a four bolt mounting for the field, larger units have six. Hub is set in place on shaft via step, collar or spacer.

High Heat Dissipation Capacity.
Suitable for high speed cycle.

Fast Response.
Quick engagement and disengagement.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
MSB-1.2	23185800	12.202 / 9	5500	15 mm	24 / 17	5 x 17	1.18 / 2.60
MSB-2.5	23186400	25.761 / 19	5000	20 mm	24 / 25	5 x 22	2.20 / 4.85
MSB-5	23182900	50.165 / 37	4000	25 mm	24 / 30	7 x 28	4.00 / 8.82
MSB-10	23188700	100.331 / 74	3600	30 mm	24 / 35	7 x 33	7.98 / 17.60
MSB-20	23187500	200.661 / 148	2600	40 mm	24 / 50	10 x 43.5	14.02 / 30.90
MSB-40	23189300	399.966 / 295	2400	50 mm	24 / 65	15 x 55	21.00 / 46.30
MSB-70	23188100	699.602 / 516	2000	60 mm	24 / 90	15 x 65	34.02 / 75.00
MSB-100	23189900	1000.594 / 738	1800	70 mm	24 / 100	18 x 76	50.80 / 112.00

OGURA INDUSTRIAL CORP.

Torque Range: 5.4 to 199.3 Nm.
4 to 147 ft-lbs.

Clutch designed for general industrial use. Compact design with a thin overall profile. Zero backlash armatures can be built into custom hubs. Clutches are available with bearing supported field or a (no bearing) flange field.

Fast Response.
TM series clutches are dry type single disc units with no sliding parts. That means you can count on fast response time.

No Backlash Armature.
By mounting the armature to its hub by means of leaf springs, black lash is minimized and armature rattle is eliminated.

Compact Design.
The compact desgin of the TM series reduces mounting requirements and makes installation a snap.

Mounting Flexibility.
The TM series can be provided with a flange mount or bearing mount design.

Low Inertia.
Fast response and low inertia are due to the TM series low weight and compact design.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
TMC-0.6	23473200	6.101 / 4.5	5000	12 mm	24 /12	4 x 1.5	0.50 / 1.10
TMF-0.6	23474400	6.101 / 4.5	5000	12 mm	24 / 12	4 x 1.5	0.45 / 1.00
TMC-1.2	23430500	12.202 / 9	5000	15 mm	24 / 15	5 x 2	1.00 / 2.20
TMF-1.2	23456800	12.202 / 9	5000	15 mm	24 / 15	5 x 2	1.00 / 2.20
TMC-2.5	23430700	25.083 / 18.5	4500	20 mm	24 / 22	5 x 2	1.81 / 4.00
TMF-2.5	23456900	25.083 / 18.5	4500	20 mm	24 / 22	5 x 2	1.81 / 4.00
TMC-5	23430900	50.165 / 37	4000	25 mm	24 / 33	7 x 3	3.31 / 7.30
TMF-5	23457000	50.165 / 37	4000	25 mm	24 / 33	7 x 3	2.99 / 6.60
TMC-10	23431100	101.686 / 75	3600	30 mm	24 / 35	7 x 3	5.90 / 13.00
TMF-10	23457100	101.686 / 75	3600	30 mm	24 / 35	7 x 3	5.90 / 13.00
TMC-20	23434300	203.373 / 150	3000	40 mm	24 / 50	10 x 3.5	10.89 / 24.00
TMF-20	23457200	203.373 / 150	3000	40 mm	24 / 50	10 x 3.5	11.34 / 25.00

Torque Range: 12.2 to 1000.6 Nm.
9 to 738 ft-lbs.

Clutch designed for general industrial use. Suitable for high speed and high cycle applications. Clutch has automatic wear adjustment mechanism which maintains proper air gap over life of the clutch to maintain a consistent engagement time.

Automatic Air Gap Adjustment.
As the armature and rotor wear, the air gap is automatically reset to maintain proper position, greatly extending overall life and helping to maintain time to speed requirements.

Easy Mounting.
One piece bearing mounted field suitable for vertical and horizontal mounting

High Heat Dissipation Capacity.
Suitable for high speed cycle.

Fast Response.
Quick engagement and disengagement.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
MSC-1.2T	23138500	12.202 / 9	5500	15 mm	24 / 15	5 x 17	0.68 / 1.50
MSC-2.5T	23140200	25.761 / 19	5000	20 mm	24 / 25	5 x 22	1.04 / 2.30
MSC-5T	23142000	50.165 / 37	4000	25 mm	24 / 30	7 x 28	1.91 / 4.20
MSC-10T	23167200	100.331 / 74	3600	30 mm	24 / 35	7 x 33	3.86 / 8.50
MSC-20T	23163400	200.661 / 148	2600	40 mm	24 / 50	10 x 43.5	6.35 / 14.00
MSC-40T	23165200	399.966 / 295	2400	50 mm	24 / 65	15 x 55	9.98 / 22.00
MSC-70T	23144200	699.602 / 516	2000	60 mm	24 / 90	15 x 65	15.88 / 35.00
MSC-100T	23145900	1000.594 / 738	1800	70 mm	24 / 100	18 x 76	23.59 / 52.00

OGURA INDUSTRIAL CORP.

Torque Range: 50.2 to 1999.8 Nm.
37 to 1475 ft-lbs.

Heavy duty clutches best suited for marine and mobile applications. Bi-directional spring resists engine vibration and shock. Output can be modified to meet your requirement, or clutch can be purchased with armature only to bolt into your hub.

Heavy Duty Design.
The MMC series utilize a special plate spring that resists engine vibration and shock.

Easy Mounting.
Mounting is a snap on these stationary coil type clutches. The coil is supported by a ball bearing. Alignment and maintenance are not required.

Rotation Flexibility.
Rotation may be clockwise or counterclockwise.

Longevity.
Efficient heat dissipation allows long life even in heavy duty applications. Clutch surface is tempered to provide effective rust protection.

Compact And High Torque.
The compact design of the MMC series requires minimal space while providing high torque.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
MMC-5E	23368900	50.165 / 37	4000	25 mm	12 / 30	7 x 3	3.40 / 7.50
MMC-10E	23369000	101.686 / 75	3600	30 mm	12 / 35	7 x 3	6.80 / 15.00
MMC-20E	23369100	203.373 / 150	3000	40 mm	12 / 50	10 x 3.5	11.79 / 26.00
MMC-40E	23369200	399.966 / 295	3000	50 mm	12 / 65	15 x 5	19.50 / 43.00
MMC-40G	23374000	399.966 / 295	3000	50 mm	24 / 65	15 x 5	19.50 / 43.00
MMC-70E	23369300	699.602 / 516	2500	60 mm	12 / 90	15 x 5	31.75 / 70.00
MMC-100E	23369400	999.238 / 737	1800	70 mm	12 / 100	18 x 6	47.17 / 104.00
MMC-200G	23540000	1999.831 / 1475	1600	80 mm	24 / 150	20 x 6	78.93 / 174.00

Torque Range: 2.7 to 94.9 Nm.
2 to 70 in-lbs.

Clutch/brake units are designed for general industrial use. Unit features die cast housing with double bearing support on the input and the output shafts. Units come standard with zero backlash armatures but can be modified for high cycle applications using a zero gap armature. Modular simple 1 piece construction means no adjustments required. Clear plastic cover allows you to see inside the unit without having to remove the cover.

Easy Mounting And Maintenance.
The clutch/brake units are preassembled. No adjustments are necessary, simply attach your pulley or coupling to the output shaft and you are ready to go.

Zero Backlash.
By mounting the armature to the hub via leaf springs, backlash is minimized and armature rattle is eliminated.

Controllable Response Time.
Variations in acceleration or deceleration times and slip torque can be achieved by controlling the applied current.

Fast Response.
Elimination of splines provides faster response and high performance by overcoming friction in the armature and hub.

High Heat Dissipation.
The AM series units perform relentlessly year after year, even in heavy duty applications, due to their excellent heat dissipation.

Good Overhung Load Capacity.
Four bearings (two on the bore input and output) provide excellent overhung load capacity.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
AMU-2.5C	25255900	0.248 / 0.183	3600	6 mm shaft	24 / 3	2 mm width	0.41 / 0.90
AMU-5C	25256000	0.498 / 0.367	3600	6 mm shaft	24 / 4	2 mm width	0.54 / 1.20
AMU-10C	25256100	1.005 / 0.741	3600	8 mm shaft	24 / 6	2.5 mm width	0.91 / 2.00
AMU-20C	25256200	2.034 / 1.5	3600	10 mm shaft	24 / 6.1	4 mm width	1.50 / 3.30
AMU-40C	25256300	4.067 / 3	3600	12 mm shaft	24 / 9	4 mm width	2.04 / 4.50
AMU-80C	25256400	8.135 / 6	3600	15 mm shaft	24 / 11.5	5 mm width	2.86 / 6.30

Torque Range: 12 to 50.2 Nm.
9 to 37 ft-lbs.

Clutch/brake combination unit designed for general design applications. Both with input and output shafts have independent double bearing support. Housing includes external heat sinks for better heat dissipation and an easily accessible external mounted wiring block.

Fast Response.
The V series brakes are dry type single disc units. This ensures fast response in high speed, high cycle applications.

Zero Backlash.
The armature is mounted to the hub by special leaf springs to provide minimal backlash and no armature rattle.

Easy Mounting.
The clutch and brake are mounted in one housing. A simple connection to the input or the output shaft with a pulley or coupling is all that is required.

Totally Enclosed.
To reduce the chance of contamination to the clutch or brake. Also, a housing will reduce the chance of wear particles from the clutch or brake. Thin housing helps cool the unit in demanding applications.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
VSAU-1.2	23700600	12.202 / 9	6000	15 mm shaft	24 / 15	5 mm width	4.76 / 10.50
VSAU-2.5	23700700	25.083 / 18.5	5500	20 mm shaft	24 / 22	6 mm width	8.16 / 18.00
VSAU-5	23700800	50.165 / 37	4500	25 mm shaft	24 / 33	8 mm width	14.52 / 32.00

Torque Range: 12 to 1000 Nm.
9 to 738 ft-lbs.

Combination clutch/brake unit designed for general industrial use. Housing contains through hole foot mounts for easy assembly and an easy shaft in and shaft out connection. Both shafts are double bearing mounted to accept heavy side loads. Clutch and brake armatures have automatic wear adjustments to maintain proper air gap settings through life of the unit.

Automatic Air Gap Adjustment.
Both clutch and brake armatures are equipped with a mechanism that automatically adjusts for wear which maintains stable response time.

