

# 5403 Electromagnet



## OVERVIEW

The **5403 Electromagnet** is a variable gap C frame dipole electromagnet. It is used in research and industrial applications where a large pole gap and coil spacing is required for the sample or ancillary equipment. It can be operated to high current for intermittent operation or low current for continuous operation. The light weight allows it to be used on optical tables or production test equipment and the simple poles enable axial entry & exit holes to be matched to the optical geometry.

The **5403EG Electromagnet** is an extended fixed gap C frame dipole electromagnet. This magnet is similar to the standard 5403 but has air-cooled coils to provide a larger clearance between the coils. It is used in research and industrial applications where a large pole gap and coil spacing is required for the sample or ancillary equipment. It can be operated to high current for intermittent operation or low current for continuous operation. The light weight allows it to be used on optical tables or production test equipment and the simple poles enable axial entry & exit holes to be matched to the optical geometry.

Revised March 26, 2020

## Features

- Modest Size
- Fixed Pole Gap
- Wide Variety of Pole Caps
- Air or Water Cooled
- Any Mounting Orientation

## Applications

- Hall Effect Studies
- Magneto-Optical Studies
- Laboratory Experiments
- Magnetic Separation Experiments
- Magnetic Alignment of Small Components
- Chemical Reaction Rate Studies

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## Model 5403 General Specifications

### Mechanical

	5403	5403EG-50
Pole Diameter	76mm	
Standard Pole Face Diameter	10, 38, 76mm	76mm
Pole Gap	0 to 86mm	40 to 130mm
Coil Spacing	86mm	132mm
Dimensions (mm) (W x D x H)	604x270x359	582x282x359
Weight	124kg	141kg

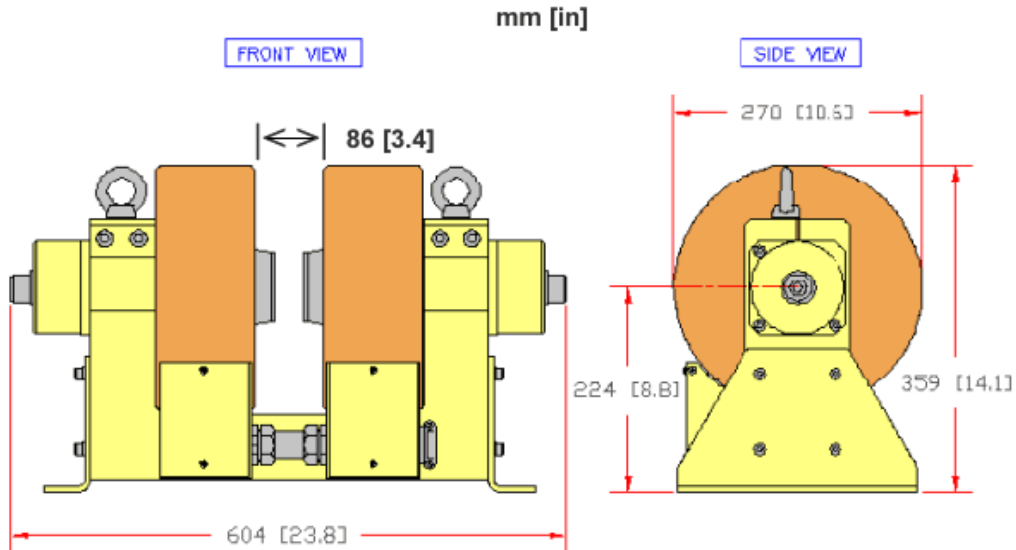
### Coils (series connected)

Resistance (20°C)	0.45Ω	
Max Resistance	0.55Ω	
Max Continuous Power (air cooled)	20A, 10V, 0.20kW	
Max Peak Power (air cooled)	40A, 20V, 0.8kW 4min max on, 12 min off	
Water Cooling (At nominal 18°C. Allowed range 15°C to 25°C non-condensing.)	2liters/min, 1bar (0.5US GPM, 16psid)	
Max Continuous Power (water cooled)	50A, 25V, 1.25kW	
Max Peak Power (water cooled)	70A, 33V, 2.5kW 10min max on, 20 min off	
Self Inductance measured from $L \sim \Delta V / (\Delta I / \Delta t)$	Approx 180mH	Approx 220mH

