



**MAGTROL**



# **HYSTERESIS BRAKE**

## **Metric Product Guide**

**PROVIDING TECHNICAL SOLUTIONS TO YOUR TENSION CONTROL PROBLEMS**

---

**Frictionless**



**Longer Expected Life**



**Superior Repeatability**



**Less Maintenance**



**Less Downtime**



# Pioneers in Hysteresis Torque Control

Founded in 1953, Magtrol, Inc. pioneered the technology of applying the principles of magnetic hysteresis to meet the critical needs for reliable, smooth and adjustable torque control. This pioneering effort led to the development of Magtrol's Hysteresis Brake and Clutch products, which feature superior torque repeatability, longer expected life, a broad speed range and lower operating costs. A leading edge company, Magtrol serves a wide array of torque and tension control applications and continues to develop innovations in hysteresis technology. This catalog features our standard metric brake products. Additional brake and clutch products are currently available in standard English dimensions and can be modified to meet metric requirements. For more details and information, please contact your local representative or Magtrol directly.

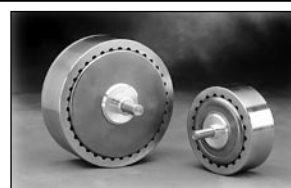
---

**Principles and Advantages of Hysteresis.....page 3**



---

**Hysteresis Brakes and Applications ..... pages 4-5**



---

**Matched Brakes and Applications ..... pages 6-7**



---

**Large Bore Brakes and Applications ..... pages 8-9**



---

**Hysteresis Clutches and Applications..... pages 10-11**



---

**How to Select a Brake or Clutch..... pages 12-13**



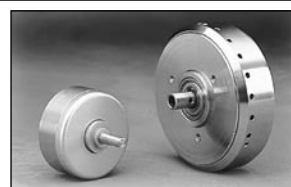
---

**Special Designs and Modifications..... page 14**



---

**Options and Accessories ..... page 15**





# Principles & Advantages of Hysteresis

## OPERATING PRINCIPLES OF HYSTERESIS

### OVERVIEW

The hysteresis effect in magnetism is applied to torque control by the use of two basic components—a reticulated pole structure and a specialty steel rotor/shaft assembly—fastened together but not in physical contact. Until the field coil is energized, the drag cup can spin freely on the ball bearings. When a magnetizing force from either a field coil or magnet is applied to the pole structure, the air gap becomes a flux field. The rotor is magnetically restrained, providing a braking action between the pole structure and rotor.

Because torque is produced strictly through a magnetic air gap, without the use of friction or shear forces, Magtrol Hysteresis Brakes provide absolutely smooth, infinitely controllable torque loads, independent of speed, and they operate quietly without any physical contact of interactive members. As a result, with the exception of shaft bearings, no wear components exist.

### CONTROL

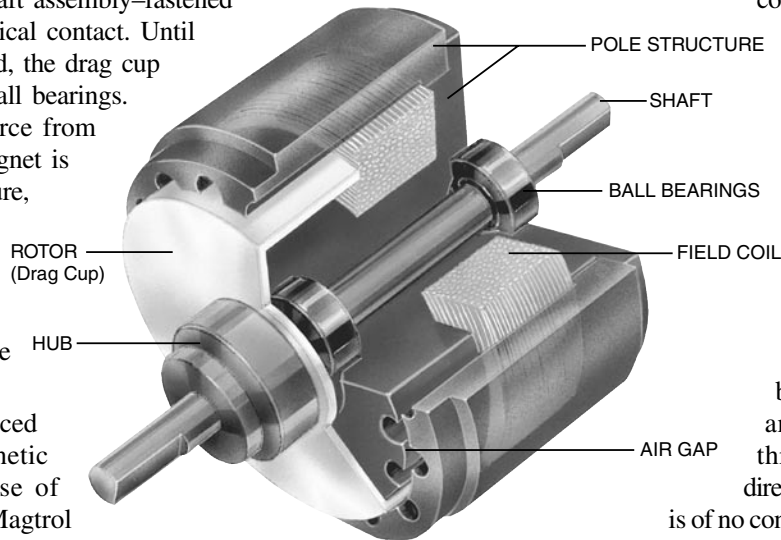
In an electrically operated Hysteresis Brake, adjustment and control of torque is provided by a field coil. This allows for complete control of torque by

adjusting DC current to the field coil. Adjustability from a minimum value (bearing drag) to a maximum value of rated torque is possible. Additional torque in the range of 15-25% above rated torque may be available on some brakes.

The amount of braking torque transmitted by the brake is proportional to the amount of current flowing through the field coil. The direction of current flow (polarity)

is of no consequence to the operation of the brake. For optimum torque stability, a DC

supply with current regulation is recommended. This will help to minimize torque drift attributable to changes in coil temperature and in-line voltage, which can result in changes in coil current, and consequently, in torque.



## ADVANTAGES OF HYSTERESIS DEVICES

### BROAD SPEED RANGE

Magtrol hysteresis devices offer the highest slip speed range of all electric torque control devices. Depending on size, kinetic power requirements and bearing loads, many Magtrol Brakes can be operated at speeds in excess of 10,000 rpm. In addition, full torque is available even at zero slip speed and torque remains absolutely smooth at any slip speed.

### LONG, MAINTENANCE-FREE LIFE

Magtrol Hysteresis Brakes produce torque strictly through a magnetic air gap, making them distinctly different from mechanical-friction and magnetic particle devices. Because hysteresis devices do not depend on friction or shear forces to produce torque, they do not suffer the problems of wear, particle aging, and seal leakage. As a result, hysteresis devices typically have life expectancies many times that of friction and magnetic particle devices.

### LIFE CYCLE COST ADVANTAGES

While the initial cost of hysteresis devices may be the same or slightly more than that of their counterparts, the high cost of replacing, repairing and maintaining friction and magnetic particle devices often makes hysteresis devices the most cost-effective means of tension and torque control available.

### SUPERIOR TORQUE REPEATABILITY

Because torque is generated magnetically without any contacting parts or particles, Hysteresis Brakes provide superior torque repeatability. Friction and magnetic particle devices are usually subject to wear and aging with resultant loss of repeatability. Magtrol devices will repeat their performance precisely, to ensure the highest level of process control.

### OPERATIONAL SMOOTHNESS

Because they do not depend on mechanical friction or particles in shear, Hysteresis Brakes are absolutely smooth at any slip ratio. This feature is often critical in wire drawing, packaging and many other converting applications.

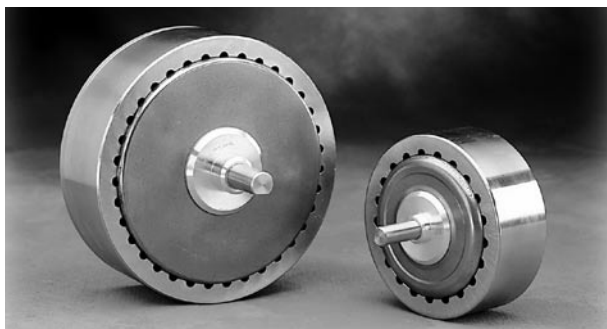
### EXCELLENT ENVIRONMENTAL STABILITY

Magtrol hysteresis devices can withstand significant variation in temperature and other operating conditions. In addition, because they have no particles or contacting active parts, Hysteresis Brakes are extremely clean. Magtrol devices are used in food and drug packaging operations, in clean rooms, and environmental test chambers.



# Hysteresis Brakes

## SPECIFICATIONS



Pure Hysteresis Brakes produce torque strictly through a magnetic air gap without the use of magnetic particles or friction components. This method of braking provides far superior operating characteristics (smoother torque, longer life, superior repeatability, high degree of controllability, and less maintenance and down time) which make them the preferred choice for precise tension control during the processing of nearly any material, web or strand.

