HYSTERESIS BRAKES

FEATURES

- Ideal for low-torque/high-speed applications with exceptional power ratings
- Torque up to 3,500 oz·in/26 N·m
- Speed: up to 25,000 rpm
- Power: up to 7,000 W
- Compressed-air cooling offers excellent heat dissipation with allowable input air pressure of up to 95 PSI eliminates the need for a regulator (available on the AHB Series)
- Blower cooling eliminates the need for additional air supply equipment and Includes air deflectors to guide exhaust air away from the motor under test (available on the BHB Series)
- All metric dimensioning (HB/MHB/CHB Series also available in English dimensions)
- Base mounting standard on the AHB/BHB/CHB Series
- AHB/BHB/CHB Series are designed for use with Magtrol's PT Series T-slot Base Plate mounting system (sold separately)
- Magtrol hysteresis braking technology provides precise torque control independent of shaft speed
- EMC conforms to European standards
- A variety of accessories and system options to choose from to create a simple and cost-effective test system

Fig.1 : AHB-6 Compressed-Air Cooled Hysteresis Brake

DESCRIPTION

HYSTERESIS BRAKES AND BASE MOUNTED HYSTERESIS BRAKES

Magtrol pioneered the technology of applying the principles of hysteresis to meet the critical needs for reliable, smooth and adjustable torque control. Magtrol's 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.

LARGE BORE BRAKES

For many years Magtrol has designed hysteresis brakes with large bores, and without a shaft or bearings. These uniquely designed brakes contain a large inside diameter to accommodate wire fed directly through the brake, while the rotor mounted to a tape supply reel, provides the required tension.

Magtrol Large Bore 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.

MATCHED BRAKES

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.

To solve this problem, Magtrol 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 is matched at the selected match point to within a tolerance of ±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) is less than ±4%* of the selected matched torque value. With this level of matching, a system with multiple tension rollers would provide tension consistency within ±1% if set at the matched point with all brakes receiving the same current. The matched point can be any value between 50% and 100% of rated torque, which allows the brakes to be optimized for specific applications. Unless otherwise specified, all brakes are matched at 100 rpm.

COMPRESSED-AIR BRAKES

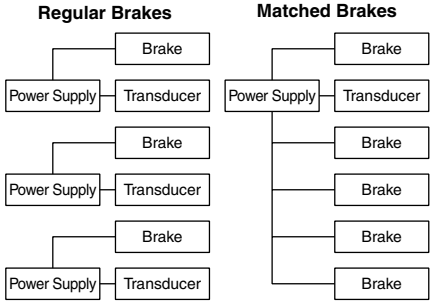
When torque control/torque measurement must be performed at the highest possible power, Magtrol AHB Series Hysteresis Brakes are ideal. Passages running through the brakes enables compressed air cooling, providing excellent heat dissipation. This design allows for continuous power ratings up to 3,000 watts (5,300 watts intermittent). Use of pre-loaded bearings in the AHB Series Hysteresis Brakes allows operation at speeds of up to 25,000 rpm for extended durations.

AHB Brakes are conveniently base mounted. Base mounting, with integral barrier type terminal strip, provides easy mounting and wiring.

BLOWER COOLED BRAKES

When torque control/torque measurement must be performed at the highest possible power, Magtrol BHB Series Hysteresis Brakes are ideal. This design allows for continuous power ratings up to 6,000 watts (7,000 watts intermittent). Use of pre-loaded bearings in the BHB Series Hysteresis Brakes allows operation at speeds of up to 20,000 rpm for extended durations.

BHB Brakes are conveniently base mounted. Base mounting, with integral barrier type terminal strip, provides easy mounting and wiring.



APPLICATIONS

HB/MHB/CHB/LB SERIES BRAKES

- Precise control of wire tension during wind, hook and cut operation of high-speed automated winding machines
- Frictionless, non-breakaway force for tensioning materials during slitting and many other material processing operations
- Load simulation applications for life testing on electric motors, actuators, small gas engines, gearboxes, and many other rotating devices and assemblies
- Open-loop control for maintaining precise tension during winding process in transformer and coil winding operations
- Holding of backdriving loads
- Ultimate tension control, regardless of control scheme–dancer roll, follower arm, photo or ultrasonic sensors
- Precise load control and programmed repeatability in fitness machines

AHB/BHB SERIES BRAKES

Magtrol's AHB/BHB Series Hysteresis Brakes can function in either torque measurement or torque control applications. When mounted to a PT Series T-slot Base Plate, a cost-effective, basic motor test rig can be easily configured. For this purpose, Magtrol offers several accessories and system options to choose from. The simplest test bench may include one or two AHB/BHB Brakes and an AMF Adjustable Motor Fixture mounted onto a PT Base Plate. Adding a TM Series In-Line Torque Transducer, couplings, FRS Free-Run Speed Sensor, 3411 Torque Display or DSP7000 Controller greatly expands the system's motor testing capabilities.

Other accessories available from Magtrol include: power supplies, air filters, pressure gauge kits, air lines, pipe fittings, jack shafts and risers.

In addition to motor test applications, AHB/BHB Series Hysteresis Brakes can be used for the following:

- Durability/reliability verification
- Brush run-in
- Carburetor tuning
- High-speed tension control

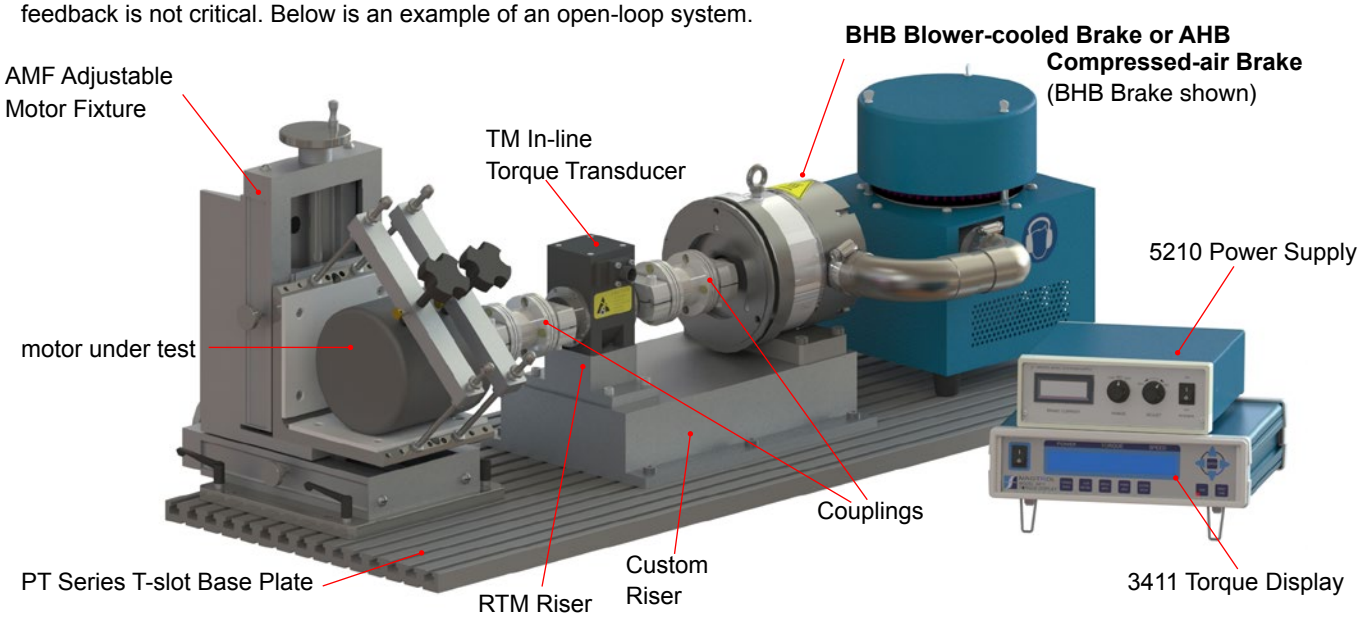
SYSTEM CONFIGURATIONS

AHB/BHB Series Hysteresis Brakes are versatile enough to be specified for use in simple open-loop systems or more complex closed-loop systems.

OPEN-LOOP SYSTEMS

A characteristic of the open-loop system is that it does not use feedback to determine if its input has achieved the desired goal. This means that the system does not react to the output of the processes that it is controlling.

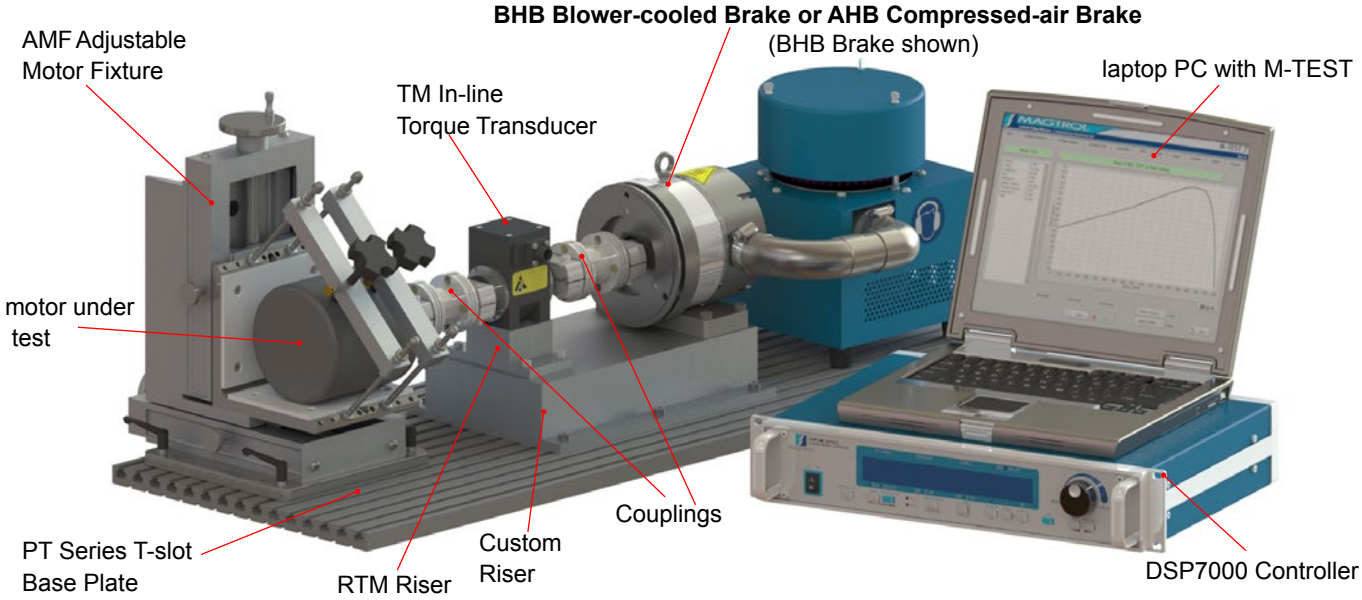
An open-loop controller is often used in simple test setups because of its simplicity and low cost, especially in systems where feedback is not critical. Below is an example of an open-loop system.



CLOSED-LOOP SYSTEMS

A characteristic of the closed-loop system is that it uses feedback to determine if its input has achieved the desired goal. This means that the system reacts to the output of the processes that it is controlling.

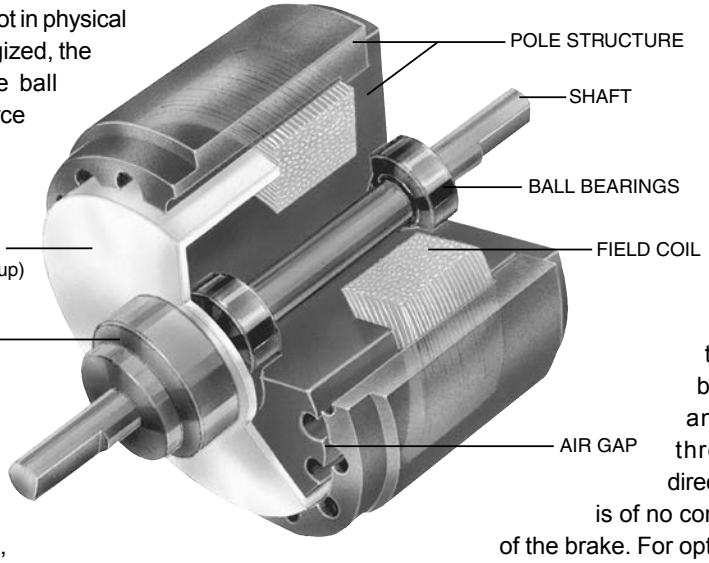
A closed-loop controller is often used because of its ability to repeatedly return to a desired controlled point. Below is an example of a closed-loop system.



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

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.

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.

OPERATIONAL SMOOTHNESS

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

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.

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.

