

## COMBINED BEARINGS



# Technical features

## Types of combined bearings

Nadella combined needle bearings type **RAX** and derivatives are designed to support simultaneously both a radial and an axial load.

They comprise a needle thrust bearing (or roller thrust bearing) and needle cage retained in a common outer ring.

The technical characteristics of the thrust bearing and the needle cage are set out in the appropriate sections. These bearings form one integral unit permitting easy storage, handling and fitting. Their high radial and axial load capacities and small space requirement enable cost effective solutions to be achieved.

Calculations for combined bearings are carried out taking the axial component and the radial component separately without transforming the axial load into an equivalent radial load.

The operation of the thrust bearing and the needle cage independent of one another precludes any interaction harmful to precise axial and radial rotation. Axial expansion of the shaft, for example, will have no effect on the accuracy of the radial component.

The bearings can be used without inner rings or thrust plates, if the shaft journals serving as raceways are of sufficient hardness and possess a suitable surface finish. Hardness of 58-64 HRC will ensure that the full capacity of these bearings is attained.

Lower hardness figures will entail a reduction in the static and dynamic capacities (both axial and radial) as shown in the tables of dimensions (see Technical Section).

### TYPES OF BEARINGS

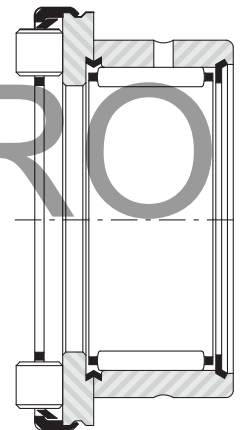
#### Standard combined bearings



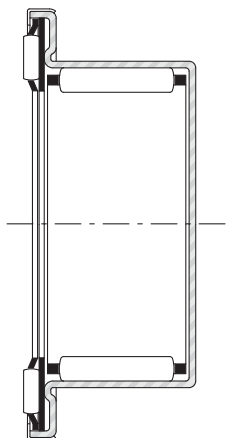
RAX700



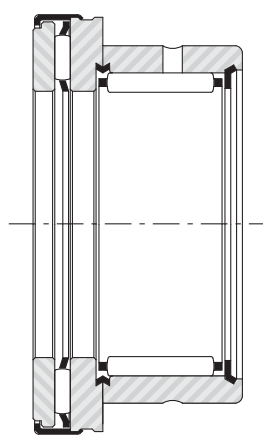
RAX400



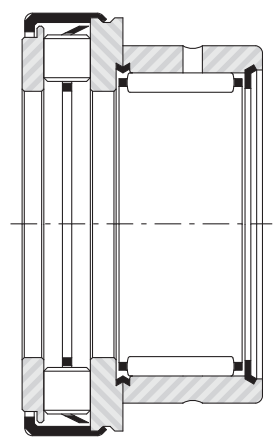
RAX500



RAXF700



RAXPZ400



RAXZ500



# Technical features

## Types of combined bearings

### Combined bearings type RAX 700 and RAXF 700

Combined bearings type **RAX 700** possess a one-piece outer ring formed from thin sheet steel accurately controlled and hardened by suitable heat treatment. The shape of this outer ring prevents weakness in the area between the axial component and the radial component, even after the latter has been tightly fitted into a housing.

This type of combined bearing is inexpensive and occupies little space, thus providing a very economical solution. Because they are easy to use and can be fitted rapidly, they are often employed in preference to an arrangement with two separate needle bearings.

Closed-end combined bearings type **RAXF 700** ensure perfect sealing at the end of a shaft and do not require the use of blind housings or end caps.

### Standard combined bearings type RAX 400 and RAX 500

Combined needle bearings type **RAX 400** and **RAX 500** comprise a thrust plate and an outer ring machined separately and joined by a strong metal insert. This arrangement prevents localised stresses and weakness in the area between the two components, thus eliminating the risk of damage during mounting or operation.

Although combined bearings type **RAX 700** should be considered first on grounds of economy, combined bearings with thick outer ring type **RAX 400** or **RAX 500** should be used when operating conditions require higher limit loads or greater rotational accuracy. Moreover, they can be supplied in machine-tool quality type **RAXN**.

### Standard combined bearings type RAXPZ 400 and RAXZ 500

These bearings have an incorporated thrust plate retained by a steel ring set on the thrust plate. They are better protected against the introduction of dust and metal particles and are therefore recommended for spindles of drilling machines.

|                                   | With needle thrust bearing |            |                               |                            | With roller thrust bearing    |                            |
|-----------------------------------|----------------------------|------------|-------------------------------|----------------------------|-------------------------------|----------------------------|
|                                   | Thin outer ring            |            | Thick outer ring              |                            | Thick outer ring              |                            |
|                                   | open                       | Closed-end | Without retained thrust Plate | With retained thrust plate | Without retained thrust plate | With retained thrust plate |
| <b>Bearings</b>                   | RAX 700                    | RAXF 700   | RAX 400                       | RAXPZ 400                  | RAX 500                       | RAXZ 500                   |
| <b>Separate thrust plates</b>     | CP thick or thin           |            | CP thick or thin              |                            | CP thick or thin              |                            |
| <b>Inner rings <sup>(1)</sup></b> | JR                         |            | JR                            |                            | JR                            |                            |

(1) Inner rings with oil hole type **JR...JS1** on request.

### Machine-tool quality combined bearings types RAXN 400, RAXN 500, and derivatives

The combined bearings in the **RAXN 400** and **RAXN 500** series are manufactured to the same dimensions as the **RAX 400** and **RAX 500** series in higher precision with respect to out-of-roundness and thickness of the rings and axial run-out of the thrust bearing. These bearings, which are also available with retained thrust plate **RAXNPZ 400** and **RAXNZ 500**, are particularly recommended for use in drilling machine spindles.

|                               | With needle thrust bearing |                            | With roller thrust bearing |                            |
|-------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
|                               | Without thrust plate       | With retained thrust plate | Without thrust plate       | With retained thrust plate |
| <b>Bearings</b>               | RAXN 400                   | RAXNPZ 400                 | RAXN 500                   | RAXNZ 500                  |
| <b>Separate thrust plates</b> | CPN                        |                            | CPN                        |                            |
| <b>Inner ring</b>             | IM 19 000<br>IM 20 600     |                            | IM 20 600                  |                            |

# Technical features

## Types of combined bearings

### TOLERANCES OF COMBINED BEARINGS

#### Combined bearings types RAX 700 and RAXF 700

Because types RAX 700 and RAXF 700 have an outer ring formed from thin sheet steel, the radial component of these bearings can only be inspected using a ring-gauge having sufficient thickness to withstand deformation and with a bore ground with great accuracy. The diameters of the ring-gauge and the "GO" and "NO-GO" plug-gauges are identical to those given on page 58 in the inspection table for caged needle bushes type DL having identical inner and outer diameters.

Thickness tolerance of the axial component  $C_1$ :  $\pm 0,1$  mm

#### Standard combined bearings type RAX 400, RAX 500 and derivatives

- *Radial component*

Diameter under the needles  $F_w$ : tolerance F6 (ISO Standard 1206).

Outer diameter D  
Out-of-roundness  
Inner rings JR

Normal tolerance class according to ISO Standard 1206 (see table on page 219).

- *Axial component*

Thickness  $C_1$ :  $+ 0,05 / - 0,06$  mm  
Axial run-out max: 0,01 mm

| Tolerance         | Thin thrust plates                       |                                       | Thick thrust plates<br>mm |
|-------------------|--|---------------------------------------|---------------------------|
|                   | Internal $\varnothing$<br>$d \leq 60$ mm | Internal $\varnothing$<br>$d > 60$ mm |                           |
| Thickness         | $h \pm 0,030$ <sup>(1)</sup>             | $h \pm 0,050$ <sup>(2)</sup>          | $h \pm 0,050$             |
| Max axial run-out | 0,020 <sup>(1)</sup>                     | 0,025 <sup>(2)</sup>                  | 0,005                     |

(1) Under minimum load of 150 N - (2) Under minimum load of 250 N

#### Machine-tool quality combined bearings types RAXN 400, RAXN 500 and derivatives

- *Radial component*

Diameter under the needles  $F_w$ : tolerance F6 (ISO Standard 1206).

Outer diameter D: Normal tolerance class according to

ISO Standard 1206 (see table on page 219).

Out-of-roundness: Precision class 5 according to ISO Standard 492 (DIN 620) (see table on page 219).

Inner rings IM 19000 and IM 20600:

inner diameter d:  $0 / -0,010$  mm

outer diameter F:  $0 / -0,005$  mm

width B:  $01 / -0,130$  mm up to  $d = 40$  mm

$0 / -0,160$  mm for  $d > 40$  mm

out-of-roundness: 0.005 mm.

- *Axial component*

Thickness  $C_1$ :  $0 / -0,012$  mm

Axial run-out: 0,005 mm

- *Thrust plates*

Thickness h: selected to obtain tolerance h8 on total thickness ( $h + C_1$ )

Axial run-out: 0,005 mm.

### RADIAL PLAY

#### Combined bearings types RAX 700, RAXF 700

The fit of a combined bearing with thin outer ring in the housing determines, to a large extent, the dimension under the needles and consequently the radial play during operation.

The recommended shaft and housing tolerances give a radial play whose limits are suitable for most normal applications. To obtain a closer clearance, it is possible to match the shaft diameters with the diameters under the needles of the bearings, after the latter have been fitted into their housings.

The possible differences in the stiffness of housings and the variations of clamping force resulting from the tolerance build up do not permit to establish a range of dimensions under the needles for every application.

