



Brand of **NTN corporation**

# MACHLINE®

Experience the power  
of precision and speed



**machline®**

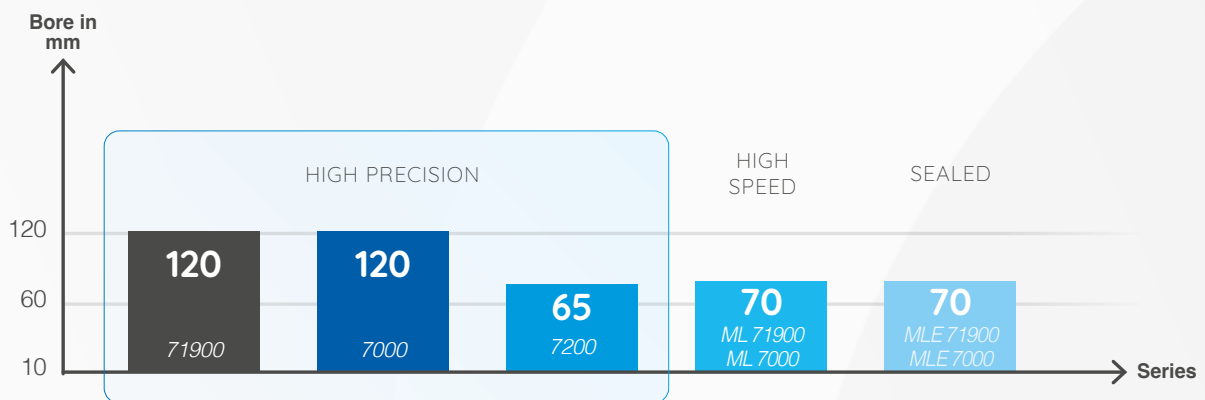
# High precision bearings

MACHLINE® is the **SNR** range of high precision bearings. It combines high speed and increased load capacity to meet the ever increasing demands of your machines.

The **ML range** has been specially designed to withstand very high speeds.

The sealed **MLE range** has lifetime lubrication, eliminating the need for periodic lubrication. The **CH** ceramic ball bearing versions increase speed (+30%) and rigidity (+10%) compared to the standard versions.

All MACHLINE® spindle bearings are produced to the P4S precision specification, which incorporates ISO 4 (ABEC 7) dimensional tolerances and ISO 2 (ABEC 9) dynamic tolerances.



The entire MACHLINE® range high precision, ML, MLE and series 7000, 71900 and 7200 are available in hybrid version.

## High precision

- **71900V** and **7000V** series, with an excellent compromise between speed, rigidity, capacity and accuracy performance
- **7200 G1** series, specially designed to meet the specifications set by applications with high predominantly axial loads
- Variants according to contact angle (C for 15° and H for 25°) and preload (low, medium or high)

## High speed (ML)

The **71900** and **7000** series family, designed and developed by SNR to meet the increasingly stringent requirements of high-speed mechanisation:

- 4S manufacturing accuracy as standard (ISO 2 for rotational dynamics and ISO 4 for others)
- Adapted geometry: reduction of the ball diameter, increase in the number of balls, improved guidance of the cage on the outer ring and increase in the limiting speed (+20%)
- Different variants depending on contact angle (C for 17° and H for 25°) and preload



## High speed and sealed (MLE)

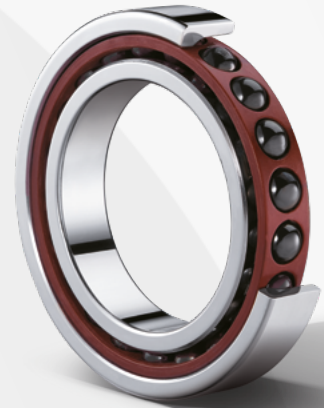
In a spindle, when it is not necessary to install an oil lubrication circuit and when grease lubrication is sufficient, SNR offers a technically adapted and economically advantageous solution. In this case, we recommend the use of bearings from the MLE family, consisting of the 71900 and 7000 series.

- 4S manufacturing accuracy as standard
- Nitrile seals fixed to the outer ring, without contact with the inner ring, which allows the same limiting speed to be maintained as in an open bearing
- Variants depending on contact angle (C for 17° and H for 25°) and preload

## Hybrids, with ceramic balls (CH)

Available for all ML, MLE and **7000, 71900 and 7200** series, with silicon nitride balls and steel bushings, combining the best properties of both materials:

- Reduced thermal level and increased limiting speed. Reduced lubrication requirements compared to an «all steel» bearing
- Significantly increased rigidity and service life



Increased performance with ceramic balls:



Life span

**x3**



Speed

**+30%**



Stiffness

**+10%**

## Additional services

To choose the best bearing and guarantee its perfect integration, we offer you exclusive services.

Our application engineers are always ready to listen to our customers to find the best technical solution for each application. Our experts guarantee perfect assembly of the prototypes. In the event of premature damage to the spindle, they diagnose the causes and provide solutions.

