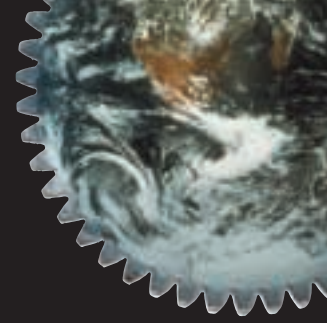




American Metric® Corporation

Linear Technology

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Linear bearings and accessories have gained in importance. In the future more and more linear systems will be used to achieve cost-effective designs; it is no longer a question of what is technically possible, rather what is technically necessary.

The linear components described in this catalogue are technically high-precision products which have proved themselves in automation and handling applications.

The catalogue includes five product areas of linear motion technology together with the most important technical data.

For special components, or for additional linear motion products, please request technical information from us. We will be pleased to make our knowhow available to you through the services of our Special Products Department.



Linear Technology



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Sample:

AG -

OP -

08 -

KS -

0 -

X

specials
to customer's specification
X = drawing number

Seal

no code = seals at both ends
0 = no seals
1 = seal at one end
V = external seals, both ends
V1 = external seal, one end

Linear bearing

C (KH) = compact linear ball bearing
(only in compact housings)
K (LME) = standard linear ball bearing
V (SDE) = all steel linear ball bearing
KS (LMES) = linear ball bearing, self-aligning

Shaft diameter Ø8 to Ø80

Version

no code = closed
AJ = radial adjustable
OP = open
OPAJ = open, radial adjustable

Description of Part

AL - Extruded Profile:

AGC closed compact
TAGC closed compact, tandem
ALGS pillow block
AG standard
AGS side opening
TAG tandem
QAG quadruple
FAG flanged
FTAG flanged, tandem
FTRG round-flanged, tandem housing
FWBT flanged tandem shaft block

AL - Casting:

MAG pillow block

Iron Casting:

GG pillow block
FGG flanged housing



Individual components: external seals, internal seals and wiper rings, as well as fitting dowels and radial-axial fixing screws are available from stock.

It is responsibility of the user to ascertain the suitability of the items listed in this catalogue for any specific application. Faulty products will be replaced free of charge, if returned to us immediately. No further warranty will apply after such an exchange.

KH Linear Ball Bushings

The outer shell is made of steel, the cage is plastic.
Balls are Grade 10. Bushings are available with seals at one or both ends.



LME / SDE Standard Linear Bearings

The outer shells of the standard range is made of rolled steel.
The cage is either plastic or steel, depending on the version.
Balls are Grade 10, and the wiper is vulcanised onto the end ring.



Standard linear bearings are available in the following versions:

closed
closed with radial adjustment
open

LMEF / LMEF-L

Flanged Linear Bearings, single and double

The outer shells of the standard range is made of rolled steel.
Either plastic or steel is used for the cage.
Balls are Grade 10 and the wiper is vulcanised onto the end ring.



LMES Self aligning Linear Ball Bearings

These bearings consist of a very precise injection-moulded plastic carrier with clipped-in runner plates. The plastic carrier also acts as a return track and for seal fixing. The seal is made of a special rubber material with a low coefficient of friction.



Speed, Temperature, Lubrication, Friction

Standard linear ball bearings and selfaligning linear ball bearings can be used at speeds of up to 3 m/sec.. For higher speeds up to 5 m/sec., all-steel bearings with special lubricant should be used.

Bearings are suitable for a temperaturerange between - 20°C to +80°C.

For higher temperatures we recommend all-steel bearings with special lubricants.

The linear ball bearings are designed for oil or grease lubrication. For high speeds, greater than 2m/s and temperatures above 140°C, we recommend special lubricant Klüber Lubrication Isoflex NCA 15.

At normal temperatures and speeds less than 2m/s, we recommend special lubricating oil Klüber Oil 4LC68.

The Coefficient of Friction depends on the seals, load and bearing lubrication. The linear bearings have a Coefficient of Friction of 0.001 to 0.005.

Construction, Design and Materials

- Linear housings - aluminium extruded section

Housings can be fitted with all the linear bearings contained in this catalogue.

Aluminium-housings are made of Al Mg Si 0,7 F26.

- Linear housings - graphite pellet / aluminium injection mouldings

These housing units consist of standard or selfaligning linear ball bearings, plain bearings, cast iron- or aluminium injection moulded housings.

The inner housing diameters are generally H7.

Other Tolerance information at forthcoming sections.

Assembly Notes

The linear ball bearings will fit housings with a tolerance of H7.

They can be retained by retaining rings or clips. Open bearings are held in the radial-axial fixing bore by means of screws, dowelpins or lubricating slotted screws (page 11).

Standard linear ball bearings can also be pre-loaded with JS6 to M6 tolerances.

For safety and economic reasons however we strongly recommend the use of our pre-assembled housing units!

Operating Life and Working Load for Linear Ball Bearings

Working Load

The load conditions listed in the tables apply to the linear ball bearings described in this catalogue in combination with precision steel shafts.

1. The load is applied at 90° to the horizontal plane

2. The surface hardness is HRC 62±2.

The following formula applies to configurations other than those given:

$$W_R = \frac{P}{K_\theta * K_S * K_L}$$

W_R = required dynamic load [N]
 P = resultant of externally applied loads [N]
 K_S = hardness factor of shaft
 K_θ = factor for direction of resultant load
 K_L = factor for operating life

Direction of Load

For load correction factor K_q applicable to any linear ball bearing or linear housing, please enquire.

Shaft Surface Hardness

If a shaft does not conform to the HRC 62 +/- 2 criterion, apply a surface hardness correction factor K_S .

Operating Life

The correction factor K_L for operating life expectancy can be obtained from Fig.1.

Figure 2

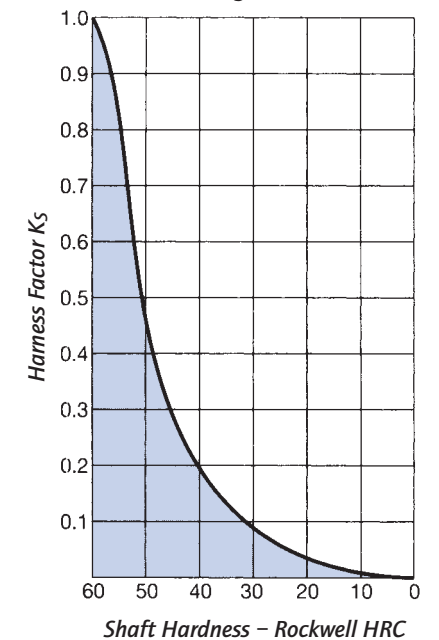
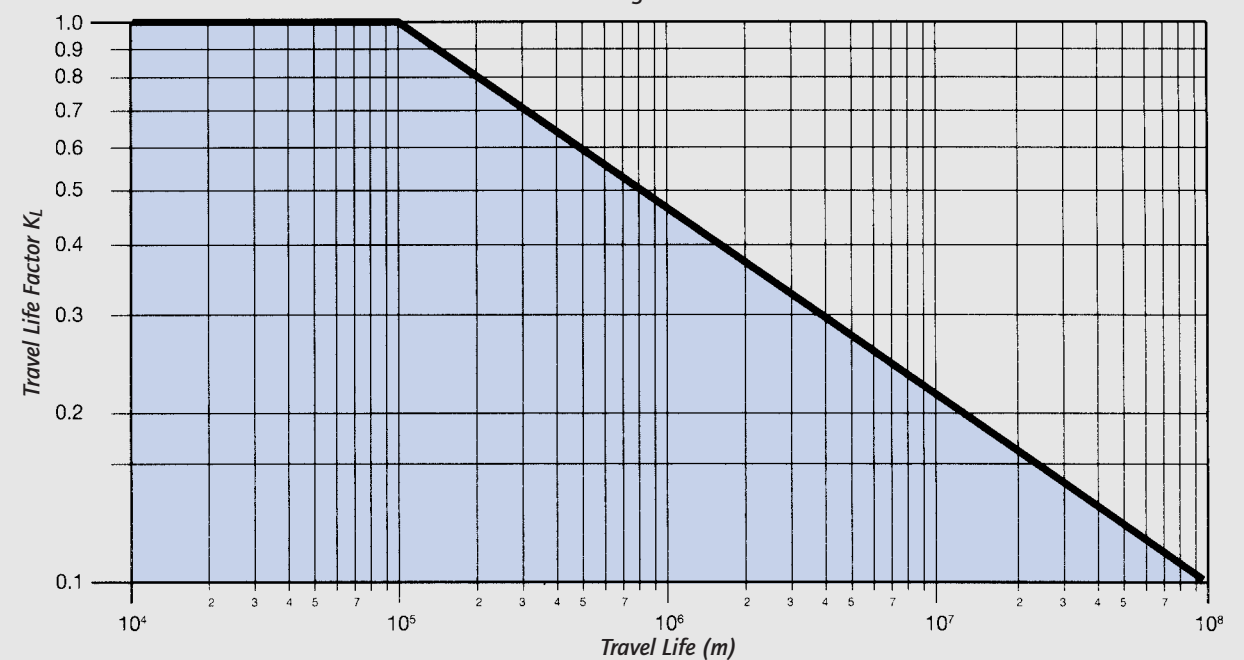


Figure 2



Load Limit

The load limit is the maximum load which may be applied to the bearing. Any application must be analysed in advance in order to ensure that maximum and / or shock loads will not exceed the load limits.

Dynamic Load Conditions

The dynamic load condition refers to the maximum continuous load which may be applied to a bearing, with a 90% probability that under normal operating conditions a working life of 100km can be achieved. However, it must be appreciated that extremely short strokes, and the direction of load application, are also deciding factors.

The working life can be estimated by the use of the following formula:

$$L_m = \left(\frac{W}{P} * K_\theta * K_S \right)^3 * 10^5 m$$

where: L_m = working life in meters
 W = dynamic load condition according to the tables, in N
 P = result of the externally applied load, in N
 K_θ = direction factor for the resulting load
 K_S = shaft hardness factor.

Calculation Example

This shows how to calculate the correct size of ball bushing for a given application. In this example the "bearing shaft system" is subjected to a load of 2300N, acting at right angles to the direction of motion. The load is uniformly distributed among four closed Super-Linear Ball Bearings. The carriage moves over a stroke of 0.3m at a frequency of 100 complete cycles per minute. An operating life of at least 3500 hours is required. A precision shaft will be used.

First, the average load acting on each of the Super-Linear Ball Bearings must be determined.

$$P = \frac{2300}{4} = 575 N \quad \text{From this the working life in m can be found}$$

$$L_m = 2 * s * f * L_h * 60 \quad \text{where: } s = \text{stroke in m}$$

$$L_m = 2 * 0.3 * 100 * 3500 * 60 \quad f = \text{frequency in cycles per min}$$

$$L_m = 1.26 * 10^7 m \quad L_h = \text{required life in hours}$$

From Fig. 1 (graph) the working life factor (KL) 0.2.

From Fig. 2 (graph) the shaft hardness factor (KS) 1.

For closed Super-Linear Ball Bearings the minimum value of Kq is 1, which is the value used for this calculation.

The necessary dynamic load is determined from the following formula:

$$WR = \frac{P}{K_L * K_S * K_\theta} \quad WR = \frac{575}{0.2 * 1 * 1} = 2875 N$$

From the appropriate sections giving technical product data and dimensions in this catalogue, it can be seen that the linear bearing with the next higher load capacity is the Super-Linear Ball Bearing with a dynamic load capacity of 3820 N.

Determination of Working Life

The expected working life of the Super-Linear Ball Bearing under the conditions of this example is as follows:

$$W = 3820 N \text{ is the stated dynamic load} \quad K_\theta = 1 \text{ is the orientation factor}$$

$$P = 575 N \text{ is resultant external load} \quad K_S = 1 \text{ is the shaft hardness factor}$$

$$\text{The above values are substituted in the following expression: } L_m = \left(\frac{W}{P} * K_\theta * K_S \right)^3 * 10^5 m = 2.93 * 10^7 m$$

The result is converted to hours as follows

$$L_h = \left(\frac{L_m}{2 * 60 * s * f} \right) = 8139 \text{ Hours}$$

Load Calculation

All operation variables must be considered when designing a linear motion system. The following examples show how the position of the load and the load center can influence selection of the product. When considering an application, every force acting on the system must be evaluated in order to enable the most suitable product to be selected.

$$F_{1z} = \frac{L}{4} + \frac{L}{2} \cdot \frac{d_2}{d_0} - \frac{L}{2} \cdot \frac{d_3}{d_1}$$

$$F_{2z} = \frac{L}{4} + \frac{L}{2} \cdot \frac{d_2}{d_0} - \frac{L}{2} \cdot \frac{d_3}{d_1}$$

$$F_{3z} = \frac{L}{4} + \frac{L}{2} \cdot \frac{d_2}{d_0} - \frac{L}{2} \cdot \frac{d_3}{d_1}$$

$$F_{4z} = \frac{L}{4} + \frac{L}{2} \cdot \frac{d_2}{d_0} - \frac{L}{2} \cdot \frac{d_3}{d_1}$$

Horizontal Application I
 At the time of movement with uniform velocity or at the time of stop.

$$F_{1z} = \frac{L}{4} + \frac{L}{2} \cdot \frac{d_2}{d_0} - \frac{L}{2} \cdot \frac{d_3}{d_1}$$

$$F_{2z} = \frac{L}{4} + \frac{L}{2} \cdot \frac{d_2}{d_0} - \frac{L}{2} \cdot \frac{d_3}{d_1}$$

$$F_{3z} = \frac{L}{4} + \frac{L}{2} \cdot \frac{d_2}{d_0} - \frac{L}{2} \cdot \frac{d_3}{d_1}$$

$$F_{4z} = \frac{L}{4} + \frac{L}{2} \cdot \frac{d_2}{d_0} - \frac{L}{2} \cdot \frac{d_3}{d_1}$$

Horizontal Application II
 At the time of movement with uniform velocity or at the time of stop.

Terms:

- d_0 = distance between centerlines of the bearing housings
- d_1 = distance between centerlines of shafts
- d_2 = distance between centerlines of carriage and center of gravity
- d_3 = distance between centerline of carriage and center of gravity
- L = Load (N)
- F_{NX} = Force in direction of X-axis (N)
- F_{NY} = Force in direction of Y-axis (N)
- F_{NZ} = Force in direction of Z-axis (N)

$$F_{1Y} \sim F_{4Y} = \frac{L}{2} \cdot \frac{d_3}{d_1}$$

$$F_{1z} = F_{4z} = \frac{L}{4} + \frac{L}{2} \cdot \frac{d_2}{d_0}$$

$$F_{2z} = F_{3z} = \frac{L}{4} + \frac{L}{2} \cdot \frac{d_2}{d_0}$$

Side Mounted Application
 At the time of movement with uniform velocity or at the time of stop.

$$F_{1X} \sim F_{4X} = \frac{L}{2} \cdot \frac{d_2}{d_0}$$

$$F_{1Y} \sim F_{4Y} = \frac{L}{2} \cdot \frac{d_3}{d_1}$$

$$F_{1X} + F_{4X} \sim F_{2X} + F_{3X}$$

$$F_{1Y} + F_{4Y} \sim F_{2Y} + F_{3Y}$$

Vertical Application
 At the time of movement with uniform velocity or at the time of stop. At the time of start and stop, the load varies because of inertia.

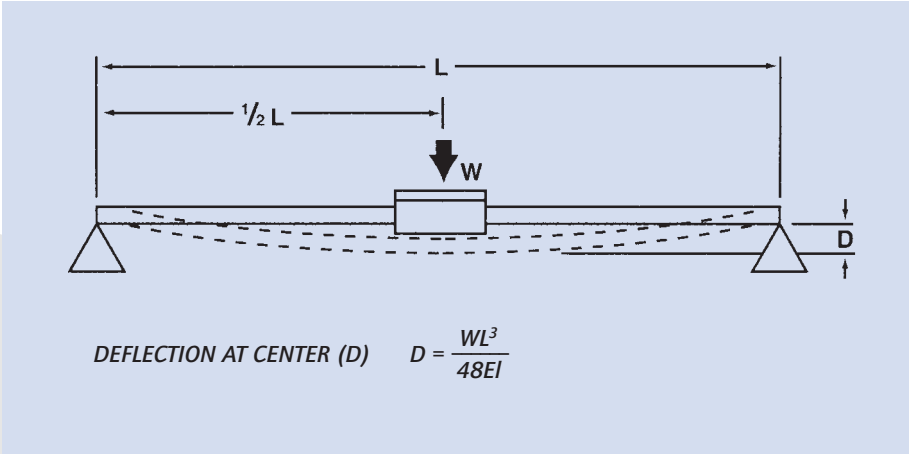
Shaft Deflection

When using hardened precision steel shafts with end supports, care must be taken to ensure that the shaft deflection within the bearing travel does not exceed the bearing performance criteria.

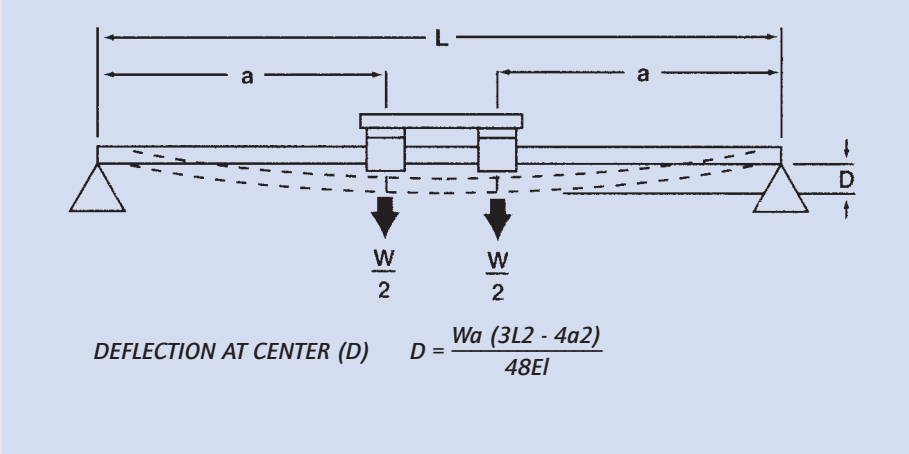
The following equations give the shaft deflection at the center of a shaft with end supports. Systems using fully supported shafts are not subjected to these deflections.

Value of EI for Hardened and Ground Shafts	
Shaft-Ø (mm)	EI (Nm²)
5	5.838
8	38.26
10	93.41
12	193.7
16	612.2
20	1495
25	3649
30	7566
40	2.391 · 10 ⁴
50	5.838 · 10 ⁴
60	1.211 · 10 ⁵
80	3.826 · 10 ⁵

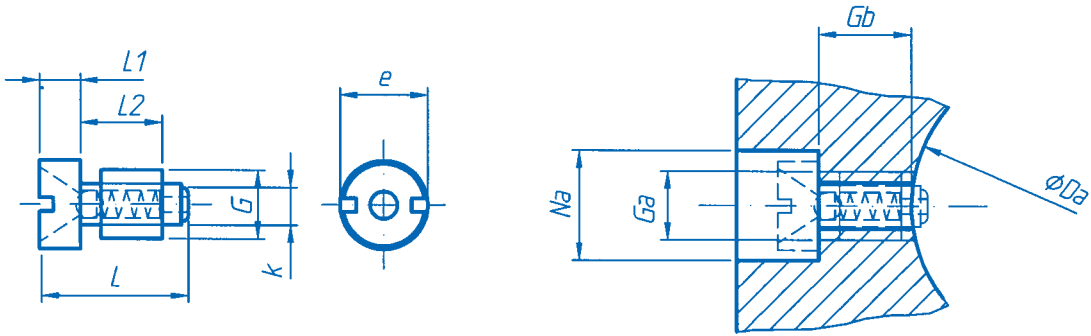
Simply Supported Shaft with Single Block



Simply Supported Shaft with 2 Single Blocks



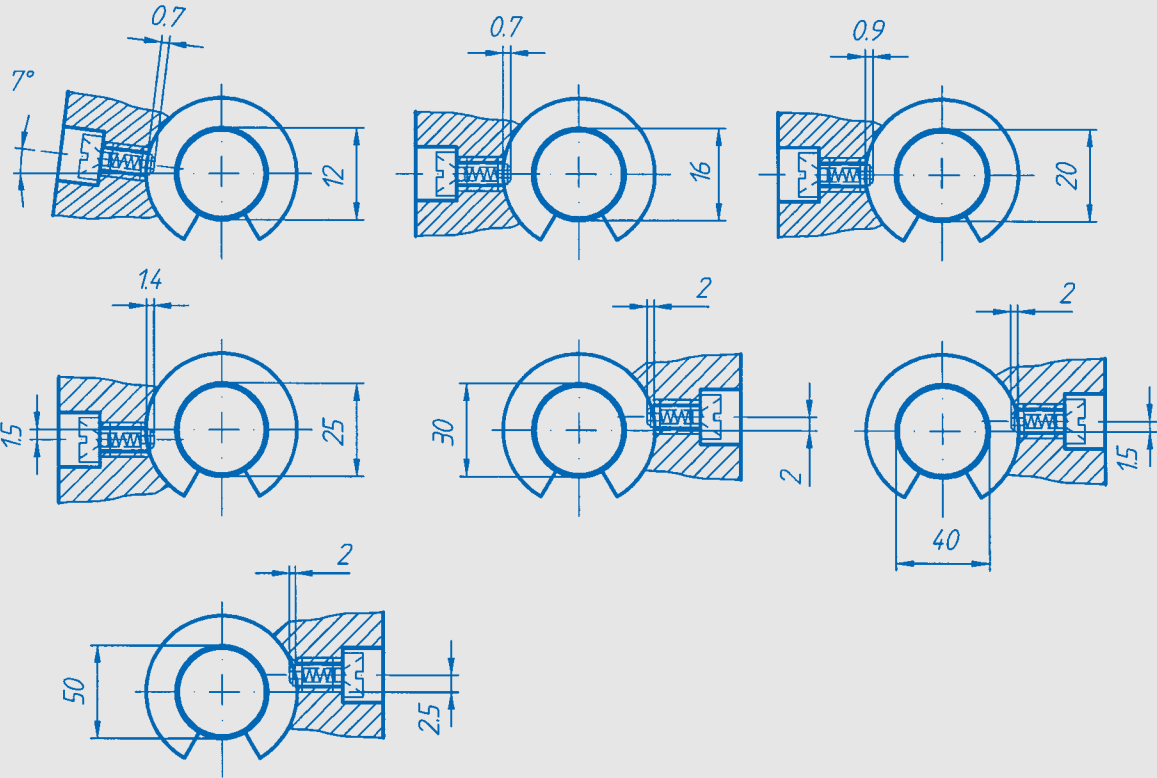
lubrication nipple
slotted screw



dimensions in mm

shaft-Ø	G	L	L1	L2	k	Øe	ØDa	Ga	Gb ^{±0,2}	ØNa ^{±0,4}
12	M5	10,9	3	6	3	6,45	22	M5	7,2	8
16	M5	10,9	3	6	3	6,45	26	M5	7,2	8
20	M5	10,9	3	6	3	6,45	32	M5	7	8
25	M5	10,9	3	6	3	6,45	40	M5	6,5	8
30	M5	10,9	3	6	3	6,45	47	M5	6,2	8
40	M5	10,9	3	6	3	6,45	62	M5	6,2	8
50	M5	10,9	3	6	3	6,45	75	M5	6,2	8

position of radial - axial fixings



The linear ball bearings are manufactured to very tight tolerances and result in smooth, almost frictionless movement. This excellent performance will be achieved only if the bearings are carefully assembled.

The alignment of the bearing and the parallelism of the shaft are the most important factors. To achieve smooth movement, two linear bearings per shaft are normally used. The housings should be carefully aligned as described below. When using tandem bearing housings, such alignment becomes superfluous.

In addition, make sure that the height from the mounting plate surface to the shaft is constant within limits of 0.025 mm. Depending on the accuracy of the mounting surface, it may be necessary to use shims.

The housings can be fitted to the mounting plate as follows:

- Mount two housings, align them, and tighten the fixing screws. (Fig.1)
- Mount the second pair of housings on the opposite side of the carriage and screw the fixing screws finger tight.
- Push a sample shaft of the correct diameter and tolerance (h6) through this pair of housings in order to align them. (Fig. 2)
- After correct alignment of the second pair of housings tighten the fixing screws.

