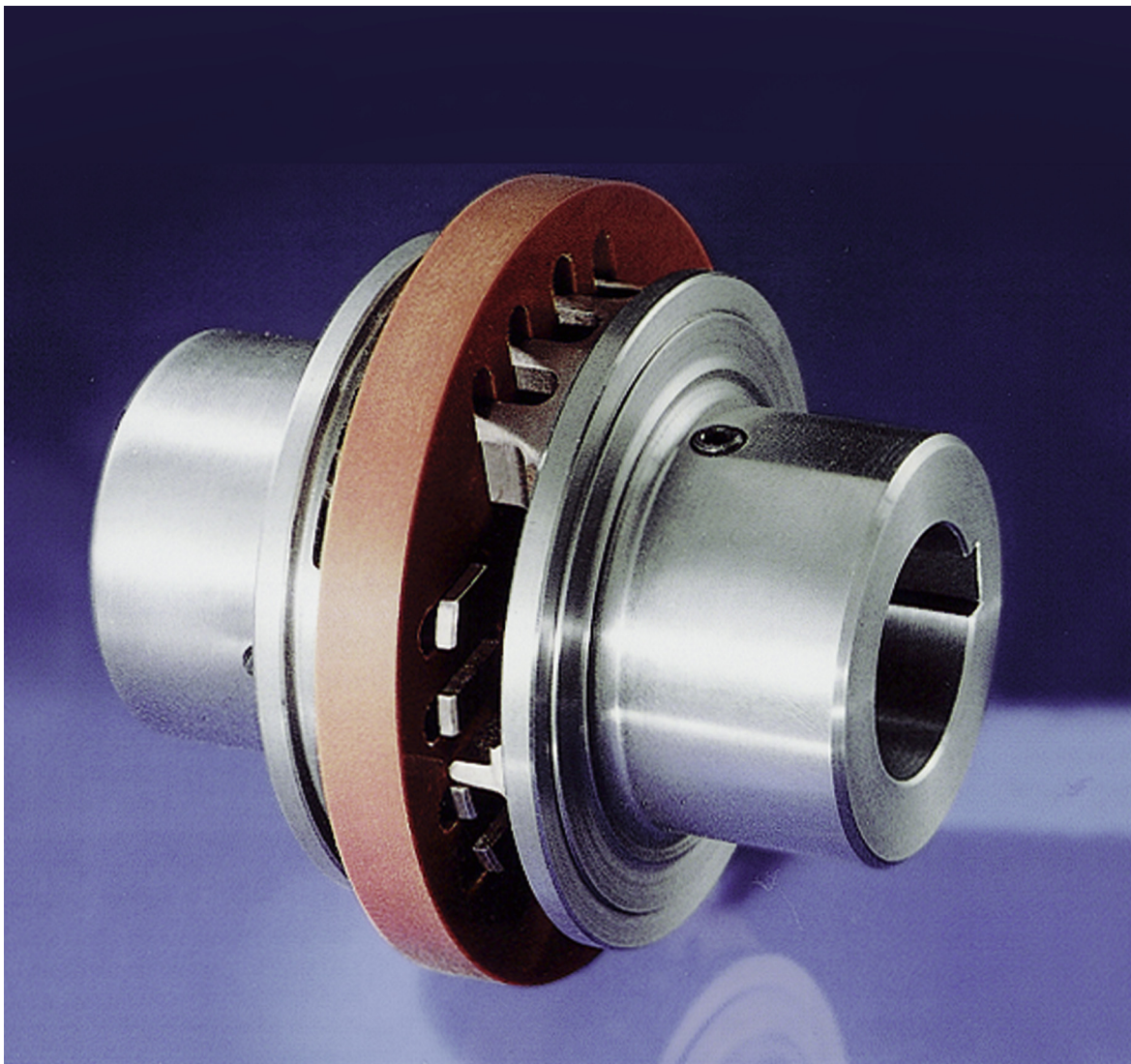


# Flexible Couplings

44



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# Why RINGSPANN Flexible Couplings?

## No connection of shafts without clutches

It is a well-known fact that the connection of shafts is a lengthy, and therefore costly, operation of accurately aligning the respective machine parts.

With machine base plates and foundations made of sectional steel there is the additional need to compensate for the misalignment of individual components caused by the tightening of the fastening screws. Variations in heat expansion and sudden alterations of the foundation level can cause further problems to the mounting operation.

Even more serious are the failures from incorrectly mounted flexible couplings - under the influence of torque the radial forces produced by the displacement can result in overloaded bearings, excessive heat in the friction bearings, and broken shafts.

However, by using a RINGSPANN flexible coupling for shafts, excessive costs for fitting, loss of production and repair can be avoided.

