Qualification Test Report

Q18001

STRAIGHT VERSION QUALIFICATION ACCORDING TO EN 50467

FXP 2

PRJ-16-000908122

A	First Edition				2019/02/20	M BOIVIN
LTR	Revision record				Date	Author
Approved by	Product Development Engineer	Engineering Manager	Manager Product Management			
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Notification to	Product Manager					
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1 INTRODUCTION

1.1 AIM OF THE TESTS

The aim of the type tests is to qualify the connector FXP2 according to the standard EN50467.
The FXP series is designed to fulfil the standard EN50467 and consequently section 7 of this standard which defined the type tests, specimens, sequence, ratings and measurements to be performed by the product in tests.

Unless otherwise specified, severity of the service conditions shall be those per EN50467, table B.1, for on board rolling stock locations 4-5-6. Testing AC voltage frequency is 50 Hz.

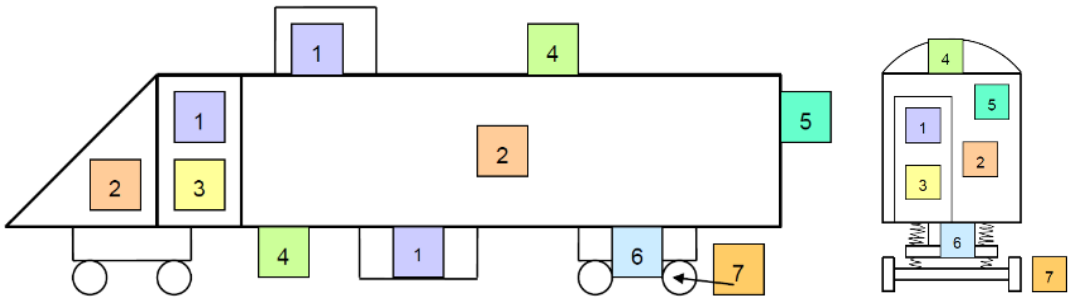

Figure 1 – Typical connector locations on board rolling stock (EN50467, fig. 3)

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1.2 APPLICABLE DOCUMENTS

1.2.1 TE Connectivity documents

Connectors:

- 212678_DEUTSCH - Straight female receptacle for contacts to be crimped cal.20
- 212679_DEUTSCH - Straight male plug for contacts to be crimped cal.20
- 114-157007 - Implementation and wiring procedure of FXP2 range
- 108-157009 - FXP2 series, straight version, Product Specification
- 409-157000 - FXP series Maintenance Manual
- 502-157074 – Current-temperature derating and breakdown voltage

Contacts:

- 212689_DEUTSCH - S/A female contact cal.20 to be crimped 120 to 240mm²
- 212919_DEUTSCH - S/A male contact cal.20 to be crimped 120 to 240mm²

Other / Download documents:

- http://www.te.com/

1.2.2 Normative documents

The following referenced standards are applicable, as well as the standards listed therein as applicable standards. For undated references, the last standard version in effect at the test date has been used.

- EN 45545-2+A1:2016 – Railway applications – Fire protection on railway vehicles – Part 2: Requirements for fire behavior of materials and components
- EN 50467:2012 - Railway applications – Rolling stock – Electrical connectors, requirements and test methods
- EN 50124-1/A2:2005 - Railway applications – Insulation coordination – Part 1: Basic requirements – Clearances and creepage distances for all electrical and electronic equipment
- EN 60068-1:2014 - Environmental testing – Part 1: general guidance
- EN 60068-2-1:2007 - Environmental testing – Part 2-1: Tests – Test A: Cold
- EN 60068-2-2:2007 - Environmental testing – Part 2-2: Tests – Test B: Dry heat
- EN 60068-2-11:1999 - Environmental testing – Part 2: Tests – Test Ka: Salt mist
- EN 60512-1:2001 - Connectors for electronic equipment – Tests and measurements – Part 1: General
- EN 60512-1-1:2002 - Connectors for electronic equipment – Tests and measurements – Part 1-1: General examination – Test 1a: Visual examination
- EN 60512-1-2:2002 - Connectors for electronic equipment – Tests and measurements – Part 1-2: General examination – Test 1b: Examination of dimension and mass
- EN 60512-2-1:2002 - Connectors for electronic equipment – Tests and measurements – Part 2-1: Electrical continuity and contact resistance tests – Test 2a: Contact resistance – Millivolt level method
- EN 60512-2-2:2003 - Connectors for electronic equipment – Tests and measurements – Part 2-1: Electrical continuity and contact resistance tests – Test 2b: Contact resistance – Specified test current method

