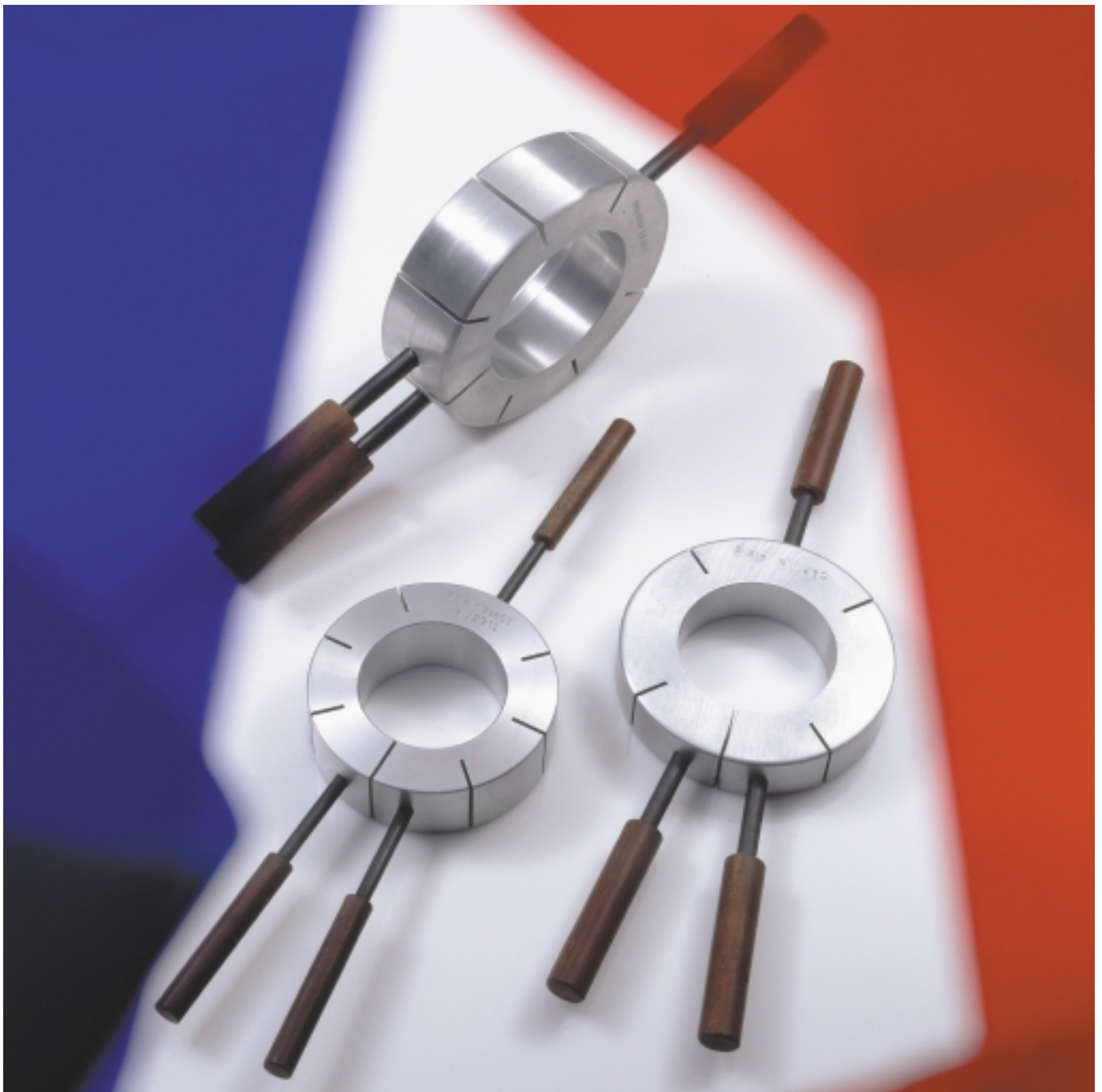


FAG Heating Rings

Uncomplicated devices for extracting cylindrical roller bearing inner rings



Application · Description · Handling

Application

FAG heating rings are suitable for dismantling the lipless inner rings of cylindrical roller bearings and needle roller bearings and for inner rings with a fixed lip. The heating rings are ideal for the occasional extraction of small and medium-size bearing rings (bore diameters ranging from 50 to 200 mm). Depending on the ring size, the heating process takes 5 to 30 seconds.

