

MOUNTING INSTRUCTION

MU27P - Receptacle

PRJ-14-000003352

A4 printed version TCPN: YSPEC-408-157000-1

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1. INTRODUCTION

The MU27P connector is a standard connector for the American railway especially for locomotives. This connector is completely designed according to 2 standards:

- **AAR S-512** : Manual of Standards and Recommended Practices Locomotives and Locomotive Interchange Equipment (27 point control plug and receptacle)
- **APTA RP-E-019-99** : Recommended Practice for 27-Point Jumper and Receptacle Hardware for locomotives and Locomotive-Hauled Equipment

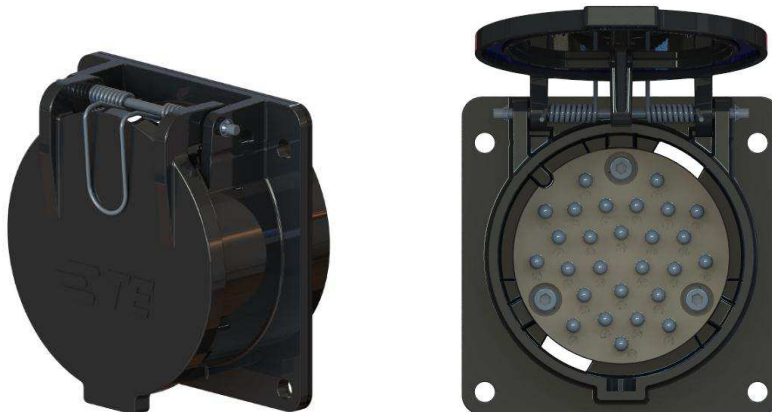
This document is an operating instruction to mount the receptacle. There is also the same type of documentations for the installation of the plug and the dummy. The respective references are 408-157000-2 and 408-157000-3.

2. BILL OF MATERIAL

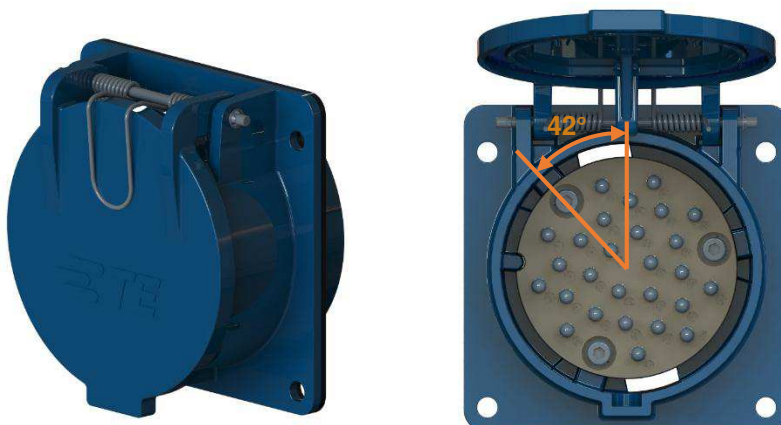
2.1 Introduction

There are 4 types of connector corresponding to 4 functions on the loco. Each connector is differentiated by colour and/or by the position of insulators. The 4 types of connectors are named as follows:

- *MU. LOCO UNIT CONTROLS* : Position insulators at 0° and black colour for the body
Commercial reference: 27P-REC-1-01

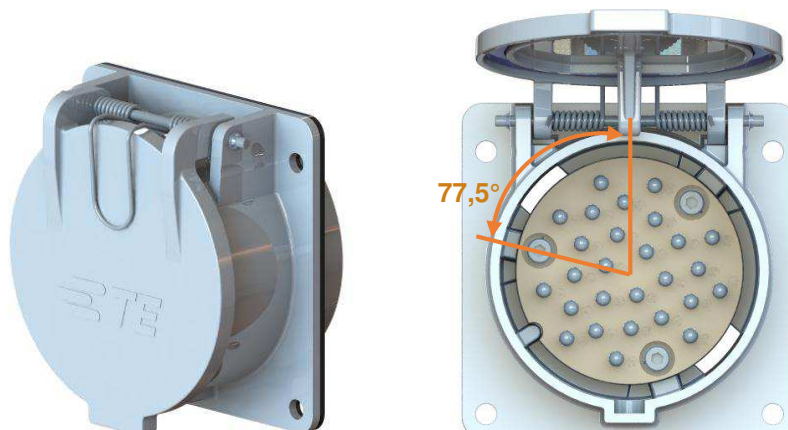


- *COMMUNICATION INTERCITY* : Position insulators at 42° and blue colour for the body
Commercial reference: 27P-REC-2-01