# Flexibility for a better reactivity

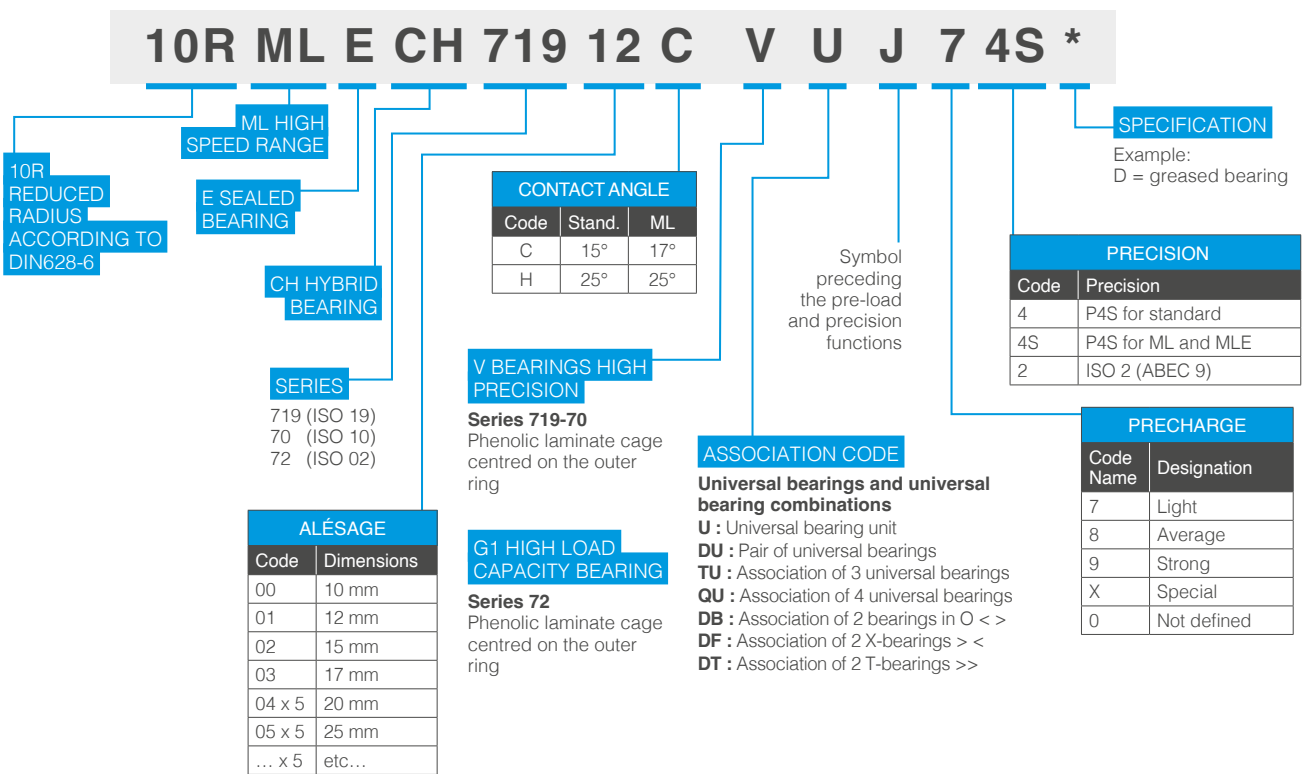
In order to meet your needs as quickly as possible with the required pairing, the **SNR** brand offers you various available variants: seals, ceramic balls, specific grease, etc.

# Training adapted to your activity

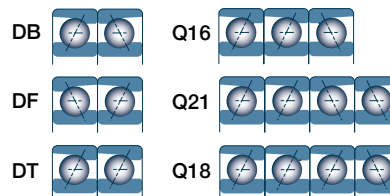
A comprehensive training programme, either for designers or for manufacturing and maintenance technicians, can be provided by our engineers and experts.

**Are you interested in this service?** Do not hesitate to talk to your usual sales contact.

## Designation



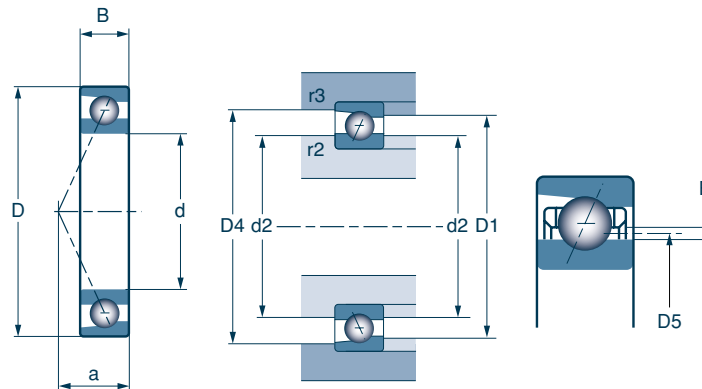
Association of matched bearings:







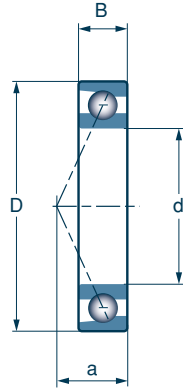
# MACHLINE® : High precision ranges - Standard



## 719 / 70 / 72 series

Dimensions			Mass	Series	Shoulders and fillets					Passage for lubrication		Beads	
d	D	B	kg		D1	d2	D4	r2 <sub>maxi</sub>	r3 <sub>maxi</sub>	D5	E	Diam.	Nb
10	22	6	0,010	<b>71900</b>	17,8	13,6	18,8	0,3	0,1	14,7	1,10	3,175	11
	26	8	0,018	<b>7000</b>	21,4	14,7	22,7	0,3	0,1	16,5	1,85	4,762	10
	30	9	0,030	<b>7200</b>	24,5	16,0	25,5	0,6	0,3	18,2	2,25	5,556	10
12	24	6	0,011	<b>71901</b>	19,6	15,4	20,6	0,3	0,1	16,5	1,30	3,175	13
	28	8	0,020	<b>7001</b>	23,4	16,7	24,7	0,3	0,1	18,5	1,65	4,762	11
	32	10	0,037	<b>7201</b>	26,0	18,3	27,9	0,6	0,3	20,5	1,85	5,953	10
15	28	7	0,015	<b>71902</b>	24,3	18,7	25,4	0,3	0,1	20,0	1,40	3,969	13
	32	9	0,028	<b>7002</b>	26,9	20,2	28,2	0,3	0,1	22,0	1,65	4,762	13
	35	11	0,044	<b>7202</b>	29,0	21,1	31,3	0,6	0,3	23,3	2,10	5,953	11
17	30	7	0,017	<b>71903</b>	26,6	21,0	27,7	0,3	0,1	23,0	1,45	3,969	14
	35	10	0,037	<b>7003</b>	29,4	22,7	30,7	0,3	0,1	24,4	1,75	4,762	14
	40	12	0,065	<b>7203</b>	33,0	24,1	35,2	0,6	0,3	26,5	2,45	6,747	11
20	37	9	0,036	<b>71904</b>	31,9	25,1	33,2	0,3	0,15	26,8	1,78	4,762	15
	42	12	0,063	<b>7004</b>	35,5	26,6	37,3	0,6	0,3	29,0	2,40	6,350	13
	47	14	0,105	<b>7204</b>	38,6	28,5	41,4	1,0	0,3	31,3	2,80	7,938	11
25	42	9	0,041	<b>71905</b>	37,4	30,6	38,7	0,3	0,15	32,3	1,75	4,762	17
	47	12	0,076	<b>7005</b>	40,1	32,2	42,3	0,6	0,3	34,2	2,05	6,350	15
	52	15	0,128	<b>7205</b>	44,5	34,0	46,9	1,0	0,3	36,8	2,80	7,938	13
30	47	9	0,047	<b>71906</b>	41,9	35,1	43,2	0,3	0,15	36,8	1,73	4,762	18
	55	13	0,112	<b>7006</b>	47,0	38,1	49,5	1,0	0,3	40,4	2,35	7,144	16
	62	16	0,200	<b>7206</b>	52,1	40,4	55,4	1,0	0,3	43,5	3,15	9,525	13
35	55	10	0,075	<b>71907</b>	48,6	41,4	50,4	0,6	0,15	43,2	1,85	5,556	18
	62	14	0,150	<b>7007</b>	53,1	43,2	56,3	1,0	0,3	46,0	2,85	7,938	16
	72	17	0,290	<b>7207</b>	61,0	47,4	64,5	1,1	0,3	50,9	3,50	11,112	13
40	62	12	0,110	<b>71908</b>	55,2	46,8	57,2	0,6	0,15	49,0	2,18	6,350	19
	68	15	0,185	<b>7008</b>	59,0	49,2	61,8	1,0	0,3	51,8	2,55	7,938	18
	80	18	0,370	<b>7208</b>	67,6	52,8	71,8	1,1	0,6	56,9	4,05	11,906	13
45	68	12	0,128	<b>71909</b>	60,7	52,3	62,7	0,6	0,3	54,5	2,15	6,350	20
	75	16	0,238	<b>7009</b>	65,0	54,7	68,6	1,0	0,3	57,5	2,85	8,731	18
	85	19	0,416	<b>7209</b>	72,5	57,4	77,5	1,1	0,6	61,7	4,30	12,700	14
50	72	12	0,129	<b>71910</b>	65,2	56,8	67,2	0,6	0,3	58,9	2,13	6,350	21
	80	16	0,256	<b>7010</b>	70,0	59,7	73,6	1,0	0,3	62,5	2,80	8,731	19
	90	20	0,486	<b>7210</b>	76,9	62,5	82,7	1,1	0,6	66,7	4,20	12,700	15
55	80	13	0,181	<b>71911</b>	72,5	62,1	75,8	1,0	0,3	65,4	2,25	7,144	21
	90	18	0,390	<b>7011</b>	80,0	65,0	84,0	1,1	0,6	69,0	2,00	9,525	19
	100	21	0,620	<b>7211</b>	87,0	68,0	92,5	1,5	0,6	72,5	2,10	14,288	14
60	85	13	0,195	<b>71912</b>	77,5	67,1	80,8	1,0	0,3	70,4	2,25	7,144	23
	95	18	0,420	<b>7012</b>	85,0	70,0	89,0	1,1	0,6	73,8	2,00	9,525	21
	110	22	0,810	<b>7212</b>	95,0	75,0	101,5	1,5	0,6	79,5	2,30	15,875	14

