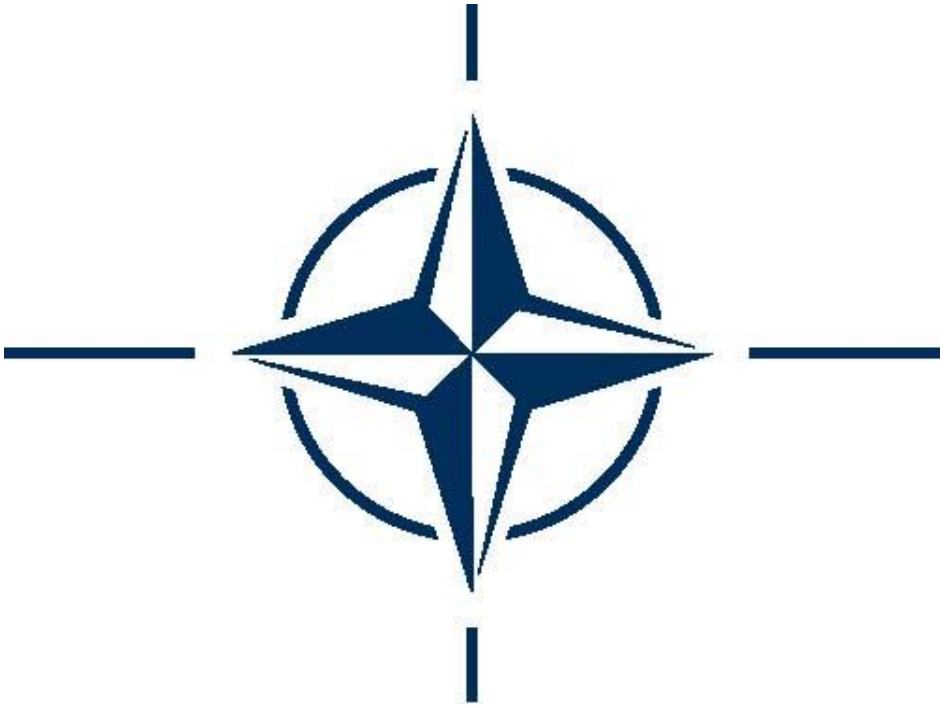
NATO STANDARD

AEP-4007

ELECTRICAL CONNECTORS BETWEEN PRIME MOVERS, TRAILERS AND TOWED ARTILLERY

Edition A, version 1

OCTOBER 2021



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NATO LETTER OF PROMULGATION

15 October 2021

1. The enclosed Allied Engineering Publication AEP-4007, Edition A, version 1 - ELECTRICAL CONNECTORS BETWEEN PRIME MOVERS, TRAILERS AND TOWED ARTILLERY; which has been approved by the nations in the NATO ARMY ARMAMENTS GROUP, is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 4007.

2. AEP-4007, Edition A, version 1, is effective upon receipt.

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4. This publication shall be handled in accordance with C-M(2002)60.

Dimitrios SIGOULAKIS
Major General, GRC (A)
Director, NATO Standardization Office

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RECORD OF RESERVATIONS

CHAPTER	RECORD OF RESERVATION BY NATIONS
Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Document Database for the complete list of existing reservations.	

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RECORD OF SPECIFIC RESERVATIONS

[nation]	[detail of reservation]
DEU	1. Germany reserves the right to apply other circuit arrangements than those listed in chapter 4.5 of the agreement. Reason: The reservations stay unchanged to those in Ed 2 2. Germany reserves the right to apply the 12-pole-receptacle in accordance with annex A only for the repair of vehicles introduced before 2012-04-01. Reason: According to law vehicles who were brought into traffic after 2012-04-01 should be under jurisdiction of the ADR (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY ROAD).
Note: The reservations listed on this page include only those that were recorded at time of promulgation and may not be complete. Refer to the NATO Standardization Document Database for the complete list of existing reservations.	

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CHAPTER 1 DEFINITION

The following terms and definitions are used for the purpose of this agreement:

a. Blackout.
When applied to lighting means reduced lighting to comply with regulations governing vehicle movement under blackout or tactical conditions. When applied to rear lights, stoplights, front corner markers (or their equivalents), etc. means special purpose lights or lamps, capable only of suitably reduced emissions, solely for use under blackout or tactical conditions. There is no EEC equivalent.

b. Convoy light.
A light used by certain nations to mark the rear of a vehicle operating under blackout or reduced lighting conditions. It does this by reflecting on a white surface from a cowled lamp. It is used as an alternative to blackout rear lights. There is no EEC equivalent.

c. End-outline (Europe) or Clearance Lamps (North America).
Used to indicate the outer edges of the front and rear of the vehicle/trailer, and are mounted as high as possible. End-outline (Europe) conforms to EEC Definition.

d. Side Marker Lights (North America).
Are used to define the outline of the trailer when viewed from the side. On each side, one red as far to the rear as practicable and one yellow as far forward as practicable. There is no EEC equivalent.

