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**Rolling bearings — Cast and pressed  
 housings for insert bearings —  
 Boundary dimensions and tolerances**

*Roulements — Logements moulés et emboutis pour roulements  
 “insert” — Dimensions d’encombrement et tolérances*

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 3228 was prepared by Technical Committee ISO/TC 4, *Rolling bearings*, Subcommittee SC 6, *Insert bearings*.

This fourth edition cancels and replaces the third edition (ISO 3228:1993), which has been technically revised. In particular, this fourth edition has been extended. Boundary dimensions and tolerances of cast housings for diameter series 3 have been added in [Tables 2, 4, 6 and 8](#). In addition, boundary dimensions and tolerances of larger size cast flanged housings, oval and cast take-up housings for diameter series 2 have been added in [Tables 5 and 7](#).

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# Rolling bearings — Cast and pressed housings for insert bearings — Boundary dimensions and tolerances

## 1 Scope

This International Standard specifies boundary dimensions and tolerances for cast and pressed housings for insert bearings for which boundary dimensions are given in ISO 9628<sup>[1]</sup>.

It applies to plummer block housings, flanged housings and take-up housings.

The inclusion of relubrication features is optional, but when provided it is intended that they intersect the zone specified in ISO 9628<sup>[1]</sup> in such a way that lubricant satisfactorily feeds from the housing through this zone. The exact design of the relubrication features is not otherwise covered by this International Standard.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 5593, *Rolling bearings — Vocabulary*

ISO 15241, *Rolling bearings — Symbols for quantities*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5593 apply.

## 4 Symbols

### 4.1 General

For the purposes of this document, the symbols given in ISO 15241 and those in 4.2 to 4.7 apply.

The symbols (except those for tolerances) shown in [Figures 1](#) to [6](#), and the values given in [Tables 1](#) to [10](#) denote nominal dimensions, unless specified otherwise.

NOTE [Figures 1](#) to [6](#) are drawn schematically and do not necessarily show all design details. The grease nipple positions in [Figures 1](#) to [4](#) are examples. Other positions are at the discretion of the manufacturer.

## 4.2 Cast plumber block housing

See [Figure 1](#) and [Tables 1](#) and [2](#).

$A$	(overall) width of base
$D_a$	spherical seating diameter of housing
$H$	distance from mounting base to centreline of spherical seating diameter
$H_1$	height of feet
$J$	centre distance between bolt holes
$L$	(overall) length of base
$N$	width of bolt hole
$N_1$	length of bolt hole
$\Delta_{Hs}$	deviation of single distance from mounting base to centreline of spherical seating diameter

## 4.3 Cast flanged housing, square

See [Figure 2](#) and [Tables 3](#) and [4](#).

$A$	(overall) width
$A_1$	width of flange
$A_2$	distance from mounting face to centreline of spherical seating diameter
$D_a$	spherical seating diameter of housing
$J$	centre distance between bolt holes
$L$	(overall) length
$N$	diameter of bolt hole
$X$	position tolerance of bolt holes
$\Delta_{A2s}$	deviation of single distance from mounting face to centreline of spherical seating diameter

## 4.4 Cast flanged housing, oval

See [Figure 3](#) and [Tables 5](#) and [6](#).

$A$	(overall) width
$A_1$	width of flange
$A_2$	distance from mounting face to centreline of spherical seating diameter
$D_a$	spherical seating diameter of housing
$H$	height of flange

$J$	centre distance between bolt holes
$L$	(overall) length
$N$	diameter of bolt hole
$X$	position tolerance of bolt holes
$\Delta_{A2s}$	deviation of single distance from mounting face to centreline of spherical seating diameter

#### 4.5 Cast take-up housing

See [Figure 4](#) and [Tables 7](#) and [8](#).