Dimensions			Mass	Series	Shoulders and fillets					Passage for lubrication		Beads	
d	D	B	kg		D1	d2	D4	r2 <sup>maxi</sup>	r3 <sup>maxi</sup>	D5	E	Diam.	Nb
<b>65</b>	90	13	0,210	<b>71913</b>	82,5	72,5	86,0	1,0	0,3	74,5	1,25	7,144	27
	100	18	0,440	<b>7013</b>	90,0	75,0	94,0	1,1	0,6	78,8	2,00	9,525	22
	120	23	1,140	<b>7213</b>	104,0	81,0	109,0	1,5	0,6	87,0	2,30	15,875	15
<b>70</b>	100	16	0,340	<b>71914</b>	91,0	79,0	95,0	1,0	0,3	81,5	1,50	8,731	24
	110	20	0,610	<b>7014</b>	98,5	81,5	103,0	1,1	0,6	85,8	2,50	11,112	21
<b>75</b>	105	16	0,360	<b>10R71915</b>	96,0	84,0	100,0	0,6	0,3	86,3	1,50	8,731	26
	115	20	0,650	<b>7015</b>	103,5	86,5	108,0	1,1	0,6	90,7	2,50	11,112	22
<b>80</b>	110	16	0,380	<b>10R71916</b>	101,0	89,0	105,0	0,6	0,3	91,2	1,50	8,731	27
	125	22	0,850	<b>7016</b>	112,0	93,0	117,5	1,1	0,6	98,0	3,50	13,494	20
<b>85</b>	120	18	0,550	<b>10R71917</b>	110,0	95,0	114,0	0,6	0,6	98,6	1,80	9,525	27
	130	22	0,900	<b>7017</b>	117,0	98,0	122,5	1,1	0,6	102,8	3,50	13,494	21
	150	28	1,810	<b>7217</b>	131,0	104,0	140,0	2,0	1,0	110,3	3,10	20,638	15
<b>90</b>	125	18	0,580	<b>10R71918</b>	115,0	100,0	119,0	0,6	0,6	103,5	1,80	9,525	29
	140	24	1,160	<b>7018</b>	125,5	104,5	131,5	1,5	0,6	110,0	3,80	15,081	20
<b>95</b>	130	18	0,590	<b>10R71919</b>	120,0	105,0	124,0	0,6	0,6	108,3	2,00	10,319	28
	145	24	1,210	<b>7019</b>	130,5	109,5	136,5	1,5	0,6	114,8	3,80	15,081	21
<b>100</b>	140	20	0,820	<b>10R71920</b>	128,5	111,5	133,5	0,6	0,6	115,6	2,10	11,112	28
	150	24	1,270	<b>7020</b>	135,5	114,5	141,5	1,5	0,6	119,7	3,80	15,081	22
<b>105</b>	160	26	1,610	<b>7021</b>	144,5	120,5	150,0	2,0	1,0	127,0	4,00	15,875	22
<b>110</b>	150	20	0,890	<b>10R71922</b>	138,5	121,5	143,5	0,6	0,6	125,5	2,10	11,112	30
	170	28	2,000	<b>7022</b>	153,0	127,0	160,0	2,0	1,0	134,0	4,50	17,462	21
<b>120</b>	165	22	1,190	<b>10R71924</b>	151,5	133,5	157,5	0,6	0,6	137,7	3,30	13,494	28
	180	28	2,150	<b>7024</b>	163,0	137,0	170,0	2,0	1,0	144,0	4,50	17,462	23