- EN 60512-2-5:2003 - Connectors for electronic equipment – Tests and measurements – Part 2-5: Electrical continuity and contact resistance tests – Test 2e: Contact disturbance
- EN 60512-3-1:2002 – Connectors for electronic equipment – Tests and measurements – Part 3-1: Insulation tests – Test 3a: Insulation resistance
- EN 60512-4-1:2003 - Connectors for electronic equipment – Tests and measurements – Part 4-1: Voltage stress tests – Test 4a: Voltage proof
- EN 60512-5-1:2002 – Connectors for electronic equipment – Tests and measurements – Part 5-1: Current-carrying capacity tests – Test 5a: Temperature rise
- EN 60512-7-2:2012 - Connectors for electronic equipment – Tests and measurements – Part 7-2: Impact tests (free connectors) – Test 7b: Mechanical strength impact
- EN 60512-9-1:2010 - Connectors for electronic equipment – Tests and measurements – Part 9-1: Endurance tests – Test 9a: Mechanical operation
- EN 60512-11-6:2002 - Connectors for electronic equipment – Tests and measurements – Part 11-6: Climatic tests – Test 11f: Corrosion, salt mist
- EN 60512-11-9:2002 - Connectors for electronic equipment – Tests and measurements – Part 11-9: Climatic tests – Test 11i: Dry heat
- EN 60512-11-10:2002 - Connectors for electronic equipment – Tests and measurements – Part 11-10: Climatic tests – Test 11j: Cold
- EN 60512-13-1:2006 - Connectors for electronic equipment – Tests and measurements – Part 13-1: Mechanical operation tests – Test 13a: Engaging and separating force
- EN 60512-13-5:2006 - Connectors for electronic equipment – Tests and measurements – Part 13-5: Mechanical operation tests – Test 13e: Polarizing and keying method
- EN 60512-15-1:2008 - Connectors for electronic equipment – Tests and measurements – Part 15-1: Connector tests (mechanical) – Test 15a: Contact retention in insert
- EN 60512-15-2:2008 - Connectors for electronic equipment – Tests and measurements – Part 15-2: Connector tests (mechanical) – Test 15b: Insert retention in housing (axial)
- NFF 00-363:1995 – Rolling stock – Products to be crimped for electrical connections
- EN 60529:1991+A1:2000 – Degree of protection procured by enclosures (IP code)
- EN 61373:1999 – Railway applications – Rolling stock equipment – Shock and vibrations tests
- ISO 1431-1:2004 – Rubber, vulcanized or thermoplastic – Resistance to ozone cracking – Part 1: Static and dynamic strain testing

➢ Assembly drawings (***see appendix 1***):

- C-212678_DEUTSCH: Female socket, 3x caliber 20, 120 up to 240 mm^2, 3x M40
- C-212679 _DEUTSCH: Male mobile plug, 3x caliber 20, 120 up to 240 mm^2, 3x M40
- C-212689_DEUTSCH: S/A female contact caliber 20 to be crimped, 120 up to 240 mm^2
- C-212919_DEUTSCH: S/A male contact caliber 20 to be crimped, 120 up to 240 mm^2

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1.3 SAMPLING

Sample No.	Reference	Quantity per sample	Description	Drawing
1 to 12	FXP2RS-3M40-S	1	FEMALE RECEPTACLE	C-212678_DEUTSCH
	FXP2PS-3M40-P	1	MALE PLUG	C-212679_DEUTSCH
	FXP-CS20-M240S-CU	3	FEMALE CONTACT	C-212689_DEUTSCH
	FXP-CS20-M240P-CU	3	MALE CONTACT	C-212919_DEUTSCH
	0401-0391AS	3	CABLE GLAND	/

The connectors under test are shown below:

FXP size2 - Straight female receptacle:

FXP size2 - Female contact for receptacle:

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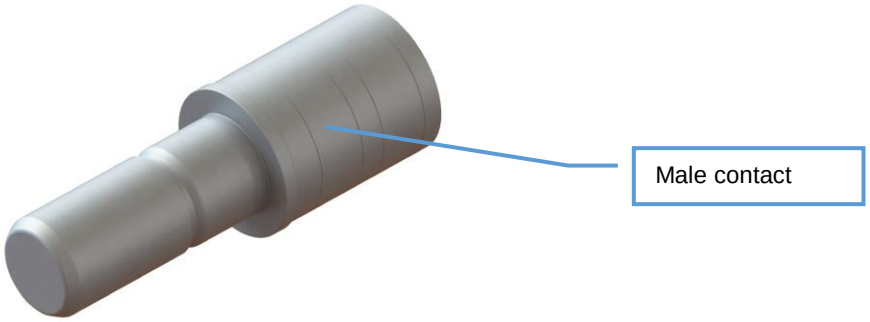
FXP size2 - Straight male plug:

FXP size2 - Female contact for plug:



The contacts are assembled in the insulators by clips.
The link between the male and female contacts is done with a diabolo (spring lamellas technology).
The cross section of termination chooses for the qualification is the big size (240 mm²).

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1.4 TESTS SEQUENCE

The samples are submitted to the tests in the table here-after:

Group		Test description	EN 60512	EN 50467	Sample number
0	01	Visual & dimensional examination	1a,1b		2 to 12
	02	Conformity of marking	1a		2 to 12
	03	Contact resistance	2b		1, 5, 7 to 12
	04	Insulation resistance	3a		1 to 12
	05	Dielectric strength	4a		1 to 12
A	A1	Visual & dimensional examination	1a, 1b		1
	A3	Polarization	13e, 1a		
	A6	Contact retention in insert	15a, 1a		
	A8	Mechanical strength impact	7b, 1a		
B	B1	Initial measurement	2b		2 to 4
	B2	Mechanical operation	9a, 1a	7.9	
	B3	Final measurement	2b, 4a	7.12	
C	C1	Temperature rise	5a	7.8	5
D	D1	Initial measurement	2b		6
	D2	Cold	11j, 1a	6.18	
	D3	Dry heat	11i, 1a	6.18	
	D4	Salt mist test	11f, 1a	7.14	
	D5	Final measurement	2b		
	D6	Dielectric strength	4a	7.12	
E	E3	Degree of protection IP code		7.7	7 & 8
	E4	Dielectric strength	4a	7.12	
F	F1	Simulated long life random vibration at increased levels	2e, 1a	EN61373	9
	F2	Shock	1a	EN61373	
	F3	Random vibration test	2e, 1a	EN61373	
	F4	Dielectric strength	4a	7.12	
G	G1	Fluid resistance	19c		10 to 12
	G2	Engaging and separating force	13a		
	G3	Contact resistance	2b		
	G4	Insulation resistance	3a		
	G5	Dielectric strength	4a	7.12	
	G6	Contact retention in insert	15a		
	G7	Insert retention in housing (axial)	15b		
	G8	Visual examination	1a		
		Fire behavior of materials and components		6.22	
		Resistance to ozone		6.24	