SPECIFICATIONS

UP TO 0.14 N·m (20.0 oz·in) TORQUE RANGE

HYSTERESIS BRAKE RATINGS

BRAKE MODEL	MATCHED BRAKE MODEL	MIN. TORQUE AT RATED CURRENT		RATED CURRENT	VOLTAGE[a]	MAXIMUM SPEED	KINETIC POWER[b]	
							5 MINUTES	CONTINUOUS
		N·m	oz·in	mA	VDC	rpm	W	W
HB-2.5	MHB-2.5	0.018	2.5	146	25.0	20,000	20	5
HB-3M	MHB-3M	0.020	2.8	145	25.0	20,000	20	5
HB-10	MHB-10	0.071	10.0	133	24.0	20,000	45	12
HB-10M	MHB-10M	0.070	9.9	133	24.0	20,000	45	12
HB-16	---	0.113	16.0	192	24.0	20,000	75	20
HB-20M	MHB-20M	0.140	19.8	214	26.0	20,000	50	12

BRAKE MODEL	MATCHED BRAKE MODEL	DRAG TORQUE DE-ENERGIZED @ 1,000 rpm		NOMINAL POWER	RESISTANCE AT 25°C ± 10%	EXTERNAL INERTIA		WEIGHT	
		N·m	oz·in	W	Ω	kg·cm^2	lb·in·s^2	kg	lb
HB-2.5	MHB-2.5	3.53×10^{-4}	0.05	3.70	171	4.3×10^{-3}	3.8×10^{-6}	0.11	0.24
HB-3	MHB-3	3.53×10^{-4}	0.05	3.59	171	4.3×10^{-3}	3.8×10^{-6}	0.11	0.24
HB-10	MHB-10	7.06×10^{-4}	0.10	3.18	180	3.7×10^{-2}	3.3×10^{-5}	0.22	0.49
HB-10M	MHB-10M	7.06×10^{-4}	0.10	3.18	180	4.35×10^{-2}	3.8×10^{-5}	0.22	0.49
HB-16	---	7.06×10^{-4}	0.10	4.60	125	6.3×10^{-2}	5.6×10^{-5}	0.29	0.65
HB-20M	MHB-20M	7.77×10^{-4}	0.11	5.65	120	4.58×10^{-2}	4.1×10^{-5}	0.29	0.65

a) Other coil voltages are available.

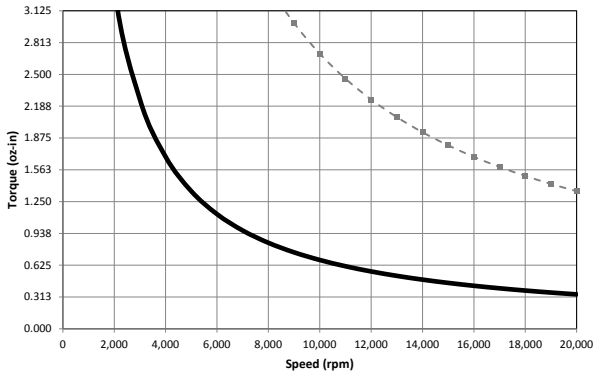
b) Kinetic power ratings are maximum values based on limiting coil and/or bearing temperature to approximately 100 ºC, and should not be exceeded. Actual values in service may vary ±50% depending on mounting, ventilation, ambient temperature, etc.

* Angular Acceleration values are available upon request

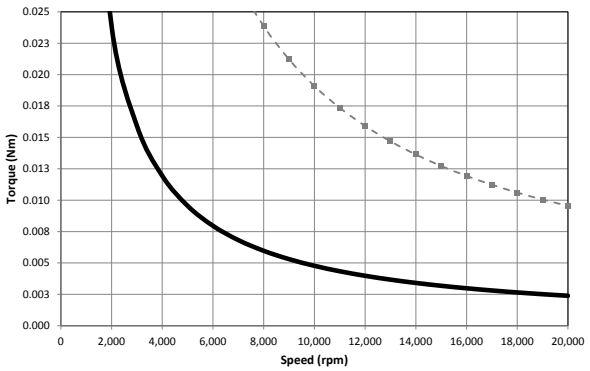
** To prevent damage to the power supply from inductive kickback, connect a diode rated at greater than or equal to the power supply's output voltage and current across the brake leads. Connect the cathode to the positive lead and the anode to the negative lead.

POWER ABSORPTION CURVES

HB-2.5/MHB-2.5

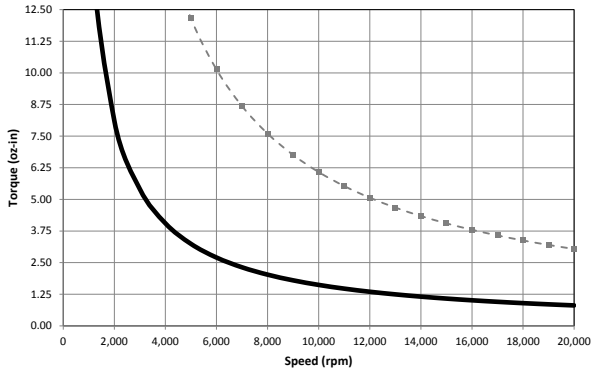


HB-3M/MHB-3M

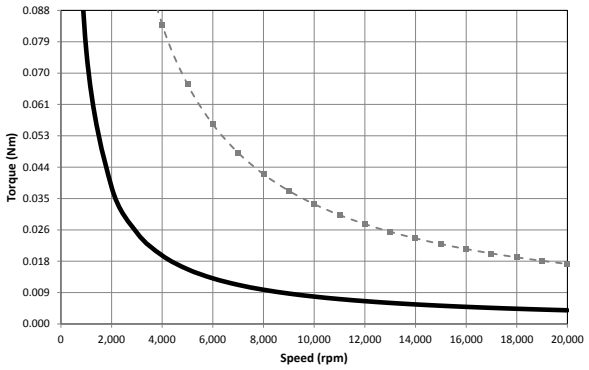


SPECIFICATIONS

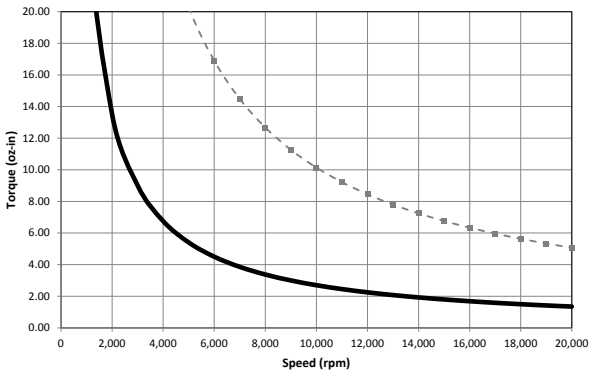
HB-10/MHB-10



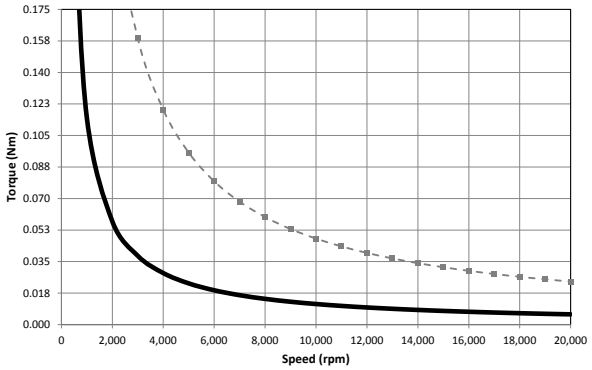
HB-10M/MHB-10M



HB-16



HB-20M/MHB-20M



The power absorption curves represent the maximum power (heat) that the brake can dissipate over time.

Maximum Kinetic Power Rating Curve for Less Than Five Minutes: Area under curve equals the maximum speed and torque combinations for a motor test of less than five minutes.

Maximum Kinetic Power Rating Curve for Continuous Duty: Area under curve equals the maximum speed and torque combinations for a continuous duty motor test.

SPECIFICATIONS

UP TO 0.35 N·m (50.0 oz·in) TORQUE RANGE

HYSTERESIS BRAKE RATINGS

BRAKE MODEL	MATCHED BRAKE MODEL	MIN. TORQUE AT RATED CURRENT		RATED CURRENT	VOLTAGE[a]	MAXIMUM SPEED	KINETIC POWER[b]	
							5 MINUTES	CONTINUOUS
		N·m	oz·in	mA	VDC	rpm	W	W
HB-38	MHB-38	0.268	38	250	26.3	15,000	90	25
HB-50	MHB-50	0.350	50	253	24.0	15,000	90	23
HB-50M	MHB-50M	0.350	50	253	24.0	15,000	90	23

BRAKE MODEL	MATCHED BRAKE MODEL	DRAG TORQUE DE-ENERGIZED @ 1,000 rpm		NOMINAL POWER	RESISTANCE AT 25°C ± 10%	EXTERNAL INERTIA		WEIGHT	
		N·m	oz·in	W	Ω	kg·cm^2	lb·in·s^2	kg	lb
HB-38	MHB-38	1.41 X 10^{-3}	0.20	6.60	105	0.97 X 10^{-1}	8.6 x 10^{-5}	0.48	1.06
HB-50	MHB-50	1.41 X 10^{-3}	0.20	6.10	95	1.67 X 10^{-1}	1.478 x 10^{-4}	0.78	1.72
HB-50M	MHB-50M	1.55 x 10^{-3}	0.22	6.10	95	1.67 x 10^{-1}	1.478 X 10^{-4}	0.78	1.72

a) Other coil voltages are available.

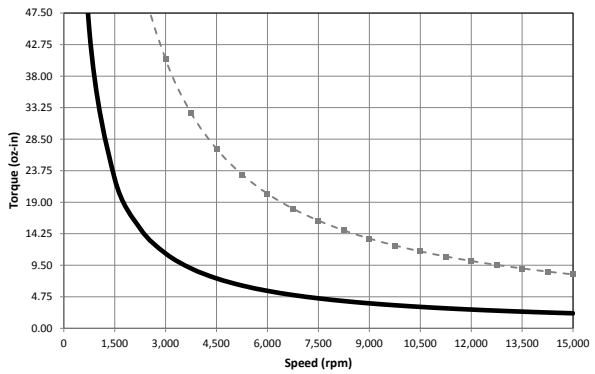
b) Kinetic power ratings are maximum values based on limiting coil and/or bearing temperature to approximately 100 ºC, and should not be exceeded. Actual values in service may vary ±50% depending on mounting, ventilation, ambient temperature, etc.

* Angular Acceleration values are available upon request

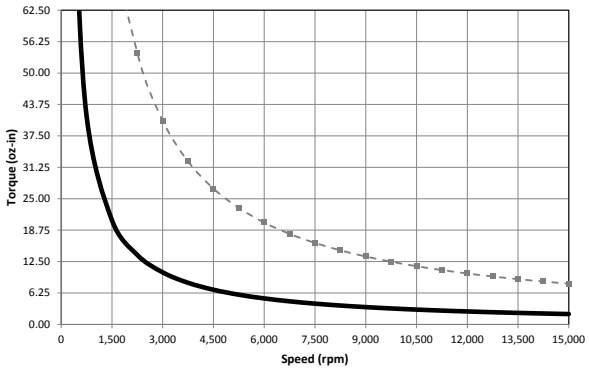
** To prevent damage to the power supply from inductive kickback, connect a diode rated at greater than or equal to the power supply's output voltage and current across the brake leads. Connect the cathode to the positive lead and the anode to the negative lead.

POWER ABSORPTION CURVES

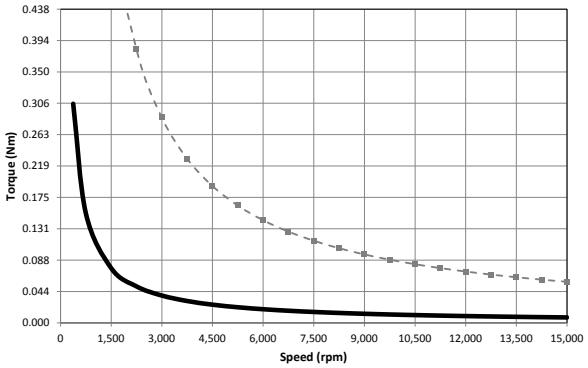
HB-38/MHB-38



HB-50/MHB-50



HB-50M/MHB-50M



The power absorption curves represent the maximum power (heat) that the brake can dissipate over time.

Maximum Kinetic Power Rating Curve for Less Than Five Minutes: Area under curve equals the maximum speed and torque combinations for a motor test of less than five minutes.

Maximum Kinetic Power Rating Curve for Continuous Duty: Area under curve equals the maximum speed and torque combinations for a continuous duty motor test.

SPECIFICATIONS

UP TO 1.75 N·m (250.0 oz·in) TORQUE RANGE

HYSTERESIS BRAKE RATINGS

BRAKE MODEL	MATCHED BRAKE MODEL	MIN. TORQUE AT RATED CURRENT		RATED CURRENT	VOLTAGE[a]	MAXIMUM SPEED	KINETIC POWER[b]			
							5 MINUTES		CONTINUOUS	
		N·m	oz·in	mA	VDC	rpm	W		W	
AHB-1	---	1.00	140	400	24.0	25,000	with air	w/o air	with air	w/o air
							1,200	250	1,200	55
CHB-1	---	1.00	140	253	24.0	12,000	300		75	
HB-140	MHB-140	1.00	140	253	24.0	12,000	300		75	
HB-140M	MHB-140M	1.00	140	253	24.0	12,000	300		75	
AHB-1.5	---	1.50	212	400	26.0	25,000	with air	w/o air	with air	w/o air
							1,300	450	1,300	70
LB-250M	MLB-250M	1.50	212	270	26.0	3,000	450		110	
CHB-1.5	---	1.75	250	270	26.0	10,000	450		110	
HB-250	MHB-250	1.75	250	270	26.0	10,000	450		110	
HB-250M	MHB-250M	1.75	250	270	26.0	10,000	450		110	

BRAKE MODEL	MATCHED BRAKE MODEL	DRAG TORQUE DE-ENERGIZED @ 1,000 rpm		NOMINAL POWER	RESISTANCE AT 25°C ± 10%	EXTERNAL INERTIA		WEIGHT	
		N·m	oz·in	W	Ω	kg·cm^2	lb·in·s^2	kg	lb
AHB-1	---	5.42×10^{-3}	0.77	9.60	60	8.76×10^{-1}	7.75×10^{-4}	2.00	4.4
CHB-1	---	5.42×10^{-3}	0.77	6.10	95	1.00×10^{0}	8.85×10^{-4}	2.00	4.4
HB-140	MHB-140	4.94×10^{-3}	0.70	6.10	95	1.03×10^{0}	9.1×10^{-4}	1.86	4.1
HB-140M	MHB-140M	5.42×10^{-3}	0.77	6.10	95	1.00×10^{0}	8.85×10^{-4}	1.86	4.1
AHB-1.5	---	7.77 X 10-3	1.10	10.24	64	2.75×10^{0}	2.43×10^{-3}	4.20	9.3
LB-250M	MLB-250M	---	---	7.00	95	---	---	3.00	6.6
CHB-1.5	---	7.77 X 10-3	1.10	7.00	96	3.45×10^{0}	3.05×10^{-3}	4.20	9.3
HB-250	MHB-250	7.77 X 10-3	1.10	7.00	96	3.11×10^{0}	2.75×10^{-3}	3.50	7.7
HB-250M	MHB-250M	7.77 X 10-3	1.10	7.00	96	3.45×10^{0}	3.05×10^{-3}	3.50	7.7

a) Other coil voltages are available.

b) 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.

