DAIDYNE DDK05

Pb Free RoHS ELV

This product is an environmentally friendly "Lead free bearing."
This compound bearing, a "perfect oilless bearing" that does not require any lubricant at all uses polytetrafluoroethylene (PTFE) resin, has excellent low friction characteristics and also optimizes metal properties such as strength and dimensional stability.

Features

① The bearing surface has such low a coefficient of static and dynamic friction that the surface runs smoothly without lubrication, and in addition, the so-called stick and slip phenomenon is eliminated. The bearing can be used in oil as well.
② The operating temperature range extends from -200°C to +280°C.
③ Adaptable to operations under high-load, impact load, intermittent operation and reciprocating motion.
④ Free from electrostatic induction (When installed, each bearing has an electrical resistance of 1Ω to 10Ω per 1 cm^2 wide contact area.)
⑤ The bearing surface is highly resistant to most industrial chemicals and solvents such as petroleum and alcohol.
⑥ The bearing will not damage the surface of engaging component (shaft).
⑦ Extended service life.
⑧ The bearing is light and thin (max. 3 mm thick), requiring little space and permits compact equipment design.
⑨ The bearing minimizes operating noise.

Major Superior Points to Roller Bearing

① DDK05 bearing is free from the skew problem.
② DDK05 bearing can also be used for sliding motion in the axial direction.
③ DDK05 bearing allows very compact equipment design that does not occupy wide space.
④ In general the bearing price is competitive compared to rolling element bearings.
⑤ The bearing exhibits exceptional resistance against fretting corrosion.

Superior Points to Roller Bearing

① Permitted bearing pressure is high.
② The rolling element bearings are inferior to Daido plain bearings in conditions of high-load, low speed operation, reciprocating and intermittent motion where boundary lubrication condition cannot be assured and further at high temperature (+280°C) or low temperature (-200°C).
③ DDK05 bearing can be used in various liquids and gases, or in a vacuum.
④ Standard bearings are stocked and are available for quick delivery.

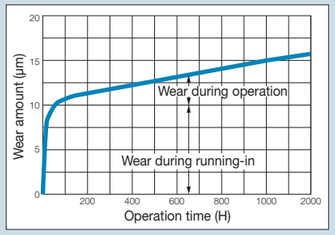
Physical Characteristics (Typical Values)

Compressive Strength (MPa)	304
Coefficient of Linear Thermal Expansion (10^{-6}/°C)	11 (direction parallel to bearing face), 30 (thickness direction)
Heat Transfer Coefficient (W/m-k)	42
Service Temperature Limit (°C)	−200～+280
Friction Coefficient	0.04 to 0.1 (below 6 m/min, 3.5 to 55 MPa)
	0.06 to 0.18 (6 to 300 m/min, below 3.5 MPa)

Friction properties/characteristics of DDK05

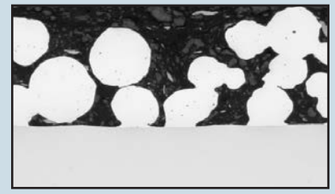
The graph shows that during the running in stage, part of the surface layer rapidly transfers to the shaft surface to make to the irregularity flat and form a smooth low-wear and low-friction surface. During operation when the surface layer consisting of PTFE mixture becomes thinner friction between the metals of the bearing and the shaft temporarily occurs. Then the PTFE mixture expands due to the heat generated by the friction and the mixture is pushed out from the porous intermediate layer and supplied to the bearing surface very slowly. Therefore no wear occurs on the shaft.

<Table 1> Wear of DDK05

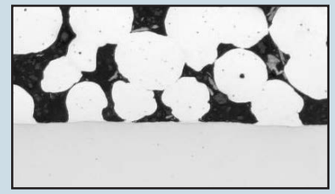


Designing DDK05

① **PV value and wear**
The service life of DDK05 is determined primarily by bearing load and PV value. The term PV value refers to the product of a pressure (P) in MPa and a velocity (V) in m/min. A bearing with a PV value of 206 MPa m/min can only operate for short periods of time. The maximum PV value for a bearing that be used for continuous operation is 103 MPa m/min. Testing has shown that the rate of wear to a DDK05 after breaking in is roughly proportional to its PV value up to 0.04–0.05 mm of wear.
Fig. 1 shows the relationship between service life and PV value.



Prior to breaking in the bearing



Photographic cross-section of a DDK05 after breaking in and operating for a certain period of time.

② **Basic relationship between service life and PV value (PV value in MPa·m/min)**

●Bushings (unidirectional loading)

$$\text{Service life in hours (H)} = \frac{39\times10^3\times f\times m}{PV} - C$$

NB: The term “unidirectional loading” refers to bearing loads applied to a fixed bushing by an axle that is either rotating or sliding.

●Bushings (rotational loading)

$$\text{Service life in hours (H)} = \frac{78\times10^3\times f\times m}{PV} - C$$

NB: The term “rotational loading” refers to bearing loads applied to a rotating bushing by a fixed axle.

●Thrust washer

$$\text{Service life in hours (H)} = \frac{25\times10^3\times f\times m}{PV} - C$$

NB: Refer to Table 2 on page 56 and Table 3 on page 57 for values of the coefficients f, m, and C.

③ **Formula for calculating (PV value in MPa·m/min)**

For rotational loading

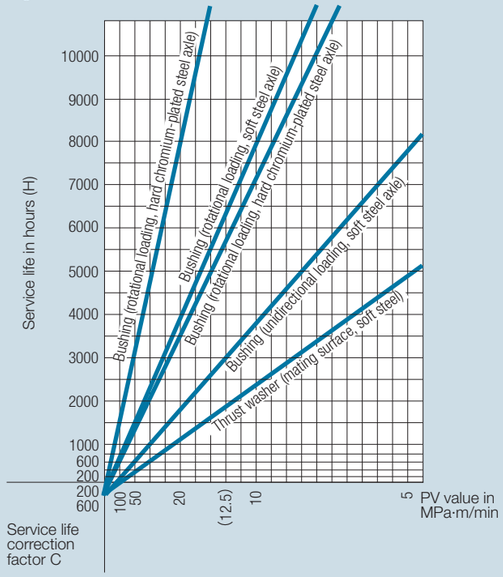
Bushing	Thrust washer
$V=\pi dN/10^3$	$V=\pi(D+d)N/2\times10^3$
$P=W/Ld$	$P=W/(D^2-d^2)\pi\times4$
$PV=\pi WN/10^3L$	$PV=2WN/10^3\cdot(D-d)$

V : rotating speed in m/min,
π : ratio of the circumference to the diameter,
d : inner diameter in mm
D : outer diameter in mm,
P : surface pressure in MPa
W: load in N,
N : rotational speed in rpm

NB1: During oscillating movement, the articulation θ in degrees (°) is calculated using a rotational speed N of 2θC/360, where C is the cycles per minute.

