

Hysteresis Brake

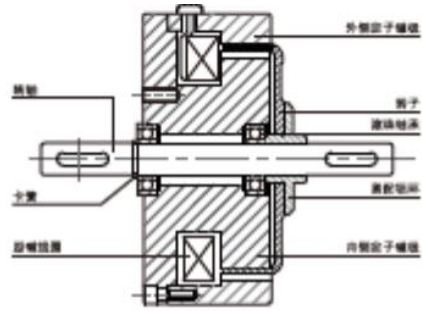
磁滞制动器



- ◆ **High Degree of controllability** 可控性高
- ◆ **Operational Smoothness without Mechanical Friction or particles** 运行平滑-无机械或粉尘摩擦
- ◆ **Longer expected life** 寿命更长
- ◆ **Superior torque repeatability** 扭矩重复性强
- ◆ **Less maintenance and down time** 较少维护及停机时间
- ◆ **Broad Speed range** 速度范围宽
- ◆ **Infinitely adjustable for precise torque and tension control** 精确扭矩和张力控制的无限可调

Operating principles 工作原理

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



磁性中的滞后效应通过使用两个基本组件被应用于扭矩控制 - 网状磁极结构和特殊钢质转子/轴组件安装在一起，但不以物理接触方式。在极结构通电之前，拖曳杯可以在其轴承上自由旋转。当来自励磁线圈的磁化力施加到极结构时，气隙变成磁通场并且转子被磁性约束，从而在极结构和转子之间提供制动或离合作用。

The superior design of these hysteresis devices provides several inherent advantages over magnetic-particle and friction devices. They operate on a frictionless design principle with virtually no wear. This provides such advantages as: longer expected life, superior torque repeatability, life-cycle cost advantages, broad speed range, excellent environmental stability and superior operational smoothness.

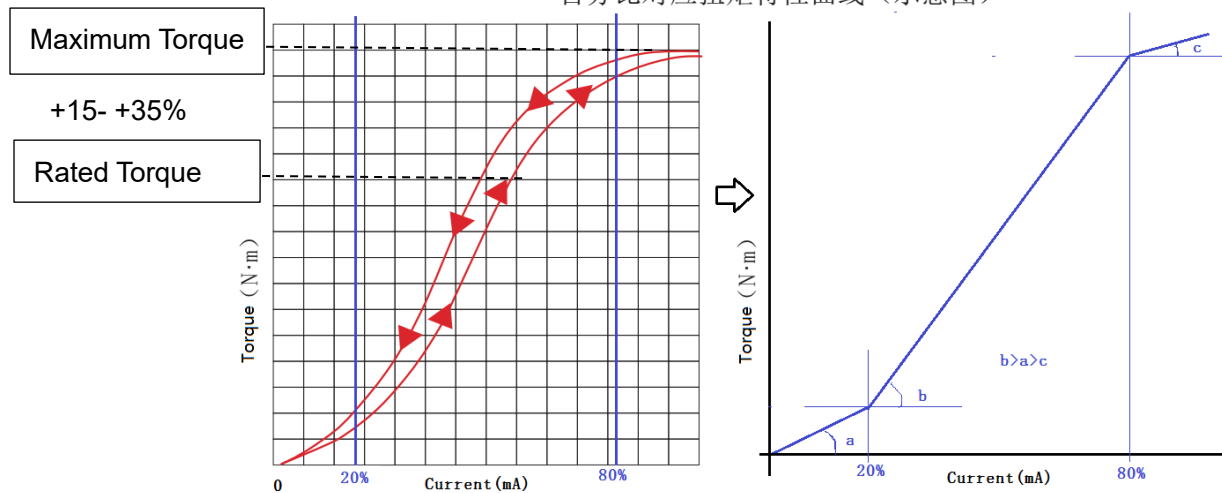
这些磁滞装置的卓越设计提供了超越磁性颗粒和摩擦装置的若干固有优势。他们在无摩擦的设计原则下运作几乎没有磨损。这具有如下优点：预期寿命更长，扭矩可重复性更好，寿命周期成本优势，速度范围宽，环境优良稳定性和卓越的操作流畅性。

In a Current Controlled Electric 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 15 - 35% above rated torque is possible. These brakes utilize the same operating principle as our permanent magnet hysteresis brakes, however the magnets are replaced with a field coil which provides the precise magnetic field strength necessary to provide the rated torque.

在电流控制磁滞制动器中，转矩的调节和控制由励磁线圈提供。这允许通过调整到励磁线圈的直流电流来完全控制转矩。从最小值（轴承阻力）到额定扭矩以上 15-35% 的最大值可调。这些制动器采用与我们的永磁磁滞制动器相同的工作原理，但是磁场被替换为磁场线圈，其提供了额定转矩所需的精确磁场强度。



Torque VS Current Correlation Diagram
百分比对应扭矩特性曲线（示意图）



Residual Magnetic 残余磁力:

The residual magnetic force will be generated at the time of the excitation current suddenly changes to less than 50% of the initial value and the rotor does not rotate, and torque will be fluctuated during operation. And the effective way of avoiding the torque fluctuation are:
当励磁电流突然改变为低于初始值的 50%且没有转动转子时会产生残余磁力，运转时会使扭矩出现波动。有效的避免扭矩波动的方法有:

1. Manually rotate the stator and rotor respectively and reduce the excitation current concurrently
手动分别转动定子和转子的同时逐渐降低励磁电流;
2. Reduce the excitation current gradually prior to stopping the running equipment
在设备运行停机前逐渐降低励磁电流;
3. Turn off the low excitation current(The relative speed between stator and rotor is minimum 100rpm)prior to stopping the running equipment.
在设备运行停机前断开低励磁电流（定子和转子之间的相对转速在 100 转以上）

Selection Reference 选型参考:

X X X - X X X - X X

			A-Double Ended Shafts
			B-Single Ended Shaft at Left Side
			C-Single Ended Shaft at Right Side
			Type and Specification
			HB-Standard Hysteresis Brake
			LB-Large Bore Hysteresis Brake
			MHB-Matched Hysteresis Brake
			AHB-Compressed Air Cooled Hysteresis Brake
			BHB-Blower Cooled Hysteresis Brake
			EHB-External Rotor Cooled Hysteresis Brake
			PHB-Fan Cooled Hysteresis Brake

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			A-双输出轴
			B-输出轴在左边
			C-输出轴在右边
			型号规格
			HB-标准磁滞制动器
			LB-空心轴磁滞制动器
			MHB-匹配式磁滞制动器
			AHB-气冷式磁滞制动器
			BHB-鼓风式磁滞制动器
			EHB-外转子高功率磁滞制动器
			PHB-风叶自冷式磁滞制动器

以上这些都放在每个产品的功能介绍里



HB系列标准型磁滞制动器概述：

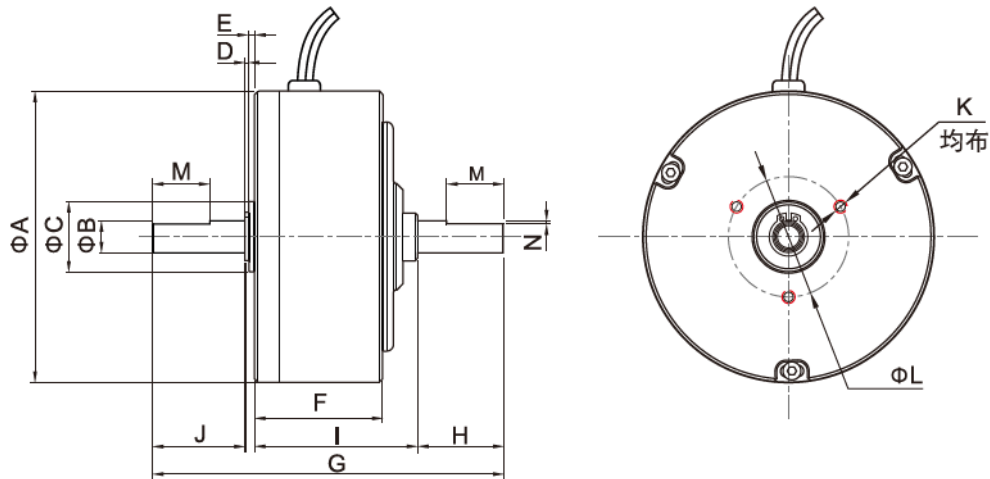
HB系列标准磁滞制动器分为单出轴与双出轴，广泛应用于测试台、执行器等中的扭矩加载和功率吸收，以及用于电线、电缆、绳索、螺纹、纸和箔进行收卷张力控制。也可作为转速的启动耦合加速控制和过载保护或反向制动，以及用于健身器材的模拟加载，这些制动器在操作中无声、无摩擦、无磨损。扭矩与转速无关。在每个制动器的工作范围内，扭矩是无限可调节的。

HB series standard hysteresis brake:

HB series standard Hysteresis brakes are categorized into single ended shaft and double ended shafts, and are being widely used for torque loading and power absorption in test benches, actuators, etc., as well as tension control with wire, cable, ropes, threads, paper and foils at take-up and payoff equipment. Can be used as start coupling for rpm speed up control and as overload protection or braking against backlash, as well as use for the simulation loading for sport equipment. These brakes are noiseless, frictionless and wear free in their operation. Torque is independent from rpm speed. Torque is infinitely adjustable within each brake's range of operation.