Figure 1

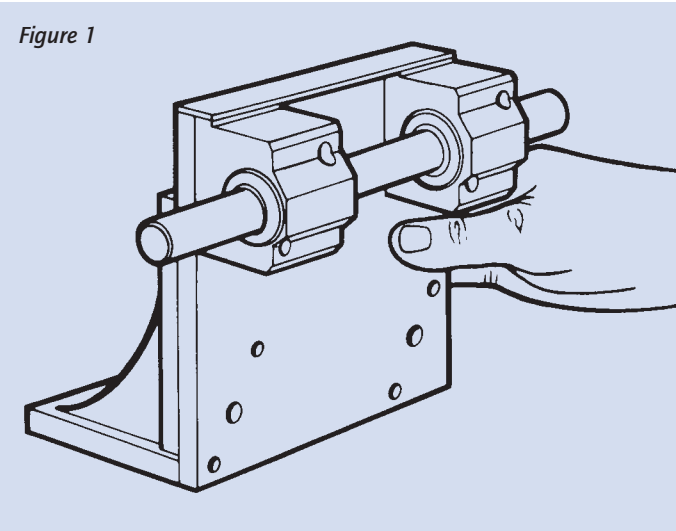


Figure 2

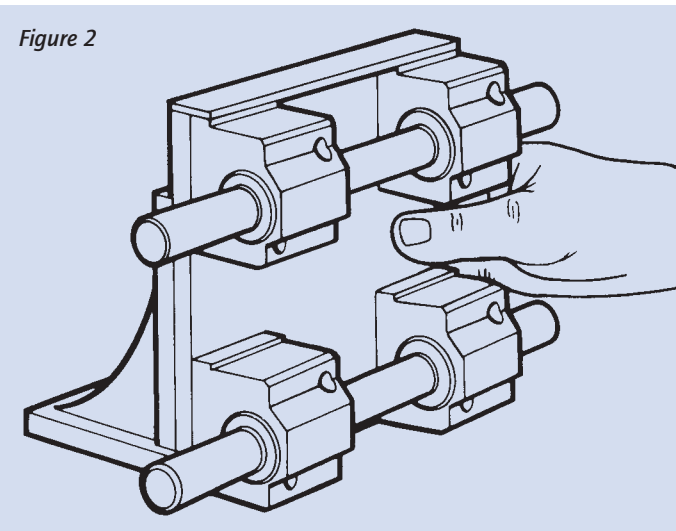


Figure 3

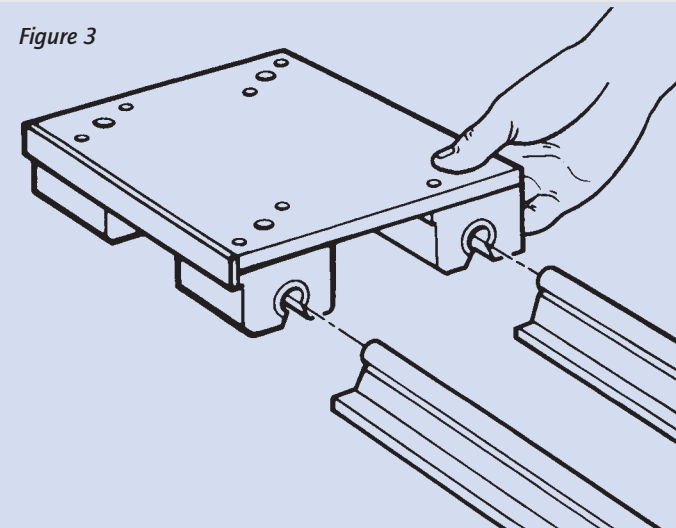


Figure 4

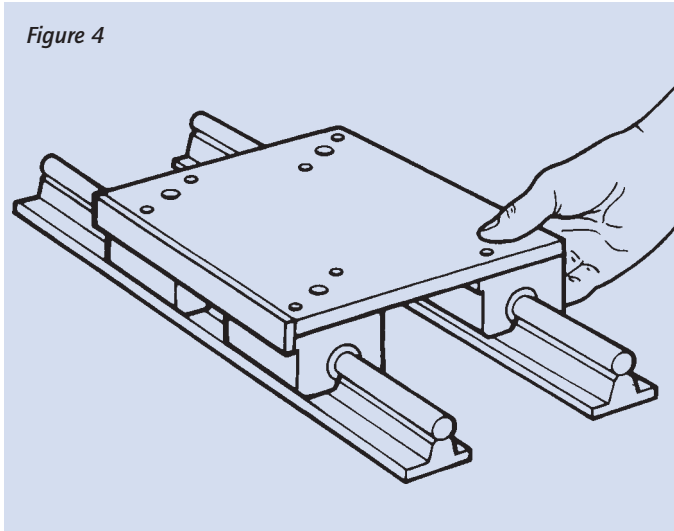


Figure 5

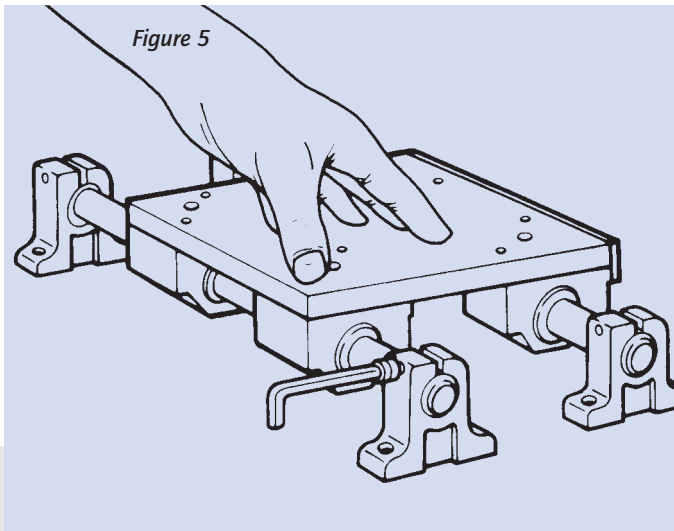
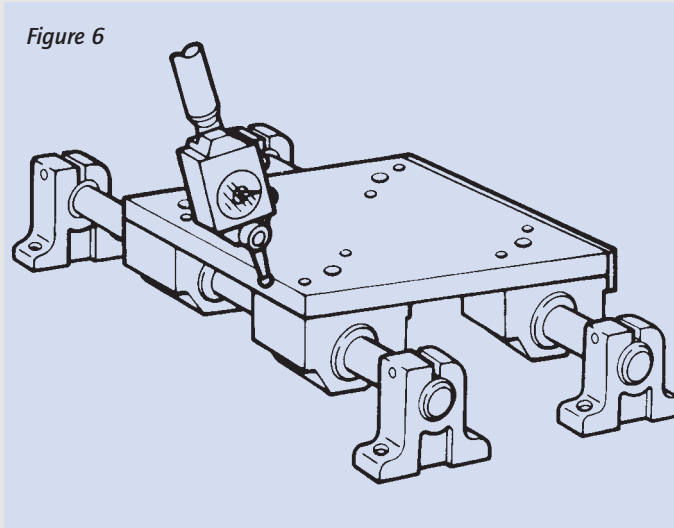


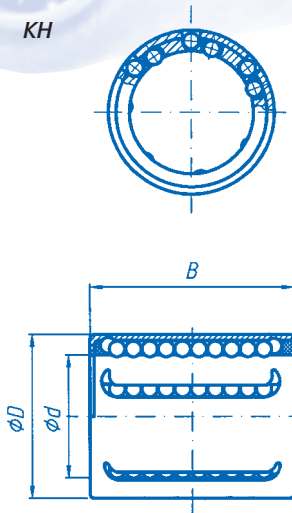
Figure 6



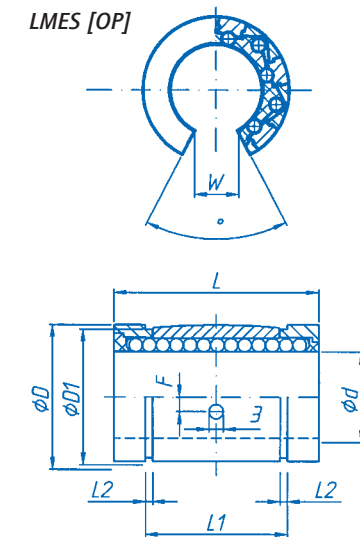
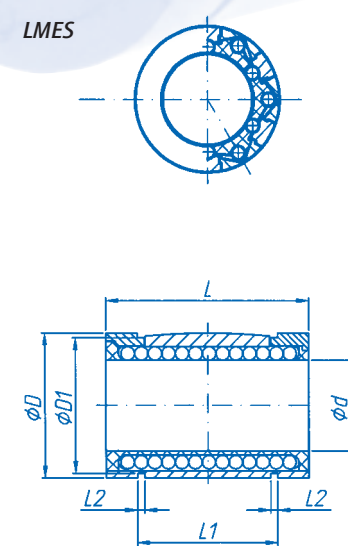
After properly preparing the carriage, the shafts need to be fixed on the mounting plate. To provide smooth running, the shafts must be parallel, with a tolerance of not more than 0.025 mm over the entire length of travel. To achieve this, proceed as follows:

- Mount one shaft, either supported at the ends, or over the whole length, finger tight on the mounting plate.
- Using an optical aligning device, such as a laser, ensure the shaft is straight, and tighten the fixing screws.
- When the first shaft is fixed correctly, mount the second shaft, align, and screw finger tight.
- Now assemble the carriage. Moving it along will pull the second shaft into alignment with the first one. (Fig. 3 & 4)
- When the second shaft is fixed the process is complete. Note however that, when using continuous shaft supports, the fixing screws should be tightened when the carriage is in the vicinity. Shafts with end supports should be tightened when the carriage is at the end being fixed. (Fig. 5)
- At this point another check can be carried out to ensure that the carriage is tracking as it should, i.e. that the edge of the carriage is moving parallel with the shaft. This can be done by means of a dial indicator, mounted on the edge of the carriage. When moving the carriage the indicated value should be within the stated tolerance. (Fig. 6)

compact linear ball bushing
steel body / cage plastic



super ball bushing with self alignment
steel pressure plates, plastic cage



dimensions in mm

load capacity

weight

part-no.	Ød	ØD	B	C	Co	
KH-0622	6	12	22	400	239	7
KH-0824	8	15	24	435	280	12
KH-1026	10	17	26	500	370	14.5
KH-1228	12	19	28	620	510	18.5
KH-1428	14	21	28	620	520	20.5
KH-1630	16	24	30	800	620	27.5
KH-2030	20	28	30	950	790	32.5
KH-2540	25	35	40	1990	1670	66
KH-3050	30	40	50	2800	2700	95
KH-4060	40	52	60	4400	4450	182
KH-5070	50	62	70	5500	6300	252

ordering example:

KH -

Ø -

PP

P = seal one end, PP = seal both ends

shaft diameter

standard linear bearing

dimensions in mm

load capacity

weight

part-no.	Ød ^{H6}	ØD ^{h6}	L	L1	L2	D1	W	(°)	F	LMES [N] C Co	LMES-OP [N] C Co	
LMES-08	8	16	25	16.5 ^{0.2}	1.1	11.5				310 240		0.016
LMES-10	10	19	29	21.5 ^{0.2}	1.1	15.2				500 390		0.017
LMES-12	12	22	32	22.9 ^{0.2}	1.3	21.0	6.5	66	1.35	650 520	750 600	0.023
LMES-16	16	26	36	24.9 ^{0.2}	1.3	24.9	9.0	68	0	800 630	920 730	0.028
LMES-20	20	32	45	31.5 ^{0.2}	1.6	30.3	9.0	55	0	1500 1250	1560 1300	0.061
LMES-25	25	40	58	44.1 ^{0.3}	1.85	37.5	11.5	57	1.5 ⁽¹⁾	2500 2200	2600 2290	0.122
LMES-30	30	47	68	52.1 ^{0.3}	1.85	44.5	14.0	57	2.0	3200 2800	3330 2910	0.185
LMES-40	40	62	80	60.6 ^{0.3}	2.15	59.0	19.5	56	1.5	5500 4900	5720 5100	0.360
LMES-50	50	75	100	77.6 ^{0.3}	2.65	72.0	22.5	54	2.5	8600 7100	8940 7380	0.580

⁽¹⁾ the radial/axial fixing hole is located under the center.

ordering example:

LMES -

Ø -

OP -

UU

U = seal one end , UU = seal both ends

open from Ø12

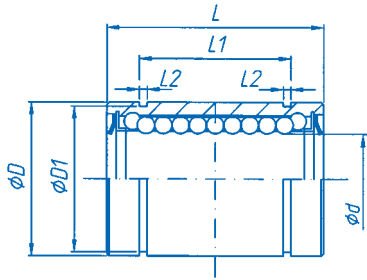
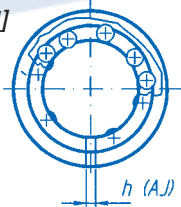
shaft diameter

linear bushing, self-aligning

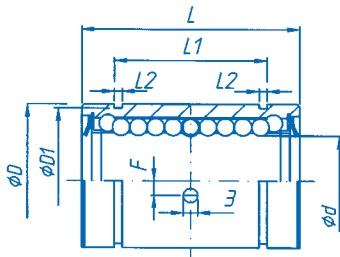
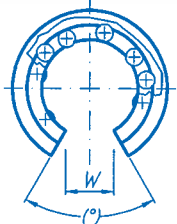


standard linear ball bushing
steel shell / plastic cage

LME [LME-AJ]

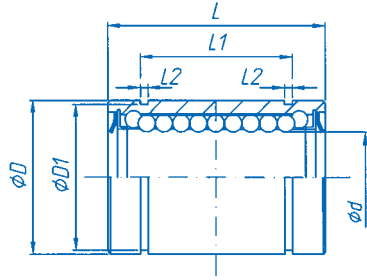
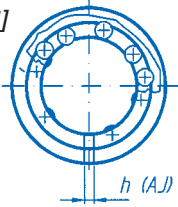


LME-OP

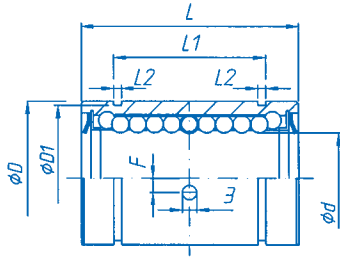
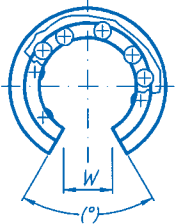


all-steel standard ball bushing

SDE [SDE-AJ]



SDE-OP



dimensions in mm

part-no.	Ød ^{H6}	ØD ^{h6}	L	L1	L2	D1	h	W	(°)	F	load capacity [N] C	weight [kg] Co
LME-05	5	12	22 ^{+0.2}	14.5 ^{+0.2}	1.1	11.5	1.0				210	0.011
LME-08	8	16	25 ^{+0.2}	16.5 ^{+0.2}	1.1	15.2	1.0				270	0.02
LME-12	12	22	32 ^{+0.2}	22.9 ^{+0.2}	1.3	21.0	1.5				520	0.041
LME-16	16	26	36 ^{+0.2}	24.9 ^{+0.2}	1.3	24.9	1.5	10.0	78	0	590	0.057
LME-20	20	32	45 ^{+0.2}	31.5 ^{+0.2}	1.6	30.3	2.0	10.0	60	0	880	0.091
LME-25	25	40	58 ^{+0.3}	44.1 ^{+0.3}	1.85	37.5	2.0	12.5	60	1.5 ⁽¹⁾	1000	0.215
LME-30	30	47	68 ^{+0.3}	52.1 ^{+0.3}	1.85	44.5	2.0	12.5	50	2.0	1600	0.325
LME-40	40	62	80 ^{+0.3}	60.6 ^{+0.3}	2.15	59.0	3.0	16.8	50	1.5	2200	0.705
LME-50	50	75	100 ^{+0.3}	77.6 ^{+0.3}	2.65	72.0	3.0	21.0	50	2.5	3900	1.13
LME-60	60	90	125 ^{+0.4}	101.7 ^{+0.4}	3.15	86.5	3.0	27.2	54		4800	2.05

ordering example:

LME -

Ø -

OP -

UU

U = seal one end, UU = seal both ends
open from Ø16 / AJ = radial adjustable from Ø12

shaft diameter

standard ball bushing

load capacity of open and closed version are identical

the bushings are also available in metric-japanese sizes (LM)

⁽¹⁾ the radial / axial fixing hole is located under the center (see page 11)

dimensions in mm

part-no.	Ød ^{H6}	ØD ^{h6}	L	L1	L2	D1	h	W	(°)	F	load capacity [N] C	weight [kg] Co
SDE-05	5	12	22 ^{+0.2}	14.5 ^{+0.2}	1.1	11.5	1.0				168	0.012
SDE-08	8	16	25 ^{+0.2}	16.5 ^{+0.2}	1.1	15.2	1.0				196	0.022
SDE-12	12	22	32 ^{+0.2}	22.9 ^{+0.2}	1.3	21	1.5	7.5	78	1.35	420	0.05
SDE-16	16	26	36 ^{+0.2}	24.9 ^{+0.2}	1.3	24.9	1.5	10.0	78	0	686	0.076
SDE-20	20	32	45 ^{+0.2}	31.5 ^{+0.2}	1.6	30.3	2.0	10.0	60	0	924	0.11
SDE-25	25	40	58 ^{+0.3}	44.1 ^{+0.3}	1.85	37.5	2.0	12.5	60	1.5 ⁽¹⁾	1470	0.22
SDE-30	30	47	68 ^{+0.3}	52.1 ^{+0.3}	1.85	44.5	2.0	12.5	50	2.0	2100	0.286
SDE-40	40	62	80 ^{+0.3}	60.6 ^{+0.3}	2.15	59.0	3.0	16.8	50	1.5	3290	0.88
SDE-50	50	75	100 ^{+0.3}	77.6 ^{+0.3}	2.65	72.0	3.0	21.0	50	2.5	5320	1.54
SDE-60	60	90	125 ^{+0.4}	101.7 ^{+0.4}	3.15	86.5	3.0	27.2	50		8890	2.2
SDE-80	80	120	165 ^{+0.4}	133.3 ^{+0.4}	4.15	116	3.0	36.3	50		14560	5.5
SDM-100	100	150	175 ^{+0.4}	125 ^{+0.4}	5.0	145	3.0	50	50		17640	9.9

ordering example:

SDE -

Ø -

OP -

UU

U = seal one end, UU = seal both ends
open from Ø12 / AJ radial adjustable from Ø12

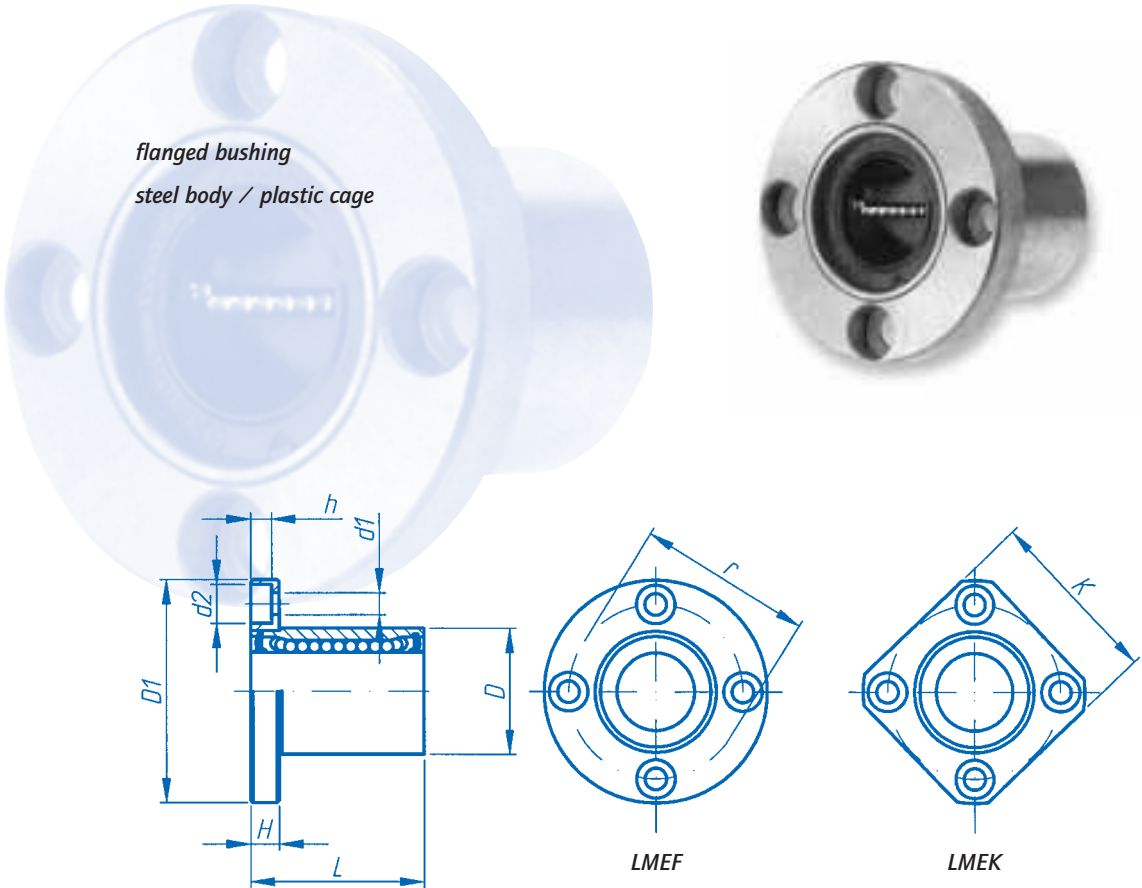
shaft diameter

standard ball bushing

load capacity of open and closed version are identical

⁽¹⁾ the radial / axial fixing hole is located under the center (see page 11)

the bushings are also available in metric-japanese (LM) and inch-american (SDM) sizes



dimensions in mm											load capacity		weight
part-no.	Ød ^{H6}	ØD ^{h6}	L	D1	H	h	d1	K	d2	r	C	Co	[N]
LME(F/K)-08	8	16	25	32	5	3.3	3.4	25	6.5	24	270	410	0.44
LME(F/K)-12	12	22	32	42	6	4.4	4.5	32	8	32	520	790	0.86
LME(F/K)-16	16	26	36	46	6	4.4	4.5	35	8	36	590	910	1.2
LME(F/K)-20	20	32	45	54	8	5.4	5.5	42	9.5	43	880	1400	1.84
LME(F/K)-25	25	40	58	62	8	5.4	5.5	50	9.5	51	1000	1600	3.35
LME(F/K)-30	30	47	68	76	10	6.5	6.6	60	11	62	1600	2800	5.45
LME(F/K)-40	40	62	80	98	13	8.6	9	75	14	80	2200	4100	11.85
LME(F/K)-50	50	75	100	112	13	8.6	9	88	14	94	3900	8100	17.3
LME(F/K)-60	60	90	125	134	18	10.8	11	106	17.5	112	4800	10200	31.8

also available in metric-japanese (LM) sizes

ordering example:

LME(F/K) -

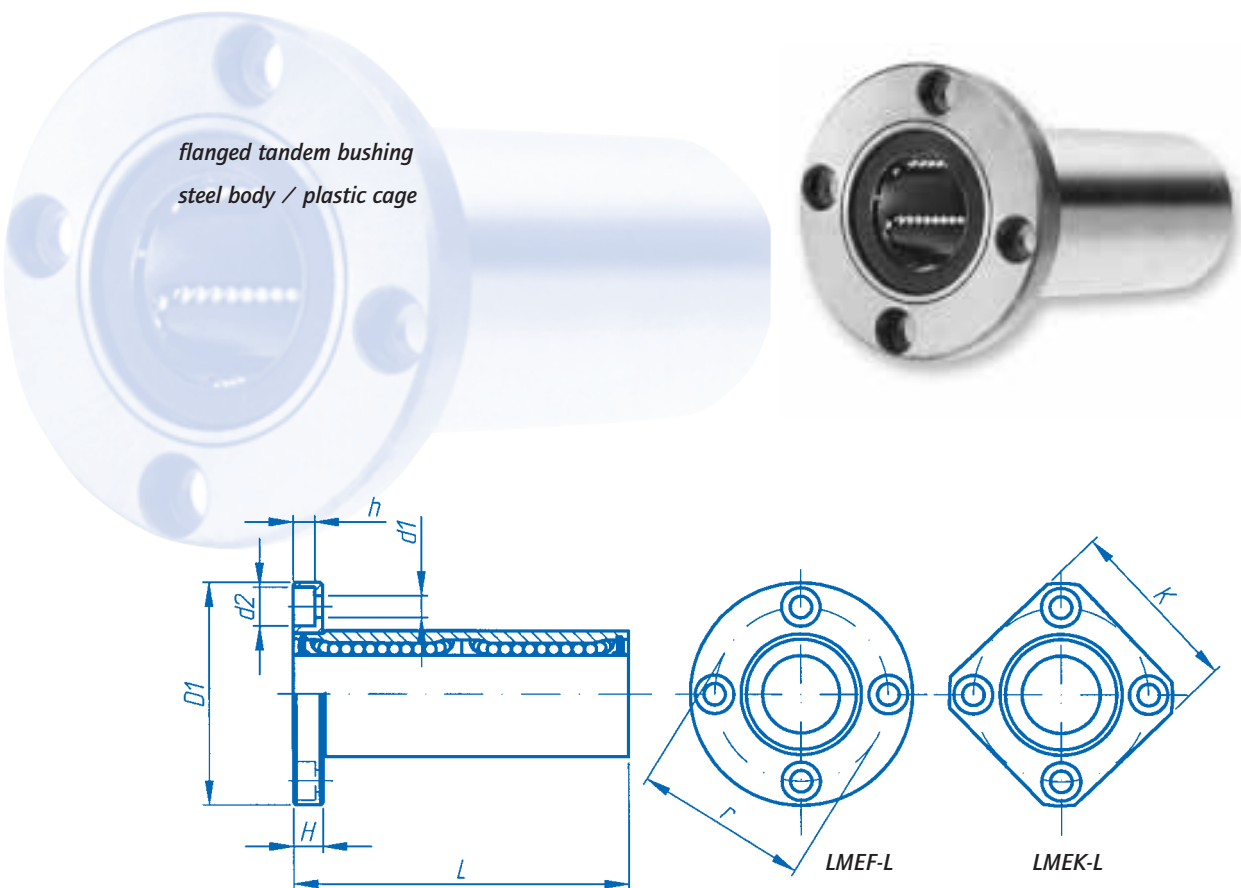
Ø -

UU

U = seal one end, UU = seal both ends

shaft diameter

round flanged ball bushing



dimensions in mm											load capacity		weight
part-no.	Ød ^{H6}	ØD ^{h6}	L	D1	H	h	d1	K	d2	r	C	Co	[N]
LME(F/K)-08-L	8	16	45	32	5	3.3	3.5	25	6.5	24	431	784	0.53
LME(F/K)-12-L	12	22	57	42	6	4.4	4.5	32	8	32	657	1200	1.0
LME(F/K)-16-L	16	26	70	46	6	4.4	4.5	35	8	36	1230	2350	1.87
LME(F/K)-20-L	20	32	80	54	8	5.4	5.5	42	9.5	43	1400	2750	2.6
LME(F/K)-25-L	25	40	112	62	8	5.4	5.5	50	9.5	51	1560	3140	5.15
LME(F/K)-30-L	30	47	123	76	10	6.5	6.6	60	11	62	2490	5490	6.55
LME(F/K)-40-L	40	62	154	98	13	8.6	9	75	14	80	3430	8040	15.6
LME(F/K)-50-L	50	75	192	112	13	8.6	9	88	14	94	6080	15900	35.0
LME(F/K)-60-L	60	90	211	134	18	10.8	11	106	17.5	112	7650	20000	45.0

also available in metric-japanese (LM) sizes

ordering example:

LME(F/K) -

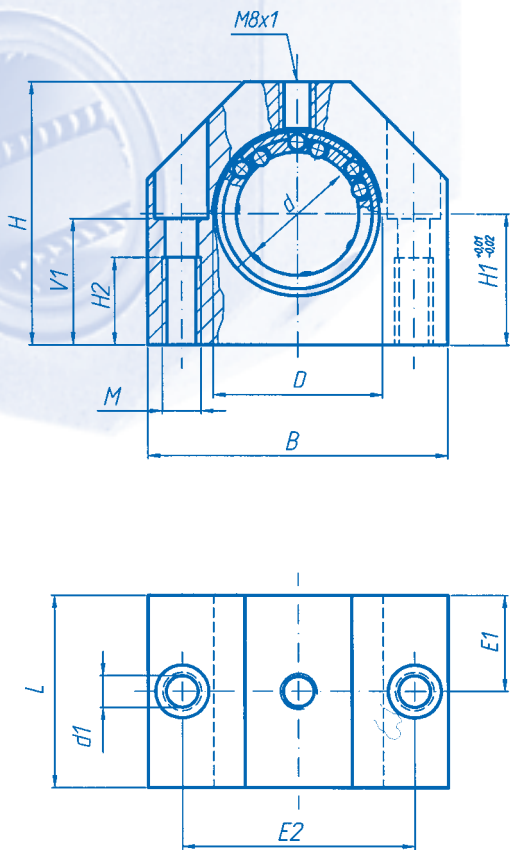
Ø - L -

UU

U = seal one end, UU = seal both ends

shaft diameter, long version

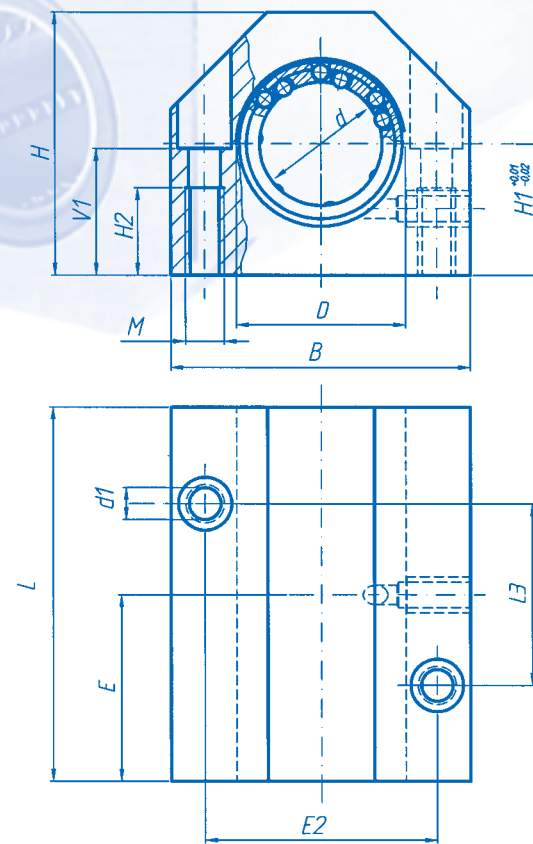
round flanged ball bushing



single closed
compact version
linear ball bushing
lubrication hole M8 x 1

part-no.	dimensions in mm												load capacity		weight
AGC	d	D	H	H1	H2	B	L	E1	E2 ^{±0,15}	d1	V1	M	C	Co	[kg]
AGC-12-C	12	19	33	17	11	40	28	14	29	4.3	16	M5	620	510	0.185
AGC-16-C	16	24	38	19	11	45	30	15	34	4.3	18	M5	800	620	0.275
AGC-20-C	20	28	45	23	13	53	30	15	40	5.3	22	M6	950	790	0.325
AGC-25-C	25	35	54	27	18	62	40	20	48	6.6	26	M8	1990	1670	0.66
AGC-30-C	30	40	60	30	18	67	50	25	53	6.6	29	M8	2800	2700	0.95
AGC-40-C	40	52	76	39	22	87	60	30	69	8.4	38	M10	4400	4450	1.82
AGC-50-C	50	62	92	47	26	103	70	35	82	10.5	46	M12	5500	6300	2.52

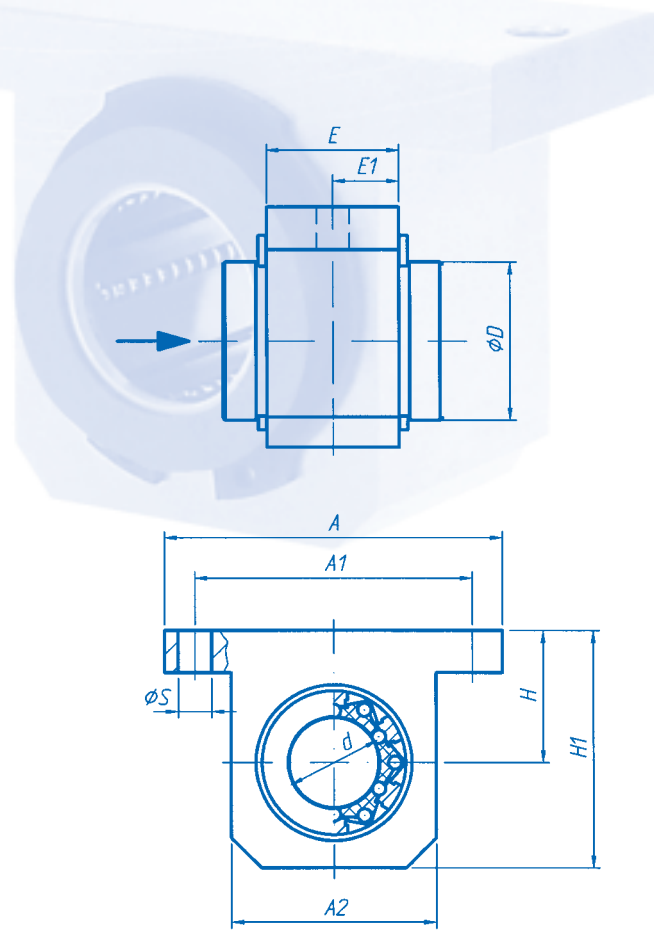
- for suitable accessories see section IV
- load capacity values apply only if hardened and ground shafts are used - see section V.
- fixing screws DIN 912-8.8, circlip DIN 7980



tandem closed
compact version
linear ball bearing
lubrication hole M8 x 1

part-no.	dimensions in mm													load capacity		weight
TAGC	d	D	H	H1	H2	B	L	L3 ^{±0,15}	E	E2 ^{±0,15}	d1	V1	M	C	Co	[kg]
TAGC-12-C	12	19	33	17	11	40	60	35	30.0	29	4.3	16	M5	1240	1020	0.185
TAGC-16-C	16	24	38	19	11	45	65	40	32.5	34	4.3	18	M5	1600	1240	0.275
TAGC-20-C	20	28	45	23	13	53	65	45	32.5	40	5.3	22	M6	1900	1580	0.325
TAGC-25-C	25	35	54	27	18	62	85	55	42.5	48	6.6	26	M8	3980	3340	0.66
TAGC-30-C	30	40	60	30	18	67	105	70	52.5	53	6.6	29	M8	5600	5400	0.95
TAGC-40-C	40	52	76	39	22	87	125	85	62.5	69	8.4	38	M10	8800	8900	1.82
TAGC-50-C	50	62	92	47	26	103	145	100	72.5	82	10.5	46	M12	11000	12600	2.52

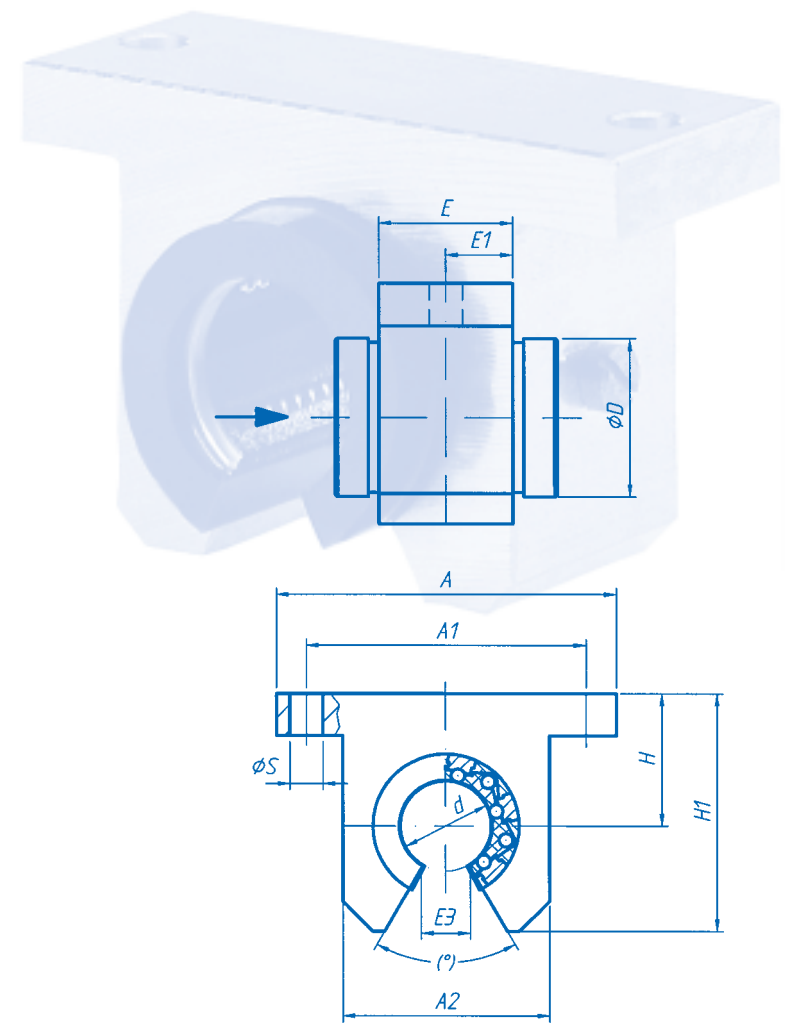
- for suitable accessories see section IV
- load capacity values apply only if hardened and ground shafts are used - see section V
- fixing screws DIN 912-8.8, circlip DIN 7980



standard closed
self-aligning
integral seals both ends

part-no.	dimensions in mm										load capacity		weight
ALGS	d	D	H ^{±0,015}	H1	A	A1	A2	E ^{±0,3}	E1	S	C	Co	[kg]
ALGS-12-KS	12	22	18	35	52	42 ^{±0.15}	30	20	10	5.3	650	520	0.09
ALGS-16-KS	16	26	22	40.5	56	46 ^{±0.15}	34	22	11	5.3	800	630	0.12
ALGS-20-KS	20	32	25	48.0	70	58 ^{±0.15}	40	28	14	6.4	1500	1250	0.25
ALGS-25-KS	25	40	30	58.0	80	68 ^{±0.15}	50	40	20	6.4	2500	2200	0.49
ALGS-30-KS	30	47	35	67.0	88	76 ^{±0.2}	58	48	24	6.4	3200	2800	0.78
ALGS-40-KS	40	62	45	85.0	108	94 ^{±0.2}	74	56	28	8.4	5500	4900	1.28
ALGS-50-KS	50	75	50	100	135	116 ^{±0.2}	96	72	36	10.5	8600	7100	1.70

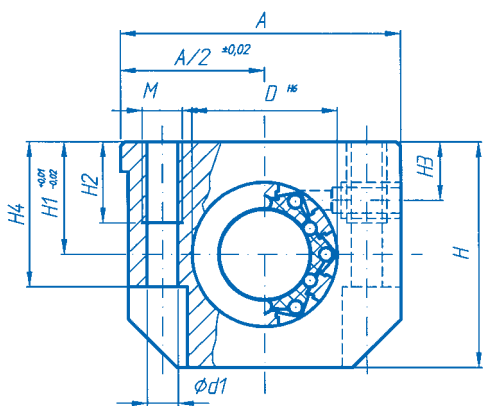
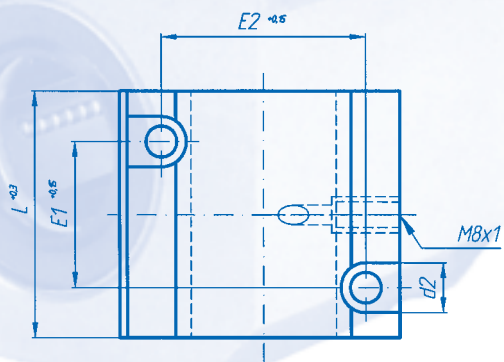
- for specials see ordering code
- suitable accessories - see section IV
- the bushings are secured in the housings by retaining rings to DIN 471
- load values apply only if hardened and ground shafts are used - see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



standard open
self-aligning
integral seals both ends

part-no.	dimensions in mm												load capacity		weight
ALGS-OP	d	D	H ^{±0,015}	H1	A	A1	A2	E	E1	E3	S	(°)	C	Co	[kg]
ALGS-OP-12-KS	12	22	18	28	52	42 ^{±0.15}	30	20	10	7	5,3	60	750	600	0.09
ALGS-OP-16-KS	16	26	22	33.5	56	46 ^{±0.15}	34	22	11	9,4	5,3	60	920	730	0.12
ALGS-OP-20-KS	20	32	25	42	70	58 ^{±0.15}	40	28	14	10	6,4	60	1560	1300	0.25
ALGS-OP-25-KS	25	40	30	51	80	68 ^{±0.15}	50	40	20	12,5	6,4	60	2600	2290	0.49
ALGS-OP-30-KS	30	47	35	60	88	76 ^{±0.2}	60	48	24	12,5	6,4	60	3330	2910	0.78
ALGS-OP-40-KS	40	62	45	77	108	94 ^{±0.2}	74	56	28	16,8	8,4	60	5720	5100	1.28
ALGS-OP-50-KS	50	75	50	93	135	116 ^{±0.2}	96	72	36	21	10,5	60	8940	7380	1.70

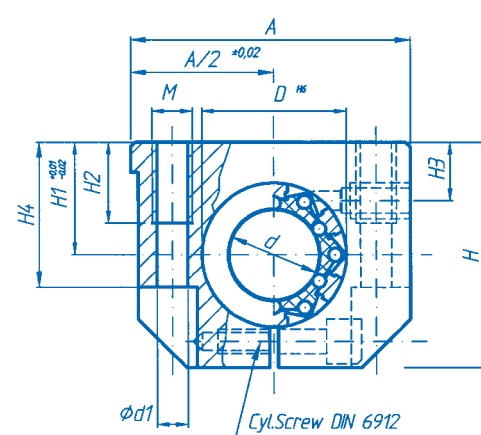
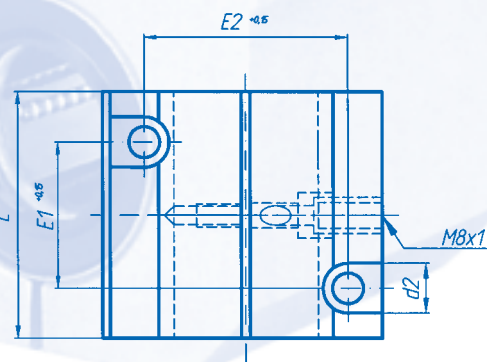
- for specials see ordering code
- suitable accessories see section IV
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



single closed
self-aligning
integral seals both ends
lubrication hole M8 x 1

part-no.	dimensions in mm														load capacity		weight
AG	d	D	H	H1	H2	H3	H4	L	A	E1	E2	d1	d2	M	C	Co	[kg]
AG-08-KS	8	16	28	13	10	8	14	32	35	20	25	3,3	6	4	310	240	0.07
AG-12-KS	12	22	35	18	13	10	25	39	43	23	32	4,2	8	5	650	520	0.13
AG-16-KS	16	26	42	22	13	12	30	43	53	26	40	5,2	10	6	800	630	0.20
AG-20-KS	20	32	50	25	18	13	34	54	60	32	45	6,8	11	8	1500	1250	0.34
AG-25-KS	25	40	60	30	22	15	40	67	78	40	60	8,6	15	10	2500	2200	0.65
AG-30-KS	30	47	70	35	22	16	48	79	87	45	68	8,6	15	10	3200	2800	0.97
AG-40-KS	40	62	90	45	26	20	60	91	108	58	86	10,3	18	12	5500	4900	1.80

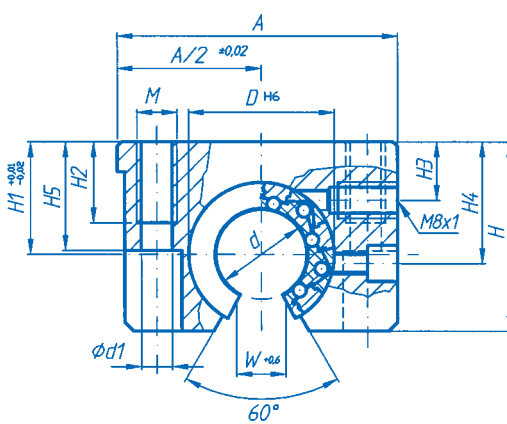
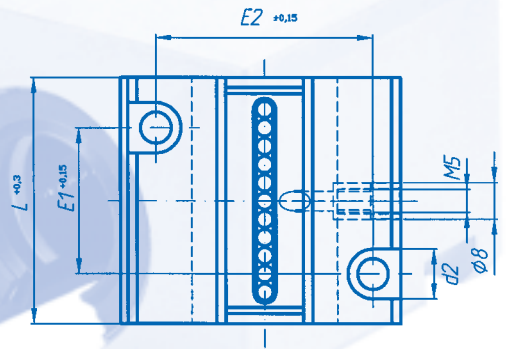
- for specials see ordering code
- suitable accessories see section IV
- bushing secured in housing by means of retaining rings to DIN 472
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



single closed
self-aligning
radial adjustment
integral seals both ends
lubrication hole M8 x 1

part-no.	dimensions in mm														load capacity		weight
AG-AJ	d	D	H	H1	H2	H3	H4	L	A	E1	E2	d1	d2	M	C	Co	[kg]
AG-AJ-08-KS	8	16	28	13	10	8	14	32	35	20	25	3,3	6	4	310	240	0.07
AG-AJ-12-KS	12	22	35	18	11	10	25	39	43	23	32	4,2	8	5	650	520	0.13
AG-AJ-16-KS	16	26	42	22	13	12	30	43	53	26	40	5,2	10	6	800	630	0.20
AG-AJ-20-KS	20	32	50	25	18	13	34	54	60	32	45	6,8	11	8	1500	1250	0.34
AG-AJ-25-KS	25	40	60	30	22	15	40	67	78	40	60	8,6	15	10	2500	2200	0.65
AG-AJ-30-KS	30	47	70	35	22	16	48	79	87	45	68	8,6	15	10	3200	2800	0.97
AG-AJ-40-KS	40	62	90	45	26	20	60	91	108	58	86	10,3	18	12	5500	4900	1.80

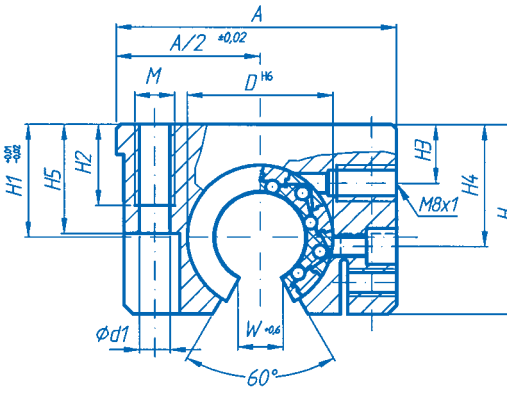
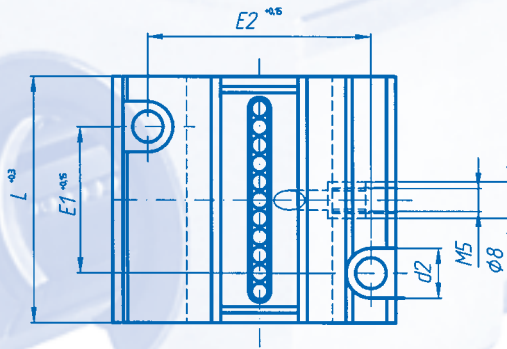
- for specials see ordering code
- suitable accessories see section IV
- bushing secured in housing by means of retaining rings to DIN 472
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



single open
self-aligning
integral seals both ends
lubrication hole M8 x 1

part-no.	dimensions in mm																load capacity		weight
AG-OP	d	D	H	H1	H2	H3	H4	H5	L	A	E1	E2	d1	d2	M	W	C	Co	[kg]
AG-OP-12-KS	12	22	28	18	11	8	16.65	23,5	39	43	23	32	4,2	8	5	7,0	750	600	0.11
AG-OP-16-KS	16	26	35	22	13	12	22.00	30	43	53	26	40	5,2	10	6	9,4	920	730	0.17
AG-OP-20-KS	20	32	42	25	18	13	25.00	34	54	60	32	45	6,8	11	8	10,2	1560	1300	0.30
AG-OP-25-KS	25	40	51	30	22	15	31.50	40	67	78	40	60	8,6	15	10	12,5	2600	2290	0.57
AG-OP-30-KS	30	47	60	35	22	16	33.00	48	79	87	45	68	8,6	15	10	13,9	3330	2910	0.86
AG-OP-40-KS	40	62	77	45	26	20	43.50	60	91	108	58	86	10,3	18	12	18	5720	5100	1.60

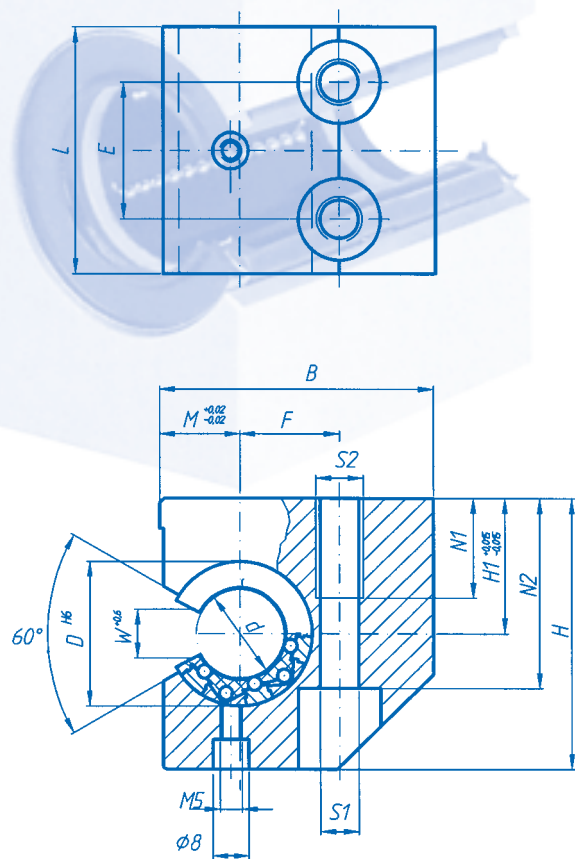
- for specials see ordering code
- suitable accessories see section IV
- bushing secured in housing by means of axial-radial fixing screw
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



single open
self-aligning
radial adjustment
integral seals both ends
lubrication hole M8 x 1

part-no.	dimensions in mm																load capacity		weight
AG-OPAJ	d	D	H	H1	H2	H3	H4	H5	L	A	E1	E2	d1	d2	M	W	C	Co	[kg]
AG-OPAJ-12-KS	12	22	28	18	11	8	16.65	25	39	43	23	32	4,2	8	5	7,0	750	600	0.11
AG-OPAJ-16-KS	16	26	35	22	13	12	22.00	30	43	53	26	40	5,2	10	6	9,4	920	730	0.17
AG-OPAJ-20-KS	20	32	42	25	18	13	25.00	34	54	60	32	45	6,8	11	8	10,2	1560	1300	0.30
AG-OPAJ-25-KS	25	40	51	30	22	15	31.50	40	67	78	40	60	8,4	15	10	12,5	2600	2290	0.57
AG-OPAJ-30-KS	30	47	60	35	22	16	33.00	48	79	87	45	68	8,6	15	10	13,9	3330	2910	0.86
AG-OPAJ-40-KS	40	62	77	45	26	20	43.50	60	91	108	58	86	10,5	18	12	18,0	5720	5100	1.60

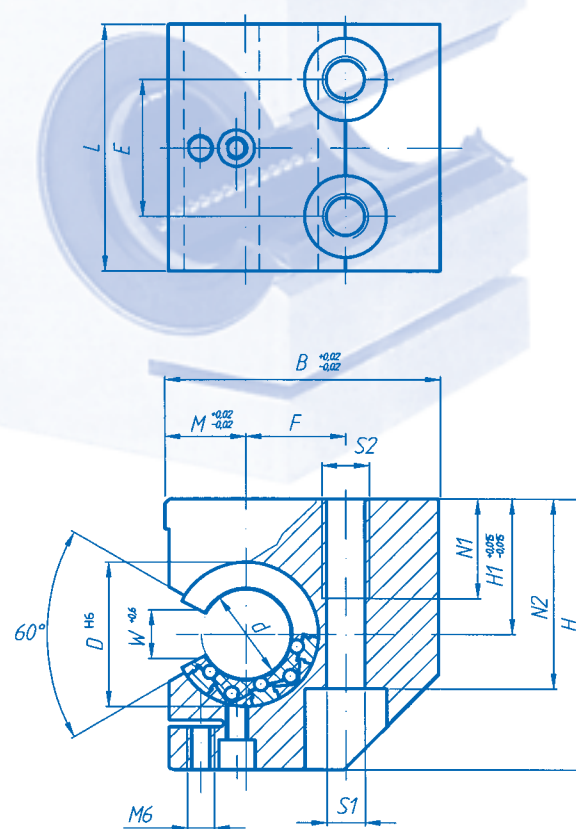
- for specials see ordering code
- suitable accessories see section IV
- bushing secured in housing by means of axial-radial fixing screw
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



open on side
self-aligning
integral seals both ends

part-no.	dimensions in mm														load capacity		weight
AGS	d	D	H	H1	F	E	B	L	S1	S2	M	N1	N2	W	C	Co	[kg]
AGS-20-KS	20	32	60	30	22	30	60	54	8,6	M10	17	22	42	10,2	1560	1300	0.42
AGS-25-KS	25	40	72	35	28	36	75	67	10,3	M12	21	26	50	12,5	2600	2290	0.80
AGS-30-KS	30	47	82	40	34	42	86	79	13,5	M16	25	34	55	13,9	3330	2910	1.20
AGS-40-KS	40	62	100	45	43	48	110	91	17,5	M20	32	43	67	18,0	5720	5100	2.00

