Bearings for Motor Vehicles

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KINEX also produces a group of standardised and special bearings used in the arrangements of individual aggregates of motor vehicles. These aggregates are installed practically in all motor vehicles produced in the Czech and Slovak Republics. These are mainly ŠKODA passenger cars, TATRA and LIAZ lorries, JAWA, ČZ and KORADO motorcycles, KAROSA buses, ZETOR tractors, etc. Standardised, mainly single row ball bearings, single row ball bearings with shields and single row angular contact ball bearings are used in arrangements e. g. of water pumps, clutches, alternators, dynamos, gearboxes, engines, etc.

In addition to the above mentioned standardised bearings also special antifriction bearings are applied therein.

These bearings are for example used for following arrangements of passanger cars:

- arrangements of rack pinion in two PLC 03-29-1 and PLC 03-73 bearings.
- arrangements of steering rod in two special PLC 03-33 ball bearings. The original arrangement was in two special PLC 03-19 ball bearings.
- arrangements of a toothed wheel of the 5th speed gear is solved using PLC 43-18-1 bearings.
- PLC 43-34-1, PLC 44-17, NU 22/32 ETNG, PLC04-48/1, PLC 04-47/1 – gearbox of Škoda cars

These bearings are for example used for following arrangements of tractors and trucks:

- arrangements of the shaft and gearbox using the PLC 44-13 or PLC 44-13-1 bearing.
- arrangements of the steering rod using the PLC 03-9-1 bearing.
- PLC 44-6, PLC 46-17-1, PLC 46-20 – gearbox and final drive of trucks
- axles of construction machines PLC 55-200-1

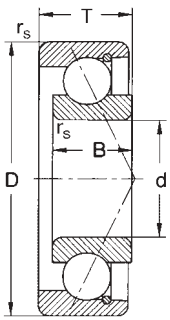
These bearings are for example used for following arrangements of motorbikes:

- arrangements of the steering bearings PLC 23-8-1; PLC 03-217 and PLC 04-214

Clutch bearings

Clutch bearings are integrated arragengements units for clutch control of passenger cars.

Special Single Row Angular Contact Ball Bearings (without Cage)



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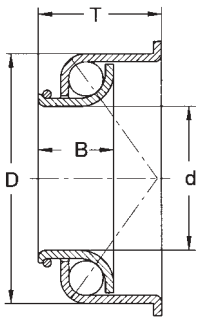

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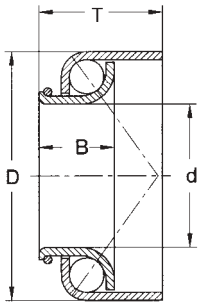

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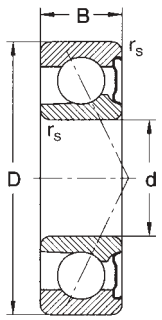


4

Dimensions					Basic load rafing		Limiting speed for lubrication with		Bearing designation	Fig.	Mass	Off-size					
d	D	B	T	r_s	dynamic C_r	static C_{or}	grease	oil				Δdmp max	Δdmp min	ΔDmp max	ΔDmp min	ΔTs max	ΔTs min
mm					kN		min^{-1}				kg	μm					
12	32	9	10	0,60	8,80	4,70	1)	1)	**PLC 03-73**	1	0,035	0	-8	0	-11	+100	-100
17	35	7,80	9	–	8,25	5,21	1)	1)	**PLC 03-29-1**	1	0,033	0	-8	0	-11	+100	-100
18	35	7,80	9	0,60	8,25	5,21	1)	1)	**PLC 03-29-2**	1	0,031	0	-8	0	-11	+100	-100
22,20	36,85	11,40	17,90	–	5,11	6,31	1) 2)	–	**PLC 03-19**	2	0,036	+210	0	+150	0	–	–
	36,85	11,40	16,50	–	5,11	6,31	1) 2)	–	**PLC 03-33**	3	0,034	+210	0	+150	0	–	–
25	45	10	12	0,60	9,10	7,30	1)	1)	**PLC 23-8-2**	1	0,063	+100	+70	0	-11	0	-400
	47	12	–	0,60	14,20	9,25	1) 2)	–	**PLC 03-217**	4	0,080	0	-10	0	-11	0	-120
	52	15	–	1	19,70	12,00	1) 2)	–	**PLC 04-214**	4	0,120	0	-10	0	-13	0	-120
26,07	45	10	12	0,60	9,10	7,30	1)	1)	**PLC 23-8-1**	1	0,060	+30	0	0	-11	0	-400

