THE COUPLING.

R+W®
A POPPE + POTTHOFF COMPANY

INDUSTRIAL COUPLINGS

AUGEMENTED REALITY APP

NEXT LEVEL INFORMATION
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Every product image in our catalog shown with this icon contains additional information. With your smartphone or tablet, you unlock all of this in virtual reality.

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Download the R+W AR App free from the App Store or Google Play now.

The R+W App is also available as Windows version (rw-couplings.com/app/).

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NEXT LEVEL COMMUNICATION

SOCIALIZING WITH R+W

Would you like to learn more about R+W and our couplings? We are pleased to take you into the world of R+W. On our YouTube channel, you can find several videos pertaining to our product line.

Are you more interested in application examples for our couplings? If so, please take a look at our case studies that can be found on our homepage. Here you can also subscribe to the R+W newsletter or find a link to download the R+W App.

And if you simply cannot get enough of us, you can find us on Facebook, Google+, and Twitter.

WHO WE ARE.

ABOVE ALL R+W IS:
THE PERFECT COUPLING

When R+W Antriebselemente GmbH was first established in 1990 in Klingenberg, Germany, there were three people on board. The head office is still there, but we are now more than 220 people, with subsidiaries in the USA, China, Italy, Singapore, France and Slovakia, and are partnered with over 60 well established distributors in more than 50 countries throughout the world. Many developments have lead to this success, but most importantly it was brought about by our endless search for the best possible coupling solutions as well as the high esteem in which we hold all of our customers.

WE PROVIDE INSPIRED SOLUTIONS BACKED BY SOUND PLANNING AND DESIGN.

R+W stands for expertise in the development of solutions for precise torque transmission. The focus of our development is on innovative coupling systems for all sectors of precision drive technology. As a leading manufacturer of precision couplings and line shafts, we strive to maintain a permanent status of technology leadership in our field. Our central claim: R+W couplings ensure precision for process reliability and efficiency, and to that end we seek perfection.

Optimized for technology and business, our product portfolio includes:

- **Bellows couplings**
- **Metallic couplings**
- **Elastic couplings**
- **Ball-detent safety couplings**
- **Drive shafts**
- **Development of customized solutions with collaboration from start to finish, including:**
  - Consultation
  - Conception
  - Engineering analysis
  - Prototyping
  - Manufacturing

TO THE TOP OF THE WORLD
WITH TONS OF DRIVE

Our guiding principle, DRIVE, is a mutual calling that unifies our 220 employees: To manufacture top-notch, high-performance couplings and torque limiters for the global market; precise to the micrometer.

With DRIVE, we present ourselves as a Dynamic, Reliable, Innovative and Versatile market and technology leader that strives for Expansion by making further development and improvement part of our everyday business.

DRIVE MEANS

DYNAMIC

Dynamics fascinate us. For our team "dynamic" means outstanding expertise in all matters involving torque transmission and ideal collaboration for the acquisition and application of company knowledge. We work shoulder to shoulder with our customers on a dynamic course toward performance and corporate excellence!

RELIABLE

Our course is set for the future! R+W makes state of the art, zero backlash, wear free coupling systems for the leading industries in drive technology. In addition, we manufacture pioneering special solutions produced with absolute precision. Our reliable products are a sound investment in the efficiency and dependability of your systems and machines.

INNOVATIVE

We understand that adaptability is one of the most significant strengths of our company. A creative work environment based on the spirit of innovation does not happen by accident; instead it is the result of consistent effort.

In order to remain at the heart of technology development, we network tightly with the elite industry leaders and collaborate intensively with universities and technical colleges. This has led to the creation of a prolific research & development department in which we have been able to prototype and test our own inventions.

VERSATILE

Versatility at R+W begins with leveraging the creativity, skills and capacities of our employees. With a broad foundation and a solution oriented mindset, we work in accordance with customer requirements and respond quickly to changes. For this very reason we are also the perfect partner for designing, engineering, and manufacturing unique and special couplings. We are particularly proud of the high level of diversification of our products and of our dedication to continuous improvement.

EXPANDING

Expansion is a critical objective for the future of our company. Most importantly for us this means maintaining genuine industry contacts in a continuously growing global network of expertise. Our customers benefit from our broad based proximity to the market and from strong collaboration with our partners. This allows us to stay focused on our customers' most up to date requirements, keeping us flexible and able to respond to inquiries with the right solution!

OTHER R+W COUPLINGS

Aside from the products detailed in this catalog, we also offer high quality shaft couplings and torque limiters for servo motion control and other small to midsize precision applications.

More information on these can be found in our PRECISION COUPLINGS guide book.

APPLICATIONS AND DESIGN FEATURES
INDUSTRIAL DRIVE COUPLINGS

TORQSET® SAFETY COUPLINGS

ST

from **200 – 250,000 Nm**

AREAS OF APPLICATION

- timber processing machinery
- bulk material handling systems
- tunnel boring machinery
- industrial shredders
- rotary test stands
- extruder drives
- wastewater scraper drives
- wherever potential for torque overload exists

FEATURES

- compact, simple design
- precise overload protection
- adjustable disengagement torque
- robust
- full disengagement up on overload

HIGH STRENGTH **DISC PACK COUPLINGS**

LP

from **350 – 50,000 Nm**

AREAS OF APPLICATION

- API 610 pump packages
- paper machinery
- steel mill equipment
- test stands
- generators
- bulk material handling systems
- centrifuges
- cooling tower drives
- compressors
- printing machinery
- for infinite life in extreme conditions

FEATURES

- maintenance free for infinite life
- frictional clamping of disc packs
- high speeds with extended DBSE
- zero backlash
- high torsional stiffness
- low restoring forces from misalignment

FLEXIBLE **GEAR COUPLINGS**

BZ

from **1,900 – 2,080,000 Nm**

AREAS OF APPLICATION

- mixers
- rolling mills
- conveyors
- crushers
- shredders
- levelers
- wherever high torque and low cost meet

FEATURES

- very compact design
- corrosion resistant
- large misalignment compensation
- reduced wear design
- low maintenance

TORSIONALLY STIFF **BELLOWS COUPLINGS** BX

P. 103

from **10,000 – 100,000 Nm**

AREAS OF APPLICATION

- test stands
- centrifuges
- wind energy
- machine tools
- printing machinery
- wherever precise transmission is required

FEATURES

- robust construction
- high torsional stiffness
- fatigue resistant for infinite life
- easy to mount and dismount
- precise rotational transmission
- minimal restoring loads under misalignment

BACKLASH FREE **SERVOMAX® ELASTIC JAW COUPLINGS** EK EZ

P. 109

from **1,950 – 25,000 Nm**

AREAS OF APPLICATION

- pump systems
- conveyors
- material handling systems
- extruder drives
- crushers
- shredders
- wherever shock, vibration, and misalignment need to be absorbed

FEATURES

- vibration damping
- electrically isolating (standard version)
- misalignment compensation
- backlash free
- maintenance free

FOR USE IN HAZARDOUS ENVIRONMENTS ATEX

P. 117

AREAS OF APPLICATION

for safer operation in industries with explosive atmospheres, such as:

- oil & gas extraction
- petrochemical processing
- munitions manufacturing
- bulk and powder processing
- paint systems

FEATURES

For hazardous zones 1/21 and 2/22 these couplings are authorized under directive 94/9/EG.

- Safety couplings
- Bellows couplings
- Elastic jaw couplings
- Disc pack couplings


M=20:1

SIZING AND SELECTION

According to
DIN 740 part 2

SAFETY COUPLINGS

ST

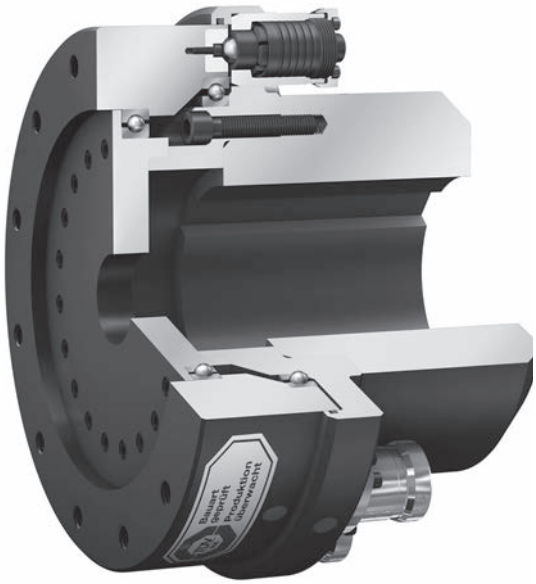
RELIABLE TORQUE OVERLOAD PROTECTION

ST series safety couplings are designed to decouple machine drives in the event of torque overload, preventing damage and downtime.

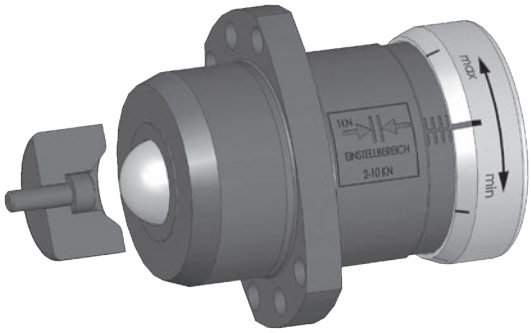
A series of ball bearings are spring loaded into detents on an otherwise freely spinning output plate. In the case of the ST series, these ball bearings are mounted onto plungers which are individually loaded in order to generate high clutching forces while maintaining a relatively small profile.

The transmittable torque is determined by the number and force setting of the safety elements and their distance from the center of the rotational axis. In the event of an overload, the force applied by the detents causes the plungers to overcome the spring loading and retract into the housings, resulting in a complete separation of the driving and driven hubs.

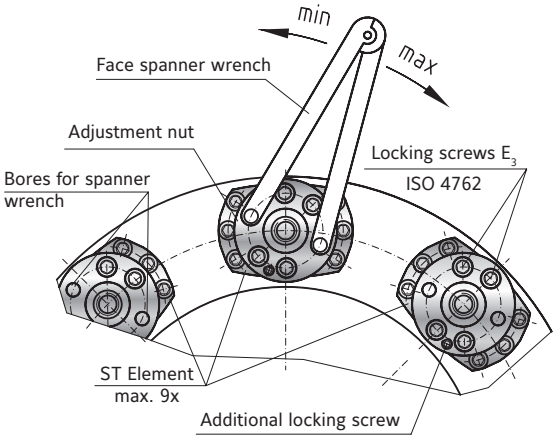
They will not re-engage automatically. After the overload condition has passed, an axial force must be applied in order to re-engage the safety elements into the detents of the output plate.

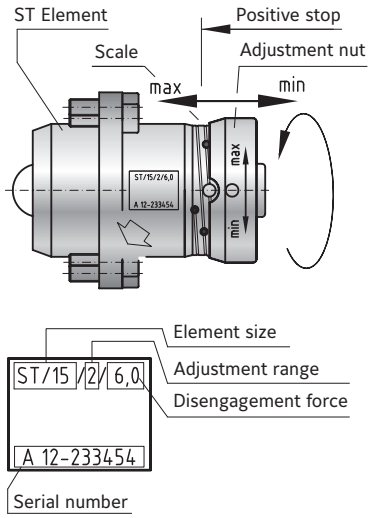


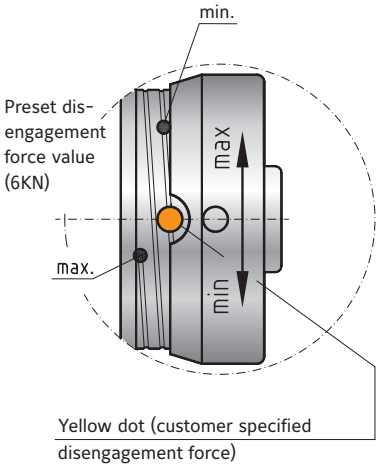
The safety elements consist of two components: the detent receptacle and the adjustable plunger mechanism.



TORQUE ADJUSTMENT







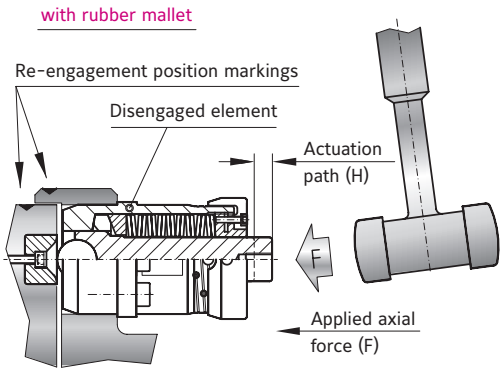
After loosening (approx. 1 rotation) the locking screws (E_3), the adjustment nut can be turned to adjust the disengagement setting. Minimum, maximum and preset values are marked on the adjustment scale. After adjustment, the torque setting is secured by tightening the locking screws (E_3).

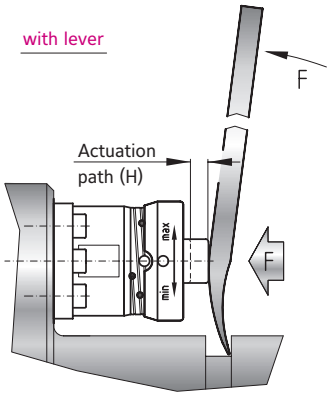
▶ **Note**

All safety elements must be set to the same value.

RE-ENGAGEMENT OF THE SAFETY ELEMENTS

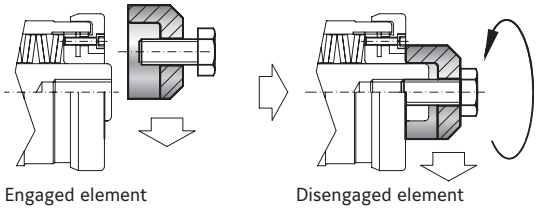
After the overload has been cleared, the drive or driven side must be rotated until the re-engagement position markings are lined up. The elements can only be re-engaged in this position. The element is re-engaged through applying an axial force to the plunger. Re-engagement is audible. Once this is complete, the torque limiter is ready for operation.





MANUAL DISENGAGEMENT OF ELEMENTS

Prior to machine start-up, the individual elements can be manually disengaged. A manual disengagement tool is available from R+W (see page 61).



SAFETY COUPLINGS

ST

SYMBOLS

T_{AR} = Disengagement torque of the coupling (Nm)
K = Service factor
T_{max} = Maximum torque of the drive system (Nm)
T_{AN} = Rated torque of the motor (Nm)
P_{Drive} = Drive power (kW)
n = Drive speed (min^{-1})
α = Angular acceleration (rad/s^2)
t = Acceleration time (s)
ω = Angular velocity (rad/s)
J_L = Moment of inertia of load (kgm^2)
J_A = Moment of inertia of drive (kgm^2)
T_{AS} = Peak motor torque (Nm)
S = Number of safety elements
F = Tangential force (kN)
r = Radius to element (m)
s = Spindle pitch (mm)
F_V = Feed force (N)
η = Spindle efficiency
d_0 = Pitch diameter (mm)
F_V = Feed force (N)
C_T = Torsional stiffness of coupling (Nm/rad)
$J_{Masch.}$ = Total load inertia (kgm^2)
(e.g. shaft + sprocket + chain + roller + 1/2 of coupling)
$J_{Mot.}$ = Total driving inertia (kgm^2)
(e.g. motor shaft + 1/2 of coupling)
f_e = Resonant frequency of the two mass system (Hz)

Shock or Load Factor S_A		
uniform load	non-uniform load	heavy shock load
1	2	3
For many crushing and shredding applications load factors are commonly S_A = 2-3		

ACCORDING TO DISENGAGEMENT TORQUE

Safety couplings are normally selected according to the required disengagement torque, which must be greater than the maximum torque required for start-up and operation.

Disengagement torque values are often determined from the drive data and are typically a multiple of the nominal torque at the operating drive speed (T_{AN}). In addition to a start-up torque ($T_{max.}$), the following values are used as further safety factors, depending on the load conditions:

K = 1.3 uniform harmonious load
K = 1.5 non-uniform load
K = 1.8 heavy shock load

$$T_{AR} \geqq K \cdot T_{max} \text{ (Nm)}$$

or

$$T_{AN} \geqq 9{,}550 \cdot \frac{P_{Drive}}{n} \text{ (Nm)}$$

ACCORDING TO ACCELERATION (START-UP WITH NO LOAD)

$$T_{AR} \geqq \frac{J_L}{J_A + J_L} \cdot T_{As} \cdot S_A \geqq \alpha \cdot J_L \,(Nm)$$

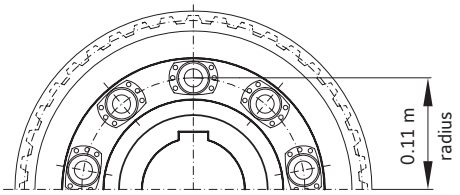
$$\alpha = \frac{\omega}{n} = \frac{\pi \cdot n}{t \cdot 30}$$

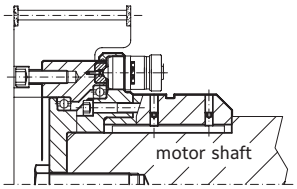
ACCORDING TO ACCELERATION (START-UP WITH LOAD)

$$T_{AR} \geqq \left[\frac{J_L}{J_A + J_L} \cdot (T_{AS} - T_{AN}) + T_{AN} \right] \cdot S_A \geqq \alpha \cdot J_L + T_{AN} \,(Nm)$$

ACCORDING TO THE NUMBER OF SAFETY ELEMENTS

$$T_{AR} = S \cdot F \cdot r$$





ACCORDING TO LINEAR FEED FORCE

Screw drive

$$T_{AN} = \frac{s \cdot F_v}{2{,}000 \cdot \pi \cdot \eta} \,(Nm)$$

Rack and pinion drive

$$T_{AN} = \frac{d_0 \cdot F_v}{2{,}000} \,(Nm)$$

ACCORDING TO RESONANT FREQUENCY

The torsional natural frequency of the coupling must be significantly higher or lower than that of the equipment. For the mechanical substitution model the two mass system applies.

$$f_e = \frac{1}{2 \cdot \pi} \sqrt{C_T \cdot \frac{J_{Masch} + J_{Mot}}{J_{Masch} \cdot J_{Mot}}} \,(Hz)$$

SAFETY COUPLINGS

ST

ELASTIC JAW COUPLING DESIGN ST2

Size	ST2 / 2	ST2 / 5	ST2 / 10	ST2 / 25	ST2 / 40	ST2 / 60	ST2 / 100	ST2 / 160
T_{KN} Rated Torque (Nm)	2,000	3,000	5,000	7,500	20,000	20,000	40,000	40,000
T_{Kmax} Maximum Torque (Nm)	4,800	7,500	18,000	25,000	48,000	48,000	120,000	120,000
Torsional Stiffness (10^3 Nm/rad)	58	92	145	230	500	580	850	1000
Relative Damping	1	1	1	1	1	1	1	1

LOAD FACTORS BY MACHINE TYPE

EXCAVATORS
S bucket chain excavators
S traveling gear (caterpillar)
M traveling gear (rails)
M suction pumps
S bucket wheels
M slewing gears

CONSTRUCTION MACHINERY
M concrete mixers
M road construction machinery

CHEMICAL INDUSTRY
M mixers
G agitators (light fluids)
M dryer drums
G centrifuges

FEEDERS AND CONVEYORS
S belt conveyors
G belt conveyors (bulk materials)
M belt bucket conveyors
M screw conveyors
M circular conveyors
M hoists

BLOWERS AND FANS[1]
G blowers (axial/radial) P:n ≤ 0.007
M blowers (axial/radial) P:n ≤ 0.07
S blowers (axial/radial) P:n > 0.07
G cooling tower fans P:n ≤ 0.007
M cooling tower fans P:n ≤ 0.07
S cooling tower fans P:n > 0.07

GENERATORS AND TRANSFORMERS
S generators

RUBBER MACHINERY
S extruders
S calendars
M mixers
S rolling millse

WOOD PROCESSING MACHINERY
G woodworking machines

CRANES
S traveling gears
S hoisting gears
M slewing gears

PLASTICS MACHINERY
M mixers
M shredders

METALWORKING MACHINERY
M sheet metal bending machines
S plate straightening machines
S presses
M shears
S punch presses
M machine tools, main drives

FOOD PROCESSING MACHINERY
G filling machines
M kneading machines
M cane crushers
M cane cutters
S cane mills
M sugar beet cutters
M sugar beet washers

PAPER MACHINERY
S wood cutters
S calendars
S wet presses
S suction presses
S suction rollers
S drying cylinders

PUMPS
S piston pumps
G centrifugal pumps (light fluids)
S reciprocating pumps

STONE AND CLAY MACHINES
S breakers
S rotary kilns
S hammer mills
S brick presses

TEXTILE MACHINERY
M tanning vats
M willows
M looms

COMPRESSORS
S reciprocating compressors
M centrifugal compressors

METAL ROLLING MILLS
M plate tilters
S ingot handling machinery
M winding machines (strip and wire)
S descaling machines
S cold rolling mills
M chain transfers
M cross transfers
M roller straighteners
S tube welding machines
S continuous casting plants
M roller adjustment drives

LAUNDRY MACHINES
M tumblers
M washing machines

WASTEWATER TREATMENT PLANTS
M aerators
G screw pumps

[1] P = power of drive in kW
n = speed of drive in rpm

DESIGN FACTORS

Shock or Load Factor S_A

Drive type	Load characteristics of driven machine		
	G	M	S
electric motors, turbines, hydraulic motors	1.25	1.6	2.0
internal combustion engines ≥4 cylinder degree of uniformity ≥1:100	1.5	2.0	2.5

G = smooth uniform load | M = moderate load | S = heavy shock load

Temperature Factor S_υ

Ambient Temperature	-40 C° +30 C°	+40 C°	+60 C°	+80 C°	> +80 C°
S_υ	1.0	1.1	1.4	1.8	on request

Start Factor S_Z

Starts per Hour	30	60	120	240	>240
S_Z	1.0	1.1	1.2	1.3	on request

ACCORDING TO TORQUE

1. Calculate the drive torque T_{AN}.

$$T_{AN} \geqq 9{,}550 \cdot \frac{P_{Drive}}{n} \quad (Nm)$$

2. Base the coupling rated torque T_{KN} on the drive torque T_{AN} multiplied by the application factors.

$$T_{KN} \geq T_{AN} \cdot S_A \cdot S_\upsilon \cdot S_Z$$

Example:
Coupling between an electric motor (P = 450 kW and n = 980 rpm) and a gearbox driving a belt conveyor for bulk materials.

$$T_{AN} = 9{,}550 \cdot \frac{450\ kW}{980\ min.^{-1}} = 4{,}385.2\ Nm$$

smooth uniform load
= G : S_A = 1.25
ambient temperature
40˚C : S_υ = 1.1
starts
30/h : S_Z = 1.0

$$T_{KN} \geq T_{AN} \cdot S_A \cdot S_\upsilon \cdot S_Z$$
$$T_{KN} \geq 4{,}385.2\ Nm \cdot 1.25 \cdot 1.1 \cdot 1.0 = 6{,}029.7\ Nm$$

Selected coupling: ST2 / 10 with elastomer coupling T_{KN} = 6,030 Nm

SAFETY COUPLINGS

ST

GEAR COUPLING DESIGN ST4

Size		ST4 / 2	ST4 / 5	ST4 / 10	ST4 / 25	ST4 / 40	ST4 / 60	ST4 / 100	ST4 / 160	ST4 / 250
T_{KN} Rated Torque	(Nm)	5,700	9,000	14,500	22,000	45,000	70,000	150,000	200,000	402,000
T_{Kmax} Maximum Torque	(Nm)	14,000	21,500	35,000	54,000	110,000	170,000	360,000	480,000	804,000
n Ref (max speed)	($min.^{-1}$)	4,000	3,900	3,700	3,550	2,750	2,420	1,950	1,730	990

ACCORDING TO TORQUE

1. Calculate the drive torque. T_{AN}.

$$T_{AN} \geqq 9{,}550 \cdot \frac{P_{Drive}}{n} \text{ (Nm)}$$

2. Base the coupling rated torque T_{KN} on the drive torque T_{AN} multiplied by the application factor. (see page 20 for shock or load factors S_A).

$$T_{KN} \geq T_{AN} \cdot S_A$$

Example:
Coupling between an electric motor
(P = 800 kW and n = 980 rpm) and a gearbox driving a bucket chain excavator (S_A = 2).

$$T_{AN} = 9{,}550 \cdot \frac{800 \text{ kW}}{980 \text{ min.}^{-1}} = 7{,}796 \text{ Nm}$$

$$T_{KN} \geq T_{AN} \cdot S_A$$
$$T_{KN} \geq 7{,}796 \text{ Nm} \cdot 2 = 15{,}592 \text{ Nm}$$

Selected coupling: ST4 / 25 with gear coupling T_{KN} = 16,000 Nm

DISC PACK COUPLINGS

LP

SYMBOLS

T_{KN} = Rated torque of the coupling (Nm)

T_{AS} = Peak torque of the drive system

e.g. max. acceleration torque of drive (Nm)
or max. braking torque of load (Nm)

J_L = Total load inertia (e.g. shaft + sprocket + chain + roller + 1/2 of coupling) (kgm ^{2})

J_A = Total driving inertia (motor [including gear ratio] + 1/2 of coupling) (kgm ^{2})

Shock or Load Factor S_A		
uniform load	non-uniform load	highly dynamic load
1	2	3-4
Common factor for servo drives in machine tools: S_A = 2-3		

ACCORDING TO TORQUE

Couplings are normally sized for the highest torque to be regularly transmitted. The peak torque of the application should not exceed the rated torque of the coupling. The following calculation provides an approximation of the minimum required coupling size, and allows for the maximum rated speed and misalignment to exist in the application.

$$T_{KN} \geqq 1.5 \cdot T_{AS} \text{ (Nm)}$$

ACCORDING TO ACCELERATION TORQUE

A more detailed calculation takes acceleration and the driving and driven moments of inertia into account. A strong inertia ratio diminishes the effect of the load factor in the sizing calculation.

$$T_{KN} \geqq T_{AS} \cdot S_A \cdot \frac{J_L}{J_A + J_L} \text{ (Nm)}$$

GENERAL INFORMATION
GEAR COUPLING

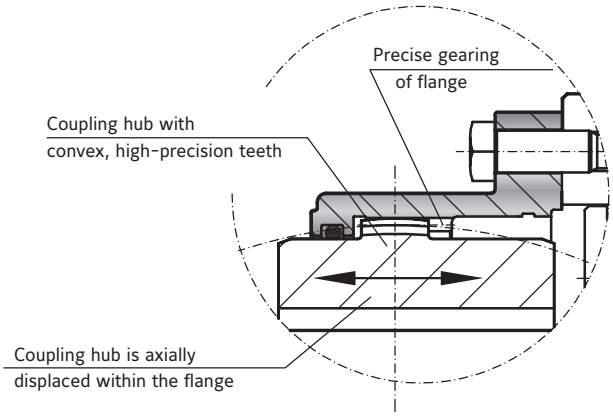
GEAR COUPLING

BZ

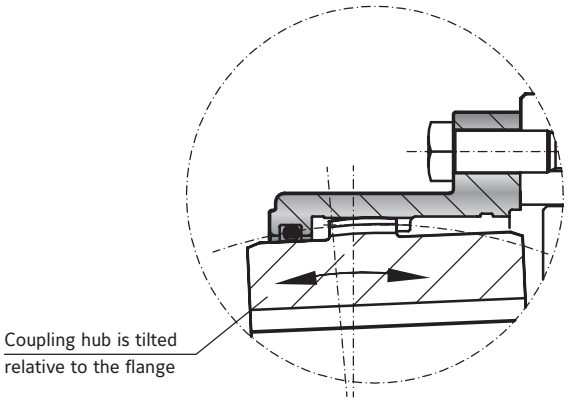
FUNCTION OF THE GEAR COUPLING

The high precision gearing of the coupling compensates for lateral, angular, and axial misalignment. The gearing transmits torque with minimal backlash and a high degree of torsional rigidity. The precise geometry of the gearing ensures the performance of the coupling.

Axial misalignment



Angular and lateral misalignment



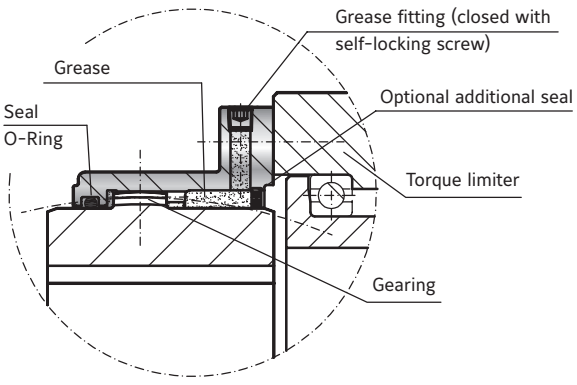
MAINTENANCE AND LUBRICATION

▶ **Note:** Lubrication of the gearing is very important to the service life of the coupling.
An additional seal (optional) ensures the lubrication of the gearing over a long period of time.

Use only high performance grease

RECOMMENDED LUBRICANTS

Normal speed		High speed	
Castrol	Impervia MDX	Caltex	Coupling Grease
Esso	Fibrax 370	Klüber	Klüberplex GE 11-680
Klüber	Klüberplex GE 11-680	Mobil	Mobilgrease XTC
Mobil	Mobilux EPO	Shell	Albida GC1
Shell	Alvania grease EP R-O or ER 1	Texaco	Coupling Grease
Total	Specis EPG		



For easier handling, the coupling will be shipped unassembled.

GEAR COUPLINGS

BZ

SYMBOLS

T_{KN} = Rated torque of the coupling (Nm)

T_{AN} = Rated torque of the drive (Nm)

S_A = Shock or load factor

P = Drive power (kW)

n = Rotational speed (rpm)

DESIGN FACTORS

Shock or Load Factor S_A

Drive type	Load characteristics of driven machine		
	G	M	S
electric motors, turbines, hydraulic motors	1.25	1.6	2.0
internal combustion engines ≥4 cylinder degree of uniformity ≥1:100	1.5	2.2	2.5

G = smooth uniform load | M = moderate load | S = heavy shock load

LOAD FACTORS BY MACHINE TYPE

EXCAVATORS
S bucket chain excavators
S traveling gear (caterpillar)
M traveling gear (rails)
M suction pumps
S bucket wheels
M slewing gears

CONSTRUCTION MACHINERY
M concrete mixers
M road construction machinery

CHEMICAL INDUSTRY
M mixers
G agitators (light fluids)
M dryer drums
G centrifuges

FEEDERS AND CONVEYORS
S belt conveyors
G belt conveyors (bulk materials)
M belt bucket conveyors
M screw conveyors
M circular conveyors
M hoists

BLOWERS AND FANS[1]
G blowers (axial/radial) P:n ≤ 0.007
M blowers (axial/radial) P:n ≤ 0.07
S blowers (axial/radial) P:n > 0.07
G cooling tower fans P:n ≤ 0.007
M cooling tower fans P:n ≤ 0.07
S cooling tower fans P:n > 0.07

GENERATORS AND TRANSFORMERS
S generators

RUBBER MACHINERY
S extruders
S calendars
M mixers
S rolling millse

WOOD PROCESSING MACHINERY
G woodworking machines

CRANES
S traveling gears
S hoisting gears
M slewing gears

PLASTICS MACHINERY
M mixers
M shredders

METALWORKING MACHINERY
M sheet metal bending machines
S plate straightening machines
S presses
M shears
S punch presses
M machine tools, main drives

FOOD PROCESSING MACHINERY
G filling machines
M kneading machines
M cane crushers
M cane cutters
S cane mills
M sugar beet cutters
M sugar beet washers

PAPER MACHINERY
S wood cutters
S calendars
S wet presses
S suction presses
S suction rollers
S drying cylinders

PUMPS
S piston pumps
G centrifugal pumps (light fluids)
S reciprocating pumps

STONE AND CLAY MACHINES
S breakers
S rotary kilns
S hammer mills
S brick presses

TEXTILE MACHINERY
M tanning vats
M willows
M looms

COMPRESSORS
S reciprocating compressors
M centrifugal compressors

METAL ROLLING MILLS
M plate tilters
S ingot handling machinery
M winding machines (strip and wire)
S descaling machines
S cold rolling mills
M chain transfers
M cross transfers
M roller straighteners
S tube welding machines
S continuous casting plants
M roller adjustment drives

LAUNDRY MACHINES
M tumblers
M washing machines

WASTEWATER TREATMENT PLANTS
M aerators
G screw pumps

[1]) P = power of drive in kW
n = speed of drive in rpm

ACCORDING TO TORQUE

1. Calculate the drive torque at speed T_{AN}.

$$T_{AN} \geqq 9{,}550 \cdot \frac{P_{Drive}}{n} \text{ (Nm)}$$

2. Determine the required torque rating of the coupling T_{KN} based on the drive torque T_{AN} multiplied by the shock or load factor S_A (see page 20)

$$T_{KN} \geq T_{AN} \cdot S_A$$

Sample calculation:
Coupling between an electric motor (P = 800 kW at n = 980 rpm) and a transmission, driving a screw conveyor (S_A = 1.6).

$$T_{AN} = 9{,}550 \cdot \frac{800 \text{ kW}}{980 \text{ min.}^{-1}} = 7{,}796 \text{ Nm}$$

$$T_{KN} \geq T_{AN} \cdot S_A$$
$$T_{KN} \geq 7{,}796 \text{ Nm} \cdot 1.6 = 12{,}473 \text{ Nm}$$

BELLOWS COUPLINGS

BX

SYMBOLS

T_{KN} = Rated torque of coupling (Nm)

T_{AS} = Peak torque (Nm)

e.g. maximum acceleration peak torque or maximum braking torque from the load

J_L = Moment of inertia of the load (load + drive line components + half of coupling) (kgm^2)

J_A = Drive inertia (rotor of motor + drive line components + half of coupling) (kgm^2)

C_T = Torsional stiffness of coupling (Nm/rad)

f_e = Resonant frequency of the two mass system (Hz)

f_{er} = Exitation frequency of the drive (Hz)

φ = Angle of twist (degree)

Shock or Load Factor S_A		
uniform load	non-uniform load	heavy shock load
1	2	3-4
For many crushing and shredding applications load factors are commonly S_A = 2-3		

ACCORDING TO TORQUE

Couplings are normally sized for the highest torque to be regularly transmitted. The peak torque of the application should not exceed the rated torque of the coupling. The following calculation provides an approximation of the minimum required coupling size, and allows for the maximum rated speed and misalignment to exist in the application.

$$T_{KN} \geqq 1.5 \cdot T_{AS} \text{ (Nm)}$$

ACCORDING TO ACCELERATION TORQUE

A more detailed calculation takes acceleration and the driving and driven moments of inertia into account. A strong inertia ratio diminishes the effect of the load factor in the sizing calculation.

$$T_{KN} \geqq T_{AS} \cdot S_A \cdot \frac{J_L}{J_A + J_L} \text{ (Nm)}$$

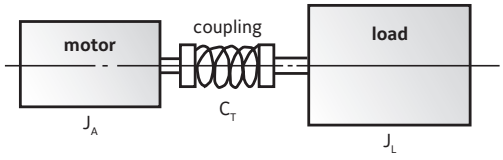
ACCORDING TO RESONANT FREQUENCY

The torsional natural frequency of the coupling must be significantly higher or lower than that of the equipment. For the mechanical substitution model the two mass system applies.

