

23000

Couplings

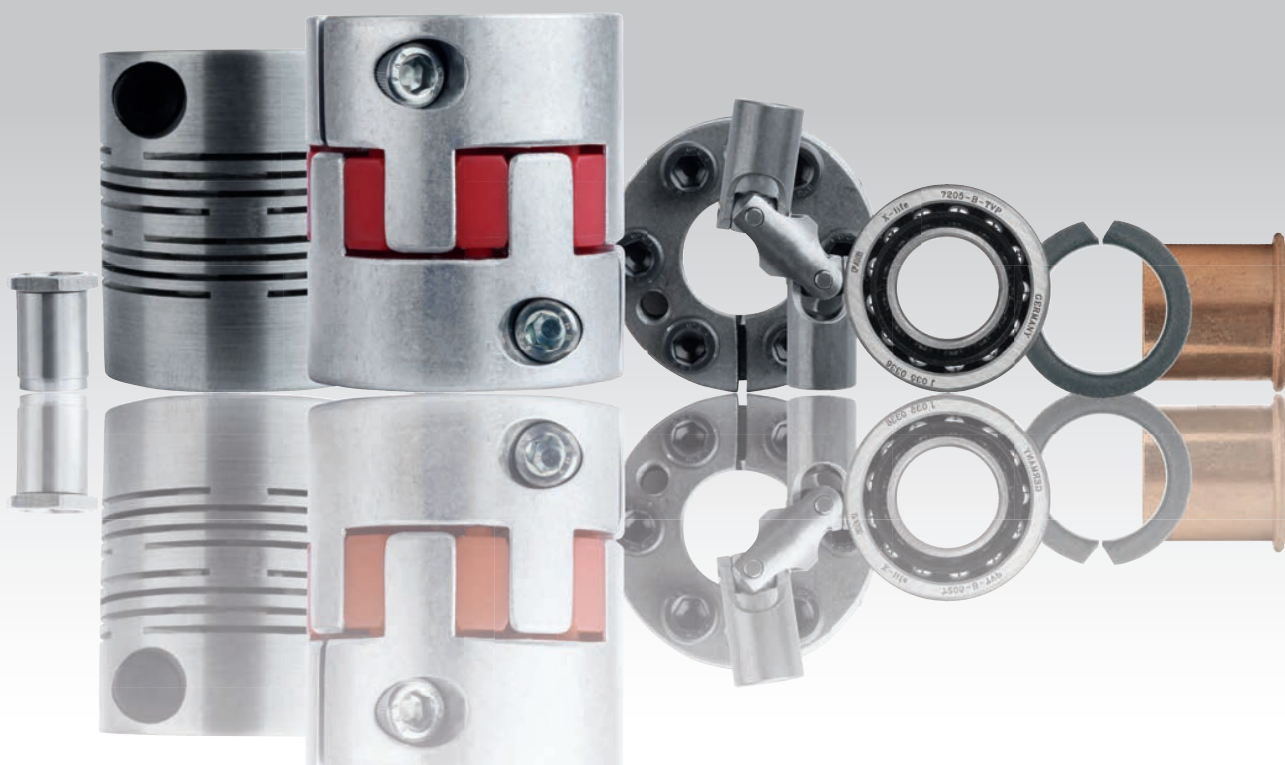
Rigid couplings

Conical clamping rings

Cardan joints

Quick plug couplings

Bearings



01000

02000

03000

04000

05000

06000

07000

08000

09000

20000

21000

22000

23000

Couplings

Note:

The zero backlash, flexible metal bellows or elastomer couplings are particularly suited to highly accurate drives with average torque values. They are the ideal solution for accurately connecting two shaft journals at a true angle. Axial, radial and angular displacement between two ends of a shaft can be compensated within defined limits. This produces minimal bearing stresses as a result of the low restoring forces. A strong shaft to hub connection guarantees zero backlash transmission of torque, even without additional parallel key. Low mass moments of inertia and a high quality kinetic energy guarantee excellent dynamic behaviour, even at high revolutions. As a basic principle, the couplings are wear and maintenance-free. The range of possible uses extends from challenging drive systems in general mechanical engineering through applications in metrology and automatic control to the spindle and axial drives of machine tools. Other typical examples of their use include textile, packaging and timber processing machines as well as industrial robots and multi-spindle drilling heads.

Engineering

Comparison	Metal bellows couplings	Elastomer couplings	Spring bar coupling devices
Major functional features	<ul style="list-style-type: none"> – very high torsion resistance, therefore accurate transfer of the angle of rotation – low mass moments of inertia – full metal version – minimal restoring forces on the bearing 	<ul style="list-style-type: none"> – plug-in (blind assembly is possible) – vibration dampening – no-play, due to pretensioning of the coupling star in the claws – 23021 to DIN 69002 suitable for the highest revs 	<ul style="list-style-type: none"> – compact design – play-free, absolute synchronism – high torsion resistance – low mass moments of inertia – full metal version – models in aluminium and stainless steel
Connection or compensating elements	– metal bellows of stainless steel	– elastomer star in polyurethane	– full metal version with slotted structure
Hub version	– easy-to-assemble clamp hub (strong, no-play)	<ul style="list-style-type: none"> – easy-to-assemble clamp hub – conical connection to clamping ring hub 	– easy-to-assemble clamp hub, fixed or removable (strong, no-play)
Temperature range	to max. 300 °C	-30 °C up to +90 °C	-50 °C up to +150 °C
Revolutions	Couplings are prebalanced. Additional balancing is recommended for revolutions in excess of 5000 r.p.m.	Version with clamping ring hub (23021) is suitable for up to 20000 r.p.m..	Depending on model, suitable for speeds up to 10000 r.p.m.

Layout

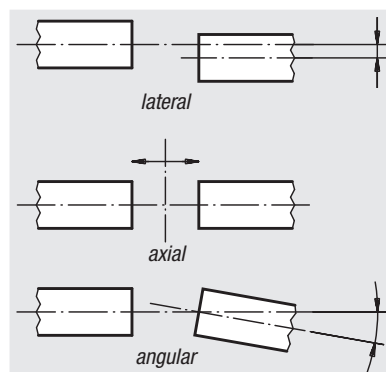
$$M_N \geq 1,5 \cdot M_{max} \text{ [Nm]}$$

Judgement calculation:

M_N $\hat{=}$ nominal torque of the coupling

M_{max} $\hat{=}$ maximum engine torque

For an accurate layout, the actual acting torques must be calculated from the cutting or acceleration forces. For short periods in exceptional cases such as collision, for example, increased stress up to twice the nominal torque is possible.



Shaft displacement

Axial and angular displacement are generally not a problem and are also easy to check. Conversely, great attention should be paid to radial shaft displacement, i.e. the lateral parallel displacement of the axes of rotation. This error must not exceed the value prescribed in the table.

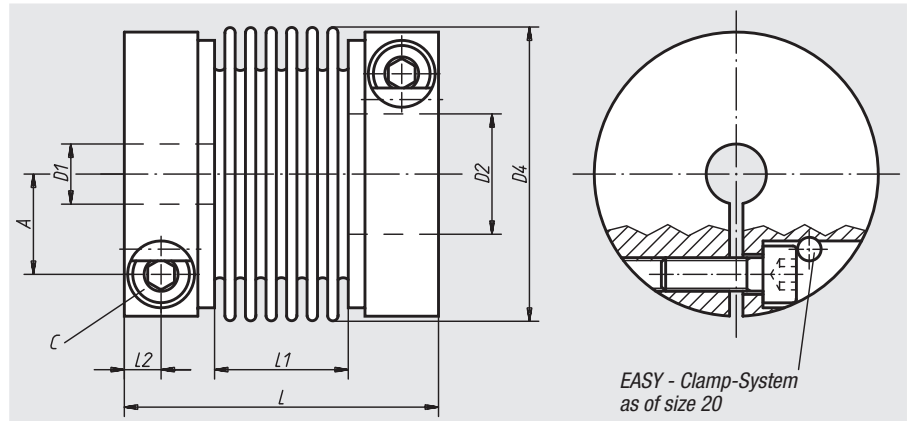
Metal bellows couplings

with radial clamping hub



Material:
Hub in aluminium, natural finish. Bellows in stainless steel

Sample order:
nlm 23000-012,
D1 = 6
D2 = 6
(The hubs are supplied predrilled).



Note:
Short assembly times and an easy installation due to the radial clamping hub. Also, if the installation space is limited. The necessary tightening torque of the clamping screw must be noted.

Assembly:
The seat shaft / hub is to be selected as transitional seat. Admissible seat clearance shaft / hub: min. 0.01 mm; max. 0.04 mm. E.g. shaft: Ø 28 k6 borehole: Ø 28 F6. Boreholes which are smaller than D min. are possible; but an optimal transfer of the nominal torque of the coupling can not be guaranteed in this case. As the metal bellows consist of thin stainless steel sheeting, special care during fitting and disassembly is necessary. Damages to the bellows can render the coupling useless.

On request:
Desired hub holes D1 and D2 separately with tolerance class or tolerance zone.

Order No.	Size	Nominal torque Nm	Moment of inertia (10 ⁻³ kgm ²)	Torsion resistance Nm/arcmin	Max. axial shaft displacement ±	Max. lateral shaft displacement	Axial spring stiffness N/mm	Lateral spring stiffness N/mm	Tightening torque of screws (Nm)
23000-001	1	1	0,0004	0,09	0,3	0,2	21	26	1
23000-004	4	4	0,003	0,46	0,4	0,2	35	65	2
23000-007	7	7	0,014	1,1	0,6	0,25	45	60	4
23000-012	12	12	0,03	2,05	0,7	0,25	40	70	7
23000-020	20	20	0,14	5,2	0,8	0,25	51	190	14
23000-060	60	60	0,29	8,7	0,9	0,3	49	260	35
23000-170	170	170	0,83	17,5	1	0,3	80	470	65
23000-400	400	400	2,42	47,1	1	0,3	100	640	115
23000-600	600	600	4,7	66,9	1	0,3	100	980	200

Order No.	D1/D2 predrilled	D1/D2 min.	D1/D2 max.	D4	A	C (DIN 912-10.9)	L	L1	L2	Approx. weight g
23000-001	3	3	6	16,5	4,6	M2,5	31,5	13,5	3,3	12
23000-004	4	5	10	24,5	7,5	M3	43,5	17,5	4,4	40
23000-007	5	6	17	34	11	M4	57	29	5	70
23000-012	5	6	19	39,5	13	M5	62	29	6	140
23000-020	7	9	30	56	19	M6	70	30	7,5	300
23000-060	12	18	34	66	22	M8	77	33	8,5	500
23000-170	15	22	43	82	28,5	M10	92	40	10,5	800
23000-400	24	34	55	101	35	M12	106	48	12	1500
23000-600	31	35	70	122	43,5	M14	116	52	13,5	2200

01000 02000 03000 04000 05000 06000 07000 08000 09000 20000 21000 22000 23000

Metal bellows couplings

clamping with grub screw



Material, version:

Hub in aluminium, natural finish. Bellows in stainless steel.

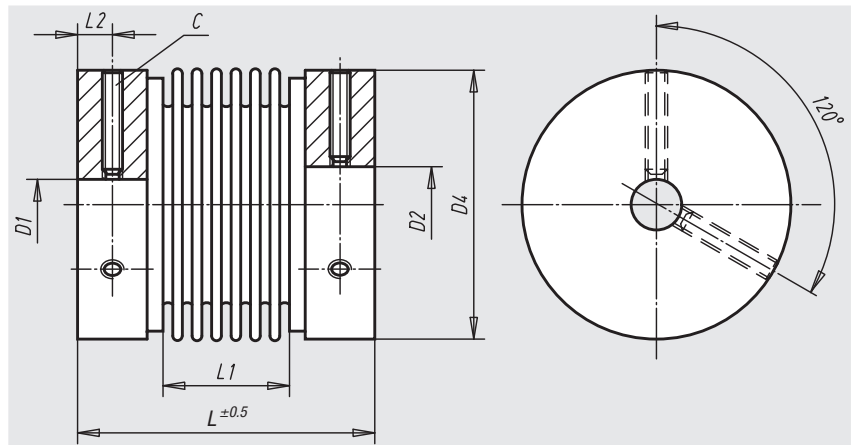
Sample order:

n1m 23002-0004,

D1 = 3

D2 = 3

(The hubs are supplied predrilled).



Note:

The clamping of the hub by means of a grub screw is a cost-effective alternative for the Metal Bellows Couplings with radial clamping hub (23000). Short assembly times and an easy installation due to the clamping hub with grub screws. Also, if the installation space is limited. The necessary tightening torque of the grub screw must be noted. For easy disassembling we recommend to fit out the shafts with a face surface.

Temperature range:

-20 °C up to +150 °C.

Assembly:

The seat shaft / hub is to be selected as transitional seat. Admissible seat clearance shaft / hub: min. 0.01 mm; max. 0.04 mm. E.g.

shaft: Ø 5 k6

borehole: Ø 5 G7.

Boreholes which are smaller than D min. are possible; but an optimal transfer of the nominal torque of the coupling can not be guaranteed in this case.

As the metal bellows consist of thin stainless steel sheeting, special care during fitting and disassembly is necessary. Damages to the bellows can render the coupling useless.

On request:

Desired hub holes D1 and D2 separately with tolerance class or tolerance zone.

Order No.	Size	Nominal torque Nm	Moment of inertia (10 ⁻³ kgm ²)	Torsion resistance (10 ⁻³ Nm/arcmin)	Max. axial shaft displacement ±	Max. lateral shaft displacement	Axial spring stiffness N/mm	Lateral spring stiffness N/mm	Approx. weight g
23002-0004	0,4	0,4	0,00019	50	0,35	0,1	10	15	8
23002-0005	0,9	0,9	0,00019	90	0,3	0,1	21	26	10
23002-0020	2	2	0,0029	230	0,5	0,1	15	15	32
23002-0040	4	4	0,0032	460	0,4	0,1	35	65	37
23002-0060	6	6	0,016	1100	0,6	0,25	45	60	85
23002-0080	8	9	0,028	1300	0,8	0,25	16	24	120

Order No.	Tightening torque of screws (Nm)	D1/D2 predrilled	D1/D2 min.	D1/D2 max.	D4	C (DIN 916)	L	L1	L2
23002-0004	1	3	3	8	16	M3	26	12	2,3
23002-0005	1	3	3	8	16	M3	27	13	2,3
23002-0020	4	5	5	15	25	M4	38	16	3,5
23002-0040	4	5	5	15	25	M4	39	17	3,5
23002-0060	8	6	6	20	35	M5	54	29	4,3
23002-0080	10	6	6	26	41	M6	54	26	5

Beam Coupling

with radial clamping hub, aluminium



Material, version:
Aluminium, natural finish

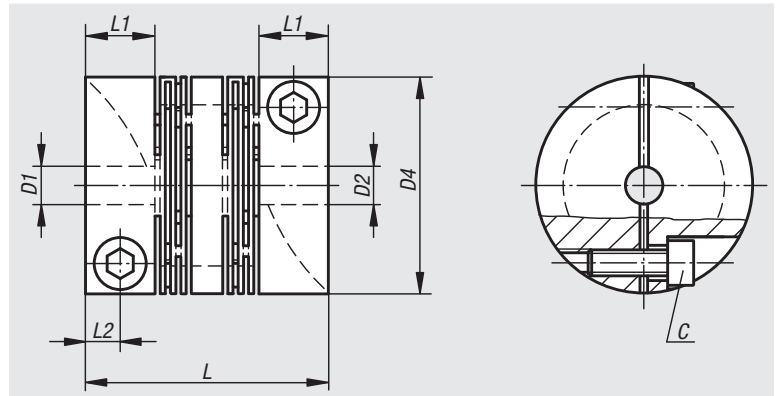
Sample order:
nlm 23010-1016,
D1 = 2,5
D2 = 2,5
(The hubs are supplied predrilled).

Note:
Zero backlash, torsionally rigid, resiliently flexible and maintenance-free full metal coupling for transmitting angle synchronous rotary movement. The innovative slit structure makes possible a very good axial, radial and angular flexibility with low reset force. Ideal for servomotors.

Temperature range:
-50 °C up to +150 °C.

Assembly:
Recommended shaft tolerances h7.

On request:
Desired hub holes D1 and D2 separately with tolerance class or tolerance zone.



Order No.	Size	Nominal torque Nm	Moment of inertia (10 ⁻³ kgm ²)	Torsion resistance Nm/arcmin	Max. axial shaft displacement ±	Max. lateral shaft displacement	Max. angular shaft displacement	Axial spring stiffness N/mm	Lateral spring stiffness N/mm	Revolutions per minute max.
23010-1016	16	3	0,001	0,09	0,3	0,2	1°	155	234	10000
23010-1018	18	3	0,0003	0,12	0,3	0,2	1°	39	176	10000
23010-1020	20	5	0,0015	0,15	0,3	0,2	1°	192	243	9500
23010-1022	22	3	0,0008	0,17	0,3	0,2	1°	80	369	9500
23010-1025	25	7	0,0043	1,02	0,3	0,2	1°	140	437	8000
23010-1030	30	10	0,011	1,45	0,4	0,3	1°	170	363	6000
23010-1040	40	19	0,035	3,35	0,4	0,3	1°	270	379	5000
23010-1050	50	35	0,114	10,18	0,5	0,3	1°	410	853	5000
23010-1060	60	70	0,285	20,65	0,5	0,3	1°	510	1201	4500
23010-1070	70	130	0,480	27,55	0,5	0,3	1°	1900	2002	4000

Order No.	D1/D2 predrilled	D1/D2 min.	D1/D2 max.	D4	L	L1	L2	C (DIN 912-12.9)	Tightening torque of screws (Nm)	Approx. weight kg
23010-1016	2,5	3	6	16	23	7	3,5	M2,5x6	1	0,010
23010-1018	2,5	3	6	18	16,6	5,5	2,75	M2,5x8	1	0,005
23010-1020	2,5	3	8	20	28	8	4	M2,5x8	1	0,015
23010-1022	2,5	3	10	22	20	5,5	2,75	M2,5x8	1	0,012
23010-1025	5,5	6	12	25	28	8	4	M3x10	2	0,025
23010-1030	5,5	6	14	30	40	11	5,5	M4x10	4	0,050
23010-1040	5,5	6	18	40	48	11	5,5	M5x14	9	0,115
23010-1050	9,5	10	26	50	65	19	9,5	M6x16	14	0,250
23010-1060	9,5	10	30	60	80	25	12,5	M8x18	30	0,500
23010-1070	14,5	15	35	70	95	25	12,5	M8x25	30	0,750

Beam Coupling

with radial clamping hub, stainless steel



Material, version:

Stainless steel 1.4305, natural finish

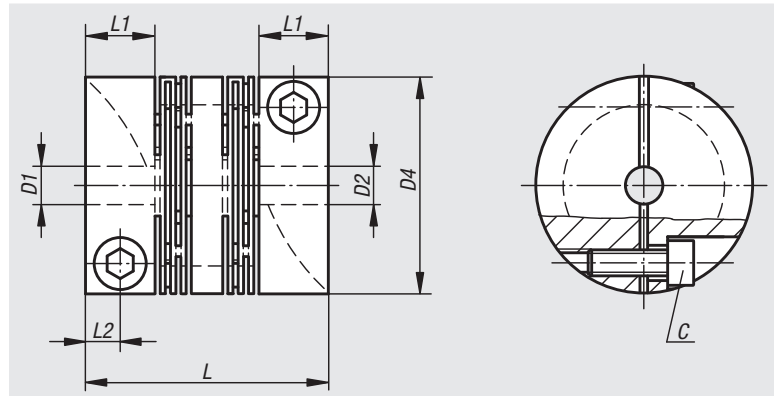
Sample order:

nIm 23010-2016,

D1 = 2,5

D2 = 2,5

(The hubs are supplied predrilled).



Note:

Zero backlash, torsionally rigid, resiliently flexible and maintenance-free full metal coupling for transmitting angle synchronous rotary movement. The innovative slit structure makes possible a very good axial, radial and angular flexibility with low reset force. Ideal for servomotors.

Temperature range:

-50 °C up to +150 °C.

Assembly:

Recommended shaft tolerances h7.

On request:

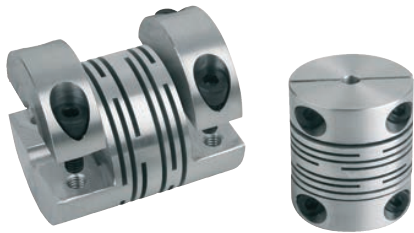
Desired hub holes D1 and D2 separately with tolerance class or tolerance zone.

Order No.	Size	Nominal torque Nm	Moment of inertia (10 ⁻³ kgm ²)	Torsion resistance Nm/arcmin	Max. axial shaft displacement ±	Max. lateral shaft displacement	Max. angular shaft displacement	Axial spring stiffness N/mm	Lateral spring stiffness N/mm	Revolutions per minute max.
23010-2016	16	6	0,0025	0,23	0,3	0,2	1°	325	940	10000
23010-2018	18	6	0,001	0,2	0,3	0,2	1°	98	435	10000
23010-2020	20	12	0,0032	0,23	0,3	0,2	1°	435	508	9500
23010-2022	22	6	0,0024	0,9	0,3	0,2	1°	136	450	9500
23010-2025	25	16	0,00784	1,45	0,3	0,2	1°	285	927	8000
23010-2030	30	25	0,022	2,47	0,4	0,3	1°	400	903	6000
23010-2040	40	36	0,09	5,82	0,4	0,3	1°	660	1229	5000
23010-2050	50	73	0,254	16	0,5	0,3	1°	950	1619	5000

Order No.	D1/D2 predrilled	D1/D2 min.	D1/D2 max.	D4	L	L1	L2	C (DIN 912-12.9)	Tightening torque of screws (Nm)	Approx. weight kg
23010-2016	2,5	3	6	16	23	7	3,5	M2,5x6	1	0,028
23010-2018	2,5	3	6	18	16,6	5,5	2,75	M2,5x8	1	0,018
23010-2020	2,5	3	8	20	28	8	4	M2,5x8	1	0,045
23010-2022	2,5	3	10	22	20	5,5	2,75	M2,5x8	1	0,040
23010-2025	3,5	6	12	25	28	8	4	M3x10	2	0,075
23010-2030	5,5	6	14	30	40	11	5,5	M4x10	4	0,160
23010-2040	5,5	6	18	40	48	11	5,5	M5x14	9	0,340
23010-2050	9,5	10	26	50	65	19	9,5	M6x16	14	0,650

Beam Coupling

with removable clamping hub, aluminium



Material, version:

Aluminium, natural finish

Sample order:

nIm 23012-1025,

D1 = 5,5

D2 = 5,5

Note:

Zero backlash, torsionally rigid, resiliently flexible and maintenance-free full metal coupling for transmitting angle synchronous rotary movement. The innovative slit structure makes possible a very good axial, radial and angular flexibility with low reset force. Ideal for servomotors.

Temperature range:

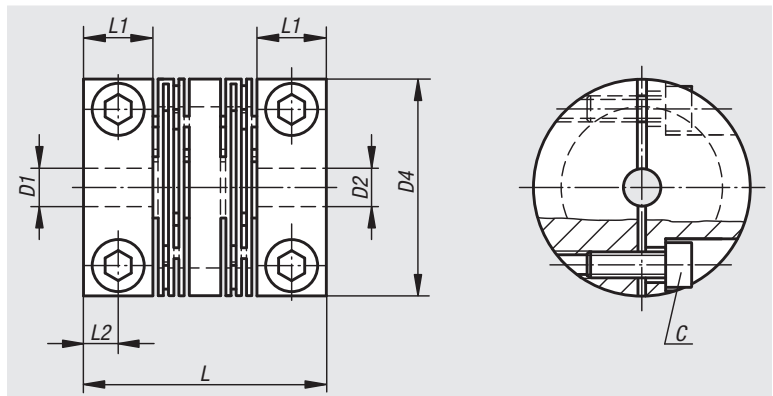
-50 °C to +150 °C.

Assembly:

Recommended shaft tolerances h7.

On request:

Desired hub holes D1 and D2 separately with tolerance class or tolerance zone.

