

THE COUPLING.



# INDUSTRIAL COUPLINGS

# Sizing and selection



Proper sizing of couplings is crucial to ensuring smooth and efficient power transmission. This involves taking the specific requirements and operating conditions of the application into account. Various factors such as torque, speed, temperature and shock loads must be considered when selecting the correct coupling type and size.

**According to DIN 740 part 2**

# Legend guide book industrial couplings

$T_{AR}$	=	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 ( $\text{min}^{-1}$ )
$\alpha$	=	Angular acceleration ( $\text{rad/s}^2$ )
t	=	Acceleration time (s)
$\omega$	=	Angular velocity (rad/s)
$J_L$	=	Moment of inertia of load ( $\text{kgm}^2$ )
$J_A$	=	Moment of inertia of drive ( $\text{kgm}^2$ )
$T_{AS}$	=	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)
$\eta$	=	Spindle efficiency
$d_0$	=	Pitch diameter (mm)
$C_T$	=	Torsional stiffness of coupling (Nm/rad)
$J_{Masch}$	=	Total load inertia ( $\text{kgm}^2$ ) (e.g. shaft + sprocket + chain + roller + 1/2 of coupling)
$J_{Mot.}$	=	Total driving inertia ( $\text{kgm}^2$ ) (e.g. motor shaft + 1/2 of coupling)
$f_e$	=	Resonant frequency of the two mass system (Hz)
$f_{er}$	=	Excitation frequency of the drive (Hz)
$T_{KN}$	=	Rated torque of coupling (Nm)
$T_{AS}$	=	Peak torque (Nm) e.g. maximum acceleration peak torque or maximum braking torque from the load
$\varphi$	=	Angle of twist (degree)
$S_A$	=	Load factor
N	=	Length to flexure (mm)

## Sizing and selection

# Formulas

### Shock / 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 (TAN). In addition to a start-up torque (Tmax.), 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

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

or

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

### According to torque

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

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

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

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.

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

## Formulas

According to acceleration  
(Start-up with no load)

$$T_{AR} \geq \alpha \cdot J_L \geq \frac{J_L}{J_A + J_L} \cdot T_{AS} \cdot S_A \text{ (Nm)}$$

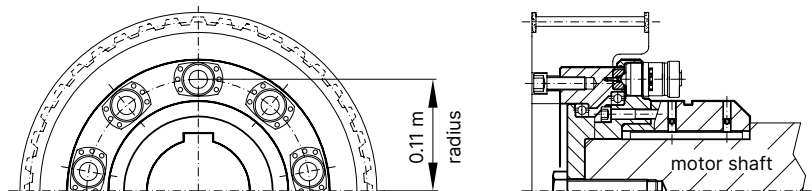
$$\alpha = \frac{\omega}{n} = \frac{\pi \cdot n}{t \cdot 30}$$

According to acceleration  
(Start-up with load)

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

According to the number  
of safety elements

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



According to linear feed force

Screw drive

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

Rack and pinion drive

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

## Sizing and selection

# Formulas

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### 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.

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

### 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.

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

### According to torsional deflection

To calculate transmission error as a result of torsional stress:

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

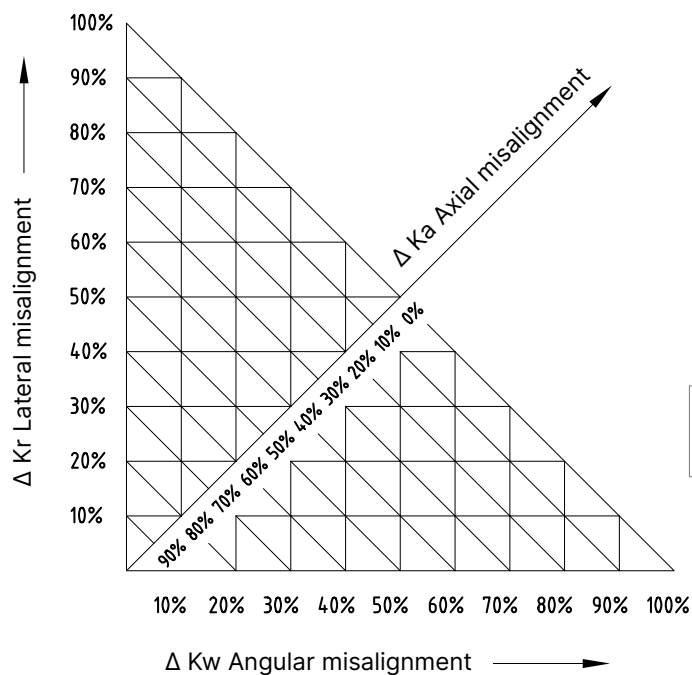
## Sizing and selection

# Design disc pack couplings

Taking into account the friction drive principle of the R+W disc coupling design, torque is transferred 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

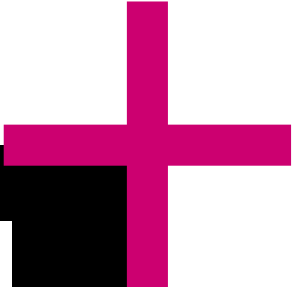






# Torsionally stiff disc pack couplings

## 350 – 50,000 Nm



DISC PACK COUPLINGS  
LP

**Areas of application**

- + 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

**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°C to +280°C

**Rotational speed**  
see table

**Delivery**  
pre-assembled (separate components on request)






**ATEX (Optional)**  
Available on request.

Ordering example	LP1	700	D	154	25	56	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 / 56 / XX - balanced for 8,000 rpm)

# Torsionally stiff disc pack couplings

## 350 – 50,000 Nm

Model		Features	Page
LP1 S		<p><b>With keyway mounting single flex design</b> 350 – 50,000 Nm</p> <ul style="list-style-type: none"> <li>• Extremely high torsional stiffness</li> <li>• Compact and robust design</li> <li>• Compensates for axial and angular misalignment only</li> </ul>	44
LP1 D		<p><b>With keyway mounting dual flex design</b> 350 – 50,000 Nm</p> <ul style="list-style-type: none"> <li>• High torsional stiffness</li> <li>• Robust design</li> <li>• Compensates for axial, angular and lateral misalignment</li> </ul>	45
LP2		<p><b>With keyway mounting dual flex design with spacer</b> 350 – 50,000 Nm</p> <ul style="list-style-type: none"> <li>• High torsional stiffness</li> <li>• Customer specified length on request</li> <li>• Compensates for axial, angular and lateral misalignment</li> </ul>	46-47
LP4 S		<p><b>With conical clamping ring single flex design</b> 350 – 50,000 Nm</p> <ul style="list-style-type: none"> <li>• Extremely high torsional stiffness</li> <li>• Compact design</li> <li>• Good for reversing loads</li> <li>• Zero backlash torque transmission</li> <li>• Compensates for axial and angular misalignment only</li> </ul>	48
LP4 D		<p><b>With conical clamping ring dual flex design</b> 350 – 50,000 Nm</p> <ul style="list-style-type: none"> <li>• High torsional stiffness</li> <li>• Good for reversing loads</li> <li>• Zero backlash torque transmission</li> <li>• Compensates for axial, angular and lateral misalignment</li> </ul>	49

