CORPORATE STANDARDIZATION	NORME D'ETUDES	ASNE0611
	CONNECTORS, CIRCULAR SQUARE FLANGE RECEPTACLES QUICK SCREW COUPLING, SCOOP-PROOF CONTACT PROTECTION	Issue : **E** Date : **12.2007**

1 FIELD OF APPLICATION

This ASN defines the main characteristics of the square flange receptacles taken from the individual sheet DOD-C-38999/20 that comply with the requirements of specification MIL-DTL-38999, series III, classes F, W, K, M and J.

The main characteristics of these receptacles are as follows:

- quick screw coupling with metal-to-metal bottoming,
- contacts with full scoop-proof protection during coupling,
- insertion and extraction of contacts from the rear of the receptacle,
- mounting on the panel by 4 bolts and nuts.

2 REFERENCES NORMATIVES

ISO 965-2	ISO general purpose metric screw threads. Tolerances Part 2: limits of sizes for general purpose external and internal screw threads Medium quality.
DOD-C-38999/20	Connectors, electrical, circular, wall mounting flange, triple start threaded coupling, removable crimp contact serie III, metric.
MIL-DTL-38999	Connector, electrical, circular, miniature, high density, quick disconnect (bayonet, threaded and breech coupling), environment resistant, removable crimp and hermetic solder contacts, general specification for.
AMS-C-26074	Coatings, electroless nickel requirements for.
EIA 364-10	Fluid immersion test procedure for electrical connectors.
MIL-STD-1373	Screw thread, modified, 60°, stub, double.
FED-STD-H28	Screw thread, standards for federal services.
AMS-QQ-P-416	Plating, cadmium (electro deposited).
AMS 2700	Passivation of corrosion resisting steel
EN 3155-008	Contact, electrical, male 008, type A, crimp, class S – Product standard.
EN 3155-009	Contact, electrical, female 009, type A, crimp. class S – Product standard
000.AS.4015[1)]	Spécification technique contacts # 8 mâles et femelles pour MIL-C-38999 séries 1 et 3, MBBN3330 avec In = 80A.

1) Document by 'Eurocopter France.

Keywords: Connector (TC) – Circular connector – Square flange receptacle – Screw coupling

Corporate Technical Office Standardization		For information, to contact the team standardisation EADS by E-mail: corporate.standardization@eads.net
F. LEBADEZET		

ASNE0545	Connectors circulars, plugs, quick screw coupling, scoop-proof contact protection.
ASNE0546	Female crimp contacts (sockets) for MIL-C-38999, series I, III et IV. connectors.
ASNE0547	Male crimp contacts (pins) for MIL-C-38999, series I, III et IV. connectors.
ASNE0548	Connectors, circular – Contact arrangements – Positioning of keys of keyways - Polarization.
ASNE0549	Connectors, MIL-C-38999, série III. Straight backshell with shield termination.
ASNE0550	Connectors, MIL-C-38999, série III. Elbow backshell with shield termination.
ASNE0612	Circular connectors, round flange receptacles, quick screw coupling, scoop-proof contact protection.
ASNE0613	MIL-C-38999, series I, III et IV connectors 16 size shielded crimp contacts (male and female).
ASNE0614	MIL-C-38999, series I, III et IV. Connectors size 8 – Shielded crimp contacts (male and female)
ASNE0615	MIL-C-38999 series III. Connectors size 8 – Shielded triaxial crimp contact (male and female).
ASNE0616	Filler plugs for sealed connectors.
ASNE0617	MIL-C-38999 series III et IV connectors – Backshell with straight strain relief clamp.
ASNE0618	MIL-C-38999 series III et IV connectors – Backshell with 90 degrees strain relief clamp.
ASNE0775	Faux contacts étanches pour connecteurs circulaires et rectangulaires.
ASNE0824	Contacts mâles à sertir, taille 8 pour connecteurs rectangulaires de baie et tiroirs à isolants interchangeables.
ASNE0825	Contacts femelles à sertir, taille 8 pour connecteurs rectangulaires de baie et tiroirs à isolants interchangeables.

Documents to be consulted at the latest issue in effect.