In practice the following applies: $f_e \geq 2 \cdot f_{er}$

$$f_e = \frac{1}{2 \cdot \pi} \sqrt{C_T \cdot \frac{J_A + J_L}{J_A \cdot J_L}} \text{ (Hz)}$$

Two Mass System



ACCORDING TO TORSIONAL DEFLECTION

To calculate transmission error as a result of torsional stress:

$$\varphi = \frac{180}{\pi} \cdot \frac{T_{AS}}{C_T} \text{ (degree)}$$

ELASTIC JAW COUPLINGS

EK

SYMBOLS

T_{KN} = Rated torque of the coupling (Nm)
T_{Kmax} = Maximum torque rating of coupling (Nm)
T_S = Peak torque applied to the coupling (Nm)
T_{AS} = Peak torque of the drive system (Nm)
T_{AN} = Nominal torque of the drive system (Nm)
T_{LN} = Nominal torque of the load (Nm)
P = Drive power (kW)
n = Rotational speed ($min.^{-1}$)
J_A = Total driving inertia (kgm^2)
(motor [including gear ratio] + 1/2 of coupling)
J_L = Total load inertia (kgm^2)
(load + drive line components + half of coupling)
J_1 = Moment of inertia of driving coupling half (kgm^2)
J_2 = Moment of inertia of driving coupling half (kgm^2)
m = Ratio of the moment of inertia of the drive to the load
υ = Temperature at the coupling (also consider radiant heat)
S_υ = Temperature factor
S_A = Load factor
S_Z = Start factor
(factor for the number of starts per hour)
Z_h = Number of starts per hour (1/h)

Temperature factor S_υ	A	B	E
Temperature (υ)	Sh 98 A	Sh 65 D	Sh 64 D
> -30°C to -10°C	1.5	1.3	1.2
> -10°C to +30°C	1.0	1.0	1.0
> +30°C to +40°C	1.2	1.1	1.0
> +40°C to +60°C	1.4	1.3	1.2
> +60°C to +80°C	1.7	1.5	1.3
> +80°C to +100°C	2.0	1.8	1.6
> +100°C to +120°C	–	2.4	2.0
> +120°C to +150°C	–	–	2.8

Start factor S_Z			
Z_h	up to 120	120 to 240	over 240
S_Z	1.0	1.3	on request

Shock / load factor S_A		
uniform load	non-uniform load	heavy shock load
1	1.8	2.5

COUPLING SELECTION FOR OPERATION WITHOUT SHOCK OR REVERSAL

The rated torque of the coupling (T_{KN}) must be greater than the rated torque of the load (T_{LN}), taking into account the temperature at the coupling (Temperature factor $S\upsilon$). Should T_{LN} be unknown, T_{AN} can be used as a substitute in the formula.

Calculation

$$T_{KN} > T_{AN} \cdot S_{\upsilon}$$

Supplemental Calculation

$$T_{AN} = \frac{9{,}550 \cdot P}{n}$$

Sample calculation: (without shock loads)

Coupling conditions
υ = 70° C
S_{υ} = 1.7 (for 70°/ Elastomer Type A)

Drive for centrifugal pump
T_{AN} = 850 Nm

Calculation: $T_{KN} > T_{AN} \times S_{\upsilon}$
$T_{KN} > 850 \text{ Nm} \cdot 1.7$
$T_{KN} > \underline{1445 \text{ Nm}}$ ⟶ **Result:** Coupling model EKH/2500/A (T_{KN} = 1950 Nm) is selected.

COUPLING SELECTION FOR OPERATION WITH SHOCK LOADS

Same basic conditions as above. In addition, the maximum torque rating of the coupling (T_{Kmax}) is dictated by peak torque (T_S) due to shock loads.

Calculation

$$T_{KN} > T_{AN} \cdot S_{\upsilon}$$

Supplemental Calculation

$$T_{AN} = \frac{9{,}550 \cdot P}{n}$$

Calculation

$$T_{Kmax} > T_S \cdot S_Z \cdot S_{\upsilon}$$

Supplemental Calculation

$$T_S = \frac{T_{AS} \cdot S_A}{m + 1}$$

$$m = \frac{J_A + J_1}{J_L + J_2}$$

ELASTOMER-DRIVE SHAFT COUPLINGS

EZ

SYMBOLS

A = Overall length (mm)

AB = Distance between flextures (mm)
AB = (A – 2xN)

Z = Tube length (mm)
Z = (A – 2xH)

H = Length of coupling ends (mm)

N = Length to flexture (mm)

T_{AS} = Peak torque of the drive (Nm)

φ = Torsional deflection (degree)

C_T^B = Torsional stiffness of both flexible elements (Nm/rad)

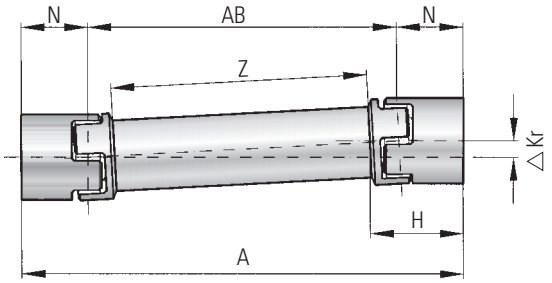
C_T^{ZWR} = Torsional stiffness per 1m of tubing (Nm/rad)

C_T^{ZA} = Total torsional stiffness (Nm/rad)

n_k = Critical speed (1/min.)

C_{Tdyn}^E = Dynamic torsional stiffness of both elastomer inserts (Nm/rad)

C_{Tdyn}^{EZ} = Total torsional stiffness (Nm/rad)



MODEL EZ

Size	Torsional stiffness of both flexible elements		Torsional stiffness per 1m of tubing	Length of coupling ends EZ	Length to flexture	Max. axial misalignment
	Elastomer insert A C_T^B (Nm/rad)	Elastomer insert B C_T^B (Nm/rad)	C_T^{ZWR} (Nm/rad)	H (mm)	N (mm)	Δ Ka (mm)
2500	87,500	108,000	1,000,000	142	108	5
4500	168,500	371,500	2,500,000	181	137	5
9500	590,000	670,000	5,000,000	229	171	6

Table 2

MAXIMUM TRANSMITTABLE TORQUE BY BORE DIAMETER (Nm)

Size	Ø 35	Ø 45	Ø 50	Ø 55	Ø 60	Ø 65	Ø 70	Ø 75	Ø 80	Ø 90	Ø 120	Ø 140
2500	1900	2600	2900	3200	3500	3800	4000	4300	4600	5200		
4500		5300	5800	6300	7000	7600	8200	8800	9400	10600	14100	
9500			9200	10100	11100	11900	12800	13800	14800	16700	22000	25600

TEMPERATURE FACTOR S

			A	B
Temperature (φ)			Sh 98 A	Sh 64 D
> -30°	to	-10°	1.5	1.7
> -10°	to	+30°	1.0	1.0
> +30°	to	+40°	1.2	1.1
> +40°	to	+60°	1.4	1.3
> +60°	to	+80°	1.7	1.5
> +80°	to	+100°	2.0	1.8
> +100°	to	+120°	–	2.4

ACCORDING TO TORSIONAL STIFFNESS

Condition: Line shaft EZ2, Size 4500 T_{AS} = 5,000Nm
Wanted: Total torsional stiffness C_T^{ZA}

$$(C_T^{ZA}) = \frac{168{,}500 \text{ Nm/rad} \times (2{,}500{,}000 \text{ Nm/rad} / 1.344 \text{ m})}{168{,}500 \text{ Nm/rad} + (2{,}500{,}000 \text{ Nm/rad} / 1.344 \text{ m})} = 154504 \text{ [Nm/rad]}$$

$$(C_T^{ZA}) = \frac{C_T^B \cdot (C_T^{ZWR}/Z)}{C_T^B + (C_T^{ZWR}/Z)} \text{ (Nm/rad)}$$

ACCORDING TO TORSIONAL DEFLECTION

Condition: Line shaft EZ2, size 4500 T_{AS} = 5,000 Nm
Wanted: Torsional deflection at maximum acceleration torque T_{AS}

Measurement (A) of line shaft = 1.706 m
Length (Z) of tubing = A-(2xH) = 1.344 m

$$\varphi = \frac{180 \times 5{,}000 \text{ Nm}}{\pi \times 154504 \text{ Nm/rad}} = 1{,}85°$$

With a maximum torque of 5,000 Nm the torsional deflection is 1.85°

$$\varphi = \frac{180 \cdot T_{AS}}{\pi \cdot C_T^{ZA}} \text{ (degree)}$$

DRIVE SHAFT COUPLINGS

EZ

ACCORDING TO MAXIMUM MISALIGNMENT

Lateral misalignment △ Kr

$$\Delta Kr_{max} = \tan \Delta \frac{Kw}{2} \cdot AB$$
$$AB = A - 2N$$

Angular misalignment △ Kw

$$\triangle Kw_{max.} = 2°$$

Axial misalignment △ Ka

△ Ka See table
(Page 27)

R+W CALCULATION PROGRAM

Using proprietary software, R+W will calculate the specific mechanical details of exactly the model you plan to use. Overall length, tube materials (e.g. steel, aluminum, CFK), and other factors are used to determine a number of performance values unique to your line shaft coupling.

Critical speed	n_k	=	1/min.
Torsional stiffness of tubing	C_T^{ZWR}	=	Nm/rad
Overall stiffness	C_T^{ZA}	=	Nm/rad
Torsional deflection	φ	=	degree-min-sec
Total Weight	m	=	kg
Moment of inertia	J	=	kgm^2
Maximum misalignment	△ Kr	=	mm

GENERAL INFORMATION
ELASTOMER SEGMENT ST2

ELASTIC SAFETY COUPLING

ST2

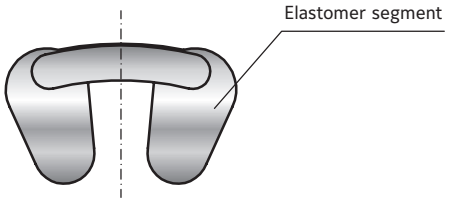
THE ELASTOMER SEGMENT

The compensating elements of the ST2 safety couplings are the elastomer segments. They transmit torque while damping vibration and compensating for lateral, axial and angular misalignment. Three different versions are available with version A being supplied unless otherwise specified.

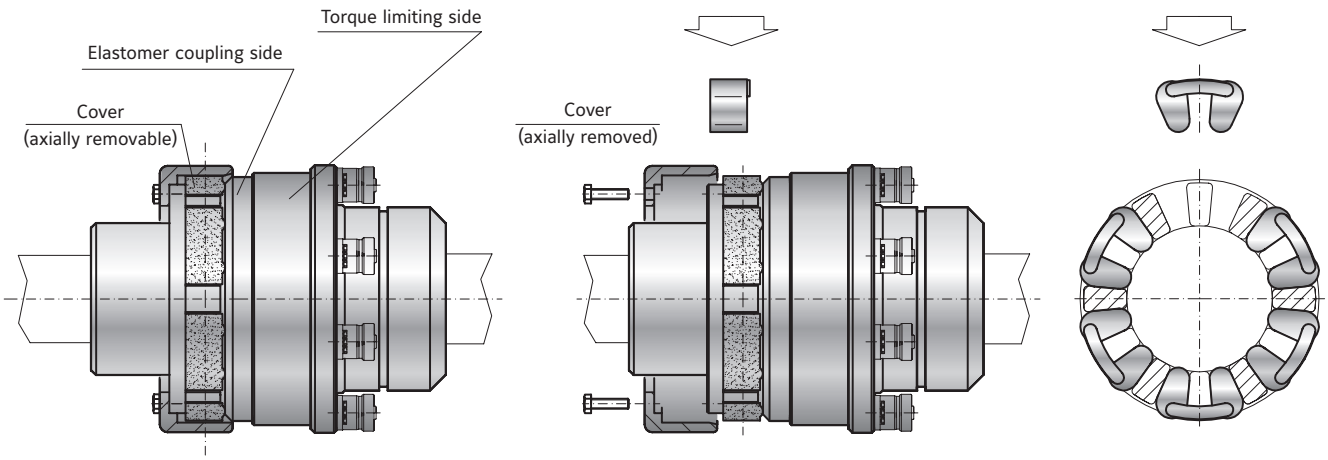
Type	Relative damping (ψ)	Temperature range constant	peak	Material	Shore hardness	Features
A (Standard)	1.0	-40°C to +80°C	+90°C	Natural and synthetic rubber	75-80 Shore A	Very high wear resistance
B	1.0	-40°C to +100°C	+120°C	Synthetic rubber	73-78 Shore A	Resistant to many oils and fuels
C	1.0	-70°C to +120°C	+140°C	Silicone rubber	70-75 Shore A	High temperature range

▶ **Note**

Elastomer segments can be easily changed after installation. Every coupling utilizes 6x elastomer segments. The elastomer segments do not need to be installed prior to coupling mounting.



CHANGING THE ELASTOMER SEGMENTS



For easier handling, the coupling will be shipped unassembled.

INSTALLATION

SHAFT / AXIS MISALIGNMENT

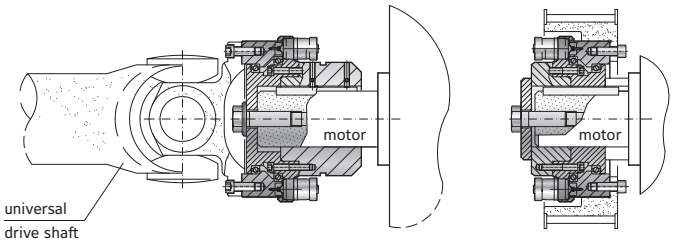
Exact alignment of the shaft axes extends the service life of the coupling and adjacent components by minimizing reaction loads from misalignment.

INDIRECT DRIVES

SAFETY COUPLINGS

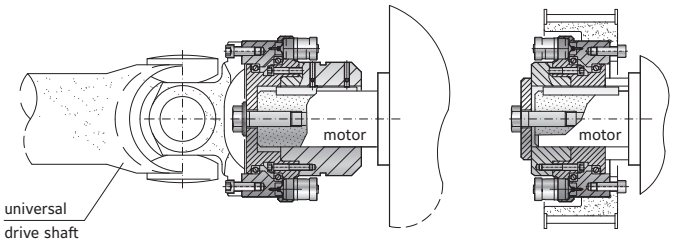
Drive attachments such as sprockets and universal joint shafts need to be centered on one of the precision locating features in the output flange of the coupling. In the case of sprockets, gears, sheaves, etc, the radial load should be centered between the two rows of ball bearings, integral to the coupling. In case this is not possible the overhung load can be supported by additional outboard bearings on the shaft. Make sure to observe the allowable size and radial load ratings for the safety couplings.

ST1



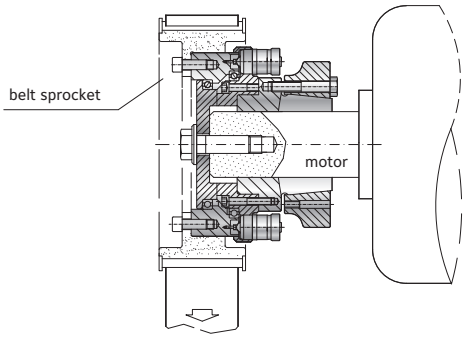
WITH KEYWAY MOUNTING

STR



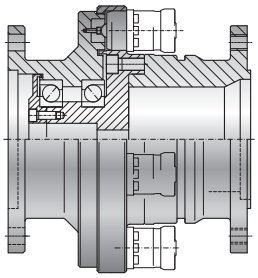
SPECIAL ROBUST VERSION

STN



WITH CONICAL CLAMPING RINGS

STF



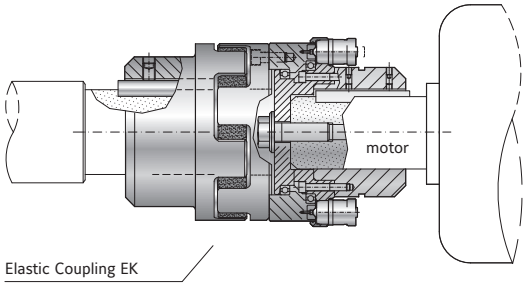
WITH FLANGE MOUNTING

DIRECT DRIVES

SAFETY COUPLINGS

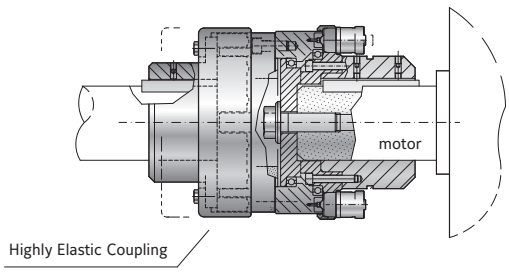
Model ST safety couplings are designed for high torque. This is accomplished by means of the robust spring plunger safety elements, which are uniformly distributed around the face of the coupling body. These safety elements provide a spring loaded form fit connection between the input and output of the coupling system. Transmittable torque is determined by the quantity and force settings of the safety elements. At a predetermined maximum torque level, the balls of the safety elements exit the conical detents in the output flange of the coupling, and retract inside the housings of the safety elements. This creates a complete disconnection of the input and output of the coupling system. Re-engagement is performed by applying pressure to the back side of the safety elements, causing the balls to be released back into their detents. The coupling system is sealed to prevent dirt and debris from entering, and to prevent grease from escaping.

STE



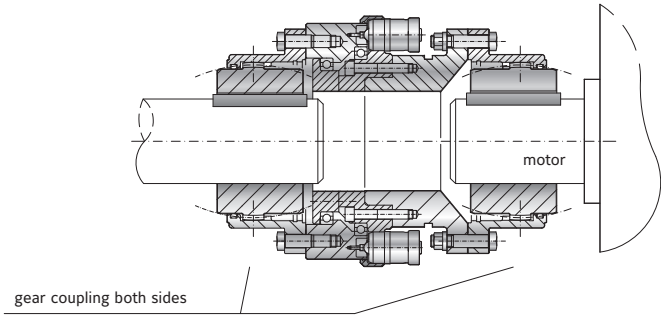
WITH KEYWAY MOUNTING AND ELASTIC COUPLING

ST2



WITH KEYWAY MOUNTING AND HIGHLY ELASTIC COUPLING

ST4



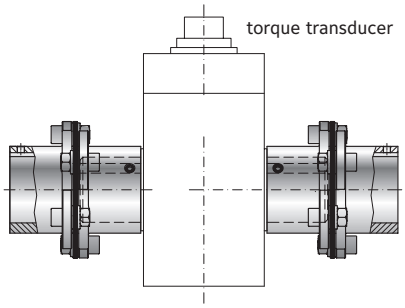
WITH KEYWAY MOUNTING AND GEAR COUPLING

DIRECT DRIVES

DISC PACK COUPLINGS

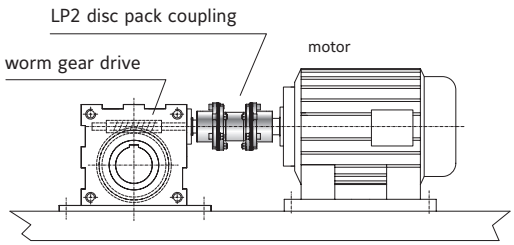
R+W LP series couplings come with the disc packs fully assembled. They need only to be mounted to the hubs and spacers during installation. Once assembled the disc pack couplings compensate for axial, lateral, and angular shaft misalignment. Torque is transmitted across the disc packs purely by the frictional flanged connection created by the grade 12.9 bolts. This helps to avoid problems associated with backlash, stress concentration, and micro movements, while also making the coupling assembly more torsionally stiff.

LP1



WITH KEYWAY MOUNTING AND SINGLE FLEX FOR INTERMEDIATE LOAD SUPPORT

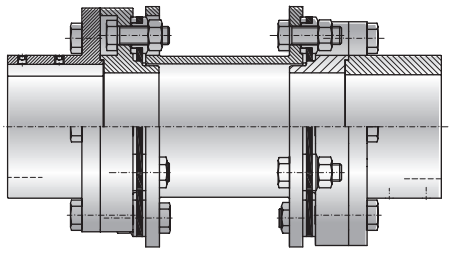
LP2



WITH KEYWAY MOUNTING AND DOUBLE FLEX

LPA

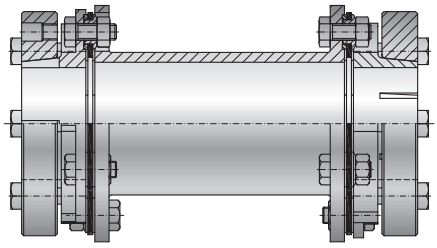
LPAI



WITH KEYWAY MOUNTING FOR API 610 / 671 METRIC OR IMPERIAL

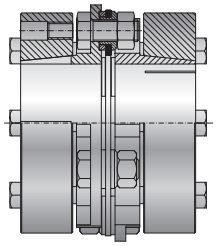
DIRECT DRIVES

LP3



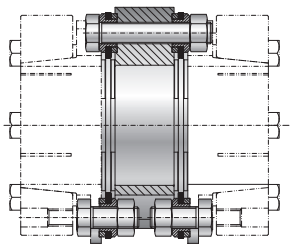
WITH CONICAL CLAMPING RING AND DOUBLE FLEX

LP4



WITH CONICAL CLAMPING RING AND SINGLE FLEX FOR INTERMEDIATE LOAD SUPPORT

LPZ



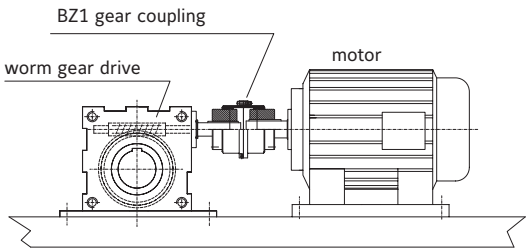
INTERMEDIATE FLANGE DOUBLE FLEX FOR USE WITH VARIOUS END HUBS

DIRECT DRIVES

CROWNED GEAR COUPLINGS

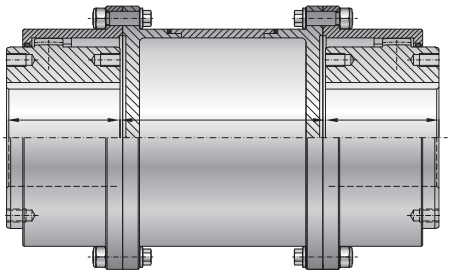
The precise integration of the coupling hub and intermediate flange allow for low backlash and highly rigid torque transmission, while compensating for lateral, axial, and angular shaft misalignment. The crowned geometry of the gearing allows for a long life, even without the presence of misalignment.

BZ1



WITH KEYWAY MOUNTING OR CYLINDRICAL BORE FOR INTERFERENCE FIT

BZA



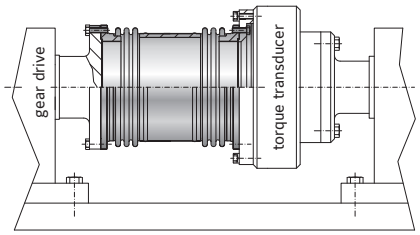
WITH INTERMEDIATE TUBE

DIRECT DRIVES

METAL BELLOWS COUPLINGS

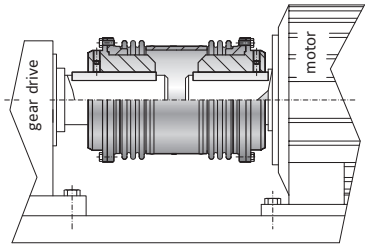
R+W bellows couplings are flexible shaft couplings. The stainless steel bellows compensates for lateral, axial and angular shaft misalignment while transmitting torque with zero backlash and high torsional stiffness.

BX1



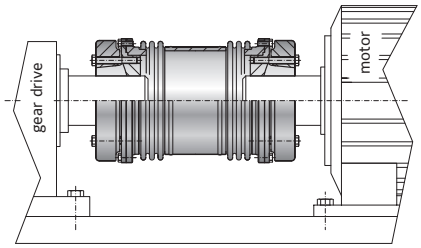
WITH FLANGE MOUNTING

BX4



WITH KEYWAY MOUNTING

BX6



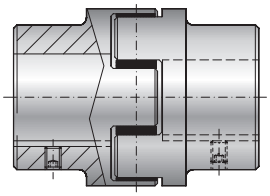
WITH CONICAL CLAMPING RINGS

DIRECT DRIVES

ELASTIC JAW COUPLINGS

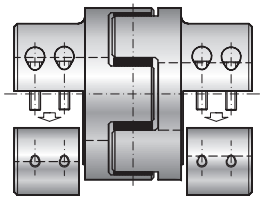
R+W elastic jaw couplings are three piece flexible shaft couplings. The elastomer inserts are preloaded into the jaws, transmitting torque with zero backlash. The coupling system also compensates for lateral, axial, and angular shaft misalignment. The elastomer inserts are available in different hardness levels in order to allow for different characteristics in terms of damping, flexibility, and torsional stiffness.

EK1



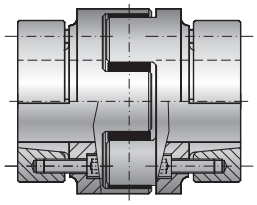
WITH SIMPLE KEYWAY MOUNTING

EKH



WITH FULLY SPLIT CLAMPING HUBS

EK6

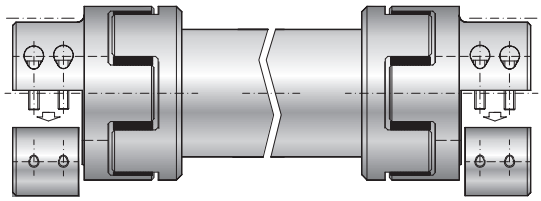


WITH CONICAL CLAMPING RINGS

ELASTIC DRIVE SHAFT SYSTEM

R+W drive shaft systems are flexible couplings for spanning larger distances between shaft ends. The elastomer inserts compensate for lateral, axial, and angular shaft misalignment. The preloaded elastic coupling system also absorbs vibration while transmitting torque with zero backlash.

EZ2



WITH FULLY SPLIT CLAMPING HUB AND INTERMEDIATE TUBE

ST

TORQSET® SAFETY COUPLINGS
200 - 250,000 Nm

R+W AUGMENTED REALITY

GENERAL INFORMATION ABOUT
R+W SAFETY COUPLINGS:

FIT CLEARANCE
Overall shaft / hub clearance of 0.02 - 0.07 mm

TEMPERATURE RANGE
-30 to +120° C

SPECIAL SOLUTIONS
Automatic re-engagement

ATEX (Optional)
For use in hazardous areas available upon request.

DISENGAGEMENT BEHAVIOR
Full disengagement / manual reset is standard.

ST

TORQSET® SAFETY COUPLINGS
200 – 250,000 Nm

MODEL | FEATURES

ST1

with simple keyway mounting
for indirect drives
from 200 - 250,000 Nm

- compact, simple design
- precise overload protection
- torsionally stiff
- integral bearing for overhung load support

Page 44-45

STR

with keyway mounting
special robust version
from 200 - 250,000 Nm

- compact, simple design
- precise overload protection
- torsionally stiff
- with heavy duty bearing for overhung load support

Page 46-47

STN

with conical clamping ring
for indirect drives
from 200 – 165,000 Nm

- high shaft clamping pressure
- compact, simple design
- precise overload protection
- torsionally stiff
- integral bearing for overhung load support

Page 48-49

STF

with flange mounting both sides
from 200 - 45,000 Nm

- compact design with customer specified interface for torque transducers and other mounting flanges
- precise overload protection
- torsionally stiff
- with special bearing for high speeds

Page 50

MODEL		FEATURES	
STE		**with keyway mounting and elastomer coupling from 200 - 14,000 Nm** ▶ vibration damping ▶ precise overload protection ▶ wear resistant ▶ press fit design	Page 51
ST2		**with simple keyway mounting and elastic coupling from 200 – 165,000 Nm** ▶ highly elastic damping ▶ compensation for misalignment ▶ precise overload protection ▶ elastomer segments resistant to oil and dirt ▶ press fit design	Page 52-53
ST4		**with simple keyway mounting and crowned gear coupling from 200 – 250,000 Nm** ▶ high power density ▶ compensation for misalignment ▶ precise overload protection ▶ low reaction loads on shaft bearings ▶ extremely wear resistant	Page 54-55
ST		**Options / Special Solutions**	Page 56
ACCESSORIES		**Accessories for Safety Couplings**	Page 59 - 63

ST1

WITH SIMPLE KEYWAY MOUNTING

200 – 45,000 Nm

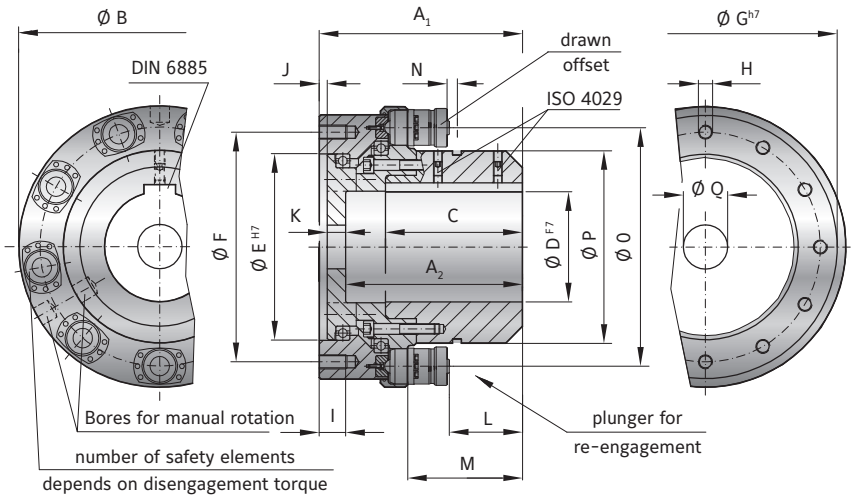
PROPERTIES

MATERIAL

Hardened steel (nitrocarburized surface)

DESIGN

- Drive side: coupling hub with keyway connection (spline profile on request)
- Driven side: output flange with 12x fastening threads and integral bearings
- Safety elements: evenly spaced around the circumference; externally adjustable



MODEL ST1 | SIZE 2 – 40

SIZE			2			5			10			25			40		
Adjustment range available from - to	(KNm)		0.2-0.5	0.5-1.0	1.0-1.5	0.7-2	1.2-4	3.2-5	2-5	4-10	6-14	6-12	9-18	15-25	12-21	22-32	32-45
			3×ST10	6×ST10	6×ST10	3×ST15	6×ST15	6×ST15	3×ST15	6×ST15	9×ST15	6×ST15	9×ST15	12×ST15	6×ST30	6×ST30	9×ST30
Overall length	(mm)	A_1	120			150			183			230			305		
Bore depth	(mm)	A_2	100			124			158			200			210		
Outside diameter	(mm)	B	198			220			270			318			428		
Fit length	(mm)	C	100			121			120			155			210		
Bore diameter possible Ø to Ø F7	(mm)	D	30-75			40-90			40-110			60-140			90-170		
Flange centering diameter H7	(mm)	E	132			145			170			210			270		
Bolt circle diameter ±0.3	(mm)	F	162			170			220			260			330		
Flange outside diameter h7	(mm)	G	192			209			259			298			380		
Fastening threads		H	12xM10			12xM12			12xM16			12xM16			12xM20		
Thread depth	(mm)	I	15			20			25			30			35		
Fit length	(mm)	J	3.5			4			6			8			8		
Wall thickness	(mm)	K	15			21			17			20			28		
Distance	(mm)	L	10.5			16.5			45			80			102		
Distance	(mm)	M	51.5			66.5			95			130			170		
Actuation path	(mm)	N	3.5			4.5			4			4			7.5		
Mounting diameter - elements	(mm)	O	154			171			220			270			350		
Hub outside diameter	(mm)	P	104			120			170			218			265		
Bore for fastening screw	(mm)	Q	max. Ø 75			max. Ø 90			max. Ø 110			max. Ø 140			max. Ø 144		
Moment of inertia (approx.) D max. + max. sgmnt	(10^{-3} kgm²)		77			151			370			780			3570		
Speed max.	(rpm)		7000			6000			4200			3800			3000		
Allowable max. radial force standard*	(KN)		5			10			20			30			40		
Approx. weight at D max. + max. sgmnt	(kg)		15			24			40			63			166		

* larger radial loads possible with special bearings

ST1

WITH SIMPLE KEYWAY MOUNTING

11,000 – 250,000 Nm

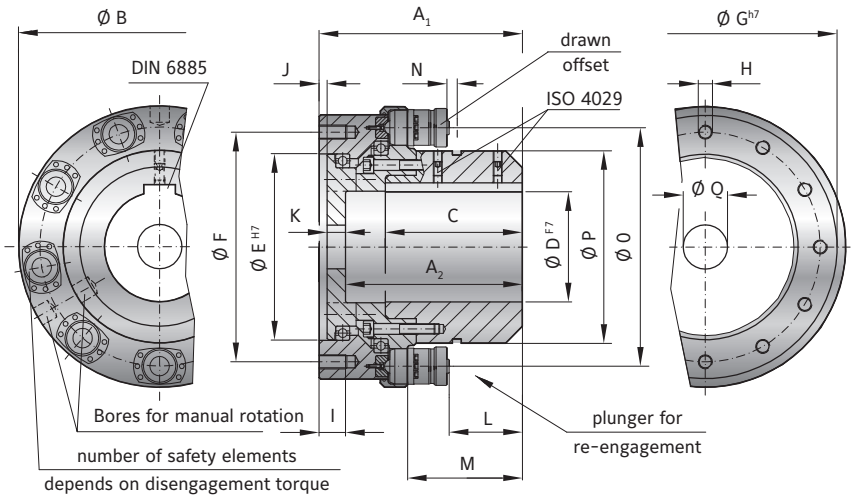
PROPERTIES

MATERIAL

Hardened steel (nitrocarburized surface)

DESIGN

- Drive side: coupling hub with keyway connection (spline profile on request)
- Driven side: output flange with 12x fastening threads and integral bearings
- Safety elements: evenly spaced around the circumference; externally adjustable