$A$	(overall) width (attachment end)
$A_1$	width of location slot
$A_2$	width of flange in which location slot is provided
$D_a$	spherical seating diameter of housing
$H$	(overall) height
$H_1$	distance between bottoms of location slots
$H_2$	height (attachment end)
$L$	(overall) length
$L_1$	distance from attachment end face to centreline of spherical seating diameter
$L_2$	length (attachment end)
$L_3$	length of location slot
$N$	diameter of attachment hole
$N_1$	length of attachment slot
$N_2$	height of attachment slot
$\Delta_{H1s}$	deviation of single distance between bottoms of location slots

#### 4.6 Pressed plummer block housing

See [Figure 5](#) and [Table 9](#).

$A$	(overall) width of base
$D_a$	spherical seating diameter of housing
$H$	distance from mounting base to centreline of spherical seating diameter
$H_1$	height of feet
$J$	centre distance between bolt holes
$L$	(overall) length of base

$N$	diameter of bolt hole
$\Delta_{Js}$	deviation of single centre distance between bolt holes
$\Delta_{Ns}$	deviation of single diameter of bolt hole

#### 4.7 Pressed flanged housings, round, triangular and oval

See [Figure 6](#) and [Table 10](#).

$A$	(overall) width
$A_1$	width of flange
$D_a$	spherical seating diameter of housing
$H$	height (round, triangular, oval)
$H_1$	distance from straight edge to centreline of spherical seating diameter (triangular)
$H_2$	limit diameter of flat surface
$J$	pitch circle diameter of bolt holes (round and triangular); centre distance between bolt holes (oval)
$L$	(overall) length of flange (oval)
$N$	side dimension of square bolt hole
$\Delta_{Js}$	deviation of single pitch circle diameter of bolt holes (round and triangular); deviation of single centre distance between bolt holes (oval)
$\Delta_{Ns}$	deviation of single side dimension of square bolt hole

## 5 Boundary dimensions and tolerances

### 5.1 General

Boundary dimensions and tolerances are given in [Tables 1](#) to [10](#).

Where “max.” is shown in [Tables 1](#) to [10](#), this indicates that the value is both the nominal value and the largest actual value permitted. Where “min.” is shown in [Tables 1](#) to [8](#), this indicates that the value is both the nominal value and the smallest actual value permitted.

### 5.2 Cast housings

Boundary dimensions and tolerances for cast housings are given in [Tables 1](#) to [8](#).

