

The World Leading Provider of High Pressure Equipment for Research and Industry since 1945!

# 1.5004 - 1.5010

## MagneDrive® II Series

### At a Glance

**Average Static Torque:** 120-300 inch-lbs. (14 to 34 N-m)

#### Material of

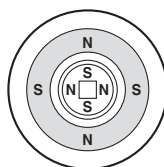
**Construction:** 316 Stainless Steel, Hastelloy C-276, Titanium GR 2

**Maximum Pressure:** 3000 psi @ 650° F  
(207 bar @ 343°C)

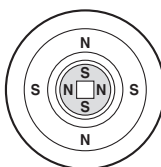
**Applications:** Agitator recognized worldwide as a highly efficient method of promoting chemical reactions and catalyst testing among gases, liquids and solids in high pressure autoclaves.

Dispersimax® agitation available for gas dispersion through liquid during mixing.

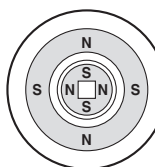
Facilitating tomorrows requirements in a proven mixing package for **Production** facilities the world over.



External driver magnets



Encapsulated driver magnet assembly and sealed rotor shaft



Outer magnets are rotated by a direct coupled motor, thus rotating inner magnets and rotor shaft.

### The MagneDrive® Principle



## Principle of Operation

MagneDrive II agitators use rare earth magnets, permitting packless mixing at higher speeds in larger vessels and with higher viscosity fluids. Outer drive magnets, rotated by a motor-driven belt, exert powerful attraction on the encapsulated inner magnet assembly. As the outer drive magnets are rotated, the inner magnets are actuated, resulting in rotation of the agitator shaft.

**Contamination-free mixing-** Packless design eliminates shaft packing and need for lubrication.

**Zero leakage to atmosphere-** The MagneDrive II is a sealed system, closed to the atmosphere, so even sensitive fluids can be processed safely.

**Continuous, high speed operation-** No need to shut down in mid-reaction to change failed packing.

**Autoclave Engineers**

Division of Snap-tite, Inc.

## Features

- Capable of mixing as high as 3250 rpm.
- Operating pressures as high as 3,000 psi @ 650° F (207 bar @ 343°C).
- Carbon graphite and Rulon LR<sup>7</sup> bearings available.

## General Specifications

<i>Base Model</i>	<i>Maximum Speed (RPM)<sup>1</sup></i>	<i>Static Torque inch-lbs (N-m)</i>	<i>HP @ Maximum Speed (RPM)<sup>2,3</sup></i>
1.5004__03F	3250	120 (14)	6.19 @ 3250 rpm
1.5006__03F	3000	180 (20)	8.75 @ 3000 rpm
1.5008__03F	3000	240 (27)	11.42 @ 3000 rpm
1.5010__03F	2750	300 (34)	13.09 @ 2750 rpm

**Material of Construction:** 316 Stainless Steel, Hastelloy C276 or Titanium GR 2 are available upon request. For information on additional materials, please consult the factory.

**Bearing Material:** Standard bearing material is Purebon 658RCH<sup>4</sup> (Optional - Rulon LR<sup>7</sup>).

**Maximum Pressure at Connection:** 3,000 psi at 650 °F (207 bar @ 343 °C)<sup>6</sup>

**Maximum Temperature at Magnet Zone:** 300 °F (149 °C)<sup>5</sup>

**Maximum Temperature at Connection:** 650 °F (343 °C)

**Cover Connection:** Four bolt flange.

**Purge Connection:** 1.5004-1.5010 Series MagneDrives are provided with a SW250 (0.250" (6.3 mm) O.D. tube gas purge connection)

**Tachometer Pick-up:** Solid state Reed switch pick-up, which senses the internal agitator shaft rpm, is standard. Optional hall effect tachometer pick-up (intrinsically safe).

**Shaft and Impeller:** 1.5004-1.5010 Series MagneDrives are supplied without lower shafts or impellers, allowing for customizing of the shaft length and impeller style. One piece encapsulation and in-tank coupling provided. Autoclave Engineers offers a wide selection of impellers in a variety of materials, including the Dispersimax™ gas dispersion system. Please consult the factory for more information.

<sup>1</sup>Maximum speeds may be limited by mixing requirements and shaft vibration, including critical speed.

<sup>2</sup>Motor horsepower should be sized at least 25% higher than the intended application requirement.

<sup>3</sup>To determine horsepower at a certain speed, use the formula:

$$hp = \frac{T \times n}{63,025} \quad \text{where: } T = \text{torque in inch-lbs} \\ n = \text{speed in rpm}$$

<sup>4</sup>Purebon is a registered Trademark of Pure Carbon Company, Inc.