## Advantages of RINGSPANN Flexible Couplings

- Excellent misalignment capability
- Minimal radial forces
- Torsionally rigid
- No stick-slip action
- Compact design
- Small dimensions

## Structure of RINGSPANN Flexible Couplings

The RINGSPANN flexible coupling is based on the reliable Oldham Principle and consists of two identical hub parts of steel or spherical graphite iron, as well as a flexible disc made of highly wear resistant plastic resin. The robust design of only three basic elements guarantees excellent reliability and easy mounting.

The driving dogs of the two hubs engage by sliding into corresponding slots of the flexible disc, the slots being offset by 90°, thereby compensating very large radial misalignments of the shafts, if necessary. Furthermore, the support dogs - offset by 90° to the driving dogs - can

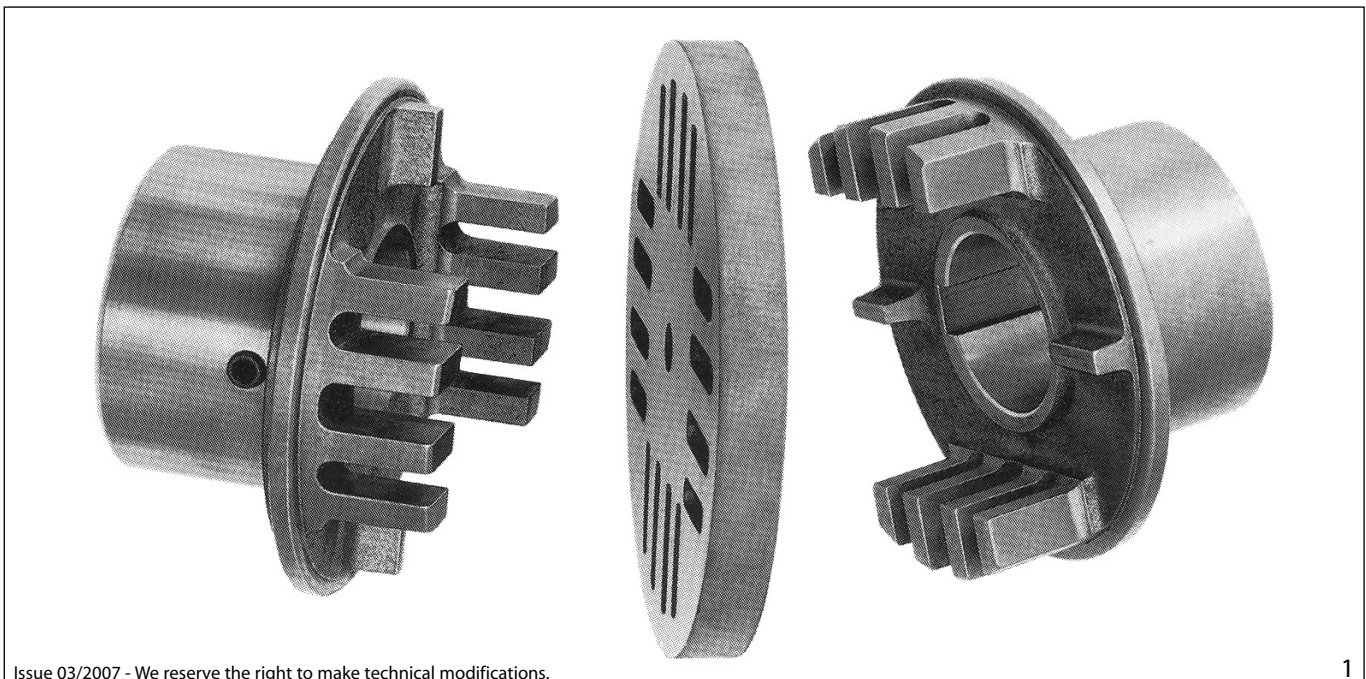
compensate angular misalignments of up to 3°. The rotation movement is always transmitted angle true. The particularly large, low-stress transmission surfaces are not subject to any elastic distortion or play and therefore no fatigue.

Driving dogs and flexible disc should be greased with graphite paste or molybdenum disulphide as recommended in the operating instructions. This is not necessary if the couplings run in oil.

Care must be taken that the flexible couplings are not affected by undue axial forces caused, for example, by heat expansion of the shafts. If necessary, the coupling has to be mounted with axial tolerance between support dogs and flexible disc.

## Service

RINGSPANN not only supplies flexible couplings, but is also available for comprehensive consultation. RINGSPANN offers the safety that you need.



Issue 03/2007 - We reserve the right to make technical modifications.

