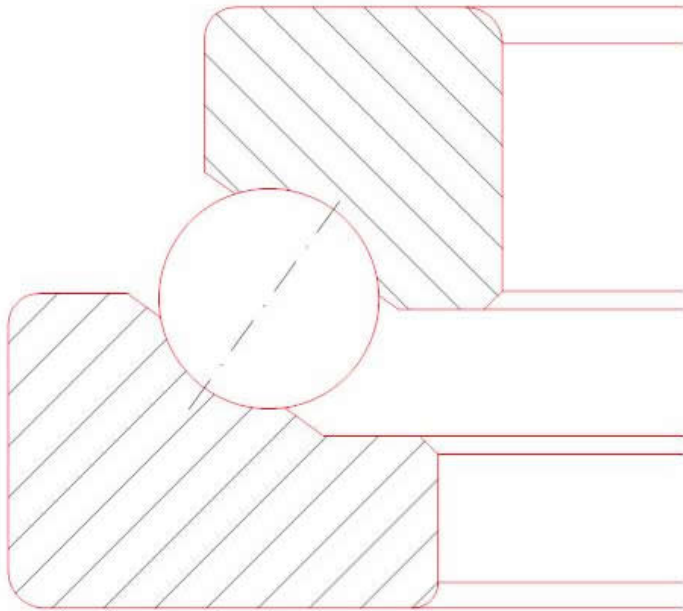


Angular contact thrust ball bearings

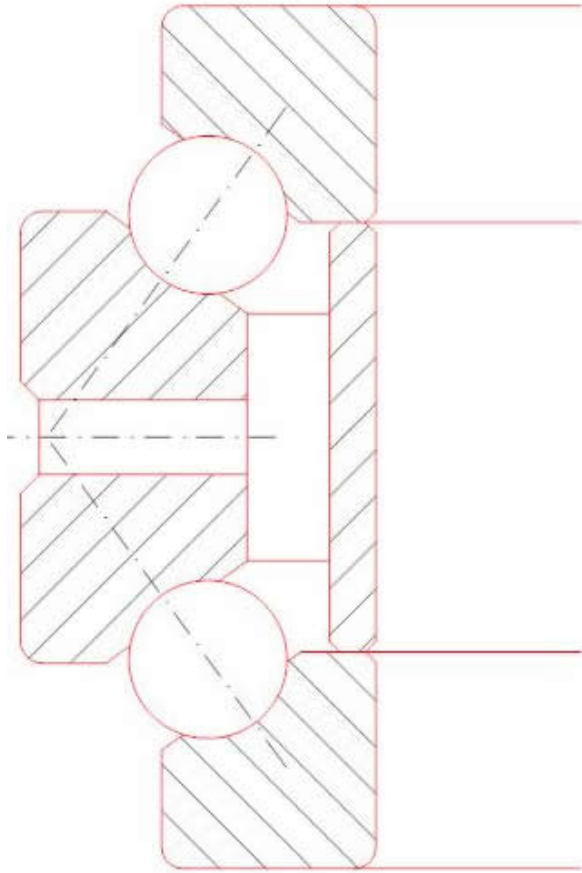
Angular contact thrust ball bearings, single direction, Ry type and angular contact thrust ball bearings, double direction, 2344 and 2347 types, have a large contact angle, i.e. between 45° and 60° , which makes them support combined loads and especially very heavy axial or even pure axial loads.

Single direction



Ry

Double direction



2344, 2347

Suffixes

A, B, C, D	-constructive versions for the same bore diameter
P6	-tolerance class with values smaller than normal
SP	-special tolerance class
V	-bearing without cage

Angular contact thrust ball bearings, single direction

Angular contact thrust ball bearings, single direction can take over particularly single direction axial loads. They can also take over combined loads, considering the specifications given at equivalent load calculation. These bearings are dismountable.

Angular contact thrust ball bearings, double direction

Angular contact thrust ball bearings, double direction are mainly high accuracy thrust bearings, with low tolerances. They are intended to high accuracy main shafts of machine-tools. In this case, angular contact thrust ball bearings, double direction, are mounted close to cylindrical roller bearings, double row, with tapered bore, NN30K type. These bearings are dismountable.

Dimensions

The main dimensions of angular contact thrust ball bearings, single direction, are in accordance with national standard STAS 11950, and those of angular contact thrust ball bearings, double direction, have the same overall dimensions as cylindrical roller bearings,

double row, with tapered bore, NN30K type, excepting the bore diameter of bearings series 2347 which have larger bores.

