Aerospace series
Pin Protruding Head
Tension, Swaged

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Published and distributed by:
AIRBUS S.A.S.
ENGINEERING DIRECTORATE
31707 BLAGNAC Cedex
FRANCE

Contents

1 Scope

This standard specifies the required characteristics of a Protruding Head, swaged type tension pin.

2 Normative references

This Airbus Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this Airbus Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

ABS0270	Collar Tension Type, Aluminium Alloy
ABS0644	Collar, Flanged Tension Type Aluminium Alloy
ABS 0777	General technical specification for standard part
AMS4967	Titanium Alloy Bars wire forging
AMS2488	Anodic Treatment
ANSI B46.1	Surface Texture
A/DET 0012	Process Specification
A/DET0013	Specification for lubrication of bolts with Cetyl Alcohol
C2011	Huck product specification
EN 2000	Aerospace series – Quality assurance EN aerospace products – Approval of the quality system of manufacturers
EN 2424	Aerospace series - Marking of aerospace products
ISO 2768-1	General tolerances
NAS4006	Aluminium Coating
6AL–4V	Titanium Alloy

3 Requirements

3.1 Configuration, dimensions, tolerances and mass

3.1.1 The configuration, dimensions, tolerances and mass shall conform with figure 1 and tables 2, 3, 4 & 5 Tolerances not specified, shall be in accordance with ISO2768-1.

3.1.2 Concentricity of conical surface of the protruding head to diameter “A” to be within 5% of diameter “A” TIR.

3.1.3 Shank straightness to be within “S” values TIR per inch of shank length.

3.1.4 To determine the grip length numbers divide the dimensional thickness of the parts being joined by 0.0625 inch (1,58mm).

3.1.5 Recommended collars ABS0270 and ABS0644.

3.1.6 Surface texture per ANSI B46.1

Bearing surface, head to shank radius, shank and lead in radious $\sqrt{32}$ 0,8 .Other surfaces $\sqrt{125}$ 3,2

