

# Guideline and requirements for suppliers of universal motors



<b>Documentation</b>	<ul style="list-style-type: none"> <li>An Overview (Flow-Chart) of all production processes and quality inspections have to be created and forwarded to Kärcher</li> <li>All inspections results have to be recorded and provided to Kärcher on request</li> </ul>
<b>Inspection of bearings</b>	<ul style="list-style-type: none"> <li>The type of bearings have to be checked in the incoming inspection and in beginning of each production lot</li> </ul>
<b>Inspection of A-bracket (gear side)</b>	<ul style="list-style-type: none"> <li>Incoming inspection of A-bracket have to be conducted according Kärcher requirements</li> <li>Damages on the sealing diameter at the oil housing have to be avoided by frequent check of device/instrument</li> </ul>
<b>A-bracket / screwing</b>	<ul style="list-style-type: none"> <li>Torque for screwing the A-bracket needs to be frequently checked</li> </ul>
<b>Inspection of carbon brushes</b>	<ul style="list-style-type: none"> <li>Incoming carbon brushes have to be checked for correct type and resistance</li> <li>The correct type of carbon have to be checked in the beginning of each production lot</li> </ul>
<b>Assembly carbon brush/ carbon wire</b>	<ul style="list-style-type: none"> <li>Carbon brush wire has to be free and without mechanical tension. Free movement of Carbon brush has to be ensured for its complete length. -&gt; Training of operators/ Work instructions with pictures</li> </ul>
<b>Breakaway torque of Pinion</b>	<ul style="list-style-type: none"> <li>The breakaway torque of the pinion have to be checked at least 3 times per shift with a target value &gt; 7 Nm</li> </ul>
<b>Press in of pinion</b>	<ul style="list-style-type: none"> <li>The radial run-out of the shaft has to be checked in process or the press in force monitored during the assembly of the pinion. The breakaway torque have to be &gt; 7 Nm and checked at least in samples</li> </ul>
<b>Shaft seal ring</b>	<ul style="list-style-type: none"> <li>The shaft seal ring have to be greased as specified by the manufacturer (grease between sealing lips) to avoid damages of the sealing lips while first run. If applicable then also the shaft has to be greased.</li> <li>Flatness/ Imbalance of the shaft seal ring have to be checked after press in for each motor (Ideally with a device)</li> </ul>
<b>Check of carbon brush guidance</b>	<ul style="list-style-type: none"> <li>A visual In-process-inspection of the carbon tunnel is required to ensure that the carbon tunnel is free of burrs, damages and dirt.</li> <li>The carbon guidance have to be checked for dimensionally accuracy</li> </ul>
<b>Press in of cooling fan</b>	<ul style="list-style-type: none"> <li>Force control or alternatively pull out tests have to be realized</li> <li>Clear guidance of fan wheel while press in have to be ensured</li> <li>Visual inspection after press-in to detect damages have to be conducted</li> </ul>
<b>Homogenously application of gel on commutator</b>	<ul style="list-style-type: none"> <li>Visual inspection during production to assure a homogenously application of gel on commutator (no gel between segments, no bubble formation, ...)</li> </ul>
<b>Missing assembly parts</b>	<ul style="list-style-type: none"> <li>Missing of assembly parts (Shaft seal ring, bearing, disc, ...) needs to be avoided by visual inspection (Ideally automatically detection)</li> </ul>
<b>Final test /Performance Test</b>	<ul style="list-style-type: none"> <li>The final performance test needs to be detailed described and agreed with Kärcher</li> </ul>
<b>Dimension check with Kärcher gauge</b>	<ul style="list-style-type: none"> <li>At least one of each production lot of the finished product has to be checked for dimension with the assembly gauge provided by Kärcher</li> </ul>
<b>Printed information on motor</b>	<ul style="list-style-type: none"> <li>The motors have to be designated according the drawing specifications</li> </ul>
<b>Packaging</b>	<ul style="list-style-type: none"> <li>Finished goods have to be packaged according Kärcher requirements. Packaging instructions have to be created and provided at the packaging work station.</li> </ul>
<b>Life Time Test</b>	<ul style="list-style-type: none"> <li>Life time tests have to be realized according PAIS 5382416 Kärcher</li> </ul>
<b>Process and design changes</b>	<ul style="list-style-type: none"> <li>Kärcher have to be informed timely in case of any intended change which could affect the product quality (process, design, parts etc.). These changes have to be realized only after written confirmation of Kärcher</li> </ul>