3 REQUIRED CHARACTERISTICS

3.1 Dimensions as per DOD-C-38999/20 - Mass

Dimensions in millimètres

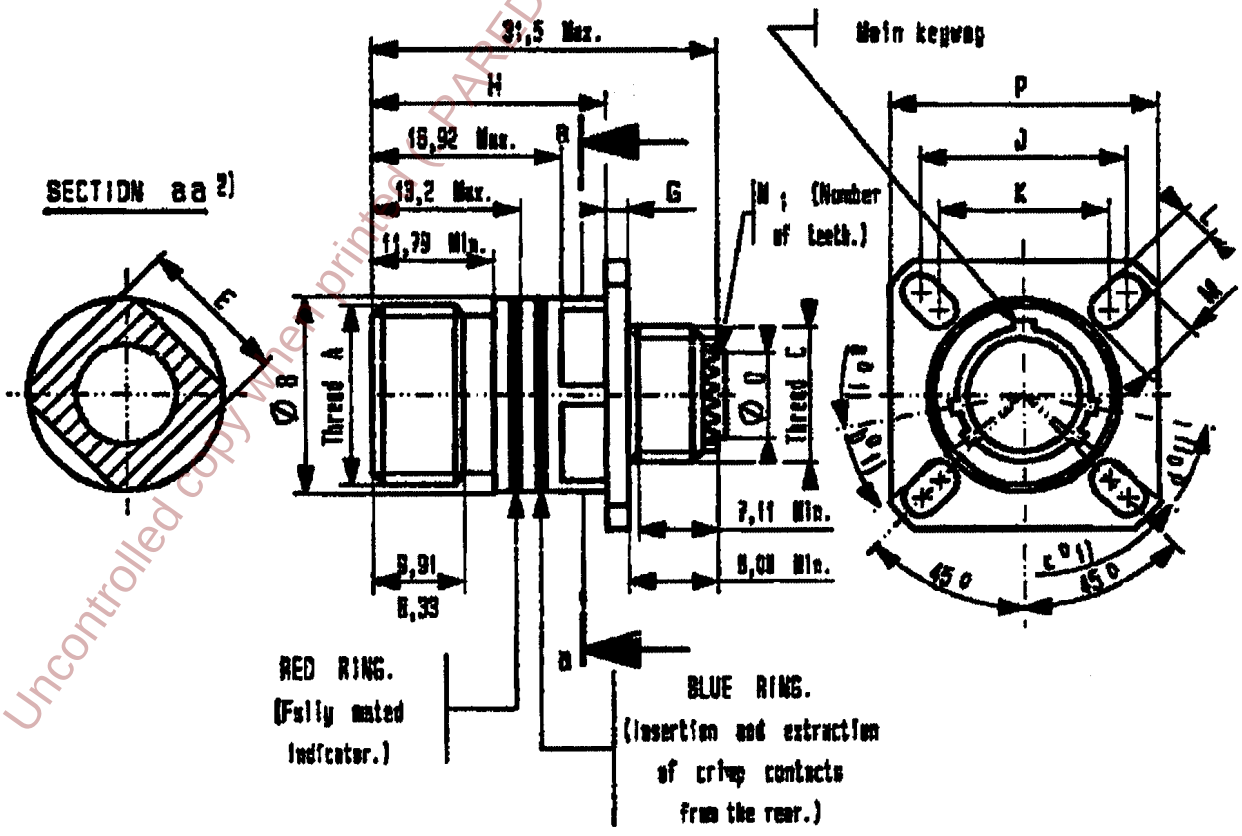


FIGURE 1

TABLE 1

Dimensions in millimetres

Receptacle size	Thread A 3 threads (class 2A) [1]	Ø B max	Thread C Class 6 g [2]	Ø D max	E max	G		H max	J	K	L ± 0,2	M ± 0,2	P ± 0,3	N1
						Classes M et J	Other classes							
9	.6250/.1/.3	15,88	M12 x 1.0	7,59	11,84	2,1 to 3,65	2,1 to 2,5	20,9	18,26	15,09	3,25	5,49	23,8	12
11	.7500/.1/.3	19,05	M15 x 1.0	10,85	15,01				20,62	18,26		4,93	26,2	10
13	.8750/.1/.3	22,23	M18 x 1.0	13,74	19,08				23,01	20,62			28,6	20
15	1.000/.1/.3	25,40	M22 x 1.0	16,92	22,25	2,1 to 3,65	2,1 to 2,5	20,9	24,61	23,01	3,25	4,83	31,0	24
17	1.1875/.1/.3	30,16	M25 x 1.0	20,09	25,43				26,97	24,61			33,3	28
19	1.2500/.1/.3	31,75	M28 x 1.0	22,78	28,60				29,36	26,97			36,5	32
21	1.3750/.1/.3	34,73	M31 x 1.0	25,96	31,78	2,1 to 4,35	2,1 to 3,2	20,1	31,75	29,36	3,25	4,93	39,7	36
23	1.500/.1/.3	38,10	M34 x 1.0	29,13	34,95				31,93	31,75	3,91	6,15	42,9	40
25	1.6250/.1/.3	41,28	M37 x 1.0	32,31	38,13				38,10	34,93			46,0	44

1) See MIL-DTL-38999, FED-STD-H28 and MIL-STD-1373
Dimensions in inches – Peach = .1. ¨Lead = 3
2) See ISO 965. Partis 1,2 and 3. Thread root radius: 0,1 mm.

