1 FIELD OF APPLICATION

The purpose of this ASN is to define the 3 types, I, II and III, of blind, self-locking bolts with 100° countersunk head. Although they are of a slightly differing design, their mechanical characteristics and dimensions are such that they are interchangeable.

The recess on the countersunk head of types I and II is used to immobilise the bolt while it is attached.

Type III is an improved version: the bolt is immobilised using a nut which is gripped in the end of the installation tool.

Advantages of type III:

- For a given bolt diameter, the nut dimensions are the same whether the head is countersunk or hexagonal.
- Easy installation, particularly for countersunk head bolts or where access if difficult.
- Reduced installation time.
- Simplification, rationalisation and reduction of wear to the end of the installation tool.

Keywords: Blind rivet (TC) - Blind bolt - 100 ° countersunk head rivet - 100 ° countersunk head bolt - Rivet.

Original French text drawn up by Centre Commun de Recherches Louis Blériot and approved by Direction de la Qualité	Translated and certified by Département Information - Documentation on the 02.12.97		ASNA0081

2 NORMATIVE REFERENCES

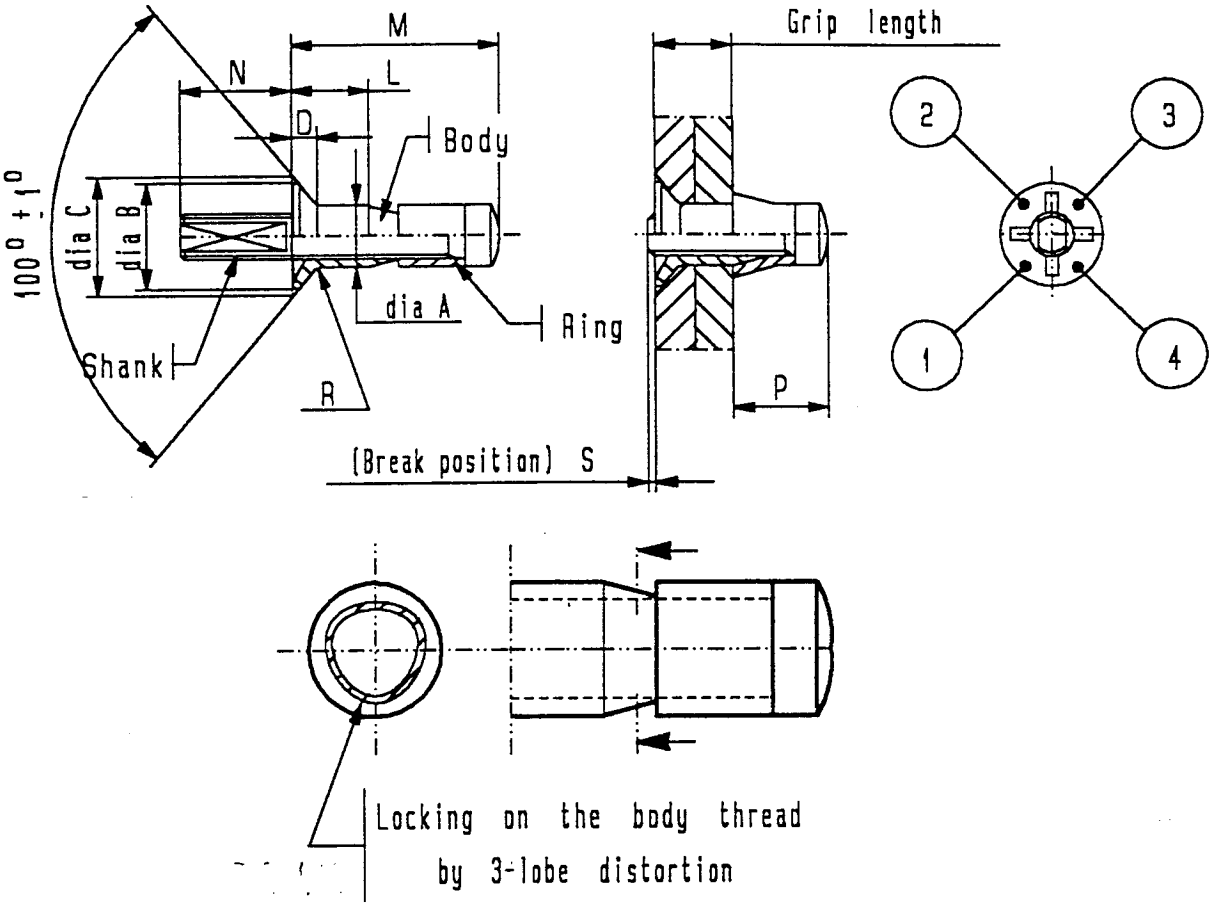
NAS 1675	Fastener-blind, internally threaded, external sleeve self-locking.
MIL-C-83488	Coating, Aluminum, ion vapor deposited.
MIL-L-46010	Lubricant, solid film, heat aered, corrosion inhibiting.
MIL-L-81329	Lubricant, solid film, extreme environment.
MIL-L-87132	Lubricant, cetyl alcohol, 1-hexadecanol, application to fastener.
MIL-S-5002	Surface treatments and inorganic coatings for metal - surfaces of weapons systems.
MIL-S-5626	Steel chrome-molybdenum (4140) bars, rods, and forging stock (for aircraft application).
MIL-S-6049	Steel, chrome - nickel - molybdenum (8740) bars and reforging stock (aircraft quality).
MIL-S-6758	Steel, chrome - molybdenum (4130) bars and reforging stock (aircraft quality).
AMS 4928	Titanium alloy bars, wire, forgings, and rings 6.OAL-40V annealed.
AMS 4967	Titanium alloy bars, forgings, and rings 6.OAL-4.OV annealed, heat treatable.
AMS 5639	Steel bars, wire, forgings, tubing and rings, corrosion resistant 19 Cr-10 Ni (SAE 30304) - Solution heat treated.
AMS 5641	Steel, corrosion resistant, bars, wire, and forging 18.5 Cr-10 Ni-0.22 Se (SAE 30303 Se) - Free-Machining ; Swaging or Upsetting Solution Heat Treated.
AMS 5731	Steel bars, forgings, tubing, and rings, corrosion and heat resistant 15 Cr - 25.5 Ni - 1.2 Mo - 2.1 Ti - 0,006B - 0.30 V - consumable electrode melted, 1800 °F (982 °C) solution heat treated.
AMS 5732	Stell bars, wire, forgings, tubing, and rings, corrosion and heat resistant 15 Cr - 25.5 Ni - 1.2 Mo - 2.1 Ti - 0,006B - 0.30 V - consumable electrode melted, 1800 °F (982 °C) solution and precipitation heat treated.
AMS 5737	Stell bars, wire, forging, and tubing, corrosion and heat resistant 15 Cr - 25.5 Ni - 1.2 Mo - 2.1 Ti - 0,006B - 0.30 V - consumable electrode melted 1650 °F (899 °C) solution and precipitation heat treated.
DTD 5036	Low carbon chromium - nickel - corrosion resisting stell wire, rivets split pins.
QQ-P-416	Plating, cadmium (electrodeposited).
QQ-S-763	Steel bars, wire, shapes, and forgings, corrosion resisting.
PLT 5000	**Blind fastener, internally threaded self locking.**
IGC 04.81.104	Monograms of fastener manufacturers.