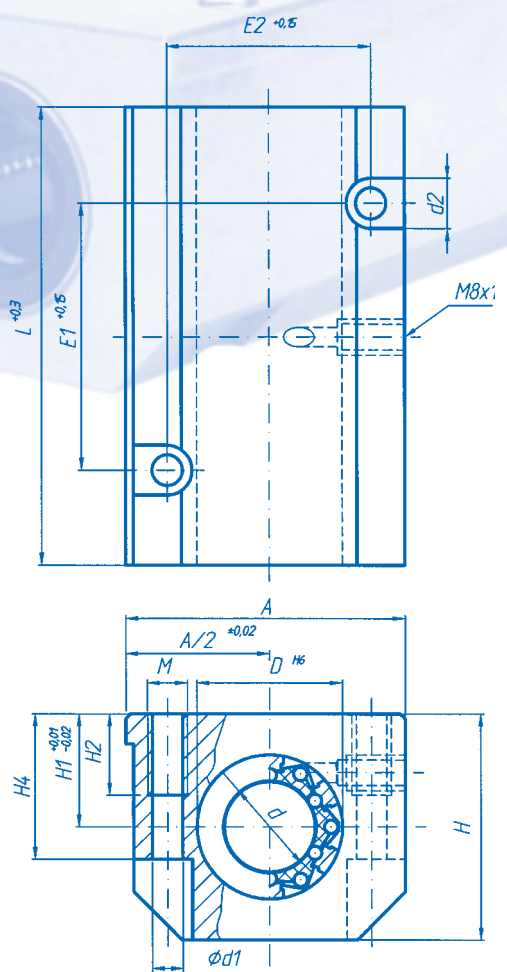
- for specials see ordering code
- suitable accessories see section IV
- bushing secured in housing by means of axial-radial fixing screw
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



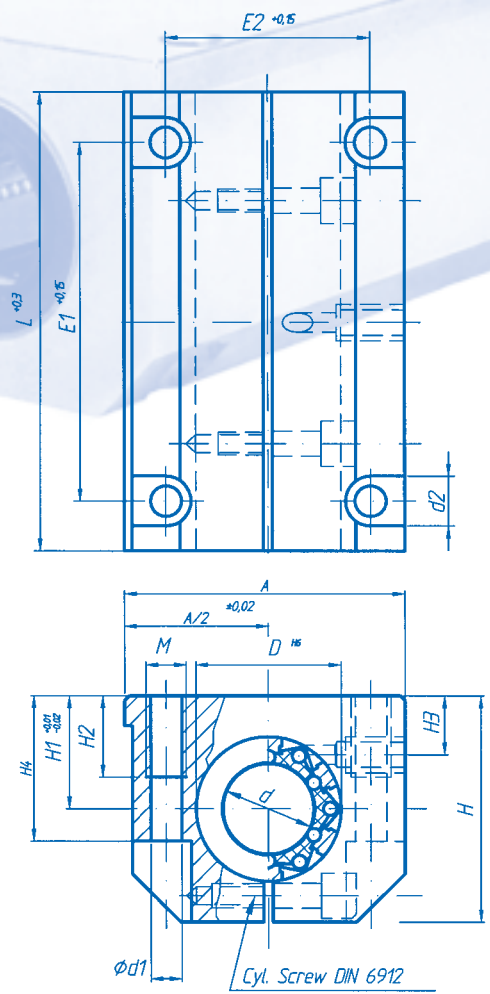
open on side
self-aligning
radial adjustment
integral seals both ends

part-no.	dimensions in mm														load capacity		weight
AGS-AJ	d	D	H	H1	F	E	B	L	S1	S2	M	N1	N2	W	C	Co	[kg]
AGS-AJ-20-KS	20	32	60	30	22	30	60	54	8,6	M10	17	22	42	10,2	1560	1300	0.42
AGS-AJ-25-KS	25	40	72	35	28	36	75	67	10,3	M12	21	26	50	12,5	2600	2290	0.80
AGS-AJ-30-KS	30	47	82	40	34	42	86	79	13,5	M16	25	34	55	13,9	3330	2910	1.20
AGS-AJ-40-KS	40	62	100	45	43	48	110	91	17,5	M20	32	43	67	18,0	5720	5100	2.00

- for specials see ordering code
- suitable accessories see section IV
- bushing secured in housing by means of axial-radial fixing screw
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



tandem closed
self-aligning
integral seals both ends
lubrication hole M8 x 1



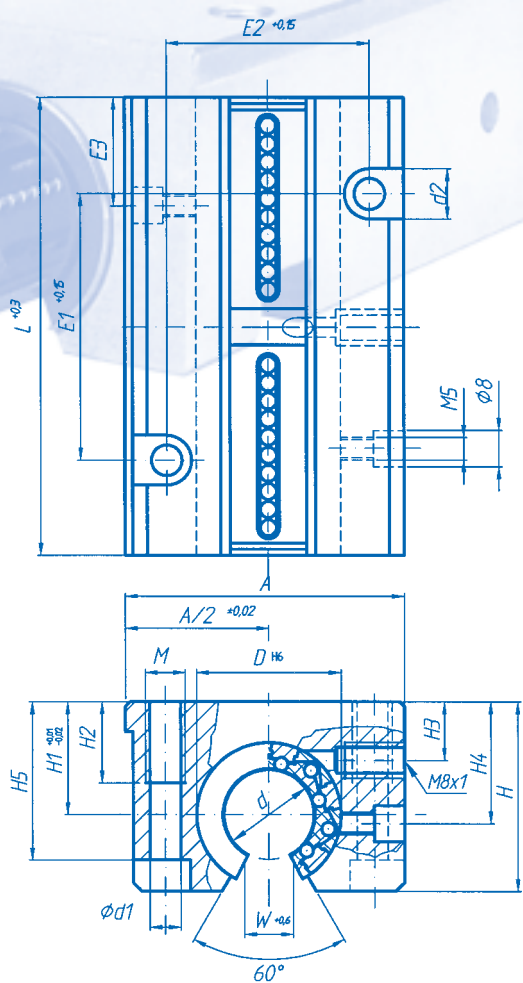
tandem closed
self-aligning
radial adjustment
integral seals both ends
lubrication hole M8 x 1

part-no.	dimensions in mm													load capacity		weight
TAG	d	D	H	H1	H2	H4	A	L	E1	E2	d1	d2	M	C	Co	[kg]
TAG-08-KS	8	16	28	13	13	14	35	62	35	25	4,2	8	5	620	480	0.15
TAG-12-KS	12	22	35	18	13	25	43	76	40	30	5,2	10	6	1300	1040	0.27
TAG-16-KS	16	26	42	22	13	30	53	84	45	36	5,2	10	6	1600	1260	0.41
TAG-20-KS	20	32	50	25	18	34	60	104	55	45	6,8	11	8	3000	2500	0.72
TAG-25-KS	25	40	60	30	22	40	78	130	70	54	8,6	15	10	5000	4400	1.35
TAG-30-KS	30	47	70	35	26	48	87	152	85	62	10,3	18	12	6400	5600	2.01
TAG-40-KS	40	62	90	45	34	60	108	176	100	80	14,25	20	16	11000	9800	3.67

- for specials see ordering code
- suitable accessories see section IV
- bushing secured in housing by means of retaining rings to DIN 472
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980

part-no.	dimensions in mm													load capacity		weight
TAG-AJ	d	D	H	H1	H2	H4	A	L	E1	E2	d1	d2	M	C	Co	[kg]
TAG-AJ-08-KS	8	16	28	13	11	14	35	62	35	31	4,2	8	5	620	480	0.15
TAG-AJ-12-KS	12	22	35	18	11	25	43	76	56	34	4,2	10	5	1300	1040	0.27
TAG-AJ-16-KS	16	26	42	22	13	30	53	84	64	42	5,2	10	6	1600	1260	0.41
TAG-AJ-20-KS	20	32	50	25	18	34	60	104	76	50	6,8	11	8	3000	2500	0.72
TAG-AJ-25-KS	25	40	60	30	22	40	78	130	94	64	8,6	15	10	5000	4400	1.35
TAG-AJ-30-KS	30	47	70	35	22	48	87	152	106	72	8,6	18	10	6400	5600	2.01
TAG-AJ-40-KS	40	62	90	45	26	60	108	176	124	90	10,3	20	12	11000	9800	3.67

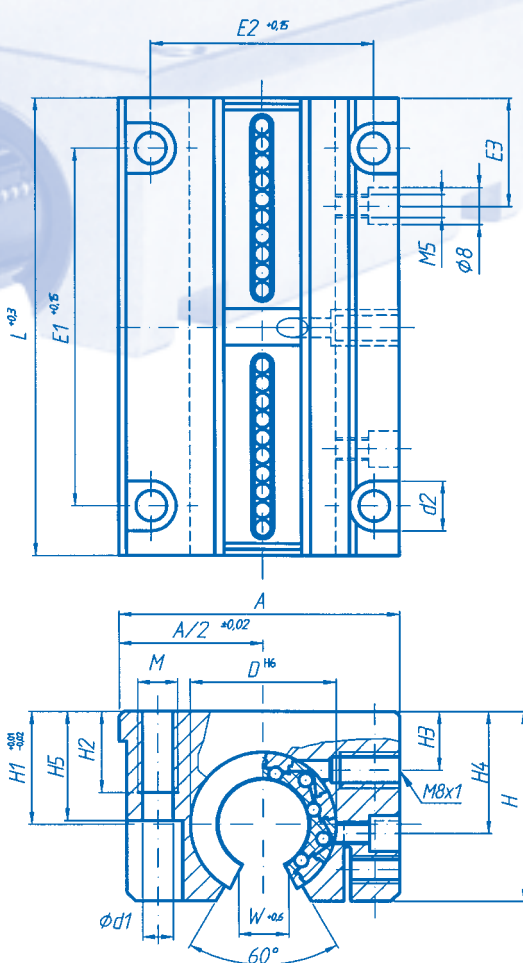
- for specials see ordering code
- suitable accessories see section IV
- bushing secured in housing by means of retaining rings to DIN 472
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



tandem open
self-aligning
integral seals both ends
lubrication hole M8 x 1

part-no.	dimensions in mm																load capacity		weight
TAG-OP	d	D	H	H1	H2	H4	H5	A	L	E1	E2	E3	d1	d2	M	W	C	Co	[kg]
TAG-OP-12-KS	12	22	30	18	13	16.65	25	43	76	40	30	19.5	5,2	10	6	7,0	1500	1200	0.22
TAG-OP-16-KS	16	26	35	22	13	22.00	30	53	84	45	36	21.5	5,2	10	6	9,4	1840	1460	0.34
TAG-OP-20-KS	20	32	42	25	18	25.00	34	60	104	55	45	27.0	6,8	11	8	10,2	3120	2600	0.62
TAG-OP-25-KS	25	40	51	30	22	31.50	40	78	130	70	54	33.5	8,6	15	10	12,9	5200	4580	1.17
TAG-OP-30-KS	30	47	60	35	26	33.00	48	87	152	85	62	39.5	10,3	18	12	14,4	6660	5820	1.68
TAG-OP-40-KS	40	62	77	45	34	43.50	60	108	176	100	80	45	14,25	20	16	18,2	11440	10200	3.15

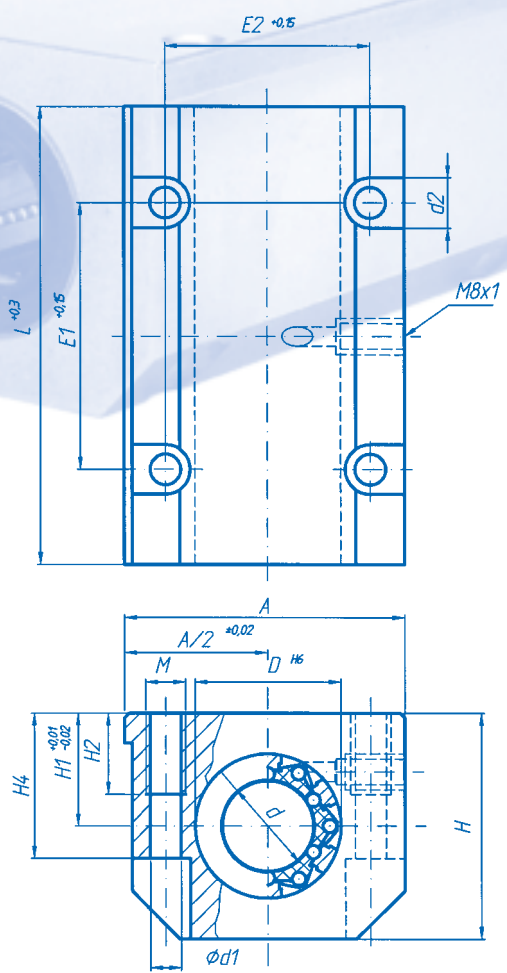
- for specials see ordering code
- suitable accessories see section IV
- bushing secured in housing by means of axial-radial fixing screw
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



tandem open
self-aligning
radial adjustment
integral seals both ends
lubrication hole M8 x 1

part-no.	dimensions in mm																load capacity		weight
TAG-OPAJ	d	D	H	H1	H2	H4	H5	A	L	E1	E2	E3	d1	d2	M	W	C	Co	[kg]
TAG-OPAJ-12-KS	12	22	30	18	11	16.65	25	43	76	56	32	19.5	4,2	8	5	7	1500	1200	0.22
TAG-OPAJ-16-KS	16	26	35	22	13	22.00	30	53	84	64	40	21.5	5,2	10	6	9,4	1840	1460	0.34
TAG-OPAJ-20-KS	20	32	42	25	18	25.00	34	60	104	76	45	27.0	6,8	11	8	10,2	3120	2600	0.62
TAG-OPAJ-25-KS	25	40	51	30	22	31.50	40	78	130	94	60	33.5	8,6	15	10	12,9	5200	4580	1.17
TAG-OPAJ-30-KS	30	47	60	35	22	33.00	48	87	152	106	68	39.5	8,6	15	10	14,4	6660	5820	1.68
TAG-OPAJ-40-KS	40	62	77	45	26	43.50	60	108	176	124	86	45.5	10,3	18	12	18,2	11440	10200	3.15

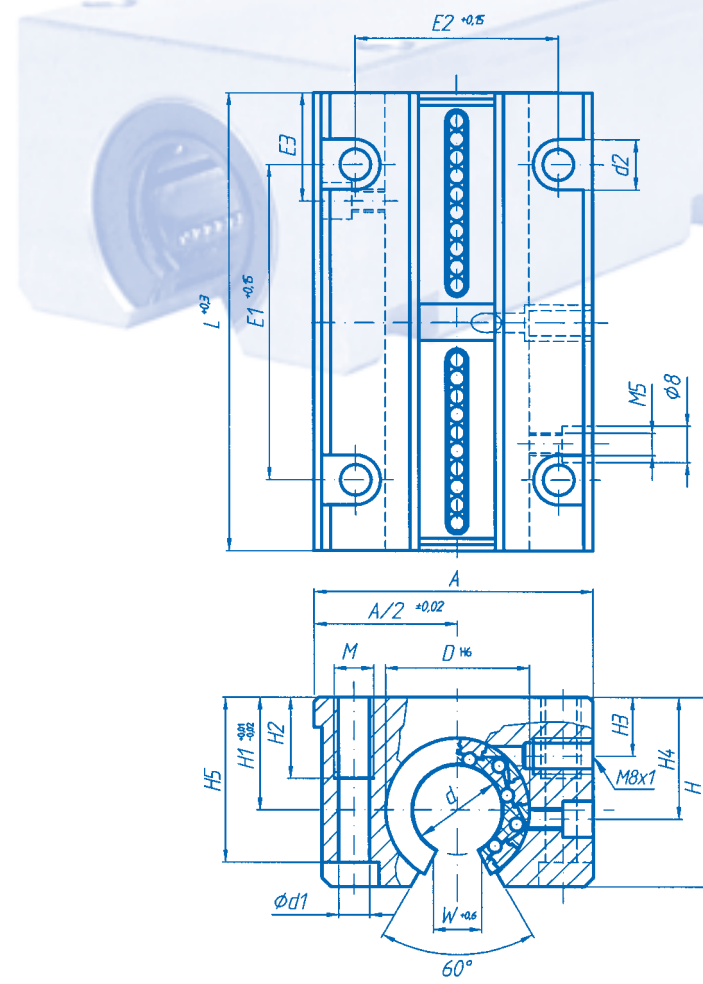
- for specials see ordering code
- suitable accessories see section IV
- bushing secured in housing by means of axial-radial fixing screw
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



tandem closed
special four hole fixing pattern
self-aligning
integral seals both ends
lubrication hole M8 x 1

part-no.	dimensions in mm													load capacity		weight
TAGI	d	D	H	H1	H2	H4	A	L	E1	E2	d1	d2	M	C	Co	[kg]
TAGI-08-KS	8	16	28	13	13	14	35	62	35	25	4,2	8	5	620	480	0.15
TAGI-12-KS	12	22	35	18	13	25	43	76	56	32	4,2	8	5	1300	1040	0.27
TAGI-16-KS	16	26	42	22	13	30	53	84	64	40	5,2	10	6	1600	1260	0.41
TAGI-20-KS	20	32	50	25	18	34	60	104	76	45	6,8	11	8	3000	2500	0.72
TAGI-25-KS	25	40	60	30	22	40	78	130	94	60	8,6	15	10	5000	4400	1.35
TAGI-30-KS	30	47	70	35	26	48	87	152	106	68	8,6	15	10	6400	5600	2.01
TAGI-40-KS	40	62	90	45	34	60	108	176	124	86	10,3	18	12	11000	9800	3.67

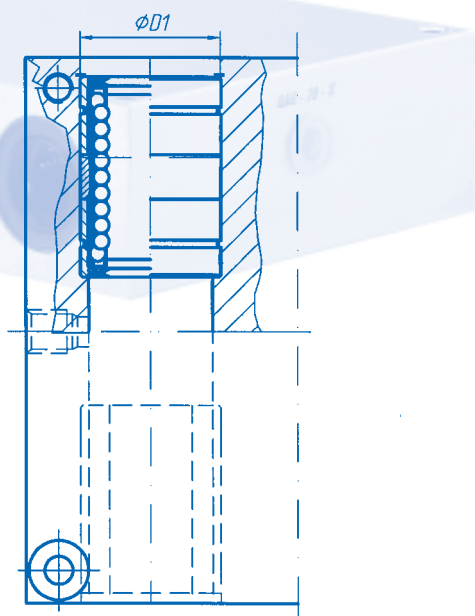
- for specials see ordering code
- suitable accessories see section IV
- bushing secured in housing by means of retaining rings to DIN 472
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



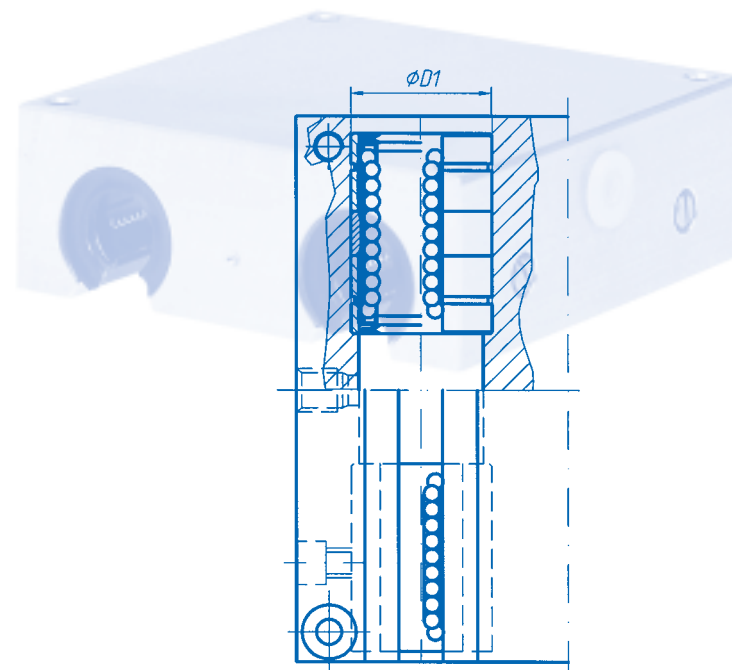
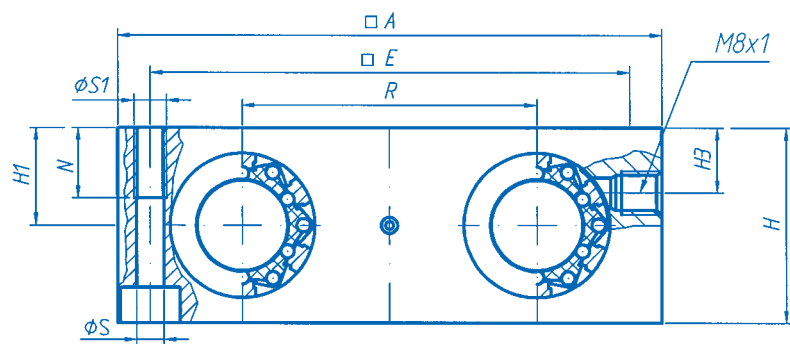
tandem open
special four hole fixing pattern
self-aligning
integral seals both ends
lubrication hole M8 x 1

part-no.	dimensions in mm																	load capacity		weight
TAGI-OP	d	D	H	H1	H2	H4	H5	A	L	E1	E2	E3	d1	d2	M	W		C	Co	[kg]
TAGI-OP-12-KS	12	22	30	18	11	16.65	25	43	76	56	32	19.5	4,2	8	5	7,0		1500	1200	0.22
TAGI-OP-16-KS	16	26	35	22	13	22.00	30	53	84	64	40	21.5	5,2	10	6	9,4		1840	1460	0.34
TAGI-OP-20-KS	20	32	42	25	18	25.00	34	60	104	76	45	27.0	6,8	11	8	10,2		3120	2600	0.62
TAGI-OP-25-KS	25	40	51	30	22	31.50	40	78	130	94	60	33.5	8,6	15	10	12,9		5200	4580	1.17
TAGI-OP-30-KS	30	47	60	35	22	33.00	48	87	152	106	68	39.5	8,6	15	10	14,4		6660	5820	1.68
TAGI-OP-40-KS	40	62	77	45	26	43.50	60	108	176	124	86	45.5	10,3	18	12	18,2		11440	10200	3.15

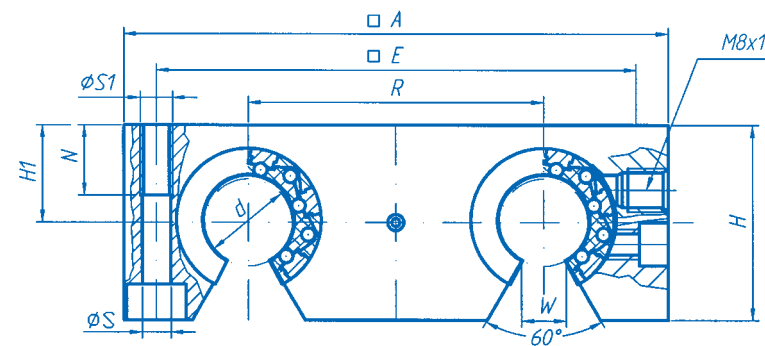
- for specials see ordering code
- suitable accessories see section IV
- bushing secured in housing by means of axial-radial fixing screw
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



quadruple closed
self-aligning
integral seals both ends
lubrication hole M8 x 1
special versions on request



quadruple open
self-aligning
integral seals both ends
lubrication hole M8 x 1
special versions on request

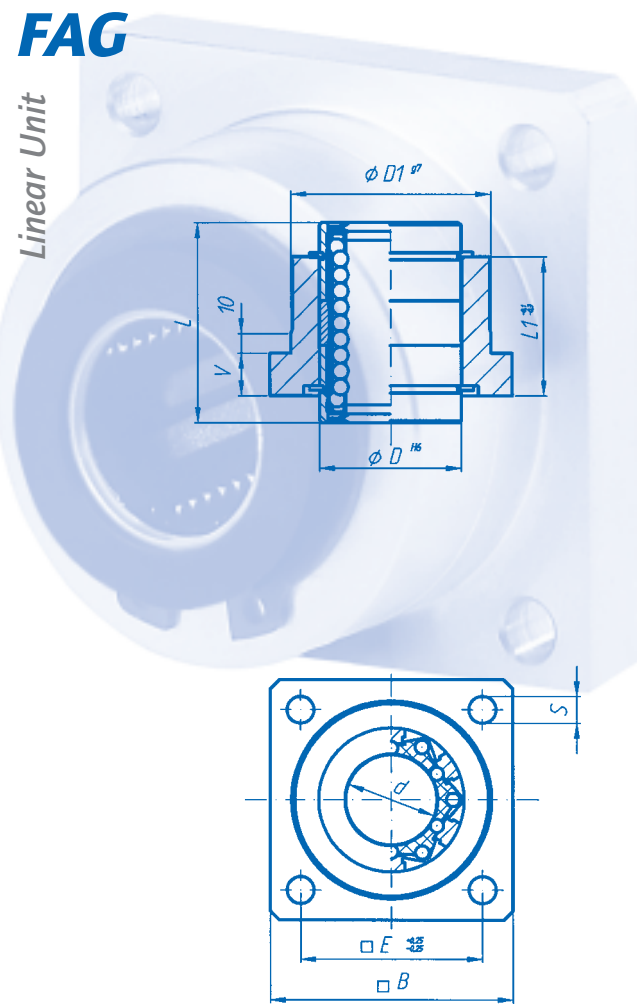


part-no.	dimensions in mm											load capacity		weight
QAG	d	D1	A	H	H1	H3	R	N	E	S	S1	C	Co	[kg]
QAG-08-KS	8	16	65	23	11.5	8	32	11	55	4,3	M5	1240	960	0.23
QAG-12-KS	12	22	85	32	16	13	42	13	73	5,3	M6	2600	2080	0.52
QAG-16-KS	16	26	100	36	18	15	54	13	88	5,3	M6	3200	2520	0.78
QAG-20-KS	20	32	130	46	23	19	72	18	115	6,8	M8	6000	5000	1.74
QAG-25-KS	25	40	160	56	28	24	88	22	140	9	M10	10000	8800	3.13
QAG-30-KS	30	47	180	64	32	27	96	26	158	10,5	M12	12800	11200	4.43
QAG-40-KS	40	62	230	80	40	35	122	34	202	13,5	M16	22000	19600	8.70