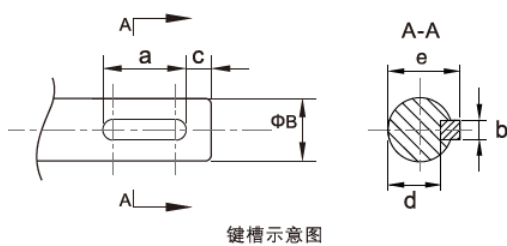
HB系列标准型磁滞制动器规格表：

型号 Model	额定扭矩 Minimum torque at rated current kg-cm	额定电流 Rated current mA	电压 Voltage VDC	线圈电阻 (于25°C ± 10%) Resistance at 25°C ± 10% Ω (Ohm)	重量 Weight kg	额定滑差功率 Kinetic power		惯性矩 External inertia kg-cm ²	最高转速 Max speed rpm
						5分钟 5 min watts	持续 Continuous watts		
HB-300	0.03	135	24	180	0.12	8	2	3.3×10^{-4}	20000
HB-201	0.2	192	24	125	0.15	25	6	1.5×10^{-3}	20000
HB-301	0.3	208	24	115	0.21	30	8	6.8×10^{-3}	20000
HB-501	0.5	208	24	115	0.21	30	8	6.8×10^{-3}	20000
HB-801	0.7	200	24	112	0.26	40	10	1.2×10^{-2}	20000
HB-102	1	200	24	120	0.39	55	15	4.6×10^{-2}	20000
HB-202	2	203	24	118	0.51	75	20	6.8×10^{-2}	15000
HB-302	3	390	24	62	0.9	120	35	1.8×10^{-1}	15000
HB-502	5	390	24	62	0.9	120	35	1.8×10^{-1}	15000
HB-103	10	250	24	96	1.8	320	80	1.1×10^0	15000
HB-203	20	315	24	76	3.5	460	115	3.2×10^0	10000
HB-303	30	750	24	32	5.2	680	165	6.8×10^0	10000
HB-503	50	750	24	32	9.6	1000	200	1.3×10^1	10000
HB-603	60	1500	24	16	11	1400	225	1.4×10^1	10000
HB-114	110	1200	24	20	20.2	1200	350	5.60×10^1	10000
HB-124	120	1200	24	20	21.8	1200	350	6.2×10^1	10000



(单位: mm)

型号	ΦA	ΦB	ΦC	D	E	F	G	H	I	J	K	ΦL	M	N
HB-300	35	2	6	0.4	-	20	50	13	23.5	13	3-M3T5	20	-	-
HB-201	35	3	8	0.5	-	22	50	10.7	25.8	13	3-M3T5	26	8	0.3
HB-301	42	4	11	0.5	-	23	58	14	28.5	15	3-M3T5	26	10	0.4
HB-501	42	4	11	0.5	-	23	58	14	28.5	15	3-M3T5	26	10	0.4
HB-801	46	5	13	0.6	1.5	23.2	60	14	28.5	15.4	3-M3T6	26	10	0.4
HB-102	53	5/6	14/15	0.8	2	26	75	21	31.3	20	3-M3T6	30	12	0.5
HB-202	58	6	15	0.8	2	27	75	20	32	20	3-M4T6	30	12	0.5
HB-302	69	8	22	1	2.5	35	95	25.5	41	25	3-M4T8	40	15	0.8
HB-502	69	8	22	1	2.5	35	95	25.5	41	25	3-M4T8	40	15	0.8
HB-103	91	10	22	1	2	40	110	27	51	29	3-M4T10	38	18	1
HB-203	115	12	28	1	4	51	132	31.4	64.5	31	3-M5T10	70	键槽(见下表) keyway	
HB-303	138	15	32	1.2	3.5	53	152	39.4	68.5	39.5	6-M5T10	80		
HB-503	157	17	35	1.2	4.2	72.3	176	39	93.8	38	6-M6T10	90		
HB-114	210	25	55	1.3	5	90	192	41	105	41	4-M8T13	106		
HB-124	226	25	52	1.3	6	76.5	213	48	108.9	49	6-M6T12	100		



键槽示意图

键槽 Keyway

型号	a	b	c	d	e	ΦB(h6)
HB-203	20	4.0	5.0	9.5	13.5	12
HB-303	20	5.0	6.0	12	17	15
HB-503	20	5.0	6.0	14	20	17
HB-114	30	8.0	5	21	28	25
HB-124	25	8.0	12.5	21	28	25

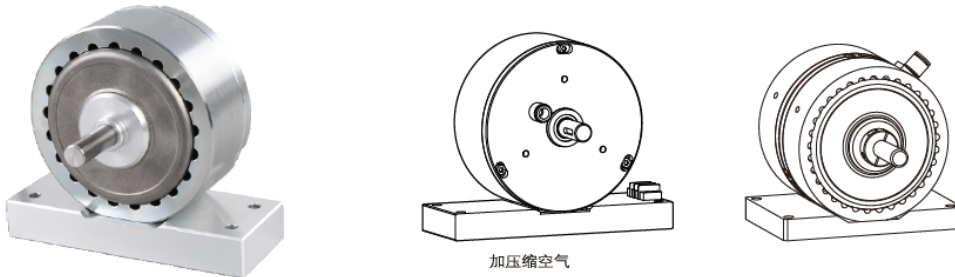
AHB系列标准型磁滞制动器概述:

AHB系列磁滞式制动器用于超过我们标准电动滞后制动器额定功率的应用。当压缩空气通过附带的管道连接输送时,这些装置可提供出色的散热效果。单元具有安装底板和端子排接线连接,可简单集成到您的应用中。

AHB series hysteresis brakes are used for applications which would exceed the power rating for our standard electric hysteresis brakes. These units offer excellent

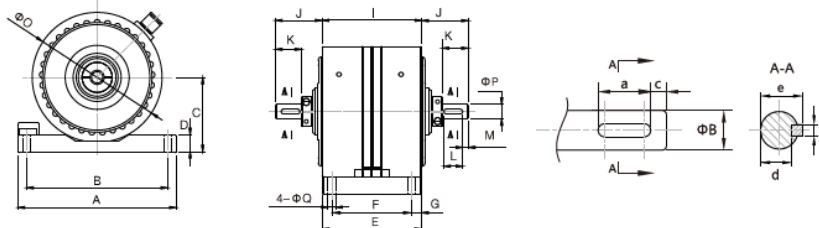


heat dissipation when compressed air is delivered via the included tubing connection. Units feature a mounting base plate & terminal strip wiring connection for simple integration into your application.