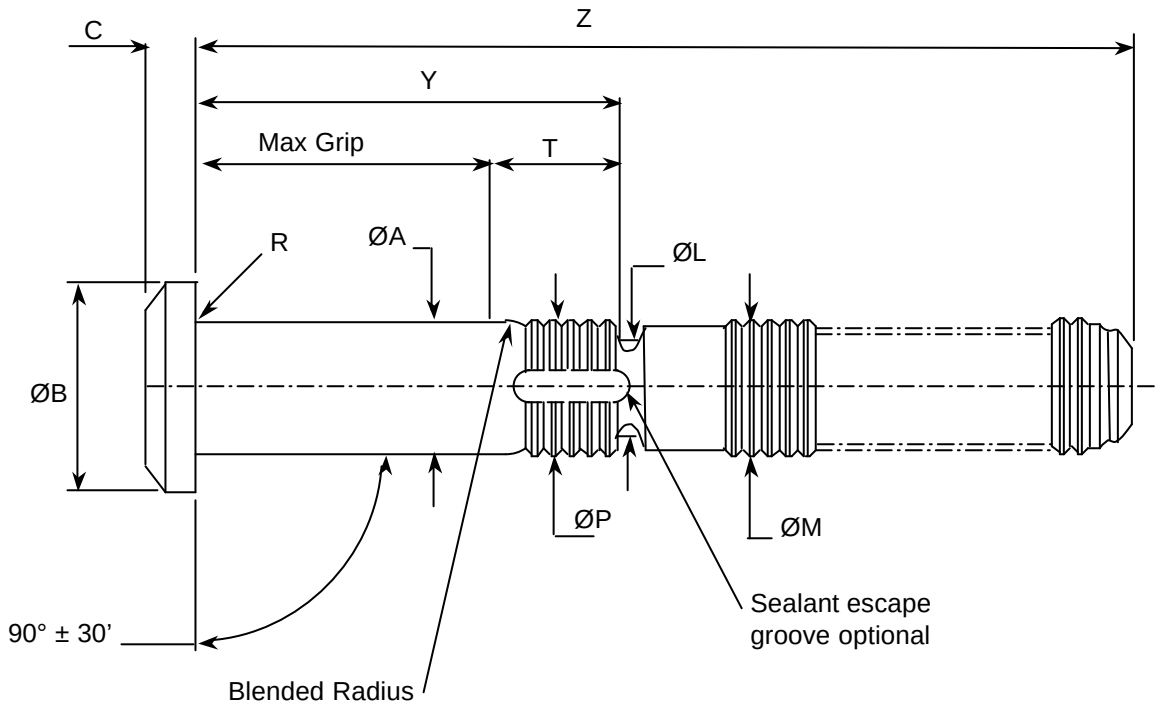
3.2 Material and surface treatment

Table 1 Material and surface treatment

Material	Surface treatment	Code
6AL–4V Titanium Alloy per AMS4967	Aluminium coating Per NAS4006	“–”
	Anodize per AMS2488 Plus Cetyl Alcohol	“A”
	ION Vapor Deposite Per A/DET 0012 Plus Cetyl Alcohol Per A/DET 0013	“V”

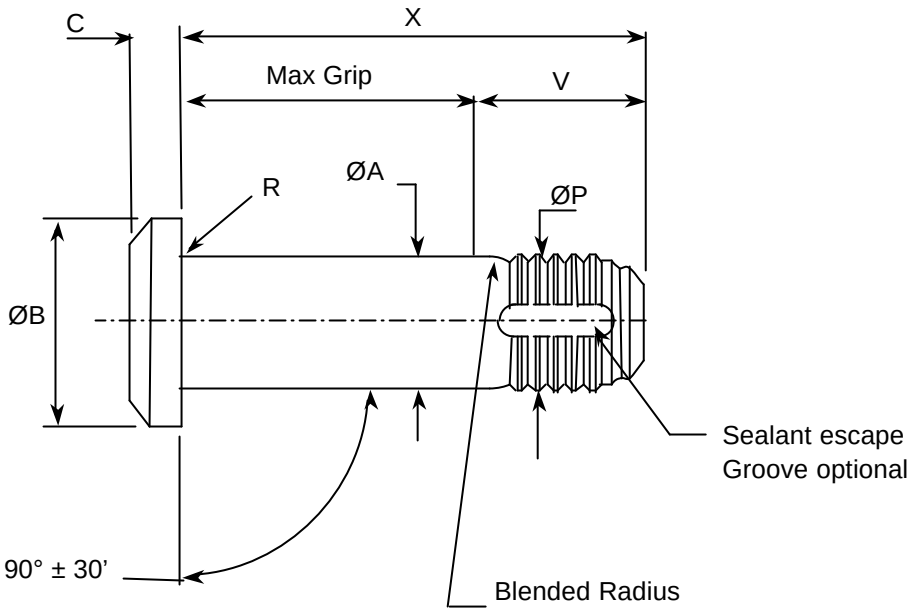
3.2.1 Minimum shear strength 655 MPa

3.2.2 Lubrication: Cetyl Alcohol Lube (Chlorine free)



Pull Type

For installation with nose assembly tool



Stump Type

For installation with automatic tool
(Type “S”) see example of part number

Figure 1 Configuration

Table 2 Dimensions and Tolerance Dimensions in inch (mm)

Diameter Code Number	Nominal Ø	ØA	ØB Theoric	C	ØL Ref	ØM Max
05	0.164 (4,2)	0.1635 0.1625 (4,152) (4,128)	0.332 0.306 (8,43) (7,78)	0.065 0.055 (1,65) (1,40)	0.136 (3,45)	0.156 (3,96)
06	0.190 (4,8)	0.1895 0.1885 (4,813) (4,788)	0.377 0.357 (9,57) (9,07)	0.074 0.064 (1,87) (1,63)	0.164 (4,17)	0.184 (4,67)
07	0.2187 (5,6)	0.2182 0.2172 (5,542) (5,516)	0.410 0.390 (10,41) (9,90)	0.085 0.075 (2,16) (1,90)	0.173 (4,39)	0.213 (5,41)
08	0.250 (6,4)	0.2495 0.2485 (6,337) (6,312)	0.440 0.415 (11,17) (10,54)	0.090 0.080 (2,28) (2,04)	0.224 (5,69)	0.244 (6,19)
10	0.312 (7,9)	0.3120 0.3110 (7,924) (7,900)	0.502 0.472 (12,75) (11,99)	0.112 0.102 (2,84) (2,59)	0.268 (6,81)	0.306 (7,77)
12	0.375 (9,5)	0.3745 0.3735 (9,512) (9,487)	0.565 0.530 (14,35) (13,46)	0.140 0.130 (3,55) (3,30)	0.339 (8,61)	0.368 (9,35)

