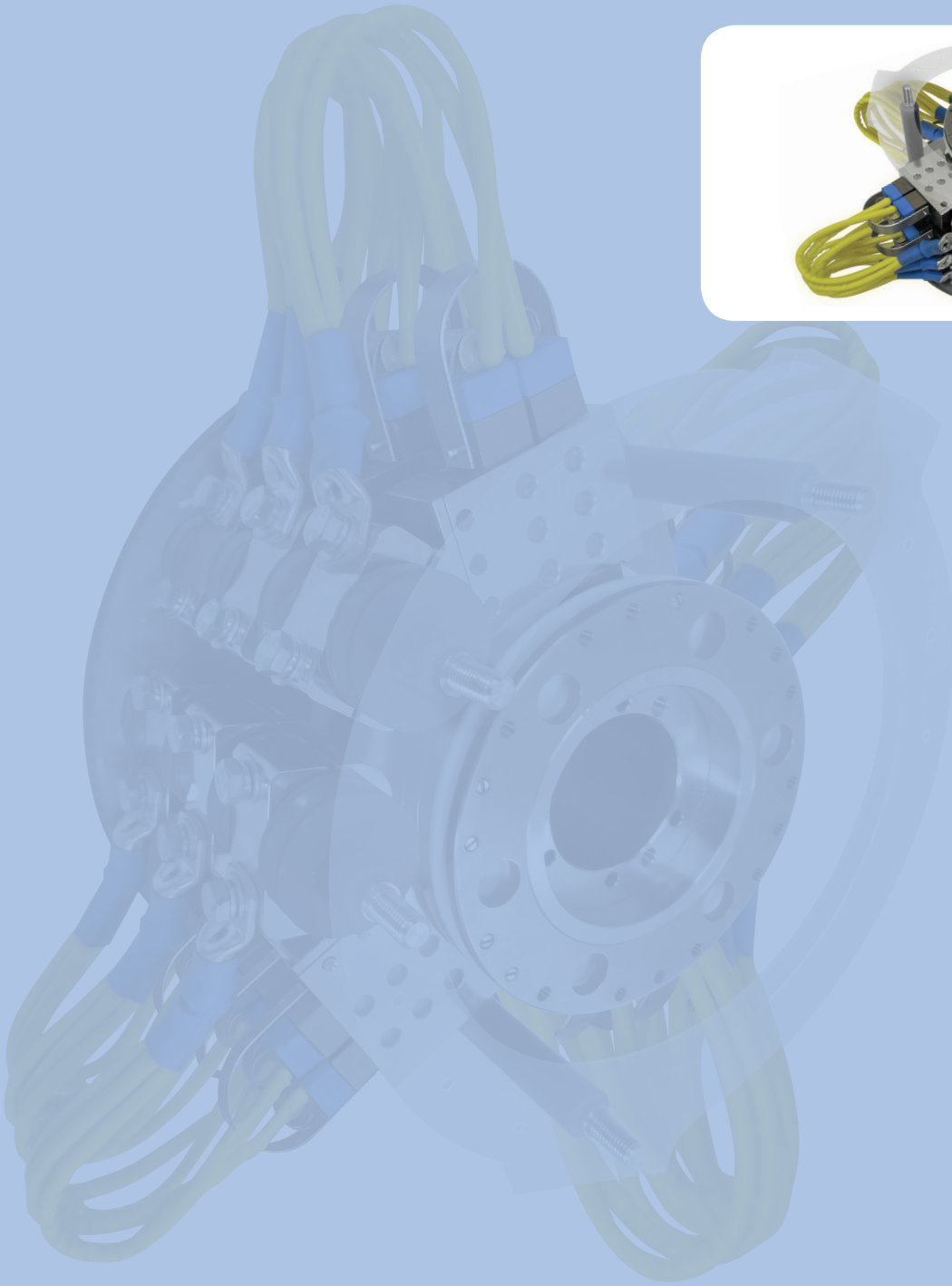


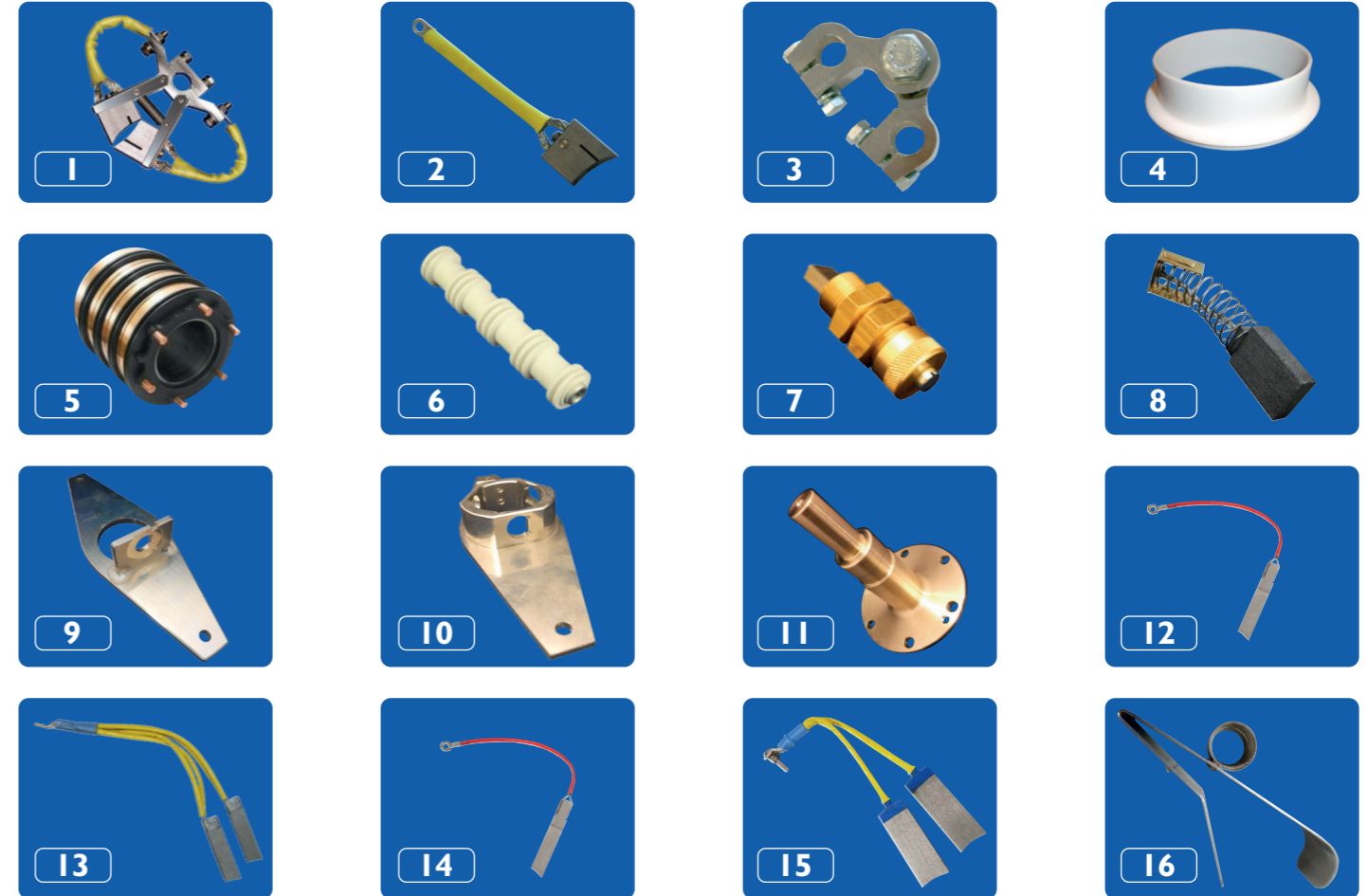
Vestas Wind Turbine Product Portfolio



Rev 4. Eng.

Morgan Standard Parts for Vestas Wind Turbines*

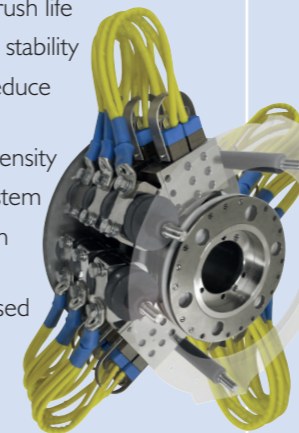
Turbine	Description	OEM No:	Morgan Part No:
1 V52, V66, V80, V90 2MW (Mk1-4)	Caliper Power Brush Holder	753247	1 off -J-DD1026M/2001 + 2 off Z410006H
2 V52, V66, V80, V90 2MW (Mk1-4)	Caliper Power Brush, 42 x 16 x 42 mm	753246	Z410006H
3 V52, V66, V80	Current Clamp Connector Swivel M5 (14mm thick)	753656	SKL 6911-14
4 V52, V66, V80	Shaft Insulating Bush V52 to V80, with locating lip	753005	SKZ6960
5 V52, V66, V80	Slip Ring Unit 4 way Clockwise, Multifit Hub	Fits various generator types.	Z410113G
6 V52, V66, V80	Brush Gear Cage Rod & Insulator	753074, 753075	1 off -SKZ6951 + 1 off -SKZ6952
7 V52, V66, V80, V90	Earthing Brush Holder NDE c/w Brush	753347	J-1000562
8 V52, V66, V80, V90	Earthing brush NDE, 6.35 x 12.7 x 22 mm	753366	Z410008D
9 V52	Base Plate For Single Brush Ground Contact	753342	J-1000567
10 V80, V90	Base Plate For Three Brush Ground Contact	753697	J-1000564
11 V52, V66, V80	Ground Contact Type 3 Radial (110mm long)	753365	J-1000554
12 V52, V66, V80, V90	Earthing Brushes DE (Pair of brushes), 16 x 10 x 97 mm	753741	Z410123D (2 off - Z410007F)
13 V90 (2MW Mk5&7), V100	Power Brush V90 Mk5 & 7, V100	753865 & 753962	Z410080G
14 V80, V90	Earth Brush DE 16 x 10 x 97 mm	753946	Z410130G
15 V90 (3MW)	V90 3 MW Power Brush, 40 x (2 x 12) x 93 mm	753483	Z410074B
16 V90 (3MW)	Vestas 3 MW Power Holder Spring	29001311	PF637-84