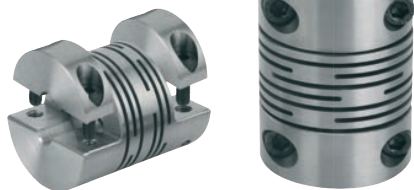


Order No.	Size	Nominal torque Nm	Moment of inertia (10^{-3} kgm ²)	Max. axial shaft displacement \pm	Max. lateral shaft displacement	Torsion resistance Nm/arcmin	Max. angular shaft displacement	Axial spring stiffness N/mm	Lateral spring stiffness N/mm	Revolutions per minute max.
23012-1025	25	7	0,0043	0,3	0,2	1,02	1°	140	437	8000
23012-1030	30	10	0,011	0,4	0,3	1,45	1°	170	363	6000
23012-1040	40	19	0,035	0,4	0,3	3,35	1°	270	379	5000
23012-1050	50	35	0,114	0,5	0,3	10,18	1°	410	853	5000

Order No.	D1/D2 predrilled	D1/D2 min.	D1/D2 max.	D4	L	L1	L2	C (DIN 912-12.9)	Tightening torque of screws (Nm)	Approx. weight kg
23012-1025	5,5	6	12	25	28	8	4	M3x10	2	0,025
23012-1030	5,5	6	14	30	40	11	5,5	M4x10	4	0,050
23012-1040	5,5	6	18	40	48	11	5,5	M5x14	9	0,115
23012-1050	9,5	10	26	50	65	19	9,5	M6x16	14	0,250

Beam Coupling

with removable clamping hub, stainless steel



Material, version:

Stainless steel 1.4305, natural finish

Sample order:

nIm 23012-2025,

D1 = 5,5

D2 = 5,5

Note:

Zero backlash, torsionally rigid, resiliently flexible and maintenance-free full metal coupling for transmitting angle synchronous rotary movement. The innovative slit structure makes possible a very good axial, radial and angular flexibility with low reset force. Ideal for servomotors.

Temperature range:

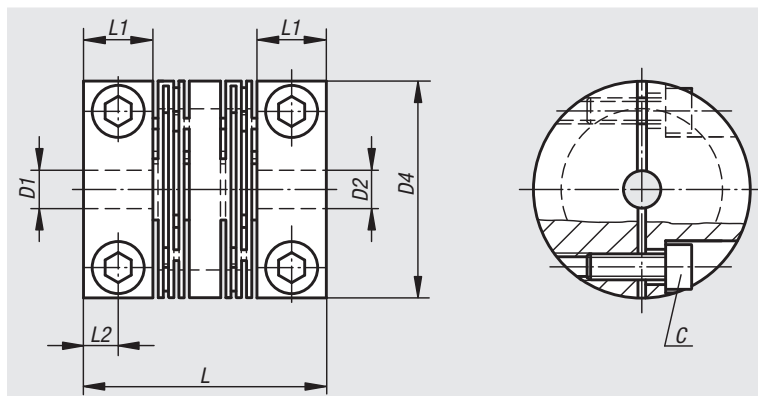
-50 °C up to +150 °C.

Assembly:

Recommended shaft tolerances h7.

On request:

Desired hub holes D1 and D2 separately with tolerance class or tolerance zone.



Order No.	Size	Nominal torque Nm	Moment of inertia (10^{-3} kgm ²)	Torsion resistance Nm/arcmin	Max. axial shaft displacement ±	Max. lateral shaft displacement	Max. angular shaft displacement	Axial spring stiffness N/mm	Lateral spring stiffness N/mm	Revolutions per minute max.
23012-2025	25	16	0,00784	1,45	0,3	0,2	1°	285	927	8000
23012-2030	30	25	0,022	2,47	0,4	0,3	1°	400	903	6000
23012-2040	40	36	0,09	5,82	0,4	0,3	1°	660	1229	5000
23012-2050	50	73	0,254	16	0,5	0,3	1°	950	1619	5000

Order No.	D1/D2 predrilled	D1/D2 min.	D1/D2 max.	D4	L	L1	L2	C (DIN 912-12.9)	Tightening torque of screws (Nm)	Approx. weight kg
23012-2025	5,5	6	12	25	28	8	4	M3x10	2	0,075
23012-2030	5,5	6	14	30	40	11	5,5	M4x10	4	0,160
23012-2040	5,5	6	18	40	48	11	5,5	M5x14	9	0,340
23012-2050	9,5	10	26	50	65	19	9,5	M6x16	14	0,650

Elastomer dog couplings

with conical hub and clamping ring (similar to DIN 69002)



Material, version:

Elastomer spider in polyurethane, shore hardness 98-A.
Hub in aluminium. Conical ring in tempered steel

Sample order:

nIm 23021-010,

D1 = 6

D2 = 6

(The hubs are supplied predrilled).

Note:

This serie of couplings is particularly suitable for use in main spindle drives resp. boring spindle drives for high speeds. The two clamping ring hubs must be mounted on the shaft ends with the given tightening torque of the screw before the plug-in assembly. The assembly force can be minimised by slight oiling of the spider.

Assembly:

The seat shaft / hub is to be selected as transitional seat. Admissible seat clearance shaft / hub: max.

0.02 mm. E.g.

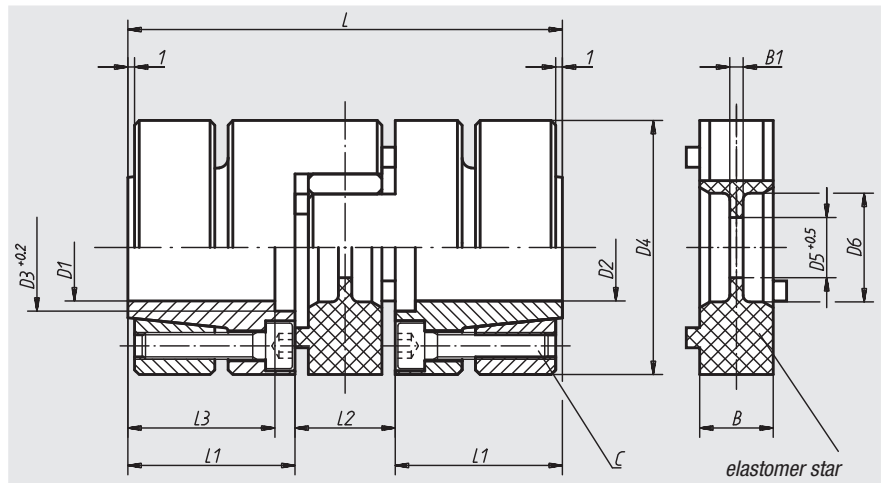
shaft: \varnothing 25 k6

borehole: \varnothing 25 G6.

Boreholes which are smaller than D min. are possible; but an optimal transfer of the nominal torque of the coupling can not be guaranteed in this case.

On request:

Desired hub holes D1 and D2 separately with tolerance class or tolerance zone.



Order No.	Size	Nominal torque Nm	Moment of inertia (10^{-3} kgm ²)	Static resistance to torsion Nm/arcmin	Max. axial shaft displacement \pm	Max. lateral shaft displacement	Radial spring stiffness N/mm	Tightening torque of screws (Nm)	Revolutions per minute max.
23021-010	10	10	0,015	0,04	0,5	0,1	600	1,8	30000
23021-017	17	17	0,05	0,24	0,5	0,1	2100	4	24000
23021-043	43	43	0,19	0,4	0,5	0,1	2500	8	19000
23021-060	60	60	0,28	0,6	0,5	0,1	2600	8	17500
23021-150	150	150	0,65	1,05	1	0,1	3300	8	15000
23021-320	320	320	2	2	1	0,12	4500	35	12000
23021-500	500	500	5,6	5,8	1	0,15	5900	67	9500
23021-700	700	700	13	8	1	0,15	7000	115	8000

Order No.	D1/D2 predrilled	D1/D2 min.	D1/D2 max.	D3	D4	D5	D6	L	L1	L2	L3	B	B1	C (DIN 912-12.9)	Approx. weight g
23021-010	6	6	14	17	32	8,5	10,5	50	18,5	13	15,5	10	2	4x M3	110
23021-017	9	9	19	22	40	9,5	18	66	25	16	21	12	3	6x M4	280
23021-043	10	12	24	29	50	12,5	27	78	30	18	25	14	3	4x M5	400
23021-060	12	12	26	30	55	12,5	27	78	30	18	25	14	3	4x M5	600
23021-150	12	17	36	40	65	14,5	30	90	35	20	30	15	4	8x M5	900
23021-320	18	20	40	46	80	16,5	38	114	45	24	40	18	4	4x M8	1900
23021-500	20	22	48	58	100	20,5	47	138	55	28	49	22	5	4x M10	4500
23021-700	24	25	60	72	120	22,5	58	155	61	33	54	25	6	4x M12	7000

Elastomer dog couplings

with radial clamping hub



Material, version:

Elastomer spider in polyurethane, shore hardness 98-A. Hub in aluminium, natural finish

Sample order:

nIm 23022-008,

D1 = 6

D2 = 6

(The hubs are supplied predrilled).

Note:

Short assembly times due to the radial clamping hub. The couplings can be mounted in complete assembled condition resp. a plug-in assembly is also possible. The assembly force can be minimised by slight oiling of the spider. The necessary tightening torque of the clamping screw must be noted.

Assembly:

The seat shaft / hub is to be selected as transitional seat. Admissible seat clearance shaft / hub: min. 0.01 mm; max. 0.04 mm.

E.g.

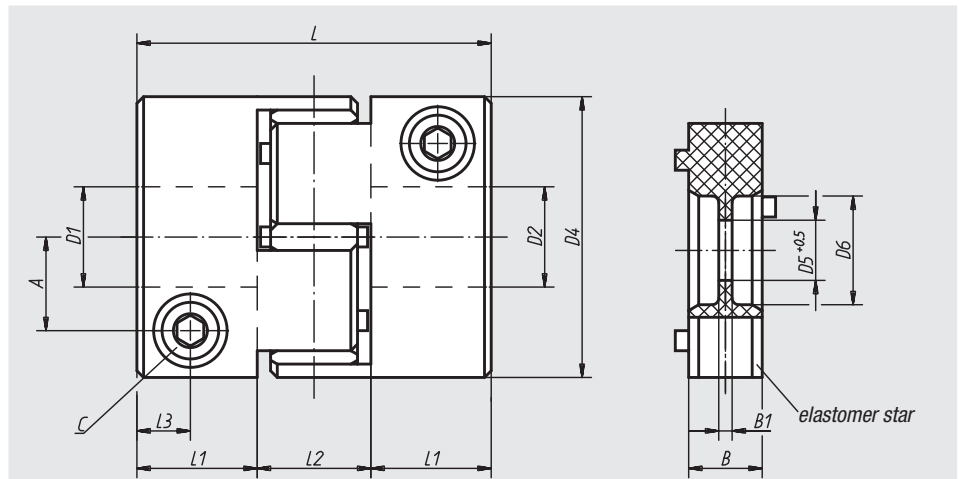
shaft: Ø 28 k6

hub: Ø 28 F6.

Hub boreholes which are smaller than D min. are possible; but an optimal transfer of the nominal torque of the coupling can not be guaranteed in this case.

On request:

Desired hub holes D1 and D2 separately with tolerance class or tolerance zone.



Order No.	Size	Nominal torque Nm	Moment of inertia (10 ⁻³ kgm ²)	Static resistance to torsion Nm/arcmin	Max. axial shaft displacement ±	Max. lateral shaft displacement	Radial spring stiffness N/mm	Tightening torque of screws (Nm)
23022-002	2	2	0,00016	0,007	0,6	0,1	405	0,5
23022-005	5	5	0,0011	0,016	0,8	0,1	510	1
23022-008	8	8	0,01	0,04	0,5	0,1	600	4
23022-015	15	15	0,03	0,24	0,5	0,1	2100	8
23022-030	30	30	0,09	0,41	0,5	0,1	2500	14
23022-060	60	60	0,18	0,61	0,5	0,1	2600	35
23022-150	150	150	0,38	1,05	1	0,1	3300	67
23022-300	300	300	1	2	1	0,12	4500	115
23022-500	500	500	2,2	5,8	1	0,15	5900	115
23022-700	700	700	5,2	8	1	0,15	7000	185

Order No.	D1/D2 predrilled	D1/D2 min.	D1/D2 max.	D4	D5	D6	A	L	L1	L2	L3	B	B1	C (DIN 912-10.9)	Approx. weight g
23022-002	3	3	5	14	-	-	4	22	7	8	3,5	6	-	M2	7
23022-005	5	5	8	20	-	-	6,5	30	10	10	5	8	-	M2,5	18
23022-008	5	8	15	32	8,5	10,5	10,5	40	13,5	13	6	10	2	M4	60
23022-015	7	10	20	40	9,5	18	13,5	50	17	16	8	12	3	M5	120
23022-030	9	13	26	50	12,5	27	16,5	58	20	18	9	14	3	M6	210
23022-060	12	15	29	60	12,5	27	19,5	62	22	18	10	14	3	M8	320
23022-150	15	22	33	70	14,5	30	23	73	26,5	20	12	15	4	M10	520
23022-300	18	30	42	85	16,5	38	29	86	31	24	14	18	4	M12	900
23022-500	20	38	56	100	20,5	47	36	94	33	28	16	22	5	M12	1500
23022-700	24	40	70	120	22,5	58	44	109	38	33	18	25	6	M14	2500

Elastomer dog couplings

clamping with grub screw



Material, version:

Elastomer spider in polyurethane, shore hardness 98-A. Hub in aluminium, natural finish

Sample order:

nlm 23023-0020,

D1 = 3

D2 = 3

(The hubs are supplied predrilled).

Note:

The clamping of the hub by means of a grub screw is a cost-effective alternative for the elastomer dog couplings with radial clamping hub (23022). Short assembly times due to the clamping hub with grub screws.

The couplings can be mounted in complete assembled condition resp. a plug-in assembly is also possible. The assembly force can be minimised by slight oiling of the spider. The necessary tightening torque of the grub screw must be noted. For easy disassembling we recommend to fit out the shaft with a face surface.

Assembly:

The seat shaft / hub is to be selected as transitional seat. Admissible seat clearance shaft / hub: min. 0.01 mm; max. 0.04 mm. E.g.

shaft: \emptyset 6 f7

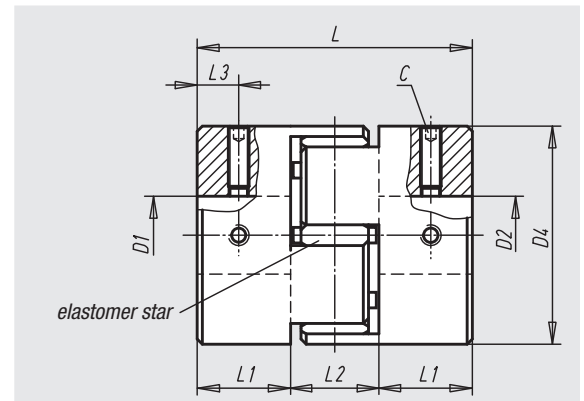
hub: \emptyset 6 H8.

Hub boreholes which are smaller than D min. are possible; but an optimal transfer of the nominal torque of the coupling can not be guaranteed in this case.

On request:

Desired hub holes D1 and D2 separately with tolerance class or tolerance zone.

miniature



Order No.	Size	Nominal torque Nm	Moment of inertia (10^{-3} kgm ²)	Static resistance to torsion Nm/arcmin	Max. axial shaft displacement \pm	Max. lateral shaft displacement	Tightening torque of screws (Nm)	Approx. weight g
23023-0020	2	2	0,00021	0,007	0,6	0,1	0,7	7,0
23023-0050	5	5	0,001	0,016	0,8	0,1	0,7	18,0
23023-0125	12,5	12,5	0,0059	0,038	1	0,1	1,7	48,0

Order No.	D1/D2 predrilled	D1/D2 min.	D1/D2 max.	D4	L	L1	L2	L3	C (DIN 916)
23023-0020	3	3	6	14	22	7	8	3,5	M3
23023-0050	5	5	9,53	20	30	10	10	5	M3
23023-0125	8	8	14	30	35	11	13	5,5	M4

Elastomer dog couplings

with radial clamping hub and intermediate tube



Material, version:

Elastomer spider in polyurethane, shore hardness 98-A. Hub in aluminium, natural finish. Intermediate tube: aluminium

Sample order:

nIm 23025-020X0500

(please also indicate dimension L4 = 500 mm)

D1 = 7

D2 = 7

(The hubs are supplied predrilled).

Note:

This serie of couplings stand-out due to the simple and cost-effective version with a intermediate tube, which is variable in length and Elastomer Dog Couplings arranged on both sides (see 23022).

Benefits are the very low moment of inertia, low weight as well as the high admissible displacement values for shaft alignment.

In the example of linear robots in packaging and printing machines this low-maintenance, rust-free coupling represents a good alternative.

The tightening torque of the clamping screws see technical data of 23022. By application with more than 1500 r.p.m. speed and a total coupling length L4 of more than 2 m, please contact us first.

Max. shaft displacement axial: ±1 mm.

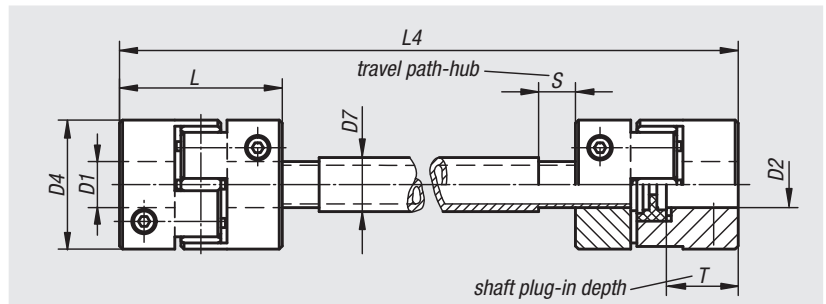
Max. shaft displacement lateral: 5 mm per meter.

Advantages:

- Plug-in, backlash-free, vibration absorption
- customized length up to 3 m
- radial clamping hub for simple installation
- to 400 Nm

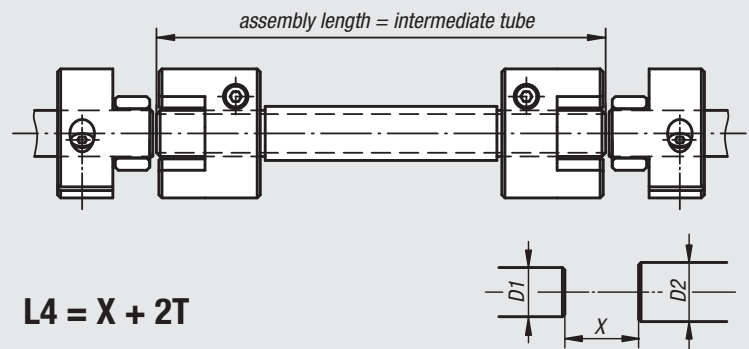
On request:

Desired hub holes D1 and D2 seperately with tolerance class or tolerance zone.



Assembly and Length Calculation:

The combination of the easy assembly clamp hub version of 23022 and push fits on the intermediate tube guarantee quick and easy assembly or dismantling of 23025. There is no need of axial displacement to do this as either half of the coupling on the intermediate tube can be inserted between the ends of the shaft as a spacer. Plug-in connection of the coupling hub to the elastomer star is achieved by means of a small, manual axial force. The hubs are attached to the shaft or the ends of the tube by only one radial clamping bolt in each case, taking account of the structural dimension L.



$$L4 = X + 2T$$

X = shaft distance

T = plug-in depth

Order No.	Size	Nominal torque Nm	Moment of inertia (10 ⁻³ kgm ²)			Torsion resistance Nm/arcmin		
			0,5 m	1,0 m	2,0 m	0,5 m	1,0 m	2,0 m
23025-020X	20	20	0,08	0,1	-	0,1	0,07	-
23025-045X	45	45	0,27	0,36	0,56	0,25	0,19	0,13
23025-090X	90	90	0,45	0,54	0,74	0,3	0,23	0,15
23025-200X	200	200	0,9	1,1	1,4	0,5	0,4	0,3
23025-400X	400	400	2,5	3,2	4,5	1,2	1	0,8

Order No.	D1/D2 predrilled	D1/D2 min.	D1/D2 max.	D4	D7	L	L4 min.	S	T min.	T max.
23025-020X	7	10	20	40	35	50	132	16	16	20
23025-045X	9	13	26	50	50	58	152	18	18	25
23025-090X	12	15	29	60	50	62	160	18	20	26
23025-200X	15	22	33	70	60	73	186	20	23	30
23025-400X	18	30	42	85	80	86	220	24	28	35

Oldham-type couplings

with radial clamping hub

miniature



Material, version:
Spacer polyacetal, hub in aluminium

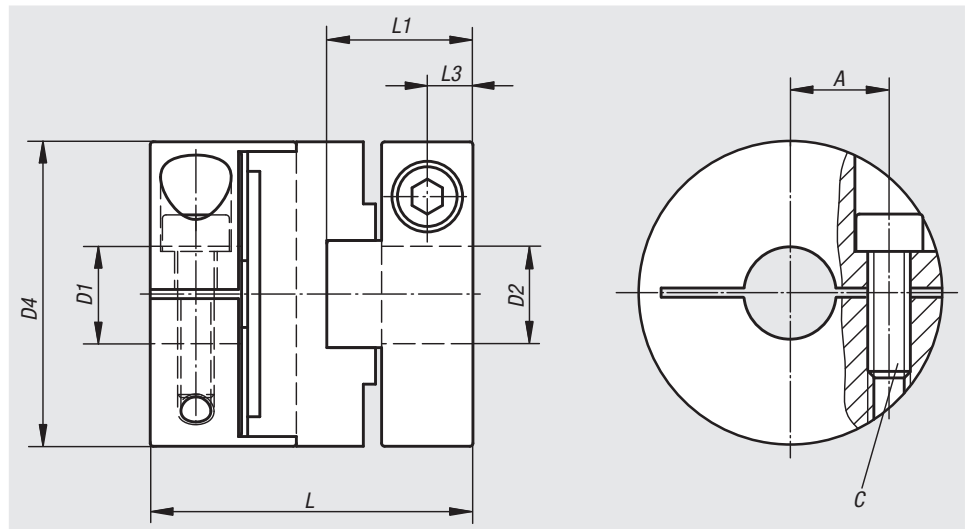
Sample order:
nlm 23030-0016,
D1 = 3
D2 = 3
(The hubs are supplied predrilled).

Note:
Short assembly times due to the radial clamping hub. The couplings can be mounted in complete assembled condition resp. a plug-in assembly is also possible. The necessary tightening torque of the clamping screw must be noted.

Assembly:
The connection of shaft ends to hub hole is optional. The play should be min. 0.01 mm and max. 0.04 mm, E.g.
shaft: $\varnothing 6 f7$
hub: $\varnothing 6 H8$.

Advantages:
- robust
- plug-in
- backlash-free
- short design

On request:
Desired hub holes D1 and D2 separately with tolerance class or tolerance zone.



Order No.	Size	Nominal torque Nm	Moment of inertia (10^{-6} kgm^2)	Static resistance to torsion Nm/arcmin	Max. angular shaft displacement	Max. lateral shaft displacement	Revolutions per minute max.	Tightening torque of screws (Nm)
23030-0016	16	1	0,0032	0,019	2°	1	8000	1
23030-0020	20	1,5	0,0082	0,035	2°	1,5	7000	1
23030-0025	25	2,5	0,026	0,058	2°	2	6000	1,5
23030-0032	32	7	0,083	0,18	2°	2,5	4800	2,5

Order No.	D1/D2 predrilled	D1/D2 min.	D1/D2 max.	D4	A	L	L1	L3	C (DIN 912-10.9)	Approx. weight g
23030-0016	3	3	6	16	5	21	9,5	3	M2,6	10
23030-0020	5	5	8	20	6,5	22,5	10	3	M2,6	16
23030-0025	6,35	6,35	10	25	8	27	12	4	M3	34
23030-0032	8	8	14	32	11	35	16	5	M4	80

Oldham-type couplings

clamping with grub screw

miniature



Material, version:

Spacer polyacetal, hub in aluminium

Sample order:

n1m 23032-0016,

D1 = 4

D2 = 4

(The hubs are supplied predrilled).

Note:

The clamping of the hub by means of a grub screw is a cost-effective alternative for the Oldham-Type Couplings with radial clamping hub (23030). Short assembly times due to the clamping hub with grub screws.

The couplings can be mounted in complete assembled condition resp. a plug-in assembly is also possible. The necessary tightening torque of the grub screw must be noted. For easy disassembling we recommend to fit out the shaft with a face surface.

Assembly:

The seat shaft / hub is to be selected as transitional seat. Admissible seat clearance shaft / hub: min.