1

# Selection of RINGSPANN Flexible Couplings

## Selection of RINGSPANN Flexible Couplings

The size of the coupling is selected according to the maximum torque requirement on the general formula:

$$M_L = 9550 \cdot \frac{P}{n} \text{ [Nm]}$$

In this formula P (kW) is the power required for driving the machine, which is in most cases lower than the nominal power of the motor. n [1/min] is the speed of the coupling.

The torque requirement  $M_L$  calculated according to this formula is an average value, but in reality the torque transmitted through the coupling is irregular, according to the irregularity of the driving power and the machine. The maximum peak torque of the drive should be lower than the torque capacity of the selected coupling according to the table.

Where the precise irregularities of the torque are not known a service factor f should be applied.

$$M_{\max} = 9550 \cdot \frac{P}{n} \cdot f \text{ [Nm]}$$

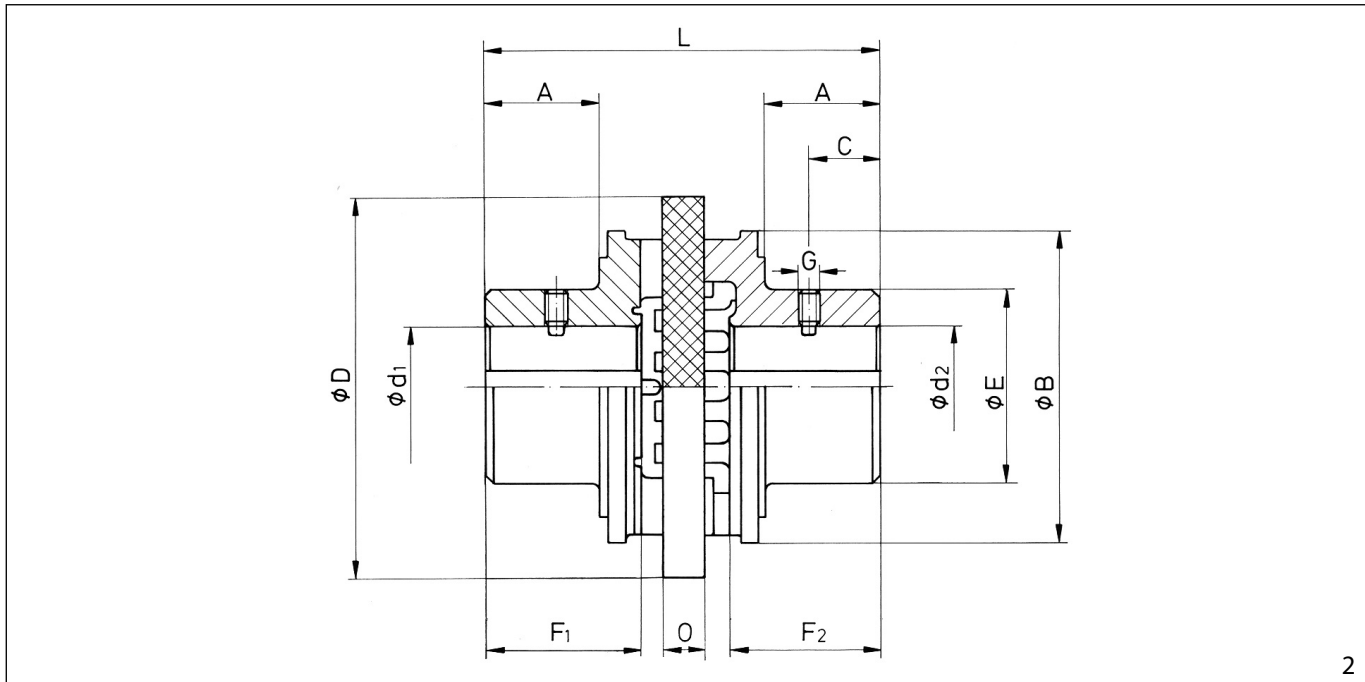
This factor f is dependant on the type of drive and type of driven machine.

## Servicefactor f

Type of driven Machine	Driven by			
	Belt drives, electric motors	Combustion engines 4 and 6 cylinders	Combustion engines 2 and 3 cylinders, single cylinder, steam engines	Single cylinder combustion engines
belt drives, small generators, small ventilators, rotary blowers	1,5	1,7	1,9	2,2
small hoists, larger ventilators, light machines for metal, wood and textile, small conveyors	1,8	2,0	2,2	2,5
hoists for heavy loads, heavier conveyors. hanging conveyors, mixers, textile machines with high inertias	2,0	2,2	2,4	2,7
presses, sheers, stumping machines, reciprocating pumps, calendars. Dan grinders. hammer mills	2,5	2,7	2,9	3,2
welding generators. stone crushers. pinch roll drives, reciprocating compressors and reciprocating pumps without flywheels, rolling mills.	3,0	3,2	3,4	3,7