* Angular Acceleration values are available upon request

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AHB AIR REQUIREMENTS

BRAKE MODEL	AIR SUPPLY PRESSURE			AIR VOLUME/ CONSUMPTION		SUPPLY TUBE FITTING	
						OUTER DIAMETER	PIPE THREAD SIZE
	PSI[a]	bar	kPa	SCFM	l/min	mm	NPT
AHB-1	90	6.21	620.5	10	283	8	1/8"
AHB-1.5	90	6.21	620.5	10	283	8	1/8"

a) The air pressure to the (at the) brake will be called out at 85 to 95 PSI. This range is thought to allow a user to directly attach to a compressor line without local regulation and filtering.

Typical sound pressure at 1 meter: 110 db
Warning: High sound levels can cause permanent hearing loss. Use hearing protection while this product is in use.

AHB ENVIRONMENTAL REQUIREMENTS

Operating Temperature	-40 °C to +85 °C
Relative Humidity	up to 90% without condensation

AHB ELECTRICAL CHARACTERISTICS

Max. Compliance Voltage	36 VDC

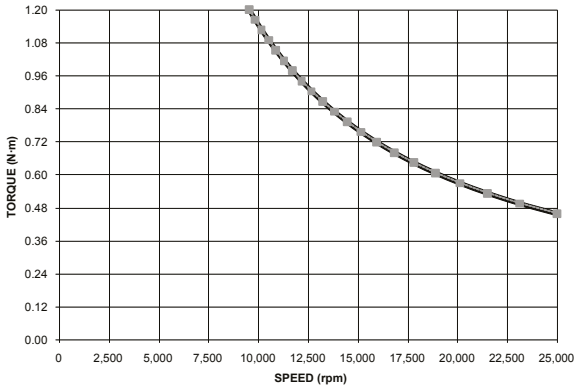
ADDITIONAL AHB MECHANICAL CHARACTERISTICS

Shaft Ends	smooth
Balancing Quality	G6.3 in accordance with ISO 1940-1

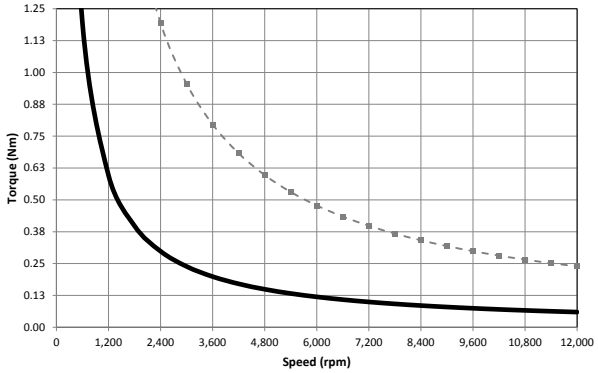
SPECIFICATIONS

POWER ABSORPTION CURVES

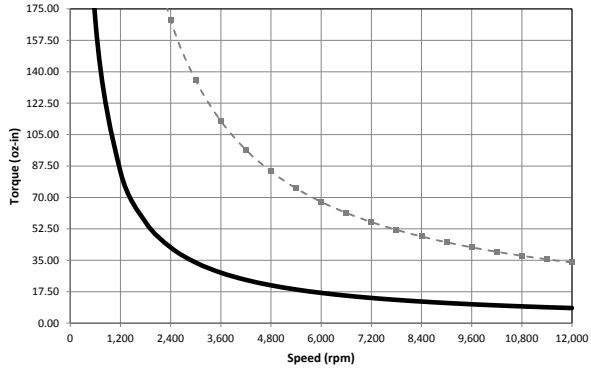
AHB-1



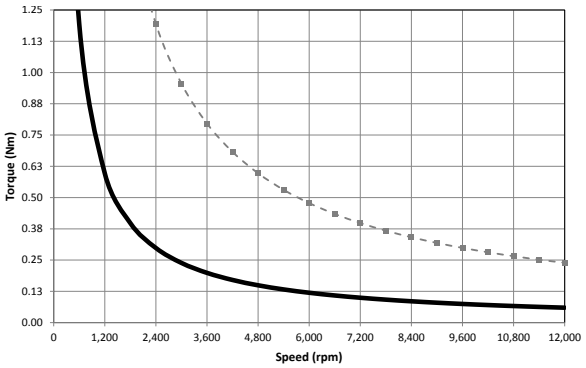
CHB-1



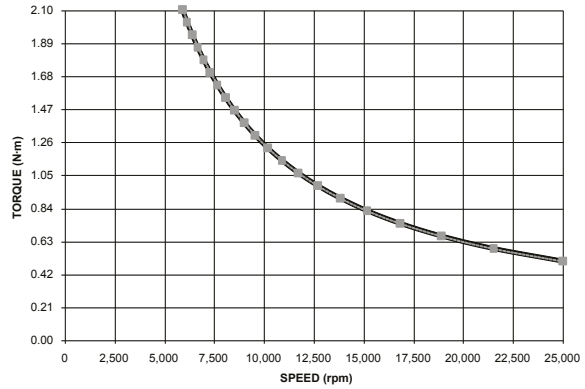
HB-140/MHB-140



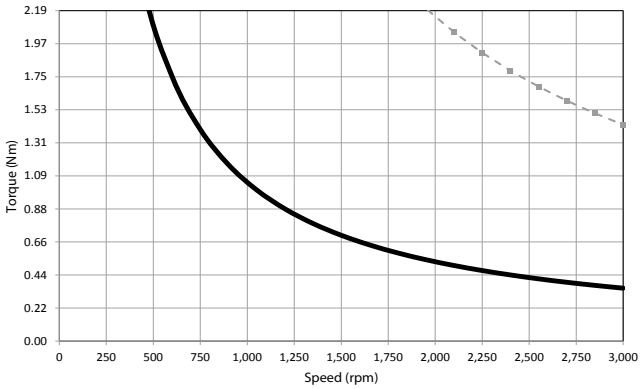
HB-140M/MHB-140M



AHB-1.5

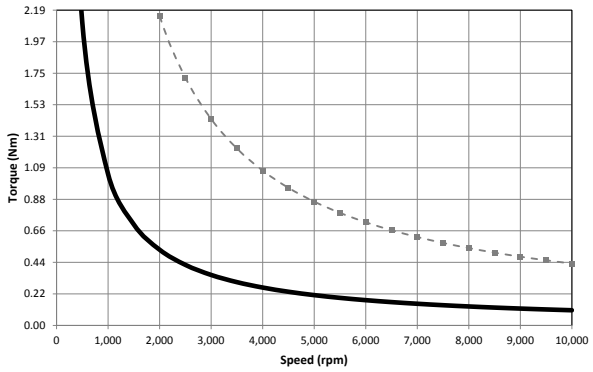


LB-250M/MLB-250M

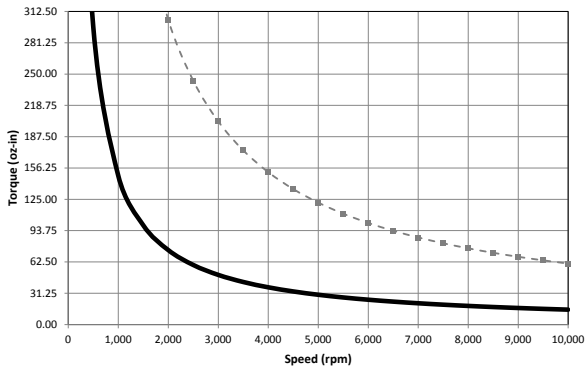


SPECIFICATIONS

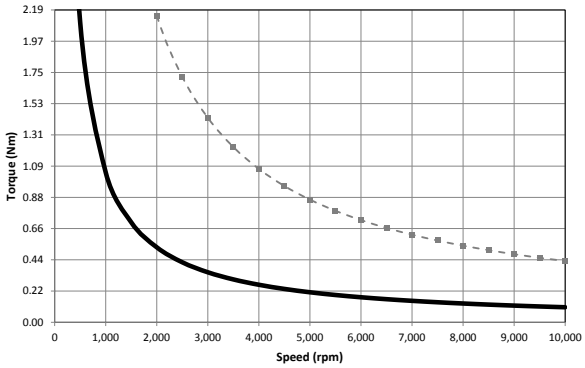
CHB-1.5



HB-250/MHB-250



HB-250M/MHB-250M



The power absorption curves represent the maximum power (heat) that the brake can dissipate over time.

Maximum Kinetic Power Rating Curve for Less Than Five Minutes: Area under curve equals the maximum speed and torque combinations for a motor test of less than five minutes.

Maximum Kinetic Power Rating Curve for Continuous Duty: Area under curve equals the maximum speed and torque combinations for a continuous duty motor test.

SPECIFICATIONS

UP TO 6.00 N·m (840.0 oz·in) TORQUE RANGE

HYSTERESIS BRAKE RATINGS

BRAKE MODEL	MATCHED BRAKE MODEL	MIN. TORQUE AT RATED CURRENT		RATED CURRENT	VOLTAGE[a]	MAXIMUM SPEED	KINETIC POWER[b]			
							5 MINUTES		CONTINUOUS	
		N·m	oz·in	mA	VDC	rpm	W		W	
AHB-3	---	3.0	425	750	24.8	20,000	with air	w/o air	with air	w/o air
							1,800	800	1,800	160
BHB-3B/BHB-3BA	---	3.0	425	750	24.8	20,000	with air	w/o air	with air	w/o air
							1,500	800	935	160
LB-450M	MLB-450M	3.0	425	442	22.1	2,500	670		160	
CHB-3	---	3.2	450	442	22.1	8,000	670		160	
HB-450	MHB-450	3.2	450	442	22.1	8,000	670		160	
HB-450M	MHB-450M	3.2	450	442	22.1	8,000	670		160	
AHB-5	---	5.0	708	383	22.8	15,000	with air	w/o air	with air	w/o air
							2,500	1,300	1,000	120
LB-750M	MLB-750M	5.0	708	383	23.0	2,000	1,000		200	
CHB-5	---	5.0	708	383	23.0	7,000	1,000		200	
HB-750	MHB-750	5.3	750	383	23.0	7,000	1,000		200	
HB-750M	MHB-750M	5.0	708	383	23.0	7,000	1,000		200	
AHB-6	---	6.0	850	1,500	24.8	20,000	with air	w/o air	with air	w/o air
							3,000	1,400	3,000	225
BHB-6B/BHB-6BA	---	6.0	850	1,500	24.0	20,000	with air	w/o air	with air	w/o air
							3,400	1,000	3,000	225
CHB-6	---	6.0	850	600	24.0	6,000	1,340		300	
HB-840	---	5.9	840	600	24.0	6,000	1,340		300	

BRAKE MODEL	MATCHED BRAKE MODEL	DRAG TORQUE DE-ENERGIZED @ 1,000 rpm		NOMINAL POWER	RESISTANCE AT 25°C ± 10%	EXTERNAL INERTIA		WEIGHT	
		N·m	oz·in	W	Ω	kg·cm^2	lb·in·s^2	kg	lb
AHB-3	---	1.51 x 10^{-2}	2.14	18.56	33.0	6.89	6.10 x 10^{-3}	6.50	14.30
BHB-3B/BHB-3BA	---	1.51 x 10^{-2}	2.14	18.56	33.0	6.89	6.10 x 10^{-3}	17.00 w/blower	37.48 w/blower
LB-450M	MLB-450M	---	---	9.80	50.0	---	---	5.30	11.70
CHB-3	---	1.51 x 10^{-2}	2.14	9.80	50.0	7.50	6.60 x 10^{-3}	6.50	14.30
HB-450	MHB-450	1.41 x 10^{-2}	2.00	9.80	50.0	7.50	6.60 x 10^{-3}	5.85	12.90
HB-450M	MHB-450M	1.51 x 10^{-2}	2.14	9.80	50.0	7.50	6.60 x 10^{-3}	5.85	12.90
AHB-5	---	5.00 x 10^{-2}	7.08	8.70	60.0	13.10	1.16 x 10^{-2}	12.40	27.34
LB-750M	MLB-750M	---	---	8.80	60.0	---	---	10.00	22.00
CHB-5	---	5.00 x 10^{-2}	7.08	8.80	60.0	11.40	1.00 x 10^{-2}	12.40	27.34
HB-750	MHB-750	5.00 x 10^{-2}	7.08	8.80	60.0	11.40	1.00 x 10^{-2}	12.80	28.30
HB-750M	MHB-750M	5.00 x 10^{-2}	7.08	8.80	60.0	11.40	1.00 x 10^{-2}	12.80	28.30
AHB-6	---	2.82 x 10^{-2}	4.00	37.00	16.5	13.80	1.22 x 10^{-2}	12.70	28.00
BHB-6B/BHB-6BA	---	2.82 X 10^{-2}	4.00	37.13	16.5	13.80	1.22 x 10^{-2}	21.00 w/blower	46.29 w/blower
CHB-6	---	2.82 X 10^{-2}	4.00	14.40	40.0	14.80	1.31 x 10^{-2}	12.70	28.00
HB-840	---	2.82 X 10^{-2}	4.00	14.40	40.0	14.80	1.31 x 10^{-2}	12.00	26.30

a) Other coil voltages are available.