0,01 mm; max. 0,04 mm. E.g.

shaft: \emptyset 6 f7

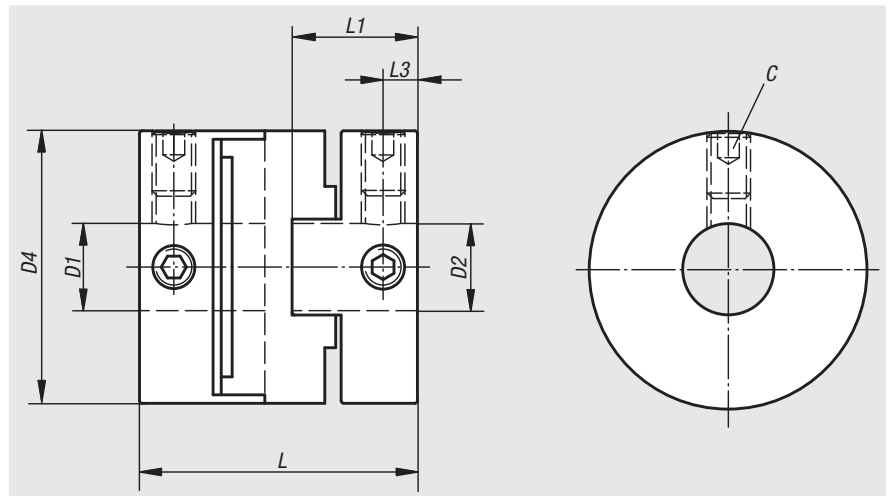
hub: \emptyset 6 H8.

Advantages:

- robust
- plug-in
- backlash-free
- short design

On request:

Desired hub holes D1 and D2 separately with tolerance class or tolerance zone.



Order No.	Size	Nominal torque Nm	Moment of inertia (10^{-3} kgm ²)	Static resistance to torsion Nm/arcmin	Max. angular shaft displacement	Max. lateral shaft displacement	Revolutions per minute max.	Tightening torque of screws (Nm)	Approx. weight g
23032-0016	16	1	0,0024	0,019	2°	1	8000	1	7
23032-0020	20	1,5	0,081	0,035	2°	1,5	7000	1,7	14
23032-0025	25	2,5	0,018	0,058	2°	2	6000	1,7	20
23032-0032	32	7	0,067	0,18	2°	2,5	4800	4	48

Order No.	D1/D2 predrilled	D1/D2 min.	D1/D2 max.	D4	L	L1	L3	C (DIN 916)
23032-0016	4	4	6,35	16	18	8	2,3	M3
23032-0020	4	4	8	20	20	9	2,5	M4
23032-0025	5	5	10	25	25,5	11,5	3	M4
23032-0032	8	8	14	32	32	14,5	4	M5

Slotted rigid couplings


Material, version:

Steel 1.0718, natural finish;
stainless steel 1.4305, natural finish

Sample order:

nIm 23050-1100

Note:

Rigid couplings transmit high torques without rotational play. They are used when there are no shaft displacements or alignment errors. Wear-free and maintenance-free. Because screws are secured, no vibration-induced loosening of screws

Is only possible to achieve the transmission of the maximum torque with optimal installation and dimensional decision of the shafts.

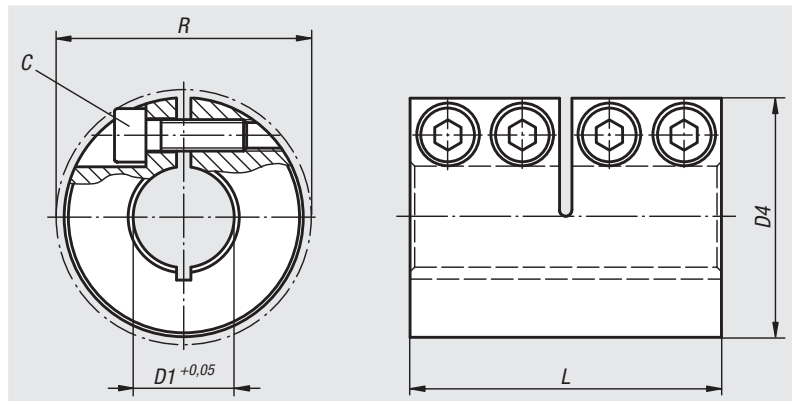
Maximum speed 4000 rpm.

Temperature range:

-40 °C up to +175 °C.

On request:

Other dimensions.



Slotted rigid couplings, steel

Order No.	Material	C (DIN 912-12.9)	D1	D4	L	R	Nominal torque Nm	Approx. weight kg
23050-1100	steel	M4x12	10	29	45	32,7	100	0,185
23050-1120	steel	M4x12	12	29	45	32,7	100	0,180
23050-1140	steel	M5x16	14	34	50	39,1	190	0,272
23050-1150	steel	M5x16	15	34	50	39,1	190	0,266
23050-1160	steel	M5x16	16	34	50	39,1	190	0,261
23050-1190	steel	M6x18	19	42	65	48,2	300	0,520
23050-1200	steel	M6x18	20	42	65	48,2	350	0,518
23050-1250	steel	M6x18	25	45	75	50,8	390	0,623
23050-1300	steel	M6x18	30	53	83	58,1	475	0,920

Slotted rigid couplings, stainless steel

Order No.	Material	C (DIN 912 A2-70)	D1	D4	L	R	Nominal torque Nm	Approx. weight kg
23050-2100	stainless steel	M4x12	10	29	45	32,7	90	0,185
23050-2120	stainless steel	M4x12	12	29	45	32,7	90	0,180
23050-2140	stainless steel	M5x16	14	34	50	39,1	160	0,272
23050-2150	stainless steel	M5x16	15	34	50	39,1	160	0,266
23050-2160	stainless steel	M5x16	16	34	50	39,1	160	0,261
23050-2190	stainless steel	M6x18	19	42	65	48,2	260	0,520
23050-2200	stainless steel	M6x18	20	42	65	48,2	300	0,518
23050-2250	stainless steel	M6x18	25	45	75	50,8	325	0,623
23050-2300	stainless steel	M6x18	30	53	83	58,1	400	0,920

Divided rigid couplings


Material, version:

Steel 1.0718, natural finish;
stainless steel 1.4305, natural finish

Sample order:

nIm 23052-1100

Note:

Rigid couplings transmit high torques without rotational play. They are used when there are no shaft displacements or alignment errors. Wear-free and maintenance-free. Because screws are secured, no vibration-induced loosening of screws

Is only possible to achieve the transmission of the maximum torque with optimal installation and dimensional decision of the shafts.

Maximum speed 4000 rpm.

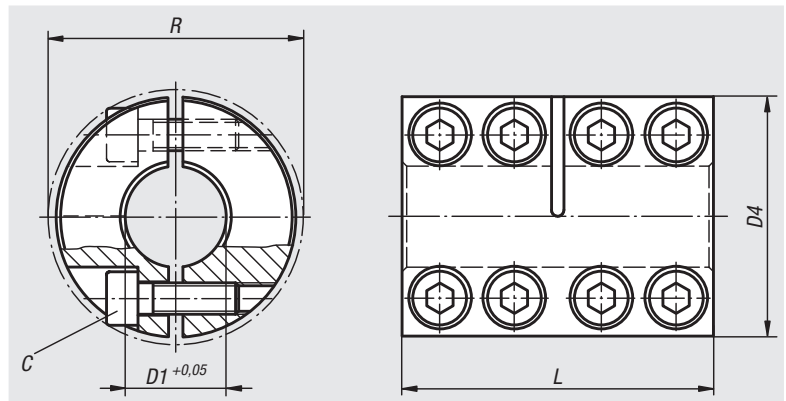
Temperature range:

-40 °C up to +175 °C.

On request:

Other dimensions.

Version with DIN 6885/1 parallel keyway, tolerance P9.


Divided rigid couplings, steel

Order No.	Material	C (DIN 912-12.9)	D1	D4	L	R	Nominal torque Nm	Approx. weight kg
23052-1100	steel	M4x12	10	29	45	32,7	100	0,185
23052-1120	steel	M4x12	12	29	45	32,7	100	0,180
23052-1140	steel	M5x16	14	34	50	39,1	190	0,272
23052-1150	steel	M5x16	15	34	50	39,1	190	0,266
23052-1160	steel	M5x16	16	34	50	39,1	190	0,261
23052-1190	steel	M6x18	19	42	65	48,2	300	0,520
23052-1200	steel	M6x18	20	42	65	48,2	350	0,518
23052-1250	steel	M6x18	25	45	75	50,8	390	0,623
23052-1300	steel	M6x18	30	53	83	58,1	475	0,920

Divided rigid couplings, stainless steel

Order No.	Material	C (DIN 912 A2-70)	D1	D4	L	R	Nominal torque Nm	Approx. weight kg
23052-2100	stainless steel	M4x12	10	29	45	32,7	90	0,185
23052-2120	stainless steel	M4x12	12	29	45	32,7	90	0,180
23052-2140	stainless steel	M5x16	14	34	50	39,1	160	0,272
23052-2150	stainless steel	M5x16	15	34	50	39,1	160	0,266
23052-2160	stainless steel	M5x16	16	34	50	39,1	160	0,261
23052-2190	stainless steel	M6x18	19	42	65	48,2	260	0,520
23052-2200	stainless steel	M6x18	20	42	65	48,2	300	0,518
23052-2250	stainless steel	M6x18	25	45	75	50,8	325	0,623
23052-2300	stainless steel	M6x18	30	53	83	58,1	400	0,920

Conical clamping rings, form A



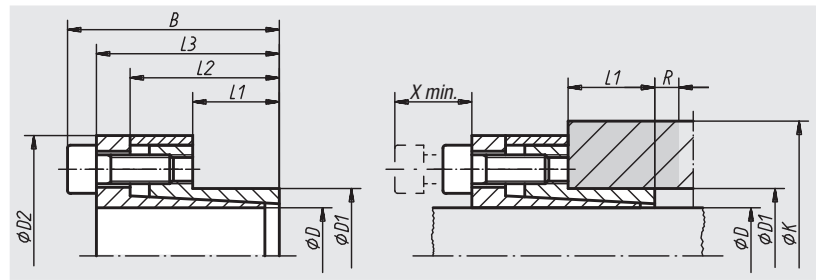
Material:
Steel 1.0503

Version:
Natural finish

Sample order:
nlm 23350-2028

Note:
The form A cone clamping rings are particularly suitable for connecting thin-walled hubs to a shaft. The large clamping surface guarantees the hub will be centred running true in the plane.
Further advantages are: smooth, cheap shafts and hubs, no weakness caused by grooves, great fatigue strength.
Application: see Technical Information.

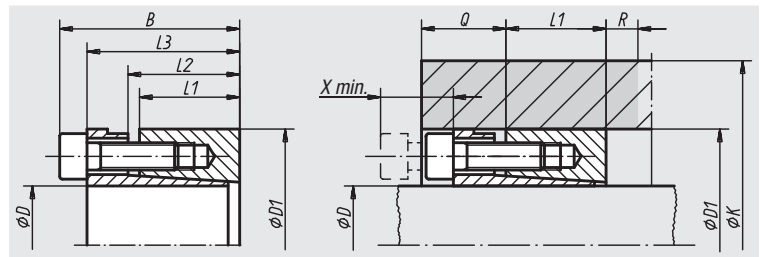
The gap X min. must be maintained if the clamping ring is to be loosened without dismantling the neighbouring component. The specified minimum values for K apply if the hub overhang is $R \geq 0.5 (K-D1)$.



Order No.	D	D1	D2	B	L1	L2	L3	Torque M Nm transmissible at tightening torque MS	Axial force F kN transmissible at tightening torque MS	Surface pressure on shaft P N/mm ²	Surface pressure on hub P N/mm ²
23350-2028	20	28	50	44	18	31	38	186	19	156	111
23350-2534	25	34	56	51	25	38	45	232	19	90	66
23350-3041	30	41	62	51	25	38	45	418	28	112	84
23350-3547	35	47	69	56	30	43	50	650	37	107	80
23350-4053	40	53	75	56	30	43	50	743	37	94	71
23350-4559	45	59	85	73	40	57	65	1563	69	114	87
23350-5065	50	65	92	78	45	62	70	1737	69	114	88
23350-6077	60	77	104	83	50	67	75	2344	78	85	67

Order No.	Number of clamping screws	Clamping screws tightening torque Ms in Nm	Elasticity limit Re (N/mm ²) of the hub material K min mm 200 / 250 / 280 / 320 / 400	X min. mm
23350-2028	4 x M6	15	64 / 57 / 54 / 51 / 47	30
23350-2534	4 x M6	15	62 / 56 / 54 / 51 / 48	30
23350-3041	6 x M6	15	78 / 71 / 68 / 66 / 60	30
23350-3547	8 x M6	15	90 / 82 / 78 / 75 / 69	30
23350-4053	8 x M6	15	94 / 87 / 83 / 80 / 75	30
23350-4559	8 x M8	35	119 / 108 / 103 / 97 / 90	35
23350-5065	10 x M8	35	132 / 119 / 114 / 108 / 99	35
23350-6077	10 x M8	35	137 / 125 / 120 / 115 / 108	35

Conical clamping rings, form B



Material:
Steel 1.0503

Version:
Natural finish

Sample order:
nlm 23351-3560

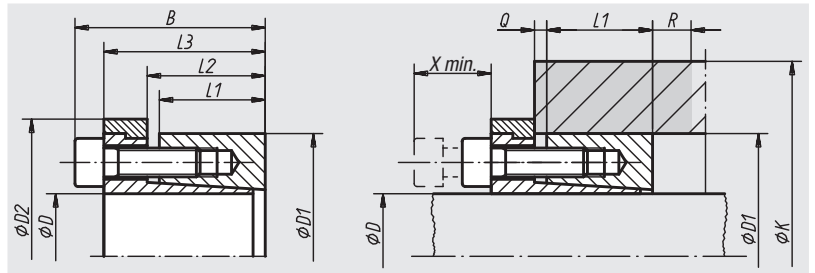
Note:
The cone clamping rings 23351 can be fully recessed in a hub connection. The particular advantage of this design is also the transfer of higher torques.
Application: see Technical Information.

The gap X must be maintained if the clamping ring is to be loosened without dismantling the neighbouring component.
The specified minimum values for K apply if the hub overhangs are $Q \geq 0.5 (K-D1)$ and $R \geq 0.5 (K-D1)$. If the hub is axially connected immovably to the shaft even before the clamping elements are fitted, the lower values for 23352 apply to M, F, P shaft, P hub and K min.

Order No.	D	D1	B	L1	L2	L3	Torque M Nm transmissible at tightening torque MS	Axial force F kN transmissible at tightening torque MS	Surface pressure on shaft P N/mm ²	Surface pressure on hub P N/mm ²
23351-2047	20	47	48	26	31	42	445	45	259	110
23351-2550	25	50	48	26	31	42	557	45	207	104
23351-3055	30	55	48	26	31	42	668	45	173	94
23351-3560	35	60	48	26	31	42	1039	59	197	115
23351-4065	40	65	48	26	31	42	1187	59	173	106
23351-4575	45	75	58	30	36	50	1873	83	182	109
23351-5080	50	80	58	30	36	50	2082	83	218	137
23351-6090	60	90	58	30	36	50	3331	111	182	121

Order No.	Number of clamping screws	Clamping screws tightening torque Ms in Nm	Elasticity limit Re (N/mm ²) of the hub material K min mm 200 / 250 / 280 / 320 / 400	X min. mm
23351-2047	6 x M6	15	87 / 80 / 77 / 74 / 70	35
23351-2550	6 x M6	15	89 / 83 / 80 / 77 / 73	35
23351-3055	6 x M6	15	93 / 87 / 84 / 81 / 77	35
23351-3560	8 x M6	15	120 / 109 / 104 / 99 / 92	35
23351-4065	8 x M6	15	123 / 113 / 108 / 103 / 96	35
23351-4575	6 x M8	35	128 / 120 / 117 / 113 / 107	40
23351-5080	8 x M8	35	167 / 151 / 145 / 137 / 127	40
23351-6090	8 x M8	35	173 / 159 / 153 / 146 / 136	40

Conical clamping rings, form C



Material:
Steel 1.0503

Version:
Natural finish

Sample order:
nlm 23352-2047

Note:
The form C clamping rings can be used very universally. The lateral stop secures the axial position of the hub: see Technical Information.

The gap X must be maintained if the clamping ring is to be loosened without dismantling the neighbouring component. The specified minimum values for K apply if the hub overhangs are $Q \geq L2-L1$ and $R \geq 0.5 (K-D1)$.

Order No.	D	D1	D2	B	L1	L2	L3	Torque M Nm transmissible at tightening torque MS	Axial force F kN transmissible at tightening torque MS	Surface pressure on shaft P N/mm ²	Surface pressure on hub P N/mm ²
23352-2047	20	47	53	48	26	31	42	279	28	162	69
23352-2550	25	50	56	48	26	31	42	348	28	130	65
23352-3055	30	55	61	48	26	31	42	418	28	108	59
23352-3560	35	60	66	48	26	31	42	650	37	123	72
23352-4065	40	65	71	48	26	31	42	743	37	108	66
23352-4575	45	75	81	58	30	36	50	1172	52	114	68
23352-5080	50	80	86	58	30	36	50	1302	52	137	85
23352-6090	60	90	96	58	30	36	50	2084	69	114	76

Order No.	Number of clamping screws	Clamping screws tightening torque Ms in Nm	Elasticity limit Re (N/mm ²) of the hub material K min mm 200 / 250 / 280 / 320 / 400	X min. mm
23352-2047	6 x M6	15	81 / 74 / 71 / 69 / 64	35
23352-2550	6 x M6	15	83 / 77 / 74 / 71 / 67	35
23352-3055	6 x M6	15	87 / 81 / 79 / 76 / 72	35
23352-3560	8 x M6	15	99 / 92 / 89 / 86 / 81	35
23352-4065	8 x M6	15	103 / 96 / 93 / 90 / 86	35
23352-4575	6 x M8	35	121 / 113 / 109 / 105 / 100	40
23352-5080	8 x M8	35	137 / 127 / 123 / 118 / 111	40
23352-6090	8 x M8	35	146 / 137 / 132 / 128 / 121	40

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Conical clamping rings, form D



Material:
Steel 1.0503

Version:
Natural finish

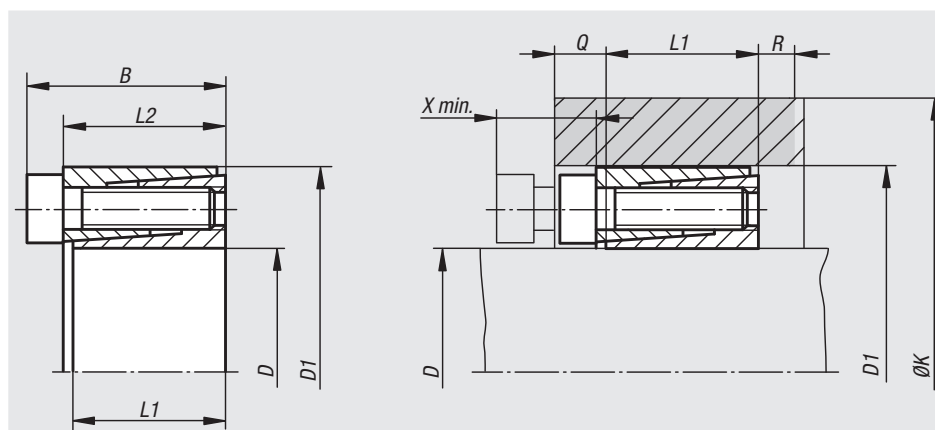
Sample order:
nlm 23354-0616

Note:

The conical clamping rings form D are suitable in particular for applications that require a small building volume and low surface pressure. The cone clamping rings can be fully recessed in a hub connection.

Application: see Technical Information.

The gap $X_{min.}$ must be maintained if the clamping ring is to be loosened without dismantling the neighbouring component. The specified minimum values for K apply if the hub overhangs are $Q \geq 0.5 (K-D1)$ and $R \geq 0.5 (K-D1)$.



Order No.	D	D1	B	L1	L2	Torque M Nm transmissible at tightening torque MS	Axial force F kN transmissible at tightening torque MS	Surface pressure on shaft P N/mm ²	Surface pressure on hub P N/mm ²
23354-0616	6	16	13,5	10,5	11	6	2	150	55
23354-0818	8	18	13,5	10,5	11	10	2,5	110	50
23354-0920	9	20	15,5	12,5	13	15	3	120	55
23354-1020	10	20	15,5	12,5	13	15	3	110	55
23354-1222	12	22	15,5	12,5	13	20	3	90	50
23354-1426	14	26	20	16,5	17	35	5	105	55
23354-1528	15	28	20	16,5	17	40	5	100	50
23354-1632	16	32	21	16,5	17	70	8	130	65
23354-1835	18	35	25	20	21	80	8	115	60
23354-2038	20	38	26	20	21	150	15	140	75
23354-2240	22	40	26	20	21	160	14	130	70
23354-2447	24	47	32	25	26	250	20	140	75
23354-2547	25	47	32	25	26	260	20	135	75
23354-2850	28	50	32	25	26	440	30	185	100
23354-3055	30	55	32	25	26	470	30	175	95
23354-3255	32	55	32	25	26	500	30	165	95
23354-3560	35	60	37	28	29	730	40	165	95

Conical clamping rings, form D



Order No.	Number of clamping screws	Clamping screws tightening torque Ms in Nm	Elasticity limit Re (N/mm ²) of the hub material K min mm 200 / 250 / 280 / 320 / 400	X min. mm
23354-0616	3 x M2,5	1,2	19,06 / 18,65 / 18,61 / 18,6 / 18,45	15
23354-0818	3 x M2,5	1,2	21,1 / 20,64 / 20,64 / 20,64 / 20,8	15
23354-0920	4 x M2,5	1,2	23,83 / 23,83 / 23,26 / 23,26 / 23,26	15
23354-1020	4 x M2,5	1,2	23,83 / 23,26 / 23,26 / 23,26 / 23,03	15
23354-1222	4 x M2,5	1,2	25,79 / 25,23 / 25,23 / 25,23 / 25,01	15
23354-1426	4 x M3	2,1	30,98 / 30,24 / 30,24 / 30,24 / 29,94	20
23354-1528	4 x M3	2,1	32,83 / 32,11 / 32,11 / 32,11 / 31,83	20
23354-1632	4 x M4	4,9	39,4 / 38,27 / 38,27 / 38,27 / 37,83	20
23354-1835	4 x M4	4,9	42,39 / 41,28 / 41,28 / 41,28 / 40,84	25
23354-2038	4 x M5	9,7	48,37 / 46,76 / 46,76 / 46,76 / 46,13	25
23354-2240	4 x M5	9,7	50,08 / 48,52 / 48,52 / 48,52 / 47,92	25
23354-2447	4 x M6	16,5	59,83 / 57,83 / 57,83 / 57,83 / 57,05	30
23354-2547	4 x M6	16,5	59,83 / 57,83 / 57,83 / 57,83 / 57,05	30
23354-2850	6 x M6	16,5	69,33 / 66,14 / 66,14 / 66,14 / 64,91	30
23354-3055	6 x M6	16,5	74,95 / 71,69 / 71,69 / 71,69 / 70,44	30
23354-3255	6 x M6	16,5	74,95 / 71,69 / 71,69 / 71,69 / 70,44	30
23354-3560	8 x M6	16,5	81,76 / 78,21 / 78,21 / 78,21 / 76,84	30

Application example for conical clamping rings

General information:

Both conical sleeves are slotted to allow for large tolerances. We recommend the following tolerances on the contact surfaces:

h8 for shafts

H8 for hub holes D

The mean surface finish for the contact surfaces of shaft and hub should be $\leq R_z 16 \mu\text{m}$.

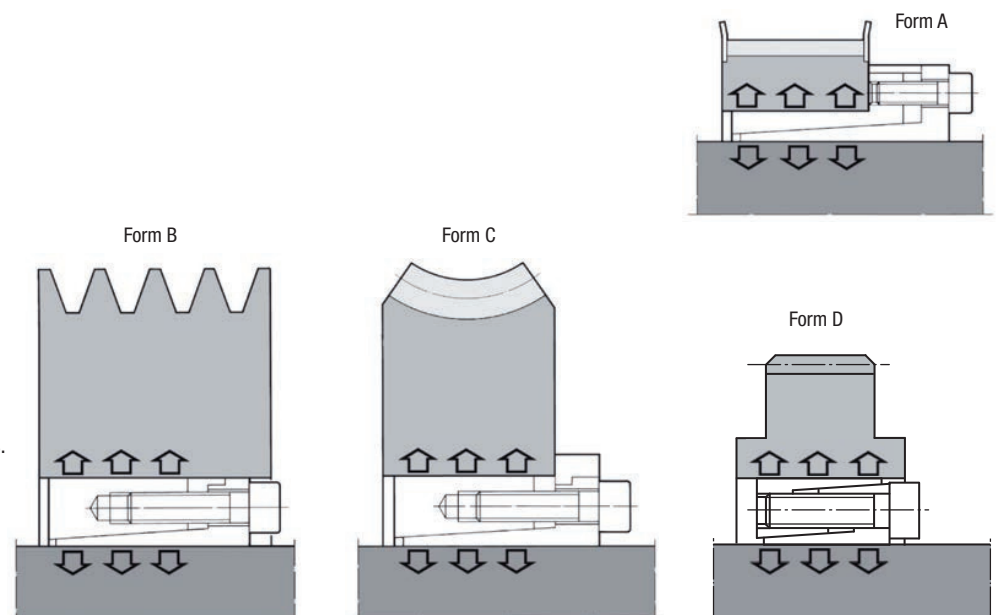
Assembly:

1. Unscrew clamping screws by a few threads.
2. Remove as many clamping screws as there are extraction holes and screw them into extraction threads to ensure that the inner and outer parts are kept apart.
3. Lightly lubricate the clamping element. Do not use oil containing molybdenum sulphide or high-pressure additives and do not use grease.
4. Insert the clamping element into the part to be braced and push onto the shaft.
5. Remove the screws from the extraction holes and screw them back into the clamping holes.
6. Tighten the clamping screws crosswise by hand while aligning the hub.

