

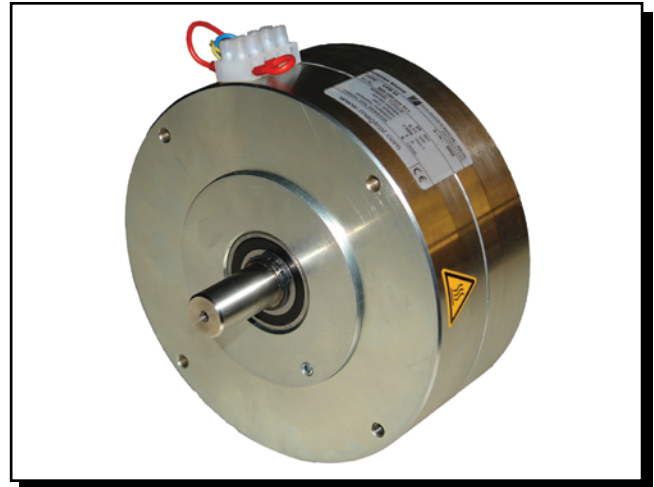
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# CPB 25 Convection Powder Brake

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## FEATURES

- Maximum torque: 25 N·m (18 lb·ft)
- Braking power: 110 W
- Stable braking torque, without shock
- Low moment of inertia
- Low residual torque
- Operation in both rotational directions
- Rated torque available from 0 rpm
- Protection against overheating with built-in thermostat
- Mount with shaft in any orientation



## DESCRIPTION

Magtrol's Convection Powder Brakes (CPB series) are ideal for applications operating in the low-to-middle speed range or middle-to-high torque range. Convection powder dynamometer brakes provide full torque at zero speed and are convection cooled, allowing power ratings up to 110 W. A thermostat in the coil shuts off the power at 80 °C in order to protect the brake from overheating.

## APPLICATIONS

Mounted on test benches, CPB 25 Convection Powder Brakes allow performance and reliability testing on driving elements such as electric motors, hand-held power tools, geared motors, reduction gears and hydraulic transmission systems. Other applications include load simulation for life testing on electric motors, actuators, gearboxes, power steering, and many other rotating devices and assemblies.

Magtrol offers three types of dynamometer brakes to absorb load: Hysteresis, Eddy Current and Magnetic Powder. Each type of Dynamometer has advantages and limitations and choosing the correct one will depend largely on the type of testing to be performed. With over 50 models to choose from, Magtrol Sales professionals are readily available to assist in selecting the proper Dynamometer to meet your testing needs.

## POWER SUPPLY

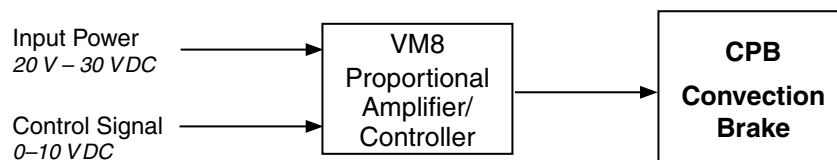
A constant-current DC power supply is recommended for the best accuracy in open-loop control systems. The Magtrol VM8 Proportional Amplifier/Controller provides current regulation of the brake and regulation of the braking torque via a 10-turn potentiometer. Torque drift, caused by temperature changes within the brake coil, is eliminated with the VM8.

## COUPLING

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

## SYSTEM CONFIGURATION

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**OPERATING PRINCIPLES**

The CPB Series Convection Powder Brakes contain, as their name suggests, a magnetic powder. The electrical current passing through the coil generates a magnetic field, which changes the property of the powder, thus producing a smooth braking torque through friction between the rotor and stator.

Convection powder dynamometer brakes produce their rated torque at zero speed. The element to be tested can be loaded

at standstill to determine the starting torque. With no electrical excitation, the shaft rotates freely. With electrical excitation, the shaft becomes coupled to the housing. While the load torque is less than the output torque, the shaft will not rotate. When the load torque is increased, the brake will slip smoothly at the torque level set by the coil input current.

