Braking Solutions for the Electric Turf & Garden Market

WARNING: Neither the accuracy nor completeness of the information contained in this publication is guaranteed by the company and may be subject to change in its sole discretion. The operating and performance characteristics of these products may vary depending on the application, installation, operating conditions and environmental factors. The company's terms and conditions of sale can be viewed at http://www.altramotion.com/terms-and-conditions/sales-terms-and-conditions. These terms and conditions apply to any person who may buy, acquire or use a product referred to herein, including any person who buys from a licensed distributor of these branded products.

©2023 by Warner Electric LLC. All rights reserved. All trademarks in this publication are the sole and exclusive property of Warner Electric LLC or one of its affiliated companies.
Regal Rexnord Electric Turf & Garden Market Braking Solutions

Regal Rexnord Brands are uniquely positioned to support the rapid growth of battery-powered mowers and UTVs

As recognized leader in the Turf & Garden market and experts in electromagnetic braking technologies, Warner Electric has become the ideal partner to solve your battery powered turf and garden equipment braking applications, including ZTR mowers, garden tractor mowers, walk-behind mowers and UTVs.

Based on long-term relationships, most major mower OEMs now view the Warner Electric engineering team as an extension of their internal engineering departments. OEMs routinely ship prototype mowers to Warner’s Technology and Innovation Center so Warner engineers can develop a custom clutch/brake solution for the specific outdoor power equipment application and then define and perform all appropriate testing protocols in-house.

The Regal Rexnord family of braking solutions for electric Turf & Garden equipment and vehicles

EOP
Enclosed Design, Spring Applied Brakes
Parking and stopping brakes engineered for outdoor applications
Torque range: 15 Nm to 120 Nm

PK
Spring Applied Parking Brakes
Parking and emergency stopping failsafe brakes
Torque range: 8 Nm to 180 Nm

WR
Spring Applied Parking Brakes
Economical parking and emergency stopping motor brake
Torque range: 2 Nm to 4 Nm

AP
Spring Applied Parking Brakes
Unique, budget-oriented thin design with high torque density
Torque range: 7 Nm to 30 Nm

Varistop
Electrically Released, Variable Torque Traction Motor Brakes
Service and parking brake installed on the traction motor

Advanced Non-Stick Friction Material

For outdoor environments
Regal Rexnord engineers have developed a proprietary friction material specifically designed for outdoor environments with high moisture levels and wide temperature differentials.

Most standard friction materials tend to get sticky and loose their effectiveness in these harsh conditions.

Warner’s friction material has proven to retain stable torque in between static parking and high energy service and emergency stopping during rigorous climate chamber and endurance testing, as well as extensive field testing.

The advanced material is available on all spring applied brakes.
EOP BRAKES

Enclosed design, spring applied parking and stopping brakes engineered for outdoor applications

The EOP range is a pre-assembled on/off dry electromagnetic brake. This failsafe brake is used for parking and emergency braking only. The brake features a high coefficient friction material and a powerful coil to optimize torque in a low profile package. The coil can be linked with a pulse width modulation power supply to reduce power consumption and maintenance.

The benefits of this cost-competitive range include a one-piece design for easy assembly, lower power consumption and overall lower maintenance costs.

- High torque within a compact space envelope
- Multi-step braking versions available
- Low profile space saving design
- Hand release on request
- IP65 as a standard, IP67 on request
- Non-sticking friction material under harsh conditions
- UL certified – UL mark on request

<table>
<thead>
<tr>
<th>Size</th>
<th>10</th>
<th>20</th>
<th>35</th>
<th>60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static Torque</td>
<td>Nm</td>
<td>lb. ft</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>A</td>
<td>mm</td>
<td>in.</td>
<td>109</td>
<td>4.291</td>
</tr>
<tr>
<td>B</td>
<td>mm</td>
<td>in.</td>
<td>42</td>
<td>1.654</td>
</tr>
<tr>
<td>C</td>
<td>mm</td>
<td>in.</td>
<td>4.6</td>
<td>0.181</td>
</tr>
<tr>
<td>D</td>
<td>mm</td>
<td>in.</td>
<td>15 / 18 / 20 / 22 (H7)</td>
<td>15 / 18 / 20 / 22 (H7)</td>
</tr>
<tr>
<td>J</td>
<td>mm</td>
<td>in.</td>
<td>20</td>
<td>0.787</td>
</tr>
<tr>
<td>F</td>
<td>mm</td>
<td>in.</td>
<td>3.543</td>
<td>4.09</td>
</tr>
<tr>
<td>G</td>
<td>3 × #5</td>
<td>3 × #12</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>AA</td>
<td>mm</td>
<td>in.</td>
<td>113</td>
<td>4.449</td>
</tr>
</tbody>
</table>

