DaimlerChrysler Ford General Motors

Part Submission Warrant

YAZAKI

Part Name	GROM WIR	Cust. Part Number	H1BT-14603-CB
Shown on Drawing No.	H1BT-14603-CB	Org. Part Number	7235-0547-30
Engineering Change Level	EE00 E 13161200 000	Dated	20/06/2016
Additional Engineering Changes	N/A	Dated	N/A
Safety and/or Government Regulation	☐ Yes ☑ No	Purchase Order No.	N/A Weight (kg) 0,059
Checking Aid No.	N/A	Checking Aid Engineering Change Level	N/A Dated N/A

ORGANIZATION MANUFACTURING INFORMATION

YAZAKI EUROPE LTD 323047696
Organization Name & Supplier/Vendor Code

Robert Bosch Strasse., 43
Street Address

Cologne NRW D-50769 Germany
City Region Postal Code Country

CUSTOMER SUBMITTAL INFORMATION

NURSAN

Buyer/Buyer Code
FORD

MATERIALS REPORTING

Has customer-required Substances of Concern information been reported? ☑ Yes ☐ No ☐ n/a

Submitted by IMDS or other customer format: IMDS
IMDS ID: 974566467 / 1

Are polymeric parts identified with appropriate ISO marking codes? ☐ Yes ☐ No ☑ n/a

REASON FOR SUBMISSION (Check at least one)

- ☐ Initial submission
- ☐ Engineering Change(s)
- ☐ Tooling: Transfer, Replacement, Refurbishment, or additional
- ☐ Correction of Discrepancy
- ☐ Tooling Inactive > than 1 year
- ☐ Change to Optional Construction or Material
- ☐ Supplier or Material Source Change
- ☐ Change in Part Processing
- ☐ Parts produced at Additional Location
- ☑ Other - please specify below: Customer Request

REQUESTED SUBMISSION LEVEL (Check one)

- ☐ Level 1 - Warrant only (and for designated appearance items, an Appearance Approval Report) submitted to customer.
- ☑ Level 2 - Warrant with product samples and limited supporting data submitted to customer.
- ☐ Level 3 - Warrant with product samples and complete supporting data submitted to customer.
- ☐ Level 4 - Warrant and other requirements as defined by customer.
- ☐ Level 5 - Warrant with product samples and complete supporting data reviewed at organization's manufacturing location.

SUBMISSION RESULTS

The results for ☑ dimensional measurements ☑ material and functional tests ☐ appearance criteria ☐ statistical process package

These results meet all drawing and specification requirements: ☑ Yes ☐ NO (If "NO" - Explanation Required)

Mold / Cavity / Production Process: one mold, 2 cores /16 CAVITIES

DECLARATION

I affirm that the samples represented by this warrant are representative of our parts which were made by a process that meets all Production Part Approval Process Manual 4th Edition Requirements. I further affirm that these samples were produced at the production rate of **-- / 8 hours.**

I also certify that documented evidence of such compliance is on file and available for review. I have noted any deviations from this declaration below.

EXPLANATION/COMMENTS:

Is each Customer Tool properly tagged and numbered? ☐ Yes ☐ No ☑ n/a

Organization Authorized Signature: Graça Ferreira Date: 20 March 2023

Print Name: Graça Ferreira Phone No. FAX No.

Title: QE E-mail: tdc@yazaki-europe.com

FOR CUSTOMER USE ONLY (IF APPLICABLE)

PPAP Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other

Customer Signature Date

Print Name Customer Tracking No. (optional)

Bureau Veritas Certification

Certification

Awarded to

ELASTOMER - SOLUTIONS MAROC, SARL

Zone Franche D'Exportation ILOT 64 Lot 3, MA 90100 Tanger, Morocco

Bureau Veritas certify that the Management System has been audited and found to be in accordance with the requirements of standard:

STANDARD

ISO 14001:2015

Scope of certification

MANUFACTURING OF INJECTED AND ASSEMBLED TECHNICAL PRODUCTS ON RUBBER, RUBBER-METAL AND RUBBER-PLASTIC.

Expiry date of previous cycle:	**12-05-2022**
Certification/Recertification audit date:	**02-12-2020**
Original approval date:	**02-01-2014**
Certification/Recertification cycle start date:	**08-03-2021**
Certificate expiration date:	**07-03-2024**

Certificate Number: **PT006569** Version: **1** Issue Date: **08-03-2021**

IPAC acreditação
A0005
ISO/IEC 17021-1
Sistemas de Gestão

Certification Manager

This certificate is valid, subject to the general and specific terms and conditions of certification services.

Managing Office: Bureau Veritas Certification Portugal, Lda, Rua Laura Ayres nº3 1600-510 Lisboa, PORTUGAL

Issuing Office: Bureau Veritas Certification Portugal, Lda, Rua Laura Ayres nº3 1600-510 Lisboa, PORTUGAL

Bureau Veritas Certification

Certification

Awarded to

ELASTOMER - SOLUTIONS MAROC, SARL

Zone Franche D'Exportation ILOT 64 Lot 3, MA 90100 Tanger, Morocco

Bureau Veritas certify that the Management System has been audited and found to be in accordance with the requirements of standard:

STANDARD

ISO 45001:2018

Scope of certification

MANUFACTURING OF INJECTED AND ASSEMBLED TECHNICAL PRODUCTS ON RUBBER, RUBBER-METAL AND RUBBER-PLASTIC.

Expiry date of previous cycle:	**18-03-2021**
Certification/Recertification audit date:	**02-12-2020**
Original approval date:	**19-03-2018**
Certification/Recertification cycle start date:	**08-03-2021**
Certificate expiration date:	**18-03-2024**

Certificate Number: **PT006570** Version: **1** Issue Date: **08-03-2021**

IPAC acreditação
A0005
ISO/IEC 17021-1
Sistemas de Gestão

Certification Manager

This certificate is valid, subject to the general and specific terms and conditions of certification services.

Managing Office: Bureau Veritas Certification Portugal, Lda, Rua Laura Ayres nº3 1600-510 Lisboa, PORTUGAL

Issuing Office: Bureau Veritas Certification Portugal, Lda, Rua Laura Ayres nº3 1600-510 Lisboa, PORTUGAL

Certificate of Approval

Awarded to

ELASTOMER SOLUTIONS MAROC, SARL

Zone Franche d'Exportation Tanger ILOT 64, Lot 3, 90100 Tanger, Morocco

Bureau Veritas Certification certify that the Quality Management System of the above organisation has been audited and found to be in accordance with the requirements of

IATF 16949 - First Edition

and the applicable customer specific requirements

SCOPE

Design and manufacturing

PERMITTED EXCLUSION(S)

None

PRODUCT(S) DELIVERED

Injected rubber products (or other similar polymeric materials), overinjected and/or assembled with plastic components.

Date Of Certification: ***07-07-2021***

Date Of Expiration: ***06-07-2024***

IATF Certificate N°: ***410901***

Bureau Veritas Certification Certificate N°: ***PRT-22572/3- IATF*** *Revision:**1***

Appendix to the Certificate of Approval

Awarded to

ELASTOMER SOLUTIONS MAROC, SARL

Zone Franche d'Exportation Tanger ILOT 64, Lot 3, 90100 Tanger, Morocco

REMOTE SUPPORT FUNCTION(S)

Name	Address	Scope
DF ELASTOMER SOLUTIONS, LDA	Estrada Nacional 13, Km 16, Recta do Mindelo, 4485-473 Mindelo, Portugal	Internal Audit Management, Quality System Management, Production Equipment Development, Process Design, Human Resource, Testing, Purchasing, Information Technologies, Engineering
ELASTOMER SOLUTIONS GmbH	Higis - Ring 15, 54578 Wiesbaum, Germany	Contract Review, Testing, Sales, Product Design

Date Of Certification: ***07-07-2021***

Date Of Expiration: ***06-07-2024***

IATF Certificate N°: ***410901***

Bureau Veritas Certification Certificate N°: ***PRT-22572/3- IATF*** *Revision:**1***

MDS Report
Substances of assemblies and materials

1. Company and Product Name

1.1 Supplier Data

Name [ID]:	**DF - Elastomer Solutions Lda [7519]**
DUNS Number:	**45-519-7574**
Street/Postal Code:	**E.N13, Km16 - Recta do Mindelo**
Nat./ZipCode/City:	**PT 4485-473 Mindelo VDC**
- Organisation unit [ID]:	**Elastomer Solutions Maroc, SARL [146149]**
- DUNS Number:	**85-052-4860**
- Street/Postal Code:	**Ilot 64, Lot 3**
- Nat./ZipCode/City:	**MA MA-90100 Tanger**
Supplier Code:	**85-052-4860**
Contact Person:	**Mafalda Reis**
- Phone:	**+351 252 669010**
- Fax No.:	**+351 252 669012**
- E-Mail Address:	**mafalda.reis@elastomer-solutions.com**

1.2 Product Identification

Part/Item No.:	**7235054730**
Description:	**Grom Wir**
Legacy Spare Part:	**No**
Report No.:	**-**
Date of Report:	**-**
Purchase Order No.:	**-**
Bill of Delivery No.:	**-**
Preliminary MDS:	**No**
Multi Sourced:	**No**
IMDS ID / Version:	**1175637278 / 1**
Node ID:	**1175637278**
MDS Status (Change Date):	**Internally released (11/18/2022)**
Recipient Company (Org Unit) [ID]:	**Yazaki Worldwide Corporation (Yazaki Europe Limited) [223417]**
Recipient Status (Change Date):	**not yet browsed (11/18/2022)**

MDS Report

Substances of assemblies and materials

Materials which are subject to legal prohibitions must not be included!
Dangerous substances formed or released during use must also be declared
Please note: GADSL list for substances that require declaration

2. Characterization of the Component

Part/Item No.:	**7235054730**	Report No.:	**-**
Description:	**Grom Wir**	IMDS ID / Version:	**1175637278 / 1**
		Node ID:	**1175637278**

Tree Level	Description Article Name Name Substance name	Part/Item No. Item- /Mat.-No. Material-No. CAS No.	IMDS ID / Version	Quantity	Weight [g]	Portion [%]	Portion (from - to) [%]	Classif. GADSL, SVHC	Parts Marking Recyclate (Indust./Consumer) Application [ID]
1	Grom Wir	7235054730	1175637278 / 1		59				
├2	Rubber Part	Rubber Part 2780		1	50				Yes
├3	EPDM	RCAB1SN4505202	578725982 / 1		50			5.3	No
├4	EPDM	-				28.111111	26 - 30		
├4	Carbon black	1333-86-4				28.111111	26 - 30		

Tree Level	Description / Article Name / Name / Substance name	Part/Item No. / Item- /Mat.-No. / Material-No. / CAS No.	IMDS ID / Version	Quantity	Weight [g]	Portion [%]	Portion (from - to) [%]	Classif. / GADSL, SVHC	Parts Marking / Recyclate (Indust./Consumer) / Application [ID]
4	Zinc oxide	1314-13-2				1.055556	0 - 2	D / P	
4	Silicic acid, aluminum sodium salt	1344-00-9				6.055556	5 - 7		
4	Kaolin	1332-58-7				1.055556	0 - 2		
4	Further Additives, not to declare	system				4.5			
4	Residual oils (petroleum), solvent-dewaxed	64742-62-7				31.111111	29 - 33		Non-tyre application [39]
2	COVER	F_2780_102_n3	607123347 / 3	1	7.9				Yes
3	PP-I	All Copolymer Grades	80775790 / 6		7.9			5.1.b	No
4	PP-I	-				96			
4	Further Additives, not to declare	system				2.5	1 - 4		
4	Pigment portion, not to declare	system				1.5	0 - 3		

This is an uncontrolled copy of a document created by IMDS. End of the report.