7. Tighten the clamping screws crosswise with a torque spanner to half the tightening torque Ms. Tighten crosswise to full tightening torque.
8. Tighten the clamping screws several times in sequence to full torque. The tightening process is complete when none of the screws can be turned any more.

Dismantling:

1. Unscrew clamping screws a few threads.
2. Remove as many clamping screws as there are extraction holes and screw them into the extraction threads.
3. Tighten opposing extraction screws to release the clamp ring.



Shaft-hub clamping sets

stainless steel

**Material:**

Stainless steel 1.4301

Version:

Natural finish

Sample order:

nlm 23370-040008

Note:

Self-centring and play-free shaft-hub clamping sets with a very low moment of inertia and minimal space required. The clamping sets produce a connection between shaft and hub actuated by spring. Quick assembly and disassembly with a central nut. The connection can be disassembled by means of an extractor. Run-out accuracy of the clamping sets ± 0.01 mm.

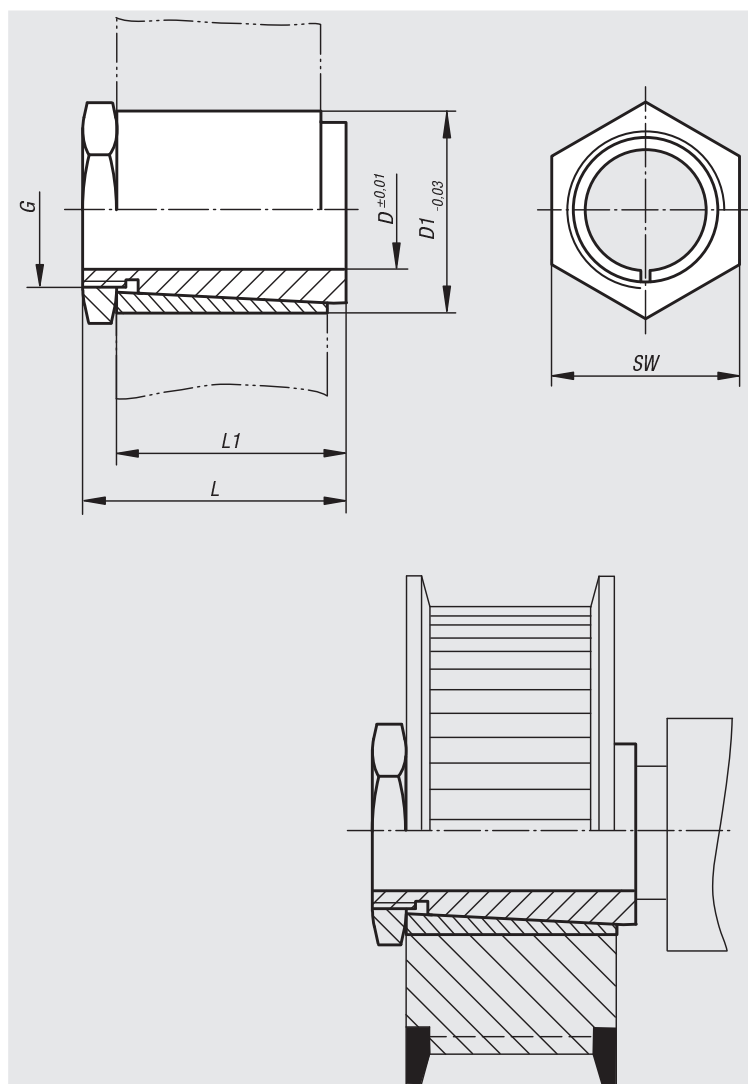
Assembly:

In order to reach the specified torque, the clamping set must be installed free of grease. The clamping set must seat solidly with the entire length upon the shaft. For maximal torque, shaft and hub must be sufficiently firm (lowest elastic limit 350 N/mm^2 , e.g., C45).

Requisite tolerances:

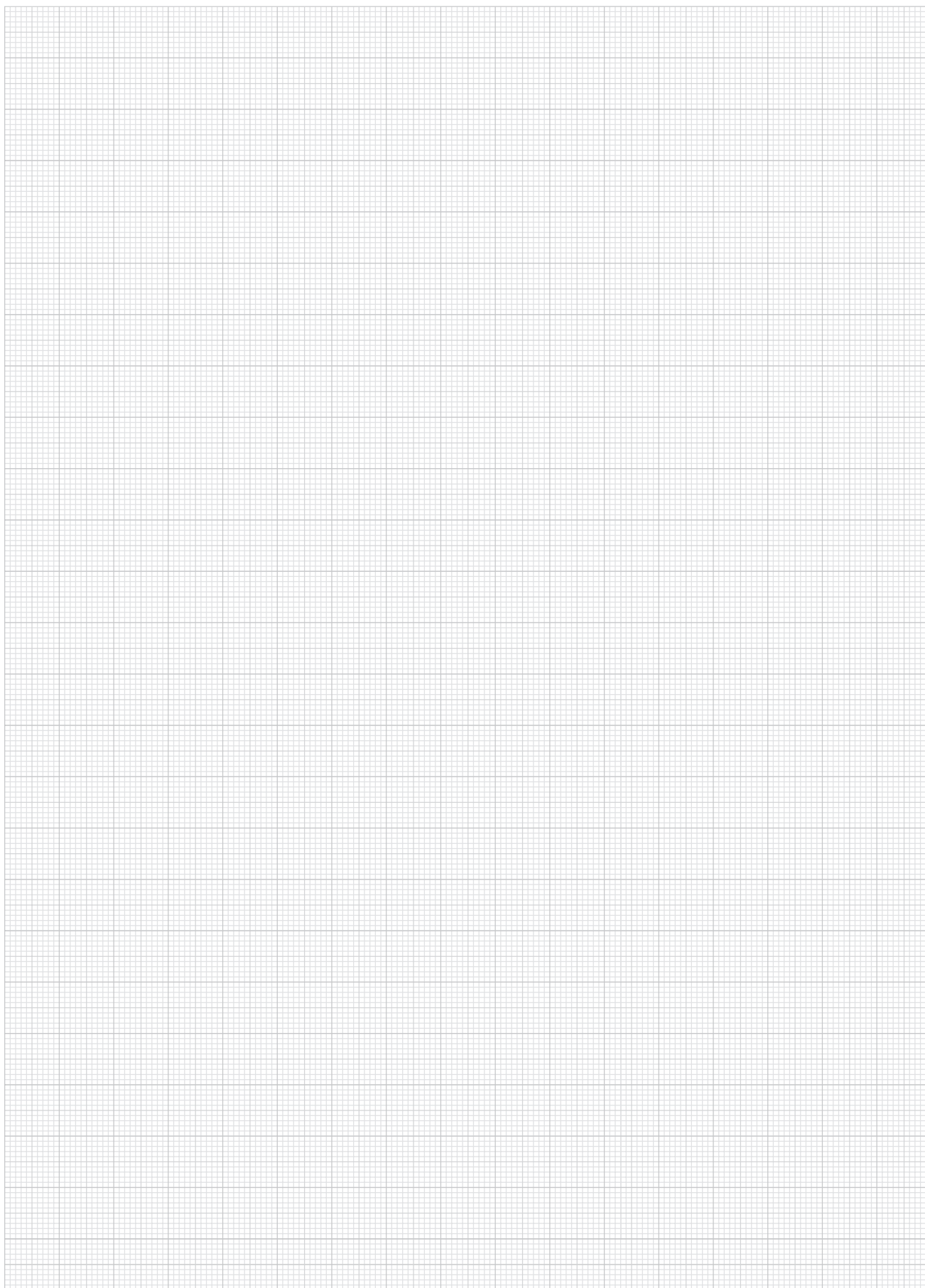
Shaft: h7

Hub: H7



Order No.	D	D1	L	L1	G	SW	Tightening torque max. Nm	Torque transmissible T Nm	Approx. weight kg
23370-040008	4	8	15	12,5	M6x0,5	8	4	3	0,004
23370-050010	5	10	15	12,5	M8x0,5	10	5	4	0,007
23370-060010	6	10	15	12,5	M8x0,5	10	8	7	0,005
23370-063510	6,35	10	15	12,5	M8x0,5	10	8	7	0,005
23370-080014	8	14	22	19	M12x1	17	15	14	0,018
23370-090014	9	14	22	19	M12x1	17	15	14	0,015
23370-100017	10	17	22	18,5	M15x1	19	19	18	0,029
23370-120017	12	17	22	18,5	M15x1	19	19	18	0,026
23370-140020	14	20	28	23	M17x1	22	25	24	0,035
23370-150020	15	20	28	23	M17x1	22	25	24	0,036
23370-160023	16	23	28	23	M20x1	27	27	26	0,051
23370-190025	19	25	28	23	M22x1	27	30	29	0,047
23370-200028	20	28	28	23	M25x1	30	32	31	0,067

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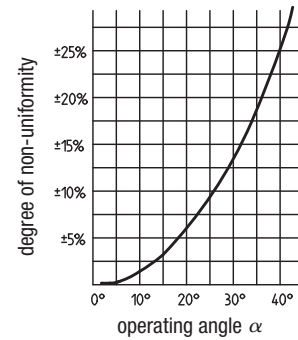
Cardan shafts: mounting and maintenance

Universal joints:

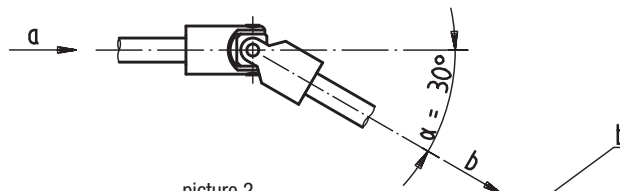
Universal joints are used for mechanical power transmission at high speeds. The speed limit is dependent on the working angle. The widest working angle is 45° for all joint types (double joint 90°). Lower speeds should be used at angles over 20° (40° double joint). Standard universal joints can be used up to 2000 rpm and joints with needle bearings up to 4000 rpm. Needle bearing mounted joints are normally only used at speeds over 1000 rpm.

Movement progression

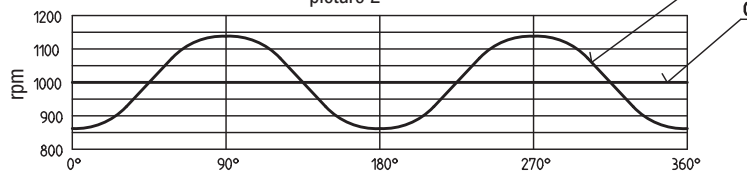
Single joints transfer uniform induced movement irregularly because by one by revolution of the driving shaft, the driven shaft is accelerated twice and retarded twice. The degree of irregularity depends on the working angle (see Figures 1 and 2).



picture 1



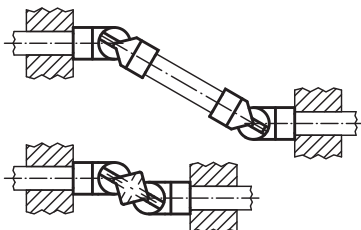
picture 2



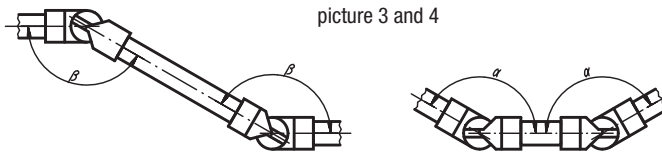
To achieve uniform movement 2 single or one double joint must be used. Where slight irregularities in rotation can be accepted or only small angles of diffraction are concerned, a single joint may be used. Furthermore, for universal rotation transfer the diffraction angle at both ends of the intermediate shaft must be the same (Figures 3 and 4).

Note:

It should be ensured that the bearing is located as closely as possible to the joint.



picture 3 and 4



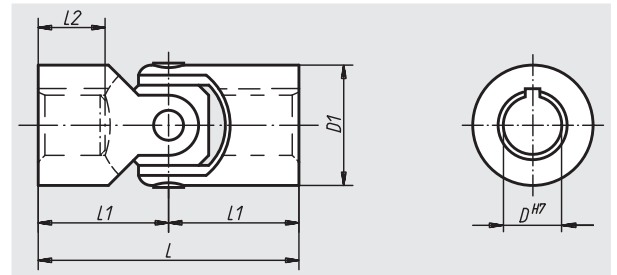
Maintenance

The joints should be lubricated at least once per day where they are in uninterrupted use. In dirty conditions we recommend covering the joints with a protective rubber sheath.

Where mounting is questionable, please consult our technical sales staff.

Cardan single joints with slide bearing

DIN 808



Material:
Steel

Version:
Joint and slide bearing hardened

Sample order:
nlm 23403-06034

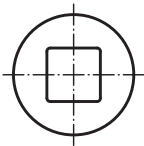
Note:
Cardan joints with slide bearing can be swivelled by 45°.

Max. transferable torque (Nm) at 150 r.p.m.; operation angle $\alpha < 5^\circ$.

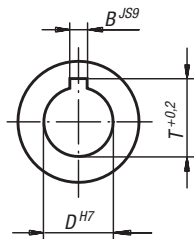
* Bore hole depth is smaller than DIN 808.

On request:

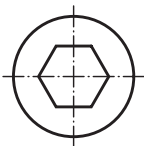
square



keyway DIN 6885-1



hexagon

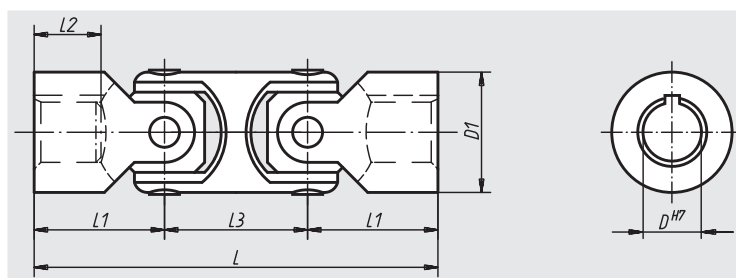


Order No. Locating hole without slot	Order No. Locating hole with slot	D	D1	L	L1	L2	B	T	Max. torque Nm	static fracture torque in Nm	Approx. weight kg
23403-06034	-	6	16	34	17	9*	2	7	7	40	0,035
23403-08040	23403-108040	8	16	40	20	11*	2	9	7	40	0,040
23403-10048	23403-110048	10	20	48	24	12*	3	11,4	16	90	0,075
23403-12056	23403-112056	12	25	56	28	14*	4	13,8	26	150	0,140
23403-16068	23403-116068	16	32	68	34	16*	5	18,3	52	300	0,290
23403-20082	23403-120082	20	40	82	41	20*	6	22,8	100	650	0,530
23403-25104	23403-125104	25	50	104	52	25*	8	28,3	210	1200	1,140

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Cardan double joints with slide bearing

DIN 808



Material:
Steel

Version:
Joint and slide bearing hardened

Sample order:
nlm 23404-06056

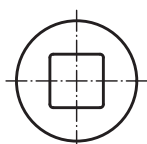
Note:
Cardan double joints with slide bearing can be swivelled by 90°.

Max. transferable torque (Nm) at 150 r.p.m.; operation angle $\alpha < 5^\circ$.

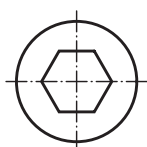
* Bore hole depth is smaller than DIN 808.

On request:

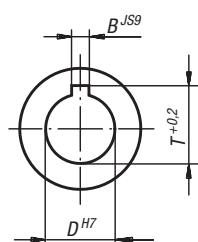
square



hexagon



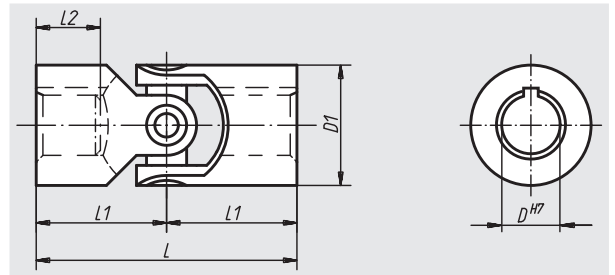
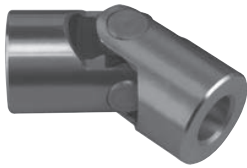
keyway DIN 6885-1



Order No. Locating hole without slot	Order No. Locating hole with slot	D	D1	L	L1	L2	L3	B	T	Max. torque Nm	static fracture torque in Nm	Approx. weight kg
23404-06056	-	6	16	56	17	9*	22	2	7	7	40	0,055
23404-08062	23404-108062	8	16	62	20	11*	22	2	9	7	40	0,080
23404-10074	23404-110074	10	20	74	24	12*	26	3	11,4	16	90	0,145
23404-12086	23404-112086	12	25	86	28	14*	30	4	13,8	26	150	0,240
23404-16104	23404-116104	16	32	104	34	16*	37	5	18,3	52	300	0,445
23404-20128	23404-120128	20	40	128	41	20*	47	6	22,8	100	650	0,860
23404-25160	23404-125160	25	50	160	52	25*	56	8	28,3	210	1200	1,680

Cardan single joints with needle bearing

DIN 808



Material:
Steel

Version:
Cardan shaft ground, natural finish

Sample order:
nlm 23406-10048

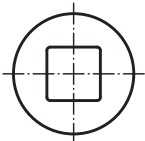
Note:
Cardan single joints with needle bearing are used for transferring speeds between 1000 r.p.m. up to 4000 r.p.m. They have a minimal clearance and are maintenance free.

Max. transferable torque (Nm) at 150 r.p.m.;
operation angle $\alpha < 5^\circ$.

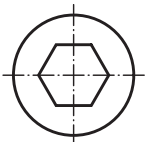
* Bore hole depth is smaller than DIN 808.

On request:

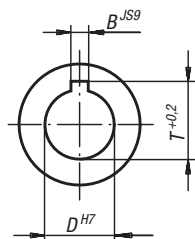
square



hexagon



keyway DIN 6885-1



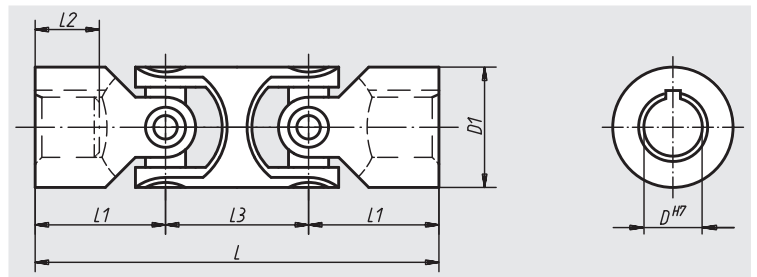
Order No. Locating hole without slot	Order No. Locating hole with slot	D	D1	L	L1	L2	B	T	Max. torque Nm	static fracture torque in Nm	Approx. weight kg
23406-10048	23406-110048	10	20	48	24	12*	3	11,4	10	80	0,085
23406-12056	23406-112056	12	25	56	28	14*	4	13,8	16	120	0,130
23406-16068	23406-116068	16	32	68	34	16*	5	18,3	35	250	0,235
23406-20082	23406-120082	20	40	82	41	20*	6	22,8	80	500	0,455
23406-25104	23406-125104	25	50	104	52	25*	8	28,3	130	800	0,975
23406-30166	23406-130166	30	63	166	83	38*	8	33,3	240	1500	2,850
23406-35140	23406-135140	35	70	140	70	35*	10	38,3	360	2200	3,150

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Cardan double joints with needle bearing



DIN 808



Material:
Steel

Version:
Cardan shaft ground, natural finish

Sample order:
nlm 23407-12086

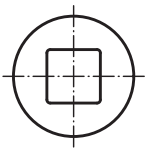
Note:
Cardan double joints with needle bearing are used for transferring speeds between 1000 r.p.m. up to 4000 r.p.m. They have a minimal clearance and are maintenance free.

Max. transferable torque (Nm) at 150 r.p.m.;
operation angle $\alpha < 5^\circ$.

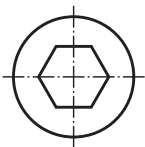
* Bore hole depth is smaller than DIN 808.

On request:

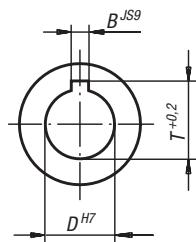
square



hexagon



keyway DIN 6885-1



Order No. Locating hole without slot	Order No. Locating hole with slot	D	D1	L	L1	L2	L3	B	T	Max. torque Nm	static fracture torque in Nm	Approx. weight kg
23407-10074	23407-110074	10	20	74	24	12*	26	3	11,4	10	80	0,115
23407-12086	23407-112086	12	25	86	28	14*	30	4	13,8	16	120	0,180
23407-16104	23407-116104	16	32	104	34	16*	37	5	18,3	35	250	0,335
23407-20128	23407-120128	20	40	128	41	20*	47	6	22,8	80	500	0,650
23407-25160	23407-125160	25	50	160	52	25*	56	8	28,3	130	800	1,350
23407-30238	23407-130238	30	63	238	83	38*	72	8	33,3	240	1500	4,100
23407-35212	23407-135212	35	70	212	70	35*	72	10	38,3	360	2200	4,500

Cardan single joints with slide bearing

version coarse DIN 808



Material:
Steel

Version:
Natural finish

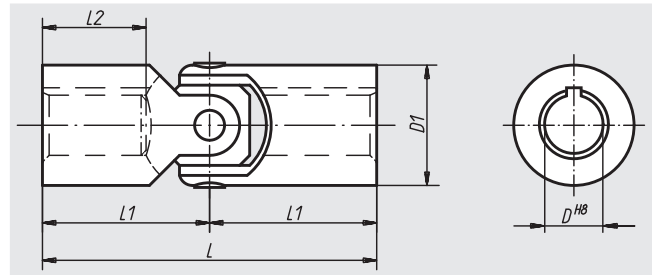
Sample order:
nlm 23409-08042

Note:

Cardan joints (version coarse) are suitable for the manual drive of lifting tables, slides, louvres etc. resp. for short-time mechanical drives at low speed.

Cardan single joints with slide bearing can be swivelled by 35°.

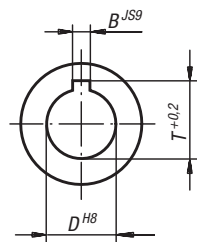
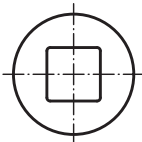
Max. transferable torque (Nm) at 150 r.p.m.;
operation angle $\alpha < 5^\circ$.



keyway DIN 6885-1

On request:

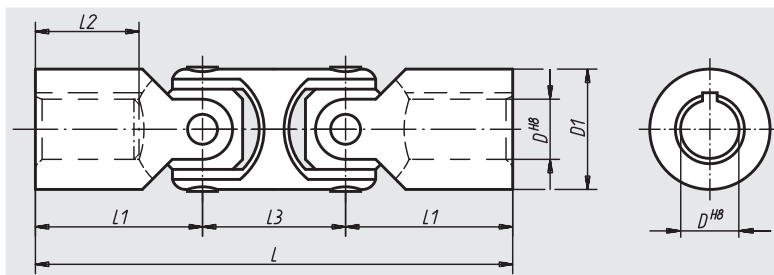
square



Order No. Locating hole without slot	Order No. Locating hole with slot	D	D1	L	L1	L2	B	T	Max. torque Nm	static fracture torque in Nm	Approx. weight kg
23409-08042	23409-108042	8	13	42	21	11	2	9	4	25	0,030
23409-10052	23409-110052	10	16	52	26	15	3	11,4	6	35	0,050
23409-12062	23409-112062	12	20	62	31	18	4	13,8	13	80	0,095
23409-16074	23409-116074	16	25	74	37	22	5	18,3	23	140	0,180
23409-20086	23409-120086	20	32	86	43	25	6	22,8	46	280	0,330
23409-25108	23409-125108	25	40	108	54	32	8	28,3	90	600	0,650
23409-32132	23409-132132	32	50	132	66	40	10	35,3	180	1100	1,260

Cardan double joints with slide bearing

version coarse DIN 808



Material:

Steel

Version:

Natural finish

Sample order:

nIm 23410-10074

Note:

Cardan joints (version coarse) are suitable for the manual drive of lifting tables, slides, louvres etc. resp. for short-time mechanical drives at low speed.