## RATINGS

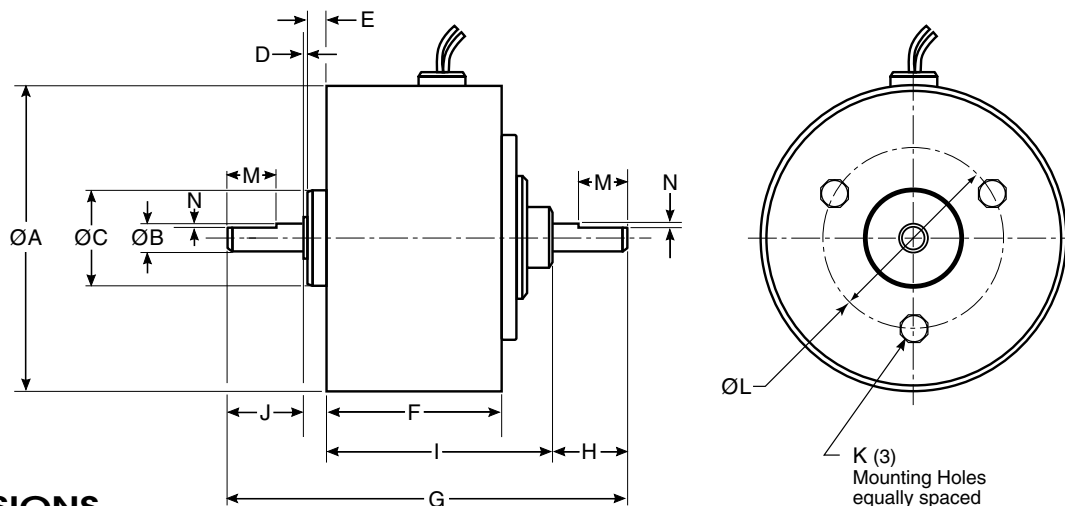
Model	Min. Torque at Rated Current Nm	Rated Current mA	Resistance at 25 °C ±10% Ω	Voltage* VDC	Nominal Power W	Max. Speed rpm	Kinetic Power Ratings**		Drag Torque De-energized @ 1000 rpm Nm	External Inertia kg·cm <sup>2</sup>	Angular Acceleration rad/s <sup>2</sup>
							5 Minutes W	Continuous W			
HB-3M-2	0,02	145	171	25,0	3,59	20000	20	5	$3,53 \times 10^{-4}$	$4,30 \times 10^{-3}$	46600
HB-10M-2	0,07	133	180	24,0	3,18	20000	35	8	$7,06 \times 10^{-4}$	$4,35 \times 10^{-2}$	16100
HB-20M-2	0,14	217	120	26,0	5,60	20000	50	12	$7,77 \times 10^{-4}$	$4,58 \times 10^{-2}$	30600
HB-50M-2	0,35	253	95	24,0	6,10	15000	90	23	$1,55 \times 10^{-3}$	$1,67 \times 10^{-1}$	21000
HB-140M-2	1,00	253	95	24,0	6,10	12000	300	75	$5,42 \times 10^{-3}$	$1,00 \times 10^0$	9620
HB-250M-2	1,75	270	96	25,9	7,00	10000	450	110	$7,77 \times 10^{-3}$	$3,45 \times 10^0$	5680
HB-450M-2	3,20	442	50	22,1	9,80	8000	670	160	$1,51 \times 10^{-2}$	$7,50 \times 10^0$	4290
HB-750M-2	5,00	383	60	23,0	8,80	7000	1000	200	$5,00 \times 10^{-2}$	$1,45 \times 10^1$	3450
HB-1750M-2	§ 13,00	600	52	31,2	13,00	6000	2400	350	$9,18 \times 10^{-2}$	$6,25 \times 10^1$	2070
HB-3500M-2	§§ 26,00	1200	26	31,2	26,00	6000	4800	600	$1,36 \times 10^{-1}$	$1,25 \times 10^2$	2070

\* 90 volt and non-standard coil voltages are available. 12 VDC coils are available on HB-3M-2 through HB-450M-2 models.

\*\* Kinetic power ratings are maximum values based on limiting coil and/or bearing temperature to approximately 100 °C, and should not be exceeded. Actual values in service may vary ±50% depending on mounting, ventilation, ambient temperature, etc.

§ 13 Nm is attainable @ approx. 600 mA. This value may decrease to 12,36 Nm if the brake is powered by any power supply or controller limited to 500 mA.

§§ 26 Nm is attainable @ approx. 1200 mA. This value may decrease to 24,72 Nm if the brake is powered by any power supply or controller limited to 1000 mA.



## DIMENSIONS

Model	ØA	ØB	ØC	D	E	F	G	H	I	J	K	ØL	M	N	Weight
HB-3M-2	31,8	3,00	10,00	0,6	2,0	18,6	42,0	8,0	23,6	8,0	M2,5 × 4	19,0	---	---	0,11 kg
HB-10M-2	45,7	5,00	14,00	0,7	2,4	20,7	52,6	12,0	25,5	12,0	M2,5 × 5	19,0	9,5	0,7	0,22 kg
HB-20M-2	50,0	5,00	14,00	0,7	1,8	23,5	55,8	13,0	27,3	13,0	M3 × 6	21,0	9,5	0,7	0,29 kg
HB-50M-2	60,0	7,00	17,00	0,7	2,0	39,7	76,5	15,0	42,8	16,0	M4 × 8	25,0	10,0	0,7	0,78 kg
HB-140M-2	92,0	10,00	22,00	0,8	2,5	39,0	100,0	25,0	50,8	21,0	M4 × 9	38,0	16,0	1,0	1,85 kg
HB-250M-2	112,7	12,00	28,00	0,7	3,9	50,4	123,1	27,0	64,2	27,0	M5 × 10	45,0	keyway		3,50 kg
HB-450M-2	137,7	15,00	32,00	0,9	3,5	52,4	131,5	27,0	73,0	27,0	M5 × 10	60,0	keyway		5,86 kg
HB-750M-2	158,0	17,00	35,00	0,9	4,0	73,0	176,0	38,0	95,0	38,0	M6 × 10	70,0	keyway		12,85 kg
HB-1750M-2	226,1	25,00	52,00	1,2	6,0	76,2	213,0	50,0	106,0	50,0	M6 × 19	100,0	keyway		24,50 kg
HB-3500M-2*	226,0	25,00	N/A	N/A	N/A	152,4	312,0	50,0	212,0	50,0	N/A	N/A	keyway		50,00 kg