## 719 CV / 70 CV/ 72 CG1 series

Contact angle 15° d 10-120 mm

Series C	a	Basic load in N		Speed limit in rpm	
		C dynamics	Co static	Grease	Oil
71900CV	5	3 050	1 520	71 000	108 000
7000CV	6	5 700	2 750	60 000	95 000
7200CG1	7	7 500	3 700	53 000	82 000
71901CV	5	3 400	1 860	64 000	97 000
7001CV	7	6 200	3 200	54 000	85 000
7201CG1	8	8 600	4 300	48 000	74 000
71902CV	6	5 100	2 850	52 000	79 000
7002CV	8	7 000	4 000	46 000	72 000
7202CG1	9	9 400	5 000	42 000	65 000
71903CV	7	5 300	3 150	46 000	70 000
7003CV	8	7 400	4 450	41 000	65 000
7203CG1	10	11 600	6 400	37 000	58 000
71904CV	8	7 700	4 900	39 000	60 000
7004CV	10	11 800	7 100	35 000	55 000
7204CG1	11	15 600	8 900	32 000	49 000
71905CV	9	8 300	5 800	33 000	50 000
7005CV	11	13 000	8 600	30 000	47 000
7205CG1	13	17 600	11 100	27 000	42 000
71906CV	10	8 400	6 300	29 000	44 000
7006CV	12	16 700	11 700	25 000	40 000
7206CG1	14	24 400	15 900	23 000	35 000
71907CV	11	11 100	8 500	25 000	38 000
7007CV	13	21 000	15 500	23 000	35 000
7207CG1	16	32 500	21 700	20 000	31 000
71908CV	13	14 700	11 800	21 000	33 000
7008CV	15	21 600	16 800	21 000	33 000
7208CG1	17	36 500	25 000	18 500	29 500
71909CV	14	15 400	10 700	20 000	30 000
7009CV	16	27 400	19 200	19 000	28 000
7209CG1	18	45 900	29 900	16 500	26 000
71910CV	14	15 600	11 300	19 000	28 000
7010CV	17	28 200	20 200	18 000	26 000
7210CG1	19	48 000	32 600	15 500	24 500
71911CV	16	18 700	13 700	16 500	25 000
7011CV	19	30 500	26 000	16 000	24 000
7211CG1	21	53 000	40 000	14 500	21 500

Series C	a	Basic load in N		Speed limit in rpm	
		C dynamics	Co static	Grease	Oil
71912CV	16	19 500	15 000	14 500	23 500
7012CV	19	32 500	29 500	15 000	23 000
7212CG1	22	65 000	49 000	12 500	19 500
71913CV	17	21 700	21 900	14 500	22 000
7013CV	20	33 000	31 000	14 000	21 000
7213CG1	24	67 000	54 000	11 500	17 500
71914CV	19	29 500	29 000	13 000	20 000
7014CV	22	43 000	40 000	13 000	20 000
10R71915CV	20	30 500	31 500	12 500	19 000
7015CV	23	44 000	42 000	12 000	19 000
10R71916CV	21	31 000	33 000	12 000	18 000
7016CV	25	59 000	55 000	11 000	17 000
7216CG1	28	94 000	78 000	9 400	15 000
10R71917CV	23	36 500	39 000	11 000	17 000
7017CV	25	61 000	59 000	10 500	16 000
10R71918CV	23	38 000	41 500	10 500	16 000
7018CV	27	73 000	69 000	10 000	15 000
10R71919CV	24	43 000	47 500	9 900	15 000
7019CV	28	74 000	73 000	9 700	14 500
10R71920CV	26	49 000	55 000	9 500	14 500
7020CV	29	76 000	77 000	9 300	14 000
7021CV	31	84 000	86 000	8 800	13 500
10R71922CV	27	51 000	59 000	8 900	13 500
7022CV	33	97 000	98 000	8 300	12 500
10R71924CV	30	70 000	81 000	8 200	12 500
7024CV	34	102 000	109 000	7 700	11 500



## 719 HV / 70 HV/ 72 HG1 series

Contact angle 25° d 10-120 mm

Series H	a	Basic load in N		Speed limit in rpm	
		C dynamics	Co static	Grease	Oil
71900HV	7	2 900	1 450	67 000	103 000
7000HV	8	5 500	2 650	53 000	82 000
7200HG1	9	7 200	3 550	46 000	72 000
71901HV	7	3 250	1 770	61 000	93 000
7001HV	9	6 000	3 050	48 000	72 000
7201HG1	10	8 300	4 200	42 000	65 000
71902HV	9	4 850	2 750	49 000	75 000
7002HV	10	6 700	3 850	42 000	62 000
7202HG1	11	9 100	4 850	37 000	57 000
71903HV	9	5 100	3 000	44 000	68 000
7003HV	11	7 000	4 250	37 000	56 000
7203HG1	13	11 200	6 200	32 000	50 000
71904HV	11	7 300	4 650	37 000	57 000
7004HV	13	11 300	6 800	31 000	47 000
7204HG1	15	15 000	8 500	28 000	43 000
71905HV	12	7 800	5 500	31 000	47 000
7005HV	14	12 400	8 200	26 000	40 000
7205HG1	16	16 900	10 600	24 000	37 000
71906HV	13	8 000	5 900	27 000	42 000
7006HV	16	15 900	11 200	22 000	34 000
7206HG1	19	23 400	15 200	20 000	31 000
71907HV	15	10 500	8 100	23 000	36 000
7007HV	18	20 000	14 800	21 000	31 000
7207HG1	21	31 000	20 700	17 000	27 000
71908HV	18	13 900	11 100	20 000	31 000
7008HV	20	20 500	16 000	20 000	30 000
7208HG1	23	35 000	24 100	16 500	25 500
71909HV	19	14 500	10 100	18 000	26 000
7009HV	22	26 000	18 100	18 000	24 000
7209HG1	25	43 800	28 500	15 000	22 500
71910HV	20	14 700	10 600	16 000	24 000
7010HV	23	26 600	19 300	14 500	22 000
7210HG1	26	45 700	30 800	13 500	20 500
71911HV	22	17 600	12 900	13 500	21 500
7011HV	26	29 000	24 900	14 000	22 000
7211HG1	29	51 000	38 000	12 500	19 500
71912HV	23	18 400	14 200	13 500	20 000
7012HV	27	30 500	28 000	14 000	21 000
7212HG1	31	62 000	47 000	11 000	17 500
71913HV	25	20 400	20 400	14 000	21 000
7013HV	28	31 500	29 500	13 000	19 000
7213HG1	33	64 000	52 000	10 000	16 500
71914HV	28	28 000	27 500	12 500	19 000
7014HV	31	40 500	37 500	12 500	19 000
10R71915HV	29	29 000	29 500	12 000	18 000
7015HV	32	41 500	40 000	11 000	17 000
10R71916HV	30	29 500	30 500	11 000	17 000
7016HV	35	56 000	53 000	10 500	16 000
10R71917HV	33	24 500	36 500	9 900	15 000
7017HV	36	58 000	56 000	9 900	15 000
10R71918HV	34	35 500	39 000	9 900	15 000
7018HV	39	69 000	66 000	9 200	14 000
10R71919HV	35	40 500	44 000	9 200	14 000
7019HV	40	71 000	69 000	8 900	13 500
10R71920HV	38	46 000	51 000	8 600	13 000
7020HV	41	72 000	73 000	8 600	13 000