Description

FAG heating rings are slotted rings that are made of a light metal alloy. Their bore diameters and widths must correspond to those of the inner rings to be extracted. Several slots in the circumference of the heating ring reduce its rigidity and thus enable a close fit on the bearing ring. Heat-insulated handles make handling of the rings easier. Due to the good heat-conducting properties of the heating ring the bearing ring quickly takes on the temperature required for extraction (80 to 120 °C). The specific heat of the light metal alloy is twice the specific heat of steel, entailing – due to the good thermal conductivity of the alloy – only a minor temperature loss with major heat emission. Since the al-

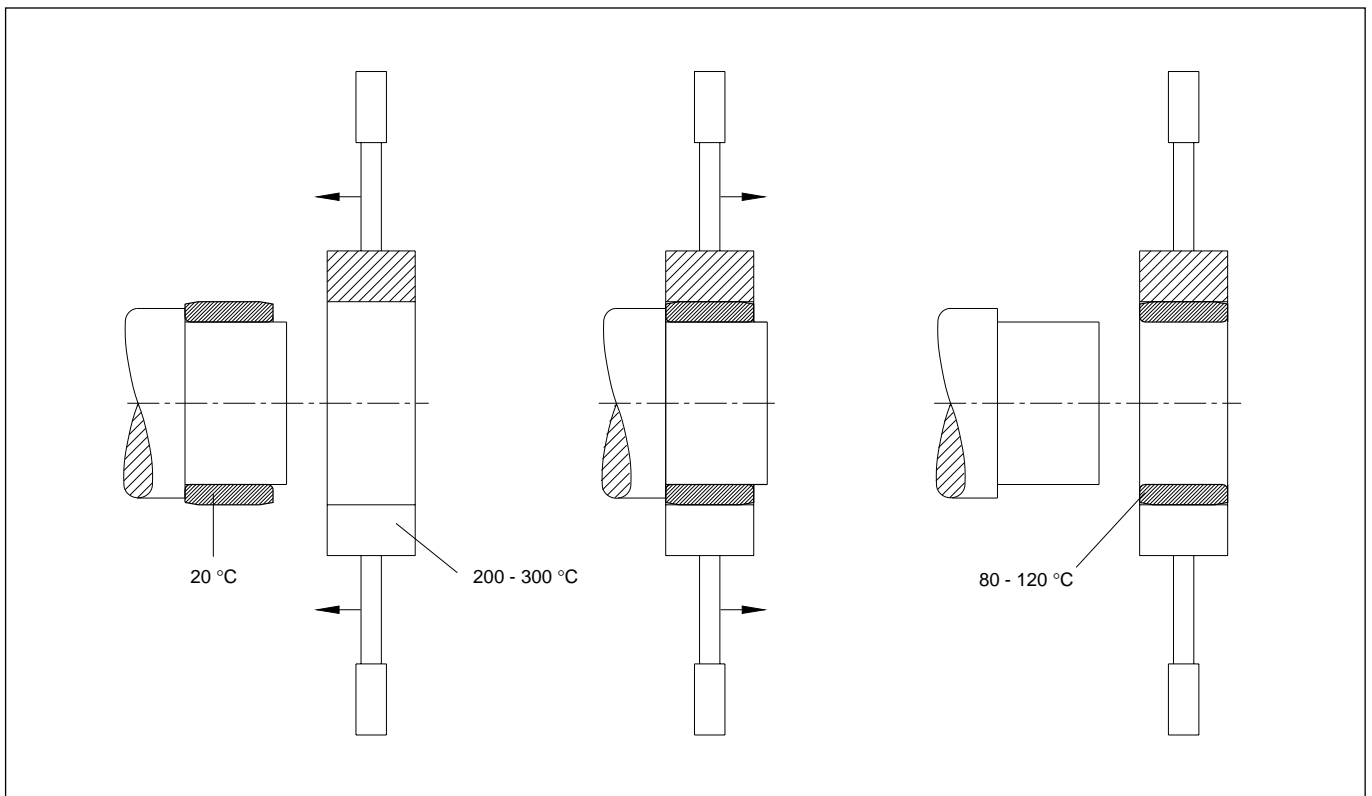
loy's coefficient of thermal expansion is twice as high as that of steel, the contact between inner ring and heating ring is improved, and the transmission of heat is intensified when the heating ring cools down and the inner ring is heated.