However, for housings of very thick steel, taking into account the probable restraining force, the variations of the dimensions under the needles after installation will be within the tolerances

given below:

+ 15/ + 50  $\mu$ m up to  $F_w = 20$  mm

+ 20/ + 60  $\mu$ m up to  $F_w = 25$  a  $F_w = 40$  mm

+ 20/ + 65  $\mu$ m up to  $F_w = 45$  mm

# Technical features

## Types of combined bearings

The limits of radial play should also take into account the tolerance of the shaft used directly as a raceway or of the outer diameter of the inner ring after it has been fitted on to the shaft.

Where an inner ring is used on a shaft of recommended tolerance k5 (or m5), the minimum play may be slightly lower and the maximum play slightly higher than for the case of an assembly without inner ring on a shaft with tolerance h5.

### Standard combined bearings type RAX 400, 500 and derivatives

#### *Bearings without inner ring*

The radial play of these bearings when used without inner rings is the difference between the diameter under the needles, which is kept within tolerance F6, and the diameter of the shaft which is machined to the recommended tolerances.

This type of combined bearing without inner ring can be supplied having a diameter under the needles selected in the lower half of tolerance F6 (suffix **TB**) or in the upper half (suffix **TC**) according to the table below.

| Nominal dimension<br>$F_w$<br>mm |            | Tolerance of diameter under the needles |                     |                     |
|----------------------------------|------------|---|---------------------|---------------------|
|                                  |            | Normal F6<br>$\mu\text{m}$              | TB<br>$\mu\text{m}$ | TC<br>$\mu\text{m}$ |
| above<br>da 6                    | to<br>a 10 | +13/+22                                 | +13/+18             | + 17/+22            |
| da 10                            | a 18       | +16/+27                                 | +16/+22             | +21/+27             |
| da 18                            | a 30       | +20/+33                                 | +20/+27             | +26/+33             |
| da 30                            | a 50       | +25/+41                                 | +25/+33             | +33/+41             |
| da 50                            | a 80       | +30/+49                                 | +30/+40             | +39/+49             |

#### *Bearings with inner ring*

The radial play prior to installation of standard combined bearings with inner ring is in conformance with the normal group of ISO Standard 5753. The closely controlled play provided by this standard can be provided on request.

### Machine-tool quality combined bearings types RAXN 400, 500 and derivatives

#### *Bearings without inner ring*

The radial play prior to installation of machine-tool quality combined bearings results from tolerance F5 on the diameter under the needles, possibly in selection **TB** or **TC**, and tolerances k5 on the diameter of the shaft.

| Nominal dimension<br>$F_w$<br>mm |            | Tolerance of diameter under the needles |
|----------------------------------|------------|---|
|                                  |            | F5<br>$\mu\text{m}$                     |
| above<br>da 6                    | to<br>a 10 | +13/+19                                 |
| da 10                            | a 18       | +16/+24                                 |
| da 18                            | a 30       | +20/+29                                 |
| da 30                            | a 50       | +25/+36                                 |
| da 50                            | a 80       | +30/+43                                 |

#### *Bearings with inner ring*

The radial play prior to installation of machine-tool quality combined bearings results from tolerance F5 on the diameter under the needles and tolerance 0/-0.005 mm on the outer diameter  $F_w$  of inner ring **IM 19000** or **IM 20600**.

### SHAFT AND HOUSING TOLERANCES

| Combined bearings                            | Shaft   |             |  |             | Housing            |   |
|--|---|-------------|--|-------------|--------------------|---|
|  | Quota $F_w$ per cuscinetti senza anello interno |             | Dimension d for bearings with inner ring |             | Dimension D        |   |
|  | Rotation  | Oscillation | Rotation                                 | Oscillation | Steel or cast-iron | Non-ferrous metal (1) or thin castings in steel |
| <b>RAX, RAXF 700</b>                         | h5 (h6)   | j5 (j6)     | k5 (k6)                                  | m5 (m6)     | H6 (H7)            | M6 (M7)   |
| <b>RAX, RAXPZ, RAXZ series 400 and 500</b>   | h5  | j5          | k5                                       | m5          | K6                 | M6  |
| <b>RAXN, RAXNPZ RAXNZ series 400 and 500</b> | k5  | k5          | k5                                       | m5          | K6                 | M6  |

1) If a housing of non-ferrous metal reaches temperatures considerably higher (or lower) than 20°C, account should be taken of the difference in expansion (or contraction) of the outer race of the bearing and suitable adjustments to the fits should be made.

The cylindrical tolerance defined as the difference in radii of two coaxial cylinders (ISO Standard 1101) should normally be less than a quarter of the manufacturing tolerance.

However, for high precision or high speed applications, it is advisable to restrict this tolerance to the one-eighth of the manufacturing tolerance.

# Technical features

## Types of combined bearings

### SUPPORTING FACES- RACEWAYS

The bearing shoulder must be a flat face at right angles to the housing axis, otherwise axial precision will be affected and the smooth running characteristics of the thrust bearing will be diminished.

Similarly, the shaft shoulder, on which the needles of the thrust bearing rotate or on which the thrust plate is supported, must be flat and square to the axis.

The deviation from true parallelism between the two supporting faces must be no more than:

- 0.3 in 1000, corresponding to an angle of 1 minute, for a combined bearing with thrust plate.
- 0.45 in 1000, corresponding to an angle of 1' 30", for a combined bearing without thrust plate.

In the case of an assembly where neither thrust plate nor inner ring is used, the shaft journal on which the needle rotate must have sufficient hardness, i.e. 58-64 HRC to ensure maximum load capacities are attained.

If the shaft shoulder is used directly as a raceway for the needles of the thrust bearing or, if it supports a thin thrust plate (thickness 0.8 or 1.5 mm), it must be rigid and continuous throughout the area of circulation of the needles bounded by dimensions  $E_b$  and  $E_a$ .

A thick thrust plate can be supported on a smaller shaft shoulder or on one that is discontinuous (as in the case of splines), provided the deflection of the plate does not affect the smooth running or required accuracy of the thrust bearing.

### INSTALLATION

The bearing must be correctly aligned with the housing. It is wise to use a small press fitted with a mandrel having a supporting face square to the axis and covering the whole area bounded by dimensions  $E_b$  and  $E_a$ . This method prevents the thrust component from undergoing shock load which might damage the bearing.

When **RAX** or **RAXF 700** bearings are placed in position during installation care must be taken to ensure that the force exerted by the press does not exceed the axial limit load shown in the table of dimensions.

The fitting of inner rings on shafts manufactured to the recommended tolerances is usually sufficient to render the use of retaining rings unnecessary. However, if it is necessary to employ a ring to support an adjacent pinion, this ring must have an outer diameter slightly smaller than dimension  $F_w$  to enable it to pass smoothly into the bearing when the shaft is introduced.

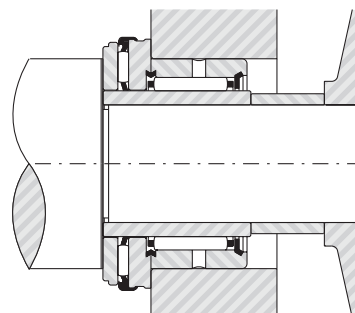
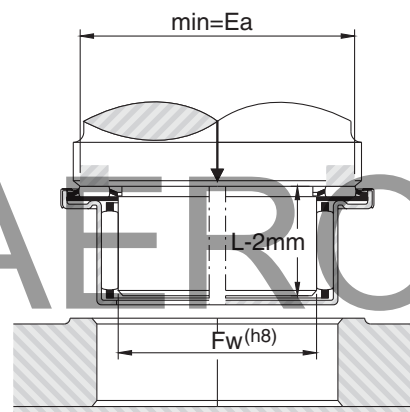
### TYPICAL ARRANGEMENTS USING COMBINED BEARINGS

**RAX** and **RAXF 700**: see page 162.

**RAX 400** (or **500**) and **RAXPZ 400** (or **RAXZ 500**): see page 163.

**RAXN 400** (or **500**) and **RAXNPZ 400** (or **RAXNZ 500**): the typical applications for these machine-tool quality combined bearings used without inner ring and with or without thick thrust plate are identical to those for the corresponding standard combined bearings (see page 163).

The special inner rings (series **19000** or **20600**) designed for machine-tool quality combined bearings are of sufficient width to permit centring of the thrust plate and thus eliminate the need for a shaft shoulder.



# Technical features

## Types of combined bearings

---

### LUBRICATION

When the applied axial loads are relatively high and the application allows the use of oil as the desired method of lubrication, bearing types **RAX 500** should be given consideration. Combined bearings with a dust cap may use oil lubrication, although their design makes them better suited for use with grease lubrication.

Combined bearings are typically shipped protected with a corrosion preventive compound that is not a lubricant. The bearings may be used in oil or grease lubricated applications, without removal of the corrosion-preventive compound. However, it may be advisable to remove the corrosion-preventive compound before packing the bearings (with a suitable grease) to obtain optimum grease performance and to minimize the possibility of confusing grease bearings with bearings containing corrosion preventive.

### LOAD RATINGS

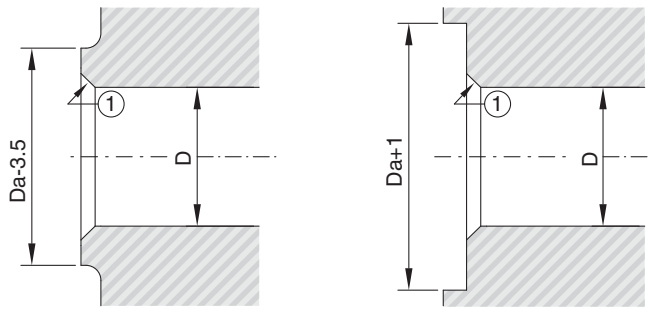
Calculations for combined bearings are carried out taking the axial component and the radial component separately without transforming the axial load into an equivalent radial load.

For the meaning of the Load Ratings in the tables of combined bearings **RAX 400**, **RAX 500** and derivatives, see the Technical Section.

