EADS CORPORATE STANDARDIZATION	NORME D'ETUDES **TENSILE RIVETS** **100° COUNTERSUNK HEAD**	**ASNA2040** Issue: K Date: **22.07.2002**

855 0629

1 SCOPE

The purpose of this ASN standard is to define the principal characteristics of tensile rivets for assembly and installation in mast structures. They are fitted usind an ASNA2044 bushing.

2 NORMATIVE REFERENCES

AMS 5737	Steel bars, wire, forgings and tubing corrosion and heat resistant 15 Cr - 25.5 Ni - 1.2 Mo - 2.1 Ti - 0.006B - 030 V - 1650°F (899°C) - Solution and precipitation heat treated.
AMS 6358	Steel sheet, strip and plate - 0.50 Cr - 0.55 Ni - 0.25 Mo (0.38-0.43C).
QQ-P-35	Passivation treatments for corrosion - Resistant steel.
QQ-P-416	Platine, cadmium (electrodeposited).
AIR 9173	Spécifications techniques générales et conditions de contrôle des vis en acier (Classes 600, 900 et 1250 MPa).
ICT 2017 ou ICT 66	Spécification technique.
ASNA2044	Bushing.
A/DET/0013	Specification for lubrification of bolts with cetyl alcohol.
IGC 04.81.104	Monograms of fastener manufacturers.

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

3 DEFINITIONS - TERMINOLOGY - SYMBOLS - ABBREVIATIONS

These tensile rivets are composed of:

- a shank,
- a bushing (as per ASNA2044).

Keywords:		
Drawn up by EADS Corporate Research Center	Approved by EADS Vice President Quality	
P.G. SAVA	**J.M. BARDOT**	

4 REQUIRED CHARACTERISTICS

4.1 Configuration - Dimensions - Tolerances

The general form shall comply with figure 1.

Dimensions and tolerances shall comply with the values indicated in figure 1 and table 1.

