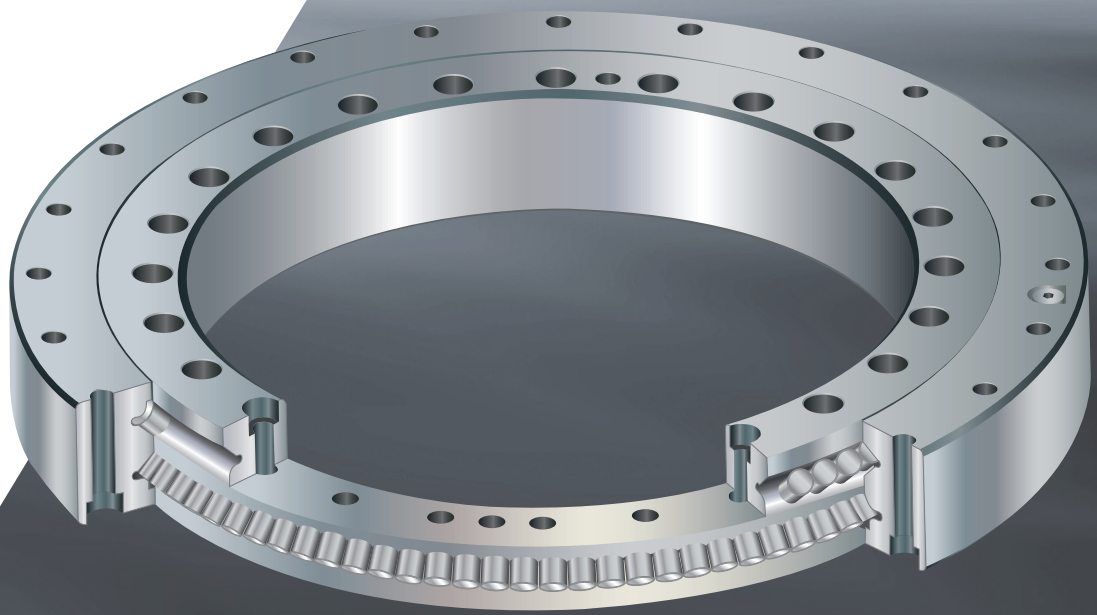
Product chapter

AXDR



Product chapter AXDR

General

General

AXDR double row angular contact roller bearings are double direction, screw-on precision bearing units ready for installation for applications with high rigidity requirements such as rotary tables or milling heads. The bearing absorbs both axial and radial torques and tilting moments backlash-free.

AXDR bearings feature two raceways with tilted cylindrical rollers laid out in an O-arrangement. The pressure angle of 45° is ideal in order to absorb all the forces occurring in machine tools.

Bearing structure

AXDR bearings consist of 2 rings

- Inner ring
- Outer ring

The rollers are introduced via special axial filling openings in the bearing; these are sealed with a plug.
In contrast to radial filling holes, the raceway is not interrupted. This leads to accurate and smooth running of the bearings.

AXDR are filled with full complement (bearing type VX)

Applications

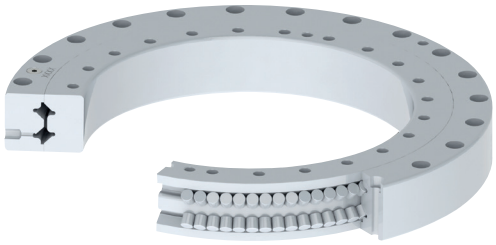
myonic AXDR double row angular contact roller bearings feature substantially higher performance capacities than most axial/radial bearings available on the market. Due to the high design strength, AXDR bearings are less sensitive to the surrounding construction; the bearings can be installed more easily.

AXDR double row angular contact roller bearings are frequent-ly used as an alternative to axial/radial bearings in rotary axes and milling heads.
A cross-comparison of the individual bearing construction series is presented in the general catalogue chapter.

Available designs

Bearing types

AXDR double row angular contact roller bearings have been designed for three different application areas, and are divided into the following bearing types:



- **VX:** Full-complement roller element sets achieve maximum rigidities.
  Due to the optimally-dimensioned end clearance between the individual cylindrical rollers, the friction torque remains low.
  The bearings are delivered pre-greased.
  The positions of the lubrication bores for relubrication are of a conventional design.

Available designs

Fastening possibilities

The three main bearing types can be further configured within a modular system: due to their compact form with integrated assembly holes, AXDR double row angular contact roller bearings are particularly easy to assemble.
The drilling pattern shown and the countersunk hole design accord with the most common variations.

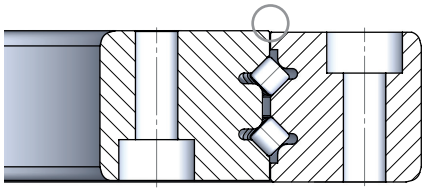
Standard fastening designs:

- SA: Counterbores opposite
- SS: Counterbores identical

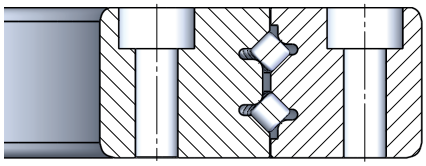
Variations with through or threaded bores are available on request.

For details see below

SA



SS

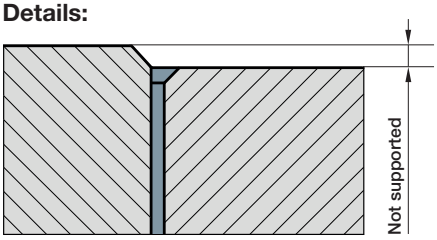


Construction height/clearance

The individual rings are always unsupported on the side of the cylinder counterbore by 0.2 mm, meaning that collisions in the fastening possibility "SA" are excluded.

If, on the other hand, the ring arrangement "SS" is selected, a total height of 0.2 mm less results as both the recessed cylinder counterbores are located on the same side.

Details:



SA

Specific bearing features

Seals

Double row angular contact roller bearings are delivered with a non-grinding gap seal. These seal reliably in normal environments and do not increase the friction torque.

Grinding seals are available on request as NBR or Viton seals which increase on the one hand the sealing effect, and on the other hand generate additional friction in the area of the seal contact surface.

For oil or oil/air lubrications, the seals can be adapted for controlled feed/discharge or distribution of the lubricant in the bearing.

Accuracies

AXDR bearings are supplied in the standard series with dimension tolerances P5 acc. DIN 620. The highly accurate hole and outer diameter designs permit the production of accurate fits and guides which are a great advantage in machine tools.