Series H	a	Basic load in N		Speed limit in rpm	
		C dynamics	Co static	Grease	Oil
7021HV	44	79 000	81 000	7 900	12 000
10R71922HV	40	47 500	55 000	8 200	12 500
7022HV	47	92 000	93 000	7 600	11 500
10R71924HV	44	66 000	76 000	7 500	11 500
7024HV	49	96 000	103 000	6 900	10 500

# Preload, axial stiffness and radial associations DU DB DF

## 719 / 70 / 72 standard series

Symbol	Sinking constant	Preload (N)			Axial stiffness (N/μm)			Radial stiffness (N/μm)		
	K <sup>1</sup>	7	8	9	7	8	9	7	8	9
71900CV	2,58	12	40	75	13	21	29	72	104	125
7000CV	2,33	25	80	160	17	30	43	100	141	171
7200CG1	2,12	40	120	230	23	39	54	128	178	214
71900HV	1,25	22	70	140	32	50	65	67	95	117
7000HV	1,14	45	130	260	42	65	87	90	124	152
7200HG1	1,03	60	180	360	54	81	110	111	157	194
71901CV	2,31	15	43	85	15	24	34	87	120	146
7001CV	2,19	30	90	180	20	33	48	113	158	192
7201CG1	2,11	42	130	250	24	39	54	135	186	227
71901HV	1,12	25	75	150	37	56	74	78	110	135
7001HV	1,06	50	140	280	47	70	95	101	138	169
7201HG1	1,03	70	200	400	56	84	112	119	168	207
71902CV	2,18	22	70	140	18	29	42	105	150	184
7002CV	2,06	32	100	200	22	38	55	123	174	212
7202CG1	1,98	45	130	270	25	41	59	149	203	249
71902HV	1,05	35	110	220	44	68	89	93	133	164
7002HV	1,00	55	160	320	54	82	110	111	154	190
7202HG1	0,97	75	220	440	61	93	123	132	182	225
71903CV	2,08	25	75	150	20	32	45	115	162	198
7003CV	1,87	35	105	210	24	41	59	141	197	240
7203CG1	1,81	60	170	350	29	48	69	164	224	275
71903HV	1,00	40	120	240	49	73	96	102	144	178
7003HV	0,91	60	170	340	58	88	115	127	175	216
7203HG1	0,92	90	280	560	69	106	143	141	200	244
71904CV	1,79	35	110	220	26	43	61	148	210	257
7004CV	1,65	60	180	360	33	57	84	185	257	312
7204CG1	1,58	85	260	500	38	66	94	205	284	340
71904HV	0,87	55	170	340	62	95	125	130	186	229
7004HV	0,81	100	300	600	78	120	165	165	231	283
7204HG1	0,80	140	410	820	91	139	189	182	251	305
71905CV	1,64	40	120	240	29	48	67	169	236	289
7005CV	1,50	70	200	400	38	65	95	215	295	358
7205CG1	1,45	100	300	600	45	77	112	245	340	413
71905HV	0,80	60	180	360	70	105	138	146	207	256
7005HV	0,74	110	320	640	88	135	180	189	263	323
7205HG1	0,72	150	450	900	104	159	216	210	294	358
71906CV	1,59	40	120	240	30	50	69	176	246	302
7006CV	1,43	85	250	500	43	72	105	246	341	416
7206CG1	1,33	130	380	760	49	82	117	283	389	472
71906HV	0,77	60	190	380	72	111	146	153	220	271
7006HV	0,70	130	400	800	98	150	205	212	300	368
7206HG1	0,68	200	600	1200	117	177	239	247	346	423
71907CV	1,45	55	165	330	37	61	86	211	295	361
7007CV	1,30	100	300	600	50	84	120	285	398	486
7207CG1	1,32	180	530	1000	60	102	142	333	460	551
71907HV	0,70	90	260	520	91	135	177	189	263	325
7007HV	0,63	170	500	1000	118	180	245	257	360	443
7207HG1	0,65	280	840	1700	142	217	296	294	414	512

<sup>1</sup>Axial deflection constant in μm (daN)<sup>-2/3</sup> 7 = light preload 8 = medium preload 9 = heavy preload

Symbol	Sinking constant	Preload (N)			Axial stiffness (N/μm)			Radial stiffness (N/μm)		
	K <sup>1</sup>	7	8	9	7	8	9	7	8	9
71908CV	1,29	75	230	460	46	77	109	260	365	445
7008CV	1,25	110	330	660	53	91	130	306	427	521
7208CG1	1,37	185	560	1100	58	98	137	332	466	566
71908HV	0,63	120	360	720	111	168	225	230	325	401
7008HV	0,61	180	530	1100	125	190	265	273	383	476
7208HG1	0,67	300	900	1800	142	215	288	297	420	518
71909CV	1,20	80	230	460	49	79	112	272	376	467
7009CV	1,24	130	400	800	60	105	150	333	500	625
7209CG1	1,33	230	700	1400	71	119	171	394	567	713
71909HV	0,59	120	360	720	115	173	232	240	339	422
7009HV	0,61	210	650	1300	140	220	300	292	431	545
7209HG1	0,63	370	1100	2200	169	257	346	352	504	629
71910CV	1,13	80	230	460	50	81	115	278	386	479
7010CV	1,15	140	420	840	64	110	160	356	524	667
7210CG1	1,29	240	720	1440	75	125	178	417	595	742
71910HV	0,55	120	370	740	119	180	241	248	353	438
7010HV	0,56	220	670	1330	145	230	310	302	451	564
7210HG1	0,61	380	1140	2280	177	271	363	369	531	660
71911CV	1,08	90	280	560	52	87	122	370	495	614
7011CV	1,12	180	480	1040	71	112	166	400	538	671
7211CG1	1,20	320	800	1600	80	122	173	449	592	723
71911HV	0,53	150	440	880	130	193	257	325	438	543
7011HV	0,55	280	720	1500	167	240	325	351	472	589
7211HG1	0,57	500	1250	2500	188	267	356	394	525	647
71912CV	1,03	100	300	600	58	94	132	401	534	667
7012CV	1,05	200	540	1160	79	125	184	443	598	744
7212CG1	1,15	400	1000	2000	90	136	193	501	660	806
71912HV	0,50	150	460	920	137	208	276	354	475	592
7012HV	0,51	320	800	1700	187	266	363	393	523	657
7212HG1	0,56	600	1500	3000	207	294	390	434	579	713
71913CV	0,97	150	400	860	77	122	180	432	582	724
7013CV	1,01	220	560	1220	85	130	193	471	625	781
7213CG1	1,09	420	1050	2100	95	145	205	533	703	859
71913HV	0,48	240	600	1260	183	260	354	384	512	641
7013HV	0,50	340	860	1750	197	282	378	414	553	686
7213HG1	0,52	620	1550	3100	218	310	412	460	613	756
71914CV	0,98	200	520	1120	84	131	194	470	623	782
7014CV	0,99	280	720	1550	93	144	213	521	693	864
71914HV	0,48	310	800	1640	196	283	381	413	557	692
7014HV	0,49	420	1100	2250	215	311	419	453	613	760
10R71915CV	0,93	220	580	1220	92	144	210	512	686	849
7015CV	0,96	300	760	1650	99	151	225	550	728	910
10R71915HV	0,46	340	860	1800	214	306	416	450	602	753
7015HV	0,47	460	1160	2400	229	327	442	482	644	802
7215HG1	0,51	740	1850	3700	239	339	451	505	673	830
10R71916CV	0,91	220	600	1280	94	149	220	525	712	885
7016CV	0,97	380	1000	2150	106	166	244	596	799	996
10R71916HV	0,45	360	900	1850	224	319	430	470	627	780
7016HV	0,47	600	1500	3150	250	356	484	527	702	879
10R71917CV	0,88	280	720	1550	105	163	242	585	778	969
7017CV	0,93	400	1060	2250	112	175	256	627	842	1045
10R71917HV	0,43	420	1080	2250	242	349	473	510	685	856
7017HV	0,46	620	1600	3300	261	376	507	551	741	923
10R71918CV	0,84	300	760	1650	113	174	258	628	832	1039
7018CV	0,93	480	1260	2700	119	186	274	669	896	1115
10R71918HV	0,41	460	1160	2400	262	375	507	551	736	917
7018HV	0,45	740	1900	3950	278	400	541	586	788	984