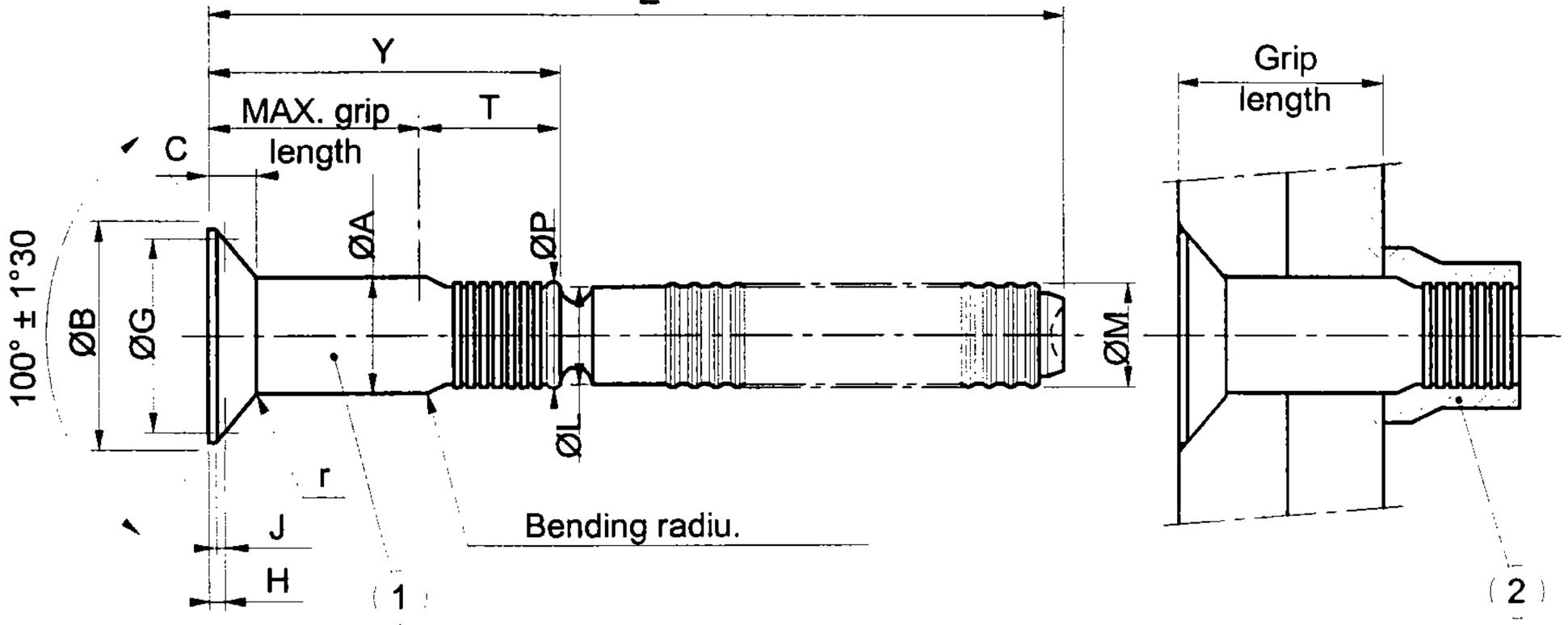

FIGURE 1 [1)]

TABLE 1 - Dimensions

Code ∅	Nominal diameter		A [1)]				B		C		G				H			
	in	mm	in		mm		in	mm	in	mm	in		mm		in		mm	
			min.	max.	min.	max.					min.	max.	min.	max.	min.	max.	min.	max.
3	.190	4,826	.1890	.1895	4,800	4,813	.384	9,753	.083	2,108	.3270	.3272	8,306	8,311	.0200	.0230	0,508	0,584
4	.250	6,350	.2490	.2495	6,325	6,337	.511	12,979	.111	2,819	.4318	.4320	10,967	10,973	.0288	.0322	0,731	0,818
5	.312	7,924	.3115	.3120	7,912	7,925	.638	16,205	.139	3,530	.5449	.5451	13,840	13,845	.0342	.0378	0,868	0,960
6	.375	9,525	.3740	.3745	9,499	9,512	.766	19,456	.167	4,242	.6580	.6582	16,713	16,718	.0401	.0439	1,018	1,115

1) Concentricity of conical surface of head with diameter A to within 0,127 (LTC).

TABLE 1 (cont'd)

Code ∅	Nominal diameter		J max.		L REF		M max.		P max.		Radius r				S [2)]		T REF	
	in	mm	in	mm	in	mm	in	mm	in	mm	min.	max.	min.	max.				
											in		mm		in	mm	in	mm
3	.190	4,826	.013	0,330	.164	4,165	.184	4,673	.184	4,673	.020	.030	0,508	0,762	.0045	0,114	.264	6,706
4	.250	6,350	.017	0,431	.244	5,689	.244	6,197	.244	6,197	.020	.030	0,508	0,762	.0045	0,114	.312	7,925
5	.312	7,924	.020	0,508	.268	6,807	.306	7,772	.306	7,772	.030	.040	0,762	1,016	.0045	0,114	.402	10,211
6	.375	9,525	.023	0,584	.339	8,610	.368	9,398	.370	9,398	.030	.040	0,762	1,016	.0060	0,152	.472	11,989

2) Straightness of barrel: within «6» values (LTC by barrel length 25,4 mm).

[1)] Surface roughness as per ANSI B 46-1: barrel support face and bending radiu. at both ends of barrel: 0,8, other surfaces 3,2.

