

Aerospace series**Pin – Tension protruding head for
Shear/tension composite applications,
Swage locking, 6Al-4V titanium (95 KSI shear)**

When this standard is applied, a careful check must be made as to whether any protective rights exist. This standard issuer hereby disclaims any liability for infringement of patent or design rights resulting from the use of this standard.

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

Contents

- 1 Scope
- 2 Normative references
- 3 Requirements
- 4 Designation
- 5 Marking
- 6 Technical specification

1 Scope

This standard specifies the dimensions, tolerances, required characteristics and the mass of a pin, tension protruding head for shear/tension composite applications, with a standard or long pintail, swage locking, 6Al-4V titanium (95 KSI shear).

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).

ISO 8080	Aerospace - Anodic treatment of titanium alloys - Sulfuric acid process.
EN 2424	Aerospace series - Marking of aerospace products. ¹
EN 4473	Aerospace series - Aluminium pigmented coatings - Technical specification. ¹
EN 6117	Aerospace series - Specification for lubrication of bolts with cetyl alcohol. ¹
EN 6118	Aerospace series - Process specification - Aluminium base protection for fasteners. ¹
ABS0999	Collar – Flanged, shear/tension type, composite applications, 3Al-2,5V titanium.
AMS 4967	Titanium alloy bars, wire, forgings and rings 6.0Al-4.0V annealed, heat treatable. ²
ANSI/ASME B46.1	Surface texture (surface roughness waviness and lay).
C2031	Manufacturer's specification.

3 Requirements

3.1 Configuration, dimensions, tolerances and mass

The configuration, dimensions, tolerances and mass shall conform with Figure 2, Table 3 to Table 5.

Concentricity : Bearing surface of protruding head to "A" diameter to be within 0.005 inch (0,127 mm) TIR.
Shank straightness : within "S" values TIR per inch of shank length.

Drill center dimple in top of head 0.035 inch (0,889 mm) max. dia., 0.010 inch (0,254 mm) max. depth and concentric to "A" within 0.008 inch (0,203 mm).

Surface texture : Ra max. as per ANSI/ASME B46.1 before coating, bearing surface of head.
Head to shank fillet radius, shank and transition radius, -32, other surfaces -125.

Mass: For example ABS0993V3-11 / head and grooves + (smooth part x Grip dash no.) =
0,79 gram + (0,13gram X 11) = 2,22

Dimensions are expressed in inch (millimeters).

Use of long pintails: The use of these configurations is restricted when used in composite with interference fit applications. The technical specialist for the standard shall be contacted for validation.

Values given in table 5 take into account the maximal overall dimensions due to the use of the long pin tail.

¹ Published as AECMA Standard at the date of publication of this standard

² Published by: Society of Automotive Engineers (SAE), 400 Commonwealth Drive, Warrendale, PA 15096-0001, USA

3.2 Material, finish and lubricant

Table 1 : Material, finish and lubricant

Material	Finish code	Finish	Lubricant
Titanium alloy 6Al-4V as per AMS 4967 (Min. shear strength : 95 KSI (655 MPa))	T	Sulfuric-acid anodizing (blue) as per ISO 8080	Cetyl alcohol as per EN 6117
	V	IVD as per EN 6118	
	K	Resin based aluminum as per EN 4473	

3.3 Mechanical characteristics

Table 2: Mechanical characteristics

Item code No.	Pin nom. size	Min. double Shear lbf (N)	Collar part number	Min. ultimate tensile with listed collar lbf (N)	Dimension in inch (mm)	
					Pin position swage gage	Pin-tail Min. tensile strength lbf (N)
2	0.164 (4,17)	3 993 (17 760)	ABS0999-2	1 700 (7 562)	HG162-05	1 350 (6 005)
3	0.190 (4,83)	5 373 (23 900)	ABS0999-3	2 400 (10 676)	HG162-06	2 000 (8 896)
3A	0.2187 (5,55)	7200 (32027)	ABS0999-3A	3 250 (14457)	HG162-07	2100 (9341)
4	0.250 (6,35)	9 292 (41 330)	ABS0999-4	4 500 (20 016)	HG162-08	3 250 (14 456)
5	0.313 (7,94)	14 586 (64 880)	ABS0999-5	6 850 (30 467)	HG162-10	5 225 (23 241)
6	0.375 (9,53)	20 980 (93 320)	ABS0999-6	10 200 (45 369)	HG162-12	7 050 (31 358)
7	0.438 (11,11)	28 575 (127 100)	ABS0999-7	13 100 (58 269)	HG162-14	9 400 (41 811)
8	0.500 (12,70)	37 266 (165 760)	ABS0999-8	18 000 (80 064)	HG162-16	11 500 (51 152)
9	0.563 (14,29)	47 201 (209 950)	ABS0999-9	22 500 (100 080)	HG162-18	13 640 (60 674)
10	0.625 (15,88)	58 303 (259 330)	ABS0999-10	29 200 (129 888)	HG162-20	21 230 (94 436)