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

* Angular Acceleration values are available upon request

** To prevent damage to the power supply from inductive kickback, connect a diode rated at greater than or equal to the power supply's output voltage and current across the brake leads. Connect the cathode to the positive lead and the anode to the negative lead.

SPECIFICATIONS

AHB AIR REQUIREMENTS

BRAKE MODEL	AIR SUPPLY PRESSURE			AIR VOLUME/ CONSUMPTION		SUPPLY TUBE FITTING	
						OUTER DIAMETER	PIPE THREAD SIZE
	PSI[a)]	bar	kPa	SCFM	l/min	mm	NPT
AHB-3	90	6.21	620.5	15	425	10	1/4"
AHB-5	90	6.21	620.5	15	425	10	1/4"
AHB-6	90	6.21	620.5	20	567	10	1/4"

a) The air pressure to the (at the) brake will be called out at 85 to 95 PSI. This range is thought to allow a user to directly attach to a compressor line without local regulation and filtering.

BHB BLOWER

BRAKE MODEL	INCLUDED BLOWER	
	MODEL	VOLTAGE VAC
BHB-3B	BL-001	120
BHB-3BA	BL-001-A	240
BHB-6B	BL-001	120
BHB-6BA	BL-001-A	240

AHB/BHB ENVIRONMENTAL REQUIREMENTS

Operating Temperature	-40 °C to +85 °C
Relative Humidity	up to 90% without condensation

AHB/BHB ELECTRICAL CHARACTERISTICS

Max. Compliance Voltage	36 VDC

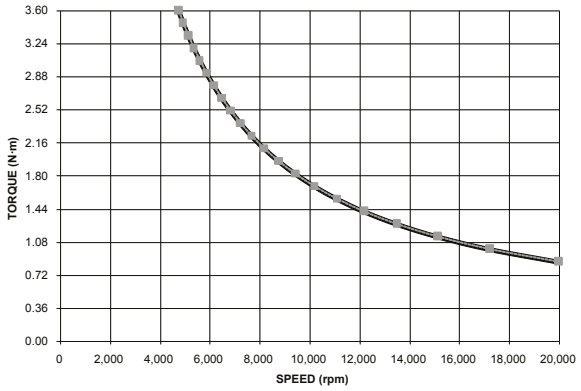
ADDITIONAL AHB/BHB MECHANICAL CHARACTERISTICS

Shaft Ends	smooth
Balancing Quality	G6.3 in accordance with ISO 1940-1

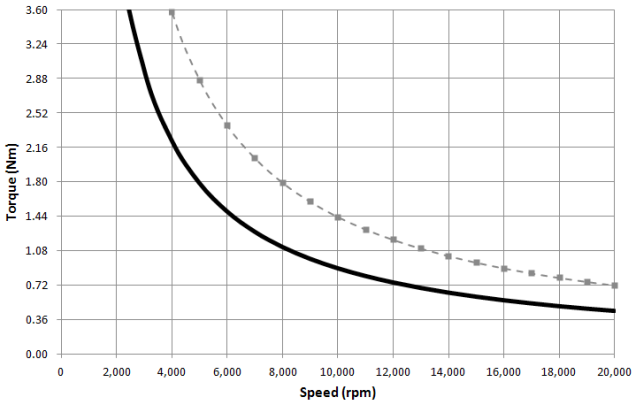
Typical sound pressure at 1 meter: 110 db
Warning: High sound levels can cause permanent hearing loss. Use hearing protection while this product is in use.

POWER ABSORPTION CURVES

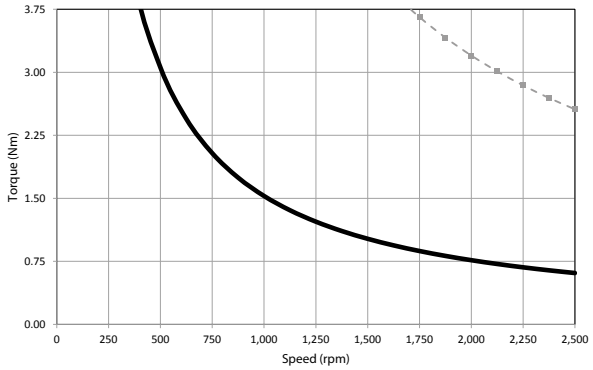
AHB-3



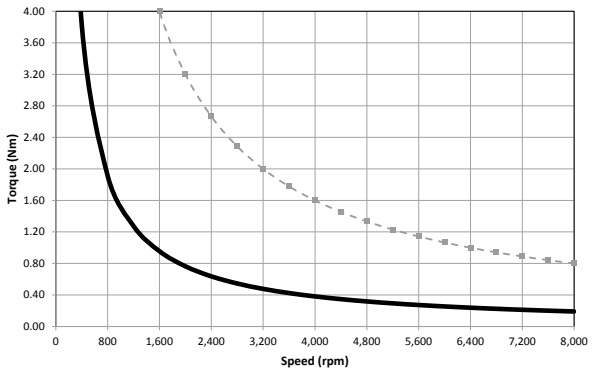
BHB-3B/BHB-3BA



LB-450M/MLB-450M

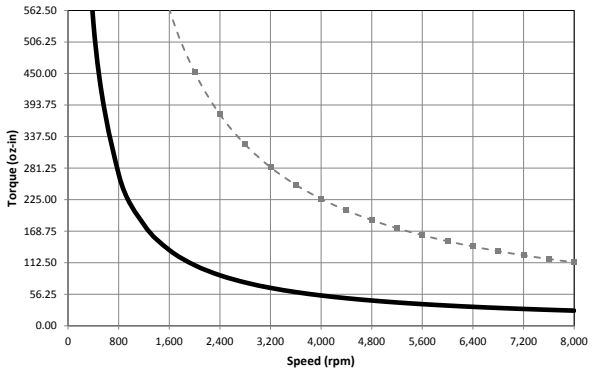


CHB-3

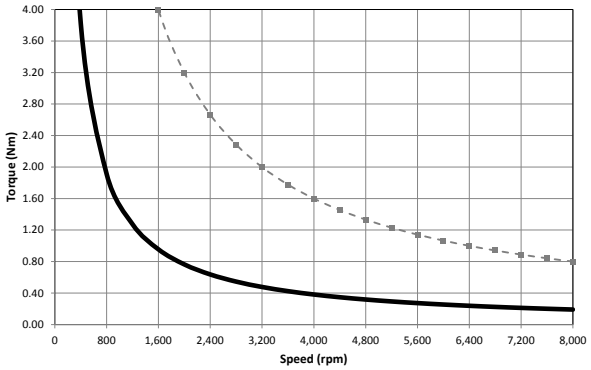


SPECIFICATIONS

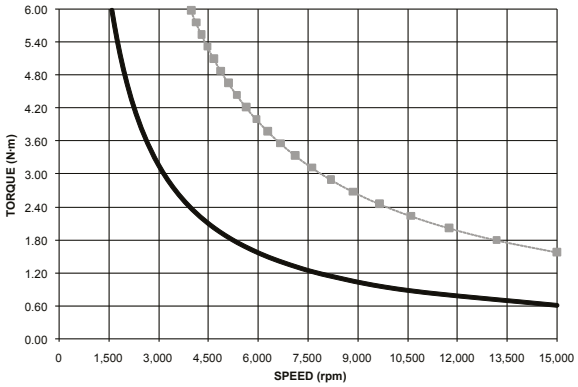
HB-450/MHB-450



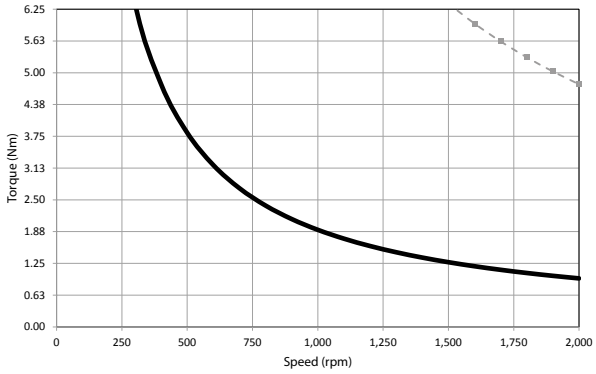
HB-450M/MHB-450M



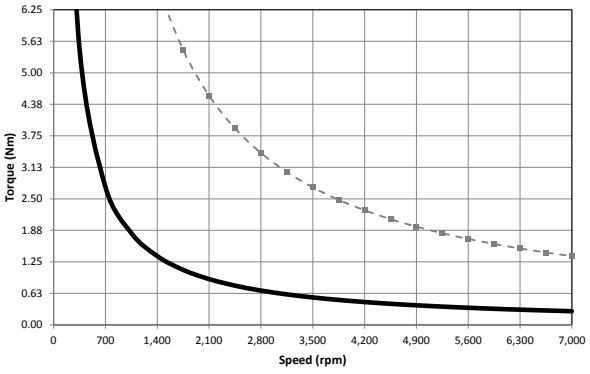
AHB-5



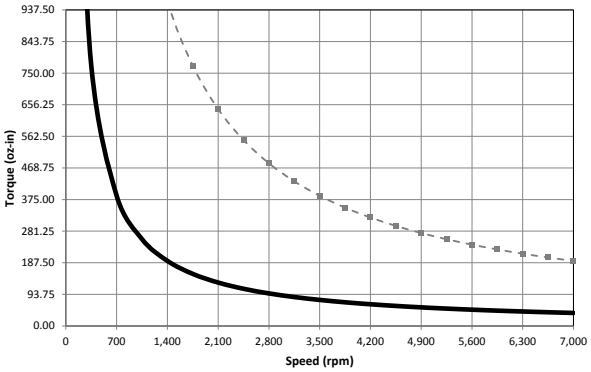
LB-750M/MLB-750M



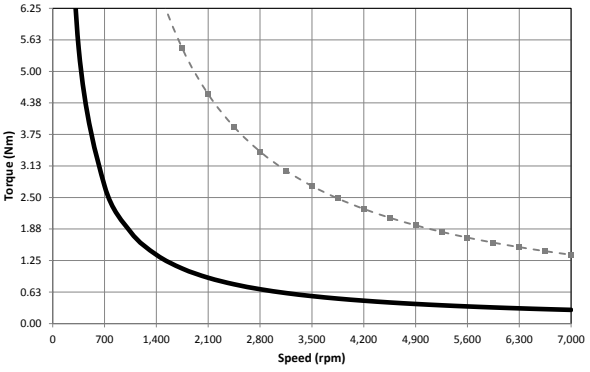
CHB-5



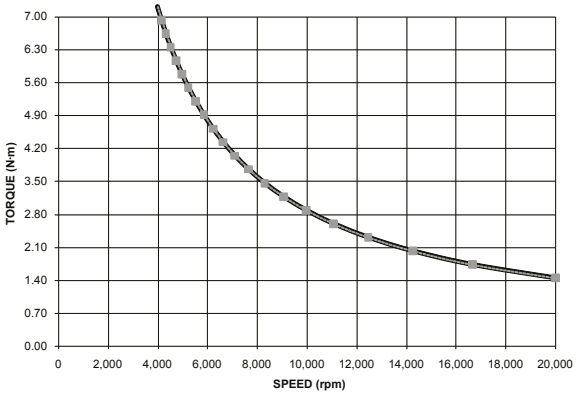
HB-750/MHB-750



HB-750M/MHB-750M

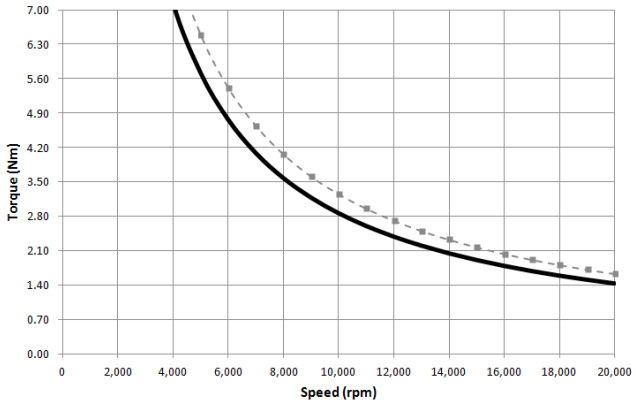


AHB-6

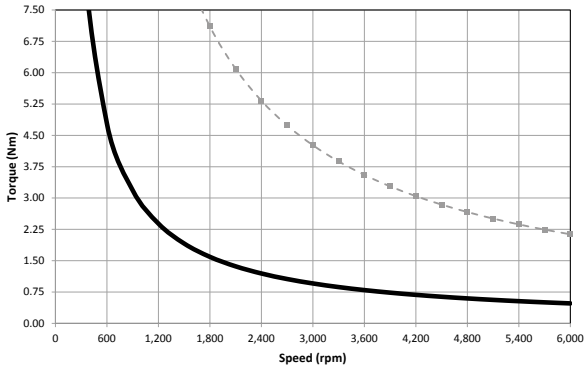


SPECIFICATIONS

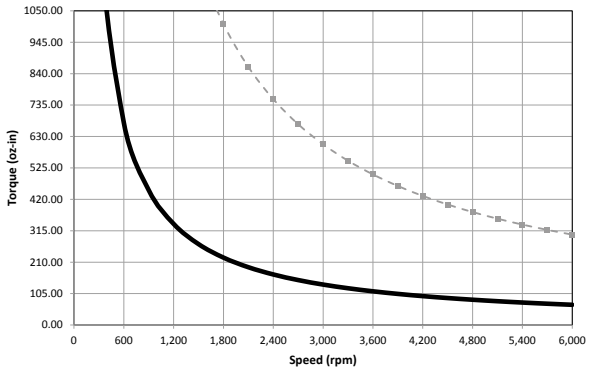
BHB-6BA/BHB-6BA



CHB-6



HB-840



The power absorption curves represent the maximum power (heat) that the brake can dissipate over time.