Model	Features	Page
<div style="border: 1px solid black; padding: 2px; display: inline-block;">LP3</div>		<p><b>With conical clamping ring dual flex design</b> 350 – 50,000 Nm</p> <ul style="list-style-type: none"> <li>• High torsional stiffness</li> <li>• High clamping pressure</li> <li>• Good for reversing loads</li> <li>• Zero backlash torque transmission</li> <li>• Compensates for axial, angular and lateral misalignment</li> </ul>
<div style="border: 1px solid black; padding: 2px; display: inline-block;">LP5 S</div>		<p><b>With clamping hub single flex design</b> 350 – 30,000 Nm</p> <ul style="list-style-type: none"> <li>• Extremely high torsional stiffness</li> <li>• Compact and robust design</li> <li>• Zero backlash torque transmission</li> <li>• Keyway optional</li> <li>• Compensates for axial and angular misalignment only</li> </ul>
<div style="border: 1px solid black; padding: 2px; display: inline-block;">LP5 D</div>		<p><b>With clamping hub dual flex design</b> 350 – 30,000 Nm</p> <ul style="list-style-type: none"> <li>• High torsional stiffness</li> <li>• Zero backlash torque transmission</li> <li>• Keyway optional</li> <li>• Compensates for axial, angular and lateral misalignment</li> </ul>
<div style="border: 1px solid black; padding: 2px; display: inline-block;">LPH</div>		<p><b>With fully split clamping hub dual flex design</b> 350 – 50,000 Nm</p> <ul style="list-style-type: none"> <li>• High torsional stiffness</li> <li>• Facilitates lateral mounting</li> <li>• Zero backlash torque transmission</li> <li>• Keyway optional</li> <li>• Compensates for axial, angular and lateral misalignment</li> </ul>
<div style="border: 1px solid black; padding: 2px; display: inline-block;">LPZ</div>		<p><b>Short intermediate spacer for dual flex configurations</b> 350 – 50,000 Nm</p> <ul style="list-style-type: none"> <li>• High torsional stiffness</li> <li>• For combination with various hub designs</li> <li>• Compensates for axial, angular and lateral misalignment</li> </ul>

# LP1 S

## With keyway mounting; single flex

350 – 50,000 Nm



### Features

- Extremely high torsional stiffness
- Wear and maintenance free
- Compensates for axial and angular misalignment only

### Material

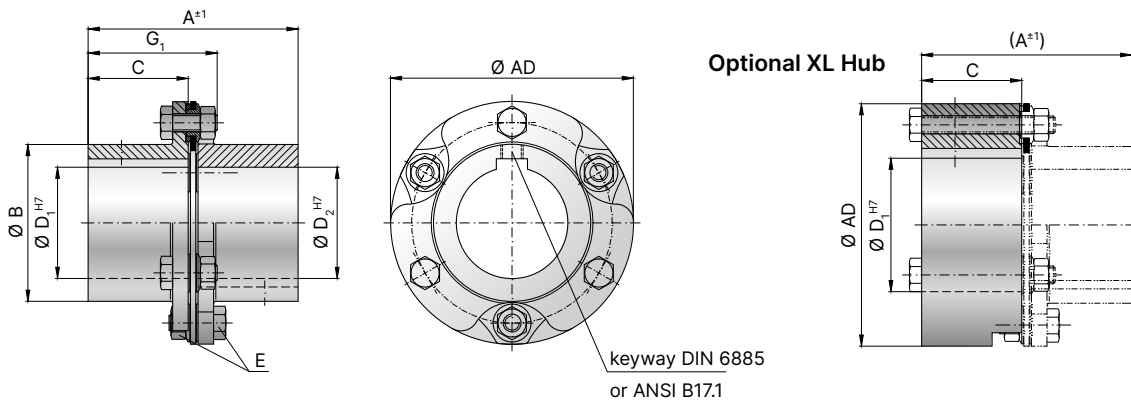
- **Disc pack:** highly elastic spring steel
- **Hubs:** high strength steel

### 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.

### S = single flex design



## Model LP1 S | Size 300–25,000

Higher torques on request

Size			300	500	700	1,100	1,600	2,600	4,000	6,000	8,000	15,000	25,000
Rated torque	(Nm)	$T_{KN}$	350	500	700	1,100	1,600	2,600	4,000	6,000	8,000	15,000	25,000
Maximum torque	(Nm)	$T_{KNmax}$	700	1,000	1,400	2,200	3,200	5,200	8,000	12,000	16,000	30,000	50,000
Overall length	(mm)	A	95	95	116	117	158	161	193	193	216	264.7	346.7
Outside diameter	(mm)	$\varnothing AD$	99	109	128	133	150	168	198	212	238	272	300
Hub diameter	(mm)	$\varnothing B$	63	70.5	78	84	86	102	120	130	140	182	189
Hub fit length	(mm)	C	45	45	55	55	75	76	90	90	100	125	165
Bore diameter available from $\varnothing$ to $\varnothing H7$	(mm)	$D_{1/2}$	18 - 48	23 - 50	25 - 58	25 - 60	28 - 64	31 - 75	38 - 90	39 - 95	50 - 102	70 - 140	75 - 145
Bore diameter available from $\varnothing$ to $\varnothing H7$ (XL Hub)	(mm)	$D_{1/2}$	> 48 - 53	> 50 - 60	> 58 - 65	> 60 - 70	> 64 - 80	> 75 - 90	> 90 - 100	> 95 - 115	> 102 - 125	> 140 - 160	> 145 - 170
Assembly screw (ISO 4017) Tensioning nut (DIN 4032)		E	M8	M8	M10	M10	M12	M12	M16	M16	M20	M20	M24
Tightening torque	(Nm)		35	40	65	95	150	165	360	400	755	770	47
Distance between hubs	(mm)	G	-	-	-	-	-	-	-	-	-	-	-
Assembly length	(mm)	$G_1$	60	60	75	75	98	99	120	120	140	165	227.8
Moment of inertia**	( $10^{-3} \text{kgm}^2$ )	$J_{ges.}$	1.7	3	5	6.4	11.3	20	46	61	118	261	471
Weight**	(kg)		1.5	2.0	2.9	3.4	5	6.8	11.1	13	19.4	30.5	46.5
Torsional stiffness disc packs	(kNm/rad)	$C_T$	200	280	470	540	800	1,200	2,000	2,500	3,600	7,700	16,000
Axial $\pm$	(mm)		0.5	0.6	0.7	0.8	1.0	1.1	1.3	1.3	1.3	1.5	1.5
Lateral $\pm$	(mm)	max. values	-	-	-	-	-	-	-	-	-	-	-
Angular $\pm$	(degree)		0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Max. speed	( $\text{min}^{-1}$ )		5,800	5,200	4,500	4,300	3,850	3,500	2,950	2,700	2,400	2,100	1,900
Max. speed (balanced)***	( $\text{min}^{-1}$ )		13,500	12,300	10,500	10,000	8,950	8,000	6,700	6,300	5,600	4,900	4,500