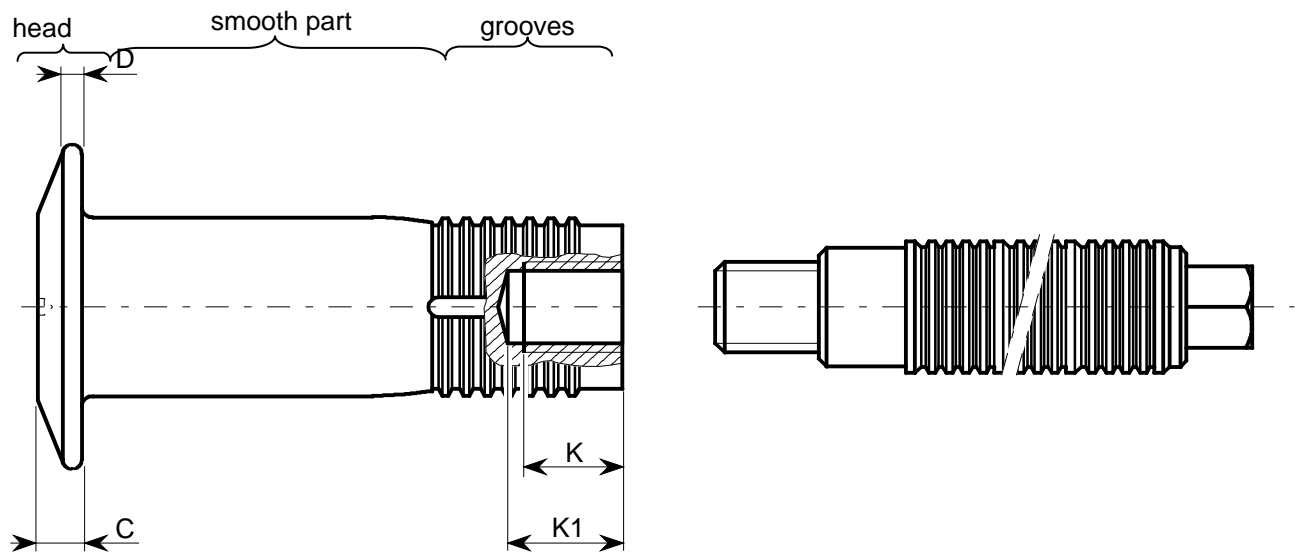


Figure 1 : Configuration and dimensions of style 1

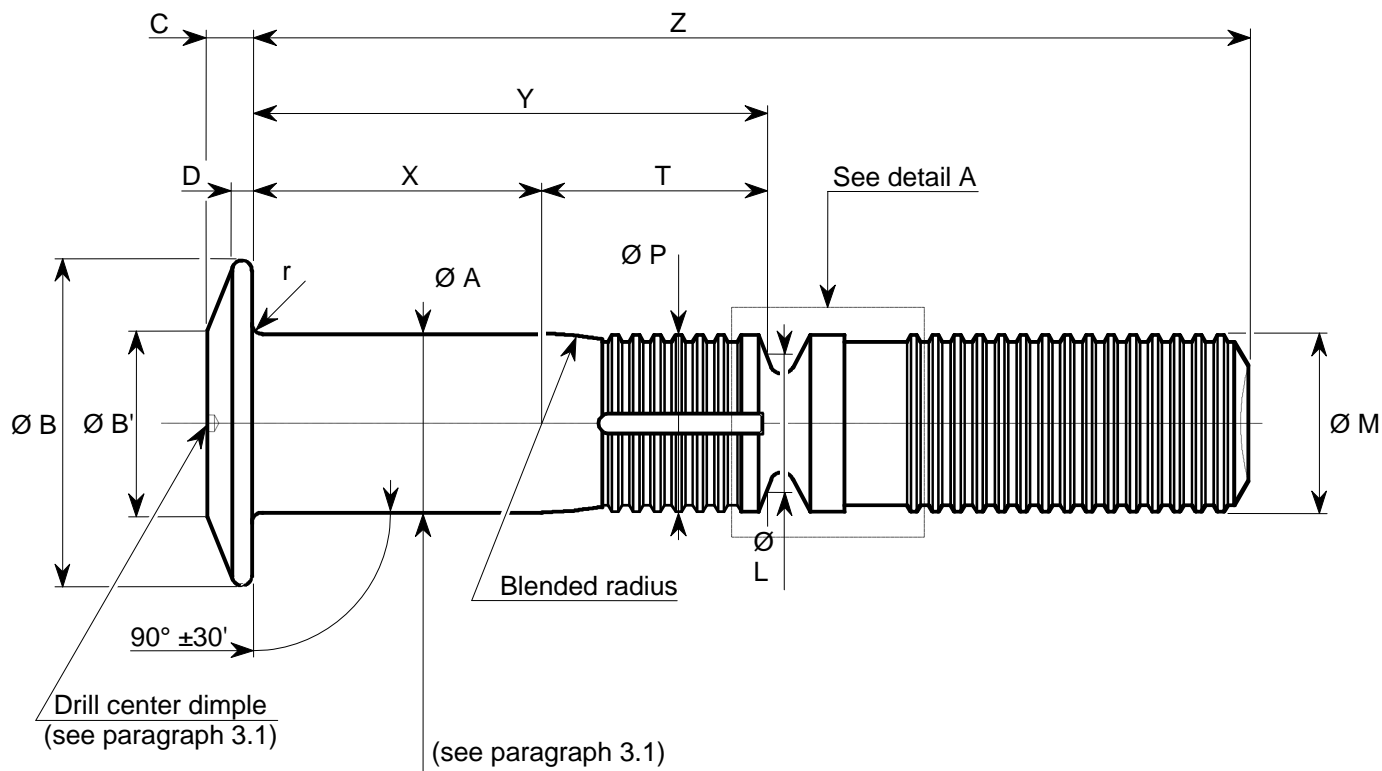


Figure 2 : Configuration and dimensions of style 2

Table 3: Dimensions, tolerances and mass

Dimension in inch (mm)