- Hand Release: Available
- Ambient Temperature: -20°C TO +60°C
- Voltage: Pulse Width Modulation - based on customer requirements
- Connector: On Request

Hand release lever (on size 35 and 60)
**PK BRAKES**

Spring applied parking and emergency stopping failsafe brakes

The Pan-Cake (PK) range is a pre-assembled on/off dry failsafe electromagnetic brake. This failsafe brake is used for parking and emergency as well as some service braking. The AC motor is used in combination with the PK brake for regenerative braking of the vehicle. The brake can be fitted with various friction materials, in addition to standard are also available a high torque and high energy materials depending on the application. The coil can be designed for single or dual voltage and pulse width modulation power supply to reduce power consumption and maintenance.

The benefits of this cost competitive range include; one-piece design for easy assembly, lower power consumption, longer battery life, and overall lower maintenance costs.

- High torque within a compact space envelope
- Multi-step braking versions available
- Low profile space saving design
- Dust cover option
- IP20 standard & IP43 with optional dual cover and end cap

<table>
<thead>
<tr>
<th>Size</th>
<th>005</th>
<th>010</th>
<th>020</th>
<th>035</th>
<th>060</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static Torque (Nm)*</td>
<td>8</td>
<td>17</td>
<td>34</td>
<td>60</td>
<td>105</td>
<td>180</td>
</tr>
<tr>
<td>Static Torque (lb. ft)*</td>
<td>5.9</td>
<td>14.8</td>
<td>29.5</td>
<td>51.6</td>
<td>92.2</td>
<td>147.5</td>
</tr>
<tr>
<td>A</td>
<td>82</td>
<td>96</td>
<td>133</td>
<td>153</td>
<td>164</td>
<td>184</td>
</tr>
<tr>
<td>B</td>
<td>41.5</td>
<td>39.7</td>
<td>43</td>
<td>43</td>
<td>59</td>
<td>75</td>
</tr>
<tr>
<td>C</td>
<td>3.2</td>
<td>3.2</td>
<td>4.5</td>
<td>6</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>D</td>
<td>10/15H7</td>
<td>15/20H7</td>
<td>15/20H7</td>
<td>19.05/20/25H7</td>
<td>20/25/30H7</td>
<td>25/30/35H7</td>
</tr>
<tr>
<td>J</td>
<td>18</td>
<td>20</td>
<td>20</td>
<td>25</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>E</td>
<td>31</td>
<td>28.5</td>
<td>43.5</td>
<td>51</td>
<td>59</td>
<td>70</td>
</tr>
<tr>
<td>F</td>
<td>72 (3xM4)</td>
<td>90 (3xM5)</td>
<td>112 (3xM5)</td>
<td>132 (3xM5 or M6)</td>
<td>145 (3xM8)</td>
<td>170 (3xM8)</td>
</tr>
<tr>
<td>G</td>
<td>90 (3xM5)</td>
<td>112 (3xM5)</td>
<td>132 (3xM5)</td>
<td>145 (3xM6)</td>
<td>170 (3xM8)</td>
<td>196 (3xM8)</td>
</tr>
<tr>
<td>AA small Flange</td>
<td>82</td>
<td>96</td>
<td>133</td>
<td>153</td>
<td>164</td>
<td>184</td>
</tr>
<tr>
<td>AB large Flange</td>
<td>100</td>
<td>115</td>
<td>138</td>
<td>178</td>
<td>185</td>
<td>215</td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>-20°C TO +60°C</td>
<td>-4°F TO +140°F</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>Pulse Width Modulation - based on customer requirements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Minimum egress over the life of a brake.
WR BRAKES

Spring Applied Parking and emergency stopping brakes

Highly reliable WR225 VAR00 spring-applied brakes feature a built-in flexible design for static engagement with some emergency stop capability. This flexibility allows the brakes to be customized to fit a wide range of applications.