NB2: During axial movement, V is the sliding speed in meters per minute.

Fig. 1: Service life and PV value



④ **Load-bearing capacity (U)**
Although actual load-bearing capacity with vary with load characteristics, the maximum load that can be supported with DDK05 is as follows.

<Table1> Allowable load (U)

Types of loading	U MPa
① Static loading with virtually no movement or an extremely slow movement, where V≒0.	137.0
② Rotational or oscillating movement, provided that the load affecting the DDK05 does not move.	55.0
③ When the DDK05 is subject to alternating or variable loads, the allowable load varies per the number of changes in loading that occur while the bearing is in use. (a) 10^5 times or less (b) 10^7 times or more	 27.5 13.7

⑤ **Operating factors (f)**

<Table 2> Operating factors (f)

Operating conditions	Housing properties	Ambient temperature of axle in °C					
		25	60	100	150	200	280
Continuously dry conditions	For material with ordinary heat conductivity	1	0.8	0.6	0.4	0.2	0.1
	For material with poor heat conductivity	0.5	0.4	0.3	0.2	0.1	–
	For non-metallic housings with poor heat conductivity	0.3	0.3	0.2	0.1	–	–
Intermittently dry conditions (No more than two minutes of operation, followed by two minutes or more of rest.)	For material with ordinary heat conductivity	2	1.6	1.2	0.8	0.4	0.2
When continuously immersed in water		2	1.5	0.6	–	–	–
When alternating between immersion in water and dry conditions		0.2	0.1	–	–	–	–
When continuously immersed in fluids other than water (excluding lubricants)		1.5	1.2	0.9	0.6	0.3	0.1

④ **Axle (mating surface) surface factor (m) and service life correction factor (C)**
The surface factor (m) is applicable in cases where the mating surface roughness is equivalent or better to the former Rmax 3.2 µm. In many cases, the surface finish is rougher than this and will require additional polishing to ensure the necessary surface quality.

<Table3>
Axle (mating surface) surface factor (m) and service life correction factor (C)

Material	Axle surface factor (m)	Service life correction factor (C)
Steel		
Soft steel	1	200
Hardened steel	1	200
Nitrided steel	1	200
Cast iron	1	200
Stainless steel	2	200
Thermal spray stainless steel	1	200
Non-ferrous		
Anodized aluminum	0.4	200
Hard anodized aluminum (0.025-mm coating)	3	600
Bronze and copper alloys	0.2	200
Galvanized steel (0.013-mm coating or more)		
Hard chromium	2	600
Lead	1.5	600
Tin-nickel	1.2	600
Nickel	0.2	600
Cadmium	0.2	600
Zinc	0.2	600
Thermal spray tungsten carbide	3	600
Phosphate-coated steel	0.2	300

NB: Refer to Fig. 11 on page 152 for the relationship between mating surface roughness and wear.

K5B DDK05 Bushing (Bushing Inner Diameter: 3 to 28 mm)

Designation of Part Number

K5 B 00 00
- 00 — Bushing Length
- 00 — Bushing Nominal I.D.
- B — Bushing
- K5 — Product Symbol

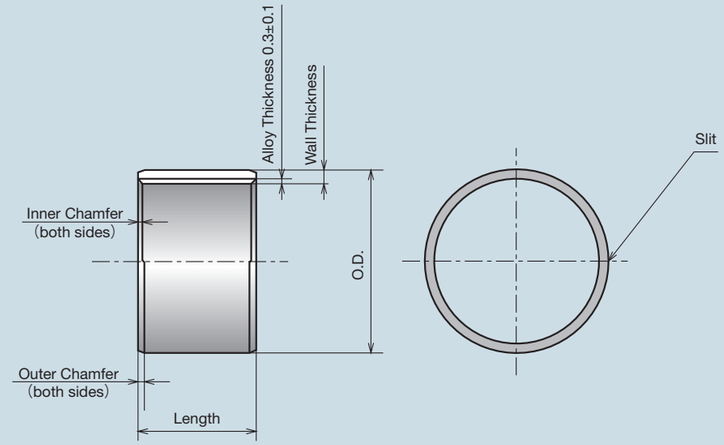
K5B 0303

Please specify by part number.

Pb Free

RoHS

ELV



(Unit : mm)