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1.5 SAMPLES IMPLEMENTATION

For each test, except particular conditions:

- Preconditioning of the samples at least 24 hours, at (23 ± 5) °C and at 45% to 75% of HR
- Samples are completely assembled according to manufacturer's specifications

Each sample for testing is composed of a pair of connectors: a plug and a receptacle, equipped of contacts and cable glands.

Products are prepared and wired according to the application specifications below:

- 114-157007: Implementation and wiring procedure of FXP2 range

The cable and crimping tools used are:

Cable section	Cable designation	CRIMPING TOOL			
		Pump	Cylinders	Flexible	Dies
240 mm^2	OMERIN 369 EN50382-2 3600V 1X240 F 120°C – 1701748 – 15/2017	PA133K	SU210K	F4622K	TN 240V20

1.6 SAMPLES WORKING ORDERS

WO No.	DESCRIPTION	CATALOGUE No.
200217499675	CONTACT FEMALE CAL. 20, 240MM2	FXP-CS20-M240S-CU
200217515802	CONTACT MALE CAL.20, 240MM2 - FXP	FXP-CS20-M240P-CU
200218548214 200218625025 200218642716	PLUG STRAIGHT 3XCAL 20 SIZE 2 - FXP	FXP2PS-3M40-P
200218548242 200218625027	RECEPTACLE STRAIGHT 3XCAL20 SIZE 2 - FXP	FXP2RS-3M40-S

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1.7 TESTS DEVICES

Description	TE No.	Calibration dates	
		Current	Next
Caliper MITUTOYO	6131	*2018/10*	*2019/10*
Caliper MOORE & WRIGHT	5143	*2018/10*	*2019/10*
Height measuring instrument MAHR	5420	*2018/06*	*2019/06*
Buffer P/NP M40x1.5 – 6H	5504	*2018/09*	*2020/09*
Scale PCM BE6001	6689	*2018/01*	*2019/01*
Ohmmeter MEGGER DLRO600	6257	*2018/10*	*2019/10*
Insulation tester MEGGER BM25	2231	*2017/11*	*2018/11*
Traction / compression machine ADAMEL LHOMARGY DY36	1118	*2017/04*	*2019/04*
High voltage generator + *SCHNEIDER ELECTRIC* voltage control	6687	*2017/04*	*2019/04*
Comparator Mitutoyo	6626	*2018/06*	*2019/06*
Dynamometric key FACOM	7604	*2017/11*	*2019/11*
Datalogger AGILENT 34970A	1868	*2018/05*	*2019/05*
Current generator ZENONE model GI2000GL	7054	*2018/05*	*2019/05*
AC current probe *CHAUVIN ARNOUX MA100*	7570	*2018/05*	*2019/05*
Climatic chamber CLIMATS 220T60/4R	6500	*2018/11*	*2019/11*
Climatic chamber FRANCE ETUVES XU250	6019	*2018/05*	*2019/05*
Salt spray chamber DYCOMETAL type SSC-400	7574	*2018/05*	*2019/05*
Digital torquemeter GEORGE RENAULT CD4005	1914	*2018/04*	*2020/04*
Flowmeter PUISI/COGETIL	7365	*2017/05*	*2019/05*
Discontinuity tester Mertronics DM600-10A	614-1	*2019/01*	*2021/01*
Vibration system ETS MPA714	SH1308329	*2018/06*	*2020/06*
VibPilot VP8 M+P International	B130054	*2018/06*	*2020/06*
Acc. Meter 50 Meas-specialities 7120A-0050	A117793	*2018/07*	*2020/07*
Thermostatic bath PRECISTERM	/	/	/
Thermometer HANNA	6831	*2018/10*	*2019/10*

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2 CONCLUSION

General, Group 0 (non-normative)					Sample No.												
Test	Test description	Standard	Test ratings	Requirements	1	2	3	4	5	6	7	8	9	10	11	12	Compliancy
01	Visual and dimensional examination	EN60512-1-1 EN60512-1-2	Customer drawing	Dimension shall comply with the drawings		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
02	Conformity of marking	EN50467, 6.2	Customer drawing	Supplier's name, manufacture date, sample reference and contact locating numbers		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
03	Contact resistance	EN60512-2-2	600 A	CR ≤ 0.15 mΩ	✓				✓		✓	✓	✓	✓	✓	✓	✓
04	Insulation resistance	EN60512-3-1	1000 V DC 60s	IR ≥ 5 000 MΩ	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
05	Dielectric strength	EN60512-4-1	12 kV / AC 50Hz	No breakdown nor flashover	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Mechanical tests, Group A (per EN 50467, tab. 5)					Sample No.												
Test	Test description	Standard	Test ratings	Requirements	1	2	3	4	5	6	7	8	9	10	11	12	Compliancy
A1	Visual and dimensional examination	EN60512-1-1 EN60512-1-2	Customer drawing	Dimension shall comply with the drawings	✓												✓
A3	Polarization	EN60512-13-5	540 N	No damage likely to impair function	✓												✓
A6	Contact retention in insert	EN60512-15-1	170 N / 10 s	No axial displacement likely to impair normal operation	✓												✓
A8	Mechanical strength impact	EN 60512-7-2	Dropping Height: 500 mm	Parts used for protection against electric shock shall not be damaged. Reduction of clearance and creepage distances is not allowed	✓												✓

