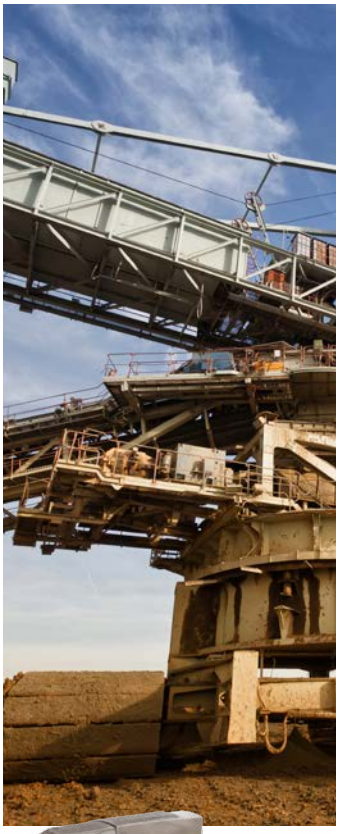
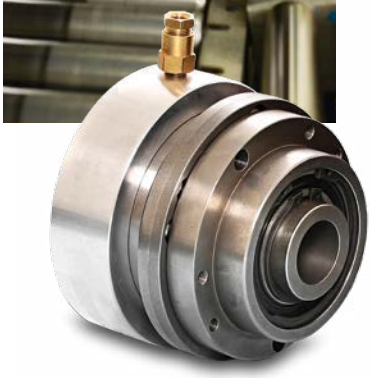
ALTRA INDUSTRIAL MOTION

Standard Clutches and Brakes





Matrix® International

An Altra Industrial Motion Company

MATRIX INTERNATIONAL PROVIDES SUPERIOR BRAKES, CLUTCHES AND TORQUE LIMITERS...WORLDWIDE.

With over 75 years in the design and manufacture of standard, as well as customized brakes and clutches, Matrix products meet the needs of the power transmission industry through a flexible approach to application and sales support.

Early involvment in design processes by the Matrix engineering team holds the key to building customer confidence — resulting in custom solutions which match application requirements.

sales and technical support in over 70 countries around the world. Matrix support extends well beyond sales and technical applications with manufacturing capability in North America, Europe and Asia Pacific. Matrix has the capability to serve the global market. Matrix maintains a dedicated customer service, sales, and distribution operation in North America to support a large and growing customer base in the USA.

Based in Brechin, Scotland, Matrix International is a rapidly growing company focused on providing custom engineered solutions to brake, clutch and coupling applications in a wide range of industrial markets. Backed by over 65 years of experience, the Matrix brand name provides cost-effective engineered solutions for applications in markets such as forklift trucks, construction vehicles, cranes, winches, industrial automation, and machine tools.

Matrix firmly commits to investing in people, technology and processes to lead the market forward. The company is registered to ISO 9001:2000 and is in the process of achieving ISO 14001 registration in support of a cleaner and greener global business environment.

As part of the Altra Industrial Motion family of power transmission companies, Matrix provides

Engineering

A dedicated team of market-focused engineering and manufacturing staff provides successful solutions to the technical and commercial challenges faced by our markets and customers. We utilize a flexible approach to solving such challenges enabling our team to provide application and technical support from concept to completion.

Each of the products in our comprehensive range can be customized to meet specific and unique requirements of the particular application. The Matrix team can customize a new solution to meet the toughest technical challenge by drawing on our many years of market-focused experience. From custom designs to leading torque per package size, Matrix has the “Power of Experience” to help solve the toughest brake, clutch and coupling applications.

Quality

Matrix Quality Systems are accredited to ISO 9000:2000 standards ensuring that product design and development, manufacturing, and service are of the highest standard. Matrix is in the process of attaining ISO 14001 environmental standards while minimizing our carbon footprint and working toward sustainable operations throughout our supply chain. Our refined manufacturing processes and quality supply chain partners enable us to provide cost-effective products that continually meet or exceed the expectations of the market.

Testing & Research

We offer the capability to quickly produce prototype units for testing and evaluation by clients or using our own computer controlled testing equipment to simulate the operating conditions of a specific client defined application. With electronic data recording, we can accelerate the design testing and verification to more quickly meet the needs of the markets shortening product development cycles.

Matrix electromagnetic brake designs are routinely developed using our unique magnetic flux path analysis process ensuring that flux loss into surrounding metal does not adversely impact torque requirements for a specified application.

ALTRA INDUSTRIAL MOTION PROVIDES LEADERSHIP THROUGH INNOVATION

For over a century, the most important breakthroughs in engineered power transmission products have been driven by our family of companies working together to lead the market forward. Developing innovative technologies is the core principal of Altra Industrial Motion.

With a full complement of mechanical and electrical solutions for every type of application, Altra Industrial Motion stands alone as the industry's most fully committed supplier of power transmission solutions.

- World-class engineering
- Rapid deployment of prototypes
- Superior customer service and application support... worldwide
- A common driving force: the Altra Business System
- Extensive training programs
- Global manufacturing to support local customer needs.

Whether you need individual components or packaged systems, choose the brands known throughout the world for quality, innovation, and service.

Series 4H and 54H-P

Series 4H and 54H-P Pressure Applied Multi-Disc Clutches

Stationary Cylinder for Dry Operation

Series 4H pressure-applied stationary cylinder multi-disc clutches are designed for dry use. Pressure supply feeds into cylinder via a flexible tube. Piston and cylinder sub-assembly mounts on shielded ball bearings. Positive disengagement achieved by use of release springs between inner plates. Standard drive rings available as optional extras.

Series 54H-P clutches developed from series 4H clutches, incorporate a pilot mount. Pilot mount with the drive ring integral is supported on an extended hub by a rigid shielded double bearing assembly. Pulleys, sprockets and other drive components can fit directly to pilot mount, which has a tolerenced spigot diameter for location and tapped fixing holes. By using a suitable adaptor, a flexible coupling can fit to the pilot mount, connecting co-axial shafts which are beyond the alignment limits of series 4H clutches.