The running tolerances (axial and radial runout) are available in two classes: standard and constricted (PRR50).
These accord approximately with the tolerances P2 and UP.

Other tolerance limitations are available on request. For example, height tolerances and offset tolerances can be defined in the same way as accurate running torques.

Specific bearing features

Lubrication/excess lubrication

The initial filling takes place using a high-performance grease from a Li-special soap with a mixture of synthetic hydrocarbon oil and mineral oil.

The grease is a special easy-running grease with appropriate additives for the operation of preloaded roller bearings. Most conventional greases are not suitable for the operation of double row angular contact roller bearings, and generate excessively high friction in the bearings!

The run-in cycles during initial operation and after relubrication must be observed in particular. Overfilling of the bearing must be avoided; excessively high grease quantities generate higher levels of friction heat and increasing running torques, in particular at higher speeds.

Relubrication takes place radially via several lubrication channels in the outer ring. Lubrication channels in the inner ring are available as a special design. myonic application engineering is happy to help regarding further details on relubrication quantities or cycles, but also special lubrication procedures such as oil/air lubrication.

The bearings are only supplied with preservation for oil-lubricated applications (suffix L120). Fuchs Anticorit 5F is used as a preservative oil. This can easily be mixed with most oils and greases.

Surface treatment

myonic double row angular contact roller bearings are offered in the standard series without surface treatment.

Measuring system

AXDR bearings cannot be offered with mounted measuring systems.
For applications with measuring systems, we recommend bearings from the AXRY-EX or AXRY-EX-S (ES) series.
These are available with incremental and absolute angle measurement systems.

Specific bearing features

Dimensions/fixing holes

All main dimensions such as the inner diameter, outer diameter, bearing height and the fixing screws are identical with those of other manufacturers.
myonic AXDR double row angular contact roller bearings feature further limited standard tolerances for the alignment of ultra high precision bearing seats.

The main dimensions and fixing holes represent the most common dimensions and define the standard.
Our application engineers are happy to provide further dimensions on request.

Calculation of rigidity

The rigidity calculation takes place under the following parameters:

- With application of a radial and axial load and a tilting torque
- With slight preloads
- With normal adjacent construction and screw connections acc. the information in the production chapter
- Identical FEM calculation procedures with precisely defined parameters were used across all product groups → The stated rigidity values in the product tables are directly comparable (AXRY vs. AXDR vs. AXCR)

An under-dimensioned, inaccurate adjacent construction reduces the rigidity of the bearing position substantially; on the other hand rigidities can also be increased through constructional support of the additional parts.

myonic application engineering is happy to assist in case of further enquiries or optimisations of your axes.

For further details, see the chapter "General calculation of rigidity".

Specific bearing features

Limiting speed/bearing friction torque

The limiting speed n_G stated in the dimensions table can be achieved for the selected taper roller bearing in swivel operation or in case of short-term continuous operation.
In case of prolonged operation in the area of the limiting speed, the bearing increasingly heats up. For thermally stable axes, a cooling system should discharge any friction heat generated.

We recommend oil/air lubrication for high speed applications. myonic application engineering is happy to assist with further details and possible limiting speeds.

The friction torque of double row angular contact roller bearings is influenced in particular through the selected preload. Higher preloads result in higher rigidities with simultaneously higher levels of friction.

The selected lubricants, in particular the viscosity and the filling quantity, have a direct influence on the friction. Standard pre-greased bearings are suitable for swivel operation and short continuous operation up to the limiting speed.

Metering systems are most suitable for relubrication purposes. In case of manual relubrication, there is a risk of overgreasing and thus an increase in the bearing friction torque.

During run-in or during relubrication, the appropriate run-in cycles must be adhered to. The specifications for the adjacent construction and surrounding parts must be adhered to!

Axial and radial runout

The undivided individual rings facilitate maximum radial runout and running accuracy. The narrow standard tolerances can be further constricted (suffix "PRR50").

Life time and load safety factor

Nominal life time

The calculation of the nominal life time takes place via special calculation programs. You are welcome to request our technical questionnaire for the purpose. The calculation itself is conducted by our employees in application engineering.

Calculations at myonic

The following is required for calculation:

- Details on application (drawings, sketches, technical specifications)
- Workpiece dimensions and weight
- Details on the load cycle (cutting forces, speeds, operating durations)

Static load safety factor

The static load safety factor S_0 describes the safety prior to unpermitted plastic deformations of the bearing components in the roller area.
In case of purely axial or radial forces, the static load safety can be inspected separately via the following formulas:

$$S_0 = \frac{C_{0r}}{F_{0r}} \quad \text{or} \quad S_0 = \frac{C_{0a}}{F_{0a}}$$

S_0 = Static load safety
(should be for machine tools >4!)
C_{0r} = Static load rating radial acc. dimensions tables [N]
C_{0a} = Static load rating axial acc. dimensions tables [N]
F_{0r} = Maximum static load of radial bearing [N]
F_{0a} = Maximum static load of axial bearing [N]

Static limiting load diagrams

Static limiting load diagrams

In most applications, tilting moments are added to the radial or axial forces.
With the aid of the following static limiting load diagrams, the correct bearing size can be rapidly selected. Here the required load safety factor S0 = 4 is already taken into account in the diagrams for the roller element set and the screw and bearing ring strength.

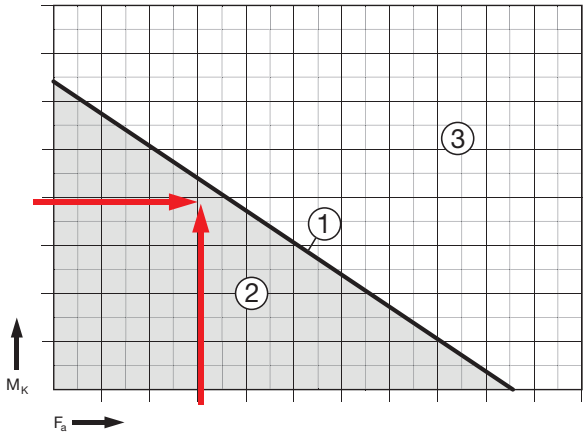
Advantages:

- Easy selection of the bearing size with mainly static load
- Determination of the possible tilting moment MK, which can be absorbed in addition to the axial load

Note:
AXDR double row angular contact roller bearings and AXRY axial-radial bearings have been calculated under the same framework conditions so that both bearing types are directly comparable with each other as long as the adjacent construction is designed acc. the myonic catalogue data.

