
RIVET - MEDIUM HEAD, CYLINDRICAL, LOCKBOLT

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SUMMARY**1 - SCOPE AND FIELD OF APPLICATION****2 - REFERENCES****3 - TERMINOLOGY****4 - REQUIRED CHARACTERISTICS****5 - DESIGNATION****6 - MARKING****7 - TECHNICAL SPECIFICATION****8 - MANUFACTURERS****AMENDMENT RECORD SHEET****1 - SCOPE AND FIELD OF APPLICATION**

This standard specifies the dimensions, tolerances, required characteristics and the masses of a rivet, medium head, cylindrical, lockbolt.

2 - REFERENCES

AMS4967	: Titanium alloy bars, wire forgings and rings 6.0AL-4.0V annealed heat treated.
ANSI/ASME-B46-1	: Surface texture (surface roughness waviness and lay).
ASNA2025	: Bush - For use with ASNA2043, ASNA2048, ASNA2391 and ASNA2392.
C2010	: Procurement specification.
EN2424	: Aerospace series - Marking of aerospace products.
EN6117	: Aerospace series - Specification for lubrication of pins with Cetyl Alcohol.
EN6118	: Aerospace series - Process specification - Aluminium base protection for fasteners.
I.C.T. No. 67	: Manufacturer's specification.

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3 - TERMINOLOGY

Not applicable.

4 - REQUIRED CHARACTERISTICS

4.1 - Configuration, dimensions, tolerances, mass

4.1.1 - Configuration shall be in accordance with the figure.

4.1.2 - Dimensions shall be in accordance with the figure and tables 1, 2 and 3.

Definition of the grip length code No.: divide grip length by 1,58.

4.1.3 - General tolerances shall be in accordance with the figure and tables 1, 2 and 3.

Concentricity tolerances of the tapered surface of head with respect to Ø A within the value of 0,203 mm (TIR).

Shank rectitude within the values of S (TIR per shank length of 25,4 mm).

4.1.4 - Mass shall be in accordance with table 4.

4.2 - Materials, finishes, lubrications

Materials, finishes and lubrications shall be in accordance with table 5.

4.3 - Mechanical characteristics

Mechanical characteristics shall be in accordance with table 6.

4.4 - General characteristics

Surface roughness as per ANSI/ASME-B46-1: Ra 0,8 µm for bearing side, shank and coupling radius at both shank ends, Ra 3,2 µm for other surfaces.