Tolerances

The tolerances of angular contact thrust ball bearings, single direction, correspond to those of angular contact thrust ball bearings, single direction. These bearings are generally manufactured to the normal tolerance classes P6 and P5.

Angular contact thrust ball bearings, double direction, are generally manufactured to tolerance classes SP and UP. The outer diameter is manufactured in such a way that these bearings mounted in the same fits with the cylindrical roller bearings should ensure a radial clearance. In this case, angular contact angular contact thrust ball bearings, double direction, will take over only axial loads.

A stiff guidance of the main shaft of machine-tools in longitudinal direction can be obtained if the angular contact thrust ball bearings, double direction, are preloaded.

This can be done if a distance ring will be mounted between the two shaft washers.

Contact angle

Angular contact thrust ball bearings, single direction, are manufactured with a contact angle between 45° and 60°, and angular contact thrust ball bearings, double direction, with a contact angle of 60°. The angle of 60° ensures proper guidance at high speeds as compared to thrust ball bearings.

Cages

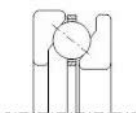
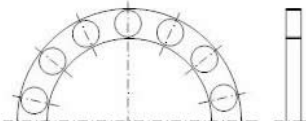
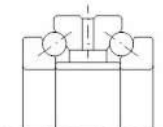
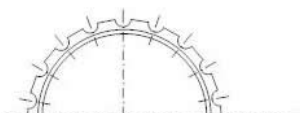
Angular contact thrust ball bearings, single direction, are fitted with machined steel cages and angular contact thrust ball bearings, double direction are fitted with machined cages guided on the distance ring.

Cage design and some technical data are given in table 1.

For an efficacious lubrication, on the outer surface of the housing washer of angular contact thrust ball bearing, double direction, a peripheral groove and at last 3 lubrication holes are provided. Generally, these bearings are lubricated with oil at high speeds, since oil reaches easily the two rows of balls by means of the lubrication holes and groove.

Cage design and some technical data

Table 1

Cage	Design Bearing	Cage	Application	Max. value	
				$D_m \cdot n$ oil	grease
Machined steel cage			- General application - Bearing type Ry	175×10^3	110×10^3
Machined brass cage M			- General application - Bearings 2344 (2347) type	175×10^3	110×10^3

Equivalent dynamic axial load

For angular contact thrust ball bearings, single direction, (RY type) and angular contact thrust ball bearings, double direction (2344 type), equivalent dynamic axial load is calculated using the equation:

$$P_a = F_a, \text{ kN} \quad \text{for pure axial load}$$

$$P_a = XF_r + YF_a, \text{ kN} \quad \text{for combined load}$$

The values of X , Y and e , are given in the bearing table for Ry type.

for $F_a / F_r < e$, these bearings cannot be used.

Equivalent static axial load

For angular contact thrust ball bearings, single direction, (RY type) and angular contact thrust ball bearings, double direction (2344 type), equivalent dynamic axial load can be calculated using the equations:

$$P_{0a} = F_a, \text{ kN}, \quad \text{for pure axial load}$$

$$P_{0a} = 2.3F_r + F_a, \text{ kN} \quad \text{for combined load}$$

This equation is available for any ratio of the radial load to the axial load, F_r / F_a , respectively for double direction bearings. In case of single direction bearings, $F_r / F_a < 0.44$.