**RATINGS**

Model	Rated Torque		Drag Torque De-energized		Nominal Input Inertia		Rated Power	Rated Speed	Max. Speed	Excitation Current **	Weight
	N·m	lb·ft	N·m	lb·in	kg·m <sup>2</sup>	lb·ft·s <sup>2</sup>	W	rpm	rpm	A	Kg
CPB 25 *	25	18.4	0.5	4.42	0.306 × 10 <sup>-3</sup>	2.26 × 10 <sup>-4</sup>	110	42	500	2.6	9.5

\* Other model and rating under development.

\*\* Voltage at 20 °C is 24 volts.

**Continuous Braking Power**

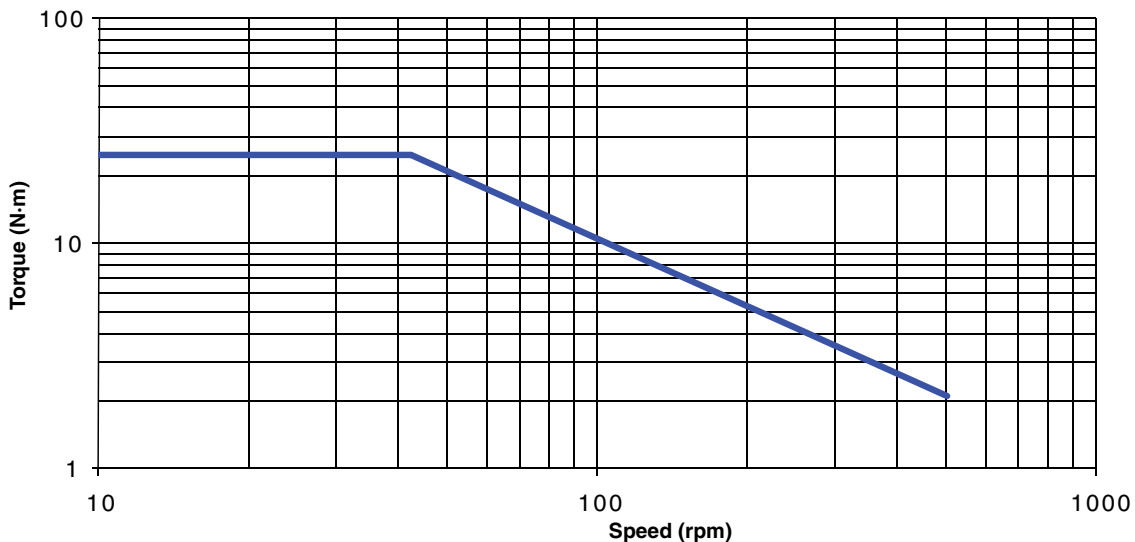
The brake can dissipate higher amounts of heat for short periods of time, but the average must not exceed 110 watts. A thermal switch will deactivate coil excitation when the case temperature exceeds 80 °C.

For continuous power, please use the formula :