MODEL ST1 | SIZE 60 – 250

SIZE			60			100			160			250	
Adjustment range available from – to	(KNm)		11-18	22-36	30-55	24-50	45-90	80-110	25-55	50-110	80-165	100-170	160-250
			3×ST 30	6×ST 30	9×ST 30	3×ST70	6×ST70	9×ST70	3×ST70	6×ST70	9×ST70	8×ST71	12×ST71
Overall length	(mm)	A_1	320			396			410			534	
Bore depth	(mm)	A_2	275			280			360			370	
Outside diameter		B	459			592			648			740	
Fit length	(mm)	C	220			280			290			370	
Bore diameter possible Ø to Ø F7	(mm)	D	80-200			100-250			100-290			200-340	
Flange centering diameter H7	(mm)	E	300			390			450			508	
Bolt circle diameter ±0.3	(mm)	F	360			464			570			600	
Flange outside diameter h7	(mm)	G	418			530			618			680	
Fastening threads		H	12xM20			12xM24			12xM24			12xM36	
Thread depth	(mm)	I	35			40			40			60	
Fit length	(mm)	J	8			10			10			12	
Wall thickness	(mm)	K	30			38			38			60	
Distance	(mm)	L	99			128			135			135	
Distance	(mm)	M	167			218			225			228	
Actuation path	(mm)	N	7,5			10			10			10	
Mounting diameter – elements	(mm)	O	376			490			532			630	
Hub outside diameter	(mm)	P	295			380			418			508	
Bore for fastening screw	(mm)	Q	max. Ø 200			max. Ø 216			max. Ø 290			max. Ø 290	
Moment of inertia (approx.) D max. + max. sgmnt	(10^{-3} kgm²)		4600			16850			24600			56800	
Speed max.	(rpm)		2500			2200			2000			1200	
Allowable max. radial force standard*	(KN)		50			60			100			120	
Approx. weight at D max. + max. sgmnt	(kg)		179			403			463			850	

* larger radial loads possible with special bearings

STR

WITH SIMPLE KEYWAY MOUNTING, ROBUST

200 – 45,000 Nm

NEW

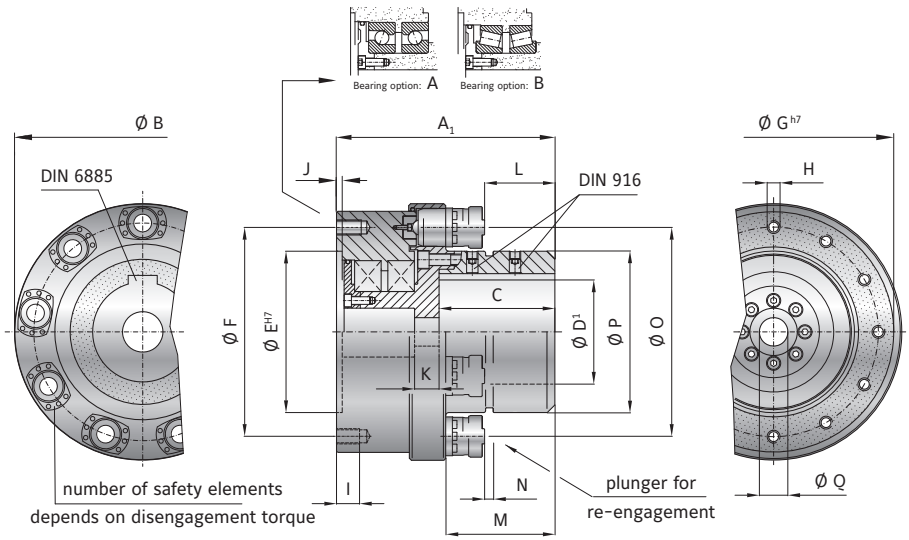
PROPERTIES

MATERIAL

Hardened steel (nitrocarburized surface)

DESIGN

- Drive side: coupling hub with keyway connection (spline profile on request)
- Driven side: Output flange with attachment threads and reinforced bearings.
- Safety elements: evenly spaced around the circumference; externally adjustable



MODEL STR | SIZE 2 – 40

SIZE			2				4				5			10			25			40		
Adjustment range available from – to	(KNm)		0.2–0.5	0.5–1.0	1.0–1.5	1.5–3.5	0.6–0.9	1.1–1.7	1.6–2.6	2.5–5.0	0.7–2	1.2–4	3.2–5	2–5	4–10	6–14	6–12	9–18	15–25	12–21	22–32	32–45
			3× ST11	6× ST11	6× ST11	6× ST11	3× ST11	6× ST11	9× ST11	9× ST11	3× ST16	6× ST16	6× ST16	3× ST16	6× ST16	9× ST16	6× ST16	9× ST16	12× ST16	6× ST31	6× ST31	9× ST31
Overall length	(mm)	A_1	170				198				190			230			264			335		
Outside diameter	(mm)	B	198				211				220			270			318			428		
Fit length	(mm)	C	95				120				111			122			150			191		
Bore diameter possible Ø to Ø F7	(mm)	D	30–80				40–100				40–90			40–110			60–140			90–170		
Flange centering diameter H7	(mm)	E	132				136				145			170			210			270		
Bolt circle diameter ±0.3	(mm)	F	162				164				170			220			260			330		
Flange outside diameter h7	(mm)	G	192				194				209			259			298			380		
Fastening threads	(mm)	H	12xM10				12xM12				12xM12			12xM16			12xM16			12xM20		
Thread depth		I	18				22				22			28			30			36		
Fit length	(mm)	J	4.5				3.5				3.5			6			8			6		
Wall thickness	(mm)	K	16				20				24			32			32			48		
Distance	(mm)	L	50.0				81.5				56.0			74			97			111		
Distance	(mm)	M	81.0				112.5				96.5			115			138			171		
Actuation path	(mm)	N	3.5				3.5				4.5			4.5			4.5			7.5		
Mounting diameter – elements	(mm)	O	154				174				171			220			270			350		
Hub outside diameter	(mm)	P	112				138				122			170			218			265		
Bore for fastening screw	(mm)	Q	max. Ø 17				max. Ø 22				max. Ø 25			max. Ø 26			max. Ø 32			max. Ø 38		
Moment of inertia (approx.) D max. + max. sgmnt	(10^{-3} kgm²)		103				130				168			484			1028			4107		
Speed max.	(rpm)		8500				6800				6300			5000			4000			3600		
Allowable max. radial force standard*	(KN)		10				14				20			40			60			80		
Approx. weight at D max. + max. sgmnt	(kg)		21				25				28			55			86			196		

* larger radial loads possible with special bearings

STR

WITH SIMPLE KEYWAY MOUNTING, ROBUST

11,000 – 250,000 Nm

NEW

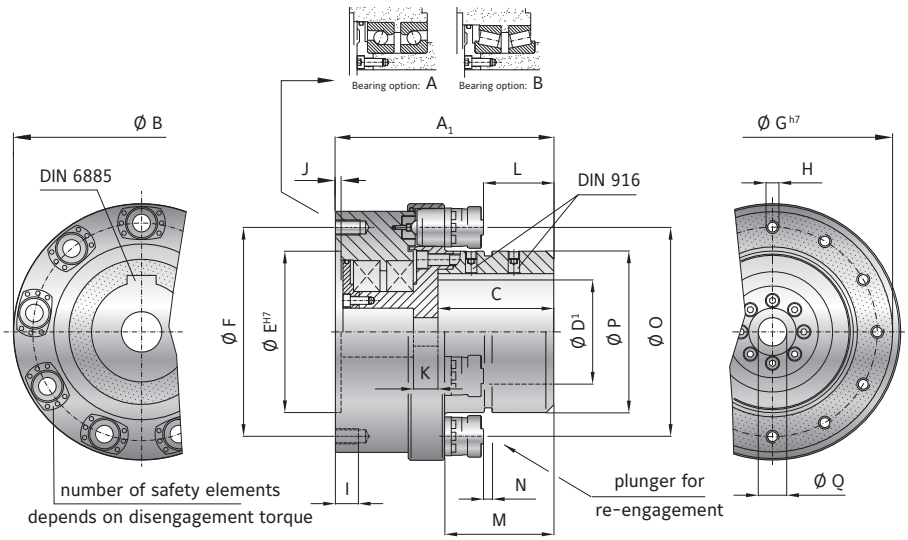
PROPERTIES

MATERIAL

Hardened steel (nitrocarburized surface)

DESIGN

- Drive side: coupling hub with keyway connection (spline profile on request)
- Driven side: Output flange with attachment threads and reinforced bearings.
- Safety elements: evenly spaced around the circumference; externally adjustable



MODEL STR | SIZE 60 – 250

SIZE			60			100			160			250	
Adjustment range available from – to	(KNm)		11-18	22-36	30-55	24-50	45-90	80-110	25-55	50-110	80-165	100-170	160-250
			3×ST31	6×ST31	9×ST31	3×ST71	6×ST71	9×ST71	3×ST71	6×ST71	9×ST71	8×ST71	12×ST71
Overall length	(mm)	A_1	380			470			490			600	
Outside diameter	(mm)	B	459			592			648			740	
Fit length	(mm)	C	220			275			282			361	
Bore diameter possible Ø to Ø F7	(mm)	D	80-200			100-250			130-290			200-340	
Flange centering diameter H7	(mm)	E	300			390			450			508	
Bolt circle diameter ±0.3	(mm)	F	360			464			570			600	
Flange outside diameter h7	(mm)	G	418			530			618			680	
Fastening threads	(mm)	H	12xM20			12xM24			12xM24			12xM36	
Thread depth		I	36			40			44			60	
Fit length	(mm)	J	9			10			11			12	
Wall thickness	(mm)	K	53.5			67.0			67.0			78.0	
Distance	(mm)	L	143			179			189			273	
Distance	(mm)	M	202.5			255			265			349	
Actuation path	(mm)	N	7.5			10			10			10	
Mounting diameter – elements	(mm)	O	376			490			532			630	
Hub outside diameter	(mm)	P	295			380			420			508	
Bore for fastening screw	(mm)	Q	max. Ø 44			max. Ø 44			max. Ø 52			max. Ø 52	
Moment of inertia (approx.) D max. + max. sgmnt	(10^{-3} kgm²)		5925			20000			31830			61300	
Speed max.	(rpm)		3200			2200			2000			1800	
Allowable max. radial force standard*	(KN)		100			130			200			240	
Approx. weight at D max. + max. sgmnt	(kg)		244			502			636			978	

* larger radial loads possible with special bearings

STN

WITH CONICAL CLAMPING BUSHING

200 – 5,000 Nm

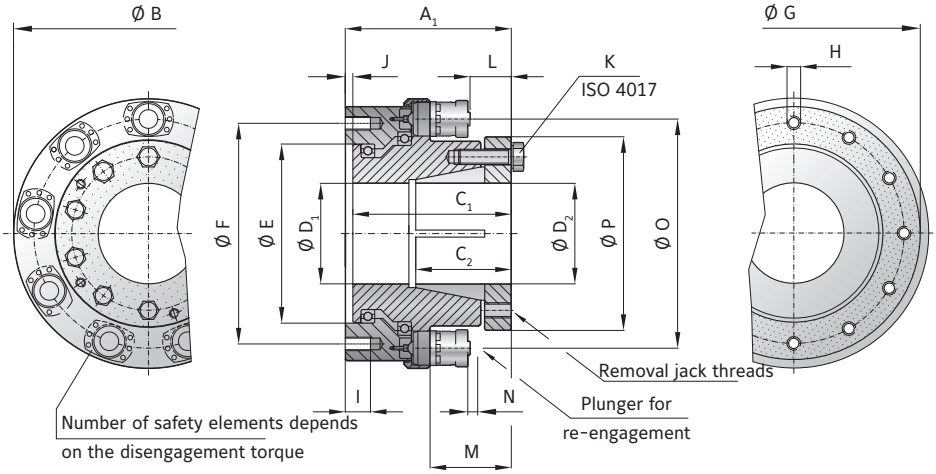
PROPERTIES

MATERIAL

Hardened steel (nitrocarburized surface)

DESIGN

- Drive side: coupling hub with conical clamping bushing connection (spline profile on request)
- Driven side: output flange with 12x fastening threads and integral bearings
- Safety elements: evenly spaced around the circumference; externally adjustable



MODEL STN | SIZE 2 – 5

SIZE			2			5		
Adjustment range available from – to	(KNm)		0.2-0.5	0.5-1.0	1.0-1.5	0.7-2	1.2-4	3.2-5
			3×ST10	6×ST10	6×ST10	3× ST15	6× ST15	6× ST15
Overall length	(mm)	A_1	124.5			160		
Flange outside diameter	(mm)	B	198			220		
Fit length / keyway length	(mm)	C_1	118			155		
Effective clamping length	(mm)	C_2	45			82		
Bore diameter possible Ø to Ø F7	(mm)	D_2	45-70			40-80		
Bore diameter max. Ø F7 with keyway	(mm)	D_2	60			70		
Flange centering diameter H7	(mm)	E	132			145		
Bolt circle diameter ±0.3	(mm)	F	162			170		
Outside diameter h7	(mm)	G	192			209		
Fastening threads	(mm)	H	12×M10			12×M12		
Thread depth	(mm)	I	15			20		
Fit length	(mm)	J	3			4		
Tightening screw ISO 4017		K	6xM10			6xM10		
Tightening torque	(Nm)		59			59		
Distance	(mm)	L	18			26.5		
Distance	(mm)	M	56			76.5		
Actuation path	(mm)	N	3.5			4.5		
Mounting diameter - elements	(mm)	O	154			170		
Hub outside diameter	(mm)	P	119			136		
Moment of inertia (approx.) D max. + max. sgmnt	(10^{-3} kgm²)		77			151		
Speed max.	(rpm)		7000			6000		
Allowable max. radial force standard*	(KN)		5			10		
Approx. weight at D max. + max. sgmnt	(kg)		15			24		

* larger radial loads possible with special bearings

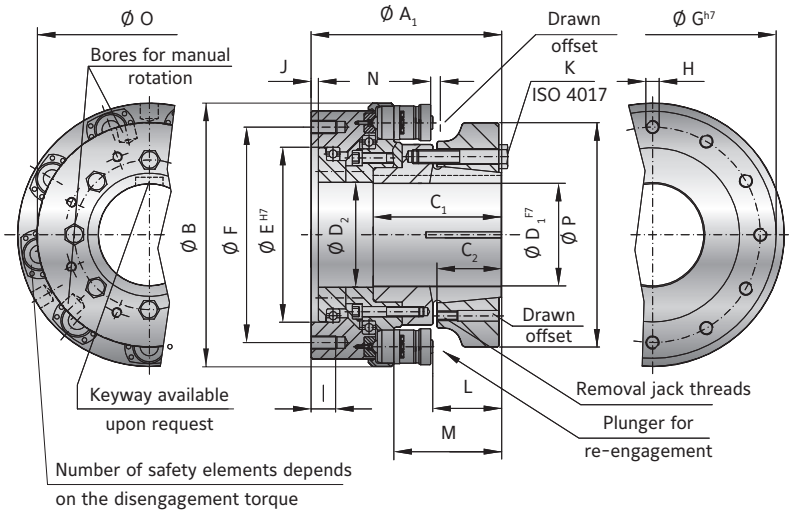
STN

WITH CONICAL CLAMPING RING
2,000 – 165,000 Nm

PROPERTIES

MATERIAL
Hardened steel (nitrocarburized surface)

DESIGN
- Drive side: coupling hub with conical clamping ring connection (spline profile on request)
- Driven side: output flange with 12x fastening threads and integral bearings
- Safety elements: evenly spaced around the circumference; externally adjustable



MODEL STN | SIZE 10 – 160

SIZE			10			25			40			60			160		
Adjustment range available from – to	(KNm)		2-5	4-10	6-14	6-12	9-18	15-25	12-21	22-32	32-45	11-18	22-36	30-55	25-55	50-110	80-165
			3×ST15	6×ST15	9×ST15	6×ST15	9×ST15	12×ST15	6×ST30	6×ST30	9×ST30	3×ST30	6×ST30	9×ST30	3×ST70	6×ST70	9×ST70
Overall length	(mm)	A_1	210			227			286			318			425		
Flange outside diameter	(mm)	B	270			318			428			459			648		
Fit length / keyway length	(mm)	C_1	147			152			191			218			305		
Effective clamping length	(mm)	C_2	62			67			93.5			93			125		
Bore diameter possible Ø to Ø F7	(mm)	D_1	65-110			70-150			110-170			80-200			140-290		
Bore diameter max. Ø F7 with keyway	(mm)	D_1	100			140			160			180			270		
Flange centering diameter H7	(mm)	E	170			210			270			300			450		
Bolt circle diameter ±0.3	(mm)	F	220			260			330			360			570		
Outside diameter h7	(mm)	G	259			298			380			418			618		
Fastening threads	(mm)	H	12xM16			12xM16			12xM20			12xM20			12xM24		
Thread depth	(mm)	I	25			30			36			35			40		
Fit length	(mm)	J	6			8			9			8			11		
Tightening screw ISO 4017		K	8xM16			9xM16			11xM16			8xM20			8xM24		
Tightening torque	(Nm)		180			180			180			570			710		
Distance	(mm)	L	72			80			82.5			94			151		
Distance	(mm)	M	122			127			151			163			240		
Actuation path	(mm)	N	4			4			8			7.5			10		
Mounting diameter – elements	(mm)	O	220			270			350			376			532		
Hub outside diameter	(mm)	P	218			278			322			378			535		
Moment of inertia (approx.) D max. + max. sgmnt	(10^{-3} kgm²)		446			789			3570			5700			30700		
Speed max.	(rpm)		4200			3800			3000			2500			2000		
Allowable max. radial force standard*	(KN)		20			30			40			50			100		
Approx. weight at D max. + max. sgmnt	(kg)		50			65			166			200			550		

* larger radial loads possible with special bearings

STF

WITH FLANGE MOUNTING

200 – 45,000 Nm

NEW

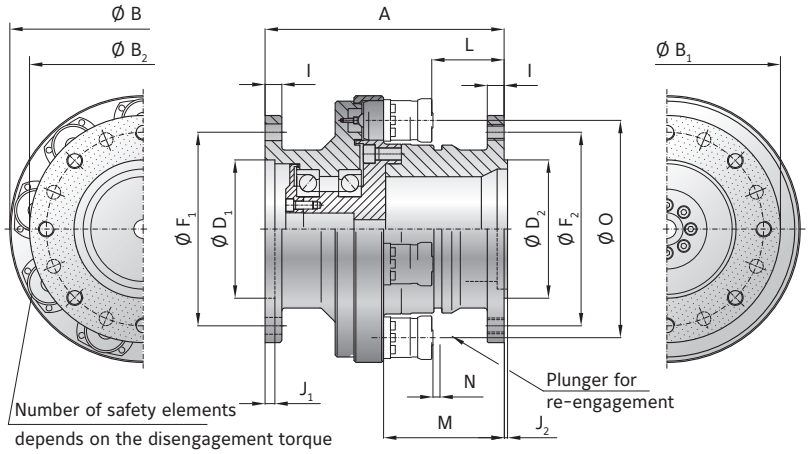
PROPERTIES

MATERIAL

Hardened steel (nitrocarburized surface)

DESIGN

- Drive side: Coupling hub with flange mounting
- Driven side: Mounting flange with fastening threads and integral bearing
- Safety elements: evenly spaced around the circumference; externally adjustable



MODEL STF | SIZE 2 – 40

SIZE			2			5			10			25			40		
Adjustment range available from to	(KNm)		0.2-0.5	0.5-1.0	1.0-1.5	0.7-2	1.2-4	3.2-5	2-5	4-10	6-14	6-12	9-18	15-25	12-21	22-32	32-45
			3×ST10	6×ST10	6×ST10	3×ST15	6×ST15	6×ST15	3×ST15	6×ST15	9×ST15	6×ST15	9×ST15	12×ST15	3×ST31	6×ST31	9×ST31
Overall length	(mm)	A	190			230			250			280			320		
Major outside diameter	(mm)	B	198			220			270			318			428		
Flange outside diameter	(mm)	B_1	170			188			230			268			340		
Flange outside diameter	(mm)	B_2	170			188			230			306			390		
Flange centering diameter H7	(mm)	D_1	90			110			140			174			210		
Flange centering diameter h7	(mm)	D_2	90			110			140			200			210		
Hole circle diameter	(mm)	F_1	130			155.5			196			220			304		
Through hole diameter	(mm)	F_1	8xØ13			8xØ15			8xØ17			12xØ19			16xØ22		
Bolt circle diameter	(mm)	F_2	130			155.5			196			270			350		
Thread size	(mm)	F_2	8xM12			8xM14			8xM16			12xM18			16xM20		
Flange thickness	(mm)	I	14			17.5			20			22			25		
Fit length	(mm)	J_1	3			4			5			5			6		
Fit length	(mm)	J_2	2.5			3			3.5			4			4		
Distance	(mm)	L	45			63.5			75			83.5			105.5		
Distance	(mm)	M	83			113.5			125			124.5			165		
Actuation path	(mm)	N	3.5			4.5			4.5			4.5			7.5		
Moment of inertia (approx.) D max. + max. sgmnt	(10^{-3} kgm²)	J.kst	83			150			380			830			3300		
Speed max.	(rpm)		9000			7500			6300			5000			3600		
Allowable max. radial force standard*	(KN)		7			12			17			22			30		
Approx. weight at D max. + max. sgmnt	(kg)	m.kst	20			30.4			50.3			73			180		

* larger radial loads possible with special bearings

STE

WITH SIMPLE KEYWAY MOUNTING

200 – 14,000 Nm

NEW: ATEX

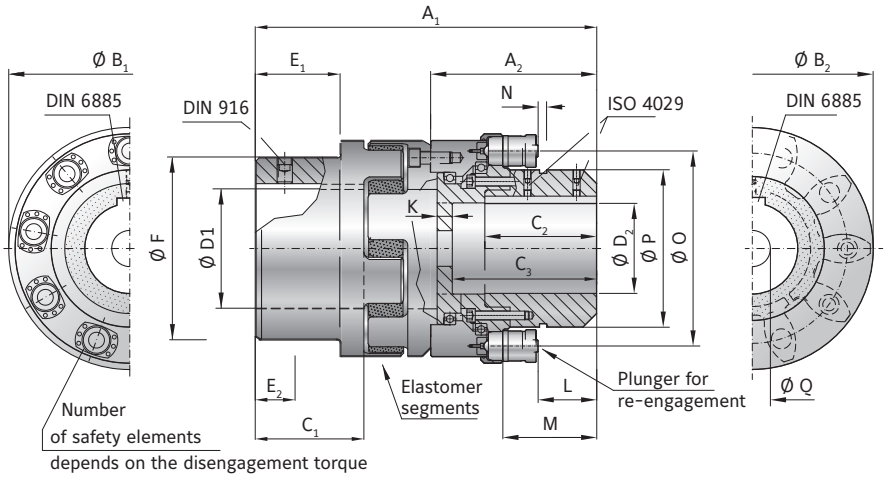
PROPERTIES

MATERIAL

- **Clutch segment:** hardened steel (nitrocarburized surface)
- **Elastomer segment:** TPU in various Shore hardnesses
- **Jaw coupling segments:** GGG40

DESIGN

- Drive side: coupling hub with simple keyway mounting
- Driven side: coupling hub with simple keyway mounting and elastomer segments
- Safety elements: evenly spaced around the circumference; externally adjustable



MODEL STE | SIZE 2 – 10

SIZE			2			4			5			10		
Adjustment range available from to	(KNm)		0.2-0.5	0.5-1.0	1.0 -1.5	0.6-0.9	1.1-1.7	1.6-2.6	0.7-2	1.2-4	3.2-5	2-5	4-10	6-14
			3×ST11	6×ST11	6×ST11	3xST11	6xST11	9xST11	3×ST16	6×ST16	6×ST16	3×ST16	6×ST16	9×ST16
Elastomer coupling size			2500			2500			4500			9500		
Elastomer insert type			A / B / D			A / B / D			A / B / D			A / B / D		
Overall length ±2	(mm)	A_1	312			360			373			460		
Length of torque limiting portion	(mm)	A_2	170			198			190			230		
Flange outside diameter (ST portion)	(mm)	B_1	198			211			220			270		
Flange outside diameter (elastomer portion)	(mm)	B_2	160			160			225			290		
Fit length/keyway length D1		C_1	88			88			113			142		
Fit length/keyway length D2	(mm)	C_2	85			120			100			122		
Bore depth (torque limiting portion)	(mm)	C_3	95			120			111			122		
Bore diameter (elastomer portion) Ø – Ø F7	(mm)	D_1	30-95			30-95			40-130			50-170		
Bore diameter (torque limiting portion) Ø – Ø F7	(mm)	D_2	30-80			40-100			40-90			40-110		
Length	(mm)	E_1	69			69			89			110		
Length	(mm)	E_2	36			36			47			57		
Hub diameter	(mm)	F	154			154			190			240		
Wall thickness	(mm)	K	16			20			24			32		
Distance	(mm)	L	50			81.5			56			74		
Distance	(mm)	M	81			112.5			97			115		
Actuation path	(mm)	N	3.5			3.5			4.5			4.5		
Mounting diameter - elements	(mm)	O	154			174			171			220		
Hub outside diameter	(mm)	P	112			138			122			170		
Bore for fastening screw	(mm)	Q	max ø17			max ø22			max ø25			max ø26		
Moment of inertia (approx.) D max. + max. sgmnt	(10^{-3}kgm²)		145			172			337			1145		
Speed max.	(rpm)		8500			6800			6300			5000		
Approx. weight at D max. + max. sgmnt	(kg)		35			39			47			110		
Axial	(mm)		± 3			± 3			± 4			± 5		
Lateral Elastomer insert type A / B	(mm)		0.5 / 0.3			0.5 / 0.3			0.5 / 0.3			0.6 / 0.4		
Angular Elastomer insert type A / B	(degree)		1.5 / 1.0			1.5 / 1.0			1.5 / 1.0			1.5 / 1.0		
Dynamic torsional stiffness at T_{KN} (Elastomer insert type A / B)	(10^3 Nm/rad)		175 / 216			175 / 216			337 / 743			1180 / 1340		

For technical information about the elastomer insert segments see page 97.

ST2

WITH SIMPLE KEYWAY MOUNTING

200 – 25,000 Nm

NEW: ATEX

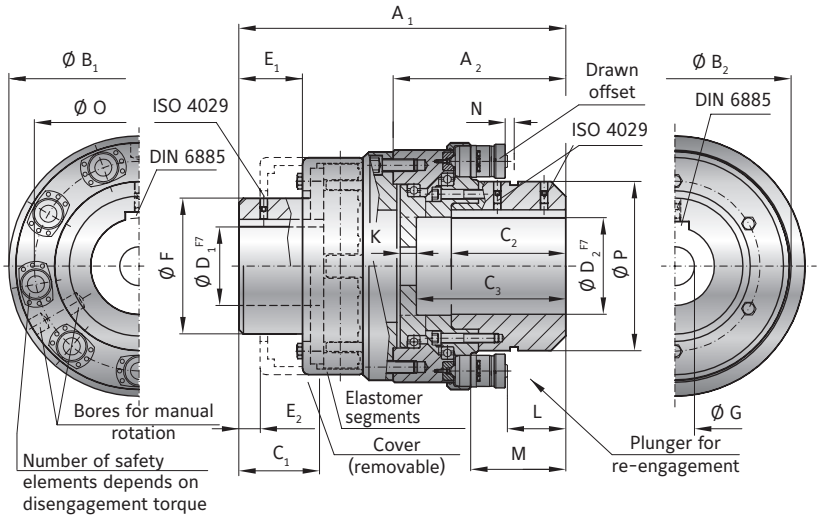
PROPERTIES

MATERIAL

- **Safety coupling portion:** hardened steel (nitrocarburized surface)
- **Elastomer segments:** precision molded, wear resistant rubber compound (75-80 Shore A)
- **Elastomer coupling:** hubs made from coated high strength cast steel

DESIGN

With keyway connection (spline profile on request). Elastomer segments compensate for misalignment and absorb vibration. Safety elements evenly spaced around the circumference. Field adjustable within the specified range.



MODEL ST2 | SIZE 2 – 25

SIZE			2			5			10			25		
Adjustment range available from - to	(KNm)		0.2-0.5	0.5-1.0	1.0 -1.5	0.7-2	1.2-4	3.2-5	2-5	4-10	6-14	6-12	9-18	15-25
			3×ST10	6×ST10	6×ST10	3×ST15	6×ST15	6×ST15	3×ST15	6×ST15	9×ST15	6×ST15	9×ST15	12×ST15
Overall length ±2	(mm)	A_1	264			313			360			437		
Length of torque limiting portion	(mm)	A_2	120			150			183			230		
Flange outside diameter (ST portion)	(mm)	B_1	198			220			270			318		
Flange outside diameter (elastomer portion)	(mm)	B_2	221			250			290			330		
Fit length/keyway length D1	(mm)	C_1	82			89			97			116		
Fit length/keyway length D2	(mm)	C_2	100			121			120			155		
Bore depth (torque limiting portion)	(mm)	C_3	100			124			158			200		
Bore diameter (elastomer portion) Ø – Ø F7	(mm)	D_1	30-80			40-100			40-105			60-130		
Bore diameter (torque limiting portion) Ø – Ø F7	(mm)	D_2	30-75			40-90			40-110			60-140		
Length to cover	(mm)	E_1	65			70			70			87		
Length to (cover removed)	(mm)	E_2	24			23			22			26		
Hub diameter	(mm)	F	130			145			160			200		
Bore for fastening screw	(mm)	G	max. Ø 75			max. Ø 90			max. Ø 110			max. Ø 140		
Distance	(mm)	L	10.5			16.5			45			80		
Distance	(mm)	M	51.5			66.5			95			130		
Actuation path	(mm)	N	3.5			4.0			4			4		
Mounting diameter - elements	(mm)	O	154			171			220			270		
Hub outside diameter	(mm)	P	104			120			170			218		
Moment of inertia (approx.) D max. + max. sgmnt	(10^{-3} kgm²)		152			289			854			1850		
Speed max.	(rpm)		3400			3000			2400			2000		
Approx. weight at D max. + max. sgmnt	(kg)		29			43.7			93			115		
Axial	(mm)		1.5			1.5			1.5			1.5		
Lateral	(mm)		0.3			0.4			0.4			0.5		
Angular	(degree)		1			1			1			1		
Dynamic torsional stiffness at T_{KN} (Standard A Insert)	(10^3 Nm/rad)		58			92			145			230		

* larger bore diameters upon request. | For technical information about the elastomer insert segments see page 29.

ST2

WITH SIMPLE KEYWAY MOUNTING

12,000 – 165,000 Nm

NEW: ATEX

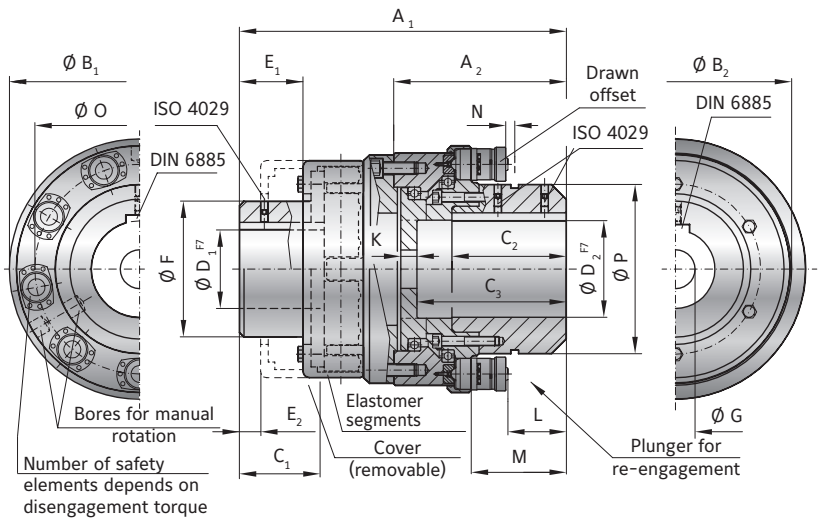
PROPERTIES

MATERIAL

- **Safety coupling portion:** hardened steel (nitrocarburized surface)
- **Elastomer segments:** precision molded, wear resistant rubber compound (75-80 Shore A)
- **Elastomer coupling:** hubs made from coated high strength cast steel

DESIGN

With keyway connection (spline profile on request). Elastomer segments compensate for misalignment and absorb vibration. Safety elements evenly spaced around the circumference. Field adjustable within the specified range.



MODEL ST2 | SIZE 40 - 160

SIZE			40			60			100			160		
Adjustment range available from - to	(KNm)		12-21	22-32	32-45	11-18	22-36	30-55	24-50	45-90	80-110	25-55	50-110	80-165
			6×ST30	6×ST30	9×ST30	3×ST 30	6×ST 30	9×ST 30	3×ST70	6×ST70	9×ST70	3×ST70	6×ST70	9×ST70
Overall length ±2	(mm)	A_1	565			580			716			730		
Length of torque limiting portion	(mm)	A_2	305			320			396			410		
Flange outside diameter (ST portion)	(mm)	B_1	428			459			592			648		
Flange outside diameter (elastomer portion)	(mm)	B_2	432			432			553			553		
Fit length/keyway length D1	(mm)	C_1	160			160			230			230		
Fit length/keyway length D2	(mm)	C_2	170			220			280			290		
Bore depth (torque limiting portion)	(mm)	C_3	210			275			280			360		
Bore diameter (elastomer portion) Ø – Ø F7	(mm)	D_1	90-170			80-160			100-200			100-200		
Bore diameter (torque limiting portion) Ø – Ø F7	(mm)	D_2	90-170			80-200			100-250			100-290		
Length to cover	(mm)	E_1	113			112			152			152		
Length to (cover removed)	(mm)	E_2	39			39			65			65		
Hub diameter	(mm)	F	255			255			300			300		
Bore for fastening screw	(mm)	G	max. Ø 144			max. Ø 200			max. Ø 216			max. Ø 290		
Distance	(mm)	L	102			99			128			135		
Distance	(mm)	M	170			167			218			225		
Actuation path	(mm)	N	7.5			7.5			10			10		
Mounting diameter - elements	(mm)	O	350			376			490			532		
Hub outside diameter	(mm)	P	265			295			380			418		
Moment of inertia (approx.) D max. + max. sgmnt	(10^{-3} kgm²)		6010			8960			21890			36858		
Speed max.	(rpm)		1800			1800			1500			1500		
Approx. weight at D max. + max. sgmnt	(kg)		271			287			642			729		
Axial	(mm)		2			2			2.5			2.5		
Lateral	(mm)		0.6			0.6			0.7			0.7		
Angular	(degree)		1			1			1			1		
Dynamic torsional stiffness at T_{KN} (Standard A Insert)	(10^3 Nm/rad)		500			580			850			1000		

* larger bore diameters upon request. | For technical information about the elastomer insert segments see page 29.