e. Rear Position (Europe) and Tail Lamps (North America).
Means the lamp used to indicate the presence and width of the vehicle when viewed from the rear. Rear Position (Europe) conforms to EEC Definition.

f. Front comer marker lights.
The EEC equivalent of these are referred to as front position (side) lamps. They are also known variously as side or front clearance lights or lamps.

g. Rear lights.
The EEC equivalent of these are referred to as rear position (side) lamps. They are also known variously as rear or tail clearance lights or lamps.

h. Rear fog lights.
The EEC equivalent is referred to as rear fog lamps.

i. Registration plate light.
The EEC equivalent of this is referred to as rear registration plate lamp. In North America, if required, the term license plate lamp is used.

j. Stoplights.
The EEC equivalent of these are referred to as stop lamps. They are also known as brake lights.

k. Turn Signal Lights.
The EEC equivalent of these are referred to as direction indicator lamps. They are also known variously as direction indicators, indicators or flashers.

l. Normal.
With regard to lighting and signaling implies operating under conditions of normality and not under blackout or tactical conditions.

m. Left (or Right) Side of a Vehicle.
Commonly, LH or RH. The side of a vehicle adjacent to the same hand of the driver (i.e. when facing forward).

n. Return (Earth).
The completion of an electrical circuit via "earth" or "ground", often the chassis or frame of a vehicle to which is connected one pole of the vehicle battery.

o. Prime Mover.
A motor vehicle, wheeled or tracked which is fitted for towing. Prime movers are further classified by the type of trailer they tow within the limit of this agreement.

p. Tactical Land Vehicle.
A military vehicle, whether designed primarily for military use or adapted from a commercial vehicle, which has specialized military characteristics to fit it for use by forces in the field in direct connection with, or in support of, combat operations or the training of troops for such operations.

q. Reversing Lamp.
A lamp used to illuminate the road to the rear of a vehicle for the purpose of reversing and to warn other road users that the vehicle is reversing or about to reverse.

CHAPTER 2 DETAILS OF AGREEMENT

2.1. SCOPE OF AGREEMENT

This standard applies to:

a. All prime movers, trailers and semi-trailers which are specifically for military usage.

b. Towed artillery and other specialized equipment of military usage.

2.2. GENERAL

The NATO countries have agreed to adopt standard designs for 12 pin, 24 volt, plug and socket-plug, receptacles and a range of harness assemblies (Inter-Vehicular Cable Assemblies) fitted with 12 pin plugs (plug and socket-type) as related to prime movers and trailers including semi-trailers, towed artillery and other specialized equipment of military usage.

2.3. TYPES AND LOCATIONS OF RECEPTACLES

a. Prime Movers for Trailers (other than semi-trailers).
A socket-type receptacle conforming to Figure 1 complete with cap conforming to Figure 6 or 7, shall be fitted at the rear of the prime mover. This shall be situated between the towing hook and the left-hand side of the prime mover looking in the forward direction. Receptacle shall also be within 500 mm of the towing hook.

b. Trailers and Towed Vehicles (other than semi-trailers).
A pin-type receptacle conforming to the dimensions shown on Figure 1 complete with cap conforming to Figure 6 or Figure 7 shall be fitted at the front of the towed vehicle.

c. Prime Movers for semi-trailers.
A socket-type receptacle conforming to the dimensions shown on Figure 1 and complete with cap conforming to Figure 6 or Figure 7 shall be fitted between the brake hose connections, preferably in the same horizontal plane. Should the prime mover be designed to operate also with full trailers or other towed equipment, an additional receptacle shall be fitted in accordance with paragraph 2.3.a.

d. Semi-Trailers.
A pin-type receptacle conforming to the dimensions shown on Figure 1 complete with cap conforming to Figure 6 or Figure 7 shall be fitted between the brake hose connections, preferably in the same horizontal plane.

e. Receptacles, Receptacle Caps and Plugs.

i. Waterproofing of Receptacles.
To ensure receptacles Figure 1 are waterproof, when Inter-Vehicular Cable Assembly is disconnected, the use of alternative type caps to suit individual national requirements are shown for example at Figure 6 and Figure 7. It is important that cap Figure 7 should have an interference fit giving a good seal (no screw threads) between rubber type material of cap and receptacle.

ii. Retention of Plugs on Receptacles.
To ensure plugs Figure 2 and Figure 3 are held in position on receptacles Figure 1, it is important that there is an interference fit, giving a good seal between plugs and receptacles, particularly when the spring loaded type cap Figure 6 is not selected for use. Care shall be taken to ensure waterproofed features do not compromise interoperability of the receptacle.

