



Braking Solutions for the Electric Turf & Garden Market



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



IPB

Integrated Positioning Brake

Spring-applied parking brake with integrated absolute position sensing

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 lose 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

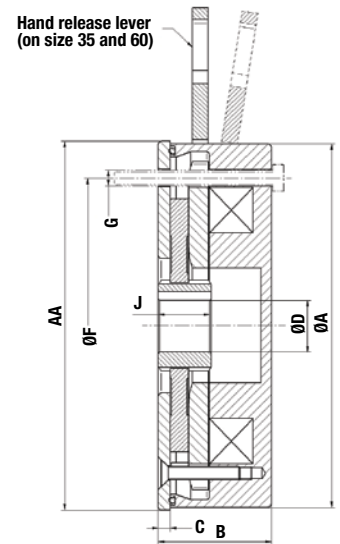
ENCLOSED DESIGN, SPRING APPLIED PARKING AND STOPPING BRAKES ENGINEERED FOR OUTDOOR APPLICATIONS



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



Size		10	20	35	60
Static Torque	Nm	15	35	50	120
	lb. ft	11	26	37	89
A	mm	109	138	155	175
	in.	4.291	4.433	6.102	6.890
B	mm	42	43	43	67
	in.	1.654	1.693	1.693	2.638
C	mm	4.6	4.5	5.6	-
	in.	0.181	0.177	0.220	
D	mm	15 / 18 / 20 / 22 (H7)	15 / 18 / 20 / 22 (H7)	19 / 20 / 25 (H7)	20 / 25 / 30 (H7)
	in.	1/2 / 5/8 / 3/4 / 1/2 (H7)	1/2 / 5/8 / 3/4 / 1/2 (H7)	3/4 (H7)	1 (H7)
J	mm	20	20	25	45
	in.	0.787	0.787	0.984	1.181
F	mm	90	112	168.3	152
	in.	3.543	4.409	6.626	5.984
G		3 × M5 3 × #12	3 × M6 3 × #12	4 × M6 3 × 1/4"	3 × M8 3 × 5/16"
	AA	mm in.	113 4.449	140 5.512	185 7.283
Hand Release		Available	Available	Available	Available on Request
Ambient Temperature		-20°C TO +60°C -4°F TO +140°F			
Voltage		Pulse Width Modulation - based on customer requirements			
Connector		On Request			

PK BRAKES

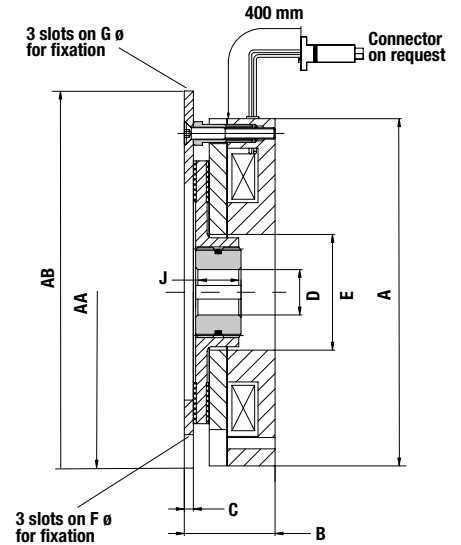
SPRING APPLIED PARKING AND EMERGENCY STOPPING FAILSAFE BRAKES



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
- P20 standard & IP43 with optional dual cover and end cap



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

* Minimum egress over the life of a brake.



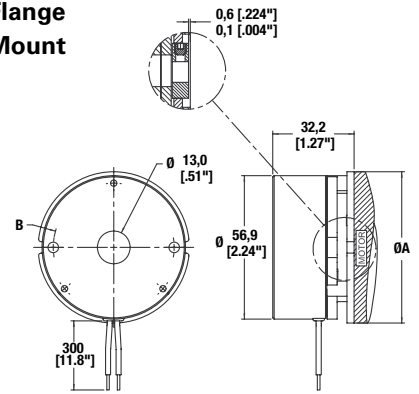
WR BRAKES

SPRING APPLIED PARKING AND EMERGENCY STOPPING BRAKES

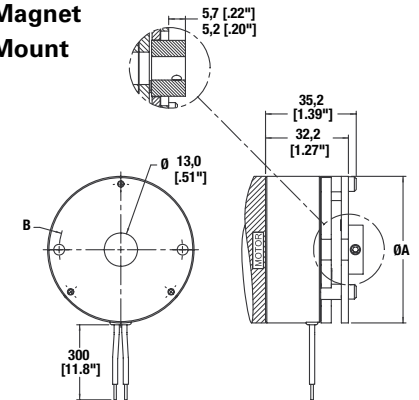
Highly reliable WR225 VAR00 spring-applied brakes feature a built-in flexible design for static engagement with some emergency stop capability. This flexibility allows the brakes to be customized to fit a wide range of applications.

- 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

Flange Mount



Magnet Mount



SPECIFICATIONS

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

IP20 is standard, additional options available.