型号 Model	额定扭矩 Minimum torque at rated current kg·cm	额定电流 Rated current mA	电压 Voltage VDC	线圈电阻 (于25°C ± 10%) Resistance at 25°C ± 10% Ω	额定滑差功率 Kinetic power				惯性矩 External inertia kg·cm ²	最高转速 Max speed rpm	重量 Weight kg	
					加压缩空气 With air supply(Kpa)		不加压缩空气 With air supply					
					5分钟 5 min	持续 Continuous	5分钟 5 min	持续 Continuous				
不带底座	AHB-202	2	200	24	120	200	200	75	20	6.8 × 10 ⁻²	25000	0.5
	AHB-502	5	393	24	61	400	400	120	35	1.8 × 10 ⁻¹	25000	1.35
	AHB-103	10	400	24	60	800	800	320	80	1.1 × 10 ⁰	25000	1.8
	AHB-203	20	315	24	76	1000	800	460	115	3.2 × 10 ⁰	25000	3.5
	AHB-303	30	750	24	32	1300	1300	680	165	6.8 × 10 ⁰	20000	5.2
	AHB-503	50	750	24	32	2300	2000	1000	200	1.3 × 10 ¹	15000	9.6
	AHB-114	100	1200	24	20	2000	1500	1200	350	5.6 × 10 ¹	10000	17
带底座		N.m	mA	VDC	Ω	watts	watts	watts	watts	kg·cm ²	rpm	kg
	AHB-1	1	400	24	60	1200	1200	320	80	8.7 × 10 ⁻¹	25000	2.1
	AHB-1.5	2	315	24	76	1300	1300	460	115	2.7 × 10 ⁰	25000	3.8
	AHB-3	3	750	24	32	1800	1800	680	165	6.8 × 10 ⁰	20000	5.7
	AHB-5	5	750	24	32	2500	2300	1000	200	1.31 × 10 ¹	15000	10
	AHB-6	6	1500	24	16	3000	2800	1400	225	1.38 × 10 ⁻¹	20000	11
	AHB-10	10	1500	24	16	3800	3500	1800	280	2.62 × 10 ¹	12000	20.6
	AHB-11	11	1200	24	20	2800	2500	1200	350	5.60 × 10 ¹	10000	20.2
	AHB-12	12	1200	24	20	2800	2500	1200	350	5.60 × 10 ¹	12000	23
	AHB-24	24	2400	24	10	5300	3000	4000	450	1.12 × 10 ²	10000	46

备注 Notes: 空气冷却设备需用户自备, 提供的空气必须清洁、干燥。 Air cooling device shall be provided by user with clean and dry air being supplied consistently and continuously.



单位 (mm)

型号	A	B	C	D	E	F	G	H	I	J	K	L	M	ΦO	ΦP	ΦQ	a	b	c	d	e
AHB-603	165	150	80	19	105	85	10	75	106	49.5	27.7	20	6	138	15	8.3	20	5	6	12	17
AHB-104	220	200	100	25	145	125	10	105	145	59.8	38	20	6	158	17	8.3	20	5	6	14	20
AHB-244	270	250	120	25	143	125	9	125	153	79.5	47.1	25	12.5	226	25	8.3	25	8	12.5	21	28



匹配式磁滞制动器：

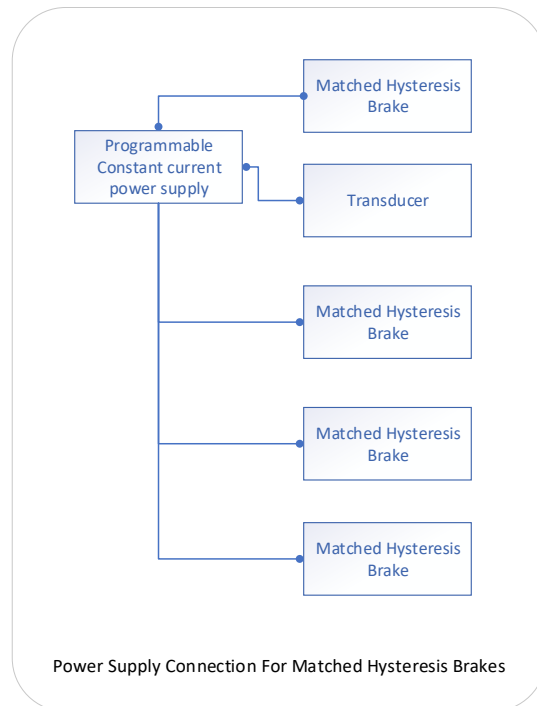
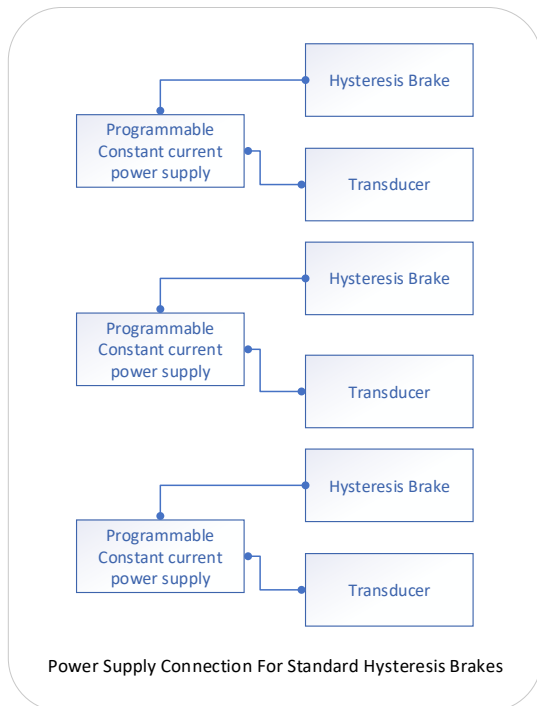
在多个电流特定点其扭矩都是相同的，仅使用一套控制系统即可实现多轴张力控制，其精度高于标准型磁滞制动器。如果匹配点高于最大可能扭矩的50%，通过特殊调整的可能性，每个制动器将在所选匹配点处匹配±1.5%以内。曲线的所有其他点都在其中相差±4%。例如，使用匹配的磁滞制动器对于多线轴放线架的多张力控制系统是有利的。主要用于多卷纱线、玻纤放卷装置及电缆、绳索等加工机械。