2.4. INTER-VEHICULAR CABLE ASSEMBLIES

a. Types.

i. Double-Ended.
Consisting of one pin-type plug conforming to the dimensions shown in Figure 2, and one socket-type plug conforming to the dimensions shown in Figure 3, complete with 12 core lead.

ii. Single-ended.
Consisting of one pin-type plug conforming to the dimensions shown in Figure 2 complete with 12 core lead.

b. Carriage and Length.
Complete Inter-Vehicular Cable Assemblies shall be carried on vehicles as follows:

i. Trailers and Towed Artillery (other than Semi-Trailers). As part of normal equipment and of such a length as will extend at least 500 mm beyond towing eye.

ii. Semi-Trailers. No Inter-Vehicular Cable Assembly to be carried.

iii. Prime Movers (for Trailers other than Semi-Trailers). No Inter-Vehicular Cable assembly to be carried except as required in paragraphs (b) (iv).

iv. Prime Movers (for Semi-Trailers and also those used as Wreckers or Recovery Vehicles). One double-ended assembly as part of normal equipment.

c. Preferred lengths of Double-ended Cable Assemblies.

	NOMINAL OVERALL LENGTH (millimeters)
1	1000
2	1500
3	2000
4	2500

2.5. CIRCUIT ARRANGEMENTS

The circuit and pin allocation is as follows:

a. Pin A.
The circuit taken through pin A shall be exclusively for the purpose of:

i. Trailer blackout.

ii. Front and rear corner marker lights blackout.

b. Pin B.
The circuit taken through pin B shall be used exclusively for the purpose of: Left hand turn signal.

c. Pin C.
The circuit taken through pin C shall be used exclusively for the purpose of: Trailer convoy lights.

d. Pin D.
The circuit taken through pin D shall be used exclusively for the purpose of: Return (earth).

e. Pin E.
The circuit taken through pin E shall be used exclusively for the purpose of:

i. Normal tail lights.

ii. Side marker lights.

iii. Front clearance lights.

iv. Rear clearance lights.

v. Registration plate illumination.

f. Pin F.
The circuit taken through pin F shall be used exclusively for the purpose of: Blackout stoplights.

g. Pin H.
The circuit taken through pin H shall be used exclusively for the purpose of: Fog lights.

h. Pin J.
The circuit taken through pin J shall be used exclusively for the purpose of: Right hand turn signal.

i. Pin K.
Pin K shall be used exclusively for the purpose of providing an auxiliary power feed to a towed vehicle where there is a requirement for this.

j. Pin L.
The circuit taken through pin L shall be used exclusively for the purpose of: Return (earth).

k. Pin M.
The circuit taken through pin M shall be used exclusively for the purpose of: Normal stoplights.

l. Pin N.
The circuit taken through pin N shall be used exclusively for the purpose of: Reversing lights.

CHAPTER 3 NOTES

3.1. CURRENT (ELECTRICAL) REQUIREMENTS:

a. Contacts: individual contacts shall have a maximum rating of 15 amps.
b. Receptacles: receptacles shall have a maximum TRAILER LOAD CAPACITY rating of 30 amps.

3.2 Any NATO Armed Forces who have difficulty in working to this pin allocation for any reason whatsoever must notify AC/225 LCGLE (Land Capability Group on Land Engagement) immediately, so that an agreed solution may be obtained.

3.3 It is realized that some cases may arise where it is desired to use fewer than the twelve conductors indicated in the Standard. In such cases the conductors of the circuits used shall still be arranged to conform to chapter 2.5, "CIRCUIT ARRANGEMENTS".

3.4 Figure 1 show the mechanical interface only, these receptacles must be earthed to suit individual nation’s requirements.

3.5 While it is intended that these connectors are used on vehicles having the Standard 24 volt system it is permissible for them to be used on military vehicles which do not. On all vehicles not conforming to the 24 volt system a notice shall be affixed adjacent to the receptacle giving the actual voltage and earth polarity.

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ANNEX A RECEPTACLE – SOCKET and PIN TYPE