# RINGSPANN-Flexible Couplings L

## Connection Shaft – Shaft with Keyways



### Technical Data and Dimensions

Type	Torque max. Nm	Speed max. 1/min	Parallel misalign- ment max. mm	Rough bore d mm	Finished bore d <sub>1</sub> and d <sub>2</sub>		A mm	B mm	C mm	D mm	E mm	F <sub>1</sub> */F <sub>2</sub> *	G	L mm	O mm	Inertia with J kgm <sup>2</sup>	Weight rough bore kg
					min. mm	max. mm											
L 10	2	13000	0,5	4,3	5	15	-	-	7	32	26	13	M4	35	6	0,0001	0,1
L 12	4	10500	0,6	5	6	18	-	-	10	40	32	16	M4	42	4	0,0002	0,2
L 16	8	8400	0,8	7	8	25	-	-	10,5	50	40	18,5	M5	51	6	0,0003	0,38
L 20	16	6800	1,0	9	10	30	-	-	17	63	50	25	M6	64	6	0,0004	0,78
L 27	32	5350	1,35	11	12	40	-	-	24	80	65	32	M6	85	8	0,0008	1,7
L 35	85	4100	1,75	15	16	35	33	90	25	110	53	42	M8	112	12	0,0013	1,9
L 42	190	3400	2,1	19	20	42	41	110	30	135	66	53	M8	136	14	0,0039	3,7
L 50	500	2670	2,5	29	30	50	51	135	40	160	85	62	M10	159	16	0,0097	6,3
L 70	1000	2140	3,5	33	34	70	65	163	45	200	104	79	M12	200	20	0,0268	12,1
L 90	2000	1700	4,5	48	50	90	81	202	60	250	150	100	M12	247	25	0,1110	28,9
L 110	4000	1350	5,5	58	60	110	101	254	70	315	175	124	M12	312	32	0,2911	50,9
L 140	8000	1050	7	72	75	140	130	330	90	400	216	160	M12	402	40	0,9767	104

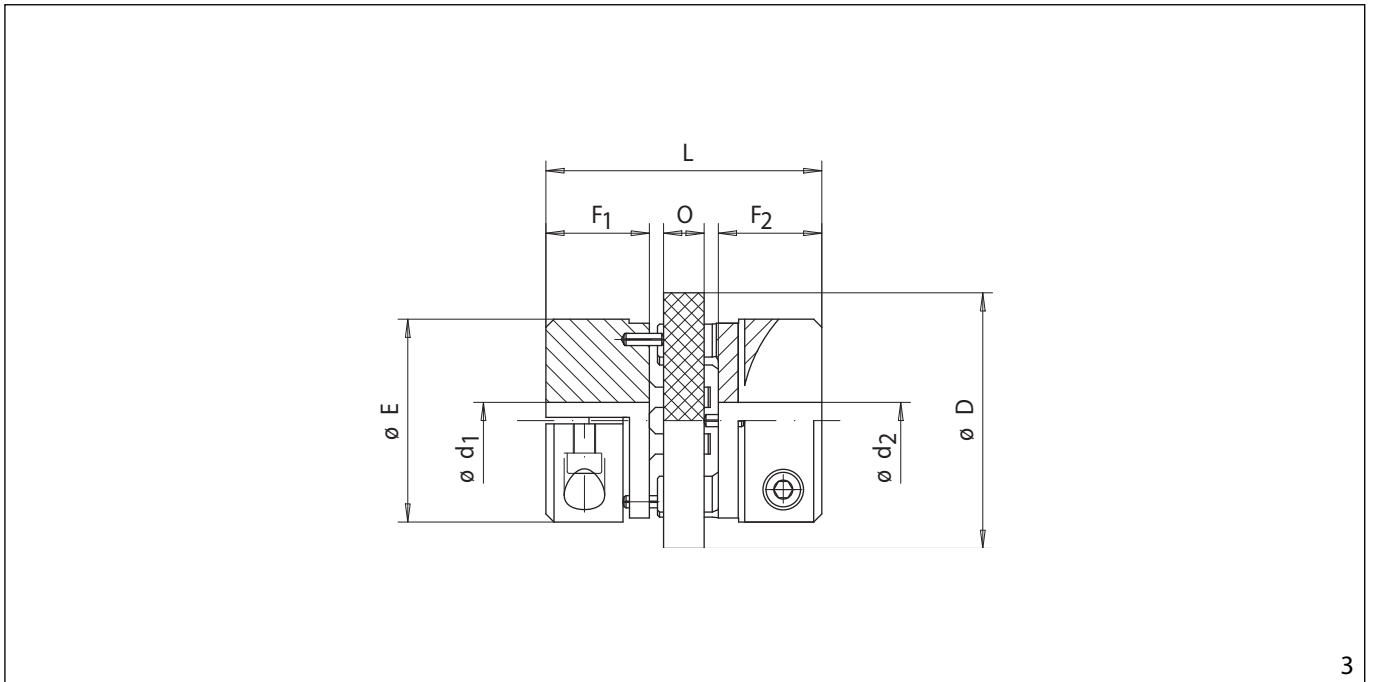
\* Hub lengths F<sub>1</sub> and F<sub>2</sub> can be shortened with corresponding changes to dimensions A, C and L.