Legend

Multi Sourced Component

MDS Report
Substances of assemblies and materials

1. Company and Product Name

1.1 Supplier Data

Name [ID]:	**DF - Elastomer Solutions Lda [7519]**
DUNS Number:	**45-519-7574**
Street/Postal Code:	**E.N13, Km16 - Recta do Mindelo**
Nat./ZipCode/City:	**PT 4485-473 Mindelo VDC**
- Organisation unit [ID]:	**Elastomer Solutions Maroc, SARL [146149]**
- DUNS Number:	**85-052-4860**
- Street/Postal Code:	**Ilot 64, Lot 3**
- Nat./ZipCode/City:	**MA MA-90100 Tanger**
Supplier Code:	**85-052-4860**
Contact Person:	**Mafalda Reis**
- Phone:	**+351 252 669010**
- Fax No.:	**+351 252 669012**
- E-Mail Address:	**mafalda.reis@elastomer-solutions.com**

1.2 Product Identification

Part/Item No.:	**7235054730**
Description:	**Grom Wir**
Legacy Spare Part:	**No**
Report No.:	**-**
Date of Report:	**-**
Purchase Order No.:	**-**
Bill of Delivery No.:	**-**
Preliminary MDS:	**No**
Multi Sourced:	**No**
IMDS ID / Version:	**1175632716 / 1**
Node ID:	**1175632716**
MDS Status (Change Date):	**Internally released (11/18/2022)**
Recipient Company (Org Unit) [ID]:	**Yazaki Worldwide Corporation (Yazaki Europe Limited) [223417]**
Recipient Status (Change Date):	**not yet browsed (11/18/2022)**

MDS Report

Substances of assemblies and materials

Materials which are subject to legal prohibitions must not be included!
Dangerous substances formed or released during use must also be declared
Please note: GADSL list for substances that require declaration

2. Characterization of the Component

Part/Item No.:	**7235054730**	Report No.:	**-**
Description:	**Grom Wir**	IMDS ID / Version:	**1175632716 / 1**
		Node ID:	**1175632716**

Tree Level	Description Article Name Name Substance name	Part/Item No. Item- /Mat.-No. Material-No. CAS No.	IMDS ID / Version	Quantity	Weight [g]	Portion [%]	Portion (from - to) [%]	Classif. GADSL, SVHC	Parts Marking Recyclate (Indust./Consumer) Application [ID]
1	Grom Wir	7235054730	1175632716 / 1		59				
├2	Rubber Part	Rubber Part 2780		1	50				Yes
├3	EPDM	RCBB1SN4500305	1123123556 / 1		50			5.3	No
├4	EPDM	-				22.946401985	20.8 - 25.8		
├4	Carbon black	1333-86-4				31.69280397	27.4 - 37.4		

Tree Level	Description / Article Name / Name / Substance name	Part/Item No. / Item- /Mat.-No. / Material-No. / CAS No.	IMDS ID / Version	Quantity	Weight [g]	Portion [%]	Portion (from - to) [%]	Classif. / GADSL, SVHC	Parts Marking / Recyclate (Indust./Consumer) / Application [ID]
4	Zinc oxide	1314-13-2				1.159057072	0 - 2.7	D / P	
4	Hydrocarbon oils	8020-83-5				33.09280397	28.8 - 38.8		
4	Limestone	1317-65-3				6.787841191	5.5 - 8.5		
4	Sulphur	7704-34-9				0.2			
4	Zinc bis(dibenzyldithiocarbamate)	14726-36-4				0.729776675	0 - 1.7		
4	Benzothiazole-2-thiol	149-30-4				0.729776675	0 - 1.7	D / P	
4	N-Phenyl-N-[(trichloromethyl)thio]benzenesulphonamide	2280-49-1				0.686848635	0 - 1.6		
4	N-Cyclohexylbenzothiazole-2-sulphenamide	95-33-0				0.729776675	0 - 1.7		
4	Further Additives, not to declare	system				1.244913151	0 - 2.9		
2	COVER	F_2780_102_n3	607123347 / 3	1	7.9				Yes
3	PP-I	All Copolymer Grades	80775790 / 6		7.9			5.1.b	No
4	PP-I	-				96			
4	Further Additives, not to declare	system				2.5	1 - 4		
4	Pigment portion, not to declare	system				1.5	0 - 3		

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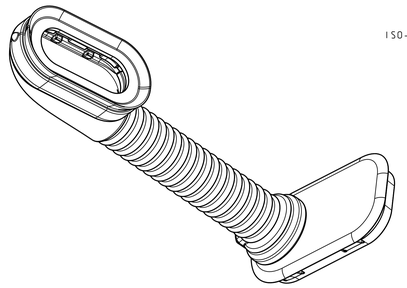
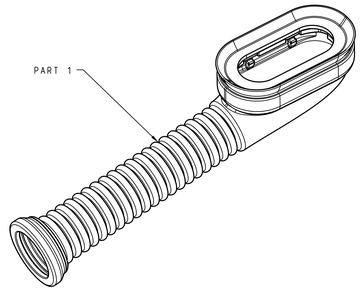
Legend

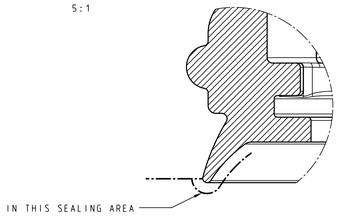
Multi Sourced Component

ISO-VIEWS

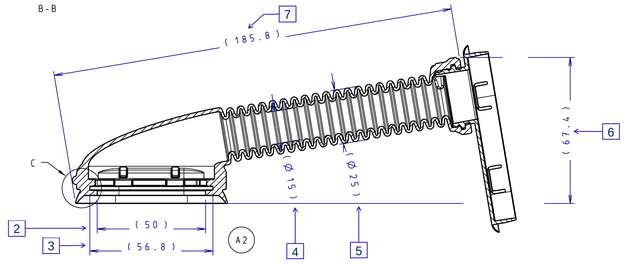


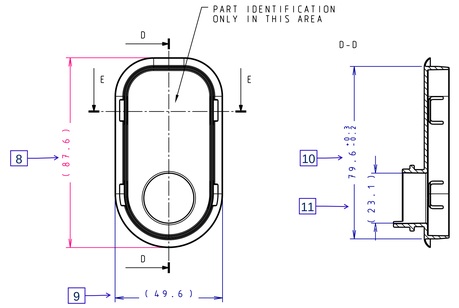


C
5:1



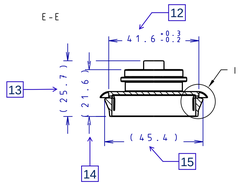
B-B



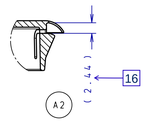


D-D

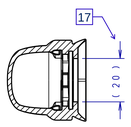
E-E



I
2:1



A-A



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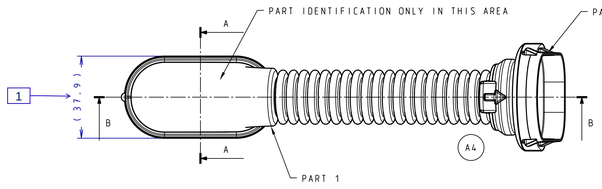
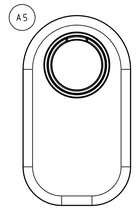
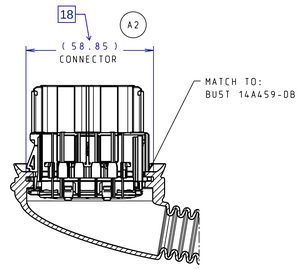




G-G

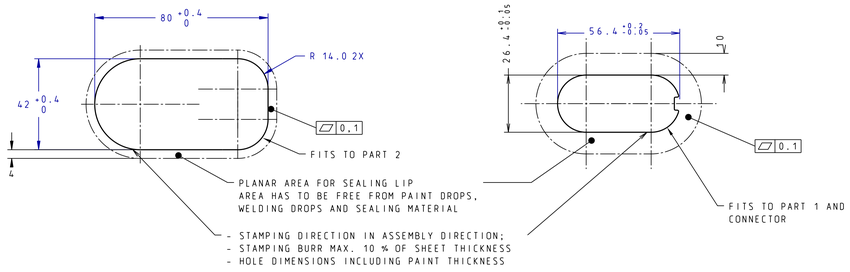


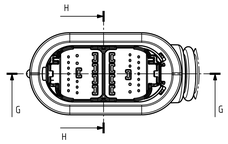
MOUNTING OPENING DOOR

MATERIAL THICKNESS:	1,40mm
TOLERANCE:	+/-0,03mm
PAINT THICKNESS (2X)	0,18mm
BURR (10% SHEET THICKNESS)	0,14mm
MAX TOTAL SHEET THICKNESS	1,75mm
MIN TOTAL SHEET THICKNESS	1,69mm

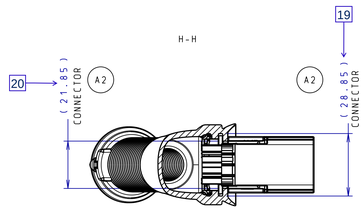
MOUNTING OPENING BODY

MATERIAL THICKNESS:	0,75mm
TOLERANCE:	+/-0,03mm
PAINT THICKNESS (2X)	0,18mm
BURR (10% SHEET THICKNESS)	0,10mm
MAX TOTAL SHEET THICKNESS	1,06mm
MIN TOTAL SHEET THICKNESS	1,00mm





H-H



GENERAL NOTES

FOR CURRENT RELEASE STATUS, SEE THE WERS ENGINEERING NOTICE

CHANGES TO DESIGN, COMPOSITION OR PROCESSING OF THE PART PREVIOUSLY APPROVED FOR PRODUCTION REQUIRE PRIOR APPROVAL FROM FORD MOTOR COMPANY PRODUCT ENGINEERING. REFER TO ISO/TS 16949

PART AS RECEIVED AT THE FORD PLANT OR SERVICE PART PACKAGER / WAREHOUSE SHALL BE FREE OF ANY CORROSION ALIGNED WITH THE FORD CUSTOMER SERVICE DIVISION (FCSD) PACKAGING AND SHIPPING GUIDE CORROSION INHIBITORS OR FOREIGN MATERIALS DETRIMENTAL TO THE INSTALLATION OR FUNCTION OF THE PART MUST BE REMOVABLE BY THE INTENDED CLEANING METHOD

ENGINEERING APPROVAL OF PRODUCTION SAMPLES FROM EACH SUPPLIER REQUIRED PRIOR TO AUTHORIZATION OF INITIAL PRODUCTION FOR SAMPLE REQUIREMENTS SEE ENGINEERING RELEASE.

PART TO CONFORM TO WSS-M99P1111-A STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

UNLESS OTHERWISE SPECIFIED:

DIMENSIONAL DEVIATION ALLOWED. WHERE FIT, FUNCTION AND APPEARANCE ARE NOT AFFECTED.

A1 MATERIAL CODE >EPDM< TO APPEAR ON PART 1 AND >PP< ON PART 2 PER ISO 1043-1 AND ISO 1043-2 (REFERENCING ISO 11469, PLASTIC AND/OR ISO 1629, RUBBER).

UNDEFINED FEATURES TO SUIT SUPPLIER.

SURFACE BLASTED OR SPARK ERODED;
SURFACE CAN VARY FROM SHINE TO DULL;
INJECTION POINT IS UP TO SUPPLIERS DISCRETION;
ALL UNDEFINED EDGES R = 0,3,
EXCEPT FROM TOOLING DIVISION;

TOOL MARKS, VOIDS AND SINKAGE MARKS ALLOWED IN NON VISIBLE AREAS.

PART MUST FREE FROM BURRS AND SHARP EDGES.