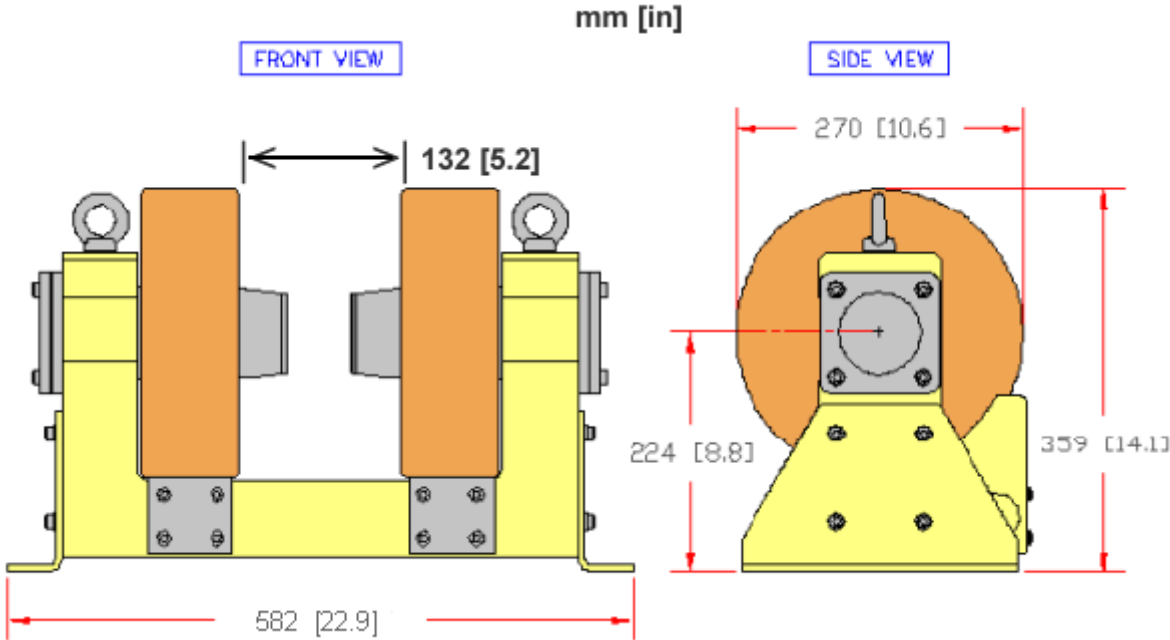
### Safety

Overtemperature Interlock	Closed below 65°C.
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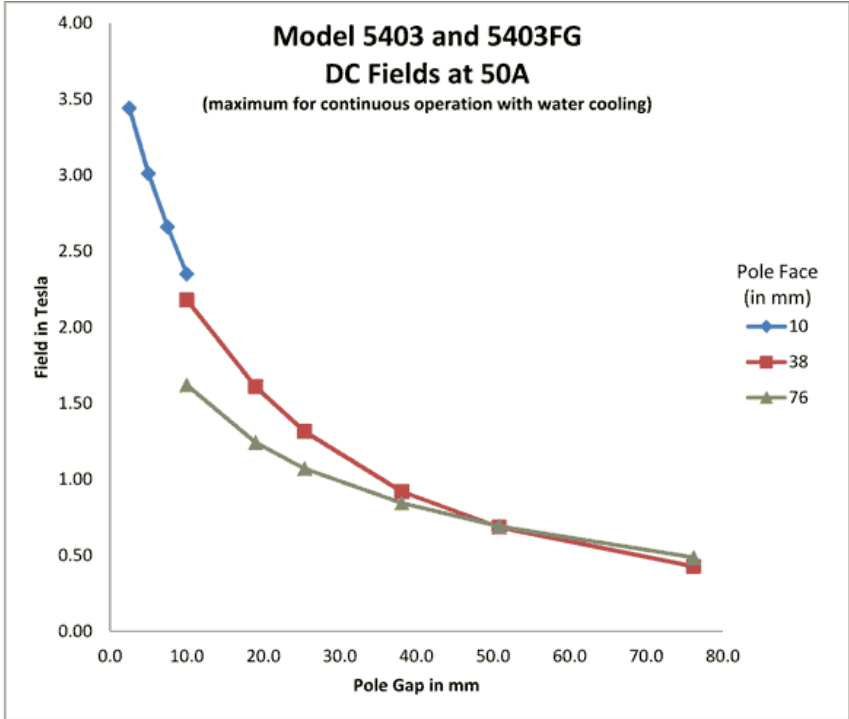
**General Assembly - 5403**



**General Assembly - 5403EG**



### Performance



Pole Face in mm	Pole Gap in mm								
	2.5	5.0	7.5	10.0	19.0	25.4	38.1	50.8	76.2
10	3.44	3.01	2.66	2.35					
38				2.18	1.61	1.31	0.92	0.69	0.43
76				1.62	1.24	1.07	0.84	0.69	0.49