Table 2 (concluded)

Diameter Code Number	Nominal Ø	ØP Max	R Rad	S	T Ref	V Ref
05	0.164 (4,2)	0.156 (3,96)	0.025 0.015 (0,63) (0,38)	0.0045 (0,114)	0.254 (6,45)	0.254 (6,45)
06	0.190 (4,8)	0.184 (4,67)			0.291 (7,39)	0.303 (7,70)
07	0.2187 (5,6)	0.213 5,41			0.370 (9,40)	0.390 (9,90)
08	0.250 (6,4)	0.244 (6,19)				
10	0.312 (7,9)	0.306 (7,77)	0.030 0.020 (0,76) (0,51)		0.472 (11,99)	0.496 (12,60)
12	0.375 (9,5)	0.370 (9,40)		0.0060 (0,152)	0.523 (13,28)	0.562 (14,27)

Table 3 Grip Range

Grip Length Code	Minimum Permissible Grip Overlap		Design Grip Range				Maximum Permissible Grip Overlap	
			inch		mm			
	inch	mm	Min	Max	Min	Max	inch	mm
02	0.047	1,19	0.063	0.125	1,61	3,17	0.141	3,58
03	0.109	2,77	0.126	0.188	3,21	4,77	0.203	5,16
04	0.172	4,37	0.189	0.250	4,81	6,35	0.266	6,76
05	0.234	5,94	0.251	0.312	6,38	7,92	0.328	8,33
06	0.297	7,54	0.313	0.375	7,96	9,52	0.391	9,93
07	0.359	9,12	0.376	0.438	9,56	11,12	0.453	11,51
08	0.422	10,72	0.439	0.500	11,16	12,70	0.516	13,11
09	0.484	12,29	0.501	0.562	12,73	14,27	0.578	14,68
10	0.547	13,89	0.563	0.625	14,31	15,87	0.641	16,28
11	0.609	15,47	0.626	0.688	15,91	17,47	0.703	17,86
12	0.672	17,07	0.689	0.750	17,51	19,05	0.766	19,46
13	0.734	18,64	0.751	0.812	19,08	20,62	0.828	21,03
14	0.797	20,24	0.813	0.875	20,66	22,22	0.891	22,63
15	0.859	21,82	0.876	0.938	22,26	23,82	0.953	24,21
16	0.922	23,42	0.939	1.000	23,86	25,40	1.016	25,81
17	0.984	24,99	1.001	1.062	25,43	26,97	1.078	27,38
18	1.047	26,59	1.063	1.125	27,01	28,57	1.141	28,98
19	1.109	28,17	1.126	1.188	28,61	30,17	1.203	30,56
20	1.172	29,77	1.189	1.250	30,21	31,75	1.266	32,16
21	1.234	31,34	1.251	1.312	31,78	33,32	1.328	33,73
22	1.297	32,94	1.313	1.375	33,36	34,92	1.391	35,33
23	1.359	34,52	1.376	1.438	34,96	36,52	1.453	36,91
24	1.422	36,12	1.439	1.500	36,56	38,10	1.516	38,51
25	1.484	37,69	1.501	1.562	38,13	39,67	1.578	40,08
26	1.547	39,29	1.563	1.625	39,71	41,27	1.641	41,68
27	1.609	40,87	1.626	1.688	41,31	42,87	1.703	43,26
28	1.672	42,47	1.689	1.750	42,91	44,45	1.766	44,86
29	1.734	44,04	1.751	1.812	44,48	46,02	1.828	46,43
30	1.797	45,64	1.813	1.875	46,06	47,62	1.891	48,03
31	1.859	47,22	1.876	1.938	47,66	49,22	1.953	49,61
32	1.922	48,82	1.939	2.000	49,26	50,80	2.016	51,21