Item code No.	Style 1 and style 2							Style 1			Mass (g) ¹⁾	
	Nom. size	Ø A shank $+0.0005$ 0 $\left(\begin{array}{c} +0,013 \\ 0 \end{array} \right)$	Ø A shank coated ± 0.0005 ($\pm 0,013$)	Ø B head ± 0.010 ($\pm 0,25$)	Ø B' flat ± 0.010 ($\pm 0,25$)	C head height		Internal thread right hand			Head and grooves	Smooth part
						Max.	Min.	K thread depth max.	K1 drill depth max.	Thread type		
2	0.164 (4,17)	0.163 (4,14)	0.163 (4,14)	0.316 (8,03)	0.196 (4,98)	0.052 (1,32)	0.042 (1,07)	-	-	-	0,53	0,10
3	0.190 (4,83)	0.189 (4,80)	0.189 (4,80)	0.367 (9,32)	0.227 (5,77)	0.061 (1,55)	0.051 (1,30)	-	-	-	0,79	0,13
3A	0.2187 5,55	0.217 (5,51)	0.217 (5,51)	.400 10,16	.263 6,68	.074 1,88	.064 1,63	-	-	-	1,23	0,17
4	0.250 (6,35)	0.249 (6,32)	0.249 (6,32)	0.450 (11,43)	0.299 (7,59)	0.083 (2,11)	0.073 (1,85)	-	-	-	1,77	0,22
5	0.313 (7,94)	0.312 (7,91)	0.312 (7,91)	0.553 (14,05)	0.374 (9,50)	0.099 (2,51)	0.089 (2,26)	-	-	-	3,29	0,35
6	0.375 (9,53)	0.374 (9,50)	0.374 (9,50)	0.662 (16,81)	0.449 (11,40)	0.120 (3,05)	0.110 (2,79)	-	-	-	5,8	0,50
7	0.438 (11,11)	0.437 (11,09)	0.437 (11,09)	0.752 (19,10)	0.524 (13,31)	0.131 (3,33)	0.121 (3,07)	-	-	-	8,9	0,68
8	0.500 (12,70)	0.499 (12,67)	0.499 (12,67)	0.866 (22,00)	0.599 (15,21)	0.155 (3,94)	0.145 (3,68)	-	-	-	13,69	0,90
9	0.563 (14,29)	0.561 (14,25)	0.561 (14,25)	0.955 (24,26)	0.674 (17,12)	0.171 (4,34)	0.161 (4,09)	0.307 (7,798)	0.494 (12,55)	0.2875-18 UNS-3B	18,80	1,12
10	0.625 (15,88)	0.624 (15,84)	0.624 (15,84)	1.092 (27,74)	0.749 (19,02)	0.198 (5,03)	0.188 (4,78)	0.390 (9,906)	0.577 (14,66)	0.3125-18 UNS-3B	27,44	1,40

Dimension in inch (mm)

Item code No.	Style 2		Style 1 and style 2				
	Ø L Ref.	Ø M Max.	Ø P Max.	r ± 0.005 (± 0,13)	S ²⁾	T Ref.	D Ref.
2	0.124 (3,15)	0.156 (3,96)	0.156 (3,96)	0.020 (0,51)	0.0045 (0,11)	0.207 (5,26)	0.025 (0,64)
3	0.150 (3,81)	0.184 (4,67)	0.184 (4,67)	0.020 (0,51)	0.0045 (0,11)	0.201 (5,11)	0.030 (0,76)
3A	.175 (4,45)	.213 (5,41)	.213 (5,419)	.020 (0,51)	.0045 (0,11)	.245 (6,22)	.035 (0,89)
4	0.215 (5,46)	0.244 (6,20)	0.244 (6,20)	0.020 (0,51)	0.0045 (0,11)	0.300 (7,62)	0.040 (1,02)
5	0.265 (6,73)	0.306 (7,77)	0.306 (7,77)	0.025 (0,64)	0.0045 (0,11)	0.369 (9,37)	0.045 (1,14)
6	0.315 (8,00)	0.370 (9,40)	0.370 (9,40)	0.025 (0,64)	0.0060 (0,15)	0.441 (11,20)	0.060 (1,52)
7	0.370 (9,40)	0.431 (10,95)	0.431 (10,95)	0.025 (0,64)	0.0060 (0,15)	0.531 (13,49)	0.065 (1,65)
8	0.405 (10,29)	0.492 (12,50)	0.492 (12,50)	0.025 (0,64)	0.0060 (0,15)	0.623 (15,82)	0.075 (1,91)
9	-	-	0.555 (14,10)	0.035 (0,89)	0.0060 (0,15)	0.811 (20,60)	0.085 (2,16)
10	-	-	0.618 (15,70)	0.035 (0,89)	0.0080 (0,20)	0.984 (24,99)	0.095 (2,41)

1) Mass: For example: ABS0993V3-11
head and grooves + (smooth part x Grip dash no.) =
0,79 gram + (0,13gram X 11) = 2,22

2) See paragraph 3.1.

Table 4: Grip dimensions and tolerances (standard pintail)

Dimension in inch (mm)