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

# LP1 D

## With keyway mounting; dual flex

350 – 50,000 Nm



### Features

- High torsional stiffness
- Wear and maintenance free
- Compensates for axial, angular and lateral misalignment

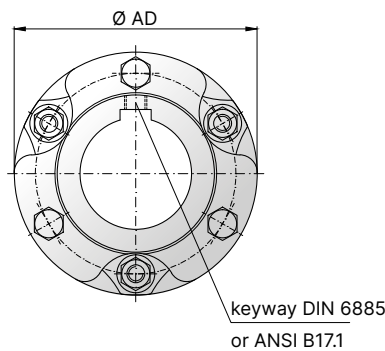
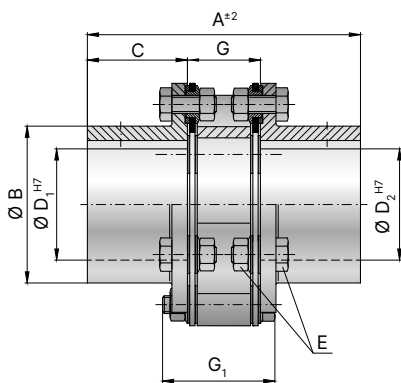
### Material

- **Disc pack:** Hochelastischer Federstahl
- **Hubs and spacer:** high strength steel

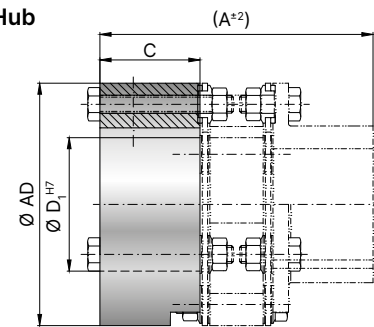
### Design

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.

D = dual flex design



Optional XL Hub



## Model LP1 D | Size 300–25,000

Higher torques on request

Size			300	500	700	1,100	1,600	2,600	4,000	6,000	8,000	15,000	25,000
Rated torque	(Nm)	$T_{KN}$	350	500	700	1,100	1,600	2,600	4,000	6,000	8,000	15,000	25,000
Maximum torque	(Nm)	$T_{KNmax}$	700	1,000	1,400	2,200	3,200	5,200	8,000	12,000	16,000	30,000	50,000
Overall length	(mm)	A	123	123	154	158	204	208	250	258	297	336.4	468.4
Outside diameter	(mm)	$\varnothing AD$	99	109	128	133	150	168	198	212	238	272	300
Hub diameter	(mm)	$\varnothing B$	63	70.5	78	84	86	102	120	130	140	182	189
Hub fit length	(mm)	C	45	45	55	55	75	76	90	90	100	125	165
Bore diameter available from $\varnothing$ to $\varnothing H7$	(mm)	$D_{1/2}$	18 - 48	23 - 50	25 - 58	25 - 60	28 - 64	31 - 75	38 - 90	39 - 95	50 - 102	70 - 140	75 - 145
Bore diameter available from $\varnothing$ to $\varnothing H7$ (XL Hub)	(mm)	$D_{1/2}$	> 48 - 53	> 50 - 60	> 58 - 65	> 60 - 70	> 64 - 80	> 75 - 90	> 90 - 100	> 95 - 115	> 102 - 125	> 140 - 160	> 145 - 170
Assembly screw (ISO 4017) Tensioning nut (DIN 4032)		E	M8	M8	M10	M10	M12	M12	M16	M16	M20	M20	M24
Tightening torque	(Nm)		35	40	65	95	150	165	360	400	755	770	47
Distance between hubs	(mm)	G	33	33	44	48	54	56	70	78	97	86.4	138.4
Assembly length	(mm)	$G_1$	50.3	50.3	61.4	66.4	77.5	77.5	100	110	132.5	132.5	230.6
Moment of inertia**	( $10^{-3} \text{kgm}^2$ )	$J_{ges.}$	2.6	4	9	10.5	18	32	74	100	200	400	928
Weight**	(kg)		2.2	2.9	4.4	5.2	7.3	10	16	19.5	30.2	44	92.5
Torsional stiffness disc packs	(kNm/rad)	$C_T$	100	140	235	270	400	600	1,000	1,250	1,800	3,850	8,000
Axial $\pm$	(mm)		1.0	1.0	1.5	1.5	2.0	2.0	2.5	2.5	2.5	3.0	4.0
Lateral $\pm$	(mm)	$max, values$	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.8
Angular $\pm$	(degree)		1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Max. Drehzahl	( $\text{min}^{-1}$ )		5,800	5,200	4,500	4,300	3,850	3,500	2,950	2,700	2,400	2,100	1,900
Max. speed (balanced)***	( $\text{min}^{-1}$ )		13,500	12,300	10,500	10,000	8,950	8,000	6,700	6,300	5,600	4,900	4,500

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

LP2

# With keyway mounting

350 – 5,200 Nm



### Features

- High torsional stiffness
- Dual flex design
- Customer specified length on request

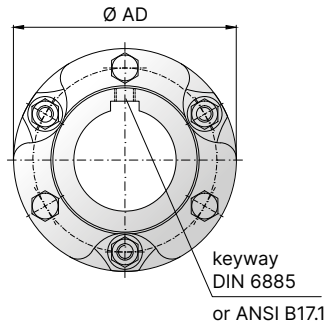
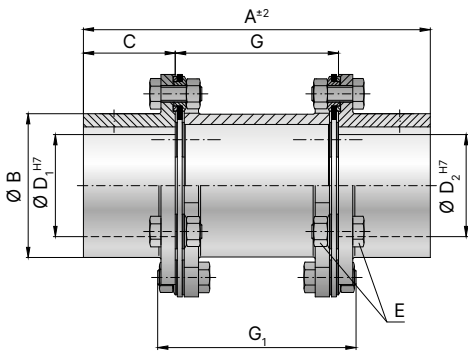
### Material

- **Disc pack:** highly elastic spring steel
- **Hubs and spacer:** high strength steel