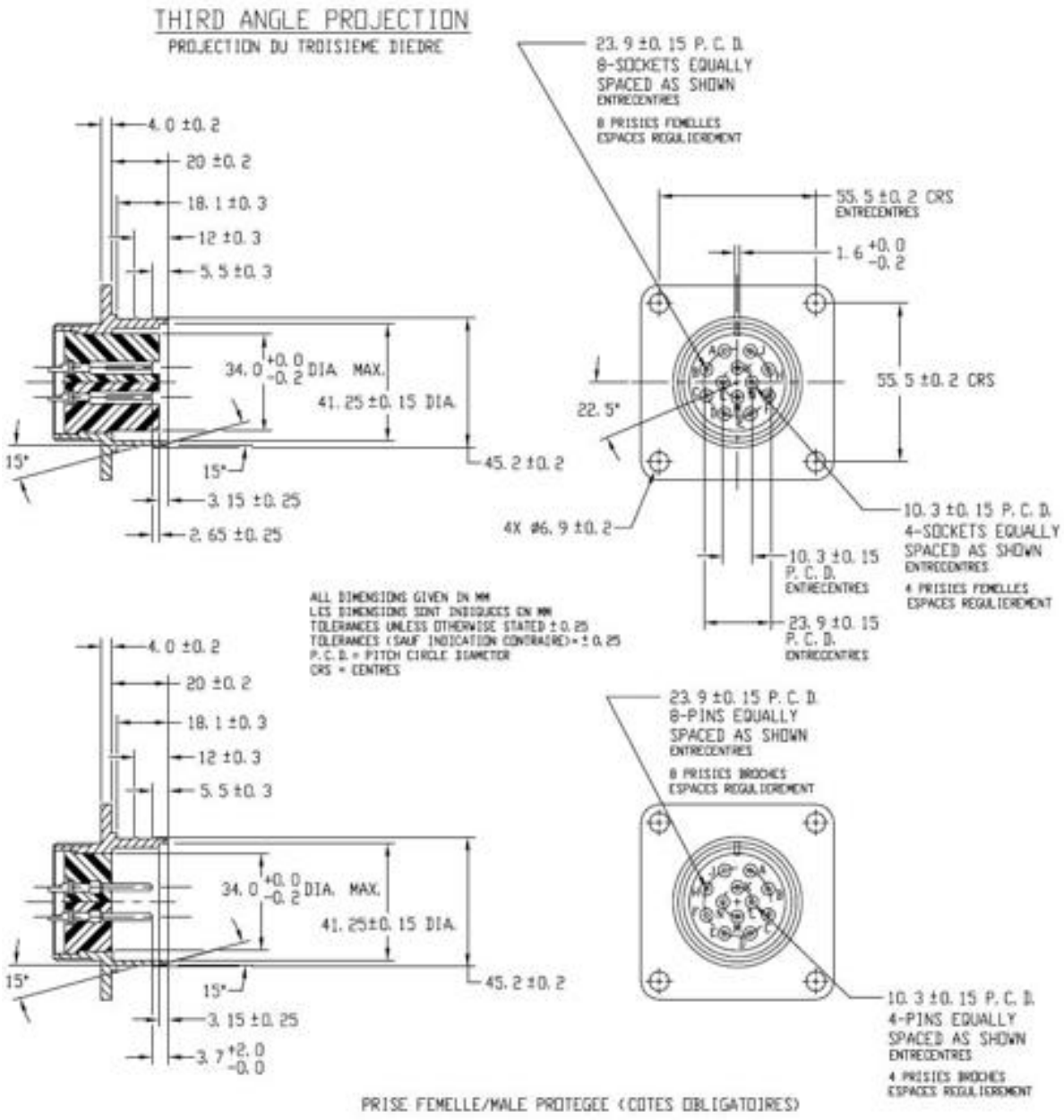

Figure 1: Receptacle – Socket and Pin Type (Mandatory Dimensions)