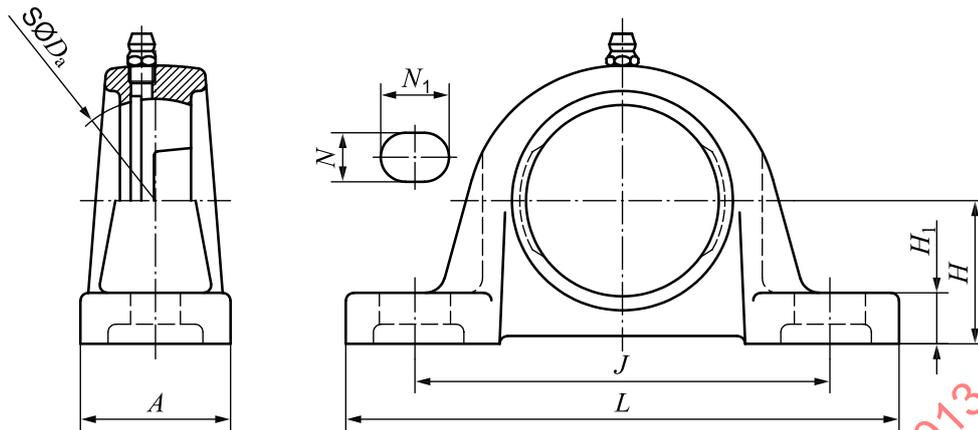


Figure 1 — Cast plummer block housing

Table 1 — Cast plummer block housings — Diameter series 2

Dimensions and tolerance values in millimetres

$D_a$	$L$	$A$	$J$	$H$	$\Delta_{H_s}$	$H_1$	$N$		$N_1$
	max.	max.				max.	min.	max.	min.
40	129	39	96	30,2	$\pm 0,25$	17	10,5	12,5	16
47	134	39	96	33,3	$\pm 0,25$	17	10,5	12,5	16
52	142	39	105	36,5	$\pm 0,25$	17	10,5	12,5	16
62	167	48	121	42,9	$\pm 0,25$	20	13	15	19
72	172	48	126	47,6	$\pm 0,25$	20	13	15	19
80	186	55	136	49,2	$\pm 0,25$	20	13	15	19
85	192	55	146	54	$\pm 0,3$	22	13	15	19
90	208	61	159	57,2	$\pm 0,3$	23	17	19,5	20,5
100	233	61	172	63,5	$\pm 0,3$	25	17	19,5	20,5
110	243	71	186	69,9	$\pm 0,3$	27	17	19,5	22
120	268	73	203	76,2	$\pm 0,3$	34	21	25	24
125	274	74	210	79,4	$\pm 0,3$	34	21	25	24
130	300	83	217	82,6	$\pm 0,35$	35	21	25	24
140	305	84	232	88,9	$\pm 0,35$	38	21	25	24
150	330	95	247	95,2	$\pm 0,35$	41	21	25	24
160	356	100	262	101,6	$\pm 0,35$	44	25	29	34
180	390	111	308	115	$\pm 0,35$	46	25	29	34

**Table 2 — Cast plummer block housings — Diameter series 3**

Dimensions and tolerance values in millimetres

$D_a$	$L$	$A$	$J$	$H$	$\Delta H_s$	$H_1$	$N$		$N_1$
	max.	max.					min.	max.	
62	177	47	132	45	$\pm 0,25$	18	15,5	18,5	18
72	182	52	140	50	$\pm 0,25$	21	15,5	18,5	18
80	212	58	160	56	$\pm 0,3$	23	15,5	18,5	23
90	222	62	170	60	$\pm 0,3$	25	15,5	18,5	25
100	247	69	190	67	$\pm 0,3$	27	18,5	21,5	28
110	278	77	212	75	$\pm 0,3$	30	18,5	21,5	33
120	313	82	236	80	$\pm 0,3$	33	18,5	21,5	36
130	333	87	250	85	$\pm 0,35$	35	23,5	26,5	36
140	343	92	260	90	$\pm 0,35$	38	23,5	26,5	36
150	363	92	280	95	$\pm 0,35$	42	25,5	28,5	38
160	383	102	290	100	$\pm 0,35$	42	25,5	28,5	38
170	403	112	300	106	$\pm 0,35$	47	25,5	28,5	38
180	424	112	320	112	$\pm 0,35$	47	31,5	34,5	43
190	434	122	330	118	$\pm 0,35$	52	31,5	34,5	43
200	474	122	360	125	$\pm 0,4$	52	34,5	37,5	48
215	494	132	380	140	$\pm 0,4$	57	34,5	37,5	48
225	494	132	380	140	$\pm 0,4$	57	34,5	37,5	48
240	524	142	400	150	$\pm 0,4$	62	38,5	41,5	53
260	574	142	450	160	$\pm 0,4$	72	38,5	41,5	53
280	604	142	480	180	$\pm 0,4$	82	38,5	41,5	53
300	624	142	500	200	$\pm 0,46$	82	38,5	41,5	53