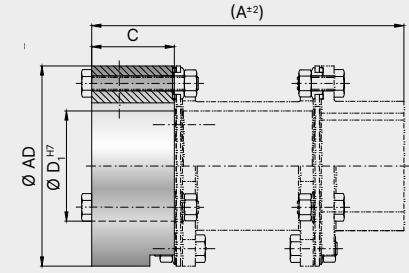
### Design

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



## Model LP2 | Size 300–2,600

Higher torques on request

Size			300	500	700	1,100	1,600	2,600
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)	$\varnothing AD$	99	109	128	133	150	168
Hub diameter	(mm)	$\varnothing B$	63	70.5	78	84	86	102
Hub fit length	(mm)	C	45	45	55	55	75	76
Bore diameter available from $\varnothing$ to $\varnothing H7$	(mm)	$D_{1/2}$	18 - 48	23 - 50	25 - 58	25 - 60	28 - 64	31 - 75
Bore diameter available from $\varnothing$ to $\varnothing H7$ (XL Hub)	(mm)	$D_{1/2}$	> 48 - 53	> 50 - 60	> 58 - 65	> 60 - 70	> 64 - 80	> 75 - 90
Assembly screw (ISO 4017) Tensioning nut (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	123	124	166	162
Moment of inertia**	( $10^{-3}kgm^2$ )	$J_{ges}$	4	5	9	11	20	35
Weight**	(kg)		2.6	3.5	4.8	5.4	8.5	12
Torsional stiffness disc packs	(kNm/rad)	$C_T$	100	140	235	270	400	600
Axial $\pm$	(mm)		1	1	1.5	1.5	2	2
Lateral $\pm$	(mm)	max. values	0.8	0.8	1	1	1.4	1.4
Angular $\pm$	(degree)		1.4	1.4	1.4	1.4	1.4	1.4
Max. speed	(min <sup>-1</sup> )		5,800	5,200	4,500	4,300	3,850	3,500
Max. speed (balanced)***	(min <sup>-1</sup> )		13,500	12,300	10,500	10,000	8,950	8,000

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

LP2

# With keyway mounting

4,000 – 50,000 Nm



### Features

- High torsional stiffness
- Dual flex design
- Customer specified length on request

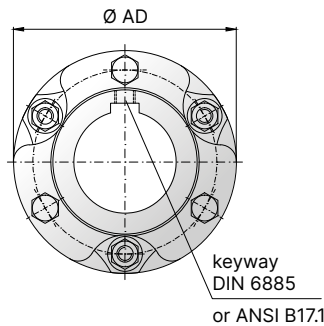
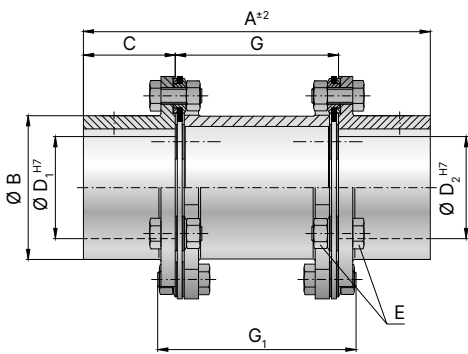
### Material

- **Disc pack:** highly elastic spring steel
- **Hubs and spacer:** high strength steel

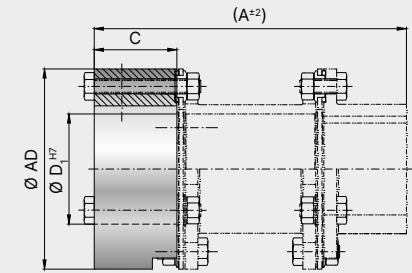
### Design

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



## Model LP2 | Size 4,000–25,000

Higher torques on request

Size			4,000	6,000	8,000	15,000	25,000
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	474	669.4
Outside diameter	(mm)	$\varnothing AD$	198	212	238	272	300
Hub diameter	(mm)	$\varnothing B$	120	130	140	182	189
Hub fit length	(mm)	C	90	90	100	125	165
Bore diameter available from $\varnothing$ to $\varnothing H7$	(mm)	$D_{1/2}$	38 - 90	39 - 95	50 - 102	70 - 140	75 - 145
Bore diameter available from $\varnothing$ to $\varnothing H7$ (XL Hub)	(mm)	$D_{1/2}$	> 90 - 100	> 95 - 115	> 102 - 125	> 140 - 160	> 145 - 170
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M16	M16	M20	M20	M24
Tightening torque	(Nm)		360	400	755	770	47
Distance between hubs	(mm)	G	140	160	172	224	339.4
Assembly length	(mm)	$G_1$	174	194	220	274.6	431.6
Moment of inertia**	( $10^{-3}kgm^2$ )	$J_{ges}$	81	109	216	448	870
Weight**	(kg)		18.4	21.3	33	48.9	82
Torsional stiffness disc packs	(kNm/rad)	$C_T$	1,000	1,250	1,800	3,850	8,000
Axial $\pm$	(mm)		2.5	2.5	2.5	3	4
Lateral $\pm$	(mm)	max. values	1.4	1.5	1.6	2.2	2.6
Angular $\pm$	(degree)		1.4	1.4	1.4	1.4	1.4
Max. speed	(min <sup>-1</sup> )		2,900	2,700	2,400	2,100	1,900
Max. speed (balanced)***	(min <sup>-1</sup> )		6,700	6,300	5,600	4,900	4,500

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

DISC PACK COUPLINGS  
LP

# LP4 S

## With conical clamping ring single flex

350 – 50,000 Nm



### Features

- Extremely high torsional stiffness
- Good for reversing loads
- Compensates for axial and angular misalignment only

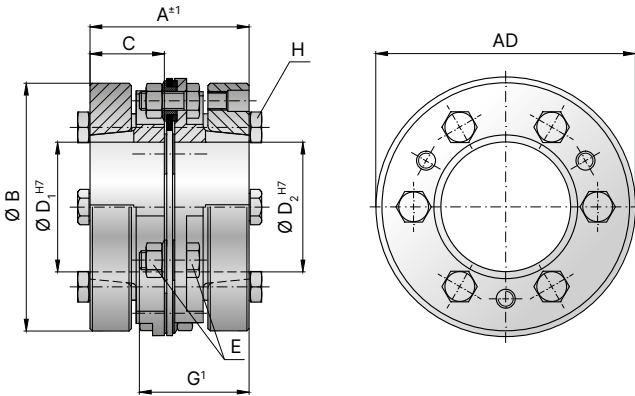
### Material

- **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.