HARNESS MAX. DIA 12 MM

PART1:

MATERIAL: EPDM ACC. TO SAE J200 TYPE M3 BA 510, B13, F17, Z1, Z2, Z3
- Z1: OZONE RESISTANCE ACC. TO FLTM BP 101-01 PROCEDURE A RATING MAX '0'
- Z2: NO MIGRATION STAINING ACC. TO FLTM BP 153-01 METH.A SLIGHT CONTACT STAINING PERMITTED
- Z3. NO STAINING BY WATER-EXTRACTABLE INGREDIENT ACC. TO FLTM BP 153-01 METH. B;
- COLOR: BLACK

TOLERANCES OF DIMENSIONS: ACC. DIN ISO 3302-1 M3
FLASH ALLOWED WITH A MAX. SIZE OF 0,5 MM * 1,5 MM;

PART IDENTIFICATION:
FORD TRADEMARK,
FORD PART NUMBER, SUPPLIER SYMBOL,
PRODUCTION DATE
SUPPLIER CODE AND CAVITY NO.
MATERIAL ABBREVIATION
SIZE TO SUIT MANUFACTURER BUT MUST BE CLEARLY VISIBLE

MASS: 50,0 GRAM

PART2:

MATERIAL: PP ACC. TO WSS-M4D638-B, BLACK

TOLERANCES OF DIMENSIONS: ACC. DIN 16742-A1310 PAGE 15 TG6
FLASH ALLOWED WITH A MAX. SIZE OF WIDTH 0,2 MM * HEIGHT 0,2 MM;

PART IDENTIFICATION:
FORD TRADEMARK,
FORD PART NUMBER, H1BT-14603-C_/E__,SUPPLIER SYMBOL,
PRODUCTION DATE
SUPPLIER CODE AND CAVITY NO.
MATERIAL ABBREVIATION
SIZE TO SUIT MANUFACTURER BUT MUST BE CLEARLY VISIBLE

MASS: 9,0 GRAM

WEIGHT OF GROMMET: 0,059 KG

==========

ES PART NO.: F_2780_190_N1.
GSDB-CODE: ECLN-F

DVP TESTING ACC. TO FORD SPECIFICATION CETP00.00-E-412

DVP TESTING FOR DOOR SLAM TEST ACC. TO
FORD SPECIFICATION RQT-180100-009532 (ED-1513)

A3 ASSEMBLY FORCES: GROMMET ASSEMBLY TO A/B-PILLAR ACC. TO FORD SDS43, ED-0020, INSTALLATION BY HAND PRESS ACTION ≤ 75 N

RETENTION FORCES: GROMMET ASSEMBLY TO A/B-PILLAR ACC. CONNECTOR SPEZIFICATION.

ASSEMBLY FORCES: GROMMET ASSEMBLY TO DOOR PANEL ACC. TO FORD SDS43, ED-0034, ≤ 45 N EACH HOOK

RETENTION FORCES: GROMMET ASSEMBLY TO DOOR PANEL ACC. TO FORD SDS43, ED-0035, ≥ 110 N

SEALING TEST: GROMMET ASSEMBLY TO A/B-PILLAR ACC. DIN EN 60529/IPX8, 200MM WATER COLUMN, RELAXED WATER, 60MIN.

LTRS	REVISIONS			
ORIGINATOR	CHECKER	ENGR APP	MATL APP	
RELEASED				
EE00 E 13033752 006		20151120		
ESD	DJANSE15	MLOZADAL	MVAZAN	
A1 NOTES CHANGED A2 TOLERANCES DELETED A3 ASSEMBLY FORCES AND SEALING TEST ADDED				
EE00 E 13094925 000		20151215		
GESCH	RLIEDTKE	MLOZADAL	MVAZAN	
DRAWING STANDARD CORRECTION ONLY				
EE00 E 13207851 000		20160720		
DLABECKI	YBENMESS	MLOZADAL	MVAZAN	
A4 ARROW ADDED A5 COVER REDESIGN				
EE00 E 13161200 000		20160620		
DLABECKI	RLIEDTKE	DSIMON23	MVAZAN	

REFERENCE	DI-B479-H1BT-14631-LB-4HU9C-001		
PART MUST COMPLY WITH RESTRICTED SUBSTANCE MANAGEMENT STANDARD WSS-M99P9999-A1 TO SAFEGUARD HEALTH, SAFETY AND THE ENVIRONMENT			
DRAFTED IN ACCORDANCE WITH FORD MOTOR COMPANY ENGINEERING CAD AND DRAFTING STANDARDS VERSION 28.1	3RD ANGLE PROJ	DIMENSIONS ARE IN MILLIMETERS	
CAD TYPE K-CATIA5	CAD LOC. TCe	CAD FILE H1BT-14603-C-DWG-01	DTMC IS MASTER
OPER. NO. N/A	UNIT N/A	DRAWING H1BT-14603-CB	
DESIGN DLABECKI	DETAIL DLABECKI	TITLE GROM WIR	SHT 1 OF 1
CHECKED RLIEDTKE	SAFETY MFG USE		N/A
SCALE 1:1	DATE 20150819	DIVISION EESE PLANT N/A	
FORD MOTOR COMPANY			

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Process Flowchart

Part number	2780
Part name	Grom Wir
Drawing Number	H1BT-14603-CB
Engineering level	EE00 E 13161200 000

Flowchart Code	PF_2780_00
Team	Eng; Qual; Indus.
Prepared by	Taoufiq Bouialhaj
Date	15-11-2022
Revision	0

◇ Operation ⊠ Operation and Inspection □ Inspection △ Storage ○ Transport

Oper. Nr	Process Flow ◇	⊠	□	△	○	Process Name	Special Characteristic (CC or S acc. System GP15)	Product/ Process characteristics
5	X	.	.	.	.	Material incoming		Packaging according to specification
10	.	.	X	.	.	Qualitative material incoming		According to control plan
11	.	.	.	.	X	Move material to rubber storage		
20	.	.	.	X	.	Rubber storage		Rubber warehouse temperature
5	X	.	.	.	.	Material incoming		Packaging according to specification
10	.	.	X	.	.	Qualitative material incoming		According to control plan
12	.	.	.	.	X	Move material to incoming storage		
15	.	.	.	X	.	Incoming storage		
16	.	.	.	.	X	Move component to assembly area		
21	.	.	.	.	X	Move material to vulcanization area		
25	.	X	.	.	.	Vulcanization (deflash and autocontrol)	S	According to work instructions / control plan / visual aids
35	X	.	.	.	.	Assembling		According to work instructions / control plan / visual aids
49	.	.	.	.	X	Move to packaging area		
50	X	.	.	.	.	Packaging		Packaging according to specification
51	.	.	.	.	X	Move to expedition warehouse		
55	.	.	.	X	.	Expedition warehouse		
60	X	.	.	.	.	Expedition		According to customer order
	.	.	.	.	.	#REF!		
	.	.	.	.	.	#N/A		
	.	.	.	.	.	#N/A		
	.	.	.	.	.	#N/A		
	.	.	.	.	.	#N/A		
	.	.	.	.	.	#N/A		
	.	.	.	.	.	#N/A		
	.	.	.	.	.	#N/A		
	.	.	.	.	.	#N/A		

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POTENCIAL FAILURE MODE AND EFFECTS ANALYSIS - PROCESS FMEA

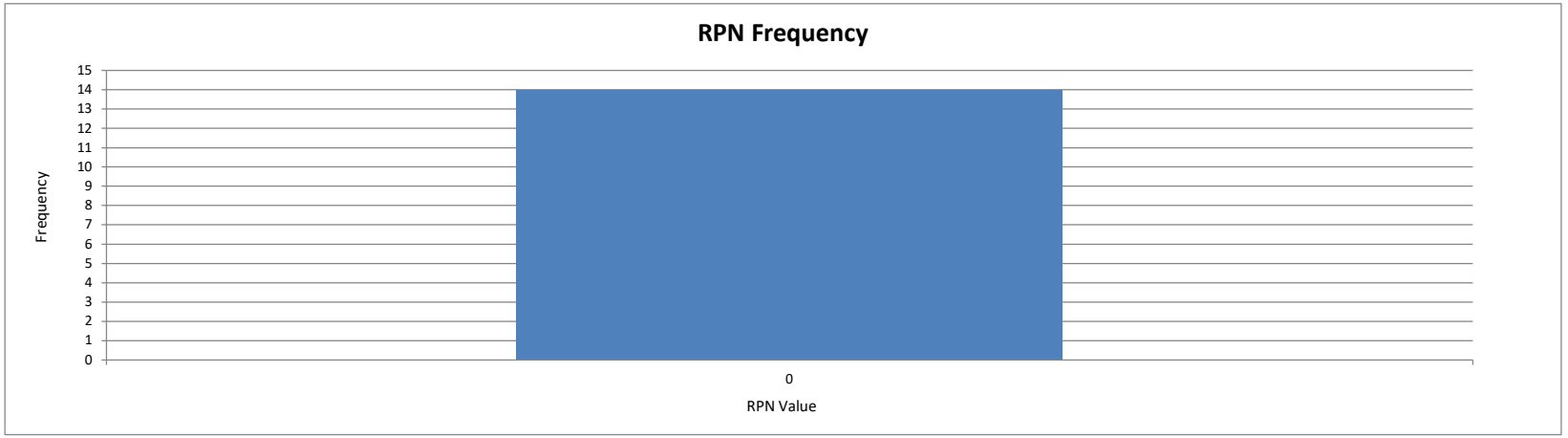
FMEA Number:	**PFMEA_2780_00**	**FMEA Date (Orig.):**	**13-09-2022**		**Coordinated by:**	**Bouialhaj Taoufiq**
Item:	**2780**	**Revision:**	**00**		**Team:**	**HN / MO/AP/ MA/AE**
Begin of Production:	**2022 ESM**	**Date:**			**Functions:**	**QE//PE/PRD/QP/LOG**
Drawing:	**H1BT-14603-CB**	**Engineering Level:**	**EE00 E 13161200 000**		**Plant**	**ESM**

Nb Op	Process Function / Requirements	Potential Failure Mode	Potential Effect(s) of Failure	S	Class	Potential Cause(s) / Mechanism(s) of Failure	Current Process				RPN	Recommended Action(s)	Respons.	Target Completion Date	Actions Results					RPN
							Prevention	O	Detection	D					Actions Taken and Completion Date	S	O	D	RPN	
05-20	**Incoming Material/ Qualitative incoming**	05 PFMEA and Control Plan_Gen Compound Incoming																		0
05-20	**Incoming Material/ Qualitative incoming**	05 PFMEA and Control Plan_Gen Component Incoming																		0
25	**Vulcanisation**	25_PC_Geral_Vulcanização_PS																		0
35	**Assembly**	35 PFMEA and Control Plan_Gen Assembly																		0
50	**Packaging**	50_PC_Geral_Embalagem_PS																		0
60	**Expedition**	60_PC_Geral_Expedição_PS																		0

LEGEND:	**Classification**	**Corrective Actions to take if**
CC = Critical Characteristic; S = Significant Characteristic ; S= Severity; D= Detection; O= Occurence	Critical	RPN > 10 and S=10-9
ES = Elastomer Solutions; RPN = Risk Priority Number (SxDxO)	S = 9 .. 10 or A1	RPN > 50 and S=8
Nb Op = Number of Operation identified in Process Flow Diagram; Class. = Classification of any significant or critical Characteristic	Significant	RPN ≥ 100 and S=1-7
	S = 5 .. 8 and O = 4 .. 10	S= A1 or A or B1 or B

REVISION HISTORY

REVISION N.	DATE	REASON FOR REVISION
00	13-09-2022	Emission



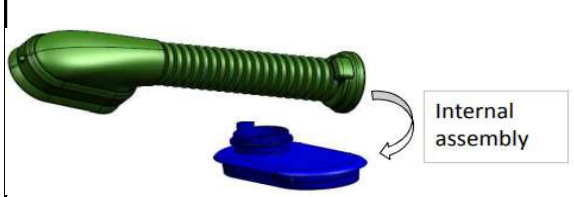
ElastomerSolutions

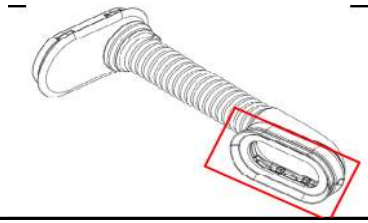
Control Plan

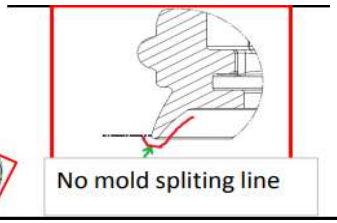
Prototype	
Pre-Serie	
Serie	x

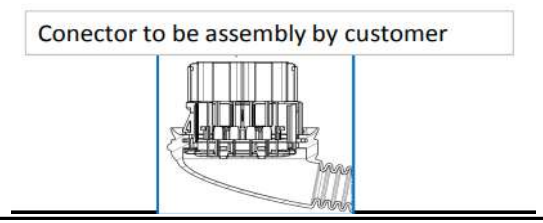
Control Plan Nb:	PC_2780_PS_00	Prepared by:	Mohamed Amekhchoun	Date (Orig.):	13-09-2022	Date (Rev.):
Part Nb:	2780	Team	HN / MO/AP/ MA/AE	Customer Approval (if req.):		
Part designation:	GROM WIR	Supplier (if req.):				
Drawing:	H1BT-14603-CB	ES Plant:	ESM			
Engineering level:	EE00 E 13161200 000					