Matched Hysteresis Brakes :

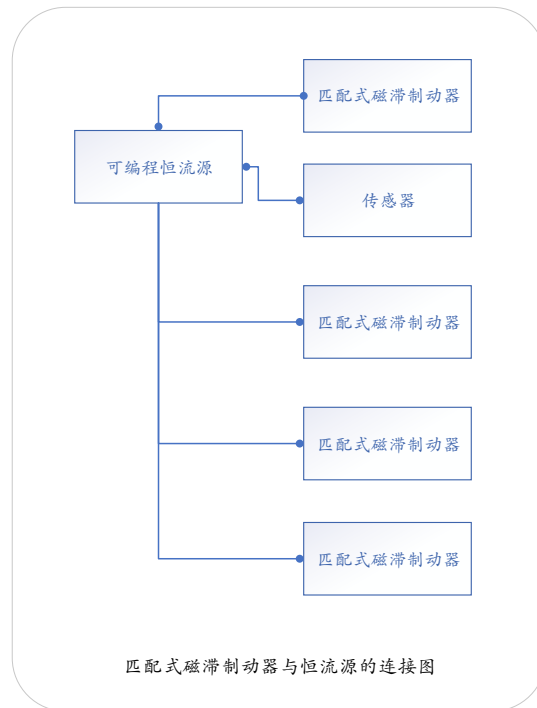
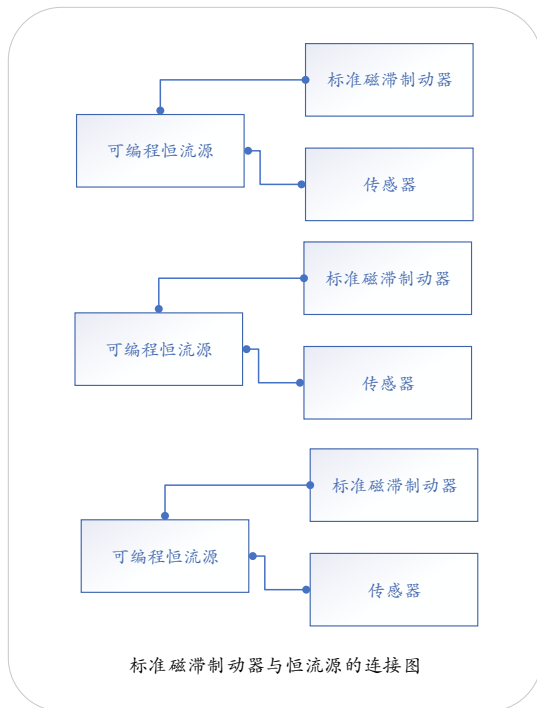
These units are developed to get the same torque at multi-current designation points, one control system can realize multi-tension management, the precision is higher than standard hysteresis brake. By possibility of a special adjustment each brake will be matched at the selected match point to within $\pm 1.5\%$ provided that the match point is over 50 % of the max possible torque. All other points of the curve then are within $\pm 4\%$ deviation from each other. The use of matched hysteresis brakes is, for example, an advantage for a multi-tension control system for multi-spool payoff frames. Mainly used for multi-filament yarns, glass fiber unwinding devices and cables, ropes and other processing machinery

选型参考 Selection Reference :

Standard Hysteresis Brake VS Matched Hysteresis Brake:



标准型磁滞制动器与匹配式磁滞制动器对比：



Notes: All single ZL Hysteresis Brakes can be matched. replace the HB in the Hysteresis Brake model number with MHB When ordering, For Large Bore Brakes without bearing, LB is replaced with MLB.

EXAMPLE: Standard Matched HB-503 MHB-503, LB-202 matched with MLB-202

备注：所有单个的张力磁滞制动器都可以匹配，下采购定单时，标准型磁滞制动器HB 型号可以替代匹配式磁滞制动器，空心轴式LB型号可以替代匹配式MLB 型号

例如：HB503=MHB503; LB202=MLB202

LB系列空心轴式磁滞制动器：

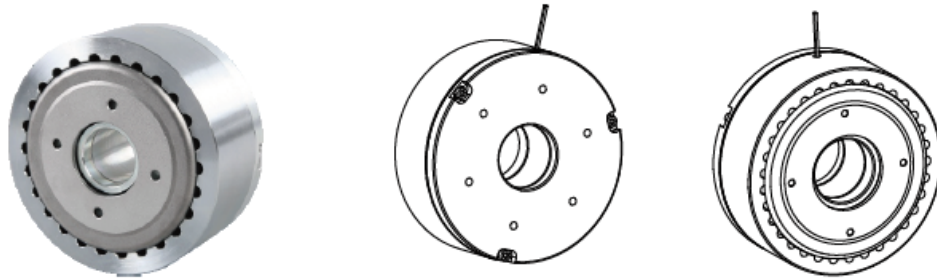
以标准型磁滞制动器为基础，去掉其轴承，在其转子上加入固定孔。为线材被动放卷提供恒张力控制，主要用于飞锭收卷操作设备的张力控制、螺旋缠绕操作和编织应用。这些制动器是提供无轴承，基于应用的要求也可作为一个“匹配”的设计。轴承必须由机械设计商提供。