- for specials see ordering code
- suitable accessories see section IV
- bushing secured in housing by means of retaining rings to DIN 472
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980

part-no.	dimensions in mm											load capacity		weight
QAG-OP	d	D1	A	H	H1	W	R	N	E	S	S1	C	Co	[kg]
QAG-OP-12-KS	12	22	85	30	18	7,0	42	13	73	5,3	M6	3000	2400	0.45
QAG-OP-16-KS	16	26	100	35	22	9,4	54	13	88	5,3	M6	3680	2920	0.73
QAG-OP-20-KS	20	32	130	42	25	10,2	72	18	115	6,8	M8	6240	5200	1.48
QAG-OP-25-KS	25	40	160	51	30	12,9	88	22	140	9	M10	10400	9160	2.68
QAG-OP-30-KS	30	47	180	60	35	13,9	96	26	158	10,5	M12	13320	11640	3.95
QAG-OP-40-KS	40	62	230	77	45	18,2	122	34	202	13,5	M16	22880	20400	8.12

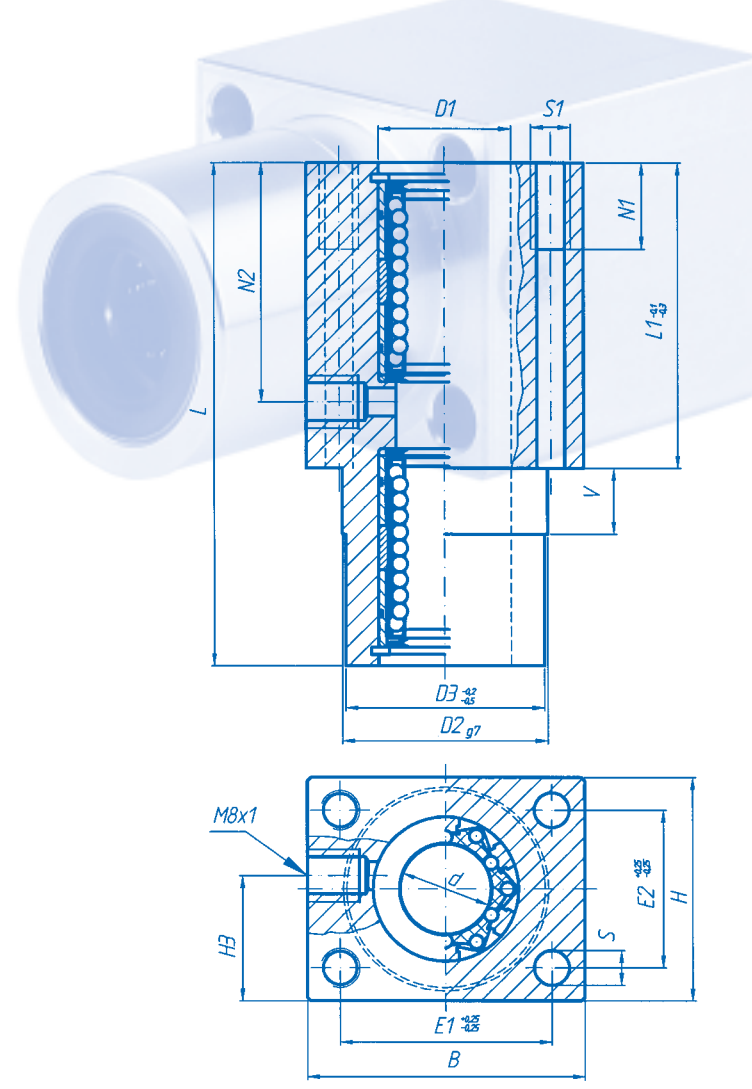
- for specials see ordering code
- suitable accessories see section IV
- bushing secured in housing by means of axial-radial fixing screw
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



single flanged
self-aligning
integral seals both ends

part-no.	dimensions in mm									load capacity		weight
FAG	d	D	D1	B	L	L1	V	E	S	C	Co	[kg]
FAG-12-KS	12	22	32	40	32	22	6	30	5.5	650	520	0.12
FAG-16-KS	16	26	38	50	36	24	8	35	5.5	800	630	0.17
FAG-20-KS	20	32	46	60	45	30	10	42	6.6	1500	1250	0.33
FAG-25-KS	25	40	58	70	58	42	12	54	6.6	2500	2200	0.68
FAG-30-KS	30	47	66	80	68	50	14	60	9.0	3200	2800	1.03
FAG-40-KS	40	62	90	100	80	59	16	78	11.0	5500	4900	2.00

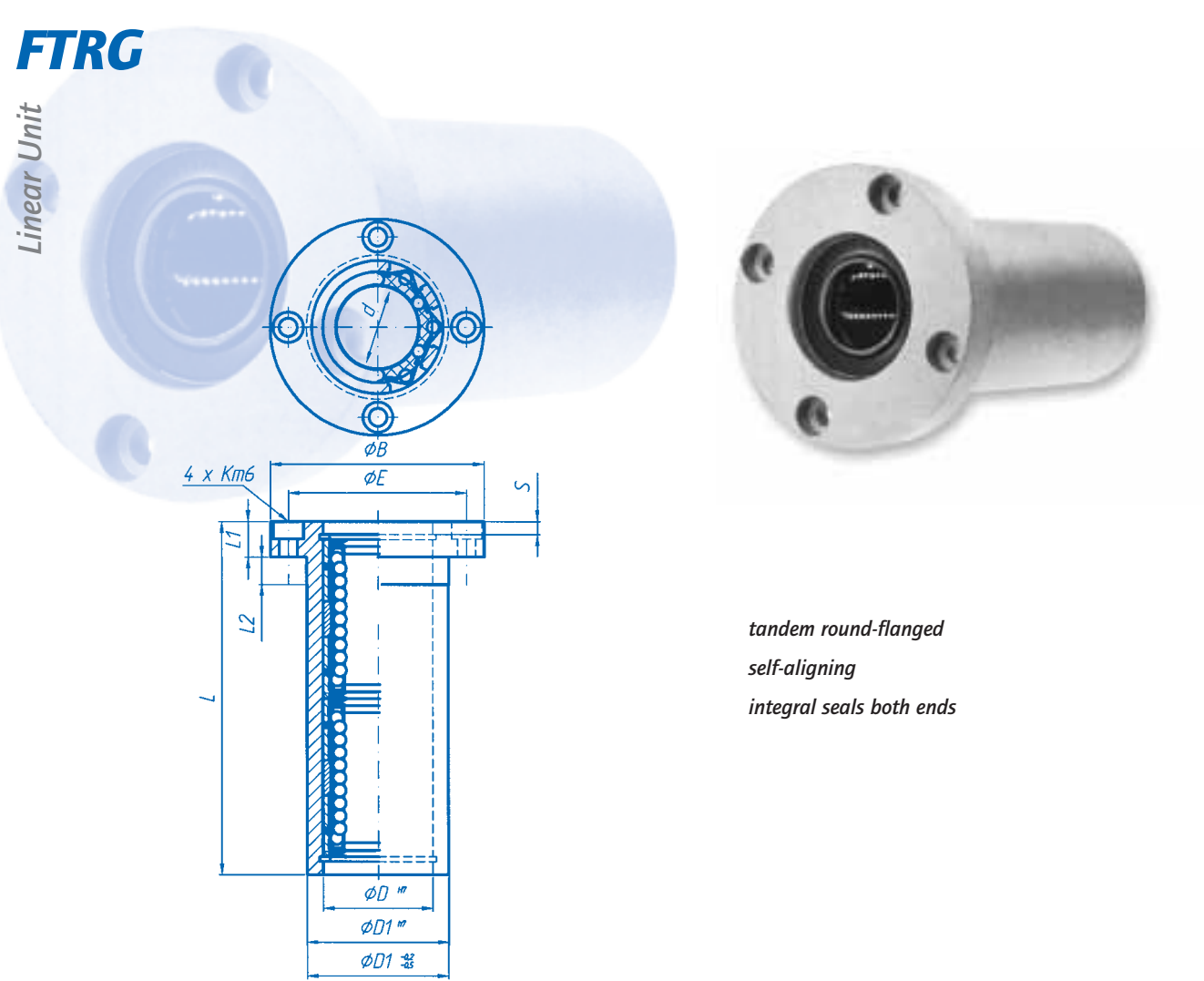
- for specials see ordering code
- suitable accessories see section IV
- the bushings are secured in the housings by retaining rings to DIN 471
- load values apply only if hardened and ground shafts are used - see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



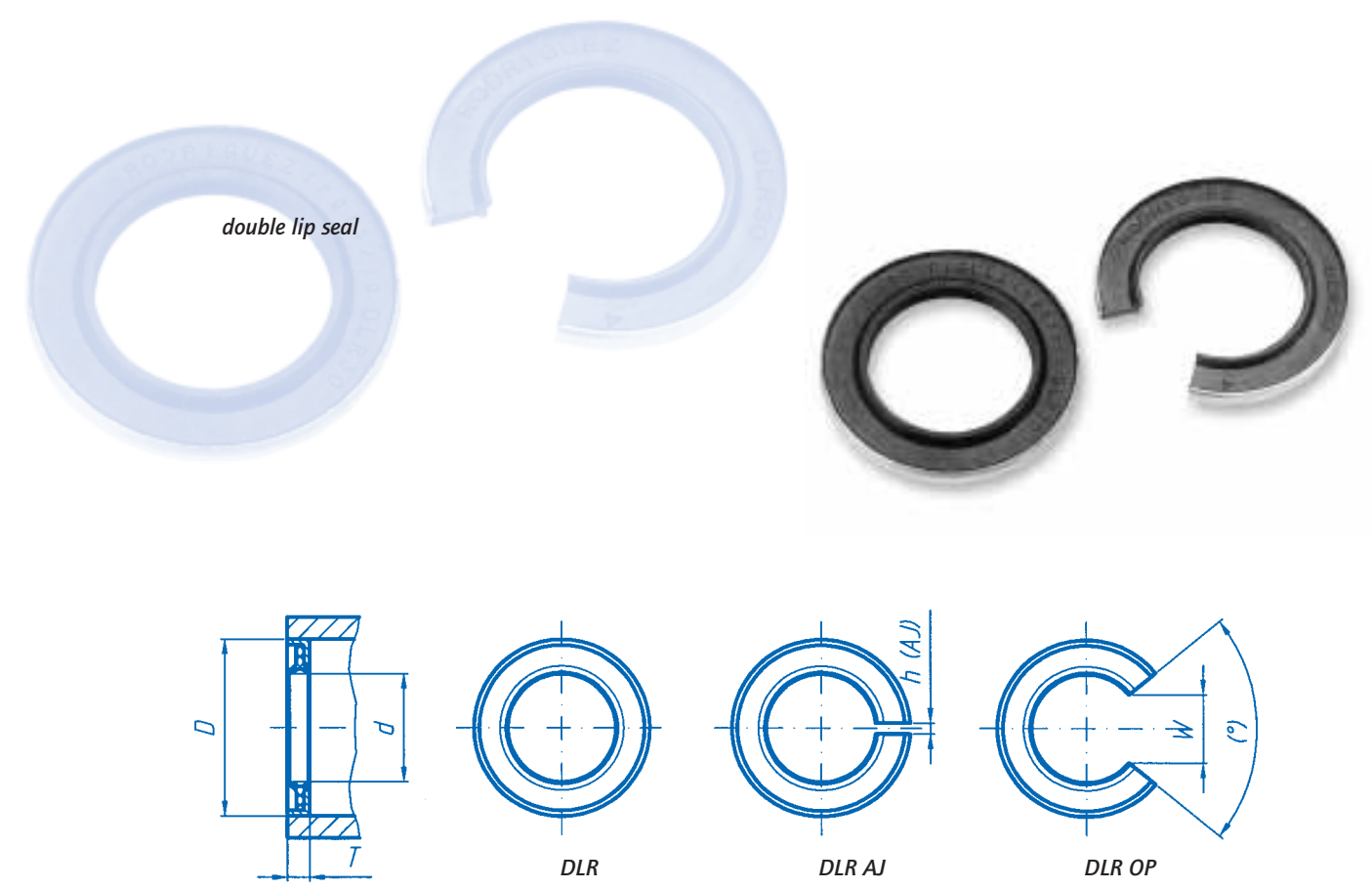
tandem flanged
self-aligning
integral seals both ends
lubrication hole M8 x 1

part-no.	dimensions in mm																load capacity		weight
FTAG	d	D1	D2	D3	H	H3	B	L	L1	E1	E2	S	S1	N1	N2	V	[N]	Co	[kg]
FTAG-12-KS	12	22	30	30	34	19	42	76	46	32	24	5.3	M6	13	36	10	1300	1040	0.20
FTAG-16-KS	16	26	35	35	40	22	50	84	50	38	28	6.6	M8	18	40	10	1600	1260	0.32
FTAG-20-KS	20	32	42	42	50	27	60	104	60	45	35	8.4	M10	22	50	10	3000	2500	0.55
FTAG-25-KS	25	40	52	52	60	32	74	130	73	56	42	10.5	M12	26	63	10	5000	4400	1.17
FTAG-30-KS	30	47	61	61	70	37	84	152	82	64	50	13.5	M16	34	74	10	6400	5600	1.50

- for specials see ordering code
- suitable accessories see section IV
- bushing secured in housing by means of retaining rings to DIN 472
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



tandem round-flanged
self-aligning
integral seals both ends



part-no.	dimensions in mm								load capacity		weight
FTRG	D	D1	B	E	L	L1	L2	S	C	Co	[kg]
FTRG-25-KS	40	52	78	65	129	13	10	4.75	5000	4400	1.35

- for specials see ordering code
- suitable accessories see section IV
- the bushings are secured in the housings by retaining rings to DIN 471
- load values apply only if hardened and ground shafts are used - see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980

DLR; DLR AJ dimensions in mm external seals for linear ball bearing					DLR OP dimensions in mm external seals for linear ball bearing				
part-no.	Ød	ØD ^{H7}	T	h	part-no.	Ød	ØD ^{H7}	T	W (°)
DLR-12	12	22	3.0	1.5	DLR-12-OP	12	22	3.0	7.5 78
DLR-16	16	26	3.0	1.5	DLR-16-OP	16	26	3.0	10.0 78
DLR-20	20	32	4.0	2.0	DLR-20-OP	20	32	4.0	10.0 60
DLR-25	25	40	4.0	2.0	DLR-25-OP	25	40	4.0	12.5 60
DLR-30	30	47	5.0	2.0	DLR-30-OP	30	47	5.0	12.5 50
DLR-40	40	62	5.0	3.0	DLR-40-OP	40	62	5.0	16.8 50

ordering example:

DLR -

Ø -

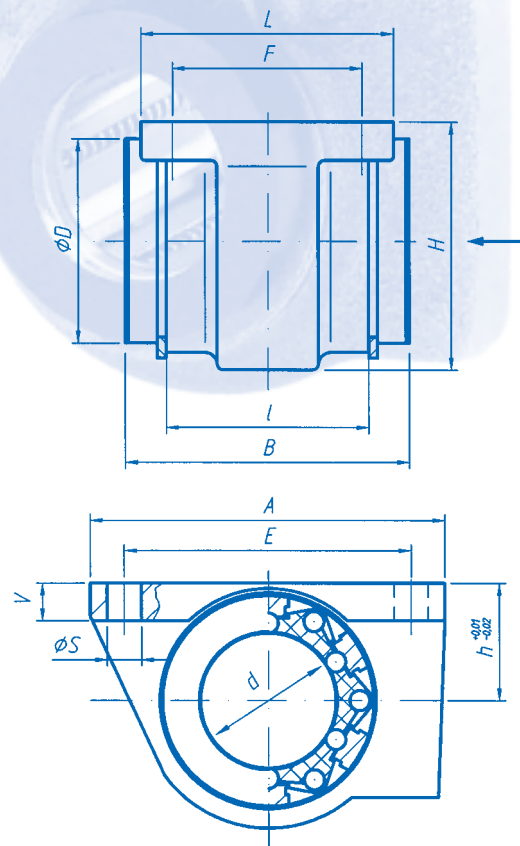
AJ

AJ = radial adjustment / OP = Open (Ø12 upwards)

shaft diameter

double lip seal

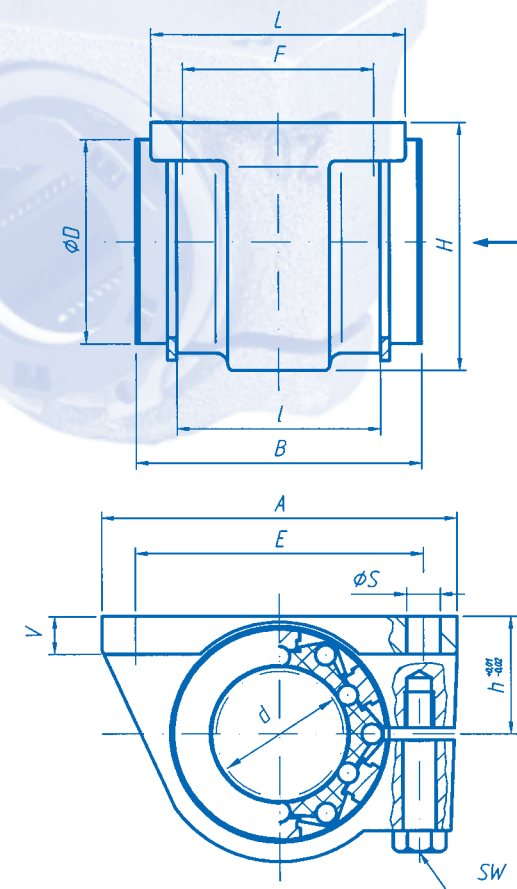
suitable external and internal retaining rings DIN 471/472 available from stock



cast iron
closed
self-aligning $\varnothing 8$ -50mm
full steel ball bushing $\varnothing 60$; 80mm
integral seals both ends

part-no.	dimensions in mm												load capacity [N]		weight [kg]
GG	d	D	h	H	B	A	L	I	E	F	S	V	C	Co	
GG-08-KS	8	16	15	28	25	32	28	14	25 ± 0.15	20 ± 0.15	3.3	5.0	310	240	0.098
GG-12-KS	12	22	18	35	32	42	32	20	32 ± 0.15	23 ± 0.15	4.3	5.5	650	520	0.12
GG-16-KS	16	26	22	42	36	50	35	22	40 ± 0.15	26 ± 0.15	4.3	6.5	800	630	0.19
GG-20-KS	20	32	25	50	45	60	42	28	45 ± 0.15	32 ± 0.15	4.3	8.0	1500	1250	0.38
GG-25-KS	25	40	30	60	58	74	54	40	60 ± 0.15	40 ± 0.15	5.3	9.0	2500	2200	0.70
GG-30-KS	30	47	35	70	68	84	60	48	68 ± 0.20	45 ± 0.20	6.4	10.0	3200	2800	1.10
GG-40-KS	40	62	45	90	80	108	78	56	86 ± 0.20	58 ± 0.20	8.4	12.0	5500	4900	2.30
GG-50-KS	50	75	50	105	100	130	70	72	108 ± 0.20	50 ± 0.20	8.4	14.0	8600	7100	3.45
GG-60-V	60	90	60	125	125	160	92	95	132 ± 0.25	65 ± 0.25	10.5	15.0	8890	16800	6.77
GG-80-V	80	120	80	170	165	200	122	125	170 ± 0.50	90 ± 0.50	13.0	22.0	14560	25200	15.50

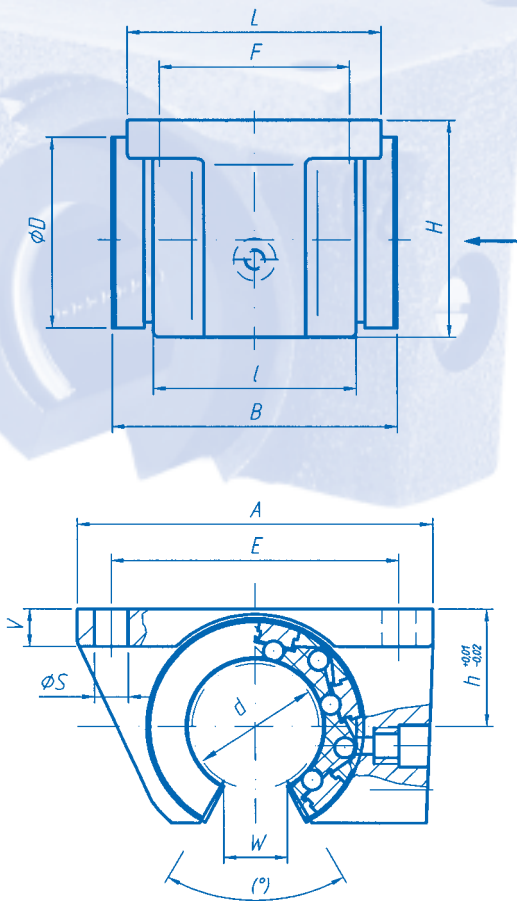
- sizes $\varnothing 8 - 50$ with super linear ball bearings, $\varnothing 60$; 80 all-steel linear bearings
- suitable accessories see section IV
- for specials see ordering code
- bushing secured in housing by means of retaining rings to DIN 471
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



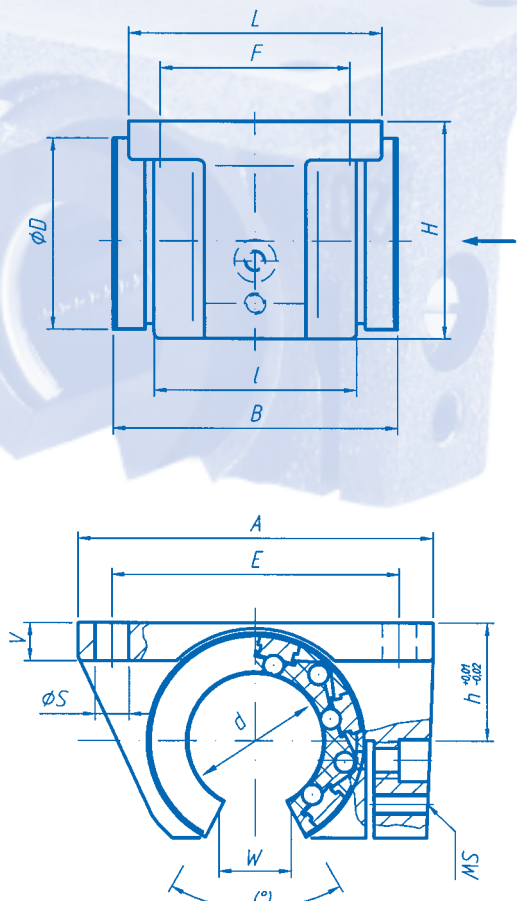
cast iron
closed
radial adjustment
self-aligning $\varnothing 8$ -50 mm
full steel ball bushing $\varnothing 60$; 80 mm
integral seals both ends

part-no.	dimensions in mm													load capacity		weight
GG-AJ	d	D	h	H	B	A	L	I	E	F	S	V	SW	C	Co	[kag]
GG-AJ-08-KS	8	16	15	28	25	32	28	14	25 ^{±0.15}	20 ^{±0.15}	3.3	5.0	5.5	310	240	0.098
GG-AJ-12-KS	12	22	18	35	32	42	32	20	32 ^{±0.15}	23 ^{±0.15}	4.3	5.5	7.0	650	520	0.12
GG-AJ-16-KS	16	26	22	42	36	50	35	22	40 ^{±0.15}	26 ^{±0.15}	4.3	6.5	7.0	800	630	0.19
GG-AJ-20-KS	20	32	25	50	45	60	42	28	45 ^{±0.15}	32 ^{±0.15}	4.3	8.0	7.0	1500	1250	0.38
GG-AJ-25-KS	25	40	30	60	58	74	54	40	60 ^{±0.15}	40 ^{±0.15}	5.3	9.0	8.0	2500	2200	0.70
GG-AJ-30-KS	30	47	35	70	68	84	60	48	68 ^{±0.20}	45 ^{±0.20}	6.4	10.0	10.0	3200	2800	1.10
GG-AJ-40-KS	40	62	45	90	80	108	78	56	86 ^{±0.20}	58 ^{±0.20}	8.4	12.0	13.0	5500	4900	2.30
GG-AJ-50-KS	50	75	50	105	100	130	70	72	108 ^{±0.20}	50 ^{±0.20}	8.4	14.0	13.0	8600	7100	3.45
GG-AJ-60-V	60	90	60	125	125	160	92	95	132 ^{±0.25}	65 ^{±0.25}	10.5	15.0	17.0	8890	16800	6.77
GG-AJ-80-V	80	120	80	170	165	200	122	125	170 ^{±0.50}	90 ^{±0.50}	13.0	22.0	19.0	14560	25200	15.50

- sizes $\varnothing 8 - 50$ with super linear ball bearings, $\varnothing 60$; 80 all-steel linear bearings
- suitable accessories see section IV
- for specials see ordering code
- bushing secured in housing by means of retaining rings to DIN 471
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



cast iron
open
aligning Ø12-50 mm
full steel ball bushing Ø60; 80 mm
integral seals both ends



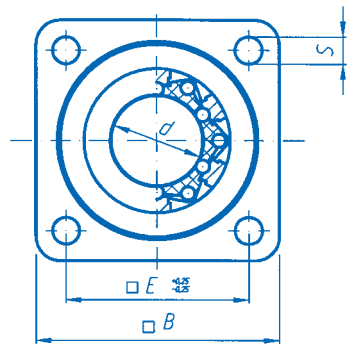
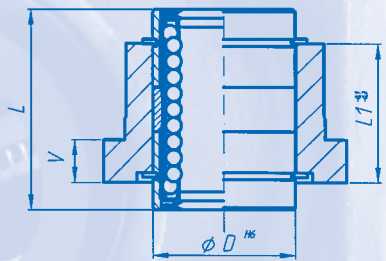
open
self-aligning Ø12-50 mm
radial adjustment
full steel ball bushing Ø60; 80 mm
integral seals both ends

part-no.	dimensions in mm													load capacity		weight
GG-OP	d	h	H	B	A	L	I	E	F	S	V	W	(°)	C	Co	[kg]
GG-OP-12-KS	12	18	28	32	42	32	20	32 ^{±0.15}	23 ^{±0.15}	4.3	5.5	7	70	750	600	0.10
GG-OP-16-KS	16	22	35	36	50	35	22	40 ^{±0.15}	26 ^{±0.15}	4.3	6.5	9,4	70	920	730	0.18
GG-OP-20-KS	20	25	42	45	60	42	28	45 ^{±0.15}	32 ^{±0.15}	4.3	8.0	10,2	60	1560	1300	0.32
GG-OP-25-KS	25	30	51	58	74	54	40	60 ^{±0.15}	40 ^{±0.15}	5.3	9.0	12,5	60	2600	2290	0.63
GG-OP-30-KS	30	35	60	68	84	60	48	68 ^{±0.20}	45 ^{±0.20}	6.4	10.0	13,9	55	3330	2910	0.90
GG-OP-40-KS	40	45	77	80	108	78	56	86 ^{±0.20}	58 ^{±0.20}	8.4	12.0	18,2	60	5720	5100	2.10
GG-OP-50-KS	50	50	88	100	130	70	72	108 ^{±0.20}	50 ^{±0.20}	8.4	14.0	21.0	50	8940	7380	3.91
GG-OP-60-V	60	60	105	125	160	92	95	132 ^{±0.25}	65 ^{±0.25}	10.5	15.0	27.2	50	8890	16800	7.79
GG-OP-80-V	80	80	140	165	200	122	125	170 ^{±0.50}	90 ^{±0.50}	13.0	22.0	36.3	50	14560	25200	16.05