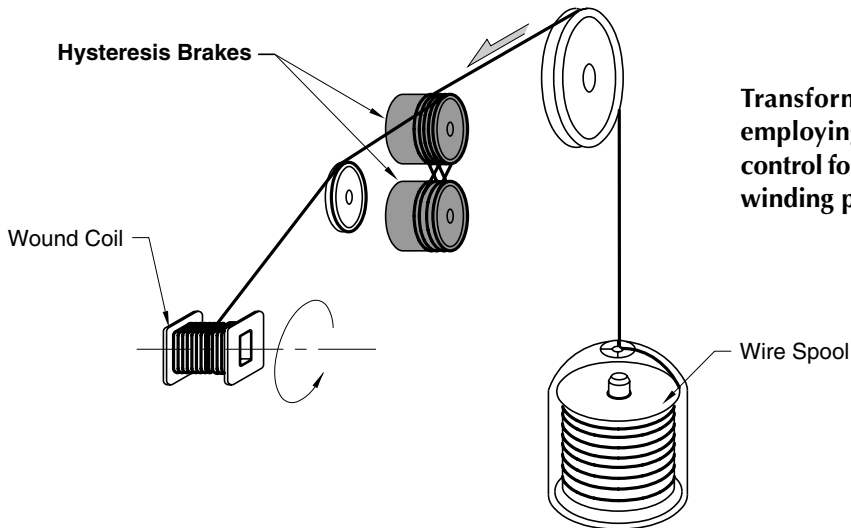
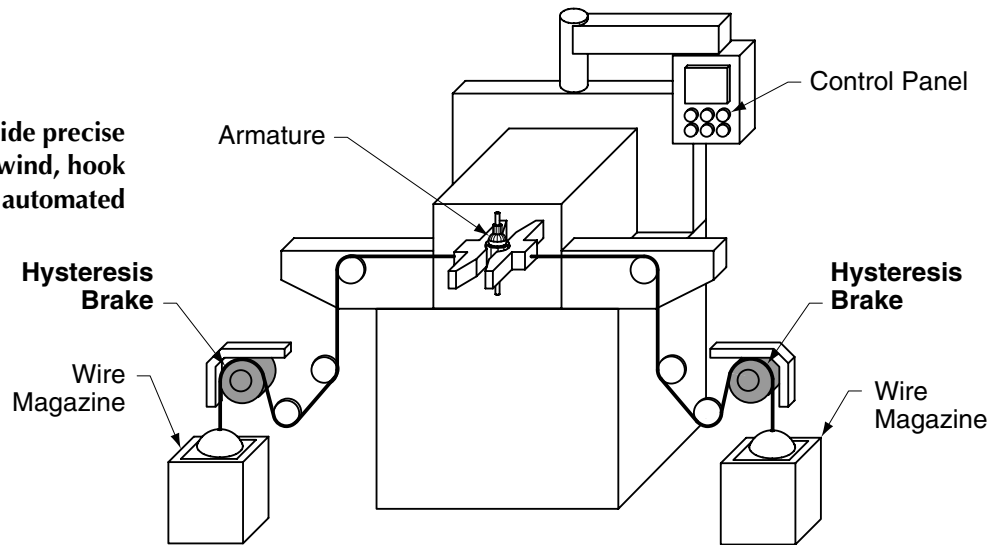
\* The HB-3500M-2 is a double brake. Magtrol manufactures double brakes to increase torque capability. For more information and a drawing, contact Magtrol.



# Hysteresis Brakes

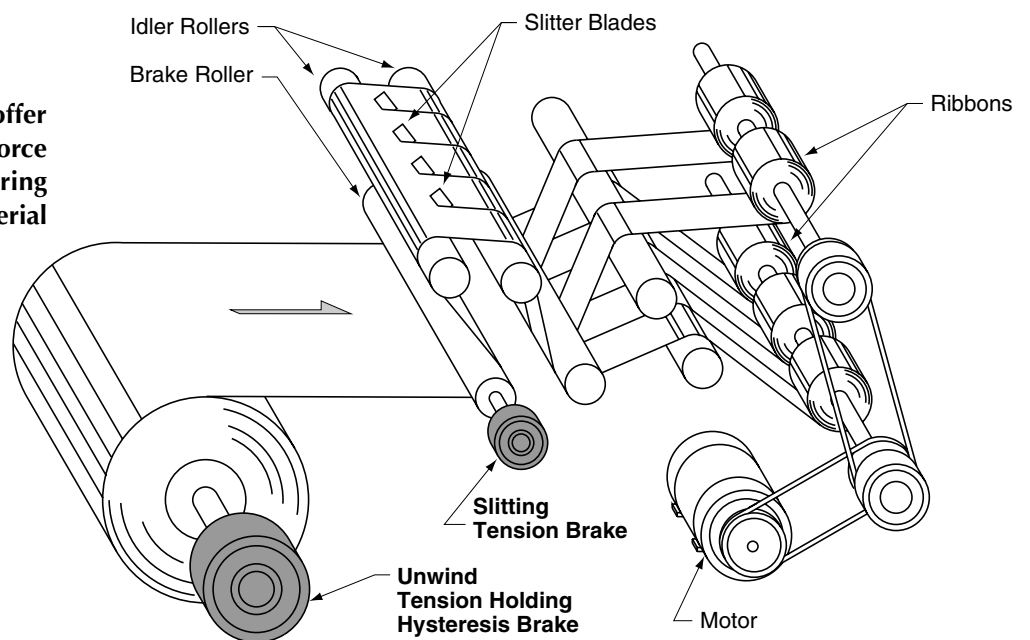
## APPLICATIONS

Magtrol Hysteresis Brakes provide precise control of wire tension during wind, hook and cut operation of high speed automated winding machines.



Transformer and coil winding operations employing Hysteresis Brakes in open loop control for maintaining precise tension during winding process.

Magtrol Hysteresis Brakes offer frictionless, non-breakaway force for tensioning materials during slitting and many other material processing operations.





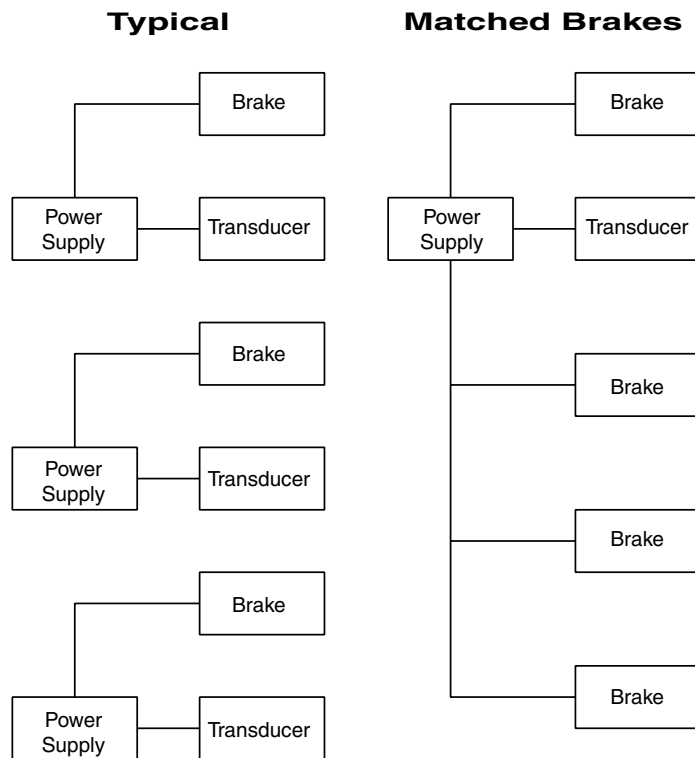
# Matched Brakes

## DESCRIPTION AND COMPARISON



In tension control applications that have multiple webs or multiple strands, it is very desirable to match the tension of each web or strand. This is most commonly attained by using a closed loop servo control system which controls current to a braking device through the use of dancer arms, follower arms and in-line tension transducers. The problem with such systems is that each web or strand must be individually controlled, increasing the cost and complicating the system with multiple sensors and power supplies.

Magtrol has developed a system to assure that every brake of a given model designation will be matched, at a predetermined torque and current point, to other brakes of the same model designation regardless of material and manufacturing tolerances. Each brake will be matched at the selected match point to within a tolerance of  $\pm 1\%$ . The maximum deviation in torque from brake to brake at any point along their torque/current curve (from 0 torque up to the selected matched torque point) will be less than  $\pm 4\%$  of the selected matched torque value. With this level of matching, a system with multiple tension rollers would provide tension consistency within  $\pm 1\%$  if set at the matched point with all brakes receiving the same current. The matched point can be any value larger than 50% up to 100% of rated torque, which allows the brakes to be optimized for specific applications.



### RATINGS

All standard metric brakes are also available in matched brake configurations, with the exception of the HB-3500M Series. Technical data for these brakes is identical to that of its standard counterpart (see page 4). For example, the MHB-140M-2 has the same ratings as the HB-140M-2.