Features

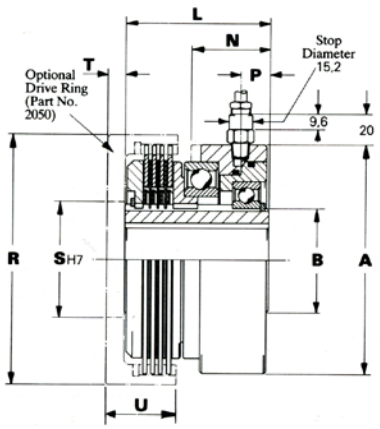
- Clutch requires no adjustment
- Shielded bearings need no lubrication in service
- Stationary cylinder allows simple supply connection
- Torques can be varied by regulating supply pressure
- Engagement speed controlled by varying pressure supply flow rate
- Large friction area gives extended plate life
- Individual plate separation ensures low drag torque
- Multi-disc design results in compact high torque clutch
- No axial thrusts transmitted to adjacent components
- All concentricities controlled within the clutch simplifying installation
- Pilot mount can be used to attach pulleys, sprockets and other drive components simplifying assembly

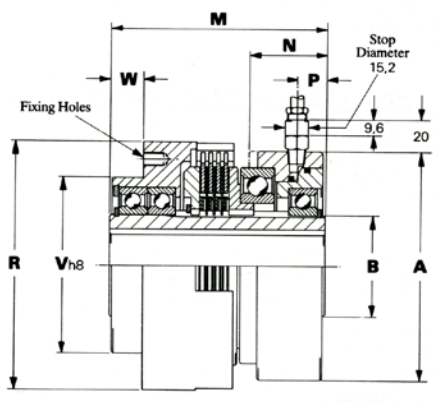
Typical Applications

- High Cyclic On/Off Applications
- Packaging
- Printing
- PTO’s
- Test Rigs

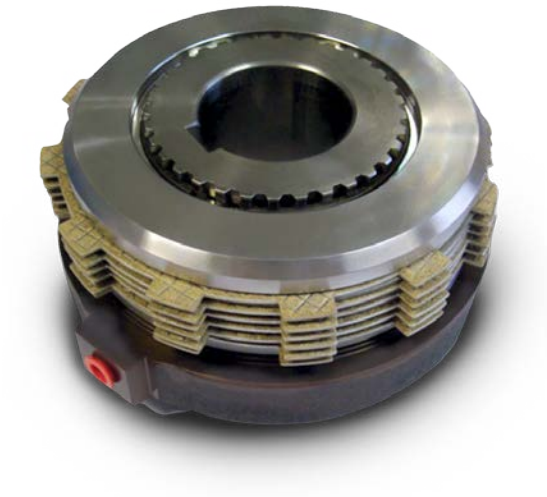
Series 4H and 54H-P

MODEL			4H30 54H30P	4H35 54H35P	4H40 54H40P	4H45 54H45P	4H50 54H50P	4H60 54H60P	4H70 54H70P
Performance Data									
Rated Static Torque	Nm	at 10 bar	115	180	280	390	550	950	1440
		at 5.5 bar	57	90	140	200	280	460	650
	ft-lbs	at 150 psi	85	140	215	295	410	720	1100
		at 80 psi	41	68	105	145	200	330	480
Rated Dynamic Torque	Nm	at 10 bar	72	115	180	250	340	600	960
		at 5.5 bar	36	58	90	128	175	290	430
	ft-lbs	at 150 psi	55	90	135	185	260	455	730
		at 80 psi	27	44	66	92	128	210	320
Pressure to Overcome Release Springs		bar	1.0	1.0	0.9	0.8	0.8	1.3	1.8
		psi	15	15	12	11	12	19	25
Drag Torque		Nm	0.07	0.12	0.18	0.25	0.34	0.60	1.00
		ft-lbs	0.05	0.09	0.14	0.19	0.26	0.46	0.73
Maximum Energy per Engagement		kJ	8	11	13	16	17	20	25
Maximum Energy per Hour		kJ	240	333	390	480	510	600	750
Maximum Speed		revs/min	7200	6000	5040	4480	4000	3200	2720
Diameters (all dimensions in mm)									
A			99	114	118	137	146	164	187
B			35	45	45	60	65	75	85
Lengths									
L			75	80	79	86	92	105	119
M			111	121	120	131	137	157	179
N Maximum Engaged			44	44	44	47	52	62	70
P Maximum Engaged			25	25	24	25	27	33	36
P Disengaged			17	18	17	17	18	21	23
U			37	39	40	42	45	55	61
4H Drive Ring									
R			102	115	127	146	159	185	213
S (H7)			45	54	54	70	74	88	100
T			8	9.5	9.5	11	11	14.5	14.5
54H-P Pilot Mount									
R			102	115	127	146	159	185	213
V (h8)			72	88	88	102	112	132	145
W			19	20	20	23	21	23	31
Fixing Holes	Number of holes		3	3	3	6	6	6	6
	Size		M6	M6	M6	M6	M8	M8	M10
	Depth		13	15	15	15	15	20	20
	P.C.D.		88	102	108	120	135	155	180





Series 52H



Series 52H Pressure Applied Multi-Disc Clutches

Stationary Cylinder for Operation in Oil

Series 52H pressure-applied stationary cylinder multi-disc clutches are designed for use in oil. Pressure supply feeds into the cylinder via a flexible tube. The piston and cylinder subassembly mount on a needle cage bearing, and needle thrust bearings accommodate the axial loads. Positive disengagement is achieved by use of release springs between the inner plates.

Standard drive rings available as optional extras.

Features

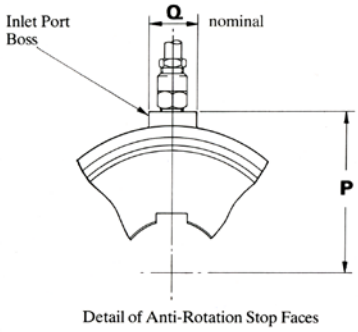
- Clutch requires no adjustment
- Torques can be varied by regulating supply pressure
- Engagement speed controlled by varying pressure supply flow rate
- Large friction area gives extended plate life
- Individual plate separation ensures low drag torque
- Multi-disc design results in compact high torque clutch
- No axial thrusts transmitted to adjacent components

Typical Applications

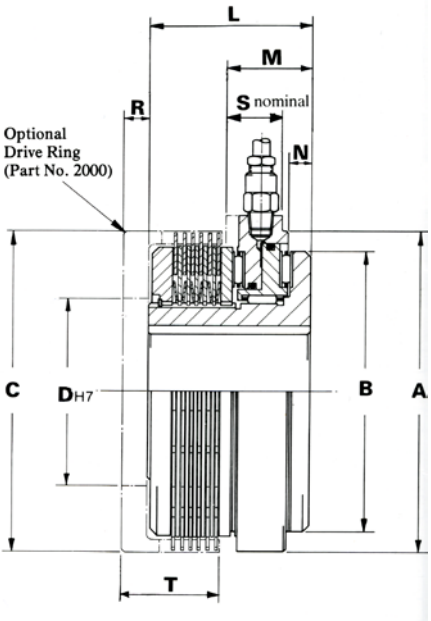
- Printing
- Machine Tool – for speed variation at the work spindle and feed engagement
- Building Machines – for traveling and combined gears
- Agricultural Machines – in the main drive and auxiliary drives (PTO) of harvesters
- Printing Presses
- Marine Gearboxes