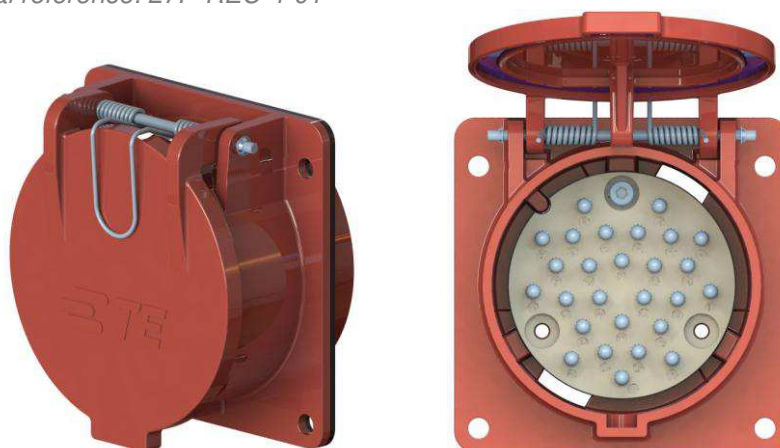


- *TYPICAL AEM-7 MU* : Position insulators at 77,5° and white colour for the body

Commercial reference: 27P-REC-3-01



- COMMUNICATION COMMUTER : Position insulators at 0° and red colour for the body
Commercial reference: 27P-REC-4-01



2.2 BOM of MU. LOCO UNIT CONTROL

Item	Part number	Quantity	Designation	Weight (g)
1	YG-UC-211283A-JG06	1	Receptacle body	1070.33
2	1504-0018A4	1	Axis of cover	3.95
3	1504-0005A4	1	Spring	3.56
4	1504-0019A4	1	Cover gasket	14.29
5	YA-UC-211297A-VN00	1	Receptacle gasket	52.30
6	Y0000000-7105-06-1	2	Self-locking ring	0.17
7	YK-UC-211276A-QK00	1	Mixed insulator	124.81
8	YK-UC-211315A-VP00	27	Sleeve	1.86
9	YK-UC-211275A-QK00	1	Male insulator	162.65
10	YS-UC-211945A-AA1A	24	Male contact 12/14 AWG	14.43
11	YS-UC-211946A-AA1A	3	Male contact 10 AWG	14.29
12	CHCM08x25-1	3	Screw CHC M8x25	17.24
13	W-08-1	3	Washer	5.10
14	YG-UC-211287A-JG06	1	Cover	376.80

Customer drawing: C-E1894-211942

2.3 BOM of TYPICAL AEM-7 MU

Item	Part number	Quantity	Designation	Weight (g)
1	YG-UC-211282A-JG05	1	Receptacle body	1070.35
2	1504-0018A4	1	Axis of cover	3.95
3	1504-0005A4	1	Spring	3.56
4	1504-0019A4	1	Cover gasket	14.29
5	YA-UC-211297A-VN00	1	Receptacle gasket	52.30
6	Y0000000-7105-06-I	2	Self-locking ring	0.17
7	YK-UC-211276A-QK00	1	Mixed insulator	124.81
8	YK-UC-211315A-VP00	27	Sleeve	1.86
9	YK-UC-211275A-QK00	1	Male insulator	162.65
10	YS-UC-211945A-AA1A	24	Male contact 12/14 AWG	14.43
11	YS-UC-211946A-AA1A	3	Male contact 10 AWG	14.29
12	CHCM08x25-I	3	Screw CHC M8x25	17.24
13	W-08-I	3	Washer	5.10
14	YG-UC-211287A-JG05	1	Cover	376.80