Please specify when ordering

- Whether supply is required with rough bores as per catalogue or finished bore.
- If finished bore, give diameters d<sub>1</sub> and d<sub>2</sub>. Tolerance of finished bores is H7. Keyways as per DIN 6885, p. 1 from finished bore size 6 mm.

# RINGSPANN-Flexible Couplings LK

## Connection Shaft – Shaft with Clamping Hubs



### Technical Data and Dimensions

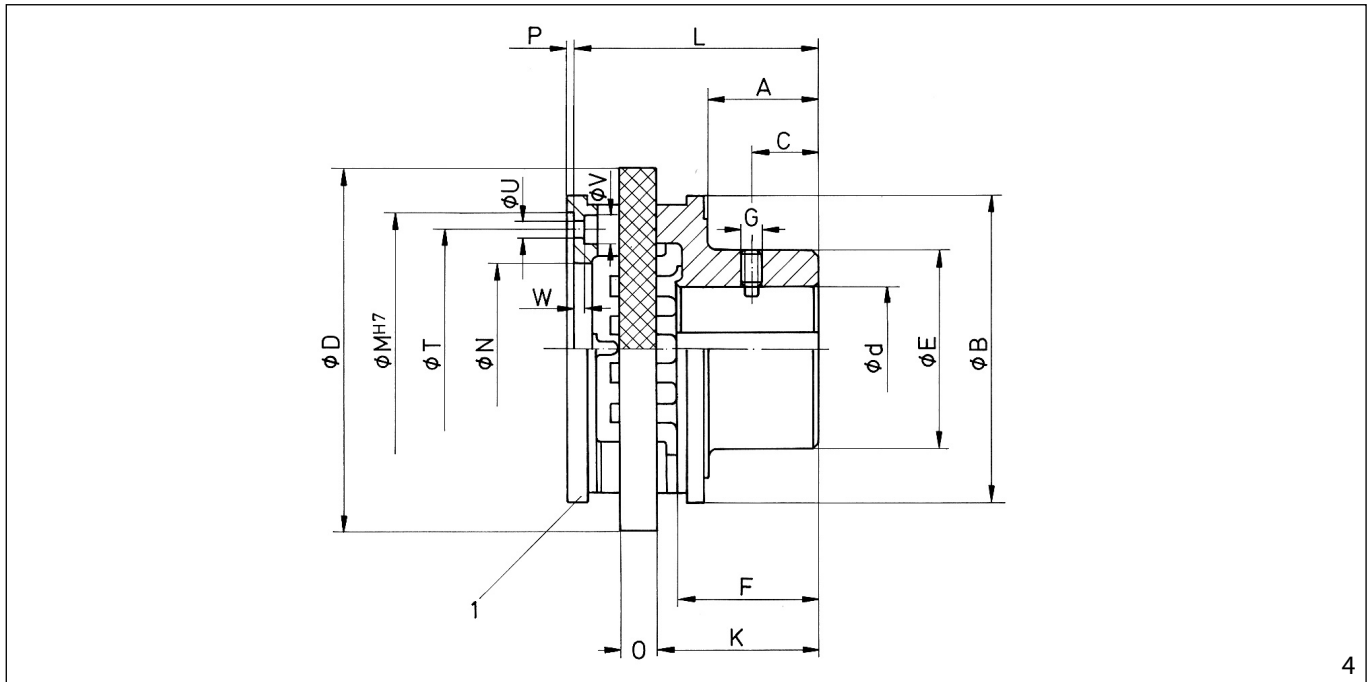
Type	Torque max. Nm	Speed max. 1/min	Parallel misalign- ment max. mm	Rough bore d mm	Finished bore d <sub>1</sub> and d <sub>2</sub>		D mm	E mm	F <sub>1</sub> /F <sub>2</sub> mm	L mm	O mm	Inertia J kgm <sup>2</sup>	Weight with rough bore kg
					min. mm	max. mm							
LK 10	2	13000	0,5	4,3	5	10	32	26	13	35	6	0,0001	0,1
LK 12	4	10500	0,6	5	6	14	40	32	16	42	4	0,0002	0,2
LK 16	8	8400	0,8	7	8	20	50	40	18,5	51	6	0,0003	0,38
LK 20	16	6800	1,0	9	10	25	63	50	25	64	6	0,0004	0,78
LK 27	32	5350	1,35	11	12	35	80	65	32	85	8	0,0008	1,7

Please specify when ordering

- Whether supply is required with rough bores as per catalogue or finished bored.
- If finish bored, give diameters d<sub>1</sub> and d<sub>2</sub>. Tolerance of finished bores is H7.