Maximum Kinetic Power Rating Curve for Less Than Five Minutes: Area under curve equals the maximum speed and torque combinations for a motor test of less than five minutes.

Maximum Kinetic Power Rating Curve for Continuous Duty: Area under curve equals the maximum speed and torque combinations for a continuous duty motor test.

SPECIFICATIONS

UP TO 26.00 N·m (3500.0 oz·in) TORQUE RANGE

HYSTERESIS BRAKE RATINGS

BRAKE MODEL	MATCHED BRAKE MODEL	MIN. TORQUE AT RATED CURRENT		RATED CURRENT	VOLTAGE[a]	MAXIMUM SPEED	KINETIC POWER[b]			
							5 MINUTES		CONTINUOUS	
		N·m	oz·in	mA	VDC	rpm	W		W	
AHB-12	---	12.00	1,700	1,200	24.0	12,000	with air 2,800	w/o air 2,200	with air 1,800	w/o air 250
BHB-12B/BHB-12BA	---	12.00	1,700	1,200	24.0	12,000	with air 3,500	w/o air 2,200	with air 3,000	w/o air 250
LB-1750M	MLB-1750M	12.00	1,700	500	26.0	1,800	1,200		350	
CHB-12	---	12.36	1,750	500	26.0	6,000	1,200		350	
HB-1750	MHB-1750	12.36	1,750	500	26.0	6,000	1,200		350	
HB-1750M	MHB-1750M	13.00[c]	1,840	600	31.2	6,000	1,200		350	
AHB-24	---	24.00	3,400	2,400	24.0	12,000	with air 5,300	w/o air 4,000	with air 3,000	w/o air 450
BHB-24B/BHB-24BA	---	24.00	3,400	2,400	24.0	12,000	with air 7,000	w/o air 4,000	with air 6,000	w/o air 450
CHB-24	---	24.72	3,500	1,000	26.0	6,000	2,400		600	
HB-3500	---	24.72	3,500	1,000	26.0	6,000	2,400		600	
HB-3500M	---	26.00[d]	3,682	1,200	31.2	6,000	2,400		600	

BRAKE MODEL	MATCHED BRAKE MODEL	DRAG TORQUE DE-ENERGIZED @ 1,000 rpm		NOMINAL POWER	RESISTANCE AT 25°C ± 10%	EXTERNAL INERTIA		WEIGHT	
		N·m	oz·in	W	Ω	$kg \cdot cm^2$	$lb \cdot in \cdot s^2$	kg	lb
AHB-12	---	9.18×10^{-2}	13.00	28.8	20.0	5.60×10^{1}	5.000×10^{-2}	24.0	53.0
BHB-12B/BHB-12BA	---	9.18×10^{-2}	13.00	28.8	20.0	5.60×10^{1}	5.000×10^{-2}	35.0 w/blower	77.2 w/blower
LB-1750M	MLB-1750M	---	---	13.0	52.0	---	---	21.0	46.3
CHB-12	---	9.18×10^{-2}	1300	13.0	52.0	5.63×10^{1}	4.980×10^{-2}	24.5	54.0
HB-1750	MHB-1750	9.18×10^{-2}	13.00	13.0	52.0	5.63×10^{1}	4.980×10^{-2}	24.5	54.0
HB-1750M	MHB-1750M	9.18×10^{-2}	13.00	13.0	52.0	5.63×10^{1}	4.980×10^{-2}	24.5	54.0
AHB-24	---	1.36×10^{-1}	19.30	57.6	10.0	1.12×10^{2}	9.900×10^{-2}	47.0	103.6
BHB-24B/BHB-24BA	---	1.36×10^{-1}	19.30	57.6	10.0	1.12×10^{2}	9.900×10^{-2}	68.0 w/blower	150.0 w/blower
CHB-24	---	1.36×10^{-1}	19.30	26.0	26.0	1.25×10^{2}	1.110×10^{-1}	50.0	110.0
HB-3500	---	1.36×10^{-1}	19.30	26.0	26.0	1.11×10^{2}	1.056×10^{-1}	50.0	110.0
HB-3500M	---	1.36×10^{-1}	19.30	26.0	28.0	1.25×10^{2}	1.110×10^{-1}	50.0	110.0

a) Other coil voltages are available.

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

c) 13 N·m is attainable @ approx. 600 mA. This value may decrease to 12.36 N·m if the brake is powered by any power supply or controller limited to 500 mA.

d) 26 N·m is attainable @ approx. 1200 mA. This value may decrease to 24.72 N·m if the brake is powered by any power supply or controller limited to 1000 mA.

* Angular Acceleration values are available upon request

** To prevent damage to the power supply from inductive kickback, connect a diode rated at greater than or equal to the power supply's output voltage and current across the brake leads. Connect the cathode to the positive lead and the anode to the negative lead.

SPECIFICATIONS

AHB AIR REQUIREMENTS

BRAKE MODEL	AIR SUPPLY PRESSURE			AIR VOLUME/ CONSUMPTION		SUPPLY TUBE FITTING	
						OUTER DIAMETER	PIPE THREAD SIZE
	PSI[a)]	bar	kPa	SCFM	l/min	mm	NPT
AHB-12	90	6.21	620.5	20	567	10	3/8"
AHB-24	90	6.21	620.5	20	567	10	3/8"

a) The air pressure to the (at the) brake will be called out at 85 to 95 PSI. This range is thought to allow a user to directly attach to a compressor line without local regulation and filtering.

BHB BLOWER

BRAKE MODEL	INCLUDED BLOWER	
	MODEL	VOLTAGE VAC
BHB-12B	BL-001	120
BHB-12BA	BL-001-A	240
BHB-24B	BL-001	120
BHB-24BA	BL-001-A	240

AHB/BHB ENVIRONMENTAL REQUIREMENTS

Operating Temperature	-40 °C to +85 °C
Relative Humidity	up to 90% without condensation

AHB/BHB ELECTRICAL CHARACTERISTICS

Max. Compliance Voltage	36 VDC

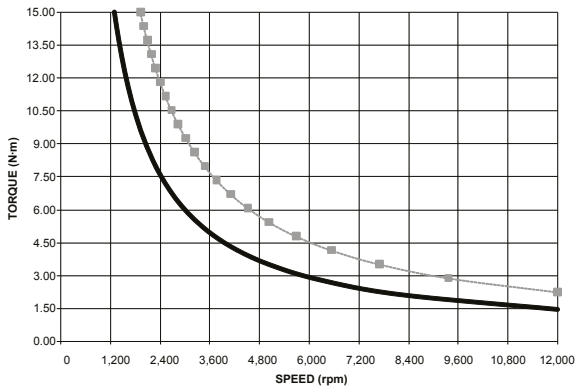
ADDITIONAL AHB/BHB MECHANICAL CHARACTERISTICS

Shaft Ends	smooth
Balancing Quality	G6.3 in accordance with ISO 1940-1

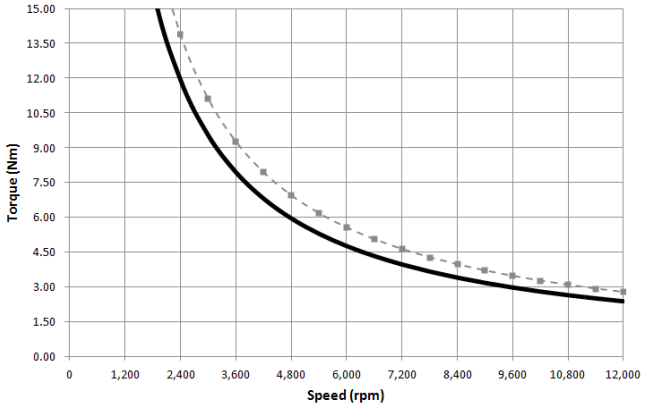
Typical sound pressure at 1 meter: 110 db
Warning: High sound levels can cause permanent hearing loss. Use hearing protection while this product is in use.