Customer drawing: C-E1894-211943

2.4 BOM of COMMUNICATION INTERCITY

Item	Part number	Quantity	Designation	Weight (g)
1	YG-UC-211283A-JG07	1	Receptacle body	1070.33
2	1504-0018A4	1	Axis of cover	3.95
3	1504-0005A4	1	Spring	3.56
4	1504-0019A4	1	Cover gasket	14.29
5	YA-UC-211297A-VN00	1	Receptacle gasket	52.30
6	Y0000000-7105-06-I	2	Self-locking ring	0.17
7	YK-UC-211276A-QK00	1	Mixed insulator	124.81
8	YK-UC-211315A-VP00	27	Sleeve	1.86
9	YK-UC-211275A-QK00	1	Male insulator	162.65
10	YS-UC-211945A-AA1A	24	Male contact 12/14 AWG	14.43
11	YS-UC-211946A-AA1A	3	Male contact 10 AWG	14.29
12	CHCM08x25-I	3	Screw CHC M8x25	17.24
13	W-08-I	3	Washer	5.10
14	YG-UC-211287A-JG07	1	Cover	376.80

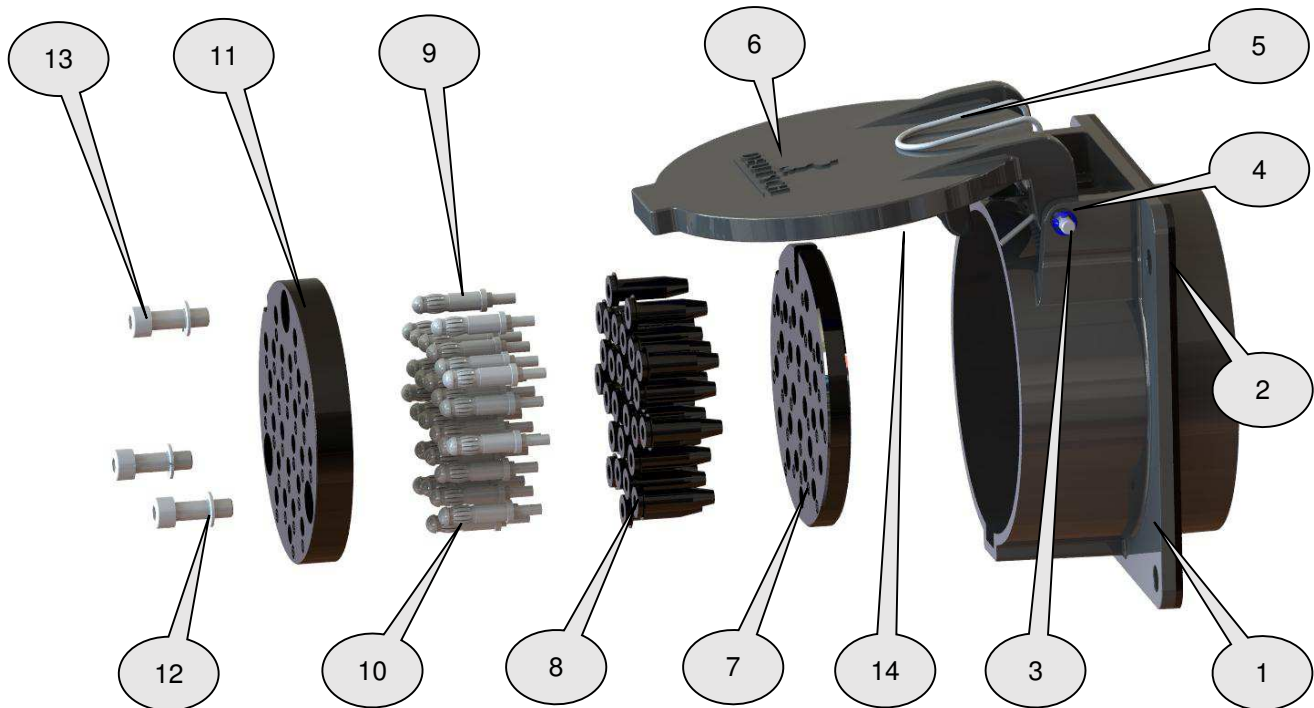
Customer drawing: C-E1894-212085

2.5 BOM of COMMUNICATION COMMUTER

Item	Part number	Quantity	Designation	Weight (g)
1	YG-UC-211281A-JG04	1	Receptacle body	1070.33
2	1504-0018A4	1	Axis of cover	3.95
3	1504-0005A4	1	Spring	3.56
4	1504-0019A4	1	Cover gasket	14.29
5	YA-UC-211297A-VN00	1	Receptacle gasket	52.30
6	Y0000000-7105-06-I	2	Self-locking ring	0.17
7	YK-UC-211276A-QK00	1	Mixed insulator	124.81
8	YK-UC-211315A-VP00	27	Sleeve	1.86
9	YK-UC-211275A-QK00	1	Male insulator	162.65
10	YS-UC-211945A-AA1A	24	Male contact 12/14 AWG	14.43
11	YS-UC-211946A-AA1A	3	Male contact 10 AWG	14.29
12	CHCM08x25-I	3	Screw CHC M8x25	17.24
13	W-08-I	3	Washer	5.10
14	YG-UC-211287A-JG04	1	Cover	376.80