Pictures/Scheme









N. Op	Operation/ Process Designation	Characteristic	PRD	PRC	SC	Product / Process / Specification / Tolerance	Control Method	Sample		Control Instruction	Responsible	Records	Reaction Mode
								Size	Frequence				
5 &10	Réception	PC_Gen Incoming Composants & PC_Gen Reception des Matieres Premiere &PC_Gen Incoming Composants Metalique											
25	Vulcanisation, Ebavurage, inspection	PC_Gen Vulcanization											
25	Vulcanisation, Ebavurage, inspection	Hardness	√	-------	-------	Dessin de la pièce (50 +/-5 Sh. A);	Duromètre	3 Pièces	1 x Equipe	IT_LAB_Utilisation du duromètre analogique	Contrôleur de processus	EN software Gummi ESM_QES_013 -	Au cas d'un ecart : Bloqué les pièces produites ; Analysé et donner des disposition selon l'analyse réalisée par le responsable qualité
25	Vulcanisation, Ebavurage, inspection	Engraving	√	-------	-------	Ford trademark Ford Reference Supplier Logo Production table Supplier Code cavity >Material<	Visual	1 Complete cycle of each plate	In each Start,re Start and End OEF	-------	Team leaders / process controllers	ESM-MTN-05-01 - Montage de Moule	Contacter l'ingénierie qualité (Selon IT-QES-11-Définition des critères généraux))
25	Vulcanisation, Ebavurage, inspection	Dimensional control	√	-------	-------	Acc to the drawing	Profile Projector	1 parts per cavity	Acc to annual layout inspection	Spécification produits	Lab Technicien	Layout Inspection supplier Validation test report	Must be Analyzed by laboratory / Quality ; In accordance with the procedure Non-compliant : P-ESM_09 - Non-conformités

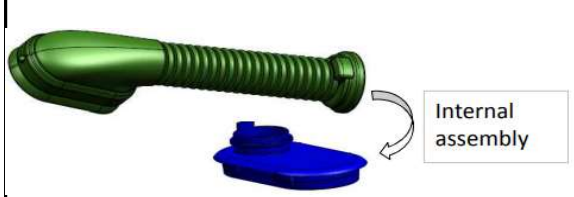
ElastomerSolutions

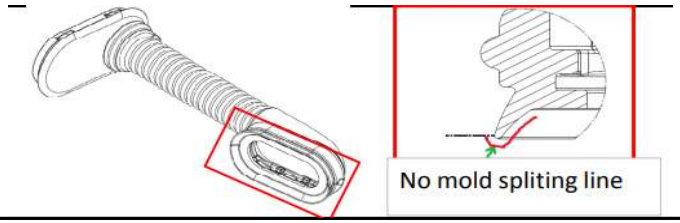
Control Plan

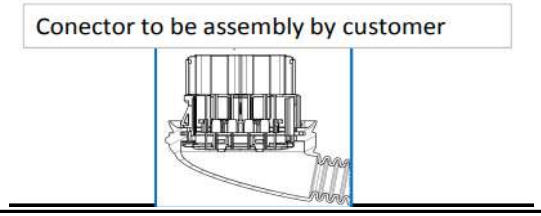
Prototype	
Pre-Serie	
Serie	x

Control Plan Nb:	PC_2780_PS_00	Prepared by:	Mohamed Amekhchoun	Date (Orig.):	13-09-2022	Date (Rev.):
Part Nb:	2780	Team	HN / MO/AP/ MA/AE	Customer Approval (if req.):		
Part designation:	GROM WIR	Supplier (if req.):				
Drawing:	H1BT-14603-CB	ES Plant:	ESM			
Engineering level:	EE00 E 13161200 000					

Pictures/Scheme







N. Op	Operation/ Process Designation	Characteristic	PRD	PRC	SC	Product / Process / Specification / Tolerance	Control Method	Sample		Control Instruction	Responsible	Records	Reaction Mode
								Size	Frequence				
25	Vulcanisation, Ebavurage, inspection	Part V isual	√	-------	-------	Visual Help of the part	Visual	100%	-------	Aide Visuel et instruc-tion de travail	Operateur	Gespress ESM-Prod_02	Analyzed the gap and give provisions according to the analysis carried out by the quality responsible
25	Vulcanisation, Ebavurage, inspection	Bavurr	-------	√	-------	Dessin de la pièce (Max. height 1,5 mm *Max. width 0,5 mm)	Visual	100%	-------	Aide Visuel et instruc-tion de travail	Operateur	Gespress ESM-Prod_02	Analyzed the gap and give provisions according to the analysis carried out by the quality responsible
							Projector profile	Suspected Parts	-------	IT_LAB_014 – Projecteur de Profil_	Technicien de laboratoire	ESM_LAB_018_ -Rapport dimension-nel	Analyzed the gap and give provisions according to the analysis carried out by the quality responsible
25	Vulcanisation, Ebavurage, inspection	Capability Study (Requalification / Layout Inspection / verification tests funcionel)	----	√	S	50mm 20 mm PpK ≥ 1,67 Cpk≥ 1,33	Projector profile	125 Parts	According to the inspection layout	IT_LAB_014 – Projecteur de Profil_	Laboratory technician	ESM_LAB_031, Process Capability Study	Analyzed the gap and give provisions according to the analysis carried out by the quality responsible
35	Assemblage	Acc drawing of the parts + Process flow chart +PC_Gen Assemblage											
50 &55 & 60	Emballage & Expédition	PC_ Gen Packging & Expedition											

EQ -Quality Enginneering; P = Production; L=Logistics; EP= Process Enginneering; CC= Competence Center; QF = Plant Quality
SC = Special Characteristic ;

REVISION HISTORY

REVISION N.	DATE	REASON FOR REVISION

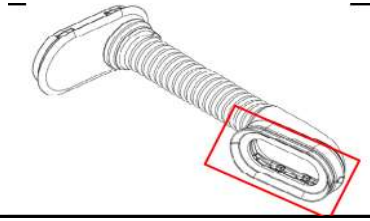
ElastomerSolutions

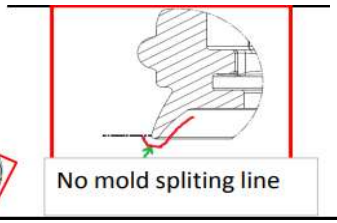
Control Plan

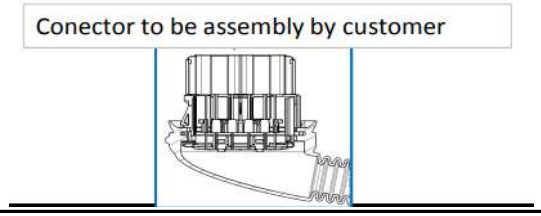
Prototype	
Pre-Serie	
Serie	x

Control Plan Nb:	PC_2780_PS_00	Prepared by:	Mohamed Amekhchoun	Date (Orig.):	13-09-2022	Date (Rev.):
Part Nb:	2780	Team	HN / MO/AP/ MA/AE	Customer Approval (if req.):		
Part designation:	GROM WIR	Supplier (if req.):				
Drawing:	H1BT-14603-CB	ES Plant:	ESM			
Engineering level:	EE00 E 13161200 000					

Pictures/Scheme







N. Op	Operation/ Process Designation	Characteristic	PRD	PRC	SC	Product / Process / Specification / Tolerance	Control Method	Sample		Control Instruction	Responsible	Records	Reaction Mode
								Size	Frequence				

00	13-09-2022	Emission

ElastomerSolutions

GAGE
REPEATABILITY AND REPRODUCIBILITY REPORT

According to AIAG - Measurement Systems Analysis 4th Edition

Date : 15/11/2022
Performed by : F.MAKLACH
Operator A: FATIMA
Operator B: ROUANI
Operator C: MOHAMMED

ESM Part number : 2780	Dimensional Report Number : 027/2022	Gage name : *Profile Projector*	
Characteristic : *Distance*	Specification : 50 +0.80/-0.80	Gage number : PPF01	Resolution : *0,001*
USL = *50,8*	LSL= *49,2*	Tolerance= TI= USL-LSL = 1,60	

Appraiser ➔	A: *FATIMA*				B: *ROUANI*				C: *MOHAMMED*				$\overline{X}p$
Parts # ▼	1st trial	2nd trial	3rd trial	Range	1st trial	2nd trial	3rd trial	Range	1st trial	2nd trial	3rd trial	Range	(part)
1	50,150	50,130	50,150	0,020	50,150	50,140	50,140	0,010	50,150	50,150	50,130	0,020	50,143
2	50,340	50,330	50,330	0,010	50,340	50,350	50,330	0,020	50,330	50,320	50,330	0,010	50,333
3	50,180	50,190	50,200	0,020	50,200	50,200	50,190	0,010	50,180	50,190	50,180	0,010	50,190
4	50,050	50,050	50,060	0,010	50,060	50,040	50,040	0,020	50,030	50,050	50,040	0,020	50,047
5	50,230	50,230	50,240	0,010	50,230	50,220	50,210	0,020	50,220	50,220	50,230	0,010	50,226
6	49,980	49,990	49,990	0,010	50,000	49,990	49,990	0,010	50,000	49,990	50,000	0,010	49,992
7	50,240	50,260	50,250	0,020	50,250	50,250	50,240	0,010	50,250	50,230	50,250	0,020	50,247
8	50,190	50,190	50,180	0,010	50,200	50,190	50,190	0,010	50,190	50,200	50,180	0,020	50,190
9	50,380	50,390	50,380	0,010	50,380	50,390	50,390	0,010	50,380	50,390	50,390	0,010	50,386
10	50,420	50,400	50,410	0,020	50,410	50,410	50,410	0,000	50,410	50,420	50,410	0,010	50,411
Average ➔	50,216	50,216	50,219	0,014	50,222	50,218	50,213	0,012	50,214	50,216	50,214	0,014	0,419
	$\overline{X}A$ =	50,2170	$\overline{R}A$=	0,014	$\overline{X}B$ =	50,2177	$\overline{R}B$=	0,012	$\overline{X}C$ =	50,2147	$\overline{R}C$=	0,014	RP

CONSTANTS

Parts	2	3	4	5	6	7	8	9	10
K_3	0,7071	0,5231	0,4467	0,4030	0,3742	0,3534	0,3375	0,3249	0,3146

$\overline{\overline{R}} = (\overline{R}A+\overline{R}B+\overline{R}C) / 3$	$\overline{\overline{R}}$ = 0,0133
$\overline{X}dif = Max.\overline{X}_{(A,B \text{ ou } C)} - Min.\overline{X}_{(A,B \text{ ou } C)}$	$\overline{X}dif$ = 0,0030
$LSC_{\overline{R}} = \overline{\overline{R}} \times D_4$	$LSC_{\overline{R}}$ = 0,0344
$LIC_{\overline{R}} = \overline{\overline{R}} \times D_3$	$LIC_{\overline{R}}$ = 0

Appraisers	K_2	Trials	D_3	D_4	K_1
2	0,7071	2	0	3,27	0,8862
3	0,5231	3	0	2,58	0,5908

Results (R&R)

[X]	< 10% ➔	Measurement system is acceptable
[ ]	10 - 30% ➔	May be acceptable based upon importance of application
[ ]	> 30% ➔	Needs improvement

Measurement analysis

Repeatability ➔ *Equipment Variation* **(EV)**

$E.V = \overline{\overline{R}} \times K1$ = 0,00788 | **K1=** 0,5908

Reproducibility ➔ *Appraiser Variation* **(AV)**

$A.V = \sqrt{(\overline{X}dif \times K2)^2 - (EV^2/n)}$ = 0,00063

K2=	0,5231	n=	10	r=	3

Repeatability and Reproducibility (R & R)

$R\&R = \sqrt{(EV^2 + AV^2)}$ = ***0,0079***

Part Variation (PV)

$PV = RP \times K3$ = 0,13178 | **K3=** 0,3146

Total Variation (TV)

$T.V = \sqrt{(R\&R^2 + PV^2)}$ = 0,13202

Tolerance analysis (%)

% E.V = 100 (EV / TV) = **5,97%**

% A.V = 100 (AV / TV) = **0,48%**

% R & R = 100 (R & R / TV) = ***5,99%***

% PV = 100 (PV / TV) = **99,82%**

ndc = 1,41(PV/R&R) = **23,514**

xxxxxxxxxx

ElastomerSolutions

GAGE
REPEATIBILITY AND REPRODUCIBILITY REPORT

According to AIAG - Measurement Systems Analysis 4th Edition

Date : 15/11/2022
Performed by : F.MAKLACH
Operator A: FATIMA
Operator B: ROUANI
Operator C: MOHAMMED