Easy Mounting.
Clutch/brake package comes fully assembled and is easily set in place by installing four bolts in the mounting feet.

Protected Against Contamination.
Clutch/brake is enclosed in an aluminum housing which prevents contamination of the clutch and brake armature. Housing also provides additional heat dissipation.

Good Overhung Load Capability.
Both input and output shafts are mounted on two independent single row ball bearings allowing for good side load capability.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
MSU-1.2	0	12.202 / 9	5500	15 mm	24 / 17	5 x 17 mm	4.99 / 11.00
MSU-2.5	0	25.761 / 19	5000	20 mm	24 / 25	5 x 22 mm	7.98 / 17.60
MSU-5	0	50.165 / 37	4000	25 mm	24 / 30	7 x 28mm	15.01 / 33.10
MSU-10	0	100.331 / 74	3600	30 mm	24 / 75	7 x 33mm	25.49 / 56.20
MSU-20	0	200.661 / 148	2600	40 mm	24 / 50	10 x 43.5 mm	43.99 / 97.00
MSU-40	0	399.966 / 295	2400	50 mm	24 / 65	15 x 55 mm	71.67 / 158.00
MSU-70	0	699.602 / 516	2000	60 mm	24 / 90	15 x 65 mm	145.15 / 320.00
MSU-100	0	1000.594 / 738	1800	70 mm	24 / 100	18 x 76 mm	190.06 / 419.00

Torque Range: 12.2 to 50 Nm.
9 to 37 ft-lbs.

Clutch/brake units are designed for extremely fast response, a high cycles applications. Because of a special no gap armature design, there is no need to adjust for wear. Units are self adjusting and there is a consistent time to speed and time to stop. Low inertia components and low voltage fields allow for very fast response time. Small units are designed with finned housings to provide superior cooling. Additional friction materials like ceramics can be used to significantly increase overall cycle life.

No Adjustment For Wear.
Special armature and hub design allow for automatic wear adjustment.

Consistent Timing.
Special no-gap armature design produces consistent time-to-speed and time-to-stop over the life of the unit.

Fast Response.
Special coil and armature design allow for extremely fast response time.

High Heat Dissipation.
Fins on the outer housing in small units and the location of the internal clutch and brake provide maximum heat transfer for optimum cooling.

Longer Life Versions Available.
Standard components allow for long cycle life. Optional friction material, such as ceramic, are available to further enhance cycle life.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
MP-5	23215300	0.498 / 0.367	2000	6 mm shaft	0.76 / 3.8	2 mm width	0.54 / 1.20
MP-10	23208400	1.005 / 0.741	2000	8 mm shaft	1.06 / 5.3	2.5 mm width	0.91 / 2.00
MP-20	23215400	2.034 / 1.5	2000	10 mm shaft	1.4 / 7	4 mm width	1.50 / 3.30
MP-40	23215500	4.067 / 3	1500	12 mm shaft	1.66 / 8.3	4 mm width	2.09 / 4.60
MP-80	23215600	8.135 / 6	1500	15 mm shaft	2.4 / 12	5 mm width	2.90 / 6.40
MP-120	23215700	12.202 / 9	1500	15 mm shaft	5 / 15	5 mm width	4.99 / 11.00
MP-250	23215800	25.083 / 18.5	1000	20 mm shaft	5 / 25	5 mm width	7.98 / 17.60
MP-500	23215900	50.165 / 37	1000	25 mm shaft	5 / 30	7 mm width	14.97 / 33.00

Torque Range: 24.4 to 3999.7 Nm.
18 to 2950 ft-lbs.

Clutch is designed for high torque small space environments where no slip is desired. Clutch can be used dry or in an oil bath. A zero backlash option is available. Zero drag torque when clutch is disengaged.

Zero Backlash.
The MZ series provides minimal backlash. Backlash can be totally eliminated as an option.

Zero Drag Torque.
There is no drag torque in the disengaged mode because both faces separate completely.

No Slip.
Driving toque is via teeth, therefore slippage is non-existent when the clutch is engaged.

Wet / Dry Applications.
The MZ series clutches can be used in either wet or dry applications.

High-torque Compact Design.
The MZ Series tooth engagement clutches provide the highest torque per size of any electromagnetic clutch style.

Flexible Mounting.
Clutches are supplied with armature assembly only which should be bolted into customer's gear, pulley or coupling.

Long Life.
Since tooth wear is minimal, the MZ series has an extremely long operational life.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
MZ-2.5W	23293200	25.083 / 18.5	5000	20 mm	24 / 15	5 x 2	1.50 / 3.30
MZ-2.5D	23479900	25.083 / 18.5	5000	20 mm	24 / 15	5 x 2	1.50 / 3.30
MZ-5W	23293300	50.165 / 37	4500	25 mm	24 / 23	7 x 3	2.00 / 4.40
MZ-5D	23480000	50.165 / 37	4500	25 mm	24 / 23	7 x 3	2.00 / 4.40
MZ-10W	23293400	100.331 / 74	3800	30 mm	24 / 30	7 x 3	3.00 / 6.60
MZ-10D	23480100	100.331 / 74	3800	30 mm	24 / 30	7 x 3	3.00 / 6.60
MZ-16W	23293500	157.275 / 116	3500	35 mm	24 / 35	10 x 3.5	4.00 / 8.80
MZ-16D	23480200	157.275 / 116	3500	35 mm	24 / 34	10 x 3.5	4.00 / 8.80
MZ-25W	23293600	245.403 / 181	3200	40 mm	24 / 40	10 x 3.5	5.00 / 11.00
MZ-25D	23480300	245.403 / 181	3200	40 mm	24 / 40	10 x 3.5	5.00 / 11.00
MZ-50W	23293700	490.806 / 362	2700	50 mm	24 / 50	12 x 3.5	8.48 / 18.70
MZ-50D	23480400	490.806 / 362	2700	50 mm	24 / 50	12 x 3.5	8.48 / 18.70
MZ-100	23575800	999.238 / 737	2200	60 mm	24 / 65	15 x 5	17.01 / 37.50
MZ-160	23575900	1571.393 / 1159	2000	70 mm	24 / 80	18 x 6	25.00 / 55.10
MZ-250	23576000	2456.742 / 1812	1600	90 mm	24 / 90	24 x 8	34.93 / 77.10
MZ-400	23576100	3930.516 / 2899	1400	100 mm	24 / 100	28 x 9	44 / 97.00

Torque Range: 24.4 to 249.5 Nm.
18 to 184 ft-lbs.

Clutch is designed for high torque small space environments where no slip and only a single engagement position is desired. Clutch can be used dry or in an oil bath. A zero backlash option is available. Zero drag torque when clutch is disengaged.

Zero Backlash.
The MZ series provides minimal backlash. Backlash can be totally eliminated as an option.

Zero Drag Torque.
There is no drag torque in the disengaged mode because both faces separate completely.

No Slip.
Driving toque is via teeth, therefore slippage is non-existent when the clutch is engaged.

Wet / Dry Applications.
The MZ series clutches can be used in either wet or dry applications.

High Torque Compact Design.
The MZ Series tooth engagement clutches provide the highest torque per size of any electromagnetic clutch style.

Flexible Mounting.
Clutches are supplied with armature assembly only which should be bolted into customer's gear, pulley or coupling.

Long Life.
Since tooth wear is minimal, the MZ series has an extremely long operational life.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
MZS-2.5D	23596400	25.083 / 18.5	5000	20 mm	24 / 15	5 x 2	1.50 / 3.30
MZS-5D	23596500	50.165 / 37	4500	25 mm	24 / 23	7 x 3	2.00 / 4.40
MZS-10D	23596600	100.331 / 74	3800	30 mm	24 / 30	7 x 3	3.00 / 6.60
MZS-16D	23596700	157.275 / 116	3500	35 mm	24 / 35	10 x 3.5	4.00 / 8.80
MZS-25D	23596800	245.403 / 181	3200	40 mm	24 / 40	10 x 3.5	5.00 / 11.00

Torque Range: 0.2 to 1 Nm.
1.8 to 8.9 in-lbs.

Small spring applied brake available with either D hub designs or set screws. Standard voltages are 24 and 45 but other voltage options are available. Units are designed to give 100% rated torque right out of the box. No burnishing required.

100% Rated Torque.
You can count on getting the rated torque for holding applications right out of the box.

Longevity.
Wear-resistant friction material and corrosion resistant surfaces provide extended operational life.

Voltages Available.
The MCNB series brake is available in 24VDC, 45VDC or 90VDC. (The 45VDC type can be used with half-wave rectification of 100VAC).

Non-asbestos Friction Material.
The MCNB series utilize non-asbestos friction discs, complying with current asbestos related safety regulations.

High Reliability.
Corrosion resistant stainless steel disc plate provides reliable operation.

Two Bore Types Offered.
In the new series a standard D cut metric bore is available. This is a plastic molded hub with an anti rattle feature.
In the older version a standard machine bore is available in both inch and metric dimensions with two set screws.