V90 3MW Morgan Upgrade

Morgan have optimised the brush and holder system to provide a step change in generator reliability. Our system provides:

- Significant reduction in slipping wear and damage
- Significant improvement in brush life
- Improved brush support and stability
- Optimised brush length to reduce unit cost
- Reduction in brush current density
- Improved brush pressure system
- Simplified unobstructed brush replacement
- System produced to recognised International Standards for brush and holder tolerances

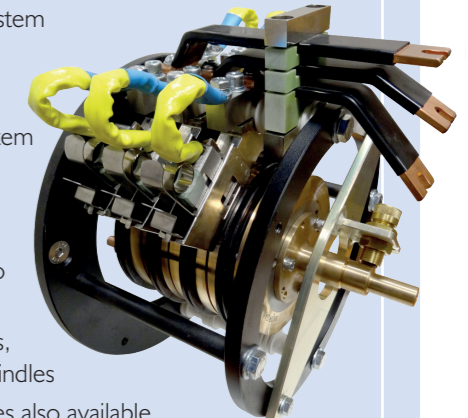


V52-V90 Morgan 'Caliper' Holder Upgrade

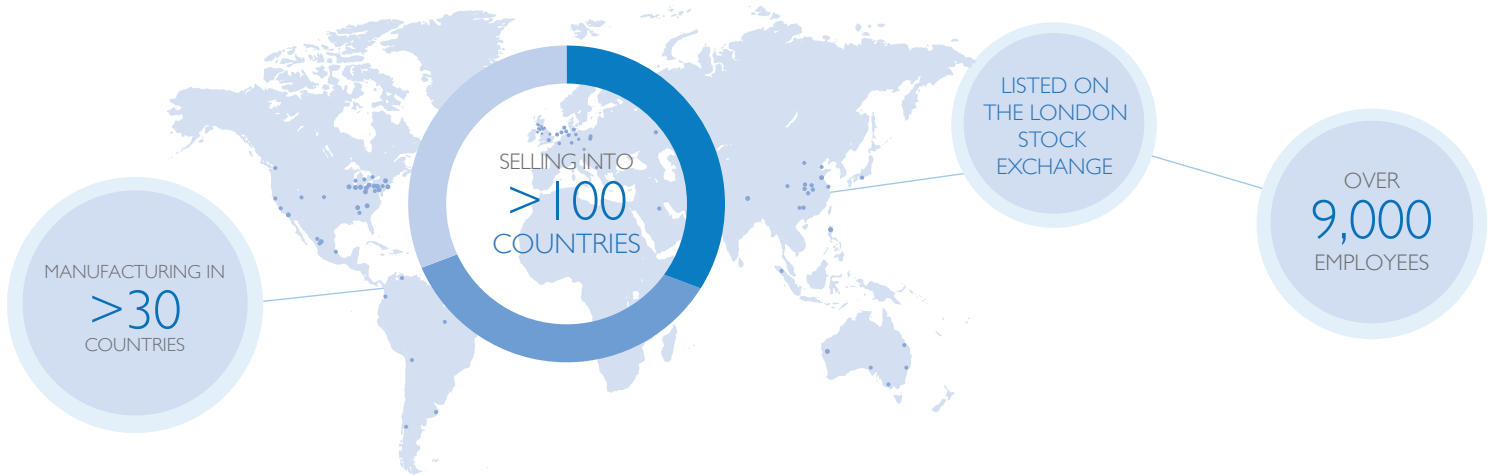
Morgan offer an upgraded brush holder system to replace the standard caliper design.

This provides significant benefits:

- Double the useable brush length. Over 5 years brush life!
- Constant force spring system
- Reduced slipping wear
- Simplified brush changes
- Nickel plated holder system for both onshore and offshore applications
- Plug and Play system no modifications required to the generator
- System includes, brushes, holders, bus bars and spindles
- Brush Wear limit switches also available



ABOUT MORGAN ADVANCED MATERIALS



Morgan Advanced Materials is a global engineering company offering world-leading competencies in materials science, specialist manufacturing and applications engineering.

We focus our resources on the delivery of products that help our customers to solve technically challenging Problems, enabling them to address global trends such as energy demand, advances in healthcare and environmental sustainability.

What differentiates us?

- Advanced material science and processing capabilities
- Extensive applications engineering experience
- A strong history of innovation and reinvention
- Consistent and reliable performance
- A truly global footprint
- We find and invest in the best people

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