Service Life Tests, Group B (per EN 50467, tab. 6)					Sample No.												
Test	Test description	Standard	Test ratings	Requirements	1	2	3	4	5	6	7	8	9	10	11	12	Compliancy
B1	Initial measurement	EN60512-2-2	600 A	CR initial, reference value		✓	✓	✓									✓
B2	Mechanical operation	EN60512-9-1	500 cycles	No damage shall occur which could impair normal use		✓	✓	✓									✓
B3	Final measurement	EN60512-2-2 EN60512-4-1	600 A 12 kV / AC 50 Hz	≤ CR initial + 50% No breakdown nor flashover		✓	✓	✓									✓

Thermal Tests, Group C (per EN 50467, tab. 7)					Sample No.												
Test	Test description	Standard	Test ratings	Requirements	1	2	3	4	5	6	7	8	9	10	11	12	Compliancy
C1	Temperature rise	EN60512-5-1 EN50467, 7.8	50K 60K 100°C	The upper limiting temperature specified shall not be exceeded					✓								✓

Climatic Tests, Group D (per EN 50467, tab. 8)					Sample No.												
Test	Test description	Standard	Test ratings	Requirements	1	2	3	4	5	6	7	8	9	10	11	12	Compliancy
D1	Initial measurement	EN60512-2-2	600 A	CR initial, reference value						✓							✓
D2	Cold	EN60512-11-10 EN50467, 6.18	-55°C / 2 h	No damage shall occur which could impair normal use						✓							✓
D3	Dry heat	EN60512-11-9 EN50467, 6.18	+100°C / 168 h	No damage shall occur which could impair normal use						✓							✓
D4	Salt mist test	EN60512-11-6 EN50467, 7.14	500 h	No damage shall occur which could impair normal use						✓							✓
D5	Final measurement	EN60512-2-2	600 A	≤ CR initial + 50%						✓							✓
D6	Dielectric strength	EN50467, 7.12 EN60512-4-1	12 kV / AC 50 Hz	No breakdown nor flashover						✓							✓

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Degree of Protection Tests, Group E (per EN 50467, tab. 9)					Sample No.												
Test	Test description	Standard	Test ratings	Requirements	1	2	3	4	5	6	7	8	9	10	11	12	Compliancy
E3	Degree of protection IP code	EN50467, 7.7	Dust test	IP6X							✓	✓					✓
			Water jet test	IPX6							✓	✓					
			Immersion 1m / 30min	IPX7							✓	✓					
			-0.5 bar / 30min	IPX8							✓	✓					
E4	Dielectric strength	EN50467, 7.12 EN60512-4-1	12 kV / AC 50 Hz	No breakdown nor flashover							✓	✓					✓

Vibrations and Shock Tests, Group F (per EN 50467, tab. 10)					Sample No.												
Test	Test description	Standard	Test ratings	Requirements	1	2	3	4	5	6	7	8	9	10	11	12	Compliancy
F1	Simulated long life random vibration at increased levels	EN61373: 1999, clause 9	Cat.2 ≤ 1 µs	Micro interruption ≤ 1 µs No damage likely to impair function									✓				✓
F2	Shock	EN61373: 1999, clause 10	Cat.2	No damage likely to impair function									✓				✓
F3	Random vibration test	EN61373: 1999, clause 8	Cat.2 ≤ 1 µs	Micro interruption ≤ 1 µs No damage likely to impair function									✓				✓
F4	Dielectric strength	EN50467, 7.12 EN60512-4-1	12 kV / AC 50 Hz	No breakdown nor flashover									✓				✓

Resistance of Fluids, Group G (per EN 50467, tab. 11)					Sample No.												
Test	Test description	Standard	Test ratings	Requirements	1	2	3	4	5	6	7	8	9	10	11	12	Compliancy
G1	Fluid resistance	EN60512-19-3	HCl: 23°C NaOH: 23°C IRM902 oil: 50°C Ageing: 65°C	No damage likely to impair function and maintain legible marking										✓	✓	✓	✓
G2	Engaging and separating force	EN60512-13-1	Insertion/extraction forces	No damage likely to impair function										✓	✓	✓	✓
G3	Contact resistance	EN60512-2-2	600 A	≤ CR initial + 50%										✓	✓	✓	✓
G4	Insulation resistance	EN60512-3-1	1000 V DC / 60 s	IR ≥ 500 MΩ										✓	✓	✓	✓
G5	Dielectric strength	EN50467, 7.12 EN60512-4-1	12 kV / AC 50 Hz	No breakdown nor flashover										✓	✓	✓	✓
G6	Contact retention in insert	EN60512-15-1	200 N / 10 s	Axial displacement after the test ≤ 0.5 mm										✓	✓	✓	✓
G7	Insert retention in housing	EN60512-15-2	360 N / 1 min	No displacement or damage likely to impair function										✓	✓	✓	✓
G8	Mated and unmated sample	EN60512-1-1	visual	No damage likely to impair function										✓	✓	✓	✓

Tests on raw materials (per EN 50467, tab. 13)				Sample No.	
Test description	Standard	Test ratings	Requirements		Compliancy
Fire behaviour of materials and components	EN 45545-2	R22 / R23	HL2 mini	HL3	✓
Resistance to ozone	ISO 1431-1	Method B: 24h / 500 ppb / 40°C / elongation 20%	No cracks shall appear	✓	✓

✓	Test realized and compliant result
✘	Test realized and no compliant result

The FXP size 2 connector's, straight version, fully satisfy to the EN50467 requirements for on board rolling stock locations 4-5-6 (EN50467, table B.1).