S = single flex design



## Model LP4 S | Size 300 – 25,000

Size			300	500	700	1,100	1,600	2,600	4,000	6,000	8,000	15,000	25,000
Rated torque*	(Nm)	$T_{KN}$	350	500	700	1,100	1,600	2,600	4,000	6,000	8,000	15,000	25,000
Maximum torque*	(Nm)	$T_{KNmax}$	700	1,000	1,400	2,200	3,200	5,200	8,000	12,000	16,000	30,000	50,000
Overall length	(mm)	A	76	76	93	99	120	136	161	174	226	238.7	264.7
Outside diameter	(mm)	Ø AD	99	109	128	133	150	168	198	212	238	272	300
Hub diameter	(mm)	Ø B	95	105	122	130	146	165	184	205	230	269	295
Hub fit length	(mm)	C	35.5	35.5	43.3	46	56	63.5	74	80.5	105	112	124
Bore diameter available from Ø to Ø H7	(mm)	$D_{1/2}$	24 - 50	24 - 55	30 - 65	30 - 65	35 - 70	35 - 85	50 - 100	50 - 110	60 - 115	70 - 150	90 - 170
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M8	M8	M10	M10	M12	M12	M16	M16	M20	M20	M24
Tightening torque	(Nm)		35	40	65	95	150	165	360	400	755	770	47
Distance between hubs	(mm)	G	-	-	-	-	-	-	-	-	-	-	-
Assembly length	(mm)	$G_1$	50.5	50.5	63.5	66	79	86.5	104	110.5	145	152	186.8
Clamping screw	(ISO 4017)	H	6 x M8	6 x M8	6 x M10	6 x M10	6 x M12	6 x M12	6 x M16	6 x M16	6 x M20	6 x M20	6 x M20
Tightening torque	(Nm)		20	26	39	61	98	140	225	308	490	620	620
Moment of inertia**	( $10^{-3}kgm^2$ )	$J_{ges.}$	3	5	12	16	30	57	106	168	371	716	1,062
Weight**	(kg)		2.5	3.0	5	6.7	9.6	13.6	19.5	25.3	45.4	62	75
Torsional stiffness disc packs	(kNm/rad)	$C_T$	200	280	470	540	800	1,200	2,000	2,500	3,600	7,700	16,000
Axial ±	(mm)		0.5	0.6	0.7	0.8	1.0	1.1	1.3	1.3	1.3	1.5	1.5
Lateral ±	(mm)	max. values	-	-	-	-	-	-	-	-	-	-	-
Angular ±	(degree)		0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Max. speed	( $min^{-1}$ )		5,800	5,200	4,500	4,300	3,850	3,500	2,900	2,700	2,400	2,100	1,900
Max. speed (balanced)***	( $min^{-1}$ )		13,500	12,300	10,500	10,000	8,950	8,000	6,700	6,300	5,600	4,900	4,500

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



# LP4 D

## With conical clamping ring dual flex

350 – 50,000 Nm



### Features

- High torsional stiffness
- Good for reversing loads
- Compensates for axial, angular and lateral misalignment

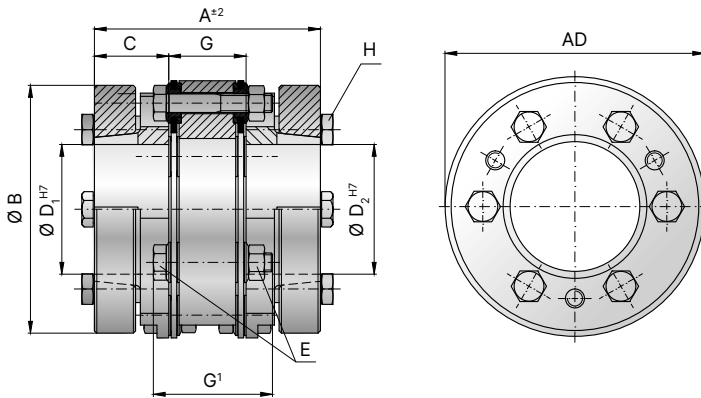
### Material

- **Disc pack:** hochelastischer Federstahl
- **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.

D = dual flex design



## Model LP4 D | Size 300 – 25,000

Size			300	500	700	1,100	1,600	2,600	4,000	6,000	8,000	15,000	25,000
Rated torque*	(Nm)	$T_{KN}$	350	500	700	1,100	1,600	2,600	4,000	6,000	8,000	15,000	25,000
Maximum torque*	(Nm)	$T_{KNmax}$	700	1,000	1,400	2,200	3,200	5,200	8,000	12,000	16,000	30,000	50,000
Overall length	(mm)	A	104	104	131	140	166	183	218	239	307	310.4	386.4
Outside diameter	(mm)	Ø AD	99	109	128	133	150	168	198	212	238	272	300
Hub diameter	(mm)	Ø B	95	105	122	130	146	165	184	205	230	269	295
Hub fit length	(mm)	C	35.5	35.5	43.3	46	56	63.5	74	80.5	105	112	124
Bore diameter available from Ø to Ø H7	(mm)	$D_{1/2}$	24 - 50	24 - 55	30 - 65	30 - 65	35 - 70	35 - 85	50 - 100	50 - 110	60 - 115	70 - 150	90 - 170
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M8	M8	M10	M10	M12	M12	M16	M16	M20	M20	M24
Tightening torque	(Nm)		35	40	65	95	150	165	360	400	755	770	47
Distance between hubs	(mm)	G	33	33	44	48	54	56	70	78	97	86.4	138.4
Assembly length	(mm)	$G_1$	50.3	50.3	61.4	66.4	77.5	77.5	100	110	132.5	132.5	230.6
Clamping screw	(ISO 4017)	H	6 x M8	6 x M8	6 x M10	6 x M10	6 x M12	6 x M12	6 x M16	6 x M16	6 x M20	6 x M20	6 x M20
Tightening torque	(Nm)		20	26	39	61	98	140	225	308	490	620	620
Moment of inertia**	( $10^{-3}kgm^2$ )	$J_{ges.}$	4	7	15	20	38	69	134	207	453	853	1,463
Weight**	(kg)		3.2	3.9	6.5	7.9	12.0	16.7	24.7	32	56.5	75.4	108.3
Torsional stiffness disc packs (kNm/rad)		$C_T$	100	140	235	270	400	600	1,000	1,250	1,800	3,850	8,000
Axial ±	(mm)		1.0	1.0	1.5	1.5	2.0	2.0	2.5	2.5	2.5	3.0	4.0
lateral ±	(mm)	max. values	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.8
Angular ±	(degree)		1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Max. speed	( $min^{-1}$ )		5,800	5,200	4,500	4,300	3,850	3,500	2,900	2,700	2,400	2,100	1,900
Max. speed (balanced)***	( $min^{-1}$ )		13,500	12,300	10,500	10,000	8,950	8,000	6,700	6,300	5,600	4,900	4,500

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

LP3

## With conical clamping ring

350 – 5,200 Nm



### Features

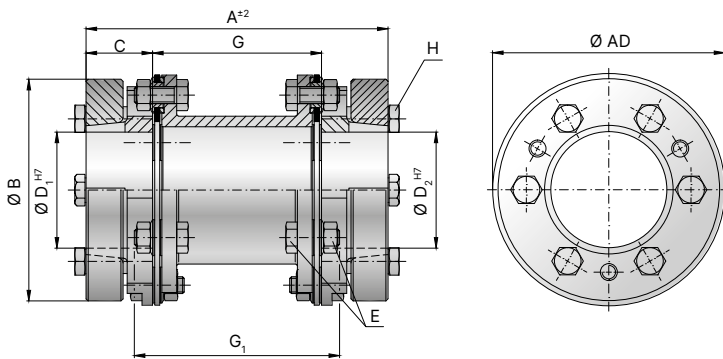
- High torsional stiffness
- Customer specified length on request
- Good for reversing loads