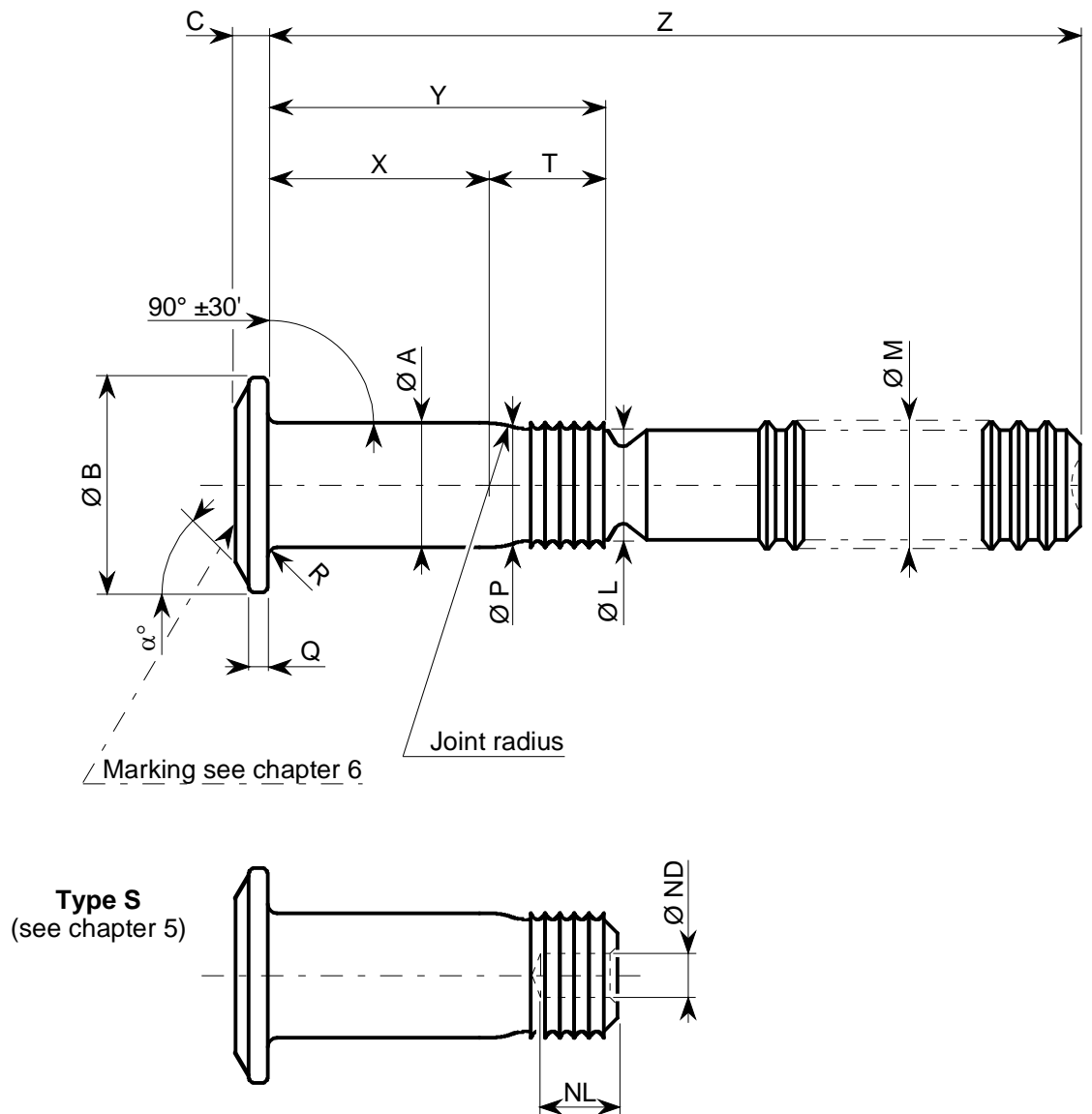


Figure - Configuration, dimensions

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Table 1 - Dimensions, tolerances

DIAMETER CODE No.	NOMINAL Ø	Ø A ±0,0127	Ø B ±0,254	C Max. Min.	α ° ± 4	Ø L Ref.	Ø M Max.	Ø P Max.
2	4,166	4,140	7,924	1,422 1,168	45	3,200	3,962	3,962
3	4,826	4,800	9,321	1,701 1,447		3,810	4,673	4,673
3A	5,555	5,529	10,160	1,880 1,626		4,394	5,410	5,410
4	6,350	6,324	10,795	2,159 1,905		4,749	6,197	6,197
5	7,925	7,912	12,268	2,590 2,336		6,197	7,772	7,772
6	9,525	9,500	14,046	2,971 2,717		7,569	9,347	9,398
7	11,113	11,087	16,103	3,277 3,023		7,925	10,947	10,947
8	12,700	12,674	17,500	3,632 3,378		9,525	12,497	12,497

DIAMETER CODE No.	NOMINAL Ø	Q Ref.	R ±0,127	S Shank rectitude	T Ref.	NL Max.	Ø ND Max.
2	4,166	0,76	0,508	0,114	3,810	2,95	1,65
3	4,826	0,89			3,860	3,00	2,18
3A	5,555	1,02			5,334	4,11	2,18
4	6,350	1,14				4,11	2,77
5	7,925	1,40	0,635		6,832	5,49	3,58
6	9,525	1,90		0,152	8,153	6,17	4,34
7	11,113	2,41			9,550	-	-
8	12,700				10,973	-	-

Dimensions in mm.