Table 4 Grip Lengths

Grip Length Code	Diameter Code Number 05						
	X		Y		Z		Weight Kg/1000 Parts
	± 0.010 inch	± 0,25 mm	± 0.010 inch	± 0,25 inch	+ 0.060 - 0.000 inch	+1,50 - 0,00 mm	
02	0.379	9,63	0.379	9,63	1.250	31,80	0,76
03	0.442	11,23	0.442	11,23	1.310	33,30	0,85
04	0.504	12,80	0.504	12,80	1.380	35,10	0,95
05	0.566	14,38	0.566	14,38	1.440	36,60	1,04
06	0.629	15,98	0.629	15,98	1.500	38,10	1,14
07	0.692	17,58	0.692	17,58	1.560	39,60	1,23
08	0.754	19,15	0.754	19,15	1.630	41,40	1,32
09	0.816	20,73	0.816	20,73	1.690	42,90	1,42
10	0.879	22,33	0.879	22,33	1.750	44,40	1,51
11	0.942	23,93	0.942	23,93	1.820	46,20	1,61
12	1.004	25,50	1.004	25,50	1.880	47,80	1,69
13	1.066	27,08	1.066	27,08	1.940	49,30	1,79
14	1.129	28,68	1.129	28,68	2.000	50,80	1,89
15	1.191	30,25	1.191	30,25	2.070	52,60	1,98
16	1.254	31,85	1.254	31,85	2.130	54,10	2,08
17	1.316	33,43	1.316	33,43	2.190	55,60	2,17
18	1.379	35,03	1.379	35,03	2.250	57,20	2,26
19	1.442	36,63	1.442	36,63	2.310	58,70	2,36
20	1.504	38,20	1.504	38,20	2.380	60,50	2,45
21	1.566	39,78	1.566	39,78	2.440	62,00	2,55
22	1.629	41,38	1.629	41,38	2.500	63,50	2,64
23	1.692	42,98	1.692	42,98	2.560	65,00	2,74
24	1.754	44,55	1.754	44,55	2.630	66,80	2,83
25	1.816	46,13	1.816	46,13	2.690	68,30	2,92
26	1.879	47,73	1.879	47,73	2.750	69,90	3,02
27	1.942	49,33	1.942	49,33	2.820	71,60	3,11
28	2.004	50,90	2.004	50,90	2.880	73,20	3,21
29	2.066	52,48	2.066	52,48	2.940	74,70	3,30
30	2.129	54,08	2.129	54,08	3.000	76,20	3,39
31	2.191	55,65	2.191	55,65	3.070	78,00	3,49
32	2.254	57,25	2.254	57,25	3.130	79,50	3,58

Table 4 Grip Lengths (continued)