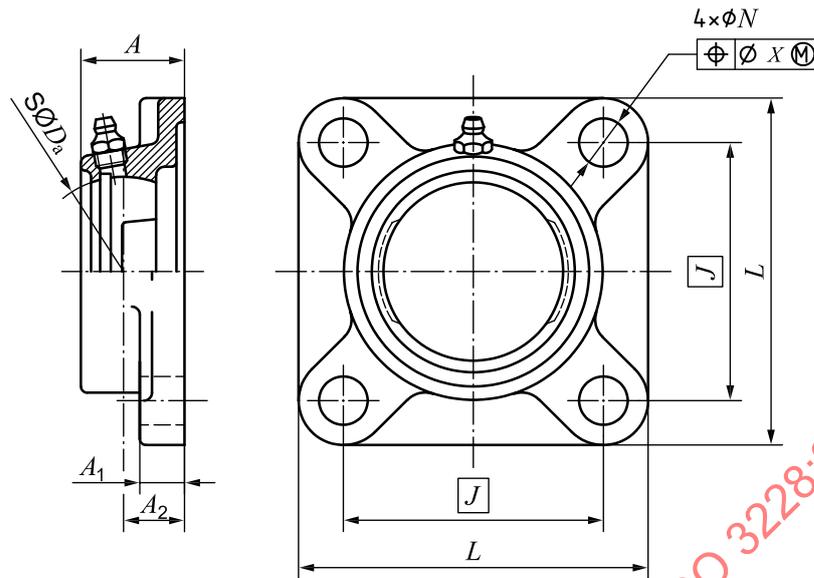


Figure 2 — Cast flanged housing, square

Table 3 — Cast flanged housings, square — Diameter series 2

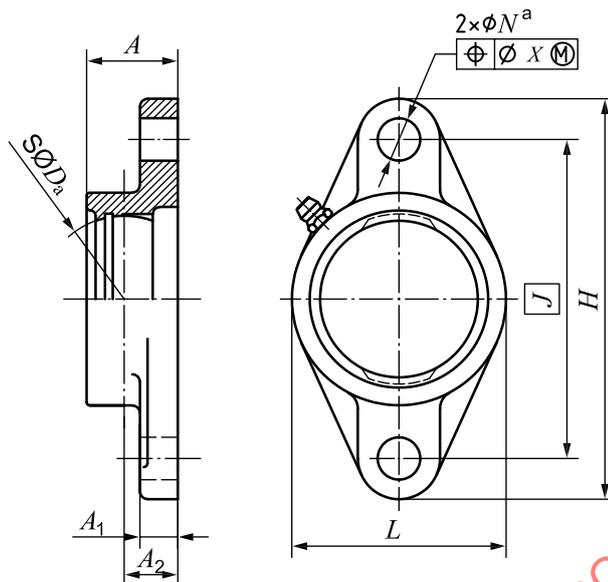
Dimensions and tolerance values in millimetres

$D_a$	$L$	$A$	$J$	$A_1$	$A_2$	$\Delta_{A2s}$	$N$		$X$
	max.	max.		max.	min.		max.		
40	78	32	54	13	17	$\pm 0,43$	10,5	12,5	0,6
47	88	34	63,5	15	19	$\pm 0,52$	10,5	12,5	0,6
52	97	35	70	15	19	$\pm 0,52$	11,5	12,5	0,6
62	110	38	82,5	16	20	$\pm 0,52$	11,5	12,5	0,6
72	119	38	92	17	21	$\pm 0,52$	13	15	0,8
80	132	43	101,5	17	24	$\pm 0,52$	13	15	0,8
85	139	45	105	18	24	$\pm 0,52$	13	17	0,8
90	145	48	111	20	28	$\pm 0,52$	17	19,5	0,8
100	164	51	130	21	31	$\pm 0,62$	17	19,5	0,8
110	177	55	143	21	34	$\pm 0,62$	17	19,5	0,8
120	189	55	149,5	24	34	$\pm 0,62$	17	19,5	0,8
125	195	57	152	24	35	$\pm 0,62$	17	20	0,8
130	202	58	159	24	35	$\pm 0,62$	17	25	0,8
140	213	65	165	24	35	$\pm 0,62$	21	25	0,8
150	222	75	175	26	36	$\pm 0,62$	21	25	0,8
160	240	75	187	27	42	$\pm 0,62$	21	25	0,8
180	270	80	210	29	44	$\pm 0,62$	25	29	0,8