Table 2 - Dimensions, tolerances of "to pull" type (without code)

(diameter code Nos continued on page 6)

GRIP LENGTH CODE No.	ADMISSIBLE TIGHTENING LENGTH		GRIP LENGTH		X *	DIAMETER CODE No.							
						2		3		3A		4	
						Y	Z	Y	Z	Y	Z	Y	Z
	Min.	Max.	Min.	Max.	±0,127	±0,25	+ 1,524 0	±0,25	+ 1,524 0	±0,25	+ 1,524 0	±0,25	+ 1,524 0
02	1,19	3,58	1,60	3,18	3,18	6,98	20,34	7,03	22,20	8,51	22,81	-	-
03	2,76	5,15	3,20	4,78	4,78	8,59	21,95	8,63	23,80	10,11	24,41	10,10	26,69
04	4,36	6,75	4,80	6,35	6,35	10,16	23,52	10,21	25,37	11,68	25,98	11,68	28,27
05	5,94	8,33	6,38	7,93	7,93	11,73	25,09	11,78	26,95	13,26	27,56	13,25	29,84
06	7,54	9,93	7,95	9,53	9,53	13,33	26,69	13,38	28,55	14,86	29,16	14,85	31,44
07	9,11	11,50	9,55	11,13	11,13	14,94	28,30	14,98	30,15	16,46	30,76	16,45	33,04
08	10,71	13,10	11,15	12,70	12,70	16,51	29,87	16,56	31,72	18,03	32,33	18,03	34,62
09	12,29	14,68	12,73	14,28	14,28	18,08	31,44	18,13	33,30	19,61	33,91	19,60	36,19
10	13,89	16,28	14,30	15,88	15,88	19,68	33,04	19,73	34,90	21,21	35,51	21,20	37,79
11	15,46	17,85	15,90	17,48	17,48	21,29	34,65	21,33	36,50	22,81	37,11	22,80	39,39
12	17,06	19,45	17,50	19,05	19,05	22,86	36,22	22,91	38,07	24,38	38,68	24,38	40,97
13	18,64	21,03	19,08	20,63	20,63	24,43	37,79	24,48	39,65	25,96	40,26	25,95	42,54
14	20,24	22,63	20,65	22,23	22,23	26,03	39,39	26,08	41,25	27,56	41,86	27,55	44,14
15	21,81	24,20	22,25	23,83	23,83	27,64	41,00	27,68	42,85	29,16	43,46	29,15	45,74
16	23,41	25,80	23,85	25,40	25,40	29,21	42,57	29,26	44,42	30,73	45,03	30,73	47,32
17	24,99	27,38	25,43	26,98	26,98	30,78	44,14	30,83	46,00	32,31	46,61	32,30	48,89
18	26,59	28,98	27,00	28,58	28,58	32,38	45,74	32,43	47,60	33,91	48,21	33,90	50,49
19	28,16	30,55	28,60	30,18	30,18	33,99	47,35	34,03	49,20	35,51	49,81	35,50	52,09
20	29,76	32,15	30,20	31,75	31,75	35,56	48,92	35,61	50,77	37,08	51,38	37,08	53,67
21	31,34	33,73	31,78	33,33	33,33	37,13	50,49	37,18	52,35	38,66	52,96	38,65	55,24
22	32,94	35,33	33,35	34,93	34,93	38,73	52,09	38,78	53,95	40,26	54,56	40,25	56,84
23	34,51	36,90	34,95	36,53	36,53	40,34	53,70	40,38	55,55	41,86	56,16	41,85	58,44
24	36,11	38,50	36,55	38,10	38,10	41,91	55,27	41,96	57,12	43,43	57,73	43,43	60,02
25	37,69	40,08	38,13	39,68	39,68	43,48	56,84	43,53	58,70	45,01	59,31	45,00	61,59
26	39,29	41,68	39,70	41,28	41,28	45,08	58,44	45,13	60,30	46,61	60,91	46,60	63,19
27	40,86	43,25	41,30	42,88	42,88	46,69	60,05	46,73	61,90	48,21	62,51	48,20	64,79
28	42,46	44,85	42,90	44,45	44,45	48,26	61,62	48,31	63,47	49,78	64,08	49,78	66,37
29	44,04	46,43	44,48	46,03	46,03	49,83	63,19	49,88	65,05	51,36	65,66	51,35	67,94
30	45,64	48,03	46,05	47,63	47,63	51,43	64,79	51,48	66,65	52,96	67,26	52,95	69,54
31	47,21	49,60	47,65	49,23	49,23	53,04	66,40	53,08	68,25	54,56	68,86	54,55	71,14
32	48,81	51,20	49,25	50,80	50,80	54,61	67,97	54,66	69,82	56,13	70,43	56,13	72,72

* Grip length is measured from the underside of the head to the end of the full cylindrical portion of the shank.