Handling

The heating ring is heated to 200 to 300 °C by means of an electric heating plate. The temperature at the bore must be checked constantly. The bore diameter design ensures that the heating ring sits on the bearing ring with a slight interference fit at 200 to 300 °C. The heating ring must be pushed onto the bearing ring (wearing heat-insulated gloves) and clamped by means of the handles. To improve the exchange of heat, the inner ring raceway may be coated with silicone oil before pushing on the heating ring.

The clamped heating ring has to be rotated to check if the interference fit of the bearing ring has been eliminated; then the heating ring can be withdrawn from the shaft together with the bearing ring. The extracted inner ring must be removed from the heating ring immediately to prevent it from being excessively heated.

Problems may arise with fretting corrosion or cold weldings in the inner ring seat. In such cases the temperature difference



Handling · Comparison with other extraction tools · Programme · Information for an Offer · Manufacture · Accessories · Examples of How to Order

between bearing ring and shaft generated by the heating ring may not suffice to extract the bearing ring, and the inner ring must be heated by means of an annular burner (see FAG Publ. No. WL 80 100 “Mounting and Dismounting of Rolling Bearings”).

Frequent use of the heating ring may affect its roundness so that the exchange of heat is reduced to such an extent that the inner ring cannot be extracted. Two or more bearing rings shrunk onto the shaft side by side cannot be dismantled simultaneously with one heating ring. The bearing rings must be heated one by one and extracted separately.

Comparison with Other Extraction Tools

We recommend to use the heating rings for cases where a small number of cylindrical roller bearing inner rings with bore diameters up to ca. 200 mm have to be dismantled infrequently. For this particular application, the low purchase price of the heating rings yields real savings. With larger bearing rings, the heating ring-related expenditure gets relatively high. For these cases an annular burner (see Publ. No. WL 80 100) is more cost-efficient. If fast dismantling is required, we recommend to use induction heating for rings with bore diameters of 100 mm and larger. Small bearing rings with bore diameters of up to about 100 mm are usually dismantled by means of mechanical extraction tools (see also TI No. WL 80-48).

Programme, Information for an Offer

The dimensional tables in this TI list FAG heating rings for the commonly used cylindrical roller bearing inner rings with bore diameters ranging from 50 to 200 mm. On request we also supply heating rings in other dimensions.

To prepare an offer we need the following information:

- Bearing code or dimensions of the inner rings
- Shaft fits
- Drawing of the mounting location
- Approximate number of parts to be extracted per day

Manufacture

In some cases, customers want to manufacture the heating rings themselves.

We recommend to make the heating rings of a heat-resistant aluminium alloy, e.g. AlCuMgPbF38 (material no. WST 3.1645).

The dimensions of the heating rings for commonly used cylindrical roller bearing inner rings are indicated in this TI. The bore of the heating ring is machined to a Z10 fit corresponding to the inner ring raceway diameter. The handles should be made of round bar steel, with a diameter of 8 to 16 mm and a length of 150 to 200 mm, depending on the ring size. The handles must be heat-insulated. The number of slots in the circumference is determined by the outside diameter of the heating ring. We recommend:

up to 200 mm	4 slots
from 200 to 300 mm	6 slots
over 300 mm	10 slots

The depth of the slots should be at least 2/3 of the ring cross section.

Recommended FAG Accessories

- Electric heating plate
Order designation:
HEIZPLATTE2
- Temperature measuring instrument
Order designation:
TEMP.MG175830
- Gloves
Order designation:
HANDSCHUH2

Examples of How to Order FAG Heating Rings

AWR176050.NU312E

(for inner ring of a cylindrical roller bearing NU312E)

AWR176050.NJ2317E

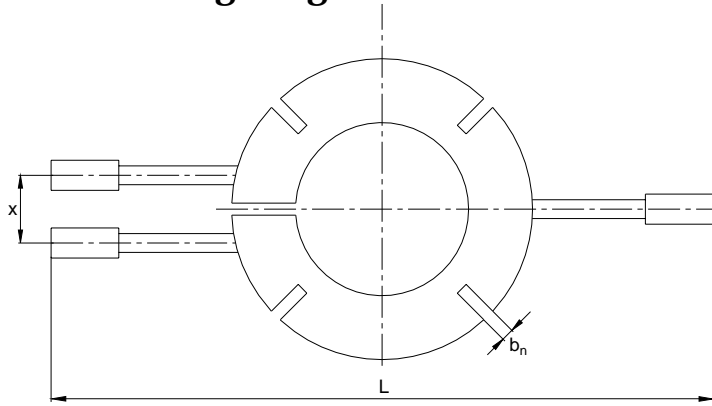
(for inner ring of a cylindrical roller bearing NJ2317E)

Heating rings for special bearings are also suffixed with the bearing code, i.e. with a number beginning with 5 or 8.