### Material

- **Disc pack:** 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 300–2,600

Size			300	500	700	1,100	1,600	2,600
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	123	124	166	162
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*	( $10^{-3}kgm^2$ )	$J_{ges.}$	5	7.5	16	20	40	74
Weight*	(kg)		3.6	5	7.0	8.1	13.2	18.3
Torsional stiffness disc packs	(kNm/rad)	$C_T$	100	140	235	270	400	600
Axial ±	(mm)		1	1	1.5	1.5	2	2
Lateral ±	(mm)	max. values	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 <sup>-1</sup> )		5,800	5,200	4,500	4,300	3,850	3,500
Max. speed (balanced)**	(min <sup>-1</sup> )		13,500	12,300	10,500	10,000	8,950	8,000

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

LP3

## With conical clamping ring

4,000 – 50,000 Nm



### Features

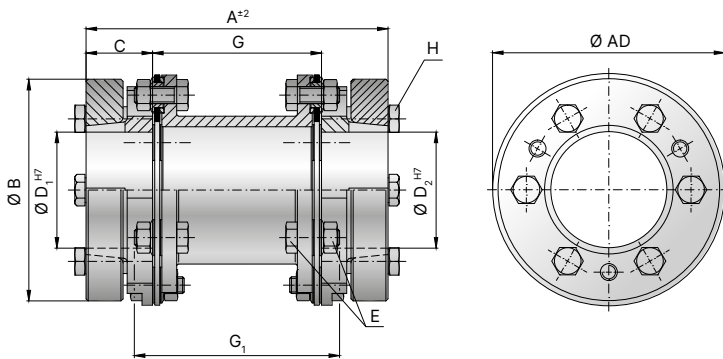
- High torsional stiffness
- Customer specified length on request
- Good for reversing loads

### Material

- **Disc pack:** 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 4,000–25,000

Size			4,000	6,000	8,000	15,000	25,000
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	448	587.4
Outside diameter	(mm)	Ø AD	198	212	238	272	300
Hub diameter	(mm)	Ø B	184	205	230	269	295
Hub fit length	(mm)	C	74	80.5	105	112	124
Bore diameter available from Ø to Ø H7	(mm)	$D_{1/2}$	50 - 100	50 - 110	60 - 115	70 - 150	90 - 170
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M16	M16	M20	M20	M24
Tightening torque	(Nm)		360	400	755	770	47
Distance between hubs	(mm)	G	140	160	172	224	339.4
Assembly length	(mm)	$G_1$	174	194	220	274.6	431.6
Clamping screw	(ISO 4017)		6 x M16	6 x M16	6 x M20	6 x M20	6 x M20
Tightening torque	(Nm)	H	225	308	490	620	620
Moment of inertia*	( $10^{-3}kgm^2$ )	$J_{ges.}$	141	216	470	903	1,465
Weight*	(kg)		26.7	33.7	60	80	110.8
Torsional stiffness disc packs	(kNm/rad)	$C_T$	1,000	1,250	1,800	3,850	8,000
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 <sup>-1</sup> )		2,900	2,700	2,400	2,100	1,900
Max. speed (balanced)**	(min <sup>-1</sup> )		6,700	6,300	5,600	4,900	4,500

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

# LP5 S

## With clamping hub single flex

350 – 30,000 Nm



### Features

- Easy installation
- Keyway optional
- Compensates for axial and angular misalignment only

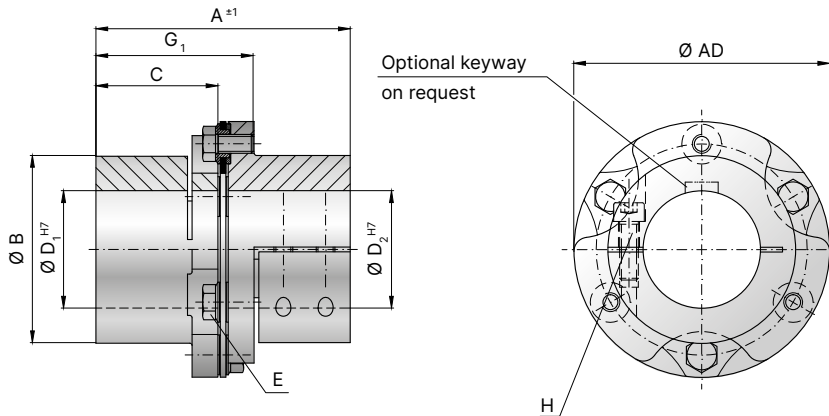
### Material

- **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.

S = single flex design



## Model LP5 S | Size 300 – 15,000

Size			300	500	700	1,100	1,600	2,600	4,000	6,000	8,000	15,000
Rated torque	(Nm)	$T_{KN}$	350	500	700	1,100	1,600	2,600	4,000	6,000	8,000	15,000
Maximum torque	(Nm)	$T_{KNmax}$	700	1,000	1,400	2,200	3,200	5,200	8,000	12,000	16,000	30,000
Overall length	(mm)	A	95	113	134	151	178	189	217	237	268	324.7
Outside diameter	(mm)	$\varnothing AD$	99	109	128	133	150	168	198	212	238	272
Hub diameter	(mm)	$\varnothing B$	72	80	89	95	103	122	137	151	168	182
Hub fit length	(mm)	C	45	54	64	72	85	90	102	112	126	155
Bore diameter available from $\varnothing$ to $\varnothing H7$	(mm)	$D_{1/2}$	18 - 48	23 - 50	25 - 58	25 - 60	28 - 64	31 - 75	38 - 90	39 - 95	50 - 102	70 - 120
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M8	M8	M10	M10	M12	M12	M16	M16	M20	M20
Tightening torque	(Nm)		35	40	65	95	150	165	360	400	755	770
Distance between hubs	(mm)	G	–	–	–	–	–	–	–	–	–	–
Assembly length	(mm)	$G_1$	63	72	84	96.8	114.2	119	142.1	152.1	176	205.4
Clamping screw	(ISO 4017)	H	4 x M6	4 x M8	4 x M8	4 x M10	4 x M12	4 x M14	4 x M14	4 x M16	4 x M20	4 x M18
Tightening torque	(Nm)		18	34	39	73	120	192	246	395	615	500
Moment of inertia*	( $10^{-3} \text{kgm}^2$ )	$J_{ges.}$	2	4	8	11	20	38	75	110	208	392
Weight*	(kg)		1.9	3	4.8	5.5	8.4	12.0	17.3	22.5	34.1	49.3
Torsional stiffness disc packs	(kNm/rad)	$C_T$	200	280	470	540	800	1,200	2,000	2,500	3,600	7,700
Axial $\pm$	(mm)		0.5	0.6	0.7	0.8	1.0	1.1	1.3	1.3	1.3	1.5
Lateral $\pm$	(mm)	max. values	–	–	–	–	–	–	–	–	–	–
Angular $\pm$	(degree)		0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Max. speed	( $\text{min}^{-1}$ )		5,800	5,200	4,500	4,300	3,850	3,500	2,900	2,700	2,400	2,100
Max. speed (balanced)**	( $\text{min}^{-1}$ )		13,500	12,300	10,500	10,000	8,950	8,000	6,700	6,300	5,600	4,900