Dimensions in mm.

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Table 2 - (diameter code Nos continued from page 5)

(end)

GRIP LENGTH CODE No.	ADMISSIBLE TIGHTENING LENGTH		GRIP LENGTH		X *	DIAMETER CODE No.							
						5		6		7		8	
						Y	Z	Y	Z	Y	Z	Y	Z
	Min.	Max.	Min.	Max.	±0,127	±0,25	+ 1,524 0	±0,25	+ 1,524 0	±0,25	+ 1,524 0	±0,25	+ 1,524 0
02	1,19	3,58	1,60	3,18	3,18	-	-	-	-	-	-	-	-
03	2,76	5,15	3,20	4,78	4,78	11,61	29,34	-	32,38	-	-	-	-
04	4,36	6,75	4,80	6,35	6,35	13,18	30,91	14,50	33,96	15,90	38,02	17,32	43,33
05	5,94	8,33	6,38	7,93	7,93	14,75	32,49	16,07	35,53	17,48	39,60	18,90	44,91
06	7,54	9,93	7,95	9,53	9,53	16,35	34,09	17,67	37,13	19,08	41,20	20,50	46,51
07	9,11	11,50	9,55	11,13	11,13	17,96	35,69	19,27	38,73	20,68	42,80	22,10	48,11
08	10,71	13,10	11,15	12,70	12,70	19,53	37,26	20,85	40,31	22,25	44,37	23,67	49,68
09	12,29	14,68	12,73	14,28	14,28	21,11	38,84	22,42	41,88	23,83	45,95	25,25	51,26
10	13,89	16,28	14,30	15,88	15,88	22,71	40,44	24,03	43,48	25,43	47,55	26,85	52,86
11	15,46	17,85	15,90	17,48	17,48	24,31	42,04	25,62	45,08	27,03	49,15	28,45	54,46
12	17,06	19,45	17,50	19,05	19,05	25,88	43,61	27,20	46,66	28,60	50,72	30,02	56,03
13	18,64	21,03	19,08	20,63	20,63	27,46	45,19	28,77	48,23	30,18	52,30	31,60	57,61
14	20,24	22,63	20,65	22,23	22,23	29,06	46,79	30,37	49,83	31,78	53,90	33,20	59,21
15	21,81	24,20	22,25	23,83	23,83	30,66	48,39	31,97	51,43	33,38	55,50	34,80	60,81
16	23,41	25,80	23,85	25,40	25,40	32,23	49,96	33,55	53,01	34,95	57,07	36,37	62,38
17	24,99	27,38	25,43	26,98	26,98	33,81	51,54	35,12	54,58	36,53	58,65	37,95	63,96
18	26,59	28,98	27,00	28,58	28,58	35,41	53,14	36,72	56,18	38,13	60,25	39,55	65,56
19	28,16	30,55	28,60	30,18	30,18	37,01	54,74	38,32	57,78	39,73	61,85	41,15	67,16
20	29,76	32,15	30,20	31,75	31,75	38,58	56,31	39,90	59,36	41,30	63,42	42,72	68,73
21	31,34	33,73	31,78	33,33	33,33	40,16	57,89	41,47	60,93	42,88	65,00	44,30	70,31
22	32,94	35,33	33,35	34,93	34,93	41,76	59,49	43,07	62,53	44,48	66,60	45,90	71,91
23	34,51	36,90	34,95	36,53	36,53	43,36	61,09	44,67	64,13	46,08	68,20	47,50	73,51
24	36,11	38,50	36,55	38,10	38,10	44,93	62,66	46,25	65,71	47,65	69,77	49,07	75,08
25	37,69	40,08	38,13	39,68	39,68	46,51	64,24	47,82	67,28	49,23	71,35	50,65	76,66
26	39,29	41,68	39,70	41,28	41,28	48,11	65,84	49,42	68,88	50,83	72,95	52,25	78,26
27	40,86	43,25	41,30	42,88	42,88	49,71	67,44	51,02	70,48	52,43	74,55	53,85	79,86
28	42,46	44,85	42,90	44,45	44,45	51,28	69,01	52,60	72,06	54,00	76,12	55,42	81,43
29	44,04	46,43	44,48	46,03	46,03	52,86	70,59	54,17	73,63	55,58	77,70	57,00	83,01
30	45,64	48,03	46,05	47,63	47,63	54,45	72,19	55,77	75,23	57,18	79,30	58,60	84,61
31	47,21	49,60	47,65	49,23	49,23	56,06	73,79	57,37	76,83	58,78	80,90	60,20	86,21
32	48,81	51,20	49,25	50,80	50,80	57,63	75,36	58,95	78,41	60,35	82,47	61,77	87,78