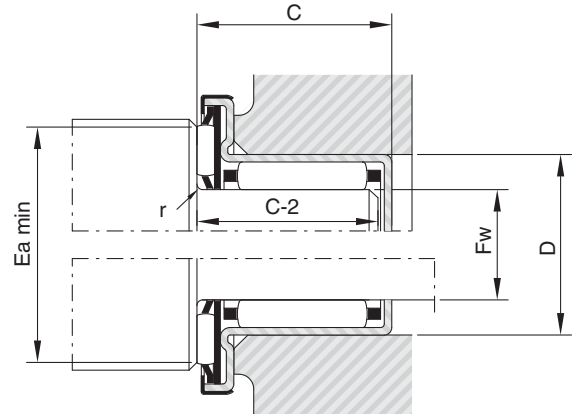
Combined bearings type **RAX700** and **RAXF700** has a limitation for the maximum axial permissible load, both axial and radial, because are made in thin outer ring. Limit loads are in the table on page 165.

# ADIFOR AERO

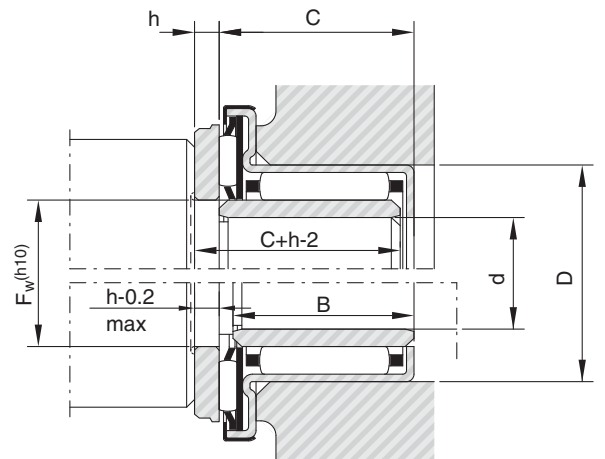
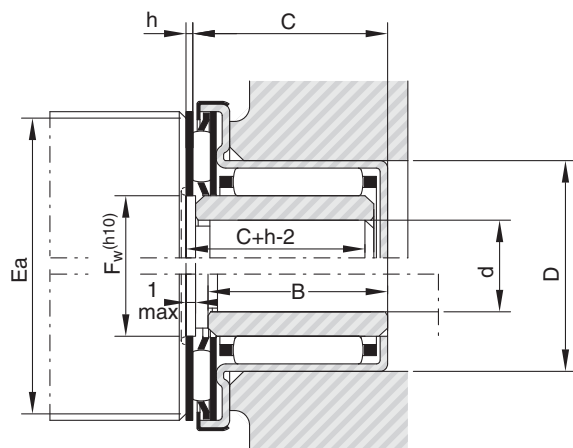
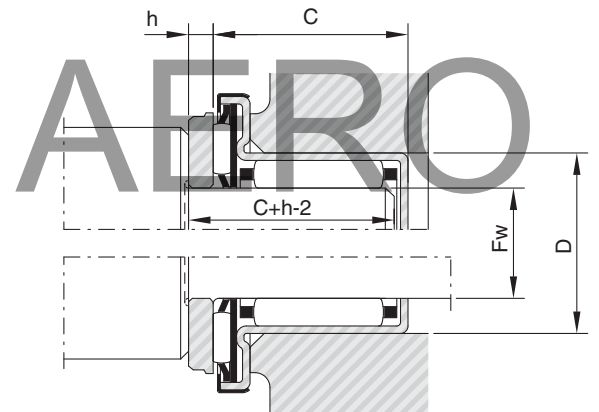
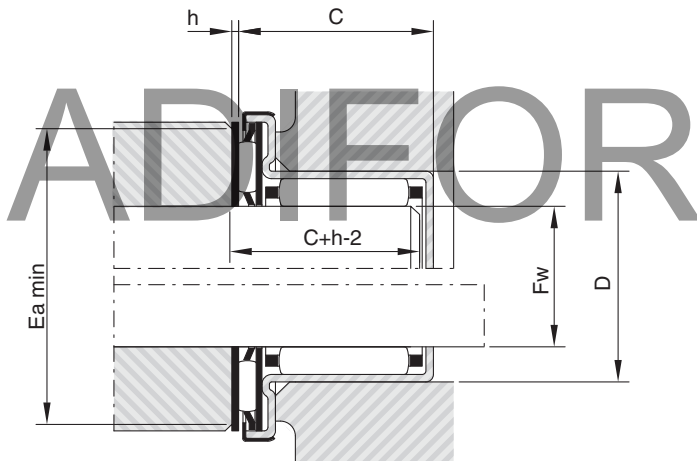
# Methods of installation for combined bearings RAX and RAXF 700



(1) Chamfer: 0,5 to 1 mm up to RAX (or RAXF) 720  
0,7 to 1,5 mm from RAX (or RAXF) 725

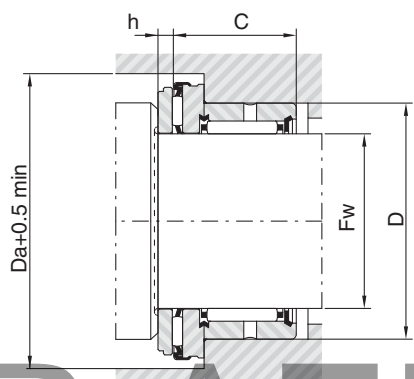
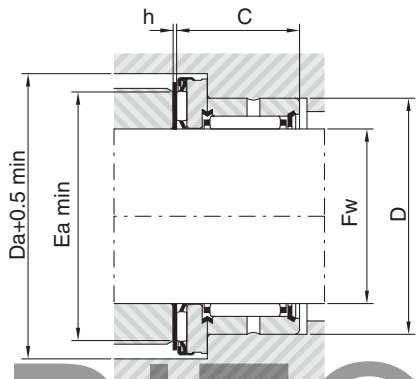
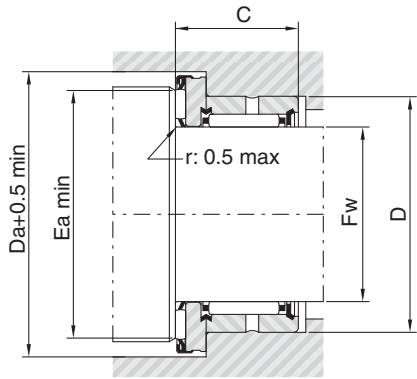


| RAX<br>RAXF  | 712  | 714 | 715 | 718 | 720 | 725 | 730 | 735 | 740 | 745 |
|--------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| r max.<br>mm | 0.75 | 1   | 1.8 | 1   | 0.5 | 1.8 | 1.8 | 1.8 | 0.5 | 0.5 |

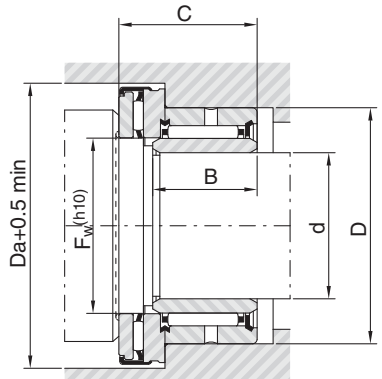
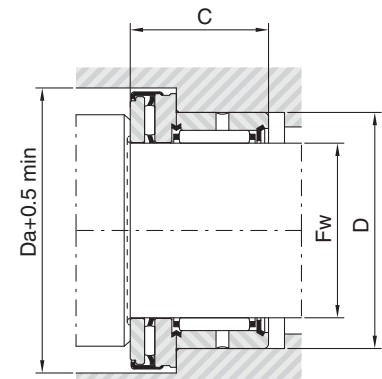
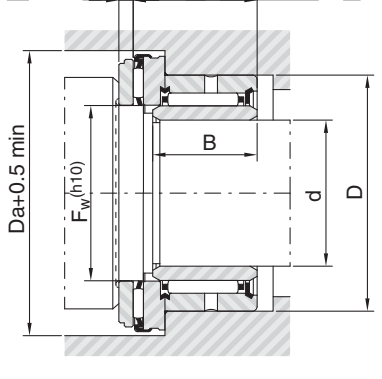
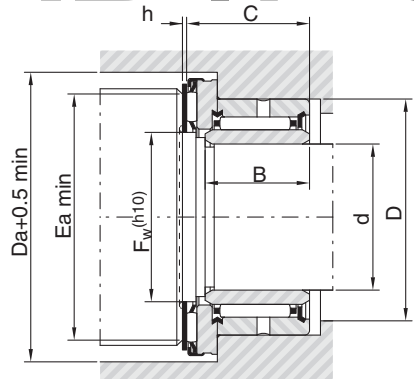