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

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

Flange Mount		
End plate outer Ø A	Mounting PCD Ø B	No. holes
*60 MM (2.24")	*48 MM (1.89")	2
70 MM (2.76")	62 MM (2.44")	2
75 MM (2.95")	68 MM (2.68")	2, 3, OR 4
80 MM (3.15")	72 MM (2.84")	2, 3, OR 4

Magnet Mount		
End plate outer Ø A	Mounting PCD Ø B	No. holes
*57 MM (2.24")	*48 MM (1.89")	2

* Only available on torque range 3 Nm max

Hexagonal Hub drive		Hexagonal Plastic Friction disc	Hexagonal Fiber Friction disc
Ø Options plain	Ø Options D drive		
 6,0 MM 6,35 MM (0.25") 8,0MM 9,5 MM (3/8") 10,0 MM	 8,0 MM 10,0 MM		

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



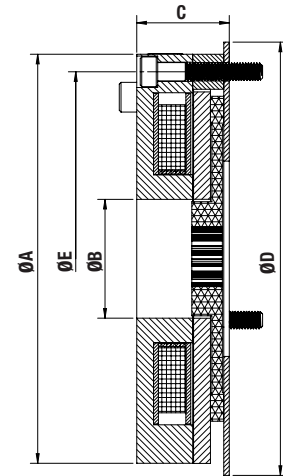
AP BRAKES



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



Model/Size			007	0020	0025	0030
Rated Dynamic Torque	(Nm)	*	7	20	25	30
	(lb.ft.)		5.0	15.0	18.5	22.0
Operating Voltage	(Vdc)	*	24			
Power	(Watts)	*	28.8			
Outer Diameter – ØA	(mm)	*	117			
Inner Diameter – ØB	(mm)	*	34			
Overall Length – C	(mm)	*	26.42			
Fixing Hole Requirements Size/Quantity/Location	(mm)		3X M5 IN PCD 107			

* 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.

IPB BRAKES



INTEGRATED POSITIONING BRAKE (IPB)

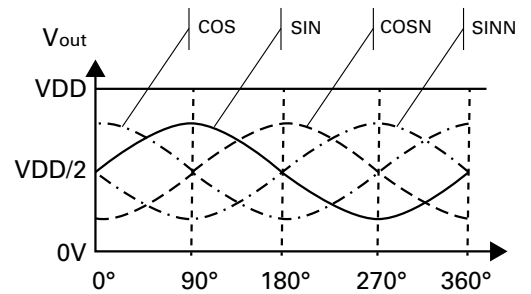
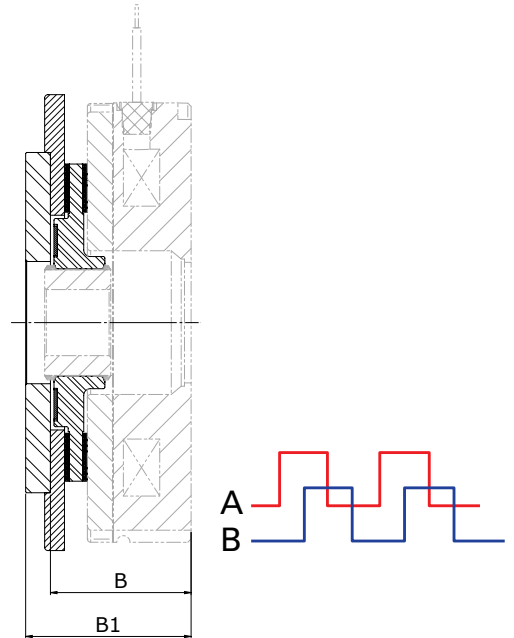
Parking and safety braking with integrated position sensing

The Integrated Position Brake (IPB) is a spring-applied, electrically released parking brake with an embedded absolute position sensor.

This compact assembly allows for the reduction of axial length in the drivetrain by eliminating the need for a traditional 20-40mm overall length encoder or resolver.

Leveraging Warner Electric's™ industry-leading thin brake designs, the new IPB provides the option of either ABZ quadrature encoder output or accurate analog SINE/ COSINE outputs.

- Integrated, plug and play absolute position sensing brake
- Ultra thin, contactless design with minimal added length
- Supports IPM and ACIM motors
- Improves power density or reduces drivetrain length
- Multiple encoder outputs available (quadrature or SIN/ COS)
- Immune to air gap variation and magnetic interference
- Magnet free, dust resistant design for harsh environments
- Through shaft compatible
- -40°C to +125°C operating range



Parking and emergency braking with absolute position sensing

Brake size	005	010	020	035	060	100
B (standard PK brake thickness)	41.5	39.7	43	43	59	60
B1*				51		

* Other sizes & configurations available. Contact an expert to learn more.

Specifications	
General	
Voltage input (VDD)	4.5 - 24 VDC
Ingress Protection	IP65
Quadrature	
Frequency	.1Hz - 20kHz
Output Level	0 - VDD
AB Output	Phase shift left/right hand motion: 270°±45°/ 90°±45°
Tooth Count	4, 128, 256, 512, 1024
Temperature	-40°C - +105°C
SINE/COSINE	
Output Level	Between 0 - 4.5 VDC
Analog output	Differential or Single Ended
Zero crossing	2.5 VDC
Temperature	-40°C - +125°C



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