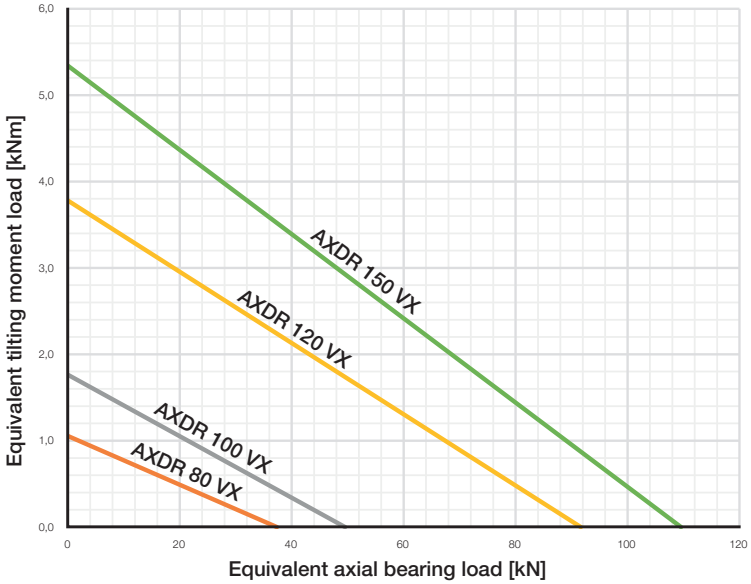
Example:
Static limiting load diagram for AXDR

1 Bearing/size
2 Permitted range
3 Unpermitted range
M_K Maximum tilting torque [kNm]
F_a Axial load [kN]

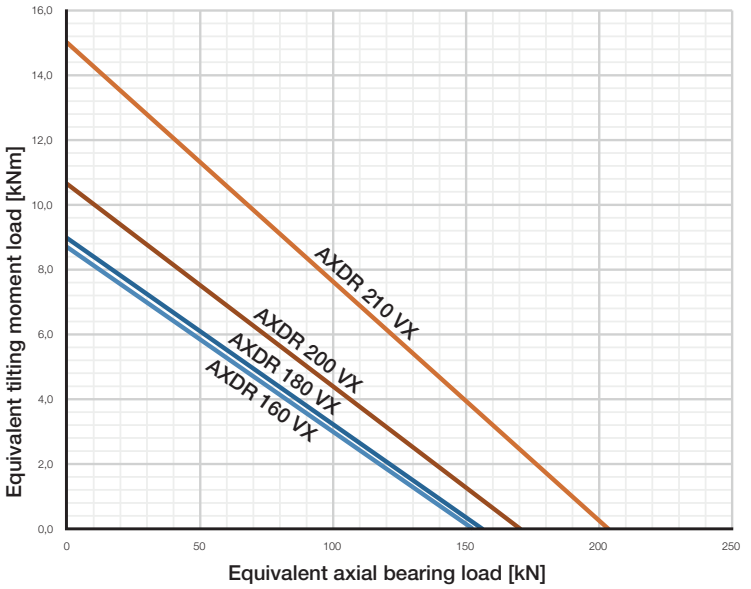


Static limiting load diagrams

Limiting load diagram double row angular contact roller bearing AXDR 80 VX to AXDR 150 VX

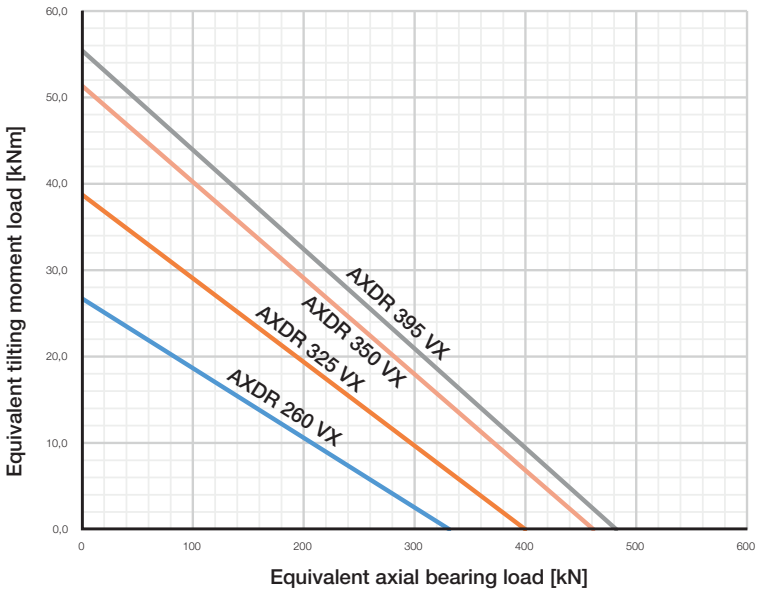


Limiting load diagram double row angular contact roller bearing AXDR 160 VX to AXDR 210 VX

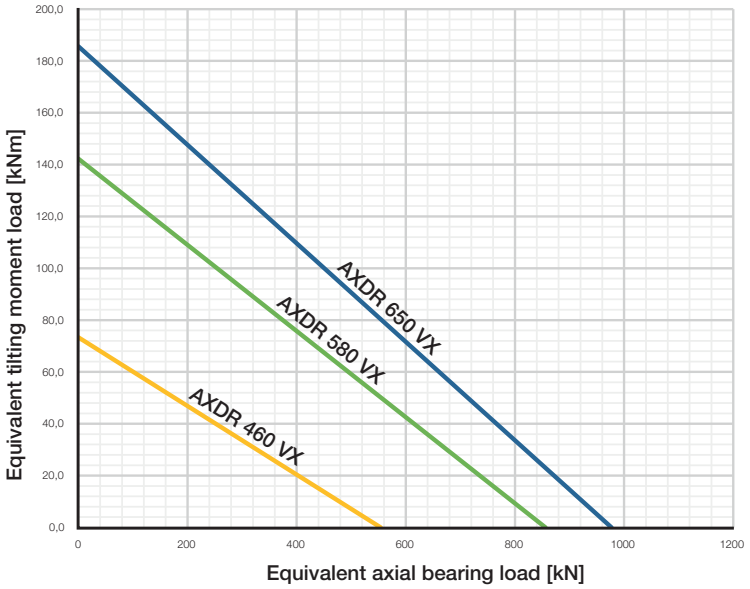


Static limiting load diagrams

Limiting load diagram double row angular contact roller bearing AXDR 260 VX to AXDR 395 VX



Limiting load diagram double row angular contact roller bearing AXDR 460 VX to AXDR 650 VX



Design of the adjacent construction

In the following sketches and tables, the design of the adjacent construction is described.
Pay particular attention to the connection areas, as any deviations will have an effect on the overall accuracy and the rigidities of the roller bearing.