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ANNEX B PLUG - PIN TYPE

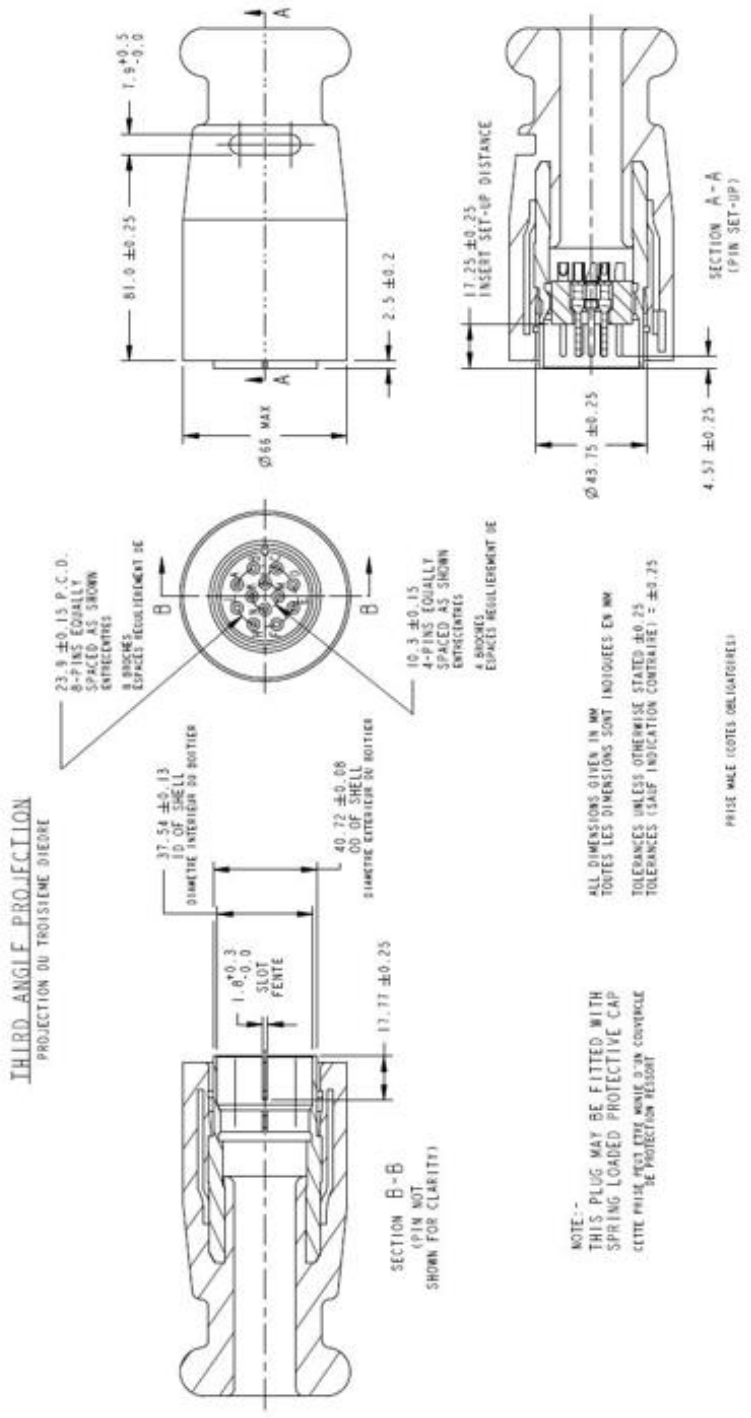

Figure 2: Plug – Pin Type (Mandatory Dimensions)

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ANNEX C PLUG – SOCKET TYPE

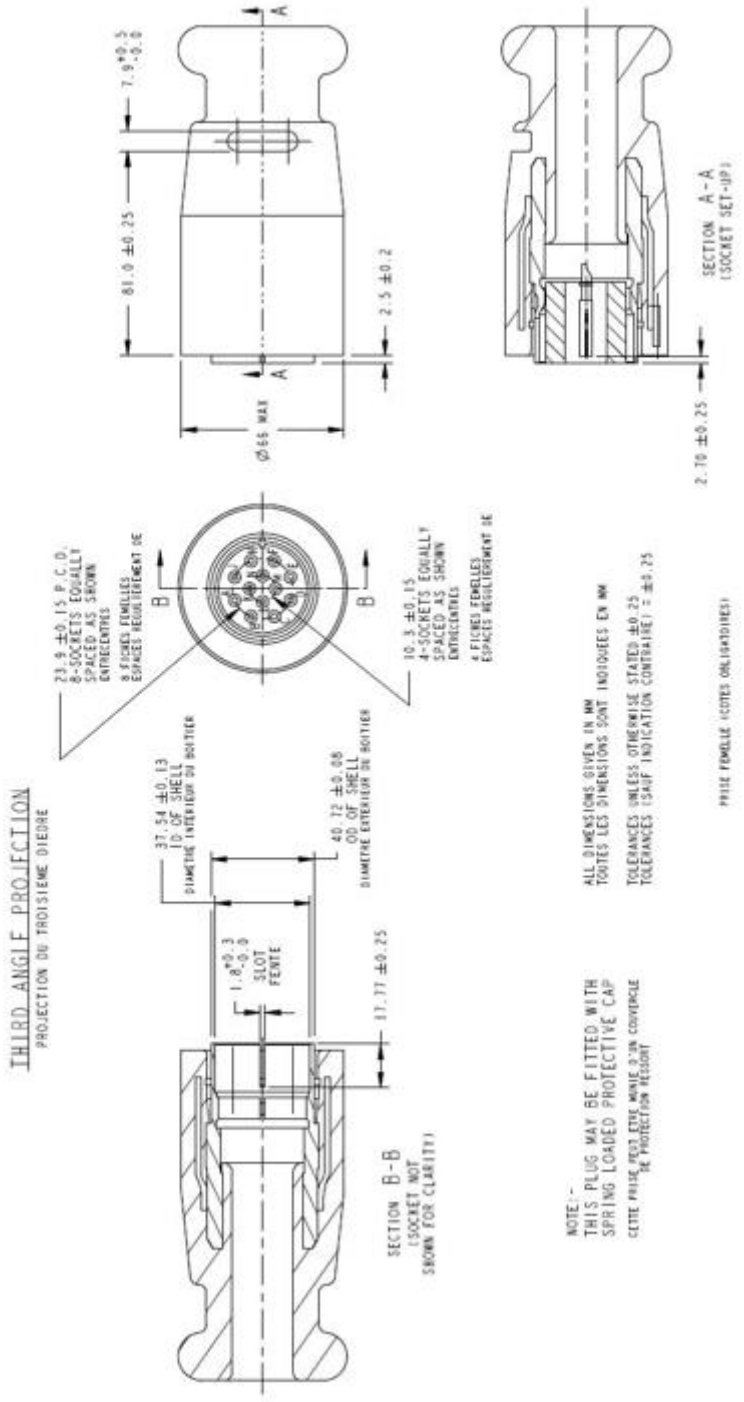

Figure 3: Plug – Socket Type (Mandatory Dimensions)