# RINGSPANN-Flexible Couplings LA

## Connection Flange – Shaft with Keyway and Flange



### Technical Data and Dimensions

Type	Torque max. Nm	Speed max. 1/min	Paral. mis- align. max. mm	Rough bore d mm	Finished bore d min. max. mm mm	A mm	B mm	C mm	D mm	E mm	F <sup>1)</sup> mm	G mm	K mm	L mm	MH <sup>7</sup> mm	N mm	O mm	P mm	T mm	U mm	V mm	W mm	Inertia J kgm <sup>2</sup>	Weight with rough bore kg	Pin- hole Image for øT <sup>2)</sup>
LA 35	85	4100	1,75	15	16 35	33	90	25	110	53	42	M8	50	76,5	75	45	12	2,5	65	6,6	11	3,5	0,0011	1,3	1
LA 42	190	3400	2,1	19	20 42	41	110	30	135	66	53	M8	61	90,5	90	52	14	2,5	75	6,6	11	4,5	0,0032	2,6	2
LA 50	500	2670	2,5	29	30 50	51	135	40	160	85	62	M10	71,5	105,5	100	65	16	4,5	88	9	15	4,5	0,0075	4,1	2
LA 50.1	500	2670	2,5	29	30 50	51	135	40	160	85	62	M10	71,5	105	125	76	16	3	108	9	15	5	0,0074	4,0	3
LA 70	1000	2140	3,5	33	34 70	65	163	45	200	104	79	M12	90	131	135	90	20	4	115	11	18	5,5	0,0203	7,7	2
LA 90	2000	1700	4,5	48	50 90	81	202	60	250	150	100	M12	111	162,5	170	104	25	4,5	150	11	18	7	0,0782	18,0	4
LA 110	4000	1350	5,5	58	60 110	101	254	70	315	175	124	M12	140	204	200	146	32	5	180	14	20	5	0,2113	31,6	3
LA 140	8000	1050	7	72	75 140	130	330	90	400	216	160	M12	181	265	250	157	40	5	225	18	26	8	0,7485	67,6	3

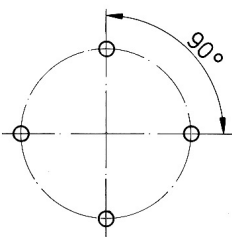
Keyways as per DIN 6885, p. 1.

<sup>1)</sup>The hub length F can be shortened with corresponding changes to dimensions A, C, K and L.

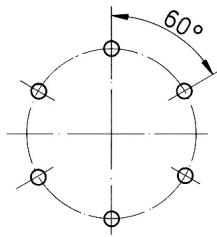
<sup>2)</sup>The pinhole images refer to coupling flange 1.

Please specify when ordering:

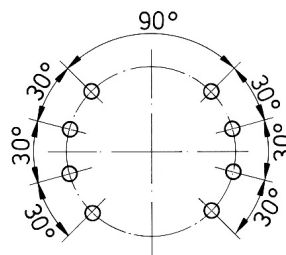
- Whether supply is required with rough bore as per catalogue or finished bore.
- If finished bore, give diameter d. Tolerance of finished bore is H7.