Grip Length Code	Diameter Code Number 06						
	X		Y		Z		Weight Kg/1000 Parts
	± 0.010 inch	± 0,25 mm	± 0.010 inch	± 0,25 mm	+ 0.060 - 0.000 inch	+1,50 - 0,00 mm	
02	0.428	10,87	0.416	10,57	1.160	29,50	1,14
03	0.491	12,47	0.479	12,17	1.220	31,00	1,26
04	0.553	14,05	0.541	13,74	1.290	32,80	1,39
05	0.615	15,62	0.603	15,32	1.350	34,30	1,52
06	0.678	17,22	0.666	16,92	1.410	35,80	1,65
07	0.741	18,82	0.729	18,52	1.470	37,30	1,77
08	0.803	20,40	0.791	20,09	1.540	39,10	1,90
09	0.865	21,97	0.853	21,67	1.600	40,60	2,03
10	0.928	23,57	0.916	23,27	1.660	42,20	2,15
11	0.991	25,17	0.979	24,87	1.730	43,90	2,28
12	1.053	26,75	1.041	26,44	1.790	45,50	2,41
13	1.115	28,32	1.103	28,02	1.850	47,00	2,53
14	1.178	29,92	1.166	29,62	1.910	48,50	2,66
15	1.241	31,52	1.229	32,22	1.980	50,30	2,79
16	1.303	33,10	1.291	32,79	2.040	51,80	2,92
17	1.365	34,67	1.353	34,37	2.100	53,30	3,04
18	1.428	36,27	1.416	35,97	2.160	54,90	3,17
19	1.491	37,87	1.479	37,57	2.220	56,40	3,20
20	1.553	39,45	1.541	39,14	2.290	58,20	3,42
21	1.615	41,02	1.603	40,72	2.350	59,70	3,55
22	1.678	42,62	1.666	42,32	2.410	61,20	3,68
23	1.741	44,22	1.729	43,92	2.470	62,70	3,80
24	1.803	45,80	1.791	45,49	2.540	64,50	3,93
25	1.865	47,37	1.853	47,07	2.600	66,00	4,06
26	1.928	48,97	1.916	48,67	2.660	67,60	4,19
27	1.991	50,57	1.979	50,27	2.730	69,30	4,31
28	2.053	52,15	2.041	51,84	2.790	70,90	4,44
29	2.115	53,72	2.103	53,42	2.850	72,40	4,57
30	2.178	55,32	2.166	55,02	2.910	73,90	4,69
31	2.241	56,92	2.229	56,62	2.980	75,70	4,82
32	2.303	58,50	2.291	58,19	3.040	77,20	4,95

Table 4 Grip Lengths (continued)

Grip Length Code	Diameter Code Number 07 & 08						
	X		Y		Z		Weight Kg/1000 Parts
	± 0.010 inch	± 0,25 mm	± 0.010 inch	± 0,25 mm	+ 0.060 - 0.000 inch	+1,50 - 0,00 mm	
02	–	–	–	–	–	–	–
03	0.578	14,68	0.558	14,17	1.400	35,60	2,45
04	0.640	16,26	0.620	15,75	1.460	37,10	2,67
05	0.702	17,83	0.682	17,32	1.520	38,60	2,89
06	0.765	19,43	0.745	18,92	1.590	40,40	3,11
07	0.828	21,03	0.808	20,52	1.650	41,90	3,33
08	0.890	22,61	0.870	22,10	1.710	43,40	3,55
09	0.952	24,18	0.932	23,67	1.770	45,00	3,77
10	1.015	25,78	0.995	25,27	1.840	46,70	3,99
11	1.078	27,38	1.058	26,87	1.900	48,30	4,21
12	1.140	28,96	1.120	28,45	1.960	49,80	4,43
13	1.202	30,53	1.182	30,02	2.020	51,30	4,65
14	1.265	32,13	1.245	31,62	2.090	53,10	4,87
15	1.328	33,73	1.308	33,22	2.150	54,60	5,69
16	1.390	35,31	1.370	34,80	2.210	56,10	5,31
17	1.452	36,88	1.432	36,73	2.270	57,70	5,53
18	1.515	38,48	1.495	37,97	2.340	59,40	5,75
19	1.578	40,08	1.558	39,57	2.400	61,00	5,97
20	1.640	41,66	1.620	41,15	2.460	62,50	6,19
21	1.702	43,23	1.682	42,72	2.520	64,00	6,41
22	1.765	44,83	1.745	44,32	2.590	65,80	6,63
23	1.828	46,43	1.808	45,92	2.650	67,30	6,84
24	1.890	48,00	1.870	47,50	2.710	68,80	7,07
25	1.952	49,58	1.932	49,07	2.770	70,40	7,29
26	2.015	51,18	1.995	50,67	2.840	72,10	7,51
27	2.078	52,78	2.058	52,27	2.900	73,70	7,73
28	2.140	54,36	2.120	53,85	2.960	75,20	7,95
29	2.202	55,93	2.182	55,42	3.020	76,70	8,17
30	2.265	57,53	2.245	57,02	3.090	78,50	8,39
31	2.328	59,13	2.308	58,62	3.150	80,00	8,61
32	2.390	60,71	2.370	60,20	3.210	81,50	8,83

