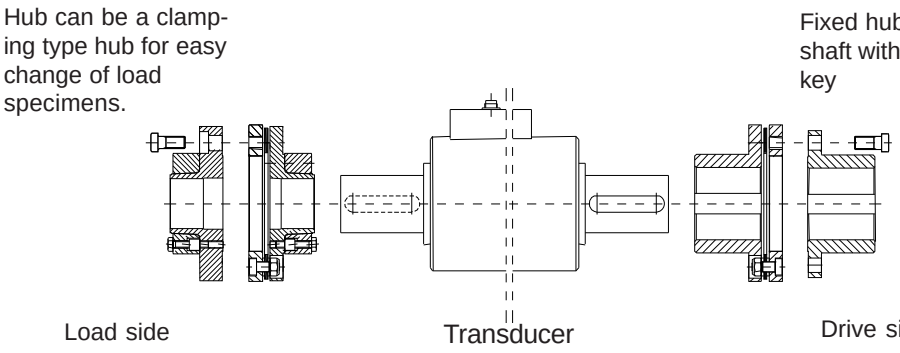
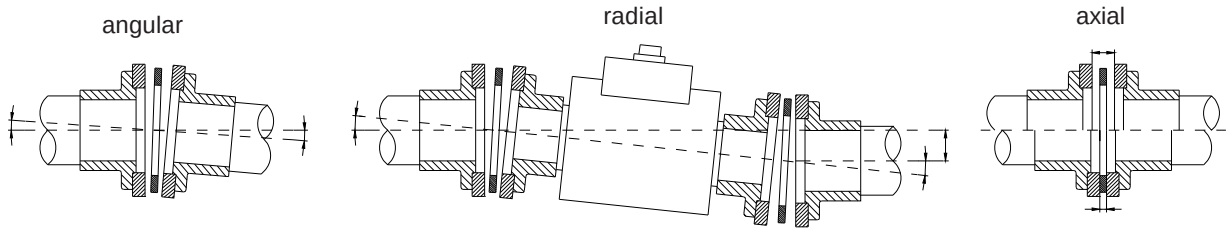
Flexible disc couplings based on sheet metal plates is shown here .

In rotating torque installations, the type of couplings used is very important.
The installation of couplings should be such that no radial forces other than the coupling weight are present.
The couplings must have a flexing part which can accommodate minor angular, radial and axial misalignment, but at the same time have the stiffness to transmit the given torque force without any vibration or slip in the force transmitted, which can spoil the correct picture of torque, or in worst case can spoil the transducer.
Many different types of couplings are present on the marked to day, but it must be taken into count that a torque transducer is a high precision measuring device and should not be employed as a simple mechanical transmission device.

Single flexible, shaft couplings **for free floating transducer.**

Torsional stiff and flexible coupling compensate axial and angular misalignment in the shaft arrangement.





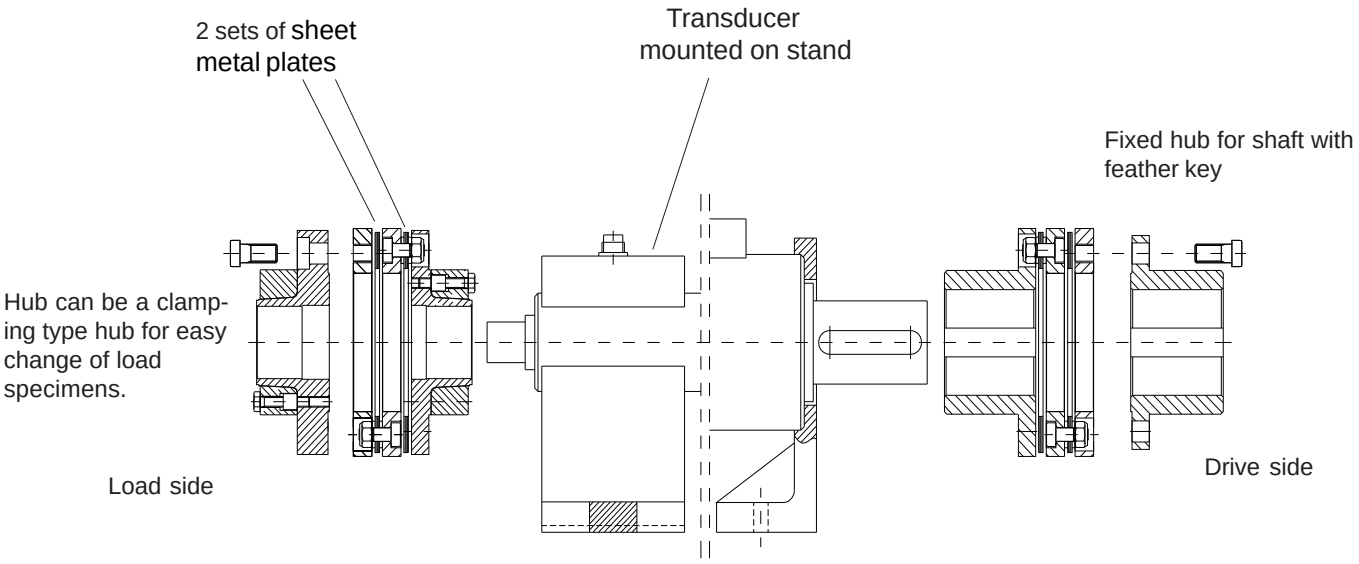
Above drawings show the principle arrangement of single flexible coupling and the shaft offset. In general the three shown types of shaft offset occur simultaneously in operation. They superimpose to a total misalignment which has to be compensated by the coupling.
Where as a single flexible element only permits angular and axial misalignment, two of these elements together with the torque sensor will become a double flexible coupling characteristic.
In this case angular misalignment can be compensated, the admissible angular offset is according the formula:

admissible *radial misalignment* $\Delta K_{rad} = a \cdot \tan$ *admissible angular misalignment* ΔK_{angel}

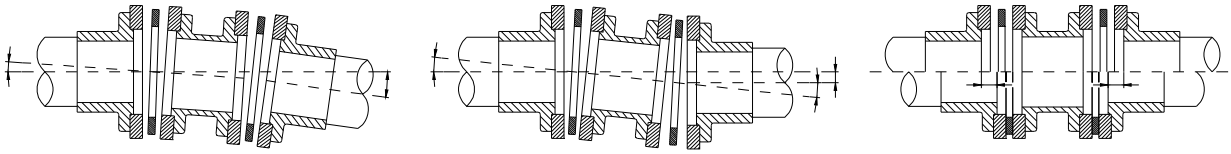
50Nm model DR2477 Torque transducer shown with 2 single flexible couplings

Double flexible, shaft couplings for foot mounted transducer

Torsional stiff and flexible shaft coupling with two flexible disc pack compensate axial, angular and even radial mis-alignment on shaft connection.



Behaviour of one double coupling shown here !



angular radial axial

The drawings above show the general design of double-flexing couplings and their characteristics during shaft offset. In general the three shown types of shaft offset occur simultaneously in operation. They superimpose a total misalign-ment which has to be compensated by the coupling. Whereas a single-flexing element only permits angular and axial misalignment, the parallel offset capacity of double-flexing couplings is a function of the admissible angular offset and the distance between the two packs according to the formula:

admissible *radial misalignment :* $\Delta K_{rad} = a \cdot \tan$ *admissible angular misalignment* ΔK_{angel}

Nordisk Transducer Teknik

Als Odde, DK-9560 Hadsund Denmark
Tel.: +45 98581444, Fax.: +45 98581866
E-mail:ntt@ntt.dk URL: www.torque-sensors.eu