DG GELENKE

TECHNICAL INFORMATION

MAINTENANCE AND LUBRICATION

To ensure trouble-free employment of precision universal joints and precision shaft joints with friction bearings or brackets you should lubricate them at regular intervals.

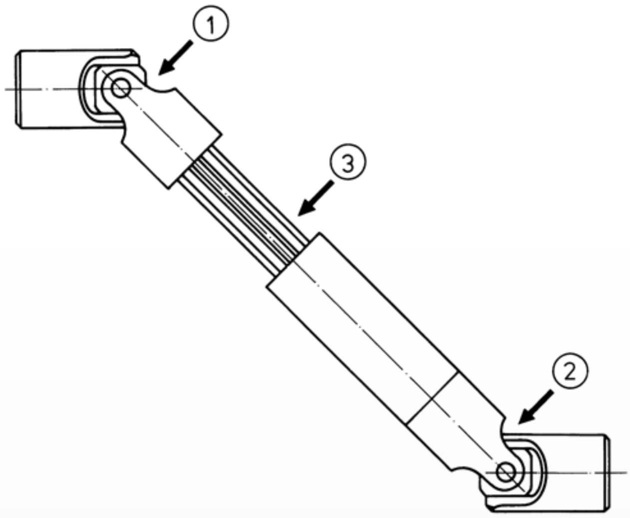
Precision universal joints with **needle bearings** are **maintenance-free** and, due to their permanent lubrication, are preferably used in machine components difficult to access.

Please note: Precision universal joints and precision shaft joints are ready for use and are lubricated with a lithium saponified, extreme pressure lubricant on a mineral oil base.
Temperature range lubricant: from -20° to +130°C (permanent lubrication)
Peak temperature lubricant: maximum 140°C

Please use lubricants with the same specification for re-lubrification.

LUBRICATING POINTS

Lubrication is required at least once daily for permanent operation at the lubricating points marked with arrows.
For friction bearings and bracket version this means all the sliding parts on the cube, the fork piece and bearing pins (1) and (2) as well as (3) for shaft joints the sliding parts of the extendable splined profile. In harsh environments, the sliding parts should be protected against fibrous particles and steam by means of a folding muff. Permanent self-lubrication for an indefinite time is achieved by filling the folding muff with a lubricating grease.
Note: Maintenance work should be carried out at regular intervals; preferably while carrying out maintenance work on other machine parts.
In such cases, we recommend that noise and backlash tests be conducted, or if the working noise and/or the backlash of the joint and profile parts deviate from the standard values.



Instructions for precision universal joints with needle bearings:

Precision universal joints with needle bearings in accordance with DIN 808-W are used wherever high transmission performances together with precise load transmissions at high speeds (of up to max. 5,000 rpm) are required. Power transmission is through the centre of the universal joint via a cube including hardened studs that are contained in needle bearing bushes sealed off by sleeves. The special roller bearing grease is inserted during assembly and guarantees that precision universal joints with needle bearings remain absolutely maintenance-free due to permanent lubrication.

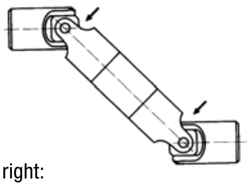
INSTALLATION INSTRUCTIONS

If two shafts, which are inclined towards each other at a given angle, are connected to each other via a universal joint, and if one of the shafts rotates with a constant angular speed, then the other shaft rotates with a variable angular speed. This irregularity of motion – which is also called gimbal error – causes the rotating angle to advance and lag alternately, thus effecting the second shaft to rotate with sinusoidal fluctuations. The greater the deflection angle α, the greater the non uniformity of the rotating motion.

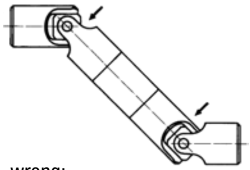
For this reason, single universal joints are only used when variable rotary motion is permissible. The non uniformity of motion can be compensated by using two single universal joints in sequence or by using a double universal joint. When properly installed the second universal joint can compensate the irregular motion of the first one under the following conditions as enumerated by DIN 808.