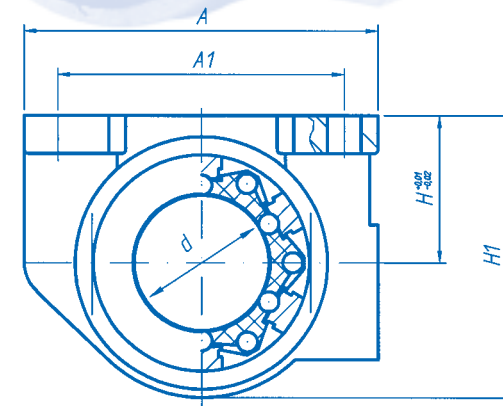
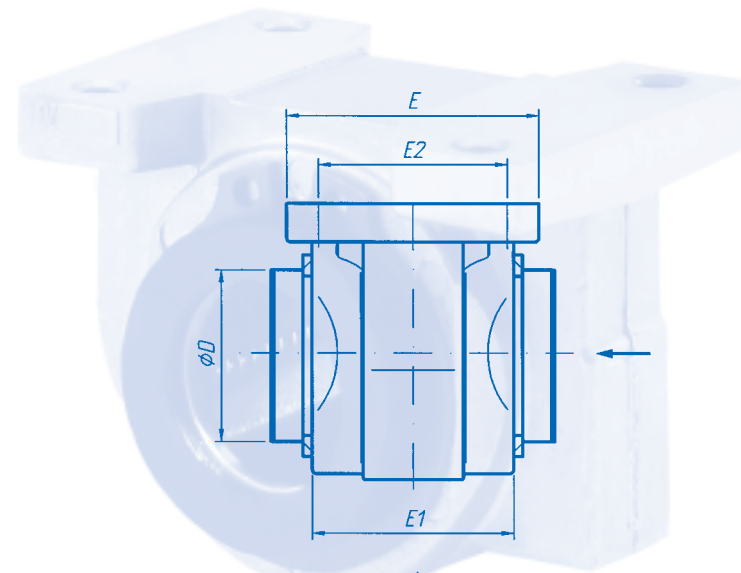
- sizes Ø 12 - 50 with super linear ball bearings, Ø 60; 80 all-steel linear bearings
- suitable accessories see section IV
- for specials see ordering code
- bushing secured in housing by means of axial-radial fixing screw
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980

part-no.	dimensions in mm														load capacity		weight
	d	h	H	B	A	L	I	E	F	S	V	W	SW	(°)	[N]	Co	[kg]
GG-OPAJ																	
GG-OPAJ-12-KS	12	18	28	32	42	32	20	32 ^{±0.15}	23 ^{±0.15}	4.3	5.5	7	2.5	70	750	600	0.10
GG-OPAJ-16-KS	16	22	35	36	50	35	22	40 ^{±0.15}	26 ^{±0.15}	4.3	6.5	9,4	2.5	70	920	730	0.18
GG-OPAJ-20-KS	20	25	42	45	60	42	28	45 ^{±0.15}	32 ^{±0.15}	4.3	8.0	10,2	2.5	60	1560	1300	0.32
GG-OPAJ-25-KS	25	30	51	58	74	54	40	60 ^{±0.15}	40 ^{±0.15}	5.3	9.0	12.5	3.0	60	2600	2290	0.63
GG-OPAJ-30-KS	30	35	60	68	84	60	48	68 ^{±0.20}	45 ^{±0.20}	6.4	10.0	13,9	3.0	55	3330	2910	0.90
GG-OPAJ-40-KS	40	45	77	80	108	78	56	86 ^{±0.20}	58 ^{±0.20}	8.4	12.0	18,2	4.0	60	5720	5100	2.10
GG-OPAJ-50-KS	50	50	88	100	130	70	72	108 ^{±0.20}	50 ^{±0.20}	8.4	14.0	21.0	5.0	50	8940	7380	3.91
GG-OPAJ-60-V	60	60	105	125	160	92	95	132 ^{±0.25}	65 ^{±0.25}	10.5	15.0	27.2	5.0	50	8890	16800	7.79
GG-OPAJ-80-V	80	80	140	165	200	122	125	170 ^{±0.50}	90 ^{±0.50}	13.0	22.0	36.3	6.0	50	14560	25200	16.05

- sizes Ø 12 - 50 with super linear ball bearings, Ø60; 80 all-steel linear bearings
- suitable accessories see section IV
- for specials see ordering code
- bushing secured in housing by means of axial-radial fixing screw
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



cast iron
flanged
self-aligning $\varnothing 12$ - 50 mm
full steel ball bushings $\varnothing 60$; 80 mm
integral seals both ends



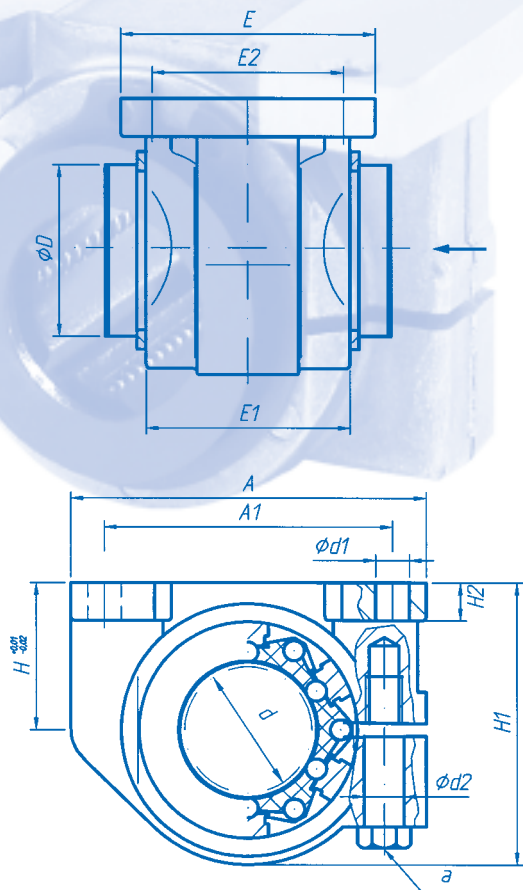
cast aluminium
closed
self-aligning
integral seals both ends

part-no.	dimensions in mm									load capacity		weight
FGG	d	B	L	L1	D	E	S	V	W	C	Co	[kg]
FGG-12-KS	12	42	32	22	22	30 ± 0.12	5.5	6	10.0	650	520	0.14
FGG-16-KS	16	50	36	24	26	35 ± 0.2	5.5	8	10.5	800	630	0.23
FGG-20-KS	20	60	45	30	32	42 ± 0.15	6.6	10	13.5	1500	1250	0.38
FGG-25-KS	25	74	58	42	40	54 ± 0.15	6.6	12	17.5	2500	2200	0.78
FGG-30-KS	30	84	68	50	47	60 ± 0.25	9.9	14	21.0	3200	2800	1.23
FGG-40-KS	40	108	80	59	62	78 ± 0.25	11.0	16	22.0	5500	4900	2.31
FGG-50-KS	50	130	100	75	75	98 ± 0.25	11.0	18	14.0	8600	7100	3.91
FGG-60-V	60	160	125	99	90	120 ± 0.50	14.0	22	15.0	8890	16800	7.79
FGG-80-V	80	200	165	130	120	155 ± 0.50	14.0	26	20.0	14560	25200	16.05

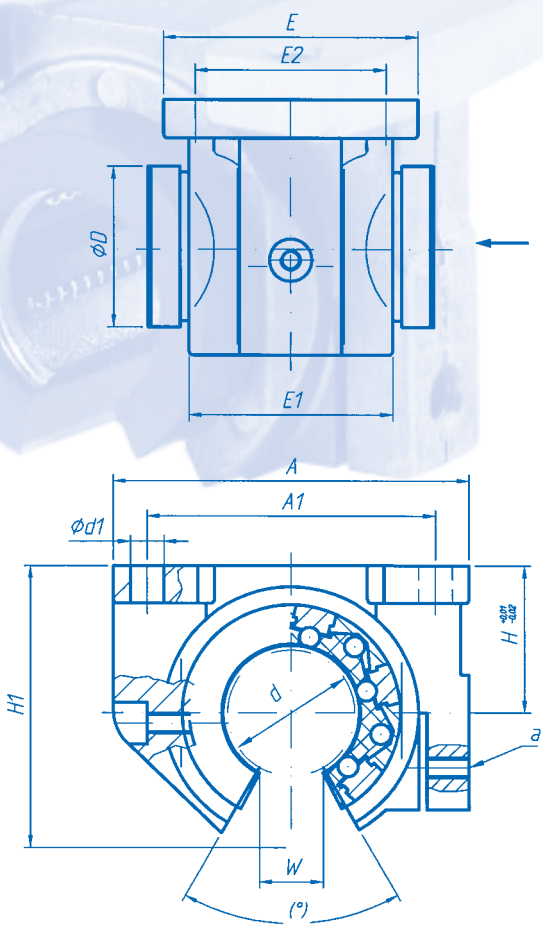
- sizes $\varnothing 12$ - 50 with super linear ball bearings, $\varnothing 60$ - 80 all-steel linear bearings
- suitable accessories see section IV
- for specials see ordering code
- bushing secured in housing by means of retaining rings to DIN 471
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980

part-no.	dimensions in mm										load capacity		weight
MAG	d	D	H	H	H1	A	A1	E	E1	E2	C [N]	Co	[kg]
MAG-12-KS	12	22	18	18	34.0	42	32 ^{±0.15}	32	20	23 ^{±0.15}	650	520	0.060
MAG-16-KS	16	26	22	22	41.0	50	40 ^{±0.15}	35	22	26 ^{±0.15}	800	630	0.078
MAG-20-KS	20	32	25	25	47.5	60	45 ^{±0.15}	42	28	32 ^{±0.15}	1500	1250	0.160
MAG-25-KS	25	40	30	30	60.0	74	60 ^{±0.20}	54	40	40 ^{±0.20}	2500	2200	0.310
MAG-30-KS	30	47	35	35	67.0	84	68 ^{±0.20}	60	48	45 ^{±0.20}	3200	2800	0.450
MAG-40-KS	40	62	45	45	87.0	108	86 ^{±0.20}	78	56	58 ^{±0.20}	5500	4900	0.810
MAG-50-KS	50	75	50	50	98.0	130	108 ^{±0.20}	70	72	50 ^{±0.20}	8600	7100	1.650

- suitable accessories see section IV
- for specials see ordering code
- bushing secured in housing by means of retaining rings to DIN 471
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



cast aluminium
closed
self-aligning
radial adjustment
integral seals both ends



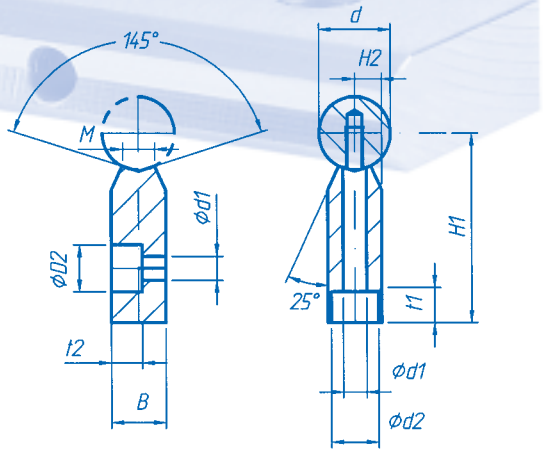
cast aluminium
open
radial adjustment
self-aligning
integral seals both ends

part-no.	dimensions in mm													load capacity		weight
MAG-AJ	d	D	H	H1	H2	A	A1	E	E1	E2	d1	d2	a	C	Co	[kg]
MAG-AJ-12-KS	12	22	18	34.0	4.8	42	32 ^{±0.15}	32	20	23 ^{±0.15}	4.5	8	7	650	520	0.060
MAG-AJ-16-KS	16	26	22	41.0	5.5	50	40 ^{±0.15}	35	22	26 ^{±0.15}	4.5	8	7	800	630	0.078
MAG-AJ-20-KS	20	32	25	47.5	7.0	60	45 ^{±0.15}	42	28	32 ^{±0.15}	4.5	8	7	1500	1250	0.160
MAG-AJ-25-KS	25	40	30	60.0	8.0	74	60 ^{±0.20}	54	40	40 ^{±0.20}	5.5	10	8	2500	2200	0.310
MAG-AJ-30-KS	30	47	35	67.0	9.0	84	68 ^{±0.20}	60	48	45 ^{±0.20}	6.6	11	10	3200	2800	0.450
MAG-AJ-40-KS	40	62	45	87.0	11.0	108	86 ^{±0.20}	78	56	58 ^{±0.20}	9.0	15	13	5500	4900	0.810
MAG-AJ-50-KS	50	75	50	98.0	12.5	130	108 ^{±0.20}	70	72	50 ^{±0.20}	9.0	15	13	8600	7100	1.650

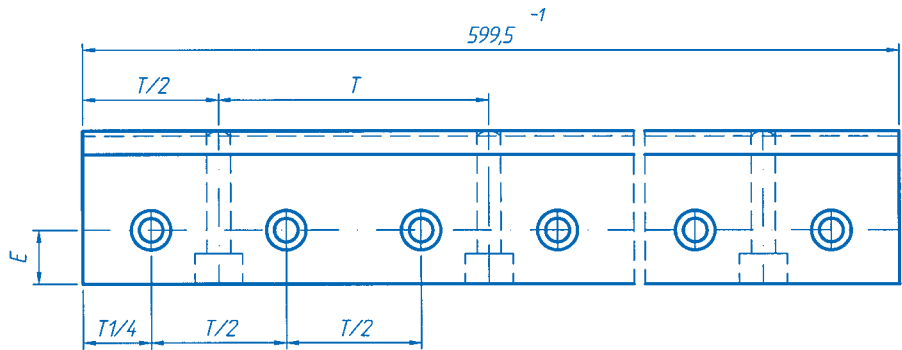
- suitable accessories see section IV
- for specials see ordering code
- bushing secured in housing by means of retaining rings to DIN 471
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980

part-no.	dimensions in mm													load capacity		weight
MAG-OPAJ	d	D	H	H1	A	A1	E	E1	E2	a	d1	W	(°)	C	Co	[kg]
MAG-OPAJ-12-KS	12	22	18	34.0	42	32 ^{±0.15}	32	20	23 ^{±0.15}	2.0	4.5	7.0	70	750	600	0.060
MAG-OPAJ-16-KS	16	26	22	41.0	50	40 ^{±0.15}	35	22	26 ^{±0.15}	2.5	4.5	9.4	70	920	730	0.078
MAG-OPAJ-20-KS	20	32	25	47.5	60	45 ^{±0.15}	42	28	32 ^{±0.15}	2.5	4.5	10.2	60	1560	1300	0.160
MAG-OPAJ-25-KS	25	40	30	60.0	74	60 ^{±0.20}	54	40	40 ^{±0.20}	3.0	5.5	12,5	60	2600	2290	0.310
MAG-OPAJ-30-KS	30	47	35	67.0	84	68 ^{±0.20}	60	48	45 ^{±0.20}	3.0	6.6	13,9	55	3330	2910	0.450
MAG-OPAJ-40-KS	40	62	45	87.0	108	86 ^{±0.20}	78	56	58 ^{±0.20}	4.0	9.0	18,2	60	5720	5100	0.810
MAG-OPAJ-50-KS	50	75	50	98.0	130	108 ^{±0.20}	70	72	50 ^{±0.20}	4.0	9.0	21.0	50	8940	7380	1.650

- suitable accessories see section IV
- for specials see ordering code
- bushing secured in housing by means of axial-radial fixing screw
- the load values given apply only if hardened and ground shafts are used, see section V
- fixing screws DIN 912 - 8.8, circlip DIN 7980



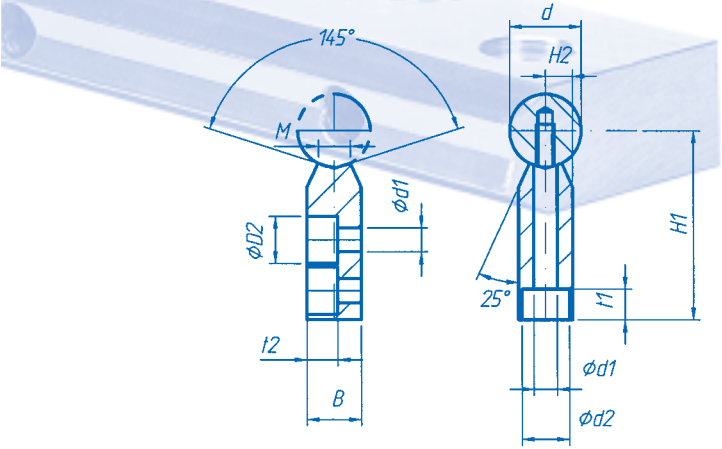
flat shape
aluminium alloy
600 mm long
single row of fixing holes



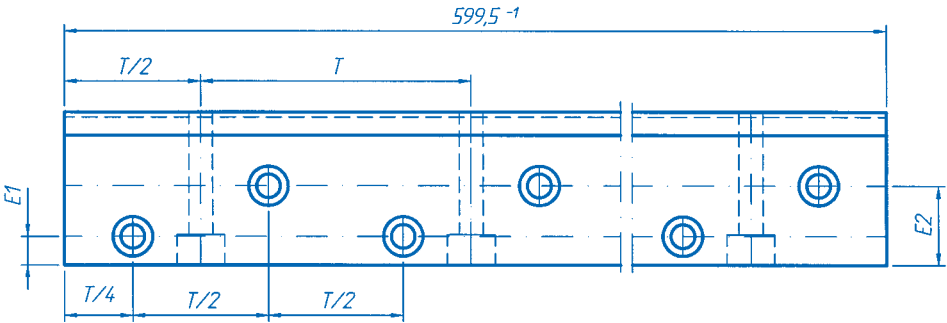
- above supports are available with shafts ready mounted
as complete rails, on request.

part-no.	dimensions in mm											weight
WUF	d	T	H1	H2	B	M	d1	d2	t1	t2	E	[kg]
WUF-20	20	100	52	7.5	15	8.3	6.6	11	8.5	8.5	15	1.10
WUF-25	25	120	62	10.0	20	10,0	9.0	15	15,0	11.0	18	1.50
WUF-30	30	150	72	12.5	25	11.0	11.0	18	15.3	13.5	21	2.10
WUF-40	40	200	88	15.0	30	15.0	14,0	20	19,0	16.0	25	3.00
WUF-50	50	200	105	17.5	35	19.0	15,5	24	21.5	18.5	30	4.20

- for corresponding precision steel shafts see section V
- lengths up to the maximum stated in section V are available on request.



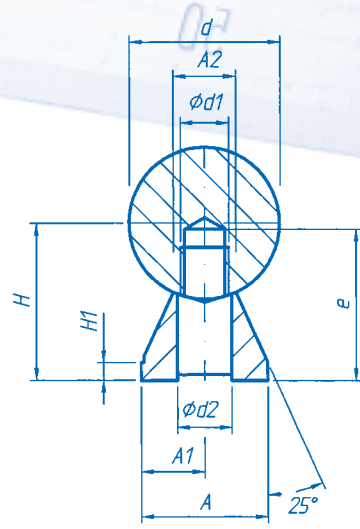
flat shape
aluminium alloy
600 mm long
double row of fixing holes



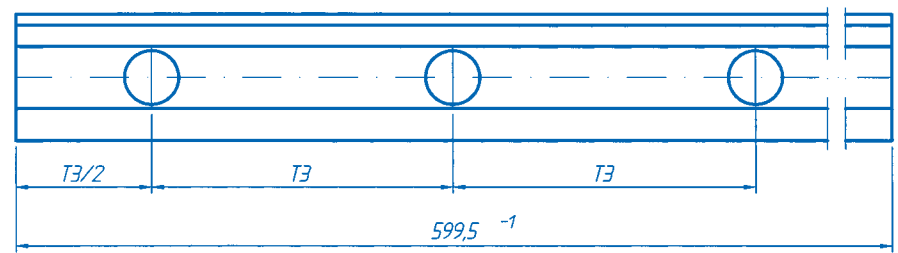
- above supports are available with shafts ready mounted
as complete rails, on request.

part-no.	dimensions in mm												weight
WUFD	d	T	H1	H2	B	M	d1	d2	t1	t2	E1	E2	[kg]
WUFD-20	20	75	52	7.5	15	8.3	6.6	11	8.5	8.5	8	22	1.00
WUFD-25	25	75	62	10.0	20	10,0	9.0	15	15.0	11.0	10	26	1.30
WUFD-30	30	100	72	12.5	25	11.0	11.0	18	15.3	13.5	12	30	1.90
WUFD-40	40	100	88	15.0	30	15.0	14,0	20	19.0	16.0	12	38	2.70
WUFD-50	50	100	105	17.5	35	19.0	15,5	24	24.0	18.5	15	45	3.70

- for corresponding precision steel shafts see section V
- lengths up to the maximum stated in section V are available on request.



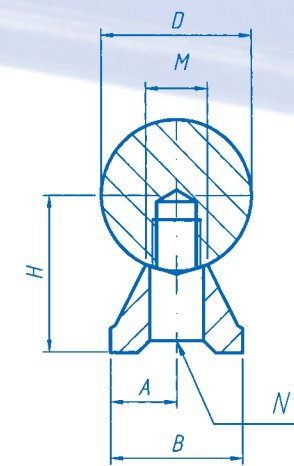
low shape
aluminium alloy
600 mm long



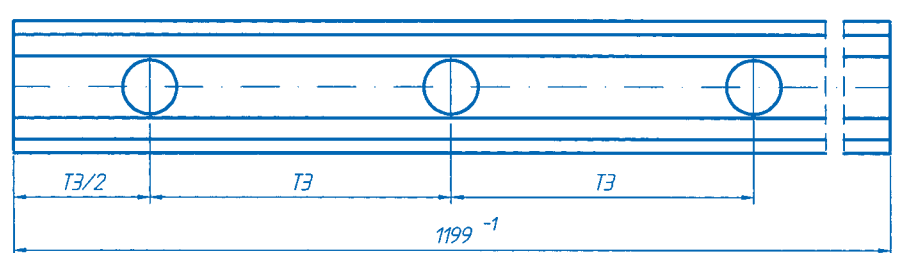
part-no.	dimensions in mm										weight
WUN	d	H ^{±0,02}	H1	A ^{±0,02}	A1 ^{±0,02}	A2	d1	d2	e	T3	[kg]
WUN-12	12	14.5	3	11	5.	5.4	M4	4.5	15.5	75	0.44
WUN-16	16	18	3	14	7.0	7.0	M5	5.5	16.0	75	0.56
WUN-20	20	22	3	17	8.5	8.1	M6	6.6	20.0	75	0.81
WUN-25	25	26	3	21	10.5	10.3	M8	9.0	25.0	75	1.06
WUN-30	30	30	3	23	11.5	11.0	M10	11.0	30.0	100	1.25
WUN-40	40	39	4	30	15.0	15.0	M12	13.5	38.0	100	2.16
WUN-50	50	46	5	35	17.5	19.0	M14	15.5	45.0	100	2.94

- for corresponding precision steel shafts see section V

- lengths up to the maximum stated in section V are available on request.



low shape
steel
1200 mm long

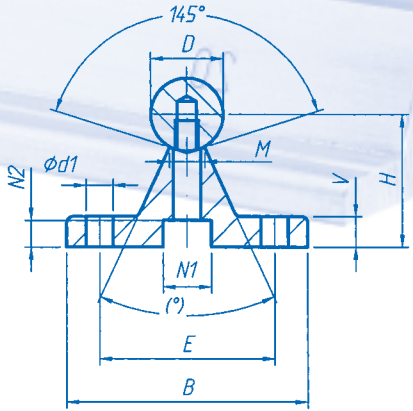


part-no.	dimensions in mm							weight
WUS	D ^{h6}	H ^{±0,02}	B	A ^{±0,02}	M ^{±0,15}	N	T3	[kg]
WUS-12	12	14	12	6.0	6.0	M4	75	1.5
WUS-16	16	18	14	7.0	7.0	M5	75	2.4
WUS-20	20	22	17	8.5	8.3	M6	75	3.7
WUS-25	25	26	21	10.5	10.8	M8	75	5.6
WUS-30	30	30	23	11.5	11.0	M10	100	9.0
WUS-40	40	39	30	15.0	15.0	M12	100	13.3

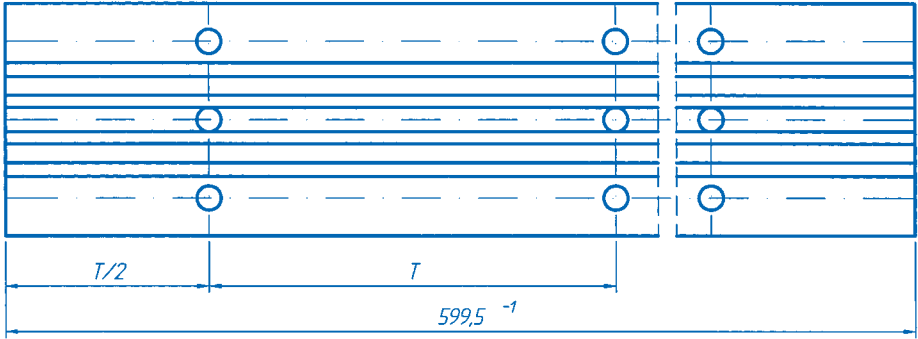
- special lengths of 600 mm available

- for corresponding precision steel shafts see section V

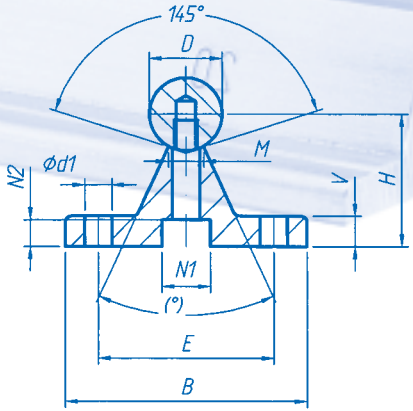
- lengths up to the maximum stated in section V are available on request.