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ANNEX D SOCKET

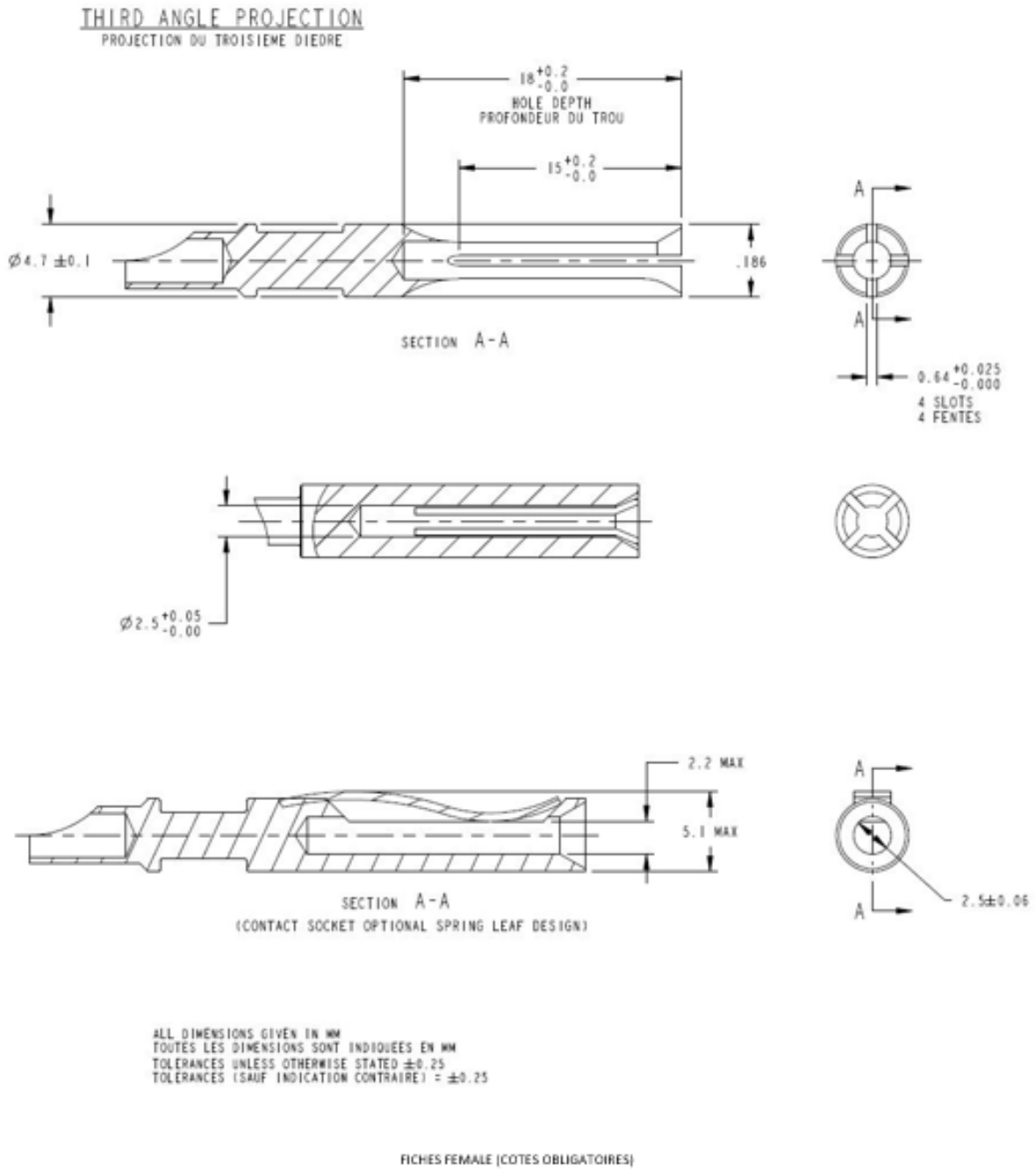

Figure 4: Socket (Mandatory Dimensions)