Model Number	Part Number	Static Torque Nm / in-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
MCNB-2G (24V) *	25244500	0.017 / 0.150	5000	8 mm	24 / 5	Set-screw only	0.18 / 0.40
MCNB-2H (45V) *	25249400	0.017 / 0.150	5000	8 mm	45 / 5	Set-screw only	0.18 / 0.40
MCNB-2GS (stopping, 24V) **	25333400	0.017 / 0.150	5000	8 mm	24 / 4.2	D-cut	-
MCNB-2GR (holding, 24V) **	25332000	0.017 / 0.150	5000	8 mm	24 / 4.2	D-cut	-
MCNB-2KS (stopping, 90V) **	25334400	0.017 / 0.150	5000	8 mm	90 / 4.2	D-cut	-
MCNB-2KR (holding, 90V) **	25334000	0.017 / 0.150	5000	8 mm	90 / 4.2	D-cut	-
MCNB-3T (12V)	25463300	0.027 / 0.24	6000	8 mm	12 / 3.3	-	0.10 / 0.22
MCNB-3T (24V)	25463300	0.027 / 0.24	6000	10 mm	24 / 13	-	0.10 / 0.22
MCLB-5G (24V)	25291400	0.042 / 0.367	5000	8 mm	24 / 7	D-cut	-
MCNB-5G (24V) *	25244600	0.042 / 0.367	5000	8 mm	24 / 7	Set-screw only	0.27 / 0.60
MCLB-5H (45V)	25317200	0.042 / 0.367	5000	8 mm	45 / 7	D-cut	-
MCNB-5H (45V) *	25249900	0.042 / 0.367	5000	8 mm	45 / 7	Set-screw only	0.27 / 0.60
MCNB-5GS (stopping, 24V) **	25339000	0.042 / 0.367	5000	8 mm	24 / 6.5	D-cut	-
MCNB-5GR (holding, 24V) **	25337600	0.042 / 0.367	5000	8 mm	24 / 6.5	D-cut	-
MCNB-5KS (stopping, 90V) **	25340100	0.042 / 0.367	5000	8 mm	90 / 6.5	D-cut	-
MCNB-5KR (holding, 90V) **	25339600	0.042 / 0.367	5000	8 mm	90 / 6.5	D-cut	-
MCNB-10G (24V) *	25244700	0.084 / 0.741	5000	10 mm	24 / 9	Set-screw only	0.41 / 0.90
MCNB-10H (45V) *	25250400	0.084 / 0.741	5000	10 mm	45 / 9	Set-screw only	0.41 / 0.90
MCNB-10GS (stopping, 24V) **	25336300	0.084 / 0.741	5000	10 mm	24 / 7	D-cut	-
MCNB-10GR (holding, 24V) **	25334800	0.084 / 0.741	5000	10 mm	24 / 7	D-cut	-
MCNB-10KS (stopping, 90V) **	25337300	0.084 / 0.741	5000	10 mm	90 / 7	D-cut	-
MCNB-10KR (holding, 90V) **	25336800	0.084 / 0.741	5000	10 mm	90 / 7	D-cut	-
MCNB-10T (12V)	25463400	0.113 / 1	6000	10 mm	12 / 4.5	-	0.25 / 0.55
MCNB-10T (24V)	25463400	0.113 / 1	6000	10 mm	24 / 16	-	0.25 / 0.55
MCNB-30T (12V)	25463500	0.249 / 2.2	6000	12 mm	12 / 4.5	-	0.45 / 0.99
MCNB-30T (24V)	25463500	0.249 / 2.2	6000	12 mm	24 / 18	-	0.45 / 0.99
MCNB-40T (12V)	25463600	0.339 / 3	6000	12 mm	12 / 4.9	-	0.65 / 1.43
MCNB-40T (24V)	25463600	0.339 / 3	6000	12 mm	24 / 19.5	-	0.65 / 1.43

* Old type.

** New type

Torque Range: 1 to 8 Nm.
9 to 71 in-lbs.

A small spring applied brake with a very thin profile which is mainly used for robotic and ball screw applications. This brake does not come with a hub so customers have flexibility with integrating the brake to their machine by providing their own hub.

Brake for Holding and Emergency Stopping.

The friction disk and the pressure plate are one piece so when the power is applied there are no loose parts, so there is no chance of noise and/or contact. This also makes brake release time very quick.

Flexible Hub Design, Lowest Cost Option.

The FNB series does not come with a hub (shown in black in the picture). The hub is customer supplied, but this provides the lowest cost option available.

Fast Response.

The brake engages via springs which are unaffected by minor temperature changes or voltage fluctuations.

Simple Design, Easy Installation.

The FNB has few moving parts and comes equipped with a spacer collar to set the air gap for the hub.

Compact Design.

Like the SNB and RNB, the FNB can provide a solution when there is limited space available.

Model Number	Part Number	Static Torque Nm / in-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
FNB-0.1K	0	0.084 / 0.741	5000	18 mm	90/ 10	-	0.5 / 1.10
FNB-0.1G	0	0.084 / 0.741	5000	18 mm	24/ 10	-	0.5 / 1.10
FNB-0.2G	0	0.170 / 1.5	4000	18 mm	24/ 13	-	0.64 / 1.40
FNB-0.2K	0	0.170 / 1.5	4000	18 mm	90/ 13	-	0.64 / 1.40
FNB-0.4G	0	0.339 / 3	4000	24 mm	24/ 15	-	0.91 / 2.00
FNB-0.4K	0	0.339 / 3	4000	24 mm	90/ 15	-	0.91 / 2.00
FNB-0.8G	0	0.678 / 6	3500	38 mm	24/ 18	-	1.41 / 3.10
FNB-0.8K	0	0.678 / 6	3500	38 mm	90/ 18	-	1.41 / 3.10

Torque Range: 2 to 16.3 Nm.
1.5 to 12 ft-lbs.

Spring applied holding brake designed for general industrial applications. Unit is used for holding only and has special zero backlash armature. Very thin brake profile provides a compact package. Braking force is produced via springs so basic fluctuations in voltage and temperature have no effect on the brake. Long life friction material allows for many trouble free cycles. Standard voltages are 24 and 90 volts. Other voltage options are available.

Compact Design With High Torque.
The RNB series brakes are approximately one-half the width of MNB style.

Basic Design Advantage.
The RNB series brake is designed for holding and emergency braking.

Manual Release Holes.
Starting with SNB series 1.2 and RNB series 3 and higher all units have three tapped holes in which screws can be inserted for manually releasing the brake in case of emergency.

Fast Response Time.
These brakes are spring-set type brakes, providing rapid torque buildup.

Operating Voltage Options.
RNB units come in two standard voltages, 90 VDC and 24 VDC. Other non-standard voltages are available.

Zero Backlash Design.
Thin disks in the RNB-Z produce low inertia. A zero backlash design also eliminates any noise due to rattling.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
RNB-0.2ZG	23614300	2.034 / 1.5	5000	12 mm	24 / 10	4 x 13.5	0.59 / 1.30
RNB-0.2ZK	23614400	2.034 / 1.5	5000	12 mm	90 / 10	4 x 13.5	0.59 / 1.30
RNB-0.4ZG	23614500	4.067 / 3	4000	12 mm	24 / 13	4 x 13.5	0.86 / 1.90
RNB-0.4ZK	23614600	4.067 / 3	4000	12 mm	90 / 13	4 x 13.5	0.86 / 1.90
RNB-0.8ZG-N	23779200	8.135 / 6	4000	14 mm	24 / 15	5 x 16	0.86 / 1.90
RNB-0.8ZK	23614800	8.135 / 6	4000	14 mm	90 / 15	5 x 16	1.18 / 2.60
RNB-1.6ZG-N	23779300	16.27 / 12	3500	15 mm	24 / 18	5 x 17	1.91 / 4.20
RNB-1.6ZK	23615000	16.27 / 12	3500	15 mm	90 / 18	5 x 17	1.91 / 4.20

Torque Range: 1 to 100.3 Nm.
0.7 to 74 ft-lbs.

Spring applied holding brake designed for general industrial applications. Unit is used for both stopping and/or holding. Very thin brake profile provides a compact package. Braking force is produced via springs so basic fluctuations in voltage and temperature have no effect on the brake. Long life friction material allows for many trouble free cycles. Standard voltages are 24 and 90 volts. Other voltage options are available.

Compact Design With High Torque.
The SNB series brakes are approximately one-half the width of MNB style.

Two Basic Designs Available.
The SNB series are designed for stopping and holding.

Manual Release Holes.
Starting with SNB series 1.2 and RNB series 3 and higher all units have three tapped holes in which screws can be inserted for manually releasing the brake in case of emergency.

Fast Response Time.
These brakes are spring-set type brakes, providing rapid torque buildup.

Longevity.
The use of wear-resistant friction material provides extended operational life.

Operating Voltage Options.
SNB units come in two standard voltages, 90VDC and 24VDC. Other non-standard voltages are available.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
SNB-0.1K-N (90V)	23771200	1.005 / 0.741	5000	12 mm	90 / 10	4 x 1.5	0.54 / 1.20
SNB-0.1G-N (24V)	23771300	1.005 / 0.741	5000	12 mm	24 / 10	4 x 1.5	0.54 / 1.20
SNB-0.2K-N (90V)	23771400	2.034 / 1.5	4000	12 mm	90 / 13	4 x 1.5	0.80 / 1.76
SNB-0.2G-N (24V)	23771500	2.034 / 1.5	4000	12 mm	24 / 13	4 x 1.5	0.80/ 1.76
SNB-0.4K-N (90V)	23771600	0.339 / 3	4000	14 mm	90 / 15	5 x 2	1.09 / 2.40
SNB-0.4G-N (24V)	23771700	0.339 / 3	4000	14 mm	12 / 18	5 x 2	1.09/ 2.40
SNB-0.8K-N (90V)	23771800	0.678 / 6	3500	19 mm	90 / 18	5 x 3	1.81 / 4.00
SNB-0.8G-N (24V)	23771900	0.678 / 6	3500	19 mm	24 / 18	5 x 3	1.81 / 4.00
SNB-1.2K-N (90V)	23772000	12.202 / 9	3500	19 mm	90 / 22	5 x 3	3.49 / 7.70
SNB-1.2G-N (24V)	23772100	12.202 / 9	3500	19 mm	24 / 22	5 x 3	3.49 / 7.70
SNB-2.5K-N (90V)	23772200	24.405 / 18	3000	24 mm	90 / 27	7 x 3	5.08 / 11.20
SNB-2.5G-N (24V)	23772300	24.405 / 18	3000	24 mm	24 / 27	7 x 3	5.08 / 11.20
SNB-5K-N (90V)	23772400	50.165 / 37	3000	28 mm	90 / 33	7 x 3	7.89 / 17.40
SNB-5G-N (24V)	23772500	50.165 / 37	3000	28 mm	24 / 33	7 x 3	7.89 / 17.40
SNB-10K-N (90V)	23772600	100.331 / 74	2500	32 mm	90 / 45	10 x 3.5	12.61/ 27.80
SNB-10G-N (24V)	23772700	100.331 / 74	2500	32 mm	24 / 45	10 x 3.5	12.61 / 27.80

Spring applied holding brake designed for general industrial applications. Unit is used for holding only. Very thin brake profile provides a compact package. Braking force is produced via springs so basic fluctuations in voltage and temperature have no effect on the brake. Long life friction material allows for many trouble free cycles. Standard voltages are 24 and 90 volts. Other voltage options are available.

Torque Range: 2 to 200.7 Nm.
1.5 to 148 ft-lbs.

Compact Design With High Torque.
The RNB series brakes are approximately one-half the width of MNB style.

Basic Design Advantage.
The RNB series brake is designed for holding and emergency braking.

Compact Design With High Torque.
The RNB series brakes are approximately one-half the width of MNB style.

Manual Release Holes.
Starting with SNB series 1.2 and RNB series 3 and higher all units have three tapped holes in which screws can be inserted for manually releasing the brake in case of emergency.

Fast Response Time.
These brakes are spring-set type brakes, providing rapid torque buildup.

