

Flexible Couplings BIPEX Series



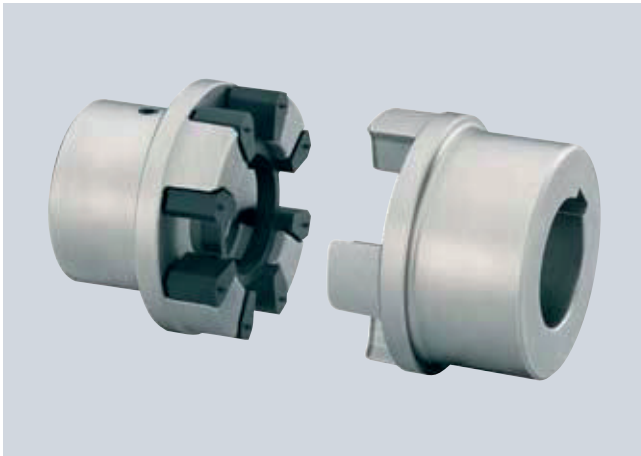
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FLENDER Standard Couplings

Flexible Couplings - BIPEX Series

General information

Overview



BIPEX couplings are torsionally flexible with low torsional backlash. They are outstanding for their particularly compact construction. BIPEX couplings link machine shafts.

BIPEX couplings are specially suited for electric motor drives which are well aligned with the driven machines and have uniform torque loads.

Benefits

BIPEX couplings are suitable for mounting horizontally, vertically or at any desired angle. The coupling parts can be arranged as required on the shaft extensions to be connected.

The cam ring is mounted with low backlash and achieves progressive torsional stiffness, i.e. torsional stiffness increases in proportion to capacity utilization.

The BIPEX coupling is fail-safe, i.e. if the cam ring is worn, the cast cams of the coupling hub provide for emergency operation.

Application

The BIPEX coupling is available as a catalog standard in 13 sizes with rated torque of between 13.5 Nm and 3700 Nm. The coupling is suitable for ambient temperatures of between $-30\text{ }^{\circ}\text{C}$ and $+80\text{ }^{\circ}\text{C}$.

BIPEX couplings are particularly suited for electric motor drives which have a uniform torque load and are well aligned. BIPEX couplings are frequently fitted and used in motor bell housings.

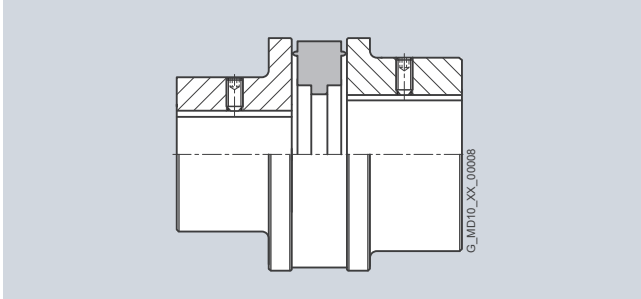
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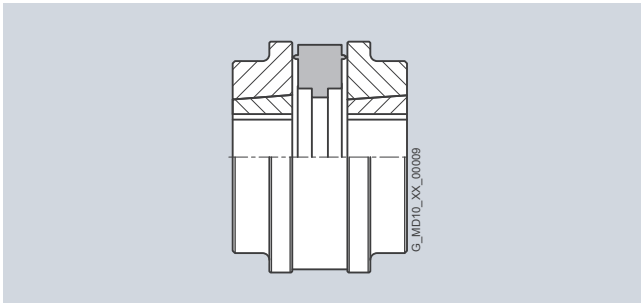
General information

Design

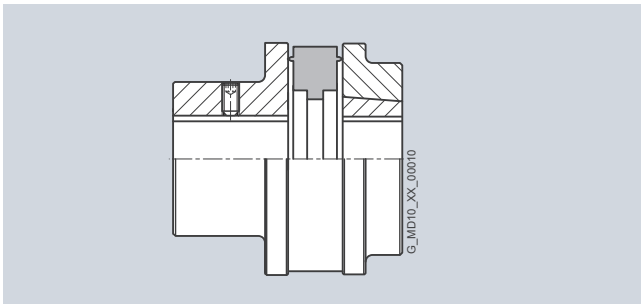
BIPEX couplings of types BWN, BWT and BNT each comprise two hub parts connected by a cam ring of elastomer material.



Type BWN



Type BWT



Type BNT

The couplings are inserted during fitting. The hubs are connected to the respective shafts via Taper clamping bushes or finished bores with parallel keyway connection.