# Methods of installation for combined bearings RAX 400 and 500, RAXPZ 400 and RAXZ 500

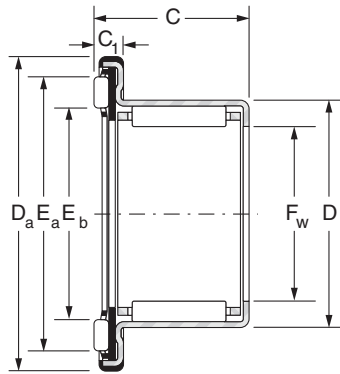


ADIFOR AERO

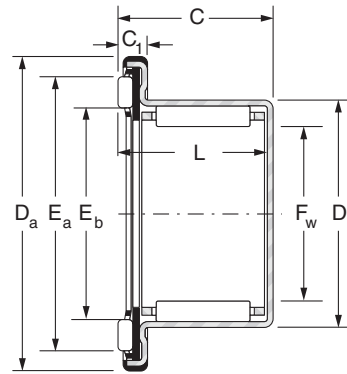


# Combined bearings RAX 700

- open RAX 700 series
- closed-end RAXF 700 series

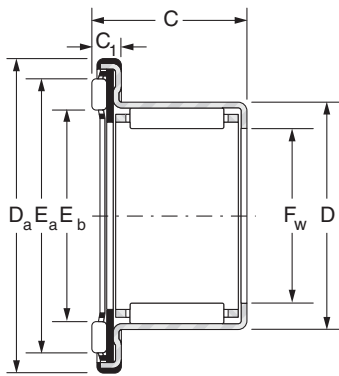


RAX 700

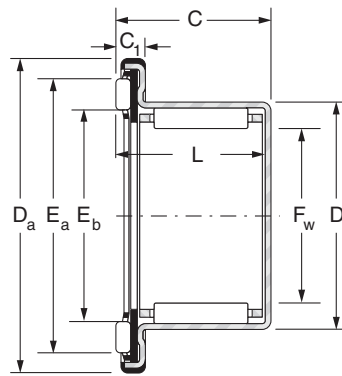


RAXF 700

| Shaft<br>∅<br>mm | Designations      |                    | F <sub>w</sub><br>mm | D<br>mm | C<br>mm | D <sub>a</sub><br>mm | E <sub>b</sub><br>mm | E <sub>a</sub><br>mm | C <sub>1</sub><br>mm | L<br>mm | Load ratings kN |                      |        |                      |
|------------------|-------------------|--------------------|----------------------|---------|---------|----------------------|----------------------|----------------------|----------------------|---------|-----------------|----------------------|--------|----------------------|
|                  | RAX 700<br>series | RAXF 700<br>series |                      |         |         |                      |                      |                      |                      |         | Radial          |                      | Axial  |                      |
|                  |                   |                    |                      |         |         |                      |                      |                      |                      |         | Dyn. C          | Stat. C <sub>0</sub> | Dyn. C | Stat. C <sub>0</sub> |
| 5                | RAX 705           |                    | 5                    | 9       | 11      | 15.5                 | 7.2                  | 11.2                 | 3.3                  | -       | 2.15            | 1.95                 | 3.15   | 6.35                 |
| 12               | RAX 712           | RAXF 712           | 12                   | 18      | 14.2    | 27.5                 | 15                   | 22.6                 | 4.2                  | 13.2    | 6.30            | 7.20                 | 6.90   | 17.7                 |
| 14               | RAX 714           | RAXF 714           | 14                   | 20      | 14.2    | 29.5                 | 17                   | 24.6                 | 4.2                  | 13.2    | 6.90            | 8.50                 | 7.40   | 20.0                 |
| 15               | RAX 715           | RAXF 715           | 15                   | 21      | 14.2    | 31.5                 | 19                   | 26.6                 | 4.2                  | 13.2    | 7.40            | 9.30                 | 7.80   | 22.0                 |
| 18               | RAX 718           | RAXF 718           | 18                   | 24      | 18.2    | 33.5                 | 21                   | 28.6                 | 4.2                  | 17.2    | 11.5            | 17.7                 | 8.00   | 23.0                 |
| 20               | RAX 720           | RAXF 720           | 20                   | 26      | 18.2    | 36.5                 | 22                   | 31.6                 | 4.2                  | 17.2    | 12.2            | 19.5                 | 11.8   | 39.0                 |
| 25               | RAX 725           | RAXF 725           | 25                   | 33      | 22.2    | 45.5                 | 30                   | 39.6                 | 4.2                  | 21.2    | 20.5            | 32.0                 | 13.7   | 52.0                 |
| 30               | RAX 730           | RAXF 730           | 30                   | 38      | 22.2    | 50.5                 | 35                   | 44.7                 | 4.2                  | 21.2    | 22.3            | 37.5                 | 14.9   | 60.0                 |
| 35               | RAX 735           |                    | 35                   | 43      | 22.2    | 56.5                 | 39                   | 50.9                 | 4.2                  | 21.2    | 24.5            | 45.0                 | 19.4   | 88.0                 |
| 40               | RAX 740           | RAXF 740           | 40                   | 48      | 22.2    | 61.5                 | 43                   | 54.9                 | 4.2                  | 21.2    | 26.2            | 51.0                 | 20.4   | 96.0                 |
| 45               | RAX 745           |                    | 45                   | 52      | 22.2    | 66.5                 | 48                   | 59.9                 | 4.2                  | 21.2    | 24.8            | 55.0                 | 21.8   | 109                  |



RAX 700

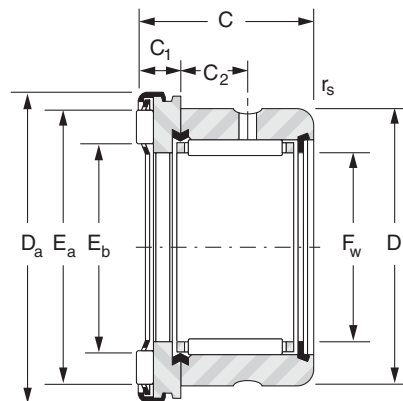


RAXF 700

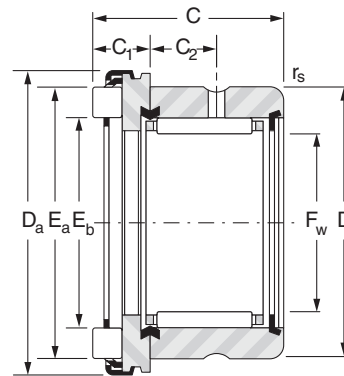
| Limit Loads kN |       | Speed rating min <sup>-1</sup> | Weight |         | Inspection   |                   |                      | Inner ring    | Thrust plate |            | Shaft Ø mm |
|----------------|-------|--------------------------------|--------|---------|--------------|-------------------|----------------------|---------------|--------------|------------|------------|
| Radial         | Axial |                                | RAX Kg | RAXF Kg | Housing Ø mm | GO plug-gauges mm | NO-GO plug-gauges mm |               | Thin         | Thick      |            |
| 0.74           | 3.5   | 25000                          | 0.005  |         | 9.000        | 5.009             | 5.036                |               |              |            | 5          |
| 2.5            | 11    | 13000                          | 0.017  | 0.018   | 18.000       | 12.009            | 12.035               | JR 8x12x12.5  | CP 12 26     | CP 2 12 26 | 12         |
| 2.9            | 12.5  | 11500                          | 0.018  | 0.020   | 20.000       | 14.009            | 14.035               | JR 10x14x12   | CP 14 26     | CP 2 14 26 | 14         |
| 3.1            | 14    | 10500                          | 0.020  | 0.022   | 21.000       | 15.009            | 15.035               | JR 12x15x12.5 | CP 15 28     | CP 2 15 28 | 15         |
| 5.8            | 16    | 10000                          | 0.027  | 0.030   | 24.000       | 18.009            | 18.035               | JR 15x18x16.5 | CP 18 30     | CP 2 18 30 | 18         |
| 6.4            | 18    | 9000                           | 0.031  | 0.035   | 26.000       | 20.009            | 20.035               | JR 15x20x16   | CP 20 35     | CP 3 20 35 | 20         |
| 10.5           | 22    | 7200                           | 0.055  | 0.060   | 33.000       | 25.015            | 25.041               | JR 20x25x20.5 | CP 25 42     | CP 3 25 42 | 25         |
| 12             | 25    | 6300                           | 0.063  | 0.070   | 38.000       | 30.015            | 30.041               | JR 25x30x20.5 | CP 30 47     | CP 3 30 47 | 30         |
| 14.3           | 27    | 5500                           | 0.075  | 0.084   | 43.000       | 35.015            | 35.041               | JR 30x35x20.5 | CP 35 52     | CP 3 35 52 | 35         |
| 16             | 30    | 5000                           | 0.086  | 0.096   | 48.000       | 40.015            | 40.041               | JR 35x40x20.5 | CP 40 60     | CP 3 40 60 | 40         |
| 17             | 32    | 4500                           | 0.088  | 0.099   | 52.000       | 45.015            | 45.041               | JR 40x45x20.5 | CP 45 65     | CP 3 45 65 | 45         |