Grip dash No.	Permissible grip overlap		Design grip range		X	2		3	
	Min.	Max.	Min.	Max.	± 0.005 ($\pm 0,13$)	Y ± 0.005 ($\pm 0,13$)	Z $+0.060$ 0 ($+1,52$) 0	Y ± 0.005 ($\pm 0,13$)	Z $+0.060$ 0 ($+1,52$) 0
03	0.058 (1,47)	0.192 (4,88)	0.062 (1,57)	0.188 (4,78)	0.188 (4,78)	0.395 (10,03)	1.015 (25,78)	0.389 (9,88)	1.043 (26,49)
05	0.182 (4,62)	0.316 (8,03)	0.188 (4,78)	0.312 (7,92)	0.312 (7,92)	0.519 (13,18)	1.139 (28,93)	0.513 (13,03)	1.167 (29,64)
07	0.308 (7,82)	0.442 (11,23)	0.312 (7,92)	0.438 (11,13)	0.438 (11,13)	0.645 (16,38)	1.265 (32,13)	0.639 (16,23)	1.293 (32,84)
09	0.432 (10,97)	0.566 (14,38)	0.438 (11,13)	0.562 (14,27)	0.562 (14,27)	0.769 (19,53)	1.389 (35,28)	0.763 (19,38)	1.417 (35,99)
11	0.558 (14,17)	0.692 (17,58)	0.562 (14,27)	0.688 (17,48)	0.688 (17,48)	0.895 (22,73)	1.515 (38,48)	0.889 (22,58)	1.543 (39,19)
13	0.682 (17,32)	0.816 (20,73)	0.686 (17,42)	0.812 (20,62)	0.812 (20,62)	1.019 (25,88)	1.639 (41,63)	1.013 (25,73)	1.667 (42,34)
15	0.808 (20,52)	0.942 (23,93)	0.812 (20,62)	0.938 (23,83)	0.938 (23,83)	1.145 (29,08)	1.765 (44,83)	1.139 (28,93)	1.793 (45,54)
17	0.932 (23,67)	1.066 (27,08)	0.938 (23,83)	1.062 (26,97)	1.062 (26,97)	1.269 (32,23)	1.889 (47,98)	1.263 (32,08)	1.917 (48,69)
19	1.058 (26,87)	1.192 (30,28)	1.062 (26,97)	1.188 (30,18)	1.188 (30,18)	1.395 (35,43)	2.015 (51,18)	1.389 (35,28)	2.043 (51,89)
21	1.182 (30,02)	1.316 (33,43)	1.188 (30,18)	1.312 (33,32)	1.312 (33,32)	1.519 (38,58)	2.139 (54,33)	1.513 (38,43)	2.167 (55,04)
23	1.308 (33,22)	1.442 (36,63)	1.312 (33,32)	1.438 (36,53)	1.438 (36,53)	1.645 (41,78)	2.265 (57,53)	1.639 (41,63)	2.293 (58,24)
25	1.432 (36,37)	1.566 (39,78)	1.436 (36,47)	1.562 (39,67)	1.562 (39,67)	1.769 (44,93)	2.389 (60,68)	1.763 (44,78)	2.417 (61,39)
27	1.558 (39,57)	1.692 (42,98)	1.562 (39,67)	1.688 (42,88)	1.688 (42,88)	1.895 (48,13)	2.515 (63,88)	1.889 (47,98)	2.543 (64,59)
29	1.682 (42,72)	1.816 (46,13)	1.686 (42,82)	1.812 (46,02)	1.812 (46,02)	2.019 (51,28)	2.639 (67,03)	2.013 (51,13)	2.667 (67,74)
31	1.808 (45,92)	1.942 (49,33)	1.812 (46,02)	1.938 (49,23)	1.938 (49,23)	2.145 (54,48)	2.765 (70,23)	2.139 (54,33)	2.793 (70,94)
33	1.932 (49,07)	2.066 (52,48)	1.936 (49,17)	2.062 (52,37)	2.062 (52,37)	2.269 (57,63)	2.889 (73,38)	2.263 (57,48)	2.917 (74,09)
35	2.058 (52,27)	2.192 (55,68)	2.062 (52,37)	2.188 (55,58)	2.188 (55,58)	2.395 (60,83)	3.015 (76,58)	2.389 (60,68)	3.043 (77,29)
37	2.182 (55,42)	2.316 (58,83)	2.186 (55,52)	2.312 (58,72)	2.312 (58,72)	-	-	-	-
39	2.308 (58,62)	2.442 (62,03)	2.312 (58,72)	2.438 (61,93)	2.438 (61,93)	-	-	-	-
41	2.432 (61,77)	2.566 (65,18)	2.436 (61,87)	2.562 (65,07)	2.562 (65,07)	-	-	-	-

Table 4: Grip dimensions and tolerances (standard pintail) Continued

Dimension in inch (mm)

Grip dash No.	Permissible grip overlap		Design grip range		X	3A		4	
	Min.	Max.	Min.	Max.	± 0.005 ($\pm 0,13$)	Y ± 0.005 ($\pm 0,13$)	Z $+0.060$ 0 ($+1,52$) 0	Y ± 0.005 ($\pm 0,13$)	Z $+0.060$ 0 ($+1,52$) 0
03	0.058 (1,47)	0.192 (4,88)	0.062 (1,57)	0.188 (4,78)	0.188 (4,78)	.433 (11,00)	1.105 (28,07)	0.488 (12,40)	1.161 (29,49)
05	0.182 (4,62)	0.316 (8,03)	0.188 (4,78)	0.312 (7,92)	0.312 (7,92)	.557 (14,15)	1.229 (31,22)	0.612 (15,54)	1.285 (32,64)
07	0.308 (7,82)	0.442 (11,23)	0.312 (7,92)	0.438 (11,13)	0.438 (11,13)	.683 (17,35)	1.355 (34,42)	0.738 (18,75)	1.411 (35,84)
09	0.432 (10,97)	0.566 (14,38)	0.438 (11,13)	0.562 (14,27)	0.562 (14,27)	.807 (20,50)	1.479 (37,57)	0.882 (22,40)	1.535 (38,99)
11	0.558 (14,17)	0.692 (17,58)	0.562 (14,27)	0.688 (17,48)	0.688 (17,48)	.933 (23,70)	1.605 (40,77)	0.988 (25,10)	1.661 (42,19)
13	0.682 (17,32)	0.816 (20,73)	0.686 (17,42)	0.812 (20,62)	0.812 (20,62)	1.057 (26,85)	1.729 (43,92)	1.112 (28,24)	1.785 (45,34)
15	0.808 (20,52)	0.942 (23,93)	0.812 (20,62)	0.938 (23,83)	0.938 (23,83)	1.183 (30,05)	1.855 (47,12)	1.238 (31,45)	1.911 (48,54)
17	0.932 (23,67)	1.066 (27,08)	0.938 (23,83)	1.062 (26,97)	1.062 (26,97)	1.307 (33,20)	1.979 (50,27)	1.362 (34,59)	2.035 (51,69)
19	1.058 (26,87)	1.192 (30,28)	1.062 (26,97)	1.188 (30,18)	1.188 (30,18)	1.433 (36,40)	2.105 (53,47)	1.488 (37,80)	2.161 (54,89)
21	1.182 (30,02)	1.316 (33,43)	1.188 (30,18)	1.312 (33,32)	1.312 (33,32)	1.557 (39,55)	2.229 (56,62)	1.612 (40,94)	2.285 (58,04)
23	1.308 (33,22)	1.442 (36,63)	1.312 (33,32)	1.438 (36,53)	1.438 (36,53)	1.683 (42,75)	2.355 (59,82)	1.738 (44,15)	2.411 (61,24)
25	1.432 (36,37)	1.566 (39,78)	1.436 (36,47)	1.562 (39,67)	1.562 (39,67)	1.807 (45,90)	2.479 (62,97)	1.862 (47,29)	2.535 (64,39)
27	1.558 (39,57)	1.692 (42,98)	1.562 (39,67)	1.688 (42,88)	1.688 (42,88)	1.933 (49,10)	2.605 (66,17)	1.988 (50,50)	2.661 (67,59)
29	1.682 (42,72)	1.816 (46,13)	1.686 (42,82)	1.812 (46,02)	1.812 (46,02)	2.057 (52,25)	2.729 (69,32)	2.112 (53,64)	2.785 (70,74)
31	1.808 (45,92)	1.942 (49,33)	1.812 (46,02)	1.938 (49,23)	1.938 (49,23)	2.183 (55,45)	2.855 (72,52)	2.238 (56,85)	2.911 (73,94)
33	1.932 (49,07)	2.066 (52,48)	1.936 (49,17)	2.062 (52,37)	2.062 (52,37)	2.307 (58,60)	2.979 (75,67)	2.362 (59,99)	3.035 (77,09)
35	2.058 (52,27)	2.192 (55,68)	2.062 (52,37)	2.188 (55,58)	2.188 (55,58)	2.433 (61,80)	3.105 (78,87)	2.488 (63,20)	3.161 (80,29)
37	2.182 (55,42)	2.316 (58,83)	2.186 (55,52)	2.312 (58,72)	2.312 (58,72)	-	-	-	-
39	2.308 (58,62)	2.442 (62,03)	2.312 (58,72)	2.438 (61,93)	2.438 (61,93)	-	-	-	-
41	2.432 (61,77)	2.566 (65,18)	2.436 (61,87)	2.562 (65,07)	2.562 (65,07)	-	-	-	-