Table 4 Grip Lengths (continued)

Grip Length Code	Diameter Code Number 10						
	X		Y		Z		Weight Kg/1000 Parts
	± 0.010 inch	± 0,25 mm	± 0.010 inch	± 0,25 mm	+ 0.060 - 0.000 inch	+1,50 - 0,00 mm	
02	–	–	–	–	–	–	–
03	0.684	17,37	0.660	16,76	1.620	41,10	4,62
04	0.746	18,95	0.722	18,34	1.680	42,70	4,96
05	0.808	20,52	0.784	19,91	1.750	44,50	5,31
06	0.871	22,12	0.847	21,51	1.810	46,00	5,65
07	0.934	23,72	0.910	23,11	1.870	47,50	6,00
08	0.996	25,30	0.972	24,69	1.930	49,00	6,34
09	1.058	26,87	1.034	26,26	2.000	50,80	6,69
10	1.121	28,47	1.097	27,86	2.060	52,30	7,03
11	1.184	30,07	1.160	29,46	2.120	53,80	7,38
12	1.246	31,65	1.222	31,04	2.180	55,40	7,72
13	1.308	33,22	1.284	32,61	2.250	57,20	8,07
14	1.371	34,82	1.347	34,21	2.310	58,70	8,41
15	1.434	36,42	1.410	35,81	2.370	60,20	8,76
16	1.496	38,00	1.472	37,39	2.430	61,70	9,10
17	1.558	39,57	1.534	38,96	2.500	63,50	9,45
18	1.621	41,17	1.597	40,56	2.560	65,00	9,79
19	1.684	42,77	1.660	42,16	2.620	66,50	10,14
20	1.746	44,35	1.722	43,74	2.680	68,10	10,48
21	1.808	45,92	1.784	45,31	2.750	69,80	10,83
22	1.871	47,52	1.847	46,91	2.810	71,40	11,17
23	1.934	49,12	1.910	48,51	2.870	72,90	11,52
24	1.996	50,70	1.972	50,09	2.930	74,40	11,86
25	2.058	52,27	2.034	51,66	3.000	76,20	12,21
26	2.121	53,87	2.097	53,26	3.060	77,70	12,55
27	2.184	55,47	2.160	54,86	3.120	79,20	12,90
28	2.246	57,05	2.222	56,44	3.180	80,80	13,24
29	2.308	58,62	2.284	58,01	3.250	82,60	13,59
30	2.371	60,22	2.347	59,61	3.310	84,10	13,93
31	2.434	61,82	2.410	61,21	3.370	85,60	14,28
32	2.496	63,40	2.472	62,79	3.430	87,10	14,62

Table 4 Grip Lengths (concluded)