**Table 4 — Cast flanged housings, square — Diameter series 3**

Dimensions and tolerance values in millimetres

$D_a$	$L$	$A$	$J$	$A_1$	$A_2$	$\Delta_{A2s}$	$N$		$X$
	max.	max.		max.			min.	max.	
62	112	31	80	14	16	$\pm 0,43$	15,8	16,2	0,7
72	127	34	95	16	18	$\pm 0,43$	15,8	16,2	0,7
80	137	38	100	17	20	$\pm 0,52$	18,8	19,2	0,7
90	152	42	112	18	23	$\pm 0,52$	18,8	19,2	0,7
100	162	46	125	19	25	$\pm 0,52$	18,8	19,2	0,7
110	177	50	132	20	28	$\pm 0,52$	22,8	23,2	0,7
120	187	54	140	21	30	$\pm 0,52$	22,8	23,2	1
130	197	58	150	23	33	$\pm 0,62$	22,8	23,2	1
140	210	60	166	23	33	$\pm 0,62$	22,8	23,2	1
150	228	63	178	26	36	$\pm 0,62$	24,8	25,2	1
160	238	68	184	26	39	$\pm 0,62$	24,8	25,2	1
170	252	70	196	28	38	$\pm 0,62$	30,7	31,3	1
180	263	76	204	28	44	$\pm 0,62$	30,7	31,3	1
190	283	78	216	31	44	$\pm 0,62$	34,7	35,3	1
200	293	96	228	31	59	$\pm 0,74$	34,7	35,3	1
215	313	96	242	33	59	$\pm 0,74$	37,7	38,3	1
225	313	96	242	33	59	$\pm 0,74$	37,7	38,3	1
240	343	98	266	36	60	$\pm 0,74$	40,7	41,3	1
260	373	112	290	41	65	$\pm 0,74$	40,7	41,3	1
280	414	117	320	46	65	$\pm 0,74$	40,7	41,3	1
300	454	127	350	56	75	$\pm 0,74$	40,7	41,3	1



- <sup>a</sup> The holes may alternatively be square with sides equal to  $N$ .

**Figure 3 — Cast flanged housing, oval**

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**Table 5 — Cast flanged housings, oval — Diameter series 2**

Dimensions and tolerance values in millimetres

$D_a$	$H$	$L$	$A$	$J$	$A_1$	$A_2$	$\Delta_{A2s}$	$N$		$X$
	max.	max.	max.		max.			min.	max.	
40	99	61	32	76,5	13	17	$\pm 0,43$	10,5	12,5	0,6
47	113	62	34	90	15	19	$\pm 0,52$	10,5	12,5	0,6
52	125	70	35	99	15	19	$\pm 0,52$	11,5	12,5	0,6
62	142	83	38	116,5	16	20	$\pm 0,52$	11,5	12,5	0,6
72	156	96	38	130	17	21	$\pm 0,52$	13	15	0,8
80	172	105	43	143,5	17	24	$\pm 0,52$	13	15	0,8
85	180	112	45	148,5	18	24	$\pm 0,52$	13	17	0,8
90	190	117	48	157	20	28	$\pm 0,52$	17	19,5	0,8
100	222	134	51	184	21	31	$\pm 0,62$	17	19,5	0,8
110	238	142	55	202	21	34	$\pm 0,62$	17	19,5	0,8
120	261	157	55	210	25	30	$\pm 0,52$	22,8	23,2	1
125	268	162	57	216	25	31	$\pm 0,62$	22,8	23,2	1
130	278	167	58	225	25	34	$\pm 0,62$	22,8	23,2	1
140	293	182	65	233	25	34	$\pm 0,62$	24,8	25,2	1
150	308	192	75	248	27	36	$\pm 0,62$	24,8	25,2	1
160	323	207	75	265	28	40	$\pm 0,62$	24,8	25,2	1