The universal joints are delivered in the standard without pin holes and pins. The needed length of the pin depends on the outside diameter of the universal joint. It has to be flush with the joint.

1. Correct fork position: when using two single universal joints make sure thath the two inside forks or brackets (for S-Type) are in flat formation, as in the case of double universal joints.

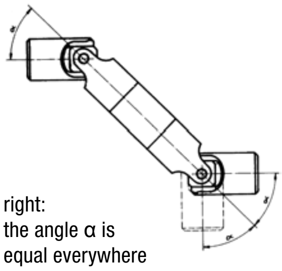


right:
forks in flat formation

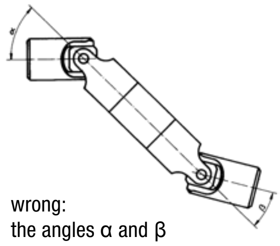


wrong:
fork plane turned by 90°

2. The working angles at both ends must be equal.

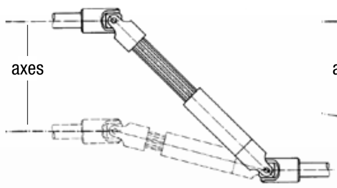


right:
the angle α is
equal everywhere

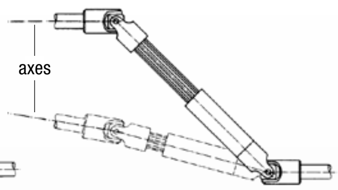


wrong:
the angles α and β
are not equal

3. The driving and driven shafts may only be shifted.