TABLE 2

Receptacke size	9	11	13	15	17	19	21	23	25
Mass [1] (g) (classes F, W)	10	15	20	25	31	35	45	58	68
Mass [1] (g) (classes M, J)	8	11	15	21	27	31	36	45	60
Mass [1] (g) (classes K)	22	26	34	43	60	62	77	86	100

[1] Approximate mass of receptacle without contacts (for information)

3.2 Installation cutouts

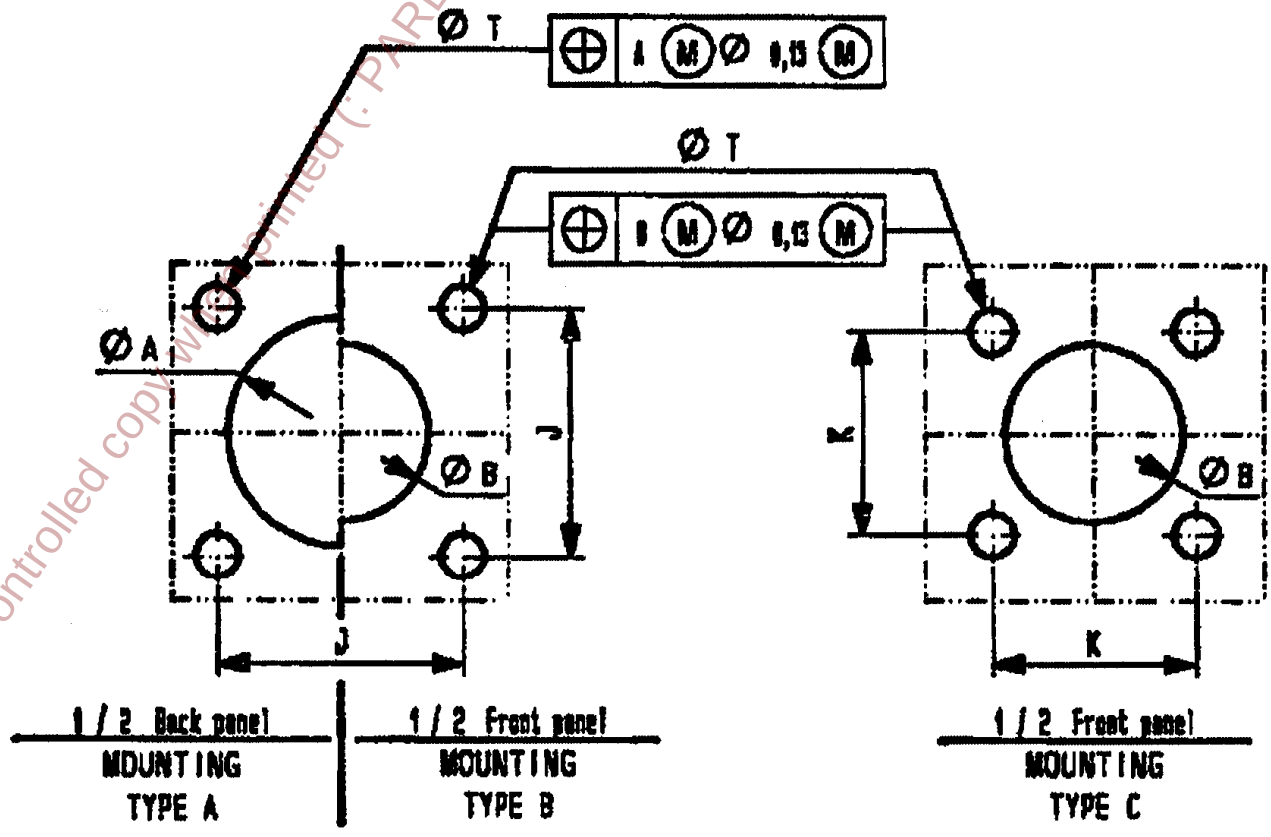


FIGURE 2

TABLE 3

Dimensions in millimetres

Receptacle size	9	11	13	15	17	19	21	23	25
A min	16,66	20,22	23,42	26,59	30,96	32,94	36,12	39,29	42,47
B	13,11	15,88	19,05	23,01	25,81	28,98	32,16	34,93	37,69
J	18,26	20,62	23,01	24,61	29,97	29,36	31,75	34,93	38,10
K	15,09	18,26	20,62	23,01	24,61	26,97	29,36	31,75	34,93
T ± 0,13	3,25							3,91	
Important note: With a type A mounting from the rear of the panel, the thickness of the latter plus that of the bolt head shall not exceed 3,2 mm.									

3.3 Materials – Surface treatments

- Shell ..... : Aluminium alloy (classes F and W)
  Composite plastic (classes M and J)
  Stainless steel (class K)
- Contact insert ..... : Thermosetting resin
- Front seal (interface) for receptacle with male contacts ..... : Silicon
- Grommet ..... : Silicon
- Shell finish ..... : See table 6

3.4 Operation

- Temperature operating ranges
  - 65℃ à + 175℃ or + 200℃ depending on the class ..... : See table 6
- Environmental resistance ..... : See paragraphs 3.5 to 3.7.

3.5 Electrical characteristics

- Permissible electrical conductors ..... : See table 4

TABLE 4

Contact size	Permissible conductors		
	Insulation external diameter		AWG gauge – (cross-section in mm^2)
	min.	max.	
22D	0,76	1,37	28 à 22 (0,10 à0,40)
20	1,02	2,11	24 à 20 (0,25 à 0,60)
16	1,65	2,77	20 à 16 (0,60 à 1,20)
12	2,48	3,61	14 à 12 (2,00 à 3,00)
10	3,21	3,76	12 à 10 (3,00 à 5,00)
8	3,43	3,94	voir note
Note – See ASNE0613, E0614 and E0615			

- Earth continuity. AV between plug and receptacle at 1,5 V DC/1A