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ANNEX E PIN

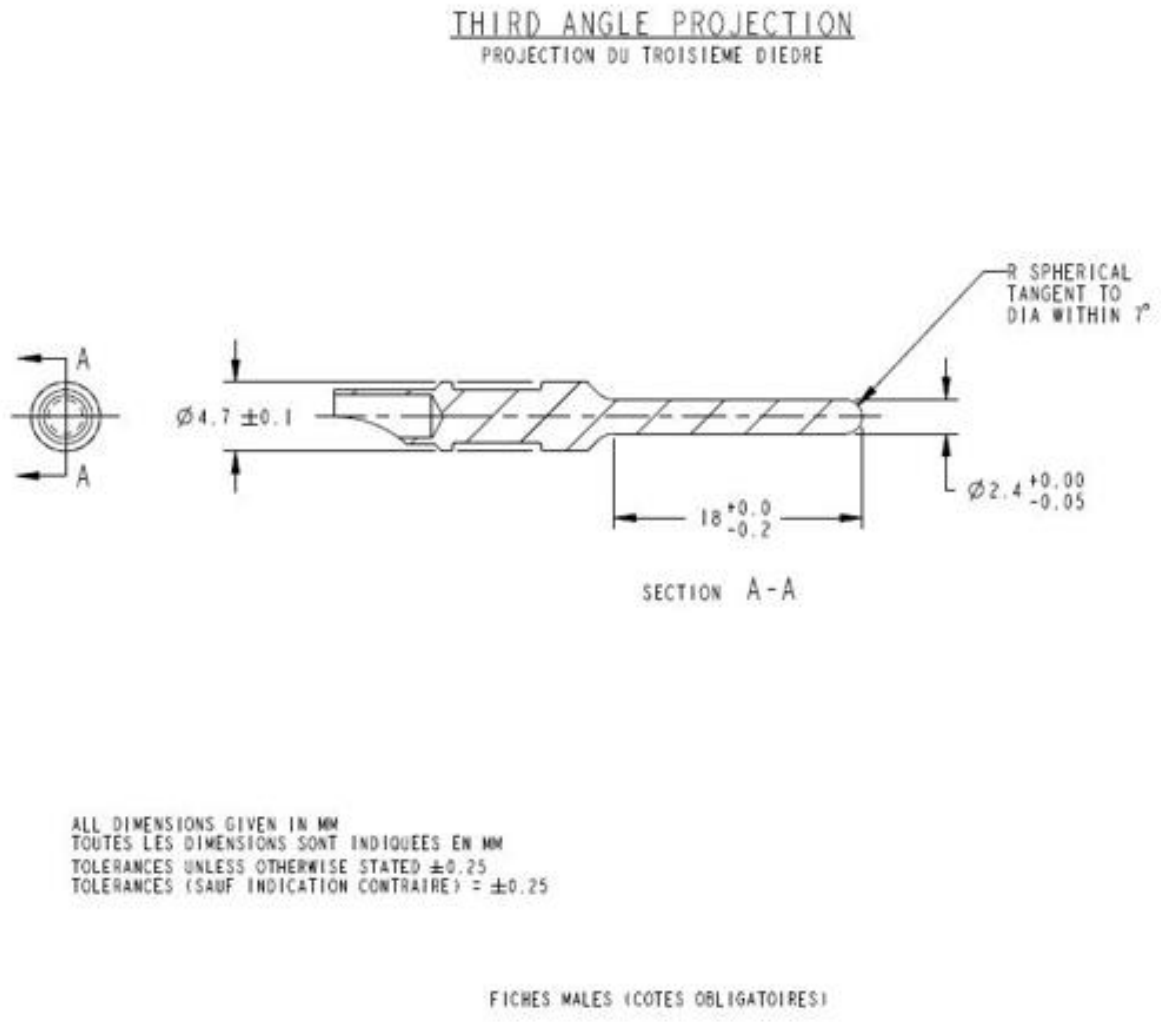

Figure 5: Pin (Mandatory Dimensions).