BIPEX couplings are positive-locking and torsionally flexible thanks to the polyurethane cam ring. Shaft misalignment will result in deformation of the cam ring.

Coupling materials:

Hubs: EN-GJL-250

Cam ring: PU 92 ShoreA -30 °C to +80 °C

Types of BIPEX coupling

| Type | Description |
|------|--|
| BWN | Coupling as a shaft-to-shaft connection with drilled and grooved hubs |
| BWT | Coupling as a shaft-shaft connection with Taper clamping bushes |
| BNT | Coupling as a shaft-shaft connection with drilled and grooved hubs and a Taper clamping bush |

The coupling comprises the following:

- Cam ring
- 2 hub parts with identical cams. The hub parts are designed with a bore and keyway to DIN 6885 or with a taper bore for mounting a Taper clamping bush.

Fitting the clamping bush connects the hub firmly to the machine shaft.

In the case of part 4 the Taper clamping bush is inserted from the machine housing side. If there is insufficient space, the Taper clamping bush cannot be fitted from this side. Besides space for fitting the Taper clamping bush, space for the fitting tool (offset screwdriver) must be taken into consideration. In the case of part 3 the Taper clamping bush is inserted from the shaft end face side. The hub must be fitted before the machines to be connected are pushed together.

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General information

Technical data

Power ratings

| Size | Rated torque | Maximum torque | Overload torque | Fatigue torque | Maximum speed | Torsional stiffness at 50 % capacity utilization | Assembly Gap dimension | Permissible shaft misalignment at speed $n=1500$ rpm ¹⁾ | | |
|------------|----------------|------------------|-----------------|----------------|------------------|--|------------------------|--|--------------------|--------------------|
| | T_{KN} Nm | T_{Kmax} Nm | T_{KOL} Nm | T_{KW} | n_{max} rpm | $C_{Tdyn 50\%}$ Nm/rad | | ΔS mm | ΔK_a mm | ΔK_r mm |
| 43 | 13.5 | 40.5 | 54 | 2.7 | 5000 | 1100 | 0.5 | 0.25 | 0.08 | 0.1 |
| 53 | 24 | 72 | 96 | 4.8 | 5000 | 2000 | 0.5 | 0.25 | 0.09 | 0.1 |
| 62 | 42 | 126 | 168 | 8.4 | 5000 | 3300 | 0.5 | 0.25 | 0.11 | 0.1 |
| 72 | 75 | 225 | 300 | 15 | 5000 | 5800 | 0.5 | 0.25 | 0.12 | 0.1 |
| 84 | 130 | 390 | 520 | 26 | 5000 | 9100 | 0.5 | 0.25 | 0.14 | 0.1 |
| 97 | 220 | 660 | 880 | 44 | 5000 | 15000 | 1.0 | 0.5 | 0.16 | 0.1 |
| 112 | 360 | 1080 | 1440 | 72 | 5000 | 22000 | 1.0 | 0.5 | 0.19 | 0.1 |
| 127 | 550 | 1650 | 2200 | 110 | 5000 | 35000 | 1.0 | 0.5 | 0.21 | 0.1 |
| 142 | 800 | 2400 | 3200 | 160 | 4900 | 54000 | 1.0 | 0.5 | 0.24 | 0.1 |
| 162 | 1250 | 3750 | 5000 | 250 | 4200 | 81000 | 1.0 | 0.5 | 0.27 | 0.1 |
| 182 | 1750 | 5250 | 7000 | 350 | 3800 | 121000 | 1.0 | 0.5 | 0.30 | 0.1 |
| 202 | 2650 | 7950 | 10600 | 530 | 3400 | 163000 | 1.0 | 0.5 | 0.34 | 0.1 |
| 227 | 3700 | 11100 | 14800 | 740 | 3000 | 271000 | 2.0 | 1.0 | 0.38 | 0.1 |

Torsional stiffness

The dynamic torsional stiffness is load-dependent and increases in proportion to capacity utilization. The values shown in the table are based on a capacity utilization of 50 %. The following table shows the correction factors for different rated loads.

$$C_{Tdyn} = C_{Tdyn 50\%} \cdot FKC$$

| Correction factor FKC | Capacity utilization T_N / T_{KN} | | | | | | |
|-----------------------|-------------------------------------|------|------|------|------|------|-------|
| | 20 % | 40 % | 50 % | 60 % | 70 % | 80 % | 100 % |
| | 0.7 | 0.9 | 1.0 | 1.1 | 1.25 | 1.4 | 1.7 |

Permitted shaft misalignment

The permitted shaft misalignment depends on the operating speed. As the speed increases, lower shaft misalignment values are permitted. The following table shows the correction factors for different speeds.