# Combined bearings RAX 400 – RAX 500

Machine-tool  
quality combined  
bearings  
RAXN 400,  
RAXN 500  
series

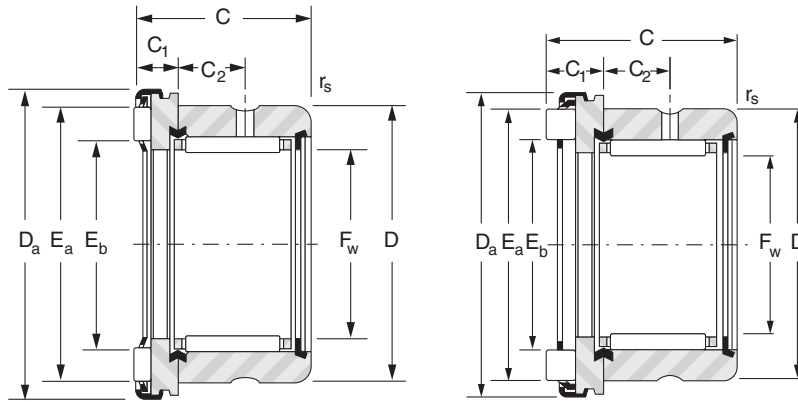


RAX 400 - RAXN 400



RAX 500 - RAXN 500

| Shaft<br>∅<br>mm | Designations      |                   | F <sub>w</sub><br>mm | C<br>mm | D<br>mm | D <sub>a</sub><br>mm | E <sub>b</sub><br>mm | E <sub>a</sub><br>mm | C <sub>1</sub><br>mm | C <sub>2</sub><br>mm | r <sub>s min</sub><br>mm |
|------------------|-------------------|-------------------|----------------------|---------|---------|----------------------|----------------------|----------------------|----------------------|----------------------|--------------------------|
|                  | RAX 400<br>series | RAX 500<br>series |                      |         |         |                      |                      |                      |                      |                      |                          |
| 10               | RAX 410           |                   | 10                   | 19      | 19      | 22                   | 12                   | 18.6                 | 5                    | 6                    | 0.35                     |
|                  |                   | RAX 510           | 10                   | 19.5    | 19      | 22                   | 12.2                 | 18.5                 | 5.5                  | 6                    | 0.35                     |
| 12               | RAX 412           |                   | 12                   | 19      | 21      | 26                   | 15                   | 22.6                 | 5                    | 6                    | 0.35                     |
|                  |                   | RAX 512           | 12                   | 20      | 21      | 26                   | 22.9                 | 14.8                 | 6                    | 6                    | 0.35                     |
| 15               | RAX 415           |                   | 15                   | 19      | 24      | 28                   | 17                   | 24.6                 | 5                    | 6                    | 0.35                     |
|                  |                   | RAX 515           | 15                   | 20      | 24      | 28                   | 16.8                 | 24.9                 | 6                    | 6                    | 0.35                     |
| 17               | RAX 417           |                   | 17                   | 21      | 26      | 30                   | 19                   | 26.6                 | 5                    | 8                    | 0.65                     |
|                  |                   | RAX 517           | 17                   | 22      | 26      | 30                   | 18.8                 | 26.9                 | 6                    | 8                    | 0.65                     |
| 20               | RAX 420           |                   | 20                   | 24      | 30      | 35                   | 22                   | 31.6                 | 6                    | 9                    | 0.85                     |
|                  |                   | RAX 520           | 20                   | 26      | 30      | 35                   | 22                   | 31.6                 | 8                    | 9                    | 0.85                     |
| 25               | RAX 425           |                   | 25                   | 24      | 37      | 42                   | 27.7                 | 37.4                 | 6                    | 9                    | 0.85                     |
|                  |                   | RAX 525           | 25                   | 26      | 37      | 42                   | 27.7                 | 37.4                 | 8                    | 9                    | 0.85                     |
| 30               | RAX 430           |                   | 30                   | 24      | 42      | 47                   | 32.7                 | 42.4                 | 6                    | 9                    | 0.85                     |
|                  |                   | RAX 530           | 30                   | 26      | 42      | 47                   | 32.7                 | 42.3                 | 8                    | 9                    | 0.85                     |
| 35               | RAX 435           |                   | 35                   | 24      | 47      | 53                   | 37.2                 | 49                   | 6                    | 9                    | 0.85                     |
|                  |                   | RAX 535           | 35                   | 27      | 47      | 53.4                 | 37.8                 | 47.8                 | 9                    | 9                    | 0.85                     |
| 40               | RAX 440           |                   | 40                   | 24      | 52      | 60                   | 43                   | 54.9                 | 6                    | 9                    | 0.85                     |
|                  |                   | RAX 540           | 40                   | 28      | 52      | 60.4                 | 54.8                 | 42.8                 | 10                   | 9                    | 0.85                     |
| 45               | RAX 445           |                   | 45                   | 24      | 58      | 65                   | 48                   | 59.9                 | 6                    | 9                    | 0.85                     |
|                  |                   | RAX 545           | 45                   | 28      | 58      | 65.4                 | 47.8                 | 59.8                 | 10                   | 9                    | 0.85                     |
| 50               | RAX 450           |                   | 50                   | 27      | 62      | 70                   | 53.3                 | 65.7                 | 6                    | 11                   | 1.3                      |
|                  |                   | RAX 550           | 50                   | 31      | 62      | 70.4                 | 52.8                 | 64.8                 | 10                   | 11                   | 1.3                      |
| 60               | RAX 460           |                   | 60                   | 28      | 72      | 85                   | 63.5                 | 79.2                 | 7                    | 11                   | 1.3                      |
|                  |                   | RAX 560           | 60                   | 32      | 72      | 85.4                 | 63.5                 | 79.5                 | 11                   | 11                   | 1.3                      |
| 70               | RAX 470           |                   | 70                   | 28      | 85      | 95                   | 73.5                 | 89.2                 | 7                    | 11                   | 1.3                      |
|                  |                   | RAX 570           | 70                   | 32      | 85      | 95.4                 | 73.5                 | 89.5                 | 11                   | 11                   | 1.3                      |



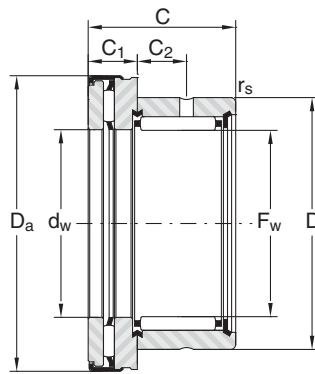
RAX 400 - RAXN 400

RAX 500 - RAXN 500

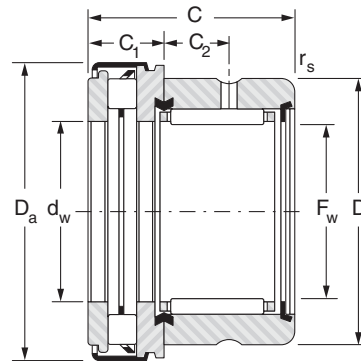
| Load Ratings kN |          |        |          | Speed Rating min <sup>-1</sup> | Weight kg | Inner ring  | Thrust plate |            | Shaft Ø mm |
|-----------------|----------|--------|----------|--------------------------------|-----------|-------------|--------------|------------|------------|
| Radial          |          | Axial  |          |                                |           |             | Thin         | Thick      |            |
| Dyn. C          | Stat. Co | Dyn. C | Stat. Co |                                |           |             |              |            |            |
| 5.90            | 7.16     | 5.00   | 10.9     | 15500                          | 0.025     | JR 7x10x16  | CP 10 22     | CP 2 10 22 | 10         |
| 5.90            | 7.16     | 8.20   | 17.9     | 15500                          | 0.026     | JR 7x10x16  | CP 10 22     | CP 2 10 22 |            |
| 6.78            | 9.03     | 7.10   | 18.5     | 13000                          | 0.032     | JR 9x12x16  | CP 12 26     | CP 2 12 26 | 12         |
| 6.78            | 9.03     | 12.7   | 29.5     | 13000                          | 0.033     | JR 9x12x16  | CP 12 26     | CP 2 12 26 |            |
| 9.66            | 12.6     | 7.60   | 20.8     | 11500                          | 0.034     | JR 12x15x16 | CP 15 28     | CP 2 15 28 | 15         |
| 9.66            | 12.6     | 14.0   | 34.0     | 11500                          | 0.036     | JR 12x15x16 | CP 15 28     | CP 2 15 28 |            |
| 11.8            | 16.3     | 8.10   | 23.0     | 10500                          | 0.041     | JR 14x17x17 | CP 17 30     | CP 2 17 30 | 17         |
| 11.8            | 16.3     | 15.0   | 39.0     | 10500                          | 0.044     | JR 14x17x17 | CP 17 30     | CP 2 17 30 |            |
| 14.8            | 23.7     | 11.8   | 39.0     | 9000                           | 0.066     | JR 17x20x20 | CP 20 35     | CP 3 20 35 | 20         |
| 14.8            | 23.7     | 22.0   | 54.0     | 9000                           | 0.070     | JR 17x20x20 | CP 20 35     | CP 3 20 35 |            |
| 15.1            | 26.2     | 13.3   | 49.0     | 7500                           | 0.099     | JR 20x25x20 | CP 25 42     | CP 3 25 42 | 25         |
| 15.1            | 26.2     | 25.5   | 70.0     | 7500                           | 0.105     | JR 20x25x20 | CP 25 42     | CP 3 25 42 |            |
| 20.2            | 34.6     | 14.5   | 57.0     | 6500                           | 0.111     | JR 25x30x20 | CP 30 47     | CP 3 30 47 | 30         |
| 20.2            | 34.6     | 26.5   | 77.0     | 6500                           | 0.118     | JR 25x30x20 | CP 30 47     | CP 3 30 47 |            |
| 22.1            | 40.8     | 18.9   | 84.0     | 5500                           | 0.130     | JR 30x35x20 | CP 35 52     | CP 3 35 52 | 35         |
| 22.1            | 40.8     | 33.8   | 94.0     | 5500                           | 0.146     | JR 30x35x20 | CP 35 52     | CP 3 35 52 |            |
| 23.8            | 47.0     | 20.4   | 96.0     | 5000                           | 0.150     | JR 35x40x20 | CP 40 60     | CP 3 40 60 | 40         |
| 23.8            | 47.0     | 46.0   | 129.0    | 5000                           | 0.174     | JR 35x40x20 | CP 40 60     | CP 3 40 60 |            |
| 24.9            | 51.8     | 21.8   | 109.0    | 4500                           | 0.179     | JR 40x45x20 | CP 45 65     | CP 3 45 65 | 45         |
| 24.9            | 51.8     | 49.0   | 143.0    | 4500                           | 0.206     | JR 40x45x20 | CP 45 65     | CP 3 45 65 |            |
| 30.2            | 68.5     | 22.5   | 118.0    | 4000                           | 0.205     | JR 45x50x25 | CP 50 70     | CP 3 50 70 | 50         |
| 30.2            | 68.5     | 51.0   | 157.0    | 4000                           | 0.232     | JR 45x50x25 | CP 50 70     | CP 3 50 70 |            |
| 31.9            | 78.1     | 31.5   | 193.0    | 3500                           | 0.282     | JR 55x60x25 | CP 60 85     | CP 4 60 85 | 60         |
| 31.9            | 78.1     | 71.0   | 255.0    | 3500                           | 0.327     | JR 55x60x25 | CP 60 85     | CP 4 60 85 |            |
| 36.1            | 84.7     | 34.5   | 223.0    | 3000                           | 0.386     | JR 60x70x25 | CP 1.5 70 95 | CP 4 70 95 | 70         |
| 36.1            | 84.7     | 77.0   | 295.0    | 3000                           | 0.435     | JR 60x70x25 | CP 1.5 70 95 | CP 4 70 95 |            |