In order to avoid a decline in bearing friction torque, accuracy requirements and running characteristics, the recommended tolerances may not be exceeded.

Press fit

If the fit is too constricted, the bearing preload increases, and thus…

…the following increases:

- The surface pressure in the raceway
- The bearing friction
- The bearing heat
- The amount of wear

…the following is reduced:

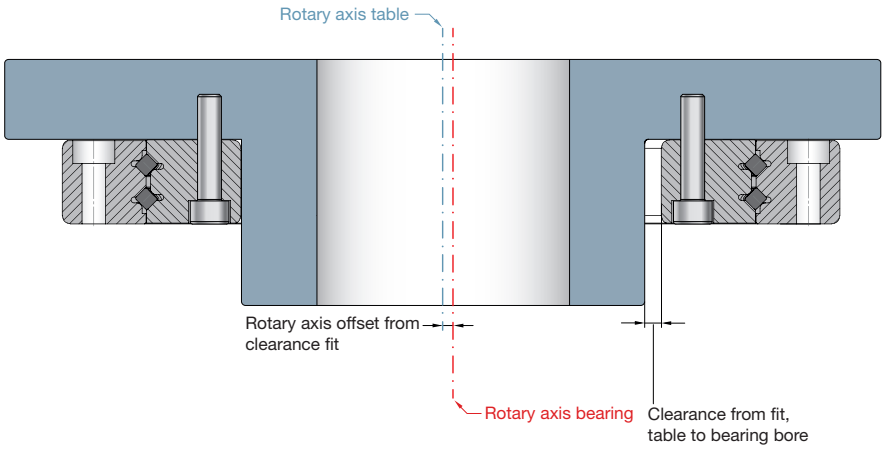
- The maximum speed
- The life time

Design of the adjacent construction

Clearance fit

If the rotating ring is not supported by interference fits, displacement of the rotation axes raceway to table centre is probable. The clearance from the fit table to bearing bore (also applies for the clearance bearing outer diameter to table with rotating outer ring) can add to the radial runout.

myonic-AXDR bearings are produced both in the hole and on the outer diameter with severely limited tolerances (acc. P5/ DIN 620). This facilitates the generation of accurate fits; the accuracy of the bearing is transferred onto the table.



In case of applications with subordinate accuracy requirements, rings can also be screwed in clearance fits.

Centred shafts/tables

Execution via a shaft clearance fit with centring of the rotary axis is possible.
Due to the solid rings, AXDR bearings are less sensitive to non-positive locking shafts than AXRY bearings.
A reduction in the rigidity of the axis and possible radial runout problems or a displacement of the rotation axis on overload must be accepted.

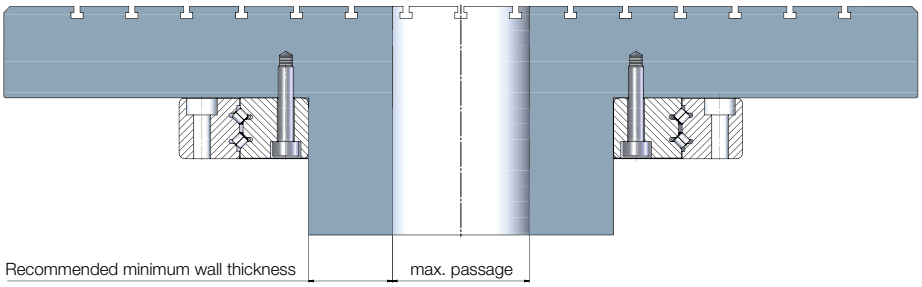
A radial runout measurement with centred tabletop and mounted measuring ball does not accord with the following catalogue values. During this accurately centred measurement, exclusively the radial runout of the raceways and the form errors of the measuring construction are measured.
If the measuring construction is executed precisely, the measured values are lower than the stated myonic radial runout values.

The myonic radial runout values include the radial runout errors of the raceway and the roundness of the bore.

Design of the adjacent construction

Minimum wall thicknesses

The wall thickness of the table adapter in the bearing bore (or on the outer diameter) must be appropriately large to exclude the risk of undefined operating conditions such as vibrations, errors in radial runout and repeatability etc.



Recommended minimum wall thicknesses

AXDR	Minimum wall thickness	Max. passage
50	12	26
80	12.5	55
100	15	70
120	16	88
150	16	118
160	24	112
180	16	148
200	18.5	163
210	30	150
260	21	218
325	23	279
350	33	284
395	23	349
460	25	410
580	30	520
650	37.5	575

Recommended fits, shaft

General

The accuracy of the fits and the geometrically-correct design of all adjacent parts have a direct effect on the accuracy requirements and the dynamic properties of the bearing and the table.
In case of maximum demands, limit the tolerances and fits accordingly.

Please observe the construction notes in the general catalogue chapter.

Rotating inner ring

On rotating shafts, the bearing inner ring is to be supported radially across its whole surface and the shaft is to be designed with a fit acc. h5.
In this way, the bore tolerance of the bearing generates a transition fit with a slight tendency to a clearance fit. In case of designs with clearance fits, see the notes in the chapter adjacent construction.

Higher requirement

Max. accuracy requirements:

For the maximum accuracy requirement with rotating inner ring, a clearance fit 0 must be targeted; existing clearance fits can add to the radial runout.