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

**LP5 D**

# With clamping hub dual flex

**350 – 30,000 Nm**



**Features**

- Easy installation
- Keyway optional
- Compensates for axial, angular and lateral misalignment

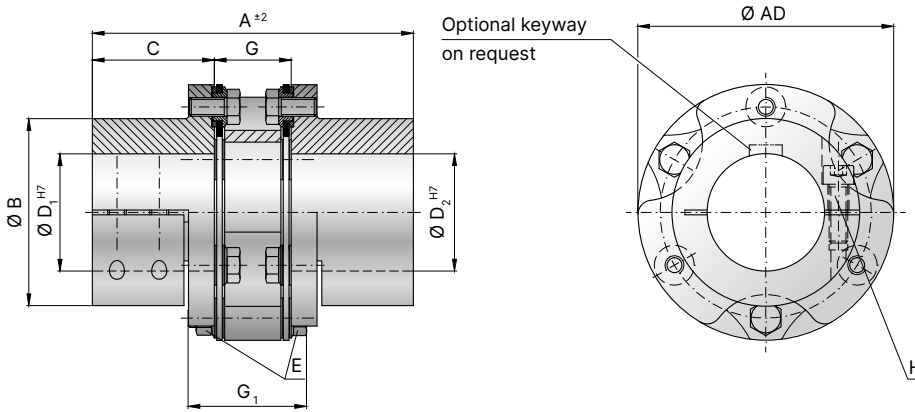
**Material**

- **Disc pack:** 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.

**D = dual flex design**



## Model LP5 D | Size 300 – 15,000

Size			300	500	700	1,100	1,600	2,600	4,000	6,000	8,000	15,000
Rated torque	(Nm)	$T_{KN}$	350	500	700	1,100	1,600	2,600	4,000	6,000	8,000	15,000
Maximum torque	(Nm)	$T_{KNmax}$	700	1,000	1,400	2,200	3,200	5,200	8,000	12,000	16,000	30,000
Overall length	(mm)	A	123	141	172	192	224	236	274	302	349	396.4
Outside diameter	(mm)	Ø AD	99	109	128	133	150	168	198	212	238	272
Hub diameter	(mm)	Ø B	72	80	89	95	103	122	137	151	168	182
Hub fit length	(mm)	C	45	54	64	72	85	90	102	112	126	155
Bore diameter available from Ø to Ø H7	(mm)	$D_{1/2}$	18 - 48	23 - 50	25 - 58	25 - 60	28 - 64	31 - 75	38 - 90	39 - 95	50 - 102	70 - 120
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M8	M8	M10	M10	M12	M12	M16	M16	M20	M20
Tightening torque	(Nm)		35	40	65	95	150	165	360	400	755	770
Distance between hubs	(mm)	G	33	33	44	48	54	56	70	78	97	86.4
Assembly length	(mm)	$G_1$	50.3	50.3	61.4	66.4	77.5	77.5	100	110	132.5	132.5
Clamping screw	(ISO 4017)	H	4 x M6	4 x M8	4 x M8	4 x M10	4 x M12	4 x M14	4 x M14	4 x M16	4 x M20	4 x M18
Tightening torque	(Nm)		18	34	39	73	120	192	246	395	615	500
Moment of inertia*	( $10^{-3}kgm^2$ )	$J_{ges.}$	3	5	11	15	27	50	103	149	291	530
Weight*	(kg)		2.7	3.9	6	7.4	10.8	15.1	22.5	29	44.8	62.8
Torsional stiffness disc packs	(kNm/rad)	$C_T$	100	140	235	270	400	600	1,000	1,250	1,800	3,850
Axial ±	(mm)	max. values	1.0	1.0	1.5	1.5	2.0	2.0	2.5	2.5	2.5	3.0
Lateral ±	(mm)		0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7
Angular ±	(degree)		1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Max. speed	( $min^{-1}$ )		5,800	5,200	4,500	4,300	3,850	3,500	2,900	2,700	2,400	2,100
Max. speed (balanced)**	( $min^{-1}$ )		13,500	12,300	10,500	10,000	8,950	8,000	6,700	6,300	5,600	4,900

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

LPH

## With fully split clamping hub

350 – 5,200 Nm



### Features

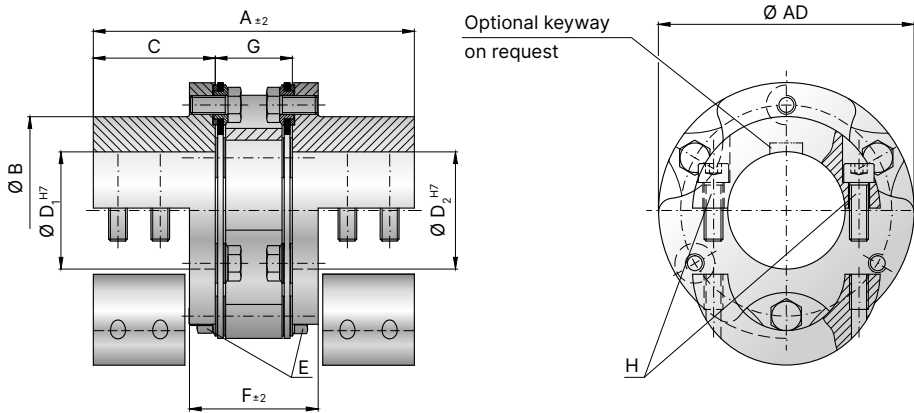
- Lateral mounting between shafts
- Easy installation and removal
- Dual flex design

### Material

- **Disc pack:** 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 | Size 300–2,600