1) The bearings are intended for oscillating motion or low frequency of rotation

2) The bearings are grease filled for operating temperatures from -30 up to 100°C

Identification symbol of the producer: S

Radial equivalent dynamic load

$P_r = F_r$ if $F_a/F_r \leq e$

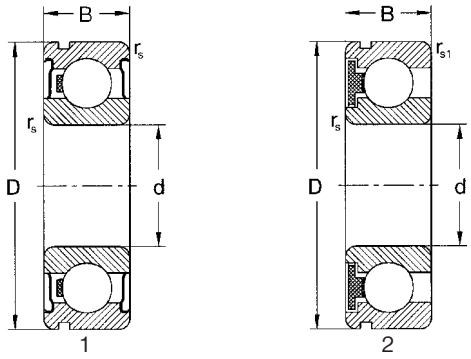
$P_r = X F_r + YF_a$ if $F_a/F_r > e$

Radial equivalent static load

$P_{or} = 0,5 F_r + X_o F_a$ ($P_{or} \geq F_r$)

e	X	Y	Y_0
0, 68	0, 41	0, 87	0, 37
0, 57	0, 43	1	0, 42
0, 57	0, 43	1	0, 42

Special Single Row Ball Bearings



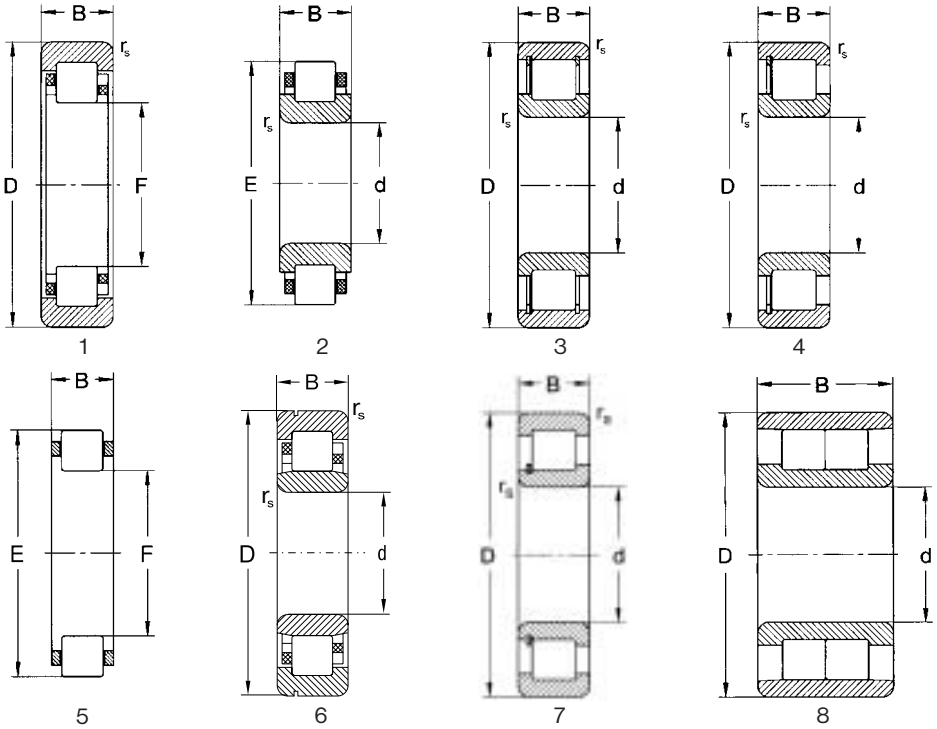
Dimensions				Basic load rating		Limiting speed for lubrication with		Bearing designation	Fig.	Mass	Shields	Cage	Radial clearance		Tolerance class	Identification symbol of the producer
				dynamic	static	grease	oil									
d	D	B	r_s min	C_r	C_{or}								min	max		
mm				kN		min^{-1}					kg		µm		µm	
25	62	17	1,1	23,700	12,100	10 500	–	**PLC 04-48/1**	1	0,225	-2RS	TNGH	5	20	P0	N
	65	18	1,1	24,200	12,800	10 500	–	**PLC 04-47/1**	1	0,230	-2RS	TNGH	5	20	P0	N
	75	17	1,2	31,600	17,400	10 000	12 000	**PLC 05-12** 1)	2	0,660	–	TNGH	13	28	P0	N

