Torsionally Rigid All-Steel Couplings – ARPEX Series

General information

Overview

ARPEX couplings have proved themselves for over 30 years in all areas of technology where reliable, maintenance-free torque transmission is required. ARPEX couplings link machine shafts and compensate for shaft misalignments, while generating only low restorative forces. Thanks to the use of spring steel plates and backlash-free screw connections, ARPEX couplings are torsionally rigid and backlash-free. All ARPEX coupling components are manufactured from high-quality steel. Robust, compact construction guaranteeing a high level of operational reliability and a long service life is therefore possible. High-precision production ensures that at speed in the assembled condition only low forces act on the machine parts connected to them. ARPEX couplings can be used for both directions of rotation and are thus also suitable for reverse operation.

ARPEX couplings are not subject to wear and, if correctly designed, assembled and installed, can be expected to have an unlimited service life. With most types the intermediate spacer can be fitted radially without having to move the driving and driven machines.

Thanks to a large number of standard components ARPEX couplings can be combined to make many different types. In this way, standard types can be used with many drives.

ARPEX couplings can withstand temperatures between -40 °C and +280 °C in operation. On request, they can also be specially equipped for use in other temperature ranges.

ARPEX coupling optionally suitable for potentially explosive environments.
Complies with Directive 94/9/EC for:

CE Ex II 2G T2/T3/T4/T5/T6
-40 °C ≤ T_a ≤ +230 °C/+150 °C/+85 °C/+50 °C/35 °C

CE Ex II 2D T 120 °C -40 °C ≤ T_a ≤ +70 °C

CE Ex I M2

To meet the high quality demands made of ARPEX couplings, the development and manufacture of ARPEX couplings is integrated into a certified quality management system in accordance with the requirements of DIN EN ISO 9001.

Type approval for use of ARPEX couplings in shipbuilding has been issued by the following classification societies: American Bureau of Shipping (ABS), Det Norske Veritas (DNV), Germanischer Lloyd (GL) and Lloyd's Register of Shipping. Product certification to GOST-R for the Russian market has already been obtained.

Design

ARPEX couplings are manufactured completely from steel. Torque is transmitted by means of torsionally rigid, flexible plates. The plates are held together by a sleeve and ring to form a compact plate pack. This ensures easy, operationally safe installation. Two plate packs fastened alternately to the flanges permit compensation of shaft misalignments in an angular, radial and axial direction. On coupling types with a single plate pack only angular and axial misalignments are possible.

Materials

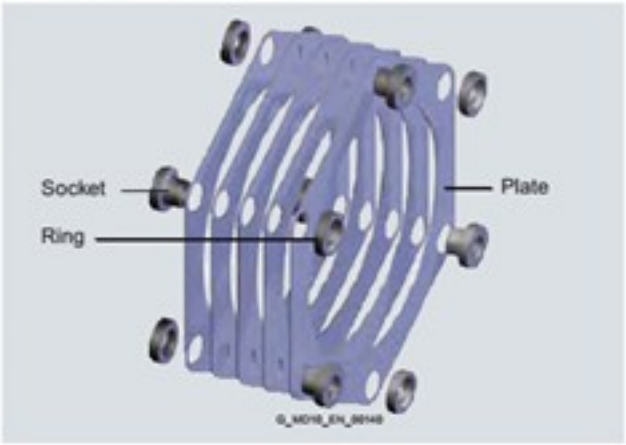
All coupling parts like hubs, spacers and flanges are manufactured from high-grade steel; the plates are made from stainless, hard-rolled CrNi spring steel. Bolts and nuts are of quality 10.9 or 10.

Application

ARPEX couplings are available as a catalog standard from 92 Nm to 1450000 Nm and are divided into various series. Because of this series diversity, ARPEX couplings meet most torque and speed requirements as a universal coupling solution in general mechanical engineering. The individual series and their corresponding possible applications are described in full in the following sections.