ST4 WITH SIMPLE KEYWAY MOUNTING

200 – 25,000 Nm

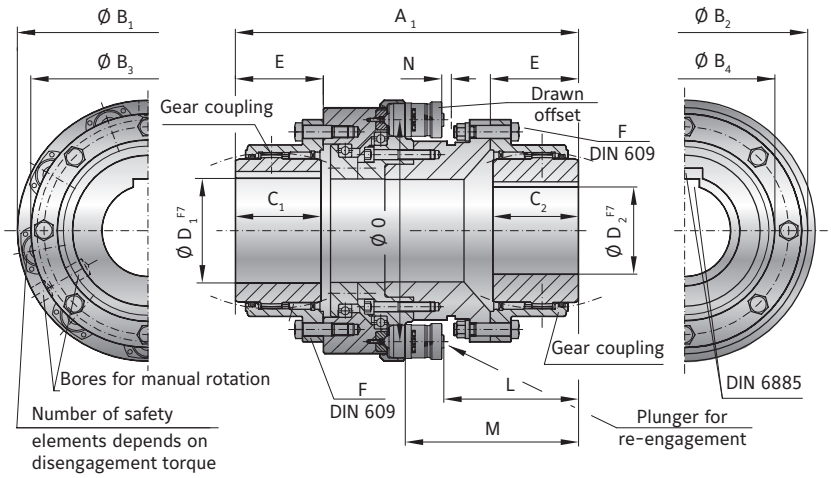
PROPERTIES

MATERIAL

- **Safety coupling portion:** hardened steel (nitrocarburized surface)
- **Gear coupling portion:** wear resistant high strength alloy steel (nitrocarburized surface)

DESIGN

With keyway connection (spline profile on request). Gear coupling for misalignment compensation. Safety elements evenly spaced around the circumference. Field adjustable within the specified range.



MODEL ST4 | SIZE 2 – 25

SIZE			2			5			10			25		
Adjustment range available from - to	(kNm)		0.2-0.5	0.5-1.0	1.0-1.5	0.7-2	1.2-4	3.2-6	2-5	4-10	6-14	6-12	9-18	15-25
			3×ST10	6×ST10	6×ST10	3×ST15	6×ST15	6 ST15	3×ST15	6×ST15	9×ST15	6×ST15	9× ST15	12×ST15
Overall length	(mm)	A_1	280			350			390			460		
Flange outside diameter (ST portion)	(mm)	B_1	198			220			270			318		
Mounting flange outside diameter (ST portion)	(mm)	B_2	192			209			259			300		
Flange outside diameter (gear coupling)	(mm)	B_3	168			200			225			265		
Hub diameter (gear coupling)	(mm)	B_4	130.5			158.4			183.4			211.5		
Fit length/keyway length	(mm)	$C_{1/2}$	62			76			90			105		
Bore diameter Ø to Ø F7	(mm)	$D_{1/2}$	30-78			32-98			42-112			46-132		
Length	(mm)	E	63.5			78.5			92.5			108		
Screw	(mm)	F	6×M8			10×M12			12×M12			12×M16		
Tightening torque	(mm)		18			65			65			150		
Distance	(mm)	L	110			138			159.5			202		
Distance	(mm)	M	148			188			209.5			252		
Actuation path	(mm)	N	3.5			4.5			4.5			4.5		
Mounting diameter - elements	(mm)	O	154			171			220			270		
Moment of inertia (approx.) D max. + max. sgmnt	(10^{-3} kgm²)		108			244			529			1117		
Speed max.	(rpm)		4000			3900			3700			3550		
Approx. weight at D max. + max. sgmnt	(kg)		25			45			65			100		
Axial	(mm)		1.5			2.5			2.5			3		
Angular	(Degrees)		2×0.35°			2×0.35°			2×0.35°			2×0.35°		

* larger bore diameters upon request. | For technical information about the gear coupling segments see page 19.

ST4

WITH SIMPLE KEYWAY MOUNTING

12,000 – 250,000 Nm

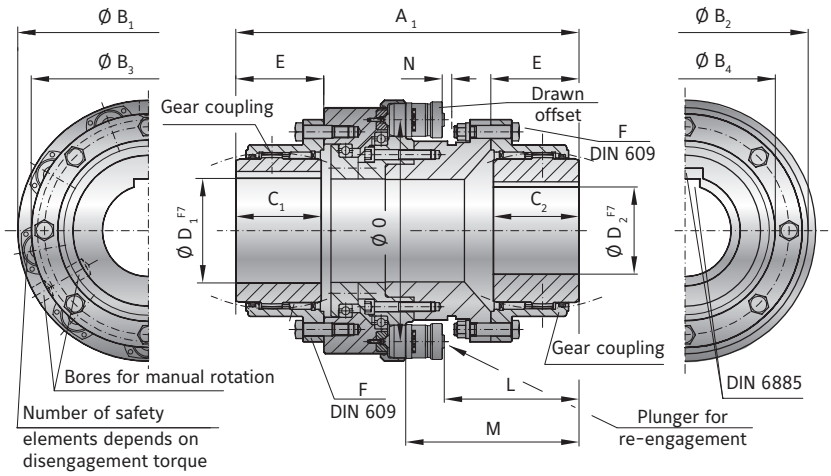
PROPERTIES

MATERIAL

- **Safety coupling portion:** hardened steel (nitrocarburized surface)
- **Gear coupling portion:** wear resistant high strength alloy steel (nitrocarburized surface)

DESIGN

With keyway connection (spline profile on request). Gear coupling for misalignment compensation. Safety elements evenly spaced around the circumference. Field adjustable within the specified range.



MODEL ST4 | SIZE 40 – 250

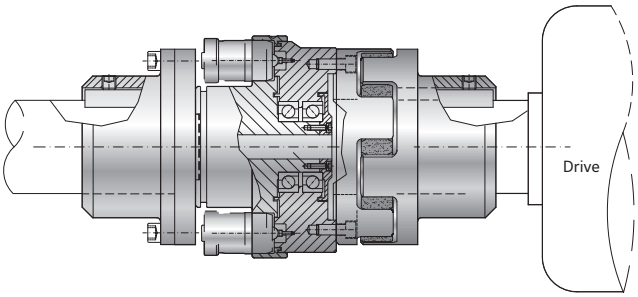
SIZE			40			60			100			160			250	
Adjustment range available from – to	(kNm)		12-21	22-32	32-45	11-18	22-36	30-55	24-50	45-90	80-110	25-55	50-110	80-165	100-170	160-250
			6×ST30	6×ST30	9×ST30	3×ST30	6×ST30	9×ST30	3×ST70	6×ST70	9×ST70	3×ST70	6×ST70	9×ST70	8×ST71	12×ST71
Overall length	(mm)	A_1	580			650			780			860			1060	
Flange outside diameter (ST portion)	(mm)	B_1	428			459			592			648			740	
Mounting flange outside diameter (ST portion)	(mm)	B_2	399			418			560			618			724	
Flange outside diameter (gear coupling)	(mm)	B_3	330			370			438			525			639	
Hub diameter (gear coupling)	(mm)	B_4	275.5			307			367			423			553	
Fit length/keyway length	(mm)	$C_{1/2}$	135			150			190			220			290	
Bore diameter Ø to Ø F7	(mm)	$D_{1/2}$	60-174			70-190			110-233			120-280			200-340	
Length	(mm)	E	139			154			194			225			296	
Screw	(mm)	F	14×M16			14×M18			14×M22			16×M24			22×M24	
Tightening torque	(mm)		150			220			400			520			670	
Distance	(mm)	L	238			275			318			360			458	
Distance	(mm)	M	306			343			408			450			534	
Actuation path	(mm)	N	8			8			10			10			10	
Mounting diameter – elements	(mm)	O	350			376			490			532			630	
Moment of inertia (approx.) D max. + max. sgmnt	(10^{-3} kgm²)		4363			6650			20611			33820			84926	
Speed max.	(rpm)		2750			2420			1950			1730			950	
Approx. weight at D max. + max. sgmnt	(kg)		225			293			570			718			1280	
Axial	(mm)		4			4			4			5			6	
Angular	(Degrees)		2×0.35°			2×0.35°			2×0.35°			2×0.35°			2×0.35°	

* larger bore diameters upon request. | For technical information about the gear coupling segments see page 19.

ST

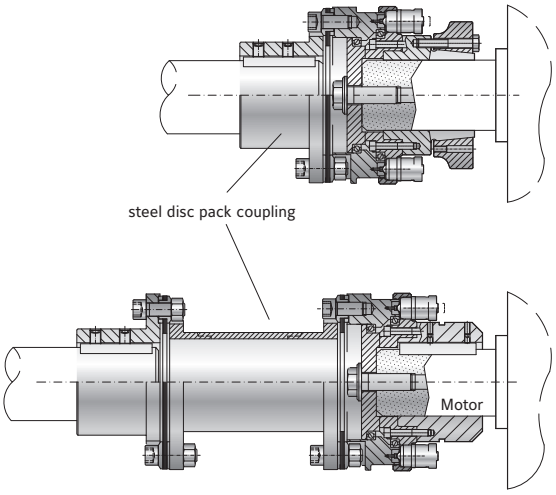
OPTIONS / SPECIAL SOLUTIONS

SAFETY COUPLINGS – FURTHER POSSIBILITIES



FOR EXTRUDER APPLICATIONS

- with elastic jaw coupling
- precise overload protection
- removable center section for lateral mounting



WITH TORSIONALLY STIFF DISC PACK COUPLING

- single or double flex
- high torsional stiffness
- disc packs from highly elastic spring steel

WITH TORSIONALLY STIFF BELLOWS COUPLING

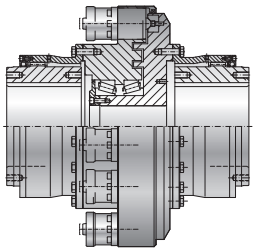
- with clamping hubs, keyway mounting or flange mounting
- compensation for misalignment
- bellows made from highly elastic stainless steel

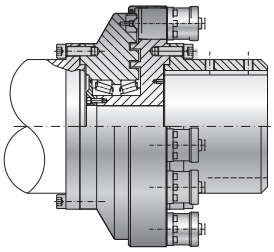
FOR HIGH SPEED APPLICATIONS

- integral ball-plunger system
- extremely compact with a low moment of inertia
- balanced for high speed

BUREAU VERITAS CERTIFIED

- for inland and offshore applications
- customized solutions
- rugged and special design for direct use in ship powertrains





MORE DESIGNS AVAILABLE

- for 1,000,000 Nm and more
- customer specified solutions
- for all branches and industries

TORQSET® SAFETY COUPLINGS
ACCESSORIES

ST SAFETY ELEMENT

PROPERTIES

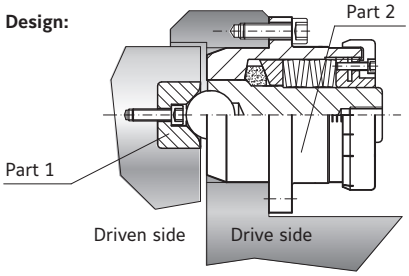
MATERIAL
Hardened steel (nitrocarburized surface)

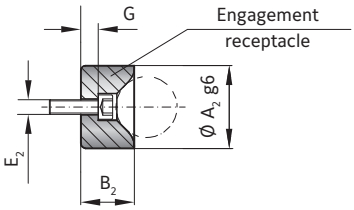
DESIGN
Two part assembly for installation into prefabricated coupling components.
Part 1: detent receptacle
Part 2: self-contained, spring loaded plunger module.
The spring force setting is adjustable in the field, with the settings clearly marked on an adjustment scale.

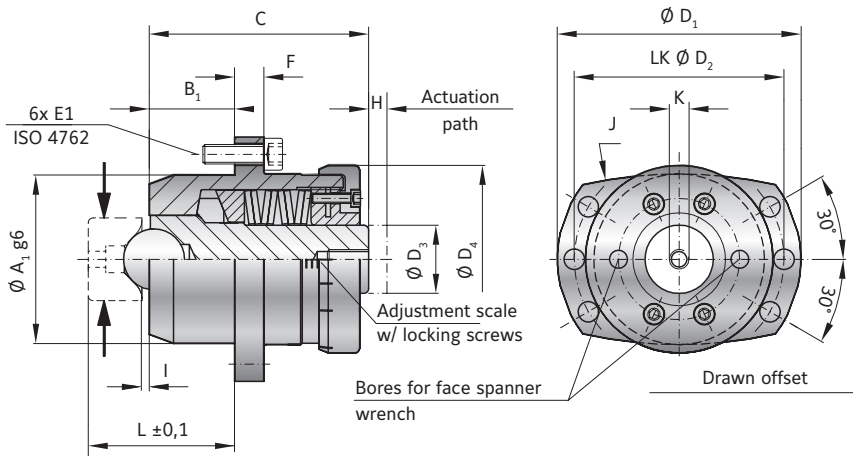
FIT TOLERANCE
For insertion of the safety elements H7 precision holes should be used for all centered components.

RE-ENGAGEMENT
When properly located over the detent receptacle the safety element can be re-engaged through the application of pressure to the back side of the plunger core.

Design:







MODEL ST | SIZE 10 - 70

SIZE			10	15	30	70
Tangential force (KN) Adjustment range available from - to	(ranges)	1	0.8-2.2	1-4	5-10	8-20
		2	–	2-8	10-20	15-40
		3	2.0-3.3	6-20	20-30	30-70
Centering diameter of safety element g6	(mm)	A_1	28	40	70	90
Centering diameter engagement receptacle g6	(mm)	A_2	18	24	34	44
Centering length of safety element	(mm)	B_1	15	20	35	45
Centering length engagement receptacle	(mm)	B_2	13.5	14	22	30
Overall length	(mm)	C	56	70	103	135
Outside diameter	(mm)	D_1	45	59	100	129
Bolt circle diameter	(mm)	D_2	37.5	50	86	110
Diameter plunger	(mm)	D_3	8	16	28	35
Diameter adjustment nut	(mm)	D_4	32	44	75	92
Screw / Tightening torque ISO 4762	(mm)	E_1	6 x M4 x 12 / 4.5 Nm	6 x M5 x 16 / 10 Nm	6 x M8 x 25 / 40 Nm	6 x M12 x 35 / 120 Nm
Screw / Tightening torque ISO 4762	(mm)	E_2	M3 x 20 4.5 Nm	M4 x 14 4.5 Nm	M6 x 20 15.5 Nm	M8 x 25 38 Nm
Flange thickness	(mm)	F	5	7	12	16
Distance	(mm)	G	6.5	5	8	10
Actuation path	(mm)	H	3	4	7.5	10
Distance	(mm)	I	1.5	2	3	4
Radius	(mm)	J	100	110	200	250
Inner thread	(mm)	K	M5 x 10	M8 x 15	M10 x 25	M16 x 30
Distance ± 0,1	(mm)	L	30	36	60	79
Weight	(kg)		0.26	0.65	2.7	6

axial spring force ≈ tangential force/1.4

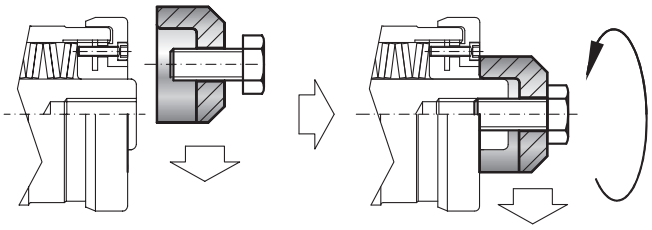
ORDERING EXAMPLE	ST	30	2	12	XX
Model	●				Special designation only (e.g. stainless steel)
Size		●			
Adjustment range 1/2/3			●		
Tangential force (KN)				●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. ST / 30 / 2 / 12 / XX)

ACCESSORIES ST
TORQSET® SAFETY COUPLINGS

ENGAGEMENT AND DISENGAGEMENT

ST

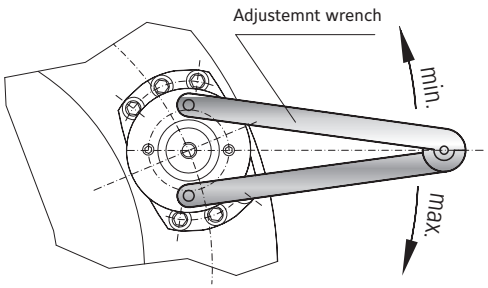


ORDER NUMBER

SIZE	ENGAGEMENT / DISENGAGEMENT TOOL
10	Order number AV / 0010
15	Order number AV / 0015
30	Order number AV / 0030
70	Order number AV / 0070

ADJUSTMENT WRENCH

ST

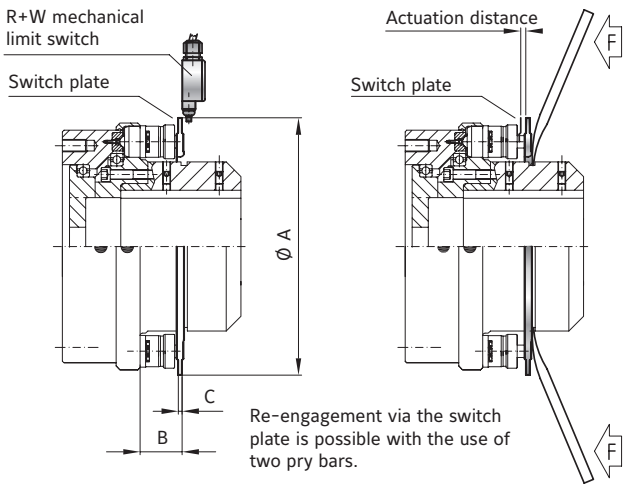


ORDER NUMBER

SIZE	ADJUSTMENT WRENCH
10	Order number SLS / 0010
15	Order number SLS / 0015
30	Order number SLS / 0030
70	Order number SLS / 0070

SWITCH PLATE

ST



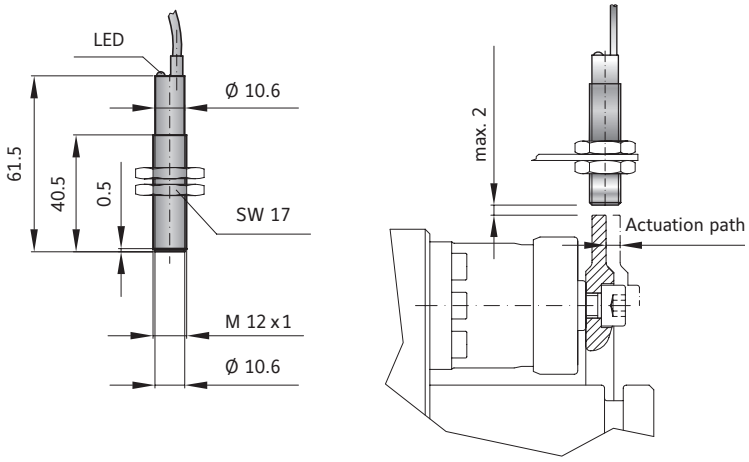
Switch plates are available on request for all sizes and SIZEs.

Contact R+W for more information.

ACCESSORIES ST
TORQSET® SAFETY COUPLINGS

PROXIMITY SWITCH

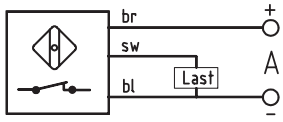
ST



ORDER NUMBER 650.2703.001

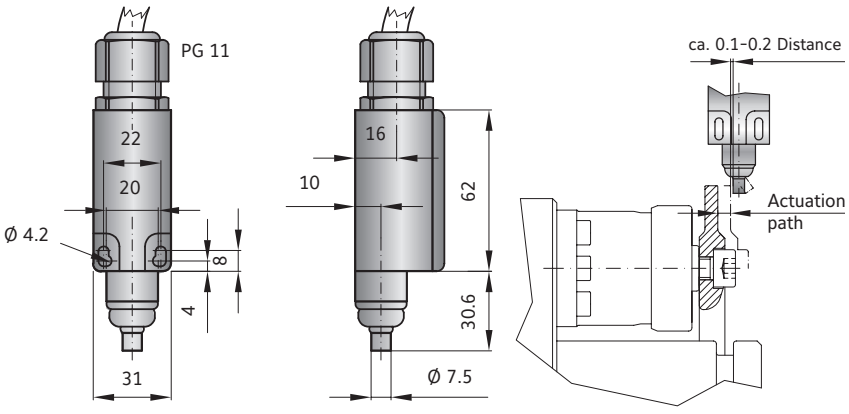
TECHNICAL DATA	ST
Voltage	10 to 30 V DC
Max. output current	200 mA
Max. switch frequency	800 Khz
Temperature range	-25° to +70° C
Protective system	IP 67
Switch type	normally open
Max. detection gap	max. 2 mm

SWITCH DIAGRAM ST



MECHANICAL LIMIT SWITCH

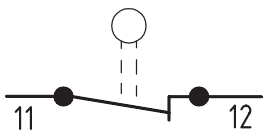
ST



ORDER NUMBER 618.6740.644

TECHNICAL DATA	ST
Max. voltage	250 V AC
Max. constant current	2.5h A
Protective system	IP 65
Contact system	Opener (forced seperating)
Temperature range	-30° to +80° C
Actuation	Plunger (metal)

SWITCH DIAGRAM ST

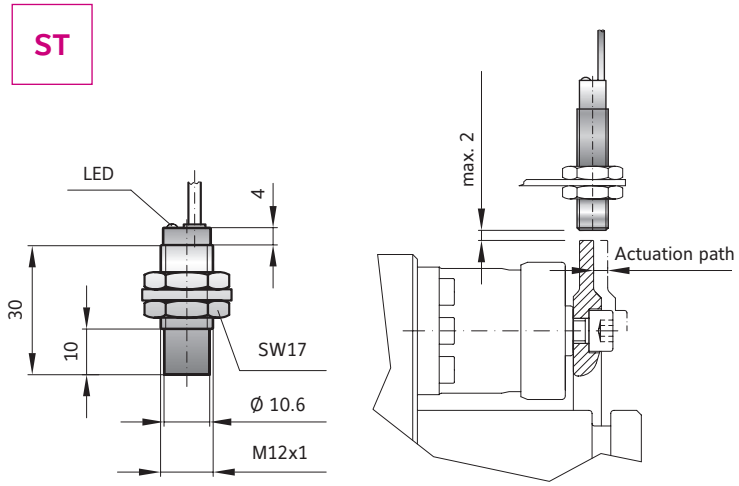


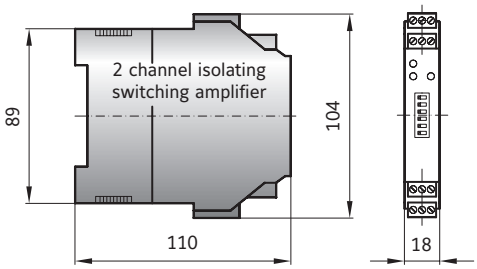
The switch plunger (pictured above and right) should be located as close to the actuation ring / limit switch plate as possible (approximately 0.1-0.2mm).

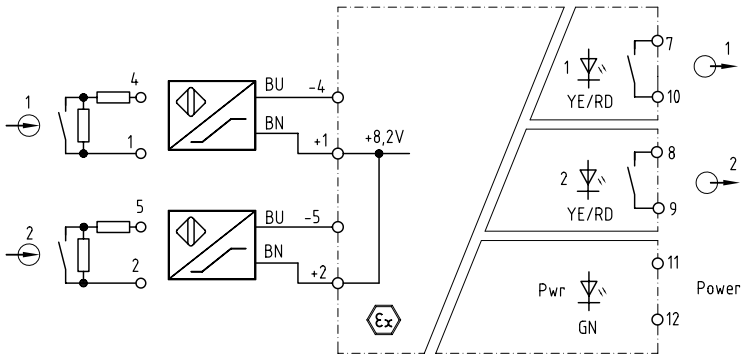
ATEX LIMIT SWITCH

ORDER NUMBER EEX. 1624.004

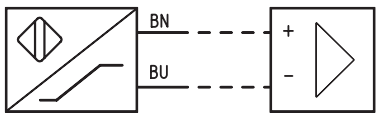
ST







SWITCH DIAGRAM



Technical data on request.

LP

TORSIONALLY STIFF DISC PACK COUPLINGS
350 - 100,000 NM

GENERAL INFORMATION ABOUT **R+W DISC PACK COUPLINGS:**

SERVICE LIFE

R+W disc pack couplings are fatigue resistant and wear free for a virtually infinite service life, as long as the technical limits are not exceeded.

FIT CLEARANCE

Overall shaft / hub clearance of 0.01 - 0.05 mm

TEMPERATURE RANGE

-30 to +280° C

ROTATIONAL SPEED

see table

DELIVERY

pre-assembled (separate components on request)

ATEX (Optional)

Certified for use in hazardous environments on request

LP

TORSIONALLY STIFF **DISC PACK COUPLINGS**
350 – 100,000 Nm

MODEL | FEATURES

LP1 S

with keyway mounting
single flex design
from 350 - 50,000 Nm

- extremely high torsional stiffness
- compact and robust design
- compensates for axial and angular misalignment only

Pages 70-71

LP1 D

with keyway mounting
dual flex design
from 350 - 50,000 Nm

- high torsional stiffness
- robust design
- compensates for axial, angular and lateral misalignment

Pages 70-71

LP2

with keyway mounting
dual flex design with spacer
from 350 - 50,000 Nm

- high torsional stiffness
- customer specified length on request
- compensates for axial, angular and lateral misalignment

Pages 72-73

LP4 S

with conical clamping ring
single flex design
from 350 - 50,000 Nm

- extremely high torsional stiffness
- compact design
- good for reversing loads
- zero backlash torque transmission
- compensates for axial and angular misalignment only

Pages 74-75

LP4 D

with conical clamping ring
dual flex design
from 350 - 50,000 Nm

- high torsional stiffness
- good for reversing loads
- zero backlash torque transmission
- compensates for axial, angular and lateral misalignment

Pages 74-75

MODEL		FEATURES	
LP3		**with conical clamping ring** **dual flex design** **from 350 - 50,000 Nm** ▶ high torsional stiffness ▶ high clamping pressure ▶ good for reversing loads ▶ zero backlash torque transmission ▶ compensates for axial, angular and lateral misalignment	Pages 76-77
LP5 S		**with clamping hub** **single flex design** **from 350 - 50,000 Nm** ▶ extremely high torsional stiffness ▶ compact and robust design ▶ zero backlash torque transmission ▶ keyway optional ▶ compensates for axial and angular misalignment only	Pages 78-79
LP5 D		**with clamping hub** **dual flex design** **from 350 - 50,000 Nm** ▶ high torsional stiffness ▶ zero backlash torque transmission ▶ keyway optional ▶ compensates for axial, angular and lateral misalignment	Pages 78-79
LPH D		**with fully split clamping hub** **dual flex design** **from 350 - 50,000 Nm** ▶ high torsional stiffness ▶ facilitates lateral mounting ▶ zero backlash torque transmission ▶ keyway optional ▶ compensates for axial, angular and lateral misalignment	Pages 80-81
LPZ		**short intermediate spacer** **for dual flex configurations** **from 350 - 50,000 Nm** ▶ high torsional stiffness ▶ for combination with various hub designs ▶ compensates for axial, angular and lateral misalignment	Pages 82-83

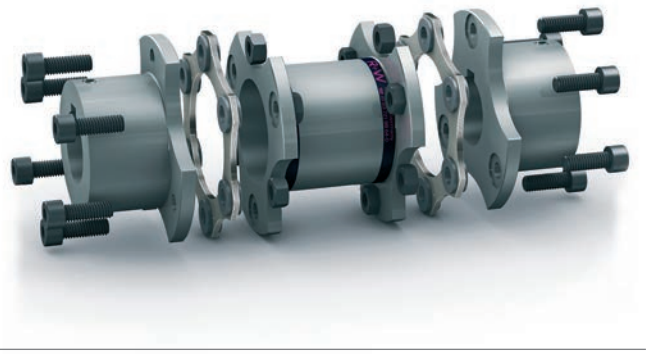
LP

TORSIONALLY STIFF **DISC PACK COUPLINGS**
350 – 100,000 Nm

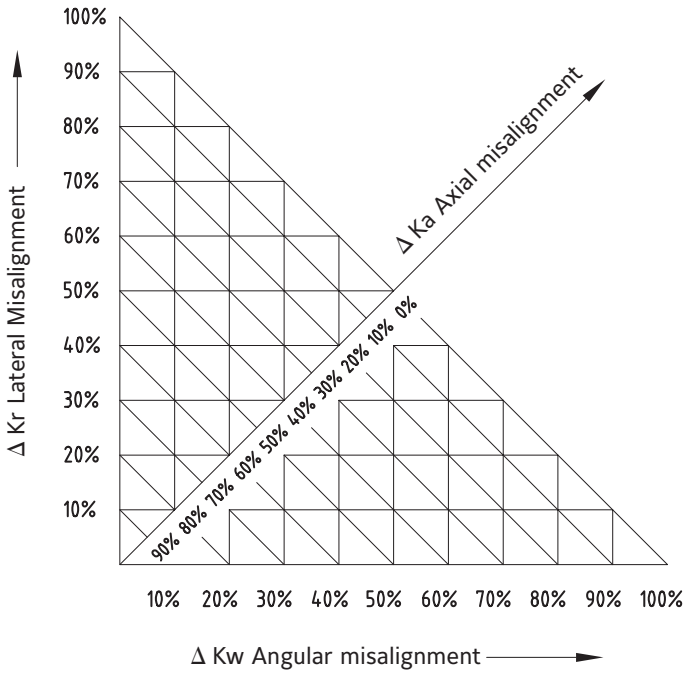
MODEL		FEATURES	
LPA		**with keyway mounting for API applications from 500 - 24,000 Nm** ▶ API 610 / 671 ▶ drop out center section ▶ safety catches in case of disc pack rupture ▶ metric configuration	Pages 84-87
LPAI		**with keyway mounting for API applications from 500 - 24,000 Nm** ▶ API 610 / 671 ▶ drop out center section ▶ safety catches in case of disc pack rupture ▶ imperial configuration	Pages 84-87
iLP	ARTIFICIAL INTELLIGENCE BY R+W	**intelligent coupling with integral sensor system from 350 - 50,000 Nm** ▶ works with various hub designs ▶ dual flex configuration ▶ compensates for axial, angular and lateral misalignment ▶ reports on torque, speed axial force and more	Pages 88-89
LP		**options / special solutions / higher torques**	Pages 90-91

DESIGN
DISC PACK COUPLINGS

Taking into account the friction drive principle of the R+W disc coupling design, torque is transfered without micro-movements or backlash.



MISALIGNMENT COMPENSATION



$$\Delta K_{total} = \Delta K_r + \Delta K_w + \Delta K_a \leq 100\%$$

The maximum total misalignment of the disc coupling should not exceed 100% of the combined percentages of the maximum axial, angular and lateral values as shown in the product data tables.

Example: pump skid

axial misalignment: 20%
lateral misalignment: 40%
angular misalignment: 40%

$$\Delta K_{total} = 20\% + 40\% + 40\% \leq 100\%$$

» coupling is fatigue resistant

LP1 WITH KEYWAY MOUNTING; SINGLE OR DUAL FLEX 350 – 50,000 Nm

S = single flex design

PROPERTIES

FEATURES
- extremely high torsional stiffness
- wear and maintenance free
- compensates for axial and angular misalignment only

MATERIAL
- **disc pack:** highly elastic spring steel
- **hubs:** high strength steel

DESIGN
Two precision machined coupling hubs mounted to the disc pack by means of high strength screws and bushings for alignment and frictional clamping of the assembly. Axial retention of the hubs on the shaft with DIN 916 set screws.
From series 25,000 assembly screws/superbolts must be used.

D = dual flex design

NEW

PROPERTIES

FEATURES
- high torsional stiffness
- wear and maintenance free
- compensates for axial, angular and lateral misalignment

MATERIAL
- **disc packs:** highly elastic spring steel
- **hubs and spacer:** high strength steel

DESIGN
Two precision machined coupling hubs and spacer plate mounted to the disc packs by means of high strength screws and bushings for alignment and frictional clamping of the assembly. Axial retention of the hubs on the shaft with DIN 916 set screws.
From series 25,000 assembly screws/superbolts must be used.