# Combined bearings with incorporated thrust plate RAXPZ 400 – RAXZ 500

Machine-tool  
quality combined  
bearings  
RAXNPZ 400,  
RAXNZ 500  
series

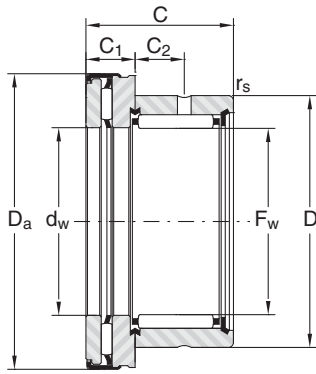


RAXPZ400 - RAXNPZ 400

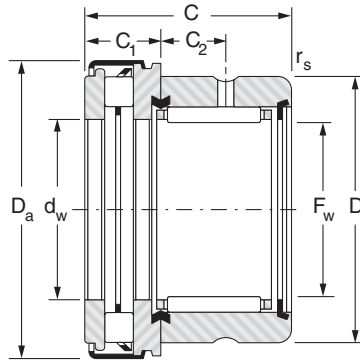


RAXZ 500 - RAXNZ 500

| Shaft<br>∅<br>mm | Designations        |                    | F <sub>w</sub><br>mm | D<br>mm | C<br>mm | d <sub>a</sub><br>mm | D <sub>a</sub><br>mm | C <sub>1</sub><br>mm | C <sub>2</sub><br>mm | r <sub>s min</sub><br>mm |
|------------------|---------------------|--------------------|----------------------|---------|---------|----------------------|----------------------|----------------------|----------------------|--------------------------|
|                  | RAXPZ 400<br>series | RAXZ 500<br>series |                      |         |         |                      |                      |                      |                      |                          |
| 10               | RAXPZ 410           |                    | 10                   | 19      | 21      | 10                   | 22.4                 | 7                    | 6                    | 0.35                     |
|                  |                     | RAXZ 510           | 10                   | 19      | 21.5    | 10                   | 22.4                 | 7.5                  | 6                    | 0.35                     |
| 12               | RAXPZ 412           |                    | 12                   | 21      | 21      | 12                   | 26.4                 | 7                    | 6                    | 0.35                     |
|                  |                     | RAXZ 512           | 12                   | 21      | 22      | 12                   | 26.4                 | 8                    | 6                    | 0.35                     |
| 15               | RAXPZ 415           |                    | 15                   | 24      | 21      | 15                   | 28.4                 | 7                    | 6                    | 0.35                     |
|                  |                     | RAXZ 515           | 15                   | 24      | 22      | 15                   | 28.4                 | 8                    | 6                    | 0.35                     |
| 17               | RAXPZ 417           |                    | 17                   | 26      | 23      | 17                   | 30.4                 | 7                    | 8                    | 0.65                     |
|                  |                     | RAXZ 517           | 17                   | 26      | 24      | 17                   | 30.4                 | 8                    | 8                    | 0.65                     |
| 20               | RAXPZ 420           |                    | 20                   | 30      | 27      | 20                   | 35.4                 | 9                    | 9                    | 0.85                     |
|                  |                     | RAXZ 520           | 20                   | 30      | 29      | 20                   | 35.4                 | 11                   | 9                    | 0.85                     |
| 25               | RAXPZ 425           |                    | 25                   | 37      | 27      | 25                   | 43                   | 9                    | 9                    | 0.85                     |
|                  |                     | RAXZ 525           | 25                   | 37      | 29      | 25                   | 43                   | 11                   | 9                    | 0.85                     |
| 30               | RAXPZ 430           |                    | 30                   | 42      | 27      | 30                   | 48                   | 9                    | 9                    | 0.85                     |
|                  |                     | RAXZ 530           | 30                   | 42      | 29      | 30                   | 48                   | 11                   | 9                    | 0.85                     |
| 35               | RAXPZ 435           |                    | 35                   | 71      | 27      | 35                   | 54                   | 9                    | 9                    | 0.85                     |
|                  |                     | RAXZ 535           | 35                   | 47      | 30      | 35                   | 54                   | 12                   | 9                    | 0.85                     |
| 40               | RAXPZ 440           |                    | 40                   | 52      | 27      | 40                   | 61                   | 9                    | 9                    | 0.85                     |
|                  |                     | RAXZ 540           | 40                   | 52      | 31      | 40                   | 61                   | 13                   | 9                    | 0.85                     |
| 45               | RAXPZ 445           |                    | 45                   | 58      | 27      | 45                   | 66                   | 9                    | 9                    | 0.85                     |
|                  |                     | RAXZ 545           | 45                   | 58      | 31      | 45                   | 66                   | 13                   | 9                    | 0.85                     |
| 50               | RAXPZ 450           |                    | 50                   | 62      | 30      | 50                   | 71                   | 9                    | 11                   | 1.3                      |
|                  |                     | RAXZ 550           | 50                   | 62      | 34      | 50                   | 71                   | 13                   | 11                   | 1.3                      |
| 60               | RAXPZ 460           |                    | 60                   | 72      | 32      | 60                   | 86                   | 11                   | 11                   | 1.3                      |
|                  |                     | RAXZ 560           | 60                   | 72      | 36      | 60                   | 86                   | 15                   | 11                   | 1.3                      |
| 70               | RAXPZ 470           |                    | 70                   | 85      | 32      | 70                   | 96                   | 11                   | 11                   | 1.3                      |
|                  |                     | RAXZ 570           | 70                   | 85      | 36      | 70                   | 96                   | 15                   | 11                   | 1.3                      |



RAXPZ400 - RAXNPZ 400

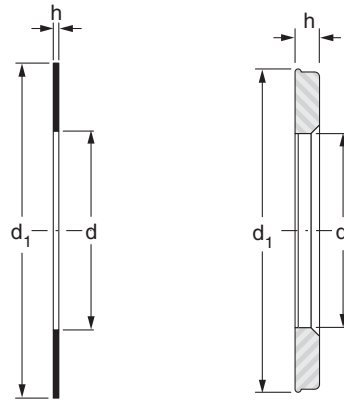


RAXZ 500 - RAXNZ 500

| Load Ratings kN |          |        |          | Speed rating<br>min <sup>-1</sup> | Weight<br>kg | Shaft<br>∅<br>mm |
|-----------------|----------|--------|----------|-----------------------------------|--------------|------------------|
| Radial          |          | Axial  |          |                                   |              |                  |
| Dyn. C          | Stat. Co | Dyn. C | Stat. Co |                                   |              |                  |
| 5.9             | 7.2      | 5      | 10.9     | 15500                             | 0.029        | 10               |
| 5.9             | 7.2      | 8.2    | 17.9     | 15500                             | 0.031        |                  |
| 6.8             | 9        | 7.1    | 18.5     | 13000                             | 0.038        | 12               |
| 6.8             | 9        | 12.7   | 29.5     | 13000                             | 0.039        |                  |
| 9.66            | 12.6     | 7.6    | 20.8     | 11500                             | 0.040        | 15               |
| 9.66            | 12.6     | 14     | 34       | 11500                             | 0.044        |                  |
| 11.8            | 16.3     | 8.1    | 23       | 10500                             | 0.048        | 17               |
| 11.8            | 16.3     | 15     | 39       | 10500                             | 0.053        |                  |
| 14.8            | 23.7     | 11.8   | 39       | 9000                              | 0.079        | 20               |
| 14.8            | 23.7     | 22     | 54       | 9000                              | 0.086        |                  |
| 15.1            | 26.2     | 13.3   | 49       | 7500                              | 0.118        | 25               |
| 15.1            | 26.2     | 25.5   | 70       | 7500                              | 0.131        |                  |
| 20.2            | 34.6     | 14.5   | 57       | 6.500                             | 0.133        | 30               |
| 20.2            | 34.6     | 26.5   | 77       | 6.500                             | 0.147        |                  |
| 22.1            | 40.8     | 18.9   | 84       | 5.500                             | 0.157        | 35               |
| 22.1            | 40.8     | 33.8   | 94       | 5.500                             | 0.181        |                  |
| 23.8            | 47       | 20.4   | 96       | 5.000                             | 0.184        | 40               |
| 23.8            | 47       | 46     | 129      | 5.000                             | 0.218        |                  |
| 24.9            | 51.8     | 21.8   | 109      | 4.500                             | 0.216        | 45               |
| 24.9            | 51.8     | 49     | 143      | 4.500                             | 0.255        |                  |
| 30.2            | 68.5     | 22.5   | 118      | 4.000                             | 0.245        | 50               |
| 30.2            | 68.5     | 51     | 157      | 4.000                             | 0.287        |                  |
| 31.9            | 78.1     | 31.5   | 193      | 3.500                             | 0.365        | 60               |
| 31.9            | 78.1     | 71     | 255      | 3.500                             | 0.423        |                  |
| 36.1            | 84.7     | 34.5   | 223      | 3.000                             | 0.479        | 70               |
| 36.1            | 84.7     | 77     | 295      | 3.000                             | 0.545        |                  |