The maximum speed for the respective coupling size and type must be observed!

$$\Delta K_{perm} = \Delta K_{1500} \cdot FKV$$

| Correction factor FKV | Speed in rpm | | | |
|-----------------------|--------------|------|------|------|
| | 500 | 1000 | 1500 | 3000 |
| | 1.20 | 1.10 | 1.0 | 0.70 |

The damping coefficient is $\Psi = 1.4$

Furthermore, torsional stiffness and damping depend on the ambient temperature and the frequency and amplitude of the torsional vibration excitation. More precise torsional stiffness and damping parameters on request.

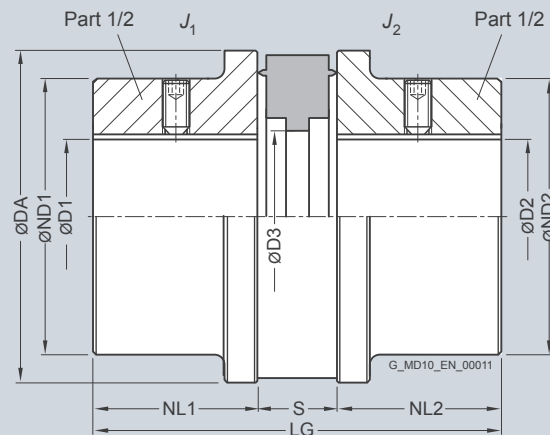
¹⁾ The maximum speed of the respective type must be noted. For further information on permissible shaft misalignment, please see the operating instructions.

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Type BWN

Selection and ordering data



| Size | Rated torque T_{KN} Nm | Dimensions in mm | | | | | | | Mass moment of inertia J_1/J_2 gm ² | Product code Order codes for bore diameters and tolerances are specified in catalog section 3 | Weight m kg |
|--|--------------------------------|------------------------------|-----|-------------|-------------|-----|----|-----|--|--|---------------------|
| | | Bore with keyway to DIN 6885 | | ND1/ ND2 | NL1/ NL2 | D3 | S | LG | | | |
| | | D1/D2 max. | DA | | | | | | | | |
| 43 | 13.5 | 25 | 43 | 43 | 22 | 21 | 12 | 56 | 0.04 | 2LC0120-0AA ■ ■ -0AA0 | 0.36 |
| 53 | 24 | 30 | 53 | 50 | 25 | 25 | 14 | 64 | 0.12 | 2LC0120-1AA ■ ■ -0AA0 | 0.62 |
| 62 | 42 | 35 | 62 | 58 | 30 | 29 | 16 | 76 | 0.26 | 2LC0120-2AA ■ ■ -0AA0 | 0.96 |
| 72 | 75 | 32 | 72 | 54 | 35 | 36 | 18 | 88 | 0.55 | 2LC0120-3AA ■ ■ -0AA0 | 1.4 |
| | | 42 | | 68 | | | | | 0.65 | | 1.6 |
| 84 | 130 | 38 | 84 | 64 | 40 | 40 | 21 | 101 | 0.8 | 2LC0120-4AA ■ ■ -0AA0 | 2.1 |
| | | 48 | | 76 | | | | | 1.1 | | 2.3 |
| 97 | 220 | 42 | 97 | 72 | 50 | 48 | 24 | 124 | 1.6 | 2LC0120-5AA ■ ■ -0AA0 | 3.3 |
| | | 50 | | 90 | | | | | 2.2 | | 3.6 |
| 112 | 360 | 48 | 112 | 82 | 60 | 54 | 27 | 147 | 3.2 | 2LC0120-6AA ■ ■ -0AA0 | 5.0 |
| | | 60 | | 100 | | | | | 4.8 | | 5.8 |
| 127 | 550 | 55 | 127 | 94 | 65 | 61 | 27 | 157 | 6.0 | 2LC0120-7AA ■ ■ -0AA0 | 7.3 |
| | | 65 | | 110 | | | | | 8.0 | | 7.8 |
| 142 | 800 | 60 | 142 | 100 | 75 | 70 | 31 | 181 | 10.0 | 2LC0120-8AA ■ ■ -0AA0 | 9.8 |
| | | 75 | | 126 | | | | | 16.0 | | 11.5 |
| 162 | 1250 | 65 | 162 | 110 | 80 | 81 | 36 | 196 | 18.0 | 2LC0121-0AA ■ ■ -0AA0 | 13.5 |
| | | 80 | | 134 | | | | | 26.0 | | 15.5 |
| 182 | 1750 | 75 | 182 | 126 | 90 | 90 | 42 | 222 | 35.0 | 2LC0121-1AA ■ ■ -0AA0 | 19.5 |
| | | 90 | | 152 | | | | | 46.0 | | 22.0 |
| 202 | 2650 | 80 | 202 | 134 | 100 | 100 | 48 | 248 | 55.0 | 2LC0121-2AA ■ ■ -0AA0 | 25.0 |
| | | 100 | | 168 | | | | | 80.0 | | 30.0 |
| 227 | 3700 | 90 | 227 | 150 | 110 | 111 | 54 | 274 | 85.0 | 2LC0121-3AA ■ ■ -0AA0 | 40.0 |
| | | 110 | | 180 | | | | | 110.0 | | 45.0 |
| ØD1: | | | | | | | | | | 1 | |
| • Without finished bore – Without order codes for diameter and tolerance | | | | | | | | | | 2 | |
| • Without finished bore from size 72 for 2nd diameter range D1 – Without order codes | | | | | | | | | | 9 | |
| • With finished bore – With order codes for diameter and tolerance (product code without -Z) | | | | | | | | | | | |
| ØD2: | | | | | | | | | | 1 | |
| • Without finished bore – Without order codes for diameter and tolerance | | | | | | | | | | 2 | |
| • Without finished bore from size 72 for 2nd diameter range D2 – Without order codes | | | | | | | | | | 9 | |
| • With finished bore – With order codes for diameter and tolerance (product code without -Z) | | | | | | | | | | | |