Large Bore Hysteresis Brakes without Bearings

Large Bore Hysteresis Brakes without Bearings are designed Based on the standard hysteresis brake, the bearing is removed and a fixed hole is added to its rotor. It provides constant tension control for the passive reel of wire. Hysteresis Brakes with a large bore are mainly used for tension control at flyer payoff operation equipment, at helical wrapping operation, and braiding applications. These brakes are supplied without bearings and are also available as a “matched” design upon request. The bearings must

be provided by the machine designer.



型号 Model	额定扭矩 Minimum torque at rated current kg-cm	额定电流 Rated current mA	电压 Voltage VDC	线圈电阻 (于25°C ± 10%) Resistance at 25°C ± 10% Ω	重量 Weight kg	额定滑差功率 Kinetic power		最高转速 Max speed rpm
						5分钟 5 min watts	持续 Continuous watts	
LB-202	2	200	24	120	0.41	75	20	5000
LB-302	3	390	24	62	0.9	120	35	5000
LB-502	5	390	24	62	0.9	120	35	5000
LB-103	10	400	24	60	1.70	320	80	3000
LB-203	20	315	24	76	3.40	460	115	3000
LB-303	30	1200	24	20	5.12	680	165	2500
LB-503	50	1200	24	20	9.30	1000	200	2000
LB-114	100	1200	24	20	22	1200	350	1800
LB-124	120	1200	24	20	22.0	1200	350	1800

BHB系列鼓风型磁滞制动器：

BHB系列磁滞制动器是在最大可能功率下转矩控制/转矩测量的理想选择。这种设计允许连续的额定功率高达6000瓦（7000瓦间歇）。使用预加载轴承在BHB系列磁滞制动器允许运行在高达20000转每分钟的速度。特点是安装基板和接线板接线连接，以便简单地集成到您的应用程序中。



Blower Cooled Hysteresis Brake:

BHB Series Hysteresis Brakes are the ideal option for torque control/torque measurement at the highest possible power,. This design allows for continuous power ratings up to 6000 watts (7000 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. Units feature a mounting base plate & terminal strip wiring connection for simple integration into your application.



型号 Model	额定扭矩 Minimum torque at rated current	额定电流 Rated current	电压 Voltage	线圈电阻 (于25°C ± 10%) Resistance at 25°C ± 10%	额定滑差功率 Kinetic power				惯性矩 External inertia	最高转速 Max speed
					加鼓风冷却 With Blower		不加鼓风冷却 Without Blower			
					5分钟 5 min	持续 Continuous	5分钟 5 min	持续 Continuous		
N.m	mA	VDC	Ω	watts	watts	watts	watts	kg·cm ²	rpm	
BHB-3	3	750	24	32	1500	900	680	165	6.8 x 10 ⁰	20000
BHB-5	5	750	24	32	2000	1800	1000	200	1.31 x 10 ¹	25000
BHB-6	6	1500	24	16	3200	2800	1400	225	1.38 x 10 ⁻¹	25000
BHB-10	10	1500	24	16	4200	4000	1800	280	2.62 x 10 ¹	15000
BHB-12	12	1200	24	20	3500	3000	2000	700	5.6 x 10 ¹	12000
BHB-24	24	2400	24	10	7000	5500	4000	450	1.12 x 10 ²	8000



EHB系列功率最优化磁滞制动器：

以外转子散热为主要特点，其连续运行功率高于标准型3-6倍，适用于功率较高的使用场合。

EHB Series Power Optimization Hysteresis Brake:

The main characteristic of the EHB series hysteresis brake is the way of using external rotor for heat dissipation, the continuous operation

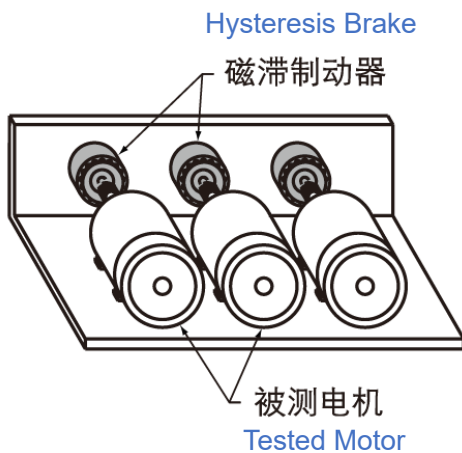
power is 3-6 times higher than standard hysteresis brake, and is being used for higher power application.