Table 4: Grip dimensions and tolerances (standard pintail) Continued

Grip dash No.	Permissible grip overlap		Design grip range		X ± 0.005 ($\pm 0,13$)	5		6	
	Min.	Max.	Min.	Max.		Y ± 0.005 ($\pm 0,13$)	Z $+0.060$ 0 ($+ 1,52$) 0	Y ± 0.005 ($\pm 0,13$)	Z $+0.060$ 0 ($+ 1,52$) 0
03	0.058 (1,47)	0.192 (4,88)	0.062 (1,57)	0.188 (4,78)	0.188 (4,78)	0.557 (14,15)	1.323 (33,60)	-	-
05	0.182 (4,62)	0.316 (8,03)	0.188 (4,78)	0.312 (7,92)	0.312 (7,92)	0.681 (17,30)	1.447 (36,75)	0.753 (19,13)	1.561 (39,65)
07	0.308 (7,82)	0.442 (11,23)	0.312 (7,92)	0.438 (11,13)	0.438 (11,13)	0.807 (20,50)	1.573 (39,95)	0.879 (22,33)	1.687 (42,85)
09	0.432 (10,97)	0.566 (14,38)	0.438 (11,13)	0.562 (14,27)	0.562 (14,27)	0.931 (23,65)	1.697 (43,10)	1.003 (25,48)	1.811 (46,00)
11	0.558 (14,17)	0.692 (17,58)	0.562 (14,27)	0.688 (17,48)	0.688 (17,48)	1.057 (26,85)	1.823 (46,30)	1.129 (28,68)	1.937 (49,20)
13	0.682 (17,32)	0.816 (20,73)	0.686 (17,42)	0.812 (20,62)	0.812 (20,62)	1.181 (30,00)	1.947 (49,45)	1.253 (31,83)	2.061 (52,35)
15	0.808 (20,52)	0.942 (23,93)	0.812 (20,62)	0.938 (23,83)	0.938 (23,83)	1.307 (33,20)	2.073 (52,65)	1.379 (35,03)	2.187 (55,55)
17	0.932 (23,67)	1.066 (27,08)	0.938 (23,83)	1.062 (26,97)	1.062 (26,97)	1.431 (36,35)	2.197 (55,80)	1.503 (38,18)	2.311 (58,70)
19	1.058 (26,87)	1.192 (30,28)	1.062 (26,97)	1.188 (30,18)	1.188 (30,18)	1.557 (39,55)	2.323 (59,00)	1.629 (41,38)	2.437 (61,90)
21	1.182 (30,02)	1.316 (33,43)	1.188 (30,18)	1.312 (33,32)	1.312 (33,32)	1.681 (42,70)	2.447 (62,15)	1.753 (44,53)	2.561 (65,05)
23	1.308 (33,22)	1.442 (36,63)	1.312 (33,32)	1.438 (36,53)	1.438 (36,53)	1.807 (45,90)	2.573 (65,35)	1.879 (47,73)	2.687 (68,25)
25	1.432 (36,37)	1.566 (39,78)	1.436 (36,47)	1.562 (39,67)	1.562 (39,67)	1.931 (49,05)	2.697 (68,50)	2.003 (50,88)	2.811 (71,40)
27	1.558 (39,57)	1.692 (42,98)	1.562 (39,67)	1.688 (42,88)	1.688 (42,88)	2.057 (52,25)	2.823 (71,70)	2.129 (54,08)	2.937 (74,60)
29	1.682 (42,72)	1.816 (46,13)	1.686 (42,82)	1.812 (46,02)	1.812 (46,02)	2.181 (55,40)	2.947 (74,85)	2.253 (57,23)	3.061 (77,75)
31	1.808 (45,92)	1.942 (49,33)	1.812 (46,02)	1.938 (49,23)	1.938 (49,23)	2.307 (58,60)	3.073 (78,05)	2.379 (60,43)	3.187 (80,95)
33	1.932 (49,07)	2.066 (52,48)	1.936 (49,17)	2.062 (52,37)	2.062 (52,37)	2.431 (61,75)	3.197 (81,20)	2.503 (63,58)	3.311 (84,10)
35	2.058 (52,27)	2.192 (55,68)	2.062 (52,37)	2.188 (55,58)	2.188 (55,58)	2.557 (64,95)	3.323 (84,40)	2.629 (66,78)	3.437 (87,30)
37	2.182 (55,42)	2.316 (58,83)	2.186 (55,52)	2.312 (58,72)	2.312 (58,72)	-	-	2.753 (69,93)	3.561 (90,45)
39	2.308 (58,62)	2.442 (62,03)	2.312 (58,72)	2.438 (61,93)	2.438 (61,93)	-	-	2.879 (73,13)	3.687 (93,65)
41	2.432 (61,77)	2.566 (65,18)	2.436 (61,87)	2.562 (65,07)	2.562 (65,07)	-	-	3.003 (76,28)	3.811 (96,80)