Series 52H

MODEL			52H30	52H50	52H70
Performance Data					
Rated Static Torque	Nm	at 20 bar	240	1320	3450
		at 10 bar	115	620	1620
	ft-lbs	at 300 psi	180	1000	2640
		at 150 psi	87	475	1250
Rated Dynamic Torque	Nm	at 20 bar	160	880	2300
		at 10 bar	76	410	1080
	ft-lbs	at 300 psi	120	670	1760
		at 150 psi	58	320	830
Pressure to Overcome Release Springs		bar	0.8	1.1	1.1
		psi	12	15	16
Drag Torque		Nm	0.5	1.7	5
		ft-lbs	0.37	1.25	3.70
Maximum Speed		revs/min	3500	2300	1600
Inertia (kgm^2) = Table Value x 10^{-3}					
Clutch Less Drive Ring and Outer Plates			0.71	6.45	32.1
Set of Outer Plates			0.26	1.86	13.1
Drive Ring			0.37	5.29	24
Weight (kg)					
Clutch Less Drive Ring			1.9	6.7	15.1
Drive Ring			0.4	1.4	3.2
Dimensional Data (all dimensions in mm)					
Standard Bores (H7) Keyways to I.S.O. 773 B.S. 4235:1972 Pt. 1 D.I.N. 6885:1968 Pt. 1; NF.E22-175			30 8 x 3.3	50 14 x 3.8	75 20 x 4.9
(Bores other than standard can be obtained by special order)			25 8 x 3.3	45 14 x 3.8	65 18 x 4.4
Minimum Bore			18.8	31.5	34.7
Diameters (all dimensions in mm)					
A			86	142	195
B			78	120	170
Lengths					
L			60	78	96
M Maximum Engaged			34	41.3	50.8
N Disengaged			8.5	11.5	14.0
P			54	80	110
Q Nominal			20	25	30
S Nominal			25	28	35
Drive Ring					
C			86	142	196
D (H7)			50	80	110
R			8	11	15
T			33	46	59



Detail of Anti-Rotation Stop Faces



• More models available

Series 66H-02

Series 66H-02 Pressure Applied Multi-Disc Clutches

Rotating Cylinder for Operation in Oil

Series 66H-02 pressure-applied rotating cylinder multi-disc clutches are designed for use in oil. The pressure supply is fed axially along the mounting shaft and radially outwards through the clutch hub into the cylinder. Positive disengagement is achieved by the use of release springs between the inner plates.

Standard drive rings available as optional extras.

Features

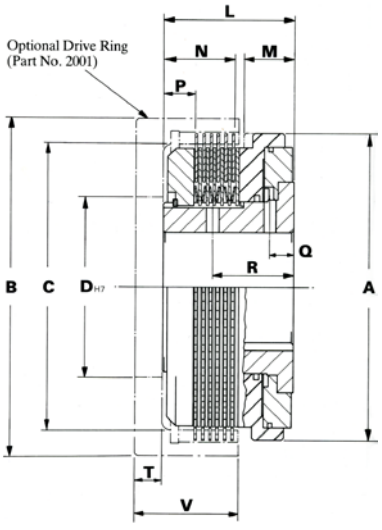
- Clutch does not require adjustment
- Torques can be varied by regulating supply pressure
- Bearing-free design eliminates bearing life considerations
- Speed of engagement can be controlled by varying pressure supply flow rate
- Individual plate separation ensures low drag torque
- Large friction area gives extended plate life
- Multi-disc design results in compact high torque clutch
- No axial thrust transmitted to adjacent components

Typical Applications

- Marine Splitter Gearboxes
- Tractor PTO's
- Marine Main Drives and PTO's
- Machine Tools
- Available in double acting version for 2-speed gearboxes

Series 66H-02

MODEL			66H45-02	66H80-02	66H140-02
Performance Data					
Rated Static Torque	Nm	at 34.5 bar	1630	9400	43350
	ft-lbs	at 500 psi	1200	6930	31960
Rated Dynamic Torque	Nm	at 34.5 bar	1085	6260	28900
	ft-lbs	at 500 psi	800	4615	21310
Pressure to Overcome Release Springs		bar	2.8	2.67	3.0
		psi	41	39	43
Drag Torque		Nm	1.2	5.6	20.3
		ft-lbs	0.9	4.13	15.0
Maximum Speed		revs/min	3900	2500	1800
Inertia (kgm^2) = Table Value x 10^{-3}					
Clutch Less Drive Ring and Outer Plates			7.4	135	1680
Set of Outer Plates			1.43	14	240
Drive Ring			3.0	105	1170
Weight (kg)					
Clutch Less Drive Ring			4.5	26.8	100
Drive Ring			1.0	7.8	42
Dimensional Data (all dimensions in mm)					
Standard Bores (H7) Keyways to I.S.O. 773 B.S. 4235:1972 Pt. 1 D.I.N. 6885:1968 Pt. 1; NF.E22-175 (For bores other than specified please consult our Engineering Department)			45 14 x 3.8	80 22 x 5.4	150 36 x 8.4
Diameters (all dimensions in mm)					
A			125	220	355
Diameter of Feed Holes		to cylinder	6.4	10.0	10.0
		to plates	6.4	8.0	10.0
Lengths					
L			59	110	181
M Maximum Engaged			25.2	40.7	83.8
N			31.3	62	98
P			9.5	25	36.5
Q			10.1	20	33
R			40.0	75	127
Drive Ring					
B			146	245	420
C			117.7	207.7	359.3
D (H7)			74	130	220
T			11	17	27
V			44	79	136
Number of Teeth			48	67	122
D.P.			10/12	8/10	3 Module
P.A.			20°	20°	20°
P.C.D.			121.92	212.72	366



• More models available

Series 5H and 55H-P

Series 5H and 55H-P Pressure Applied Tooth Clutch

Stationary Cylinder for Dry Operation or in Oil

Series 5H pressure-applied stationary cylinder tooth clutches can be used dry or in oil. Pressure supply feeds into cylinder via a flexible tube. Piston and cylinder sub-assembly mounts on shielded ball bearings. Positive disengagement achieved by use of release springs separating two toothed components. Drive flange is supported on hub by a shielded ball bearing.

Series 55H-P clutches developed from the Series 5H, incorporate a pilot mount. Pilot mount is supported on an extended hub by a rigid shielded double bearing assembly. Pulleys, sprockets and other drive components can fit directly to pilot mount, which has a toleranced spigot diameter for location and tapped fixing holes.