  Class F ..... : 1 mV
  Class W ..... : 2,5 mV
  Class K ..... : 10 mV
  Classes M et J ..... : 6 mV

- Protection against electromagnetic interference (EMI)
  * attenuation at 100 MHz
    Classes F, W, M and J : 90 dB
    Class K ..... : 80 dB
  * attenuation at 1000 MHz
    Classes F, W, M and J ..... : 85 dB
    Class K ..... 65 dB
  * attenuation at 10000 MHz
    Class F ..... : 65 dB
    Class W ..... : 50 dB

- Insulation resistance at 500 V DC
  * at + 20℃ (ambiance) ..... : 5000 MQ
  * at + 200℃ in classes F, K and M, at + 175℃ in c lasses W and J ... : 1000 MQ

- Dialectric withstanding voltage (V rms 50 Hz) ..... : See ASNE0548

3.6 Mechanical characteristics

- Service life (coupling/uncoupling cycles) ..... : 500
  1500 (classes M and J)
  with special contacts
- Resistance to 300 g – 3 ms impacts ..... :
- Resistance to sine vibrations (at ambient and at high temperature)
  * 254 mm/s – 10 to 50Hz ..... :)
  * 1,5 mm double amplitude – 50 to 140 Hz ..... :) Rupture de contact
  * 60 g – 140 to 2000 Hz ..... :) ≤ 1µs
- Resistance to random vibrations
  * 44,1 g – 50 to 2000Hz (at high temprerature) ..... :)
  * 49,5 g - 25 to 2000 Hz (at ambient temperature) ..... :)

- Contact retention in the insert (residual contact movement ≤ 0,3 mm)
  * Size 22 D contact ..... : 44 N
  * Size 20 contact ..... : 67 N
  * Size 16, 12 and 8 ..... : 111 N

- Resistance to fluids EIA 364-10 ..... : See MIL-DTL-38999
- Contact engagement (when competely coupled) ..... : 1,27 mm mini
- Applicable transverse load (to a coupled plug and receptacle) ..... : See table 5

TABLE 5

Plug size	9	11	13	15	17	19	21	23	25
Load N.m	11,3	33,9	45,2	56,5	67,8	79,1	90,4	101,7	113,0

NOTE : For models M and J, receptacles shall be inserted from the rear of the panel.
The load is applied on the end of the plug or adapter backshell perpendicular to the connector axis.