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3 APPENDICES

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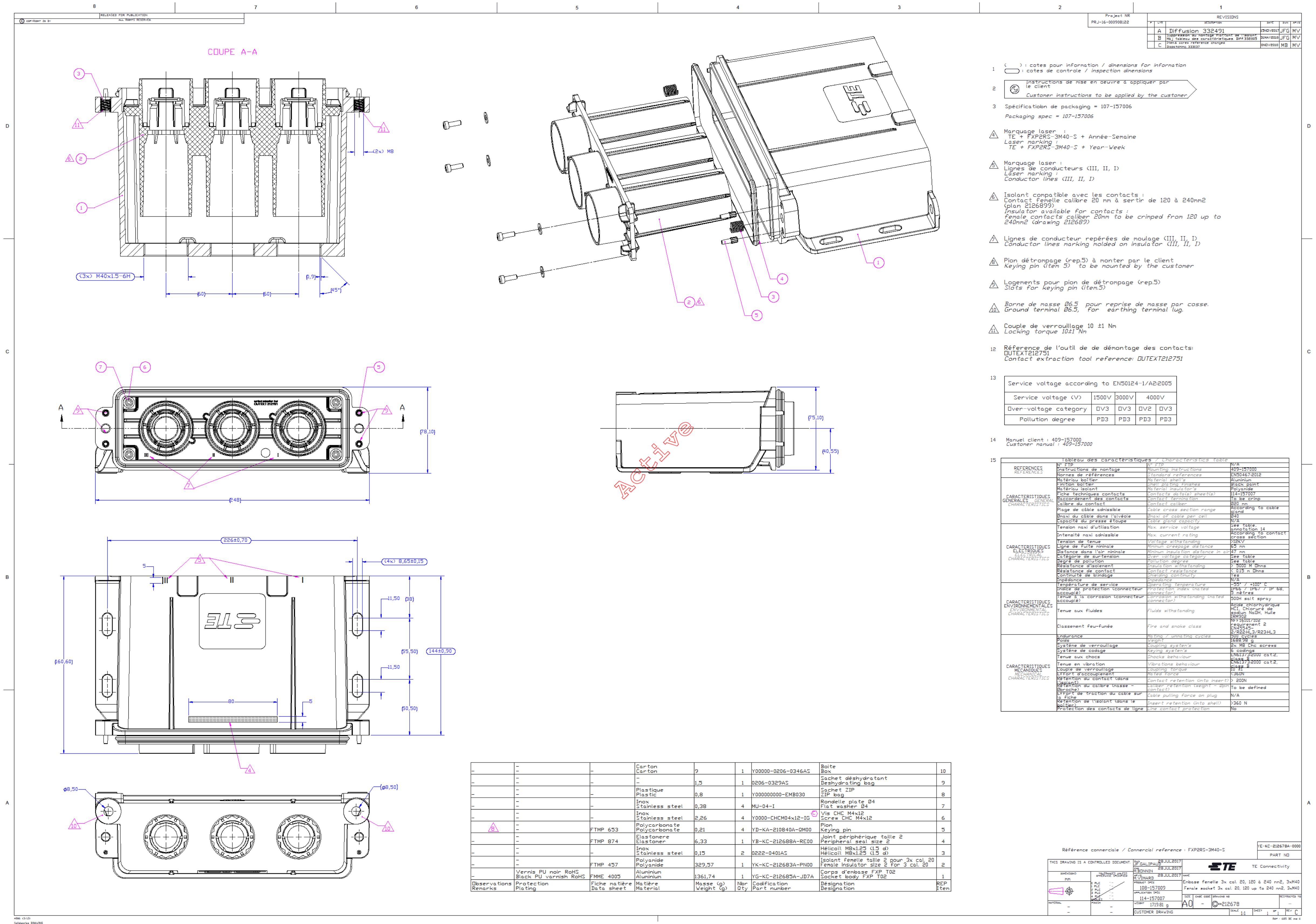
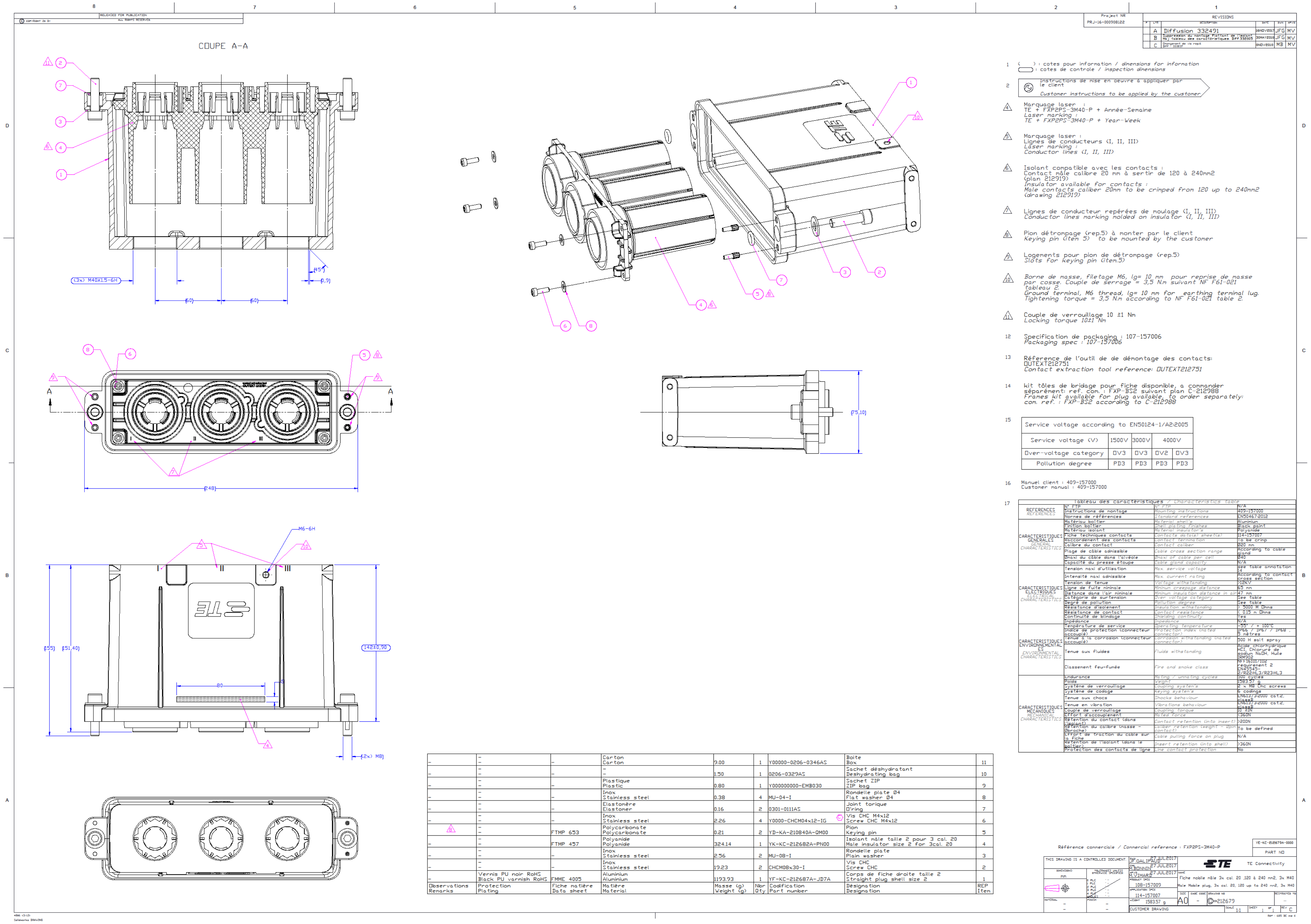
APPENDIX 1: Drawings