Features

- Tooth clutch gives positive drive with no slip
- Shielded bearings need no lubrication in service
- Stationary cylinder allows simple supply connection
- Spring disengagement results in no drag torque other than the rolling resistance of the drive flange/hub bearing
- Standard fixing holes provided in the drive flange
- No axial thrusts transmitted to adjacent components

Series 55H-P Advantages

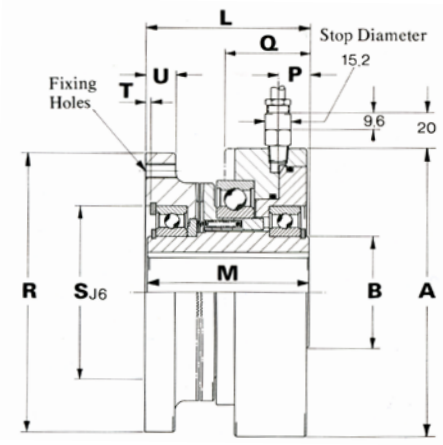
- All concentricities are controlled within the clutch simplifying installation
- Pilot mount can be used to attach pulleys, sprockets and other drive components simplifying assembly

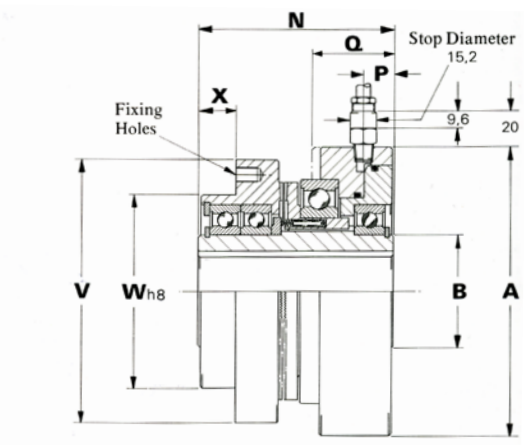
Typical Applications

- Machine Tool
- Printing
- Tire Making Machines
- Auxiliary and Back-up Drives
- Steel Production, Processing and Machining
- Dynamometers

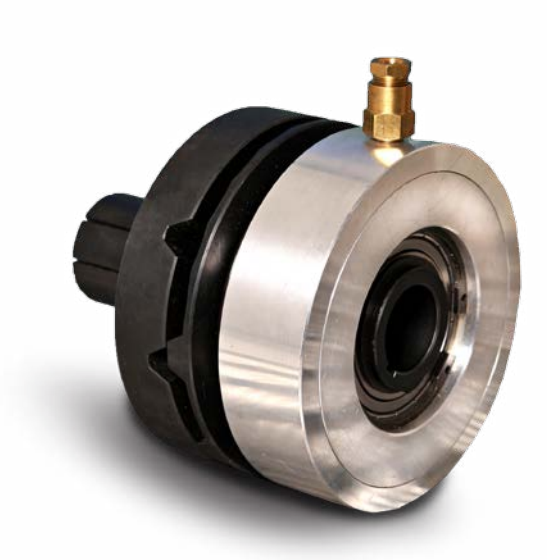
Series 5H and 55H-P

MODEL		5H30 55H30P	5H35 55H35P	5H40 55H40P	5H45 55H45P	5H50 55H50P	5H60 55H60P	5H70 55H70P	5H80 55H80P	— 55H90P
Performance Data										
Rated Static Torque at 5.5 bar/80 psi	Nm	160	260	380	550	750	1300	2070	3800	5800
	ft-lbs	115	185	275	395	545	945	1500	2800	4300
Pressure to Overcome Release Springs	bar	1.4	1.4	1.0	0.9	0.8	0.6	0.8	0.6	0.8
	psi	20	20	14	13	12	9	12	9	12
Maximum Speed	revs/min	6000	5040	4800	4000	3840	3200	2720	2560	1920
Performance Data										
A		115	127	134	153	167	193	216	240	280
B		35	45	45	60	65	75	85	100	120
Lengths										
L		79	82	85	93	95	108	123	139	—
M		77	81	83	92	94	106	122	138	—
N		93	98	101	112	113	129	146	165	185
P Engaged		20	21	20	20	21	25	26	27	30
P Disengaged		17	18	17	18	18	22	23	24	28
Q Engaged		38	39	39	40	45	53	58	59	66
5H Drive Flange										
R		111	124	137	150	162	194	213	242	—
S (J6)		62	75	75	95	100	115	130	150	—
T		3.3	2.7	3.0	3.0	3.3	3.0	7.1	6.7	—
U		13	14	14	14	18	18	21	25	—
Fixing Holes	Number of holes	3	3	3	6	6	6	6	6	—
	Size	M6	M6	M6	M6	M8	M8	M10	M10	—
	P.C.D.	90	110	120	130	140	170	190	220	—
55H-P Pilot Mount										
V		99	115	124	137	153	178	209	240	270
W (h8)		72	88	88	102	112	132	145	179	210
X		19	20	20	23	22	23	32	41	57
Fixing Holes	Number of holes	3	3	3	6	6	6	6	8	6
	Size	M6	M6	M6	M6	M8	M8	M10	M10	M12
	Depth	11.1	12.7	12.7	15.9	15.9	22.2	22.2	18	20
	P.C.D.	88	102	108	120	135	155	180	200	250
Driving Teeth										
Number of Teeth		91	106	122	137	152	183	214	300	270





Series 55H-P-SP



Series 55H-P-SP Pressure-Applied Single-Position Engagement Pilot-Mount Tooth Clutches

Features

- Continuous angular position re-engagement, ensuring drive synchronization
- Tooth clutch provides positive drive with no slip
- All concentricities controlled within clutch simplifying installation
- Sealed bearings need no lubrication in service
- Stationary cylinder allows simple supply connection
- Spring disengagement results in no drag torque other than the rolling resistance of the drive flange/hub bearing
- Standard fixing holes provided in drive flange
- Pilot mount with locating diameter and fixing holes can be used to attach pulleys, sprockets and other drive components simplifying assembly

Stationary Cylinder for Dry Operation or in Oil

The 55H-P-SP is a development of the Series 55H-P pilot mount clutch featuring single-position engagement. When the clutch is actuated, the driving and driven sides always engage in the same angular relationship, thus ensuring the driven member is always accurately synchronized. A ball detent feature ensures single-position engagement and the drive is transmitted by toothed rings, giving the same torque ratings as the 55H-P range.

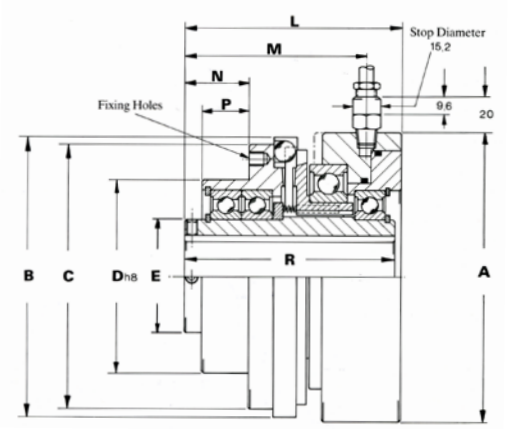
Typical Applications

Industries where synchrozied applications are required.