Customer drawing: C-E1894-212086

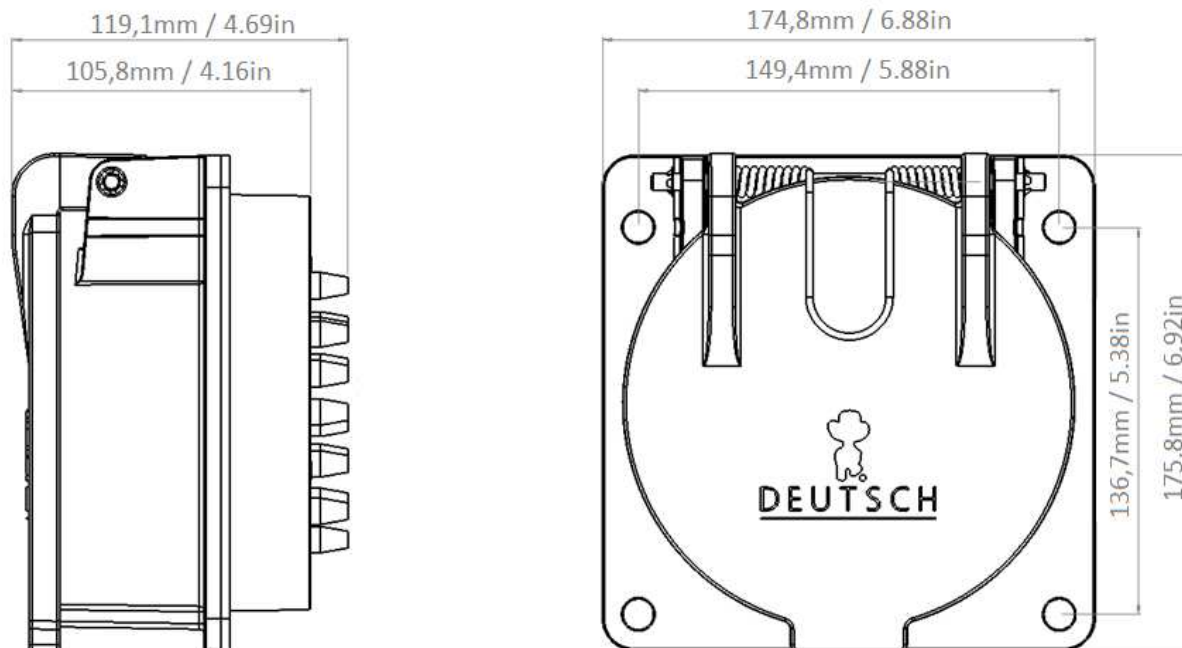
2.6 Exploded view



- 1- Receptacle
- 2- Receptacle gasket
- 3- Axis
- 4- Self-locking ring
- 5- Spring
- 6- Cover
- 7- Mixed insert

- 8- Sleeve
- 9- Male contact
- 10- Barrel
- 11- Male insert
- 12- Washer
- 13- ScrewCHC M8x25
- 14- Cover gasket

2.7 Overall dimensions



2.8 Materials

Designation	Materials
Receptacle	Aluminium
Receptacle gasket	Neoprene
Axis	A2 Stainless steel
Self-locking ring	A2 Stainless steel
Spring	A2 Stainless steel
Cover	Aluminium
Mixed insert	Polycarbonate
Sleeve	Neoprene
Male contact	Silver plated brass
Diabolo	Beryllium copper with silver plated
Male insert	Polycarbonate
Washer	A2 Stainless steel
Screw CHC M8x25	A2 Stainless steel
Cover gasket	Neoprene

3. TECHNICAL CHARACTERISTICS

3.1 Applicable standards and documents

- ◆ Reference standard : AAR Standard S-512
- ◆ Recommended practice for 27-points jumper and receptacle : APTA RP-E-017-99 & APTA RP-E-019-99
- ◆ Recommended practice for wiring of passenger equipment : APTA RP-E-002-98
- ◆ Standard for insulation integrity : APTA SS-E-001-98