Bushing I.D.	Recommended Dimension Mating Part		Bushing Dimensions																	Bushing I.D.
	Houshing I.D.	Shaft Dia.	O.D.	Wall Thickness	Part Number & Bushing Length Tolerance $^{0}_{-0.3}$															
					3	4	5	6	7	8		10	12	15	20	25	30	35	40	
3	ϕ5H7 $^{+0.012}_{0}$	ϕ3 $^{-0.025}_{-0.035}$	ϕ5 $^{+0.047}_{+0.017}$	1.0 $^{0}_{-0.025}$	**0303**	**0304**	**0305**	**0306**												3
4	ϕ6H7 $^{+0.012}_{0}$	ϕ4 $^{-0.025}_{-0.037}$	ϕ6 $^{+0.047}_{+0.017}$	1.0 $^{0}_{-0.025}$	**0403**	**0404**	**0405**	**0406**		**0408**										4
5	ϕ7H7 $^{+0.015}_{0}$	ϕ5 $^{-0.025}_{-0.037}$	ϕ7 $^{+0.053}_{+0.023}$	1.0 $^{0}_{-0.025}$	**0503**	**0504**	**0505**	**0506**		**0508**										5
6	ϕ8H7 $^{+0.015}_{0}$	ϕ6 $^{-0.025}_{-0.037}$	ϕ8 $^{+0.053}_{+0.023}$	1.0 $^{0}_{-0.025}$	**0603**	**0604**	**0605**	**0606**	**0607**	**0608**		**0610**	**0612**							6
7	ϕ9H7 $^{+0.015}_{0}$	ϕ7 $^{-0.025}_{-0.040}$	ϕ9 $^{+0.053}_{+0.023}$	1.0 $^{0}_{-0.025}$			**0705**	**0706**	**0707**	**0708**		**0710**	**0712**							7
8	ϕ10H7 $^{+0.015}_{0}$	ϕ8 $^{-0.025}_{-0.040}$	ϕ10 $^{+0.055}_{+0.025}$	1.0 $^{0}_{-0.025}$			**0805**	**0806**	**0807**	**0808**		**0810**	**0812**	**0815**						8
9	ϕ11H7 $^{+0.018}_{0}$	ϕ9 $^{-0.025}_{-0.040}$	ϕ11 $^{+0.060}_{+0.030}$	1.0 $^{0}_{-0.025}$				**0906**				**0910**								9
10	ϕ12H7 $^{+0.018}_{0}$	ϕ10 $^{-0.025}_{-0.040}$	ϕ12 $^{+0.060}_{+0.030}$	1.0 $^{0}_{-0.025}$				**1006**	**1007**	**1008**		**1010**	**1012**	**1015**	**1020**					10
12	ϕ14H7 $^{+0.018}_{0}$	ϕ12 $^{-0.025}_{-0.043}$	ϕ14 $^{+0.060}_{+0.030}$	1.0 $^{0}_{-0.025}$				**1206**		**1208**		**1210**	**1212**	**1215**	**1220**					12
13	ϕ15H7 $^{+0.018}_{0}$	ϕ13 $^{-0.025}_{-0.043}$	ϕ15 $^{+0.063}_{+0.033}$	1.0 $^{0}_{-0.025}$						**1308**		**1310**	**1312**	**1315**	**1320**					13
14	ϕ16H7 $^{+0.018}_{0}$	ϕ14 $^{-0.025}_{-0.043}$	ϕ16 $^{+0.063}_{+0.033}$	1.0 $^{0}_{-0.025}$						**1408**		**1410**	**1412**	**1415**	**1420**					14
15	ϕ17H7 $^{+0.018}_{0}$	ϕ15 $^{-0.025}_{-0.043}$	ϕ17 $^{+0.073}_{+0.038}$	1.0 $^{0}_{-0.025}$						**1508**		**1510**	**1512**	**1515**	**1520**	**1525**				15
16	ϕ18H7 $^{+0.018}_{0}$	ϕ16 $^{-0.025}_{-0.043}$	ϕ18 $^{+0.073}_{+0.038}$	1.0 $^{0}_{-0.025}$								**1610**	**1612**	**1615**	**1620**	**1625**				16
17	ϕ19H7 $^{+0.021}_{0}$	ϕ17 $^{-0.025}_{-0.043}$	ϕ19 $^{+0.081}_{+0.046}$	1.0 $^{0}_{-0.025}$								**1710**		**1715**						17
18	ϕ20H7 $^{+0.021}_{0}$	ϕ18 $^{-0.025}_{-0.043}$	ϕ20 $^{+0.081}_{+0.046}$	1.0 $^{0}_{-0.025}$								**1810**	**1812**	**1815**	**1820**	**1825**	**1830**			18
19	ϕ22H7 $^{+0.021}_{0}$	ϕ19 $^{-0.025}_{-0.046}$	ϕ22 $^{+0.081}_{+0.046}$	1.5 $^{0}_{-0.030}$								**1910**		**1915**	**1920**					19
20	ϕ23H7 $^{+0.021}_{0}$	ϕ20 $^{-0.025}_{-0.046}$	ϕ23 $^{+0.081}_{+0.046}$	1.5 $^{0}_{-0.030}$								**2010**	**2012**	**2015**	**2020**	**2025**	**2030**			20
22	ϕ25H7 $^{+0.021}_{0}$	ϕ22 $^{-0.025}_{-0.046}$	ϕ25 $^{+0.086}_{+0.051}$	1.5 $^{0}_{-0.030}$								**2210**	**2212**	**2215**	**2220**	**2225**	**2230**			22
24	ϕ27H7 $^{+0.021}_{0}$	ϕ24 $^{-0.025}_{-0.046}$	ϕ27 $^{+0.086}_{+0.051}$	1.5 $^{0}_{-0.030}$										**2415**	**2420**	**2425**	**2430**			24
25	ϕ28H7 $^{+0.021}_{0}$	ϕ25 $^{-0.025}_{-0.046}$	ϕ28 $^{+0.093}_{+0.056}$	1.5 $^{0}_{-0.030}$								**2510**	**2512**	**2515**	**2520**	**2525**	**2530**	**2535**		25
26	ϕ30H7 $^{+0.021}_{0}$	ϕ26 $^{-0.025}_{-0.046}$	ϕ30 $^{+0.115}_{+0.075}$	2.0 $^{0}_{-0.030}$										**2615**	**2620**	**2625**	**2630**			26
28	ϕ32H7 $^{+0.025}_{0}$	ϕ28 $^{-0.025}_{-0.046}$	ϕ32 $^{+0.115}_{+0.075}$	2.0 $^{0}_{-0.030}$									**2812**	**2815**	**2820**	**2825**	**2830**			28

K5B DDK05 Bushing (Bushing Inner Diameter: 30 to 160 mm)

Designation of Part Number

K5 B 00 00
- 00 — Bushing Length
- 00 — Bushing Nominal I.D.
- B — Bushing
- K5 — Product Symbol

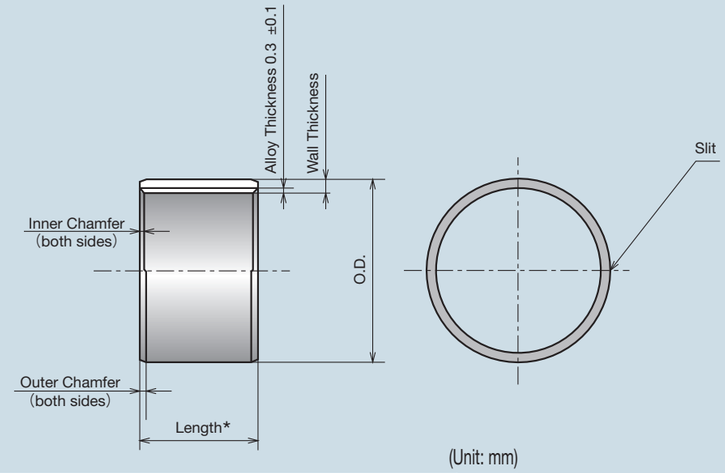
K5B 3012

Please specify by part number.