### ORDERING INFORMATION

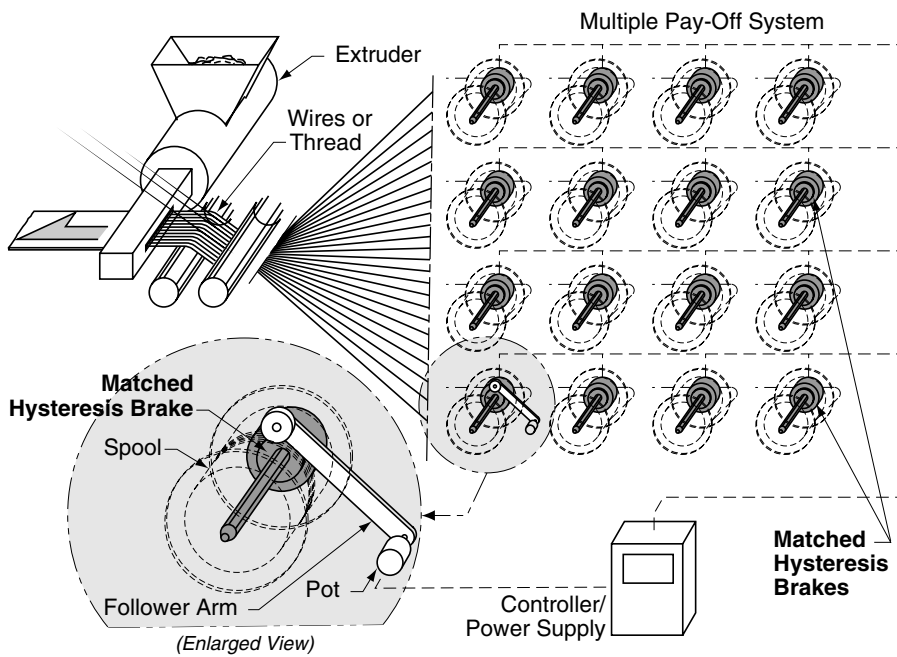
All single Hysteresis Brakes can be matched. When ordering, replace the HB in the Hysteresis Brake model number (see page 4) with MHB.

**EXAMPLE:**      Standard              Matched  
                                 HB-140M-2              MHB-140M-2

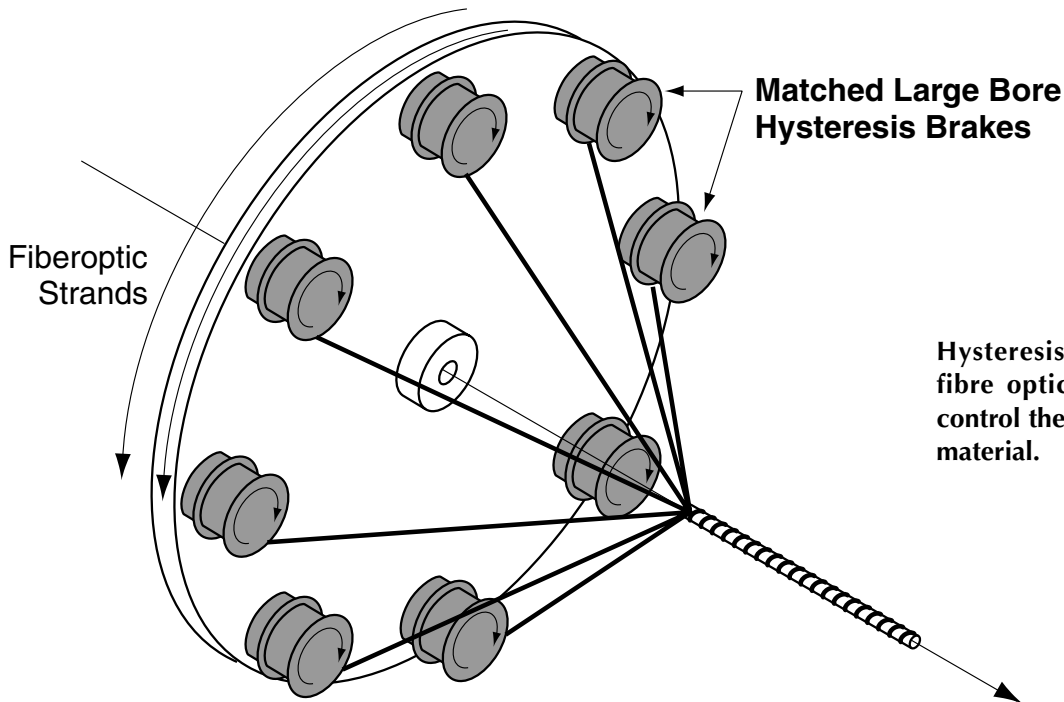


# Matched Brakes

## APPLICATIONS



Magtrol Matched Hysteresis Brakes used in a multiple pay-off system where one sensor controls tension in the system. Due to specially calibrated "matched" brakes, it is possible to hold each pay-off tension within  $\pm 1\%$  at matched point value.

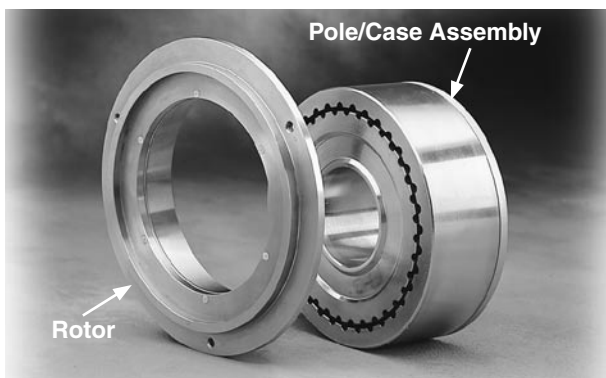


Hysteresis Brakes, installed in a fibre optic stranding machine to control the tension of the wrapping material.



# Large Bore Brakes

## SPECIFICATIONS



For many years Magtrol has designed Hysteresis Brakes with large bores, and without a shaft or bearings. These brakes are used for superior tension control for helical wrapping, braiding and other feed through applications. Magtrol Large Bore Brakes are used in machines for manufacturing cable, wire, fiber optic cable, rope and tape, among others. Magtrol Large Bore Brakes provide smooth, repeatable torque, largely independent of speed. Maximum speeds up to 8000 rpm are available.

These brakes consist of two primary parts: a pole/case assembly and a rotor. The pole/case assembly is usually mounted in a stationary position within the machine, while the rotor is shaft mounted concentrically within the pole/case assembly.

The pole/case assembly and rotor are manufactured in standard bore sizes and hole patterns. Variations to the standard dimensions can be made based on customer requirements. Certain modifications to the brake, such as a larger bore dimension, may impact its performance ratings.

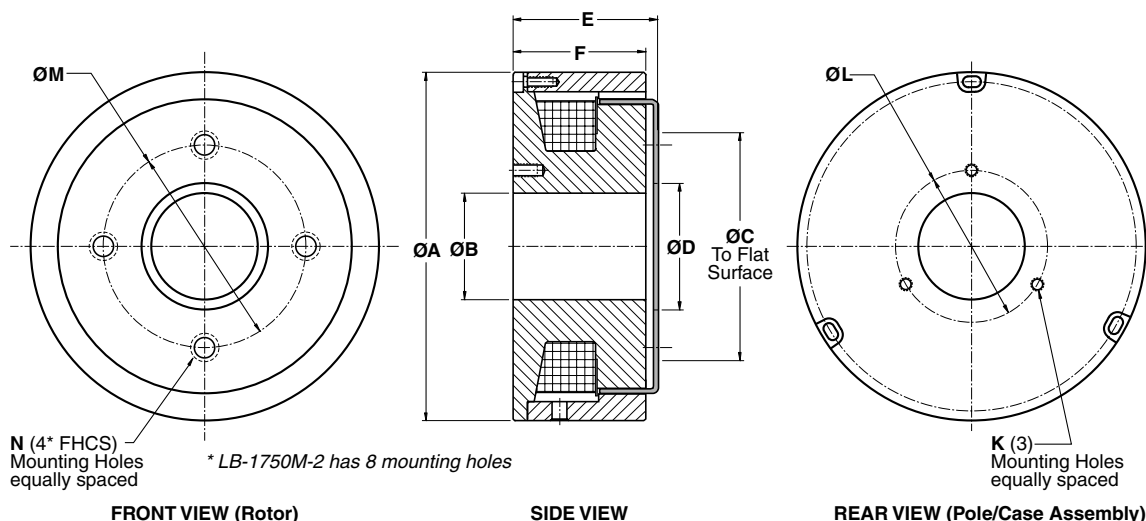
Additional options available include rotor mounting flanges, power supplies, torque-current curves and other coil voltages. Contact Magtrol for more information.