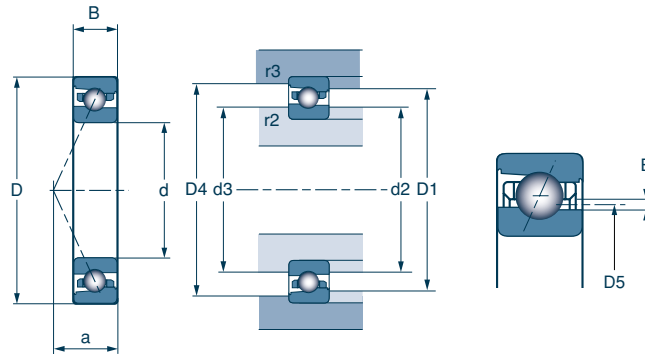
<sup>1</sup>Axial deflection constant in μm (daN)<sup>-2/3</sup> 7 = light preload 8 = medium preload 9 = heavy preload

Symbol	Sinking constant	Preload (N)			Axial stiffness (N/μm)			Radial stiffness (N/μm)		
	K <sup>1</sup>	7	8	9	7	8	9	7	8	9
<b>10R71919CV</b>	0,84	320	860	1850	115	182	269	645	870	1084
<b>7019CV</b>	0,90	500	1320	2800	125	195	286	700	940	1167
<b>10R71919HV</b>	0,41	520	1300	2700	274	390	528	576	768	958
<b>7019HV</b>	0,44	780	2000	4150	293	421	569	617	829	1034
<b>10R71920CV</b>	0,82	380	1000	2150	125	196	290	699	937	1167
<b>7020CV</b>	0,87	520	1400	2950	130	206	300	732	988	1225
<b>10R71920HV</b>	0,40	600	1500	3150	294	419	570	619	825	1033
<b>7020HV</b>	0,43	820	2100	4350	307	441	596	647	869	1084
<b>10R71921CV</b>	0,80	400	1040	2200	131	203	298	728	972	1205
<b>7021CV</b>	0,86	580	1550	3300	138	216	318	772	1040	1292
<b>10R71921HV</b>	0,39	620	1600	3250	304	439	590	641	863	1069
<b>7021HV</b>	0,42	920	2350	4850	325	466	629	684	918	1142
<b>10R71922CV</b>	0,78	420	1080	2300	136	211	310	757	1007	1251
<b>7022CV</b>	0,86	680	1800	3800	146	228	333	815	1094	1356
<b>10R71922HV</b>	0,38	640	1650	3400	315	454	613	662	892	1110
<b>7022HV</b>	0,42	1060	2700	5600	341	488	660	717	962	1199
<b>10R71924CV</b>	0,77	560	1460	3100	152	237	348	849	1135	1409
<b>7024CV</b>	0,80	740	1950	4200	159	248	367	891	1194	1489
<b>10R71924HV</b>	0,37	880	2200	4600	357	508	690	750	1001	1251
<b>7024HV</b>	0,39	1160	3000	6150	373	538	724	786	1059	1315

<sup>1</sup>Axial deflection constant in μm (daN)<sup>-2/3</sup> 7 = light preload 8 = medium preload 9 = heavy preload