Pb Free

RoHS

ELV



(Unit: mm)

Bushing I.D.	Recommended Dimension Mating Part		Bushing Dimensions																	Bushing I.D.
	Houshing I.D.	Shaft Dia.	O.D.	Wall Thickness	Part Number & Bushing Length Tolerance $^{0}_{-0.3}$															
					12	15	20	25	30	35		40	50	60	70	80	90	95	100	
30	ϕ34H7 $^{+0.025}_{0}$	ϕ30 $^{-0.025}_{-0.046}$	ϕ34 $^{+0.115}_{+0.075}$	2.0 $^{0}_{-0.030}$	**3012**	**3015**	**3020**	**3025**	**3030**	**3035**		**3040**	**3050**							30
31	ϕ35H7 $^{+0.025}_{0}$	ϕ31 $^{-0.025}_{-0.050}$	ϕ35 $^{+0.115}_{+0.075}$	2.0 $^{0}_{-0.030}$		**3115**		**3125**	**3130**			**3140**								31
32	ϕ36H7 $^{+0.025}_{0}$	ϕ32 $^{-0.025}_{-0.050}$	ϕ36 $^{+0.115}_{+0.075}$	2.0 $^{0}_{-0.030}$		**3215**	**3220**	**3225**	**3230**			**3240**								32
35	ϕ39H7 $^{+0.025}_{0}$	ϕ35 $^{-0.025}_{-0.050}$	ϕ39 $^{+0.115}_{+0.075}$	2.0 $^{0}_{-0.030}$	**3512**	**3515**	**3520**	**3525**	**3530**	**3535**		**3540**	**3550**							35
38	ϕ42H7 $^{+0.025}_{0}$	ϕ38 $^{-0.025}_{-0.050}$	ϕ42 $^{+0.115}_{+0.075}$	2.0 $^{0}_{-0.030}$			**3820**	**3825**	**3830**	**3835**		**3840**								38
40	ϕ44H7 $^{+0.025}_{0}$	ϕ40 $^{-0.025}_{-0.050}$	ϕ44 $^{+0.115}_{+0.075}$	2.0 $^{0}_{-0.030}$	**4012**	**4015**	**4020**	**4025**	**4030**	**4035**		**4040**	**4050**							40
45	ϕ50H7 $^{+0.025}_{0}$	ϕ45 $^{-0.025}_{-0.050}$	ϕ50 $^{+0.115}_{+0.075}$	2.5 $^{0}_{-0.040}$			**4520**	**4525**	**4530**	**4535**		**4540**	**4550**							45
50	ϕ55H7 $^{+0.030}_{0}$	ϕ50 $^{-0.025}_{-0.050}$	ϕ55 $^{+0.145}_{+0.095}$	2.5 $^{0}_{-0.040}$			**5020**	**5025**	**5030**	**5035**		**5040**	**5050**	**5060**						50
55	ϕ60H7 $^{+0.030}_{0}$	ϕ55 $^{-0.025}_{-0.055}$	ϕ60 $^{+0.145}_{+0.095}$	2.5 $^{0}_{-0.040}$				**5525**	**5530**	**5535**		**5540**	**5550**	**5560**						55
60	ϕ65H7 $^{+0.030}_{0}$	ϕ60 $^{-0.025}_{-0.055}$	ϕ65 $^{+0.145}_{+0.095}$	2.5 $^{0}_{-0.040}$					**6030**	**6035**		**6040**	**6050**	**6060**		**6080**				60
65	ϕ70H7 $^{+0.030}_{0}$	ϕ65 $^{-0.035}_{-0.005}$	ϕ70 $^{+0.145}_{+0.095}$	2.47 $^{0}_{-0.050}$					**6530**			**6540**	**6550**	**6560**						65
70	ϕ75H7 $^{+0.030}_{0}$	ϕ70 $^{-0.035}_{-0.005}$	ϕ75 $^{+0.145}_{+0.095}$	2.47 $^{0}_{-0.050}$					**7030**	**7035**		**7040**	**7050**	**7060**	**7070**	**7080**				70
75	ϕ80H7 $^{+0.030}_{0}$	ϕ75 $^{-0.035}_{-0.005}$	ϕ80 $^{+0.160}_{+0.095}$	2.47 $^{0}_{-0.050}$					**7530**	**7535**		**7540**	**7550**	**7560**		**7580**				75
80	ϕ85H7 $^{+0.035}_{0}$	ϕ80 $^{-0.035}_{-0.005}$	ϕ80 $^{+0.165}_{+0.100}$	2.47 $^{0}_{-0.050}$								**8040**	**8050**	**8060**		**8080**				80
85	ϕ90H7 $^{+0.035}_{0}$	ϕ85 $^{-0.035}_{0}$	ϕ90 $^{+0.165}_{+0.100}$	2.47 $^{0}_{-0.050}$								**8540**	**8550**	**8560**		**8580**				85
90	ϕ95H7 $^{+0.035}_{0}$	ϕ90 $^{-0.035}_{0}$	ϕ95 $^{+0.165}_{+0.100}$	2.47 $^{0}_{-0.050}$								**9040**	**9050**	**9060**			**9090**			90
100	ϕ105H7 $^{+0.035}_{0}$	ϕ100 $^{-0.035}_{0}$	ϕ105 $^{+0.180}_{+0.110}$	2.47 $^{0}_{-0.050}$									**10050**		**10070**	**10080**		**10095**	**100100**	100
110	ϕ115H7 $^{+0.035}_{0}$	ϕ110 $^{-0.035}_{0}$	ϕ115 $^{+0.180}_{+0.110}$	2.47 $^{0}_{-0.050}$									**11050**		**11070**			**11095**	**110100**	110
120	ϕ125H7 $^{+0.040}_{0}$	ϕ120 $^{-0.035}_{0}$	ϕ125 $^{+0.185}_{+0.120}$	2.47 $^{0}_{-0.050}$									**12050**		**12070**			**12095**	**120100**	120
130	ϕ135H7 $^{+0.040}_{0}$	ϕ130 $^{-0.035}_{-0.005}$	ϕ135 $^{+0.185}_{+0.120}$	2.47 $^{0}_{-0.050}$									**13050**			**13080**			**130100**	130
140	ϕ145H7 $^{+0.040}_{0}$	ϕ140 $^{-0.035}_{-0.005}$	ϕ145 $^{+0.185}_{+0.120}$	2.47 $^{0}_{-0.050}$									**14050**			**14080**			**140100**	140
150	ϕ155H7 $^{+0.040}_{0}$	ϕ150 $^{-0.035}_{-0.005}$	ϕ155 $^{+0.205}_{+0.140}$	2.47 $^{0}_{-0.050}$									**15050**			**15080**			**150100**	150
160	ϕ165H7 $^{+0.040}_{0}$	ϕ160 $^{-0.035}_{-0.005}$	ϕ165 $^{+0.205}_{+0.140}$	2.47 $^{0}_{-0.050}$									**16050**			**16080**			**160100**	160

*Width tolerance is :
~ID 110 $^{0}_{-0.3}$
OD 120~ $^{0}_{-0.4}$

K5F DDK05 Flanged Bushing (Bushing Inner Diameter: 3 to 60 mm)

Designation of Part Number

K5 F 00 00 00
- 00 — Flange O.D.
- 00 — Bushing Length
- 00 — Bushing Nominal I.D.
- F — Flanged Bushing
- K5 — Product Symbol

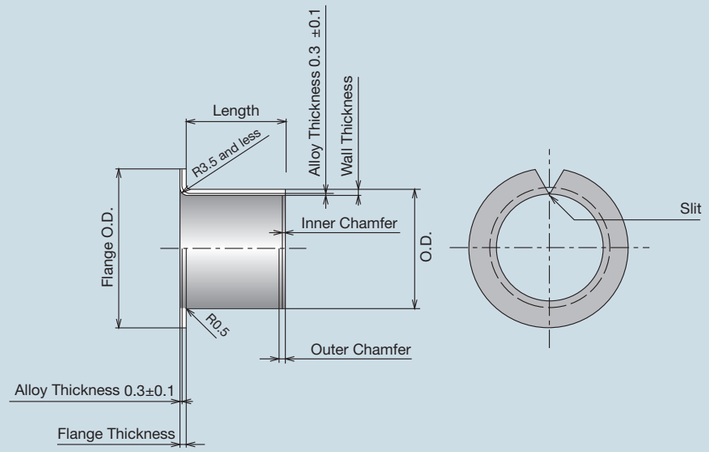
K5F 0303-7

Please specify by part number.