These documents shall be consulted at the latest issue in effect.

3 REQUIRED CHARACTERISTICS

3.1 Type I - 100° countersunk head blind bolt with triple lobe locking

3.1.1 Configuration - marking



MARKING ON THE HEAD (see drawing item nos.)

Item no. 1 - Manufacturer's monogram: see IGC 04.81.104.
Item no. 2 - The letter "K" designates Ø item nos. 3 and 4 only.
Item no. 3 - The letters "SL" designate the self-locking.
Item no. 4 - The symbol "■" designates the material: steel alloy.

DIMENSIONS: (see tables 6 and 7)

TENSILE AND SHEAR STRENGTH: (see table 8)

3.1.2 Material and finish

TABLE 1

CODE	ELEMENT	MATERIAL	FINISH
- (hyphen)	BODY AND SHANK	Steel alloy S147 or SAE 8740	Cadmium plating QQ-P-416 Type I Class 2
	RING	Stainless steel DTD 5036 (AISI 304)	
NOTE: These bolts are supplied pre-lubricated and should not be degreased.			

3.1.3 DESIGNATION

Each blind bolt shall be designated by its name and identifier block only, as in the following example:

a) New designation

Description block [1]	Company code [1]	Identifier block [3]
BLIND BOLT	F5442 [2]	ASNA0081 - 4 02 (W)*

Number of the standard
Material / finish code (see table 1)
Diameter item no. (see table 6)
Grip length code (see table 7)

b) Old designation (not valid for new design studies)

Description block	Designer's code	Identifier block
BLIND BOLT	F5442	ASNA-0081 - 4 02 (W)*

Standard reference
Material / finish code (see table 1)
Diameter item no. (see table 6)
Grip length code (see table 7)