# Thrust plates for standard combined bearings

CP thin and thick series



CP thin

CP thick

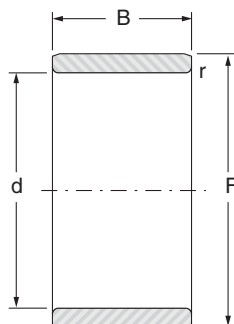
| Shaft<br>∅<br>mm | Designations      |                    | d<br>mm | d <sub>1</sub><br>mm | h<br>mm | Weight<br>g | For combined bearings |         |         |
|------------------|-------------------|--------------------|---------|----------------------|---------|-------------|-----------------------|---------|---------|
|                  | CP<br>Thin series | CF<br>Thick series |         |                      |         |             | RAX 700<br>RAXF 700   | RAX 400 | RAX 500 |
| 10               | CP 10 22          |                    | 10      | 21.5                 | 0.8     | 1.7         |                       |         |         |
|                  |                   | CP 2 10 22         | 10      | 21.5                 | 2       | 4.3         |                       | RAX 410 | RAX 510 |
| 12               | CP 12 26          |                    | 12      | 25.5                 | 0.8     | 2.5         | RAX, RAXF 712         | RAX 412 | RAX 512 |
|                  |                   | CP 2 12 26         | 12      | 25.5                 | 2       | 6.2         |                       |         |         |
| 14               | CP 14 26          |                    | 14      | 25.5                 | 0.8     | 2.3         | RAX, RAXF 714         |         |         |
|                  |                   | CP 2 14 26         | 14      | 25.5                 | 2       | 5.6         |                       |         |         |
| 15               | CP 15 28          |                    | 15      | 27.5                 | 0.8     | 2.8         | RAX, RAXF 715         | RAX 415 | RAX 515 |
|                  |                   | CP 2 15 28         | 15      | 27.5                 | 2       | 6           |                       |         |         |
| 17               | CP 17 30          |                    | 17      | 29.5                 | 0.8     | 2.5         |                       | RAX 417 | RAX 517 |
|                  |                   | CP 2 17 30         | 17      | 29.5                 | 2       | 7           |                       |         |         |
| 18               | CP 18 30          |                    | 18      | 29.5                 | 0.8     | 2.3         | RAX, RAXF 718         |         |         |
|                  |                   | CP 2 18 30         | 18      | 29.5                 | 2       | 5.7         |                       |         |         |
| 20               | CP 20 35          |                    | 20      | 34.5                 | 0.8     | 3.8         | RAX, RAXF 720         | RAX 420 | RAX 520 |
|                  |                   | CP 3 20 35         | 20      | 34.5                 | 3       | 13          |                       |         |         |
| 25               | CP 25 42          |                    | 25      | 41.5                 | 0.8     | 5.3         | RAX, RAXF725          | RAX425  | RAX 525 |
|                  |                   | CP 3 25 42         | 25      | 41.5                 | 3       | 19          |                       |         |         |
| 30               | CP 30 47          |                    | 30      | 46.5                 | 0.8     | 6           | RAX, RAXF 730         | RAX 430 | RAX 530 |
|                  |                   | CP 3 30 47         | 30      | 46.5                 | 3       | 22          |                       |         |         |
| 35               | CP 35 52          |                    | 35      | 51.5                 | 0.8     | 7           | RAX, RAXF 735         | RAX 435 | RAX 535 |
|                  |                   | CP 3 35 52         | 35      | 51.5                 | 3       | 26          |                       |         |         |
| 40               | CP 40 60          |                    | 40      | 59.5                 | 0.8     | 9.3         | RAX, RAXF 740         | RAX 440 | RAX 540 |
|                  |                   | CP 3 40 60         | 40      | 59.5                 | 3       | 34          |                       |         |         |
| 45               | CP 45 65          |                    | 45      | 64.4                 | 0.8     | 10          | RAX, RAXF 745         | RAX 445 | RAX 545 |
|                  |                   | CP 3 45 65         | 45      | 64.4                 | 3       | 37          |                       |         |         |
| 50               | CP 50 70          |                    | 50      | 69.4                 | 0.8     | 11          |                       | RAX 450 | RAX 550 |
|                  |                   | CP 3 50 70         | 50      | 69.4                 | 3       | 40          |                       |         |         |
| 60               | CP 60 85          |                    | 60      | 84.3                 | 0.8     | 17          |                       | RAX 460 | RAX 560 |
|                  |                   | CP 4 60 85         | 60      | 84.3                 | 4       | 83          |                       |         |         |
| 70               | CP 1.5 70 95      |                    | 70      | 94.3                 | 1.5     | 32          |                       | RAX 470 | RAX 570 |
|                  |                   | CP 4 70 95         | 70      | 94.3                 | 4       | 93          |                       |         |         |





# Inner rings for standard combined bearings

## JR standard series

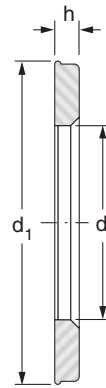


JR

| Shaft<br>∅<br>mm | Designations  |               | d<br>mm | F<br>mm | B<br>mm | r<br>mm | Weight<br>g | For combined bearings |                      |                     |
|------------------|---------------|---------------|---------|---------|---------|---------|-------------|-----------------------|----------------------|---------------------|
|                  | JR series     | JR series     |         |         |         |         |             | RAX 700<br>RAXF 700   | RAX 400<br>RAXPZ 400 | RAX 500<br>RAXZ 500 |
| 7                |               | JR 7x10x16    | 7       | 10      | 16      | 0.2     | 4.8         |                       | RAX 410              | RAX 510             |
| 8                | JR 8x12x12,5  |               | 8       | 12      | 12.5    | 0.3     | 5.8         | RAX 712               |                      |                     |
| 9                |               | JR 9x12x16    | 9       | 12      | 16      | 0.2     | 5.9         |                       | RAX 412              | RAX 512             |
| 10               | JR 10x14x12   |               | 10      | 14      | 12      | 0.3     | 7           | RAX 714               |                      |                     |
| 12               | JR 12x15x12,5 |               | 12      | 15      | 12.5    | 0.2     | 5.8         | RAX 715               |                      |                     |
|                  |               | JR 12x15x16   | 12      | 15      | 16      | 0.2     | 7.6         |                       | RAX 415              | RAX 515             |
| 13               | JR 15x18x16,5 |               | 13      | 18      | 16.5    | 0.35    | 15          | RAX 718               |                      |                     |
| 14               |               | JR 14x17x17   | 14      | 17      | 17      | 0.2     | 9.3         |                       | RAX 417              | RAX 517             |
| 15               | JR 15x20 16   |               | 15      | 20      | 16      | 0.35    | 17          | RAX 720               |                      |                     |
|                  |               | JR 17x20x20   | 15      | 20      | 20      | 0.35    | 20.5        |                       | RAX 420              | RAX 520             |
| 20               |               | JR 20x25x20   | 20      | 25      | 20      | 0.35    | 32          |                       | RAX 425              | RAX 525             |
|                  |               | JR 20x25x20,5 | 20      | 25      | 20.5    | 0.35    | 33          | RAX 725               |                      |                     |
| 25               |               | JR 25x30x20   | 25      | 30      | 20      | 0.35    | 32          |                       | RAX 430              | RAX 530             |
|                  |               | JR 25x30x20,5 | 25      | 30      | 20.5    | 0.35    | 33          | RAX 730               |                      |                     |
| 30               |               | JR 30x35x20   | 30      | 35      | 20      | 0.35    | 38          |                       | RAX 435              | RAX 535             |
|                  |               | JR 30x35x20,5 | 30      | 35      | 20.5    | 0.35    | 39          | RAX 735               |                      |                     |
| 35               |               | JR 35x40x20   | 35      | 40      | 20      | 0.35    | 44          |                       | RAX 440              | RAX 540             |
|                  |               | JR 35x40x20,5 | 35      | 40      | 20.5    | 0.35    | 45          | RAX 740               |                      |                     |
| 40               |               | JR 40x45x20   | 40      | 45      | 20      | 0.35    | 50          |                       | RAX 445              | RAX 545             |
|                  |               | JR 40x45x20,5 | 40      | 45      | 20.5    | 0.35    | 51          | RAX 745               |                      |                     |
| 45               |               | JR 45x50x25   | 45      | 50      | 25      | 0.65    | 69          |                       | RAX 450              | RAX 550             |
| 55               |               | JR 55x60x25   | 55      | 60      | 25      | 0.65    | 84          |                       | RAX 460              | RAX 560             |
| 60               |               | JR 60x70x25   | 60      | 70      | 25      | 0.85    | 190         |                       | RAX 470              | RAX 570             |

