Shock Pulse Measurement

CPKN, CPKNO, CPKN-CHs
HPK, HPK-L
MegaCPK
RPH

Supplementary Operating Manual
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1 Supplementary Operating Manual

1.1 General
This supplementary operating manual accompanies the operating/installation manual. All information contained in the operating/installation manual must be observed.

Table 1: Relevant operating manuals

<table>
<thead>
<tr>
<th>Type series</th>
<th>Reference number of the operating/installation manual</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPKN</td>
<td>2730.8, 2713.813, 2730.89</td>
</tr>
<tr>
<td>CPKN-Chs</td>
<td>2730.84</td>
</tr>
<tr>
<td>CPKNO</td>
<td>2730.88</td>
</tr>
<tr>
<td>HPK</td>
<td>1121.8, 1121.817</td>
</tr>
<tr>
<td>HPK-L</td>
<td>1136.8</td>
</tr>
<tr>
<td>MegaCPK</td>
<td>2731.8</td>
</tr>
<tr>
<td>RPH</td>
<td>1316.8014</td>
</tr>
</tbody>
</table>

1.2 Function

**Principle**
The shock pulse method is based on the knowledge that a shock, i.e. a mechanical impact, causes particles to accelerate at the point of impact. In turn, the accelerated particles give rise to a pressure wave whose propagation during the initial stages is only defined by the impact speed.

Starting from the point of impact, the pressure wave spreads through the material to the transducer where it produces a dampened oscillation at the transducer’s resonant frequency. The signal processed in the transducer is transformed within the measuring circuit in such a way that the result is an indirect impact speed.

**Use and purpose**
Shock pulse measurement primarily serves the purpose of preventive maintenance of rolling element bearings. Regular measurements are used to monitor the installation, operating conditions (lubrication, loads, etc.) and the development of the lifetime expectancy (wear rate) of the bearings. These aim at making the best possible use of the actual service life of the bearings and at determining when it is time to replace the bearings to prevent an untimely breakdown.

A reduction in the number of bearing failures as well as in the costs and downtimes caused by such failures are the beneficial effects of regular monitoring.

1.3 Fitting measuring nipples

Unless expressly ordered otherwise, only the two threaded holes, through which the measuring nipples pass, are drilled in the bearing bracket. Each threaded hole is drilled as close as possible to the rolling element bearing to be measured and, if possible, in one plane with the raceway.

If the measuring nipples are not screwed into the provided holes, proceed as follows:

1. Remove the plug of the drilled hole.
2. Screw the measuring nipples into the respective holes.
3. Put the protective caps on the measuring nipples.

1.4 Mounting the shock pulse meter

1. Remove the protective caps from the measuring nipples.
2. Connect the shock pulse meter.
   Make sure that the distance between the coupling and the meter is sufficient during measuring.
3. Put the protective caps on the measuring nipples if necessary.
1.5 Connections

Fig. 1: Connections on MegaCPK

Fig. 2: Connections on CPKN, HPK

Fig. 3: Connections on HPK-L

Fig. 4: Connections on RPH
Table 2: Technical data, connection type

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Application</th>
<th>Measuring point</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>720.48</td>
<td>Shock pulse measurement</td>
<td>Bearing, pump end</td>
<td>M8</td>
</tr>
<tr>
<td>720.49</td>
<td>Shock pulse measurement</td>
<td>Bearing, drive end</td>
<td>M8</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>M8 for countersinking Ø30 mm</td>
</tr>
</tbody>
</table>

1.6 Measuring nipple

Suitable measuring nipples can be delivered on request.

Table 3: Technical data, measuring nipple

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thread</td>
<td>M8</td>
</tr>
<tr>
<td>Material</td>
<td>Steel, zinc-electroplated (ST GAL ZN)</td>
</tr>
<tr>
<td>Length</td>
<td>24 mm</td>
</tr>
</tbody>
</table>

Fig. 5: Measuring nipple dimensions

Fig. 6: Threaded hole for a) measuring nipple, b) vibration sensor to API 610

1) Measuring nipple to KSB works standard ZN407