Pb Free

RoHS

ELV



(Unit: mm)

Bushing I.D.	Recommended Dimension Mating Part		Bushing Dimensions				Part Number & Bushing Length Tolerance $^{0}_{-0.3}$																Bushing I.D.
	Houshing I.D.	Shaft Dia.	Flange O.D.	Flange Thickness	O.D.	Wall Thickness	3	4	5	6		7	8	10	12	15	20	25	30	40	50	60	
3	ϕ4.6H7 $^{+0.012}_{0}$	$\phi3\ ^{-0.025}_{-0.035}$	$\phi7\ ^{0}_{-0.8}$	$0.8\ ^{0}_{-0.15}$	$\phi4.6\ ^{+0.047}_{+0.017}$	$0.8\ ^{0}_{-0.025}$	0303-7		0305-7														3
4	ϕ5.6H7 $^{+0.012}_{0}$	$\phi4\ ^{-0.025}_{-0.037}$	$\phi9\ ^{0}_{-0.8}$	$0.8\ ^{0}_{-0.15}$	$\phi5.6\ ^{+0.047}_{+0.017}$	$0.8\ ^{0}_{-0.025}$		0404-9		0406-9													4
5	ϕ7H7 $^{+0.015}_{0}$	$\phi5\ ^{-0.025}_{-0.037}$	$\phi10\ ^{0}_{-0.8}$	$1.0\ ^{0}_{-0.15}$	$\phi7\ ^{+0.053}_{+0.023}$	$1.0\ ^{0}_{-0.025}$		0504-10	0505-10	0506-10													5
6	ϕ8H7 $^{+0.015}_{0}$	$\phi6\ ^{-0.025}_{-0.037}$	$\phi12\ ^{0}_{-0.8}$	$1.0\ ^{0}_{-0.15}$	$\phi8\ ^{+0.053}_{+0.023}$	$1.0\ ^{0}_{-0.025}$			0605-12	0606-12		0607-12	0608-12	0610-12									6
7	ϕ9H7 $^{+0.015}_{0}$	$\phi7\ ^{-0.025}_{-0.040}$	$\phi13\ ^{0}_{-0.8}$	$1.0\ ^{0}_{-0.15}$	$\phi9\ ^{+0.053}_{+0.023}$	$1.0\ ^{0}_{-0.025}$			0705-13			0707-13		0710-13	0712-13								7
8	ϕ10H7 $^{+0.015}_{0}$	$\phi8\ ^{-0.025}_{-0.040}$	$\phi15\ ^{0}_{-0.8}$	$1.0\ ^{0}_{-0.15}$	$\phi10\ ^{+0.055}_{+0.025}$	$1.0\ ^{0}_{-0.025}$				0806-15			0808-15	0810-15	0812-15								8
10	ϕ12H7 $^{+0.018}_{0}$	$\phi10\ ^{-0.025}_{-0.040}$	$\phi18\ ^{0}_{-0.8}$	$1.0\ ^{0}_{-0.15}$	$\phi12\ ^{+0.060}_{+0.030}$	$1.0\ ^{0}_{-0.025}$				1006-18		1007-18	1008-18	1010-18	1012-18	1015-18							10
12	ϕ14H7 $^{+0.018}_{0}$	$\phi12\ ^{-0.025}_{-0.043}$	$\phi20\ ^{0}_{-0.8}$	$1.0\ ^{0}_{-0.15}$	$\phi14\ ^{+0.060}_{+0.030}$	$1.0\ ^{0}_{-0.025}$				1206-20		1207-20	1208-20	1210-20	1212-20	1215-20	1220-20						12
14	ϕ16H7 $^{+0.018}_{0}$	$\phi14\ ^{-0.025}_{-0.043}$	$\phi22\ ^{0}_{-0.8}$	$1.0\ ^{0}_{-0.15}$	$\phi16\ ^{+0.063}_{+0.033}$	$1.0\ ^{0}_{-0.025}$								1410-22	1412-22	1415-22	1420-22						14
15	ϕ17H7 $^{+0.018}_{0}$	$\phi15\ ^{-0.025}_{-0.043}$	$\phi23\ ^{0}_{-0.8}$	$1.0\ ^{0}_{-0.15}$	$\phi17\ ^{+0.073}_{+0.038}$	$1.0\ ^{0}_{-0.025}$								1510-23	1512-23	1515-23	1520-23	1525-23					15
16	ϕ18H7 $^{+0.018}_{0}$	$\phi16\ ^{-0.025}_{-0.043}$	$\phi24\ ^{0}_{-0.8}$	$1.0\ ^{0}_{-0.15}$	$\phi18\ ^{+0.073}_{+0.038}$	$1.0\ ^{0}_{-0.025}$								1610-24	1612-24	1615-24	1620-24	1625-24					16
18	ϕ20H7 $^{+0.021}_{0}$	$\phi18\ ^{-0.025}_{-0.043}$	$\phi26\ ^{0}_{-0.8}$	$1.0\ ^{0}_{-0.15}$	$\phi20\ ^{+0.081}_{+0.046}$	$1.0\ ^{0}_{-0.025}$								1810-26	1812-26	1815-26	1820-26	1825-26					18
20	ϕ23H7 $^{+0.021}_{0}$	$\phi20\ ^{-0.025}_{-0.046}$	$\phi31\ ^{0}_{-0.8}$	$1.5\ ^{0}_{-0.15}$	$\phi23\ ^{+0.081}_{+0.046}$	$1.5\ ^{0}_{-0.030}$								2010-31	2012-31	2015-31	2020-31	2025-31	2030-31				20