POWER ABSORPTION CURVES

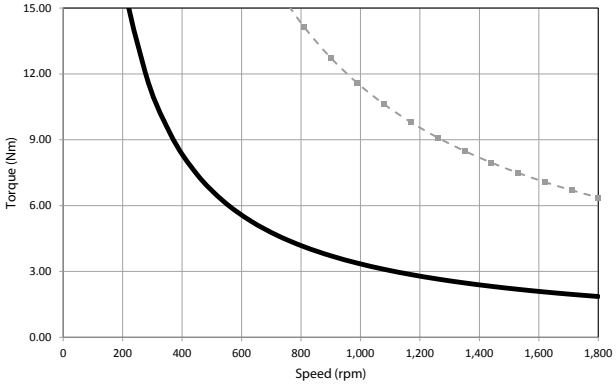
AHB-12



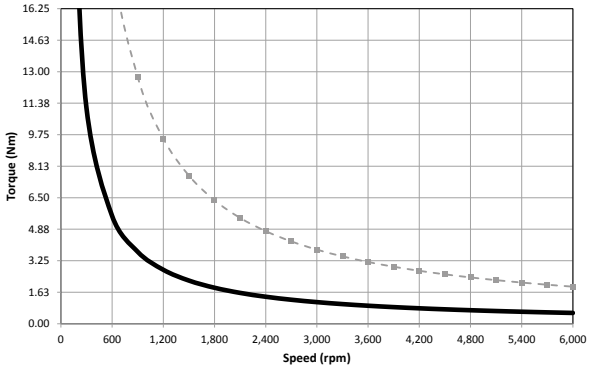
BHB-12B/BHB-12BA



LB-1750M/MLB-1750M

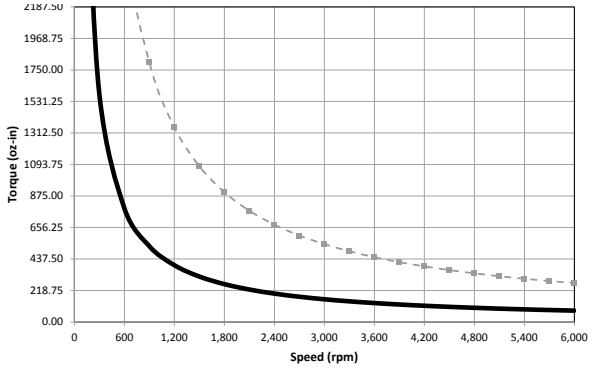


CHB-12

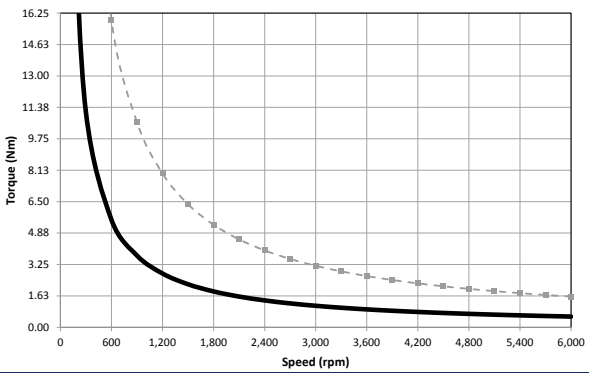


SPECIFICATIONS

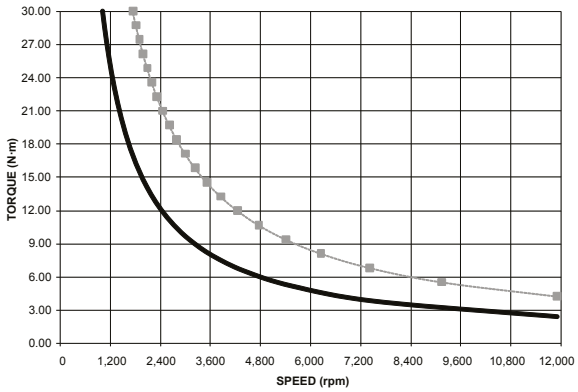
HB-1750/MHB-1750



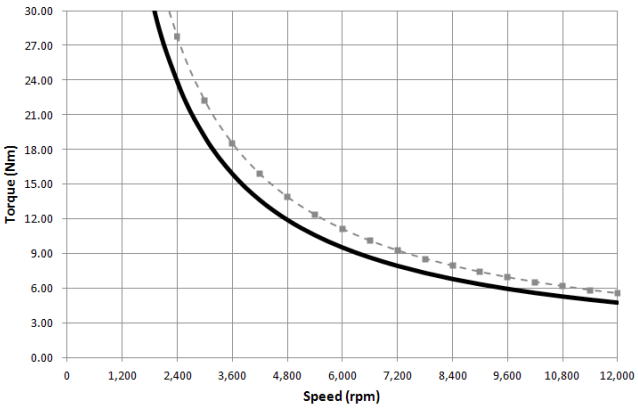
HB-1750M/MHB-1750M



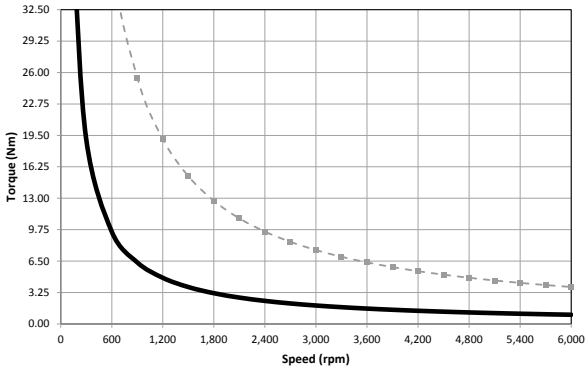
AHB-24



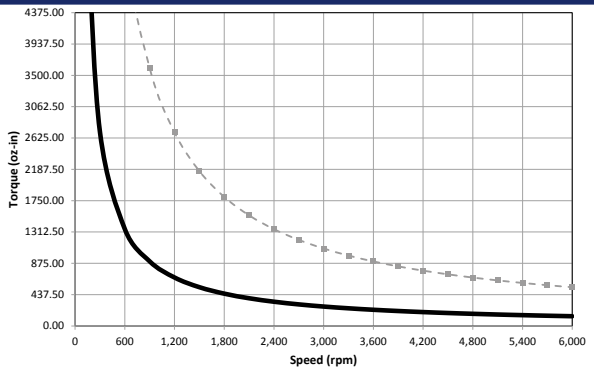
BHB-24B/BHB-24BA



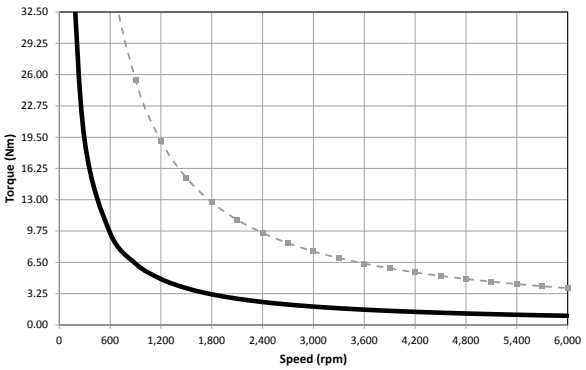
CHB-24



HB-3500



HB-3500M



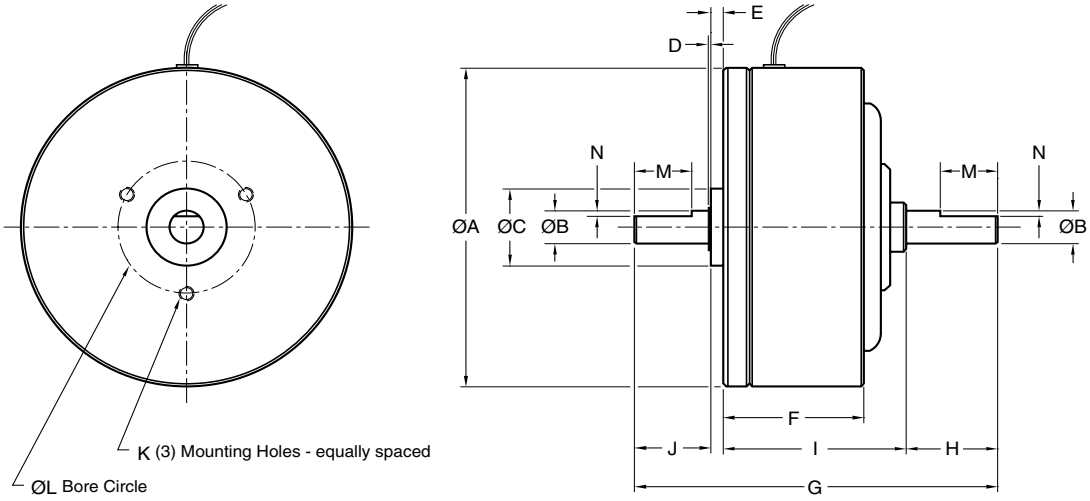
The power absorption curves represent the maximum power (heat) that the brake can dissipate over time.

Maximum Kinetic Power Rating Curve for Less Than Five Minutes: Area under curve equals the maximum speed and torque combinations for a motor test of less than five minutes.

Maximum Kinetic Power Rating Curve for Continuous Duty: Area under curve equals the maximum speed and torque combinations for a continuous duty motor test.

DIMENSIONS

HB/MHB SERIES ENGLISH DIMENSIONS (INCHES)



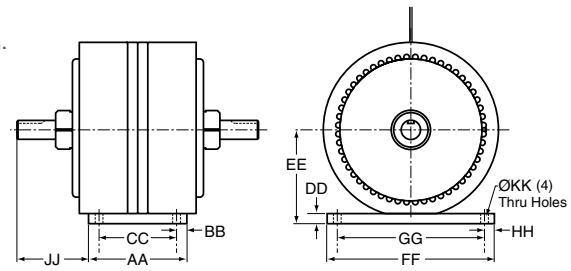
HYSTERESIS BRAKE MODEL	MATCHED BRAKE MODEL	ØA	ØB	ØC	D	E	F	G	H	I	J	K	ØL	M	N
---	MHB-2.5	1.250	0.1250	0.375	0.010	0.030	0.73	1.564	0.30	0.94	0.29	#4-40 ↧ 0.16	0.750	---	---
HB-2.5	---	1.250	0.1250	0.375	0.012	0.030	0.73	1.564	0.29	0.94	0.29	#4-40 ↧ 0.16	0.750	---	---
HB-10	MHB-10	1.800	.01875	0.500	0.021	0.096	0.82	2.120	0.50	1.00	0.50	#4-40 ↧ 0.19	0.687	0.375	0.025
HB-16	---	1.970	0.1875	0.500	0.015	0.096	0.81	2.109	0.50	0.95	0.50	#4-40 ↧ 0.25	0.750	0.375	0.025
HB-38	MHB-38	2.155	0.2500	0.625	0.032	0.096	1.25	3.000	0.56	1.69	0.63	#6-32 ↧ 0.25	0.906	0.375	0.025
HB-50	MHB-50	2.360	0.2500	0.625	0.033	0.096	1.56	3.000	0.56	1.69	0.63	#6-32 ↧ 0.25	0.906	0.375	0.025
HB-140	MHB-140	3.624	0.3750	0.875	0.025	0.140	1.53	3.968	1.00	2.00	0.80	#8-32 ↧ 0.37	1.500	0.625	0.060
HB-250	MHB-250	4.437	0.5000	1.125	0.035	0.156	1.98	4.718	1.06	2.53	0.93	#10-32 ↧ 0.50	1.750	0.625	0.060
HB-450	MHB-450	5.420	0.5000	1.125	0.035	0.156	2.06	5.156	1.06	2.87	1.03	#10-32 ↧ 0.38	1.750	0.630	0.060
HB-750	MHB-750	6.220	0.6250	1.375	0.035	0.163	2.87	6.930	1.50	3.74	1.50	¼-20 ↧ 0.44	2.750	0.750	0.060
HB-840	---	5.485	0.5000	*	*	*	4.13	7.750	1.00	*	1.00	*	*	0.625	0.060
HB-1750	MHB-1750	8.900	1.0000	2.000	0.055	0.250	3.00	8.310	2.04	4.18	1.79	¼-20 ↧ 0.50	3.000	#807 woodruff keyway (2 places)	
HB-3500	---	8.900	1.0000	*	*	*	6.00	12.460	2.04	*	2.04	*	*	#807 woodruff keyway (2 places)	

* HB-840 and HB-3500 are double brake assemblies that require base mounting. See base mounting dimensions below for details. Magtrol manufactures double brakes to increase torque capability. For more information and a drawing, contact Magtrol.

BASE MOUNTING DIMENSIONS

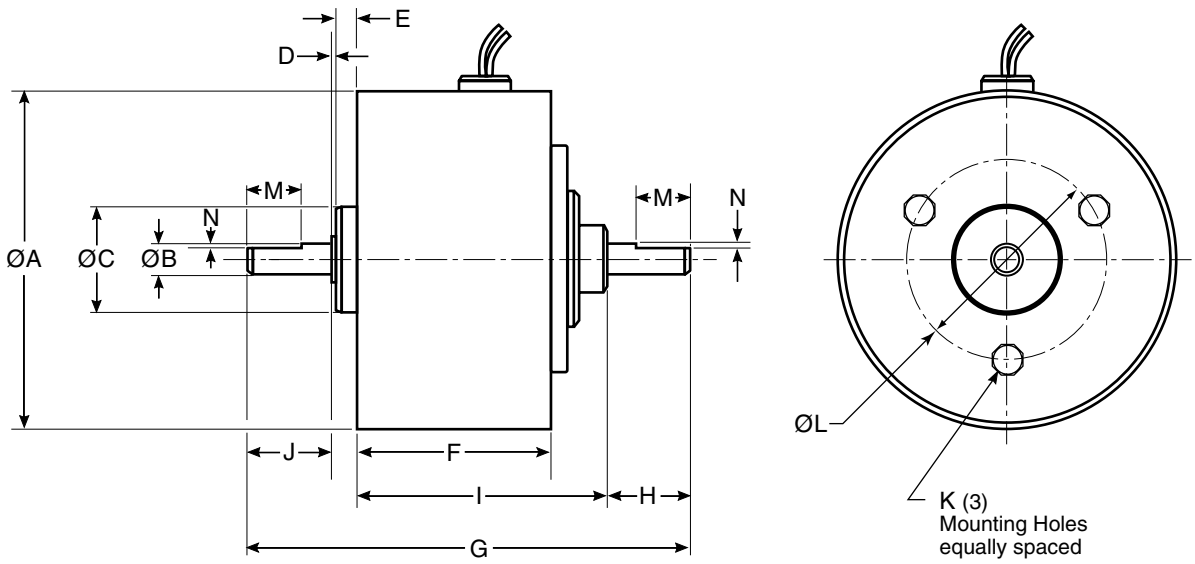
Base mounting is standard on all HB-840, HB-3500 and HB-3500M brakes.

MODEL	AA	BB	CC	DD	EE	FF	GG	HH	JJ	ØKK
English Dimensions:										
HB-840	4.13	0.25	3.63	0.50	3.15	5.25	4.75	0.25	1.81	0.204
HB-3500	5.00	0.50	4.00	0.50	4.75	8.50	7.50	0.50	3.73	0.406
Metric Dimensions:										
HB-3500M	127.0	13.5	100	12.7	120.7	216.0	190	13	92.5	11



DIMENSIONS

HB/MHB SERIES METRIC DIMENSIONS (MILLIMETERS)

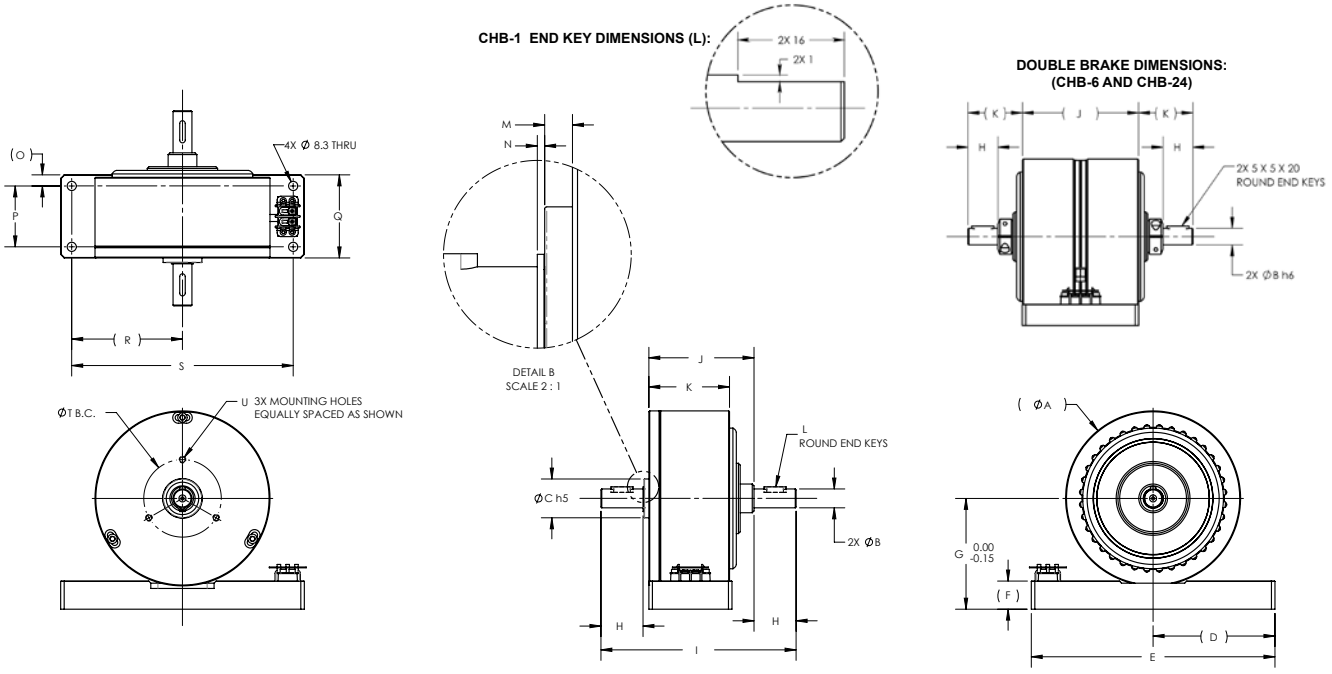


HYSTERESIS BRAKE MODEL	MATCHED BRAKE MODEL	ØA	ØB	ØC	D	E	F	G	H	I	J	K	ØL	M	N
HB-3M-2	MHB-3M-2	31.8	3.00	10.00	0.6	2.0	18.6	42.0	8.0	23.6	8.0	M2.5 ↧ 4.5	19.0	---	---
HB-10M-2	MHB-10M-2	45.7	5.00	14.00	0.7	2.4	20.7	52.6	12.0	25.5	12.0	M2.5 ↧ 5	19.0	9.5	0.7
HB-20M-2	MHB-20M-2	50.0	5.00	14.00	0.7	1.8	23.5	55.8	13.0	27.3	13.0	M3 ↧ 6	21.0	9.5	0.7
HB-50M-2	MHB-40M-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
HB-140M-2	MHB-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
HB-250M-2	MHB-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	4 x 4 x 20 round end keyway (2 places)	
HB-450M-2	MHB-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	5 x 5 x 20 round end keyway (2 places)	
HB-750M-2	MHB-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	5 x 5 x 20 round end keyway (2 places)	
HB-1750M-2	MHB-1750M-2	226.1	25.00	52.00	1.2	6.0	76.2	213.0	50.0	105.8	50.0	M6 ↧ 12	100.0	8 x 7 x 25 round end keyway (2 places)	
HB-3500M-2	---	226.0	25.00	*	*	*	152.4	312.0	50.0	*	50.0	*	*	8 x 7 x 25 round end keyway (2 places)	

*The HB-3500M-2 is a double brake assembly that requires base mounting. See base mounting dimensions on page 18 for details. Magtrol manufactures double brakes to increase torque capability. For more information and a drawing, contact Magtrol.