Operating Voltage Options.
RNB units come in two standard voltages, 90VDC and 24VDC. Other non-standard voltages are available.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
RNB-0.2K-N (90V)	23773000	2.034 / 1.5	5000	12 mm	90 / 10	4 x 1.5	0.59 / 1.30
RNB-0.2G-N (24V)	23773100	2.034 / 1.5	5000	12 mm	24 / 10	4 x 1.5	0.59 / 1.30
RNB-0.4K-N (90V)	23773200	4.067 / 3	4000	12 mm	90 / 13	4 x 1.5	0.86 / 1.90
RNB-0.4G-N (24V)	23773300	4.067 / 3	4000	12 mm	24 / 13	4 x 1.5	0.86 / 1.90
RNB-0.8K-N (90V)	23773400	8.135 / 6	4000	14 mm	90 / 15	5 x 2	1.18 / 2.60
RNB-0.8G-N (24V)	23773500	8.135 / 6	4000	14 mm	24 / 15	5 x 2	1.18 / 2.60
RNB-1.6K-T (90V)	0	15.999 / 11.8	4000	19 mm	90 / 21.5	5 x 21	1.59 / 3.50
RNB-1.6G-T (24V)	0	15.999 / 11.8	4000	19 mm	24 / 21.5	5 x 21	1.59 / 3.50
RNB-1.6K-N (90V)	23773600	16.270 / 12	3500	19 mm	90 / 18	5 x 3	1.91 / 4.20
RNB-1.6G-N (24V)	23773700	16.270 / 12	3500	19 mm	24 / 18	5 x 2	1.91 / 4.20
RNB-2.2G-T (24V)	0	21.964 / 16.2	4000	19 mm	24 / 21.5	5 x 21	2.49 / 5.50
RNB-2.2K-T (90V)	0	21.964 / 16.2	4000	19 mm	90 / 21.5	5 x 21	2.49 / 5.50
RNB-3K-N (90V)	23773800	29.828 / 22	3500	19 mm	90 / 22	5 x 3	3.58 / 7.90
RNB-3G-N (24V)	23773900	29.828 / 22	3500	19 mm	24 / 22	5 x 3	3.58 / 7.90
RNB-3.8G-T (24V)	0	37.963 / 28	3000	24 mm	24 / 31	7 x 27	3.22 / 7.10
RNB-3.8K-T (90V)	0	37.963 / 28	3000	24 mm	90 / 31	7 x 27	3.22 / 7.10
RNB-5G-T (24V)	0	50.030 / 36.9	3000	24 mm	24 / 31	7 x 27	3.99 / 8.80
RNB-5K-T (90V)	0	50.030 / 36.9	3000	24 mm	90 / 31	7 x 27	3.99 / 8.80
RNB-5K-N (90V)	23774000	50.165 / 37	3000	24 mm	90 / 27	7 x 3	5.17 / 11.40
RNB-5G-N (24V)	23774100	50.165 / 37	3000	24 mm	24 / 27	7 x 3	5.17 / 11.40
RNB-10K-N (90V)	23774200	100.331 / 74	3000	28 mm	90 / 33	7 x 3	7.89 / 17.40
RNB-10G-N (24V)	23774300	100.331 / 74	3000	28 mm	24 / 33	7 x 3	7.89 / 17.40
RNB-20K-N (90V)	23774400	195.238 / 144	2500	32 mm	90 / 45	10 x 3.5	12.25 / 27.00
RNB-20G-N (24V)	23774500	195.238 / 144	2500	32 mm	24 / 45	10 x 3.5	12.25 / 27.00

Torque Range: 2 to 799.9 Nm.
1.5 to 590 ft-lbs.

Spring applied brake used for industrial applications. Units are designed for stopping and/or holding. MNB units 1.2 and higher have adjustable torque feature. Torque of the brake can be fine tuned by you to fit your exact needs. Bolt holes for manual bolt release included on standard units. Optional manual lever releases available by special order.

Operating Voltage Options.
MNB units come in two standard voltages, 90VDC and 24VDC. Other non-standard voltages are available.

Easily Adjustable Torque.
The torque can be adjusted over a wide range of settings via an adjusting bolt. This feature allows for controllable braking time.

Manual Release Available.
Holes are provided so a bolt can be inserted to provide for a manual release. Other special designs are possible.

Wide Variety Of Controls Available.
Ogura has a wide selection of readily available controls to help control brakes for various applications.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
MNB-0.2K-N (90V)	23780200	2.034 / 1.5	4000	12 mm	90 / 13.5	4 x 1.5	0.82 / 1.80
MNB-0.2G-N (24V)	23780300	2.034 / 1.5	4000	12 mm	24 / 12	4 x 1.5	0.82 / 1.80
MNB-0.4K-N (90V)	23780400	4.067 / 3	4000	14 mm	90 / 15.5	5 x 2	1.00 / 2.20
MNB-0.4G-N (24V)	23780500	4.067 / 3	4000	14 mm	24 / 15.5	5 x 2	1.00 / 2.20
MNB-0.8K-N (90V)	23780600	8.135 / 6	3500	19 mm	90 / 20	5 x 3	1.50 / 3.30
MNB-0.8G-N (24V)	23780700	8.135 / 6	3500	19 mm	24 / 19	5 x 3	1.50 / 3.30
MNB-1.2K-N (90V)	23780800	12.202 / 9	3500	19 mm	24 / 24	5 x 3	3.31 / 7.30
MNB-1.2G-N (24V)	23780900	12.202 / 9	3500	19 mm	24 / 24	5 x 3	3.31 / 7.30
MNB-2.5K-N (90V)	23781000	24.405 / 18	3000	24 mm	90 / 35	7 x 3	4.99 / 11.00
MNB-2.5G-N (24V)	23781100	24.405 / 18	3000	24 mm	24 / 39	7 x 3	4.99 / 11.00
MNB-5K-N (90V)	23781200	50.165 / 37	3000	28 mm	90 / 42	7 x 31	7.26 / 16.00
MNB-5G-N (24V)	23781300	50.165 / 37	3000	28 mm	24 / 42	7 x 31	7.26 / 16.00
MNB-10K-N (90V)	23781400	100.331 / 74	2500	32 mm	90 / 53	10 x 3.5	10.89 / 24.00
MNB-10G-N (24V)	23781500	100.331 / 74	2500	32 mm	24 / 53	10 x 3.5	10.89 / 24.00
NB-20K-N (90V)	23781600	200.661 / 148	2500	42 mm	90 / 53	12 x 3.5	18.60 / 41.00
MNB-20J-N (72V)	23781800	200.661 / 148	2500	42 mm	72 / 70	12 x 3.5	18.60 / 41.00
MNB-40K-N (90V)	23781900	390.476 / 288	2000	55 mm	90 / 98	16 x 5	34.47 / 76.00
MNB-40J-N (72V)	23782000	390.476 / 288	2000	55 mm	72 / 94	16 x 5	34.47 / 76.00
MNB-80K-N (90V)	23782100	799.933 / 590	2000	65 mm	90 / 130	18 x 6	61.69 / 136.00
MNB-80J-N (72V)	23782200	799.933 / 590	2000	65 mm	72/ 130	18 x 6	61.69 / 136.00

Torque Range: 0.4 to 30 Nm.
3.5 to 265 in-lbs.

Permanent magnet brake designed for industrial and mobile applications. Brake force is produced via magnets which reduces both size and weight of brake versus spring applied brakes. Armature is mounted via springs which eliminates backlash. Standard brakes can accommodate temperatures up to 140deg C. Brakes can be tuned to provide a controlled stop. Output assemblies easily modified to fit your application.

UL and CSA Recognized as a component for use in motion control systems. Approved in accordance with UL508, 17th edition and CSAC 22.2 No. 14-13, 12th edition.

High Torque Compact Design.

Because permanent magnets are used versus springs, the overall size of the brakes is smaller for a given torque size. Because the brakes are smaller, their weight is also less, which can be an advantage in some applications.

Controlled Stop.

Since torque is directly controlled by flux, a brake can be tuned to provide a softer stop in an application versus having full torque applied.

Easily Customized For Your Application.

Both the mounting flange and the output hub and armature assembly can be easily modified to fit your existing application.

Zero Backlash.

The PMB Series of Brakes have a spring mounted armature, which eliminates backlash in the brake.

No Drag Torque.

When brakes are released, an airgap is present which completely releases the armature resulting in zero drag.

High Operating Temperatures.

The standard magnetic material used in the brakes can accommodate temperatures up to 140 degrees celsius. If an application requires it, special material is also available on some sizes to accommodate higher temperatures.

Note:

Brakes require a variable power supply to make sure they are properly tuned for an application.

Model Number	Part Number	Static Torque Nm / in-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
PMB-03	0	0.033 / 0.292	10,000	Max 8 mm	24 / 6	-	0.08 / 0.18
PMB-04	0	0.104 / 0.916	10,000	Max 8 mm	24 / 3	-	0.16 / 0.36
PMB-05	0	0.207 / 1.832	10,000	Max 15 mm	24 / 12	-	0.29 / 0.65
PMB-07	0	0.415 / 3.67	8000	Max 20 mm	24 / 20	-	0.54 / 1.19
PMB-06	0	0.746 / 6.6	8000	Max 17 mm	24 / 20	-	0.39 / 0.85
PMB-09	0	1.017 / 9	6000	Max 30 mm	24 / 18	-	1.09 / 2.40
PMB-11	0	2.486 / 22	5000	Max 35 mm	24 / 22	-	1.91 / 4.22

*** North America only.**

Permanent magnet hysteresis units can be configured as a clutch or a brake depending upon mounting. Torque is accurate and dependable because it is produced magnetically, not via friction. Torque is consistent over a given speed range. Because there is no wear, units have an extremely long life. Also since units are sealed, there is no concern about contamination. Each unit has an adjustable torque range that can be set by the user and since the units operate via permanent magnets, no external controls or power is required.

Torque Range: 0 to 7 Nm.
0 to 62 in-lbs.

Accurate And Dependable Torque.

Since torque is transmitted via a hysteresis field, there is minimal difference between the static and the dynamic torque. These units are unaffected by friction and wear, therefore torque is substantially more accurate and repeatable than friction tensioners.

Constant Torque (adjustable).

Units can deliver set torque regardless of speed range. Each unit's torque settings may be manually adjusted over a wide range providing great flexibility.

Stable Torque.

A consistent torque is maintained regardless of allowable slip speed due to the hysteresis principle.

Simple Installation.

Units are provided bearing mounted and pre-assembled.

Long Life.

There is virtually no wear because permanent magnets and hysteresis discs transmit the torque by magnetic flux without physical contact.

No Contamination.

Units are sealed to protect against contamination from equipment. There are also no wear particles from operation to contaminate equipment.

No Electrical Power Needed.

The PHT series clutches and brakes operate on a permanent magnet principle. External electrical connection is not required, therefore, units function independently from power fluctuation.