C-211678_DEUTSCH: Female receptacle 3x caliber 20 to be crimped, 120 up to 240 mm², 3x M40



C-212679_DEUTSCH: Male plug 3x caliber 20 to be crimped, 120 up to 240 mm², 3x M40



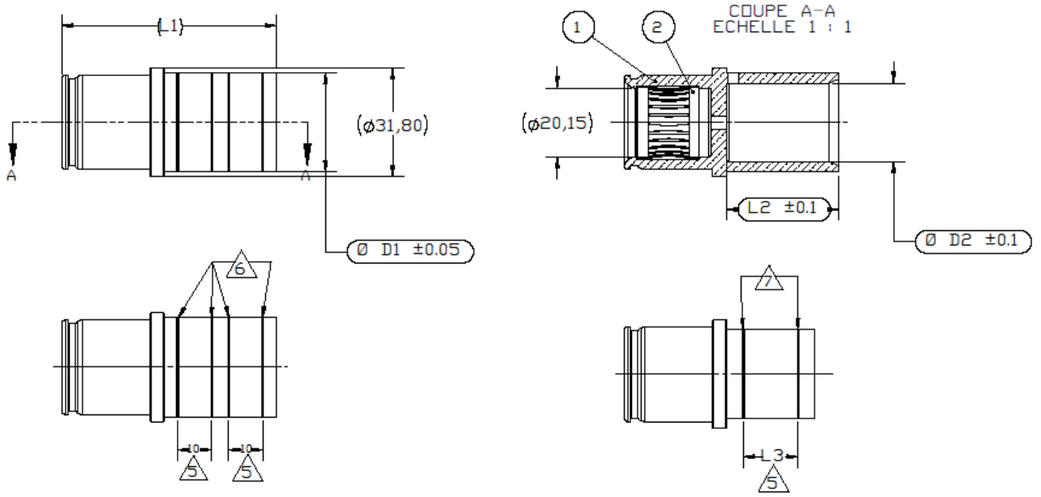
Qualification Test Report

C-212689_DEUTSCH: S/A female contact caliber 20 to be crimped, 120 up to 240 mm²

Project NR PRJ-16-000908122

REVISIONS

P	LTR	DESCRIPTION	DATE	DWN	APVD
	A	Suppression des ref. laiton, création des ref. cuivre. Diffusion 332491	26JUL2017	JFG	MV