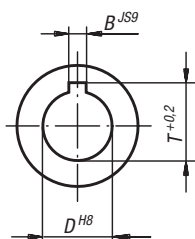
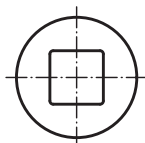
Cardan double joints with slide bearing can be swivelled by 70°.

Max. transferable torque (Nm) at 150 r.p.m.;
operation angle $\alpha < 5^\circ$.

keyway DIN 6885-1

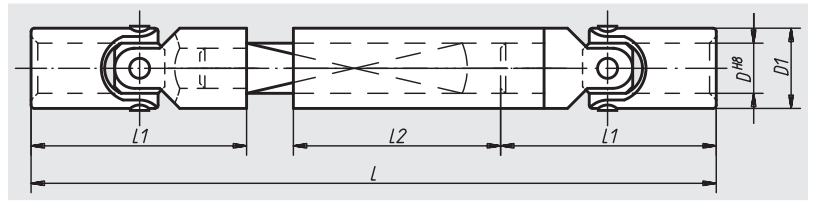
On request:

square



Order No. Locating hole without slot	Order No. Locating hole with slot	D	D1	L	L1	L2	L3	B	T	Max. torque Nm	static fracture torque in Nm	Approx. weight kg
23410-08060	23410-108060	8	13	60	21	11	18	2	9	4	25	0,045
23410-10074	23410-110074	10	16	74	26	15	22	3	11,4	6	35	0,075
23410-12088	23410-112088	12	20	88	31	18	26	4	13,8	13	80	0,140
23410-16104	23410-116104	16	25	104	37	22	30	5	18,3	23	140	0,260
23410-20124	23410-120124	20	32	124	43	25	37	6	22,8	46	280	0,485
23410-25156	23410-125156	25	40	156	54	32	47	8	28,3	90	600	0,950
23410-32188	23410-132188	32	50	188	66	40	56	10	35,3	180	1100	1,800

Telescopic cardan shafts



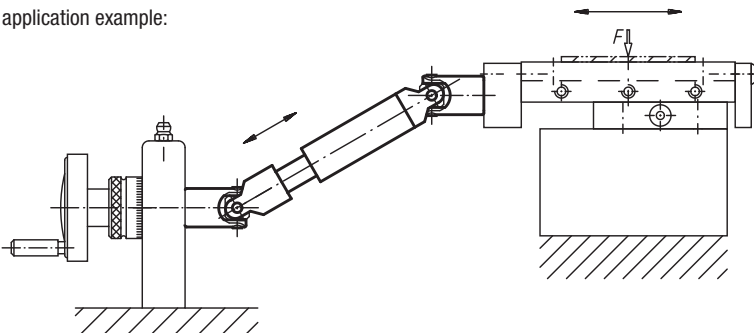
Material:
Steel

Version:
Natural finish

Sample order:
nlm 23412-120260

Note:
These cardan shafts consist of two cardan joints (version coarse), one square intermediate shaft and a sliding sleeve. They are available in every desired length. Telescopic cardan shafts are suitable for manual drives resp. for short-time mechanical drive at low speed.

application example:



Order No.	D	D1	L	L1	L2	Retractability	Shaft profile square	static fracture torque in Nm	Approx. weight kg
23412-100230	10	16	230	52	120	80	8	35	0,400
23412-120260	12	20	260	62	130	90	10	80	0,600
23412-160340	16	25	340	74	160	110	12	140	1,000
23412-200420	20	32	420	86	200	130	16	280	2,400

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Protective rubber covers

for ball-and-socket joints or cardan joints (single)

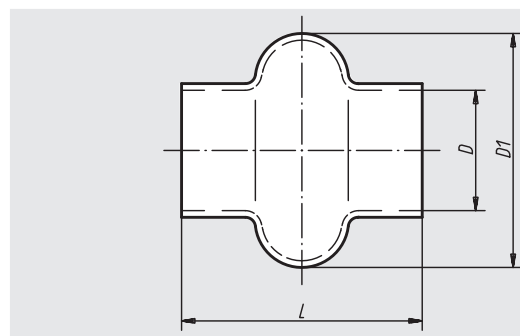


Sample order:
nlm 23414-16

Note:

The protective rubber sleeves (single) fit on simple joints above 16 mm outer diameter. They consist of a resilient, oil-resistant plastic and are produced by a dipping method.

The Order No. 23414-50 is supplied with 4-fold bellows.



Order No.	D	D1	L	Suitable for single joints of shaft Ø (D1)	Approx. weight g
23414-16	16	35	32	16	6,7
23414-20	20	36	40	20	6,8
23414-24	24	44	45	24	16,1
23414-28	28	51	50	28	17,9
23414-32	32	62	55	32	26,4
23414-36	36	65	65	36	24,8
23414-40	40	73	75	40	28,6
23414-45	45	80	85	45	25,7
23414-50	50	90	95	50	63,2
23414-65	65	110	125	63	87,5
23414-70	70	125	137	70	134,3

23415

Protective rubber covers

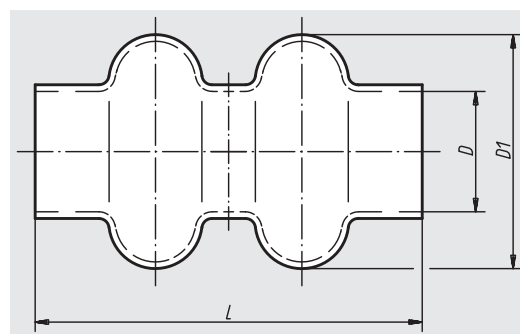
for ball-and-socket joints or cardan joints (double)



Sample order:
nlm 23415-16

Note:

The protective rubber sleeves (double) fit double joints from 16 mm outer diameter onwards. They consist of a rubberised elastic, oil-resistant plastic and are made using the immersion process.



Order No.	D	D1	L	Suitable for double joints of shaft Ø (D1)	Approx. weight g
23415-16	16	35	55	16	9,8
23415-20	20	36	65	20	9,8
23415-24	24	44	70	24	23,7
23415-28	28	51	80	28	24,1
23415-32	32	62	90	32	49,3
23415-40	40	73	120	40	79,0
23415-50	50	90	155	50	106,6

Quick plug couplings

with radial offset compensation



Material, version:

Coupling part and claw in steel, heat-treated and phosphated.
Nut (DIN 439) in steel, black oxide finish; quality class 8.8

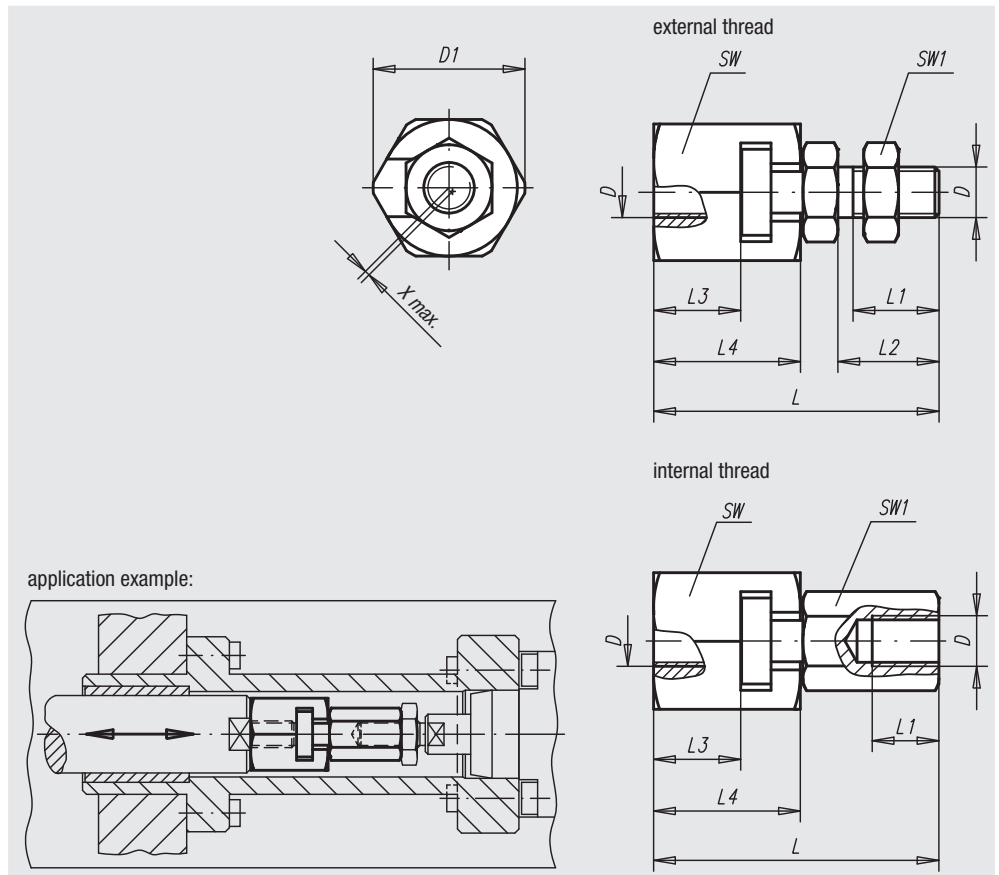
Sample order:

n1m 23450-16

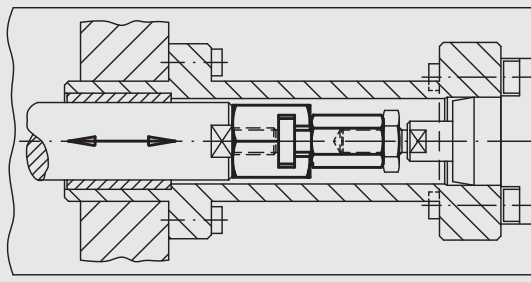
Note:

Quick plug couplings with radial offset compensation for multiple applications, e.g. as a link between a piston rod and a linear-movement unit. Assembly and disassembly of this simple, solid and two-part coupling is carried out by means of a T-slot; a manual re-adjustment is not necessary. The quick plug coupling can be linked to all commonly used pneumatic and hydraulic lifting cylinders via the connecting thread.

The quick plug coupling does not transmit any torque.



application example:



Order No.	Version	D	D1	~L	L1 min.	L2	L3 min.	L4	SW	SW1	Max. radial shift compensation	Max. permissible tensile and compressive stress in kN	Approx. weight kg
23450-06	Internal thread	M6	21	37,5	11	-	9	18	19	10	0,6	2,5	0,045
23450-08	Internal thread	M8	26	45	13,5	-	11,5	22,5	24	13	0,7	4,5	0,089
23450-10	Internal thread	M10	30	56,2	15	-	16	29	27	17	0,7	6,5	0,155
23450-101	Internal thread	M10x1,25	30	56,2	15	-	16	29	27	17	0,7	6,5	0,155
23450-12	Internal thread	M12	32,5	66,7	17,5	-	17	34	30	19	0,8	10	0,220
23450-121	Internal thread	M12x1,25	32,5	66,7	17,5	-	17	34	30	19	0,8	10	0,220
23450-16	Internal thread	M16	39	83	22	-	23	42	36	24	1	18	0,397
23450-161	Internal thread	M16x1,5	39	83	22	-	23	42	36	24	1	18	0,398
23450-20	Internal thread	M20	44	93,5	25	-	23,5	45,5	41	30	1	30	0,599
23450-201	Internal thread	M20x1,5	44	93,5	25	-	23,5	45,5	41	30	1	30	0,594
23450-0614	External thread	M6	21	37,5	11	14	9	18	19	10	0,6	2,5	0,042
23450-0817	External thread	M8	26	45	13,5	17	11,5	22,5	24	13	0,7	4,5	0,084
23450-1020	External thread	M10	30	56,2	16	20	16	29	27	17	0,7	6,5	0,144
23450-10201	External thread	M10x1,25	30	56,2	16	20	16	29	27	17	0,7	6,5	0,145
23450-1225	External thread	M12	32,5	66,7	21	25	17	34	30	19	0,8	10	0,205
23450-12251	External thread	M12x1,25	32,5	66,7	21	25	17	34	30	19	0,8	10	0,205
23450-1630	External thread	M16	39	83	25	30	23	42	36	24	1	18	0,384
23450-16301	External thread	M16x1,5	39	83	25	30	23	42	36	24	1	18	0,385
23450-2035	External thread	M20	44	93,5	29	35	23,5	45,5	41	30	1	30	0,568
23450-20351	External thread	M20x1,5	44	93,5	29	35	23,5	45,5	41	30	1	30	0,568

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Quick plug couplings

with radial offset compensation and screw-on flange



Material, version:

Coupling part and flange in steel, heat-treated and phosphated.

Nut (DIN 439) in steel, black oxide finish; quality class 8.8

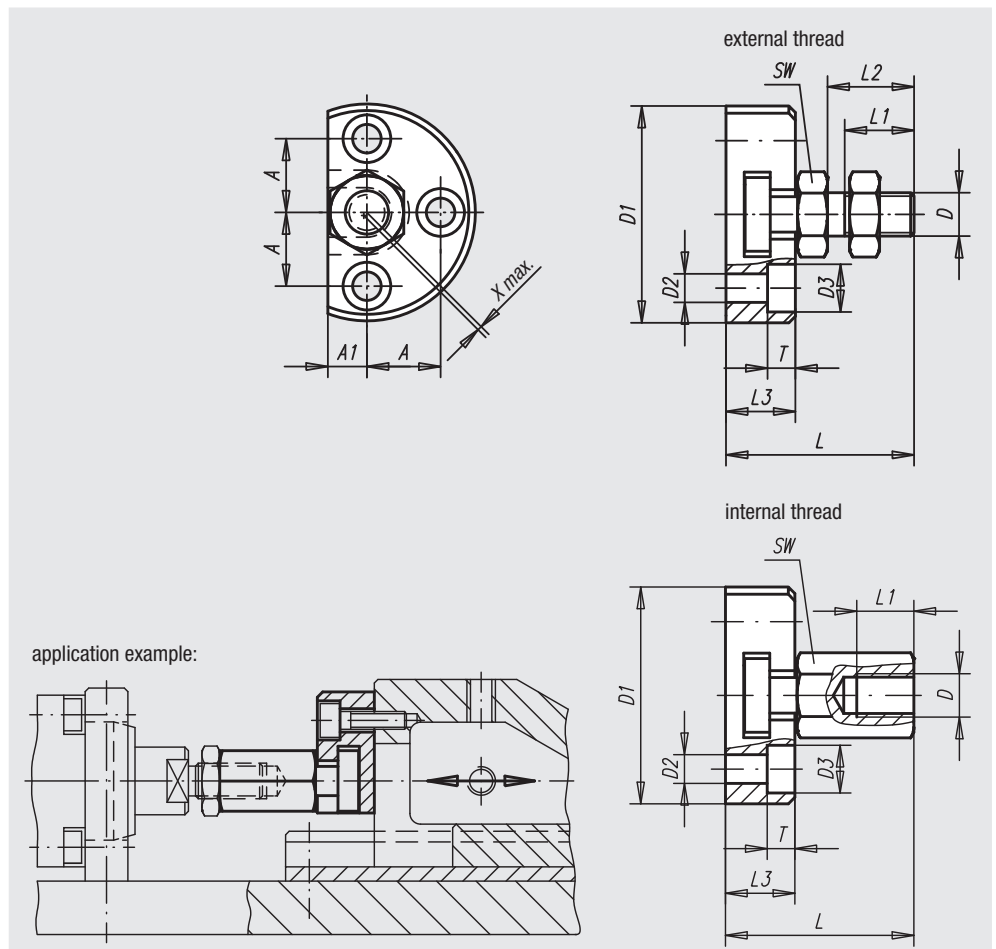
Sample order:

n1m 23452-20351

Note:

Quick plug couplings with radial offset compensation requiring only little space. Suitable for multiple applications, e.g. as a link between a piston rod and a linear-movement unit. Assembly and disassembly of this simple, solid and two-part coupling is carried out by means of a T-slot; a manual re-adjustment is not necessary. The quick plug coupling can be linked to all commonly used pneumatic and hydraulic lifting cylinders via the connecting thread.

The quick plug coupling does not transmit any torque.



Order No.	Version	D	D1	D2	D3	A	A1	~L	L1 min.	L2	L3	T	SW	Max. radial shift compensation	Max. permissible tensile and compressive stress in kN	Approx. weight kg
23452-06	Internal thread	M6	42	5,5	10	14	7	30,5	11	-	11	5,4	10	0,6	2,5	0,076
23452-08	Internal thread	M8	48	6,6	11	16	8	35,5	13,5	-	13	6,4	13	0,7	4,5	0,122
23452-10	Internal thread	M10	50	6,6	11	17	9	43,2	15	-	16	6,4	17	0,7	6,5	0,184
23452-101	Internal thread	M10x1,25	50	6,6	11	17	9	43,2	15	-	16	6,4	17	0,7	6,5	0,184
23452-12	Internal thread	M12	55	6,6	11	19	10	53,2	17,5	-	20,5	6,4	19	0,8	10	0,276
23452-121	Internal thread	M12x1,25	55	6,6	11	19	10	53,2	17,5	-	20,5	6,4	19	0,8	10	0,276
23452-16	Internal thread	M16	65	9	15	22,5	12,5	64	22	-	23	8,5	24	1	18	0,449
23452-161	Internal thread	M16x1,5	65	9	15	22,5	12,5	64	22	-	23	8,5	24	1	18	0,449
23452-20	Internal thread	M20	80	11	18	28	17	74	25	-	26	10	30	1	30	0,845
23452-201	Internal thread	M20x1,5	80	11	18	28	17	74	25	-	26	10	30	1	30	0,840
23452-0614	External thread	M6	42	5,5	10	14	7	30,5	11	14	11	5,4	10	0,6	2,5	0,073
23452-0817	External thread	M8	48	6,6	11	16	8	35,5	13,5	17	13	6,4	13	0,7	4,5	0,116
23452-1020	External thread	M10	50	6,6	11	17	9	43,2	16	20	16	6,4	17	0,7	6,5	0,173
23452-10201	External thread	M10x1,25	50	6,6	11	17	9	43,2	16	20	16	6,4	17	0,7	6,5	0,174
23452-1225	External thread	M12	55	6,6	11	19	10	53,2	21	25	20,5	6,4	19	0,8	10	0,261
23452-12251	External thread	M12x1,25	55	6,6	11	19	10	53,2	21	25	20,5	6,4	19	0,8	10	0,262
23452-1630	External thread	M16	65	9	15	22,5	12,5	64	25	30	23	8,5	24	1	18	0,431
23452-16301	External thread	M16x1,5	65	9	15	22,5	12,5	64	25	30	23	8,5	24	1	18	0,433
23452-2035	External thread	M20	80	11	18	28	17	74	29	35	26	10	30	1	30	0,815
23452-20351	External thread	M20x1,5	80	11	18	28	17	74	29	35	26	10	30	1	30	0,815

Quick plug couplings

with angular and radial offset compensation



Material, version:

Coupling part in tempered steel, nitrided, black.
Claw and seat in steel, heat-treated and phosphated.
Nut in tempered steel, phosphated.
Locking nut (EN 24035) in steel, quality class 8.8, black.
Spring in stainless steel

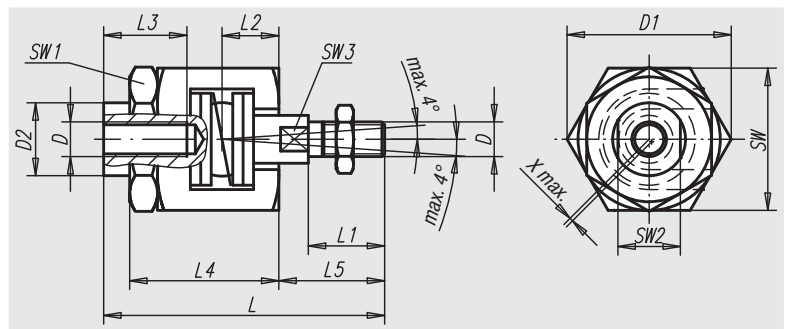
Sample order:

nIm 23454-12

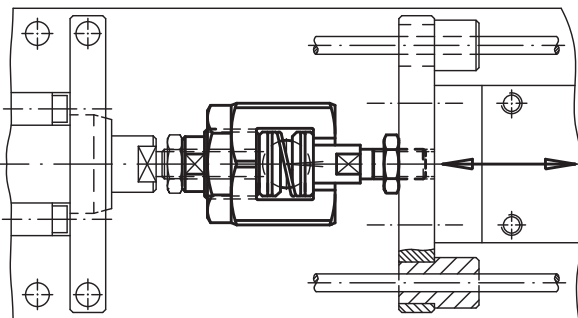
Note:

Quick plug coupling, adjustable without axial play, including angular and radial offset compensation. Suitable for multiple applications, e.g. for non-aligned linear-movements. Solid and compact design, no loose elements. Assembly and disassembly is carried out by means of a T-slot; a manual re-adjustment is not necessary. The quick plug coupling can be linked to all commonly used pneumatic and hydraulic lifting cylinders via the connecting thread.

The quick plug coupling does not transmit any torque.



application example:



Order No.	D	D1	D2	~L	L1	L2	L3 min.	L4	L5	SW	SW1	SW2	SW3	Max. radial shift compensation	Max. permissible tensile and compressive stress in kN	Approx. weight kg
23454-06	M6	24,5	9,6	52	14	9,5	13	29	18,5	22	19	8	5	0,6	2,5	0,075
23454-08	M8	30	15	63	18	11,5	16	33	23,5	27	24	13	7	0,6	4,5	0,135
23454-10	M10	44	21	81	22	16	24	43	30,5	41	36	18	12	0,7	6,5	0,403
23454-101	M10x1,25	44	21	81	22	16	24	43	30,5	41	36	18	12	0,7	6,5	0,403
23454-12	M12	44	21	85	26	16	24	43	34,5	41	36	18	12	0,7	10	0,405
23454-121	M12x1,25	44	21	85	26	16	24	43	34,5	41	36	18	12	0,7	10	0,409
23454-16	M16	60	32	121	34	26	34	62	45	55	46	27	18	1	18	1,090
23454-161	M16x1,5	60	32	121	34	26	34	62	45	55	46	27	18	1	18	1,094
23454-20	M20	60	32	129	42	26	34	62	53	55	46	27	18	1	30	1,136
23454-201	M20x1,5	60	32	129	42	26	34	62	53	55	46	27	18	1	30	1,143

igubal® pillow block bearings

**Material:**

Housing igumid® G, spherical ball in iglidur® W300

Version:

Black

Sample order:

nIm 23500-05

Note:

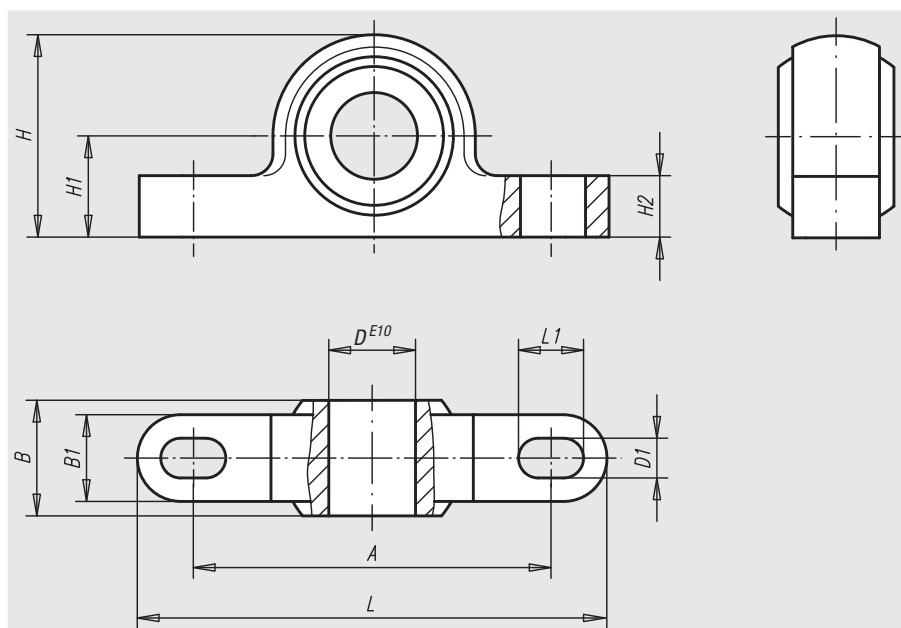
The ability to pivot allows pillow block bearings to compensate for misalignment and possible shaft deflection. They are easy to install and suitable for the accommodation of rotating, oscillating and linear movements.

igubal® pillow block bearings are maintenance free and conceived for dry running condition.