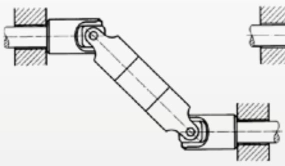


right: axis 1 parallel
to axis 2

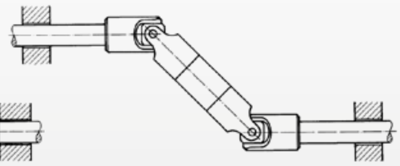


wrong: axis 1 not parallel
to axis 2

4. The bearing of the transmission (or double joint) should be installed as close as possible to the joints.

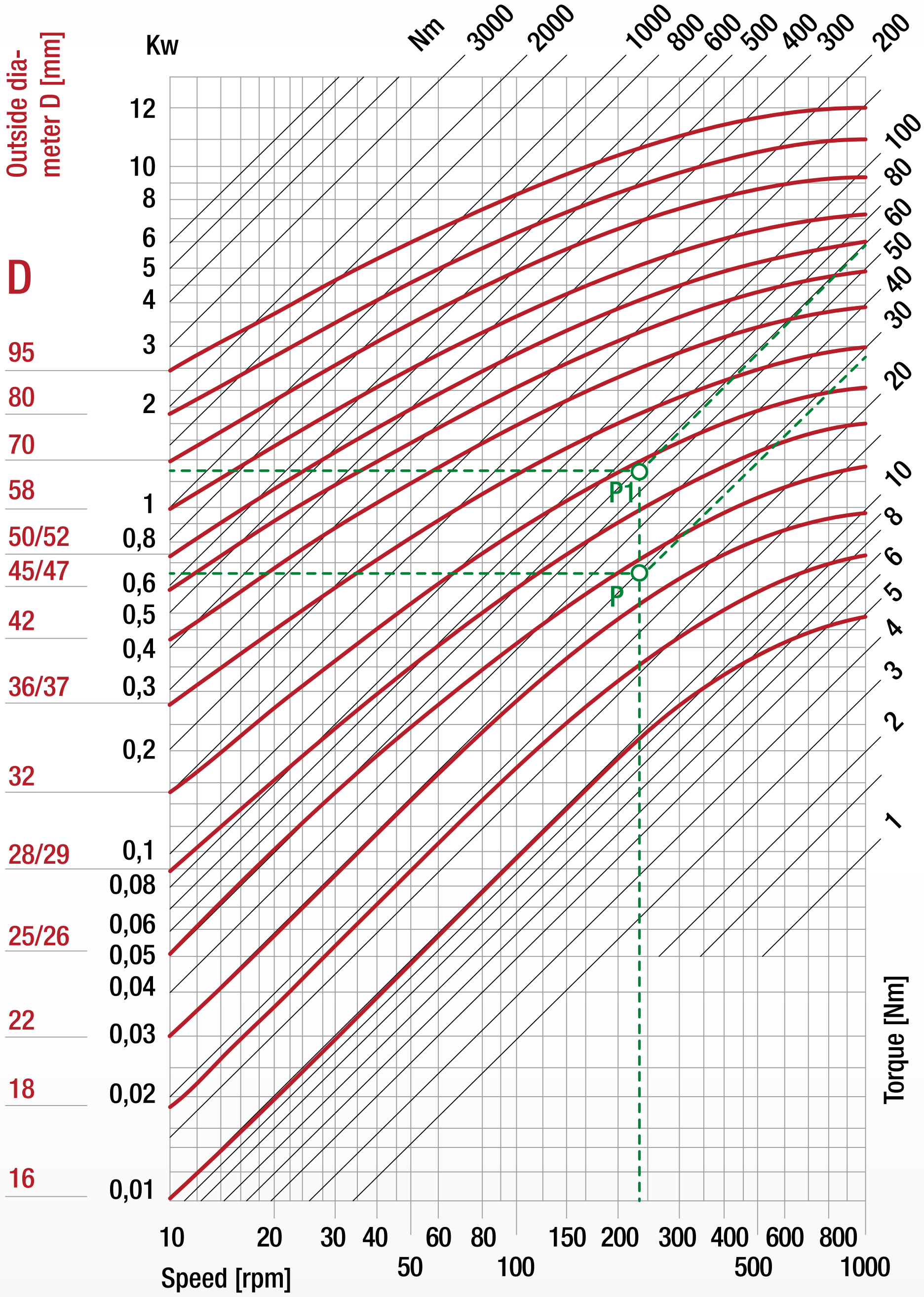


right:
bearing close to the joint



wrong:
bearing away from joint

CALCULATION DIMENSIONS OF UNIVERSAL JOINT „-G" FOR SLIDE BEARING



Working angle	Correction factor
45°	0.25
40°	0.30
35°	0.38
30°	0.45
25°	0.55
20°	0.65
15°	0.80
10°	1.00
5°	1.25

Important: When chosing a joint, it has to be considered that each application has its own particular motion characteristics, such as: shock loads, motion reversals, connected masses, kind of starting, etc.

Therefore our diagrams can only be seen as a rough indicator.