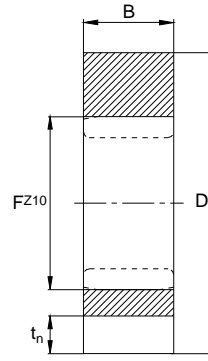
AWR176050.801634

(for inner ring of an FAG cylindrical roller bearing 801634)

FAG Heating Rings



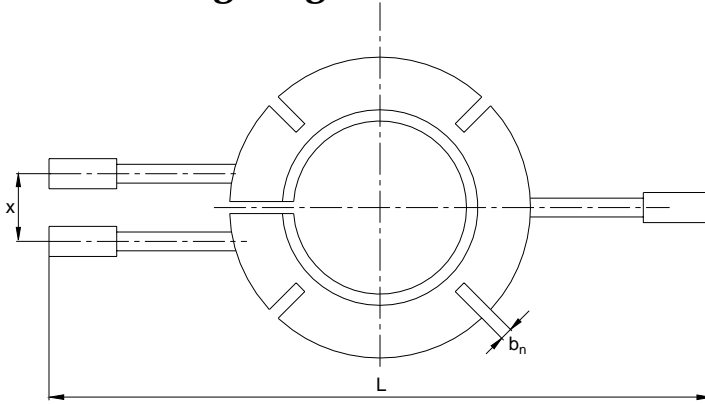
Number of slots, see page 2



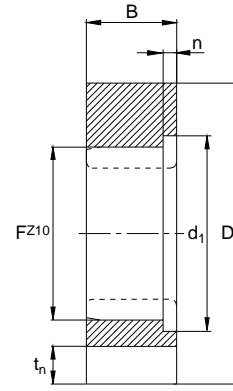
for NU

Bearing bore mm	Heating ring Code FAG	Dimensions		B	d ₁	n	b _n	t _n	L	x
		F mm	D							
50	AWR176050.NU210E	59.5	90	20			2	10	390	35
	AWR176050.NJ210E	59.5	90	20	64.5	4	2	10	390	35
	AWR176050.NU2210E	59.5	90	23			2	10	390	35
	AWR176050.NJ2210E	59.5	90	23	64.5	4	2	10	390	35
	AWR176050.NU310E	65	110	27			2	15	410	35
	AWR176050.NJ310E	65	110	27	72	5	2	15	410	35
	AWR176050.NU2310E	65	110	40			2	15	410	35
	AWR176050.NJ2310E	65	110	40	72	6.5	2	15	410	35
	AWR176050.NU410	70.8	125	31			2	18	425	40
	AWR176050.NJ410	70.8	125	31	79.5	5.5	2	18	425	40
55	AWR176050.NU211E	66	100	21			2	11	400	35
	AWR176050.NJ211E	66	100	21	71.5	3.5	2	11	400	35
	AWR176050.NU2211E	66	100	25			2	11	400	35
	AWR176050.NJ2211E	66	100	25	71.5	4	2	11	400	35
	AWR176050.NU311E	70.5	115	29			2	15	415	35
	AWR176050.NJ311E	70.5	115	29	78.2	5	2	15	415	35
	AWR176050.NU2311E	70.5	115	43			2	15	415	35
	AWR176050.NJ2311E	70.5	115	43	78.2	6.5	2	15	415	35
	AWR176050.NU411	77.2	135	33			2	19	435	40
	AWR176050.NJ411	77.2	135	33	86	6.5	2	19	435	40
60	AWR176050.NU212E	72	110	22			2	12	410	35
	AWR176050.NJ212E	72	110	22	78.5	4	2	12	410	35
	AWR176050.NU2212E	72	110	28			2	12	410	35
	AWR176050.NJ2212E	72	110	28	78.5	4	2	12	410	35
	AWR176050.NU312E	77	130	31			2	18	430	40
	AWR176050.NJ312E	77	130	31	85	5.5	2	18	430	40
	AWR176050.NU2312E	77	130	46			2	18	430	40
	AWR176050.NJ2312E	77	130	46	85	7	2	18	430	40
	AWR176050.NU412	83	145	35			2	20	445	40
	AWR176050.NJ412	83	145	35	92.5	6.5	2	20	445	40
65	AWR176050.NU213E	78.5	120	23			2	14	420	35
	AWR176050.NJ213E	78.5	120	23	85.5	4	2	14	420	35
	AWR176050.NU2213E	78.5	120	31			2	14	420	35
	AWR176050.NJ2213E	78.5	120	31	85.5	4.5	2	14	420	35
	AWR176050.NU313E	82.5	135	33			2	17.5	435	40
	AWR176050.NJ313E	82.5	135	33	91.5	5.5	2	17.5	435	40
	AWR176050.NU2313E	82.5	135	48			2	17.5	435	40
	AWR176050.NJ2313E	82.5	135	48	91.5	8	2	17.5	435	40
	AWR176050.NU413	89.3	155	37			3	22	455	40
	AWR176050.NJ413	89.3	155	37	99.5	7	3	22	455	40