ESM Part number : 2780	Dimensional Report Number : 027/2022	Gage name : *Profile Projector*	
Characteristic : *Distance*	Specification : 20 +0.50/-0.50	Gage number : PPF01	Resolution : *0,001*
USL = *20,5*	LSL= *19,5*	Tolerance= TI= USL-LSL = 1,00	

Appraiser →	A: *FATIMA*				B: *ROUANI*				C: *MOHAMMED*				$\bar{X}p$
Parts # ↓	1st trial	2nd trial	3rd trial	Range	1st trial	2nd trial	3rd trial	Range	1st trial	2nd trial	3rd trial	Range	(part)
1	20,080	20,070	20,080	0,010	20,070	20,070	20,070	0,000	20,060	20,070	20,060	0,010	20,070
2	20,220	20,230	20,220	0,010	20,220	20,220	20,220	0,000	20,220	20,230	20,230	0,010	20,223
3	20,170	20,170	20,170	0,000	20,160	20,170	20,160	0,010	20,160	20,160	20,160	0,000	20,164
4	19,990	20,010	20,010	0,020	20,000	20,000	20,000	0,000	19,990	20,000	20,000	0,010	20,000
5	20,180	20,180	20,170	0,010	20,170	20,180	20,180	0,010	20,170	20,170	20,180	0,010	20,176
6	20,240	20,240	20,230	0,010	20,230	20,240	20,240	0,010	20,240	20,230	20,230	0,010	20,236
7	20,080	20,080	20,080	0,000	20,090	20,090	20,100	0,010	20,090	20,100	20,100	0,010	20,090
8	20,090	20,100	20,110	0,020	20,100	20,110	20,110	0,010	20,110	20,100	20,100	0,010	20,103
9	20,270	20,270	20,270	0,000	20,260	20,260	20,270	0,010	20,260	20,260	20,260	0,000	20,264
10	20,010	20,000	20,010	0,010	20,010	20,010	20,010	0,000	20,000	20,010	20,010	0,010	20,008
Average →	20,133	20,135	20,135	0,009	20,131	20,135	20,136	0,006	20,130	20,133	20,133	0,008	0,264
	$\bar{X}A$ =	20,1343	$\bar{R}A$=	0,009	$\bar{X}B$ =	20,1340	$\bar{R}B$=	0,006	$\bar{X}C$ =	20,1320	$\bar{R}C$=	0,008	RP

CONSTANTS									
Parts	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
K_3	0,7071	0,5231	0,4467	0,4030	0,3742	0,3534	0,3375	0,3249	0,3146

$\bar{\bar{R}} = (\bar{R}A+\bar{R}B+\bar{R}C) / 3$	$\bar{\bar{R}}$ = 0,0077
$\bar{X}dif = Max.\bar{X}_{(A,B\ ou\ C)} - Min.\bar{X}_{(A,B\ ou\ C)}$	$\bar{X}dif$ = 0,0023
$LSC_{\bar{R}} = \bar{\bar{R}} \times D_4$	$LSC_{\bar{R}}$ = 0,0198
$LIC_{\bar{R}} = \bar{\bar{R}} \times D_3$	$LIC_{\bar{R}}$ = 0

Appraisers	K_2	Trials	D_3	D_4	K_1
2	0,7071	2	0	3,27	0,8862
3	0,5231	3	0	2,58	0,5908

Results (R&R)

[X]	< 10%	Measurement system is acceptable
[ ]	10 - 30%	May be acceptable based upon importance of application
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Measurement analysis

Repeatability → *Equipment Variation* **(EV)**

E.V = $\bar{\bar{R}} \times K1$ = 0,00453 | **K1=** 0,5908

Reproducibility → *Appraiser Variation* **(AV)**

A.V = $\sqrt{(\bar{X}dif \times K2)^2 - (EV^2/n)}$ = 0,00090

K2=	0,5231	**n=**	10	**r=**	3

Repeatability and Reproducibility (R & R)

R&R = $\sqrt{(EV^2 + AV^2)}$ = ***0,00462***

Part Variation (PV)

PV = RP X K3 = 0,08319 | **K3=** 0,3146

Total Variation (TV)

T.V = $\sqrt{(R\&R^2 + PV^2)}$ = 0,08332

Tolerance analysis (%)

% E.V = 100 (EV / TV) = **5,44%**

% A.V = 100 (AV / TV) = **1,08%**

% R & R = 100 (R & R / TV) = ***5,54%***

% PV = 100 (PV / TV) = **99,85%**

ndc = 1,41(PV/R&R) = **25,404**

xxxxxxxxxx

YAZAKI

Production Part Approval
Dimensional Test Results

ORGANIZATION:	Elastomer Solutions Maroc , SARL	PART NUMBER:	7235054730
SUPPLIER/VENDOR CODE:	850524860	PART NAME:	GROM WIR
INSPECTION FACILITY:		DESIGN RECORD CHANGE LEVEL:	EE00 E 13161200 000 20160620
		ENGINEERING CHANGE DOCUMENTS:	

ITEM	DIMENSION/SPECIFICATION	SPECIFICATION / LIMITS		TESTE DATE	QTY. TESTED	ORGANIZATION MEASUREMENT RESULTS RESULTS (DATA)		OK	NOT OK
1	() 37,9	+0,60	-0,60	14/11/2022	16	37,45	38,31	x	
2	() 50	+0,8	-0,80	14/11/2022	16	49,96	50,48	x	
3	() 56,8	+0,8	-0,80	14/11/2022	16	56,83	57,60	x	
4	(Ø) 15	+0,4	-0,40	14/11/2022	16	14,86	15,35	x	
5	(Ø) 25	+0,5	-0,50	14/11/2022	16	24,87	25,48	x	
6	() 67,4	+1	-1,00	14/11/2022	16	67,42	68,23	x	
7	() 185,8	+1,48	-1,48	14/11/2022	16	184,33	187,02	x	
8	() 87,6	+0,57	-0,57	14/11/2022	16	87,39	88,11	x	
9	() 49,6	+0,31	-0,31	14/11/2022	16	49,64	49,90	x	
10	79,60	+0,3	-0,20	14/11/2022	16	79,47	79,82	x	
11	() 23,1	+0,26	-0,26	14/11/2022	16	22,87	23,25	x	
12	41,60	+0,3	-0,20	14/11/2022	16	41,45	41,78	x	
13	() 25,7	+0,26	-0,26	14/11/2022	16	25,48	25,90	x	
14	() 21,6	+0,26	-0,26	14/11/2022	16	21,42	21,81	x	
15	() 45,4	+0,31	-0,31	14/11/2022	16	45,15	45,64	x	
16	() 2,44	+0,07	-0,07	14/11/2022	16	2,39	2,49	x	
17	() 20	+0,5	-0,50	14/11/2022	16	19,98	20,29	x	
18	() 58,85	+0,8	-0,8	14/11/2022	16	58,23	58,91	x	
	Date Marking	2016-2022		14/11/2022	16	OK		x	
	Client logo	FORD		14/11/2022	16	OK		x	
	Cavity	01-16		14/11/2022	16	OK		x	
	Client code	H1BT-14603-CB		14/11/2022	16	OK		x	
	Material	>EPDM<		14/11/2022	16	OK		x	
	Other	ECLIN-F		14/11/2022	16	OK		x	

Blanket statements of conformance are unacceptable for any test results.

SIGNATURE	TITLE	DATE
Mohamed Amekhchoun	Quality Engineer	16/11/2022

027/2022

YAZAKI

Production Part Approval
Material Test Results

ORGANIZATION:	Elastomer Solutions Maroc , SARL	PART NUMBER:	7235054730
SUPPLIER/VENDOR CODE:	850524860	PART NAME:	GROM WIR
INSPECTION FACILITY:		DESIGN RECORD CHANGE LEVEL:	EE00 E 13207851 000 20160720
		ENGINEERING CHANGE DOCUMENTS:	

ITEM	MATERIAL SPEC. NO. / VER / DATE	SPECIFICATION / LIMITS	TESTE DATE	QTY. TESTED	SUPPLIER TEST RESULTS RESULTS (DATA)	OK	NOT OK
	M3 BA 510 B13 F17 Z1 Z2 Z3 (SAE J200)					x	
510	**Basic requirements:**						
	Hardness acc.ASTM D2240	50+/-5 Sh A	21/01/2022	1	53	x	
	Tensile strength acc. D412 die C	≥ 10 MPa	21/01/2022	1	12,43	x	
	Elongation at breakacc. D412 die C	≥ 400 %	21/01/2022	1	718	x	
	Heat resistance acc to ASTM D 573 (70h at 100ºC)						
	-Change in hardness	Max. ±15 Sh. A	28/01/2022	1	+ 2	x	
	-Change in tensile strength	Max. ±30 %	28/01/2022	1	+8,44	x	
	-Change in elongation at break	Max. -50 %	28/01/2022	1	-11,42	x	
	Suffix requirements:						
B13	Compression Set acc ASTM D395, method B (22h/70°C)	Max. 25 %	25/01/2022	1	12,93	x	
F17	Low temperature britleness acc to ASTM D 2137, method A (3min/-40ºC)	No cracks	08/03/2022	1	OK	x	
Z1	Ozone resistance acc. To FLTM BP 101-01, proc. A	Max. Rating 0	21/01/2022	1	OK for characteristics of EPDM	x	
Z2	Migration staining acc. To FLTM BP 153-01, method A	Slight staining permitt	26/02/2019	1	OK	x	
Z3	Staining by water extractable ingredients acc to FLTM BP 153-01, method B	No staining by water extractable ingredients	26/02/2019	1	OK	x	

Blanket statements of conformance are unacceptable for any test results.

SIGNATURE	TITLE	DATE
Mohamed Amekhchoun	Quality Engineer	14/09/2022

YAZAKI

Production Part Approval
Material Test Results

ORGANIZATION:	Elastomer Solutions Maroc , SARL	PART NUMBER:	7235054730
SUPPLIER/VENDOR CODE:	850524860	PART NAME:	GROM WIR
INSPECTION FACILITY:		DESIGN RECORD CHANGE LEVEL:	EE00 E 13207851 000 20160720
		ENGINEERING CHANGE DOCUMENTS:	

ITEM	MATERIAL SPEC. NO. / VER / DATE	SPECIFICATION / LIMITS	TESTE DATE	QTY. TESTED	SUPPLIER TEST RESULTS RESULTS (DATA)	OK	NOT OK
	M3 BA 510 B13 F17 Z1 Z2 Z3 (ASTM D2000 - SAE J200)						
510	**Basic requirements:**						
	Hardness acc. to ASTM D 2240	50±5 Sh. A	07/03/2022	1	52	X	
	Tensile strength acc. to ASTM D 412	≥ 10 MPa	07/03/2022	4	10,2	X	
	Elongation at break acc. to ASTM D 412	≥ 400 %	07/03/2022	4	450	X	
	Heat Aged acc. to ASTM D 573 (70h at 100ºC)						
	-Change in hardness	Max. ±15 Sh. A	11/03/2022	1	4	X	
	-Change in tensile strength	Max. ±30 %	11/03/2022	4	-7	X	
	-Change in elongation at break	Max. -50 %	11/03/2022	4	-10	X	
	Suffix requirements:						
B13	Compression Set acc. to ASTM D 395, method B (22h/70°C)	Max. 25 %	08/03/2022	2	11,8	X	
F17	Low temperature resistance acc. to ASTM D 2137, method A (3min/-40ºC)	Pass	08/03/2022	4	Pass	X	
	Special requirements:						
Z1	Ozone resistance acc. to FLTM BP 101-01, method A	Max. Rating 0	11/03/2022	1	Pass	X	
Z2	Migration staining acc. to FLTM BP 153-01	Slight staining permitted	11/03/2022	1	Pass	X	
Z3	No staining by water extractable ingredients acc. to FLTM BP 153-01, method B	No staining by water extractable ingredients	11/03/2022	1	Pass	X	

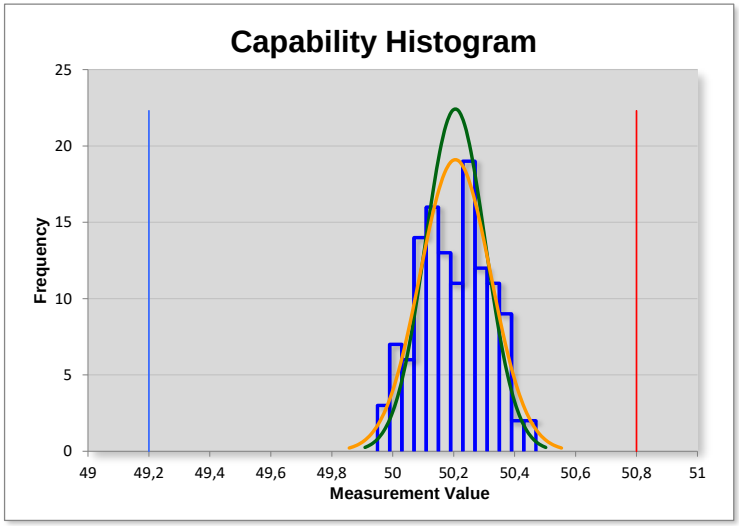
Blanket statements of conformance are unacceptable for any test results.