Assembly:

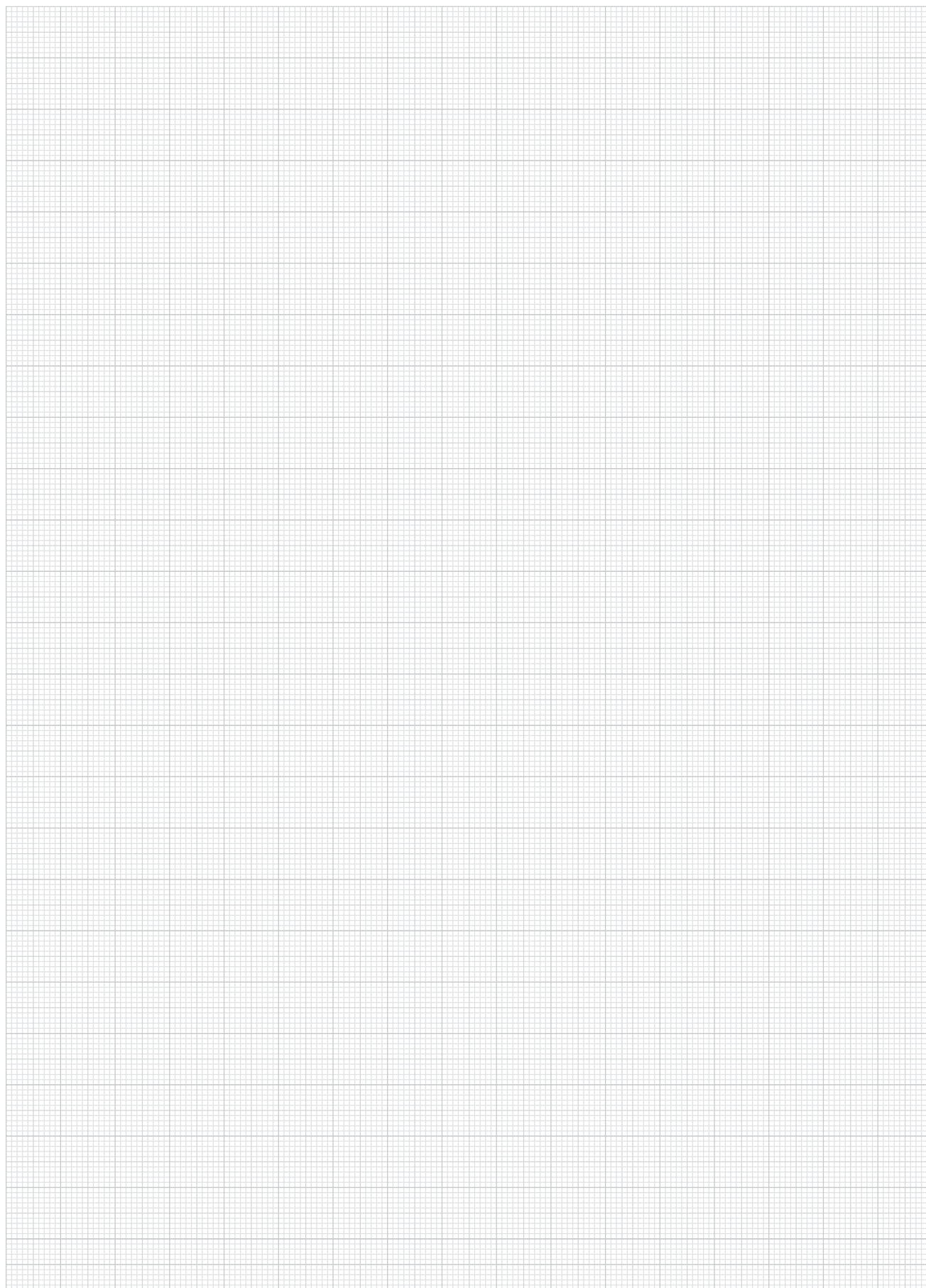
Pillow block bearings are designed for mounting with 2 screws.

Pillow block bearings are designed with a inside diameter tolerance of E10. The matching shaft should be made to tolerance class h6 and h9.



Order No.	A	B	B1	D	D1	H	H1	H2	L	L1	Max. swivel angle	Max. static tensile stress N short-term	Max. static tensile stress N long-term	Max. static axial pressure stress N	Max. tightening torque for oblong holes Nm	Approx. weight g
23500-05	26,7	8	6	5	3,3	14	7	4	34	5	30°	700	350	400	0,6	1,64
23500-06	34,5	9	7	6	4,5	18	10	5,5	43	6	29°	1100	550	400	1,3	2,88
23500-08	35,5	12	9	8	4,5	20	10	6	47	7	25°	1300	650	800	1,3	4,48
23500-10	48,5	14	10,5	10	5,5	26	14	7,5	62	8	25°	1500	750	1100	2,5	8,47
23500-12	49,5	16	12	12	5,5	28	14	8,5	65	9	25°	2200	1100	1150	2,5	11,66
23500-14	64,4	19	13,5	14	6,6	34	18	9,5	82	11	23°	2400	1200	1200	4,5	18,41
23500-16	65,4	21	15	16	6,6	36	18	10,5	86	12	23°	3000	1500	1800	4,5	24,06
23500-18	72	23	16,5	18	9	42	22	11,5	93	13	23°	3500	1750	1900	10,5	32,23
23500-20	73	25	18	20	9	44	22	13	98	14	23°	4700	2350	2500	10,5	40,99
23500-22	81	28	20	22	9	48	24	14	108	16	22°	6100	3050	2700	10,5	53,83
23500-25	94	31	22	25	9	54	27	16	124	17	22°	6600	3300	3200	10,5	76,39
23500-30	105	37	25	30	11	64	32	17	139	20	22°	8100	4050	3750	21,5	114,46

Notes



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Plastic slide bearings



Material:
High-performance polymer iglidur® G,
iglidur® J or iglidur® X.

Version:
iglidur® G matte grey;
iglidur® J yellow;
iglidur® X black

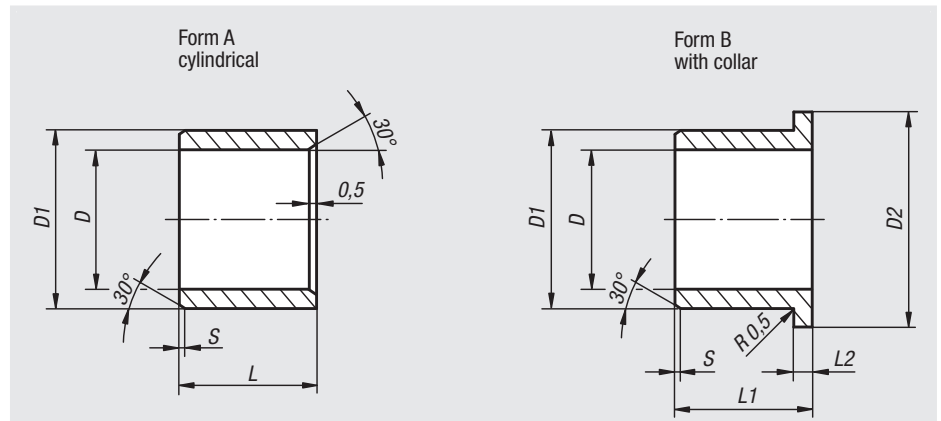
Sample order:
nlm 23710-11030403

Note:
Plastic slide bearings made of high-performance polymer.

- maintenance-free
- lubricant-free
- corrosion-resistant
- resistant to dirt
- high dimensional precision
- high pressure resistance
- good heat dissipation
- very low creep tendencies
- high mechanical damping
- resistant to UV radiation.

Assembly:
The bearings are designed for force fitting in H7 tolerated receptacles. After fitting them in a receptacle with nominal size, the inner diameter of the bearings adjusts itself according to tolerance D.

The bearings are suitable for shafts with h tolerance (at least h9 recommended).



Material	Note	longest endurance times in dry run	for high loads	for high temperatures	low friction/ high speed	dirt-resistant	chemical-resistant	low water absorption	good for edge pressing	possible under water	cost-effective	electrically conducting
iglidur® G	the all-rounder	•	•			•					•	
iglidur® J	low coefficients of friction	•			•			•	•		•	
iglidur® X	temperature and chemical resistant	•	•	•			•	•		•		•



Plastic slide bearing iglidur® G

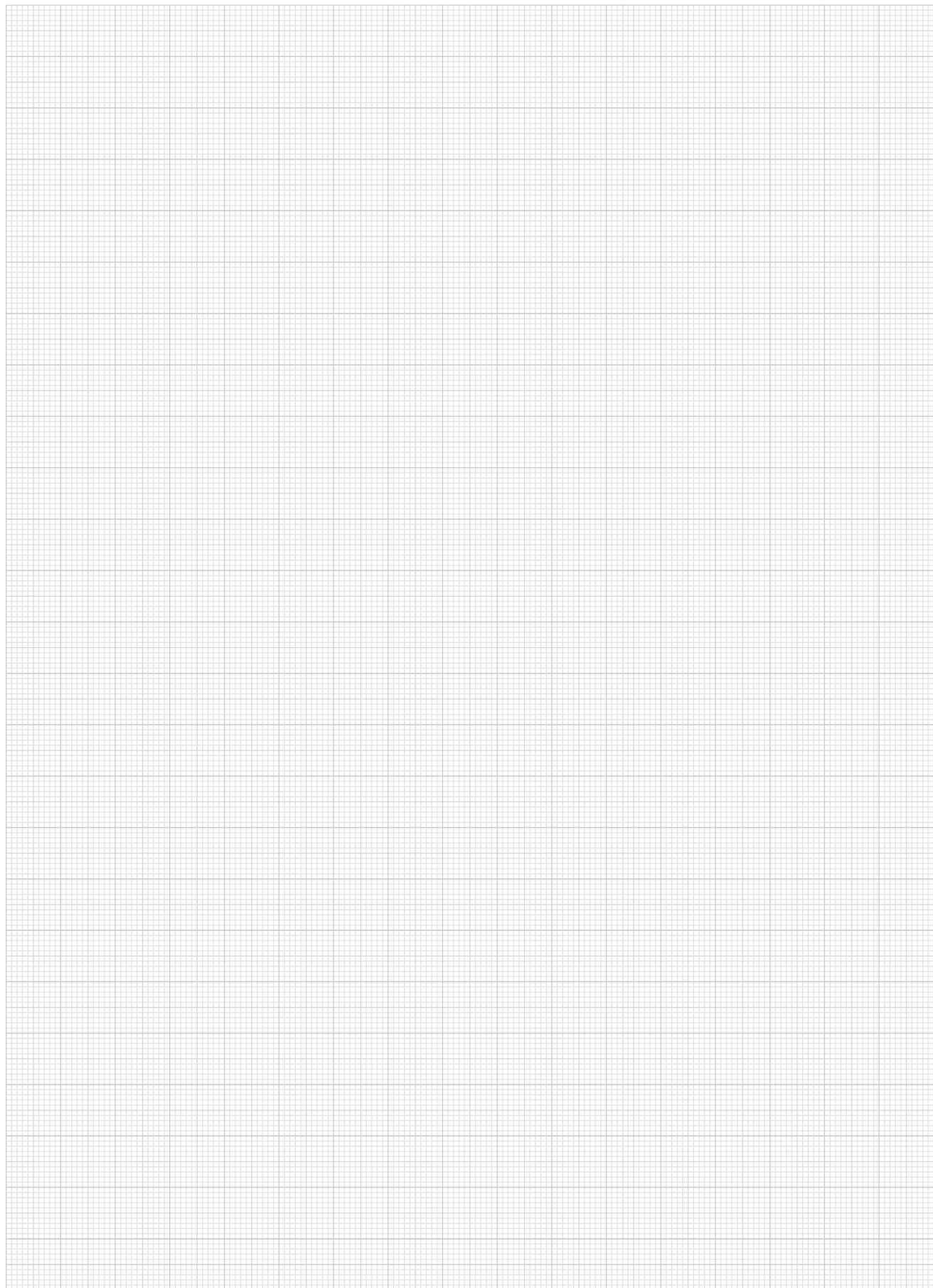
Order No. Form A	Order No. Form B	D	D1	D2	L	L1	L2	S	Tolerance D after force fitting	Max. permissible static surface pressure N/mm ²	Temperature range
23710-11050705	23710-12050705	5	7	-/11	5	-/5	-/1	0,3	E10	80	-40 °C up to +130 °C
23710-11060806	23710-12060808	6	8	-/12	6	-/8	-/1	0,5	E10	80	-40 °C up to +130 °C
23710-11081008	23710-12081007	8	10	-/15	8	-/7,5	-/1	0,5	E10	80	-40 °C up to +130 °C
23710-11101210	23710-12101209	10	12	-/18	10	-/9	-/1	0,5	E10	80	-40 °C up to +130 °C
23710-11121410	23710-12121412	12	14	-/20	10	-/12	-/1	0,8	E10	80	-40 °C up to +130 °C
23710-11141615	23710-12141612	14	16	-/22	15	-/12	-/1	0,8	E10	80	-40 °C up to +130 °C
23710-11151720	23710-12151712	15	17	-/23	20	-/12	-/1	0,8	E10	80	-40 °C up to +130 °C
23710-11161820	23710-12161817	16	18	-/24	20	-/17	-/1	0,8	E10	80	-40 °C up to +130 °C
23710-11202320	23710-12202321	20	23	-/30	20	-/21	-/1,5	0,8	E10	80	-40 °C up to +130 °C
23710-11252820	23710-12252821	25	28	-/35	20	-/21	-/1,5	0,8	E10	80	-40 °C up to +130 °C
23710-11303430	23710-12303426	30	34	-/42	30	-/26	-/2	0,8	E10	80	-40 °C up to +130 °C

Plastic slide bearing iglidur® J

Order No. Form A	Order No. Form B	D	D1	D2	L	L1	L2	S	Tolerance D after force fitting	Max. permissible static surface pressure N/mm ²	Temperature range
23710-21050705	23710-22050705	5	7	-/11	5	-/5	-/1	0,3	E10	35	-50 °C up to +90 °C
23710-21060806	23710-22060808	6	8	-/12	6	-/8	-/1	0,5	E10	35	-50 °C up to +90 °C
23710-21081008	23710-22081007	8	10	-/15	8	-/7,5	-/1	0,5	E10	35	-50 °C up to +90 °C
23710-21101210	23710-22101209	10	12	-/18	10	-/9	-/1	0,5	E10	35	-50 °C up to +90 °C
23710-21121410	23710-22121412	12	14	-/20	10	-/12	-/1	0,8	E10	35	-50 °C up to +90 °C
23710-21141615	23710-22141612	14	16	-/22	15	-/12	-/1	0,8	E10	35	-50 °C up to +90 °C
23710-21151720	23710-22151712	15	17	-/23	20	-/12	-/1	0,8	E10	35	-50 °C up to +90 °C
23710-21161820	23710-22161817	16	18	-/24	20	-/17	-/1	0,8	E10	35	-50 °C up to +90 °C
23710-21202320	23710-22202321	20	23	-/30	20	-/21	-/1,5	0,8	E10	35	-50 °C up to +90 °C
23710-21252820	23710-22252821	25	28	-/35	20	-/21	-/1,5	0,8	E10	35	-50 °C up to +90 °C
23710-21303430	23710-22303426	30	34	-/42	30	-/26	-/2	0,8	E10	35	-50 °C up to +90 °C

Plastic slide bearing iglidur® X

Order No. Form A	Order No. Form B	D	D1	D2	L	L1	L2	S	Tolerance D after force fitting	Max. permissible static surface pressure N/mm ²	Temperature range
23710-31050705	23710-32050705	5	7	-/11	5	-/5	-/1	0,3	F10	150	-100 °C up to +250 °C
23710-31060806	23710-32060808	6	8	-/12	6	-/8	-/1	0,5	F10	150	-100 °C up to +250 °C
23710-31081008	23710-32081007	8	10	-/15	8	-/7,5	-/1	0,5	F10	150	-100 °C up to +250 °C
23710-31101210	23710-32101209	10	12	-/18	10	-/9	-/1	0,5	F10	150	-100 °C up to +250 °C
23710-31121410	23710-32121412	12	14	-/20	10	-/12	-/1	0,8	F10	150	-100 °C up to +250 °C
23710-31141615	23710-32141612	14	16	-/22	15	-/12	-/1	0,8	F10	150	-100 °C up to +250 °C
23710-31151720	23710-32151712	15	17	-/23	20	-/12	-/1	0,8	F10	150	-100 °C up to +250 °C
23710-31161820	23710-32161817	16	18	-/24	20	-/17	-/1	0,8	F10	150	-100 °C up to +250 °C
23710-31202320	23710-32202321	20	23	-/30	20	-/21	-/1,5	0,8	F10	150	-100 °C up to +250 °C
23710-31252820	23710-32252821	25	28	-/35	20	-/21	-/1,5	0,8	F10	150	-100 °C up to +250 °C
23710-31303430	23710-32303426	30	34	-/42	30	-/26	-/2	0,8	F10	150	-100 °C up to +250 °C



Thrust washers

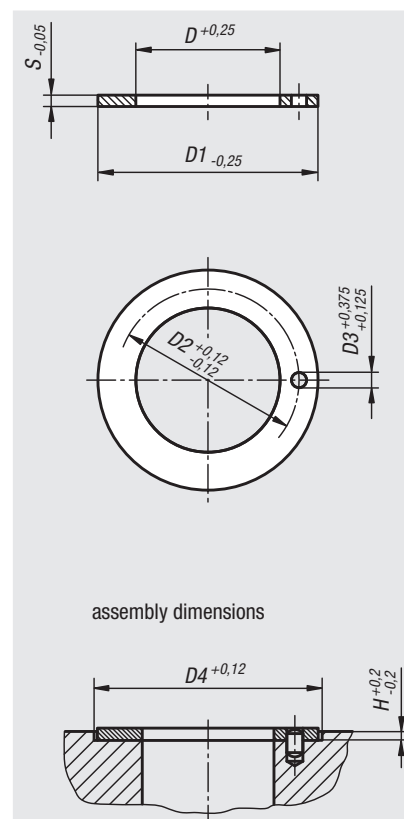


Material:
High-performance polymer iglidur® G.

Version:
matte grey.

Sample order:
nlm 23715-1050906

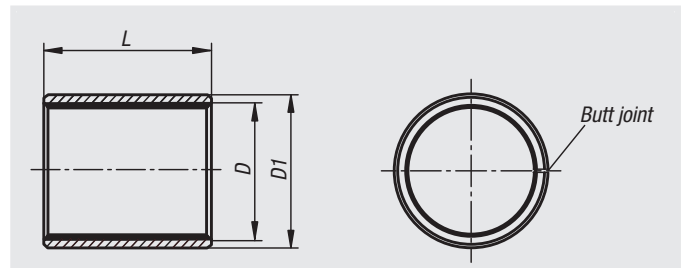
Note:
Maintenance-free and lubricant-free thrust washers.
They serve to receive axial loads in a rotational motion.
The axial loads that occur can be both alternating and permanent.
Electrically insulating. Resistant to UV radiation.



Order No.	D	D1	D2	D3	D4	H	S	Max. permissible static surface pressure N/mm ²	Temperature range
23715-1050906	5	9,5	-	-	9,5	0,3	0,6	80	-40 °C up to +130 °C
23715-1061515	6	15	-	-	15	1	1,5	80	-40 °C up to +130 °C
23715-1081810	8	18	-	-	18	0,7	1	80	-40 °C up to +130 °C
23715-1101810	10	18	-	-	18	0,7	1	80	-40 °C up to +130 °C
23715-1122415	12	24	18	1,5	24	1	1,5	80	-40 °C up to +130 °C
23715-1142015	14	20	-	-	20	1	1,5	80	-40 °C up to +130 °C
23715-1152415	15	24	19,5	1,5	24	1	1,5	80	-40 °C up to +130 °C
23715-1163015	16	30	22	2	30	1	1,5	80	-40 °C up to +130 °C
23715-1183215	18	32	25	2	32	1	1,5	80	-40 °C up to +130 °C
23715-1203615	20	36	28	3	36	1	1,5	80	-40 °C up to +130 °C
23715-1223815	22	38	30	3	38	1	1,5	80	-40 °C up to +130 °C
23715-1244215	24	42	33	3	42	1	1,5	80	-40 °C up to +130 °C
23715-1264415	26	44	35	3	44	1	1,5	80	-40 °C up to +130 °C
23715-1284815	28	48	38	4	48	1	1,5	80	-40 °C up to +130 °C

Plain bearing

cylindrical



Material:

Base material, steel.
Intermediate layer sintered bronze.
Bearing surface PTFE.

Version:

Galvanized steel

Sample order:

nIm 23730-00300404

Note:

Maintenance-free rolled composite steel plain bearings particularly suitable for dry running. Also highly suitable for lubricated applications (oil lubrication). Very low wear and friction, no stick-slip effect. Suitable for rotary and oscillating movements, high chemical resistance, low water absorption.

Assembly:

The use of a suitable press mandrel is recommended to avoid damaging the bearing surface. The butt joint must be opposite the load zone. The bearing has an interference fit after installation. Gluing is possible but not required.

Tolerances:

Housing:
Recommended tolerance H7.
Surface finish Ra 0.8 to 1.6.
Chamfer (press-in side 0.8 to 1.2 x 15°.

Shaft:

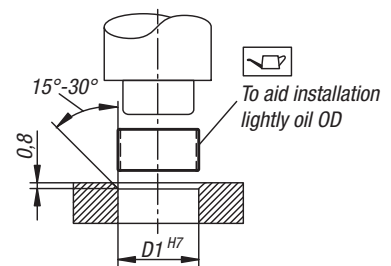
Recommended tolerance h8 to f7. For applications at a low speed and small loads drawn shafts with h9 can also be used.

Shaft surface Ra 0.4 to 0.8 (preferably ground shafts) for drawn shafts Ra 1.6 to 3.2.

Technical data:

Static load: max. 250 N/mm²
Dynamic load: max. 140 N/mm²
Friction coefficient, dry: 0.03 to 0.20
Sliding speed, dry: max. 2 m/s
Sliding speed, oil lubricated: max. 5 m/s
Thermal conductivity: 42 W/(m*K)-1
Thermal expansion coefficient: 11*10⁻⁶ K-1
Temperature range: -195°C to +280°C

Assembly:



Order No.	D	D1	L	Approx. weight kg
23730-00300404	3	4,5	4	0,0001
23730-00300405	3	4,5	5	0,0003
23730-00300406	3	4,5	6	0,0004
23730-00400504	4	5,5	4	0,0003
23730-00400506	4	5,5	6	0,0006
23730-00400508	4	5,5	8	0,0009
23730-00500705	5	7	5	0,0007
23730-00500708	5	7	8	0,0011
23730-00600805	6	8	5	0,0007
23730-00600806	6	8	6	0,0009
23730-00600810	6	8	10	0,0017
23730-00700910	7	9	10	0,0018
23730-00801006	8	10	6	0,0012
23730-00801008	8	10	8	0,0017
23730-00801010	8	10	10	0,0021
23730-01001206	10	12	6	0,0019
23730-01001208	10	12	8	0,002
23730-01001210	10	12	10	0,0025
23730-01001212	10	12	12	0,0029
23730-01001215	10	12	15	0,0038
23730-01001220	10	12	20	0,0053

Plain bearing

cylindrical



Order No.	D	D1	L	Approx. weight kg
23730-01201406	12	14	6	0,0017
23730-01201408	12	14	8	0,002
23730-01201410	12	14	10	0,003
23730-01201412	12	14	12	0,0037
23730-01201415	12	14	15	0,0047
23730-01201420	12	14	20	0,0060
23730-01401610	14	16	10	0,0036
23730-01401620	14	16	20	0,0071
23730-01501710	15	17	10	0,0038
23730-01501712	15	17	12	0,0045
23730-01501715	15	17	15	0,0057
23730-01501720	15	17	20	0,0076
23730-01601810	16	18	10	0,0046
23730-01601815	16	18	15	0,0061
23730-01601820	16	18	20	0,0081
23730-01601825	16	18	25	0,0101
23730-01802020	18	20	20	0,0089
23730-02002310	20	23	10	0,0088
23730-02002312	20	23	12	0,0088
23730-02002315	20	23	15	0,0116
23730-02002320	20	23	20	0,0151
23730-02002330	20	23	30	0,023
23730-02202520	22	25	20	0,0166
23730-02402725	24	27	25	0,0238
23730-02502815	25	28	15	0,0142
23730-02502820	25	28	20	0,01
23730-02502825	25	28	25	0,0239
23730-02502830	25	28	30	0,0284
23730-02502840	25	28	40	0,0373
23730-02602915	26	29	15	0,0156
23730-02602920	26	29	20	0,0261
23730-02602930	26	29	30	0,039
23730-02803220	28	32	20	0,0288
23730-02803225	28	32	25	0,039
23730-03003412	30	34	12	0,0175
23730-03003415	30	34	15	0,0229
23730-03003420	30	34	20	0,0309
23730-03003430	30	34	30	0,0461
23730-03003435	30	34	35	0,053
23730-03203620	32	36	20	0,032
23730-03203625	32	36	25	0,0402
23730-03503920	35	39	20	0,0354
23730-03503940	35	39	40	0,0708
23730-03804225	38	42	25	0,0569
23730-04004420	40	44	20	0,04
23730-04004430	40	44	30	0,0602
23730-04004450	40	44	50	0,1015
23730-05005530	50	55	30	0,095
23730-05005550	50	55	50	0,1599

Plain bearing

with collar



Material:

Base material, steel.
Intermediate layer sintered bronze.
Bearing surface PTFE.