Vertical And Horizontal Operation.

Units can be mounted in any axis and can be run either clockwise or counter-clockwise without affecting performance.

Model Number	Part Number	Static Torque Nm / in-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
PHT-0.02S	25293000	0.0003 / 0.0025	10000	3 mm shaft	0 / 0	D shaft	0.06 / 0.13
PHT-0.02D	25384800	0.0003 / 0.0025	3600	5 mm shaft	0 / 0	D shaft	0.05 / 0.11
PHT-0.05S	25297000	0.0006 / 0.0052	10000	3 mm shaft	0 / 0	D shaft	0.09 / 0.19
PHT-0.05D	25388100	0.0006 / 0.0052	3600	5 mm shaft	0 / 0	D shaft	0.05 / 0.12
PHT-0.5S	25297100	0.0046 / 0.041	1800	6 mm shaft	0 / 0	D shaft	0.09 / 0.19
PHT-0.5D	25386400	0.0046 / 0.041	3600	8 mm shaft	0 / 0	D shaft	0.15 / 0.32
PHT-1.2D	25295100	0.0169 / 0.150	1800	6 mm	0 / 0	Set screw	0.30 / 0.66
PHT-2.5D	25297200	0.0329 / 0.291	1800	6 mm	0 / 0	Set screw	0.57 / 1.25
PHT-5D	25297300	0.0621 / 0.550	1800	8 mm	0 / 0	3 x 9.4 mm	0.84 / 1.85
PHT-10D	25297400	0.1220 / 1.08	1800	15 mm	0 / 0	5 x 17.3 mm	1.60 / 3.52
PHT-30D	23621200	0.2542 / 2.25	1000	16 mm	0 / 0	5 x 18.3 mm	3.60 / 7.93
PHT-70D	23622300	0.5830 / 5.16	700	16 mm	0 / 0	5 x 18.3 mm	7.90 / 17.40

Torque Range: 0.05 to 1 Nm.
0.4 to 8.9 in-lbs.

Hysteresis brake for industrial application. Torque is independent of slip speed and can be easily controlled by varying the current. Since there is no frictional contact between the magnets, the units have an extremely wide torque range and are ideally suited for testing machinery and/or application that are required to produce consistent and smooth torque over a wide range.

Fast Response.
The torque of H series electromagnetic hysteresis clutches/brakes is independent of slip speed. Torque is directly proportionate to coil current, thus the torque of each unit can be adjusted by varying the current. Once the current is stable, the torque remains constant.

Long Life.
The H series produces drag torque without physical contact (friction) of parts and are not subject to wear (except the normal wear of antifriction bearings).

Repeatability.
The H series will always duplicate performance under identical operating conditions.

Smooth Operation.
The H series does not utilize mechanical friction, therefore operation is smooth at any slip speed.

Easy Mounting.
Mounting is effortless - no adjustments to make, no gaps to set. The H series may be mounted in the horizontal or vertical position.

Model Number	Part Number	Static Torque Nm / in-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
HB-0.5	25361200	0.0041 / 0.0367	3000	6 mm shaft	24 / 6.9	D-Shaft	0.40 / 0.88
HB-1.2	25091700	0.0103 / 0.091	3000	6 mm shaft	24 / 7.5	D shaft	0.86 / 1.90
HB-2.5	25091800	0.0207 / 0.183	3000	7 mm shaft	24 / 10	D shaft	1.18 / 2.60
HB-5	25091900	0.0415 / 0.367	3000	8 mm shaft	24 / 13	D shaft	2.27 / 5.00
HB-10	25092000	0.0837 / 0.741	3000	10 mm shaft	24 / 18	D shaft	3.58 / 7.90

Torque Range: 0.05 to 1 Nm.
0.4 to 8.9 in-lbs.

Hysteresis clutch for industrial application. Torque is independent of slip speed and can be easily controlled by varying the current. Since there is no frictional contact between the magnets, the units have an extremely wide torque range and are ideally suited for testing machinery and/or application that are required to produce consistent and smooth torque over a wide range.

Fast Response.
The torque of H series electromagnetic hysteresis clutches/brakes is independent of slip speed. Torque is directly proportionate to coil current, thus the torque of each unit can be adjusted by varying the current. Once the current is stable, the torque remains constant.

Long Life.
The H series produces drag torque without physical contact (friction) of parts and are not subject to wear (except the normal wear of antifriction bearings).

Repeatability.
The H series will always duplicate performance under identical operating conditions.

Smooth Operation.
The H series does not utilize mechanical friction, therefore operation is smooth at any slip speed.

Easy Mounting.
Mounting is effortless - no adjustments to make, no gaps to set. The H series may be mounted in the horizontal or vertical position.

Model Number	Part Number	Static Torque Nm / in-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
HC-0.5	25361200	0.0041 / 0.0367	3000	Shaft 10mm (in), 5mm	24 / 11	D shaft	0.45 / 1.00
HC-1.2	25091300	0.0103 / 0.091	3000	Shaft 12mm (in), 6mm	24 / 11	D shaft	0.68 / 1.50
HC-2.5	25091400	0.0207 / 0.183	3000	Shaft 14mm (in), 7mm	24 / 15	D shaft	1.00 / 2.20
HC-5	25091500	0.0415 / 0.367	3000	Shaft 16mm (in), 8mm	24 / 17	D shaft	1.68 / 3.70
HC-10	25091600	0.0837 / 0.741	3000	Shaft 18mm (in), 10m	24 / 21	D shaft	4.00 / 8.80

Torque Range: 17.6 to 8400 Nm.
13 to 6196 ft-lbs.

Multiple disk clutches designed for high torque small space environment. Multiple disks produce high torque in a compact design. Separate drive cup allows for easy connection to your gear or pulley.

High Torque Rate - Compact Design.

The MD series are designed to produce very high torque in an overall compact design. Torque is produced via multiple disks condensing overall clutch size.

Quick Release Time.

Separator springs between the friction plates allow for quick disconnect when the power is released. These springs also keep the disks from making contact with each other in the disengaged mode.

Fast Torque Build Up.

Because of limited internal movement and via multiple disk, clutch torque can be generated very quickly.

Easily Connect To Your Gear, Pulley Or Coupling.

The MD series is made to be used with the UN drive cup, the cup slides between the friction disk tangs and has a tapped bolt pattern so you can attach your bearing mounted gear pulley.

Note:

Wet type multiple disc electromagnetic clutch brake (Model MW) is also available. Electrical features and dimensions are the same as dry type (Model MD).

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
MDC-1.2	23162900	16.270 / 12	1400	20 mm	24 / 12	6 x 1.7	0.64 / 1.40
MDC-2.5	23163000	35.251 / 26	1200	25 mm	24 / 17	8 x 1.7	2.00 / 4.40
MDC-5	23163100	67.791 / 50	1000	30 mm	24 / 22	8 x 2	3.00 / 6.60
MDC-10	23163200	141.005 / 104	850	40 mm	24 / 36	12 x 2.5	4.79 / 10.56
MDC-20	23163300	282.010 / 208	700	50 mm	24 / 45	14 x 2.5	7.71 / 17.00
MDC-40	23058900	559.953 / 413	550	60 mm	24 / 50	18 x 3	15.42 / 34.00
MDC-80	23059500	1118.550 / 825	450	70 mm	24 / 60	20 x 5	31.75 / 70.00
MDC-160	23060100	2238.455 / 1651	400	90 mm	24 / 90	2 5x 5	55.79 / 123.00
MDC-250	23175300	3498.010 / 2580	350	100 mm	24 / 110	28 x 6.5	78.93 / 174.00
MDC-320	23132100	4474.199 / 3300	300	110 mm	24 / 125	28 x 9	103.87 / 229.00
MDC-450	23549600	6297.774 / 4645	250	120 mm	24 / 175	32 x 10	139.71 / 308.00
MDC-600	23549700	8399.292 / 6195	200	140 mm	24 / 150	35 x 11	191.42 / 422.00

Torque Range: 17.6 to 1119.9 Nm.
13 to 826 ft-lbs.

Multiple disk brakes designed for high torque small space environment. Multiple disks produce high torque in a compact design.

High-torque Compact Design.

The MD series are designed to produce very high torque in an overall compact design. Torque is produced via multiple disks condensing overall clutch size.

Quick Release Time.

Separator springs between the friction plates allow for quick disconnect when the power is released. These springs also keep the disks from making contact with each other in the disengaged mode.

Fast Torque Build Up.

Because of limited internal movement and via multiple disk, brake torque can be generated very quickly.

Note:

Wet type multiple disc electromagnetic clutch brake (Model MW) is also available. Electrical features and dimensions are the same as dry type (Model MD).

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
MDB-1.2N	23666500	16.270 / 12	1800	20 mm	24 / 15	6 x 1.7	1.30 2.86
MDB-2.5N	23666600	35.251 / 26	1500	25 mm	24 / 19	8 x 1.7	1.70 / 3.74
MDB-5N	23666700	70.503 / 52	1200	30 mm	24 / 24	8 x 2	2.60 / 5.72
MDB-10N	23666800	141.005 / 104	1000	40 mm	24 / 35	12 x 2.5	4.00 / 8.80
MDB-20N	23666900	282.010 / 208	800	50 mm	24 / 42	14 x 2.5	6.49 / 14.30
MDB-40N	23667000	559.953 / 413	700	60 mm	24 / 60	18 x 3	11.97 / 26.40
MDB-80N	23667100	1118.550 / 825	600	70 mm	24 / 75	20 x 5	21.95 / 48.40

Torque Range: 24.4 to 12000 Nm.
18 to 8851 ft-lbs.

Multiple disk clutches designed for high torque small environment. Clutches are designed to work in oil Multiple disks produce high torque in a compact design. Separate drive cup allows for easy connection to your gear or pulley. Special oil path grooves in the friction plastes allow for quick engagement and response time. Because clutches are used in oil lubrication they have excellent heat dissipation.

High-torque Compact Design.
The MW series are designed as extremely compact multiple disc units that deliver high torque rates.

Long Life And Low Maintenance.
The MW series stationary field design and oil lubrication system significantly reduce wear and maintenance while increasing operational life.

Quick Release Time.
Separator springs between the friction plates allow for quick disconnect when the power is released. These springs also keep the disks from making contact with each other in the disengaged mode.

Fast Torque Buildup.
An efficiently etched oil path on the friction disk, coupled with special treatment of the friction disks ensures fast response and release time.

High Heat Dissipation.
The oil lubrication system provides excellent heat dissipation making the MW series suitable for heavy duty operation.