3.2 Electrical characteristics

- ◆ Minimal creepage distance (mated connector) : 18.2 mm
- ◆ Minimal air clearance (mated connector) : 16.2 mm
- ◆ Comparative Tracking Index (CTI) of insulators : 600 Volt
- ◆ Service voltage : 600 Volts maxi
- ◆ Withstand voltage : (NF EN 50-124-1/A2) : 1500 Volt maxi
- ◆ Continuous service current : 30A

3.3 Mechanical characteristics

- ◆ Crimping pulling resistance : 180 N per contact

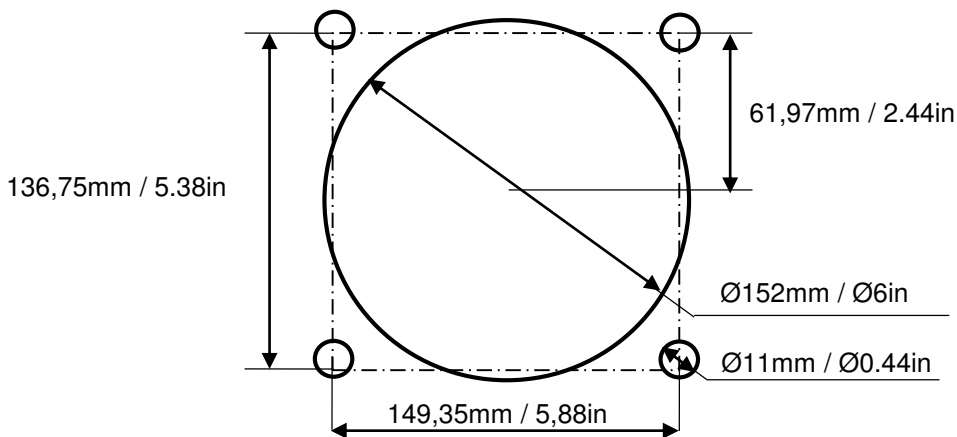
3.4 Climatic characteristics

- ◆ Temperature class : - 40°C to + 100°C
- ◆ Salt spray resistance : 48 hours

4. MOUNTING

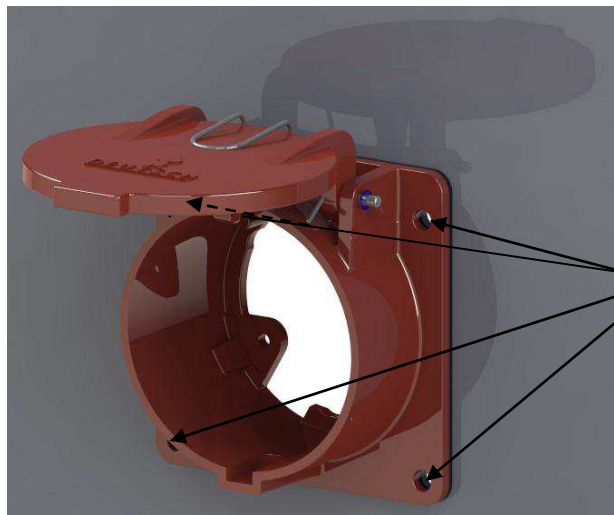
4.1 Panel cutting

Cut the panel according to the dimensions below without any sharps or edges



4.2 Fixing receptacle

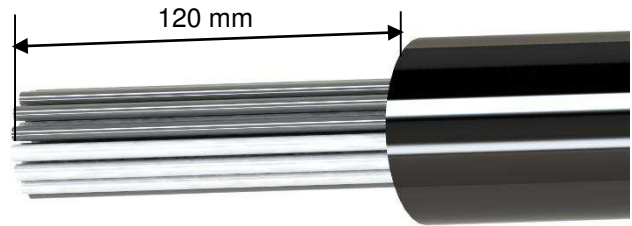
Attach the receptacle to the panel using 4 screws M8 torqued + washer (not include in the kit)



