

Universal Joints, General Information

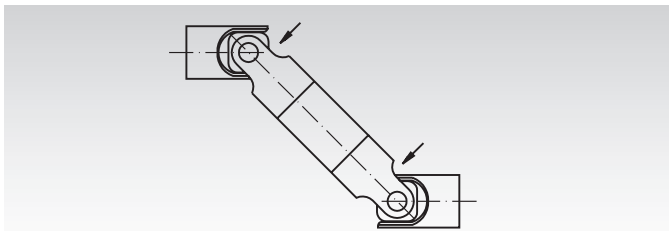
Universal joints and universal shafts are today, and will be in future, absolutely essential and versatile components for transferring rotary motion and transmitting torque from the driving to the driven unit.

If two shafts set at a certain angle are connected using a single universal joint and one shaft turns with constant velocity, the other shaft will move irregularly. This non-uniformity – also called gimbal error – means that angle of rotation of the second shaft slightly lags behind or leads the movement of the first shaft, with kind of sinus-shaped variations. The greater the oper-

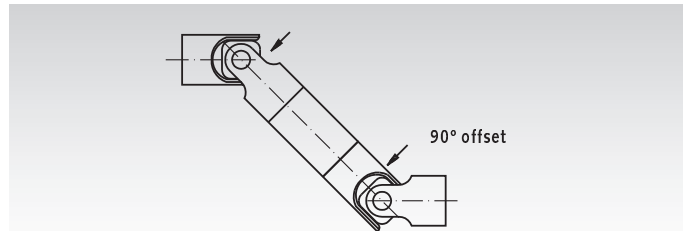
ating angle α , the greater the non-uniformity in motion of the second shaft.

Thus single universal joints are only used in applications where non-uniformity of rotation is acceptable. This non-uniformity can be compensated by either using two single universal joints in sequence - thus forming a universal shaft - or by using a double universal joint. When properly installed, the second universal joint can compensate the non-uniform rotation of the first universal joint, that is under the following preconditions, as described in DIN 808:

1. Correct yoke orientation: when two single universal joints are used, please make sure that the yokes of the inbound joints, or brackets for the bracket-version, are properly aligned – as for double universal joints.

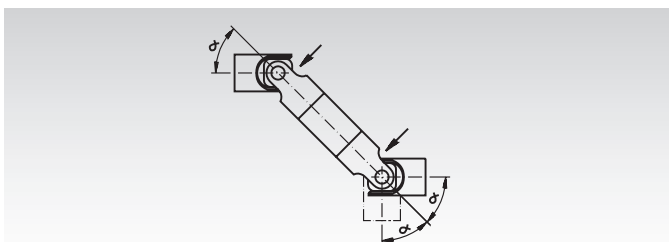


CORRECT: yoke orientation properly aligned

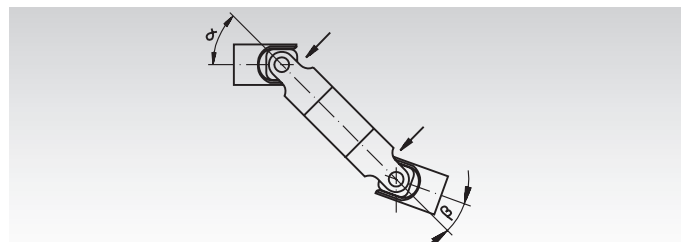


INCORRECT: yoke orientation offset by 90°

2. The operating angle must be the same at both ends.

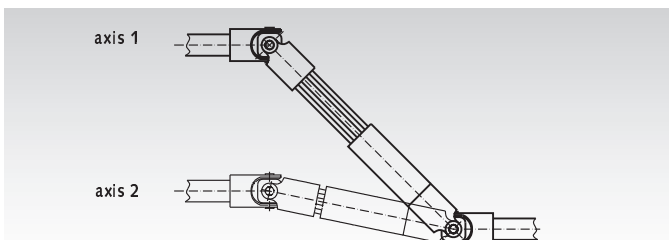


CORRECT : angle α is the same everywhere

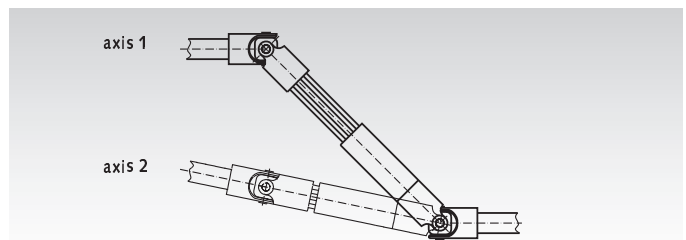


INCORRECT: angle α and β are different

3. When position of driving and driven shaft is changed, they must always be moved in parallel.

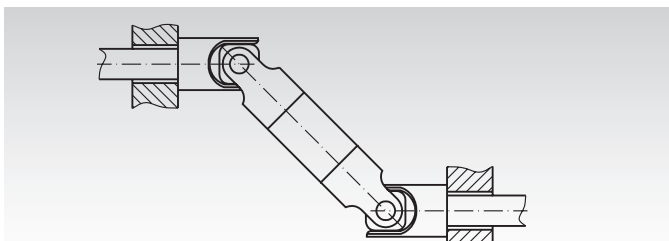


CORRECT : axis 1 is parallel to axis 2

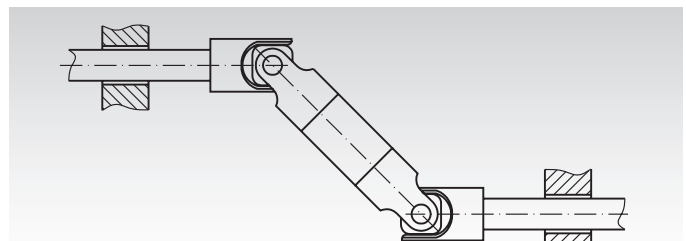


INCORRECT: axis 1 is not parallel to axis 2

4. The universal-joint shaft – or the double universal joint – should be supported as close as possible to the universal joints.



CORRECT : bearing positioned as close as possible



INCORRECT: bearing positioned is too far off the joint

The universal joints are supplied without pinholes and split pins. The length of the split pin is determined by the outer diameter of the universal joint, i.e. the pin must be flush when inserted.

We recommend Split Pins accord. to DIN 1481.

Bore \varnothing	6	8	10	12	16	20	25	32	40	50
Pin \varnothing	2	3	4	5	6	8	10	12	14	16