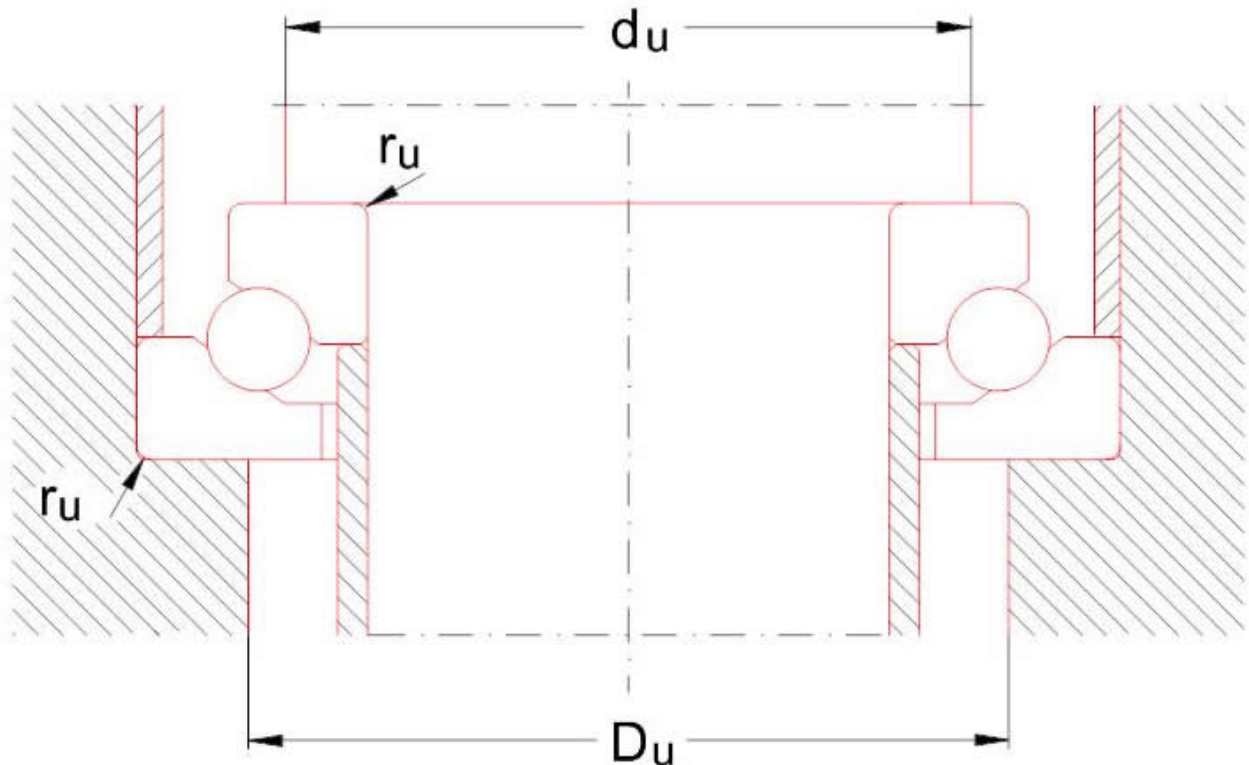
Abutment dimensions

For a proper location of the washers on the shaft and housing shoulder respectively, shaft (housing) maximum connection radius $r_{u\max}$ should be less than bearing minimum mounting chamfer r_{\min} .

Shoulder height should also be properly sized in case of bearing maximum mounting chamfer.

The values of the connection radius (r_u) and mounting dimensions are given in tables 2 and 3, depending on the bearing.