Table 6 — Cast flanged housings, oval — Diameter series 3

Dimensions and tolerance values in millimetres

$D_a$	$H$	$L$	$A$	$J$	$A_1$	$A_2$	$\Delta_{A2s}$	$N$		$X$
	max.	max.	max.		max.			min.	max.	
62	152	82	31	113	14	16	$\pm 0,43$	18,8	19,2	0,7
72	182	92	34	134	16	18	$\pm 0,43$	22,8	23,2	0,7
80	187	102	38	141	17	20	$\pm 0,52$	22,8	23,2	0,7
90	202	114	42	158	18	23	$\pm 0,52$	22,8	23,2	0,7
100	232	127	46	177	19	25	$\pm 0,52$	24,8	25,2	0,7
110	242	142	50	187	20	28	$\pm 0,52$	24,8	25,2	0,7
120	252	152	54	198	21	30	$\pm 0,52$	24,8	25,2	1
130	273	162	58	212	23	33	$\pm 0,62$	30,7	31,3	1
140	298	177	60	240	26	33	$\pm 0,62$	30,7	31,3	1
150	318	187	63	250	29	36	$\pm 0,62$	34,7	35,3	1
160	323	197	68	260	31	39	$\pm 0,62$	34,7	35,3	1
170	358	212	70	285	33	38	$\pm 0,62$	37,7	38,3	1
180	373	222	76	300	33	44	$\pm 0,62$	37,7	38,3	1
190	388	237	78	315	37	44	$\pm 0,62$	37,7	38,3	1
200	409	252	96	330	41	59	$\pm 0,74$	40,7	41,3	1
215	444	273	96	360	41	59	$\pm 0,74$	43,7	44,3	1
225	444	273	96	360	41	59	$\pm 0,74$	43,7	44,3	1
240	474	303	98	390	43	60	$\pm 0,74$	43,7	44,3	1
260	524	333	112	430	49	65	$\pm 0,74$	46,7	47,3	1
280	554	363	117	460	51	65	$\pm 0,74$	46,7	47,3	1
300	604	403	127	500	61	75	$\pm 0,74$	50,7	51,3	1