TABLE 2 - Grip length - Masses

Grip length ref. code	Permitted excess grip		Grip length				Permitted excess grip		DIAMETER CODE																MASSE IN kg/1000			
									3				4				5				6				Diameter code			
									Y		Z		Y		Z		Y		Z		Y		Z [1]					
	min.		min.	max.	min.	max.	max.		± .010	± 0,25	+ .20 − .0	+ 5,08 − 0	± .010	± 0,25	+ .20 − .0	+ 5,08 − 0	± .010	± 0,25	+ .20 − .0	+ 5,08 − 0	± .010	± 0,25	+ .20 − .0	+ 5,08 − 0				
	in	mm	in		mm		in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	3	4	5	6
02	.047	1,19	.063	.125	1,60	3,18	.141	3,58	.389	9,88	1.14	28,95	.437	11,10	1.28	32,47	–	–	–	–	–	–	–	–	–	–	–	–
03	.109	2,76	.126	.188	3,20	4,76	.203	5,15	.452	11,49	1.20	30,47	.500	12,70	1.34	34,00	.590	14,98	1.55	39,36	–	–	–	–	1,93	4,07	7,63	–
04	.172	4,35	.189	.250	4,80	6,35	.266	6,75	.514	13,05	1.26	32,00	.562	14,27	1.40	35,52	.652	16,56	1.61	40,89	.722	18,34	1.84	46,73	2,16	4,46	8,23	13,00
05	.234	5,94	.251	.312	6,38	7,93	.328	8,33	.576	14,63	1.32	33,52	.624	15,85	1.47	37,30	.714	18,13	1.67	42,41	.784	19,91	1.90	48,25	2,38	4,46	8,84	13,87
06	.297	7,54	.313	.375	7,95	9,53	.391	9,93	.639	16,23	1.39	35,30	.687	17,45	1.53	38,82	.777	19,73	1.74	44,19	.847	21,51	1.96	49,78	2,60	5,23	9,44	14,74
07	.359	9,11	.376	.438	9,55	11,13	.453	11,50	.702	17,83	1.45	36,82	.750	19,05	1.59	40,35	.840	21,33	1.80	45,71	.910	23,11	2.03	51,56	2,82	5,63	10,06	15,62
08	.422	10,71	.439	.500	11,15	12,70	.516	13,10	.764	19,40	1.51	38,35	.812	20,62	1.65	41,87	.902	22,91	1.86	47,24	.972	24,69	2.09	53,08	3,05	6,02	10,65	16,50
09	.484	12,29	.501	.562	12,73	14,28	.578	14,68	.826	20,98	1.57	39,87	.874	22,20	1.72	43,65	.964	24,48	1.92	48,70	1.034	26,26	2.15	54,60	3,26	6,40	11,27	17,36
10	.547	13,89	.563	.625	14,30	15,88	.641	16,28	.889	22,58	1.64	41,65	.937	23,80	1.78	45,17	1.027	26,08	1.99	50,54	1.097	27,86	2.21	56,13	3,49	6,79	11,86	18,24
11	.609	15,46	.626	.688	15,90	17,48	.703	17,85	.952	24,18	1.70	43,17	1.000	25,40	1.84	46,70	1.090	27,65	2.05	52,06	1.160	29,46	2.28	57,91	3,72	7,18	12,48	19,11
12	.672	17,06	.689	.750	17,50	19,05	.766	19,45	1.014	25,75	1.76	44,70	1.062	26,97	1.90	48,22	1.152	29,26	2.11	53,59	1.222	31,04	2.34	59,43	3,93	7,56	13,07	19,99
13	.734	18,64	.751	.812	19,08	20,63	.828	21,03	1.076	27,33	1.82	46,22	1.124	28,55	1.97	50,00	1.214	30,83	2.17	55,11	1.284	32,61	2.40	60,95	4,16	7,95	13,69	20,85
14	.797	20,24	.813	.875	20,65	22,23	.891	22,63	1.139	28,93	1.89	48,00	1.187	30,15	2.03	51,52	1.277	32,43	2.24	56,89	1.347	34,21	2.47	62,48	4,38	8,33	14,29	21,73
15	.859	21,81	.876	.938	22,25	23,83	.953	24,20	1.202	30,53	1.95	49,52	1.250	31,75	2.09	53,05	1.340	34,03	2.30	58,41	1.410	35,81	2.53	64,26	4,60	8,72	14,90	22,61
16	.922	23,41	.939	1.000	23,85	25,40	1.016	25,80	1.264	32,10	2.01	51,05	1.312	33,32	2.15	54,57	1.402	35,61	2.36	59,94	1.472	37,39	2.59	65,78	4,83	9,11	15,50	23,48