- Extremely compact design
- Intended for static holding applications
- 2 Nm to 4 Nm torque range
- 10 mm max hub bore
- 57 mm shell diameter
- Magnet or flange mount options
- Various mounting plates available

Specifications

(Other non-standard voltage, power, lead length or color available upon request and subject to extra charge)
IP20 is standard, additional options available.

<table>
<thead>
<tr>
<th>Static Torque</th>
<th>Temperature</th>
<th>Duty Cycle</th>
<th>Voltage</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 NM (17.7 IN.LBS.)</td>
<td>AMBIENT -20/+40°</td>
<td>50% MAX</td>
<td>12 VDC</td>
<td>11 WATT</td>
</tr>
<tr>
<td>3 NM (26.5 IN.LBS.)</td>
<td></td>
<td></td>
<td>24 VDC</td>
<td></td>
</tr>
<tr>
<td>4 NM (35.4 IN.LBS.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Options

(Other lengths, diameters or shapes available upon request and subject to tooling charge)

<table>
<thead>
<tr>
<th>End plate outer Ø A</th>
<th>Mounting PCD Ø B</th>
<th>No. holes</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 MM (2.24&quot;)</td>
<td>*48 MM (1.89&quot;)</td>
<td>2</td>
</tr>
<tr>
<td>70 MM (2.76&quot;)</td>
<td>62 MM (2.44&quot;)</td>
<td>2</td>
</tr>
<tr>
<td>75 MM (2.95&quot;)</td>
<td>68 MM (2.68&quot;)</td>
<td>2, 3, OR 4</td>
</tr>
<tr>
<td>80 MM (3.15&quot;)</td>
<td>72 MM (2.84&quot;)</td>
<td>2, 3, OR 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>End plate outer Ø A</th>
<th>Mounting PCD Ø B</th>
<th>No. holes</th>
</tr>
</thead>
<tbody>
<tr>
<td>57 MM (2.22&quot;)</td>
<td>*48 MM (1.89&quot;)</td>
<td>2</td>
</tr>
</tbody>
</table>

* Only available on torque range 3 Nm max

N.B.: Options to be selected with Warner Electric Sales Engineers
Subject to alteration without prior notice
**AP BRAKES**

Spring applied parking and emergency stopping brakes

Very flat, low profile for limited space applications.
- Unique design with high torque in a comparatively slim package.
- IP 20 standard

<table>
<thead>
<tr>
<th>Model/Size</th>
<th>007</th>
<th>0020</th>
<th>0025</th>
<th>0030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Dynamic Torque (Nm)</td>
<td>*</td>
<td>7</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>Rated Dynamic Torque (lb.ft.)</td>
<td>*</td>
<td>5.0</td>
<td>15.0</td>
<td>18.5</td>
</tr>
<tr>
<td>Operating Voltage (Vdc)</td>
<td>*</td>
<td>24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power (Watts)</td>
<td>28.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outer Diameter – ØA (mm)</td>
<td>*</td>
<td>117</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inner Diameter – ØB (mm)</td>
<td>*</td>
<td>34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Length – C (mm)</td>
<td>*</td>
<td>26.42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixing Hole Requirements</td>
<td>3X M5 IN PCD 107</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Features can be customized to suit specific application requirements.

**VARISTOP BRAKES**

Electrically released, variable torque service and parking motor brakes

Varistop brakes are installed on the traction motor. The design is a stationary single-face brakes with zero backlash designed for dry use.

Design combines an electrically released parking brake with the ability to apply variable torque for use as a service brake.