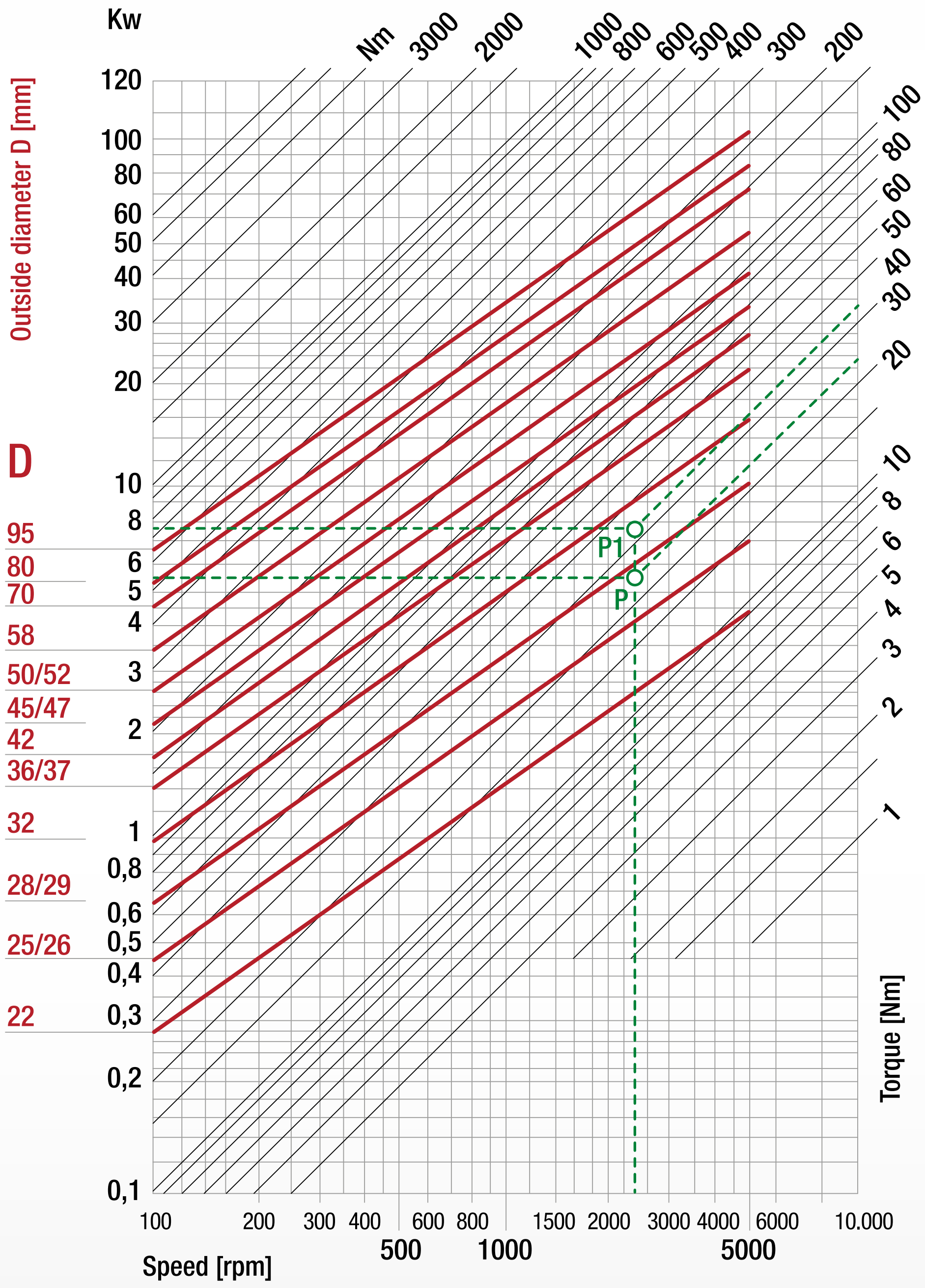
The diagrams are based on single joints, for a double joint the transmitted torque is about 10% lower.

Example: Power: 0.65 Kw | Speed n: 230 rpm | Working angle α: 10° > Correction factor 1

According the diagram with n = 230 rpm and Power = 0.65 Kw we get a maximum torque of M = 28 Nm which results in an outside diameter of D = 25 mm that is needed.

Considerung a working angle of 30° (correction factor 0.45) we get a calculative Power of P1 = 0.65 Kw : 0.45 = 1.44 Kw. This results in a needed torque of M = 60 Nm which requires an outside diameter of D = 32 mm.

CALCULATION DIMENSIONS OF UNIVERSAL JOINT „-W" FOR NEEDLE BEARING



Working angle	Correction factor
45°	0.25
40°	0.30
35°	0.40
30°	0.50
25°	0.70
20°	0.80
15°	0.90
10°	1.00
5°	1.25

Important: When chosing a joint, it has to be considered that each application has its own particular motion characteristics, such as: shock loads, motion reversals, connected masses, kind of starting, etc.

Therefore our diagrams can only be seen as a rough indicator.

The diagrams are based on single joints, for a double joint the transmitted torque is about 10% lower.

Example: Power: 5.5 Kw | Speed n: 2,300 rpm | Working angle α: 10° > Correction factor 1

According the diagram with n = 2,300 rpm and Power = 5.5 Kw we get a maximum torque of M = 23 Nm which results in an outside diameter of D = 28 mm that is needed.

Considerung a working angle of 25° (correction factor 0.7) we get a calculative Power of P1 = 5.5 Kw : 0.7 = 7.85 Kw. This results in a needed torque of M = 33 Nm which requires an outside diameter of D = 32 mm.