* Grip length is measured from the underside of the head to the end of the full cylindrical portion of the shank.

Dimensions in mm.

Table 3 - Dimensions, tolerances of "stump" type (code S)

GRIP LENGTH CODE No.	ADMISSIBLE TIGHTENING LENGTH		GRIP LENGTH		X *	DIAMETER CODE No.							
						2	3	3A	4	5	6	7	8
						Y	Y	Y	Y	Y	Y	Y	Y
	Min.	Max.	Min.	Max.	±0,127	±0,25	±0,25	±0,25	±0,25	±0,25	±0,25	±0,25	±0,25
02	1,19	3,58	1,60	3,18	3,18	7,29	7,52	9,04	-	-	-	-	-
03	2,76	5,15	3,20	4,78	4,78	8,89	9,12	10,64	10,64	12,29	-	-	-
04	4,36	6,75	4,80	6,35	6,35	10,46	10,69	12,22	12,22	13,87	15,11	16,31	17,63
05	5,94	8,33	6,38	7,93	7,93	12,04	12,27	13,79	13,79	15,44	16,69	17,88	19,20
06	7,54	9,93	7,95	9,53	9,53	13,64	13,87	15,39	15,39	17,04	18,29	19,48	20,80
07	9,11	11,50	9,55	11,13	11,13	15,24	15,47	16,99	16,99	18,64	19,89	21,08	22,40
08	10,71	13,10	11,15	12,70	12,70	16,81	17,04	18,57	18,57	20,22	21,46	22,66	23,98
09	12,29	14,68	12,73	14,28	14,28	18,39	18,62	20,14	20,14	21,79	23,04	24,23	25,55
10	13,89	16,28	14,30	15,88	15,88	19,99	20,22	21,74	21,74	23,39	24,64	25,83	27,15
11	15,46	17,85	15,90	17,48	17,48	21,59	21,82	23,34	23,34	24,99	26,24	27,43	28,75
12	17,06	19,45	17,50	19,05	19,05	23,16	23,39	24,92	24,92	26,57	27,81	29,01	30,33
13	18,64	21,03	19,08	20,63	20,63	24,74	24,97	26,49	26,49	28,14	29,39	30,58	31,90
14	20,24	22,63	20,65	22,23	22,23	26,34	26,57	28,09	28,09	29,74	30,99	32,18	33,50
15	21,81	24,20	22,25	23,83	23,83	27,94	28,17	29,69	29,69	31,34	32,59	33,78	35,10
16	23,41	25,80	23,85	25,40	25,40	29,51	29,74	31,27	31,27	32,92	34,16	35,36	36,68
17	24,99	27,38	25,43	26,98	26,98	31,09	31,32	32,84	32,84	34,49	35,74	36,93	38,25
18	26,59	28,98	27,00	28,58	28,58	32,69	32,92	34,44	34,44	36,09	37,34	38,53	39,85
19	28,16	30,55	28,60	30,18	30,18	34,29	34,52	36,04	36,04	37,69	38,94	40,13	41,45
20	29,76	32,15	30,20	31,75	31,75	35,86	36,09	37,62	37,62	39,27	40,51	41,71	43,03
21	31,34	33,73	31,78	33,33	33,33	37,44	37,67	39,19	39,19	40,84	42,09	43,28	44,60
22	32,94	35,33	33,35	34,93	34,93	39,04	39,27	40,79	40,79	42,44	43,69	44,88	46,20
23	34,51	36,90	34,95	36,53	36,53	40,64	40,87	42,39	42,39	44,04	45,29	46,48	47,80
24	36,11	38,50	36,55	38,10	38,10	42,21	42,44	43,97	43,97	45,62	46,86	48,06	49,38
25	37,69	40,08	38,13	39,68	39,68	43,79	44,02	45,54	45,54	47,19	48,44	49,63	50,95
26	39,29	41,68	39,70	41,28	41,28	45,39	45,62	47,14	47,14	48,79	50,04	51,23	52,55
27	40,86	43,25	41,30	42,88	42,88	46,99	47,22	48,74	48,74	50,39	51,64	52,83	54,15
28	42,46	44,85	42,90	44,45	44,45	48,56	48,79	50,32	50,32	51,97	53,21	54,41	55,73
29	44,04	46,43	44,48	46,03	46,03	50,14	50,37	51,89	51,89	53,54	54,79	55,98	57,30
30	45,64	48,03	46,05	47,63	47,63	51,74	51,97	53,49	53,49	55,14	56,39	57,58	58,90
31	47,21	49,60	47,65	49,23	49,23	53,34	53,57	55,09	55,09	56,74	57,99	59,18	60,50
32	48,81	51,20	49,25	50,80	50,80	54,91	55,14	56,67	56,67	58,32	59,56	60,76	62,08