***CAUTION**: The use of the letter (W) is reserved for the procurement departments for orders.

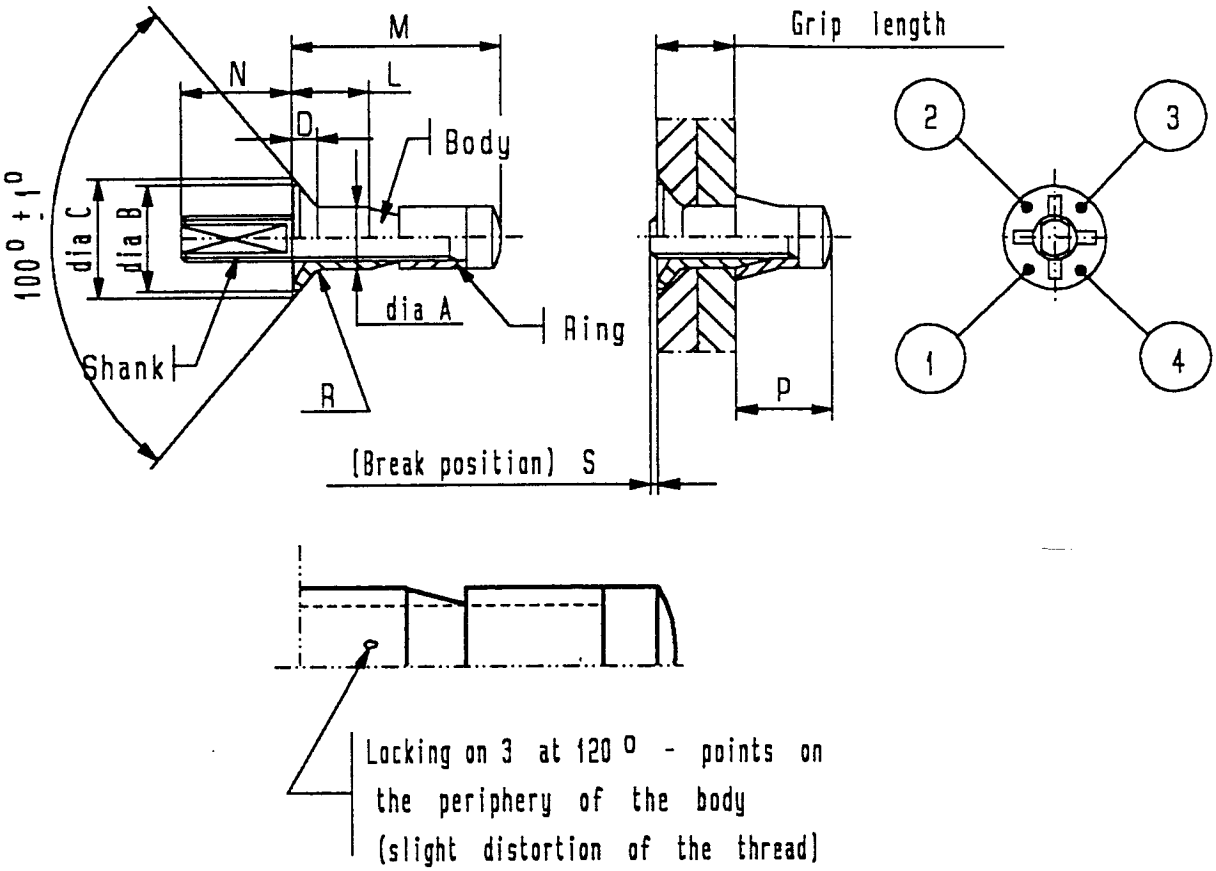
3.1.4 Technical specification

NAS 1675: except for shear and double tensile strength (see table 8).

1) Optional.
2) Company code assigned to AEROSPATIALE Normalisation Générale.
3) The identifier block shall be written without spaces. Those in the example are intended to facilitate reading.

3.2 Type II - 100° countersunk head blind bolt with 3 120°-point locking

3.2.1 Configuration - marking



MARKING ON THE HEAD (see drawing item nos.)

Item no. 1 - Manufacturer's monogram: see IGC 04.81.104.
Item no. 2 - The letter "K" designates Ø item nos. 3 and 4 only for steel and stainless steel bolts.
Item no. 3 - The letters "SL" designate the self-locking steel and stainless steel bolts.
The number "170" designates Ø item nos. 2, 5 and 6 for self-locking titanium bolts.
The number "175" designates Ø item nos. 3 and 4 for self-locking titanium bolts.
Item no. 4 - The symbol "■" designates the material: steel alloy.
The symbol "●" designates the material: stainless steel.
The letter "X" designates the I.V.D. finish on titanium bolt bodies.

DIMENSIONS: (see tables 6 and 7)

3.2.2 Tensile and shear strength: (see table 8)

3.2.3 Materials and finish

TABLE 2

CODE	ELEMENT	MATERIAL	FINISH	LUBRICATION
- (hyphen)	BODY AND SHANK	Steel alloy 4130 as per MIL-S-6758 or 4140 as per MIL-S-5626 or 8740 as per MIL-S-6049	Cadmium plating as per QQ-P-416 Type II Class 2	Dry film as per MIL-L-46010 or MIL-L-81329 or cetylic alcohol as per MIL-L-87132 depending on the required performance
	RING	Stainless steel 303 or 304 as per QQ-S-763 or AMS 5639 or AMS 5641	Passivation as per MIL-S-5002 Cadmium plating as per QQ-P-416 Type I Class 3	
A	BODY AND SHANK	Stainless steel A-286 as per AMS 5731 or AMS 5737 or AMS 5732	Passivation as per MIL-S-5002	
	RING			
B	BODY	Titanium alloy 6Al-4V as per AMS 4928 or AMS 4967	I.V.D.* MIL-C-83488 Type II Class 3	KAL-GARD FC-2 or solid paraffin or Tiolon A-20 or Tiolon X-20 or cetylic alcohol depending on the required performance
	SHANK		KAL-GARD ANN-RO 1012 optional	
	RING	Stainless steel 303 or 304 as per QQ-S-763 or AMS 5639 or AMS 5641	Passivation as per MIL-S-5002 or KAL-GARD ANN-RO 1013 optional	
C	BODY	Titanium alloy 6Al-4V as per AMS 4928 or AMS 4967	None	Dry film and cetylic alcohol optional if requested
	SHANK			
	RING	Stainless steel 303 or 304 as per QQ-S-763 or AMS 5639 or AMS 5641	Passivation as per MIL-S-5002	

*I.V.D.: Ion Vapor Deposition.
NOTE: These bolts are supplied pre-lubricated and should not be degreased.