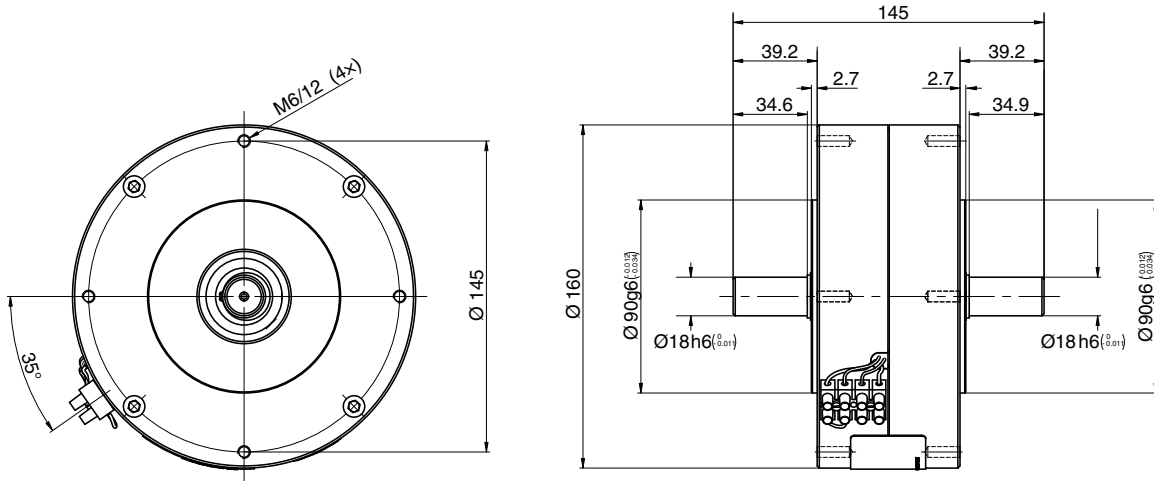
$$\text{POWER (watts)} = [\text{SPEED (rpm)} \times \text{TORQUE (N·m)}] / 9.550$$

**TORQUE-SPEED-POWER CURVES**

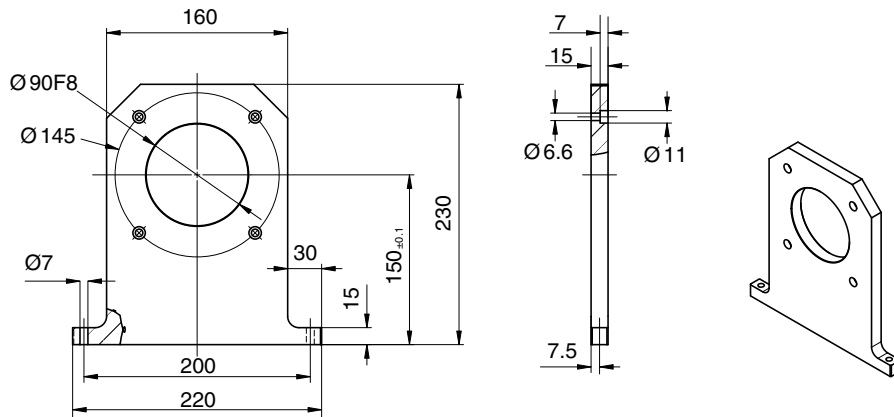
The diagram below shows the characteristic curves for the CPB 25 Convection Powder Dynamometer Brake.



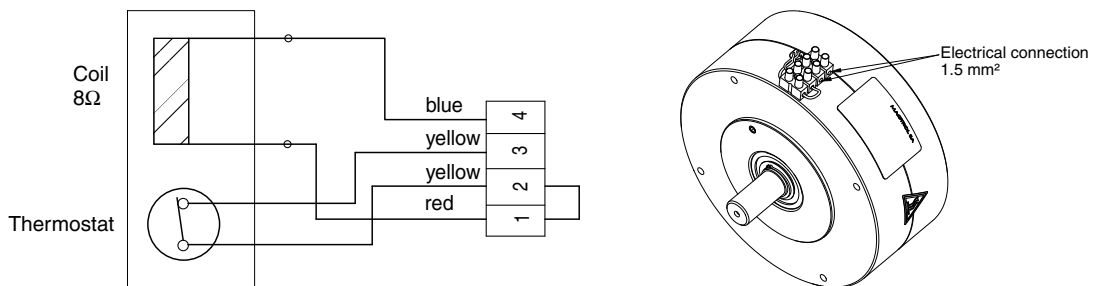
**BRAKE DIMENSIONS**



**PILLOW BLOCK DIMENSIONS**



**WIRING DIAGRAM**



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



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