Table 4: Grip dimensions and tolerances (standard pintail)

Grip dash No.	Dimension in inch (mm)								
	Permissible grip overlap		Design grip range		X	7		8	
	Min.	Max.	Min.	Max.	± 0.005 ($\pm 0,13$)	Y ± 0.005 ($\pm 0,13$)	Z $+0.060$ 0 ($+ 1,52$ 0)	Y ± 0.005 ($\pm 0,13$)	Z $+0.060$ 0 ($+ 1,52$ 0)
03	0.058 (1,47)	0.192 (4,88)	0.062 (1,57)	0.188 (4,78)	0.188 (4,78)	-	-	-	-
05	0.182 (4,62)	0.316 (8,03)	0.188 (4,78)	0.312 (7,92)	0.312 (7,92)	0.843 (21,41)	2.059 (52,30)	0.935 (23,75)	2.228 (56,59)
07	0.308 (7,82)	0.442 (11,23)	0.312 (7,92)	0.438 (11,13)	0.438 (11,13)	0.969 (24,61)	2.185 (55,50)	1.061 (26,95)	2.354 (59,79)
09	0.432 (10,97)	0.566 (14,38)	0.438 (11,13)	0.562 (14,27)	0.562 (14,27)	1.093 (27,76)	2.309 (58,65)	1.185 (30,10)	2.478 (62,94)
11	0.558 (14,17)	0.692 (17,58)	0.562 (14,27)	0.688 (17,48)	0.688 (17,48)	1.219 (30,96)	2.435 (61,85)	1.311 (33,30)	2.604 (66,14)
13	0.682 (17,32)	0.816 (20,73)	0.686 (17,42)	0.812 (20,62)	0.812 (20,62)	1.343 (34,11)	2.559 (65,00)	1.435 (36,45)	2.728 (69,29)
15	0.808 (20,52)	0.942 (23,93)	0.812 (20,62)	0.938 (23,83)	0.938 (23,83)	1.469 (37,31)	2.685 (68,20)	1.561 (39,65)	2.654 (67,41)
17	0.932 (23,67)	1.066 (27,08)	0.938 (23,83)	1.062 (26,97)	1.062 (26,97)	1.593 (40,46)	2.809 (71,35)	1.685 (42,80)	2.978 (75,64)
19	1.058 (26,87)	1.192 (30,28)	1.062 (26,97)	1.188 (30,18)	1.188 (30,18)	1.719 (43,66)	2.935 (74,55)	1.811 (46,00)	3.104 (78,84)
21	1.182 (30,02)	1.316 (33,43)	1.188 (30,18)	1.312 (33,32)	1.312 (33,32)	1.843 (46,81)	3.059 (77,70)	1.935 (49,15)	3.228 (81,99)
23	1.308 (33,22)	1.442 (36,63)	1.312 (33,32)	1.438 (36,53)	1.438 (36,53)	1.969 (50,01)	3.185 (80,90)	2.061 (52,35)	3.354 (85,19)
25	1.432 (36,37)	1.566 (39,78)	1.436 (36,47)	1.562 (39,67)	1.562 (39,67)	2.093 (53,16)	3.309 (84,05)	2.185 (55,50)	3.478 (88,34)
27	1.558 (39,57)	1.692 (42,98)	1.562 (39,67)	1.688 (42,88)	1.688 (42,88)	2.219 (56,36)	3.435 (87,25)	2.311 (58,70)	3.604 (91,54)
29	1.682 (42,72)	1.816 (46,13)	1.686 (42,82)	1.812 (46,02)	1.812 (46,02)	2.343 (59,51)	3.559 (90,40)	2.435 (61,85)	3.728 (94,69)
31	1.808 (45,92)	1.942 (49,33)	1.812 (46,02)	1.938 (49,23)	1.938 (49,23)	2.469 (62,71)	3.685 (93,60)	2.561 (65,05)	3.854 (97,89)
33	1.932 (49,07)	2.066 (52,48)	1.936 (49,17)	2.062 (52,37)	2.062 (52,37)	2.593 (65,86)	3.809 (96,75)	2.685 (68,20)	3.978 (101,04)
35	2.058 (52,27)	2.192 (55,68)	2.062 (52,37)	2.188 (55,58)	2.188 (55,58)	2.719 (69,06)	3.935 (99,95)	2.811 (71,40)	4.104 (104,24)
37	2.182 (55,42)	2.316 (58,83)	2.186 (55,52)	2.312 (58,72)	2.312 (58,72)	2.843 (72,21)	4.059 (103,10)	2.935 (74,55)	4.228 (107,39)
39	2.308 (58,62)	2.442 (62,03)	2.312 (58,72)	2.438 (61,93)	2.438 (61,93)	2.969 (75,41)	4.185 (106,30)	3.061 (77,75)	4.354 (110,59)
41	2.432 (61,77)	2.566 (65,18)	2.436 (61,87)	2.562 (65,07)	2.562 (65,07)	3.093 (78,56)	4.309 (109,45)	3.185 (80,90)	4.478 (113,74)
43	2.558 (64,97)	2.692 (68,38)	2.562 (65,07)	2.688 (68,28)	2.688 (68,28)	-	-	3.311 (84,10)	4.604 (116,94)
45	2.682 (68,12)	2.816 (71,53)	2.686 (68,22)	2.812 (71,44)	2.812 (71,44)	-	-	3.435 (87,25)	4.728 (120,09)

Table 4: Grip dimensions and tolerances (standard pintail)