-	- -	-	- -	1	1	0206-0329AS	Sachet déshydratant Deshydrating bag	4	X	X	X	X
-	- -	-	Plastique Plastic	1	1	Y0000000000-EMB040	Sachet bulle 80 x 100 mm Bubble bag 80 x 100 mm	3	X	X	X	X
-	Argenture Silver plating	-	Cuivre béryllium Beryllium copper	2,4	1	16866-000A4	Diabolo calibre 20 Diabolo caliber 20	2	X	X	X	X
-	Argenture Silver plating	FMME2005	Cuivre Copper	105,03	1	YC-KC-212690D-CD1A	Contact femelle cal.20, section 120 mm2 Female contact cal.20, section 120mm2	1				X
-	Argenture Silver plating	FMME2005	Cuivre Copper	112,13	1	YC-KC-212690C-CD1A	Contact femelle cal.20, section 150 mm2 Female contact cal.20, section 150 mm2	1			X	
-	Argenture Silver plating	FMME2005	Cuivre Copper	120,81	1	YC-KC-212690B-CD1A	Contact femelle cal.20, section 185 mm2 Female contact cal.20, section 185 mm2	1		X		
-	Argenture Silver plating	FMME2005	Cuivre Copper	151,75	1	YC-KC-212690A-CD1A	Contact femelle cal.20, section 240 mm2 Female contact cal.20, section 240 mm2	1	X			
Observations Remarks	Protection Plating	Fiche matière Data sheet	Matière Material	Masse (g) Weight (g)	Nbr Qty	Codification Part number	Désignation Designation	REP Item	FXP-CS20-M240S-CU	FXP-CS20-M185S-CU	FXP-CS20-M150S-CU	FXP-CS20-M120S-CU
									Commercial references			

1 ( ) : cotes pour information / *dimensions for information*
⟨ ⟩ : cotes de controle / *inspection dimensions*

2 Specification de packaging : 107-157006
Packaging spec : 107-157006

3

Sections du câble *Cable cross sections*	Outils de sertissage hydrauliques (Mécatraction) *Hydraulic crimping tools*			
	Pompe *Pump*	Vérins *Jacks*	Flexibles *Flex hoses*	Matrices *Dies*
120 mm2	PA 133 K	SU133K ou SU210K Chape ouverte/ *Opened shell* ou / *or* VF133K ou VF210K Chape fermée/ *Closed shel*	F 4622K Longueur/*Length* 1,80 m ou / *or* F 4623K Longueur/*Length* 3,00 m	TN120V13 TN120V20 (1 crimping)
150 mm2				TN150V13 TN150V20 (1 crimping)
185 mm2				TN185V20 (1 crimping)
240 mm2				TN240V20 (2 crimping)

4 Longueur de dénudage de la gaine du câble = L2+1mm
Cable stripping length = L2+1mm

5 Zone de sertissage
Mandatory crimping area

6 Repérage de la position du sertissage sur la pièce référencée YC-KC-212689A-CD1A
Marking position for crimping on the part referenced YC-KC-212689A-CD1A

7 Repérage pour la position du sertissage sur les pièces référencées YC-KC-212689B/C/D-CD1A
Marking position for the crimping on the contacts referenced YC-KC-212689B/C/D-CD1A.

8 Outil de démontage des contacts : DUTEXT 212751A
Contact disassembly tool reference: DUTEXT 212751A

9 Manuel client: 409-157000
Customer manual: 409-157000

Commercial referenceS	Cross-section (mm2)	Dimensions (mm)					Weight (g)
		L1	L2	L3	D1	D2	
FXP-CS20-M240S-CU	240	62.9	33	/	29	23	158.33
FXP-CS20-M185S-CU	185	55.9	26	16	26	20.5	133.06
FXP-CS20-M150S-CU	150	55.9	26	15	23	18	123.98
FXP-CS20-M120S-CU	120	54.9	25	15	21	16.5	116.55

Référence commerciale / *Commerciale reference* : Voir nomenclature / *See bill of material*

Voir nomenclature / See bill of material — PART NO

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DWN JF GALIPAUD 26JUL2017
CHK M.BONNIN 26JUL2017
APVD M.VIMARD 26JUL2017

DIMENSIONS: mm
TOLERANCES UNLESS OTHERWISE SPECIFIED: 0 PLC ±.- / 1 PLC ±.- / 2 PLC ±.- / 3 PLC ±.- / 4 PLC ±.- / ANGLES ±.-
MATERIAL: - / -
FINISH: - / -

TE Connectivity

NAME: S/E contact femelle cal.20 à sertir 120 à 240 mm2
S/A Female contact cal.20 to be crimed, 120 up to 240 mm2

PRODUCT SPEC: 108-157009
APPLICATION SPEC: 114-157007
WEIGHT: 149.58 g

SIZE	CAGE CODE	DRAWING NO	RESTRICTED TO
A2	-	C-212689	-

CUSTOMER DRAWING | SCALE 2:1 | SHEET 1 OF 1 | REV A

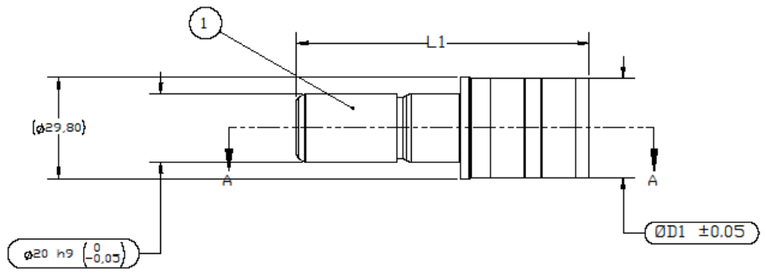
1471-9 (3/13)
Solidworks DRAWING

Réf : 687 BE ins B

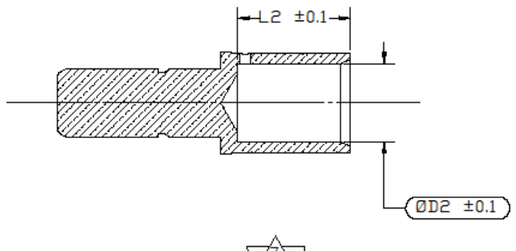
| Indicates Change

Qualification Test Report

C-212919_DEUTSCH: S/A male contact caliber 20 to be crimped, 120 up to 240 mm²



COUPE A-A



Project NR
PRJ-16-000908122

REVISIONS

P	LTR	DESCRIPTION	DATE	DWN	APVD
	A	Suppression des ref. laiton, création des ref. cuivre. Diffusion 332491	16NOV2017	JFG	MV