Version:

Galvanized steel

Sample order:

nIm 23731-00400505

Note:

Maintenance-free rolled composite steel plain bearings particularly suitable for dry running. Also highly suitable for lubricated applications (oil lubrication). Very low wear and friction, no stick-slip effect. Suitable for rotary and oscillating movements, high chemical resistance, low water absorption.

Assembly:

The use of a suitable press mandrel is recommended to avoid damaging the bearing surface. The butt joint must be opposite the load zone. The bearing has an interference fit after installation. Gluing is possible but not required.

Tolerances:

Housing:

Recommended tolerance H7.
Surface finish Ra 0.8 to 1.6.
Chamfer (press-in side 0.8 to 1.2 x 15°.

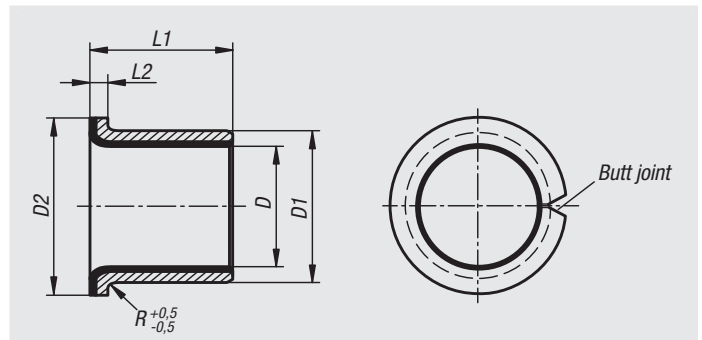
Shaft:

Recommended tolerance h8 to f7. For applications at a low speed and small loads drawn shafts with h9 can also be used.

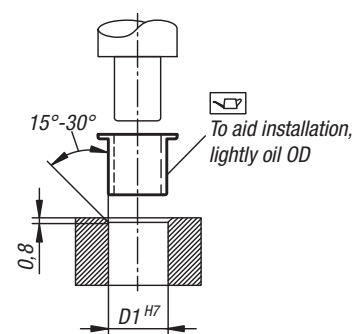
Shaft surface Ra 0.4 to 0.8 (preferably ground shafts) for drawn shafts Ra 1.6 to 3.2.

Technical data:

Static load: max. 250 N/mm²
Dynamic load: max. 140 N/mm²
Friction coefficient, dry: 0.03 to 0.20
Sliding speed, dry: max. 2 m/s
Sliding speed, oil lubricated: max. 5 m/s
Thermal conductivity: 42 W/(m*K)-1
Thermal expansion coefficient: 11*10⁻⁶ K⁻¹
Temperature range: -195°C to +280°C



Assembly:



Order No.	D	D1	D2	L1	L2	R	Approx. weight kg
23731-00400505	4	5,5	9	5,6	1	0,5	0,0005
23731-00600807	6	8	12	7	1	1	0,0014
23731-00801005	8	10	15	5,5	1	1	0,0019
23731-00801009	8	10	15	9,5	1	1	0,0023
23731-01001209	10	12	18	9	1	1	0,0029
23731-01001212	10	12	18	12	1	1	0,004
23731-01201417	12	14	20	17	1	1	0,0056
23731-01401617	14	16	22	17	1	1	0,0062
23731-01501712	15	17	23	12	1	1	0,005
23731-01501717	15	17	23	17	1	1	0,0085
23731-01601817	16	18	24	17	1	1	0,0091
23731-01802012	18	20	26	12	1	1	0,0066
23731-02002311	20	23	30	11,5	1,5	1,5	0,0136
23731-02202521	22	25	32	21,5	1,5	1,5	0,021
23731-02502826	25	28	35	26,5	1,5	1,5	0,0273
23731-03003430	30	34	42	30	2	2	0,0533
23731-03503926	35	39	47	26	2	2	0,046
23731-04004426	40	44	53	26	2	2	0,092
23731-05005522	50	55	65	22	2,5	2	0,1458

Thrust Washers


Material:

Base material, steel.
Intermediate layer sintered bronze.
Bearing surface PTFE.

Version:

Galvanized steel

Sample order:

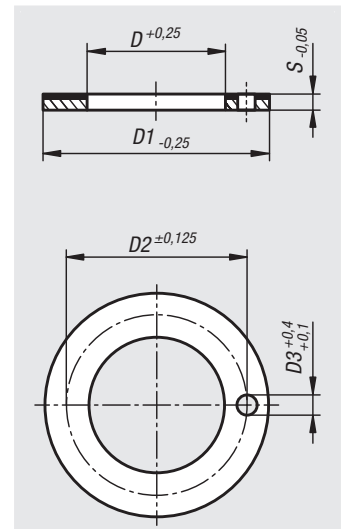
nlm 23732-01002015

Note:

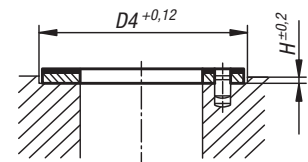
Maintenance-free steel composite plain bearings particularly suitable for dry running. Also highly suitable for lubricated applications (oil lubrication). They take up axial loads by rotating movements. The axial loads that occur can be both cyclic or permanent. Very low wear and friction, no stick-slip effect. High chemical resistance, low water absorption.

Technical data:

Static load: max. 250 N/mm²
Dynamic load: max. 140 N/mm²
Friction coefficient, dry: 0.03 to 0.20
Sliding speed, dry: max. 2 m/s
Sliding speed, oil lubricated: max. 5 m/s
Thermal conductivity: 42 W/(m*K)-1
Thermal expansion coefficient: 11*10⁻⁶ K-1
Temperature range: -195°C to +280°C



Mounting dimensions



Order No.	D	D1	D2	D3	D4	H	S
23732-01002015	10	20	15	1,5	20	1	1,5
23732-01202415	12	24	18	1,5	24	1	1,5
23732-01402615	14	26	20	2	26	1	1,5
23732-01603015	16	30	23	2	30	1	1,5
23732-01803215	18	32	25	2	32	1	1,5
23732-02003615	20	36	28	3	36	1	1,5
23732-02203815	22	38	30	3	38	1	1,5
23732-02404215	24	42	33	3	42	1	1,5
23732-02604415	26	44	35	3	44	1	1,5
23732-02804815	28	48	38	4	48	1	1,5
23732-03205415	32	54	43	4	54	1	1,5
23732-03806215	38	62	50	4	62	1	1,5
23732-04206615	42	66	54	4	66	1	1,5
23732-04807420	48	74	61	4	74	1,5	2
23732-05207820	52	78	65	4	78	1,5	2
23732-06209020	62	90	76	4	90	1,5	2

Plain bearing sintered bronze

cylindrical



Material:

Sintered bronze similar to SINT A50.

Version:

Oil impregnated (ca. 25 percent by volume oil).
Hardness min. 25 HB.

Sample order:

nIm 23760-00300604

Note:

The sintered bronze plain bearings are oil impregnated, self-lubricating, maintenance-free and ready for installation. During rotation the oil is applied to the shaft and absorbed by the bearing through capillary effect when stationary. Additional lubrication is not required under normal operating conditions.

Assembly:

Press in plain bearings, do not hammer in. The use of a suitable press mandrel is advisable. Without a mandrel there is a risk that the bearing may deform during installation. After press-fitting into a housing with bore H7 the bore D has a tolerance H7.

Tolerances:

Housing:
Recommended tolerance H7.

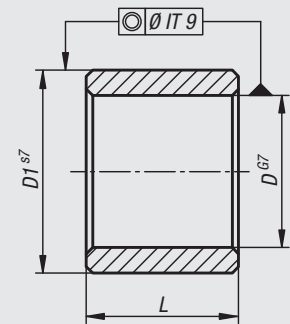
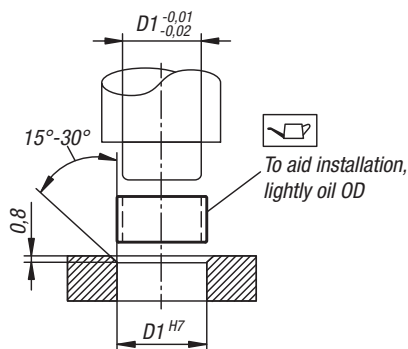
Shaft:

Recommended tolerance h6 to h9. Hardened or non-hardened ground shafts can be used (for secondary applications drawn shafts can also be used).

Technical data:

Static load: max. 50 N/mm²
Dynamic load: max. 10 N/mm²
Friction coefficient, dry: 0.05 to 0.10
Sliding speed: max. 5 m/s
Maximum pv value: 1.6 N/mm² * m/s
Temperature range: -20 °C to +100 °C

Assembly:



After press-fitting into housing with receiving hole H7, the borehole D has a tolerance H7

Order No.	D	D1	L	Approx. weight kg
23760-00300604	3	6	4	0,0005
23760-00300606	3	6	6	0,0008
23760-00400704	4	7	4	0,0007
23760-00400804	4	8	4	0,0010
23760-00500808	5	8	8	0,0016
23760-00500810	5	8	10	0,0020
23760-00500816	5	8	16	0,00328
23760-00600906	6	9	6	0,001
23760-00600910	6	9	10	0,0023
23760-00600912	6	9	12	0,0028
23760-00600916	6	9	16	0,0037
23760-00601006	6	10	6	0,0019
23760-00601010	6	10	10	0,0032
23760-00601012	6	10	12	0,0039
23760-00601016	6	10	16	0,00523
23760-00601206	6	12	6	0,0034
23760-00801108	8	11	8	0,0024
23760-00801112	8	11	12	0,0036
23760-00801208	8	12	8	0,00337
23760-00801212	8	12	12	0,00505
23760-00801220	8	12	20	0,00842
23760-01001310	10	13	10	0,00363
23760-01001416	10	14	16	0,00808
23760-01001610	10	16	10	0,0081
23760-01201512	12	15	12	0,00511
23760-01201520	12	15	20	0,00852
23760-01201612	12	16	12	0,0070
23760-01201812	12	18	12	0,0107
23760-01201816	12	18	16	0,01427
23760-01201820	12	18	20	0,01783
23760-01401822	14	18	22	0,01478
23760-01402014	14	20	14	0,01285
23760-01402018	14	20	18	0,01499
23760-01501920	15	19	20	0,0143
23760-01502116	15	21	16	0,0181

Plain bearing sintered bronze

cylindrical



Order No.	D	D1	L	Approx. weight kg
23760-01602016	16	20	16	0,0121
23760-01602020	16	20	20	0,01528
23760-01602025	16	20	25	0,0189
23760-01602032	16	20	32	0,02426
23760-01602216	16	22	16	0,01918
23760-01602220	16	22	20	0,02395
23760-01602232	16	22	32	0,03593
23760-01802218	18	22	18	0,01514
23760-01802418	18	24	18	0,0238
23760-01802428	18	24	28	0,0370
23760-01802518	18	25	18	0,02859
23760-02002432	20	24	32	0,02979
23760-02002516	20	25	16	0,0189
23760-02002520	20	25	20	0,0236
23760-02002525	20	25	25	0,02958
23760-02002532	20	25	32	0,0356
23760-02002620	20	26	20	0,02922
23760-02002625	20	26	25	0,03653
23760-02002632	20	26	32	0,04675
23760-02002825	20	28	25	0,05049
23760-02202822	22	28	22	0,03485
23760-02503020	25	30	20	0,02894
23760-02503025	25	30	25	0,0362
23760-02503032	25	30	32	0,0442
23760-02503040	25	30	40	0,05792
23760-02503220	25	32	20	0,04194
23760-02503225	25	32	25	0,05243
23760-02503232	25	32	32	0,06711
23760-02503240	25	32	40	0,08389
23760-02803628	28	36	28	0,07307
23760-03003824	30	38	24	0,06865
23760-03003830	30	38	30	0,0858
23760-03003838	30	38	38	0,1124
23760-03204032	32	40	32	0,09687
23760-03504428	35	44	28	0,1036
23760-03504435	35	44	35	0,1299
23760-03504535	35	45	35	0,14726
23760-03604536	36	45	36	0,1392
23760-04004632	40	46	32	0,08682
23760-04004640	40	46	40	0,10853
23760-04005025	40	50	25	0,1183
23760-04005040	40	50	40	0,18931
23760-04505545	45	55	45	0,23667
23760-04505645	45	56	45	0,26311
23760-05005632	50	56	32	0,1070
23760-05005650	50	56	50	0,16725
23760-05006032	50	60	32	0,18513
23760-05006040	50	60	40	0,23142
23760-05006050	50	60	50	0,2892

Plain bearing sintered bronze

with collar



Material:

Sintered bronze similar to SINT A50.

Version:

Oil impregnated (ca. 25 percent by volume oil).
Hardness min. 25 HB.

Sample order:

nIm 23760-00400804

Note:

The sintered bronze plain bearings are oil impregnated, self-lubricating, maintenance-free and ready for installation. During rotation the oil is applied to the shaft and absorbed by the bearing through capillary effect when stationary. Additional lubrication is not required under normal operating conditions.

Assembly:

Press in plain bearings, do not hammer in. The use of a suitable press mandrel is advisable. Without a mandrel there is a risk that the bearing may deform during installation. After press-fitting into a housing with bore H7 the bore D has a H7 tolerance.

Tolerances:

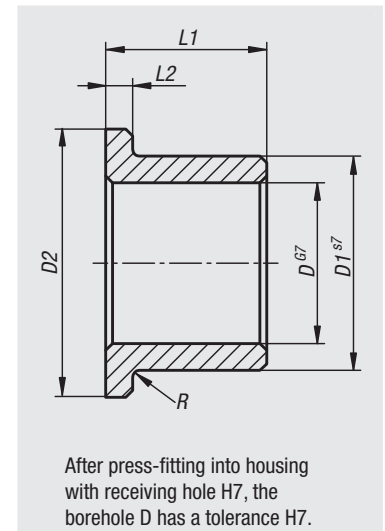
Housing:
Recommended tolerance H7.

Shaft:

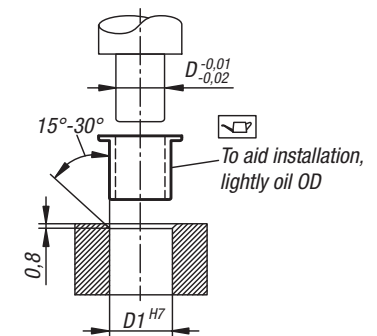
Recommended tolerance h6 to h9. Hardened or non-hardened ground shafts can be used (for secondary applications drawn shafts can also be used).

Technical data:

Static load: max. 50 N/mm²
Dynamic load: max. 10 N/mm²
Friction coefficient, dry: 0.05 to 0.10
Sliding speed: max. 5 m/s
Maximum pv value: 1.6 N/mm² * m/s
Temperature range: -20 °C to +100 °C



Assembly:



Order No.	D	D1	D2	L1	L2	R	Approx. weight kg
23761-00400804	4	8	12	4	2	0,3	0,0017
23761-00400808	4	8	12	8	2	0,3	0,00387
23761-00601006	6	10	14	6	2	0,3	0,0030
23761-00601010	6	10	14	10	2	0,3	0,00438
23761-00601016	6	10	14	16	2	0,3	0,0064
23761-00801208	8	12	16	8	2	0,3	0,00453
23761-00801212	8	12	16	12	2	0,3	0,00622
23761-00801216	8	12	16	16	2	0,3	0,00791
23761-01001310	10	13	16	10	1,5	0,6	0,00908
23761-01001316	10	13	16	16	1,5	0,6	0,0065
23761-01001510	10	15	20	10	2,5	0,6	0,00934
23761-01001516	10	15	20	16	2,5	0,6	0,0121
23761-01001610	10	16	22	10	3	0,6	0,0118
23761-01001616	10	16	22	16	3	0,6	0,01672

Plain bearing sintered bronze

with collar



Order No.	D	D1	D2	L1	L2	R	Approx. weight kg
23761-01201512	12	15	18	12	1,5	0,6	0,0058
23761-01201516	12	15	18	16	1,5	0,6	0,0076
23761-01201712	12	17	22	12	2,5	0,6	0,0117
23761-01201716	12	17	22	16	2,5	0,6	0,0141
23761-01201812	12	18	24	12	3	0,6	0,0144
23761-01201820	12	18	24	20	3	0,6	0,02291
23761-01401814	14	18	22	14	2	0,6	0,0111
23761-01402014	14	20	26	14	3	0,6	0,0182
23761-01502015	15	20	25	15	3	0,6	0,017
23761-01502020	15	20	25	20	3	0,6	0,0207
23761-01602016	16	20	24	16	2	0,6	0,01396
23761-01602020	16	20	24	20	2	0,6	0,01717
23761-01602216	16	22	28	16	3	0,6	0,02395
23761-01602220	16	22	28	20	3	0,6	0,02863
23761-01602225	16	22	28	25	3	0,6	0,03471
23761-01802218	18	22	26	18	2	0,6	0,0171
23761-01802418	18	24	30	18	3	0,6	0,02897
23761-02002416	20	24	28	16	2	0,6	0,01703
23761-02002420	20	24	28	20	2	0,6	0,0207
23761-02002616	20	26	32	16	3	0,6	0,02894
23761-02002620	20	26	32	20	3	0,6	0,03445
23761-02002625	20	26	32	25	3	0,6	0,04169
23761-02002632	20	26	32	32	3	0,6	0,05194
23761-02202815	22	28	34	15	3	0,6	0,0278
23761-02202820	22	28	34	20	3	0,6	0,0352
23761-02202825	22	28	34	25	3	0,6	0,0426
23761-02503020	25	30	35	20	2,5	0,8	0,0332
23761-02503025	25	30	35	25	2,5	0,8	0,04038
23761-02503220	25	32	39	20	3,5	0,8	0,0508
23761-02503225	25	32	39	25	3,5	0,8	0,058
23761-02803322	28	33	38	22	2,5	0,8	0,03996
23761-02803336	28	33	38	36	2,5	0,8	0,06242
23761-02803622	28	36	44	22	4	0,8	0,0727
23761-02803636	28	36	44	36	4	0,8	0,104
23761-03003820	30	38	46	20	4	0,8	0,0713
23761-03003825	30	38	46	25	4	0,8	0,08567
23761-03003830	30	38	46	30	4	0,8	0,09997
23761-03204020	32	40	48	20	4	0,8	0,0708
23761-03204025	32	40	48	25	4	0,8	0,0851
23761-03204030	32	40	48	30	4	0,8	0,0994
23761-03604528	36	45	54	28	4,5	0,8	0,12844
23761-03604536	36	45	54	36	4,5	0,8	0,15912
23761-04005025	40	50	60	25	5	0,8	0,14726
23761-04005040	40	50	60	40	5	0,8	0,2182
23761-05006032	50	60	70	32	5	1	0,21932
23761-05006050	50	60	70	50	5	1	0,3234

Deep groove ball bearing

FAG single row



Material:

Inner ring, outer ring and rolling elements, bearing steel.
Cage sheet steel.
Labyrinth seal sheet steel. Lip seal NBR.

Version:

2Z = sealed both sides with non-contact labyrinth seals.
2RSR = sealed both sides with contact lip seals.

Sample order:

nIm 23800-100301004

Note:

Deep groove ball bearings accept high radial and axial loads. Axial loads are absorbed in both directions. The versions 2Z and 2RSR are lubricated for life with a high quality grease.

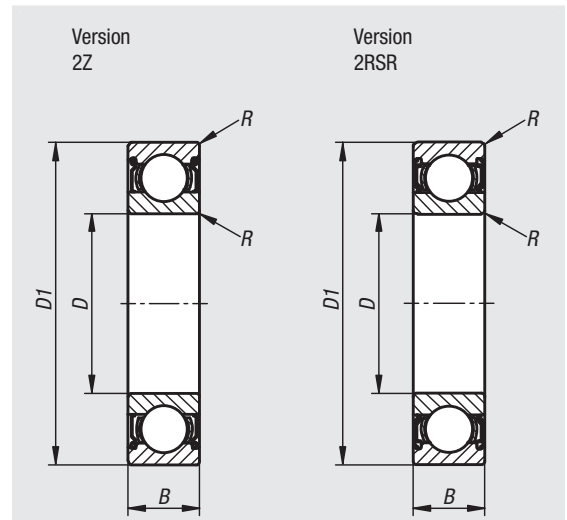
The main dimensions of the deep groove ball bearings conform to DIN 625-1. Dimensional and running tolerances correspond to tolerance class PN acc. to DIN 620. The radial internal clearance corresponds to the clearance CN acc. to DIN 620-4. These tolerance classes are standard and well suited for most applications.

Temperature range:

-30 °C to +110 °C.

On request:

Open deep groove ball bearing.
Other dimensions and versions.