Grip dash No.	Dimension in inch (mm)						
	Permissible grip overlap		Design grip range		X	9	10
	Min.	Max.	Min.	Max.	± 0.005 (± 0,13)	Y ± 0.005 (± 0,13)	Y ± 0.005 (± 0,13)
03	0.058 (1,47)	0.192 (4,88)	0.062 (1,57)	0.188 (4,78)	0.188 (4,78)	-	-
05	0.182 (4,62)	0.316 (8,03)	0.188 (4,78)	0.312 (7,92)	0.312 (7,92)	-	-
07	0.308 (7,82)	0.442 (11,23)	0.312 (7,92)	0.438 (11,13)	0.438 (11,13)	1.249 (31,72)	1.422 (36,12)
09	0.432 (10,97)	0.566 (14,38)	0.436 (11,13)	0.562 (14,27)	0.562 (14,27)	1.373 (34,87)	1.546 (39,27)
11	0.558 (14,17)	0.692 (17,58)	0.562 (14,27)	0.688 (17,48)	0.688 (17,48)	1.499 (38,07)	1.672 (42,47)
13	0.682 (17,32)	0.816 (20,73)	0.686 (17,42)	0.812 (20,62)	0.812 (20,62)	1.623 (41,22)	1.796 (45,62)
15	0.808 (20,52)	0.942 (23,93)	0.812 (20,62)	0.938 (23,83)	0.938 (23,83)	1.749 (44,42)	1.922 (48,82)
17	0.932 (23,67)	1.066 (27,08)	0.938 (23,83)	1.062 (26,97)	1.062 (26,97)	1.873 (47,57)	2.046 (51,97)
19	1.058 (26,87)	1.192 (30,28)	1.062 (26,97)	1.188 (30,18)	1.188 (30,18)	1.999 (50,77)	2.172 (55,17)
21	1.182 (30,02)	1.316 (33,43)	1.188 (30,18)	1.312 (33,32)	1.312 (33,32)	2.123 (53,92)	2.296 (58,32)
23	1.308 (33,22)	1.442 (36,63)	1.312 (33,32)	1.438 (36,53)	1.438 (36,53)	2.249 (57,12)	2.422 (61,52)
25	1.432 (36,37)	1.566 (39,78)	1.436 (36,47)	1.562 (39,67)	1.562 (39,67)	2.373 (60,27)	2.546 (64,67)
27	1.558 (39,57)	1.692 (42,98)	1.562 (39,67)	1.688 (42,88)	1.688 (42,88)	2.499 (63,47)	2.672 (67,87)
29	1.682 (42,72)	1.816 (46,13)	1.686 (42,82)	1.812 (46,02)	1.812 (46,02)	2.623 (66,62)	2.796 (71,02)
31	1.808 (45,92)	1.942 (49,33)	1.812 (46,02)	1.938 (49,23)	1.938 (49,23)	2.749 (69,82)	2.922 (74,22)
33	1.932 (49,07)	2.066 (52,48)	1.936 (49,17)	2.062 (52,37)	2.062 (52,37)	2.873 (72,97)	3.046 (77,37)
35	2.058 (52,27)	2.192 (55,68)	2.062 (52,37)	2.188 (55,58)	2.188 (55,58)	2.999 (76,17)	3.172 (80,57)
37	2.182 (55,42)	2.316 (58,83)	2.186 (55,52)	2.312 (58,72)	2.312 (58,72)	3.123 (79,32)	3.296 (83,72)
39	2.308 (58,62)	2.442 (62,03)	2.312 (58,72)	2.438 (61,93)	2.438 (61,93)	3.249 (82,52)	3.422 (86,92)
41	2.432 (61,77)	2.566 (65,18)	2.436 (61,87)	2.562 (65,07)	2.562 (65,07)	3.373 (85,67)	3.546 (90,07)

Continued

Table 4: Grip dimensions and tolerances (standard pintail) (concluded)

Dimension in inch (mm)

Grip dash No.	Permissible grip		Design grip		X	9	10
	Min.	Max.	Min.	Max.	± 0.005 ($\pm 0,13$)	Y ± 0.005 ($\pm 0,13$)	Y ± 0.005 ($\pm 0,13$)
43	2.558 (64,97)	2.692 (68,38)	2.562 (65,07)	2.688 (68,28)	2.688 (68,28)	3.499 (88,87)	3.672 (93,27)
45	2.662 (67,61)	2.816 (71,53)	2.686 (68,22)	2.812 (71,42)	2.812 (71,42)	3.623 (92,02)	3.796 (96,42)
47	2.808 (71,32)	2.942 (74,73)	2.812 (71,42)	2.938 (74,63)	2.938 (74,63)	3.749 (95,22)	3.922 (99,62)
49	2.932 (74,47)	3.066 (77,88)	2.936 (74,57)	3.062 (77,77)	3.062 (77,77)	3.873 (98,37)	4.046 (102,77)