1 ( ) : cotes pour information / *dimensions for information*
[ ] : cotes de controle / *inspection dimensions*

2 Manuel client : 409-157000
Customer manual: 409157000

3

Sections du câble *Cable cross sections*	Outils de sertissage hydrauliques (Mécatraction) *Hydraulic crimping tools*			
	Ponpe *Pump*	Vérins *Jacks*	Flexibles *Flex hoses*	Matrices *Dies*
120 mm2	PA 133 K	SU133K ou SU210K Chape ouverte/ *Opened shell* ou / *or* VF133K ou VF210K Chape fermée/ *Closed shel*	F 4622K Longueur/*Length* 1,80 m ou / *or* F 4623K Longueur/*Length* 3,00 m	TN120V13 TN120V20 (1 crinping)
150 mm2				TN150V13 TN150V20 (1 crinping)
185 mm2				TN185V20 (1 crinping)
240 mm2				TN240V20 (2 crinping)

4 Longueur de dénudage de la gaine du câble = L2+1mm
Cable stripping length = L2+1mm

5 Zone de sertissage
Mandatory crimping area

6 Repérage pour la position du sertissage pièce référencée FXP-CS20-M240P-CU
Marking position for crimping on the part referenced FXP-CS20-M240P-CU

7 Repérage pour la position du sertissage sur les pièces référencées FXP-CS20-M120/150/185P-CU
Marking position for crimping on the parts referenced FXP-CS20-M120/150/185P-CU

8 Outil de démontage des contacts : DUTEXT 212751A
Contact disassembly tool reference: DUTEXT 212751A

9 Specification de packaging : 107-157006
Packaging spec : 107-157006

Observations Remarks	Protection Plating	Fiche matière Data sheet	Matière Material	Masse (g) Weight (g)	Nbr Qty	Codification Part number	Désignation Designation	REP Item	FXP-CS20-M240P-CU	FXP-CS20-M185P-CU	FXP-CS20-M150P-CU	FXP-CS20-M120P-CU
-	- -	-	- -	1	1	0206-0329AS	Sachet déshydratant Deshydrating bag	3	X	X	X	X
-	- -	-	Plastique Plastic	1	1	Y0000000000-EMB041	Sachet bulle Bubble bag	2	X	X	X	X
-	Argenture Silver plating	FMME 2005	Cuivre Copper	179.18	1	YC-KC-212681D-CD1A	Contact mâle cal. 20 à sertir, 120 mm2 Male contact cal. 20 to be crimped, 120 mm2	1				X
-	Argenture Silver plating	FMME 2005	Cuivre Copper	186.92	1	YC-KC-212681C-CD1A	Contact mâle cal. 20 à sertir, 150 mm2 Male contact cal. 20 to be crimped, 150 mm2	1			X	
-	Argenture Silver plating	FMME 2005	Cuivre Copper	196.51	1	YC-KC-212681B-CD1A	Contact mâle cal. 20 à sertir, 185 mm2 Male contact cal. 20 to be crimped, 185 mm2	1		X		
-	Argenture Silver plating	FMME 2005	Cuivre Copper	229.19	1	YC-KC-212681A-CD1A	Contact mâle cal. 20 à sertir, 240 mm2 Male contact cal. 20 to be crimped, 240 mm2	1	X			

Commercial references

Commercial references	Cross-section (mm2)	Dimensions (mm)					Weight (g)
		L1	L2	L3	D1	D2	
FXP-CS20-M240P-CU	240	86	33	/	29	23	231.19
FXP-CS20-M185P-CU	185	77.5	26	16	26	20.5	198.53
FXP-CS20-M150P-CU	150	77.5	26	15	23	18	188.94
FXP-CS20-M120P-CU	120	76.5	25	15	21	16.5	181.21

Référence commerciale / *Commerciale reference* : FXP-CS20-M240P-CU

Voir nomenclature
See bill of material
PART NO

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DWN JF GALIPAUD 26JUL2017
CHK M BONNIN 26JUL2017
APP V MARD 26JUL2017

TE Connectivity

DIMENSIONS: mm
TOLERANCES UNLESS OTHERWISE SPECIFIED:
0 PLC +-
1 PLC +-
2 PLC +-
3 PLC +-
4 PLC +-
ANGLES +-
MATERIAL - -
FINISH - -

PRODUCT SPEC 108-157009
APPLICATION SPEC 114-157007
WEIGHT 230.69 g

NAME
S/E Contact mâle cal. 20 à sertir de 120 à 240 mm2
S/A male contact cal. 20 to be crimped, 120 up to 240 mm2

SIZE A2 | CAGE CODE - | DRAWING NO C-212919 | RESTRICTED TO -
CUSTOMER DRAWING | SCALE 1:1 | SHEET 1 OF 1 | REV A

1471-9 (3/13)
Solidworks DRAWING

Réf : 687 BE ind C

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