选型参考 Selection Reference:



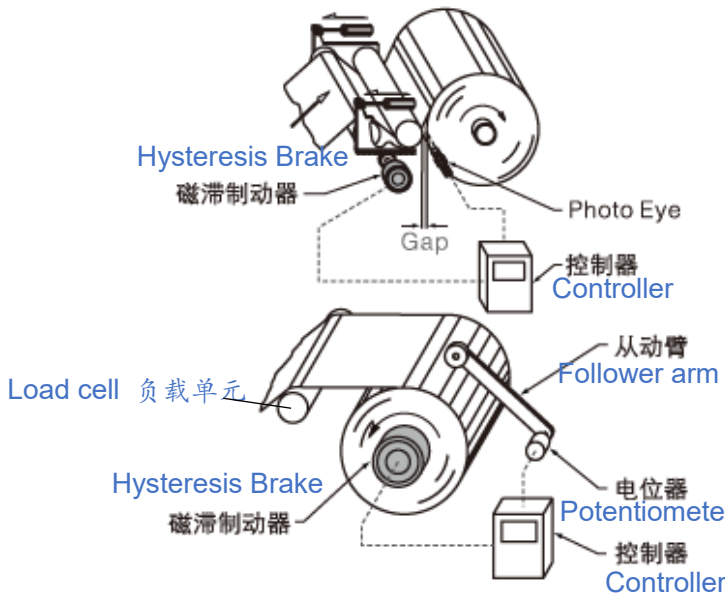
型号 Model	额定扭矩 Minimum torque at rated current	额定电流 Rated current	电压 Voltage	线圈电阻 (于25°C ± 10%) Resistance at 25°C ± 10%	重量 Weight	额定滑差功率 Kinetic power		最高转速 Max speed
						5分钟 5 min	持续 Continuous	
	N.m	mA	VDC	Ω	kg	watts	watts	rpm
EHB-1	0.6	1200	30	30	1.5	250	125	6500
EHB-3	3	1200	30	30	3.8	500	250	4500
EHB-10	10	1500	30	20	12	1000	500	3000

典型应用-标准型磁滞制动器(Typical Application -HB series standard hysteresis brake):



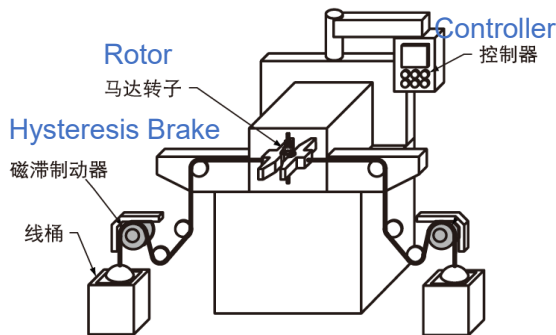
磁滞制动器广泛应用电马达，驱动器，齿轮箱以及很多其它转动装置与组件寿命测试的模拟加载。

Hysteresis Brakes are widely used in load simulation applications for life testing on electric motors, actuators, gearboxes, and many other rotating devices and assemblies.



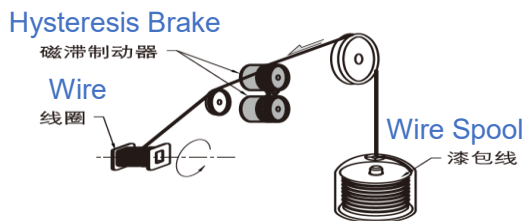
用于闭环控制，使用负载单元或松紧调节臂，图片或超声波感应器给磁滞制动器提供反馈。

For closed loop control; using load cell or dancer arm, photo or ultrasonic sensors to provide feedback to the Hysteresis Brake.



高速自动绕线机的绕组、钩、切割等操作提供精确的张力控制。

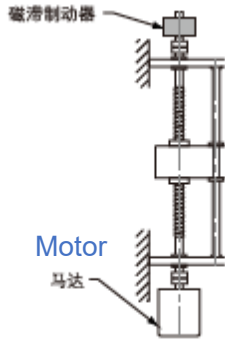
provide precise wire tension control during wind, hook and cut operations of high speed automated winding machines.



为变压器和线圈的绕组过程中使用磁滞式刹车器以开环控制维持精确张力

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

Hysteresis Brake



用于运动机构的制动和承载，如应用于车床，铣床等要求精确金给停止定位的机加工设备

Used for braking and loading of moving mechanisms, such as lathe, milling machine, etc., which require precise feed to stop positioning.

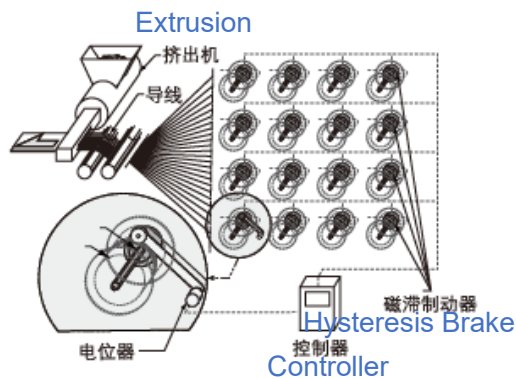


张力的磁滞制动器以其无限重复性，可控性及使用寿命长等特性，已广泛应用于精密电脑诊断设备以及日常健身器材。

The indefinite repeatability, controllability and longevity of Hysteresis devices has earned them recognition in high end, and it is being widely used in precision computerized diagnostic equipment, as well as in regular exercise machines.