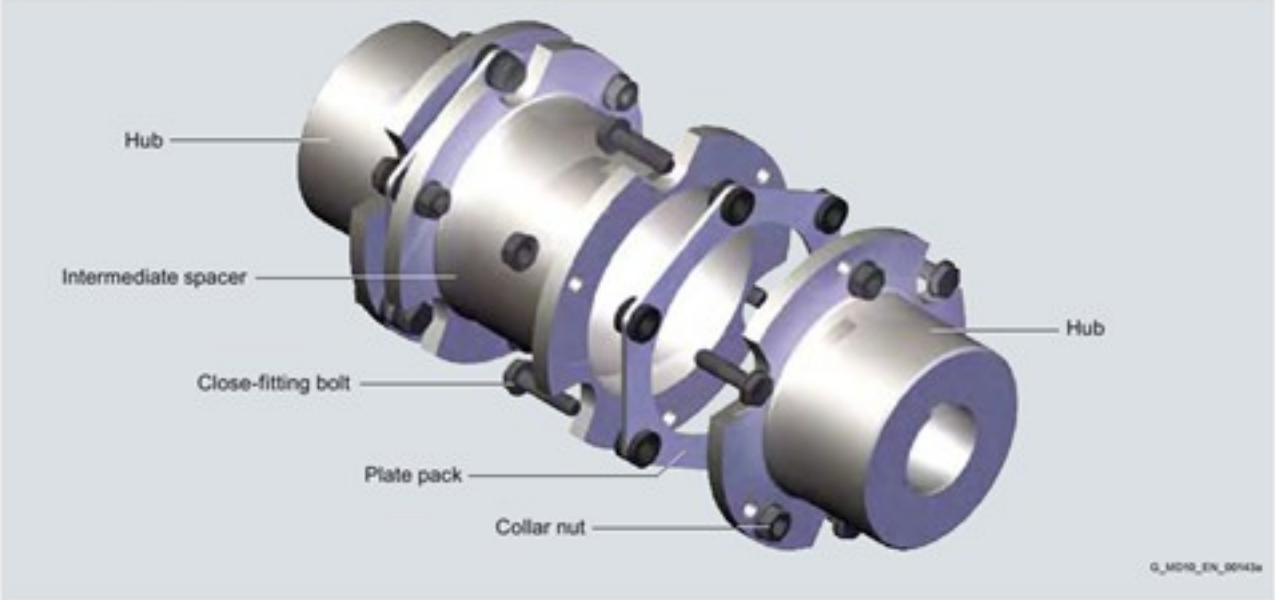
Plate pack

The flexible elements in an ARPEX coupling take the form of plate packs. The individual, thin plates are held together by a socket and ring to form a compact plate pack. The picture below shows the structure of a ring plate pack.



Design

The classic design of an ARPEX couplings of the ARS-6 series is shown in the following illustration. The plate packs are bolted alternately between the flanges of the coupling hubs and the intermediate spacer. Up to size 280-6 close-fitting bolts and from size 305-6 conical screw connections are used for fastening. A large number of intermediate spacer and shafts, hubs and flanges can be combined and thus cover a large number of possible drive requirements.



Design of an ARPEX coupling, ARS-6 series, type NEN

Variants of the ARPEX coupling, ARS-6 series

Types	
NEN, BEN, BEB	Variant with standard intermediate spacer, many sizes available from stock
NON, BON	Variant with shortest intermediate spacer
NUN, BUN, BUB	Variant with split intermediate spacer
NHN	Variant with intermediate spacer for customer-specific shaft distance
NZN	Variant with reinforced intermediate spacer
NWN	Variant with intermediate shaft

All coupling types can be very easily combined with further standard components in the ARPEX modular system. Jumbo hubs are used to permit larger maximum bores.
Clamping hubs transmit torque by friction without the use of parallel keys.
F, D and C flanges offer many different possibilities for flange connection.

The coupling parts of the ARPEX ARS-6 series are machined on all sides. Exceptions are H and Z spacers and intermediate shafts. The spacers are delivered with unmachined, primed spacer tube.

Higher torques and maximum speeds with similar coupling outer diameters DA can be achieved with the ARPEX ARC-8/-10 series.

Further application-specific coupling types are available in selection module **X.CAT NG** at www.siemens.com/couplings. Dimension sheets and further information are available on request.