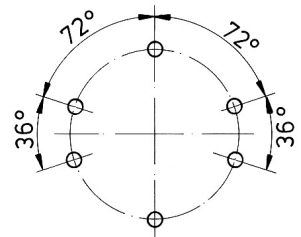
Pinhole Image 1



Pinhole Image 2



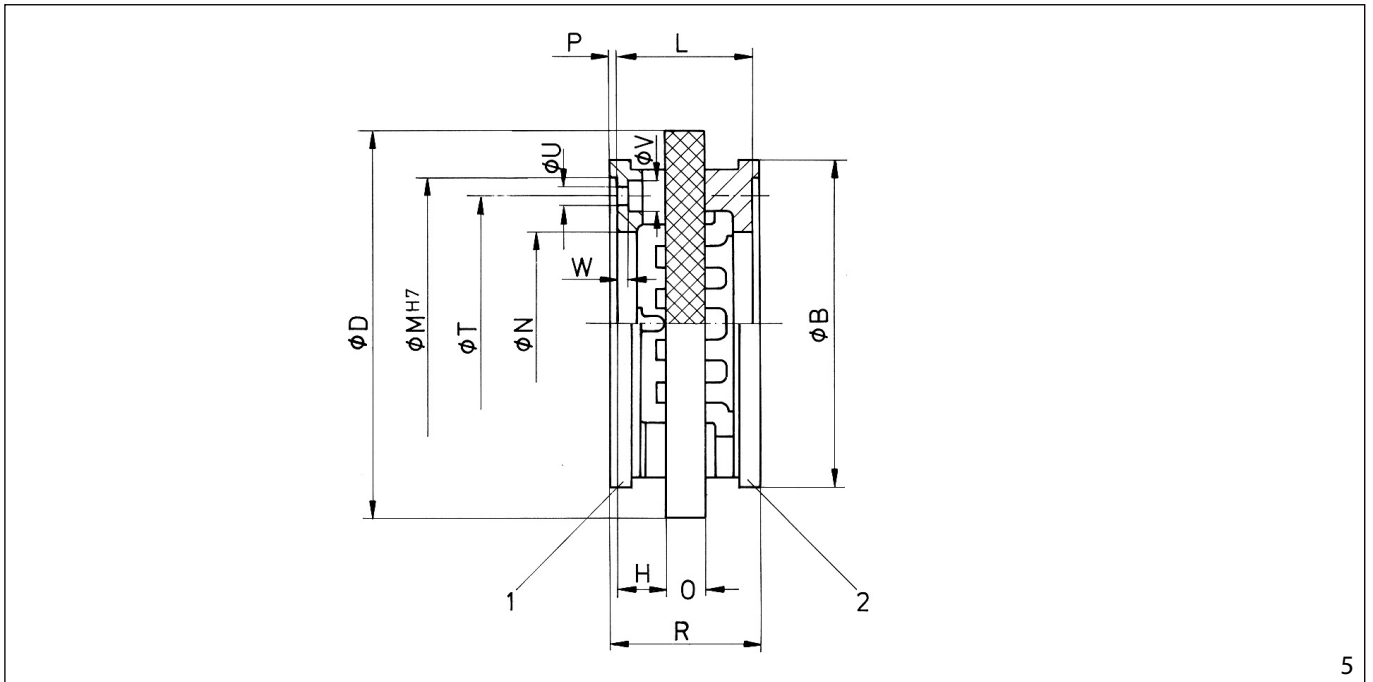
Pinhole Image 3



Pinhole Image 4

# RINGSPANN-Flexible Couplings LF

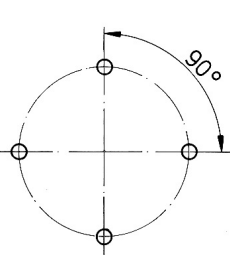
## Connection Flange – Flange with Flanges



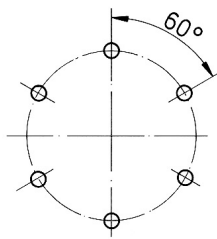
### Technical Data and Dimensions

Type	Torque max. Nm	Speed max. 1/min	Parallel misalign- ment max. mm	B mm	D mm	H mm	L mm	M <sup>H7</sup> mm	N mm	O mm	P mm	R mm	T mm	U mm	V mm	W mm	Inertia J kgm <sup>2</sup>	Weight kg	Pin- hole Image for øT <sup>1)</sup>
LF 35	85	4100	1,75	90	110	14,5	41	75	45	12	2,5	46	65	6,6	11	3,5	0,0009	0,7	1
LF 42	190	3400	2,1	110	135	15,5	45	90	52	14	2,5	50	75	6,6	11	4,5	0,0026	1,4	2
LF 50	500	2670	2,5	135	160	18	52	100	65	16	4,5	61	88	9	15	4,5	0,0053	1,9	2
LF 50.1	500	2670	2,5	135	160	17,5	51	125	76	16	3	57	108	9	15	5	0,0051	1,7	3
LF 70	1000	2140	3,5	163	200	21	62	135	90	20	4	70	115	11	18	5,5	0,0138	3,2	2
LF 90	2000	1700	4,5	202	250	26,5	78	170	104	25	4,5	87	150	11	18	7	0,0453	7,0	4
LF 110	4000	1350	5,5	254	315	32	96	200	146	32	5	106	180	14	20	5	0,1314	12,3	3
LF 140	8000	1050	7	330	400	44	128	250	157	40	5	138	225	18	26	8	0,5203	31,2	3

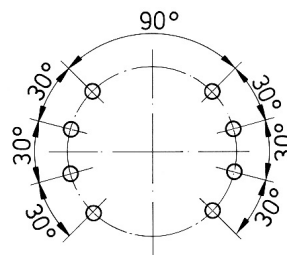
<sup>1)</sup>The pinhole images refer to coupling flange 1. The pinhole images are offset by 90° for flange 2.