Hysteresis Brake
磁滞制动器

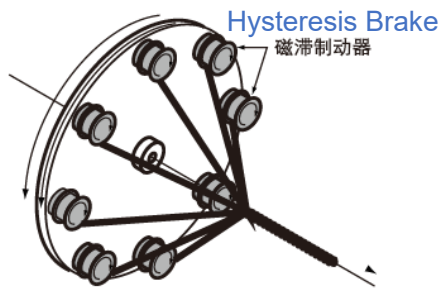
典型应用-匹配式磁滞制动器(Typical Application-Matched Hysteresis Brake):



Matched Hysteresis Brake used in a multiple payoff system where one sensor controls tension in the system. Due to specially calibrated matched brakes, it is possible to hold each payoff tension

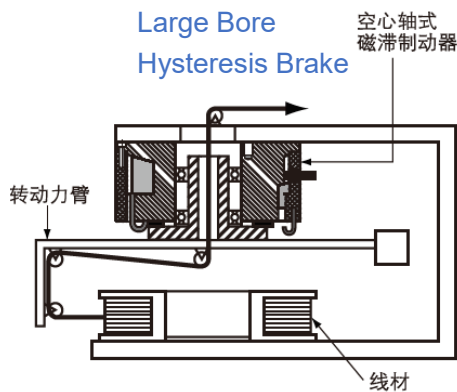
within $\pm 1\%$ at matched point value.

典型应用-空心轴式磁滞制动器 (Typical Application-Large Bore Hysteresis Brake):



空心轴式刹车器安装在一个光纤绞线机内，控制包装材料的张力。

Large Bore Hysteresis Brakes installed in a fiber optic stranding machine to control the tension of the wrapping material.

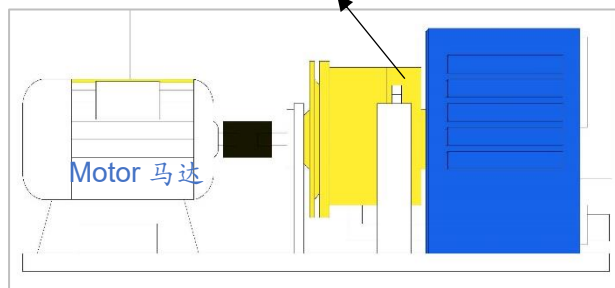


飞轮控制：制动器电极/外壳组成，用螺栓固定在机架上，带轴承的空心轴安装在电极中。空心轴，转子和飞轮形成一个组件拉紧缠绕材料

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.

典型应用-气冷与风冷磁滞制动器 (Typical Application-AHB/BHB):

AHB or BHB 气冷或风冷磁滞制动器



转速产生的扭力使气冷与风冷磁滞制动器应用在许多测功机进行对电机、驱动器，燃气发动机等测试中被优先采用，如电机加载综合性能测试，耐久及可靠性认证以及发动机化油器的调整设定

The Air cooled and blower cooled hysteresis brake is being preferentially used in many dynamometers for motors, actuators, gas engines performance test and so on. such as motor loading overall performance test, Durability/reliability verification, engine carburetor setting and so on.

可编程恒流源(Programmable Constant Current Power Supply):



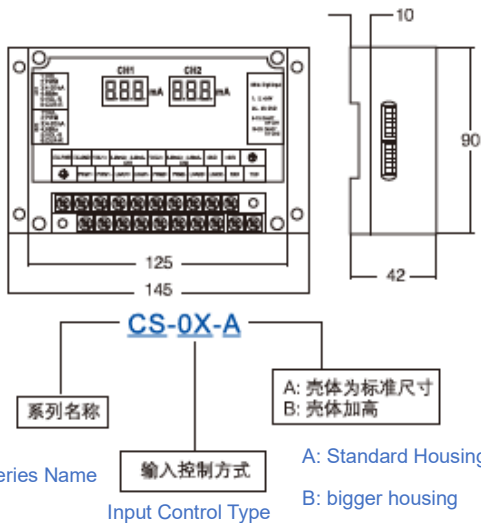
with 2 current supply.

CS-0X系列双通道程控电流源:

双通道程控电流源是结合了多种信号输入方式的恒流源，具有两路独立的输入输出接口，同时显示两路电流值。

CS-0X Series programmable current power supply :

CS-0X is a programmable constant current supply with combination of variety of input signals, and have two separate input and output channel along



工作电源 (Power Supply): DC 24V 1.5A

输出电流(Output Current): 0-250mA/0-500mA

输入控制方式(Input Control Type):

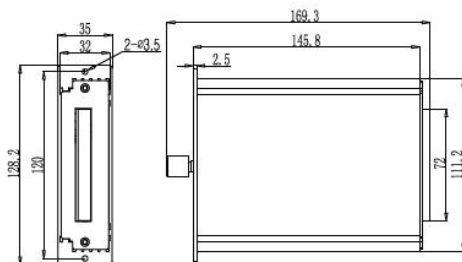
- 01: 所有功能输入控制 All Functions Input control
- 02: 数字输入控制 Digital Input control
- 03: PWM输入控制 PWM Input control
- 04: 电流输入控制 Current input control
- 05: 电压输入控制 Voltage Input control
- 06: 串口RS232输入控制 RS232 Input control



ICS系列智能电流源 (ICS Series Intelligent Current Power supply) :

ICS系列智能电流源是结合了多种信号输入方式的恒流电源，具有同路独立的输入输出接口，可设置两段电流值，并通过外部信号切换输出。

ICS Series intelligent current power supply is a constant current power supply with combination of variety input signals, can set 2 section current value, and switch the output by external signals.



规格表Specification:

型号 Model	最大输出电流 Maximum output current
ICS-500	500mA
ICS-2000	2000mA
ICS-2500	2500mA