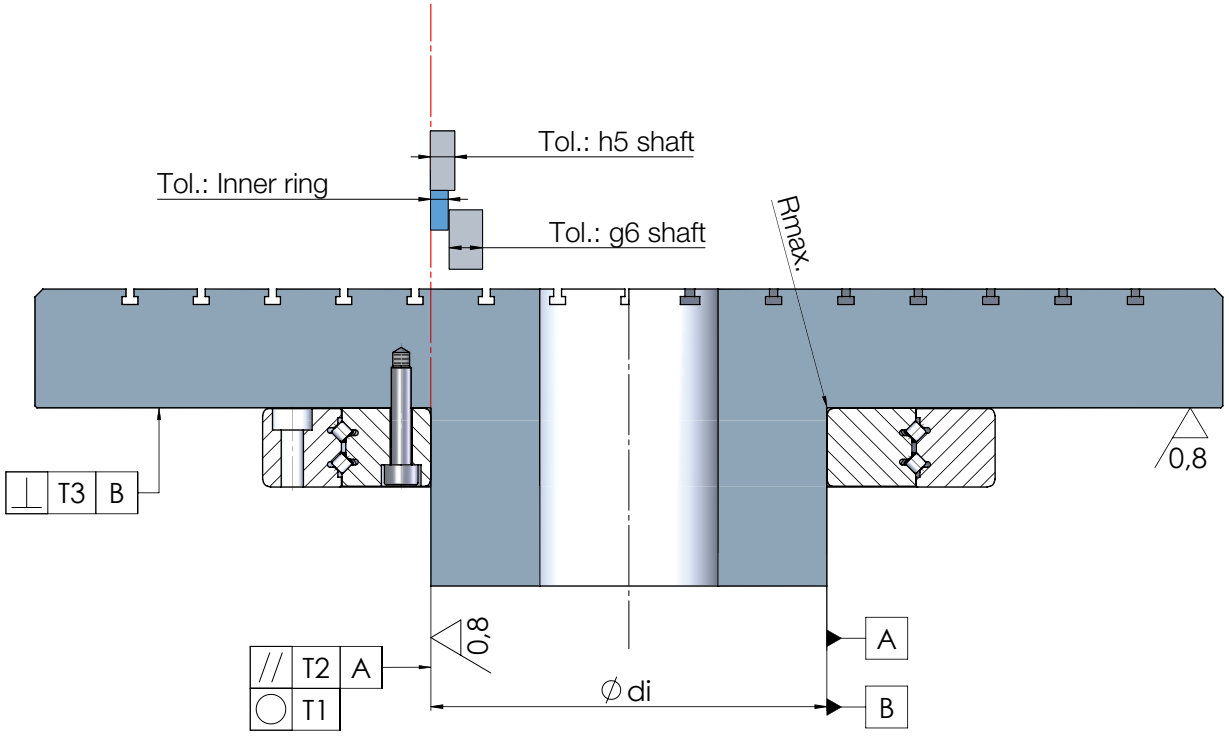
Higher dynamic characteristics:

In case of higher speeds (ndm > 35,000 mm/min) and prolonged operating durations (>10 %), an interference fit of 5 µm is not to be exceeded.

Stationary inner ring

Stationary, screwed inner rings do not require a special fit and can also be mounted with clearance to the shaft.
If the inner ring is centred, then please execute with shaft tolerance g6 and as fit h5 under maximum requirements.
Press fits are to be avoided due to the risk of an increase in bearing preload.

Recommended fits, shaft



				Stationary inner ring			Rotating inner ring					
double row angular contact roller bearings	Shaft Ø di [mm]	Tolerance zone Bearing inner Ø d [mm]		Tolerance zone g6 of the shaft Ø di [mm]		Roundness, parallelism, perpen-dicularity T1, T2, T3 [µm]	Tolerance zone h5 of the shaft Ø di [mm]		Roundness T1 [µm]	Parallelism T2 [µm]	Perpen-dicularity T3 [µm]	Maximum corner radius Rmax. [mm]
AXDR 80	80	0	-0.009	-0.010	-0.029	5	0	-0.013	3	1.5	3	0.1
AXDR 100	100	0	-0.010	-0.012	-0.034	6	0	-0.015	4	2	4	0.1
AXDR 120	120	0	-0.010	-0.012	-0.034	6	0	-0.015	4	2	4	0.1
AXDR 150	150	0	-0.013	-0.014	-0.039	8	0	-0.018	5	2.5	5	0.1
AXDR 160	160	0	-0.013	-0.014	-0.039	8	0	-0.018	5	2.5	5	0.1
AXDR 180	180	0	-0.013	-0.014	-0.039	8	0	-0.018	5	2.5	5	0.1
AXDR 200	200	0	-0.015	-0.015	-0.044	10	0	-0.020	7	3.5	5	0.1
AXDR 210	210	0	-0.015	-0.015	-0.044	10	0	-0.020	7	3.5	7	0.3
AXDR 260	260	0	-0.018	-0.017	-0.049	12	0	-0.023	8	4	7	0.3
AXDR 325	325	0	-0.023	-0.018	-0.054	13	0	-0.025	9	4.5	7	0.3
AXDR 350	350	0	-0.023	-0.018	-0.054	13	0	-0.025	9	4.5	7	0.3
AXDR 395	395	0	-0.023	-0.018	-0.054	13	0	-0.025	9	4.5	7	0.3
AXDR 460	460	0	-0.023	-0.020	-0.060	15	0	-0.027	10	5	7	0.3
AXDR 580	580	0	-0.025	-0.022	-0.066	17	0	-0.032	11	5.5	8	1
AXDR 650	650	0	-0.038	-0.024	-0.074	19	0	-0.036	13	6.5	10	1

Recommended fits, housing

General

The accuracy of the fits and the geometrically-correct design of all adjacent parts have a direct effect on the accuracy requirements and the dynamic properties of the bearing and the table. In case of maximum demands, limit the tolerances and fits accordingly.

Please observe the construction notes in the general catalogue chapter.

Outer ring stationary

It is possible to do without a fit in the housing or alternatively to have a G7 fit design. An outer ring diameter clearance fit to the housing makes assembly easier.

In case of higher dynamic requirements (ndm > 35,000 mm/min, prolonged operating duration) on the rotating shaft, maintain a minimum clearance of 20 µm for the fit seat of the outer ring to the housing.

Outer ring rotates

Normal requirement:

Execute the rotating housing with a J6 clearance; here a transition fit results with a slight tendency for clearance fit. Execute the fit seat across the entire height of the outer ring.

Higher requirement:

Max. accuracy requirement

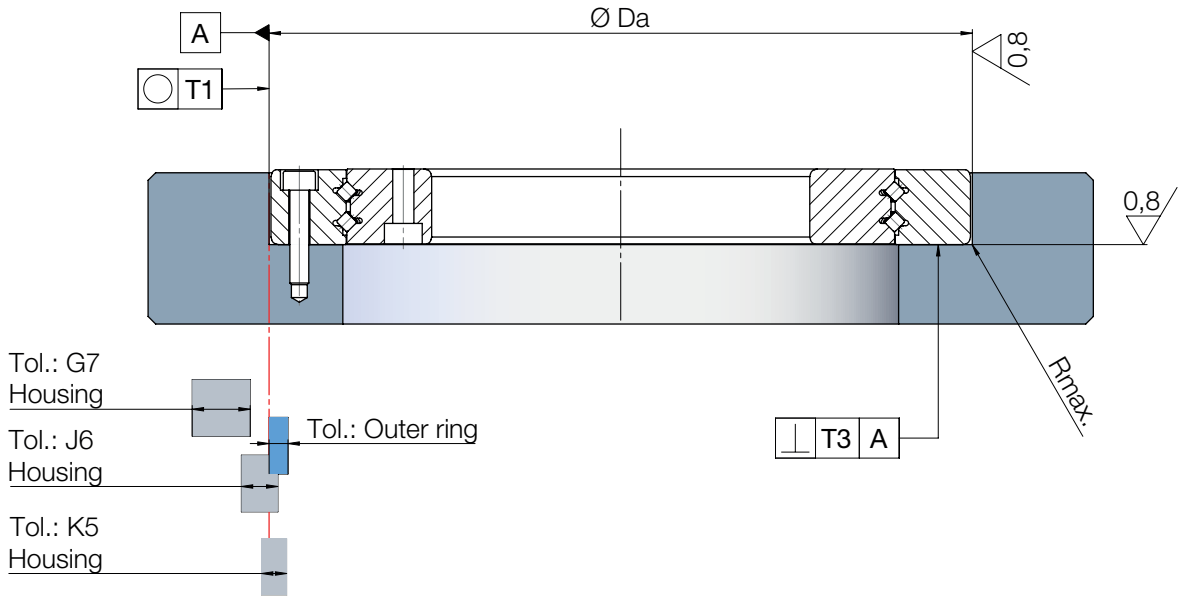
Execute the rotating housing with a J6 clearance. Alternatively, the housing can be designed with a G5 fit for a narrower fit.

This can more easily be mated with the tolerance zone of the bearing outer diameter in case of high requirements. This may make assembly more complex.
For maximum accuracy requirements, adjust the clearance fit to 0.

Higher dynamic characteristics:

In case of higher speeds (ndm > 35,000 mm/min) and prolonged operating durations, do not exceed an interference fit of 5 µm.

Recommended fits, housing



				Stationary outer ring			Rotating outer ring						
double row angular contact roller bearings	Housing Ø Da [mm]	Tolerance zone Bearing outer Ø D [mm]		Tolerance zone G7 of the housing Ø Da [mm]		Round-ness, perpendic-ularity T1, T3 [µm]	Tolerance zone J6 of the housing Ø Da [mm]		Tolerance zone K5 of the housing Ø Da [mm]		Round-ness T1 [µm]	Perpen-dicularity T3 [µm]	Maximum corner radius Rmax. [mm]
AXDR 80	146	0	-0.011	0.054	0.014	8	0.018	-0.007	0.003	-0.015	5	5	0.1
AXDR 100	185	0	-0.015	0.061	0.015	8	0.022	-0.007	0.002	-0.018	7	7	0.1
AXDR 120	210	0	-0.015	0.061	0.015	8	0.022	-0.007	0.002	-0.018	7	7	0.1
AXDR 150	240	0	-0.015	0.061	0.015	10	0.022	-0.007	0.002	-0.018	7	7	0.1
AXDR 160	295	0	-0.018	0.069	0.017	12	0.025	-0.007	0.003	-0.020	8	8	0.1
AXDR 180	280	0	-0.018	0.069	0.017	12	0.025	-0.007	0.003	-0.020	8	8	0.1
AXDR 200	300	0	-0.018	0.069	0.017	12	0.025	-0.007	0.003	-0.020	8	8	0.1
AXDR 210	380	0	-0.020	0.075	0.018	13	0.029	-0.007	0.003	-0.022	9	9	0.3
AXDR 260	385	0	-0.020	0.075	0.018	13	0.029	-0.007	0.003	-0.022	9	9	0.3
AXDR 325	450	0	-0.023	0.083	0.020	13	0.033	-0.007	0.002	-0.025	10	10	0.3
AXDR 350	540	0	-0.028	0.092	0.022	16	0.034	-0.010	0.000	-0.032	11	11	0.3
AXDR 395	525	0	-0.028	0.092	0.022	16	0.034	-0.010	0.000	-0.032	11	11	0.3
AXDR 460	600	0	-0.028	0.092	0.022	16	0.034	-0.010	0.000	-0.032	11	11	0.3
AXDR 580	750	0	-0.035	0.104	0.024	18	0.038	-0.012	0.000	-0.036	13	13	0.3
AXDR 650	870	0	-0.050	0.116	0.026	20	0.044	-0.012	0.000	-0.040	15	15	1

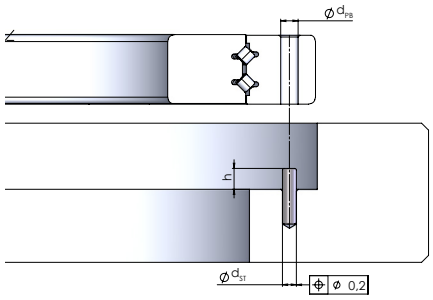
Positioning hole

For easy alignment of the outer ring, a positioning hole is offered for the construction series AXDR-ES.

Position of the positioning hole

In the following sketch, the cylinder counterbores lie at the top of the outer ring.

The pitches of the individual bearings are listed in the product data sheet in the table under Positioning hole.



Positioning hole design

Secure the positioning pins appropriately during assembly or remove them after assembly (e.g. threaded rods).

The pins must be reliably prevented from dropping out during operation.

Dimension the positioning pins remaining in the table with at least 4 mm pin height, from size 580 with at least 6 mm pin height. Maximum pin heights acc. table:

Positioning hole:

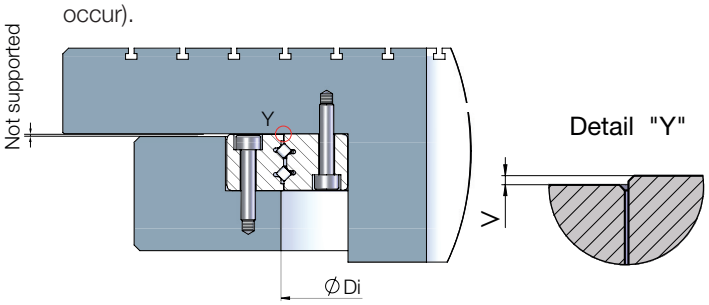
AXDR	Pin height h max. [mm]	Pin-Ø d_{ST} [mm]	Positioning hole d_{PB} min. [mm]
AXDR 50	-	-	-
AXDR 80	10	4	5
AXDR 100	10	4	5
AXDR 120	15	4	5
AXDR 150	15	4	5
AXDR 160	17.5	4	5
AXDR 180	20	4	5
AXDR 200	20	4	5
AXDR 210	20	4	5
AXDR 260	25	4	5
AXDR 325	25	4	5
AXDR 350	25	4	5
AXDR 395	25	4	5
AXDR 460	25	4	5
AXDR 580	30	6	8
AXDR 650	30	8	10

Recommended connection dimensions

For the connection dimensions, two cases must be considered:

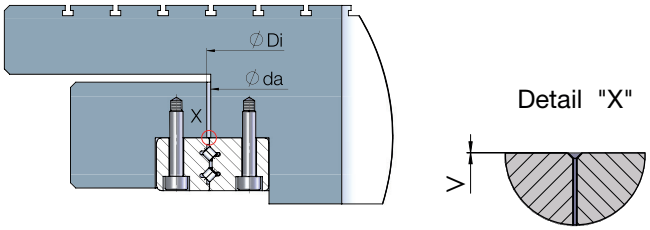
Fastening possibility SA

For the fastening possibility SA; there are no specified connection dimensions (as, due to the offset of the two rings to each other, no collision with the adjacent construction can occur).