Easily Connect To Your Gear Pulley Or Coupling.
The MW series is made to be used with the UN drive cup, the cup slides between the friction disk tangs and has a tapped bolt pattern so you can attach your bearing mounted gear pulley.

Note:
Dry type multiple disc electromagnetic clutch brake (Model MD) is also available. Electrical features and dimensions are the same as wet type (Model MW)

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
MWC-1.2	23154000	24.405 / 18	4000	20 mm	24 / 12	6 x 1.7	1.36 / 3.00
MWC-2.5	23154900	50.165 / 37	3600	25 mm	24 / 17	8 x 1.7	2.00 / 4.40
MWC-5	23156000	100.331 / 74	3200	30 mm	24 / 22	8 x 2	3.00 / 6.60
MWC-10	23152700	195.238 / 144	3000	40 mm	24 / 36	12 x 2.5	4.76 / 10.50
MWC-20	23151600	390.476 / 288	2800	50 mm	24 / 45	14 x 2.5	7.71 / 17.00
MWC-40	23015200	780.951 / 576	2400	50 mm	24 / 50	18 x 3	16.78 / 37.00
MWC-80	23031100	1561.902 / 1152	2000	70 mm	24 / 60	20 x 5	31.75 / 70.00
MWC-160	23050200	3123.804 / 2304	1600	90 mm	24 / 90	25 x 5	63.50 / 140.00
MWC-250	23062500	5000.256 / 3688	1400	100 mm	24 / 110	28 x 6.5	78.93 / 174.00
MWC-320	23078100	6247.609 / 4608	1200	110 mm	24 / 125	28 x 9	104.33 / 230.00
MWC-450	23084900	9002.631 / 6640	1000	120 mm	24 / 175	32 x 10	94.35 / 208.00
MWC-600	23083300	11998.988 / 8850	900	140 mm	24 / 150	35 x 11	191.42 / 422.00

Torque Range: 24.4 to 3199.7 Nm.
18 to 2360 ft-lbs.

Multiple disk brake designed for high torque small environment. Brakes are designed to work in oil. Multiple disks produce high torque in a compact design. Special oil path grooves in the friction plates allow for quick engagement and response time. Because brakes are used in oil lubrication they have excellent heat dissipation.

High-torque Compact Design.
The MW series are designed as extremely compact multiple disc units that deliver high torque rates.

Long Life And Low Maintenance.
The MW series stationary field design and oil lubrication system significantly reduce wear and maintenance while increasing operational life.

Quick Release Time.
Separator springs between the friction plates allow for quick disconnect when the power is released. These springs also keep the disks from making contact with each other in the disengaged mode.

Fast Torque Buildup.
An efficiently etched oil path on the friction disk, coupled with special treatment of the friction disks ensures fast response and release time.

High Heat Dissipation.
The oil lubrication system provides excellent heat dissipation making the MW series suitable for heavy duty operation.

Note:
Dry type multiple disc electromagnetic clutch brake (Model MD) is also available. Electrical features and dimensions are the same as wet type (Model MW).

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
MWB-1.2	23123900	24.405 / 18	4000	20 mm	24 / 8	6 x 1.7	0.68 / 1.50
MWB-2.5	23124200	50.165 / 37	3600	25 mm	24 / 12	8 x 1.7	1.32 / 2.90
MWB-5	23124500	101.686 / 75	3200	30 mm	24 / 18	8 x 2	2.00 / 4.40
MWB-10	23124700	203.373 / 150	3000	40 mm	24 / 24	12 x 2.5	3.40 / 7.50
MWB-20	23125000	390.476 / 288	2800	50 mm	24 / 31	14 x 2.5	4.49 / 9.90
MWB-40	23125200	780.951 / 576	2400	60 mm	24 / 36	18 x 3	9.98 / 22.00
MWB-80	23125500	1561.902 / 1152	2000	70 mm	24 / 45	20 x 5	19.05 / 42.00
MWB-160	23126000	3123.804 / 2304	1600	90 mm	24 / 100	25 x 5	33.11 / 73.00

Low cost slip clutch design for momentary and/or continuous slipping. Torque is produced magnetically eliminating the possibility of high break away torque that occurs within typical friction devices. Torque is consistent over a given speed range. Units are sealed so that internal particles cannot contaminate machine likewise external particles cannot contaminate the OPLs. Units are supplied with stainless steel shafts, which can be customized to meet your needs. (The OPR units are hollow bore mounted.)

Torque Range: 0.03 to 0.4 Nm.
0.27 to 3.5 in-lbs.

Accurate Torque.
The drag torque is produced by means of a hysteresis principle. This allows for constant torque levels and eliminates the possibility of high break away torque that occurs with typical friction devices.

Long Operational Life.
Permanent magnets and magnetic particles transmit toque, therefore, wear is virutally eliminated.

Available In Two Types.
The standard OPL units (N type) come with an integral shaft. This shaft can be lengthened, shortened or adapted to suit a customer's requirements, such as D cuts, snap ring grooves and others. The shaft material is 400 series stainless steel. The second option if for OPL units to be supplied with a thru-bore type). Smaller bore units are available in 6 mm and 8 mm, larger units are only available with an 8 mm bore.

Stable Torque.
A virtual consistent torque is maintained because of the hysteresis principle and is consistent within allowable speed range.

Easy Installation With No Adjustments.
Units are provided pre-assembled to a specific torque range so there is nothing to adjust.

Bearing And Bushing Styles Available.
For slower speeds and lighter loads bushing units are the most cost effective option. However, ball bearing (B) units are available if required by application speed or loading.

No Contamination.
Units are sealed which prevents any particles from contaminating the machine, and also prevents contamination of the clutch by the machine environment.

Model Number	Part Number	Static Torque Nm / in-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
OPL-0.3N	25256500	0.0025 / 0.022	300	8 mm shaft	N/A	N/A	0.09 / 0.19
OPL-0.3R	25273800	0.0025 / 0.022	300	8 mm	N/A	N/A	0.02 / 0.05
OPL-0.6N	25256600	0.05 / 0.044	300	8 mm shaft	N/A	N/A	0.09 / 0.19
OPL-0.6R	25273700	0.05 / 0.044	300	8 mm	N/A	N/A	0.02 / 0.05
OPL-1BN	25256900	0.0084 / 0.074	400	8 mm shaft	N/A	N/A	0.16 / 0.35
OPL-1BR	25274900	0.0084 / 0.074	400	8 mm	N/A	N/A	0.18 / 0.26
OPL-1.2N	25256700	0.0104 / 0.092	250	8 mm shaft	N/A	N/A	0.09 / 0.21
OPL-1.2R	25272500	0.0104 / 0.092	250	8 mm	N/A	N/A	0.03 / 0.06
OPL-1.5BN	25257000	0.0122 / 0.108	400	8 mm shaft	N/A	N/A	0.16 / 0.35
OPL-1.5BR	25275000	0.0122 / 0.108	400	8 mm	N/A	N/A	0.18 / 0.26
OPL-1.8N	25256800	0.015 / 0.133	200	8 mm shaft	N/A	N/A	0.10 / 0.23
OPL-2BN	25257100	0.0169 / 0.150	300	8 mm shaft	N/A	N/A	0.19 / 0.42
OPL-2BR	25275100	0.0169 / 0.150	300	8 mm	N/A	N/A	0.15 / 0.33
OPL-3BN	25257200	0.0253 / 0.224	300	8 mm shaft	N/A	N/A	0.19 / 0.42
OPL-3BR	25275200	0.0253 / 0.224	300	8 mm	N/A	N/A	0.15 / 0.33
OPL-4BN	25257300	0.033 / 0.292	200	8 mm shaft	N/A	N/A	0.22 / 0.49

Torque Range: 0.5 to 8 Nm.
4.4 to 71 in-lbs.

Magnetic particle clutch designed for industrial applications requiring fast response time and a stable torque. Units can also be set for continuous slip which makes them ideal for tension applications. Since voltage to torque is linear, output torque can be easily controlled. Since torque is also transmitted via internal particles, unit life is extremely long.

Fast Response.
The OP series has been designed to provide fast response. Response rates can be further quickened through overexcitation circuits.

Slip Capacity.
OP series units are designed to deliver high performance under constant slip conditions.

No Contamination.
Units are sealed which prevents any wear particles from contaminating the machine, and also prevents contamination of the clutch by the machine environment.

Stable Torque.
The OP series produce consistent and repeatable torque. Torque is independent of speed and proportional to voltage applied to the field.

Long Life.
The OP series unit's sturdy construction and precise formulation of the magnetic particles combine to provide extended life.

Model Number	Part Number	Static Torque Nm / in-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
OPC-5N	25244800	0.0415 / 0.367	1800	5 mm shaft	24 / 12	D shaft	0.68 / 1.50
OPC-10N	25439200	0.0837 / 0.741	1800	7 mm shaft	24 / 14	D shaft	0.82 / 1.80
OPC-20N	25276100	0.1695 / 1.5	1800	12 mm shaft	24 / 18	D shaft	1.27 / 2.80
OPC-40N	25444300	0.339 / 3	1800	12 mm	24 / 22	Set screw	2.40 / 5.30
OPC-40A	254476	0.339 / 3	1800	12 mm	24 / 15	Set screw	2.40 / 5.30
OPC-80N	25441800	0.6779 / 6	1800	15 mm	24 / 33	Set screw	3.08 / 6.80
OPC-80A	254484	0.6779 / 6	1800	15 mm	24 / 19	Set screw	3.08 / 6.80

Torque Range: 0.5 to 8 Nm.
4.4 to 71 in-lbs.

Magnetic particle clutch designed for industrial applications requiring fast response time and a stable torque. Units can also be set for continuous slip which makes them ideal for tension applications. Since voltage to torque is linear, output torque can be easily controlled. Since torque is also transmitted via internal particles, unit life is extremely long.

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Model Number	Part Number	Static Torque Nm / in-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
OPB-5N	25231000	0.0415 / 0.367	1800	6 mm shaft	24 / 6.4	Double D Flat	0.41 / 0.90
OPB-10N	25233000	0.0837 / 0.741	1800	7 mm shaft	24 / 8.9	Double D Flat	0.68 / 1.50
OPB-20N	25233100	0.1695 / 1.5	1800	10 mm shaft	24 / 9	Double D Flat	1.00 / 2.20
OPB-40N	25230800	0.339 / 3	1800	12 mm shaft	24 / 9	Double D Flat	1.81 / 4.00
OPB-80N	25230900	0.6779 / 6	1800	15 mm shaft	24 / 9	Double D Flat	3.00 / 6.60
OPB-120N	25428200	1.0169 / 9	1800	15 mm shaft	24 / 9	Double D Flat	4.90 / 10.80
OPB-120F	25430500	1.0169 / 9	1800	15 mm shaft	24 / 9	Double D Flat	5.40 / 11.90
OPB-250N	25426300	2.0337 / 18	1800	20 mm shaft	24 / 9	Double D Flat	8.62 / 19.00
OPB-250F	25430600	2.0337 / 18	1800	20 mm shaft	24 / 9	Double D Flat	9.89 / 21.80

Torque Range: 11.9 to 195 Nm.
8.8 to 144 ft-lbs.

