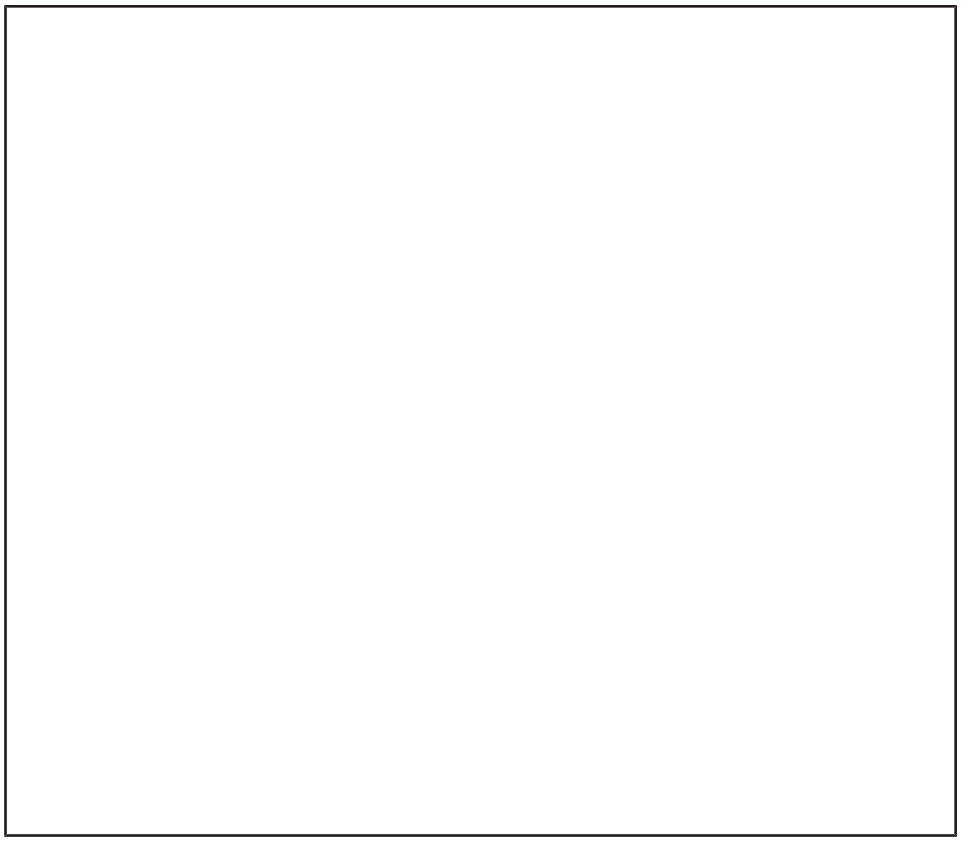
Shock Pulse Measurement (Vibration Analysis)

CPKN, CPKNO, CPKN-CHs
HPK, HPK-L
KWP
MegaCPK
RPH, RPHb, RPHd, RPH-HW
Magnochem

Supplementary Operating Manual



CE

KSB

Legal information/Copyright

Supplementary Operating Manual Shock Pulse Measurement (Vibration Analysis)

Original operating manual

Contents

1 Supplementary Operating Manual

1.1 General

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

Table 1: Relevant operating manuals

Type series	Reference number of the installation/operating manual
CPKN CPKN-CHs CPKNO	2730.8, 2730.813, 2730.89 2730.84 2730.88
HPK HPK-L	1121.8, 1121.817 1136.8
KWP	2361.8, 2361.81
Magnochem	2747.8, 2747.82, 2747.85
MegaCPK	2731.8
RPH	1316.8014
RPHb, API 610	1321.8
RPHd	1322.81
RPH-HW	1327.8

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.