FAG Heating Rings



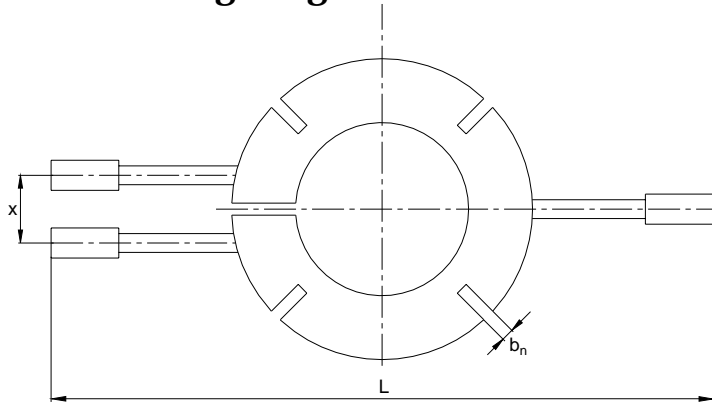
Number of slots, see page 2



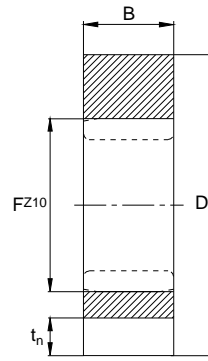
for NJ

Bearing bore mm	Heating ring Code FAG	Dimensions		B	d ₁	n	b _n	t _n	L	x
		F	D							
70	AWR176050.NU214E	83.5	130	24			2	15.5	430	40
	AWR176050.NJ214E	83.5	130	24	90.5	4	2	15.5	430	40
	AWR176050.NU2214E	83.5	130	31			2	15.5	430	40
	AWR176050.NJ2214E	83.5	130	31	90.5	4.5	2	15.5	430	40
	AWR176050.NU314E	89	145	35			2	18.5	445	40
	AWR176050.NJ314E	89	145	35	98.5	5.5	2	18.5	445	40
	AWR176050.NU2314E	89	145	51			2	18.5	445	40
	AWR176050.NJ2314E	89	145	51	98.5	8.5	2	18.5	445	40
	AWR176050.NU414	100	180	42			3	26	480	45
AWR176050.NJ414	100	180	42	111.5	8	3	26	480	45	
75	AWR176050.NU215E	88.5	135	25			2	15.5	435	40
	AWR176050.NJ215E	88.5	135	25	95.5	4	2	15.5	435	40
	AWR176050.NU2215E	88.5	135	31			2	15.5	435	40
	AWR176050.NJ2215E	88.5	135	31	95.5	4.5	2	15.5	435	40
	AWR176050.NU315E	95	155	37			3	20	455	40
	AWR176050.NJ315E	95	155	37	105.5	5.5	3	20	455	40
	AWR176050.NU2315E	95	155	55			3	20	455	40
	AWR176050.NJ2315E	95	155	55	105.5	8.5	3	20	455	40
	AWR176050.NU415	104.5	185	45			3	27	485	45
AWR176050.NJ415	104.5	185	45	117	8.5	3	27	485	45	
80	AWR176050.NU216E	95.3	145	26			2	16.5	445	40
	AWR176050.NJ216E	95.3	145	26	103	4.5	2	16.5	445	40
	AWR176050.NU2216E	95.3	145	33			2	16.5	445	40
	AWR176050.NJ2216E	95.3	145	33	103	4.5	2	16.5	445	40
	AWR176050.NU316E	101	165	39			3	21.5	465	45
	AWR176050.NJ316E	101	165	39	111.5	6	3	21.5	465	45
	AWR176050.NU2316E	101	165	58			3	21.5	465	45
	AWR176050.NJ2316E	101	165	58	111.5	9	3	21.5	465	45
	AWR176050.NU416	110	190	48			3	26.5	490	45
AWR176050.NJ416	110	190	48	123	9	3	26.5	490	45	
85	AWR176050.NU217E	100.5	155	28			3	18	455	40
	AWR176050.NJ217E	100.5	155	28	109	4.5	3	18	455	40
	AWR176050.NU2217E	100.5	155	36			3	18	455	40
	AWR176050.NJ2217E	100.5	155	36	109	5	3	18	455	40
	AWR176050.NU317E	108	175	41			3	22.5	475	45
	AWR176050.NJ317E	108	175	41	119	6.5	3	22.5	475	45
	AWR176050.NU2317E	108	175	60			3	22.5	475	45
	AWR176050.NJ2317E	108	175	60	119	10	3	22.5	475	45
	AWR176050.NU417	113	195	52			3	27.5	495	45
AWR176050.NJ417	113	195	52	127	10	3	27.5	495	45	