3.2.4 DESIGNATION

Each blind bolt shall be designated by its name and identifier block only, as in the following example:

a) New designation

Description block [1]	Company code [1]	Identifier block [3]
BLIND BOLT	F5442 [2]	ASNA0081 A 4 02 (Y)*

Number of the standard
Material / finish code (see table 2)
Diameter item no. (see table 6)
Grip length code (see table 7)

*CAUTION: The use of the letter (Y) is reserved for procurement departments for orders.

b) Old designation (not valid for new design studies)

Description block	Designer's code	Identifier block
BLIND BOLT	F5442	ASNA-0081 A 4 02 (Y)*

Standard reference
Material / finish code (see table 2)
Diameter item no. (see table 6)
Grip length code (see table 7)

*CAUTION: The use of the letter (Y) is reserved for the procurement departments for orders.

3.2.5 Technical specification

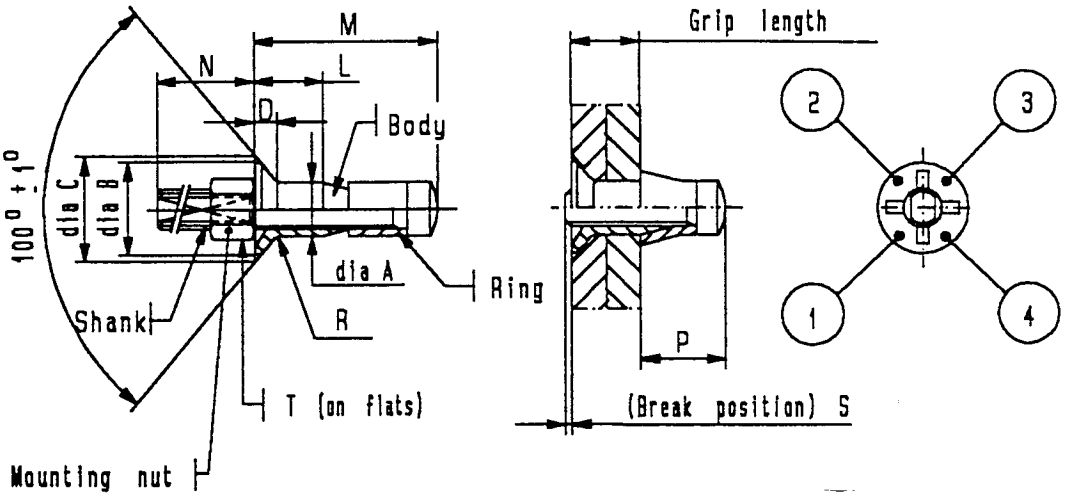
TABLE 3

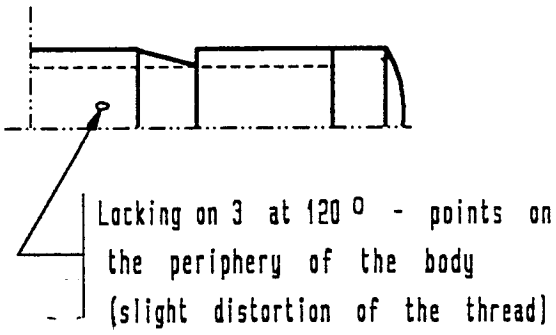
MATERIAL CODE	TECHNICAL SPECIFICATION
- (hyphen)	NAS 1675 except tensile and double shear strength see table 8
A	
B	PLT 5000 - Class 5, type 1

1) Optional.
2) Company code assigned to AEROSPATIALE Normalisation Générale.
3) The identifier block shall be written without spaces. Those in the example are intended to facilitate reading.

3.3 Type III - 100° countersunk head blind bolt with 3 120°-point locking and immobilisation nut (removed after installation)

3.3.1 Configuration - marking





MARKING ON THE HEAD (see drawing item nos.)

Item no. 1 - Manufacturer's monogram: see IGC 04.81.104.
Item no. 2 - The letter "K" designates Ø item nos. 3 and 4 only for bolts made of steel or stainless steel.
Item no. 3 - The letters "SL" designate the self-locking for steel and stainless steel bolts.
The number "5170" designates Ø item nos. 2, 5 and 6 for self-locking titanium bolts.
The number "5175" designates Ø item nos. 3 and 4 for self-locking titanium bolts.
Item no. 4 - The symbol "■" designates the material: steel alloy.
The symbol "●" designates the material: stainless steel.
The letter "X" designates the I.V.D. finish on titanium bolt bodies.

DIMENSIONS: (see tables 6 and 7)