17	.984	24,99	1.001	1.062	25,43	26,98	1.078	27,38	1.326	33,68	2.07	52,57	1.374	34,90	2.22	56,35	1.464	37,18	2.42	61,46	1.534	38,96	2.65	67,30	5,05	9,49	16,11	24,35
18	1.047	26,59	1.063	1.125	27,00	28,58	1.141	28,98	1.389	35,28	2.14	54,35	1.437	36,50	2.28	57,87	1.527	38,78	2.49	63,24	1.597	40,56	2.71	68,83	5,26	9,88	16,73	25,22
19	1.109	28,16	1.126	1.188	28,60	30,18	1.203	30,55	1.452	36,88	2.20	55,87	1.500	38,10	2.34	59,40	1.590	40,38	2.55	64,77	1.660	42,16	2.78	70,61	5,49	10,27	17,37	26,10
20	1.172	29,76	1.189	1.250	30,20	31,75	1.266	32,15	1.514	38,45	2.26	57,40	1.562	39,67	2.40	60,92	1.652	41,96	2.61	66,29	1.722	43,74	2.84	72,13	5,72	10,65	17,94	26,98
21	1.234	31,34	1.251	1.312	31,78	33,33	1.328	33,73	1.576	40,03	2.32	58,92	1.624	41,25	2.47	62,70	1.714	43,53	2.67	67,81	1.784	45,31	2.90	73,65	5,93	11,04	18,53	27,84
22	1.297	32,94	1.313	1.375	33,35	34,93	1.391	35,33	1.639	41,63	2.39	60,70	1.687	42,85	2.53	64,22	1.777	45,13	2.74	69,59	1.847	46,91	2.96	75,18	6,16	11,42	19,15	28,72
23	1.359	34,51	1.376	1.438	34,95	36,53	1.453	36,90	1.702	43,23	2.45	62,22	1.750	44,45	2.59	65,75	1.840	46,73	2.80	71,11	1.910	48,51	3.03	76,95	6,39	11,81	19,75	29,60
24	1.422	36,11	1.439	1.500	36,55	38,10	1.516	38,50	1.764	44,80	2.51	63,75	1.812	46,02	2.65	67,27	1.902	48,31	2.86	72,64	1.972	50,01	3.09	78,48	6,62	12,20	20,34	30,47
25	1.484	37,69	1.501	1.562	38,13	39,68	1.578	40,08	1.826	46,38	2.57	65,27	1.874	47,60	2.72	69,05	1.964	49,88	2.92	74,16	2.034	51,66	3.15	80,00	6,83	12,58	20,96	31,35
26	1.547	39,29	1.563	1.625	39,70	41,28	1.641	41,48	1.889	47,98	2.64	67,05	1.937	49,20	2.78	70,57	2.027	51,48	2.99	75,94	2.097	53,26	3.21	81,53	7,05	12,97	21,56	32,21
27	1.609	40,86	1.626	1.688	41,30	42,88	1.703	43,25	1.952	49,58	2.70	68,57	2.000	50,80	2.84	72,14	2.090	53,08	3.05	77,46	2.160	54,86	3.28	83,31	7,28	13,36	22,17	33,09
28	1.672	42,46	1.689	1.750	42,90	44,45	1.766	44,85	2.014	51,15	2.76	70,10	2.062	52,37	2.90	73,62	2.152	54,66	3.11	78,99	2.222	56,44	3.34	84,83	7,49	13,74	22,77	33,97
29	1.734	44,04	1.751	1.812	44,40	46,03	1.828	46,43	2.076	52,73	2.82	71,62	2.124	53,95	2.97	75,40	2.214	56,23	3.17	80,51	2.284	58,01	3.40	86,35	7,72	14,13	23,38	34,84
30	1.797	45,64	1.813	1.875	46,05	47,63	1.891	48,03	2.139	54,33	2.89	73,40	2.187	55,55	3.03	76,92	2.277	57,83	3.24	82,29	2.347	59,61	3.47	87,88	7,95	14,52	24,00	35,70
31	1.859	47,21	1.876	1.938	47,65	49,23	1.953	49,60	2.202	55,93	2.95	74,92	2.250	57,15	3.09	78,45	2.340	59,43	3.30	82,81	2.410	61,21	3.53	89,66	8,16	14,90	24,59	36,58
32	1.922	48,81	1.939	2.000	49,25	50,80	2.016	51,20	2.264	57,50	3.01	76,45	2.312	58,72	3.15	79,97	2.402	61,01	3.36	85,34	2.472	62,79	3.59	91,18	8,39	15,29	25,21	37,46