- Printing

Series 55H-P-SP

MODEL		55H30P-SP	55H35P-SP	55H40P-SP	55H45P-SP	55H50P-SP	55H60P-SP	55H80P-SP
Performance Data								
Rated Static Torque at 5.5 bar/80 psi	Nm	160	260	380	550	750	1300	3800
	ft-lbs	115	185	275	395	545	945	2800
Pressure to Overcome Release Springs	bar	1.0	1.0	0.7	0.8	0.75	0.55	0.7
	psi	14	14	10	12	11	8	10
Maximum Speed	revs/min	3600	3040	2880	2560	2400	1920	2560
Inertia (kgm²) = Table Value x 10^{-3}								
Clutch Less Pilot Mount Assembly		0.94	1.72	2.03	4.60	5.96	13.4	42
Pilot Mount Assembly		2.07	3.25	5.66	7.25	12.3	26.5	53
Weight (kg)								
Complete Unit		3,5	5	6	9	10	14,8	37
Dimensional Data (all dimensions in mm)								
Standard Bores (H7) Keyways to I.S.O. 773 B.S. 4235:1972 Pt. 1 D.I.N. 6885:1968 Pt. 1; NF.E22-175 (Bores other than standard can be obtained by special order)		20 6 x 2.8	30 8 x 3.3	30 8 x 3.3	38 10 x 3.3	44 12 x 3.3	50 14 x 3.8	75 20 x 4.9
		—	25 8 x 3.3	25 8 x 3.3	35 10 x 3.3	40 12 x 3.3	45 14 x 3.8	70 20 x 4.9
		—	—	—	30 8 x 3.3	35 10 x 3.3	40 12 x 3.3	60 18 x 4.4
Minimum Bore		15.7	18.8	18.8	28.4	31.5	34.7	34.7
Diameters (all dimensions in mm)								
A		115	127	134	153	167	193	240
B		110	124	136	149	162	187	237
C		98	114	124	137	152	178	241
D (h8)		72	88	88	102	112	132	175
E		35	45	45	60	65	75	100
Lengths								
L		102	107	110	118	121	137	175
M Disengaged		85	91	94	101	105	116	151
M Engaged		79	84	87	95	99	110	144
N		24	25	25	29	29	32	52
P		18	18	18	21	20	22	39
R		99	105	107	118	121	137	175
Fixing Holes								
Number		3	3	3	6	6	6	8
Size		M6	M6	M6	M6	M8	M8	M10
P.C.D.		88	102	108	120	135	155	200
Depth		8	8	11	11	13	13	18



Series 5EC-P

Series 5EC-P Sure Drive Electromagnetic Pilot-Mount Tooth Clutches

Features

- One-piece construction, eliminates costly installation setting and alignment procedures, and ensures all axial forces are contained within the clutch assembly
- Bearing mounted pilot mount, provides rigid precise location for direct attachment of power transmission components and reduces engineering required by machine builder
- 'Hirth' type drive teeth provide high torque in a compact envelope and positive drive without slip
- Stationary coil and magnet assembly allow high running speeds and simple connection to DC power supply without brushes.

Stationary Field for Dry Operation

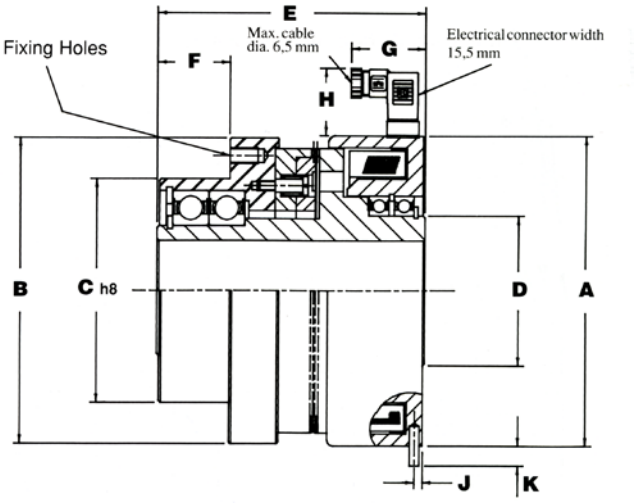
Series 5EC-P electromagnetic tooth clutches are designed for dry operation. When a DC voltage is applied, a magnetic field is generated, bringing the two toothed rings into mesh. This provides a positive slip free drive. The armature is spring-loaded to ensure rapid disengagement and zero drag when disengaged.

Typical Applications

- Machine Tools
- Heavy Machines
- Steel Production, Processing and Machining
- Lifting Gear and Container Cranes
- Synchronization Clutches for series switching of two electric motors
- Dynometers and Test Equipment
- Remotely Operated Equipment
- Metal and Material Handling
- Cardboard Box Machining

Series 5EC-P

MODEL		5EC 025P	5EC 035P	5EC 055P	5EC 070P
Performance Data					
Rated Static Torque	Nm	50	200	800	1800
	lbf ft	37	148	590	1325
Power Consumption at 20° C	Watts	19	26	63	120
Maximum Speed	rpm	5800	4000	3000	2600
Dimensional Data (all dimensions in mm)					
Standard Bores (H7) Keyways to I.S.O. 773 B.S. 4235:1972 Pt. 1 D.I.N. 6885:1968 Pt. 1; NF.E22-175 (Bores other than standard can be obtained by special order)	——	30 8 x 3.3	50 14 x 3.8	60 18 x 4.4	
	20 6 x 2.8	25 8 x 3.3	45 14 x 3.8	55 16 x 4.3	
	15 5 x 2.3	20 6 x 2.8	40 12 x 3.3	50 14 x 3.8	
Diameters(all dimensions in mm)					
A		74	98	155	209
B		74	98	153	209
C (h8)		52	75	112	145
D		35	45	75	95
Lengths					
E		77	100	133.5	165
F		15	23	36	46
G (ref)		34.5	34.5	37.2	40
H (ref)		32	32	32	32
J		2.5	2.5	5	6.5
K		8.1	10	10	10
Fixing Holes					
Number		3	3	6	6
Size		M4	M6	M8	M10
P.C.D.		65	88	135	180
Depth		8	12	14	20
Driving Teeth					
Number of Teeth		168	192	264	288



Series 56-P

Series 56-P Spring-Applied Pressure-Released Multi-Disc Brakes

Features

- Spring-applied, ensuring automatic braking in the event of a power failure
- With all working parts being enclosed, the break is suitable for external mounting, even in unfavorable environments
- Provision is made for a through flow of cooling oil to give greater heat dissipation
- External mounting to shaft ends facilitates retro-fitting to existing machinery
- The end plate can be bored to suit through-shaft installations
- Multi-disc design results in compact high-torque brake
- Only the hub in inner plates rotates, minimizing rotational inertia

Stationary Cylinder for Wet or Dry Operation

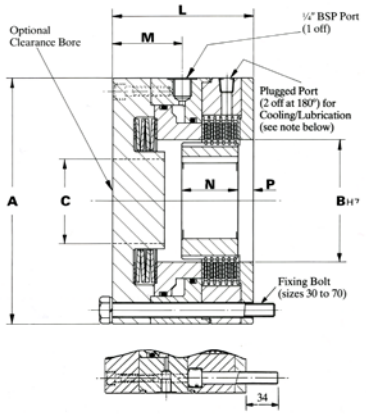
Series 56P spring-applied pressure-released brakes are designed for dynamic braking with oil in the disc-pack chamber, and can also be used dry as holding brakes. They are engaged by disc springs and disengaged by a pressure supply to the cylinder which moves the piston axially, compressing the disc springs and releasing the plates. The hub is usually fitted to the end of the shaft which is being braked.