## RATINGS

Model	Min. Torque at Rated Current	Rated Current	Resistance at 25 °C ±10%	Voltage	Nominal Power	Max. Speed*	Kinetic Power Ratings**	
							5 Minutes	Continuous
	Nm	mA	Ω	VDC	W	rpm	W	W
LB-250M-2	1,50	270	95	25,6	6,99	3000	450	110
LB-450M-2	3,00	442	50	22,1	9,80	2500	670	160
LB-750M-2	5,00	383	60	23,0	8,82	2000	1000	200
LB-1750M-2	12,00	500	52	26,0	13,00	1800	2400	350

\* Higher speeds available on special basis.

\*\* Kinetic power ratings are maximum values based on limiting coil and/or bearing temperature to approximately 100 °C, and should not be exceeded. Actual values in service may vary ±50% depending on mounting, ventilation, ambient temperature, etc.



## DIMENSIONS

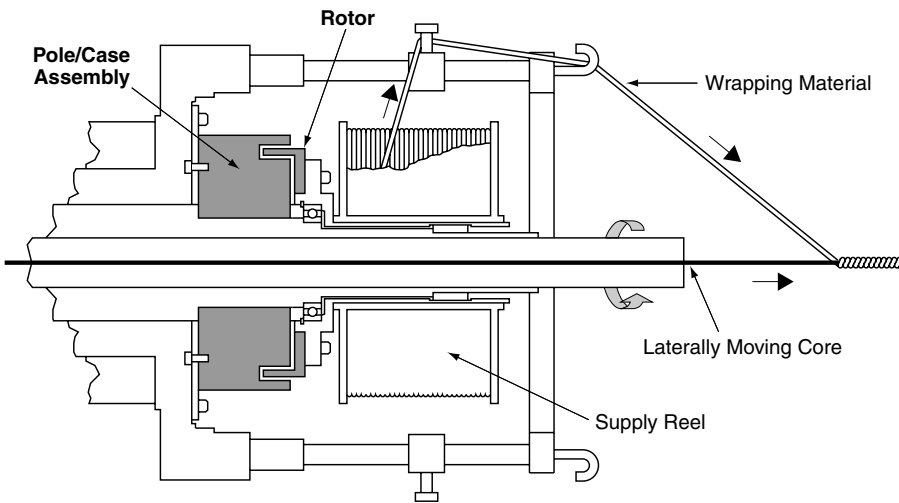
Model	ØA	ØB*	ØC	ØD	E	F	K	ØL	ØM	N	Weight
LB-250M-2	112,7	28,0	70,0	36,0	54,5	50,4	M5 × 10,0	45,0	54,0	M4	3,00 kg
LB-450M-2	137,7	42,0	90,0	50,0	57,0	52,4	M5 × 10,0	60,0	80,0	M4	5,30 kg
LB-750M-2	158,0	50,0	110,0	60,0	80,0	72,8	M6 × 10,0	70,0	90,0	M5	10,00 kg
LB-1750M-2	226,0	80,0	160,0	120,0	83,0	76,0	M6 × 19,0	100,0	140,0	M5	21,00 kg

\* Slightly larger bore diameters can be provided but will result in reduced torque ratings.



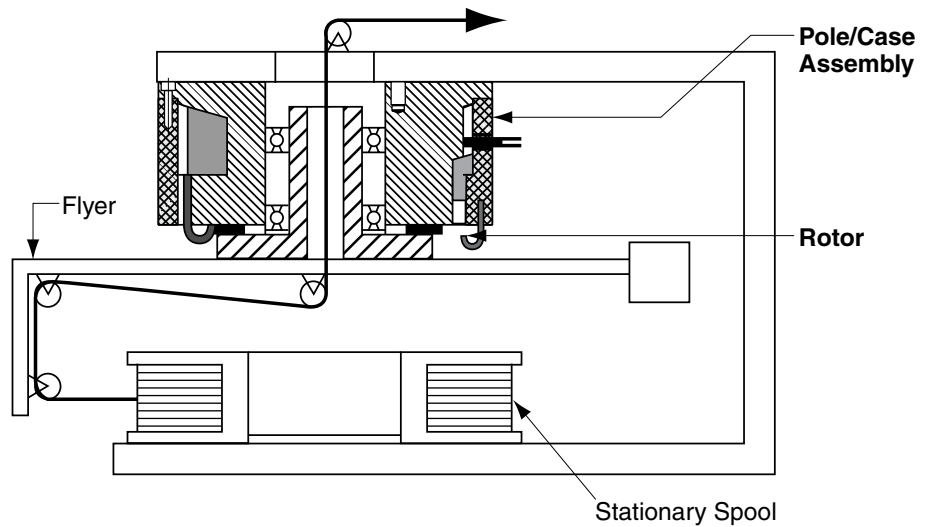
# Large Bore Brakes

## APPLICATIONS



Typical helical-wrapping operation in which a rotating spindle winds onto a laterally moving core with the supply reel tension being controlled by a Magtrol Large Bore Hysteresis Brake.

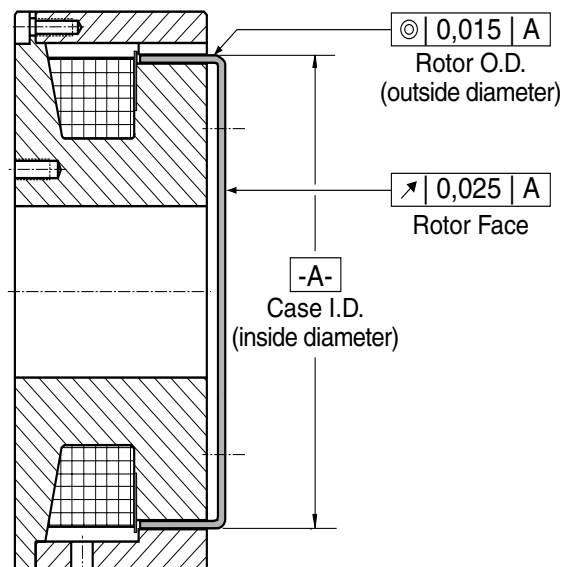
**Flyer Control:** The brake pole/case assembly is bolted to the machine frame and a hollow shaft, with bearings, is mounted in the pole. The hollow shaft, rotor and flyer bobbin form one assembly to tension the winding material.



## OPERATING CONSIDERATIONS

The pole/case assembly and the rotor are shipped as separate items, and it is the responsibility of the machine designer to assure proper alignment and concentricity of the mating brake parts in the final assembly. The mounting structure for these parts must be such that concentricity between the rotor O.D. (outside diameter) and the case I.D. (inside diameter), which forms the outer segment of the air gap, does not exceed 0,015 mm. Additionally, the run-out of the rotor face should not exceed 0,025 mm.