Fastening possibility SS

For the fastening possibility SS, there is no offset between the inner and outer ring and therefore the specified table values apply here.
The diameter value Øda is a maximum value, and the diameter value ØDi is a minimum value.



double row angular contact roller bearings	Connection dimensions Øda Max. [mm]	Connection dimensions ØDi Min. [mm]
AXDR 80	106.5	114.5
AXDR 100	141.0	149.0
AXDR 120	160.4	168.4
AXDR 150	191.0	199.0
AXDR 160	223.7	231.7
AXDR 180	225.9	233.9
AXDR 200	246.0	254.0
AXDR 210	292.7	300.7
AXDR 260	318.4	326.4
AXDR 325	381.7	389.7
AXDR 350	439.4	447.4
AXDR 395	458.5	466.5
AXDR 460	525.3	533.3
AXDR 580	661.6	669.6
AXDR 650	753.3	761.3

Order designation

Designation system

AXDR 200VX - SA - PRR50 - AC - JXXXX - L120

Construc-tion series

Bore
in mm

Bearing type:
VX = Full complement

Fastening possibility:
SA = Grooves opposite
SS = Grooves identical
Others available on request

Lubrication:
Without = Standard grease
L120 = Bearing ungreased, only preserved (e.g. for oil lubrication)
Gxxx = Special grease (number is issued by myonic)

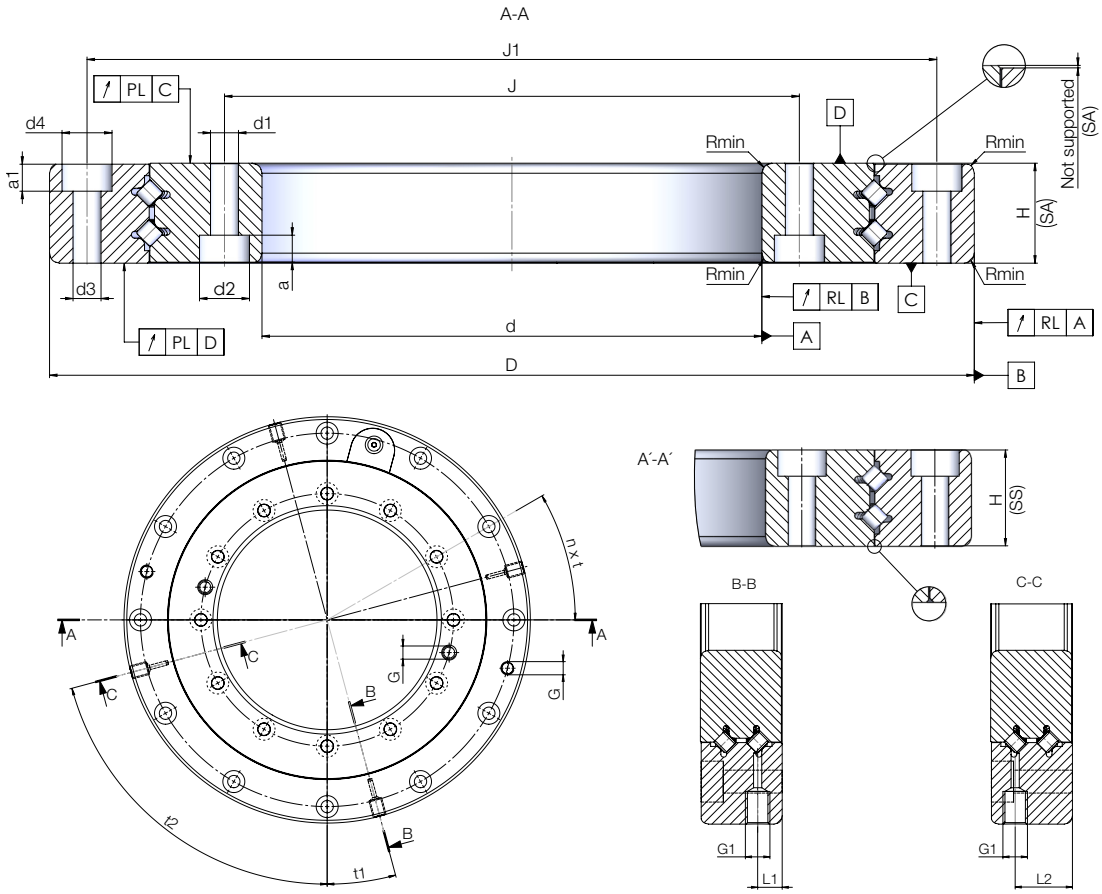
Regulation:
Without = Standard
JXXXX= Customized regulation (number is issued by myonic)

Bearing alignment:
Without = Standard
AC = Bearing preload adapted for Customized alignment

Accuracy requirements:
Without = Standard
PRR50 = Axial and radial runout tolerances restricted

Please contact myonic application engineering should you require further technical details or special designs.