FAG Heating Rings



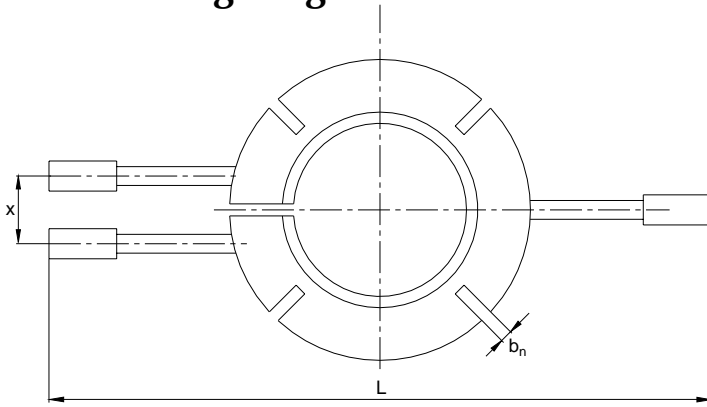
Number of slots, see page 2



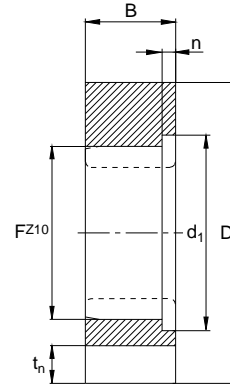
for NU

Bearing bore mm	Heating ring Code FAG	Dimensions		B	d ₁	n	b _n	t _n	L	x
		F mm	D							
90	AWR176050.NU218E	107	165	30			3	19.5	465	45
	AWR176050.NJ218E	107	165	30	115.5	5	3	19.5	465	45
	AWR176050.NU2218E	107	165	40			3	19.5	465	45
	AWR176050.NJ2218E	107	165	40	115.5	6	3	19.5	465	45
	AWR176050.NU318E	113.5	185	43			3	24	485	45
	AWR176050.NJ318E	113.5	185	43	125	6.5	3	24	485	45
	AWR176050.NU2318E	113.5	185	64			3	24	485	45
	AWR176050.NJ2318E	113.5	185	64	125	10	3	24	485	45
	AWR176050.NU418	123.5	215	54			3	30.5	515	45
AWR176050.NJ418	123.5	215	54	138	10	3	30.5	515	45	
95	AWR176050.NU219E	112.5	170	32			3	19.5	470	45
	AWR176050.NJ219E	112.5	170	32	122	5	3	19.5	470	45
	AWR176050.NU2219E	112.5	170	43			3	19.5	470	45
	AWR176050.NJ2219E	112.5	170	43	122	6.5	3	19.5	470	45
	AWR176050.NU319E	121.5	200	45			3	26	500	45
	AWR176050.NJ319E	121.5	200	45	133.5	7.5	3	26	500	45
	AWR176050.NU2319E	121.5	200	67			3	26	500	45
	AWR176050.NJ2319E	121.5	200	67	133.5	11.5	3	26	500	45
100	AWR176050.NU220E	119	185	34			3	22	485	45
	AWR176050.NJ220E	119	185	34	129	5	3	22	485	45
	AWR176050.NU2220E	119	185	46			3	22	485	45
	AWR176050.NJ2220E	119	185	46	129	6	3	22	485	45
	AWR176050.NU320E	127.5	210	47			3	27.5	510	45
	AWR176050.NJ320E	127.5	210	47	141	7.5	3	27.5	510	45
	AWR176050.NU2320E	127.5	210	73			3	27.5	510	45
	AWR176050.NJ2320E	127.5	210	73	141	10.5	3	27.5	510	45
105	AWR176050.NU221E	125.5	195	36			3	23	495	45
	AWR176050.NJ221E	125.5	195	36	136	6	3	23	495	45
	AWR176050.NU321E	133	225	49			3	30	525	45
	AWR176050.NJ321E	133	225	49	148	7.5	3	30	525	45
110	AWR176050.NU222E	132.5	205	38			3	24	505	45
	AWR176050.NJ222E	132.5	205	38	143	6	3	24	505	45
	AWR176050.NU2222E	132.5	205	53			3	24	505	45
	AWR176050.NJ2222E	132.5	205	53	143	8.5	3	24	505	45
	AWR176050.NU322E	143	240	50			3	32.5	540	45
	AWR176050.NJ322E	143	240	50	157	8	3	32.5	540	45
	AWR176050.NU2322E	143	240	80			3	32.5	540	45
	AWR176050.NJ2322E	143	240	80	157	12.5	3	32.5	540	45