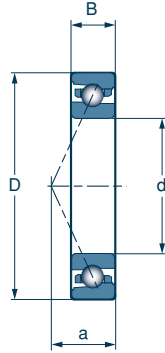


# MACHLINE® : high speed and sealed ranges - ML & MLE



## ML & MLE 719 / 70 series

Dimensions			Mass	Series		Shoulders and fillets						Passage for the lubrication		Beads	
d	D	B	kg	Range	Symbol	D1	d2	d3	D4	r2	r3	D5	E	Diam.	Nb
10	22	6	0,010	ML	71900	17,2	13,3	13,6	17,8	0,3	0,1	14,4	1,05	2,381	14
	26	8	0,018	ML	7000	19,5	14,2	14,7	20,1	0,3	0,1	15,7	1,53	3,175	11
12	24	6	0,011	ML	71901	19,0	15,1	15,4	19,6	0,3	0,1	16,2	1,05	2,381	14
	28	8	0,020	ML	7001	21,5	16,2	16,7	22,1	0,3	0,1	17,7	1,58	3,175	13
15	28	7	0,015	ML	71902	23,3	18,3	18,7	23,7	0,3	0,1	19,7	1,35	2,778	16
	32	9	0,028	ML	7002	25,7	19,4	20,2	26,8	0,3	0,1	21,3	1,85	3,969	13
17	30	7	0,017	ML	71903	25,6	20,6	21,0	26,0	0,3	0,1	22,0	1,35	2,778	18
	35	10	0,037	ML	7003	28,4	22,0	22,7	29,5	0,3	0,1	23,9	1,85	3,969	15
20	37	9	0,036	ML	71904	30,7	24,5	25,1	31,8	0,3	0,2	26,3	1,75	3,969	16
	42	12	0,063	ML	7004	34,3	25,3	26,6	35,7	0,6	0,3	27,9	2,63	5,556	14
25	42	9	0,041	ML	71905	36,2	30,0	30,6	37,3	0,3	0,2	31,8	1,75	3,969	19
	47	12	0,076	ML	7005	39,9	30,9	32,2	41,3	0,6	0,3	33,5	2,63	5,556	17
30	47	9	0,047	ML	71906	40,7	34,5	35,1	41,8	0,3	0,2	36,2	1,73	3,969	22
	55	13	0,112	ML	7006	45,8	36,8	38,1	47,2	1,0	0,3	39,4	2,63	5,556	20
35	55	10	0,075	ML	71907	47,1	40,8	41,4	48,2	0,6	0,2	42,7	1,90	3,969	26
	62	14	0,149	ML	7007	51,5	41,5	43,2	53,6	1,0	0,3	44,6	3,10	6,350	20
40	62	12	0,109	ML	71908	53,1	45,3	46,8	54,4	0,6	0,2	47,6	2,25	4,762	25
	68	15	0,185	ML	7008	57,5	47,5	49,2	59,6	1,0	0,3	50,5	3,00	6,350	22
45	68	12	0,128	ML	71909	58,6	50,8	52,3	59,9	0,6	0,3	53,0	2,23	4,762	28
	75	16	0,238	ML	7009	63,0	53,0	54,7	65,0	1,0	0,3	56,1	3,05	6,350	22
50	72	12	0,129	ML	71910	63,1	55,3	56,8	64,4	0,6	0,3	57,5	2,23	4,762	30
	80	16	0,256	ML	7010	68,0	58,0	59,7	70,0	1,0	0,3	61,0	3,00	6,350	25
55	80	13	0,177	ML	71911	73,8	60,5	62,2	76,0	1,0	0,3	64,3	2,50	5,556	30
	90	18	0,396	ML	7011	79,5	65,5	66,5	83,5	1,1	0,6	69,5	1,70	7,938	22
60	85	13	0,190	ML	71912	78,8	65,6	67,1	81,0	1,0	0,3	69,3	2,50	5,556	32
	95	18	0,426	ML	7012	84,5	70,5	71,5	88,5	1,1	0,6	74,4	1,67	7,938	24
65	90	13	0,202	ML	71913	83,5	70,5	72,5	86,5	1,0	0,3	75,0	1,25	6,350	29
	100	18	0,445	ML	7013	89,5	74,0	76,5	93,5	1,1	0,6	79,4	1,67	7,938	26
70	100	16	0,330	ML	71914	92,0	76,5	79,0	95,5	1,0	0,3	81,9	1,63	7,938	26
	110	20	0,625	ML	7014	98,0	81,5	83,0	102,5	1,1	0,6	86,4	2,07	9,525	24



## ML & MLE 719 CV / 70 CV series

Series C		a	Basic load in N		Speed limit in rpm	
			C dynamics	Co static	Grease	Oil
ML 71900	C	5	1 430	680	101 500	135 000
ML 7000	C	6	2 040	920	94 000	125 000
ML 71901	C	5	1 490	705	90 000	120 000
ML 7001	C	7	2 280	1 110	82 500	110 000
ML 71902	C	6	2 030	1 030	75 000	100 000
ML 7002	C	8	3 450	1 710	69 000	92 000
ML 71903	C	7	2 170	1 180	67 500	90 000
ML 7003	C	8	3 750	2 020	61 500	82 000
ML 71904	C	8	3 900	2 080	56 500	75 000
ML 7004	C	10	6 550	3 600	52 500	70 000
ML 71905	C	9	4 300	2 550	47 500	63 000
ML 7005	C	11	7 450	4 500	44 500	59 000
ML 71906	C	10	4 650	3 000	41 500	55 000
ML 7006	C	12	8 300	5 150	37 500	50 000
ML 71907	C	11	5 100	3 600	35 500	47 000
ML 7007	C	13	10 500	6 700	33 000	44 000
ML 71908	C	13	6 950	4 950	31 500	42 000
ML 7008	C	15	11 000	7 500	29 500	39 000
ML 71909	C	14	7 350	5 550	28 500	38 000
ML 7009	C	16	10 900	7 600	27 000	36 000
ML 71910	C	14	7 600	6 000	26 500	35 000
ML 7010	C	17	11 700	8 700	25 000	33 000
ML 71911	C	16	10 100	8 200	21 000	31 000
ML 7011	C	19	23 300	21 700	22 000	30 500
ML 71912	C	16	10 400	8 700	18 000	29 500
ML 7012	C	19	24 400	24 000	19 000	28 500
ML 71913	C	17	17 600	18 400	19 000	30 500
ML 7013	C	20	25 500	26 000	18 000	27 000
ML 71914	C	19	25 000	26 000	17 000	27 000
ML 7014	C	22	34 000	34 500	16 500	25 000

## ML & MLE 719 HV / 70 HV series

Series H		a	Basic load in N		Speed limit in rpm	
			C dynamics	Co static	Grease	Oil
ML 71900	H	7	1 360	645	94 000	125 000
ML 7000	H	8	1 950	870	82 500	110 000
ML 71901	H	7	1 410	670	82 500	110 000
ML 7001	H	9	2 180	1 050	75 000	100 000
ML 71902	H	9	1 930	980	67 500	90 000
ML 7002	H	10	3 300	1 630	62 500	83 000
ML 71903	H	9	2 060	1 110	61 500	82 000
ML 7003	H	11	3 600	1 820	55 500	74 000
ML 71904	H	11	3 700	1 970	51 000	68 000
ML 7004	H	13	6 300	3 400	47 500	63 000
ML 71905	H	12	4 100	2 400	43 000	57 000
ML 7005	H	14	7 100	4 050	40 000	53 000
ML 71906	H	13	4 400	2 850	37 500	50 000
ML 7006	H	16	7 800	4 900	34 500	46 000
ML 71907	H	15	4 800	3 400	32 500	43 000
ML 7007	H	18	10 000	6 350	30 000	40 000
ML 71908	H	18	6 550	4 650	28 500	38 000
ML 7008	H	20	10 500	7 100	27 000	36 000
ML 71909	H	19	6 950	5 250	25 500	34 000
ML 7009	H	22	10 300	7 200	24 000	32 000
ML 71910	H	20	7 150	5 650	24 000	32 000
ML 7010	H	23	11 100	8 200	22 500	30 000
ML 71911	H	22	9 600	7 700	18 000	28 500
ML 7011	H	26	22 000	20 600	19 000	27 000
ML 71912	H	24	9 800	8 200	17 500	26 500
ML 7012	H	27	23 000	22 600	17 000	25 500
ML 71913	H	25	16 600	17 200	17 500	26 000
ML 7013	H	28	23 900	24 400	16 000	24 500
ML 71914	H	28	23 700	24 300	15 000	23 500
ML 7014	H	31	32 000	32 500	15 000	21 800