Magnetic particle clutch designed for industrial applications requiring fast response time and a stable torque. Units can also be set for continuous slip which makes them ideal for tension applications. Since voltage to torque is linear, output torque can be easily controlled. Since torque is also transmitted via internal particles, unit life is extremely long.

Reliable and Stable Torque.
The PB/PC series have been designed to maintain high performance in continuous slip applications within their heat dissipation range.

Forced Air Cooling.
Units come equipped with inlets and outlets for forced air. Forced air cooling provides additional heat dissipation if warranted by the application. In general forced air cooling can double the heat dissipation.

High Cycle Capability and Long Life.
The use of high wear resistant particles assures long operational life in high cycle applications.

Designed for Continuous Slip.
The PB/PC series have been designed to maintain high performance in continuous slip applications through maximum and continuous heat dissipation.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
PC-1.2	39175700	12.202 / 9	1800	15 mm shaft	24 / 42	5 x 2	7.71 / 17.00
PC-2.5	39091600	24.405 / 18	1800	20 mm shaft	24 / 56	5 x 2	12.70 / 28.00
PC-5	39095000	50.165 / 37	1800	25 mm shaft	24 / 82	7 x 3	19.50 / 43.00
PC-10-02	39647300	100.331 /74	1800	30 mm shaft	24 / 105	7 x 3	42.64 / 94.00
PC-20	39175900	195.238 / 144	1800	35 mm shaft	24 / 112	10 x 3	71.67 / 158.00

Torque Range: 11.9 to 195 Nm.
8.8 to 144 ft-lbs.

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Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
PB-1.2	39175800	12.202 / 9	1800	15 mm shaft	24 / 42	5 x 2	6.80 / 15.00
PB-2.5	39096100	24.405 / 18	1800	20 mm shaft	24 / 56	5 x 2	10.89 / 24.00
PB-5	39096200	50.165 / 37	1800	25 mm shaft	24 / 82	7 x 3	17.69 / 39.00
PB-10	39096300	100.331 /74	1800	30 mm shaft	24 / 105	7 x 3	39.92 / 88.00
PB-20	39214000	200.661 / 148	1800	35 mm shaft	24 / 112	10 x 3.5	63.96 / 141.00

OGURA INDUSTRIAL CORP.

Multiple Disk Mechanical Clutches Designed for use on industrial equipment. High torque in small size makes them ideally suited for applications where space is a premium and the actuation method needs to be done mechanically.

Torque Range: 24.9 to 4700 Nm.
18.4 to 3467 ft-lbs.

High Torque, Compact Design.
Multiple disk design provides high torque in a small diameter

Low Drag Torque.
Special release spring enables quick disengagement. Both wet and dry types have very low drag torque when the clutch is disengaged.

Small Activation Force.
Thanks to a large lever ratio (and roller designed for sizes larger than 100) activation force is small versus the torque the clutch can transmit.

No Thrust Load.
Force is only required to engage or disengage the clutch. There is no thrust load required to keep the clutch engaged.

Good Heat Dissipation.
The wet clutch option has very good heat dissipation capabilities.

Easy Adjustment.
Torque is easily adjustable by accessing the torque adjustment nut.

Long Life.
Wet clutches have very little frictional wear and can last a very long time. The friction disc on the dry type clutch has a very large friction area. Both wet and dry friction discs can be serviced if required.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
DS-253TG	21040200	34.980 / 25.8	-	25 mm	N/A	7 x 28	1.41 / 3.10
OS-255	21054500	50.030 / 36.9	-	25 mm	N/A	7 x 28	1.41 / 3.10
OD-255	21056400	50.165 / 37	-	25 mm	N/A	7 x 28	2.59 / 5.70
OD-457	21056900	61.012 / 45	-	45 mm	N/A	12 x 48.5	9.39 / 20.70
DS-354TG	21042000	79.993 / 59	-	32 mm	N/A	10 x 35.5	3.31 / 7.30
OS-357	21054800	100.059 / 73.8	-	32 mm	N/A	10 x 35.5	3.31 / 7.3
OD-357	21056700	100.331 / 74	-	32 mm	N/A	10 x 35.5	5.40 / 11.90
DS-454TG	21043200	139.649 / 103	-	45 mm	N/A	12 x 48.5	5.72 / 12.60
OS-457	21055000	200.661 / 148	-	45 mm	N/A	12 x 48.5	5.72 / 12.60
DS-555TG	21044400	319.973 / 236	-	55 mm	N/A	15 x 60	8.48 / 18.70
OS-558	21055200	459.622 / 339	-	55 mm	N/A	15 x 60	8.48 / 18.70
OD-558	21057100	459.622 / 339	-	55 mm	N/A	15 x 60	15.51 / 34.20
DS-705TG	21045600	630.455 / 465	-	70 mm	N/A	18 x 76	19.01 / 41.90
OS-708	21055400	900.263 / 664	-	70 mm	N/A	18 x 76	19.01 / 41.90
DS-805TG	21046200	1000.594 / 738	-	70 mm	N/A	18 x 76	22.10 / 50.70
OS-808	21055500	1400.560 / 1033	-	70 mm	N/A	18 x 76	22.10 / 50.70
DS-1006TG	21046400	1499.535 / 1106	-	80 mm	N/A	20 x 86	34.02 / 75.00
OS-1008TG	21055700	1750.361 / 1291	-	80 mm	N/A	20 x 86	40.01 / 88.20
DS-1206TG	21046600	2799.764 / 2065	-	100 mm	N/A	28 x 109	69.85 / 154.00
OS-1208TG	21055900	3199.731 / 2360	-	100 mm	N/A	28 x 109	76.20 / 168.00
DS-1406TG	21046800	5000.256 / 3688	-	120 mm	N/A	32 x 130	115.21 / 254.00
OS-1409TG	21056100	5599.528 / 4130	-	120 mm	N/A	32 x 130	140.16 / 309.00
DS-1606TG	21047000	6499.791 / 4794	-	150 mm	N/A	38 x 162	145.15 / 320.00
OS-1609TG	21056300	7500.385 / 5532	-	150 mm	N/A	38 x 162	170.10 / 375.00

OGURA INDUSTRIAL CORP.

Torque Range: 699.6 to 10599.8 Nm.
516 to 7,818 ft-lbs.

Multiple disc pneumatic clutch/brakes designed for in plant industrial use. Multiple disc units provide efficient torque to size ratio. High heat dissipation makes them ideal for punch press applications.

Compact Design.
Multiple disc design provides efficient torque to size ratio.

Wear Adjustment.
Plate movement can be easily controlled by turning the adjustment nut.

High Heat Dissipation.
Suitable for high cycles.

Thin Axial Profile.
The profile helps fit into small spaces.

Easily Adjustable Torque.
By changing pneumatic pressure, torque and response time can be adjusted

Robust Design.
Robust design for severe applications.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
ACSB-50	22046200	699.602 / 516	-	40 mm	N/A	10 x 43.5	24.95 / 55.00
ACSB-100	22044400	1300.229 / 959	-	50 mm	N/A	12 x 53.5	38.10 / 84.00
ACSB-170	22035800	2200.492 / 1623	-	65 mm	N/A	18 x 71	50.80 / 112.00
ACSB-280	22031800	3700.027 / 2729	-	80 mm	N/A	20 x 86	81.19 / 179.00
ACSB-400	22133100	5299.892 / 3909	-	90 mm	N/A	24 x 98	130.18 / 287.00
ACSB-580	22034400	7599.359 / 5605	-	105 mm	N/A	28 x 114	200.03 / 441.00
ACSB-800	22035900	10599.784 / 7818	-	120 mm	N/A	32 x 130	279.87 / 617.00

OGURA INDUSTRIAL CORP.

Torque Range: 3000.4 to 14995.4 Nm.
2213 to 11060 ft-lbs.

Wet type multiple disc hydraulic clutch that is made to be run in an oil bath application. Multiple discs provide high torque in a small size. Since the torque is transmitted via oil shear on friction discs. Heat dissipation is very effective which leads to long life.

For Oil Bath Applications Only.
This clutch is designed to be used in an oil bath environment and cannot be used as a standalone clutch.

Small Size And High Torque.
Multiple discs and hydraulic pressure provide a high torque to low size ratio.

Long Life.
Torque is transmitted via oil shear which minimizes wear and extends life.

Highly Reliable And Maintenance Free.
No adjustment is required through the life of the clutch.

Good Heat Dissipation.
A combination of lubrication method and oil amount will give the clutches good heat dissipation suitable for heavy and/or high cycle rates.

Backup Lock-up Feature.
In case of hydraulic failure, inserting and tightening three bolts engages clutch.

Model Number	Part Number	Static Torque Nm / ft-lbs	Maximum rpm	Bore	Volts / Watts	Keyway	Weight kg / lbs
HO-1007	22057000	5000.256 / 3688	-	90 mm	N/A	24 x 98	45.99 / 101.40
HO-1207	22057100	10000.513 / 7376	-	110 mm	N/A	28 x 119	83.01 / 183.00
HO-1407	22057200	16500.304 / 12170	-	130 mm	N/A	35 x 141	133.81 / 295.00
HO-1607	22057300	25001.282 / 18440	-	160 mm	N/A	38 x 172	-

Clutch Will Not Disengage:

Potential Problem	Possible Reasons	Fix
Voltage not releasing.	Faulty switch.	Replace switch.
Rotor and armature locked together.	The clutch has been severely galled and has locked up. (Galling is the condition whereby a piece of metal is trapped between the armature and the rotor and melts due to high pressure and heat, spot welding the surfaces together.)	If rotor and armature connot be separated, replace the clutch. If they do separate, follow burnishing procedure.
Pulley bearing locked.	Bearing lost grease due to seal problem, temperature or water contamination.	Replace clutch.
*Brake plate clamped down too tightly.	If the brake nuts are screwed down too tight, the armature will be pressed against the rotor all the time. This should be evident by discoloration of the brake plate. If the unit ran long enough, the brake plate and the clutch would be destroyed.	Loosen brake nuts and reset air gap according to recommendations. If clutch is destroyed, replace clutch.