Typical Applications

- Winches
- Mining Machines
- High Torque Required Applications
- Agricultural Machines-in the main drive and auxiliary drives (PTO) of harvesters
- Machine Tools-for speed variation at the work spindle and feed engagement
- Building Machines-for traveling and combining gears
- Rotary Actuators
- Access Platforms
- Construction Machinery

Series 56-P

MODEL			56P30	56P40	56P45	56P55	56P70	56P110	56P140
Performance Data									
Rated Static Torque with plates in oil		Nm	105	240	405	870	1460	4780	9000
		ft-lbs	78	180	300	640	1080	3525	6640
Rated dynamic Torque with plates in oil		Nm	70	160	270	580	970	3190	6000
		ft-lbs	52	120	200	425	720	2350	4425
Energy	per Engagement	kJ	10	14	19	27	45	80	155
	per Hour	kJ	300	420	570	810	1350	2400	4650
Maximum Speed		revs/min	5200	2800	2800	2200	2200	1600	1450
Inertia (kgm^2) = Table Value x 10^{-3}									
Hub and Set of Inner Plates			0.23	1.04	2.25	5.97	15.5	234	620
Weight (kg)									
Complete Unit			8,4	13,2	17	27	40	164	236
Dimensional Data (all dimensions in mm)									
Standard Bores (H7) Keyways to I.S.O. 773 B.S. 4235:1972 Pt. 1 D.I.N. 6885:1968 Pt. 1; NF.E22-175			30 8 x 3.3	50 14 x 3.8	55 16 x 4.3	75 20 x 4.9	95 25 x 5.4	170 40 x 9.4	190 45 x 10.4
(Bores other than standard can be obtained to special order)			25 8 x 3.3	45 14 x 3.8	50 14 x 3.8	65 18 x 4.4	80 22 x 5.4	150 36 x 8.4	150 36 x 8.4
Minimum Bore			18.8	31.5	34.7	41.0	63.2	90	115
Diameters (all dimensions in mm)									
	A		135	162	180	220	255	400	480
	B (H7)		50	80	90	110	140	225	280
	C Maximum		33	54	62	79	99	145	265
Lengths									
	L		85	98	102	114	128	185	200
	M		40	50	51	54	53	83	67
	N		30	30	41	40	45	90	110
	P Maximum		10	11	11	13	17	14	18
	P Minimum		4	4	4	5	9	8	14
Fixing Bolts									
Number			6	8	8	12	12	12	8
Size			M10	M10	M10	M12	M12	M16	M20
Length			110	120	120	130	150	90	100
P.C.D.			115	142	160	195	230	360	440
Tightening Torque		Nm	49	49	49	85	85	318	830
		ft-lbs	36	36	36	63	63	234	612



SAE Series

SAE Series Multiple Disc Hydraulic Bolt-On Brakes

For Wet or Dry Operation

SAE Series Hydraulic Brakes are the perfect choice for mobile equipment wheel drives, track drives, winch drives and other hydraulic and motor driven equipment where power off braking is required. SAE brakes are widely used in these mobile equipment applications where failsafe brake operation is essential for parking in the event of a power loss.

The SAE Series multi-disc, hydraulic brakes are designed as wet or dry parking brakes. Typically mounted between a hydraulic motor and a reducer, these brakes are designed to release at hydrostatic transmission pump pressure changes.

Industries served:

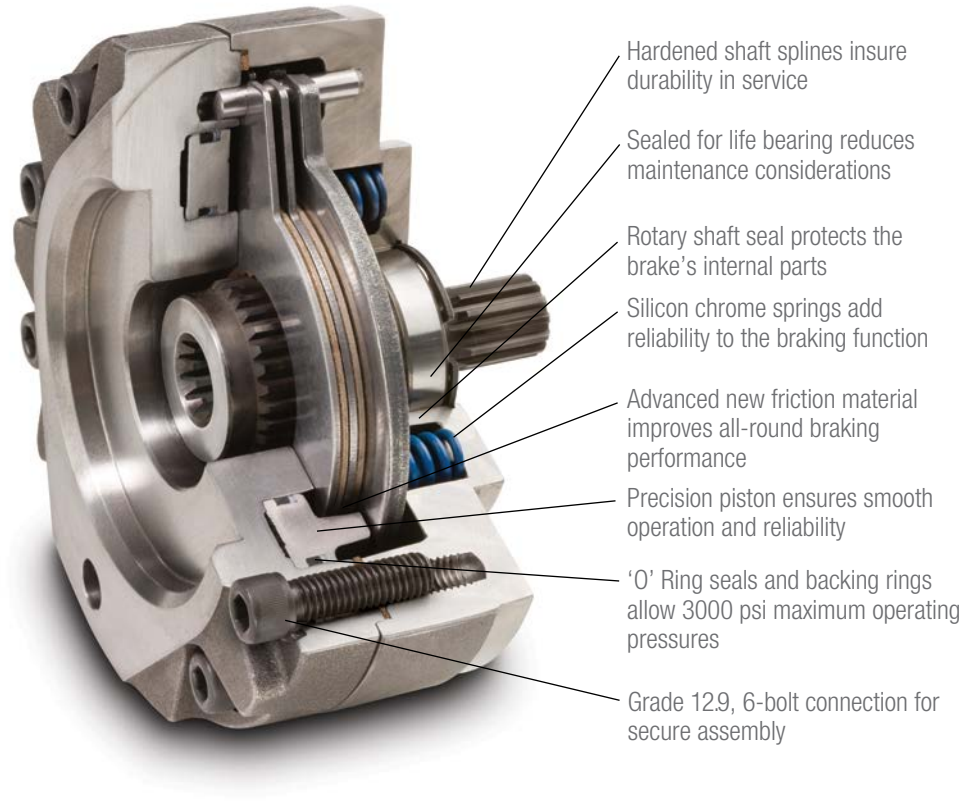
- Mining Vehicles
- Mobile Boom and Platform Lifts
- Agricultural Vehicles
- Special Purpose Vehicles

Why customers choose the SAE Series:

- Robust brake construction with high grade castings enables the brake to continuously hold 3,000 psi and 4,000 psi peak pressures
- Sealed construction keeps harmful contaminants out
- Spring applied hydraulic release operation ensures safety
- Bearing supported shaft ensures alignment for easy assembly
- Silicon chrome springs offer longer service life and high torque output
- SAE standard interface enables easy installation
- Advanced friction material provides improved all-round brake performance
- Close dynamic/static performance for smooth deceleration and E-stop when required
- Wet or dry options available for service or parking brakes
- Once they are installed, the brakes are fully sealed and can handle a variety of tough environments
- Suitable for mining applications
- SAE Series bolt-on brakes are a cost effective solution, particularly for straight fixed axle vehicles

SAE Series Multiple Disc Hydraulic Bolt-on Brakes

A Cost-Effective Brake Solution for Mobile Equipment



Matrix Brake Series	SAE Bolt-On Configuration	Rated Dry Static Torque Range lb.-in.	(Nm)	Rated Wet Static Torque Range lb.-in.	(Nm)	Full Release Pressure Range psi	(Bars)	Brake Unit Weight lb.	(kg)
AHBS	"A/B" Short	800-2,400	(90-270)	500-1,600	(56-180)	66-195	(4.6-13.4)	23	(10.4)
BHBS	"B" Short	800-2,400	(90-270)	500-1,600	(56-180)	66-195	(4.6-13.4)	21	(9.5)
AHB	"A/B"	1,000-3,600	(113-405)	1,000-2,400	(113-270)	66-195	(4.6-13.4)	27	(12.2)
BHB	"B"	1,000-3,600	(113-405)	1,000-2,400	(113-270)	66-195	(4.6-13.4)	25	(11.3)
CHB	"C"	4,000-10,000	(450-1130)	2,600-6,600	(290-945)	95-235	(6.5-16.2)	52	(23.6)
DHB	"D"	7,000-14,000	(790-1580)	4,600-9,300	(520-1050)	85-170	(5.9-11.7)	105	(47.6)

Series 1CD

Series 1CD Surestop Spring-Applied Electromagnetically-Released Caliper Brakes

Features

- Spring-applied, engages and remains engaged if power fails
- Adjustable air gap, increases pad life and allows for the accommodation of different disc thicknesses
- Floating mount minimizes drag
- Low power consumption, low running costs
- Electromagnet remote from shaft eliminates shaft magnetism

For Dry Operation

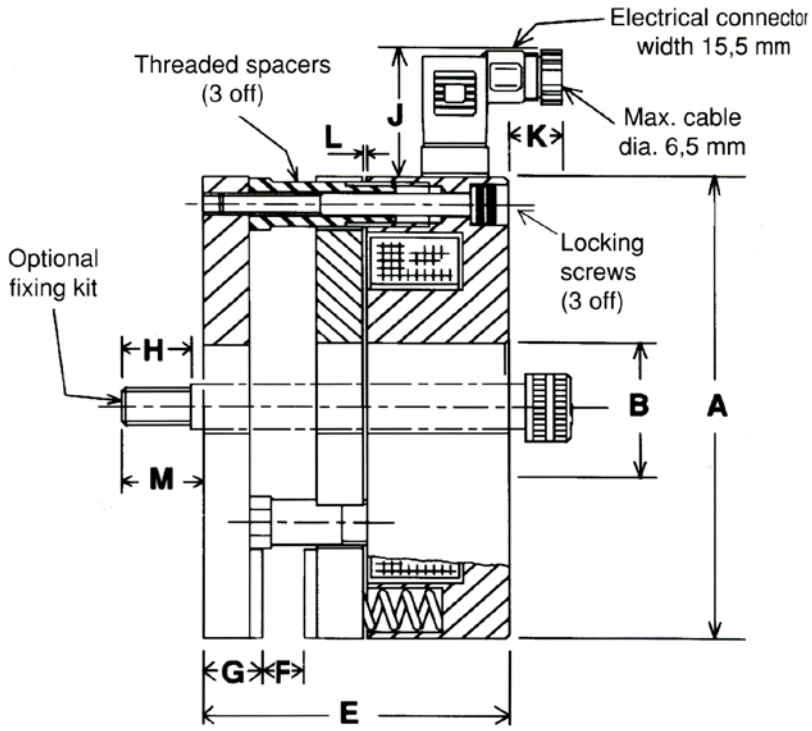
SURESTOP™ brakes are engaged by coil springs and disengaged by an electromagnetic force. The SURESTOP can be used in rotational or linear motion applications for either dynamic braking of an inertia, or as a holding brake.

Typical Applications

- Machine Tools
- Test Equipment
- Braking Linear Motion
- Positioning Systems (Automation)

Series 1CD

MODEL		1CD 040	1CD 070
Performance Data			
Static Braking Force (Bedded)	N	800	3300
Dynamic Braking Force (Bedded)	N	720	2950
Power Consumption @ 20°C	Watts	31	72
Weight	kg	4.5	18.2
Dimensional Data (all dimensions in mm)			
A		125	210
B		36	70
Lengths			
E (ref)		73	106
F (nominal disc or rail thickness)		10.0	12.7
G (ref)		14	15
H		16.4	18.4
J		32.5	32.5
K		13.0	5.6
L (Air Gap Setting)	(Nominal)	0.25	0.35
	(Max)	0.75	1.00
M (ref)		20	25
Fixing Dimensions			
Fixing Holes for Shoulder Screws (2 off)	Size	M10	M12
	P.C.D.	110	190



Series 54L

Series 54L Multi-Disc Torque Limiters

For Wet or Dry Operation

The Series 54L torque limiters prevent overload damage in an installation by slipping at an adjustable preset torque. These compact units are a simple construction and are easy to adjust. Optional overload Slip Sensor can be used to detect torque overload.