1) r_{s1} = 0,4 mm

Radial Equivalent Dynamic and Static Load

The methods of calculation correspond to a relevant basic rolling bearing type.

Special Single Row and Double Row Cylindrical Roller Bearings



Dimensions				Basic load rating		Limiting speed for lubrication with		Bearing designation	Mass	Cage	Off-size		Radial clearance		Fig.	Ident. symbol of the prod.
				dynamic	static	grease	oil				$\Delta E(F)mp^{2)}$		ΔBs			
d(F)	D(E)	B	r_s	C_r[1)]	C_{or}[1)]					min	max	min	max	min		
mm				kN		min^{-1}			kg		µm		µm			
25	46,97	17	1,1	38,90	34,90	7 500	15 000	**PLC 43-34/1**	0,110	TNG	+10	0	–	–	1	N
27,5	52	20	1,1	38,30	35,50	12 000	14 000	**PLC 44-17**	0,109	TNG	+10	0	–	–	1	N
30	60	26	1	79,40	82,50	8 900	10 600	**PLC 44-6**	0,330	M	-30	-49	–	–	2	N
	80	21	1,1	71,30	79,40	2 100	3 400	**PLC 45-201**	0,609	–	–	–	38	66	3	N
32	65	21	1	51,10	50,10	10 000	12 000	**NU 22/32 ENTNG**	0,309	TNG	–	–	25	40	6	N
35	60	26	1,1	79,40	82,50	8 900	10 600	**PLC 44-18**	0,290	M	-60	-79	–	–	2	N
	80,03	21	1,1	76,40	77,90	2 400	3 400	**PLC 45-17-1**	0,480	–	–	–	35	70	4	N
40	60	24,75	–	79,40	82,50	8 900	10 600	**PLC 44-20**	0,200	M	–	–	–	–	5	N
	65	21	1	47,30	51,10	7 500	8 900	**PLC 44-13**	0,262	M	-30	-49	–	–	2	S
	65	21	1	49,20	54,10	–	10 000	**PLC 44-13-1**	0,212	TNG	-30	-49	–	–	2	S
	70,1	26	1,3	56,80	94,00	2 000	3 200	**PLC 45-200**	0,520	–	–	–	10	35	7	N
	90,03	23	2	87,44	96,20	1 900	3 000	**PLC 46-20**	0,680	–	–	–	35	70	4	N
49,93	80	15	0,6	41,80	51,20	2 300	4 100	**PLC 45-202**	0,315	–	–	–	3	6	3	N
50	72,1	31	–	116,00	184,00	1 800	2 700	**PLC 55-200-1**	0,380	–	–	–	–	–	8	N

1) C_r or C_{or} values for bearings without outer rings are valid on the assumption that the hardness of outer raceway in housing is from 59 to 63 HRC

2) For bearings without outer ring the tolerance of circumscribed circle to rolling elements is given