SIGNATURE	TITLE	DATE
Mohamed Amekhchou	Quality Engineer	14/09/2022

Process Capability Study

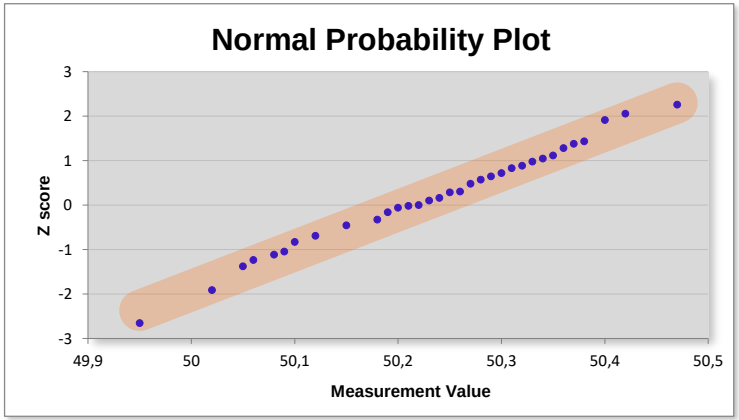
According to AIAG - Statistical Process Control 2nd Edition

Part Number			Drawing Number			
F_2780_190_N1			H1BT - 14603 - CB			
Part Name			Drawing level		Report N°	
GROM WIR			EE00 E 13161200 000 20160620		027/2022	
Dimension	lower	upper	Quality Engineer		Operator	
Design Tolerance	49,20	50,80	Mohammed Amekhchoun		MAKLACH FATIMA	
		lambda	Subgroups	Samples	Sample Size	Date Performed
Box-Cox Data Transformation	no	0	25	5	125	14/11/2022



Specification Limits		
lower	nominal	upper
49,200	50,000	50,800

Actual Data		
min	mean	max
49,950	50,206	50,470



Process Capability		
within	stdDev	0,0989
actual	**Cpk**	**2,003**
potential	Cp	2,697
overall	stdDev	0,116
actual	**Ppk**	**1,707**
potential	Pp	2,297

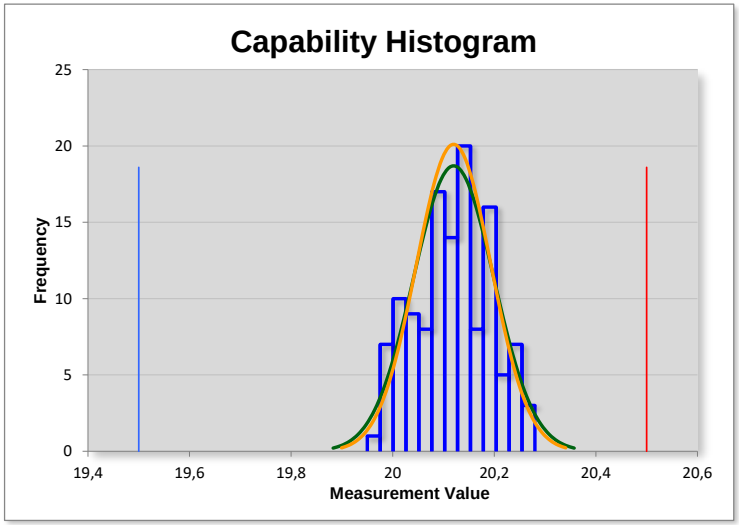
skewness	-0,050

Control Limits	Process Control	
	UCL	50,338
	Xbar	50,206
	LCL	50,073
	Process Stability	
	UCL	0,486
	Rbar	0,230
	LCL	0,000

Process Capability Study

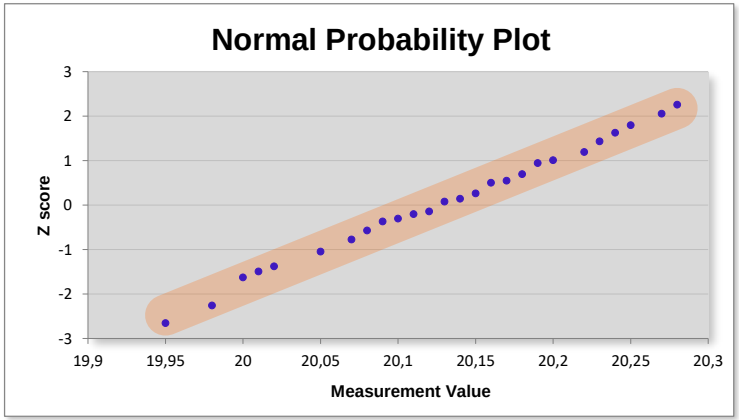
According to AIAG - Statistical Process Control 2nd Edition

Part Number			Drawing Number			
F_2780_190_N1			H1BT - 14603 - CB			
Part Name			Drawing level			
GROM WIR			EE00 E 13161200 000 20160620			
Dimension	lower	upper	Quality Engineer		Operator	
Design Tolerance	19,50	20,50	Mohammed Amekhchoun		MAKLACH FATIMA	
		lambda	Subgroups	Samples	Sample Size	Date Performed
Box-Cox Data Transformation	no	0	25	5	125	14/11/2022



Specification Limits		
lower	nominal	upper
19,500	20,000	20,500

Actual Data		
min	mean	max
19,950	20,120	20,280



Process Capability		
within	stdDev	0,0791
actual	**Cpk**	**1,601**
potential	Cp	2,107
overall	stdDev	0,074
actual	**Ppk**	**1,722**
potential	Pp	2,266

skewness	-0,056

Control Limits		
	Process Control	
	UCL	20,226
	Xbar	20,120
	LCL	20,014
	Process Stability	
	UCL	0,389
	Rbar	0,184
	LCL	0,000

ElastomerSolutions

Master Safety Data Sheet

according to 1907/2006/CE, Article 31° (REACH)

1. PRODUCT AND COMPANY NAME

1.1 **Product Designation:** EPDM Rubber parts

1.2 **Product Application:** Automotive Industry

1.3 **Supplier:**,

DF - Elastomer Solutions Lda (Portugal)	Elastomer solutions s.r.o. (Slovakia)	Elastomer solutions Maroc Sarl (Maroc)	Elastomer solutions Mexico S. deRL de CV (Mexico)
E.N. n.º 13 km 16 Recta do Mindelo 4485-473 Mindelo Portugal	Továrenská 422 018 61 Beluša Slovakia	Zone Franche d'Exportation Tanger Ilot 64, Lot 3 MA-90100 Tanger - Maroc	Circuito Fresnillo Poniente No. 21 Parque Industrial Fresnillo Fresnillo, Zac., México. C.P. 99059
Phone + 351 252 669 010 Fax + 351 252 669 012	Phone +421 42 46 518 35 Fax +421 42 47 112 82	Phone +212 539 39 58 93 Fax +212 539 39 58 91	Phone +52 493 9357831 Fax +52 493 9357694

2. HAZARDS IDENTIFICATION

2.1 **Hazards designation**

This product is not hazardous.

2.2 **Major risks to men and to the environment**

Not known.

3. COMPOSITION AND INFORMATION ABOUT INGREDIENTS

3.1 **Product Components**

Vulcanized EPDM rubber compound; contains EPDM polymer, plasticizers, fillers, vulcanization auxiliaries, oils, lubricants, sulphur and accelerators.

4. FIRST AID MEASURES

4.1 **General Information:** No emergency medical treatment necessary.

4.2 **Inhalation:** Not applicable.

4.3 **Skin contact:** Wash with water and soap.

4.4 **Eye contact:** Wash immediately the eyes with running water for 15 minutes.

4.5 **Ingestion:** Not applicable.

5. FIRE FIGHTING MEASURES

5.1 **Extinguishing media:** Spray water, CO_2, Dry chemical fire extinguishers and foams.

5.2 **Extinguishing media that should not be used for safety reasons:** Strong water jets.

5.3 **Exposure Hazards:** Dense, toxic fumes may be released.

5.4 **Fire fighting protection equipment**: Use self-breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Remove product by hand.

7. HANDLING AND STORAGE

7.1 **Handling** – Do not eat or drink during product handling.
Do not smoke during product handling.

7.2 **Storage** – Store in cool, dry place away from ignition sources. Storage area should be cool, dry, dust-free and moderately ventilated.
Recommended ideal storage temperature should be between +10ºC and +25ºC. Although for rubber parts in general, low and high temperatures are not harmful, parts can become stiffer at very low temperature. Also exposure to high temperatures for a long period must result in shortening of life time with hardening of some physical properties. Occasionally, a white appearance of parts (blooming), resulting from migration of components to surface, can be observed, having no impact on functionality. Low temperatures generally accelerate the blooming process.
Rubber products should be protected from light and direct exposure to sun must be avoided. Contact with any kind of fluids must be prevented (solvents, oils).
The recommended shelf life time is 10 to 15 years when the product is kept in original packing and is according to the storage conditions as described in this point. For the product that contain inner lubricant the shelf life time is a maximum of 1 year.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 **Exposure Guidelines –** Not applicable.

8.2 **Exposure Controls –** Wash hands after work.

8.2.1 – **Hand Protection** – Protection gloves should be used.

8.3 **Environmental Exposure Controls** – Avoid contact with water courses, sea and soil. Observe valid legislation about product disposal.

9. PHYSICAL AND CHEMICAL PROPERTIES

Properties

- Appearance: Solid
- Color: Black or other
- Odor: Characteristic

State change:

Melting point/range	Not applicable
Boiling point/range	Not applicable
Flash point/range	Not applicable

- Auto ignition point Not self-igniting
- Explosion Hazard Not explosive
- Water solubility Not soluble
- Relative Density 1.10 a 1.20 g/ml

10. STABILITY AND REACTIVITY

10.1 **Chemical Stability** – Stable under recommended storage, handling and application conditions.

10.2 **Hazardous Decomposition Products** – Hazard decomposition products are not known.

11. TOXICOLOGICAL INFORMATION

This product does not present a danger to human health.

12. ECOLOGICAL INFORMATION

This product isn’t biodegradable.

13. DISPOSAL CONSIDERATIONS

Observe valid legislation about product disposal.

14. TRANSPORT INFORMATION

No special transport measures necessary.

15. REGULATORY INFORMATION

Product is not classified as hazardous to EC criteria.

16. OTHER INFORMATION

Expanding of rubber parts:

- Assembly expanding rate is generally 350 %; 200% over lifetime.
- Sharp edges on expanding tooling have to be avoided
- Lubrication can be used to insert tooling

Lubrication:

- Soap or soap thinned with water can be used to lubricate grommets for the assembly
- Teflon lubrication is allowed
- Oil based lubrication is forbidden

Drilling of wires inside the grommet:

- The wires inside the grommet should be straight and not drilled, as this drilling can influence the movement of the grommet.