22	ϕ25H7 $^{+0.021}_{0}$	$\phi22\ ^{-0.025}_{-0.046}$	$\phi33\ ^{0}_{-0.8}$	$1.5\ ^{0}_{-0.15}$	$\phi25\ ^{+0.086}_{+0.051}$	$1.5\ ^{0}_{-0.030}$								2210-33	2212-33	2215-33	2220-33	2225-33					22
24	ϕ27H7 $^{+0.021}_{0}$	$\phi24\ ^{-0.025}_{-0.046}$	$\phi35\ ^{0}_{-0.8}$	$1.5\ ^{0}_{-0.15}$	$\phi27\ ^{+0.086}_{+0.051}$	$1.5\ ^{0}_{-0.030}$										2415-35	2420-35	2425-35	2430-35				24
25	ϕ28H7 $^{+0.021}_{0}$	$\phi25\ ^{-0.025}_{-0.046}$	$\phi36\ ^{0}_{-0.8}$	$1.5\ ^{0}_{-0.15}$	$\phi28\ ^{+0.093}_{+0.056}$	$1.5\ ^{0}_{-0.030}$								2510-36	2512-36	2515-36	2520-36	2525-36	2530-36				25
26	ϕ30H7 $^{+0.021}_{0}$	$\phi26\ ^{-0.025}_{-0.046}$	$\phi38\ ^{0}_{-0.8}$	$2.0\ ^{0}_{-0.15}$	$\phi30\ ^{+0.115}_{+0.075}$	$2.0\ ^{0}_{-0.030}$										2615-38	2620-38						26
28	ϕ32H7 $^{+0.025}_{0}$	$\phi28\ ^{-0.025}_{-0.046}$	$\phi40\ ^{0}_{-0.8}$	$2.0\ ^{0}_{-0.15}$	$\phi32\ ^{+0.115}_{+0.075}$	$2.0\ ^{0}_{-0.030}$									2812-40	2815-40	2820-40		2830-40				28
30	ϕ34H7 $^{+0.025}_{0}$	$\phi30\ ^{-0.025}_{-0.046}$	$\phi42\ ^{0}_{-0.8}$	$2.0\ ^{0}_{-0.15}$	$\phi34\ ^{+0.115}_{+0.075}$	$2.0\ ^{0}_{-0.030}$									3012-42	3015-42	3020-42	3025-42	3030-42	3040-42			30
31	ϕ35H7 $^{+0.025}_{0}$	$\phi31\ ^{-0.025}_{-0.050}$	$\phi45\ ^{0}_{-0.8}$	$2.0\ ^{0}_{-0.15}$	$\phi35\ ^{+0.115}_{+0.075}$	$2.0\ ^{0}_{-0.030}$												3125-45					31
32	ϕ36H7 $^{+0.025}_{0}$	$\phi32\ ^{-0.025}_{-0.050}$	$\phi46\ ^{0}_{-0.8}$	$2.0\ ^{0}_{-0.15}$	$\phi36\ ^{+0.115}_{+0.075}$	$2.0\ ^{0}_{-0.030}$											3220-46	3225-46	3230-46				32
35	ϕ39H7 $^{+0.025}_{0}$	$\phi35\ ^{-0.025}_{-0.050}$	$\phi49\ ^{0}_{-0.8}$	$2.0\ ^{0}_{-0.15}$	$\phi39\ ^{+0.115}_{+0.075}$	$2.0\ ^{0}_{-0.030}$									3512-49		3520-49	3525-49	3530-49	3540-49	3550-49		35
38	ϕ42H7 $^{+0.025}_{0}$	$\phi38\ ^{-0.025}_{-0.050}$	$\phi52\ ^{0}_{-0.8}$	$2.0\ ^{0}_{-0.15}$	$\phi42\ ^{+0.115}_{+0.075}$	$2.0\ ^{0}_{-0.030}$											3820-52		3830-52	3840-52			38
40	ϕ44H7 $^{+0.025}_{0}$	$\phi40\ ^{-0.025}_{-0.050}$	$\phi54\ ^{0}_{-0.8}$	$2.0\ ^{0}_{-0.15}$	$\phi44\ ^{+0.115}_{+0.075}$	$2.0\ ^{0}_{-0.030}$									4012-54		4020-54	4025-54	4030-54	4040-54	4050-54		40
45	ϕ50H7 $^{+0.025}_{0}$	$\phi45\ ^{-0.025}_{-0.050}$	$\phi60\ ^{0}_{-0.8}$	$2.5\ ^{0}_{-0.15}$	$\phi50\ ^{+0.115}_{+0.075}$	$2.5\ ^{0}_{-0.040}$											4520-60	4525-60	4530-60	4540-60	4550-60		45
50	ϕ55H7 $^{+0.030}_{0}$	$\phi50\ ^{-0.025}_{-0.050}$	$\phi65\ ^{0}_{-0.8}$	$2.5\ ^{0}_{-0.15}$	$\phi55\ ^{+0.145}_{+0.095}$	$2.5\ ^{0}_{-0.040}$											5020-65		5030-65	5040-65		5060-65	50
55	ϕ60H7 $^{+0.030}_{0}$	$\phi55\ ^{-0.025}_{-0.050}$	$\phi70\ ^{0}_{-0.8}$	$2.5\ ^{0}_{-0.15}$	$\phi60\ ^{+0.145}_{+0.095}$	$2.5\ ^{0}_{-0.040}$													5530-70	5540-70		5560-70	55
60	ϕ65H7 $^{+0.030}_{0}$	$\phi60\ ^{-0.025}_{-0.050}$	$\phi75\ ^{0}_{-0.8}$	$2.5\ ^{0}_{-0.15}$	$\phi65\ ^{+0.145}_{+0.095}$	$2.5\ ^{0}_{-0.040}$													6030-75	6040-75		6060-75	60