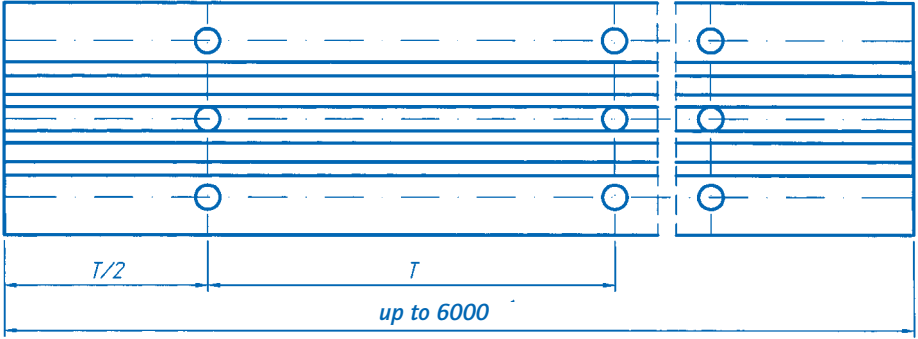
medium height
aluminium alloy
600 mm long



- above supports are available with shafts ready mounted
as complete rails, on request.



medium height
aluminium extruded section
up to 6000 mm long



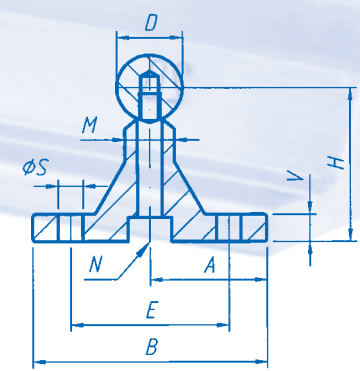
- above supports are available with shafts ready mounted
as complete rails, on request.

part-no.	dimensions in mm													weight
WUM	D	B	H ^{±0,02}	V	N1	N2	d1	d2	M	(°)	E ^{±0,15}	T1	T2	[kg]
WUM-12	12	40	22	5	8.0	5.0	4.5	4.5	5.8	50	29	75	120	0.52
WUM-16	16	45	26	5	9.5	6.0	5.5	5.5	7.0	50	33	100	150	0.64
WUM-20	20	52	32	6	11.0	6.5	6.6	6.6	8.3	50	37	100	150	0.90
WUM-25	25	57	36	6	14.0	8.5	6.6	9.0	10.8	50	42	120	200	1.08
WUM-30	30	69	42	7	17.0	10.5	9.0	11.0	11.0	50	51	150	200	1.43
WUM-40	40	73	50	8	17.0	10.5	9.0	11.0	15.0	50	55	200	300	1.81
WUM-50	50	84	60	9	19.0	12.5	11.0	13.0	19.0	46	63	200	300	2.45
WUM-60	60	94	68	10	19,0	12,5	11.0	13.0	25.0	46	72	300		3.16
WUM-80	80	116	86	12	19,0	12,5	13.0	13.0	34.0	46	92	300		4.86

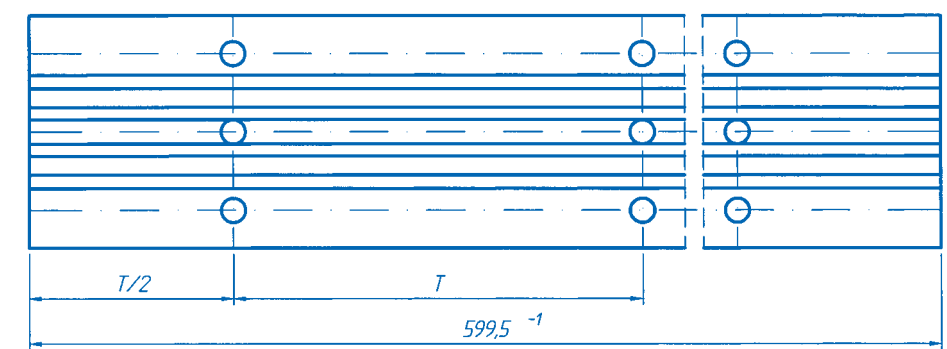
- for corresponding precision steel shafts see section V.
- lengths up to the maximum stated in section V are available on request.

part-no.	dimensions in mm											weight [kg]/m
WUV	D	B	H ^{±0,5}	V	N2	d1	M	(°)	E ^{±0,15}	T1	T2	
WUV-16	16	52	30	6	6.0	5.5	7.0	50	37	100	150	1.7
WUV-20	20	52	32	6	6.5	6.6	8.3	50	37	100	150	1.7
WUV-25	25	57	36	6	8.5	6.6	10.8	50	42	120	200	1.8
WUV-30	30	69	42	8	10.5	9.0	11.0	50	51	150	200	2.4
WUV-40	40	85	60	11	10.5	9.0	15.0	50	65	200	300	3.2
WUV-50	50	85	65	11	12.5	11.0	19.0	46	65	200	300	3.2

- for corresponding precision steel shafts see section V.
- lengths up to the maximum stated in section V are available on request.



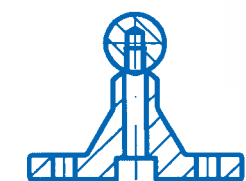
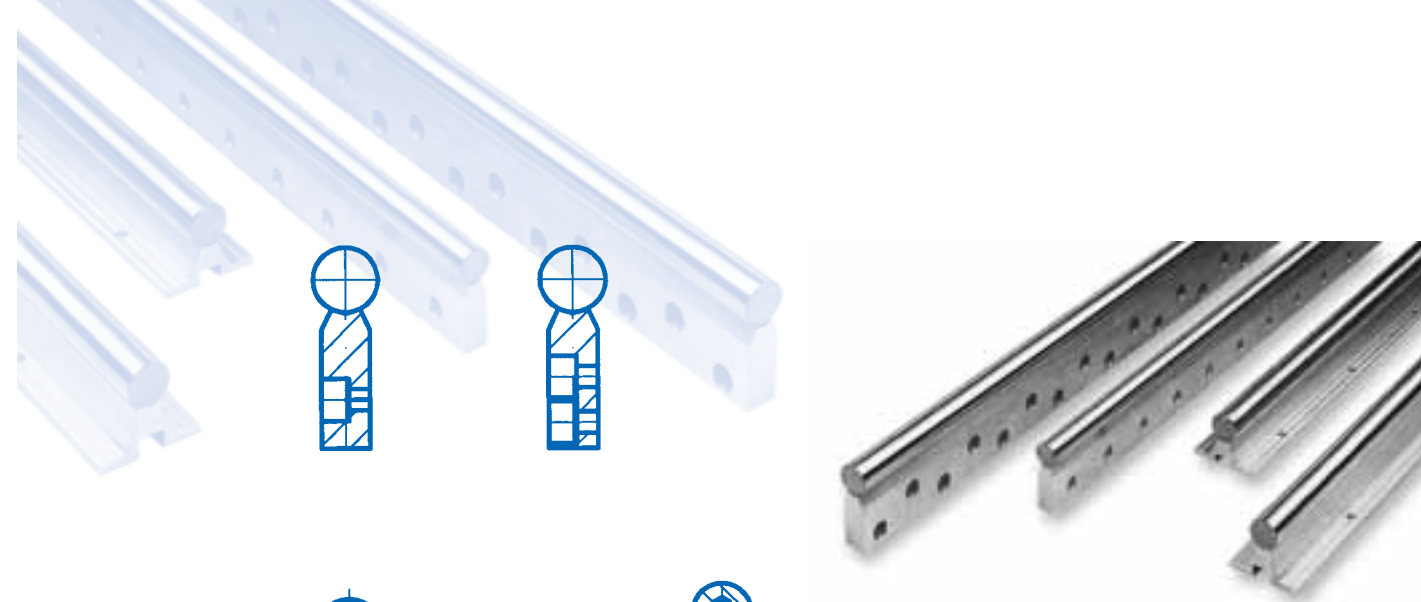
full height
aluminium alloy
600 mm long



- above supports are available with shafts ready mounted
as complete rails, on request.

part-no.	dimensions in mm											weight
WUH	Dh6	H ^{±0,02}	V	B	A	M	E ^{±0,15}	N	S	T1	T2	[kg]
WUH-12	12	28	5	43	21.5	9	29	M4	4.5	75	120	0.64
WUH-16	16	30	5	48	24.0	10	33	M5	5.5	100	150	0.74
WUH-20	20	38	6	56	28.0	11	37	M6	6.6	100	150	1.00
WUH-25	25	42	6	60	30.0	14	42	M8	6.6	120	200	1.20
WUH-30	30	53	8	74	37.0	14	51	M10	9,0	150	200	1.80
WUH-40	40	60	8	78	39.0	18	55	M10	9,0	200	300	2.10

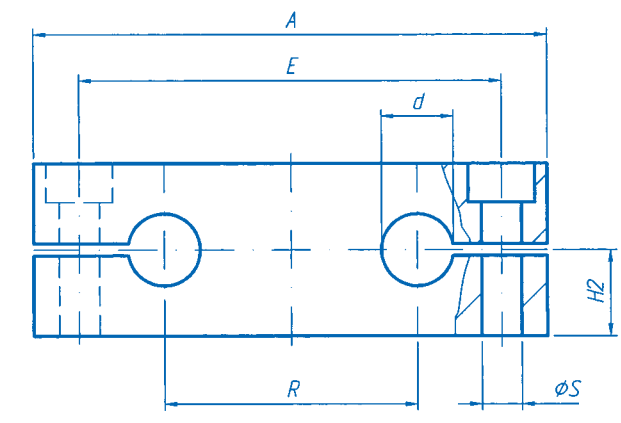
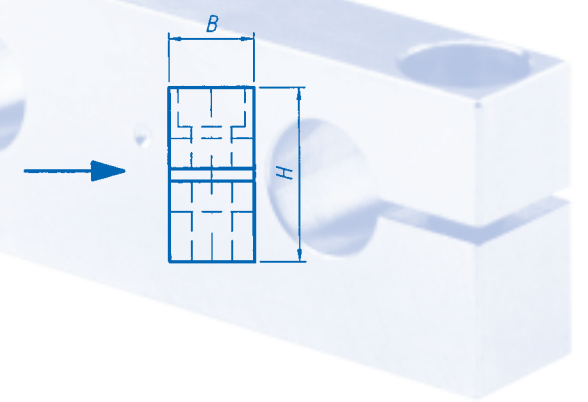
- for corresponding precision steel shafts see section V.
- lengths up to the maximum stated in section V are available on request.



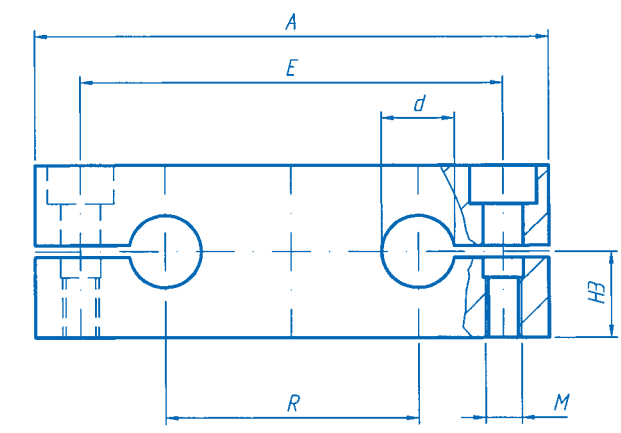
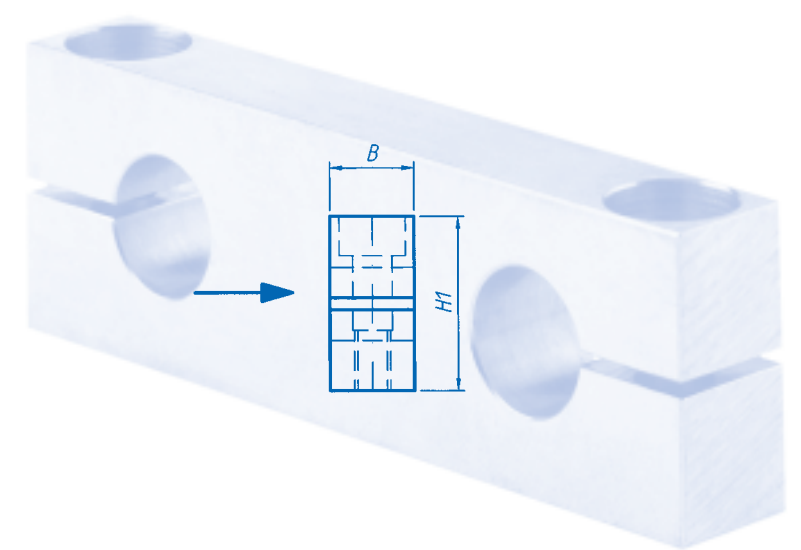
complete assembled
differend shaft material

These support rails are supplied completely assembled.
For dimensions please see the page describing the appropriate shaft support.
Any length can be supplied. If required lengths exceeds the maximum manufactured length,
rails will be supplied in sections to be assembled at the manufacturer.
The position of the first fixing hole can be selected by customer.
Available support rails are tabulated below:

Shaft Ø	TSF with screw		TSFD with screw		TSM with screw		TSV with screw		TSH with screw	
12					WUM	M4x17			WUH	M4x20
16					WUM	M5x20	WUV	M5x20	WUH	M5x25
20	WUF	M6x45	WUFD	M6x45	WUM	M6x25	WUV	M6x25	WUH	M6x30
25	WUF	M8x50	WUFD	M8x50	WUM	M8x30	WUV	M8x30	WUH	M8x35
30	WUF	M10x60	WUFD	M10x60	WUM	M10x35	WUV	M10x35	WUH	M10x45
40	WUF	M10x75	WUFD	M10x70	WUM	M10x40	WUV	M10x40	WUH	M10x50
50	WUF	M12x90	WUFD	M12x90	WUM	M10x45	WUV	M10x45		



aluminium alloy
fixed block



aluminium alloy
moveable block

part-no. dimensions in mm

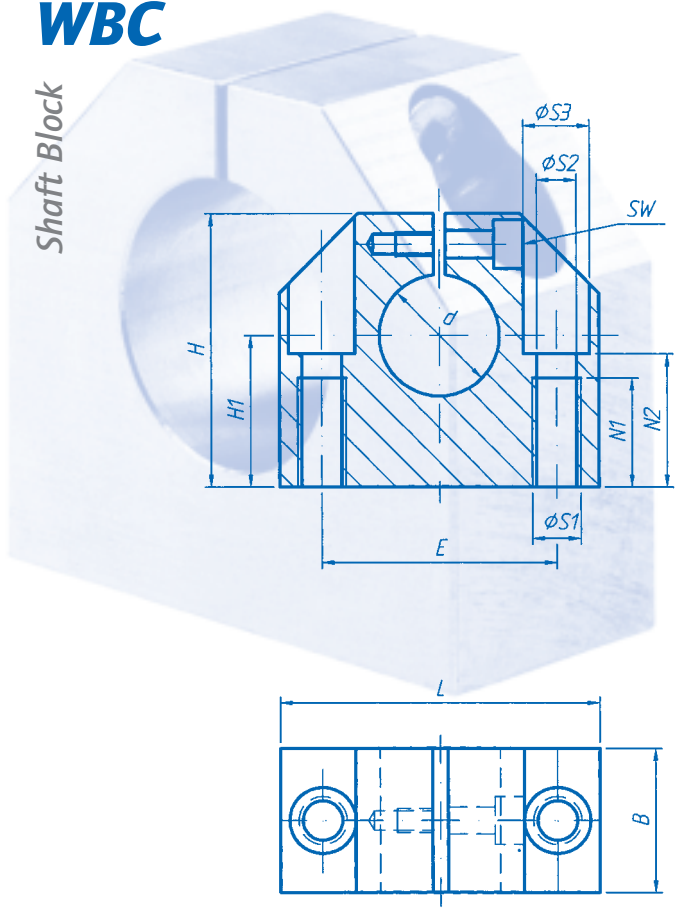
TAA	d	A	B	H	H2 ^{±0,015}	R	ØS	E	weight [kg]
TAA-08	8	65	12	23	12.5	32	5.5	52	0.04
TAA-12	12	85	14	32	18.0	42	6.6	70	0.09
TAA-16	16	100	18	36	20.0	54	9.0	82	0.14
TAA-20	20	130	20	46	25.0	72	11.0	108	0.25
TAA-25	25	160	25	56	30.0	88	13.5	132	0.47
TAA-30	30	180	25	64	35.0	96	13.5	150	0.62
TAA-40	40	230	30	80	44.0	122	17.5	190	1.15

- distance between shaft centres equals dimension "R" for types QAG and QAG-OP, section III
- suitable precision steel shafts, see section V

part-no. dimensions in mm

TAB	d	A	B	H1	H3 ^{±0,015}	M	E	R	weight [kg]
TAB-08	8	65	12	22	11	M5	52	32	0.04
TAB-12	12	85	14	28	14	M6	70	42	0.07
TAB-16	16	100	18	32	16	M8	82	54	0.13
TAB-20	20	130	20	42	21	M10	108	72	0.22
TAB-25	25	160	25	52	26	M12	132	88	0.44
TAB-30	30	180	25	58	29	M12	150	96	0.56
TAB-40	40	230	30	72	36	M16	190	122	1.00

- distance between shaft centres equals dimension "R" for types QAG and QAG-OP, section III
- suitable precision steel shafts, see section V

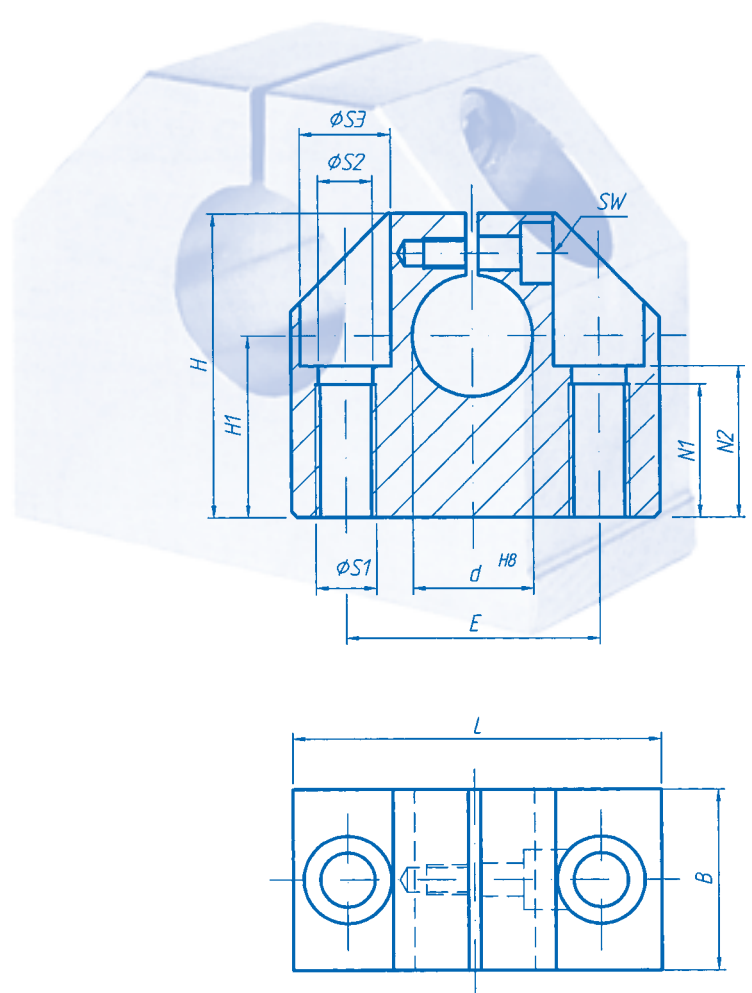


compact
aluminium alloy



part-no.	dimensions in mm												weight
WBC	d	B	H	H1	L	S1	S2	S3	E ^{±0,12}	N1	N2	SW	[kg]
WBC-06	6	16	27	15	32	M5	4,2	8	22	11	13	2,5	0.03
WBC-08	8	16	27	16	32	M5	4,2	8	22	11	13	2,5	0.03
WBC-10	10	18	33	18	40	M6	5,2	10	27	13	16	3,0	0.05
WBC-12	12	18	33	19	40	M6	5,2	10	27	13	16	3,0	0.05
WBC-14	14	20	38	20	45	M6	5,2	10	32	13	18	3,0	0.07
WBC-16	16	20	38	22	45	M6	5,2	10	32	13	18	3,0	0.07
WBC-20	20	24	45	25	53	M8	6,8	11	39	18	22	4,0	0.12
WBC-25	25	28	54	31	62	M10	8,6	15	44	22	26	4,0	0.17
WBC-30	30	30	60	34	67	M10	8,6	15	49	22	29	4,0	0.22
WBC-40	40	40	76	42	87	M12	10,3	18	66	26	38	5,0	0.48
WBC-50	50	50	92	50	103	M16	14,25	20	80	34	46	6,0	0.82

- suitable precision steel shafts, see section V

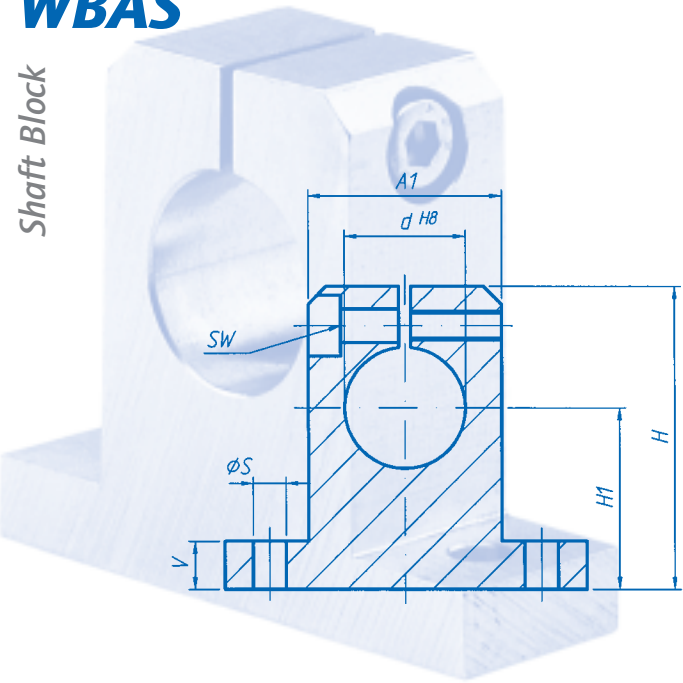


shaft block
aluminium alloy

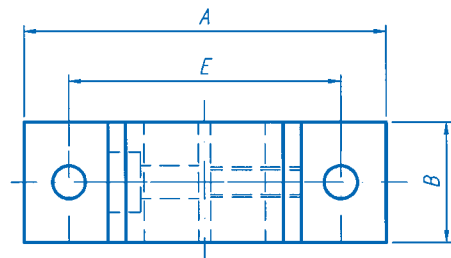


part-no.	dimensions in mm												weight
WBA	d	B	H	H1 ^{±0,02}	L	S1	S2	S3	E ^{±0,12}	N1	N2	SW	[kg]
WBA-08	8	18	28	15	32	M4	3,3	6	22	9	13.0	3	0.04
WBA-12	12	20	35	20	43	M6	5,2	10	30	13	16.5	4	0.10
WBA-16	16	24	42	25	53	M8	6,8	11	38	18	21.0	3	0.15
WBA-20	20	30	50	30	60	M10	8,6	15	42	22	25.0	4	0.23
WBA-25	25	38	60	35	78	M12	10,3	18	56	26	30.0	5	0.41
WBA-30	30	40	70	40	87	M12	10,3	18	64	26	34.0	6	0.53
WBA-40	40	48	90	50	108	M16	14,25	20	82	34	44.0	8	0.99
WBA-50	50	58	105	60	132	M20	17,5	26	100	43	49.0	8	1.25

- suitable precision steel shaft, see section V



standard shaft block
aluminium alloy

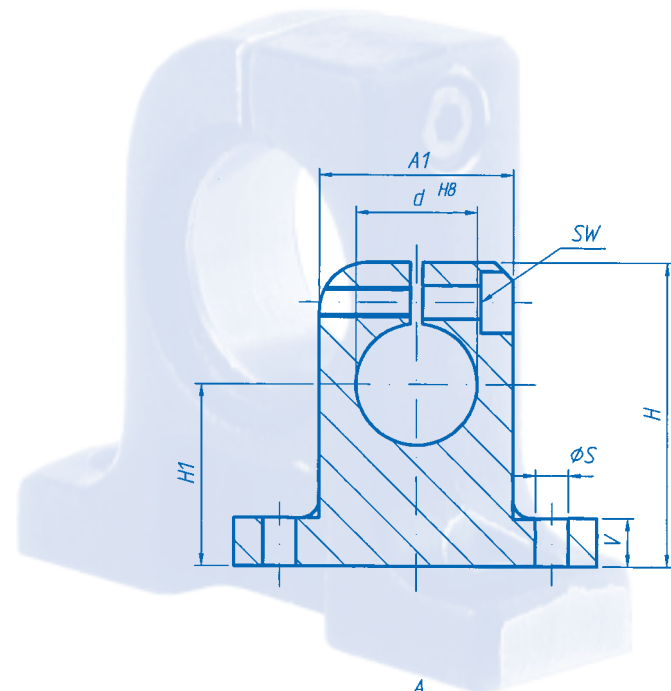


part-no. dimensions in mm

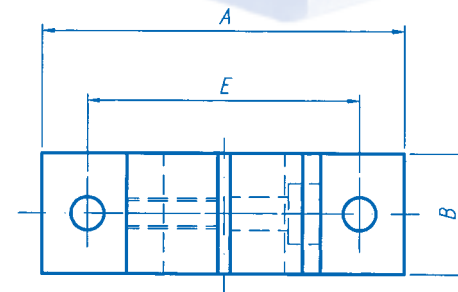
WBAS	d	H	H1 ^{±0,02}	A	A1	B	E	S	V	SW	weight [kg]
WBAS-08	8	27	15	32	16	10	25 ^{±0,15}	4.5	5.0	3	0.012
WBAS-12	12	35	20	42	20	12	32 ^{±0,15}	5.5	5.5	3	0.023
WBAS-16	16	42	25	50	26	16	40 ^{±0,15}	5.5	6.5	3	0.035
WBAS-20	20	50	30	60	32	20	45 ^{±0,15}	5.5	8.0	4	0.067
WBAS-25	25	58	35	74	38	25	60 ^{±0,15}	6.6	9.0	5	0.140
WBAS-30	30	68	40	84	45	28	68 ^{±0,15}	9.0	10.0	6	0.200
WBAS-40	40	86	50	108	56	32	86 ^{±0,15}	11.0	12.0	8	0.480
WBAS-50	50	100	60	130	80	40	108 ^{±0,15}	11.0	14.0	8	1.90
WBAS-60	60	124	75	160	100	48	132 ^{±0,15}	13.5	15.0	8	3.60