1070.807/09-EN

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

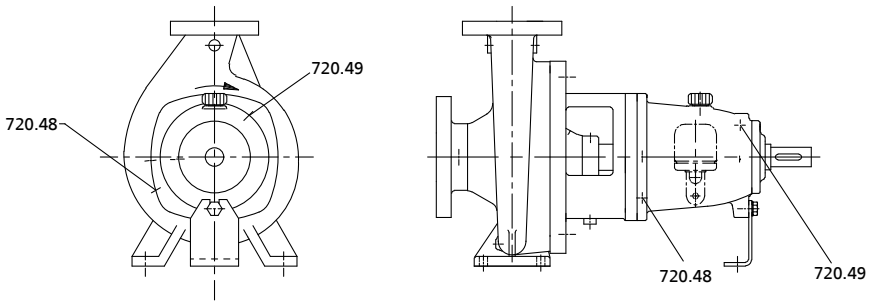


Fig. 1: Connections for measuring nipples on CPKN, HPK

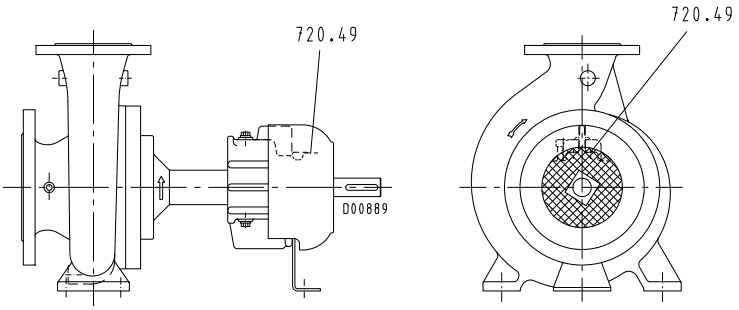


Fig. 2: Connections for measuring nipples on HPK-L

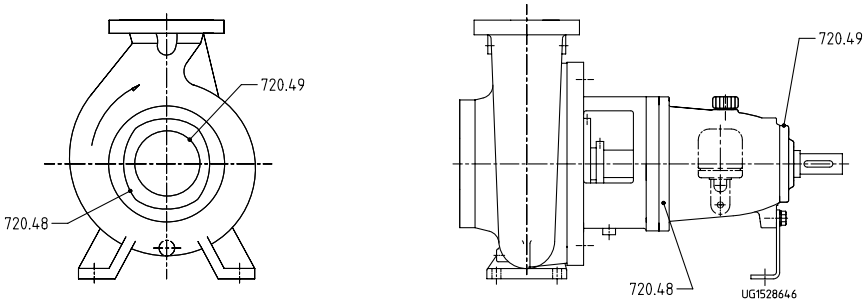


Fig. 3: Connections for measuring nipples on KWP, bearing brackets P03ax to P12sx

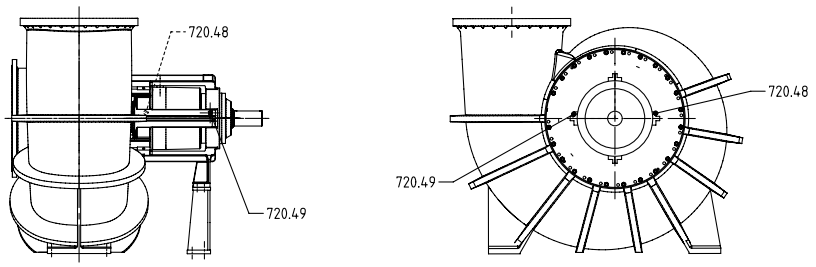


Fig. 4: Connections for measuring nipples on KWP, bearing brackets P16ax to P20sx