MODEL LP1 S|D | SIZE 300 – 2600

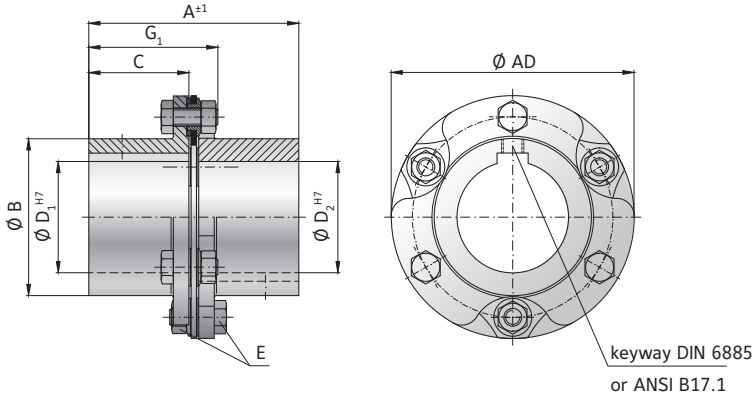
SIZE			300		500		700		1100		1600		2600	
Type			S	D	S	D	S	D	S	D	S	D	S	D
Rated torque	(Nm)	T_{KN}	350		500		700		1,100		1,600		2,600	
Maximum torque	(Nm)	T_{KNmax}	700		1,000		1,400		2,200		3,200		5,200	
Overall length	(mm)	A	95	123	95	123	116	154	117	158	158	204	161	208
Outside diameter	(mm)	Ø AD	99		109		128		133		150		168	
Hub diameter	(mm)	Ø B	63		70,5		78		84		86		102	
Hub fit length	(mm)	C	45		45		55		55		75		76	
Bore diameter available from Ø to Ø H7	(mm)	$D_{1/2}$	18 – 48		23 – 50		25 – 58		25 – 60		28 – 64		31 – 75	
Bore diameter available from Ø to Ø H7 (XL Hub)	(mm)	$D_{1/2}$	on request		> 50 – 60		> 58 – 65		> 60 – 70		> 64 – 80		> 75 – 90	
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M8		M8		M10		M10		M12		M12	
Tightening torque	(Nm)		35		40		65		95		150		165	
Distance between hubs	(mm)	G	–	33	–	33	–	44	–	48	–	54	–	56
Assembly length	(mm)	G_1	60	50.3	60	50.3	75	66.4	76	66.4	98	77.5	99	77.5
Moment of inertia**	(10^{-3}kgm²)	$J_{ges,}$	2	3	3	4	5	9	7	11	12	19	22	35
Weight**	(kg)		1.4	2.2	2.0	2.8	2.9	4.6	3.5	5.3	5.2	7.6	7.2	10.3
Torsional stiffness	(10^3Nm/rad)	C_T	120	60	160	80	260	130	300	150	420	210	580	290
Axial ±	(mm)	max. values	0.5	1.0	0.6	1.0	0.7	1.5	0.8	1.5	1.0	2.0	1.1	2.0
Lateral ±	(mm)		–	0.2	–	0.2	–	0.3	–	0.3	–	0.4	–	0.4
Angular ±	(degree)		0.7	1.4	0.7	1.4	0.7	1.0	0.7	1.4	0.7	1.4	0.7	1.4
Max. speed	(min^{-1})		5,800		5,300		4,500		4,300		3,800		3,400	
Max. speed (balanced)***	(min^{-1})		11,200		10,200		8,700		8,300		7,400		6,600	

** at maximum bore diameter | *** higher speeds on request

ORDERING EXAMPLE	LP1	700	D	154	25	57.15	XX
Model	●						Special designation only (e.g. special bore diameter tolerances, balancing, etc.). Contact R+W for more information
Size		●					
Type (S or D)			●				
Overall length (mm)				●			
Bore diameter Ø D1 H7					●		
Bore diameter Ø D2 H7						●	

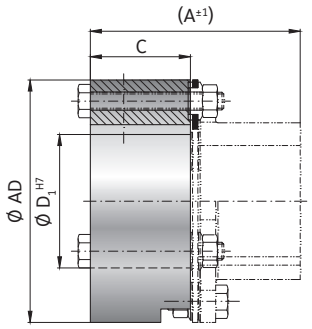
For custom features place an XX at the end of the part number and describe the special requirements (e.g. LP1 / 700 / D / 154 / 25 / 57.15 / XX - balanced for 8,000 rpm)

S = single flex design

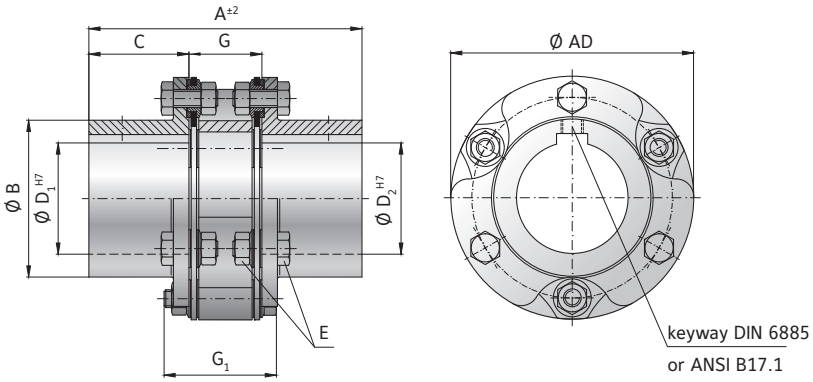


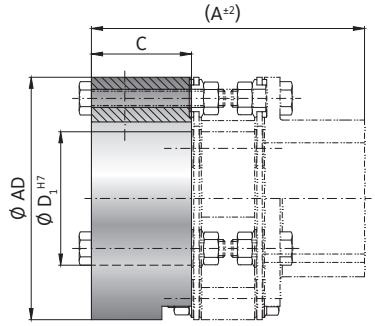
Optional XL Hub

NEW



D = dual flex design





MODEL LP1 S|D | SIZE 4000 - 25000

Higher torque capacity on request

SIZE			4000		6000		8000		15000		25000	
Type			S	D	S	D	S	D	S	D	S	D
Rated torque	(Nm)	T_{KN}	4,000		6,000		8,000		15,000		25,000	
Maximum torque	(Nm)	T_{KNmax}	8,000		12,000		16,000		30,000		50,000	
Overall length	(mm)	A	193	250	193	258	216	297	268	360	356	on request
Outside diameter	(mm)	Ø AD	198		212		238		299		372	
Hub diameter	(mm)	Ø B	120		130		140		192		on request	
Hub fit length	(mm)	C	90		90		100		125		165	
Bore diameter available from Ø to Ø H7	(mm)	$D_{1/2}$	38 - 90		39 - 95		50 - 102		70 - 150		on request	
Bore diameter available from Ø to Ø H7 (XL Hub)	(mm)	$D_{1/2}$	> 90 - 100		> 95 - 115		> 102 - 125		> 150 - 170		on request	
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M16		M16		M20		M24		M36	
Tightening torque	(Nm)		360		400		755		1,200		72	
Distance between hubs	(mm)	G	–	70	–	78	–	97	–	110	–	on request
Assembly length	(mm)	G_1	120	100	120	110	140	132.5	170	155	on request	on request
Moment of inertia**	(10^{-3}kgm²)	$J_{ges.}$	51	78	66	105	113	185	426	671	718	on request
Weight**	(kg)		11.7	16.9	13.6	20.1	18.8	28.4	39.0	58.1	78	on request
Torsional stiffness	(10^3Nm/rad)	C_T	940	470	1,140	570	1,600	800	2,800	1,400	5,920	2,960
Axial ±	(mm)	max. values	1.3	2.5	1.3	2.5	1.3	2.5	1.5	3.0	1.5	4.0
Lateral ±	(mm)		–	0.5	–	0.5	–	0.6	–	0.7	–	0.8
Angular ±	(degree)		0.7	1.4	0.7	1.4	0.7	1.4	0.7	1.4	0.7	1.4
Max. speed	(min^{-1})		2,900		2,700		2,400		1,900		1,500	
Max. speed (balanced)***	(min^{-1})		5,600		5,200		4,700		3,700		3,000	

** at maximum bore diameter | *** higher speeds on request

ORDERING EXAMPLE	LP1	6000	S	193	57.15	90	XX
Model	●						Special designation only (e.g. special bore diameter tolerances, balancing, etc.). Contact R+W for more information.
Size		●					
Type (S or D)			●				
Overall length (mm)				●			
Bore diameter Ø D1 H7					●		
Bore diameter Ø D2 H7						●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. LP1 / 6000 / S / 193/ 57.15 / 90 / XX - F7 tolerance on D2)

LP2

WITH KEYWAY MOUNTING
350 – 5,200 Nm

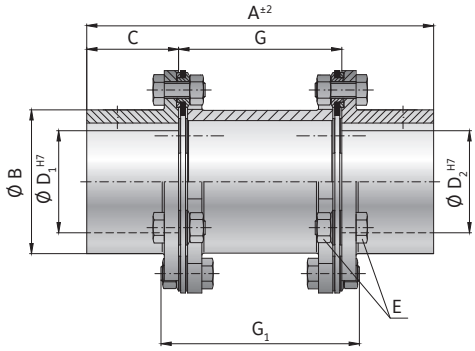
ARTIFICIAL INTELLIGENCE BY R+W

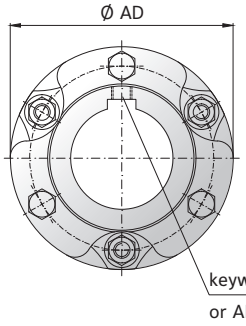
PROPERTIES

FEATURES
- high torsional stiffness
- dual flex design
- customer specified length on request

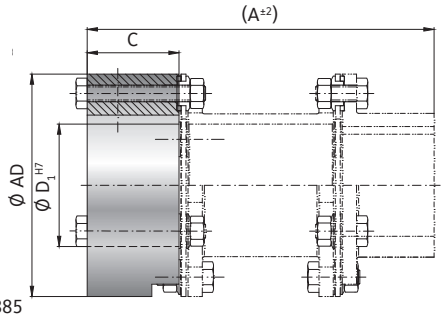
MATERIAL
- **disc packs:** highly elastic spring steel
- **hubs and spacer:** high strength steel

DESIGN
Two precision machined coupling hubs and spacer mounted to the disc packs by means of high strength screws and bushings for alignment and frictional clamping of the assembly. Axial retention of the hubs on the shaft with DIN 916 set screws.
From series 25,000 assembly screws/superbolts must be used.





Optional XL Hub NEW



MODEL LP2 | SIZE 300 – 2600

SIZE			300	500	700	1100	1600	2600
Rated torque	(Nm)	T_{KN}	350	500	700	1,100	1,600	2,600
Maximum torque	(Nm)	T_{KNmax}	700	1,000	1,400	2,200	3,200	5,200
Overall length	(mm)	A	170	170	205	206	286	286
Outside diameter	(mm)	Ø AD	99	109	128	133	150	168
Hub diameter	(mm)	Ø B	63	70.5	78	84	86	102
Hub fit length	(mm)	C	45	45	55	55	75	76
Bore diameter available from Ø to Ø H7	(mm)	$D_{1/2}$	18 – 48	23 – 50	25 – 58	25 – 60	28 – 64	31 – 75
Bore diameter available from Ø to Ø H7 (XL Hub)	(mm)	$D_{1/2}$	on request	> 50 – 60	> 58 – 65	> 60 – 70	> 64 – 80	> 75 – 90
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M8	M8	M10	M10	M12	M12
Tightening torque	(Nm)		35	40	65	95	150	165
Distance between hubs	(mm)	G	80	80	95	96	136	134
Assembly length	(mm)	G_1	100	100	121	118	171	166
Moment of inertia**	(10^{-3}kgm²)	$J_{ges.}$	4	6	12	16	29	51
Weight**	(kg)		3.1	4.4	6.1	7.6	11.5	15.0
Torsional stiffness	(10^3Nm/rad)	C_T	60	80	130	150	210	290
Axial ±	(mm)	max. values	1	1	1.5	1.5	2	2
Lateral ±	(mm)		0.8	0.8	1	1	1.4	1.4
Angular ±	(degree)		1.4	1.4	1.4	1.4	1.4	1.4
Max. speed	(min^{-1})		5,800	5,300	4,500	4,300	3,800	3,400
Max. speed (balanced)***	(min^{-1})		11,200	10,200	8,700	8,300	7,400	6,600

** at maximum bore diameter | *** higher speeds on request

ORDERING EXAMPLE	LP2	500	170	25.4	48	XX
Model	●					Special designation only (e.g. special bore diameter tolerances, balancing, etc.). Contact R+W for more information.
Size		●				
Overall length (mm)			●			
Bore diameter Ø D1 H7				●		
Bore diameter Ø D2 H7					●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. LP2 / 500 / 170 / 25.4 / 48 / XX – balanced for 10,000 rpm)

LP2

WITH KEYWAY MOUNTING
4,000 - 50,000 Nm

ARTIFICIAL INTELLIGENCE BY R+W

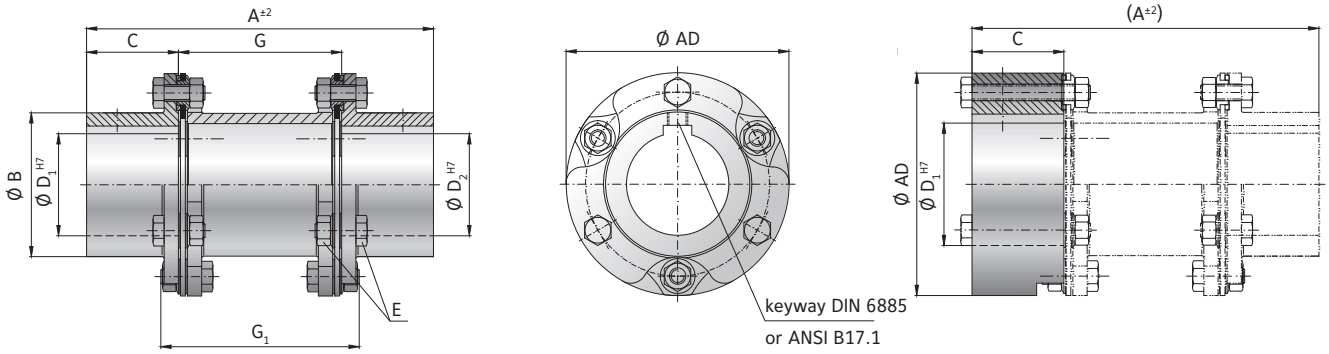
PROPERTIES

FEATURES
- high torsional stiffness
- dual flex design
- customer specified length on request

MATERIAL
- **disc packs:** highly elastic spring steel
- **hubs and spacer:** high strength steel

DESIGN
Two precision machined coupling hubs and spacer mounted to the disc packs by means of high strength screws and bushings for alignment and frictional clamping of the assembly. Axial retention of the hubs on the shaft with DIN 916 set screws.
From series 25,000 assembly screws/superbolts must be used.

Optional XL Hub NEW



DISC PACK COUPLINGS LP

MODEL LP2 | SIZE 4000 - 25000

Higher torque capacity on request

SIZE			4000	6000	8000	15000	25000
Rated torque	(Nm)	T_{KN}	4,000	6,000	8,000	15,000	25,000
Maximum torque	(Nm)	T_{KNmax}	8,000	12,000	16,000	30,000	50,000
Overall length	(mm)	A	320	340	372	480	on request
Outside diameter	(mm)	Ø AD	198	212	238	299	372
Hub diameter	(mm)	Ø B	120	130	140	192	on request
Hub fit length	(mm)	C	90	90	100	125	165
Bore diameter available from Ø to Ø H7	(mm)	$D_{1/2}$	38 - 90	39 - 95	50 - 102	70 - 150	on request
Bore diameter available from Ø to Ø H7 (XL Hub)	(mm)	$D_{1/2}$	> 90 - 100	> 95 - 115	> 102 - 125	> 150 - 170	on request
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M16	M16	M20	M24	M36
Tightening torque	(Nm)		360	400	755	1,200	72
Distance between hubs	(mm)	G	140	160	172	230	on request
Assembly length	(mm)	G_1	178	198	216	294.2	on request
Moment of inertia**	(10^{-3}kgm^2)	$J_{ges,}$	119	151	267	790	on request
Weight**	(kg)		28.4	28.4	41.2	70.1	on request
Torsional stiffness	(10^3Nm/rad)	C_T	470	570	800	1,400	2,960
Axial ±	(mm)	max. values	2.5	2.5	2.5	3	4
Lateral ±	(mm)		1.4	1.5	1.6	2.2	2.6
Angular ±	(Grad)		1.4	1.4	1.4	1.4	1.4
Max. speed	(min^{-1})		2,900	2,700	2,400	1,900	1,500
Max. speed (balanced)***	(min^{-1})		5,600	5,200	4,700	3,700	3,000

** at maximum bore diameter | *** higher speeds on request

ORDERING EXAMPLE	LP2	6000	340	50.8	90	XX
Model	●					Special designation only (e.g. special bore diameter tolerances, balancing, etc.). Contact R+W for more information.
Size		●				
Overall length (mm)			●			
Bore diameter Ø D1 H7				●		
Bore diameter Ø D2 H7					●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. LP2 / 6000 / 340 / 50.8 / 90 / XX - F7 bore tolerance on D2)

LP4 WITH CONICAL CLAMPING RING; SINGLE OR DUAL FLEX 350 – 50,000 Nm

S = single flex design

PROPERTIES

FEATURES
- extremely high torsional stiffness
- good for reversing loads
- compensates for axial and angular misalignment only

MATERIAL
- **disc pack:** highly elastic spring steel
- **hubs:** high strength steel

DESIGN
Two precision machined coupling hubs with conical clamping ring mounted to the disc pack by means of high strength screws and bushings for alignment and frictional clamping of the assembly.

From series 25,000 assembly screws/superbolts must be used.

D = dual flex design

NEW

PROPERTIES

FEATURES
- high torsional stiffness
- good for reversing loads
- compensates for axial, angular and lateral misalignment

MATERIAL
- **disc packs:** highly elastic spring steel
- **hubs and spacer:** high strength steel

DESIGN
Two precision machined coupling hubs with conical clamping ring and spacer plate mounted to the disc packs by means of high strength screws and bushings for alignment and frictional clamping of the assembly.

MODEL LP4 S|D | SIZE 300 – 2600

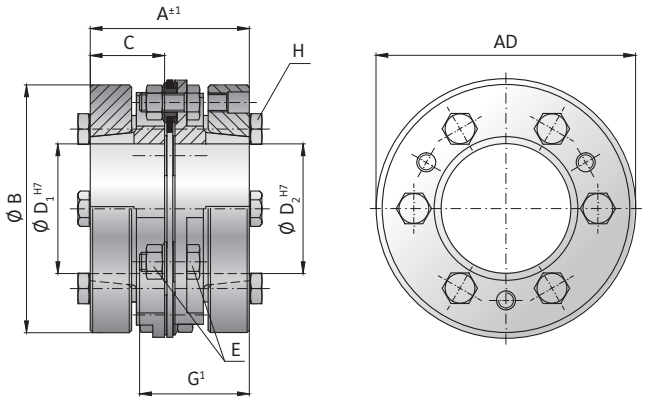
SIZE			300		500		700		1100		1600		2600	
Type			S	D	S	D	S	D	S	D	S	D	S	D
Rated torque*	(Nm)	T_{KN}	350		500		700		1,100		1,600		2,600	
Maximum torque*	(Nm)	T_{KNmax}	700		1,000		1,400		2,200		3,200		5,200	
Overall length	(mm)	A	76	104	76	104	93	131	99	140	120	166	136	183
Outside diameter	(mm)	Ø AD	99		109		128		133		150		168	
Hub diameter	(mm)	Ø B	95		105		122		130		146		165	
Hub fit length	(mm)	C	35.5		35.5		43.5		46		56		63.5	
Bore diameter available from Ø to Ø H7	(mm)	$D_{1/2}$	24 - 50		24 - 55		30 - 65		30 - 65		35 - 70		35 - 85	
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M8		M8		M10		M10		M12		M12	
Tightening torque	(Nm)		35		40		65		95		150		165	
Distance between hubs	(mm)	G	–	33	–	33	–	44	–	48	–	54	–	56
Assembly length	(mm)	G_1	50.5	50.3	50.5	50.3	62.5	66.4	64	66.4	81	77.5	88.5	77.5
Clamping screw	(ISO 4017)	H	6 x M8		6 x M8		6 x M10		6x M10		6 x M12		6 x M12	
Tightening torque	(Nm)		20		26		39		61		98		140	
Moment of inertia**	(10^{-3}kgm²)	$J_{ges.}$	3	4	5	7	12	15	16	20	31	38	89	71
Weight**	(kg)		2.4	3.1	3.0	3.9	5.1	6.6	6.1	7.9	9.7	12.1	14.4	17.5
Torsional stiffness	(10^3Nm/rad)	C_T	120	60	160	80	260	130	300	150	420	210	580	290
Axial ±	(mm)	max. values	0.5	1.0	0.6	1.0	0.7	1.5	0.8	1.5	1.0	2.0	1.1	2.0
Lateral ±	(mm)		–	0.2	–	0.2	–	0.3	–	0.3	–	0.4	–	0.4
Angular ±	(degree)		0.7	1.4	0.7	1.4	0.7	1.4	0.7	1.4	0.7	1.4	0.7	1.4
Max. speed	(min^{-1})		5,800		5,300		4,500		4,300		3,800		3,400	
Max. speed (balanced)***	(min^{-1})		11,200		10,200		8,700		8,300		7,400		6,600	

* maximum transmittable torque depends on the bore diameter | ** at maximum bore diameter | *** higher speeds on request

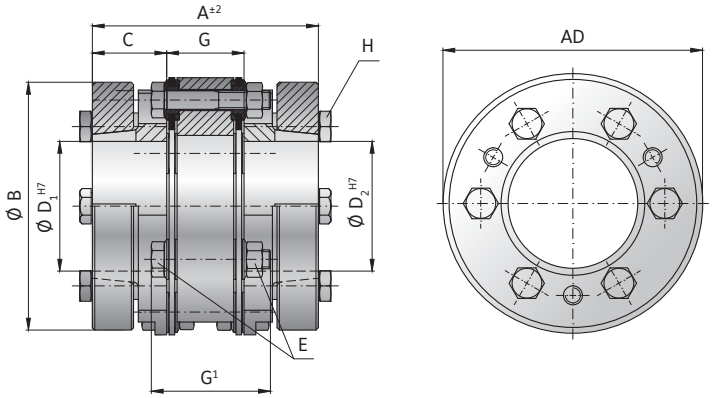
SIZE	Ø24	Ø26	Ø30	Ø35	Ø40	Ø45	Ø50	Ø55	Ø60	Ø70	Ø80	Ø90	Ø100	Ø110	Ø120	Ø130	Ø140	Ø160	Ø180
300	330	360	420	490	560	630	700												
500	430	470	540	640	730	820	910	1000											
700			650	760	870	980	1090	1200	1310										
1100			1020	1190	1370	1540	1710	1880	2050										
1600				1610	1840	2070	2300	2530	2760	3200									
2600				2300	2620	2950	3280	3610	3940	4600	5200								
4000							4000	4400	4800	5600	6400	7200	8000						
6000							5400	6000	6500	7600	8700	9800	10900	12000					
8000									8300	9700	11100	12500	13900	15300					
15000										12000	14000	15500	17500	19000	21000	22500	24500	28000	
25000													28000	30500	33500	36000	39000	44500	50000

Higher torque capacity possible with keyway or spline on request.

S = single flex design



D = dual flex design



MODEL LP4 S|D | SIZE 4000 - 25000

SIZE			4000		6000		8000		15000		25000	
Type			S	D	S	D	S	D	S	D	S	D
Rated torque*	(Nm)	T_{KN}	4,000		6,000		8,000		15,000		25,000	
Maximum torque*	(Nm)	T_{KNmax}	8,000		12,000		16,000		30,000		50,000	
Overall length	(mm)	A	161	218	174	239	226	307	264	356	274	on request
Outside diameter	(mm)	Ø AD	198		212		238		299		372	
Hub diameter	(mm)	Ø B	184		205		230		285		on request	
Hub fit length	(mm)	C	74		80.5		105		123		124	
Bore diameter available from Ø to Ø H7	(mm)	$D_{1/2}$	50 - 100		50 - 110		60 - 115		70 - 170		on request	
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M16		M16		M20		M24		M36	
Tightening torque	(Nm)		360		400		755		1,200		72	
Distance between hubs	(mm)	G	–	70	–	78	–	97	–	110	–	on request
Assembly length	(mm)	G_1	106	100	112.5	110	148	142.5	173	155	on request	on request
Clamping screw	(ISO 4017)	H	6 x M16		6 x M16		6 x M20		6 x M20		6 x M24	
Tightening torque	(Nm)		225		400		490		620		1.180	
Moment of inertia**	(10^{-3}kgm²)	$J_{ges.}$	110	137	172	211	368	440	1,003	1,248	1,469	on request
Weight**	(kg)		19.9	25.1	25.9	32.4	45.4	54.9	73.3	92.3	116	on request
Torsional stiffness	(10^3Nm/rad)	C_T	940	470	1,140	570	1,600	800	2,800	1,400	5,920	2,960
Axial ±	(mm)	max. values	1.3	2.5	1.3	2.5	1.3	2.5	1.5	3.0	1.5	4.0
Lateral ±	(mm)		–	0.5	–	0.5	–	0.6	–	0.7	–	0.8
Angular ±	(degree)		0.7	1.4	0.7	1.4	0.7	1.4	0.7	1.4	0.7	1.4
Max. speed	(min^{-1})		2,900		2,700		2,400		1,900		1,500	
Max. speed (balanced)***	(min^{-1})		5,600		5,200		4,700		3,700		3,000	

* maximum transmittable torque depends on the bore diameter | ** at maximum bore diameter | *** higher speeds on request

ORDERING EXAMPLE	LP4	6000	D	239	55	80	XX
Model	●						Special designation only (e.g. special bore diameter tolerances, balancing, etc.). Contact R+W for more information.
Size		●					
Type (S or D)			●				
Overall length (mm)				●			
Bore diameter Ø D1 H7					●		
Bore diameter Ø D2 H7						●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. LP4 / 6000 / D / 239 / 55 / 80 / XX - F7 bore tolerance on D2)

LP3

WITH CONICAL CLAMPING RING
350 – 5,200 Nm

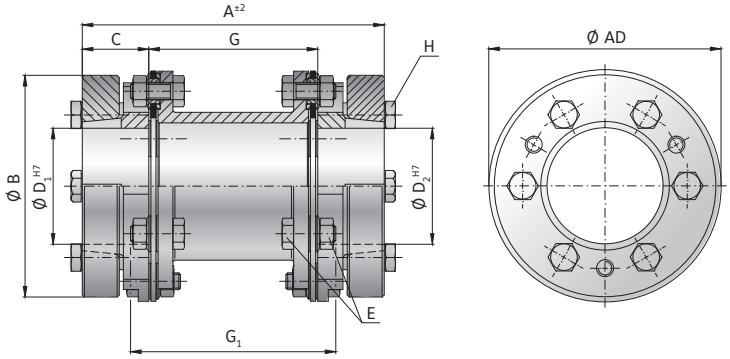
ARTIFICIAL INTELLIGENCE BY R+W

PROPERTIES

FEATURES
- high torsional stiffness
- customer specified length on request
- good for reversing loads

MATERIAL
- **disc packs:** highly elastic spring steel
- **hubs and spacer:** high strength steel

DESIGN
Two precision machined coupling hubs with conical clamping ring and spacer mounted to the disc packs by means of high strength screws and bushings for alignment and frictional clamping of the assembly.
From series 25,000 assembly screws/superbolts must be used.



MODEL LP3 | SIZE 300 – 2600

SIZE			300	500	700	1100	1600	2600
Rated torque*	(Nm)	T_{KN}	350	500	700	1,100	1,600	2,600
Maximum torque*	(Nm)	T_{KNmax}	700	1,000	1,400	2,200	3,200	5,200
Overall length	(mm)	A	151	151	182	188	248	261
Outside diameter	(mm)	Ø AD	99	109	128	133	150	168
Hub diameter	(mm)	Ø B	95	105	122	130	146	165
Hub fit length	(mm)	C	35.5	35.5	43.5	46	56	63.5
Bore diameter available from Ø to Ø H7	(mm)	$D_{1/2}$	24 - 50	24 - 55	30 - 65	30 - 65	35 - 70	35 - 85
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M8	M8	M10	M10	M12	M12
Tightening torque	(Nm)		35	40	65	95	150	165
Distance between hubs	(mm)	G	80	80	95	96	136	134
Assembly length	(mm)	G_1	100	100	121	118	170	166
Clamping screw	(ISO 4017)	H	6 x M8	6 x M8	6 x M10	6 x M10	6 x M12	6 x M12
Tightening torque	(Nm)		20	26	39	61	98	140
Moment of inertia**	(10^{-3}kgm²)	$J_{ges,}$	5	7	16	21	41	76
Weight**	(kg)		3.5	4.5	7.0	8.4	13.5	19.1
Torsional stiffness	(10^3Nm/rad)	C_T	60	80	130	150	210	290
Axial ±	(mm)	max. values	1	1	1.5	1.5	2	2
Lateral ±	(mm)		0.8	0.8	1	1	1.4	1.4
Angular ±	(degree)		1.4	1.4	1.4	1.4	1.4	1.4
Max. speed	(min^{-1})		5,800	5,300	4,500	4,300	3,800	
Max. speed (balanced)***	(min^{-1})		11,200	10,200	8,700	8,300	7,400	6,600

* maximum transmittable torque depends on the bore diameter | ** at maximum bore diameter | *** higher speeds on request

SIZE	Ø24	Ø26	Ø30	Ø35	Ø40	Ø45	Ø50	Ø55	Ø60	Ø70	Ø80	Ø90	Ø100	Ø110	Ø120	Ø130	Ø140	Ø160	Ø180
300	330	360	420	490	560	630	700												
500	430	470	540	640	730	820	910	1000											
700			650	760	870	980	1090	1200	1310										
1100			1020	1190	1370	1540	1710	1880	2050										
1600				1610	1840	2070	2300	2530	2760	3200									
2600				2300	2620	2950	3280	3610	3940	4600	5200								
4000							4000	4400	4800	5600	6400	7200	8000						
6000							5400	6000	6500	7600	8700	9800	10900	12000					
8000									8300	9700	11100	12500	13900	15300					
15000										12000	14000	15500	17500	19000	21000	22500	24500	28000	
25000													28000	30500	33500	36000	39000	44500	50000

Higher torque capacity possible with keyway or spline on request.

LP3

WITH CONICAL CLAMPING RING
4,000 - 50,000 Nm

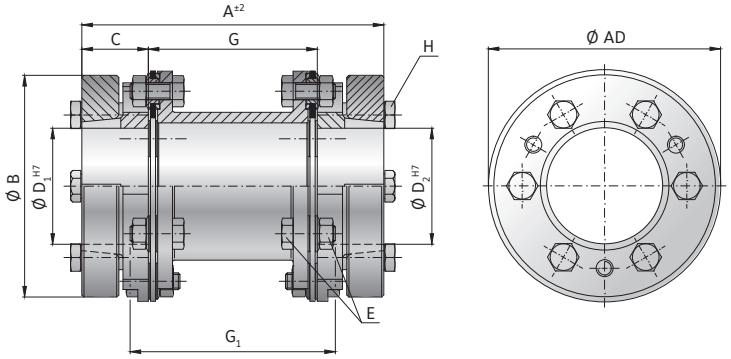
ARTIFICIAL INTELLIGENCE BY R+W

PROPERTIES

FEATURES
- high torsional stiffness
- customer specified length on request
- good for reversing loads

MATERIAL
- **disc packs:** highly elastic spring steel
- **hubs and spacer:** high strength steel

DESIGN
Two precision machined coupling hubs with conical clamping ring and spacer mounted to the disc packs by means of high strength screws and bushings for alignment and frictional clamping of the assembly.
From series 25,000 assembly screws/superbolts must be used.



MODEL LP3 | SIZE 4000 - 25000

SIZE			4000	6000	8000	15000	25000
Rated torque*	(Nm)	T_{KN}	4,000	6,000	8,000	15,000	25,000
Maximum torque*	(Nm)	T_{KNmax}	8,000	12,000	16,000	30,000	50,000
Overall length	(mm)	A	288	321	382	476	on request
Outside diameter	(mm)	Ø AD	198	212	238	299	372
Hub diameter	(mm)	Ø B	184	205	230	285	on request
Hub fit length	(mm)	C	74	80.5	105	123	124
Bore diameter available from Ø to Ø H7	(mm)	$D_{1/2}$	50 - 100	50 - 110	60 - 115	70 - 170	on request
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M16	M16	M20	M24	M36
Tightening torque	(Nm)		360	400	755	1,200	72
Distance between hubs	(mm)	G	140	160	172	230	on request
Assembly length	(mm)	G_1	178	198	226	295	on request
Clamping screw	(ISO 4017)	H	6 x M16	6 x M16	6 x M20	6 x M20	6 x M24
Tightening torque	(Nm)		225	308	490	620	,180
Moment of inertia**	(10^{-3}kgm²)	$J_{ges,}$	149	225	456	1,344	on request
Weight**	(kg)		27.9	34.9	57.7	99.9	on request
Torsional stiffness	(10^3Nm/rad)	C_T	470	570	800	1,400	2,960
Axial ±	(mm)	max. values	2.5	2.5	2.5	3	4
Lateral ±	(mm)		1.4	1.5	1.6	2.2	2.6
Angular ±	(degree)		1.4	1.4	1.4	1.4	1.4
Max. speed	(min^{-1})		2,900	2,700	2,400	1,900	1,500
Max. speed (balanced)***	(min^{-1})		5,600	5,200	4,700	3,700	3,000

* maximum transmittable torque depends on the bore diameter | ** at maximum bore diameter | *** higher speeds on request

ORDERING EXAMPLE	LP3	6000	321	50.8	75	XX
Model	●					Sonderanfertigungen (z.B. andere Gesamtlänge) on request möglich.
Size		●				
Overall length (mm)			●			
Bore diameter Ø D1 H7				●		
Bore diameter Ø D2 H7					●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. LP3 / 6000 / 321 / 50.8 / 75 / XX - F7 bore tolerance on D2)

LP5 WITH CLAMPING HUB; SINGLE OR DUAL FLEX

350 – 50,000 Nm

S = single flex design

NEW

PROPERTIES

FEATURES
- easy installation
- keyway optional
- compensates for axial and angular misalignment only

MATERIAL
- **disc pack:** highly elastic spring steel
- **hubs:** high strength steel

DESIGN

Two precision machined split clamping hubs mounted to the disc pack by means of high strength screws and bushings for alignment and frictional clamping of the assembly.

From series 25,000 assembly screws/superbolts must be used.

D = dual flex design

NEW

PROPERTIES

FEATURES
- easy installation
- keyway optional
- compensates for axial, angular and lateral misalignment

MATERIAL
- **disc packs:** highly elastic spring steel
- **hubs and spacer:** high strength steel

DESIGN

Two precision machined split clamping hubs and spacer plate mounted to the disc packs by means of high strength screws and bushings for alignment and frictional clamping of the assembly.