ElastomerSolutions GmbH

Test Report

Report_No.:
2022_11_No 08

ESD Part-No.:	**2780**
Customer Part-No.:	H1BT-14603-CB
Part Name:	Grommet
ESD Release:	N1_1
Investigator:	i.A. W. Bader
Test Date:	17.11.2022
Origin of samples:	Elastomer Solutions Morocco (ESM)
Test Conditions:	**Water Test IPX8** Sealing Test: Grommet assembly with B-pillar frame fitted to B-pillar test plate
Specification:	CPS 9.9
Duration of Test:	60 minutes
Height of water:	200 mm
Mounting Opening:	56,4x26,4x1,06 mm min hole 56,4x26,4x1,0 mm max hole
Number of tested parts:	10 each hole SFC compound 10 each hole Bracamonte compound

Test Results and Remarks:

Result: **No Leakage detected**

ELASTOMER SOLUTIONS
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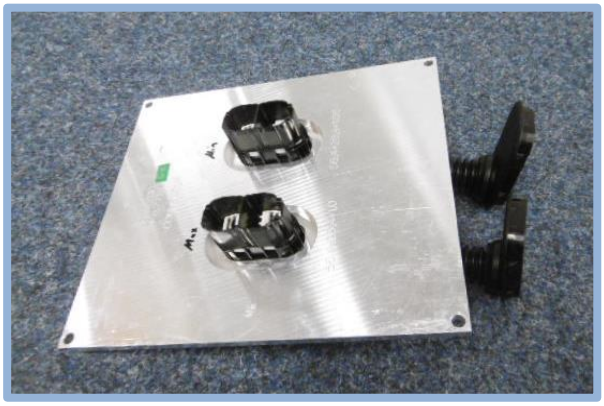
Test Report

Report_No.:
2022_11_No 08

Picture 1: ESD Water Test Equipment

Picture 2: sheet metal with grommet, wet side



Picture 3: Sheet metal with grommet, dry side

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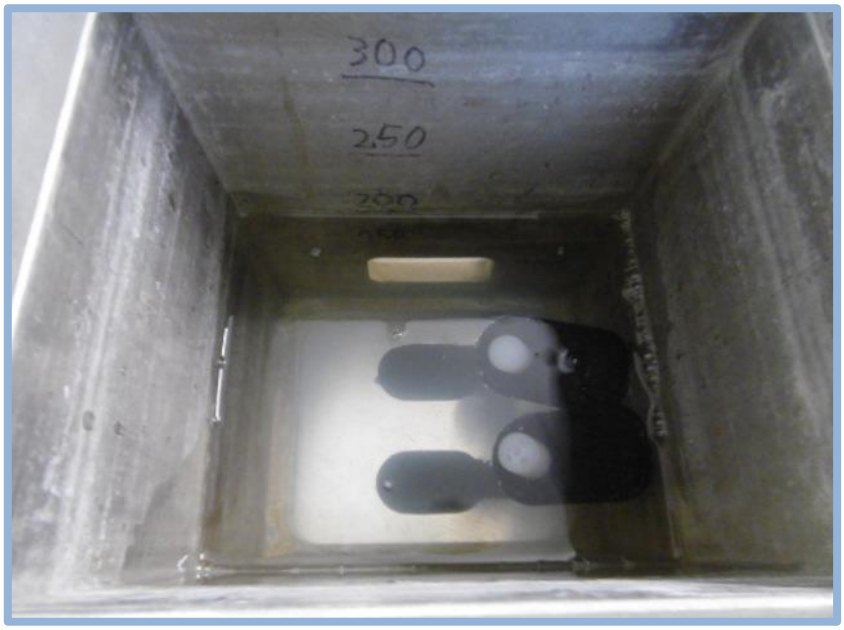
Test Report

Picture 4: Test plate fitted in Test equipment



Picture 5: Grommet applied with water column

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Test Report

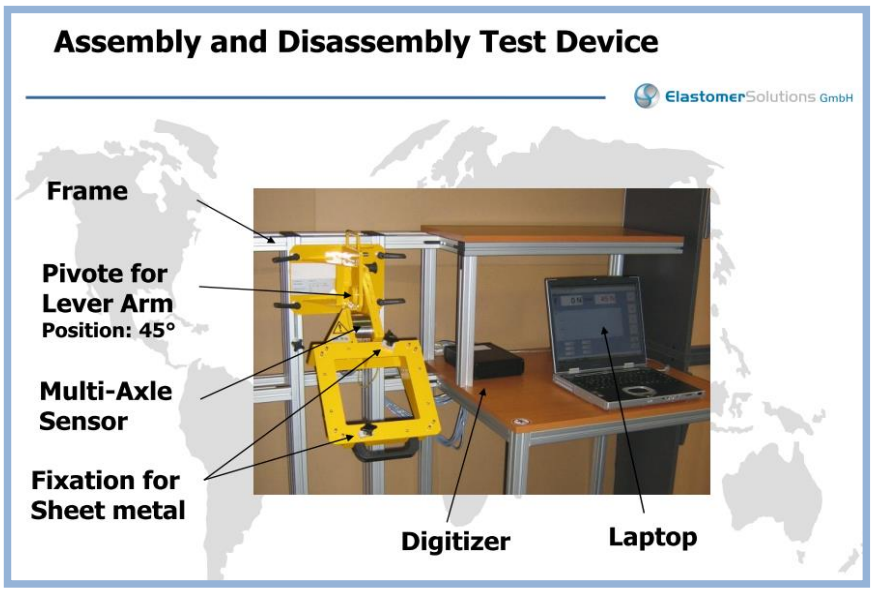
Report No.:
2022_11_No 10

ESD Part-No.:	**2780**
Customer Part-No.:	H1BT-14603-CB
Part Name:	Grommet
ESD Release:	N1_1
Investigator:	i.A. W. Bader
Test Date:	18.11.2022
Origin of samples:	Elastomer Solutions Morocco (ESM)
Test Conditions:	**Assembly Force** Assembly Test: Grommet Assembly to A-Pillar
	Grommets were > pushed-in into A-Pillar <
Specification:	ED-0020 (& CPS 9.3)
Requested Force:	≤ 75 N
Mounting Opening:	56,4 x 26,4x 1,06mm min hole 56,4 x 26,4x 1,0mm max hole
Quantity of tested parts:	10 parts SFC compound 10 parts Bracamonte compound
	Test was carried out with sheet metal Fo2780/81 and connector (min & max)

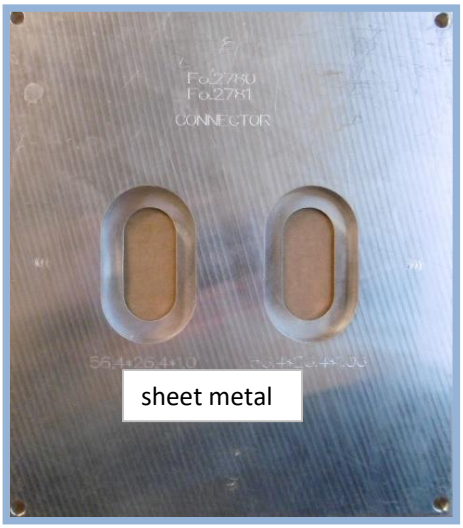
Remarks:

Test Report

Report No.:
2022_11_No 10



Picture 1: ESD Test Equiopment



Grommet assembly

Test Report

Report No.:
2022_11_No 10

Test results:

Push-in forces min hole			
	SFC compound	Bracamonte compound	
1	48	65	Newton
2	50	63	Newton
3	55	62	Newton
4	56	59	Newton
5	55	55	Newton
6	56	61	Newton
7	52	63	Newton
8	53	57	Newton
9	55	61	Newton
10	50	59	Newton
Average	**53**	**61**	Newton

Push-in forces max hole			
	SFC compound	Bracamonte compound	
1	43	60	Newton
2	44	62	Newton
3	49	57	Newton
4	50	55	Newton
5	48	59	Newton
6	49	60	Newton
7	47	55	Newton
8	49	58	Newton
9	45	55	Newton
10	47	60	Newton
Average	**47**	**58**	Newton

ElastomerSolutions GmbH

Test Report

Report No.:
2022_11_No 11

ESD Part-No.:	**2780**
Customer Part-No.:	H1BT-14603-CB
Part Name:	Grommet
ESD Release:	N1_1
Investigator:	i.A. W. Bader
Test Date:	18.11.2022
Origin of samples:	Elastomer Solutions Morocco (ESM)
Test Conditions:	**Assembly Force** Assembly Test: Assembly grommet assy to door panel
Specification:	ED-0034 (&CPS 9.6)
Requested Force:	≤ 45 N
Mounting Opening:	80,0 x 42,0 x 1,64 R14 min hole 80,4 x 42,4 x 1,58 R14 max hole
Quantity of tested parts:	10
	Tests were carried out on Elastomer-Solutions Assembly and Disassembly Test Device

Test Results and Remarks:

	Min	Max	
Average Push-in Force at Hook 1:	37	35	[N]
Average Push-in Force at Hook 2:	38	35	[N]
Average Push-in Force at Hook 3:	37	34	[N]
Average Push-in Force at Hook 4:	36	34	[N]

Remark: Test was carried out with sheet metal Fo2780/ Fo2781 cover (min & max)

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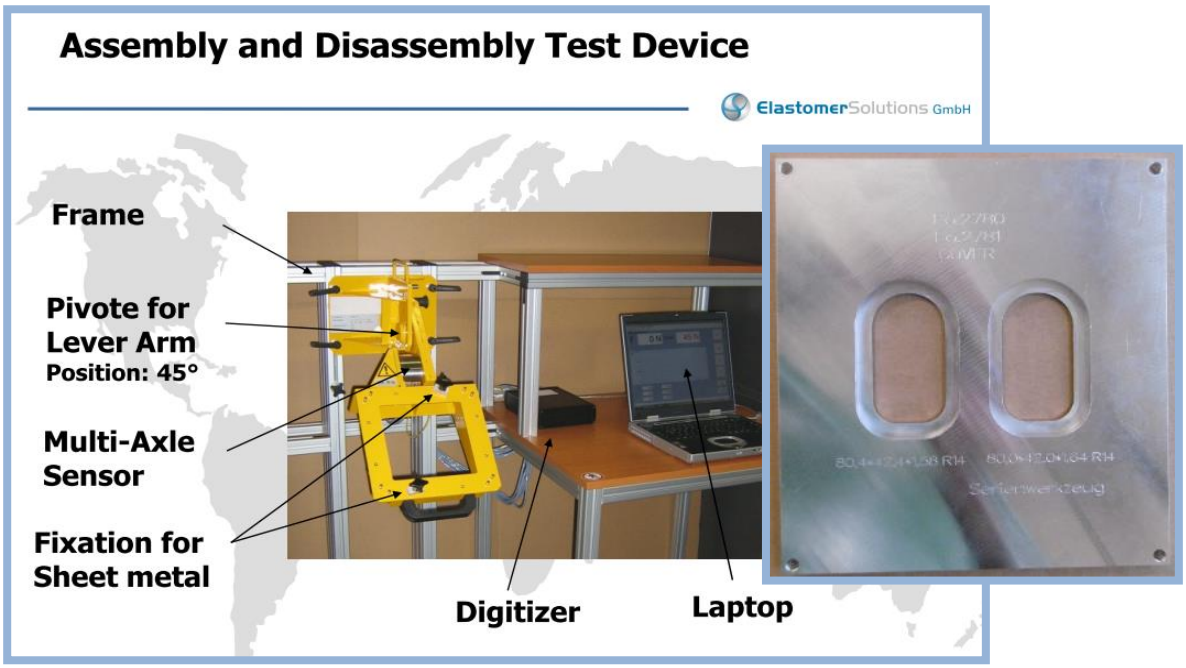
Test Report

Report No.:
2022_11_No 11



Picture 1: ESD Test Equiopment

Push-in Forces Hook 1			
No	Min	Max	
1	34	34	N
2	38	37	N
3	35	34	N
4	40	38	N
5	36	35	N
6	35	33	N
7	36	37	N
8	41	34	N
9	39	33	N
10	35	35	N
Ø	**37**	**35**	N

Push-in Forces Hook 2			
No	Min	Max	
1	35	33	N
2	35	31	N
3	36	33	N
4	38	34	N
5	40	39	N
6	39	38	N
7	38	33	N
8	39	36	N
9	41	34	N
10	38	35	N
Ø	**38**	**35**	N

Push-in Forces Hook 3			
No	Min	Max	
1	32	34	N
2	38	36	N
3	40	30	N
4	40	32	N
5	39	33	N
6	38	36	N
7	39	38	N
8	35	35	N
9	35	33	N
10	38	30	N
Ø	**37**	**34**	N

Push-in Forces Hook 4			
No	Min	Max	
1	38	31	N
2	32	32	N
3	36	38	N
4	38	35	N
5	36	33	N
6	36	35	N
7	35	33	N
8	34	31	N
9	35	32	N
10	38	35	N
Ø	**36**	**34**	N