Features

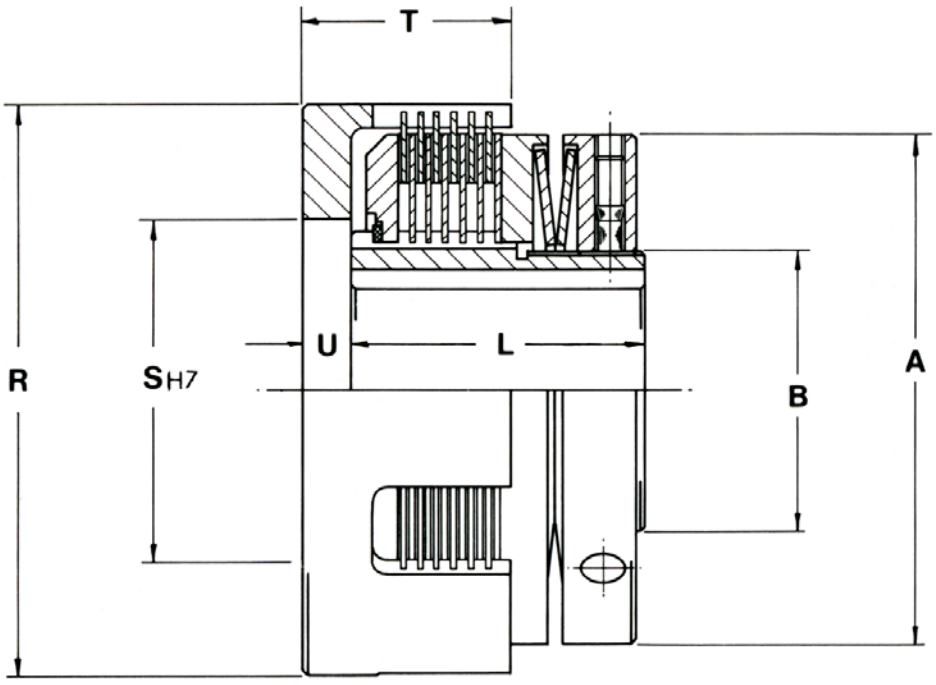
- Simple stepless adjustment allows accurate setting of any required breakaway torque up to the maximum
- Multi-disc design results in contact high torque unit
- Large friction area gives extended plate life
- Bi-directional operation
- Suitable for horizontal or vertical installation
- With optional overload Slip Sensor, detection and signaling of slip is achieved

Typical Applications

- Conveyors
- Pulsating Drives with High Peaks
- Mining
- Bulk Material Handling

Series 54L

MODEL		54L25	54L30	54L40	54L50	54L60	54L70
Performance Data							
Maximum Rated Breakaway Torque in Oil	Nm	30	99	264	460	680	1220
	lbf ft	22	73	195	340	487	900
Weight (kg)							
Complete Unit		0.8	1.4	2.5	3.6	5.3	7.8
Dimensional Data (all dimensions in mm)							
Standard Bores (H7) and Keyways to I.S.O. 773 (Bores other than standard can be obtained by special order)		20 6 x 2.8	25 8 x 3.3	40 12 x 3.3	50 14 x 3.8	60 18 x 4.4	75 20 x 4.9
Minimum Bore		11	19	25	31.5	34.5	41
Diameters (all dimensions in mm)							
A		64	76	101	126	151	176
B		36	42	56	72	85	100
Lengths							
L		35	48	58	67	72	92
Lengths							
R		73	86	113	142	169	196
S (H7)		40	52	68	82	98	112
T		27	32	39	44	50	58
U		8.5	8	10	11	14.5	15



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The power of one, the strength of many.

Other product solutions from

Altra Industrial Motion

www.altramotion.com

Our comprehensive product offering is comprised of nine major categories including electromagnetic clutches and brakes, heavy duty clutches and brakes, overrunning clutches, gearing, engineered and precision couplings, engineered bearing assemblies, linear products, belted drives and air motors. With thousands of product solutions available, Altra provides true single source convenience while meeting specific customer requirements. Many major OEM's and end users prefer Altra products as their No.1 choice for performance and reliability.

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Warner Electric
Inertia Dynamics
Matrix International

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Wichita Clutch
Twiflex Limited
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Svendborg Brakes

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Bauer Gear Motor

Linear Products

Warner Linear

Engineered Bearing Assemblies

Kilian Manufacturing

Precision Couplings and Air Motors

Huco Dynatork

Altra Industrial Motion

All Customer Service phone numbers shown in bold

Belted Drives and Sheaves

TB Wood's

Belted Drives

Chambersburg, PA - USA
1-888-829-6637 – Press #5

For application assistance: 1-888-829-6637 – Press #7

Couplings

Ameridrives Couplings

Mill Spindles, Ameriflex, Ameridisc

Erie, PA - USA
1-814-480-5000

Gear Couplings

San Marcos, TX - USA
1-800-458-0887

Ameridrives Power Transmission

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1-920-593-2444

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+44 (0) 1924 460801

Boksburg, South Africa
+27(0) 11 918 4270

Guardian Couplings

Engineered Flywheel Couplings, Engine Housings and Pump Mounts, Flexible Shaft Couplings

Michigan City, IN - USA
1-219-874-5248

Huco Dynatork

Precision Couplings and Air Motors

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Chambersburg, PA - USA
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Flexible Couplings, Bearing Isolators, and Coupling Guards

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Elastomeric Couplings

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For application assistance: 1-888-829-6637 – Press #7

General Purpose Disc Couplings

San Marcos, TX - USA
1-888-449-9439

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Inertia Dynamics

Spring Set Brakes; Power On and Wrap Spring Clutch/Brakes

New Hartford, CT - USA
1-800-800-6445

Matrix International

Electromagnetic Clutches and Brakes, Pressure Operated Clutches and Brakes

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+44 (0) 1356 602000

New Hartford, CT - USA
1-800-825-6544

Warner Electric

Electromagnetic Clutches and Brakes

New Hartford, CT - USA
1-800-825-6544

For application assistance: 1-800-825-9050

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+33 (0)2 41 21 24 24

Precision Electric Coils and Electromagnetic Clutches and Brakes

Columbia City, IN - USA
1-260-244-6183

Engineered Bearing Assemblies

Kilian Manufacturing

Engineered Bearing Assemblies

Syracuse, NY - USA
1-315-432-0700

Gearing

Bauer Gear Motor

Geared Motors

Esslingen, Germany
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Somerset, NJ - USA
1-732-469-8770

Boston Gear

Enclosed and Open Gearing, Electrical and Mechanical P.T. Components

Charlotte, NC - USA
1-800-825-6544

For application assistance: 1-800-816-5608

Nuttall Gear and Delroyd Worm Gear

Worm Gear and Helical Speed Reducers

Niagara Falls, NY - USA
1-716-298-4100

Heavy Duty Clutches and Brakes

Industrial Clutch

Pneumatic and Oil Immersed Clutches and Brakes

Waukesha, WI - USA
1-262-547-3357

Svendborg Brakes

Industrial Brakes and Brake Systems

Vejstrup, Denmark
+45 63 255 255

Twiflex Limited

Caliper Brakes and Thrusters

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Twickenham, England
+44 (0) 20 8894 1161

Heavy Duty Clutches and Brakes Cont.

Wichita Clutch

Pneumatic Clutches and Brakes

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Bedford, England
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Linear Products

Warner Linear

Linear Actuators

Belvidere, IL - USA
1-800-825-6544

For application assistance: 1-800-825-9050

Saint Barthélémy d'Anjou, France
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Overrunning Clutches

Formsprag Clutch

Overrunning Clutches and Holdbacks

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For application assistance: 1-800-348-0881 – Press #2

Marland Clutch

Roller Ramp and Sprag Type Overrunning Clutches and Backstops

South Beloit, IL - USA
1-800-216-3515

Stieber Clutch

Overrunning Clutches and Holdbacks

Heidelberg, Germany
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