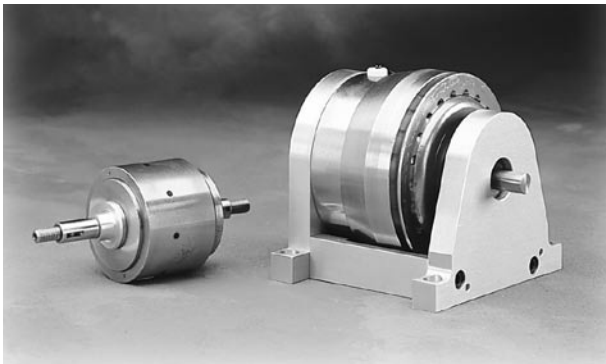
At the standard bore diameters, actual brake torque at rated current will normally exceed the minimum guaranteed values. Larger bore diameters can be provided, however, reductions in performance will result as bore diameters are increased. Any modification to a Large Bore Brake should be reviewed in detail with Magtrol before ordering.





# Hysteresis Clutches

## SPECIFICATIONS



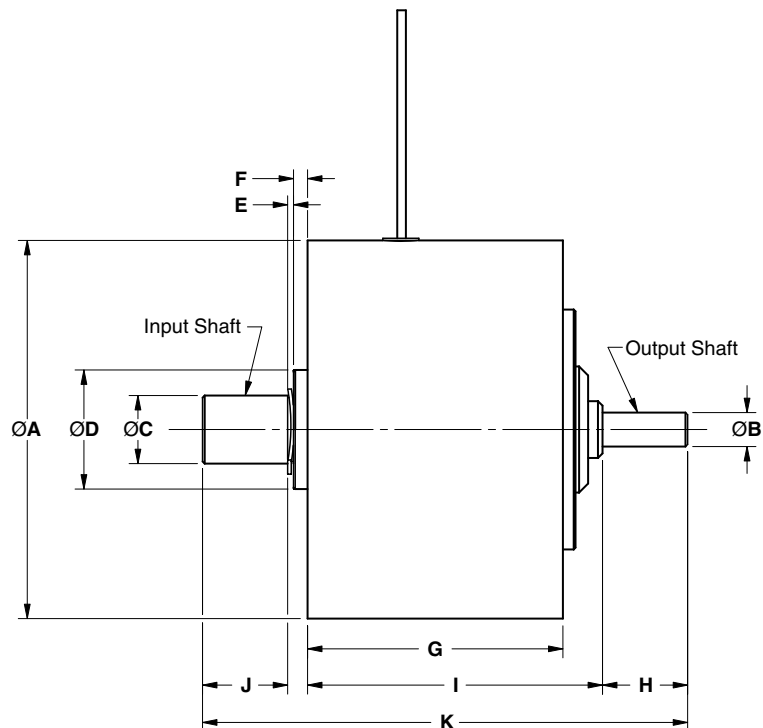
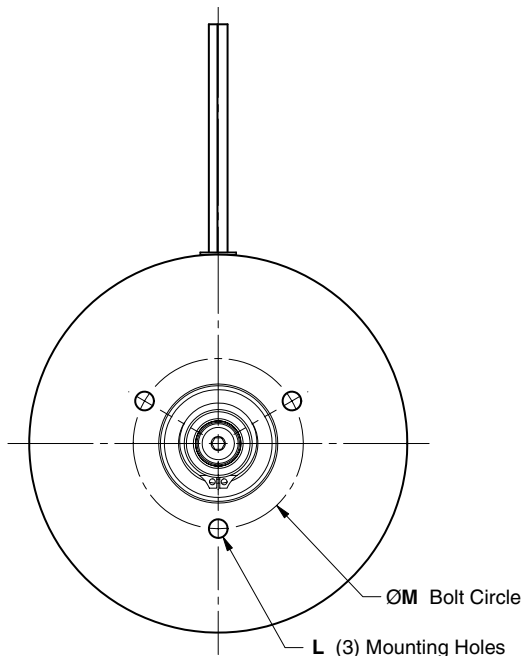
Like Magtrol's Hysteresis Brake, the Hysteresis Clutch develops torque strictly through a magnetic air gap, ensuring an absolutely smooth transmission of torque from the drive unit to the driven element. Designed to be powered without the use of brushes or slip rings, and being a pure hysteresis device that does not rely on friction elements or magnetic particles, there is never any fear of contamination due to wear particles or leaky seals. This makes Magtrol Hysteresis Clutches and Brakes ideal for use in food processing and clean room environments.

## RATINGS

Model	Min. Torque at Rated Current	Rated Current	Resistance at 25 °C ±10%	Voltage*	Nominal Power	Max. Speed	Kinetic Power Ratings**		Inertia	
							5 Minutes	Continuous	Input Shaft	Output Shaft
	Nm	mA	Ω	VDC	W	rpm	W	W	kg·cm <sup>2</sup>	kg·cm <sup>2</sup>
HCF-32M	0,23	332	72,5	24,0	8,0	3600	90	25	0,984	0,089
HCF-250M	1,80	415	60,0	24,9	10,3	3600	450	110	25,560	2,760

\* Other coil voltages are available.

\*\* Kinetic power ratings are maximum values based on limiting coil and/or bearing temperature to approximately 100 °C, and should not be exceeded. Actual values in service may vary ±50% depending on mounting, ventilation, ambient temperature, etc.



## DIMENSIONS

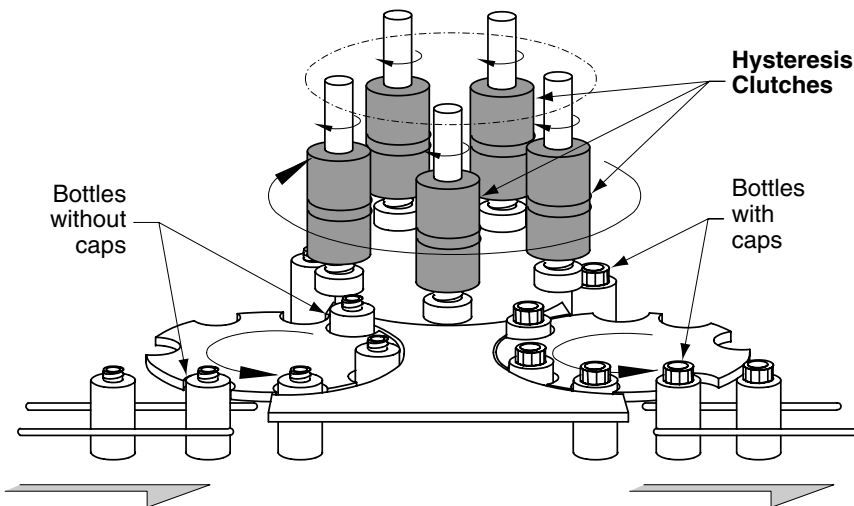
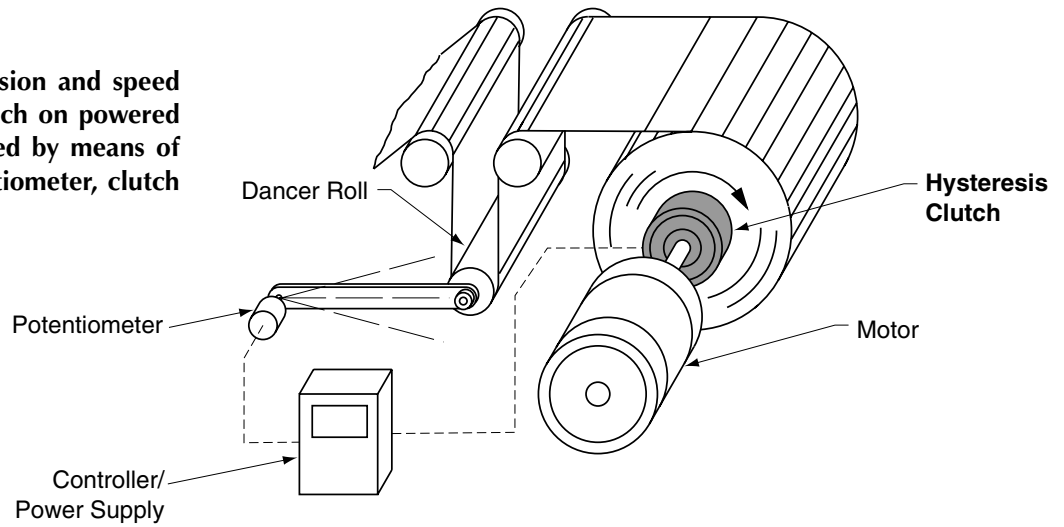
Model	ØA	ØB	ØC	ØD	ØE	F	G	H	I	J	K	ØL	M	Weight
HCF-32M	67	6	12	21	1	2,5	45	15	52,0	15,0	85,5	M4 × 8,0	30	1,0 kg
HCF-250M	127	12	20	42	2	6,0	70	27	83,5	25,2	143,3	M5 × 10,0	60	5,6 kg