Angular contact thrust ball bearings, single direction



Angular contact thrust ball bearings, double direction

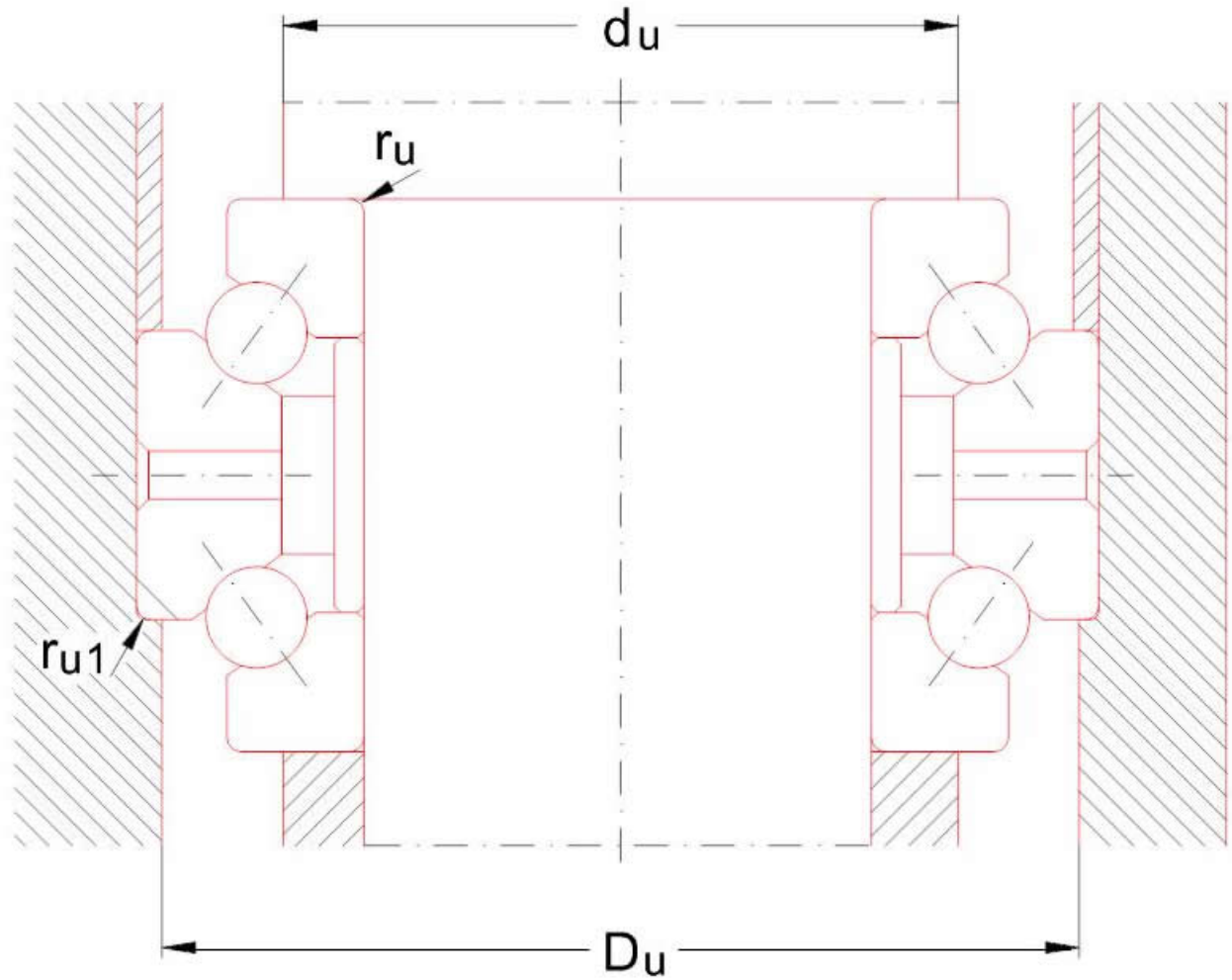


Table 2

Shaft diameter	Bearing	Mounting dimensions		
		d_u min.	D_u max.	r_u max.
mm	-	mm		
101	Ry6520A	127	127	0.6
106	Ry6520B	140	140	0.6
185	Ry6537	272.5	272.5	5
200	Ry6540	225	225	1.5
310	Ry6562	410	410	5
330	Ry6566	360	360	3
360	Ry6572	400	400	4
380	Ry6576	450	450	4
400	Ry6580B	470	470	4
403	Ry6681V	438	438	2
420	Ry6584	485	485	4

Table 3

Bore symbol	Shaft diameter		Mounting dimensions			
	d		d_u min.	D_u max.	r_u max.	r_{u1} max.
	2344	2374				
	2345					
	mm					
06	30	(32)	40.5	50.5	1	0.15
07	35	(37)	46.5	57	1	0.15
08	40	(42)	51.5	63.5	1	0.15
09	45	(47)	57.5	70	1	0.15
10	50	(52)	62.5	75	1	0.15
11	55	(57)	69	84.5	1	0.3
12	60	(62)	74	89.5	1	0.3
13	65	(67)	79	94.5	1	0.3
14	70	(73)	86.5	103.5	1	0.3
15	75	(78)	91.5	108.5	1	0.3
16	80	(83)	98.5	117	1	0.3
17	85	(88)	103.5	122	1	0.3
18	90	(93)	110.5	130.5	1.5	0.3

440	Ry6588	490	490	2
500	Ry65/500	550	550	2.1
530	Ry65/530	620	620	4
560	Ry65/560	650	650	5
600	Ry65/600	665	665	4
600	Ry65/600A	700	700	4
610	Ry65/610A	700	700	4
620	Ry65/620	700	700	6
630	Ry630	690	690	4
630	Ry630	740	740	6
630	Ry630A	705	705	4
650	Ry650	760	760	5
670	Ry670	785	785	8
710	Ry710	830	830	6
710	Ry710A	780	780	4
800	Ry800B	875	875	4
800	Ry800C	930	930	7.5
810	Ry810A	920	920	6
848	Ry848	960	960	6
850	Ry850	925	925	4
900	Ry900	980	980	5
1060	Ry1060	1105	1105	2.1
1060	Ry1060A	1155	1155	6
1060	Ry1060B	1155	1155	6
1100	Ry65/1100	1210	1210	5
1120	Ry65/1120	1220	1220	5
1346.2	Ry65/1346	2863.85	2863.85	4
1371.6	Ry65/1372	2990.85	2990.85	4
1800	Ry65/1800	1950	1950	4
1800	Ry1800A	2000	2000	4