3.3.2 Tensile and shear strength: (see table 8)

3.3.3 Materials and finish

TABLE 4

CODE	ELEMENT	MATERIAL	FINISH	LUBRICATION
- (hyphen)	BODY AND SHANK	Steel alloy 4130 as per MIL-S-6758 or 4140 as per MIL-S-5626 or 8740 as per MIL-S-6049	Cadmium plating QQ-P-416 Type II Class 2	Dry film as per MIL-L-46010 or MIL-L-81329 or cetylic alcohol as per MIL-L-87132 depending on the required performance
	RING	Stainless steel 303 or 304 as per QQ-S-763 or AMS 5639 or AMS 5641	Passivation as per MIL-S-5002 Cadmium plating QQ-P-416 Type I Class 3	
	NUT	Mild steel	Anti-corrosion coating gold coloured	
A	BODY AND SHANK	Stainless steel A-286 as per AMS 5731 or AMS 5737 or AMS 5732	Passivation as per MIL-S-5002	Dry film as per MIL-L-46010 or MIL-L-81329 or cetylic alcohol as per MIL-L-87132 depending on the required performance
	RING			
	NUT	Mild steel	Anti-corrosion coating black	
B	BODY	Titanium alloy 6Al-4V as per AMS 4928 or AMS 4967	I.V.D.* MIL-C-83488 Type II Class 3	KAL-GARD FC-2 or solid paraffin or Tiolon A-20 or Tiolon X-20 or cetylic alcohol depending on the required performance
	SHANK		KAL-GARD ANN-RO 1012 optional	
	RING	Stainless steel 303 or 304 as per QQ-S-763 or AMS 5639 or AMS 5641	Passivation as per MIL-S-5002 or KAL-GARD ANN-RO 1013 optional	
	NUT	Mild steel	Anti-corrosion coating grey	
C	BODY	Titanium alloy 6Al-4V as per AMS 4928 or AMS 4967	None	Dry film and cetylic alcohol optional, if requested
	SHANK			
	RING	Stainless steel 303 or 304 as per QQ-S-763 or AMS 5639 or AMS 5641	Passivation as per MIL-S-5002	
	NUT	Mild steel	Anti-corrosion coating grey	

*I.V.D.: Ion Vapor Deposition

NOTE: These bolts are supplied pre-lubricated and should not be degreased.

3.3.4 DESIGNATION

Each blind bolt shall be designated by its name and identifier block only, as in the following example:

a) New designation

Description block [1]	Company code [1]	Identifier block [3]
BLIND BOLT	F5442 [2]	ASNA0081 A 4 02 (Z)*

Number of the standard
Material / finish code (see table 4)
Diameter item no. (see table 6)
Grip length code (see table 7)

*CAUTION: The use of the letter (Z) is reserved for the procurement departments for orders.

b) Old designation (not valid for new design studies)

Description block	Designer's code	Identifier block
BLIND BOLT	F5442	ASNA-0081 A 4 02 (Z)*

Standard reference
Material / finish code (see table 4)
Diameter item no. (see table 6)
Grip length code (see table 7)

*CAUTION: The use of the letter (Z) is reserved for the procurement departments for orders.

3.3.5 Technical specification

TABLE 5

MATERIAL CODE	TECHNICAL SPECIFICATION
- (hyphen)	NAS 1675 except for tensile and double shear strength see table 8
A	
B	PLT 5000 - Class 5, type 1

1) Optional.
2) Company code assigned to AEROSPATIALE Normalisation Générale.
3) The identifier block shall be written without spaces. Those in the example are intended to facilitate reading.

TABLE 6 - Dimensions

Ø item no.	D		A				B		C				D		R (radius)				N. Ref.				T. Ref.	
	NOMINAL		in		mm		min		in		mm		REF.		in		mm		Type I, II		Type III		Type III	
	in	mm	min	max	min	max	in	mm	min	max	min	max	in	mm	min	max	min	max	in	mm	in	mm	in	mm
2	.1635	4.15	.1625	.1645	4.13	4.18	.296	7.52	.325	.332	8.25	8.43	.069	1.75	.010	.030	0.25	0.76	.309	7.85	.766	19.46	.375	9.52
3	.189	4.80	.188	.190	4.77	4.83	.342	8.69	.378	.385	9.60	9.78	.081	2.06	.015	.030	0.33	0.76	.344	8.74	.806	20.47		
4	.2480	6.30	.247	.249	6.27	6.32	.463	11.76	.499	.507	12.67	12.88	.107	2.72	.015	.030	0.38	0.76	.322	8.18	.905	22.99	.375	9.52
5	.3105	7.89	.3095	.3115	7.86	7.91	.577	14.65	.626	.635	15.90	16.13	.134	3.40	.020	.040	0.51	1.02	.378	9.60	1.157	29.39	.500	12.70
6	.3735	9.49	.3725	.3745	9.46	9.51	.696	17.68	.752	.762	19.10	19.35	.160	4.06	.020	.040	0.51	1.02	.451	11.45	1.216	30.88	.500	12.70

TABLE 6 (cont'd)

Ø item no.	STEEL BOLT							STAINLESS STEEL BOLT						TITANIUM BOLT					
	P max		S					P max		S				P max		S			
			in		mm					in		mm				in		mm	
	in	mm	+	−	+	−		in	mm	−	+	−	+	in	mm	+	−	+	−
2	.246	6.25	.020	.068	0.51	1.73		.267	6.78	.006	.082	0.15	2.08	.257	6.53	.020	.068	0.51	1.73
3	.281	7.14	.015	.073	0.38	1.85		.302	7.67	.016	.072	0.41	1.83	.288	7.31	.015	.073	0.38	1.85
4	.325	8.25	.010	.078	0.25	1.98		.346	8.79	.026	.072	0.66	1.83	.320	8.13	.010	.078	0.25	1.98
5	.390	9.91	.010	.083	0.25	2.11		.414	10.52	.031	.072	0.79	1.83	.396	10.06	.010	.083	0.25	2.11
6	.470	11.94	.010	.093	0.26	2.37		.470	11.94	.031	.072	0.79	1.83	.473	12.01	.010	.093	0.25	2.36