DIMENSIONS

CHB DIMENSIONS (MILLIMETERS)

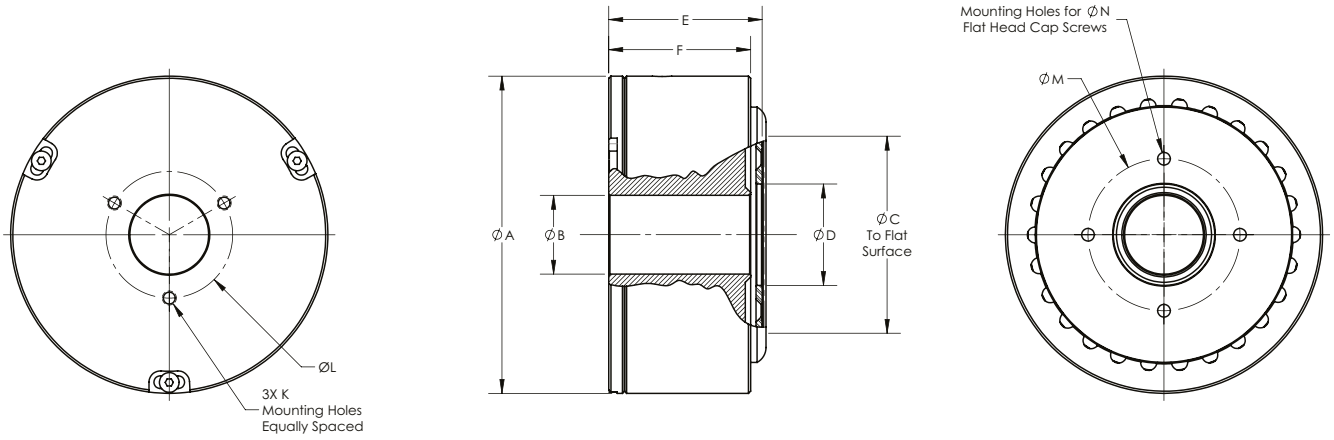


CHB BRAKE MODEL	ØA	ØB	ØC	D	E	F	G	H	I	J
CHB-1	92.0	10 h5	22 h5	60.0	140	19.0	60	25	100.0	50.8
CHB-1.5	112.7	12 h5	28 h5	85.0	170	19.0	70	27	123.1	64.2
CHB-3	139.3	15 h6	32 h5	82.5	165	19.0	80	27	131.5	73.0
CHB-5	158.0	17 h4	35 h5	110.0	220	25.0	100	38	176.2	94.9
CHB-6	139.3	15 h6	---	82.5	165	19.0	80	27	202.7	104.7
CHB-12	226.0	25 h6	52 h5	135.0	270	25.4	120	50	213.0	105.9
CHB-24	226.0	25 h6	---	135.0	270	25.4	120	50	311.6	152.4

CHB BRAKE MODEL	K	L	M	N	O	P	Q	R	S	ØT	U
CHB-1	39.0	*see above*	2.5	0.7	10.0	25	45	50	100	38	M4x0.7- 6H ↧ 9.1 min
CHB-1.5	50.4	2 x 4 x 4 x 20	3.9	1.0	10.0	30	50	75	150	45	M5x0.8 - 6H ↧ 10 min
CHB-3	52.4	2 x 5 x 5 x 20	3.5	1.1	7.5	50	65	75	150	60	M5x0.8 - 6H ↧ 10 min
CHB-5	72.8	2 x 5 x 5 x 20	4.2	1.1	10.0	55	75	100	200	70	M6x1.0 - 6H ↧ 10 min
CHB-6	49.0	2 x 5 x 5 x 20	---	---	10.0	85	105	75	150	---	---
CHB-12	76.2	2 x 8 x 7 x 25	6.0	1.1	12.5	55	80	125	250	100	M6x1.0 - 6H ↧ 12 min
CHB-24	79.6	2 x 8 x 7 x 25	---	---	9.0	125	143	125	250	---	---

DIMENSIONS

LB DIMENSIONS (MILLIMETERS)



LARGE BORE BRAKE MODEL	LARGE BORE MATCHED BRAKE MODEL	ØA	ØB[a)]	ØC	ØD	E	F	K	ØL	ØM	N
LB-250M	MLB-250M	112.7	28.0	70.0	36.0	54.5	50.4	M5 ↧ 10.0	45.0	54.0	M4
LB-450M	MLB-450M	137.7	42.0	90.0	50.0	57.0	52.4	M5 ↧ 10.0	60.0	80.0	M4
LB-750M	MLB-750M	158.0	50.0	127.0	60.0	80.0	72.8	M6 ↧ 12.0	70.0	90.0	M5
LB-1750M	MLB-1750M	226.0	80.0	160.0	120.0	83.0	76.0	M6 ↧ 12.0	100.0	140.0	M5

a) Slightly larger bore diameters can be provided but will result in reduced torque ratings.

OPERATING CONSIDERATIONS

Alignment notes:

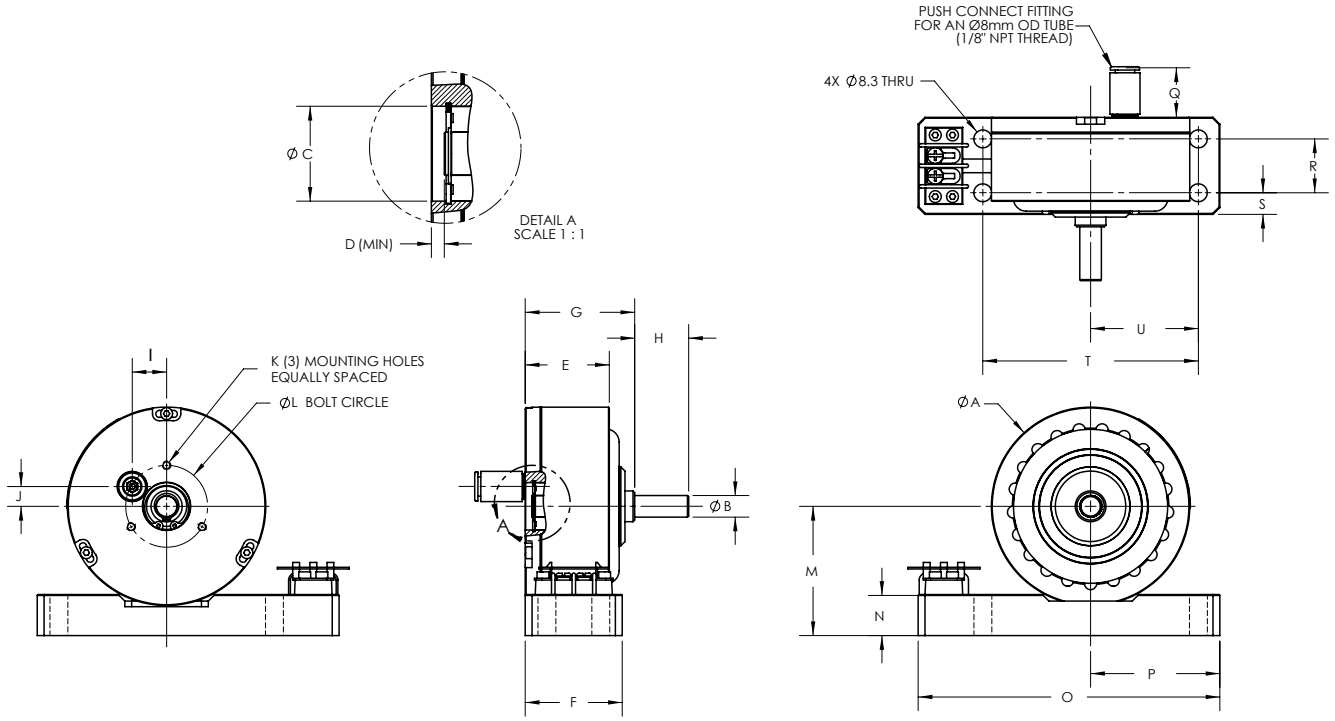
- The pole/case assembly and the rotor are shipped as separate items.
- It is the responsibility of the machine designer to assure proper alignment of the mating brake parts in the final assembly.
- These components must be mounted so that the concentricity and perpendicularity between the rotor and pole does not exceed the specified tolerances.
- Refer to individual LB model drawings, available on Magtrol's web site, for further details.

Additional Information:

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.

DIMENSIONS

AHB DIMENSIONS (MILLIMETERS)



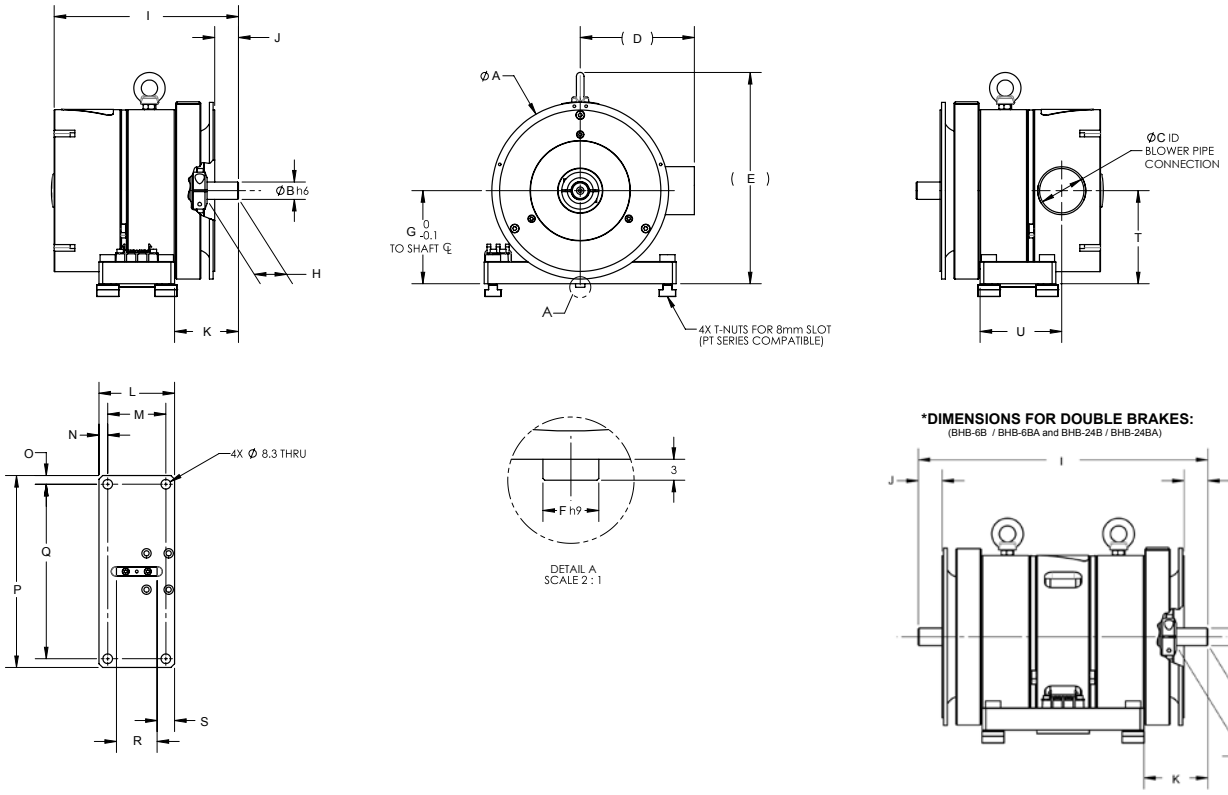
AHB BRAKE MODEL	ØA	ØB	ØC	D	E	F	G	H	I	J
AHB-1	92.0	10.0 h5	22.0 H6	2.5	39.0	45	50.8	25	15.9	9.2
AHB-1.5	112.7	12.0 h4	28.0 H6	2.5	50.4	50	64.2	27	19.5	11.3
AHB-3	139.3	15.0 h5	32.0 H6	2.0	52.4	65	72.9	27	24.7	14.3
AHB-5	158.0	17.0 h4	35.0 H6	3.0	72.8	75	94.9	38	28.6	16.5
AHB-6	139.3	15.0 h5	*	*	104.7	105	*	27	*	*
AHB-12	226.0	25.0 h6	52.0 H5	3.0	76.2	80	105.8	50	38.5	22.2
AHB-24	226.0	25.0 h6	*	*	152.4	143	*	50	*	*

AHB BRAKE MODEL	K	ØL	M	N	O	P	Q	R	S	T	U
AHB-1	M4x0.7-6H ↧ 8 min	38.0	60.0	19	140	60	23	25.0	10.0	100.0	50
AHB-1.5	M5x0.8-6H ↧ 10 min	45.0	70.0	19	170	85	23	30.0	10.0	150.0	75
AHB-3	M5x0.8-6H ↧ 10 min	60.0	80.0	19	165	82.5	21	50.0	7.5	150.0	75
AHB-5	M6x1.0-6H ↧ 10 min	70.0	100.0	25	220	110	21	55.0	10.0	200.0	100
AHB-6	*	*	80.0	19	165	83	*	85.0	10.0	150.0	75
AHB-12	M6x1.0-6H ↧ 12 min	100.0	120.0	25	270	135	18	55.0	12.5	250.0	125
AHB-24	*	*	120.0	25	270	135	*	125.0	9.0	250.0	125

* Face mount not available on the AHB-6 and AHB-24.