# Preload, axial stiffness and radial associations DU DB DF

## ML & MLE 719 / 70 series

Symbol			Sinking constant	Preload (N)			Axial stiffness (N/μm)			Radial stiffness (N/μm)		
Range	Size	Contact angle	K'	7	8	9	7	8	9	7	8	9
ML	71900	C	2,58	7	21	45	12	18	25	58	83	105
ML	7000	C	2,33	10	30	60	12	19	26	61	87	108
ML	71900	H	1,25	11	35	70	25	37	49	54	37	98
ML	7000	H	1,14	16	50	100	26	39	51	57	82	103
ML	71901	C	2,31	7	22	45	12	19	26	61	89	110
ML	7001	C	2,19	11	35	70	15	22	30	70	102	127
ML	71901	H	1,12	12	35	70	26	39	51	58	83	103
ML	7001	H	1,06	18	55	110	30	45	59	66	95	119
ML	71902	C	2,18	10	30	60	15	23	31	75	107	133
ML	7002	C	2,06	17	50	100	18	27	36	88	125	155
ML	71902	H	1,05	16	50	100	32	48	64	70	102	127
ML	7002	H	1,00	30	80	160	39	55	72	85	117	146
ML	71903	C	2,08	11	35	65	17	27	34	84	122	148
ML	7003	C	1,87	19	55	110	20	31	41	101	142	176
ML	71903	H	1,00	17	50	100	35	62	67	78	110	137
ML	7003	H	0,91	30	90	180	42	63	82	94	134	167
ML	71904	C	1,79	20	60	120	21	33	44	107	152	189
ML	7004	C	1,65	35	100	200	27	40	54	132	185	230
ML	71904	H	0,87	30	90	180	44	66	85	98	140	175
ML	7004	H	0,81	50	160	320	54	82	106	119	174	217
ML	71905	C	1,64	22	65	130	25	38	51	124	176	219
ML	7005	C	1,50	35	110	220	30	47	63	151	218	271
ML	71905	H	0,80	35	100	200	52	76	99	116	163	203
ML	7005	H	0,74	60	180	360	65	96	125	144	206	257
ML	71906	C	1,59	23	70	140	28	43	57	139	199	248
ML	7006	C	1,43	40	120	250	35	54	73	176	251	316
ML	71906	H	0,77	35	110	220	58	87	112	128	186	232
ML	7006	H	0,70	65	200	390	74	111	143	165	238	295
ML	71907	C	1,45	25	80	150	32	50	64	160	233	284
ML	7007	C	1,30	50	160	320	40	62	82	198	288	359
ML	71907	H	0,70	40	120	240	67	99	129	149	214	267
ML	7007	H	0,63	80	250	500	83	125	162	185	268	335
ML	71908	C	1,29	35	100	210	37	55	75	185	260	329
ML	7008	C	1,25	55	160	330	44	65	88	218	308	387
ML	71908	H	0,63	55	160	330	77	113	148	172	243	307
ML	7008	H	0,61	90	260	520	92	135	175	205	290	362
ML	71909	C	1,20	35	110	220	40	61	81	200	290	361
ML	7009	C	1,22	55	160	330	44	65	88	218	308	387
ML	71909	H	0,59	60	170	350	86	124	162	191	268	338
ML	7009	H	0,60	90	260	520	92	135	175	205	290	362
ML	71910	C	1,13	40	110	230	44	64	86	219	303	383
ML	7010	C	1,14	60	180	350	49	74	98	245	349	431
ML	71910	H	0,55	60	180	360	90	132	171	200	287	357
ML	7010	H	0,56	90	280	560	100	150	194	224	324	404
ML	71911	C	1,06	50	150	300	50	75	99	252	357	443
ML	7011	C	1,15	73	233	470	50	78	104	254	369	460
ML	71911	H	0,59	80	240	480	104	154	199	225	331	414
ML	7011	H	0,64	120	368	740	107	160	207	239	344	430

<sup>1</sup>Axial deflection constant in μm (daN)<sup>-2/3</sup> 7 = light preload 8 = medium preload 9 = heavy preload

Symbol			Sinking constant	Preload (N)			Axial stiffness (N/μm)			Radial stiffness (N/μm)		
Range	Size	Contact angle	K <sup>1</sup>	7	8	9	7	8	9	7	8	9
<b>ML</b>	<b>71912</b>	<b>C</b>	1,01	50	160	310	52	80	104	269	381	473
<b>ML</b>	<b>7012</b>	<b>C</b>	1,08	78	252	508	55	85	113	275	401	500
<b>ML</b>	<b>71912</b>	<b>H</b>	0,57	80	240	490	109	161	209	241	354	442
<b>ML</b>	<b>7012</b>	<b>H</b>	0,60	130	395	800	117	173	225	260	373	468
<b>ML</b>	<b>71913</b>	<b>C</b>	1,03	62	185	370	53	81	107	268	382	475
<b>ML</b>	<b>7013</b>	<b>C</b>	1,03	85	271	546	59	92	122	298	434	541
<b>ML</b>	<b>71913</b>	<b>H</b>	0,57	88	288	576	108	164	212	240	354	442
<b>ML</b>	<b>7013</b>	<b>H</b>	0,57	140	430	860	126	188	243	281	405	506
<b>ML</b>	<b>71914</b>	<b>C</b>	1,04	92	265	530	61	91	121	306	431	536
<b>ML</b>	<b>7014</b>	<b>C</b>	1,03	115	360	720	66	102	135	332	480	598
<b>ML</b>	<b>71914</b>	<b>H</b>	0,57	130	265	820	123	185	239	274	399	498
<b>ML</b>	<b>7014</b>	<b>H</b>	0,57	190	673	1160	141	208	271	313	449	563

<sup>1</sup>Axial deflection constant in μm (daN)<sup>-2/3</sup> 7 = light preload 8 = medium preload 9 = heavy preload









# NTN

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NTN-SNR ROULEMENTS - 1 rue des Usines - 74000 Annecy  
RCS ANNECY B 325 821 072 - Code APE 2815Z - Code NACE 28.15  
[www.ntn-snr.com](http://www.ntn-snr.com)

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