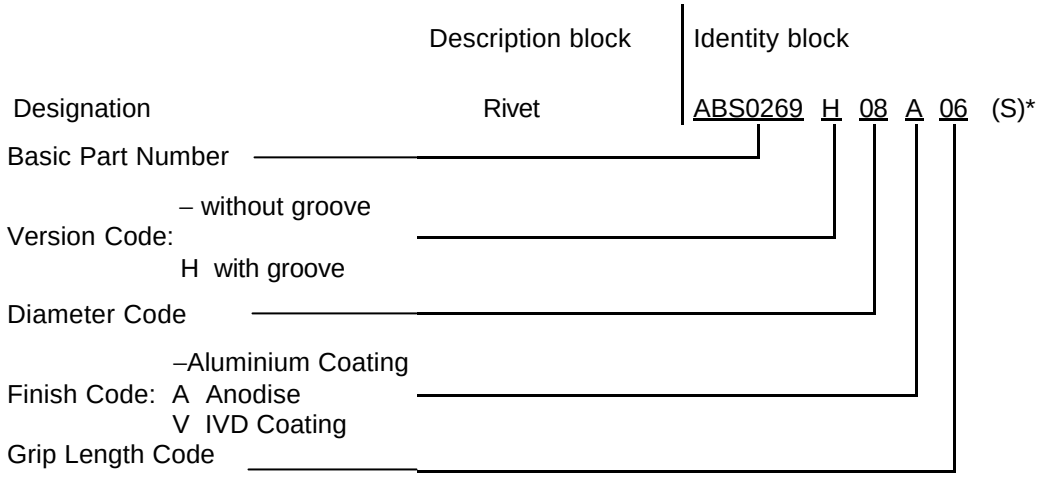
Grip Length Code	Diameter Code Number 12						
	X		Y		Z		Weight Kg/1000 Parts
	± 0.010 inch	± 0,25 mm	± 0.010 inch	± 0,25 mm	+ 0.060 - 0.000 inch	+1,50 - 0,00 mm	
02	–	–	–	–	–	–	–
03	–	–	–	–	–	–	–
04	0.812	20,62	0.733	18,62	1.890	48,00	7,73
05	0.874	22,20	0.835	21,21	1.950	49,50	8,22
06	0.937	23,80	0.898	22,81	2.010	51,00	8,72
07	1.000	25,40	0.961	24,41	2.080	52,80	9,22
08	1.062	26,97	1.023	25,98	2.140	54,40	9,72
09	1.124	28,55	1.085	27,56	2.200	55,90	10,22
10	1.187	30,15	1.148	29,16	2.270	57,60	10,72
11	1.250	31,75	1.211	30,76	2.330	59,20	11,21
12	1.312	33,32	1.273	32,33	2.400	61,00	11,71
13	1.374	34,90	1.335	33,91	2.480	63,00	12,21
14	1.437	36,50	1.398	35,51	2.520	64,00	12,71
15	1.500	38,10	1.461	37,11	2.580	65,50	13,20
16	1.562	39,67	1.523	38,68	2.650	67,30	13,70
17	1.624	41,25	1.585	40,26	2.710	68,80	14,20
18	1.687	42,85	1.648	42,77	2.770	70,40	14,70
19	1.750	44,45	1.711	43,46	2.830	71,90	15,20
20	1.812	46,02	1.773	45,03	2.890	73,40	15,70
21	1.874	47,60	1.836	46,63	2.950	74,90	16,19
22	1.937	49,20	1.898	48,21	3.010	76,40	16,69
23	2.000	50,80	1.961	49,81	3.080	78,20	17,19
24	2.062	52,37	2.023	51,38	3.140	79,80	17,69
25	2.124	53,95	2.085	52,96	3.200	81,30	18,18
26	2.187	55,55	2.148	54,56	3.270	83,00	18,68
27	2.250	57,15	2.211	56,16	3.330	84,60	19,18
28	2.312	58,72	2.273	57,73	3.400	86,40	19,68
29	2.374	60,30	2.335	59,31	3.460	87,90	20,18
30	2.437	61,90	2.398	60,91	3.520	89,40	20,68
31	2.500	63,50	2.461	62,51	3.580	90,90	21,17
32	2.562	65,07	2.523	64,08	3.650	92,70	21,67

Table 5 Mechanical Characteristics

Diameter Code Number	Double Shear KN Min	Ultimate Tensile KN
05	17,8	9,7
06	23,9	12,2
07	32,0	17,2
08	41,4	22,2
10	64,9	36,9
12	93,4	56,5

4 Designation

EXAMPLE:



* This letter “S” is reserved for the sole use of Procurement departments for ordering purpose.

5 Marking

5.1.1 EN 2424, style A

5.1.2 Manufacturer´s part marking: The manufacturers symbol, manufacturer´s es reference and material code are to be marked on the head by depressed characters 0.010 inch (0,25 mm) deep maximum.

6 Technical specification

C2011 (specification from the supplier).

RECORD OF REVISIONS

Issue	Clause modified	Description of modification
5 06/04		Diameter code “07” added. Rewritten in the new format