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ANNEX F RECEPTACLE CAP

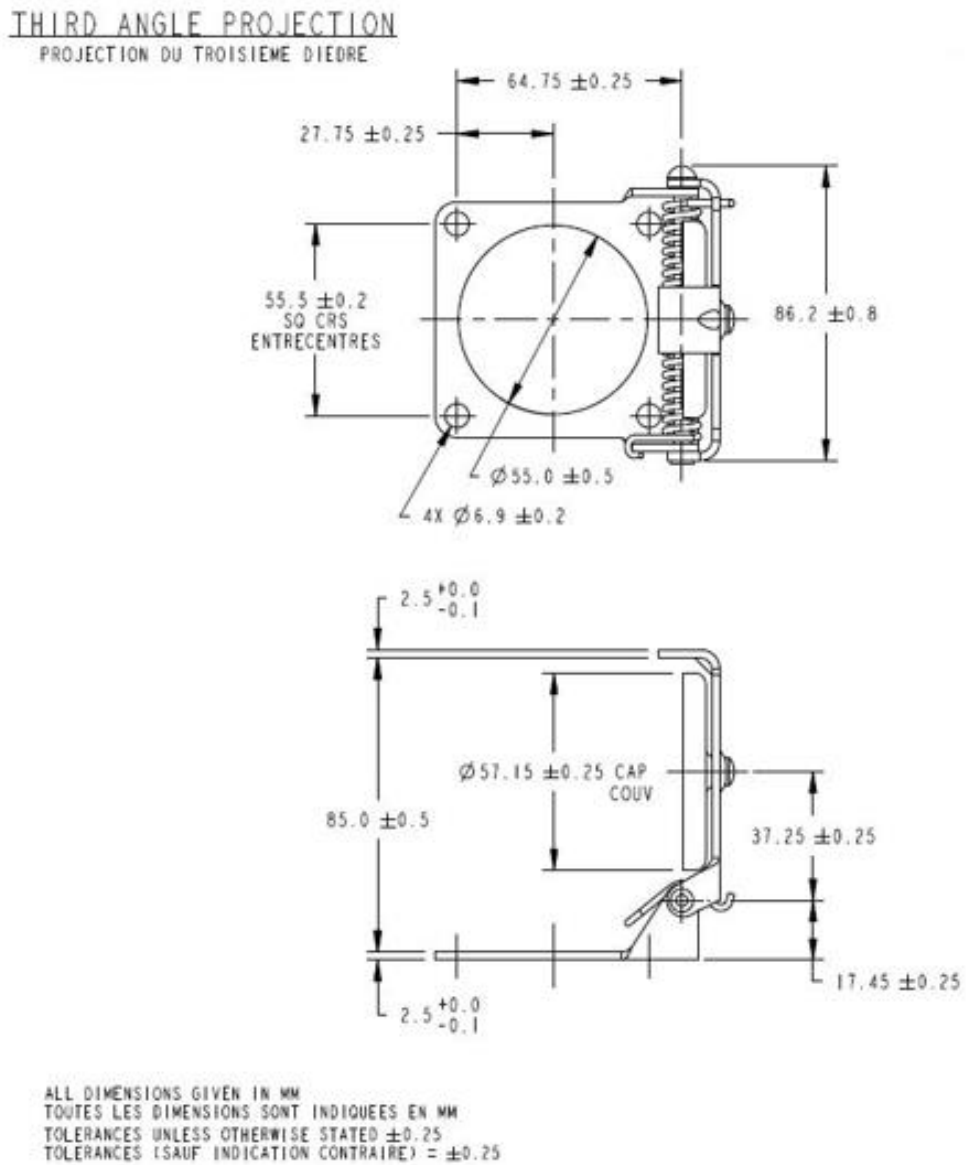

Figure 6: Receptacle Cap (Mandatory Dimensions).

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ANNEX G RECEPTACLE CAP

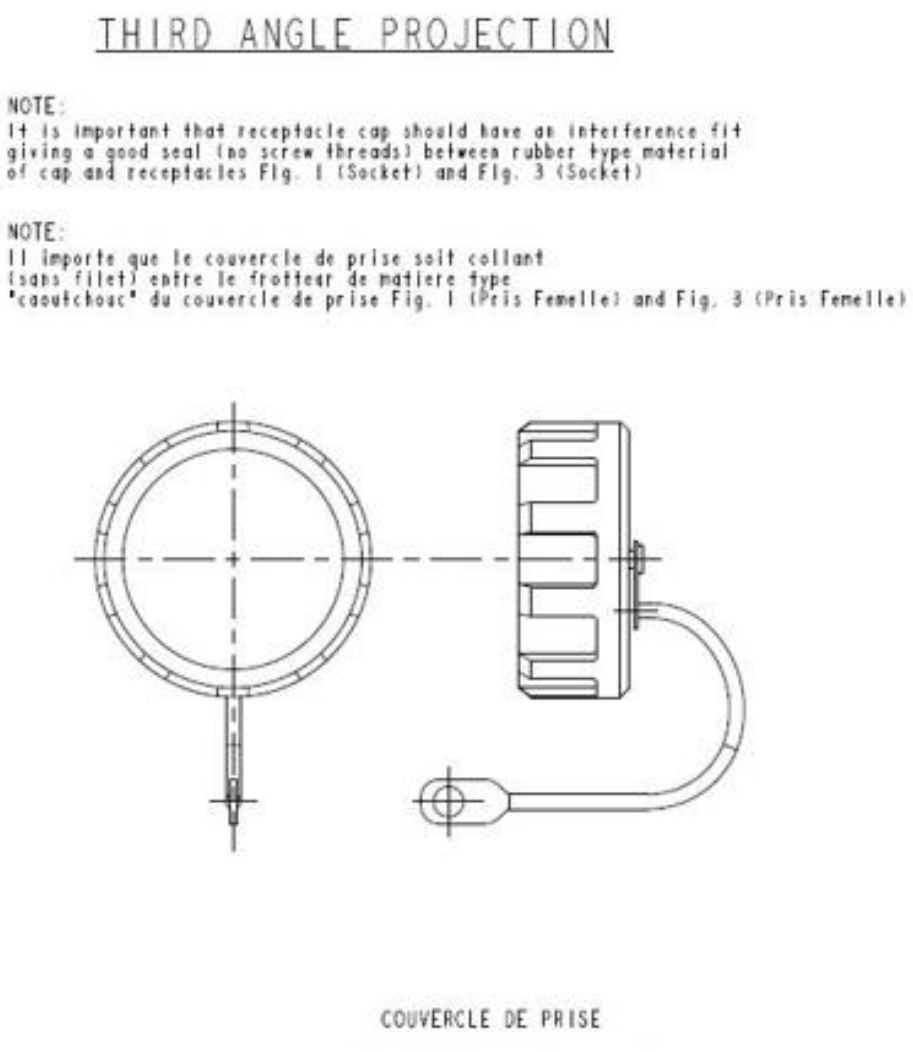

Figure 7: Receptacle Cap.

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