TABLE 7 - Lengths and grip lengths

Ø item no.	Grip length code	Grip length				L		M	
		in		mm		Nominal		max	
		min	max	min	max	in	mm	in	mm
2	02	.094	.156	2.39	3.96	.156	3.96	.532	13.52
	03	.157	.219	3.99	5.56	.219	5.56	.590	14.99
	04	.220	.281	5.59	7.14	.281	7.14	.652	16.56
	05	.282	.344	7.16	8.74	.344	8.74	.722	18.34
	06	.345	.406	8.76	10.31	.406	10.31	.782	19.87
	07	.407	.469	10.34	11.91	.469	11.91	.842	21.39
	08	.470	.531	11.94	13.49	.531	13.49	.902	22.91
	09	.532	.594	13.51	15.09	.594	15.09	.972	24.69
	10	.595	.656	15.11	16.66	.656	16.66	1.032	26.22
	11	.657	.719	16.69	18.26	.719	18.26	1.092	27.74
	12	.720	.781	18.29	19.84	.781	19.84	1.152	29.26
	13	.782	.844	19.86	21.44	.844	21.44	1.222	31.04
	14	.845	.906	21.46	23.01	.906	23.01	1.282	32.57
	15	.907	.969	23.03	24.61	.969	24.61	1.342	34.09
	16	.970	1.031	24.64	26.19	1.031	26.19	1.402	35.61
3	02	.094	.156	2.39	3.96	.156	3.96	.576	14.63
	03	.157	.219	3.99	5.56	.219	5.56	.639	16.23
	04	.220	.281	5.59	7.14	.281	7.14	.701	17.80
	05	.282	.344	7.16	8.74	.344	8.74	.764	19.40
	06	.345	.406	8.76	10.31	.406	10.31	.826	20.98
	07	.407	.469	10.34	11.91	.469	11.91	.889	22.58
	08	.470	.531	11.94	13.49	.531	13.49	.951	24.15
	09	.532	.594	13.51	15.09	.594	15.09	1.014	25.75
	10	.595	.656	15.11	16.66	.656	16.66	1.076	27.33
	11	.657	.719	16.69	18.26	.719	18.26	1.139	28.93
	12	.720	.781	18.29	19.84	.781	19.84	1.201	30.50
	13	.782	.844	19.86	21.44	.844	21.44	1.264	32.10
	14	.845	.906	21.46	23.01	.906	23.01	1.326	33.68
	15	.907	.969	23.03	24.61	.969	24.61	1.389	35.28
	16	.970	1.031	24.64	26.19	1.031	26.19	1.440	36.58
	17	1.032	1.094	26.21	27.79	1.094	27.79	1.514	38.45
	18	1.095	1.156	27.81	29.36	1.156	29.36	1.576	40.03
	19	1.157	1.219	29.39	30.96	1.219	30.96	1.639	41.63
	20	1.220	1.281	30.99	32.54	1.281	32.54	1.701	43.20
	21	**1.282**	**1.344**	**32.56**	**34.14**	**1.344**	**34.14**	**1.764**	**44.80**
	22	1.345	1.406	34.16	35.71	1.406	35.71	1.826	46.38
	23	1.407	1.469	35.74	37.31	1.469	37.31	1.889	47.98
	24	1.470	1.531	37.34	38.89	1.531	38.89	1.951	49.55
	25	1.532	1.594	38.91	40.49	1.594	40.49	2.014	51.15
	26	1.595	1.656	40.51	42.06	1.656	42.06	2.076	52.73
	27	1.657	1.719	42.09	43.66	1.719	43.66	2.139	54.33
	28	1.720	1.781	43.69	45.24	1.781	45.24	2.201	55.90
	29	**1.782**	**1.844**	**45.26**	**46.84**	**1.844**	**46.84**	**2.264**	**57.50**
	30	**1.845**	**1.906**	**46.86**	**48.41**	**1.906**	**48.41**	**2.326**	**59.08**
	31	1.907	1.969	48.44	50.01	1.969	50.01	2.389	60.68
	32	1.970	2.031	50.04	51.59	2.031	51.59	2.451	62.25

TABLE 7 (cont'd)