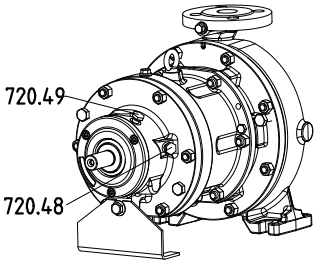


Fig. 5: Connections for measuring nipples on Magnochem

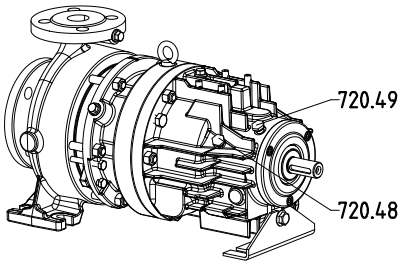


Fig. 6: Connections for measuring nipples on Magnochem, model with heat barrier

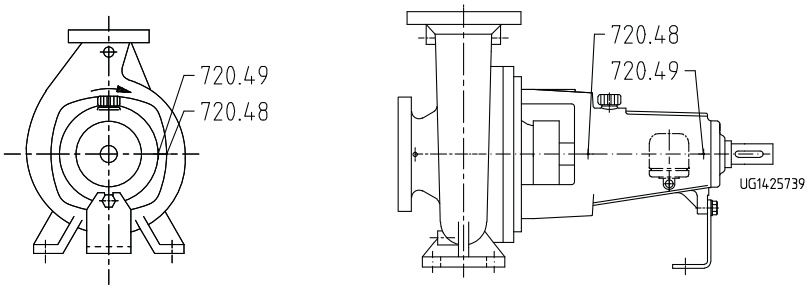


Fig. 7: Connections for measuring nipples on MegaCPK

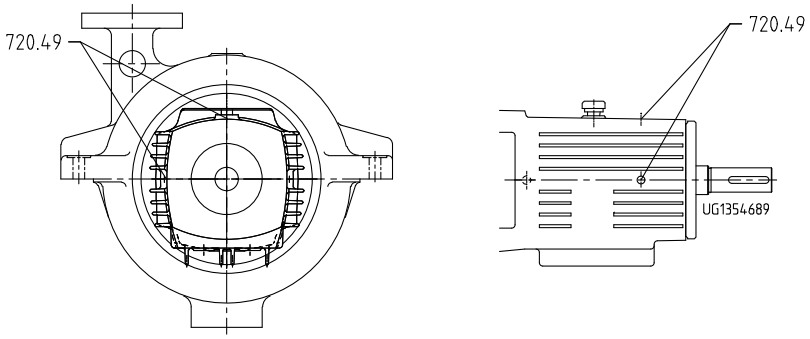


Fig. 8: Connections for measuring nipples on RPH, RPH-HW

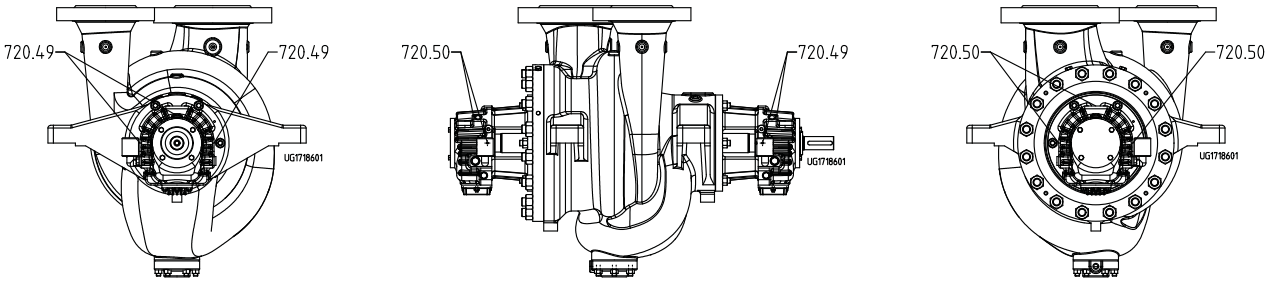


Fig. 9: Connections for measuring nipples on RPHb, RPHd

Table 2: Technical data, connection types

Part No.	Use	Measuring point	Connection		
			CPKN, HPK, HPK-L, KWP, Magnochem, MegaCPK	RPH, RPH-HW	RPHb, RPHd
720.48	Shock pulse measurement	Bearing, pump end	M8	-	-
720.49	Shock pulse measurement	Bearing, drive end	M8	M8 with countersink Ø 30 mm	M8 with countersink Ø 30 mm
720.50	Shock pulse measurement	Bearing, non-drive end	-	-	

1.6 Measuring nipple

Suitable measuring nipples can be delivered on request.

Table 3: Technical data, measuring nipple[1)]

Feature	Value
Thread	M8
Material	Steel, zinc-electroplated (ST GAL ZN)
Length	24 mm

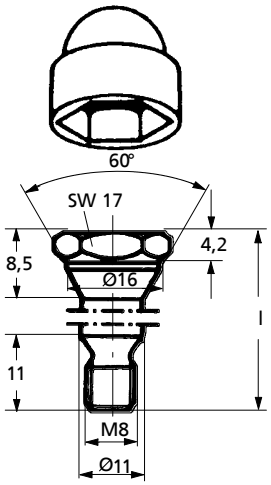


Fig. 10: Measuring nipple dimensions

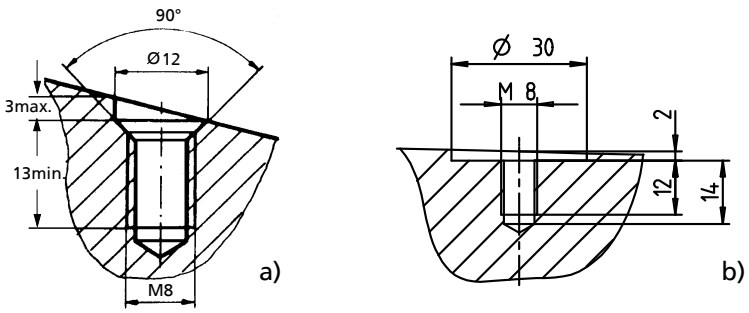


Fig. 11: Threaded hole for a) measuring nipple, b) vibration sensor to API 610

1070.807/09-EN

1 Measuring nipple to KSB works standard ZN407

1070.807/09-EN (01325148)

KSB SE & Co. KGaA
Johann-Klein-Straße 9 • 67227 Frankenthal (Germany)
Tel. +49 6233 86-0
www.ksb.com