K5T DDK05 Thrust Washer

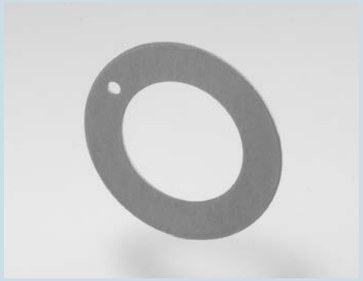
Designation of Part Number

K5 T 00

- 00 — Nominal I.D.
- T — Thrust Washer
- K5 — Product Symbol

K5T 06

Please specify by part number.



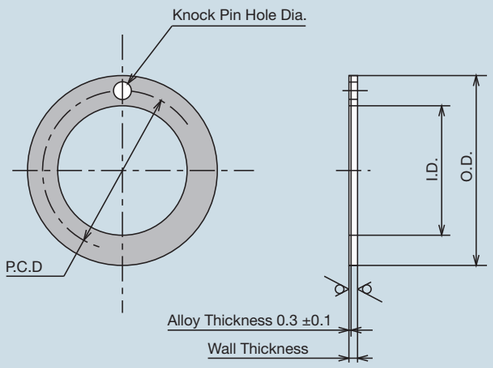
Pb Free

RoHS

ELV

(Unit: mm)

Nominal I.D.	Part Number	I.D.	O.D.	Thickness	Knock Pin Hole Dia.	Knock Pin Hole P. C. D	Housing Recess Depth
6	**K5T06**	8 +0.25 0	16 0 −0.25	1.5 −0.03 −0.08	1.100 +0.20 0	12 ±0.12	1.0 +0.20 −0.05
8	**K5T08**	10 +0.25 0	18 0 −0.25			14 ±0.12	
10	**K5T10**	12 +0.25 0	24 0 −0.25		1.625 +0.25 0	18 ±0.12	
12	**K5T12**	14 +0.25 0	26 0 −0.25		2.125 +0.25 0	20 ±0.12	
14	**K5T14**	16 +0.25 0	30 0 −0.25			23 ±0.12	
16	**K5T16**	18 +0.25 0	32 0 −0.25			25 ±0.12	
18	**K5T18**	20 +0.25 0	36 0 −0.25		3.125 +0.25 0	28 ±0.12	
20	**K5T20**	22 +0.25 0	38 0 −0.25			30 ±0.12	
22	**K5T22**	24 +0.25 0	42 0 −0.25			33 ±0.12	
24	**K5T24**	26 +0.25 0	44 0 −0.25			35 ±0.12	
25	**K5T25**	28 +0.25 0	48 0 −0.25		4.125 +0.25 0	38 ±0.12	
30	**K5T30**	32 +0.25 0	54 0 −0.25			43 ±0.12	
35	**K5T35**	38 +0.25 0	62 0 −0.25			50 ±0.12	
40	**K5T40**	42 +0.25 0	66 0 −0.25			54 ±0.12	
45	**K5T45**	48 +0.25 0	74 0 −0.25	2.0 −0.03 −0.08		61 ±0.12	1.5 +0.20 −0.05
50	**K5T50**	52 +0.25 0	78 0 −0.25			65 ±0.12	



K5P DDK05 SlidePlate

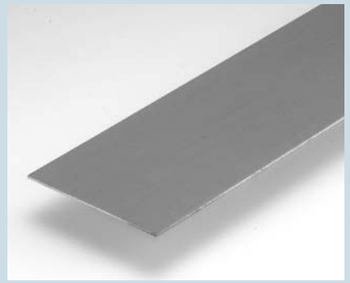
Designation of Part Number

K5 P 00

- 00 — Thickness Indication Symbol
- P — Slide Plate
- K5 — Product Symbol

K5P 100

Please specify by part number.



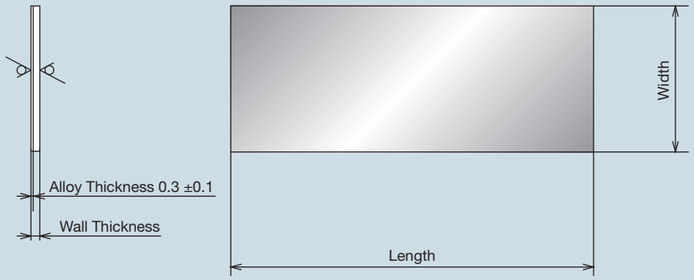
Pb Free

RoHS

ELV

(Unit: mm)

Part Number	Thickness	Width	Length
K5P100	1.0 +0.03 −0.13	80 +2.0 0	500 +10.0 0
K5P150	1.5 +0.03 −0.13	90 +2.0 0	
K5P200	2.0 +0.03 −0.13	100 +2.0 0	
K5P250	2.5 −0.05 −0.15	100 +2.0 0	
K5P300	3.0 0 −0.1	100 +2.0 0	



DAIDYNE DDK35

Pb Free RoHS ELV

This is a completely maintenance-free composite bearing made of polytetrafluoroethylene (PTFE) resin mixed with a special filler for low friction characteristics as well as optimal strength and dimensional stability of the metal. The phosphor bronze used for the backing provides excellent water resistance. This bearing is identical in construction to the DAIDYNE DDK05 with the lone exception that phosphor bronze is used instead of steel for the backing.

Features

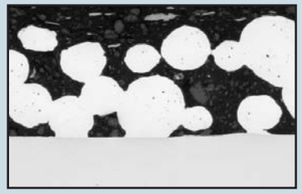
1. The basic features and characteristics of this bearing are identical to those of the DDK05. Refer to pages 54–57 for more information.
2. Provides superior water resistance compared with the DDK05.
3. Constructed of non-magnetic materials.

Suitable applications for DDK35

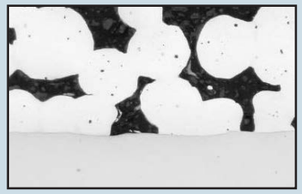
When using DDK35 for heavy-duty operations, the appearance of the bearing will change during breaking-in. Once broken in, the bearing surface will change to the greenish-grey color like a semi-metallic mat. The areas that bear the brunt of a heavy load will have a dull bronze color. In some cases, the bearing surface could exhibit feathers. These are all typical of a DDK35 that is well broken in and operating normally. Therefore, even though its appearance changes, there is no deterioration of the bearing's performance and it remains suitable for use in extremely long-term operations.

Designing DDK35

Identical to the DDK05.
Refer to "Designing DDK05" on pages 55–57.



Prior to breaking in the bearing



Photographic cross-section of a DDK35 after breaking in and operating for a certain period of time.

DDK35 dimensions and specifications

Bushing inner diameter from 3 to 160 mm

K5B 0303(B)

Designation of Part Number

K5 B ○○ ○○ (B)

- (B) Phosphor bronze backing
- ○○ Bushing length
- ○○ Bushing nominal inner diameter
- B Bushing
- K5 Materials symbol

K5B 0303(B)

Please specify by Part No.
This product is produced on order only.

Dimensions are identical to the DDK05 flanged bushing.
Refer to pages 62–63 for more information.

Flanged bushing inner diameter from 5 to 60 mm

K5F 0504-10(B)

Designation of Part Number

K5 F ○○ ○○-○○ (B)

- (B) Phosphor bronze backing
- ○○ Outer flange diameter
- ○○ Bushing length
- ○○ Bushing nominal inner diameter
- F Flanged bushing
- K5 Materials symbol

K5F 0504-10(B)

Please specify by Part No.
This product is produced on order only.

Dimensions are identical to the DDK05 flanged bushing.
Refer to pages 62–63 for more information.

Thrust washe

K5T 06(B)

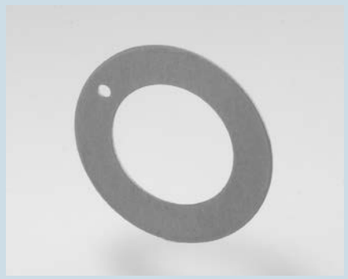
Designation of Part Number

K5 T ○○ (B)

- (B) Phosphor bronze backing
- ○○ Nominal inner diameter
- T Thrust washer
- K5 Materials symbol

K5T 06(B)

Please specify by Part No.
This product is produced on order only.