Size			300	500	700	1,100	1,600	2,600
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	123	141	172	192	224	236
Outside diameter	(mm)	$\varnothing AD$	99	109	128	133	150	168
Hub diameter	(mm)	$\varnothing B$	72	80	89	95	100	116.5
Hub fit length	(mm)	C	45	54	64	72	85	90
Bore diameter available from $\varnothing$ to $\varnothing H7$	(mm)	$D_{1/2}$	18 - 48	23 - 50	25 - 58	25 - 60	28 - 64	31 - 75
Assembly screw (ISO 4017) Tensioning nut (DIN 4032)		E	M8	M8	M10	M10	M12	M12
Tightening torque	(Nm)		35	40	65	95	150	165
Distanz	(mm)	F	62	66	74	80	96	98
Distance between hubs	(mm)	G	33	33	44	48	54	56
Clamping screw (ISO 4017)		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*	( $10^{-3}kgm^2$ )	$J_{ges.}$	3	5	11	15	26	46
Weight*	(kg)		2.7	3.9	5.9	7.4	10.3	14
Torsional stiffness disc packs	(kNm/rad)	$C_T$	100	140	235	270	400	600
Axial $\pm$	(mm)	max. values	1.0	1.0	1.5	1.5	2.0	2.0
Lateral $\pm$	(mm)		0.2	0.2	0.3	0.3	0.4	0.4
Angular $\pm$	(degree)		1.4	1.4	1.4	1.4	1.4	1.4
Max. speed	( $min^{-1}$ )		5,800	5,200	4,500	4,300	3,850	3,500
Max. speed (balanced)**	( $min^{-1}$ )		13,500	12,300	10,500	10,000	8,950	8,000

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

LPH

## With fully split clamping hub

4,000 – 50,000 Nm



### Features

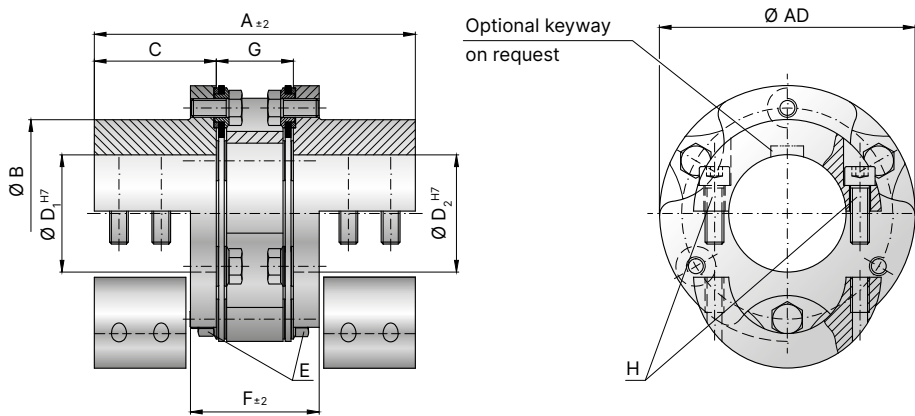
- Lateral mounting between shafts
- Easy installation and removal
- Dual flex design

### Material

- **Disc pack:** 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 | Size 4,000–25,000

Size			4,000	6,000	8,000	15,000	25,000
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	396.4	468.4
Outside diameter	(mm)	$\varnothing AD$	198	212	238	272	300
Hub diameter	(mm)	$\varnothing B$	137	149	168	182	189
Hub fit length	(mm)	C	102	112	126	155	165
Bore diameter available from $\varnothing$ to $\varnothing H7$	(mm)	$D_{1/2}$	38 - 90	39 - 95	50 - 102	70 - 120	90 - 135
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M16	M16	M20	M20	M24
Tightening torque	(Nm)		360	400	755	770	47
Distanz	(mm)	F	124	132	163	166.4	244.4
Distance between hubs	(mm)	G	70	78	97	86.4	138.4
Clamping screw	(ISO 4017)	H	8 x M14	8 x M16	8 x M20	8 x M18	12 x M16
Tightening torque	(Nm)		215	342	530	500	390
Moment of inertia*	( $10^{-3}kgm^2$ )	$J_{ges.}$	103	146	287	526	894
Weight*	(kg)		22.5	28.5	44.2	62.2	84.8
Torsional stiffness disc packs	(kNm/rad)	$C_T$	1,000	1,250	1,800	3,850	8,000
Axial $\pm$	(mm)		2.5	2.5	2.5	3.0	4.0
Llateral $\pm$	(mm)	max. values	0.5	0.5	0.6	0.7	0.8
Angular $\pm$	(degree)		1.4	1.4	1.4	1.4	1.4
Max. speed	(min <sup>-1</sup> )		2,900	2,700	2,400	2,100	1,900
Max. speed (balanced)**	(min <sup>-1</sup> )		6,700	6,300	5,600	4,900	4,500

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

**LPZ**

# Spacer plate

**350 – 50,000 Nm**



**Features**

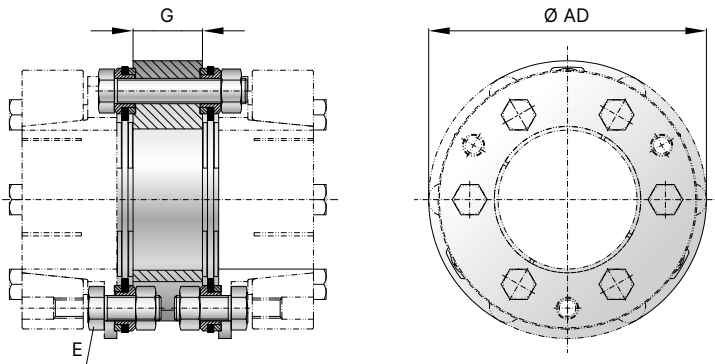
- High torsional stiffness
- Dual flex design
- For combination of hub types

**Material**

- **Spacer plate:** high strength steel

**Design**

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



## Model LPZ | Size 300–25,000

Size			300	500	700	1,100	1,600	2,600	4,000	6,000	8,000	15,000	25,000
Rated torque*	(Nm)	$T_{KN}$	350	500	700	1,100	1,600	2,600	4,000	6,000	8,000	15,000	25,000
Maximum torque	(Nm)	$T_{KNmax}$	700	1,000	1,400	2,200	3,200	5,200	8,000	12,000	16,000	30,000	50,000
Distance between hubs	(mm)	G	23	23	32	34	38	38	44	52	65	57	105
Outside diameter	(mm)	Ø AD	99	109	128	133	150	168	198	212	238	272	300
Assembly screw Tensioning nut	(ISO 4017) (DIN 4032)	E	M8	M8	M10	M10	M12	M12	M16	M16	M20	M20	M24
Tightening torque	(Nm)		35	40	65	95	150	165	360	400	755	770	47
Moment of inertia	( $10^{-3}kgm^2$ )	$J_{ges.}$	0.6	1	2.5	3	5	9	18	28	57	93	271
Weight	(kg)		0.53	0.66	1.1	1.4	1.8	2.3	3.7	5	7.8	9.7	24.2
Axial ±	(mm)	max. values	1	1	1.5	1.5	2	2	2.5	2.5	2.5	3	4
Lateral ±	(mm)		0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.8
Angular ±	(degree)		1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Max. speed	( $min^{-1}$ )		5,800	5,200	4,500	4,300	3,850	3,500	2,900	2,700	2,400	2,100	1,900
Max. speed (balanced)*	( $min^{-1}$ )		13,500	12,300	10,500	10,000	8,950	8,000	6,700	6,300	5,600	4,900	4,500

\* higher speeds on request





**With conical clampin 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

# Notes

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