# Hysteresis Clutches

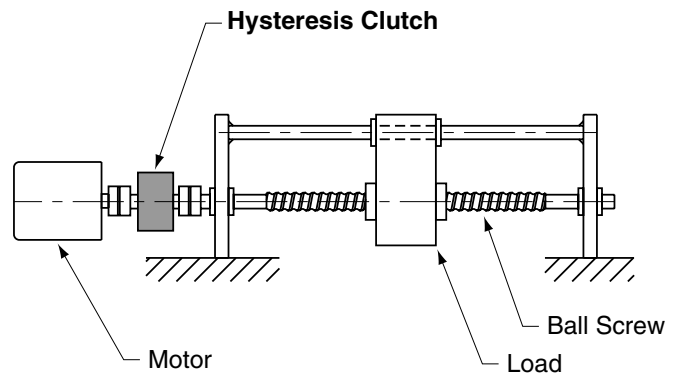
## APPLICATIONS

Closed-loop winding tension and speed control – Hysteresis Clutch on powered rewind. Tension controlled by means of dancer roll with potentiometer, clutch and controller



Magtrol Hysteresis Clutches provide precise control of torque for capping, bolting and other screw applications. Their clean particle-free nature eliminates fear of contamination, making them ideal for use in food processing and clean room environments.

Torque limiting Hysteresis Clutch arrangement prevents over torque and provides precise, stable and smooth application of torque.





# How to Select a Brake or Clutch

To properly size a brake or clutch, the operating parameters of MAXIMUM TORQUE (T), ANGULAR VELOCITY ( $\omega$ ), and KINETIC POWER (P) have to be determined. Once calculated, these parameters can be used to select the proper size brake from the technical data provided on the ratings specifications tables found in this catalog. These parameters are easily calculated from system operating requirements such as: total web or strand tension (F); the radius of the full reel, roller, pulley, etc. (d/2); and linear velocity/feed rate (v). The following example is given to show the relationship of these system requirements to the calculation of the brake operating parameters. Since this example is not meant to cover all possible applications, an application data sheet is provided on the following page. If additional assistance is needed, simply complete a copy of the data sheet and fax it to Magtrol. Our Application Engineering staff will be pleased to assist you.

<b>SAMPLE PROBLEM</b>			
<b>GIVEN:</b> d = 0,5 m F = 2,0 N v = 200 $\frac{m}{min}$	<b>FIND:</b> T $\omega$ P	<b>DESCRIPTION</b> d - Diameter [m] F - Tension [N] v - Velocity $[\frac{m}{min}]$	<b>T</b> - Torque [Nm] <b><math>\omega</math></b> - Angular Velocity [rad/s] <b>P</b> - Kinetic Power $[\frac{J}{S}]$
<p><b>TORQUE:</b></p> $T = \frac{F \times d}{2} = \frac{2,0 \times 0,5}{2} = 0,5 \text{ [Nm]}$ <p><b>ANGULAR VELOCITY:</b></p> $\omega = \left[ \frac{v}{\pi \cdot d} \right] \times \left[ \frac{2\pi}{60} \right] = \frac{v}{30d} = \frac{200}{(30)(0,5)} = 13,33 \text{ [rad/s]}$ <p><b>KINETIC POWER:</b></p> $P = F \times v = 2,0 \times \frac{200}{60} = 6,67 \left[ \frac{Nm}{S} \right] = \left[ \frac{J}{S} \right] = \text{[watt]}$			





# Special Designs and Modifications

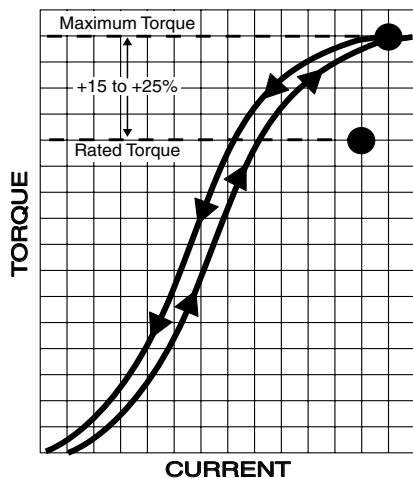
Since 1953, Magtrol has created literally thousands of special and modified brake designs to help solve specific application problems for our customers.

## COMMON MODIFICATIONS

- Non-Standard Coil Voltages
- Special Shaft Configurations: keyways, flats, holes and hollow
- Dust Covers
- Speed Pickups
- Special Mounting Configurations
- Non-Standard Lead: material, lengths, location
- Higher Torque Devices
- High Speed Units

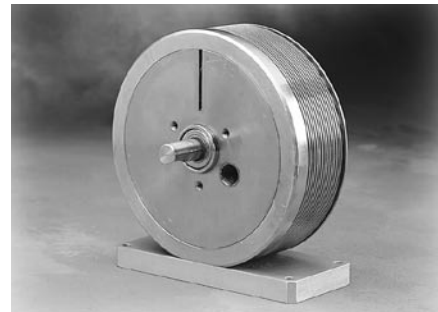
## HIGHER TORQUE CAPABILITY

It is Magtrol's policy never to overstate the capabilities of our products. As a result, our brakes are conservatively rated. Higher torque values (15-25% above rated torque) are typically available from each brake, depending on the brake being ordered. In addition, special designs capable of producing even higher torques are available.



## FORCED AIR COOLED BRAKES

Unlike many other forms of braking devices, Magtrol Hysteresis Brakes can be safely operated at relatively high speeds, provided the combination of applied torque and speed of operation do not cause the brake to be operated above its kinetic power rating. The kinetic power rating of the brake can be increased significantly, when necessary, by forced air cooling. Magtrol has designed brakes with provisions for forced air cooling utilizing compressed air supplied by the machine builder and has also created special designs and blower packages for use in high-torque/high-speed applications where compressed air is not available.



*Compressed Air Cooled*



*Blower Cooled*

---

## OTHER HYSTERESIS DEVICES



### PERMANENT MAGNET BRAKES & CLUTCHES

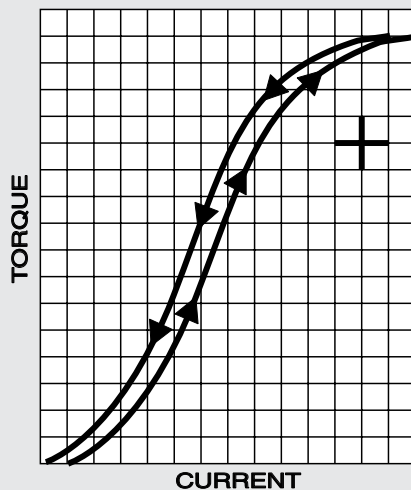
Magtrol Hysteresis Permanent Magnet Brakes are ideal in applications where electrical power cannot be provided to a brake or clutch coil. Although best suited to applications where a fixed torque is to be applied, adjustable units can be manufactured to fit other applications. While typically provided as brake units, by the addition of an input shaft, the same unit can be used as a clutch. In a clutch application, the pole/case assembly becomes the drive element and the rotor/shaft assembly becomes the driven element with torque being transmitted through the magnetic air gap. Magtrol Hysteresis Permanent Magnet devices provide all the superior operating characteristics of smooth operation, precise repeatability and long life inherent in our Hysteresis Brakes and Clutches.