3.7 Classes (environmental resistance specific to each class)

TABLE 6

Class	Finish	Operating Temperature	Resistance to salt spray
F	Conductive chemical nickel-plating (AMS-C-26074 class 3 or 4 – Grade B)	- 65℃ to + 200℃	48 hours
W	Conductive olive-green cadmium-platingr (AMS-QQ-P-416)	- 65℃ to + 175℃	500 hours
K	Passivation (AMS 2700)	- 65℃ to + 200℃	500 hours
M	Conductive chemical nickel-plating	- 65°to + 200℃	2000 hours
J	Conductive olive-green cadmium-plating	- 65℃ to + 175℃	2000 hours

3.8 Receptacle size – Contacts arrangements

See table 1 and ASNE0548.

3.9 Types de contacts

TABLE 7

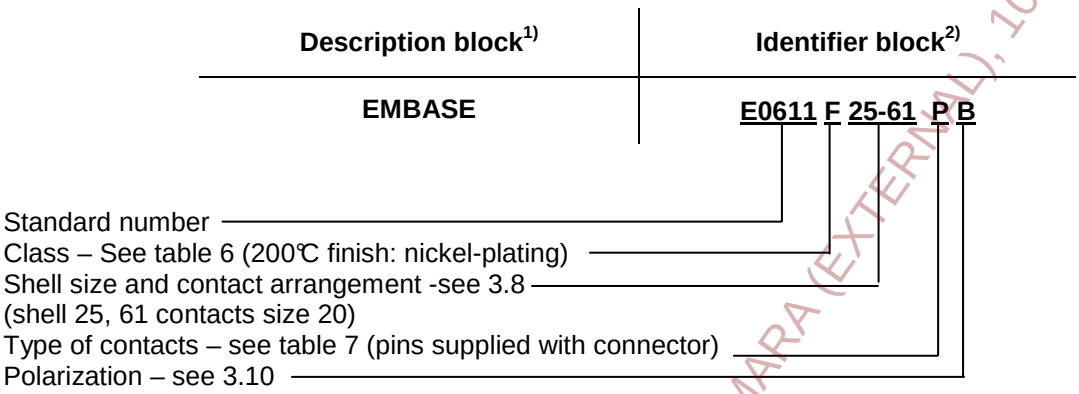
Code	Type de contact – Etat de la livraison
P	Pin contact (supplied with connector)
S	Socket contact (supplied with connector)
X[1)]	Pin contact (supplied separately)
Y[1)]	Socket contact (supplied separately)
[1)] Codes X and Y shall never be marked on the receptacle, this shall only bear codes P and S.	

3.10 Positioning of keys or keyways - Polarization

See ASNE0548.

4 DESIGNATION

The item shall be designated as follows :



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

5 MARQUAGE

5.1 Marking

Marking on the receptacle shell shall include the following:

- the manufacturer's name or monogram,
- the manufacturer's part number and (or) designation as per DOD-C-38999/20,

5.2 Packaging

The label on the package shall indicate:

- the manufacturer's name or monogram, his part number and, when applicable, the designation as per DOD-C-38999/20,
- the EADS part number,
- the date of manufacture (year - week).

6 TECHNICAL SPECIFICATION

- MIL-DTL-38999
- DOD-C-38999/20
- Qualification of arrangement « 21-48 » as per specification 000.AS.4015.

7 MANUFACTURERS

Refer to the list of qualified manufacturers and products.

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

RECORD OF REVISIONS

Issue[1)]	Paragraph modified	Description of modification	Reason
A 01.89		New standard.	H/DE.AC Helicopter Division request dated 20.07.88
B 09.93	Sections 1, 2 and 4	M, J and K shell class codes added	F/DMGN Eurocopter France request dated 05.07.93
C 09.94	4.5	Size 10 contact added.	F/DM GNO Eurocopter France request dated 14/02/94.
D (09.95)	2 an 6	ASNE0824 and E0825 contacts and technical specification 000.AS.4015 added.	F/DM GNO Eurocopter France request dated 19/06/95.
E	Page 1 2 4	"AEROSPATIALE" changed to "EADS" MIL-S-38999 changed to MIL-DTL-38999 MIL-STD-1344 changed to EIA 364-10 QQ-P-416 changed to AMS-QQ-P-416 QQ-P-35 changed to AMS 2700 Class - see table 5 changed to see table 6 Type of contacts - see table 6 changed to see table 7	Group trade name changed. AIRBUS request Email of 03/08/2007