Ø item no.	Grip length code	Grip length				L		M	
		in		mm		Nominal		max	
		min	max	min	max	in	mm	in	mm
	02	.094	.156	2.39	3.96	.156	3.96	.629	15.98
	03	.157	.219	3.99	5.56	.219	5.56	.691	17.55
	04	.220	.281	5.59	7.14	.281	7.14	.754	19.15
	05	.282	.344	7.16	8.74	.344	8.74	.816	20.73
	06	.345	.406	8.76	10.31	.406	10.31	.879	22.33
	07	.407	.469	10.34	11.91	.469	11.91	.941	23.90
	08	.470	.531	11.94	13.49	.531	13.49	1.004	25.50
	09	.532	.594	13.51	15.09	.594	15.09	1.066	27.08
	10	.595	.656	15.11	16.66	.656	16.66	1.129	28.68
	11	.657	.719	16.69	18.26	.719	18.26	1.191	30.25
	12	.720	.781	18.29	19.84	.781	19.84	1.254	31.85
	13	.782	.844	19.86	21.44	.844	21.44	1.316	33.43
	14	.845	.906	21.46	23.01	.906	23.01	1.379	35.03
	15	.907	.969	23.03	24.61	.969	24.61	1.441	36.60
	16	.970	1.031	24.64	26.19	1.031	26.19	1.504	38.20
4	17	1.032	1.094	26.21	27.79	1.094	27.79	1.566	39.78
	18	1.095	1.156	27.81	29.36	1.156	29.36	1.629	41.38
	19	1.157	1.219	29.39	30.96	1.219	30.96	1.691	42.95
	20	1.220	1.281	30.99	32.54	1.281	32.54	1.754	44.55
	21	1.282	1.344	32.56	34.14	1.344	34.14	1.816	46.13
	22	1.345	1.406	34.16	35.71	1.406	35.71	1.879	47.73
	23	1.407	1.469	35.74	37.31	1.469	37.31	1.941	49.30
	24	1.470	1.531	37.34	38.89	1.531	38.89	2.004	50.90
	25	1.532	1.594	38.91	40.49	1.594	40.49	2.066	52.48
	26	1.595	1.656	40.51	42.06	1.656	42.06	2.129	54.08
	27	1.657	1.719	42.09	43.66	1.719	43.66	2.191	55.65
	28	1.720	1.781	43.69	45.24	1.781	45.24	2.254	57.25
	29	1.782	1.844	45.26	46.84	1.844	46.84	2.316	58.83
	30	1.845	1.906	46.86	48.41	1.906	48.41	2.379	60.43
	31	1.907	1.969	48.44	50.01	1.969	50.01	2.441	62.00
	32	1.970	2.031	50.04	51.59	2.031	51.59	2.504	63.60

TABLE 7 (cont'd)

Ø item no.	Grip length code	Grip length				L		M	
		in		mm		Nominal		max	
		min	max	min	max	in	mm	in	mm
5	03	.157	.219	3.99	5.56	.219	5.56	.796	20.22
	04	.220	.281	5.59	7.14	.281	7.14	.858	21.80
	05	.282	.344	7.16	8.74	.344	8.74	.921	23.40
	06	.345	.406	8.76	10.31	.406	10.31	.983	24.97
	07	.407	.469	10.34	11.91	.469	11.91	1.046	26.57
	08	.470	.531	11.94	13.49	.531	13.49	1.108	28.15
	09	.532	.594	13.51	15.09	.594	15.09	1.171	29.75
	10	.595	.656	15.11	16.66	.656	16.66	1.233	31.32
	11	.657	.719	16.69	18.26	.719	18.26	1.296	32.92
	12	.720	.781	18.29	19.84	.781	19.84	1.358	34.50
	13	.782	.844	19.86	21.44	.844	21.44	1.421	36.10
	14	.845	.906	21.46	23.01	.906	23.01	1.483	37.67
	15	.907	.969	23.03	24.61	.969	24.61	1.546	39.27
	16	.970	1.031	24.64	26.19	1.031	26.19	1.608	40.85
	17	1.032	1.094	26.21	27.79	1.094	27.79	1.671	42.45
	18	1.095	1.156	27.81	29.36	1.156	29.36	1.733	44.02
	19	1.157	1.219	29.39	30.96	1.219	30.96	1.796	45.62
	20	1.220	1.281	30.99	32.54	1.281	32.54	1.858	47.20
	21	1.282	1.344	32.56	34.14	1.344	34.14	1.921	48.80
	22	1.345	1.406	34.16	35.71	1.406	35.71	1.983	50.37
	23	1.407	1.469	35.74	37.31	1.469	37.31	2.046	51.97
	24	1.470	1.531	37.34	38.89	1.531	38.89	2.108	53.55
	25	1.532	1.594	38.91	40.49	1.594	40.49	2.171	55.15
	26	1.595	1.656	40.51	42.06	1.656	42.06	2.233	56.72
	27	1.657	1.719	42.09	43.66	1.719	43.66	2.296	58.32
	28	1.720	1.781	43.69	45.24	1.781	45.24	2.358	59.90
	29	1.782	1.844	45.26	46.84	1.844	46.84	2.421	61.50
	30	1.845	1.906	46.86	48.41	1.906	48.41	2.479	62.97
	31	1.907	1.969	48.44	50.01	1.969	50.01	2.546	64.67
	32	1.970	2.031	50.04	51.59	2.031	51.59	2.608	66.25

TABLE 7 (cont'd)