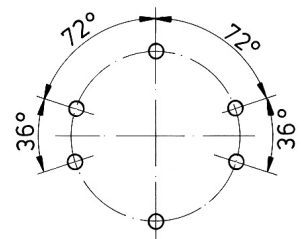
Pinhole Image 1



Pinhole Image 2



Pinhole Image 3



Pinhole Image 4

### Freewheels

#### Backstops

Automatic protection against reverse running of conveyor belts, elevators, pumps and fans.



Catalogue 84

#### Overrunning Clutches

Automatic engaging and disengaging of drives.



Catalogue 84

#### Indexing Freewheels

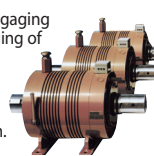
For gradual feed of materials.



Catalogue 84

#### Housing Freewheels

Automatic engaging and disengaging of multimotor drives for installations with continuous operation.



Catalogue 84

#### Freewheel Elements

Cage Freewheels, Sprag Sets and Freewheel Chains.

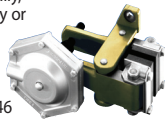


Catalogue 89

### Brakes

#### Industrial Disc Brakes

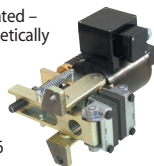
Spring activated – pneumatically, hydraulically or manually released.



Catalogue 46

#### Industrial Disc Brakes

Spring activated – electromagnetically released.



Catalogue 46

#### Industrial Disc Brakes

Pneumatically activated – spring released.



Catalogue 46

#### Industrial Disc Brakes

Manually activated – manually released.



Catalogue 46

#### Industrial Disc Brakes

Hydraulically activated – spring released.



Catalogue 46

### Torque and Force Limiters

#### Torque Limiters with Screw Face

Reliable overload protection for tough operating conditions.



Catalogue 45

#### Torque Limiters with Rollers

With double or single Rollers. Through ratcheting or disengaging, also for 360° synchronous running.



Catalogue 45

#### Torque Limiters with Balls

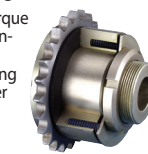
Reliable overload protection with maximum response accuracy. Also backlash free.



Catalogue 45

#### Torque Limiters with Friction Linings

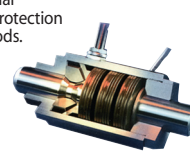
RIMOSTAT Torque Limiter for constant torque. Belleville Spring Torque Limiter for simple release.



Catalogue 45

#### Force Limiters

Reliable axial overload protection in piston rods.



Catalogue 49

### Couplings and Clamping Clutches

#### Flexible Couplings

Large, allowed radial and angular misalignments. Minimum resiliency.



Catalogue 44

#### Flange-Couplings

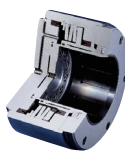
Rigid, easily removable shaft coupling with no clearance cone clamping elements.



E04.020

#### Clamping Clutches

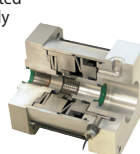
For the automatic coupling of rolls. Fast, safe and free from slipping connection.



Catalogue 45

#### Safety Clamping Units

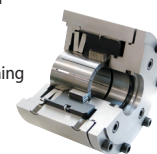
Spring actuated – pneumatically released. For secure and precise positioning of piston rods.



E01.023

#### Safety Clamping Units

Spring actuated – hydraulically released. For secure and precise positioning of piston rods.



Catalogue 32

### Shaft-Hub-Connections

#### Two-part Shrink Discs

External clamping connection. Advantages: Simple, secure mounting even without torque wrench.



Catalogue 36

#### Three-part Shrink Discs

External clamping connection for the fastening of hollow shafts on solid shafts



Catalogue 36

#### Cone Clamping Elements

For shaft-hub connections. High torques with small dimensions.



Catalogue 36

#### Star and Clamping Discs

Ideal for shaft-hub-connection for frequent release.



Catalogue 36

#### Star Spring Washers

Axial spring element for preloading of ball bearings.



Catalogue 20

### Precision Clamping Fixtures

#### Standard Parts for Clamping Fixtures

The RINGSPANN-System for the manufacture of your own precision clamping fixtures.



Catalogue 14

#### Standard Clamping Fixtures

Standard program in high precision, ready manufactured chucks and mandrels.



#### Special Clamping Fixtures

Custom made solutions for specific clamping problems.



#### Collet Mandrels

Universal, cost effective standard series. Fast collet change to other clamping diameters.



Catalogue 15

#### Hydraulic Expanding Clamping Tools

Mandrels and chucks with high concentricity. Clamping several workpieces in one process possible.



Catalogue 16