* Grip length is measured from the underside of the head to the end of the full cylindrical portion of the shank.

Dimensions in mm.

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Table 4 - Mass

GRIP LENGTH CODE No.	MASS (g)							
	DIAMETER CODE No.							
	2	3	3A	4	5	6	7	8
02	0,63	0,96	1,89	1,86	3,17	4,98	-	-
03	0,72	1,09	2,05	2,08	3,51	5,49	-	-
04	0,81	1,22	2,22	2,30	3,86	5,98	9,50	10,10
05	0,89	1,34	2,39	2,52	4,20	6,48	10,17	10,77
06	0,98	1,47	2,56	2,74	4,54	6,98	10,84	11,45
07	1,07	1,60	2,73	2,96	4,88	7,48	11,52	12,12
08	1,16	1,72	2,90	3,18	5,23	7,98	12,19	12,79
09	1,25	1,85	3,07	3,40	5,57	8,48	12,86	13,46
10	1,33	1,97	3,24	3,62	5,91	8,98	13,53	14,13
11	1,42	2,10	3,41	3,84	6,26	9,48	14,21	14,81
12	1,51	2,23	3,57	4,06	6,60	9,97	14,88	15,48
13	1,60	2,35	3,74	4,28	6,95	10,47	15,54	16,15
14	1,69	2,48	3,91	4,50	7,29	10,97	16,22	16,82
15	1,78	2,61	4,08	4,72	7,63	11,47	16,90	17,50
16	1,86	2,74	4,25	4,94	7,98	11,97	17,56	18,17
17	1,95	2,87	4,42	5,16	8,32	12,47	18,23	18,73
18	2,04	3,00	4,59	5,38	8,67	12,97	18,91	19,51
19	2,13	3,13	4,76	5,60	9,01	13,47	19,59	20,19
20	2,21	3,26	4,93	5,82	9,35	13,97	20,25	20,85
21	2,30	3,39	5,09	6,04	9,70	14,47	20,92	21,52
22	2,39	3,52	5,26	6,26	10,04	14,97	21,60	22,20
23	2,48	3,65	5,43	6,48	10,39	15,46	22,27	22,88
24	2,57	3,78	5,60	6,70	10,73	15,96	22,94	23,54
25	2,65	3,91	5,77	6,92	11,08	16,46	23,61	24,21
26	2,74	4,04	5,94	7,14	11,42	16,96	24,29	24,89
27	2,83	4,17	6,11	7,36	11,77	17,46	25,18	25,56
28	2,92	4,30	6,28	7,58	12,11	17,96	25,63	26,23
29	3,01	4,43	6,45	7,80	12,46	18,46	26,30	26,90
30	3,09	4,56	6,61	8,02	12,80	18,96	26,97	27,58
31	3,18	4,69	6,78	8,24	13,15	19,46	27,65	28,25
32	3,27	4,82	6,95	8,46	13,49	19,96	28,32	28,92