MODEL LP5 S|D | SIZE 300 – 2600

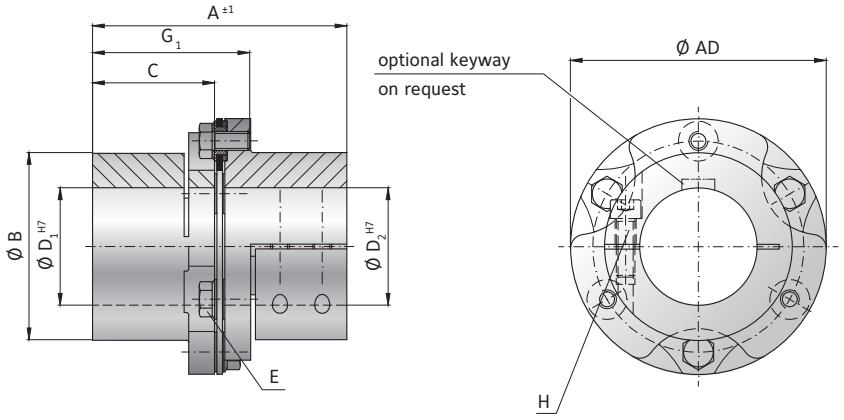
SIZE			300		500		700		1100		1600		2600	
Type			S	D	S	D	S	D	S	D	S	D	S	D
Rated torque*	(Nm)	T_{KN}	350		500		700		1,100		1,600		2,600	
Maximum torque*	(Nm)	T_{KNmax}	700		1,000		1,400		2,200		3,200		5,200	
Overall length	(mm)	A	on request		108	137	on request		on request		178	224	189	236
Outside diameter	(mm)	Ø AD	99		109		128		133		150		168	
Hub diameter	(mm)	Ø B	72		80		89		95		103		122	
Hub fit length	(mm)	C	43		52		on request		on request		85		90	
Bore diameter available from Ø to Ø H7	(mm)	$D_{1/2}$	18 - 48		23 - 50		25 - 58		25 - 60		28 - 64		31 - 75	
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M8		M8		M10		M10		M12		M12	
Tightening torque	(Nm)		35		40		65		95		150		165	
Distance between hubs	(mm)	G	–	33	–	33	–	44	–	48	–	54	–	56
Assembly length	(mm)	G_1	59	50.3	68	50.3	84	66.4	94	66.4	113	77.5	119	77.5
Clamping screw	(ISO 4762)	H	4 x M6		4 x M8		4 x M8		4 x M10		4 x M12		4 x M14	
Tightening torque	(Nm)		18		34		39		73		120		192	
Moment of inertia**	(10^{-3}kgm²)	$J_{ges.}$	2	3	4	5	8	11	11	15	20	27	38	50
Weight**	(kg)		1.8	2.5	2.8	3.7	4.3	6.0	5.5	7.4	8.4	10.6	12.0	15.1
Torsional stiffness	(10^3Nm/rad)	C_T	120	60	160	80	260	130	300	150	420	210	580	290
Axial ±	(mm)	max. values	0.5	1.0	0.6	1.0	0.7	1.5	0.8	1.5	1.0	2.0	1.1	2.0
Lateral ±	(mm)		–	0.2	–	0.2	–	0.3	–	0.3	–	0.4	–	0.4
Angular ±	(degree)		0.7	1.4	0.7	1.4	0.7	1.4	0.7	1.4	0.7	1.4	0.7	1.4
Max. speed	(min^{-1})		5,800		5,300		4,500		4,300		3,800		3,400	
Max. speed (balanced)***	(min^{-1})		11,200		10,200		8,700		8,300		7,400		6,600	

* maximum transmittable torque depends on the bore diameter | ** at maximum bore diameter | *** higher speeds on request

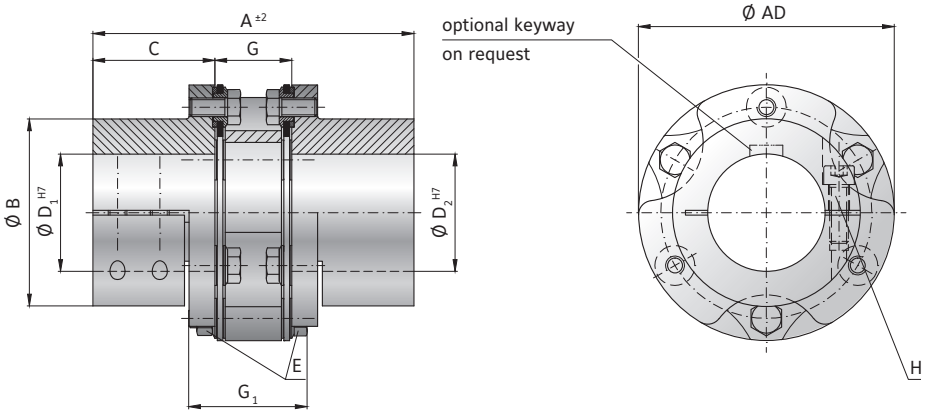
SIZE	Ø18	Ø20	Ø23	Ø25	Ø30	Ø35	Ø40	Ø45	Ø50	Ø55	Ø60	Ø70	Ø80	Ø90	Ø100	Ø120	Ø140	Ø150	Ø160
300	170	190	220	240	290	340	390	430											
500			310	330	400	470	530	600	650										
700				390	470	550	630	710	790	870									
1100				590	710	830	950	1070	1190	1300	1430								
1600					980	1150	1310	1470	1640	1800	1970								
2600						1580	1800	2030	2250	2480	2700	3160							
4000							2300	2600	2800	3100	3400	4000	4600	5200					
6000							3200	3600	4100	4500	4900	5700	6500	7300					
8000									5100	8600	6100	7100	8100	9200	10200				
15000												9000	10000	11500	13000	15500	18000	19500	
25000															19000	23000	26500	28500	30500

Higher torque capacity possible with keyway or spline on request.

S = single flex design



D = dual flex design



MODEL LP5 S|D | SIZE 4000 - 25000

SIZE			4000		6000		8000		15000		25000	
Type			S	D	S	D	S	D	S	D	S	D
Rated torque*	(Nm)	T_{KN}	4,000		6,000		8,000		15,000		25,000	
Maximum torque*	(Nm)	T_{KNmax}	8,000		12,000		16,000		30,000		50,000	
Overall length	(mm)	A	217	274	on request		on request		328	420	392	on request
Outside diameter	(mm)	Ø AD	198		212		238		299		372	
Hub diameter	(mm)	Ø B	137		151		168		220		on request	
Hub fit length	(mm)	C	102		on request		on request		155		183	
Bore diameter available from Ø to Ø H7	(mm)	$D_{1/2}$	38 - 90		39 - 95		50 - 102		70 - 150		on request	
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M16		M16		M20		M24		M36	
Tightening torque	(Nm)		360		400		755		1,200		72	
Distance between hubs	(mm)	G	–	70	–	78	–	97	–	110	–	on request
Assembly length	(mm)	G_1	140.8	100	151	110	174	132.5	212	155	on request	on request
Clamping screw	(ISO 4762)	H	4 x M14		4 x M16		4 x M20		8 x M20		8 x M24	
Tightening torque	(Nm)		246		395		615		680		1.200	
Moment of inertia**	(10^{-3}kgm²)	$J_{ges.}$	75	103	106	145	207	279	658	904	1.147	on request
Weight**	(kg)		17.3	22.5	21.9	28.4	33.8	43.4	61.2	80.3	on request	on request
Torsional stiffness	(10^3Nm/rad)	C_T	940	470	1,140	570	1,600	800	2,800	1,400	5,920	2,960
Axial ±	(mm)	max, values	1.3	2.5	1.3	2.5	1.3	2.5	1.5	3.0	1.5	4.0
Lateral ±	(mm)		–	0.5	–	0.5	–	0.6	–	0.7	–	0.8
Angular ±	(degree)		0.7	1.4	0.7	1.4	0.7	1.4	0.7	1.4	0.7	1.4
Max, speed	(min^{-1})		2,900		2,700		2,400		1,900		1,500	
Max, speed (balanced)***	(min^{-1})		5,600		5,200		4,700		3,700		3,000	

* maximum transmittable torque depends on the bore diameter | ** at maximum bore diameter | *** higher speeds on request

ORDERING EXAMPLE	LP5	700	S	133	25.4	40	XX
Model	●						Special designation only (e.g. special bore diameter tolerances, balancing, etc.). Contact R+W for more information.
Size		●					
Type (S or D)			●				
Overall length (mm)				●			
Bore diameter Ø D1 H7					●		
Bore diameter Ø D2 H7						●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. LP5 / 700 / S / 133 / 25.4 / 40 / XX - balanced to 10,000 rpm)

LPH

WITH FULLY SPLIT CLAMPING HUB

350 – 5,200 Nm

NEW

PROPERTIES

FEATURES

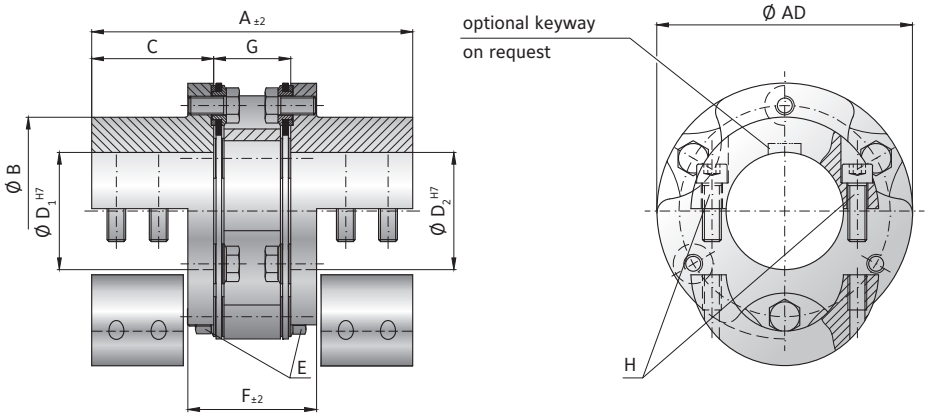
- lateral mounting between shafts
- easy installation and removal
- dual flex design

MATERIAL

- **disc packs:** highly elastic spring steel
- **hubs and spacer:** high strength steel

DESIGN

Two precision machined fully split clamping hubs and spacer plate mounted to the disc pack by means of high strength screws and bushings for alignment and frictional clamping of the assembly.
From series 25,000 assembly screws/superbolts must be used.



MODEL LPH D | SIZE 300 – 2600

SIZE			300	500	700	1100	1600	2600
Rated torque*	(Nm)	T_{KN}	350	500	700	1,100	1,600	2,600
Maximum torque*	(Nm)	T_{KNmax}	700	1,000	1,400	2,200	3,200	5,200
Overall length	(mm)	A	119	137	172	192	224	236
Outside diameter	(mm)	ø AD	99	109	128	133	150	168
Hub diameter	(mm)	ø B	72	80	89	95	100	116.5
Hub fit length	(mm)	C	43	52	64	72	85	90
Bore diameter available from Ø to Ø H7	(mm)	$D_{1/2}$	18 - 48	23 - 50	25 - 58	25 - 60	28 - 64	31 - 75
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M8	M8	M10	M10	M12	M12
Tightening torque	(Nm)		35	40	65	95	150	165
Length of center section	(mm)	F	58	58	74	80	96	98
Distance between hubs	(mm)	G	33	33	44	48	54	56
Clamping screw	(ISO 4762)	H	8 x M6	8 x M8	8 x M8	8 x M10	8 x M10	8 x M12
Tightening torque	(Nm)		16	28	34	63	86	143
Moment of inertia**	(10^{-3}kgm²)	$J_{ges.}$	3	5	11	15	26	48
Weight**	(kg)		2.5	3.7	6.0	7.4	10.3	14.6
Torsional stiffness	(10^3Nm/rad)	C_T	60	80	130	150	210	290
Axial ±	(mm)	max. values	1.0	1.0	1.5	1.5	2.0	2.0
Lateral ±	(mm)		0.2	0.2	0.3	0.3	0.4	0.4
Angular ±	(degree)		1.4	1.4	1.4	1.4	1.4	1.4
Max. speed	(min^{-1})		5,800	5,300	4,500	4,300	3,800	3,400
Max. speed (balanced)***	(min^{-1})		11,200	10,200	8,700	8,300	7,400	6,600

* maximum transmittable torque depends on the bore diameter | ** at maximum bore diameter | *** higher speeds on request

SIZE	Ø18	Ø20	Ø23	Ø25	Ø30	Ø35	Ø40	Ø45	Ø50	Ø55	Ø60	Ø70	Ø80	Ø90	Ø100	Ø120	Ø140	Ø150	Ø160
300	180	200	230	250	300	350	400	450											
500			300	330	400	460	525	590	650										
700				400	480	560	640	720	800	880									
1100				590	710	830	950	1070	1190	1310	1430								
1600					970	1140	1300	1460	1630	1790	1950								
2600						1580	1810	2040	2260	2490	2700	3150							
4000							2300	2600	2900	3200	3500	4000	4600	5200					
6000							3200	3700	4100	4500	4900	5700	6500	7400					
8000									5000	5600	6100	7100	8100	9100	10000				
15000												9000	10000	11500	13000	15500	18000	19500	
25000															19000	23000	26500	28500	30500

Higher torque capacity possible with keyway or spline on request.

LPH

WITH FULLY SPLIT CLAMPING HUB

4,000 - 50,000 Nm

NEW

PROPERTIES

FEATURES

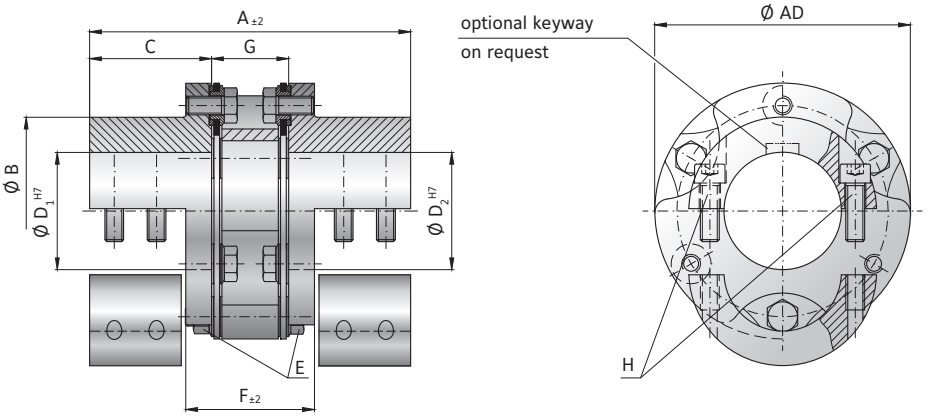
- lateral mounting between shafts
- easy installation and removal
- dual flex design

MATERIAL

- **disc packs:** highly elastic spring steel
- **hubs and spacer:** high strength steel

DESIGN

Two precision machined fully split clamping hubs and spacer plate mounted to the disc pack by means of high strength screws and bushings for alignment and frictional clamping of the assembly.
From series 25,000 assembly screws/superbolts must be used.



MODEL LPH D | SIZE 4000 - 25000

SIZE			4000	6000	8000	15000	25000
Rated torque*	(Nm)	T_{KN}	4,000	6,000	8,000	15,000	25,000
Maximum torque*	(Nm)	T_{KNmax}	8,000	12,000	16,000	30,000	50,000
Overall length	(mm)	A	274	302	349	420	on request
Outside diameter	(mm)	ø AD	198	212	238	299	372
Hub diameter	(mm)	ø B	137	149	168	220	on request
Hub fit length	(mm)	C	102	112	126	155	183
Bore diameter available from Ø to Ø H7	(mm)	$D_{1/2}$	38 - 90	39 - 95	50 - 102	70 - 150	on request
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M16	M16	M20	M24	M36
Tightening torque	(Nm)		360	400	755	1,000	72
Length of center section	(mm)	F	124	132	163	190	on request
Distance between hubs	(mm)	G	70	78	97	110	on request
Clamping screw	(ISO 4762)	H	8 x M14	8 x M16	8 x M20	8 x M20	8 x 24
Tightening torque	(Nm)		215	342	530	680	1,200
Moment of inertia**	(10^{-3}kgm²)	$J_{ges.}$	104	146	280	913	on request
Weight**	(kg)		22.7	28.5	43.4	80.9	on request
Torsional stiffness	(10^3Nm/rad)	C_T	470	570	800	1,400	2,960
Axial ±	(mm)	max. values	2.5	2.5	2.5	3.0	4,0
Lateral ±	(mm)		0.5	0.5	0.6	0.7	0,8
Angular ±	(degree)		1.4	1.4	1.4	1.4	1,4
Max, speed	(min^{-1})		2,900	2,700	2,400	1,900	1,500
Max, speed (balanced)***	(min^{-1})		5,600	5,200	4,700	3,700	3,000

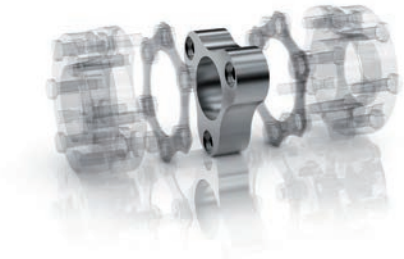
* maximum transmittable torque depends on the bore diameter | ** at maximum bore diameter | *** higher speeds on request

ORDERING EXAMPLE	LPH	700	D	172	25.4	40	XX
Model	●						Special designation only (e.g. special bore diameter tolerances, balancing, etc.). Contact R+W for more information.
Size		●					
Type (D)			●				
Overall length (mm)				●			
Bore diameter Ø D1 H7					●		
Bore diameter Ø D2 H7						●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. LPH / 700 / D / 172 / 25.4 / 40 / XX - balanced to 8,000 rpm)

LPZ

SPACER PLATE
350 – 5,200 Nm



NEW

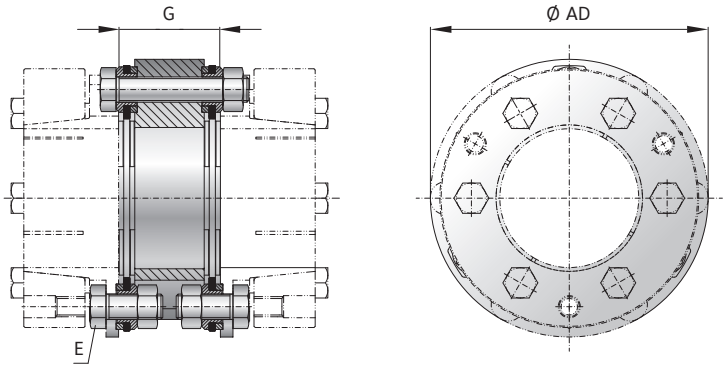
PROPERTIES

FEATURES
- high torsional stiffness
- dual flex design
- for combination of hub types

DESIGN
For use when combining various hub designs with two disc packs and spacer plate.

MATERIAL
- **spacer plate:** high strength steel

From series 25,000 assembly screws/superbolts must be used.



MODEL LPZ | SIZE 300 – 2600

SIZE			300	500	700	1100	1600	2600
Rated torque	(Nm)	T_{KN}	350	500	700	1,100	1,600	2,600
Maximum torque	(Nm)	T_{Kmax}	700	1,000	1,400	2,200	3,200	5,200
Distance between hubs	(mm)	G	33	33	44	48	54	56
Outside diameter	(mm)	ø AD	99	109	128	133	150	168
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M8	M8	M10	M10	M12	M12
Tightening torque	(Nm)		35	40	65	95	150	165
Moment of inertia	(10^{-3}kgm²)	$J_{ges.}$	0.7	1	2.6	3.2	5	9
Weight	(kg)		0.55	0.66	1.25	1.4	1.8	2.3
Torsional stiffness	(10^{3}Nm/rad)	C_T	60	80	130	150	210	290
Axial ±	(mm)	max. values	1	1	1.5	1.5	2	2
Lateral ±	(mm)		0.2	0.2	0.3	0.3	0.4	0.4
Angular ±	(degree)		1.4	1.4	1.4	1.4	1.4	1.4
Max. speed	($min.^{-1}$)		5,800	5,300	4,500	4,300	3,800	3,400
Max. speed (balanced)***	($min.^{-1}$)		11,200	10,200	8,700	8,300	7,400	6,600

*** higher speeds on request

ORDERING EXAMPLE	LPZ	500	XX
Model	●		Special designation only (e.g. balancing, materials, etc.). Contact R+W for more information.
Size		●	
For custom features place an XX at the end of the part number and describe the special requirements (e.g. LPZ / 500 / XX - balanced to 10,000 rpm)			

LPZ

SPACER PLATE
4,000 - 50,000 Nm

NEW

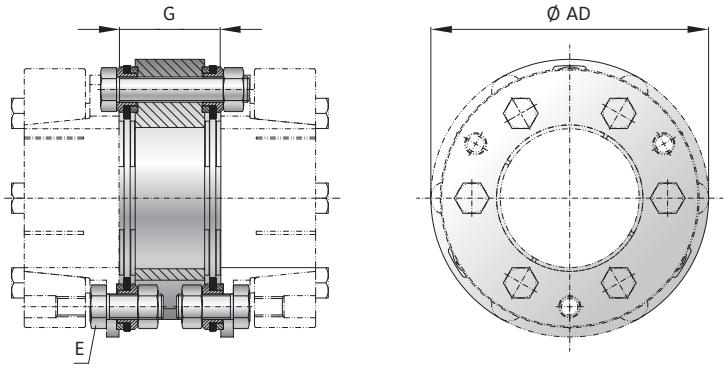
PROPERTIES

FEATURES
- high torsional stiffness
- dual flex design
- for combination of hub types

DESIGN
For use when combining various hub designs with two disc packs and spacer plate.

MATERIAL
- **spacer plate:** high strength steel

From series 25,000 assembly screws/superbolts must be used.



MODEL LPZ | SIZE 4000 - 25000

SIZE			4000	6000	8000	15000	25000
Rated torque	(Nm)	T_{KN}	4,000	6,000	8,000	15,000	25,000
Maximum torque	(Nm)	T_{Kmax}	8,000	12,000	16,000	30,000	50,000
Distance between hubs	(mm)	G	70	78	97	110	on request
Outside diameter	(mm)	ø AD	198	212	238	299	372
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M16	M16	M20	M24	M36
Tightening torque	(Nm)		360	400	755	1,200	72
Moment of inertia	(10^{-3}kgm²)	$J_{ges.}$	18	27	54	164	on request
Weight	(kg)		3.7	4.8	7.5	14	on request
Torsional stiffness	(10^3Nm/rad)	C_T	470	570	800	1,400	2,960
Axial ±	(mm)	max. values	2.5	2.5	2.5	3	4
Lateral ±	(mm)		0.5	0.5	0.6	0.7	0.8
Angular ±	(degree)		1.4	1.4	1.4	1.4	1.4
Max. speed	(min.$^{-1}$)		2,900	2,700	2,400	1,900	1,500
Max. speed (balanced)***	(min.$^{-1}$)		5,600	5,200	4,700	3,700	3,000

*** higher speeds on request

ORDERING EXAMPLE	LPZ	6000	XX
Model	●		Special designation only (e.g. balancing, materials, etc.). Contact R+W for more information.
Size		●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. LPZ / 6000 / XX - balanced to 5,000 rpm)

LPA

WITH KEYWAY MOUNTING
500 – 24,000 Nm

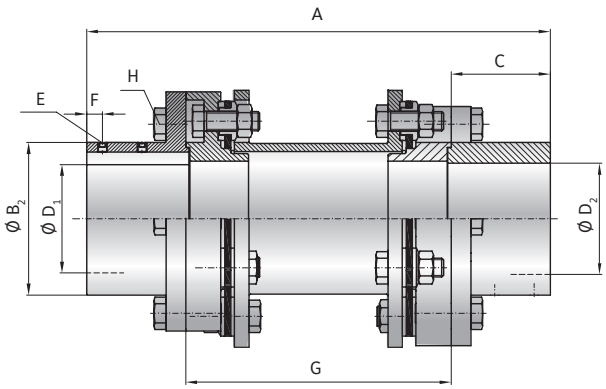
API 610 – METRIC
(API 671 OPTIONAL)

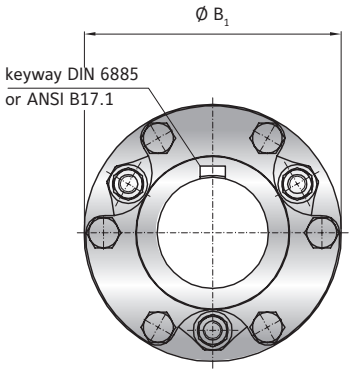
PROPERTIES

FEATURES
- lateral installation and removal without disturbing shaft hubs
- flail safe in case of disc pack rupture
- standard balance quality of AGMA Class 9

MATERIAL
- **disc packs:** highly elastic spring steel
- **hubs and spacer:** high strength steel

DESIGN
Two precision machined coupling hubs mounted to the disc pack spacer with connection of the disc packs by means of high strength screws and bushings for alignment and frictional clamping of the assembly. Axial retention of the hubs on the shaft with DIN 916 set screws.





MODEL LPA | SIZE 500 – 12000

SIZE			500	800	2500	5000	8000	12000
Power rating	(kW/100 rpm)	P_{KN}	5	8	26.2	52	84	126
Rated torque	(Nm)	T_{KN}	500	800	2,500	5,000	8,000	12,000
Maximum torque	(Nm)	T_{Kmax}	1,000	1,600	5,000	10,000	16,000	24,000
Overall length	(mm)	A	190 – 230	250 – 290	332 – 402	360 – 430	450	500
Outside diameter	(mm)	B_1	116	142	190	231	298	324
Hub diameter	(mm)	B_2	71	84	102	130	160	192
Hub fit length	(mm)	C	45	55	75	90	100	125
Bore diameter available from Ø to Ø H7	(mm)	$D_{1/2}$	23 – 50	25 – 60	31 – 75	39 – 95	50 – 115	70 – 140
Set screw (DIN 916)		E	2 × M6	2 × M6	2 × M8	2 × M10	2 × M10	2 × M12
Screw location	(mm)	F	7	10	14	15	15	20
Spacer length	(mm)	G	100 – 140	140 – 180	180 – 250	180 – 250	250	250
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	H	M8	M10	M16	M20	M24	M24
Tightening torque	(Nm)		41	83	355	690	1,200	1,200
Moment of inertia**	(10^{-3}kgm²)		8 – 8.4	21.8 – 22.3	85.8 – 88.4	248 – 256	901	1,350
Material			steel	steel	steel	steel	steel	steel
Weight**	(kg)		5 – 5.4	9.2 – 9.6	20.8 – 22	39 – 41	83	105
Axial ±	(mm)		0.75	1	1.3	1.5	1.7	2
Lateral ±	(mm)		0.7 – 1.1	1 – 1.5	1.3 – 2	1.1 – 1.9	1.5	1.5
Angular ±	(degree)		1°	1°	1°	1°	1°	1°
Max. speed	(1/min.)		7,600	6,400	5,300	3,900	3,100	2,500
Max. speed (balanced)	(1/min.)		18,800	15,100	12,800	9,800	8,100	6,200

** at maximum bore diameter

ORDERING EXAMPLE	LPA	800	250	41.28	38	XX
Model	●					Special designation only (e.g. special bore diameter tolerances, balancing, etc.). Contact R+W for more information.
Size		●				
Overall length (mm)			●			
Bore diameter Ø D1 H7				●		
Bore diameter Ø D2 H7					●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. LPA / 800 / 250 / 41.28 / 38 / XX – balanced to 15,000 rpm)

LPAI

WITH KEYWAY MOUNTING
500 – 24,000 Nm

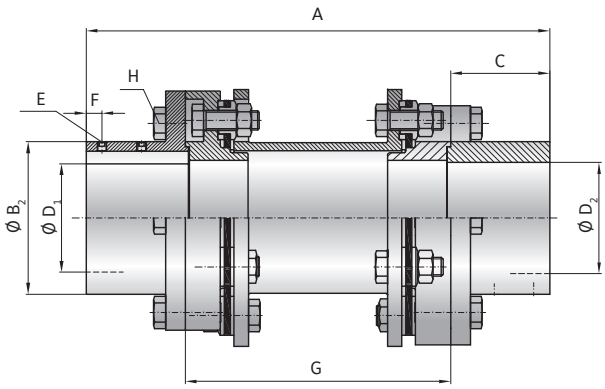
API 610 – IMPERIAL (API 671 OPTIONAL)

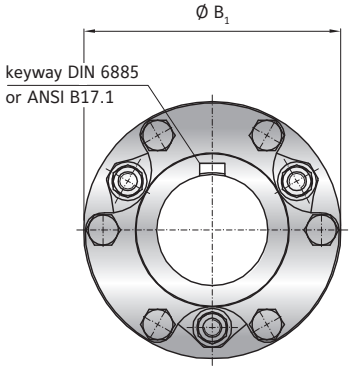
PROPERTIES

FEATURES
- lateral installation and removal without disturbing shaft hubs
- flail safe in case of disc pack rupture
- standard balance quality of AGMA Class 9

MATERIAL
- **disc packs:** highly elastic spring steel
- **hubs and spacer:** high strength steel

DESIGN
Two precision machined coupling hubs mounted to the disc pack spacer with connection of the disc packs by means of high strength screws and bushings for alignment and frictional clamping of the assembly. Axial retention of the hubs on the shaft with DIN 916 set screws.





MODEL LPAI | SIZE 500 – 12000

SIZE			500		800		2500		5000		8000	12000
Power rating	(kW/100 rpm)	P_{KN}	5		8		26.2		52		84	126
Rated torque	(Nm)	T_{KN}	500		800		2,500		5,000		8,000	12,000
Maximum torque	(Nm)	T_{Kmax}	1,000		1,600		5,000		10,000		16,000	24,000
Overall length	(mm)	A	217	268	237	288	330	381	358	409	429	479
Outside diameter	(mm)	B_1	116		142		190		231		298	324
Hub diameter	(mm)	B_2	71		84		102		130		160	192
Hub fit length	(mm)	C	45		55		75		90		100	125
Bore diameter available from Ø to Ø H7	(mm)	$D_{1/2}$	23 – 50		25 – 60		31 – 75		39 – 95		50 – 115	70 – 140
Set screw (DIN 916)		E	2 × 1/4"-20		2 × 1/4"-20		2 × 5/16"-18		2 × 3/8"-16		2 × 1/2"-13	2 × 1/2"-13
Screw location	(mm)	F	7		10		14		15		15	20
Spacer length	(mm)	G	127/5"	178/7"	127/5"	178/7"	178/7"	229/9"	178/7"	229/9"	229/9"	229/9"
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	H	5/16"-18		3/8"-16		5/8"-11		3/4"-10		1"-8	1"-8
Tightening torque	(Nm)		38		68		320		595		1,100	1,100
Moment of inertia**	(10^{-3}kgm²)		8.3	8.8	21	22.3	85	87	248	254	890	1,344
Material			steel		steel		steel		steel		steel	steel
Weight**	(kg)		5.3	5.7	9.1	9.6	20.8	21.6	38.9	40	82.3	104
Axial ±	(mm)		0.75		1		1.3		1.5		1.7	2
Lateral ±	(mm)		1	1.5	0.9	1.4	1.3	1.8	1.1	1.6	1.3	1.3
Angular ±	(degree)		1°		1°		1°		1°		1°	1°
Max. speed	(1/min.)		7,600		6,400		5,300		3,900		3,100	2,500
Max. speed (balanced)***	(1/min.)		18,800		15,100		12,800		9,800		8,100	6,200

** at maximum bore diameter | *** higher speeds on request

ORDERING EXAMPLE	LPAI	800	237	25.4	50.8	XX
Model	●					Special designation only (e.g. special bore diameter tolerances, balancing, etc.). Contact R+W for more information.
Size		●				
Overall length (mm)			●			
Bore diameter Ø D1 H7				●		
Bore diameter Ø D2 H7					●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. LPA / 800 / 237 / 25.4 / 50.8 / XX – balanced to 15,000 rpm)

LPA LPAI

API 610 / API 671
MORE INFORMATION

DEFINITION OF TERMS / GENERAL INFORMATION

- API is the American Petroleum Institute
- API 610 and 671 seek to harmonize the technical requirements of pump and compressor systems in the American oil and gas industry, and are used worldwide
- Couplings built in accordance with API 671 must meet stricter requirements than API 610

REQUIREMENTS FOR COUPLINGS

API 610

- Design according to service factor of at least 1.0 (unless otherwise specified)
- Anti-flail safety required to prevent the spacer from being thrown in the event of disc pack rupture
- Spacer length of at least 5"
- Balance requirements vary by speed (contact R+W)

API 671

- Design according to service factor of at least 1.5 (unless otherwise specified)
- Anti-flail safety required to prevent the spacer from being thrown in the event of disc pack rupture
- Match-weighed screws with documentation for future replacement
- Balance requirements vary by speed (contact R+W)

INFORMATION REQUIRED FOR DESIGN

- Drive power or nominal / peak application torque
- Rotational speed
- Bore diameters
- Keyway standards or sizes
- Distance between shaft ends (DBSE)
- Ambient temperature
- Balance grade (if different from AGMA Class 9)

Special designs are available on request!