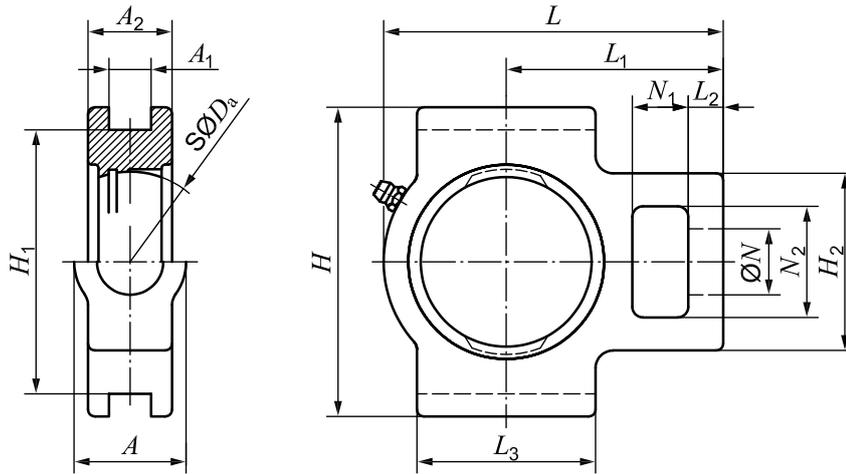


Figure 4 — Cast take-up housing

Table 7 — Cast take-up housings — Diameter series 2

Dimensions and tolerance values in millimetres

$D_a$	$A$	$A_1^a$		$A_2$	$H$	$H_1$	$\Delta_{H1s}$	$H_2$	$L$	$L_1$	$L_2$	$L_3$	$N$	$N_1$	$N_2$
	max.	min.	max.	max.	max.			max.	max.	max.	min.	max.	min.	min.	min.
47	51	12	14	36	94	76	$\pm 0,3$	64	104	69	9	59	18	15	30
52	51	12	14	38	94	76	$\pm 0,3$	64	104	69	9	59	18	15	30
62	53	12	14	38	107	89	$\pm 0,35$	66	118	74	9	66	19	15	36
72	53	12	14	38	107	89	$\pm 0,35$	66	132	81	10	72	19	15	36
80	67	16	18	44	124	101	$\pm 0,35$	85	146	91	14	84	27	18	47
85	67	16	18	44	124	101	$\pm 0,35$	85	149	91	14	84	27	18	47
90	67	16	18	50	124	101	$\pm 0,35$	85	153	92	14	88	27	18	47
100	72	22	28	56	152	130	$\pm 0,4$	104	191	120	17	104	34	24	62
110	72	22	28	56	152	130	$\pm 0,4$	104	196	120	17	104	34	29	62
120	72	25	28	56	169	150,6	$\pm 0,4$	113	226	139	20	123	40	31	69
125	72	25	28	56	169	150,6	$\pm 0,4$	113	226	139	20	123	40	31	69
130	72	25	28	56	169	150,6	$\pm 0,4$	113	234	142	20	123	40	31	69
140	72	26	29	56	186	164,6	$\pm 0,4$	113	237	142	20	123	40	31	69
150	75	29	32	56	200	172,6	$\pm 0,4$	126	263	164	28	159	47	37	72

<sup>a</sup> Dimensions of adjacent parts are in accordance with each manufacturer's recommendations.

Table 8 — Cast take-up housings — Diameter series 3

Dimensions and tolerance values in millimetres

$D_a$	$A$		$A_1$		$A_2$	$H$	$H_1$	$\Delta_{H1s}$	$H_2$	$L$	$L_1$	$L_2$	$L_3$	$N$	$N_1$	$N_2$
	max.	min.	max.	max.	max.			max.	max.	max.	min.	max.	min.	min.	min.	
62	38	12	12,75	28	91	79,75	$\pm 0,3$	64	124	78	11	67	25	15	35	
72	43	16	16,75	30	102	89,75	$\pm 0,35$	72	139	87	13	76	27	17	40	
80	47	16	16,75	34	113	99,75	$\pm 0,35$	77	152	96	14	82	29	19	44	
90	52	18	18,75	36	126	111,75	$\pm 0,35$	85	164	102	16	91	31	21	49	
100	57	18	18,75	40	140	124,75	$\pm 0,4$	92	180	112	17	99	33	23	54	
110	63	20	20,75	42	153	139,75	$\pm 0,4$	100	193	119	19	108	36	26	60	
120	68	22	23,25	46	165	149,6	$\pm 0,4$	107	209	129	20	117	38	28	65	
130	73	22	23,25	48	180	159,6	$\pm 0,4$	115	222	137	22	125	40	30	69	
140	82	26	27,25	52	192	169,6	$\pm 0,4$	118	240	148	24	136	42	31	69	
150	92	26	27,25	54	204	179,6	$\pm 0,4$	132	255	157	24	142	45	35	84	
160	92	26	27,25	57	218	191,6	$\pm 0,46$	134	265	162	24	152	45	35	84	
170	104	30	31,25	62	232	203,6	$\pm 0,46$	152	285	176	27	162	52	41	97	
180	104	32	33,25	66	242	213,6	$\pm 0,46$	154	301	185	29	172	52	41	97	
190	112	32	33,25	68	258	227,6	$\pm 0,46$	162	315	194	29	177	56	45	105	
200	112	35	36,25	74	273	239,6	$\pm 0,46$	167	325	199	30	182	56	45	105	
215	122	35	36,25	77	293	259,6	$\pm 0,52$	177	348	212	31	202	58	47	114	
225	122	35	36,25	77	293	259,6	$\pm 0,52$	177	348	212	31	202	58	47	114	
240	132	38	39,25	82	323	284,6	$\pm 0,52$	187	388	237	37	217	64	51	124	
260	142	45	46,25	92	358	319,6	$\pm 0,57$	212	436	270	41	232	69	59	139	
280	152	50	51,25	102	388	349,6	$\pm 0,57$	222	469	288	44	242	74	64	149	
300	157	50	51,25	102	419	379,6	$\pm 0,57$	232	519	318	49	258	79	69	159	