<sup>5</sup>The magnets are stabilized at 300 °F (149 °C). When the temperature of the magnets exceeds the stabilizing temperature for an extended period, loss of magnetic torque will occur. Some of this loss is reversible and torque will regenerate; however, the problem is avoided by using adequate cooling to limit the magnet temperature to 300 °F (149 °C). A cooling jacket with two NPT connections is provided for air cooling, if necessary. Additional information on cooling requirements can be obtained in the Operation and Maintenance manual.

<sup>6</sup>Pressures may vary by material.

<sup>7</sup>Rulon is a registered Trademark of Saint-Gobain Performance Plastics Corporation.

Please refer to the following sections of the catalog for complimentary products and additional technical details. See the 1.5004-1.5010 Ordering Guide on the back cover to configure a drive for your specific application.

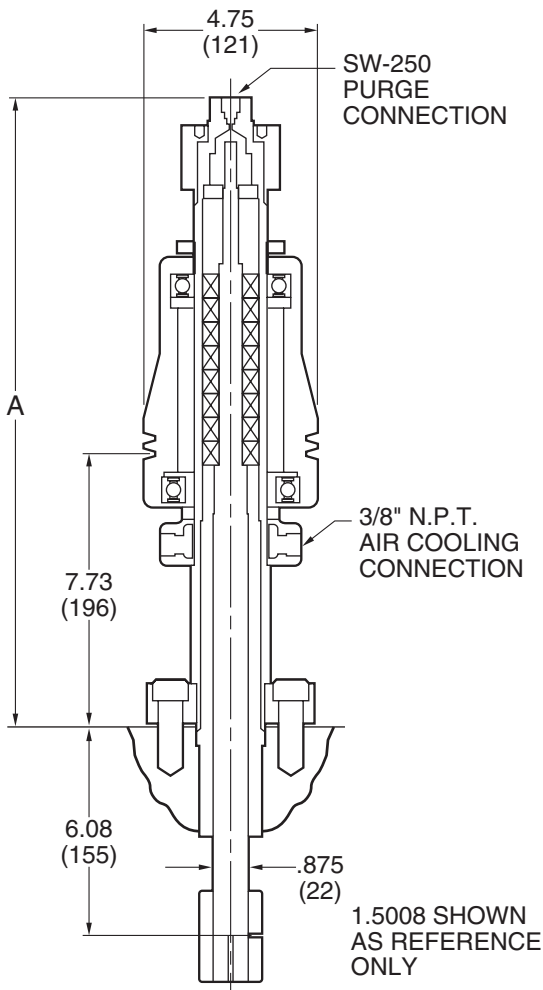
**MAG1.5004-1.5010 Drawings**

- 316 Stainless Steel ..... Drawing 40-6549
- Hastelloy C-276 ..... Drawing 40A-8415
- Titanium GR 2 ..... Drawing 20B-7429

Consult factory for other connection requirements

**Supporting Information**

**Dimensional**



Model	A
1.5004_03F	17.78 (452)
1.5006_03F	19.78 (502)
1.5008_03F	21.78 (553)
1.5010_03F	23.78 (604)

# Ordering Guide

1.50 \_ \_ \_ \_ \_ F- \_ \_ \_ \_ \_  
 A A B B C C D D E E G G

AA - Size	
04	120 in-lb Static Torque
06	180 in-lb Static Torque
08	240 in-lb Static Torque
10	300 in-lb Static Torque
BB - Material	
SS	316 Stainless Steel
HC	Hastelloy C-276
TI	Titanium GR 2
CC - Pressure	
02	2000 psi (Titanium)
03	3000 psi (std.)
DD - Bearing	
PB	Purebon® 658RCH Bearing
RB	Rulon LR Bearings
EE - Speed Sensor	
HS	Hall Effect Proximity Sensor
RS	Reed Switch
GG - Top Seal	
KO	Kalrez O-ring
VO	Viton O-ring
EP	EPDM O-ring

**Example:** 1.5004HC02F-RBSHSVO is a 1.5004 series MagneDrive® in Hastelloy® A-286, rated 3000 psi with Purebon® bearings, Hall effect speed sensor, and Viton® O-ring.

Note: Drive shafts and Impellers are not included with MagneDrive®, consult factory for availability.

Purebon® is a registered trademark of Pure Carbon.

Rulon® is a registered trademark of Saint-Gobain.

Hastelloy® is a registered trademark of Haynes International

Viton® is a registered trademark of DuPont Performance Elastomers



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**! WARNING !**

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Bulletin AGT-MAG1.5004-1.5010

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