FAG Heating Rings



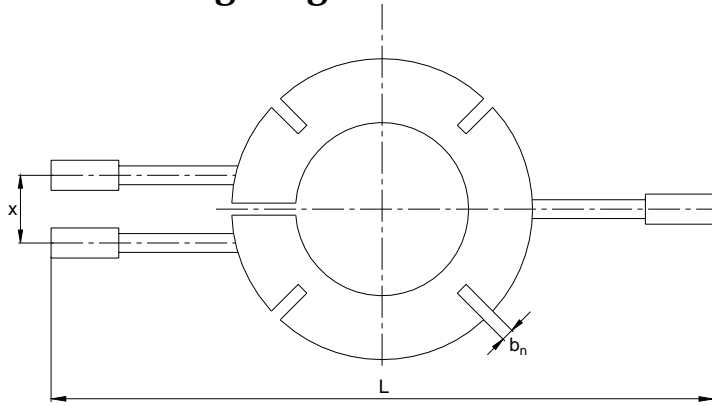
Number of slots, see page 2



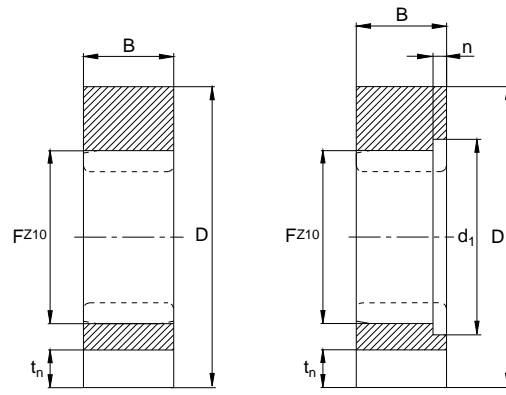
for NJ

Bearing bore mm	Heating ring Code FAG	Dimensions		B	d ₁	n	b _n	t _n	L	x
		F mm	D							
120	AWR176050.NU224E	143.5	220	40			3	25.5	520	45
	AWR176050.NJ224E	143.5	220	40	155	6	3	25.5	520	45
	AWR176050.NU2224E	143.5	220	58			3	25.5	520	45
	AWR176050.NJ2224E	143.5	220	58	155	9	3	25.5	520	45
	AWR176050.NU324E	154	250	55			3	32	550	45
	AWR176050.NJ324E	154	250	55	170	8.5	3	32	550	45
	AWR176050.NU2324E	154	250	86			3	32	550	45
AWR176050.NJ2324E	154	250	86	170	12	3	32	550	45	
130	AWR176050.NU226E	153.5	230	40			3	25.5	530	45
	AWR176050.NJ226E	153.5	230	40	166	6	3	25.5	530	45
	AWR176050.NU2226E	153.5	230	64			3	25.5	530	45
	AWR176050.NJ2226E	153.5	230	64	166	10	3	25.5	530	45
	AWR176050.NU326E	167	275	58			3	36	575	45
	AWR176050.NJ326E	167	275	58	184	9	3	36	575	45
	AWR176050.NU2326E	167	275	93			3	36	575	45
AWR176050.NJ2326E	167	275	93	184	14	3	36	575	45	
140	AWR176050.NU228E	169	260	42			3	30.5	560	45
	AWR176050.NJ228E	169	260	42	182	7	3	30.5	560	45
	AWR176050.NU2228E	169	260	68			3	30.5	560	45
	AWR176050.NJ2228E	169	260	68	182	12	3	30.5	560	45
	AWR176050.NU328E	180	295	62			3	38.5	595	45
	AWR176050.NJ328E	180	295	62	198	10	3	38.5	595	45
	AWR176050.NU2328E	180	295	102			3	38.5	595	45
AWR176050.NJ2328E	180	295	102	198	16	3	38.5	595	45	
150	AWR176050.NU230E	182	285	45			3	34.5	585	45
	AWR176050.NJ230E	182	285	45	195	7.5	3	34.5	585	45
	AWR176050.NU2230E	182	285	73			3	34.5	585	45
	AWR176050.NJ2230E	182	285	73	195	12.5	3	34.5	585	45
	AWR176050.NU330E	193	315	65			3	40.5	615	45
	AWR176050.NJ330E	193	315	65	212	10	3	40.5	615	45
	AWR176050.NU2330E	193	315	108			3	40.5	615	45
AWR176050.NJ2330E	193	315	108	212	16.5	3	40.5	615	45	
160	AWR176050.NU232E	195	305	48			3	37	605	45
	AWR176050.NJ232E	195	305	48	209	8	3	37	605	45
	AWR176050.NU2232E	193	300	80			3	36	600	45
	AWR176050.NJ2232E	193	300	80	208	12.5	3	36	600	45