Concluded

Grip Dash No.	Permissible grip overlap		Design grip range		X	6		7	
	Min.	Max.	Min.	Max.	± 0.005 ($\pm 0,13$)	Y ± 0.005 ($\pm 0,13$)	Z $+0.060$ 0 ($+1,52$ 0)	Y ± 0.005 ($\pm 0,13$)	Z $+0.060$ 0 ($+1,52$ 0)
03	0.058 (1,47)	0.192 (4,88)	0.062 (1,57)	0.188 (4,78)	0.188 (4,78)	-	-	-	-
05	0.182 (4,62)	0.316 (8,03)	0.188 (4,78)	0.312 (7,92)	0.312 (7,92)	0.753 (19,13)	1,960 (49,78)	0.843 (21,41)	2,188 (55,58)
07	0.308 (7,82)	0.442 (11,23)	0.312 (7,92)	0.438 (11,13)	0.438 (11,13)	0.879 (22,33)	2,212 (56,18)	0.969 (24,61)	2,440 (61,98)
09	0.432 (10,97)	0.566 (14,38)	0.438 (11,13)	0.562 (14,27)	0.562 (14,27)	1.003 (25,48)	2,460 (62,48)	1.093 (27,76)	2,688 (68,28)
11	0.558 (14,17)	0.692 (17,58)	0.562 (14,27)	0.688 (17,48)	0.688 (17,48)	1.129 (28,68)	2,712 (68,88)	1.219 (30,96)	2,940 (74,68)
13	0.682 (17,32)	0.816 (20,73)	0.686 (17,42)	0.812 (20,62)	0.812 (20,62)	1.253 (31,83)	2,960 (75,18)	1.343 (34,11)	3,188 (80,98)
15	0.808 (20,52)	0.942 (23,93)	0.812 (20,62)	0.938 (23,83)	0.938 (23,83)	1.379 (35,03)	3,212 (81,58)	1.469 (37,31)	3,440 (87,38)
17	0.932 (23,67)	1.066 (27,08)	0.938 (23,83)	1.062 (26,97)	1.062 (26,97)	1.503 (38,18)	3,460 (87,88)	1.593 (40,46)	3,688 (93,68)
19	1.058 (26,87)	1.192 (30,28)	1.062 (26,97)	1.188 (30,18)	1.188 (30,18)	1.629 (41,38)	3,712 (94,28)	1.719 (43,66)	3,940 (100,08)
21	1.182 (30,02)	1.316 (33,43)	1.188 (30,18)	1.312 (33,32)	1.312 (33,32)	1.753 (44,53)	3,960 (100,58)	1.843 (46,81)	4,188 (106,38)
23	1.308 (33,22)	1.442 (36,63)	1.312 (33,32)	1.438 (36,53)	1.438 (36,53)	1.879 (47,73)	4,212 (106,98)	1.969 (50,01)	4,440 (112,78)
25	1.432 (36,37)	1.566 (39,78)	1.436 (36,47)	1.562 (39,67)	1.562 (39,67)	2.003 (50,88)	4,460 (113,28)	2.093 (53,16)	4,688 (119,08)
27	1.558 (39,57)	1.692 (42,98)	1.562 (39,67)	1.688 (42,88)	1.688 (42,88)	2.129 (54,08)	4,712 (119,68)	2.219 (56,36)	4,940 (125,48)
29	1.682 (42,72)	1.816 (46,13)	1.686 (42,82)	1.812 (46,02)	1.812 (46,02)	2.253 (57,23)	4,960 (125,98)	2.343 (59,51)	5,188 (131,78)
31	1.808 (45,92)	1.942 (49,33)	1.812 (46,02)	1.938 (49,23)	1.938 (49,23)	2.379 (60,43)	5,212 (132,38)	2.469 (62,71)	5,440 (138,18)
33	1.932 (49,07)	2.066 (52,48)	1.936 (49,17)	2.062 (52,37)	2.062 (52,37)	2.503 (63,58)	5,460 (138,68)	2.593 (65,86)	5,688 (144,48)
35	2.058 (52,27)	2.192 (55,68)	2.062 (52,37)	2.188 (55,58)	2.188 (55,58)	2.629 (66,78)	5,712 (145,08)	2.719 (69,06)	5,940 (150,88)
37	2.182 (55,42)	2.316 (58,83)	2.186 (55,52)	2.312 (58,72)	2.312 (58,72)	2.753 (69,93)	5,960 (151,38)	2.843 (72,21)	6,188 (157,18)
39	2.308 (58,62)	2.442 (62,03)	2.312 (58,72)	2.438 (61,93)	2.438 (61,93)	2.879 (73,13)	6,212 (157,78)	2.969 (75,41)	6,440 (163,58)
41	2.432 (61,77)	2.566 (65,18)	2.436 (61,87)	2.562 (65,07)	2.562 (65,07)	3.003 (76,28)	6,460 (164,08)	3.093 (78,56)	6,688 (169,88)

Use of long pintails: The use of these configurations is restricted when used in composite with interference fit applications. The technical specialist for the standard shall be contacted for validation.

4 Designation

EXAMPLE:

	Description block	Identity block			
	Pin	ABS0998	V	4	- 11
Number of this standard					
Finish code (see Table 1)					
Item code No. (see Table 3)					
- : standard pintail (see Table 4)					
L : long pintail (see Table 5)					
Grip dash No. (see Table 4)					

When calling up the 3A diameter fastener there is no requirement for a '-' between the diameter code and the grip length, see example below.

ABS0998V3A11

5 Marking

EN 2424, style B (depressed 0.006 inch (0,15 mm) max.).

6 Technical specification

As per manufacturer's specification C2031.

RECORD OF REVISIONS

Issue	Clause modified	Description of modification
1 10/02		New Standard
2 05/06		Standard revised
3 10/10	Page 4; 6; 7 Page 10 Page 11 and 12 Table Page 3 and 7 Page 6 Page 3	Table 2 and 3: size 3A added. Mass revised Table 4 : Grip dash no. 43 and 45 added. Table 4: Dimension for size 9 and 10 corrected All tables editorially revised. Chapter 3.1 and Table 7: Mass calculation for Pin added Fig. 1 head, smooth part and grooves added Chapter 3.1: Replaced the word “conical” with the word “bearing”
4 01/12	Scope And Chapter 3.1 Table 2 Table 3 Table 4 Table 5 Chapter 4	Use of long pintails version and specific requirements for them, added. Pin tail tensile strength amended in accordance with manufacturer's recommendation. 'ØA' and 'ØA' coated diameter '3A' dimensions corrected. Dimension 'K' (thread depth) now a max value, dimensions added for diameters '9' and '10' 'ØL' for diameters '2' and '3' corrected. Dimension 'T' corrected for diameters '2' and '3'. Title of Table 4: “Grip dimensions and tolerances” changed into “Grip dimensions and tolerances (standard pintail)”. Dimensions 'Y' and 'Z' corrected for diameters '2' and '3'. Dimension 'Z' corrected for diameter '6' for grip lengths 37, 39 and 41. (long pintail length)” added (for diameter codes -6 & -7) Footnote added for example of part number for diameter code 3A.