1) Z tolerances. : steel alloy → - 0/+ 0.060 in (- 0/+ 1,524 mm)
stainless steel → - 0/+ 0.20 in (- 0/+ 5,08 mm)

4.3 Materials - Protection - Lubrication

TABLE 3

Materials	Code	Protection	Lubrication
Steel alloy (SAE 8740) as per AMS 6358	None	Cadmium plating as per QQ-P-416 type II, class 2	CETYL ALCOHOL as per A/DET/0013
Stainless steel A 286 (AISI 660) as per AMS 5737 or EZ6NCT25 as per AIR 9173	C	Passivation as per QQ-P-35	
NOTE: Since these rivets are pre-lubricated, they shall not be degreased.			

4.4 Shearing and tensile strength

TABLE 4

Code	Resistance to double shearing min. (N)	Tensile strength with ASNA2044 bushing min. (N)
3	23930	12230
4	41360	22240
5	64940	36920
6	93410	56490

5 DESIGNATION

Each rivet shall be designated as in example below:

Description block[1]	Identifier block[2]
RIVET	ASNA2040 C 3 10

Standard reference
Material protection code (see table 3)
Diameter code
Grip length code (see table 2)

NOTE – Where necessary, the company code F5442[3] shall be specified between the description block and the identifier block.

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[1] Optional.
[2] The identifier block shall be written without spaces. Those in the example are intended to facilitate reading.
[3] Company code assigned to EADS Corporate Standardization. F5442 is the designer's code for the present standard.

6 MARKING

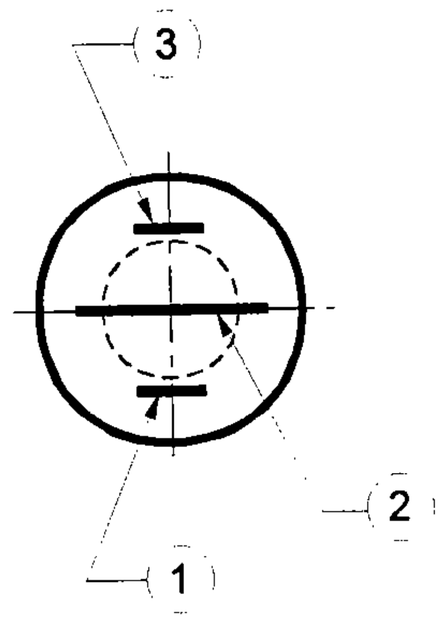

FIGURE 2

Marking on the rivet head consists of the following:

1) the manufacturer's monogram: see IGC 04.81.104,
2) the material code,
3) the rivet manufacturer's part number.

7 TECHNICAL SPECIFICATIONS

ICT 2017 or ICT 66 : Technical specifications.

8 MANUFACTURERS

Refer to the list of qualified manufacturers and products.

RECORD OF REVISIONS

Issue [1]	Paragraph modified	Description of modification	Reason
A (05.84)		New standard.	
B à F		Updated.	
G (11.86)		Change over to photocomposition.	Registered in general design manual.
H (08.87)	4 5	Previous designation replaced by new designation in new designs. Procurement specification modified in IGC standard. Identification marking added.	
J (07.92)	4.3	Standard re-written. Addition of alloy steel.	DA request.
K (07.02)	Table 1 Table 2	For the code ∅4, the dimension A min. is 6,325 mm and not 6,224 mm. Dimension Y : – Tolerance : ± 0.010 (± 0,25) Dimension Z : – 2 levels of tolerance according to the material.	EADS AIRBUS request. Compliance modification with the document of the supplier.

1) The issue I has not been used.