# Options and Accessories

## TORQUE CURRENT CURVES

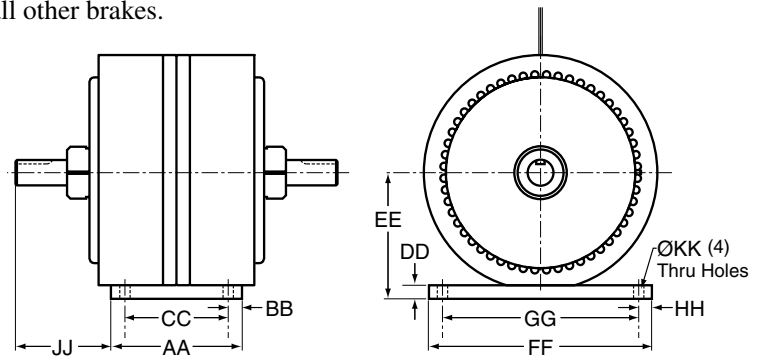
Nominal performance characteristic curves similar to that shown will be provided by Magtrol, upon request. Precise calibration curves for individual brakes can be provided, but must be specified at time of order and do require an additional charge. Contact Magtrol for price and delivery of brakes complete with calibration curves.



## MOUNTING OPTIONS

### BASE MOUNTING

Base mounting is standard on all HB-3500M brakes and is an available option on all other brakes.



All other dimensions per standard brakes

Brake Model*	AA	BB	CC	DD	EE	FF	GG	HH	JJ	ØKK
HB-1751M	101,5	12,7	76,0	12,6	120,7	215,9	190,0	13,0	**	11,0
HB-3501M	127,0	13,5	100,0	12,7	120,7	216,0	190,0	13,0	92,5	11,0

\* Ordering Example: An HB-1750M with a base mount is an HB-1751M.

\*\* Contact Magtrol for drawing.

### COUPLINGS

Although intended for coupled service, moderate overhung loads can be tolerated, depending on such operating characteristics as speed, weight, and center of gravity of load. Care should be taken to make certain that the shaft is properly aligned. Couplings should be of proper size and flexibility to adequately protect bearings from undue stress and shock loading.

### PILLOW BLOCKS

Pillow blocks are available for all brake and clutch units except the HB-3500M. Please refer to Magtrol's web site for drawings and dimensions.

## POWER SUPPLIES

For optimum torque stability, Magtrol offers four different power supplies for its Hysteresis Brakes and Clutches:

### MODEL 6100 CLOSED LOOP SPEED CONTROL/POWER SUPPLY

The 6100 is a durable, variable, closed loop speed control power supply governed by an adjustable proportional/integral (PI) control algorithm for unsurpassed stability in its class. Designed to work with a Magtrol Hysteresis Brake that is specially fitted with a speed pick-up, the 6100 functions as a power supply and also features an easy-to-read digital speed display.



### MODEL 5250 CURRENT REGULATED POWER SUPPLY

Model 5250-2 is an open frame, current regulated power supply.

### MODEL 5200 POWER SUPPLY

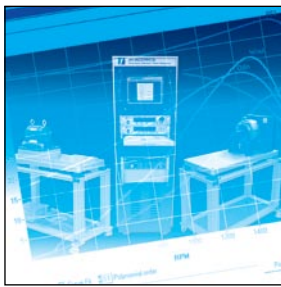
The Model 5200 is an unregulated 0 to 35 VDC Power Supply which offers control and regulation of the braking torque via a 10 turn potentiometer. The 5200 is our most basic control for manual testing in an open loop torque control mode.

### MODEL 5210 CURRENT REGULATED POWER SUPPLY

The Model 5210 provides the same control capabilities as the 5200, and also provides current regulation of the brake. With regulated current, the 5210 will eliminate torque drift caused by temperature changes within the brake coil.



# OTHER MAGTROL PRODUCTS



## Motor Testing Equipment

Magtrol offers three types of Dynamometers, each with a different braking system to absorb load: hysteresis, Eddy-current and powder. The dynamometers are complemented by DSP-based controllers, power analyzers and LabVIEW™ based motor test software. Magtrol's dynamometers, electronics and software are used for testing all types of electric and pneumatic motors, gas engines and gearheads, as well as servo drives and inverters. With over 50 dynamometers to choose from, and the availability of Customised Motor Test Systems (CMTS),

virtually every motor testing requirement can be met. Features include: Torque from 0,02 N m to 1200 N m; Speed from 0 rpm to 70 000 rpm; Power from 7 W to 140 kW; DSP-based high speed controller with RS-232 and GPIB communication; Single and three-phase power analyzers; LabVIEW™ based motor test software. Customized turnkey systems with table/cabinet, power supply, PC, printer, fixtures, etc. available.



## Load-Force-Weight Transducers

Highly reliable systems to measure and monitor load, force and weight, commonly used to provide safety, control and overload protection. Typical applications requiring Load-Force-Weight Systems include cranes, ski lifts, harbour installations, oil drilling (on and off shore), hoists, winches and other heavy lifting equipment. The systems are extremely accurate, can be used for static or dynamic measurement, and are able to withstand the most extreme environmental conditions. Features include: Nominal value up to 2500 kN; Accuracy class < 0,5%;

Protection up to IP67; Transducer made of high resistance stainless steel; Overload admissible 150%; Overload at rupture up to 500%; Test and certificate for component to CE standards and material certificate on request; Analog or digital signal conditioner with inputs up to 2 channels, 0-10 V, 4-20 mA outputs or bus interface, and digital display.



## Displacement Transducers

Provides contactless measurement of absolute piston position in hydraulic and pneumatic cylinders, and other applications. Features include: Accuracy of 0,3%; Range from 50 mm to 1 m; High shock and vibration resistance; Ability to withstand pressure up to 450 bar; Operating temperature of -40 °C to +80 °C with active temperature compensation. High temperature version up to 200 °C available.



## Rotary Transmitters

Used for signal transmission of transducers on a rotating part (e.g. engine shaft) to a stationary system (measuring instrument or PC). Common applications include thermocouples and strain gauges, as well as piezo electric transducers to measure oscillation, acceleration, force and pressure. The transmitter can also provide the supply signal to each transducer. Features include: Noise 25 µV; 1, 4, 8 or 12 channels; Speed up to 40 000 rpm; Resistance < 0,2 mΩ; Very low inertia; No slip rings.

*Due to the continual development of our products, we reserve the right to modify specifications without forewarning.*

For more information, contact your local sales agent:



n° 150887

HB-EU www 01/06

For over 50 years, Magtrol Inc and Magtrol SA have been providing customers with high quality products to test, measure and control torque-speed-power, load-force-weight, tension and displacement. Magtrol Inc, which is headquartered in the USA, is a leading manufacturer of motor test equipment and hysteresis brakes and clutches. Magtrol SA (formerly Vibro-meter Instrumentation Division), located in Switzerland, also offers motor test equipment as well as products to measure, control and monitor load-force-weight and displacement. Magtrol offers customers a wide array of measurement and control solutions, combined with excellent worldwide sales and service.

**MAGTROL INC**  
70 Gardenville Parkway  
Buffalo, New York 14224 USA  
Tel: +1 716 668 5555  
Fax: +1 716 668 8705  
E-mail: magtrol@magtrol.com

**MAGTROL SA**  
Route de Moncor 4B  
1701 Fribourg, Suisse  
Tel: +41 (0)26 407 3000  
Fax: +41 (0)26 407 3001  
E-mail: magtrol@magtrol.ch

Subsidiaries in:  
U.K. • Germany • France • China

For worldwide network of sales agents, visit our web site:

**www.magtrol.com**