Table 5 - Materials, finishes, lubrications

MATERIAL	FINISH	LUBRICATION
Titanium alloy 6AL-4V as per AMS4967 Rc = 655 MPa	IVD as per EN6118	Cetyl alcohol as per EN6117

Table 6 - Mechanical characteristics

DIAMETER CODE No.	NOMINAL Ø	DOUBLE SHEAR STRENGTH Min. (daN)	TENSILE STRENGTH WITH BUSH ASNA2025 Min. (daN)
2	4,166	1 783	622
3	4,826	2 393	711
3A	5,555	3 202	1 000
4	6,350	4 136	1 334
5	7,925	6 494	2 224
6	9,525	9 341	3 113
7	11,113	12 722	4 226
8	12,700	16 592	5 560

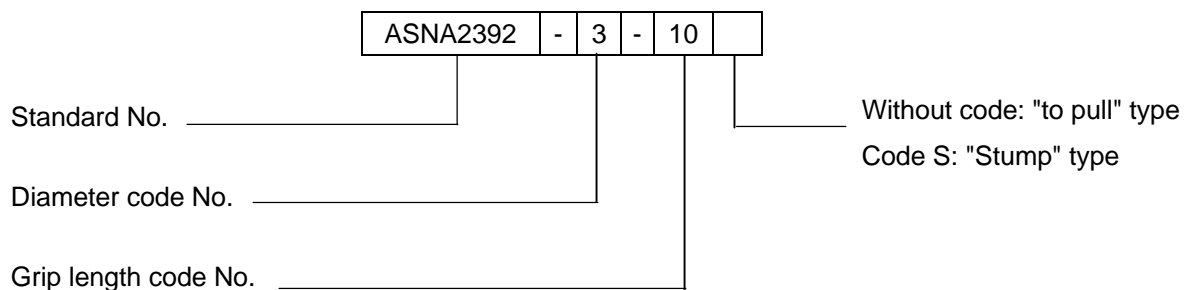
Dimensions in mm.

5 - DESIGNATION

Example of part number identification to be used on drawing schedules:

ASNA2392-3-10 , Rivet

Example of part number construction:



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6 - MARKING

Parts shall be marked as per EN2424, category G.

Manufacturer's reference marking on head (recessed of 0,254 mm max.).

7 - TECHNICAL SPECIFICATION

As per manufacturer's specification C2010 and I.C.T. No. 67.

8 - MANUFACTURERS

Refer to the list of qualified manufacturers and products.

AMENDMENT RECORD SHEET

Issue	Modified paragraph	Modification summary	Justification
A.06.87 B.11.87 C.12.87		New standard. Masses modified. 3Y modified for grip length code No. 29: 50,13 mm changed to 49,88 mm. Masses modified. Manufacturer's specification I.C.T. No. 67 added in technical specification.	A 320 Mod. 9999 In accordance with manufacturer's documentation
D.10.88		Diameter code No. 6 added.	BAe request - A 340 B36/COM/21335/DM
E.01.89 F.03.90 G.03.99		Type "S" added. Type "S" added on drawing schedules. Standard fully amended. Diameter code No. 2 (4,166 mm), 7 (11,113 mm) and 8 (12,700 mm) added.	A 340 A 340 A 340-500/600
H.02.01		Dimension modified in table 2 for grip length code No. 10/diameter code No. 6: 22,70 mm changed to 24,03 mm.	In accordance with manufacturer documentation
J.11.02 K.02.03		Diameter code No. 3A added. Dimensions modified for diameter code No 3A in table 1 (Ø A, NL and Ø ND). Table 3 added for "stump" type.	A 380 A 380
L.06.07		"Grip length" is called "X". In table 1, values of dimensions "Ø A", "Ø B" and "R" modified. In figure tolerance of angle added. Unit "µm" added for surface roughness in § 4.4. Dimensions "Q" and angle 45° added in table 1 and figure. "Admissible tightening torque" changed to "Admissible tightening length" in table 2. In table 2, values of dimensions "Z" modified. In table 4, masses of for diameter code 3A added.	In accordance with manufacturer documentation

NOTE: Modification to the last standard issue are indicated by a vertical line in the margin.