# Thrust plates for machine-tool quality combined bearings

CPN series for  
RAXN 400 and RAXN 500

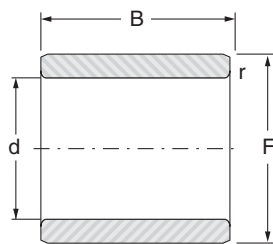


CPN

| Centred          |                          | Designations           |                             | d<br>mm | d <sub>1</sub><br>mm | h<br>mm | Weight<br>kg |
|------------------|--------------------------|------------------------|-----------------------------|---------|----------------------|---------|--------------|
| On shaft<br>∅ mm | On inner<br>ring<br>∅ mm | CPN<br>Standard series | CPN<br>Supplementary series |         |                      |         |              |
| 10               |                          | CPN 2 10 22            |                             | 10      | 21.5                 | 2       | 0.0043       |
|                  |                          |                        | CPN 2,5 10 22               | 10      | 21.7                 | 2.5     | 0.005        |
|                  |                          |                        | CPN 4 10 22                 | 10      | 21.7                 | 4       | 0.009        |
| 12               |                          | CPN 2 12 26            |                             | 12      | 25.5                 | 2       | 0.0062       |
|                  |                          |                        | CPN 3 12 26                 | 12      | 25.7                 | 3       | 0.0095       |
|                  |                          |                        | CPN 4 12 26                 | 12      | 25.7                 | 4       | 0.012        |
| 15               |                          | CPN 2 15 28            |                             | 15      | 27.5                 | 2       | 0.006        |
|                  |                          |                        | CPN 4 15 28                 | 15      | 27.7                 | 4       | 0.013        |
|                  |                          |                        | CPN 7 15 28                 | 15      | 27.7                 | 7       | 0.024        |
| 17               |                          | CPN 2 17 30            |                             | 17      | 29.5                 | 2       | 0.007        |
|                  |                          |                        | CPN 4 17 30                 | 17      | 29.7                 | 4       | 0.014        |
|                  |                          |                        | CPN 7 17 30                 | 17      | 29.7                 | 7       | 0.025        |
|                  | 20                       | CPN 3 20 35            |                             | 20      | 34.5                 | 3       | 0.013        |
|                  |                          |                        | CPN 5 20 35                 | 20      | 34.7                 | 5       | 0.024        |
|                  | 25                       | CPN 3 25 42            |                             | 25      | 41.5                 | 3       | 0.019        |
|                  |                          |                        | CPN 5 25 42                 | 25      | 41.77                | 5       | 0.033        |
|                  | 30                       | CPN 3 30 47            |                             | 30      | 46.5                 | 3       | 0.022        |
|                  |                          |                        | CPN 5 30 47                 | 30      | 46.7                 | 5       | 0.037        |
|                  | 35                       | CPN 3 35 52            |                             | 35      | 51.5                 | 3       | 0.026        |
|                  |                          |                        | CPN 4 35 52                 | 35      | 52                   | 4       | 0.034        |
|                  | 40                       | CPN 3 40 60            |                             | 40      | 59.5                 | 3       | 0.034        |
|                  | 45                       | CPN 3 45 65            |                             | 45      | 64.4                 | 3       | 0.037        |
|                  | 50                       | CPN 3 50 70            |                             | 50      | 69.4                 | 3       | 0.040        |
|                  | 60                       | CPN 4 60 85            |                             | 60      | 84.3                 | 4       | 0.083        |
|                  | 70                       | CPN 4 70 95            |                             | 70      | 94.3                 | 4       | 0.093        |

# Inner ring for machine-tool quality combined bearings

IM 19000 and IM 20600 series for RAXN 400 and RAXN 500

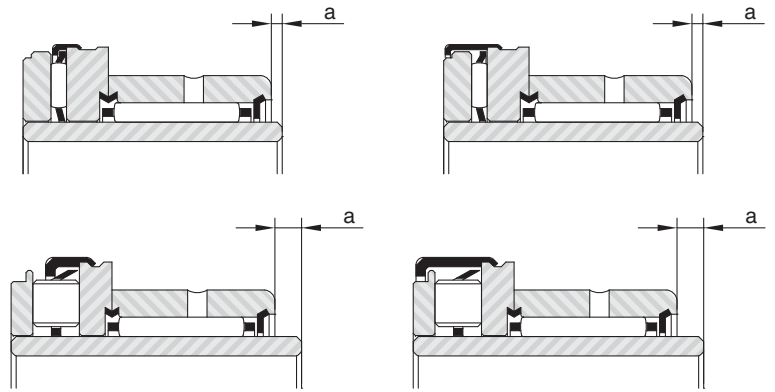


IM

| Shaft<br>∅<br>mm | Designations     |                  | d<br>mm | F<br>mm | B<br>mm | Weight<br>kg |
|------------------|------------------|------------------|---------|---------|---------|--------------|
|                  | IM 19 000 series | IM 20 600 series |         |         |         |              |
| 17               | IM 19 017        |                  | 17      | 20      | 27.5    | 0.019        |
|                  |                  | IM 20 617        | 17      | 20      | 31.5    | 0.021        |
| 20               | IM 19 020        |                  | 20      | 25      | 27.5    | 0.038        |
|                  |                  | IM 20 620        | 20      | 25      | 31.5    | 0.044        |
| 25               | IM 19 025        |                  | 25      | 30      | 27.5    | 0.042        |
|                  |                  | IM 20 625        | 25      | 30      | 31.5    | 0.048        |
| 30               | IM 19 030        |                  | 30      | 35      | 27.5    | 0.055        |
|                  |                  | IM 20 630        | 30      | 35      | 31.5    | 0.063        |
| 35               | IM 19 035        |                  | 35      | 40      | 27.5    | 0.063        |
|                  |                  | IM 20 635        | 35      | 40      | 31.5    | 0.072        |
| 40               | IM 19 040        |                  | 40      | 45      | 27.5    | 0.069        |
|                  |                  | IM 20 640        | 40      | 45      | 31.5    | 0.08         |
| 45               | IM 19 045        |                  | 45      | 50      | 30.5    | 0.085        |
|                  |                  | IM 20 645        | 45      | 50      | 34.5    | 0.096        |
| 50               | IM 19 050        |                  | 50      | 60      | 32.5    | 0.208        |
|                  |                  | IM 20 650        | 50      | 60      | 38.5    | 0.25         |
| 60               | IM 19 060        |                  | 60      | 70      | 32.5    | 0.247        |
|                  |                  | IM 20 660        | 60      | 70      | 39.5    | 0.30         |

# Bearing assemblies

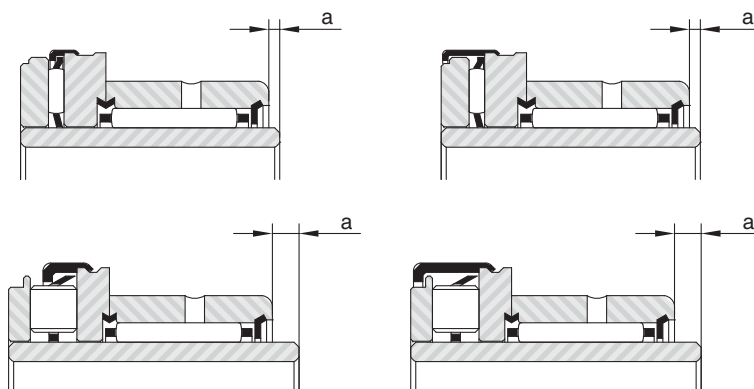
Combined bearings,  
thrust plates, inner rings  
machine-tool  
quality series  
RAXN, RAXNPZ 400,  
RAXN, RAXNZ 500



| Combined bearings and separate thrust plates | Combined bearings with retained thrust plates | Inner rings | a mm |
|--|---|-------------|------|
| RAXN 420 + CPN 3 20 35                       | RAXNPZ 420                                    | IM 19 017   | 0.5  |
|  |   | IM 20 617   | 4.5  |
| RAXN 420 + CPN 5 20 35                       |   | IM 20 617   | 2.5  |
| RAXN 520 + CPN 3 20 35                       | RAXNZ 520                                     | IM 20 617   | 2.5  |
| RAXN 520 + CPN 5 20 35                       |   | IM 20 617   | 0.5  |
| RAXN 425 + CPN 3 25 42                       | RAXNPZ 425                                    | IM 19 020   | 0.5  |
| RAXN 425 + CPN 5 25 42                       |   | IM 20 620   | 4.5  |
| RAXN 525 + CPN 3 25 42                       | RAXNZ 525                                     | IM 20 620   | 2.5  |
| RAXN 525 + CPN 5 25 42                       |   | IM 20 620   | 0.5  |
| RAXN 430 + CPN 3 30 47                       | RAXNPZ 430                                    | IM 19 025   | 0.5  |
|  |   | IM 20 625   | 4.5  |
| RAXN 430 + CPN 5 30 47                       |   | IM 20 625   | 2.5  |
| RAXN 530 + CPN 3 30 47                       | RAXNZ 530                                     | IM 20 625   | 2.5  |
| RAXN 530 + CPN 5 30 47                       |   | IM 20 625   | 0.5  |
| RAXN 435 + CPN 3 35 52                       | RAXNPZ 435                                    | IM 19 030   | 0.5  |
|  |   | IM 20 630   | 4.5  |
| RAXN 435 + CPN 4 35 52                       |   | IM 20 630   | 3.5  |
| RAXN 535 + CPN 3 35 52                       | RAXNZ 535                                     | IM 20 630   | 1.5  |
| RAXN 535 + CPN 4 35 52                       |   | IM 20 630   | 0.5  |

# Bearing assemblies

Combined bearings,  
thrust plates, inner rings  
machine-tool  
quality series  
RAXN, RAXNPZ 400,  
RAXN, RAXNZ 500



| Combined bearings and separate thrust plates | Combined bearings with retained thrust plates | Inner rings | a mm |
|--|---|-------------|------|
| RAXN 440 + CPN 3 40 60                       | RAXNPZ 440                                    | IM 19 035   | 0.5  |
|  |   | IM 20 635   | 4.5  |
| RAXN 540 + CPN 3 40 60                       | RAXNZ 540                                     | IM 20 635   | 0.5  |
| RAXN 445 + CPN 3 45 65                       | RAXNPZ 445                                    | IM 19 040   | 0.5  |
|  |   | IM 20 640   | 4.5  |
| RAXN 545 + CPN 3 45 65                       | RAXNZ 545                                     | IM 20 640   | 0.5  |
| RAXN 450 + CPN 3 50 70                       | RAXNPZ 450                                    | IM 19 045   | 0.5  |
|  |   | IM 20 645   | 4.5  |
| RAXN 550 + CPN 3 50 70                       | RAXNZ 550                                     | IM 20 645   | 0.5  |
| RAXN 460 + CPN 4 60 85                       | RAXNPZ 460                                    | IM 19 050   | 0.5  |
|  |   | IM 20 650   | 6.5  |
| RAXN 560 + CPN 4 60 85                       | RAXNZ 560                                     | IM 20 650   | 2.5  |
| RAXN 470 + CPN 4 70 95                       | RAXNPZ 470                                    | IM 19 060   | 0.5  |
|  |   | IM 20 660   | 7.5  |
| RAXN 570 + CPN 4 70 95                       | RAXNZ 570                                     | IM 20 660   | 3.5  |



Distributeur de fournitures pour l'industrie aéronautique en Rhône-Alpes  
8 rue du Puits Rochefort Z.I. de Montmartre, 42100 Saint-Étienne, FRANCE  
+33-(0)4 77 49 36 36