DIMENSIONS

BHB DIMENSIONS (MILLIMETERS)



BHB BRAKE MODEL	ØA	ØB	ØC	D	E	F	G	H	I	J
BHB-3B / BHB-3BA	151.9	15	1 ½ "	98.1	181.7	8	80	27	158.4	20.5
BHB-6B / BHB-6BA	151.9	15	2"	98.1	181.7	8	80	27	248.2*	20.4*
BHB-12B / BHB-12BA	226.6	25	1 ½"	151.4	283.0	8	120	50	206.0	47.0
BHB-24B / BHB-24BA	226.6	25	2"	153.9	283.0	8	120	50	375.2*	47.0*

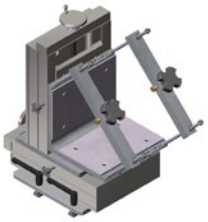
BHB BRAKE MODEL	K	L	M	N	O	P	Q	R	S	T	U
BHB-3B / BHB-3BA	54.9	65.0	50	7.5	7.5	165	150	35	15.0	80	70.2
BHB-6B / BHB-6BA	54.9	138.5	120	9.3	7.5	165	150	45	46.8	80	69.3
BHB-12B / BHB-12BA	84.2	90.0	70	10.0	10.0	270	250	35	27.5	120	96.7
BHB-24B / BHB-24BA	84.4	206.4	185	10.7	10.0	270	250	25	8.1	120	103.2

SYSTEM OPTIONS AND ACCESSORIES

PT SERIES T-SLOT BASE PLATES

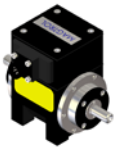
Magtrol's PT Series Base Plates are used for creating a basic test rig by mounting a brake and/or TM Torque Transducer in line with the unit to be tested. Its solid, warp-resistant structure and multiple, single-sided T-slots enable modular construction that is cost-effective and easy to assemble.

AMF SERIES ADJUSTABLE MOTOR FIXTURES



Magtrol's AMF Series Adjustable Motor Fixtures are used to secure small to medium-sized motors in place while running any test. These extremely versatile fixtures also enable easy motor centering for coupling to a brake. (Couplings can be supplied upon request.) The AMF-1, -2 and -3 Fixtures feature one or two adjustable bridges, each fitted with a fluted knob clamp screw, to allow clamping anywhere along the axis of the motor. To safeguard the motor, locking thumb screws provide protection against vibration and all motor-to-fixture contact surfaces are nylon padded for scratch-free clamping.

TM SERIES IN-LINE TORQUE TRANSDUCERS



Magtrol's In-Line Torque Transducers deliver precise torque and speed measurement over a very broad range. Each model has an integrated conditioning electronic module providing 0 to ±10 VDC torque output and an open collector speed output. All TM In-Line Transducers employ Magtrol's unique non-contact differential transformer torque measuring technology which makes them very reliable, providing high overload protection, excellent long-term stability and high noise immunity.

TM RISERS

Many times, hysteresis brakes will be used with one of Magtrol's TM Series In-Line Torque Transducers. Risers lift the appropriate TM from the PT to the shaft height of the brake. The riser is complete with attachment hardware for the TM and T-Nuts and shoulder bolts for attachment to a PT Base Plate.

JACK SHAFT RISER

For each brake there is an appropriately sized hardened jack shaft, complete with T-Nuts and shoulder bolts, that will mount to a PT Base Plate. Risers lift the appropriate Jack Shaft from the PT to the shaft height of the brake.

FRS FREE RUN SPEED SENSOR

Magtrol's FRS Free-Run Speed Sensor is designed for applications where it is necessary to acquire speed readings that are unaffected by drag load. Before connecting a motor to the dynamometer, the free-run speed can be obtained from the FRS Sensor. With its reflective sensor, the FRS does not need to be attached to the motor but only placed close to the motor shaft (as shown in the photo to the right). Note: For best contrast, the shaft should be marked with reflective tape. The sensing end of the fiber optic assembly emits and receives light reflected from the shaft, and sends the speed signal to the digital fiber sensor.

The raw speed data is then transmitted to either a Magtrol 3410 Torque Display or DSP7000 Dynamometer Controller where it is converted and displayed in rpm

AIR FILTER KIT

In order to ensure optimal life, the compressed air supply used to cool AHB Series Hysteresis Brakes must be free of contamination, including water, oil, rust scale, dust, etc. For optimal performance, Magtrol recommends the use of a 5 micron coalescing filter. Air filter kits purchased from Magtrol include the filter and a mounting bracket for attaching the air filter to a PT Base Plate.

PRESSURE GAUGE KIT

To ensure proper air volume Magtrol offers a pressure gauge kit, including "T" connector and tube (as shown), to be used in-line with the air supply line.

POWER SUPPLIES

Hysteresis Brakes provide torque that is proportional to the current applied. During normal operation, the coil resistance of a Brake will change with temperature. To eliminate the resulting torque drift, Magtrol recommends using a current-regulated power supply, such as the Model 5210, VM Series or the Lambda ZUP36-6. Refer to the note about power supplies under "Accessory Ordering Information" for more details.

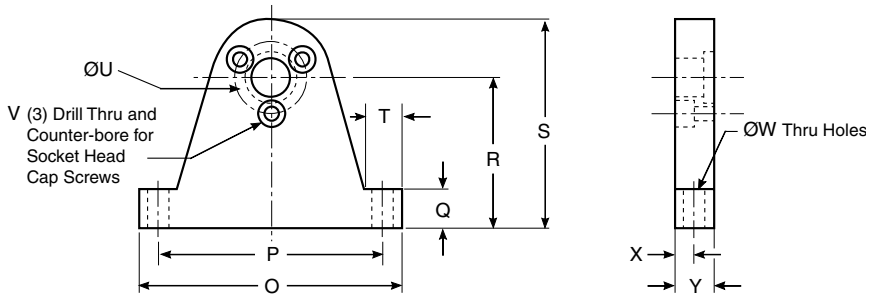
ALSO AVAILABLE

- Connection Cables: brake to controller; power supply to brake; controller to power supply
- Couplings: brake to in-line torque transducer
- Air Supply Lines: 8 mm and 10 mm outside diameter; sold by the meter
- Pipe Fittings

SYSTEM OPTIONS AND ACCESSORIES

HB/MHB PILLOW BLOCKS

Pillow Block Assemblies are an available option for all brake units except the HB-3500 and HB-3500M.



ENGLISH DIMENSIONS

PILLOW BLOCK MODEL	FOR BRAKE MODELS	O	P	Q	R	S	T	ØU	V	ØW	X	Y
4736	HB-2.5, MHB-2.5	1.75	1.500	0.25	1.000	1.500	0.25	0.750	#4-40	0.125	0.125	0.25
4702	HB-8, MHB-10.5	2.50	2.125	0.38	1.437	2.125	0.38	0.687	#4-40	0.201	0.187	0.38
4703	HB-16	2.50	2.125	0.38	1.437	2.125	0.38	0.750	#4-40	0.201	0.187	0.38
4705	HB-32, HB-50, MHB-38, MHB-50	2.50	2.125	0.38	1.437	2.125	0.38	0.906	#6-32	0.201	0.187	0.38
4711	HB-140, MHB-140	4.00	3.500	0.38	2.000	3.187	0.50	1.500	#8-32	0.204	0.250	0.50
4714	HB-250, MHB-250	4.00	2.500	0.38	2.375	3.687	0.50	1.750	#10-32	0.204	0.250	0.50
4717	HB-450, MHB-450	4.62	4.000	0.50	3.000	4.310	0.56	1.750	#10-32	0.204	0.250	0.50
4720	HB-750, MHB-750	5.25	4.500	0.75	3.250	5.125	0.75	2.750	#¼-20	0.343	0.375	0.75
4722	HB-1750, MHB-1750	7.50	6.500	1.00	5.000	7.000	1.00	3.000	#¼-20	0.328	0.500	1.00

METRIC DIMENSIONS

PILLOW BLOCK MODEL	FOR BRAKE MODELS	O	P	Q	R	S	T	ØU	V	ØW	X	Y
4723	HB-3M-2, MHB-3M-2	44.5	38.0	6.4	25.4	38.1	7.4	19.0	M2.5	3.4	3.2	6.4
4700	HB-10M-2, MHB-10M-2	63.5	54.0	9.7	36.5	53.9	10.4	19.0	M2.5	5.5	4.7	9.5
4704	HB-20M-2, MHB-20M-2	63.5	54.0	9.7	36.5	53.9	10.4	21.0	M3	5.5	4.7	9.5
4706	HB-50M-2, MHB-50M-2	63.5	54.0	9.7	36.5	53.9	10.4	25.0	M4	5.5	4.7	9.5
4864	HB-140M-2, MHB-140M-2	101.6	90.0	9.7	50.0	80.9	12.7	38.0	M4	4.5	6.4	12.7
4865	HB-250M-2, MHB-250M-2	101.6	90.0	9.7	60.0	93.7	12.7	45.0	M5	5.5	6.4	12.7
4866	HB-450M-2, MHB-450M-2	117.3	104.0	12.7	76.0	120.4	14.2	60.0	M5	6.6	6.4	12.7
4858	HB-750M-2, MHB-750M-2	133.4	115.0	19.1	83.0	130.6	19.1	70.0	M6	9.0	9.5	19.1
4867	HB-1750M-2, MHB-1750M-2	190.5	166.0	25.4	120.0	177.8	25.4	100.0	M6	11.0	12.7	25.4

ORDERING INFORMATION

SYSTEM OPTIONS

CATEGORY	DESCRIPTION	MODEL/PART #
TORQUE MEASUREMENT	In-Line Torque Transducers	TM/TMHS/TMB Series
SPEED MEASUEMENT	Free-Run Speed Sensor	FRS
MOUNTING	T-slot Base Plate - available in lengths from 400 mm to 1500 mm	PT Series
	Couplings	Contact Magtrol
ADJUSTABLE MOTOR FIXTURES	Motor fixture for motors up to 4 inches in diameter	AMF-1
	Motor fixture for motors up to 6 inches in diameter	AMF-2
	Motor fixture for motors up to 8 ¼ inches in diameter	AMF-3
CONTROLLERS & DISPLAYS	High Speed Programmable Dynamometer Controller	DSP7000
	Torque Display	3411
BRAKE POWER SUPPLIES	Current-regulated Power Supply	5210
	Regulated DC Power Supply - 0-36 volts/6 amps; high accuracy;digital display	Lambda ZUP36-6
	VM Series Proportional Amplifier/Controller	VM Series
CONNECTION CABLES	Connect DSP7000 Controller to brake	88M085-0150 (1.5 m) 88M085-0200 (2 m) 88M085-0500 (5 m) 88M085-1000 (10 m)
	Connect 5210 Power Supply to brake	88M085-0150 (1.5 m) 88M085-0200 (2 m) 88M085-0500 (5 m) 88M085-1000 (10 m)
	Connect ZUP36-6 Power Supply to brake	88M175-0200 (2 m) 88M175-0500 (5 m)
	Connect DSP7000 Controller to ZUP36-6 Power Supply	88M176-0100 (1 m) 88M176-0200 (2 m)
	Connect TM Torque Transducer to DSP7000	ER 113/01 (5 m) ER 113/02 (10 m) ER 113/03 (20 m)
TM RISERS	Lift the appropriate TM from the PT to the shaft height of the brake.	RTM-1-060 RTM-1-070 RTM-1-080 RTM-1-100 RTM-1-120 RTM-2-120
JACK SHAFT RISER	Lift the appropriate Jack Shaft from the PT to the shaft height of the brake.	JS-1-060 JS-1-070 JS-1-080 JS-1-100 JS-1-120 JS-2-120 JS-10-080 JS-10-120 JS-20-120
MISC	Air Supply Lines	Contact Magtrol
	Pipe Fittings	Contact Magtrol

MAGTROL INC
70 Gardenville Parkway
Buffalo NY 14224 | USA
phone +1 716 668 5555
fax +1 716 668 8705
e-mail magtrol@magtrol.com

MAGTROL SA
Route de Montena 77
1728 Rossens | Switzerland
phone +41 26 407 30 00
fax +41 26 407 30 01
e-mail magtrol@magtrol.ch

Offices in: Germany
France - China - India
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