Ø item no.	Grip length code	Grip length				L		M	
		in		mm		Nominal		max	
		min	max	min	max	in	mm	in	mm
6	03	.157	.219	3.99	5.56	.219	5.56	.938	23.81
	04	.220	.281	5.59	7.14	.281	7.14	1.000	25.40
	05	.282	.344	7.16	8.74	.344	8.74	1.063	26.99
	06	.345	.406	8.76	10.31	.406	10.31	1.125	28.58
	07	.407	.469	10.34	11.91	.469	11.91	1.188	30.16
	08	.470	.531	11.94	13.49	.531	13.49	1.250	31.75
	09	.532	.594	13.51	15.09	.594	15.09	1.313	33.34
	10	.595	.656	15.11	16.66	.656	16.66	1.375	34.93
	11	.657	.719	16.69	18.26	.719	18.26	1.438	36.51
	12	.720	.781	18.29	19.84	.781	19.84	1.500	38.10
	13	.782	.844	19.86	21.44	.844	21.44	1.563	39.69
	14	.845	.906	21.46	23.01	.906	23.01	1.625	41.28
	15	.907	.969	23.03	24.61	.969	24.61	1.688	42.86
	16	.970	1.031	24.64	26.19	1.031	26.19	1.750	44.45
	17	1.032	1.094	26.21	27.79	1.094	27.79	1.813	46.04
	18	1.095	1.156	27.81	29.36	1.156	29.36	1.875	47.63
	19	1.157	1.219	29.39	30.96	1.219	30.96	1.938	49.21
	20	1.220	1.281	30.99	32.54	1.281	32.54	2.000	50.80
	21	1.282	1.344	32.56	34.14	1.344	34.14	2.063	52.39
	22	1.345	1.406	34.16	35.71	1.406	35.71	2.125	53.98
	23	1.407	1.469	35.74	37.31	1.469	37.31	2.188	55.56
	24	1.470	1.531	37.34	38.89	1.531	38.89	2.250	57.15
	25	1.532	1.594	38.91	40.49	1.594	40.49	2.313	58.74
	26	1.595	1.656	40.51	42.06	1.656	42.06	2.375	60.33
	27	1.657	1.719	42.09	43.66	1.719	43.66	2.438	61.91
	28	1.720	1.781	43.69	45.24	1.781	45.24	2.500	63.50
	29	1.782	1.844	45.26	46.84	1.844	46.84	2.563	65.09
	30	1.845	1.906	46.86	48.41	1.906	48.41	2.625	66.68
	31	1.907	1.969	48.44	50.01	1.969	50.01	2.688	68.26
	32	1.970	2.031	50.04	51.59	2.031	51.59	2.750	69.85

5 TENSILE AND SHEAR STRENGTH

TABLE 8

Ø Item no.	STEEL BOLT		STAINLESS STEEL BOLT		TITANIUM BOLT	
	Double shear strength min (N)	Tensile strength min (N)	Double shear strength min (N)	Tensile strength min (N)	Double shear strength min (N)	Tensile strength min (N)
2	14 900	4 000	12 010	4 000	14 010	4 000
3	18 240	5 780	18 680	6 230	18 680	6 230
4	31 140	9 120	32 030	9 340	32 030	9 340
5	53 300	16 010	50 480	16 010	50 480	16 010
6	86 740	24 910	73 170	24 910	73 170	24 910

6 MANUFACTURERS

Refer to the list of qualified manufacturers and products.

RECORD OF REVISIONS

Issue	Paragraph modified	Description of modification	Reason
A 08-80	-	New standard	
B 03-84		Standard revised. Equivalence added JO-LOK and VISU-LOK	Pre-distribution restricted to AIRBUS INDUSTRIE
C 09-85		Standard fully revised – Titanium bolt added – Bolt of type III added	 – Further to AIRBUS INDUSTRIE request – Further to A/DET/D request
D 05-86		Typeset and updated	
E 08-87	2.1.3 2.2.3 2.3.3 2.2.1 2.3.1 2.2.2 2.3.2 3 4	New designations added for new design studies Paragraph on marking on the head modified Passivation on shank (code B) cancelled Dimensions - Diameters and Lengths Tables updated Table updated	Brought into accordance with manufacturer's documents
F 02-90	4	Ø item nos. 3 and 4 – Steel bolt: double shear strength and tensile strength values modified for Ø 3 – Stainless steel bolt and titanium bolt: **double shear strength value modified**	Brought into accordance with manufacturer's documents
G 03-93	4.1.4 4.2.2 4.3.2 4.2.4 6	Technical specification L609S changed to L609S, issue 3 Material code A modified: AMS 5735 changed to AMS 5731 or AMS 5732 Technical specification modified: NAS1675 changed to ESCBB-2/ESCBB-9 – **Steel bolt, double shear strength: reference value 5 modified** – Titanium bolt, double shear strength: reference value 3 modified	Typing error Further to an update of manufacturer's documents

RECORD OF REVISIONS

Issue[1)]	Paragraph modified	Description of modification	Reason
H 12-93	4.2.1 4.3.1 4.2.3 4.3.3 4.3.5	Paragraph on marking on the head modified Item no. 3, numbers 5170 and 5175 deleted Item no. 3, numbers 170 and 175 deleted Material code C added Nut protection code –(hyphen), A, B, modified Material code C added Technical specification Type 5 changed to type 1	 Aircraft Division request as per letter F 223/93 dated 20/9/93 Manufacturer's request as per letter A9497 dated 14/9/93
J 03-95	Table 8	Steel bolts: – shear strength Item no. 3: value 20680 changed to 18240 Item no. 4: value 34560 changed to 31140 – tensile strength Item no. 3: value 6230 changed to 5780 Item no. 4: value 9340 changed to 9120	Manufacturer's letter ref. 8811 dated 03/95
K	3.1.4 3.2.5 3.3.5 Tables 2, 4	Technical specification L 690 S replaced by NAS 1675 Technical specification ESCBB-2 class 1 (steel bolt) and ESCBB-2 class 2 (stainless steel bolt) replaced by NAS 1675 ESCBB-9 class 2 (titanium bolt) replaced by PLT 5000 class 5, type 1 Technical specification PLT 5000 - class 1, type 1 (steel bolt) and PLT 5000 - class 2, type 1 (stainless steel bolt) replaced by NAS 1675 Code B: stainless steel ring material added	Aircraft Business request further to note 048/96 dated 02/96 and AIRBUS Industrie request

1) The issue I has not been used