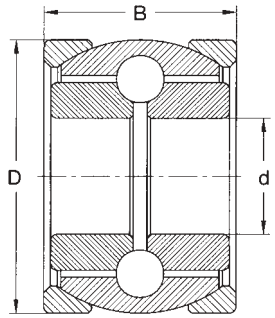
Radial equivalent dynamic load

$P_r = F_r$

Radial equivalent static load

$P_{or} = F_r$

Special Single Row Ball Bearings with Four-Point Contact (without Cage)



Dimensions				Basic load rating		Limiting speed for lubrication with		Bearing designation	Mass	Off-size					
d	D	T	r_s min	dynamic C_r	static C_{or}	grease	oil			Δdmp max	Δdmp min	ΔDmp max	ΔDmp min	ΔBs max	ΔBs min
mm				kN		min^{-1}			kg	µm					
22	48	36	0,5	22,8	14,2	1)	–	PLC 03-9-1	0,286	+28	+7	-80	-180	0	-500

1) The bearings are intended for oscillating motion or low frequency of rotation

Identification symbol of the producer: S

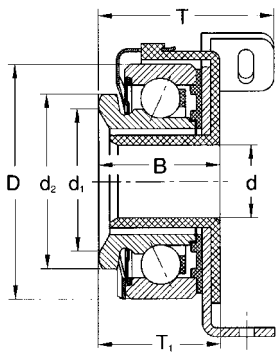
Radial equivalent dynamic load

$P_r = F_r + 0{,}47\ F_a$ if $F_a/F_r \leq 1{,}33$
$P_r = 0{,}54\ F_r + 0{,}81\ F_a$ if $F_a/F_r > 1{,}33$

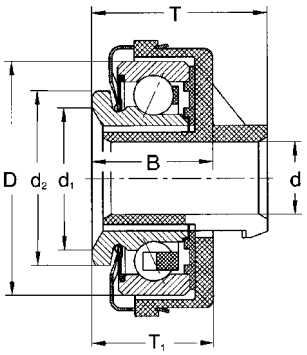
Radial equivalent static load

$P_{or} = F_r + 0{,}46\ F_a$ ($P_{or} \geq F_r$)

Clutch Bearings



1

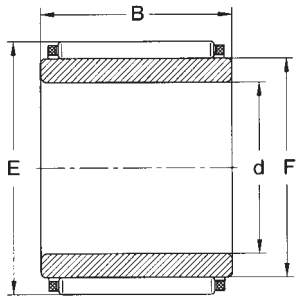


2

Dimensions							Basic load rating		Limiting speed for lubrication with grease	Bearing designation	Mass	Fig.
d	D	B	d_1	d_2	T	T_1	dynamic C_r	static C_{or}				
mm							kN		min^{-1}		kg	
25	54,4	22,5	40	43,5	36	21	12,30	7,79	7500	**PLC 04-23**	0,182	1
	54,4	24,0	40	43,5	32	24	12,30	7,79	7500	**PLC 04-24**	0,149	2

Identification symbol of the producer: N

Special Single Row Needle Roller Bearings



Dimensions					Basic load rating		Limiting speed for lubrication with		Bearing designation	Mass	Cage	Off-size					
d	E	B	r_s min	F	dynamic C_r[1]	static C_{or}[1]	grease	oil				Δdmp max	Δdmp min	ΔDmp[2] max	ΔDmp[2] min	ΔBs max	ΔBs min
mm					kN		min^{-1}			kg		µm					
25	37	28	0,5	32	30,4	59,6	9 400	14 000	**PLC 43-18-1**	0,088	TNG	+3	-10	-10	-30	0	-60

1) C_r and C_{or} values for bearings without outer rings are valid on the assumption that the hardness of outer raceway in housing is from 59 to 63 HRC

2) For bearings without outer ring the tolerance of circumscribed circle to rolling elements is given

Identification symbol of the producer: S

Radial equivalent dynamic load

$P_r = F_r$

Radial equivalent static load

$P_{or} = F_r$