Dimensions table AXDR___VX (full complement)



Designation	Weight	Dimensions [mm]														
	m	d	Δd	D	ΔD	VX-SA		VX-SS		J	J1	t1	t2	G1	L1	L2
	[kg]					H	ΔH	H	ΔH							
AXDR 80VX	1,6	80	-0,009	146	-0,011	20	-0,075	19,8	±0,075	93	133	22,5°	67,5°	M6	6	14
AXDR 100VX	2,7	100	-0,010	185	-0,015	20	-0,075	19,8	±0,075	115	170	15°	75°	M6	6	14
AXDR 120VX	4,9	120	-0,010	210	-0,015	30	-0,075	29,8	±0,075	138	192	15°	75°	M6	8	22
AXDR 150VX	5,8	150	-0,013	240	-0,015	30	-0,1	29,8	±0,1	168	222	11,25°	78,75°	M6	8	22
AXDR 160VX	11,8	160	-0,013	295	-0,018	35	-0,1	34,8	±0,1	184	270	15°	75°	M6	10,5	24,5
AXDR 180VX	10,3	180	-0,013	280	-0,018	40	-0,1	39,8	±0,1	200	260	10°	70°	M6	12	28
AXDR 200VX	11,2	200	-0,015	300	-0,018	40	-0,1	39,8	±0,1	220	280	9°	81°	G1/8	12	28
AXDR 210VX	21,9	210	-0,015	380	-0,020	40	-0,1	39,8	±0,1	240	350	11,25°	78,75°	G1/8	12	28
AXDR 260VX	22	260	-0,018	385	-0,020	50	-0,12	49,8	±0,12	282	363	7,5°	82,5°	G1/8	15	35
AXDR 325VX	26,4	325	-0,023	450	-0,023	50	-0,15	49,8	±0,15	347	428	42°	54°	G1/8	15	35
AXDR 350VX	46,8	350	-0,023	540	-0,028	50	-0,15	49,8	±0,15	385	505	7,5°	82,5°	G1/8	15	35
AXDR 395VX	32,7	395	-0,023	525	-0,028	50	-0,15	49,8	±0,15	418	502	5°	85°	G1/8	15	35
AXDR 460VX	41,1	460	-0,023	600	-0,028	50	-0,15	49,8	±0,15	486	574	130,5°	139,5°	G1/8	15	35
AXDR 580VX	76,4	580	-0,025	750	-0,035	60	-0,15	59,8	±0,15	610	720	5,625°	84,375°	G1/8	18	42
AXDR 650VX	114,2	650	-0,038	870	-0,050	60	-0,15	59,8	±0,15	690	830	5,625°	84,375°	G1/8	18	42

1) Tightening torque for screws acc. DIN 912, strength class 10.9.

2) Please enquire in case of high speed applications.

3) Measuring speed n_{const} = 5 rpm
Dependent on the selected preload and lubrication

4) Measured on the installed bearing with ideal adjacent construction.

Designation	Fixing holes											
	Inner ring				Outer ring				Extraction thread on the inner ring and outer ring		Number x Pitch	Screw tightening torque
	d1	d2	a	Number	d3	d4	a1	Number	G	Number	n x t	M_A [1] [Nm]
AXDR 80VX	5.6	10	5.4	8	5.6	10	5.4	8	M6	2	8 x 45°	8.5
AXDR 100VX	5.6	10	5.4	12	5.6	10	5.4	12	M6	2	12 x 30°	8.5
AXDR 120VX	7	11	6.4	12	7	11	6.4	12	M8	2	12 x 30°	14
AXDR 150VX	7	11	6.4	16	7	11	6.4	16	M8	2	16 x 22.5°	14
AXDR 160VX	11.4	18	10.6	12	11.4	18	10.6	12	M8	2	12 x 30°	68
AXDR 180VX	7	11	6.4	18	7	11	6.4	18	M8	2	18 x 20°	14
AXDR 200VX	7	11	6.4	20	7	11	6.4	20	M8	2	20 x 18°	14
AXDR 210VX	14	20	12.6	16	14	20	12.6	16	M10	2	16 x 22.5°	116
AXDR 260VX	9.3	15	8.6	24	9.3	15	8.6	24	M10	2	24 x 15°	34
AXDR 325VX	9.3	15	8.6	30	9.3	15	8.6	30	M10	2	30 x12°	34
AXDR 350VX	14	20	12.6	24	14	20	12.6	24	M10	2	24 x 15°	116
AXDR 395VX	9.3	15	8.6	36	9.3	15	8.6	36	M10	2	36 x 10°	34
AXDR 460VX	9.3	15	8.6	40	9.3	15	8.6	40	M10	2	40 x 9°	34
AXDR 580VX	11.4	18	10.6	32	11.4	18	10.6	32	M12	2	32 x 11.25°	68
AXDR 650VX	14	20	12.6	32	14	20	12.6	32	M12	2	32 x 11.25°	116

Designation	Load ratings				Limiting speed [2]	Bearing friction torque [3]	Axial runout & radial runout [4]				Rigidity of the bearing position		
	Axial		Radial		Grease	Grease	Inner ring		Outer ring		Axial	Radial	Tilting rigidity
							Standard	Restricted	Standard	Restricted			
	dyn. C_a [kN]	stat. C_{0a} [kN]	dyn. C_r [kN]	stat. C_{0r} [kN]	n_G [rpm]	$M_{RL\,max}$ [Nm]	PL & RL [µm]	PL & RL [µm]	PL & RL [µm]	PL & RL [µm]	C_{al} [kN/µm]	C_{rl} [kN/µm]	C_{kl} [kNm/mrad]
AXDR 80VX	29.5	149.5	26.2	59.8	900	2.8	4	2	5	3	2.7	1.4	4.5
AXDR 100VX	34.2	198.2	30.4	79.3	700	2.8	4	2.5	7	4	3.5	1.7	10.1
AXDR 120VX	67.1	366.6	59.6	146.6	600	4.2	4	2.5	7	4	3.6	1.9	14.1
AXDR 150VX	73.7	438.3	65.4	175.3	500	5.6	5	2.5	7	4	4.2	2.2	22.9
AXDR 160VX	100.7	617.9	89.4	247.2	450	5.6	5	2.5	7	4	5.3	2.6	38.6
AXDR 180VX	101.2	624.2	89.9	249.7	450	7	5	2.5	7	4	4.9	2.6	37.1
AXDR 200VX	106.0	681.0	94.1	272.4	400	8.4	6	3	7	4	5.3	2.8	46.7
AXDR 210VX	116.3	813.6	103.3	325.4	350	9	6	3	8	5	7.7	3.8	96.1
AXDR 260VX	203.0	1325.6	180.4	530.2	300	11	8	4	8	5	6.3	3.3	92.2
AXDR 325VX	223.9	1599.4	198.8	639.7	250	15	8	4	9	5	7.3	3.9	153.2
AXDR 350VX	241.5	1845.7	214.4	738.3	230	17	8	4	10	7	9.2	4.9	255.8
AXDR 395VX	247.2	1927.7	219.4	771.1	210	20	8	4	10	7	8.6	4.5	251.1
AXDR 460VX	265.9	2215.1	236.0	886.1	190	28	10	5	10	7	9.8	5.2	373.5
AXDR 580VX	389.3	3423.4	345.4	1369.4	150	50	12	6	15	8	11.6	6.2	693.4
AXDR 650VX	416.8	3907.4	369.8	1563.0	130	70	14	7	15	8	14.3	7.5	1086.5