Dimensions are identical to the DDK05 thrust washer.
Refer to page 64 for more information.

Slide plate

K5P 100(B)

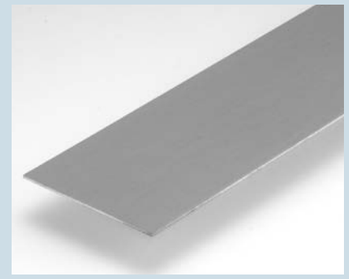
Designation of Part Number

K5 P ○○ (B)

- (B) Phosphor bronze backing
- ○○ Wall thickness symbols
- P Slide plate
- K5 Materials symbol

K5P 100(B)

Please specify by Part No.
This product is produced on order only.



Dimensions are identical to the DDK05 slide plate.
Refer to page 65 for more information.

DAIDYNE DDK02

Pb Free RoHS ELV

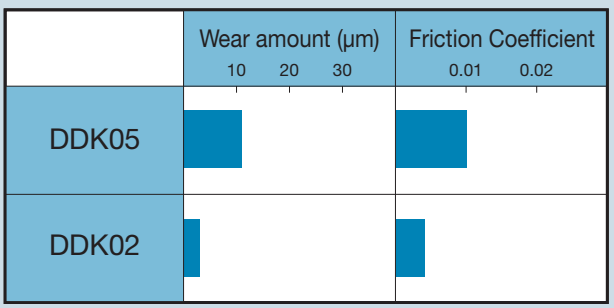
This product is an environmentally friendly "lead-free bearing." The material structure of DAIDYNE DDK02 consists of multiple layers of PTFE resin + porous intermediate layer + steel lining (similar to that of DDK05) and due to the improvement of the sliding layer and porous layer, boundary surface performance and fluid lubrication have also improved.

Features

1. Offers excellent wear-resistance along boundary surfaces and under fluid lubrication.
   Provides three to five times the wear resistance of DDK05.
2. Offers low friction characteristics along boundary surfaces and under fluid lubrication.
   Even less friction than DDK05.
3. Excellent corrosion resistance
   Suitable for a wide range of applications.

Performance Comparison between DDK05 and DDK02

The following results show the comparison of the amount of wear and the friction coefficient under the conditions of lubrication using shock absorber oil.



Test Conditions	
1. Bushing Size (mm)	ϕ20×ϕ23×20L
2. Speed (m/min)	3
3.Specific Load (MPa)	19.6
4.Clearance (Diameter)(mm)	0.08
5.Lubrication	SAE#10,0.15 mm³/min
6.Temperature	Room Temperature
7.Shaft Material Roughness (μm Rmax) Hardness (Hv)	S55C 1.0 700
8.Test Time (H)	100

Standard Dimensions of the DDK02 Bushing

Thickness Dimensions of the DDK02 Bushing (Unit:mm)

Bushing nominal inner diameter		Thickness (T)
min	max	
–	ϕ19	1.0 $^{0}_{-0.020}$
ϕ19	ϕ25	1.5 $^{0}_{-0.020}$
ϕ25	ϕ40	2.0 $^{0}_{-0.025}$
ϕ40	ϕ60	2.5 $^{0}_{-0.040}$
ϕ60	ϕ160	2.47 $^{0}_{-0.050}$

Identical to DDK05 bushings except for wall thickness tolerances.
Please see pages 58 to 61 for DDK05 bushing dimensions.

DAIDYNE DDK06

Pb Free RoHS ELV

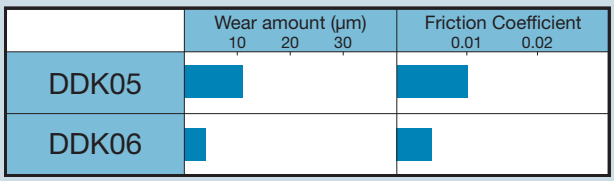
The material structure of DDK06 consists of multiple layers of PTFE resin + porous intermediate layer + steel lining (similar to that of DDK05) and due to the improvement of the sliding layer and porous layer, boundary surface performance and fluid lubrication have also improved.

Features

- Excellent cavitation resistance – Approximately ten times better than DDK05
- Low friction characteristics of the boundary surface and fluid lubrication – Lower friction characteristics than DDK05
- Excellent wear resistance of the boundary surface and fluid lubrication (at low or intermediate load) – Three to five times better wear resistance than DDK05
- Excellent corrosion resistance – Wide range of applications

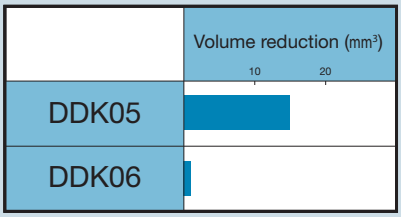
Performance Comparison between DDK05 and DDK06

The following results show the comparison of the amount of wear and the friction coefficient under the conditions of lubrication using shock absorber oil.



Test Conditions	
1. Bushing Size (mm)	ϕ20×ϕ23×20L
2. Speed (m/min)	3
3.Specific Load (MPa)	19.6
4.Clearance (Diameter)(mm)	0.08
5.Lubrication	SAE#10,0.15 mm³/min
6.Temperature	Room Temperature
7.Shaft Material Roughness (μm Rmax) Hardness (Hv)	S55C 1.0 700
8.Test Time (H)	100

Results of Cavitation Testing



Test conditions	Dimensions	Unit
1. Test sample dimensions	40×40	mm
2. Alloy thickness	0.3	mm
3. Surface layer thickness	0.01 – 0.03	mm
4. Frequency	19	kHz
5. Output	600	W
6. Lubricant	Water	–
7. Lubricant temperature	10 – 20	°C
8. Clearance	1.0	mm
9. Honed diameter	35	mm
10. Test time	3	min

Standard Dimensions of the DDK06 Bushing

Thickness Dimensions of the DDK06 Bushing (Unit: mm)

Bushing nominal inner diameter		Thickness (T)
min	max	
–	ϕ19	1.0 $^{0}_{-0.020}$
ϕ19	ϕ25	1.5 $^{0}_{-0.020}$
ϕ25	ϕ40	2.0 $^{0}_{-0.025}$
ϕ40	ϕ60	2.5 $^{0}_{-0.040}$
ϕ60	ϕ160	2.47 $^{0}_{-0.050}$

Identical to DDK05 bushings except for wall thickness tolerances.
Please see pages 58 to 61 for DDK05 bushing dimensions.