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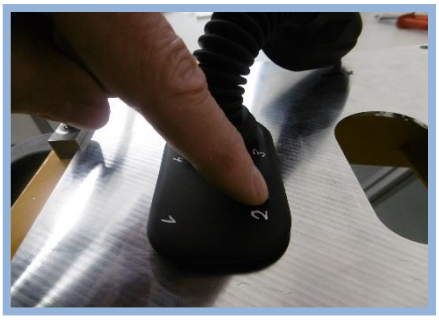
Test Report

Report No.:
2022_11_No 11

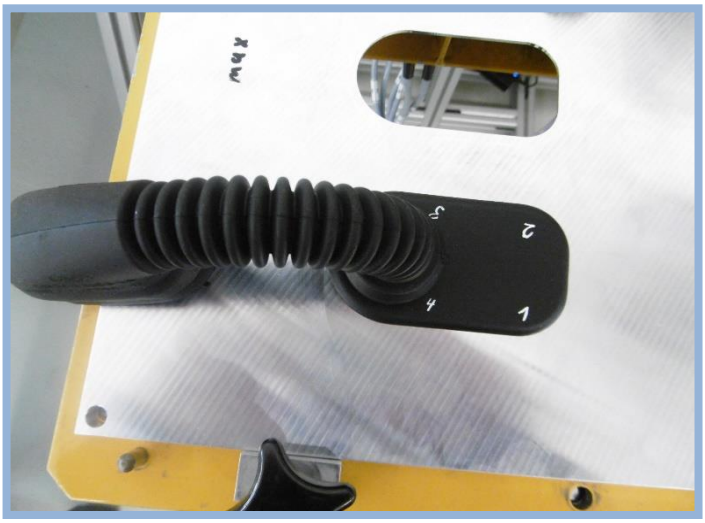
Picture 2: Assembly of cover at hook 1



Picture 3: Assembly of cover at hook 2

Picture 4: Assembly of cover at hook 3

Picture 5: Assembly of cover at hook 4



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ElastomerSolutions GmbH

Test Report

Report No.:
2022_11_No.14

ESD Part-No.:	**2780**
Customer Part-No.:	H1BT-14603-CB
Part Name:	Grommet
ESD Release:	N1_1
Investigator:	i.A. W. Bader
Test Date:	18.11.2022
Origin of samples:	Elastomer Solutions Morocco (ESM)
Test Conditions:	**Retention Force** Retention Test: Grommet assy to door panel
Specification:	ED - 0035 (& CPS 9.7)
Requested Force:	≥ 110 N
Mounting Opening:	80,0 x 42,0 x 1,64 R14 min hole 80,4 x 42,4 x 1,58 R14 max hole
Quantity of tested parts:	10
	Tests were carried out on Elastomer-Solutions Assembly and Disassembly Test Device

Test Results and Remarks:

Average Pulling Force min hole: **133 [N]**

Average Pulling Force max hole: **122 [N]**

Remark: Test was carried out with sheet metal Fo2780/ Fo2781 cover (min & max)

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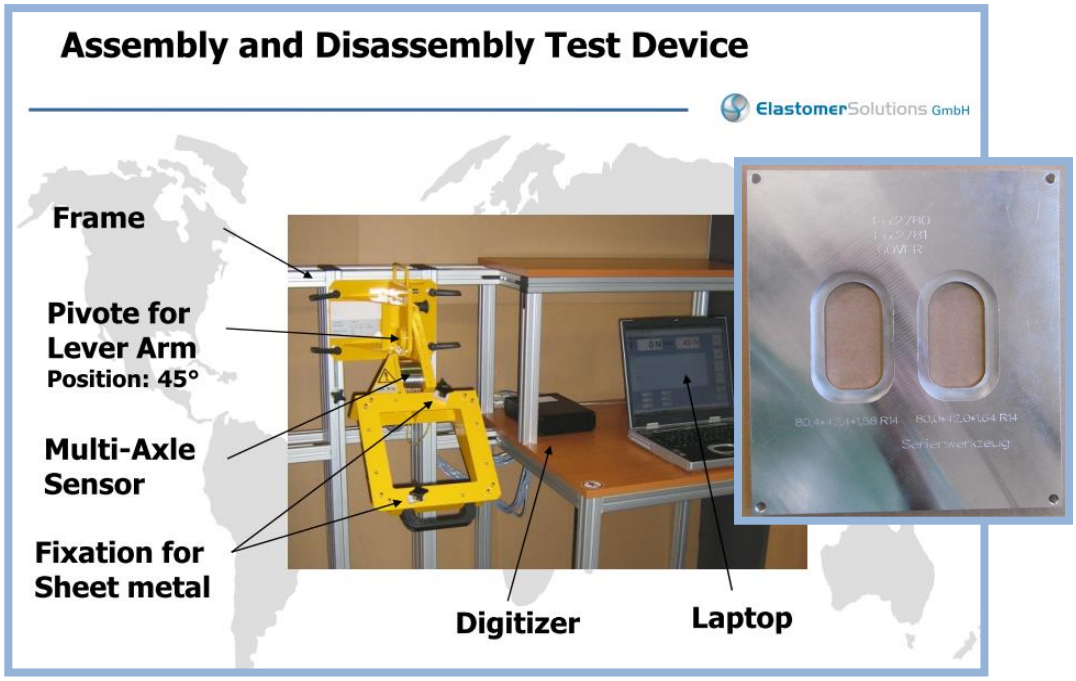
2022_11_No.14



Picture 1: ESD Test Equiopment

Pulling forces min hole		
1	133	Newton
2	129	Newton
3	133	Newton
4	137	Newton
5	132	Newton
6	141	Newton
7	135	Newton
8	132	Newton
9	128	Newton
10	130	Newton
Average	**133**	**Newton**

Pulling forces max hole		
1	125	Newton
2	123	Newton
3	120	Newton
4	121	Newton
5	122	Newton
6	119	Newton
7	124	Newton
8	118	Newton
9	120	Newton
10	124	Newton
Average	**122**	**Newton**

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Test Report

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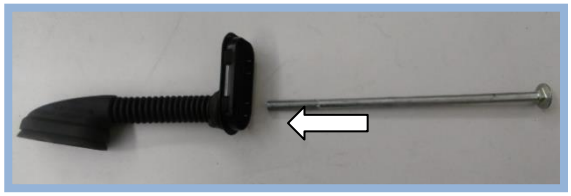
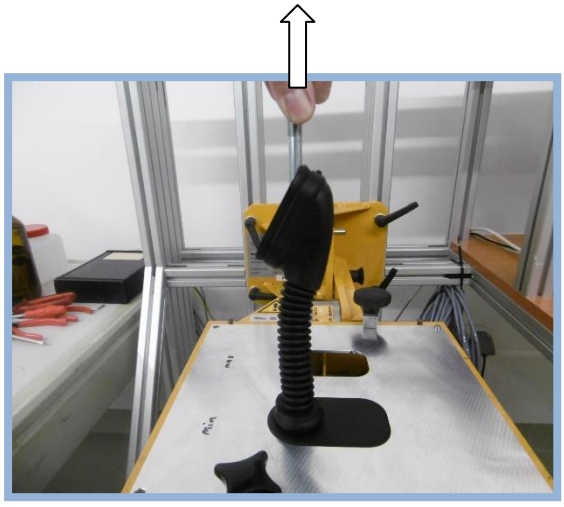
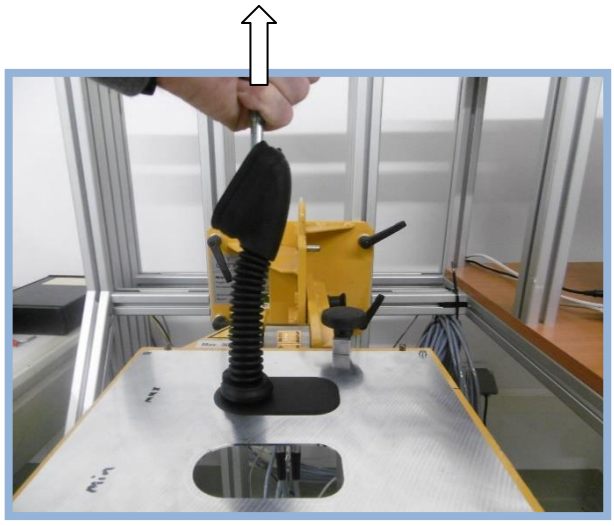
2022_11_No.14





Pulling-off cover from door panel hole (min hole)



Pulling-off cover from door panel hole (max hole)

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Test Report

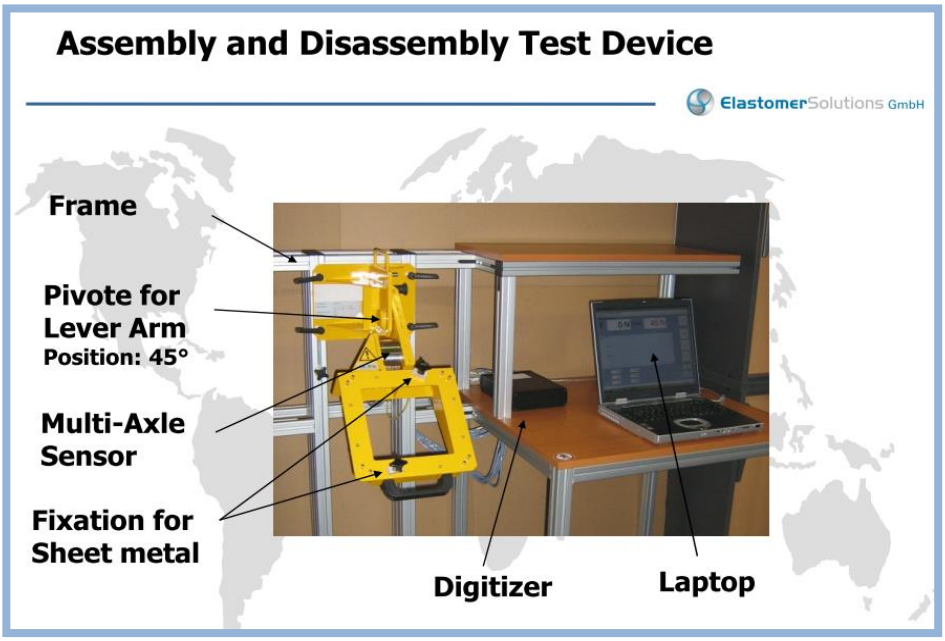
Report No.:
2022_11_No 13

ESD Part-No.:	**2780**
Customer Part-No.:	H1BT-14603-CB
Part Name:	Grommet
ESD Release:	N1_1
Investigator:	i.A. W. Bader
Test Date:	18.11.2022
Origin of samples:	Elastomer Solutions Morocco (ESM)
Test Conditions:	**Rentention Force** Rentention Test: Grommet to connector
Specification:	
Requested Force:	≥ 110 N
Mounting Opening:	56,4 x 26,4 x 1,06 mm (min hole)
Quantity of tested parts:	10 parts SFC compound 10 parts Bracamonte compound
	Test was carried out with sheet metal Fo2780/81 and connector

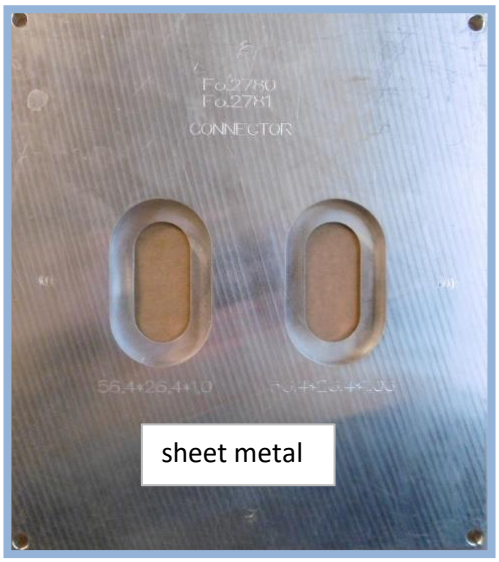
Remarks:

Test Report

Report No.:
2022_11_No 13



Picture 1: ESD Test Equiopment



Grommet assembly

Test Report

Report No.:
2022_11_No 13

Test Results:

All parts from both compounds needs more than 150 Newton to pull out