LPA LPAI

APPLICATION FORM
API 610 / REQUEST SHEET API 610

SAMPLE DESIGN LPA 2500 API 610

Customer	Order number	Quote number	Drawing number

Characteristic	Unit	Value
Drive power	KW	300
Speed	1/min	1900
Torque	Nm	1508
Service factor		1.66
Rated torque	Nm	2500
Distance between shaft ends	mm	260
Ambient temperature	°C	40

Dynamic balancing		
Balance quality		G 6.3
Procedure		
Component balance		

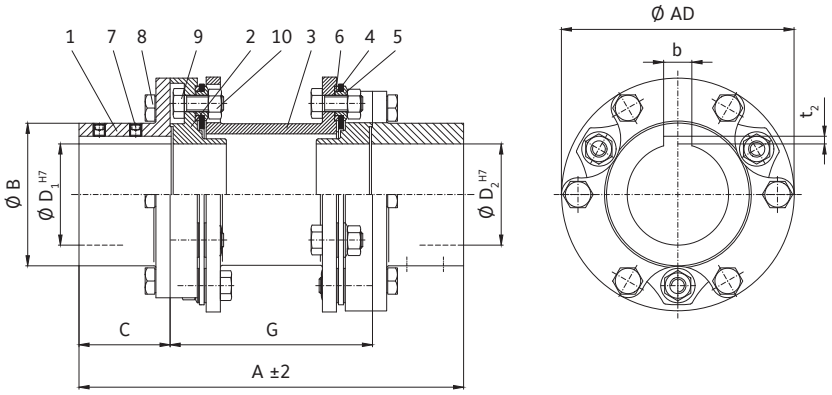
Balance grade AGMA Class 9

Coupling qualifies for operating conditions

Coupling Type / Size / Overall length (mm)

LPA / 2500 / 402

Characteristic	Unit	Value
Rated torque	Nm	2500
Maximum torque	Nm	5000
Moment of inertia	10^{-3}kgm²	88.4
Approximate weight	kg	22
Max. axial misalignment	mm	1.3
Max. angular misalignment	degree	1
Max. lateral misalignment	mm	2
Max. allowable speed	1/min.	12800
Overall length A	mm	402
Outside diameter AD	mm	190
Hub diameter B	mm	102
Hub fit length C	mm	75
Spacer length G	mm	250



Driving side					
Hub	mm	Tol.	keyw.	mm	Tol.
D_1	65	H7	b	18	JS9
Style	Cylindrical		t_2	4.4	

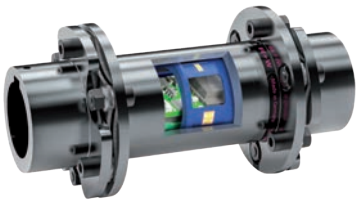
Driven side					
Hub	mm	Tol.	keyw.	mm	Tol.
D_2	65	H7	b	18	JS9
Style	Cylindrical		t_2	4.4	

Keyway
DIN 6885-1

Item	Quantity	Description	Standard	Part designation	Material
1	2	Keyway hub	–	820124	16MnCr5 (1.7131)
2	2	Guard ring	–	820254	16MnCr5 (1.7131)
3	1	Spacer	–	820321	16MnCr5 (1.7131)
4	12	Flexible disc	–	820008	X12CrNi17 7 (1.4310)
5	12	Sleeve	–	820508	42CrMo4+QT
6	12	Bushing	–	820408	42CrMo4+QT
7	4	Set screw	ISO 4029	M8	–
8	12	Assembly screw	ISO 4017	M16x35 - 12.9	–
9	12	Assembly screw	ISO 4017	M16x40 - 12.9	–
10	12	Tensioning nut	ISO 4032	M16 -12	–
Surface protection: oiled					

iLP

INTELLIGENT COUPLING WITH INTEGRAL SENSOR TECHNOLOGY 350 – 50,000 Nm



ARTIFICIAL INTELLIGENCE BY R+W

NEW

PROPERTIES

FEATURES

- recording of various performance characteristics
- measurement accuracy within <1% (torque)
- amplifier on board
- evaluation directly on integral chip
- wireless transmission directly to mobile device or PC (with gateway)
- data export in CSV

MEASUREMENTS TAKEN

- speed
- torque
- vibration
- optional axial force

DESIGN

- spacer with integral sensor technology
- coupling properties remain unchanged (see previous pages)
- custom configurations on request

SPECIFICATIONS

- Bluetooth Low Energy
- magnetic charging port
- sampling rate of 500 Hz
- transmission rate of up to 500 Hz
- speed up to 3000 rpm

POWER SUPPLY

Battery power

- no wiring necessary
- easy installation
- for use with mobile app

Inductive power

- for fixed installations
- continuous and uninterrupted measurement (24/7 operation)

COUPLING MODELS AVAILABLE WITH SENSOR UNIT

LP2

- with keyway mounting
- positive drive connection
- easy installation

LP3

- with conical clamping ring hubs
- frictional shaft connection
- zero backlash torque transmission in reversing applications

LP5

- with clamping hubs
- frictional shaft connection
- zero backlash torque transmission in reversing applications
- easy installation

LPH

- with fully split clamping hubs
- frictional shaft connection
- zero backlash torque transmission in reversing applications
- lateral mounting

SPECIAL OPTIONS

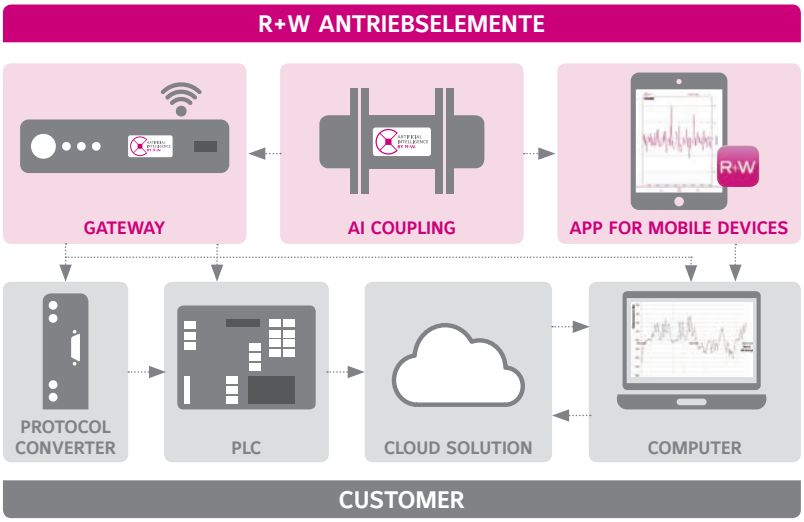
- e.g. with flange connections
- or fully customized

iLP INTELLIGENT COUPLING WITH INTEGRAL SENSOR TECHNOLOGY 350 – 50,000 Nm

DATA COLLECTION

GATEWAY

- connection to PC via USB port
- PLC or cloud solutions via 8 analog outputs (-10 to 10 V)
- 4 digital outputs for programmable status updates
- SMA connector for external antennas



R+W APP

- display of all measurement variables
- min / max and average values
- tare function
- various chart types
- detailed measurement curves
- intuitive gesture control
- retains data for further analysis
- export in CSV format

Requirements:
- Android tablet or smartphone
- version 6.0 or higher
- minimum 30 MB free space
- Bluetooth 4.0 or higher

LP OPTIONS / SPECIAL SOLUTIONS / HIGHER TORQUES

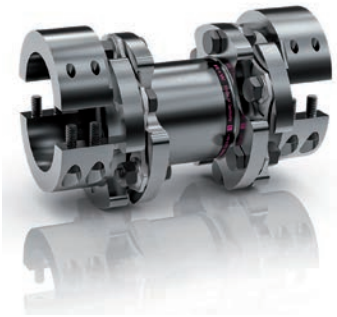
TORSIONALLY STIFF DISC PACK COUPLINGS – FURTHER INFORMATION

ARTIFICIAL INTELLIGENCE BY R+W

WITH CLAMPING HUB

- easy installation
- zero backlash torque transmission
- customer specified length available
- dual flex design
- keyway optional on request

ARTIFICIAL INTELLIGENCE BY R+W



WITH FULLY SPLIT CLAMPING HUB

- easy installation and removal
- zero backlash torque transmission
- customer specified length available
- dual flex design
- keyway optional on request

WITH CONICAL CLAMPING RING HUB AND FLANGE MOUNTING FOR CONNECTION TO TORQUE TRANSDUCERS

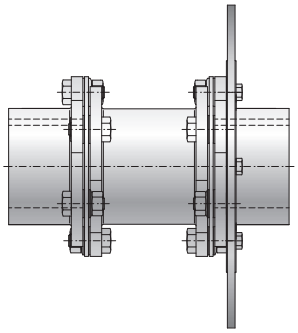
- high torsional stiffness
- high clamping pressure
- zero backlash torque transmission

WITH INTEGRAL COOLANT DELIVERY PIPE

- spacer: carbon fiber, aluminum or steel
- for high speeds
- customer specified length available
- dual flex design

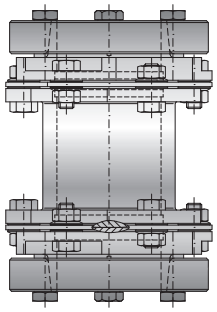
LP OPTIONS / SPECIAL SOLUTIONS / HIGHER TORQUES

TORSIONALLY STIFF DISC PACK COUPLINGS – FURTHER INFORMATION



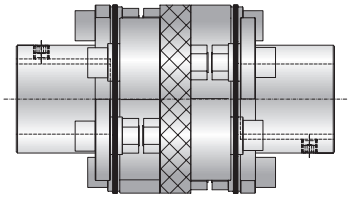
WITH BRAKE DISC

- brake disc according to customer requirements
- single or dual flex
- with keyway mounting, conical clamping rings, clamping hubs, fully split clamping hubs or flange mounting



WITH VERTICAL SUPPORT

- for vertical installations
- with keyway mounting, conical clamping rings, clamping hubs, fully split clamping hubs or flange mounting



WITH ELECTRICAL ISOLATING

- single or dual flex
- with keyway mounting, conical clamping rings, clamping hubs, fully split clamping hubs or flange mounting

HIGHER TORQUES ON REQUEST

BZ

CROWNED GEAR COUPLINGS
1,900 – 2,080,000 Nm

GENERAL INFORMATION ABOUT **R+W CROWNED GEAR COUPLINGS:**

FIT CLEARANCE

Overall shaft / hub clearance of 0.01 - 0.05 mm

TEMPERATURE RANGE

-30 to +100° C; higher temperatures on request

BZ

CROWNED GEAR COUPLINGS
1,900 – 2,080,000 Nm

MODEL | FEATURES

BZ1

with keyway mounting or cylindrical bore for interference fit from 1,900 - 2,080,000 Nm

- high power density
- very low backlash
- economically priced
- low maintenance due to special crowned tooth design

Page 96 - 97

BZA

with keyway mounting or cylindrical bore for interference fit from 1,900 - 2,080,000 Nm

- for spanning larger shaft distances
- high power density
- very low backlash
- low maintenance due to special crowned tooth design

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BZ

Options / Special Solutions

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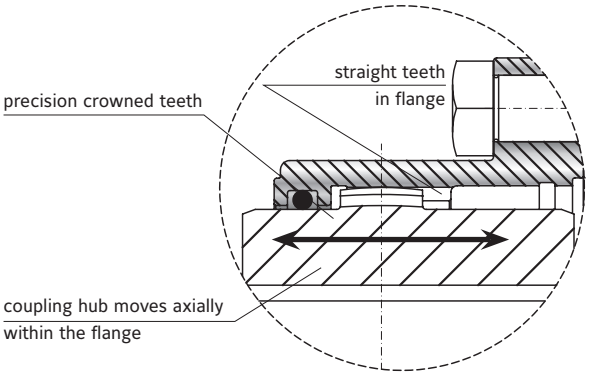
GENERAL INFORMATION
CROWNED GEAR COUPLINGS

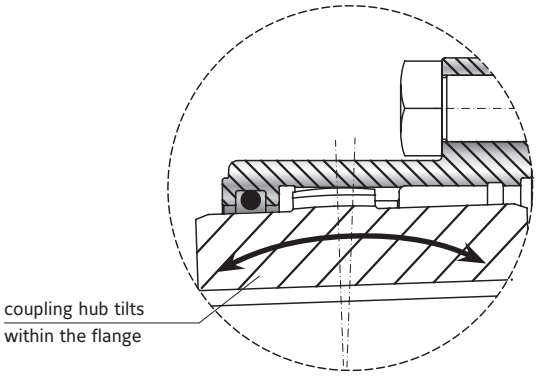
FUNCTION OF THE GEAR COUPLING

The precise integration of the coupling hub and intermediate flange allow for low backlash and highly rigid torque transmission, while compensating for lateral, axial and angular shaft misalignment. The crowned geometry of the gearing allows for a long life, even without the presence of misalignment.

Axial misalignment



Angular and lateral misalignment



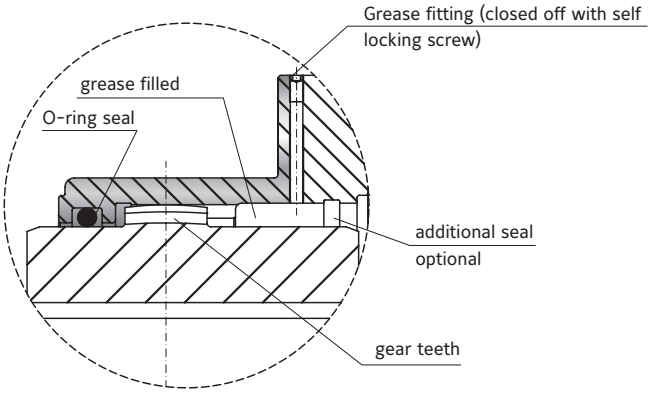
APPROVED LUBRICANTS

▶ **Note:** Proper lubrication is very important to the service life of the coupling. An optional additional seal may be included in order to extend lubrication intervals.

High performance grease is recommended.

Normal speed and loads		High speed and loads	
Castrol	Impervia MDX	Caltex	Coupling Grease
Esso	Fibrax 370	Klüber	Klüberplex GE 11-680
Klüber	Klüberplex GE 11-680	Mobil	Mobilgrease XTC
Mobil	Mobilux EPO	Shell	Albida GC1
Shell	Alvania grease EP R-O or ER 1	Texaco	Coupling Grease
Total	Specis EPG		

MAINTENANCE AND LUBRICATION



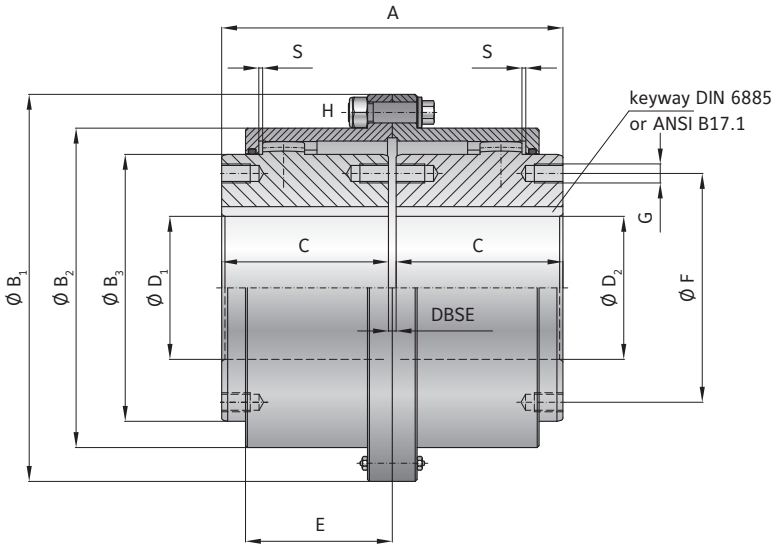
BZ1

WITH KEYWAY MOUNTING
1,900 - 480,000 Nm

PROPERTIES

MATERIAL
Coupling from high strength steel

DESIGN
Hubs with keyway mounting or high precision cylindrical bore for interference fitting.
Optional DIN 916 set screw for locking down onto shaft key.
Size 450 and up with axial threads in hubs.



MODEL BZ1 | SIZE 10 - 2000

SIZE			10	25	50	100	150	200	300	450	600	800	1500	2000
Rated torque	(kNm)	T_{KN}	1.9	2.9	5.7	9	14.5	22	34	45	70	85	150	200
Max. torque	(kNm)	T_{Kmax}	4.2	6.8	14	21.5	35	54	83	110	170	205	360	480
Installed length	(mm)	A	89	103	127	157	185	216	246	278	308	358	388	450
Outside diameter	(mm)	B_1	111	142	168	200	225	265	300	330	370	406	438	505
Flange diameter	(mm)	B_2	82.5	104.6	130.5	158.4	183.4	211.5	245.5	275.5	307	335	367	423
Hub diameter	(mm)	B_3	68	86	105	132	151	179	209.5	234	255	280	306	356
Hub fit length	(mm)	C	43	50	62	76	90	105	120	135	150	175	190	220
Max bore diameter H7 with 1 / 2 keyways*	(mm)	$D_{1/2}$	48 / 52	62 / 62	72 / 78	90 / 98	105 / 112	122 / 132	144 / 156	160 / 174	175 / 190	192 / 210	210 / 233	245 / 280
Bore diameters from ø to ø H7 with interference fit	(mm)	$D_{1/2}$	12-52	18-62	30-78	32-98	42-112	45-132	50-156	60-174	70-190	90-210	110-233	120-280
Distance between shaft ends	(mm)	DBSE	3	3	3	5	5	6	8	8	8	8	8	10
Hub length	(mm)	E	39	46	59	78.5	92.5	108	123	139	154	179	194	225
Hole circle diameter	(mm)	ØF	61	73	91	115	132	154	180	204	220	240	268	316
Thread size		G	M5	M6	M8	M10	M12	M12	M16	M16	M20	M20	M24	M24
Bolt		H	M8	M10	M10	M12	M12	M16	M16	M16	M18	M22	M22	M24
Tightening torque	(Nm)		18	36	36	65	65	150	150	150	220	400	400	520
Moment of inertia at Dmax	(10^{-3}kgm²)		3.9	11.6	28.7	70.6	135.3	326.7	605.6	1021	1745.5	2963	4147.2	7982
Weight at Dmax	(kg)		2.5	4.8	8.4	14.2	21.4	36.0	51.5	71	99	144	165	234.5
Max speed	(1/min)		6000	4550	4000	3900	3700	3550	3000	2750	2420	2270	1950	1730
Axial misalignment	(mm)	S	1.5	1.5	1.5	2.5	2.5	3	4	4	4	4	4	5
Angular misalignment	(Degree)		2×0.35	2×0.35	2×0.35	2×0.35	2×0.35	2×0.35	2×0.35	2×0.35	2×0.35	2×0.35	2× 0.35	2× 0.35

* Larger maximum bore possible with 2 keyways, due to increased stress distribution versus wall thickness.

ORDERING EXAMPLE	BZ1	50	60	50	XX
Model	●				Special designation only (e.g. special bore tolerance).
Size		●			
Bore Ø D1 H7			●		
Bore Ø D2 H7				●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. BZ1 / 50 / 60 / 50 / XX)

BZ1

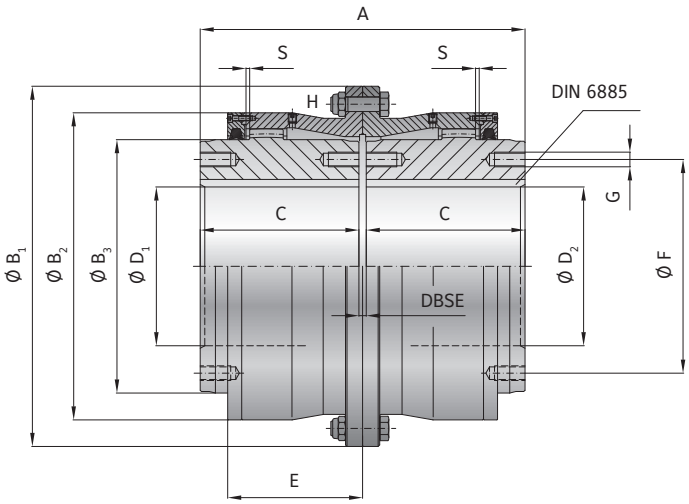
WITH KEYWAY MOUNTING
290,000 – 2,080,000 Nm

NEW

PROPERTIES

MATERIAL
Coupling from high strength steel

DESIGN
Hubs with keyway mounting or high precision cylindrical bore for interference fitting.
Optional DIN 916 set screw for locking down onto shaft key.



MODEL BZ1 | SIZE 3000 – 10000

SIZE			3000	4000	5000	7000	8000	10000
Rated torque	(kNm)	T_{KN}	290	402	518	693	882	1040
Max. torque	(kNm)	T_{Kmax}	580	804	1036	1386	1764	2080
Installed length	(mm)	A	532	592	652	712	772	820
Outside diameter	(mm)	B_1	590	639	702	769	834	894
Flange diameter	(mm)	B_2	503	553	597	657	722	763
Hub diameter	(mm)	B_3	415	464	490	545	620	660
Hub fit length	(mm)	C	260	290	320	350	380	400
Bore diameter H7	(mm)	$D_{1/2}$	160-325	180-370	200-400	200-430	230-475	250-510
Bore diameters from ø to ø H7 with interference fit	(mm)	$D_{1/2}$	160-325	180-370	200-400	200-430	230-475	250-510
Distance between shaft ends	(mm)	DBSE	12	12	12	12	12	20
Hub length	(mm)	E	221	245.5	262	280	292	315
Hole circle diameter	(mm)	ØF	350	400	430	490	560	580
Thread size		G	M24	M24	M30	M30	M24	M36
Bolt		H	M24	M24	M30	M30	M30	M36
Tightening torque	(Nm)		670	670	1250	1250	1250	2170
Moment of inertia at Dmax	(10^{-3}kgm^2)		18781	28323	44986	71329	113616	150801
Weight at Dmax	(kg)		406	503	670	904	1201	1403
Max speed	(1/min)		1100	990	890	785	700	645
Axial misalignment	(mm)	S	6	6	6	6	6	10
Angular misalignment	(Degree)		2×0.35	2×0.35	2×0.35	2×0.35	2×0.35	2×0.35

ORDERING EXAMPLE	BZ1	5000	210	390	XX
Model	●				Special designation only (e.g. special bore tolerance).
Size		●			
Bore Ø D1 H7			●		
Bore Ø D2 H7				●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. BZ1 / 5000 / 210 / 390 / XX)

BZA

WITH KEYWAY MOUNTING

1,900 – 480,000 Nm

NEW

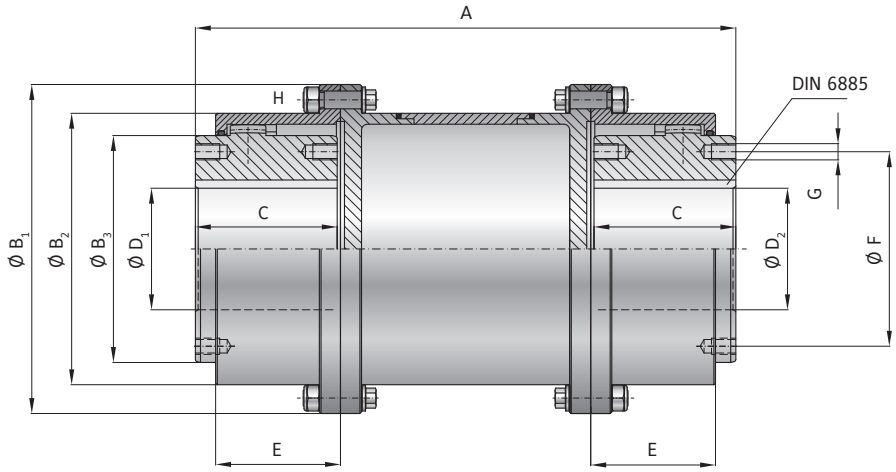
PROPERTIES

MATERIAL

▶ Coupling from high strength steel

DESIGN

Hub with keyway connection or cylindrical bore for shink disc.
Optional set screw for keyway DIN 916.
Customer specified intermediate length also available.



MODEL BZA | SIZE 10 - 2000

SIZE			10	25	50	100	150	200	300	450	600	800	1500	2000
Rated torque	(kNm)	T_{KN}	1.9	2.9	5.7	9	14.5	22	34	45	70	85	150	200
Max. torque	(kNm)	T_{Kmax}	4.2	6.8	14	21.5	35	54	83	110	170	205	360	480
Installed length	(mm)	A	89	103	127	157	185	216	246	278	308	358	388	450
Outside diameter	(mm)	B_1	111	142	168	200	225	265	300	330	370	406	438	505
Flange diameter	(mm)	B_2	82.5	104.6	130.5	158.4	183.4	211.5	245.5	275.5	307	335	367	423
Hub diameter	(mm)	B_3	68	86	105	132	151	179	209.5	234	255	280	306	356
Hub fit length		C	43	50	62	76	90	105	120	135	150	175	190	220
Max bore diameter H7 with 1 / 2 keyways*	(mm)	$D_{1/2}$	48 / 52	62 / 62	72 / 78	90 / 98	105 / 112	122 / 132	144 / 156	160 / 174	175 / 190	192 / 210	210 / 233	245 / 280
Bore diameters from ø to ø H7 with interference fit	(mm)	$D_{1/2}$	12-52	18-62	30-78	32-98	42-112	45-132	50-156	60-174	70-190	90-210	110-233	120-280
Hub length	(mm)	E	39	46	59	78.5	92.5	108	123	139	154	179	194	225
Hole circle diameter	(mm)	F	61	73	91	115	132	154	180	204	220	240	268	316
Thread size		G	M5	M6	M8	M10	M12	M12	M16	M16	M20	M20	M24	M24
Bolt		H	M8	M10	M10	M12	M12	M16	M16	M16	M18	M22	M22	M24
Tightening torque	(Nm)		18	36	36	65	65	150	150	150	220	400	400	520
Axial misalignment	(mm)	S	1.5	1.5	1.5	2.5	2.5	3	4	4	4	4	4	5
Angular misalignment	(Degree)		2×0.35	2×0.35	2×0.35	2×0.35	2×0.35	2×0.35	2×0.35	2×0.35	2×0.35	2×0.35	2× 0.35	2× 0.35

* Larger maximum bore possible with 2 keyways, due to increased stress distribution versus wall thickness.

ORDERING EXAMPLE	BZA	50	1200	60	50	XX
Model	●					Special designation only (e.g. special bore tolerance).
Size		●				
Overall length mm			●			
Bore Ø D1 H7				●		
Bore Ø D2 H7					●	
For custom features place an XX at the end of the part number and describe the special requirements (e.g. BZA / 50 / 1200 / 60 / 50 / XX)						

BZA

WITH KEYWAY MOUNTING

290,000 – 2,080,000 Nm

NEW

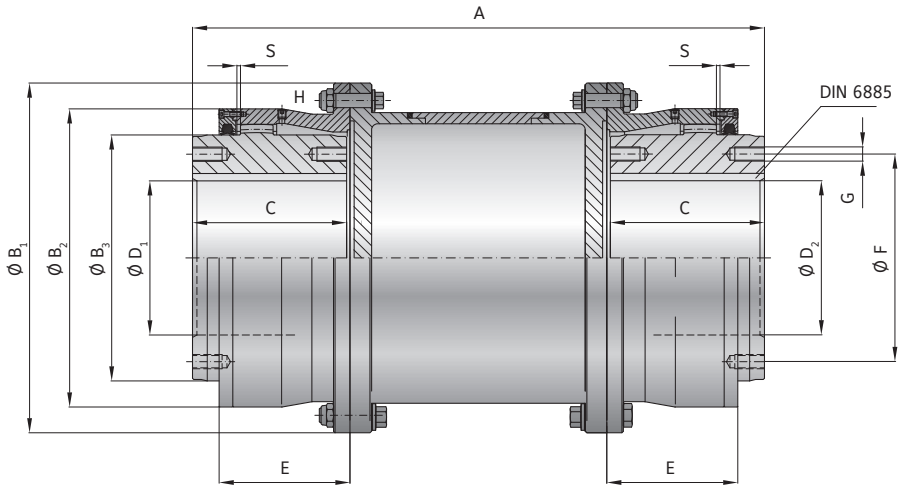
PROPERTIES

MATERIAL

▶ Coupling from high strength steel

DESIGN

Hub with keyway connection or cylindrical bore for shink disc. Optional set screw for keyway DIN 916. Customer specified intermediate length also available.



MODEL BZA | SIZE 3000 - 10000

SIZE			3000	4000	5000	7000	8000	10000
Rated torque	(kNm)	T_{KN}	290	402	518	693	882	1040
Max. torque	(kNm)	T_{Kmax}	580	804	1036	1386	1764	2080
Installed length	(mm)	A	532	592	652	712	772	820
Outside diameter	(mm)	B_1	590	639	702	769	834	894
Flange diameter	(mm)	B_2	503	553	597	657	722	763
Hub diameter	(mm)	B_3	415	464	490	545	620	660
Hub fit length	(mm)	C	260	290	320	350	380	400
Bore diameter H7	(mm)	$D_{1/2}$	160-325	180-370	200-400	200-430	230-475	250-510
Bore diameters from ø to ø H7 with interference fit	(mm)	$D_{1/2}$	160-325	180-370	200-400	200-430	230-475	250-510
Hub length	(mm)	E	221	245.5	262	280	292	315
Hole circle diameter	(mm)	F	350	400	430	490	560	580
Thread		G	M24	M24	M30	M30	M24	M36
Bolt		H	M24	M24	M30	M30	M30	M36
Tightening torque	(Nm)		670	670	1250	1250	1250	2170
Axial misalignment	(mm)	S	6	6	6	6	6	10
Angular misalignment	(Degree)		2×0.35	2×0.35	2×0.35	2×0.35	2×0.35	2×0.35

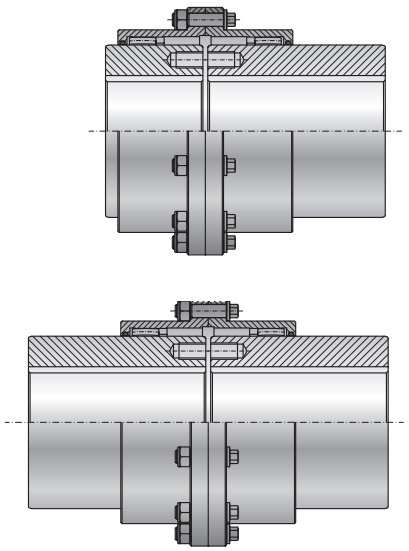
ORDERING EXAMPLE	BZA	3000	1200	160	280	XX
Model	●					Special designation only (e.g. special bore tolerance).
Size		●				
Overall length mm			●			
Bore Ø D1 H7				●		
Bore Ø D2 H7					●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. BZA / 3000 / 1200 / 160 / 280 / XX)

BZ

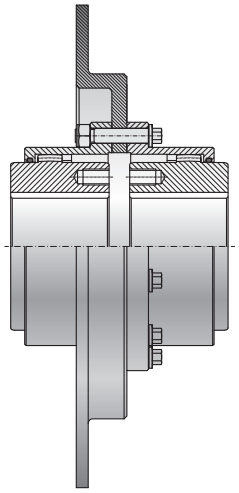
OPTIONS / SPECIAL SOLUTIONS
1,900 – 2,080,000

FLEXIBLE GEAR COUPLINGS – FURTHER POSSIBILITIES



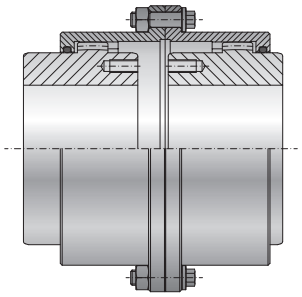
WITH EXTEDED HUB ON ONE OR BOTH ENDS

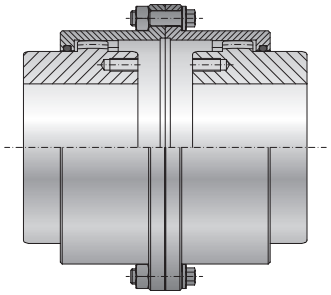
- Hub length is customizable
- Easy replacement of existing gear couplings
- Optimal utilization of available space



WITH BRAKE DISC

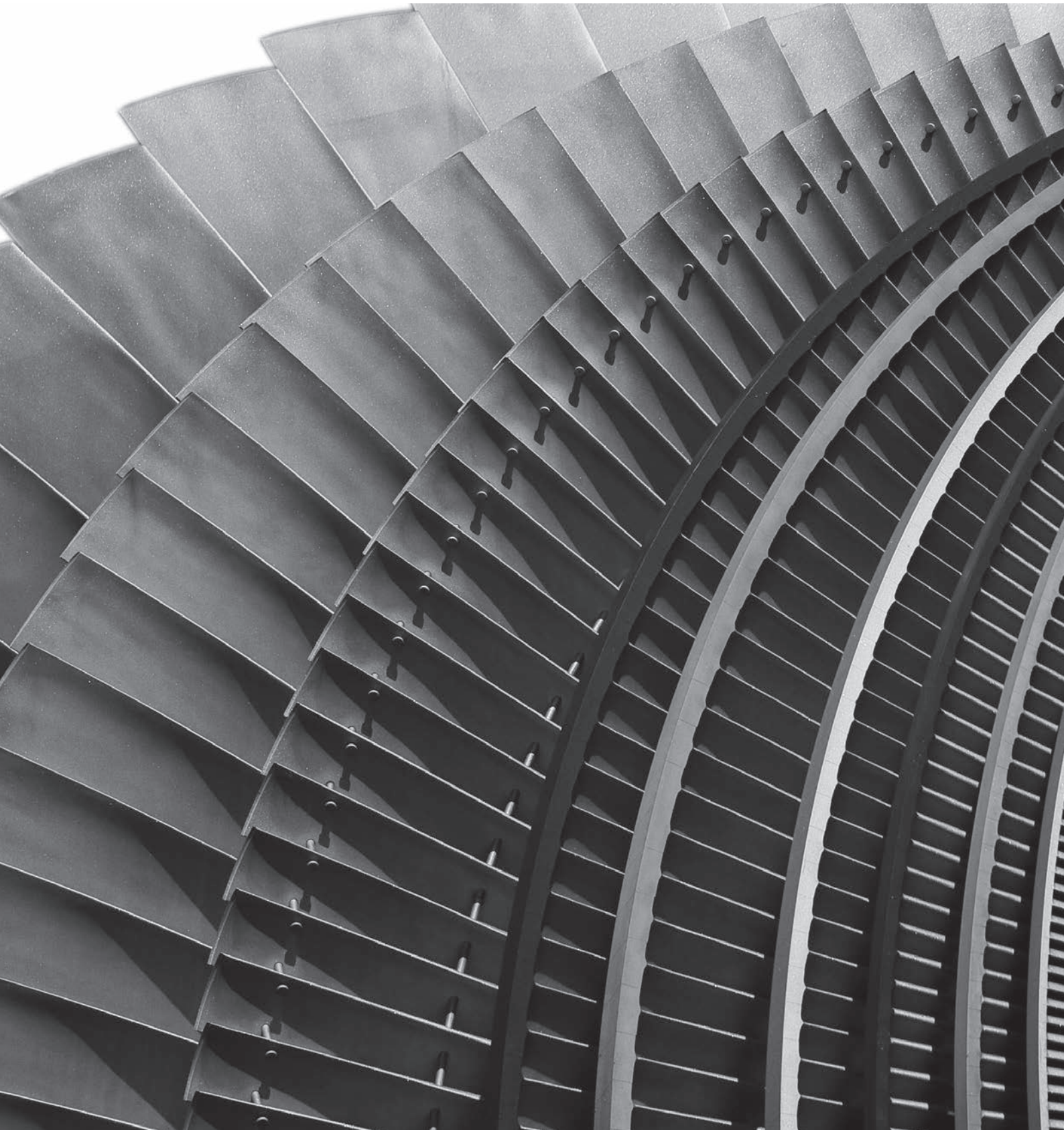
- custom dimensions available
- use for holding or emergency stopping





WITH REVERSED HUB ON ONE OR BOTH ENDS

- for minor increases in the distance between shaft ends
- optimized torque transfer with best shaft engagement
- longer life



BX

BACKLASH FREE, TORSIONALLY STIFF METALLIC BELLOWS COUPLINGS
10,000 - 100,000 Nm

GENERAL INFORMATION ABOUT **R+W BELLOWS COUPLINGS:**

Optional:

SERVICE LIFE

R+W bellows couplings are fatigue resistant and wear free for an infinite service life, as long as the technical limits are not exceeded.

FIT CLEARANCE

Overall shaft / hub clearance of 0.03 - 0.08 mm

TEMPERATURE RANGE

-40 to +300° C

SPECIAL SOLUTIONS

Various materials, tolerances, dimensions and performance ratings available for custom applications on request.

ATEX (Optional)

For use in hazardous areas available upon request.