	AWR176050.NU332E	204	335	68			3	44	635	45
	AWR176050.NJ332E	204	335	68	224	10	3	44	635	45
	AWR176050.NU2332E	204	335	114			3	44	635	45
AWR176050.NJ2332E	204	335	114	224	17	3	44	635	45	

FAG Heating Rings



Number of slots, see page 2



for NU

for NJ

Bearing bore mm	Heating ring Code FAG	Dimensions		B	d ₁	n	b _n	t _n	L	x
		F mm	D							
170	AWR176050.NU234E	207	325	52			3	40	625	45
	AWR176050.NJ234E	207	325	52	222	8	3	40	625	45
	AWR176050.NU2234E	205	315	86			3	37	615	45
	AWR176050.NJ2234E	205	315	86	221	12	3	37	615	45
	AWR176050.NU334E	218	365	72			3	49	665	45
	AWR176050.NJ334E	218	365	72	239	11	3	49	665	45
	AWR176050.NU2334EX	216	365	120			3	49	665	45
	AWR176050.NJ2334EX	216	365	120	238	17.5	3	49	665	45
180	AWR176050.NU236E	217	335	52			3	40	635	45
	AWR176050.NJ236E	217	335	52	232	8	3	40	635	45
	AWR176050.NU2236E	215	330	86			3	39	630	45
	AWR176050.NJ2236E	215	330	86	231	12	3	39	630	45
	AWR176050.NU336E	231	380	75			3	50	680	45
	AWR176050.NJ336E	231	380	75	253	11.5	3	50	680	45
	AWR176050.NU2336EX	227	385	126			3	51	685	45
	AWR176050.NJ2336EX	227	385	126	250	18	3	51	685	45
190	AWR176050.NU238E	230	355	55			3	42	655	45
	AWR176050.NJ238E	230	355	55	246	8.5	3	42	655	45
	AWR176050.NU2238E	228	350	92			3	41	650	45
	AWR176050.NJ2238E	228	350	92	245	13.5	3	41	650	45
	AWR176050.NU338E	245	400	78			3	52	800	45
	AWR176050.NU2338EX	240	405	132			3	54	805	45
	AWR176050.NJ2338EX	240	405	132	264	18.5	3	54	805	45
200	AWR176050.NU240E	243	380	58			3	46	680	45
	AWR176050.NJ240E	243	380	58	260	9	3	46	680	45
	AWR176050.NU2240E	241	370	98			3	43	670	45
	AWR176050.NJ2240E	241	370	98	259	14	3	43	670	45
	AWR176050.NU340E	258	430	80			3	57	830	45
	AWR176050.NJ340E	258	430	80	281	12	3	57	830	45
	AWR176050.NU2340EX	253	430	138			3	57	830	45
	AWR176050.NJ2340EX	253	430	138	278	19	3	57	830	45

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FAG Heating Rings

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