Order No.	Abbreviation	Version	D	D1	B	R min.	Dynamic base loads N	Static base loads N	Speed limit r/min.	Approx. weight kg
23800-100301004	623-2Z	2Z	3	10	4	0,15	640	220	45.000	0,001
23800-100401305	624-2Z	2Z	4	13	5	0,2	1.290	490	38.000	0,004
23800-100501605	625-2Z	2Z	5	16	5	0,3	1.320	440	36.000	0,005
23800-200501605	625-2RSR	2RSR	5	16	5	0,3	1.320	440	24.000	0,005
23800-100601906	626-2Z	2Z	6	19	6	0,3	2.600	1.100	32.000	0,008
23800-200601906	626-2RSR	2RSR	6	19	6	0,3	2.600	1.100	22.000	0,008
23800-100701906	607-2Z	2Z	7	19	6	0,3	2.600	1.100	32.000	0,008
23800-200701906	607-2RSR	2RSR	7	19	6	0,3	2.600	1.100	22.000	0,007
23800-100702207	627-2Z	2Z	7	22	7	0,3	3.250	1.370	30.000	0,012
23800-200702207	627-2RSR	2RSR	7	22	7	0,3	3.250	1.370	20.000	0,011
23800-100802207	608-2Z	2Z	8	22	7	0,3	3.250	1.370	30.000	0,011
23800-200802207	608-2RSR	2RSR	8	22	7	0,3	3.250	1.370	20.000	0,01
23800-100902407	609-2Z	2Z	9	24	7	0,3	3.650	1.630	30.000	0,016
23800-200902407	609-2RSR	2RSR	9	24	7	0,3	3.650	1.630	20.000	0,016
23800-100902608	629-2Z	2Z	9	26	8	0,3	4.550	1.960	28.000	0,021
23800-200902608	629-2RSR	2RSR	9	26	8	0,3	4.550	1.960	19.000	0,021

Deep groove ball bearing

FAG single row



Order No.	Abbreviation	Version	D	D1	B	R min.	Dynamic base loads N	Static base loads N	Speed limit r/min.	Approx. weight kg
23800-101001905	61800-2Z	2Z	10	19	5	0,3	1.450	590	36.000	0,006
23800-201001905	61800-2RSR	2RSR	10	19	5	0,3	1.450	590	18.000	0,006
23800-101002608	6000-2Z	2Z	10	26	8	0,3	4.550	1.960	28.000	0,02
23800-201002608	6000-2RSR	2RSR	10	26	8	0,3	4.550	1.960	19.000	0,02
23800-101003009	6200-2Z	2Z	10	30	9	0,6	6.000	2.600	26.000	0,032
23800-201003009	6200-2RSR	2RSR	10	30	9	0,6	6.000	2.600	17.000	0,032
23800-101003511	6300-2Z	2Z	10	35	11	0,6	8.150	3.450	22.000	0,057
23800-201003511	6300-2RSR	2RSR	10	35	11	0,6	8.150	3.450	15.000	0,057
23800-101202105	61801-2Z	2Z	12	21	5	0,3	1.520	670	32.000	0,006
23800-201202105	61801-2RSR	2RSR	12	21	5	0,3	1.520	670	18.000	0,006
23800-101202808	6001-2Z	2Z	12	28	8	0,3	5.100	2.360	26.000	0,02
23800-201202808	6001-2RSR	2RSR	12	28	8	0,3	5.100	2.360	18.000	0,022
23800-101203210	6201-2Z	2Z	12	32	10	0,6	6.950	3.100	24.000	0,039
23800-201203210	6201-2RSR	2RSR	12	32	10	0,6	6.950	3.100	16.000	0,039
23800-101203712	6301-2Z	2Z	12	37	12	1	9.650	4.150	20.000	0,064
23800-201203712	6301-2RSR	2RSR	12	37	12	1	9.650	4.150	13.000	0,064
23800-101502405	61802-2Z	2Z	15	24	5	0,3	1.650	800	28.000	0,008
23800-201502405	61802-2RSR	2RSR	15	24	5	0,3	1.650	800	16.000	0,008
23800-101503209	6002-2Z	2Z	15	32	9	0,3	5.600	2.850	24.000	0,033
23800-201503209	6002-2RSR	2RSR	15	32	9	0,3	5.600	2.850	16.000	0,033
23800-101503511	6202-2Z	2Z	15	35	11	0,6	7.800	3.750	20.000	0,045
23800-201503511	6202-2RSR	2RSR	15	35	11	0,6	7.800	3.750	14.000	0,045
23800-101504213	6302-2Z	2Z	15	42	13	1	11.400	5.400	18.000	0,09
23800-201504213	6302-2RSR	2RSR	15	42	13	1	11.400	5.400	12.000	0,09
23800-101703510	6003-2Z	2Z	17	35	10	0,3	6.000	3.250	22.000	0,04
23800-201703510	6003-2RSR	2RSR	17	35	10	0,3	6.000	3.250	14.000	0,04
23800-101704012	6203-2Z	2Z	17	40	12	0,6	9.500	4.750	18.000	0,067
23800-201704012	6203-2RSR	2RSR	17	40	12	0,6	9.500	4.750	12.000	0,067
23800-101704714	6303-2Z	2Z	17	47	14	1	13.400	6.550	16.000	0,117
23800-201704714	6303-2RSR	2RSR	17	47	14	1	13.400	6.550	11.000	0,118
23800-102004212	6004-2Z	2Z	20	42	12	0,6	9.300	5.000	17.000	0,071
23800-202004212	6004-2RSR	2RSR	20	42	12	0,6	9.300	5.000	12.000	0,071
23800-102004714	6204-2Z	2Z	20	47	14	1	12.700	6.550	15.000	0,11
23800-202004714	6204-2RSR	2RSR	20	47	14	1	12.700	6.550	10.000	0,11
23800-102005215	6304-2Z	2Z	20	52	15	1,1	16.000	7.800	14.000	0,155
23800-202005215	6304-2RSR	2RSR	20	52	15	1,1	16.000	7.800	9.500	0,155
23800-102504712	6005-2Z	2Z	25	47	12	0,6	10.000	5.850	15.000	0,083
23800-202504712	6005-2RSR	2RSR	25	47	12	0,6	10.000	5.850	10.000	0,085
23800-102505215	6205-2Z	2Z	25	52	15	1	14.000	7.800	14.000	0,133
23800-202505215	6205-2RSR	2RSR	25	52	15	1	14.000	7.800	9.000	0,133
23800-102506217	6305-2Z	2Z	25	62	17	1,1	22.400	11.400	11.000	0,24
23800-202506217	6305-2RSR	2RSR	25	62	17	1,1	22.400	11.400	7.500	0,242

Deep groove ball bearing

FAG single row



Order No.	Abbreviation	Version	D	D1	B	R min.	Dynamic base loads N	Static base loads N	Speed limit r/min.	Approx. weight kg
23800-103005513	6006-2Z	2Z	30	55	13	1	12.700	8.000	13.000	0,126
23800-203005513	6006-2RSR	2RSR	30	55	13	1	12.700	8.000	8.500	0,126
23800-103006216	6206-2Z	2Z	30	62	16	1	19.300	11.200	11.000	0,201
23800-203006216	6206-2RSR	2RSR	30	62	16	1	19.300	11.200	7.500	0,201
23800-103007219	6306-2Z	2Z	30	72	19	1,1	29.000	16.300	9.500	0,363
23800-203007219	6306-2RSR	2RSR	30	72	19	1,1	29.000	16.300	6.300	0,365
23800-103506214	6007-2Z	2Z	35	62	14	1	16.000	10.200	11.000	0,163
23800-203506214	6007-2RSR	2RSR	35	62	14	1	16.000	10.200	7.500	0,163
23800-103507217	6207-2Z	2Z	35	72	17	1,1	22.500	15.300	9.500	0,299
23800-203507217	6207-2RSR	2RSR	35	72	17	1,1	22.500	15.300	6.300	0,301
23800-103508021	6307-2Z	2Z	35	80	21	1,5	33.500	19.000	8.500	0,481
23800-203508021	6307-2RSR	2RSR	35	80	21	1,5	33.500	19.000	5.600	0,483
23800-104006815	6008-2Z	2Z	40	68	15	1	16.600	11.600	10.000	0,2
23800-204006815	6008-2RSR	2RSR	40	68	15	1	16.600	11.600	6.700	0,202
23800-104008018	6208-2Z	2Z	40	80	18	1,1	29.000	18.000	8.500	0,382
23800-204008018	6208-2RSR	2RSR	40	80	18	1,1	29.000	18.000	5.600	0,384
23800-104009023	6308-2Z	2Z	40	90	23	1,5	42.500	25.000	7.500	0,654
23800-204009023	6308-2RSR	2RSR	40	90	23	1,5	42.500	25.000	5.000	0,654
23800-104507516	6009-2Z	2Z	45	75	16	1	20.000	14.300	9.000	0,253
23800-204507516	6009-2RSR	2RSR	45	75	16	1	20.000	14.300	6.000	0,257
23800-104508519	6209-2Z	2Z	45	85	19	1,1	31.000	20.400	8.000	0,441
23800-204508519	6209-2RSR	2RSR	45	85	19	1,1	31.000	20.400	5.300	0,441
23800-104510025	6309-2Z	2Z	45	100	25	1,5	53.000	31.500	6.700	0,869
23800-204510025	6309-2RSR	2RSR	45	100	25	1,5	53.000	31.500	4.500	0,867
23800-105008016	6010-2Z	2Z	50	80	16	1	20.800	15.600	8.500	0,282
23800-205008016	6010-2RSR	2RSR	50	80	16	1	20.800	15.600	5.600	0,283
23800-105009020	6210-2Z	2Z	50	90	20	1,1	36.500	24.000	7.500	0,478
23800-205009020	6210-2RSR	2RSR	50	90	20	1,1	36.500	24.000	4.800	0,48
23800-105011027	6310-2Z	2Z	50	110	27	2	62.000	38.000	6.000	1,12
23800-205011027	6310-2RSR	2RSR	50	110	27	2	62.000	38.000	4.000	1,12

Angular contact ball bearing FAG

single-row



Material:

Inner ring, outer ring and rolling elements, bearing steel.
Cage reinforced fibre glass polyamide.

Version:

open.

Sample order:

nIm 23805-001003009

Note:

Single row angular contact ball bearings accept high radial and axial loads. Axial loads are absorbed in only one direction against the shoulder guide. For axial counter support a second bearing mounted inverse is required. The pressure angle of 40° make these bearings highly resilient. Suitable for high speeds.

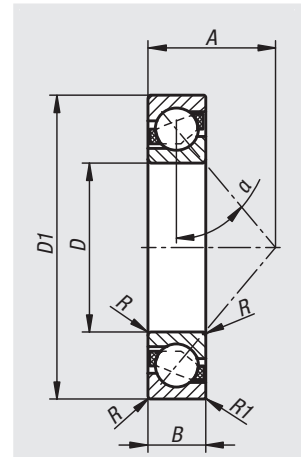
The main dimensions of angular contact ball bearings conform to DIN 628-1. Dimensional and running tolerances correspond to tolerance class PN acc. to DIN 620. These tolerance classes are standard and are well suited for most applications.

Temperature range:

-30 °C to +120 °C.

On request:

Sealed both sides with NBR contact lip seals. Other dimensions and versions.



Order No.	Abbreviation	Version	D	D1	B	R min.	R1 min.	α	A	Dynamic base loads N	Static base loads N	Speed limit r/min.	Approx. weight kg
23805-001003009	7200-B-TVP	Open	10	30	9	0,6	0,3	40°	13	5.300	2.600	32.000	0,032
23805-001203210	7201-B-TVP	Open	12	32	10	0,6	0,3	40°	14	7.400	3.550	28.000	0,035
23805-001503511	7202-B-TVP	Open	15	35	11	0,6	0,3	40°	16	8.400	4.450	24.000	0,044
23805-001704012	7203-B-TVP	Open	17	40	12	0,6	0,3	40°	18	10.500	5.700	20.000	0,065
23805-002004714	7204-B-TVP	Open	20	47	14	1	0,6	40°	21	14.400	7.800	18.000	0,104
23805-002505215	7205-B-TVP	Open	25	52	15	1	0,6	40°	24	15.300	9.000	16.000	0,127
23805-003006216	7206-B-TVP	Open	30	62	16	1	0,6	40°	27	21.700	14.100	13.000	0,196
23805-003507217	7207-B-TVP	Open	35	72	17	1,1	0,6	40°	31	28.000	19.000	11.000	0,282
23805-004008018	7208-B-TVP	Open	40	80	18	1,1	0,6	40°	34	34.000	23.500	9.500	0,367
23805-004508519	7209-B-TVP	Open	45	85	19	1,1	0,6	40°	37	37.500	27.000	8.500	0,405
23805-005009020	7210-B-TVP	Open	50	90	20	1,1	0,6	40°	39	39.000	28.500	8.000	0,458

23815

Spherical roller bearing FAG

cylindrical bore



Material:

Inner ring, outer ring and rolling elements, bearing steel.

Cage, steel.

Version:

open.

Sample order:

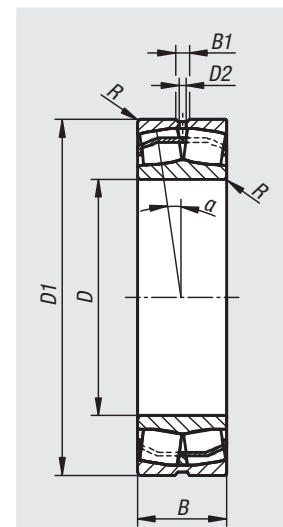
nIm 23815-002505218

Note:

Spherical roller bearings accept high radial and axial loads. Axial loads are absorbed in both directions.

They are designed for high loading. Spherical roller bearings compensate for angular errors (set angle α).

With groove and lubrication holes.



The main dimensions of the spherical roller bearing conform to DIN 625-2. Dimensional and running tolerances correspond to tolerance class PN acc. to DIN 620. The radial internal clearance corresponds to the clearance CN acc. to DIN 620-4. These tolerance classes are standard and well suited for most applications.

Temperature range:

-30 °C to +200 °C.

On request:

Other dimensions and versions.

Order No.	Abbreviation	Version	D	D1	D2	B	B1	R min.	α	Dynamic base loads N	Static base loads N	Speed limit r/min.	Approx. weight kg
23815-002505218	22205-E1	Open	25	52	3,2	18	4,8	1	1,5°	48.000	42.500	17.000	0,18
23815-003006220	22206-E1	Open	30	62	3,2	20	4,8	1	1,5°	64.000	57.000	13.000	0,275
23815-003507223	22207-E1	Open	35	72	3,2	23	4,8	1,1	1,5°	88.000	81.500	11.000	0,434
23815-004008023	22208-E1	Open	40	80	3,2	23	4,8	1,1	1,5°	101.000	91.000	10.000	0,528
23815-004508523	22209-E1	Open	45	85	3,2	23	4,8	1,1	1,5°	104.000	99.000	10.000	0,589
23815-005009023	22210-E1	Open	50	90	3,2	23	4,8	1,1	1,5°	109.000	107.000	9.500	0,622

Cylinder roller bearing FAG

with cage



Material:

Inner ring, outer ring and rolling elements, bearing steel.
Cage reinforced fibre glass polyamide.

Version:

NU floating bearing.
NJ support bearing.

Sample order:

nIm 23820-001503511

Note:

Cylinder roller bearings accept high radial loads. The bearings are separable. The bearing parts can be fitted independently of each other. This means that both bearing rings can have a tight fit. The bearings are supplied without seals. They can be lubricated with grease or oil from the side. Suitable for high speeds.

NU version are floating bearings and accept only radial forces. The outer ring has two flanges, the inner ring has none. Outer and inner rings can be displaced by the value *S* in both directions.

NJ versions are support bearings and accept axial loads in one direction in addition to radial loads. The outer ring has two flanges, the inner ring has one flange. Outer and inner rings can be displaced in one direction by the value *S*.

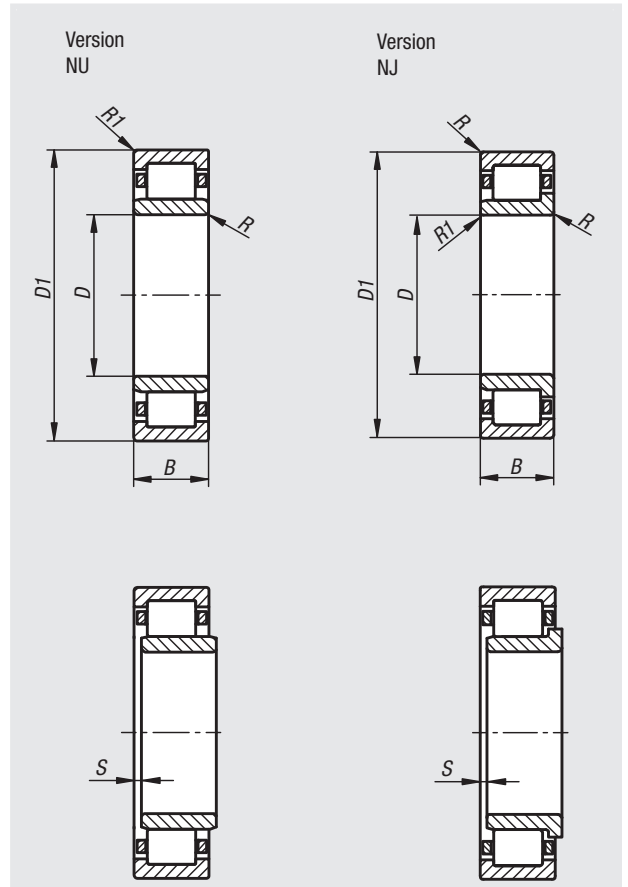
Dimensional and running tolerances correspond to tolerance class PN acc. to DIN 620. This radial clearance corresponds to the clearance CN acc. to DIN 620-4. These tolerance classes are standard and are well suited for most applications.

Temperature range:

-30 °C to +120 °C.

On request:

Other dimensions and versions.



Order No.	Abbreviation	Version	D	D1	B	R min.	R1 min.	S	Dynamic base loads N	Static base loads N	Speed limit r/min.	Approx. weight kg
23820-001503511	NU-202-E-TVP2	NU floating bearing	15	35	11	0,6	0,3	1,6	15.100	10.400	22.000	0,048
23820-101503511	NJ-202-E-TVP2	NJ support bearing	15	35	11	0,6	0,3	1,6	15.100	10.400	22.000	0,049
23820-001704012	NU-203-E-TVP2	NU floating bearing	17	40	12	0,6	0,3	1,2	20.800	14.600	18.000	0,069
23820-101704012	NJ-203-E-TVP2	NJ support bearing	17	40	12	0,6	0,3	1,2	20.800	14.600	18.000	0,07
23820-002004714	NU-204-E-TVP2	NU floating bearing	20	47	14	1	0,6	0,8	32.500	24.700	16.000	0,114
23820-102004714	NJ-204-E-TVP2	NJ support bearing	20	47	14	1	0,6	1	32.500	24.700	16.000	0,117
23820-002505215	NU-205-E-TVP2	NU floating bearing	25	52	15	1	0,6	1,3	34.500	27.500	15.000	0,135
23820-102505215	NJ-205-E-TVP2	NJ support bearing	25	52	15	1	0,6	1,2	34.500	27.500	15.000	0,14
23820-003006216	NU-206-E-TVP2	NU floating bearing	30	62	16	1	0,6	1,5	45.000	36.000	12.000	0,207
23820-103006216	NJ-206-E-TVP2	NJ support bearing	30	62	16	1	0,6	1,5	45.000	36.000	12.000	0,213
23820-003507217	NU-207-E-TVP2	NU floating bearing	35	72	17	1,1	0,6	0,7	58.000	48.500	10.000	0,303
23820-103507217	NJ-207-E-TVP2	NJ support bearing	35	72	17	1,1	0,6	0,7	58.000	48.500	10.000	0,309
23820-004008018	NU-208-E-TVP2	NU floating bearing	40	80	18	1,1	1,1	1	63.000	53.000	9.000	0,379
23820-104008018	NJ-208-E-TVP2	NJ support bearing	40	80	18	1,1	1,1	1	63.000	53.000	9.000	0,389
23820-004508519	NU-209-E-TVP2	NU floating bearing	45	85	19	1,1	1,1	1	72.000	63.000	8.500	0,434
23820-104508519	NJ-209-E-TVP2	NJ support bearing	45	85	19	1,1	1,1	1,9	72.000	63.000	8.500	0,445
23820-005009020	NU-210-E-TVP2	NU floating bearing	50	90	20	1,1	1,1	1,3	75.000	69.000	8.000	0,49
23820-105009020	NJ-210-E-TVP2	NJ support bearing	50	90	20	1,1	1,1	1,3	75.000	69.000	8.000	0,503

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22000
23000

Tapered roller bearing FAG

single row



Material:

Inner ring, outer ring and rolling elements, bearing steel.
Cage, steel.

Version:

Series 302
Series 303
Series 320 (ISO dimension)

Sample order:

nIm 23825-101504213

Note:

Tapered roller bearings can accept high radial and axial loads. Axial loads are absorbed in only one direction. For axial counter support a second bearing mounted inverse is required. Suitable for medium speeds.

The bearings are separable. This means the bearing parts can be fitted independently of each other. The bearings are supplied without seals. They can be lubricated with grease or oil from the side.

The main dimensions of the tapered roller bearings conform to DIN ISO 355 and DIN 720. Dimensional and running tolerances correspond to tolerance class PN acc. to DIN 620. These tolerance classes are standard and are well suited for most applications.

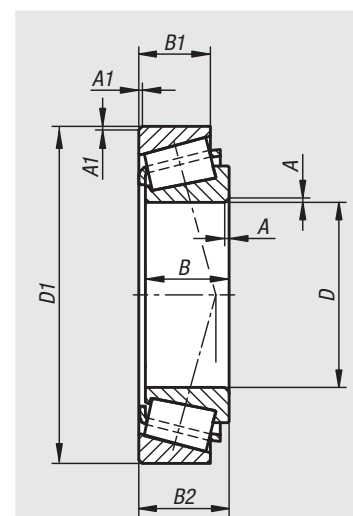
Temperature range:

-30 °C to +120 °C.

On request:

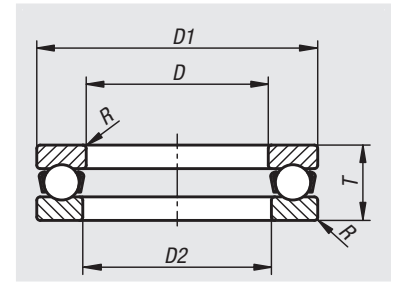
Other dimensions and versions.

Order No.	Abbreviation	Version	D	D1	B	B1	B2	A	A1	Dynamic base loads N	Static base loads N	Speed limit r/min. kg	Approx. weight
23825-101504213	30302-A	Series 303	15	42	13	11	14,25	1	1	23.000	20.500	21.000	0,096
23825-001704012	30203-A	Series 302	17	40	12	11	13,25	1	1	18.500	17.800	21.000	0,056
23825-101704714	30303-A	Series 303	17	47	14	12	15,25	1	1	27.500	24.500	18.200	0,129
23825-302004215	32004-X	Series 320 (ISO dimensions)	20	42	15	12	15	0,6	0,6	24.000	28.500	18.200	0,108
23825-002004714	30204-A	Series 302	20	47	14	12	15,25	1	1	27.000	27.000	16.800	0,092
23825-102005215	30304-A	Series 303	20	52	15	13	16,25	1,5	1,5	34.000	32.500	15.400	0,188
23825-302504715	32005-X	Series 320 (ISO dimensions)	25	47	15	11,5	15	0,6	0,6	26.500	33.500	15.400	0,12
23825-102506217	30305-A	Series 303	25	62	17	15	18,25	1,5	1,5	47.000	45.500	12.600	0,289
23825-303005517	32006-X	Series 320 (ISO dimensions)	30	55	17	13	17	1	1	38.500	46.500	12.600	0,195
23825-003006216	30206-A	Series 302	30	62	16	14	17,25	1	1	43.500	48.000	11.900	0,237
23825-103007219	30306-A	Series 303	30	72	19	16	20,75	1,5	1,5	60.000	61.000	10.500	0,445
23825-303506218	32007-X	Series 320 (ISO dimensions)	35	62	18	14	18	1	1	45.500	57.000	11.200	0,257
23825-003507217	30207-A	Series 302	35	72	17	15	18,25	1,5	1,5	54.000	59.000	9.800	0,334
23825-103508021	30307-A	Series 303	35	80	21	18	22,75	2	1,5	73.000	75.000	9.400	0,573
23825-304006819	32008-XA	Series 320 (ISO dimensions)	40	68	19	14,5	19	1	1	53.000	71.000	9.800	0,312
23825-004008018	30208-A	Series 302	40	80	18	16	19,75	1,5	1,5	61.000	67.000	8.800	0,435
23825-104009023	30308-A	Series 303	40	90	23	20	25,25	2	1,5	91.000	102.000	7.800	0,812
23825-304507520	32009-XA	Series 320 (ISO dimensions)	45	75	20	15,5	20	1	1	61.000	86.000	8.800	0,329
23825-104510025	30309-A	Series 303	45	100	25	18	27,25	2	1,5	96.000	108.000	6.700	0,998
23825-305008020	32010-X	Series 320 (ISO dimensions)	50	80	20	15,5	20	1	1	64.000	93.000	7.800	0,384
23825-105011027	30310-A	Series 303	50	110	27	23	29,25	2,5	2	130.000	148.000	6.300	1,27



Axial ball bearing

single direction



Material:

Housing washer, shaft washer and rolling elements, bearing steel.
Cage, steel.

Sample order:

nIm 23830-001002409

Note:

Axial ball bearings accept high axial loads from one direction but may not be loaded radially.

The bearings are separable. This means the bearing parts can be fitted independently of each other.

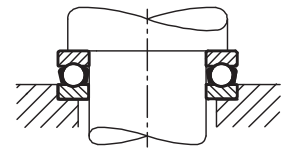
The main dimensions of the axial ball bearing conform to ISO 104 and DIN 711. Dimensional and running tolerances correspond to tolerance class PN acc. to DIN 620. These tolerance classes are standard and are well suited for most applications.

Temperature range:

-30 °C to +150 °C.

On request:

Other dimensions and versions.



Order No.	Abbreviation	D	D1	D2	T	R min.	Dynamic base loads N	Static base loads N	Speed limit r/min.	Approx. weight kg
23830-01002409	51100	10	24	11	9	0,3	10.000	14.000	13.000	0,018
23830-01202609	51101	12	26	13	9	0,3	10.400	15.300	13.000	0,021
23830-01202811	51201	12	28	14	11	0,6	13.200	19.000	10.000	0,032
23830-01502809	51102	15	28	16	9	0,3	10.600	16.600	12.000	0,024
23830-01503212	51202	15	32	17	12	0,6	16.600	25.000	9.000	0,043
23830-01703009	51103	17	30	18	9	0,3	11.400	19.600	11.000	0,024
23830-01703512	51203	17	35	19	12	0,6	17.300	27.500	8.500	0,05
23830-02003510	51104	20	35	21	10	0,3	15.000	26.500	9.500	0,037
23830-02004014	51204	20	40	22	14	0,6	22.400	37.500	7.500	0,082
23830-02504211	51105	25	42	26	11	0,6	18.000	35.500	9.000	0,055
23830-02504715	51205	25	47	27	15	0,6	28.000	50.000	6.700	0,114
23830-03004711	51106	30	47	32	11	0,6	19.000	40.000	8.000	0,63
23830-03005216	51206	30	52	32	16	0,6	25.000	46.500	6.300	0,136
23830-03505212	51107	35	52	37	12	0,6	20.000	46.500	7.500	0,08
23830-03506218	51207	35	62	37	18	1	35.500	67.000	5.300	0,198
23830-04006013	51108	40	60	42	13	0,6	27.000	63.000	6.300	0,114
23830-04006819	51208	40	68	42	19	1	46.500	98.000	4.800	0,257
23830-04506514	51109	45	65	47	14	0,6	28.000	69.500	6.000	0,087
23830-04507320	51209	45	73	47	20	1	39.000	80.000	4.800	0,279
23830-05007014	51110	50	70	52	14	0,6	29.000	75.000	5.600	0,151
23830-05007822	51210	50	78	52	22	1	50.000	106.000	4.300	0,346