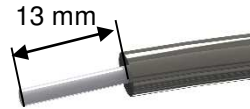
Tightening torque : 20 N/m

4.3 Preparation of the cable

Strip the external sheath of about 120 mm

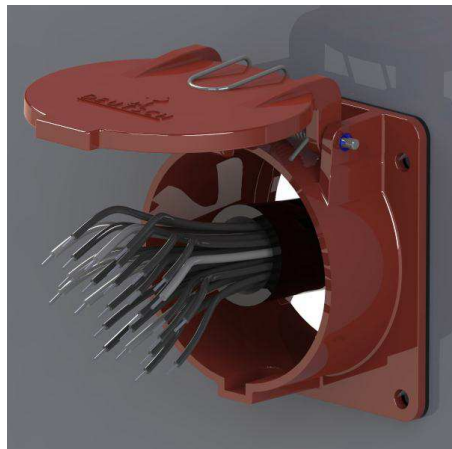


Strip on 13mm the 27 cables

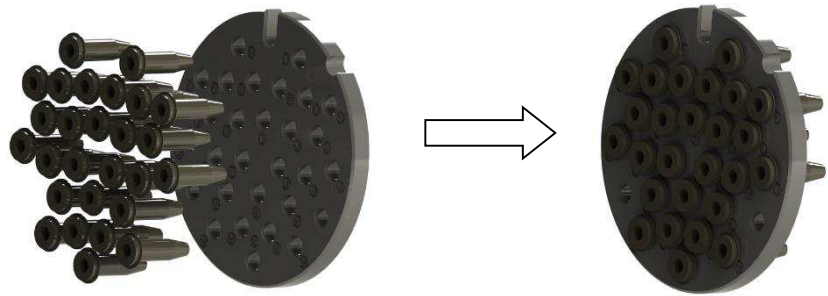


4.4 Cable implantation into the receptacle

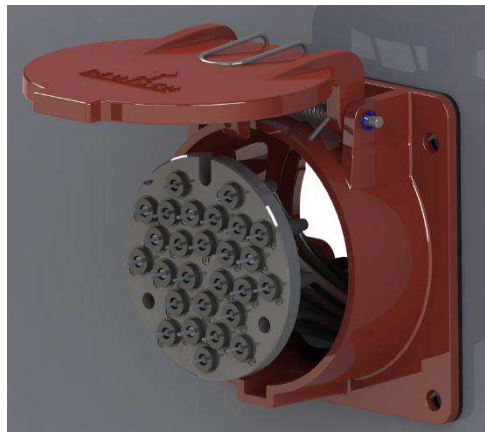
Pass the cable through the receptacle



Insert sleeves into the mixed insert



Pass the cables through the sleeves



4.5 Contacts crimping

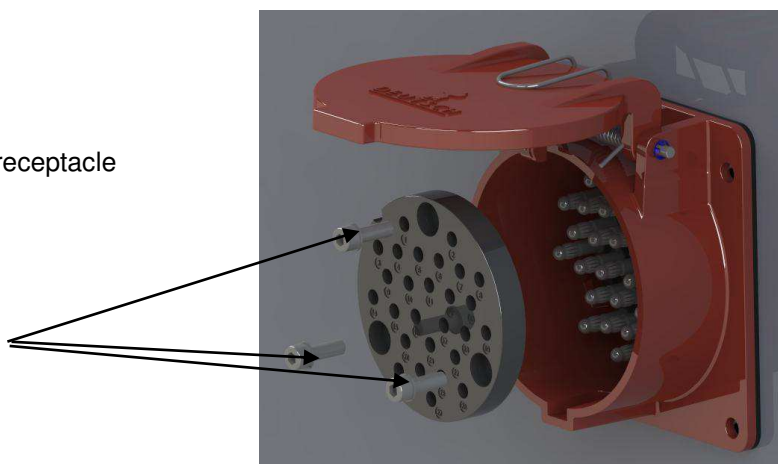
Crimp the contacts by using the tools corresponding to each cable section cross. See section 5



4.6 Mounting inserts on the receptacle

Mounting the male insert on the receptacle with the 3 screws M8 + washers

Tightening torque : 15 N/m



5. CONTACT CRIMPING

5.1 Manual crimping tools DMC



Cable cross sections	Manual crimping tools	
	Hand crimper	Die
Gauge 14	HX4	Y543
Gauge 12	HX4	Y543
Gauge 10	HX4	Y543

6. MAINTENANCE OPERATIONS

In case of need to dismantle the receptacles, process in the reverse way of the operations described on the chapter 4

6.1 Spare parts

Caliber	Cable cross section	Number of contacts	Commercial reference	Drawings
8	AWG12 and 14	24	27P-KITCON-24P12-3P10	C-S1894-212124
	AWG10	3		