Please contact Warner Electric for more information.
Premier Industrial Company Leading Brands

OTHER PRODUCT SOLUTIONS FROM REGAL REXNORD

Our comprehensive product offerings include various types of clutches and brakes, overrunning clutches, engineered bearing assemblies, gearing and gear motors along with linear motion products, belted drives, couplings, limit switches, precision motors, drives & controls, and miniature motors. With thousands of product solutions available, Regal Rexord provides true single source convenience while meeting specific customer requirements. Many major OEMs and end users prefer Regal Rexnord products as their No. 1 choice for performance and reliability.

WWW.REGALREXNORD.COM

Electric Clutches & Brakes
- Stromag
- Warner Electric

Precision Motors & Automation
- Kollmorgen

Heavy Duty Clutches & Brakes
- Industrial Clutch
- Stromag
- Svendborg Brakes
- Twiflex
- Wichita Clutch

Miniature Motors
- Portescap

Overrunning Clutches
- Formsprag Clutch
- Marland Clutch
- Stieber

Linear Systems
- Thomson

Engineered Couplings & Universal Joints
- Ameridrives
- Bibby Turboflex
- Guardian Couplings
- Huco
- Lamiflex Couplings
- Stromag
- TB Wood’s

Specialty Components
- Kilian
- Stromag
- TB Wood’s

Gear Drives & Gear Motors
- Bauer Gear Motor
- Boston Gear
- Delroyd Worm Gear
- Nuttall Gear
### Warner Electric Facilities

#### North America
- **USA**
  - 31 Industrial Park Road
  - New Hartford, CT 06057 - USA
  - 860-379-1252
  - *Electromagnetic Clutches and Brakes*
  - 449 Gardner Street
  - South Beloit, IL 61080 - USA
  - 815-389-3771
  - 4578 East Park 30 Drive
  - Columbia City, IN 46725 - USA
  - 260-244-6183
  - *Precision Electric Coils and Electromagnetic Clutches and Brakes*

#### Europe
- **France**
  - 7 rue de Champfleur - CS20095
  - 49192 St Barthelemy d'Anjou - France
  - +33 (0)2 41 21 24 24
  - *Electromagnetic Clutches and Brakes*

#### Asia Pacific
- **Australia**
  - +61 2 9894 0133

#### Customer Service
- 1-800-825-6544

#### Application Support
- 1-800-825-9050

### European Offices
- **France**
  - 7 rue de Champfleur - CS20095
  - 49192 St Barthelemy d’Anjou - France
  - +33 (0)2 41 21 24 24
  - *Electromagnetic Clutches and Brakes*

#### Customer Service
- +33 (0)2 41 21 24 76

#### Application Support
- +33 (0) 2 41 21 24 24

### Asia Pacific
- **Australia**
  - +61 2 9894 0133

#### Customer Service
- +61 2 9894 0133

#### Application Support
- +61 2 9894 0133

### Neither the accuracy nor completeness of the information contained in this publication is guaranteed by the company and may be subject to change in its sole discretion. The operating and performance characteristics of these products may vary depending on the application, installation, operating conditions and environmental factors. The company’s terms and conditions of sale can be viewed at [http://www.altramotion.com/terms-and-conditions/sales-terms-and-conditions](http://www.altramotion.com/terms-and-conditions/sales-terms-and-conditions). These terms and conditions apply to any person who may buy, acquire or use a product referred to herein, including any person who buys from a licensed distributor of these branded products.

©2023 by Warner Electric LLC. All rights reserved. All trademarks in this publication are the sole and exclusive property of Warner Electric LLC or one of its affiliated companies.

---

Scan to see all the brands of Regal Rexnord

---

Neither the accuracy nor completeness of the information contained in this publication is guaranteed by the company and may be subject to change in its sole discretion. The operating and performance characteristics of these products may vary depending on the application, installation, operating conditions and environmental factors. The company’s terms and conditions of sale can be viewed at [http://www.altramotion.com/terms-and-conditions/sales-terms-and-conditions](http://www.altramotion.com/terms-and-conditions/sales-terms-and-conditions). These terms and conditions apply to any person who may buy, acquire or use a product referred to herein, including any person who buys from a licensed distributor of these branded products.

©2023 by Warner Electric LLC. All rights reserved. All trademarks in this publication are the sole and exclusive property of Warner Electric LLC or one of its affiliated companies.