- suitable precision steel shafts, see section V

- dimensions H1, A, A1, B, V tolerances to DIN 1686 - GTB 15



steel shaft block

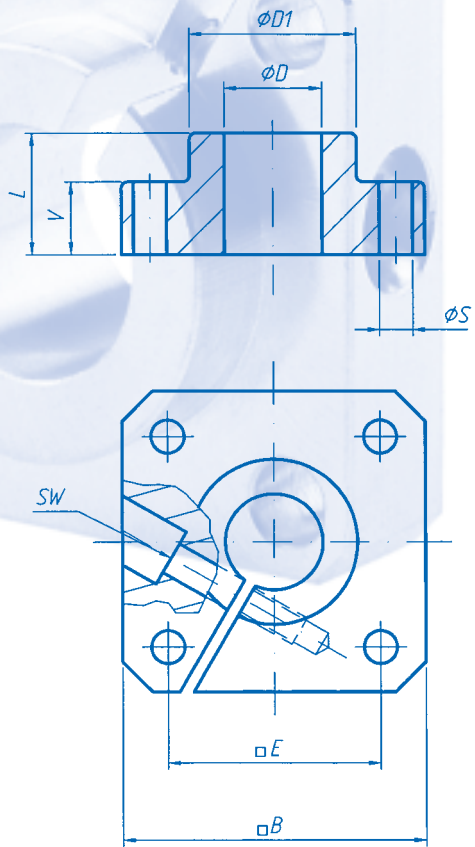


part-no. dimensions in mm

WBS	d	H	H1	A	A1	B	E	S	V	SW	weight [kg]
WBS-08	8	27	15 ^{±0.010}	32	16	10	25 ^{±0.15}	4.5	5.2	2.5	0.03
WBS-12	12	35	20 ^{±0.010}	42	20	12	32 ^{±0.15}	5.5	5.5	3.0	0.06
WBS-16	16	42	25 ^{±0.010}	50	26	16	40 ^{±0.15}	5.5	6.5	3.0	0.11
WBS-20	20	50	30 ^{±0.010}	60	32	20	45 ^{±0.15}	5.5	8.0	3.0	0.21
WBS-25	25	58	35 ^{±0.010}	74	38	25	60 ^{±0.15}	6.6	9.0	4.0	0.35
WBS-30	30	68	40 ^{±0.010}	84	45	28	68 ^{±0.20}	9.0	10.0	5.0	0.52
WBS-40	40	86	50 ^{±0.010}	108	56	32	86 ^{±0.20}	11.0	12.0	6.0	0.92
WBS-50	50	100	60 ^{±0.015}	130	80	40	108 ^{±0.20}	11.0	14.0	6.0	1.90
WBS-60	60	124	75 ^{±0.015}	160	100	48	132 ^{±0.25}	13.5	15.0	8.0	3.60
WBS-80	80	160	100 ^{±0.015}	200	130	60	170 ^{±0.50}	17.5	22.0	10.0	7.30

- suitable precision steel shafts, see section V

- dimensions H1, A, A1, B, V tolerances to DIN 1686 - GTB 15

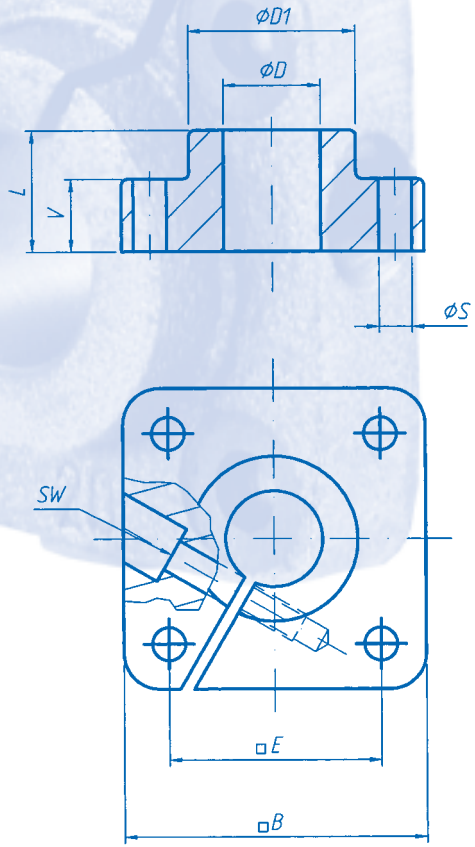


flanged shaft block
aluminium alloy



part-no.	dimensions in mm								weight
FWBA	D	B	L	D1	E	S ^{H13}	V	SW	[kg]
FWBA-12	12	40	20	23.5	30 ^{±0.12}	5.5	12	3	0.06
FWBA-16	16	50	20	27.5	35 ^{±0.12}	5.5	12	3	0.08
FWBA-20	20	50	23	33.5	38 ^{±0.15}	6.6	14	4	0.10
FWBA-25	25	60	25	42.0	42 ^{±0.15}	6.6	16	5	0.15
FWBA-30	30	70	30	49.5	54 ^{±0.25}	9.0	19	6	0.30
FWBA-40	40	100	40	65.0	68 ^{±0.25}	11.0	26	8	0.70
FWBA-50	50	100	50	75.0	75 ^{±0.25}	11.0	36	8	1.20

- suitable precision steel shafts, see section V
- dimensions B, L, D, V, tolerances to DIN 1686 - GTB 15

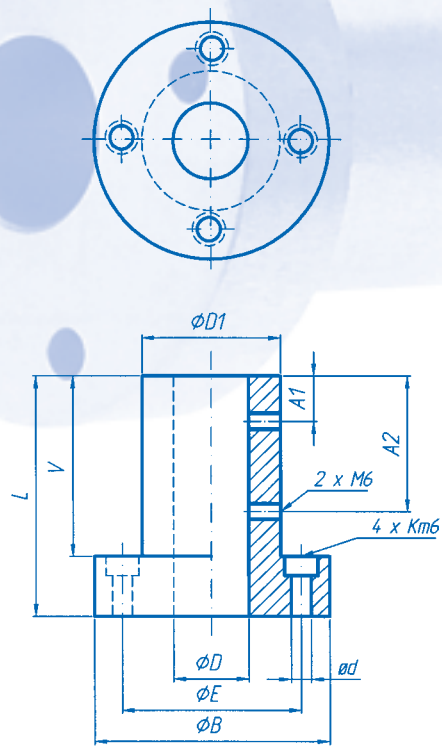


flanged shaft block
cast iron



part-no.	dimensions in mm								weight
FWBG	D	B	L	D1	E	S ^{H13}	V	SW	[kg]
FWBG-12	12	42	20	23.5	30 ^{±0.12}	5.5	12	3	0.15
FWBG-16	16	50	20	27.5	35 ^{±0.12}	5.5	12	3	0.21
FWBG-20	20	54	23	33.5	38 ^{±0.15}	6.6	14	4	0.28
FWBG-25	25	60	25	42.0	42 ^{±0.15}	6.6	16	5	0.41
FWBG-30	30	76	30	49.5	54 ^{±0.25}	9.0	19	6	0.75
FWBG-40	40	96	40	65.0	68 ^{±0.25}	11.0	26	8	1.65
FWBG-50	50	106	50	75.0	75 ^{±0.25}	11.0	36	8	2.60

- suitable precision steel shafts, see section V
- dimensions B, L, D, V, tolerances to DIN 1686 - GTB 15



round-flanged shaft block
aluminium alloy
extra rigidity

part-no. dimensions in mm

FWBT	D	D1	B	E	A1	A2	V	L	Ød	weight [kg]
FWBT-25	25	46	78	59.4	15	45	60	80	6.6	1.35

- suitable precision steel shafts, see section V
- dimensions B, L, D, V, tolerances to DIN 1686 - GTB 15

Tolerance zones for internal (hole) dimensions (H15 through H5)												(Dimension in mm)
Basic	Size	H15	H14	H13	H12	H11	H10	H9	H8	H7	H6	H5
Over	6	+0.580	+0.360	+0.220	+0.150	+0.090	+0.058	+0.036	+0.022	+0.015	+0.009	+0.006
To	10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Over	10	+0.700	+0.430	+0.270	+0.180	+0.110	+0.070	+0.043	+0.027	+0.018	+0.011	+0.008
To	14	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Over	14	+0.700	+0.430	+0.270	+0.180	+0.110	+0.070	+0.043	+0.027	+0.018	+0.011	+0.008
To	18	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Over	18	+0.840	+0.520	+0.330	+0.210	+0.130	+0.084	+0.052	+0.033	+0.021	+0.013	+0.009
To	24	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Over	24	+0.840	+0.520	+0.330	+0.210	+0.130	+0.084	+0.052	+0.033	+0.021	+0.013	+0.009
To	30	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Over	30	+1.000	+0.620	+0.390	+0.250	+0.160	+0.100	+0.062	+0.039	+0.025	+0.016	+0.011
To	40	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Over	40	+1.000	+0.620	+0.390	+0.250	+0.160	+0.100	+0.062	+0.039	+0.025	+0.016	+0.011
To	50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Over	50	+1.200	+0.740	+0.460	+0.300	+0.190	+0.120	+0.074	+0.046	+0.030	+0.019	+0.013
To	65	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Over	65	+1.200	+0.740	+0.460	+0.300	+0.190	+0.120	+0.074	+0.046	+0.030	+0.019	+0.013
To	80	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Over	80	+1.400	+0.870	+0.540	+0.350	+0.220	+0.140	+0.087	+0.054	+0.035	+0.022	+0.015
To	100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Over	100	+1.400	+0.870	+0.540	+0.350	+0.220	+0.140	+0.087	+0.054	+0.035	+0.022	+0.015
To	120	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Over	120	+1.600	+1.000	+0.630	+0.400	+0.250	+0.160	+0.100	+0.063	+0.040	+0.025	+0.018
To	140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Over	140	+1.600	+1.000	+0.630	+0.400	+0.250	+0.160	+0.100	+0.063	+0.040	+0.025	+0.018
To	160	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Over	160	+1.600	+1.000	+0.630	+0.400	+0.250	+0.160	+0.100	+0.063	+0.040	+0.025	+0.018
To	180	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Over	180	+1.850	+1.150	+0.720	+0.460	+0.290	+0.185	+0.115	+0.072	+0.046	+0.029	+0.020
To	200	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Tolerance zones for external (shaft) dimensions (h15 through h5)												(Dimension in mm)
Basic	Size	h15	h14	h13	h12	h11	h10	h9	h8	h7	h6	h5
Over	6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
To	10	-0.580	-0.360	-0.220	-0.150	-0.090	-0.058	-0.036	-0.022	-0.015	-0.009	-0.006
Over	10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
To	14	-0.700	-0.430	-0.270	-0.180	-0.110	-0.070	-0.043	-0.027	-0.018	-0.011	-0.008
Over	14	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
To	18	-0.700	-0.430	-0.270	-0.180	-0.110	-0.070	-0.043	-0.027	-0.018	-0.011	-0.008
Over	18	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
To	24	-0.840	-0.520	-0.330	-0.210	-0.130	-0.084	-0.052	-0.033	-0.021	-0.013	-0.009
Over	24	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
To	30	-0.840	-0.520	-0.330	-0.210	-0.130	-0.084	-0.052	-0.033	-0.021	-0.013	-0.009
Over	30	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
To	40	-1.000	-0.620	-0.390	-0.250	-0.160	-0.100	-0.062	-0.039	-0.025	-0.016	-0.011
Over	40	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
To	50	-1.000	-0.620	-0.390	-0.250	-0.160	-0.100	-0.062	-0.039	-0.025	-0.016	-0.011
Over	50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
To	65	-1.200	-0.740	-0.460	-0.300	-0.190	-0.120	-0.074	-0.046	-0.030	-0.019	-0.013
Over	65	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
To	80	-1.200	-0.740	-0.460	-0.300	-0.190	-0.120	-0.074	-0.046	-0.030	-0.019	-0.013
Over	80	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
To	100	-1.400	-0.870	-0.540	-0.350	-0.220	-0.140	-0.087	-0.054	-0.035	-0.022	-0.015
Over	100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
To	120	-1.400	-0.870	-0.540	-0.350	-0.220	-0.140	-0.087	-0.054	-0.035	-0.022	-0.015
Over	120	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
To	140	-1.600	-1.000	-0.630	-0.400	-0.250	-0.160	-0.100	-0.063	-0.040	-0.025	-0.018
Over	140	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
To	160	-1.600	-1.000	-0.630	-0.400	-0.250	-0.160	-0.100	-0.063	-0.040	-0.025	-0.018
Over	160	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
To	180	-1.600	-1.000	-0.630	-0.400	-0.250	-0.160	-0.100	-0.063	-0.040	-0.025	-0.018
Over	180	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
To	200	-1.850	-1.150	-0.720	-0.460	-0.290	-0.185	-0.115	-0.072	-0.046	-0.029	-0.020

An economic and proven solution to many linear bearing applications is the use of hardened and precision-ground shafts (solid or tubular) offered in various materials and finishes, together with recirculating-ball type linear bushes, bush housings, shaft mounting blocks, continuous shaft supports. Our linear bearing shafts are induction hardened. This ensures a constant degree of hardness along the ball-ways, as well as the rest of the shaft surface, in both the radial and axial direction. This induction process provides an effective hardened zone all over the shaft surface whilst leaving the core unhardened. This facilitates subsequent machining. The shafts are centerless ground and are then tested rigorously for straightness and roundness of the cylindrical form, as well as for surface finish. With the aid of the tabulation below, please select the shaft-type best suited to your application.

selection criteria for solid or tubular linear bearing shafts						
your special requirements	our type	material + finish	surface hardness	tolerance of o/d	sizes avail. Ø	see page
- very high surface hardness - all machining examples on page 69 can be carried out - no special corrosion resistance	WV	solid shafts material induction-hardened + precision-ground Cf 53 (1.1213) USA 1050	62 +/- 2 HRC	h6	3 - 120 mm Ø	70
- o/d hardened + 5-10 µm hard-chrome plating - all machining examples on page 69 can be carried out - considerable corrosion resistance	WV 1	solid shafts material induction-hardened ground, and hard chrome plated Cf 53 Cr (1.1213) USA 1050	900-1100 HV	h7	3 - 120 mm	70
- high surface hardness - all machining examples on page 69 can be carried out - considerable corrosion resistance	WRS 1	rust-resistant solid shafts induction-hardened + precision-ground X46Cr13 (1.4034) USA AISI 420B	55 +/- 2 HRC	h6	5 - 60 mm	71
- high surface hardness - all machining examples on page 69 can be carried out - considerable corrosion- and acid resistance	WRS 3	acid-resistant "stainless" steel" solid shafting, induction-hardened + precision-ground X105CrMo17 (1.4125) USA AISI 440C	55 +/- 3 HRC	h6	12-50 mm	71
- very high surface hardness - all machining examples on page 69 can be carried out - low wt./m - good wt./stiffness ratio - cables and fluids can be fed through hollow center no corrosion	WH	hollow/tubular shafts, induction-hardened + precision ground 100Cr6 (1.3505) USA 52100	62 +/- 2 HRC	h6	12 - 100 mm	71

PFWB - machining examples of H + G precision shafts

Please take advantage of our machining facilities, your overall costs will be lower if you use our "ready-to-install" linear bearing shafts

We specialise in machining induction hardened shafts. Using modern CNC machines we can supply finish-machined shaft units: eg: cyl. dias, chamfers, radial or axial drilled and tapped bores. Also pre-assembled shafts with shaft supports or end-mountings.



machining examples

shaft induction-hardened ends left soft (annealed)



shaft induction-hardened ends left soft (annealed)



shaft induction-hardened ends left soft (annealed)



shaft induction-hardened ends left soft (annealed)



shaft induction-hardened ends left soft (annealed)



complete shaft induction-hardened, ncl. area being machined



shaft induction-hardened incl. region of bored hole



shaft induction-hardened



shaft induction-hardened



shaft induction-hardened



shaft induction-hardened



We will machine your shafts to your specification or drawing, and delivery will be quick

WV solid* steel shafts, induction hardened to HRC 62±2
material spec. CF-53 (1.1213) USA 1050

WV 1 solid* shafts, hard-chrome plated 5-10µm thickness, hardness HV 900/1100
material spec. CF-53 (1.1213) USA 1050

shaft o / d	weight per meter	shaft material code WV	max. production lengths	depth of hardened zone DIN 50190	standard- tolerance ISO h6
Ø mm	kg/m		mm	mm	µm
5	0.154	WV - 5	4000	0.8	0 -8
6	0.222	WV - 6	4000	0.8	0 -9
8	0.395	WV - 8	5000	1	0 -9
10	0.617	WV - 10	5000	1	0 -11
12	0.888	WV - 12	6000	1.3	0 -11
14	1.208	WV - 14	6000	1.3	0 -11
15	1.387	WV - 15	6000	1.3	0 -11
16	1.578	WV - 16	6000	1.6	0 -11
18	1.998	WV - 18	6000	1.6	0 -13
20	2.466	WV - 20	6500	1.6	0 -13
22	2.984	WV - 22	6500	1.8	0 -13
24	3.551	WV - 24	6000	1.8	0 -13
25	3.853	WV - 25	6500	1.8	0 -13
30	5.549	WV - 30	6500	2	0 -16
32	6.313	WV - 32	6500	2	0 -16
35	7.553	WV - 35	6500	2.5	0 -16
36	7.99	WV - 36	6500	2.5	0 -16
40	9.865	WV - 40	6500	2.5	0 -19
45	12.48	WV - 45	6500	2.5	0 -19
50	15.41	WV - 50	6500	3	0 -19
60	22.2	WV - 60	6500	3	0 -19
70	30.21	WV - 70	6500	3	0 -19
80	39.46	WV - 80	6500	3	0 -19
100	61.65	WV - 100	6500	3.3	0 -22
		WV 1	ISO h7		
5	0.154	WV 1 - 5	4000	0.8	0 -12
6	0.222	WV 1 - 6	4000	0.8	0 -15
8	0.395	WV 1 - 8	5000	1	0 -15
10	0.617	WV 1 - 10	5000	1	0 -18
12	0.888	WV 1 - 12	6000	1.3	0 -18
14	1.208	WV 1 - 14	6000	1.3	0 -18
15	1.387	WV 1 - 15	6000	1.3	0 -18
16	1.578	WV 1 - 16	6000	1.6	0 -18
20	2.466	WV 1 - 20	6500	1.6	0 -21
24	3.551	WV 1 - 24	6000	1.8	0 -21
25	3.853	WV 1 - 25	6500	1.8	0 -21
30	5.549	WV 1 - 30	6500	2	0 -21
32	6.313	WV 1 - 32	6500	2	0 -21
35	7.553	WV 1 - 35	6500	2.5	0 -25
40	9.865	WV 1 - 40	6500	2.5	0 -25
50	15.41	WV 1 - 50	6500	3	0 -25
60	22.2	WV 1 - 60	6500	3	0 -25
80	39.46	WV 1 - 80	6500	3	0 -30

WRS 1 rust and acid resistant, HRC 51-55, material spec. X-46Cr13 (1.4034) USA AISI 420B

WRS 3 "stainless" st. acid resistant, HRC 52-56, material spec. X105CrMo17 (1.41252) USA AISI 440C

WH hollow/tubular shafts, induction hardened HRC 62±2
material spec. C60 or 100Cr 6 (1.0601) USA 52100

shaft o / d	shaft i / d	weight per meter	shaft material code WRS 1	maximum production lengths	depth of hardened zone DIN 50190	standard- tolerance ISO h6
Ø mm	Ø mm	kg/m		mm	mm	µm
5		0.154	WRS 1 - 5	1000	0.7	0 -8
6		0.222	WRS 1 - 6	3900	0.7	0 -9
8		0.395	WRS 1 - 8	3900	0.9	0 -9
10		0.617	WRS 1 - 10	3900	1.1	0 -11
12		0.888	WRS 1 - 12	4900	1.3	0 -11
14		1.208	WRS 1 - 14	4900	1.5	0 -11
15		1.387	WRS 1 - 15	4900	1.6	0 -11
16		1.578	WRS 1 - 16	4900	1.6	0 -11
20		2.466	WRS 1 - 20	4900	1.8	0 -13
25		3.853	WRS 1 - 25	4900	2	0 -13
30		5.549	WRS 1 - 30	4900	2.4	0 -13
40		9.865	WRS 1 - 40	4900	2.6	0 -13
50		15.41	WRS 1 - 50	4900	2.9	0 -13
60		22.2	WRS 1 - 60	4900	3	0 -16
			WRS 3			
12		0.888	WRS 3 - 12	6000	1.3	0 -11
14		1.208	WRS 3 - 14	6000	1.5	0 -11
15		1.387	WRS 3 - 15	6000	1.6	0 -11
16		1.578	WRS 3 - 16	6000	1.6	0 -11
20		2.466	WRS 3 - 20	6000	1.8	0 -13
25		3.853	WRS 3 - 25	6000	2	0 -13
30		5.549	WRS 3 - 30	6000	2.4	0 -13
40		9.865	WRS 3 - 40	6000	2.6	0 -13
50		15.41	WRS 3 - 50	6000	2.9	0 -13
			WH			
12	4	0.79	WH - 12	6000	1.3	0 -11
16	7	1.28	WH - 16	6000	1.6	0 -11
20	14	1.25	WH - 20	6000	1.8	0 -13
25	15.6	2.35	WH - 25	6000	2	0 -13
30	18.3	3.5	WH - 30	6000	2.4	0 -13
40	28	4.99	WH - 40	6000	2.6	0 -16
50	29.7	9.91	WH - 50	6000	2.9	0 -16
60	36	14.2	WH - 60	6000	3	0 -19
80	57	19.43	WH - 80	6000	3.2	0 -19

Other diameter and special tolerances on request.

Linear air supported multiaxis direct drives

Linear one - axis systems, incl. air - bearings versions

Linear shaftsystems - type linear bearing assemblies

Linear monorail - type with recirculating-balls or rollers - heavy loads

Linear steel track with needle-bearing prismatic rollers

Linear light alloy supported bearing track with angular contact bearings

Linear ballscrews, precision ground, rolled with single, double or flanged ball-nuts

Linear trapezoid leadscrews, nut options - brass, steel, stainless or plastic

Linear electro-mechanical actuator / positioners: standard stroke / travel up to 1200mm loads to 10.000N DC from 12-36V AC 220V-50/60 Hz.

Linear low-friction plain bushings (various materials) - specials to customer specification

Linear ballunits - various materials and designs - specials to customer specification

Linear ball bearings and accessories in inch/imperial dimension

Linear positioning and motion-control systems with steppers, brushed or brushless servomotors, controls and programs



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Laurens, SC 29360

MAJOR PRODUCT LISTINGS

CHAIN: Custom constructions/Flat top/Rubber block/Leaf/PIV/Roller/Accumulator/ANSI/Assembled to order/Attachments/Bush/Conveyor/Draw bench/Hollow pin/Extended pin/Long pitch/Nickel plated/Stainless steel/Side bow/Stud

BELTS: American pitch/Endless synchronous/HTD pitch/AT pitch/Metric pitch/Open ended synchronous/Special constructions/Special backings/Spliced synchronous/Super torque/V-belting/Variable speed

SPROCKETS: Flat top/Hardened teeth/Idler, tension and freewheel/Plastics/Stainless steel/Taper bushing/Tensioners/Machined to specifications

GEARING: Nylon gear rack/Round gear rack/Stainless steel gear rack/Ground gear rack/Injection molded gear rack/Spiral bevel/Bevel/Cast iron spur/Induction hardened spur/Induction molded plastic spur/Nylon spur/Spur/Stainless steel spur

MOTORS: Electric single phase/Electric three phase disk brake/Drip and Explosion proof/Two speed/Three phase

REDUCERS: Right angle/European replacements/Worm gears

PULLEYS: Bar stock in metric, American, and HTD pitches/Flanges/Pulleys in American, metric, HTD,AT and Super Torque profiles/Taper bushing pulleys in American, HTD and Super Torque/Variable speed/Poly-V/Adjustable taper bushing /V-belt sheaves/Sheaves available in aluminum/Taper bushing V-belt sheaves

SHAFTING: Drill rod/Case hardened shafting/Ground and polished stainless steel/Ground and polished/Key stock/Key stock and woodruff kits/Shaft keys/Woodruff keys

BUSHINGS: Oil impregnated sintered bronze/ANSI inch bore taper/BSW inch bore taper/Metric bore taper

OTHER PRODUCTS: Adapter sleeves/Ball joints/Stainless and chromium steel balls/Bearing units/Calipers/Chain breakers/Set collars/Gear couplings/Star couplings/Thread gauges/Grease fittings in inch and metric/Machine handles/Hex rod/KM nuts for shafts and withdraw sleeves/Lock nuts with nylon inserts/Locking ring elements/Oil sight glasses/O-ring in kits and cord/Hardened dowel pins/Grooved pins/Rolled pins/Taper pins/Retaining rings/Snap rings/Rod ends/Shaft seals/Set screws/Splines/Arm tensioners/Pulley tensioners/Sprocket tensioners/Threaded rod/Hydraulic tubing/Universal joints/Washers/Withdrawal sleeves

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