Mass moment of inertia J in gm², 1 gm² = 0.001 kgm², with reference to one coupling half.

Weight and mass moments of inertia apply to maximum bore diameters.

Ordering example:

BIPEX BWN coupling, size 43,

Part 1/2: Bore D1 20H7 mm, with keyway to DIN 6885-1 and set screw,

Part 1/2: Bore D2 22H7 mm, with keyway to DIN 6885-1 and set screw.

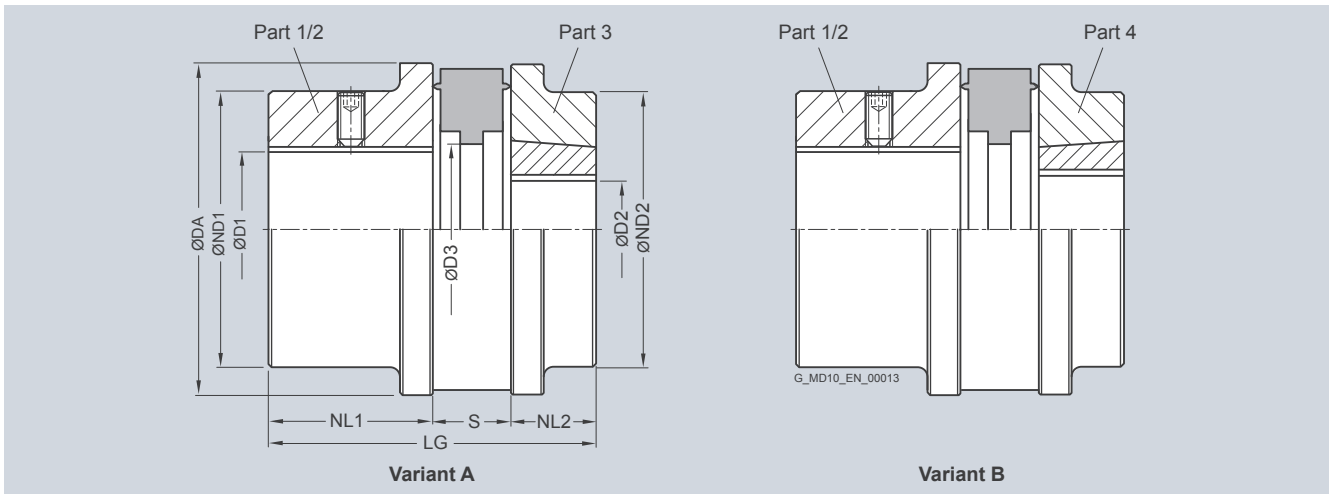
Product code:

2LC0120-0AA99-0AA0
L0M+M0N

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Type BNT

Selection and ordering data



Dimension D3, see type BWN.

| Size | Rated torque T_{KN} Nm | Variant | Dimensions in mm | | | | | | | | | | | Mass moment of inertia ¹⁾ J gm ² | Product code Order codes for bore diameters and tolerances are specified in catalog section 3 | Weight m kg |
|------|--------------------------------|---------|-------------------------------------|----------------------------|--------------------------------|------------------|-----|-----|-----|-----|-----|----|-----|--|--|---------------------|
| | | | Bore with keyway to DIN 6885-1 max. | Taper clamping bushes Size | Bore with keyway to DIN 6885-1 | | DA | ND1 | ND2 | NL1 | NL2 | S | LG | | | |
| 62 | 42 | A | 35 | 1008 | 10 | 25 ¹⁾ | 62 | 58 | 58 | 30 | 23 | 16 | 69 | 0.22 | 2LC0120-2AE ■■ -0AA0 | 0.9 |
| | | B | | | | | | | | | | | | | 2LC0120-2AF ■■ -0AA0 | |
| 72 | 75 | A | 32 | 1108 | 10 | 28 ¹⁾ | 72 | 54 | 68 | 35 | 23 | 18 | 76 | 0.41 | 2LC0120-3AE ■■ -0AA0 | 1.4 |
| | | B | 42 | | | | | | | | | | | | 2LC0120-3AF ■■ -0AA0 | |
| 84 | 130 | A | 38 | 1210 | 11 | 32 | 84 | 64 | 76 | 40 | 26 | 21 | 87 | 0.85 | 2LC0120-4AE ■■ -0AA0 | 1.9 |
| | | B | 48 | | | | | | | | | | | | 2LC0120-4AF ■■ -0AA0 | |
| 112 | 360 | A | 48 | 1610 | 14 | 42 ¹⁾ | 112 | 82 | 100 | 60 | 26 | 27 | 113 | 2.70 | 2LC0120-6AE ■■ -0AA0 | 4.5 |
| | | B | 60 | | | | | | | | | | | | 2LC0120-6AF ■■ -0AA0 | |
| 142 | 800 | A | 60 | 2012 | 14 | 50 | 142 | 100 | 126 | 75 | 33 | 31 | 139 | 9.25 | 2LC0120-8AE ■■ -0AA0 | 8.9 |
| | | B | 75 | | | | | | | | | | | | 2LC0120-8AF ■■ -0AA0 | |
| 182 | 1750 | A | 75 | 2517 | 16 | 60 | 182 | 126 | 126 | 90 | 45 | 42 | 177 | 27.0 | 2LC0121-1AE ■■ -0AA0 | 16.7 |
| | | B | 90 | | | | | | | | | | | | 2LC0121-1AF ■■ -0AA0 | |
| 202 | 2650 | A | 80 | 3020 | 25 | 75 | 202 | 134 | 168 | 100 | 52 | 48 | 200 | 52.5 | 2LC0121-2AE ■■ -0AA0 | 23 |
| | | B | 100 | | | | | | | | | | | | 2LC0121-2AF ■■ -0AA0 | |
| 227 | 3700 | A | 90 | 3535 | 35 | 90 | 227 | 150 | 180 | 110 | 90 | 54 | 254 | 30.0 | 2LC0121-3AE ■■ -0AA0 | 37.5 |
| | | B | 110 | | | | | | | | | | | | 2LC0121-3AF ■■ -0AA0 | |

- ØD1:
 • Without finished bore – Without order codes for diameter and tolerance 2
 • With finished bore – With order codes for diameter and tolerance (product code without **-Z**) 9
- ØD2:
 • Without Taper clamping bush – Without order codes for diameter and tolerance 1
 • With Taper clamping bush – With order codes for diameter (product code without **-Z**) 9

Mass moment of inertia J in gm², 1 gm² = 0.001 kgm², with reference to one coupling half.

Weight and mass moments of inertia apply to maximum bore diameters.

Ordering example:

BIPEX BNT coupling, size 62, variant B
 Part 1/2: Bore D1 20H7 mm, with keyway to DIN 6885-1 and set screw,
 Part 4: Bore D2 22H7 mm, with keyway to DIN 6885-1 and set screw.

Product code:
2LC0120-2AF99-0AA0
LOM+MON

¹⁾ Bores, some with shallow keyway, see catalog section 14.