Clutch Will Not Engage:

Potential Problem	Possible Reasons	Fix
No voltage going to the clutch.	Wiring connector not seated properly.	Pull apart and re-seat connector.
	No voltage or low voltage coming from the battery.	Check with voltmeter, battery should be 8-16 volts. (Assuming 12 volt battery.)
	Defective charging system.	Fix charging system.
	Lead wire cut or broken internally.	Fix or replace lead wire. If destroyed, replace clutch.
	Fuse blown.	Replace fuse.
	Defective switch operating clutch.	Replace the switch.

*PTO Clutch/Brakes Only

Clutch Will Not Engage continued:

Potential Problem	Possible Reasons	Fix
If voltage is going to the clutch, but the clutch will still not engage.	Coil open or shorted.	Check coil with ohmmeter. A range close to 3 to 4 ohms should be present at an ambient coil temperature of 21°C / 70°F Replace coil.
	Check coil voltage to make sure it is compatible with the voltage coming in. (If voltage is too high, this could cause the coil to burn out.)	Change battery or coil to meet your requirement.
	Burnt out coil caused by frictional contact (flange mounted clutches, rotor strike). If so, coil will be discolored, can be cracked, burnt or epoxy can be melted.	Replace coil.
	*Rotor/armature air gap too large.	If straight bore, air gap can be readjusted. If unit has set screws, bottom out armature hub against field then back off to .1" and retighten set screws. If spacer on straight bore, reduce width of the spacer. If taper bore clutch, tap on armature cover to close gap.
	*Rotor/armature air gap too large.	Re-adjust according to air gap adjustment procedure.
Clutch engages, but load will not engage.	Rivets or springs broken.	Replace clutch.
	Key missing.	Put in key.
	Armature could be warped because of heat due to slippage. This means it will pull in, but will slip when a load is supplied. Clutch should show signs of heat.	Replace clutch and determine why it slipped.

*PTO Clutch/Brakes Only
*Mobile Clutches Only

Clutch Slips:

Potential Problem	Possible Reasons	Fix
Low voltage going into the clutch.	Defective battery.	Replace battery
	Lead wire cut which could be intermittently grounding out the lead wire causing the clutch to turn on and off or not to give full voltage.	Fix or replace lead wire.
Erratic engagement.	If lead wire is kinked or pinched and the break is internal, the clutch operation may show up as being erratic engagement.	Fix or replace lead wire.
Clutch is contaminated.	Oil or other lubricant has been sprayed on the clutch surface. Sometimes this shows up after the clutch is disassembled. Physical evidence is either burnt oil or a greasy metallic surface showing oil still present.	Clean off surfaces with solvent and reburnish. Replace the clutch if damage is severe enough.
Clutch overloaded.	Output torque required is greater than what the clutch can handle. If input torque going into clutch is greater than the output torque required, the clutch will slip. If it slips too long, the clutch surfaces will be galled.	Size clutch correctly for the application. Replace clutch.
Output stalled.	If output is stalled, clutch could slip to the point where it will burn up and destroy either bearings or the field.	Replace clutch.
Clutch not burnished.	If full torque is required immediately and clutch is not burnished, it will slip and could become galled.	Try to reburnish clutch. If slipping is to severe, clutch will have to be replaced.

Noisy Clutch

Potential Problem	Possible Reasons	Fix
If clutch is able to move on the shaft:	Check center bolt and washer to make sure it is tight. If it is tight, make sure that the shaft is not too long. Clutch shaft should end before the end of the clutch to allow some deflection in the center bolt and washer to keep clutch on tightly.	Retighten center bolt or change spacer or shaft length

Noisy Clutch continued:

Potential Problem	Possible Reasons	Fix
Noise from pulley bearing.	Check if bearing feels rough. Check belt load to make sure pulley and bearings are not over loaded.	Reduce belt load.
	High temperature can be caused by either operating environment or due to slippage. If slippage, clutch should be discolored. Refer to slippage section for potential reasons.	Reduce the heat or eliminate slippage.
Pinging or scraping noise noticed when clutch is disengaged *Noise is evident when the clutch is first installed and rotated by hand.	Air gap too close.	Increase air gap.
	Surface is heavily galled.	Re-burnish the clutch.
	Possible causes are bolts in field not tightened down properly.	Tighten bolts.
	Key in keyway not seated properly. This could cause it to cock to one side.	Remove rotor assembly and reseat keyway.
	Lead wire pinched between mounting face and field bracket cocking field assembly.	Loosen the bolts, remove wire and retighten field mounting bolts.
	If set screw version, this could be because of improper air gap between pulley/armature and field.	Loosen set screw, push together, then back off .1", and retighten setscrew.
	Mounting face not concentric with the shaft.	Re-machine mounting holes or switch mounting face (by switching you will be able to verify if mounting holes on the clutch are the problem or the mounting holes on the face are the problem.)
*Mounting bracket has come loose from back of field assembly.	Check to see if projection welds are broken. If they are, check to see if rotor strike has occurred. Possible misalignment in combination of belt side load has broken projection welds.	Replace the clutch.

*Mobile Clutches Only

Noisy Clutch continued:

Potential Problem	Possible Reasons	Fix
Noise from field bearing (Noisy field bearing has failed or is about to fail.) In general purpose and PTO brakes	Check to see if the clutch is discolored to see if it shows signs of slippage.	Refer to slippage section.
	Check for damage to both the outer race and inner race of the bearing. Make sure key is not too tight forcing pressure on the inner race. In the outer race area, check for marks or damage that could have caused the clearances to close up.	Replace clutch.
	Check temperature if shaft clutch is mounted on to make sure it is under 149°C / 300°F	Reduce reason for the high temperature overloading on the engine.
	Check torque tab or backing plate to make sure that there is freedom of movement of 1/16 of an inch axially and radially. Check to see if any marks are evident that would indicate axial forces applied.	Loosen torque tab to make sure it has freedom of movement both axially and radially.
*Pinging or scraping noise noticed when clutch is engaged.	Brake shroud and air gap set too close. This means that the armature is contacting the brake while the clutch is engaged.	Back off the air gap to the higher end of the air gap range.
*Brake plate rattles.	In a heavy vibration application, the pin holding the backing plate can become worn because of vibration opening up clearance. This can then generate noise because of the additional movement in the braking plate.	Change the method of securing the clutch to allow for a greater surface area of contact so force is more spread out and less wear takes place.

*PTO Clutch/Brakes Only

The following flow chart will help you to quickly identify many of the common questions concerning a non-functioning electromagnetic clutch or brake. However we are always here to help. If you require assistance please contact the jbj Techniques technical office, telephone +44 (0)1737 767493 or email: info@jbj.co.uk

HAS IT EVER WORKED?

YES

MECHANICAL	ELECTRICAL
Armature Worn Out?	Fuse Blown?
Friction surface galled?	Open Coil?
Oil on Facing?	Shorted Coil?
Worn Spline?	Wire Broken?
Non-Mated Parts?	Switch Failure?
Application Changed?	
Rust on Armature?	

NO

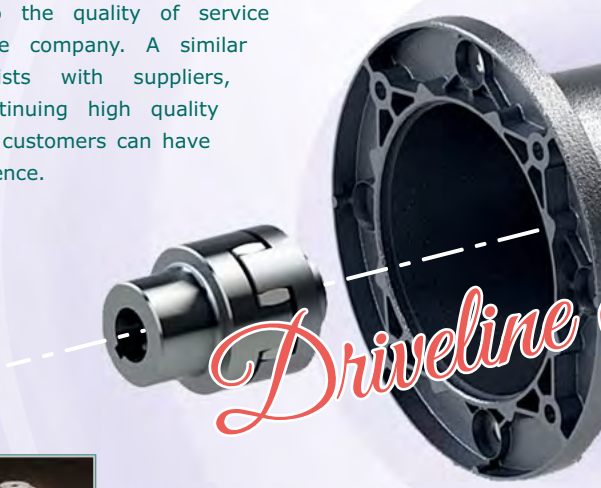
MECHANICAL	ELECTRICAL
Gap too Large?	AC In?
Burr on Spline?	DC In?
Sized Properly?	Good Fuse in Place?
Key in Place?	Torque Controls Set Properly?
	Switch Wired Properly?
	Coil Good?

jbj Techniques is a specialist supplier of high-quality products for the mechanical power transmission and fluid power sectors. The company offers a high level of in-house expertise plus a huge selection of products to meet a very broad range of customer applications. From specification, through technical advice and manufacture to after-sales support, jbj Techniques provides a comprehensive and valued service to the power transmission and hydraulics industries. The company fields a UK-wide team of technical sales engineers to ensure that the business is close to its customers, and it enjoys excellent associations with European manufacturers, acting as sole UK distributor in many cases.

jbj's team is recognised for its expertise in the selection and configuration of hydraulic and mechanical transmission systems. Able to draw on an extensive product range that provides the building blocks for bespoke systems both large and small, the in-house design team offers a complete service, ranging from an assessment of customer requirements to full technical backup, including product specification, CAD based system design, system build and certification. Moreover customers can take advantage of jbj's own machine-shop facilities and skilled engineers to guarantee quality and control costs.

jbj Techniques provides one of the widest ranges of couplings available within the UK; mechanical power transmission couplings for a vast range of applications. Ranging from miniature couplings, all steel gear couplings, flexible spider couplings, shaft couplings, torque limiting couplings, disc and grid type couplings, ATEX compliant and shaft locking devices. Magnetic couplings for power transmission between hermetically sealed areas. However as extensive as the selection is, couplings make up a fraction of jbj's portfolio. As power transmission specialists the company stock and provide gearboxes, clutches, pumps, hydraulic motors, flow meters, fluid power accessories including: cooling & heat exchange products, reservoirs, pipe flanges, seals and level indicators, as well as a variety of bellhousings and engine adaptors, to name just a few of the product categories.

jbj Techniques Limited is proud of it's relationship and reputation with customers and suppliers. The core client base is stable and loyal, which is testament to the quality of service provided by the company. A similar relationship exists with suppliers, ensuring a continuing high quality service in which customers can have complete confidence.

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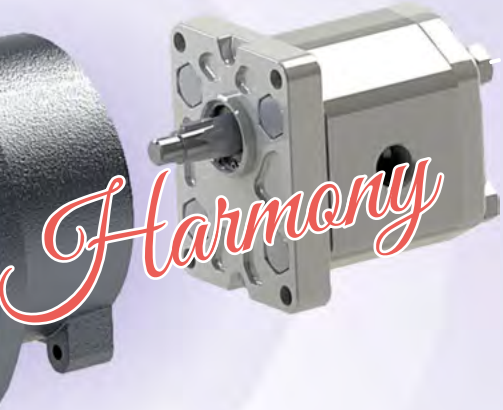


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