BX

TORSIONALLY STIFF **METALLIC BELLOWS COUPLINGS**
10,000 –100,000 Nm

MODEL | FEATURES

BX1

with flange mounting
from 10,000 - 100,000 Nm

- for customer specific applications

Page 105

BX4

with simple keyway mounting
from 10,000 - 100,000 Nm

- low backlash keyway connection
- compact, simple design

Page 106

BX6

with conical clamping ring
from 10,000 - 100,000 Nm

- backlash free conical clamping
- high shaft clamping pressure

Page 107

BX1

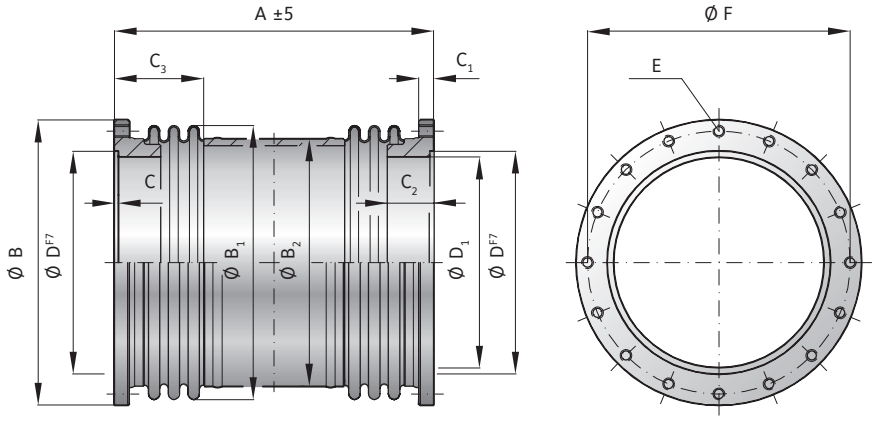
WITH FLANGE MOUNTING
10,000 - 100,000 Nm

PROPERTIES

FEATURES
- compact, simple design
- high misalignment compensation
- integral support system (size 25 and up)

MATERIAL
- **Hubs:** steel
- **Bellows:** highly flexible high grade stainless steel

DESIGN
Both ends with flanged hubs
Spacer between bellows
(optional variable length)
(size 10 without spacer)
welded bellows-hub connection



MODEL BX1 | SIZE 10 - 100

SIZE			10	25	50	75	100
Rated torque	(KNm)	T_{KN}	10	25	50	75	100
Maximum torque	(KNm)	T_{Kmax}	15	38	75	113	150
Overall length	(mm)	$A^{\pm 5}$	125	380	450	580	640
Outside diameter of flange	(mm)	B	310	336	398	449	545
Outside diameter of bellows ±2	(mm)	B_1	300	323	370	412w	520
Outside diameter of tube	(mm)	B_2	–	273	324	360	460
Fit length +0.5	(mm)	$C^{+0.5}$	4	5	6	10	15
Thread depth	(mm)	C_1	15	25	30	36	36
Hub length	(mm)	C_2	24	81	80	103	120
Bellows body length +3	(mm)	C_3	–	121	133	165	165
Centering diameter F 7	(mm)	D	265	260	310	350	440
Hub diameter +0.3	(mm)	D_1	250	240	285	317	390
Fastening threads*		E	20x M12	24x M16	24x M20	20x M24	24x M24
Tightening torque of the fastening screws (screw grade 10.9)	(Nm)		120	300	580	1000	1000
Bolt circle diameter ±0.4	(mm)	F	290	304	361	404	500
Moment of inertia	(10^{-3} kgm²)	$J_{ges.}$	101	548	1185	2725	7900
Approximate weight	(kg)		8.3	27.8	43.7	80	151
Axial	± (mm)	Max. value	3	5	6	7	8
Lateral	± (mm)		0.4	2.2	2.5	3	3.5
Angular	± (degree)		1.5	1	1	1	1
Torsional stiffness coupling	(10^3 Nm/rad)		20,000	9,000	15,500	23,000	35,000
Axial spring stiffness bellows	(N/mm)		985	3000	4300	3900	2800
Lateral spring stiffness bellows	(KN/mm)		21	133	207	175	219

*drilling pattern between hub 1 and hub 2 not aligned as standard

ORDERING EXAMPLE	BX1	50	XX
Model	●		**Special designation only (e.g. stainless steel hubs)**
Size / torque rating (KNm)		●	
For custom features place an XX at the end of the part number and describe the special requirements (e.g. BX1 / 50 / XX)			

BX4

WITH SIMPLE KEYWAY MOUNTING

10,000 - 100,000 Nm

PROPERTIES

FEATURES

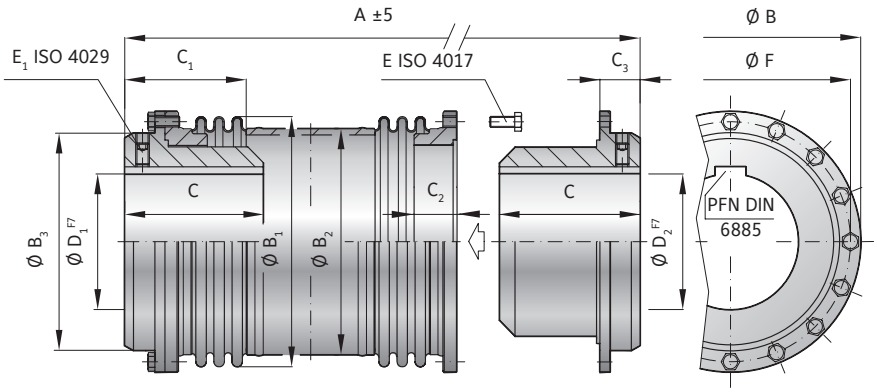
- compact, simple design
- high misalignment compensation
- integral support system (size 25 and up)

MATERIAL

- **Hubs:** steel
- **Bellows: highly** flexible high grade stainless steel

DESIGN

Both sides with removable coupling hubs, including keyway (splines optional)
Spacer between bellows
(optional variable length)
(size 10 without spacer)
welded bellows-hub connection



MODEL BX4 | SIZE 10 - 100

SIZE			10	25	50	75	100
Rated torque	(KNm)	T_{KN}	10	25	50	75	100
Maximum torque	(KNm)	T_{Kmax}	15	38	75	113	150
Overall length	(mm)	$A_{\pm 5}$	210	480	590	760	840
Outside diameter of flange	(mm)	B	310	336	398	449	545
Outside diameter of bellows ±2	(mm)	B_1	300	323	370	412	520
Outside diameter of tube	(mm)	B_2	–	273	324	360	460
Hub diameter	(mm)	B_3	255	260	310	350	440
Fit length	(mm)	C	95	130	200	240	280
Length ±3	(mm)	C_1	–	170	200	257	260
Hub length	(mm)	C_2	24	81	80	103	120
Distance	(mm)	C_3	42	49	70	90	100
Inside diameter possible from Ø to Ø F7	(mm)	D_1/D_2	50 - 170	60 - 170	80 - 200	100 - 230	120 - 280
Fastening screw ISO 4017 / Tightening torque	(Nm)	E	20 x M12 / 120	24 x M16 / 300	24 x M20 / 580	20 x M24 / 1000	24 x M24 / 1000
Fastening screw ISO 4029 / Tightening torque	(Nm)	E_1	M12 / 100	M16 / 220	M20 / 450	M24 / 800	M24 / 800
Bolt circle diameter ±0.4	(mm)	F	290	304	361	404	500
Moment of inertia	(10^{-3} kgm²)	$J_{ges.}$	492	1272	3270	6754	19350
Approximate weight	(kg)		44.7	85	164	260	477
Axial	± (mm)	Max. value	3	5	6	7	8
Lateral	± (mm)		0.4	2.2	2.5	3	3.5
Angular	± (degree)		1.5	1	1	1	1
Torsional stiffness coupling (10^3 Nm/rad)			20,000	9,000	15,500	23,000	35,000

MAXIMUM TRANSMITTABLE TORQUE OF KEYWAY CONNECTION

Data is in KNm. These values relate to metric DIN 6885 keyway dimensions with 100% contact through the hub.

Serie	Ø 60	Ø 80	Ø 100	Ø 120	Ø140	Ø 160	Ø 170	Ø 180	Ø 200	Ø 220	Ø 230	Ø 240	Ø 260	Ø 280
10	x	x	x	x	x	x	x	x	x	x	x	x	x	x
25	7	12	18	26	34	44	46	x	x	x	x	x	x	x
50	x	19	28	40	52	67	71	84	94	x	x	x	x	x
75	x	x	34	47	62	81	85	101	112	136	142	x	x	x
100	x	x	x	55	74	94	100	118	131	159	166	189	205	220

BX6

WITH REMOVABLE CONICAL CLAMPING RING HUB 10,000 - 100,000 Nm

PROPERTIES

FEATURES

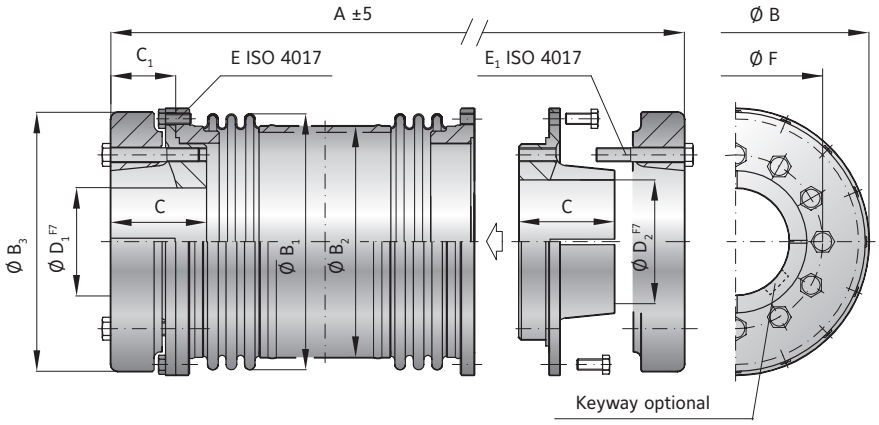
- **c**ompact, simple design
- high misalignment compensation
- integral support (size 25 and up)

MATERIAL

- **Hubs:** steel
- **Bellows:** highly flexible high grade stainless steel

DESIGN

Both sides with removable clamping hubs including conical clamping ring system.
Spacer between bellows
(optional variable length)
(size 10 without spacer)
welded bellows-hub connection



MODEL BX6 | SIZE 10 - 100

SIZE			10	25	50	75	100
Rated torque	(KNm)	T_{KN}	10	25	50	75	100
Maximum torque	(KNm)	T_{Kmax}	15	38	75	113	150
Overall length	(mm)	$A_{\pm 5}$	235	530	650	840	940
Outside diameter of flange	(mm)	B	310	336	398	449	545
Outside diameter of bellows ±2	(mm)	B_1	300	323	370	412	520
Outside diameter of tube	(mm)	B_2	–	273	324	360	460
Diameter of clamping ring	(mm)	B_3	300	310	380	420	530
Fit length	(mm)	C	90	110	140	170	200
Length	(mm)	C_1	55	74	99	130	150
Inside diameter possible from Ø to Ø F7	(mm)	D_1/D_2	70 - 170	80 - 170	100 - 200	130 - 230	150 - 280
Fastening screw ISO 4017 for mounting flange	(mm)	E	20 x M12	24 x M16	24 x M20	20 x M24	24 x M24
Tightening torque	(Nm)		120	300	580	1000	1000
Fastening screw ISO 4017 for conical clamping ring	(mm)	E_1	8 x M16	12 x M16	12 x M20	16 x M20	12 x M24
Tightening torque	(Nm)		200	250	300	350	600
Bolt circle diameter ±0.4	(mm)	F	210	220	250	290	360
Moment of inertia	(10^{-3} kgm²)	$J_{ges.}$	828	1535	3799	8277	24876
Approximate weight	(kg)		60	93	168	280	550
Axial	± (mm)	Max. value	3	5	6	7	8
Lateral	± (mm)		0.4	2.2	2.5	3	3.5
Angular	± (degree)		1.5	1	1	1	1
Torsional stiffness coupling	(10^3 Nm/rad)		20,000	9,000	15,500	23,000	35,000

ORDERING EXAMPLE	BX4 | BX6	50	120	200	XX
Model	●				**Special designation only (e.g. stainless steel hubs)**
Size / torque rating (KNm)		●			
Bore D1 F7			●		
Bore D2 F7				●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. BX4 / 50 / 117.48 / 127 / XX; XX = 700 mm overall length)

EK EZ

BACKLASH FREE SERVOMAX® ELASTIC JAW COUPLINGS
1,950 – 25,000 Nm

R+W AUGMENTED REALITY

GENERAL INFORMATION ABOUT **R+W ELASTOMER COUPLINGS:**

Optional:

SERVICE LIFE

When properly selected, handled, and installed, these couplings are maintenance free with infinite service life.

ATEX (Optional)

For use in hazardous areas available upon request.

SPECIAL SOLUTIONS

Various materials, tolerances, dimensions and performance ratings available for custom applications on request.

FIT CLEARANCE

Overall shaft / hub clearance of 0.01 – 0.05 mm

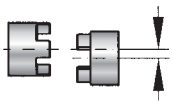
EK | EZ

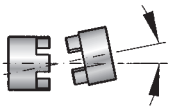
BACKLASH FREE **SERVOMAX® ELASTIC JAW COUPLINGS**
1,950 – 25,000 Nm

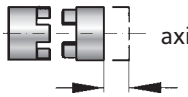
MODEL		FEATURES	
EK1		**with simple keyway mounting** **from 1,950 - 25,000 Nm** ▶ economically priced version ▶ modifiable to customer specific dimensions and features	Page 112
EKH		**with fully split clamping hubs** **from 1,950 - 25,000 Nm** ▶ easy installation and removal ▶ allows for lateral mounting	Page 113
EK6		**with conical clamping ring** **from 1,950 - 25,000 Nm** ▶ highly concentric design ▶ high clamping pressure on shafts ▶ hubs mount axially ▶ in case a housing will be used, no access holes are necessary	Page 114
EZ2		**with fully split clamping hubs** **from 1,950 - 25,000 Nm** ▶ standard lengths of up to 4 meters ▶ no intermediate support bearing necessary ▶ lateral installation and removal without disturbing adjacent equipment	Page 115

GENERAL INFORMATION
R+W ELASTIC JAW COUPLINGS

SHAFT MISALIGNMENT


lateral


angular


axial

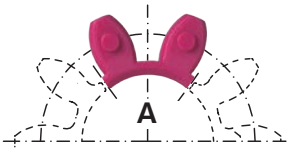
FUNCTION

The equalizing element of the EK coupling is the elastomer insert. It transmits torque without backlash or vibration. The elastomer insert defines the characteristics of the entire drive system.

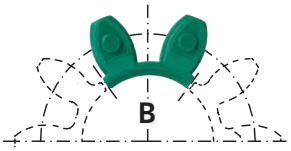
Backlash is eliminated by the press fit of the elastomer into the hubs. Through variation of the Shore hardness of the elastomer insert, the coupling system can be optimized for the ideal torsional characteristics.

SIZE 2500 - 9500

THE COUPLING INCLUDES 5X ELASTOMER SEGMENTS

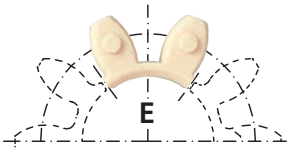


Shore hardness 98 Sh A



Shore hardness 64 Sh D

Shore hardness 65 Sh D



Shore hardness 64 Sh D

DESCRIPTION OF THE ELASTOMER TYPES

Type	Shore hardness	Color	Material	Relative damping (Ψ)	Temperature range	Features
A	98 Sh A	red	TPU	0.4 - 0.5	-30°C to +100°C	high damping
B	64 Sh D	green	TPU	0.3 - 0.45	-30°C to +120°C	high torsional stiffness
D*	65 Sh D	black	TPU	0.3 - 0.45	-10°C to +70°C	electrically conductive
E	64 Sh D	beige	Hytrel	0.3 - 0.45	-50°C to +150°C	temperature resistant

* The electrical conductivity of the elastomer material is to prevent the electrostatic charging of the elastomer coupling system, to reduce the risk of sparking in operation. ATEX technical data is available upon request.

The values of the relative damping were determined at 10 Hz and +20° C.

SIZES EK

SIZE*			2500		4500		9500	
Type (elastomer insert)			A	B	A	B	A	B
Static torsional stiffness	(Nm/rad)	C_T	87600	109000	167000	372000	590000	670000
Dynamic torsional stiffness	(Nm/rad)	C_{Tdyn}	175000	216000	337000	743000	1180000	1340000
lateral misalignment	(mm)	Max. values	0.5	0.3	0.5	0.3	0.6	0.4
angular misalignment	(Degree)		1.5	1	1.5	1	1.5	1
axial misalignment	(mm)		±3		±4		±5	

Static torsional stiffness at 50% T_{KN} Dynamic torsional stiffness at T_{KN}

* Note: The technical values for elastomer inserts D and E correspond to the values for B, due to the identical Shore hardness.

EK1

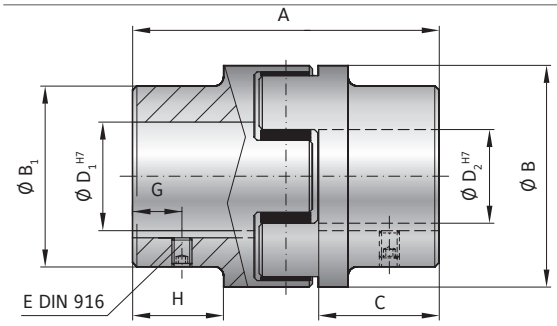
WITH KEYWAY MOUNTING
1,950 – 25,000 Nm

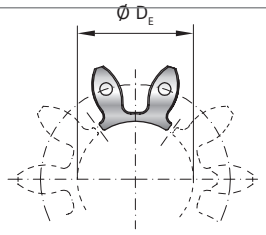
PROPERTIES

FEATURES
- press fit design
- readily modified for custom dimensions
- low backlash (keyway)

MATERIAL
- **Hubs:** GGG40
- **Elastomer:** wear resistant thermally stable TPU

DESIGN
Two concentrically machined hubs with curved jaws, keyways, and set screws. 5x elastomer segments press fit for zero backlash; standard versions are electrically isolating.





elastomer insert type A / B

MODEL EK1 | SIZE 2500 – 9500

SIZE			2500		4500		9500	
Type (Elastomer insert)			A	B	A	B	A	B
Rated torque	(Nm)	T_{KN}	1950	2450	5000	6200	10000	12500
Max. torque	(Nm)	T_{Kmax}	3900	4900	10000	12400	20000	25000
Overall length	(mm)	A	213		272		341	
Outside diameter	(mm)	B/B_1	160 / 154		225 / 190		290 / 240	
Mounting length	(mm)	C	88		113		142	
Inside diameter (pilot bored)	(mm)	D_V	30		40		50	
Inside diameter range H7	(mm)	$D_{1/2}$	30 – 95		40 – 130		50 – 170	
Inside diameter of elastomer	(mm)	D_E	80		111		145	
Set screws (DIN 916)		E	see table (depending on bore Ø)**					
Distance	(mm)	G	25		30		40	
Possible shortening length	(mm)	H	69		89		110	
Moment of inertia per hub	(10^{-3} kgm²)	J_1/J_2	40		147		480	
Approx. weight	(kg)		12,5		25		53	
Speed standard	(min^{-1})		3,500		3,000		2,000	
Speed balanced	($10^3 min^{-1}$)		10	10	8	8	6,5	6,5

For information on shaft misalignment, torsional stiffness, and other details about the elastomer inserts **see page 97.**

** Set screw	
Ø 12.1 – 30	M5
Ø 30.1 – 58	M8
Ø 58.1 – 95	M10
Ø 95.1 – 130	M12
Ø 130.1 – 170	M16

ORDERING EXAMPLE	EK1	2500	A	50.8	80	XX
Model	●					Special designation only (e.g. special bore tolerance).
Size		●				
Elastomer insert type			●			
Bore D1 H7				●		
Bore D2 H7					●	
For custom features place an XX at the end of the part number and describe the special requirements (e.g. EK1 / 2500 / A / 50.8 / 80 / XX; XX = stainless steel)						

EKH

WITH FULLY SPLIT CLAMPING HUB

1,950 - 25,000 Nm

PROPERTIES

FEATURES

- lateral mounting
- easy installation and removal
- allows for pre-alignment of shafts

MATERIAL

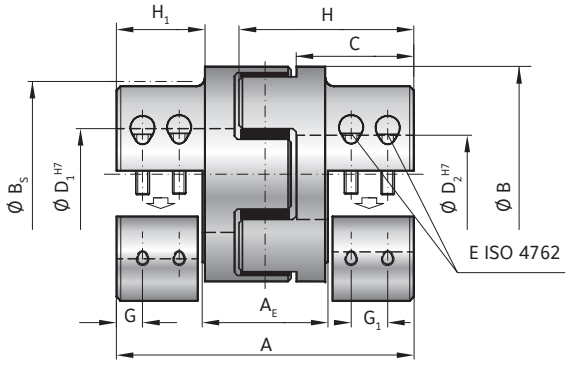
- **Hubs:** GGG40
- **Elastomer:** wear resistant thermally stable TPU

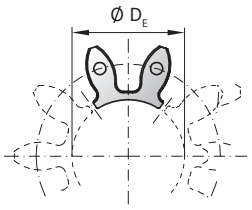
DESIGN

Two concentrically machined, fully split hubs with curved jaws and clamping screws. 5x elastomer segments press fit for zero backlash; standard versions are electrically isolating.

ORDERING EXAMPLE

see page 98





elastomer insert type A / B

MODEL EKH | SIZE 2500 - 9500

SIZE			2500		4500		9500	
Type (Elastomer insert)			A	B	A	B	A	B
Rated torque	(Nm)	T_{KN}	1950	2450	5000	6200	10000	12500
Max. torque*	(Nm)	T_{Kmax}	3900	4900	10000	12400	20000	25000
Overall length	(mm)	A	213		272		341	
Length of center section	(mm)	A_E	78		104		131	
Outside diameter	(mm)	B	160		225		290	
Outside diameter with screw head	(mm)	B_S	156		199		243	
Mounting length	(mm)	C	85		113		140	
Inside diameter range H7	(mm)	$D_{1/2}$	35 - 90		40 - 120		50 - 140	
Inside diameter of elastomer	(mm)	D_E	80		111		145	
Clamping screw (ISO 4762)		E	8 × M16		8 × M20		8 × M24	
Tightening torque of the clamping screw	(Nm)		300		600		1100	
Distance between centers	(mm)	F	57		75		90	
Distance	(mm)	G/G_1	36		24 / 41		30 / 48	
Hub length	(mm)	H/H_1	120 / 69		154 / 89		193 / 110	
Moment of inertia per hub	(10^{-3} kgm²)	J_1/J_2	40		147		480	
Approx. weight	(kg)		12.5		25		53	
Speed standard	(min^{-1})		3,000		3,500		2,000	
Speed balanced	($10^3 min^{-1}$)		10	10	8	8	6.5	6.5

For information on shaft misalignment, torsional stiffness, and other details about the elastomer inserts **see page 97.**

** Maximum transmittable torque of the clamping hub depends on the bore diameter

Size	Ø 35	Ø 45	Ø 50	Ø 55	Ø 60	Ø 65	Ø 70	Ø 75	Ø 80	Ø 90	Ø 120	Ø 140
2500	1400	1800	2000	2250	2500	2700	2900	3100	3300	3700		
4500		2400	2600	2900	3100	3400	3600	3900	4100	4700	6200	
9500			5000	5500	6000	6500	7000	7500	8000	9000	12000	14000

Higher torques possible with keyway.

EK6

WITH CONICAL CLAMPING RING

1,950 – 25,000 Nm

PROPERTIES

FEATURES

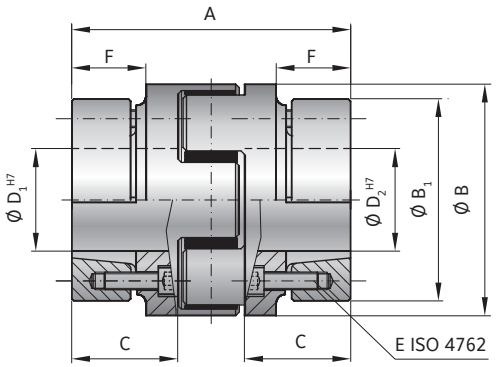
- high clamping pressure
- self centering on shaft
- very high concentricity

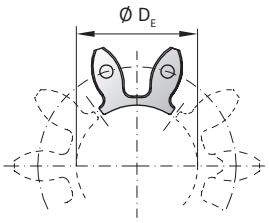
MATERIAL

- **Hubs:** GGG40
- **Elastomer:** wear resistant thermally stable TPU

DESIGN

Two concentrically machined hubs with curved jaws and conical clamping rings. 5x elastomer segments press fit for zero backlash; standard versions are electrically isolating.





elastomer insert type A / B

MODEL EK6 | SIZE 2500 – 9500

SIZE			2500		4500		9500	
Type (Elastomer insert)			A	B	A	B	A	B
Rated torque	(Nm)	T_{KN}	1950	2450	5000	6200	10000	12500
Max. torque	(Nm)	T_{Kmax}	3900	4900	10000	12400	20000	25000
Overall length	(mm)	A	177		227		282	
Outside diameter	(mm)	B/B_1	160 / 159		225 / 208		285	
Mounting length	(mm)	C	70		90		112	
Inside diameter range H7	(mm)	$D_{1/2}$	40 – 95		50 – 130		60 – 170	
Inside diameter of elastomer	(mm)	D_E	80		111		145	
Clamping screw (ISO 4762)		E	10x M10		10x M12		10x M16	
Tightening torque of the clamping screw	(Nm)		60		100		160	
Distance	(mm)	F	51		66		80	
Moment of inertia per hub	(10^{-3} kgm²)	J_1/J_2	31.7		135.7		469.2	
Approx. weight	(kg)		15		35		73	
Speed standard	(min^{-1})		3,500		3,000		2,000	
Speed balanced	($10^3 min^{-1}$)		10	10	8	8	6.5	6.5

For information on shaft misalignment, torsional stiffness, and other details about the elastomer inserts **see page 97.**

ORDERING EXAMPLE	EK6 / EKH	2500	A	50.8	80	XX
Model	●					Special designation only (e.g. special bore tolerance).
Size		●				
Elastomer insert type			●			
Bore D1 H7				●		
Bore D2 H7					●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. EK6 / 2500 / A / 50.8 / 80 / XX; XX = stainless steel)

EZ2

WITH FULLY SPLIT CLAMPING HUB

1,950 - 25,000 Nm

PROPERTIES

FEATURES

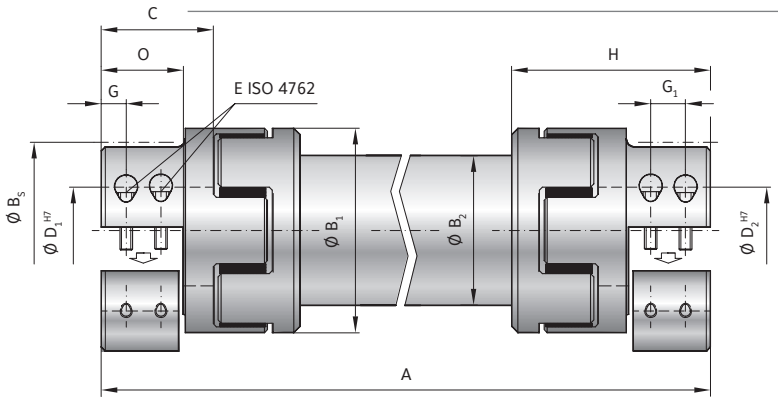
- easy installation and removal
- standard lengths up to 4 meters
- no intermediate support bearings required

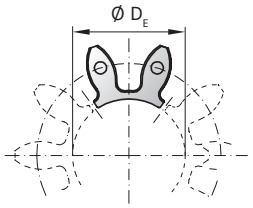
MATERIAL

- **Hubs:** GGG40
- **Intermediate tube:** steel, optional CFK tube on request
- **Elastomer insert:** wear resistant, thermally stable TPU

DESIGN

Two fully split clamping hubs with concave driving jaws and four clamping screws. Both coupling bodies are firmly connected to a highly straight and laterally stiff intermediate tube. Elastomer consists of five separate segments. The elastomer insert makes the coupling axially mountable, backlash free, and electrically isolating.





elastomer insert type A / B

MODEL EZ2 | SIZE 2500 - 9500

SIZE			2500		4500		9500	
Type (Elastomer insert)			A	B	A	B	A	B
Rated torque	(Nm)	T_{KN}	1950	2450	5000	6200	10000	12500
Maximum torque*	(Nm)	T_{Kmax}	3900	4900	10000	12400	20000	25000
Overall length	(mm)	A	460 - 4000		580 - 4000		710 - 4000	
Outer diameter hub	(mm)	B_1	160		225		290	
Outer diameter tube	(mm)	B_2	150		175		220	
Outer diameter with screwhead	(mm)	B_S	155		199		243	
Fit length	(mm)	C	88		110		140	
Inside diameter range from Ø to Ø H7	(mm)	$D_{1/2}$	35 - 90		40 - 120		50 - 140	
Max. inside diameter (Elastomer insert)	(mm)	D_E	80		111		145	
Mounting screw ISO 4762		E	8 x M16		8 x M20		8 x M24	
Tightening torque	(Nm)		300		600		980	
Distance between centers	(mm)	F	57		75		90	
Distance	(mm)	G/G_1	18 / 30		24 / 41		30 / 48	
Hub length	(mm)	H	142		181		229	
Moment of inertia per hub	(10^{-3} kgm²)	J_1/J_2	30		140		450	
Inertia of tube per meter	(10^{-3} kgm²)	J_3	360		750		1.800	
Combined dynamic torsional stiffness of the inserts	(Nm/rad)	C_{Tdyn}^{E}	87,500	108,000	168,500	371,500	590,000	670,000
Torsional stiffness of tube per meter	(Nm/rad)	C_T^{ZWR}	950,000		2,200,200		5,500,000	
Shaft average value	(mm)	N	108		137		171	
Length	(mm)	O	67		85		105	

* Maximum transmittable torque of the clamping hub depends on the bore diameter - see page 99.

ORDERING EXAMPLE	EZ2	2500	1200	A	50.8	80	XX
Model	●						Special designation only (e.g. special bore tolerance).
Size		●					
Overall length			●				
Elastomer insert type				●			
Bore Ø D1 H7					●		
Bore Ø D2 H7						●	

For custom features place an XX at the end of the part number and describe the special requirements (e.g. EZ2 / 2500 / 1200 / A / 50.8 / 80 / XX; XX = stainless steel)

ATEX

FOR USE IN HAZARDOUS AREAS

FOR USE IN HAZARDOUS AREA
INDUSTRIAL COUPLINGS

MARKING EXAMPLE

Based on the ATEX markings the product can be certified for suitability under certain conditions.

CE	Ex	II	2G	Ex h	IIA T6	Gb	X
		II	2D	Ex h	IIIA T85°C	DB	X
		Equipment group	Category	Protection type	Explosion subgroup / Temperature class / max. surface temperature	Equipment protection level (EPL)	Additional features

Equipment group	Approval type
I	Approved for underground operation
II	Approved for all other applications

Category	Approved for zone	Zone description
1G	0	Area in which an explosive atmosphere consisting of a mixture of air and flammable gases, vapors, or mists is present continuously, frequently or for long periods of time.
2G	1	Area in which the potential exists for an explosive mixture of air and flammable gases, vapors or mists to occur.
3G	2	Area in which the potential for an explosive mixture of air and flammable gases, vapors, or mists to occur is unlikely and only for a brief duration.
1D	20	Area with the same conditions as zone 0, with powder or dust.
2D	21	Area with the same conditions as zone 1, with powder or dust.
3D	22	Area with the same conditions as zone 2, with powder or dust.

Protection type	Definition
Ex h	Design safety level: ignition hazard is avoided by the product design.

Example classification by occurring gases, mists and vapors according to temperature class and explosion group

Temperature class / max. surface temperature	IIA	IIB (includes IIA)	IIC (includes IIA + IIB)
T1 / 450°C	Acetone, Ammonia, Methane, ...	City gas (gas lamp)	Hydrogen
T2 / 300°C	Ethyl alcohol, n-butane, cyclohexane, ...	Ethylene, Ethylene oxide	Ethine (acetylene)
T3 / 200°C	Gasoline, diesel, heating oil, ...	ethylene glycol, hydrogen sulfide	
T4 / 135°C	Acetaldehyde	ethyl ether	
T5 / 100°C			
T6 / 85°C			Carbon disulphide

MARKING EXAMPLE

Equipment protection level according to IEC 60079	Importance
Ga	Very high protection level
Gb	High protection level
Gc	Extended protection level
Da	Very high protection level
Db	High protection level
Dc	Extended protection level

Additional mark	Importance
X	special operating conditions (from description)
U	Part is a component. Conformity must be declared after installation in a device.

GENERAL INFORMATION

The use of devices and components in potentially explosive atmospheres areas is governed by the European directives 2014/34/EU (ATEX). According to this they are with CE and receive an EU declaration of conformity as a device. The presented products are non-electrical equipment of category 2.

According to directive 2014/34/EU each delivery of an ATEX coupling requires the inclusion of special installation and operating manuals and the EU declaration of conformity issued by the manufacturer. All necessary values and specifications for installation and operation can be found in these documents.

In accordance with the Machinery Directive 2006/42/EC and the guideline for the application of the Machinery Directive 2006/42/EC of the European Commission For Enterprise and Industry, 2nd edition June 2010, editor Ian Fraser, R+W couplings are components and therefore not a machine or an incomplete machine. As a component within the meaning of the Machinery Directive, R+W couplings are not to be marked with a CE marking, receive neither CE declaration of conformity nor installation and no serial number, and is therefore not covered by the Machinery Directive.

All models of BX, LP, EK and ST are available with ATEX certification on request. The Model BZ coupling is not intended for use in potentially explosive atmospheres.

All R+W ATEX couplings are designed for use in general suitable for industry (device group II). The operation is in the explosion endangered zones 1 and 2 (category 2G) and 21 and 22 (category 2D).

Product specific information about ATEX certified couplings, such as temperature class, are available on request.

All statements made about ATEX conforming products are based on our present knowledge and experience. R+W reserves the right to change technical specifications.

NOTES

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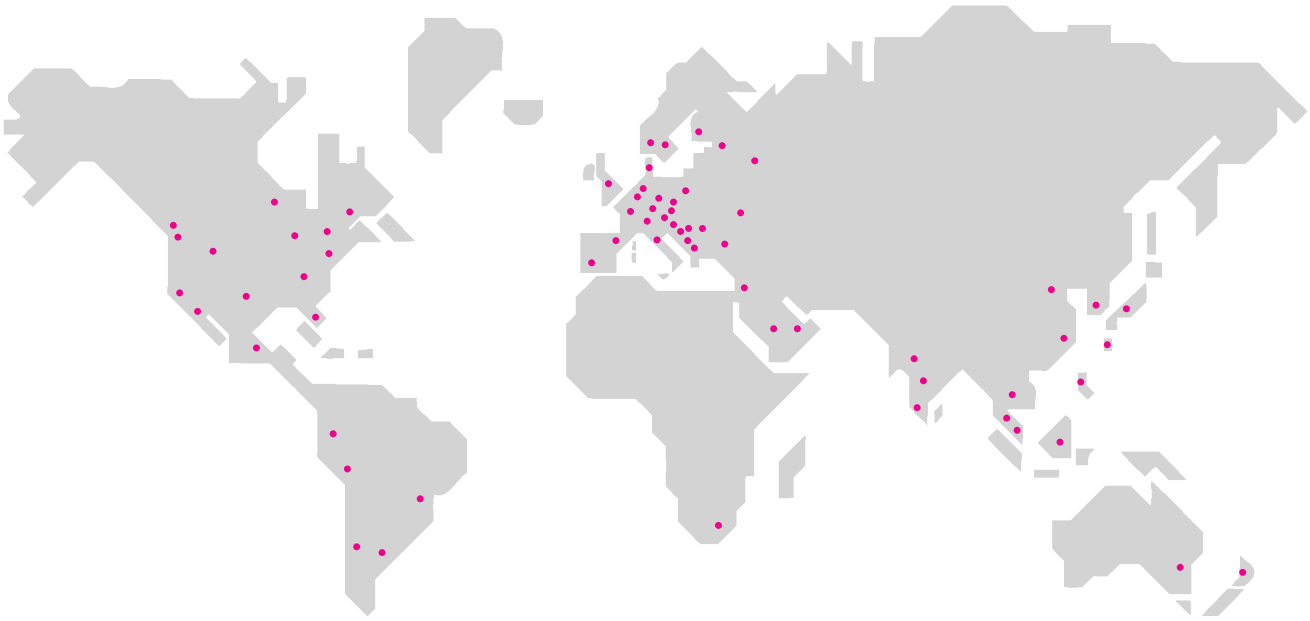
PERFECT CONNECTIONS WORLDWIDE.

QUALITY "MADE IN GERMANY."



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