DAIMLERCHRYSLER Ford GM

Part Submission Warrant

Part Name **CABLE STRAP** Cust. Part Number **E9DB-13A506-BA**

Shown on Drawing No. **15-005771** Org. Part Number **698 145 3810**

Engineering Change Level **A** Dated **5/1/19**

Additional Engineering Changes **N/A** Dated **N/A**

Safety and/or Government Regulation ☐ Yes ☑ No Purchase Order No. **MAIL** Weight (kg) **0,0019**

Checking Aid No. **N/A** Checking Aid Engineering Change Level **N/A** Dated **N/A**

ORGANIZATION MANUFACTURING INFORMATION

ITW FASTENER PRODUCTS GMBH
Supplier Name & Supplier/Vendor Code

AM PULVERHÄUSCHEN 7
Street Address

67677 ENKENBACH-ALSENBORN **GERMANY**
City Region Postal Code Country

CUSTOMER SUBMITTAL INFORMATION

Nursan Kablo Donanımları San. ve Tic. A.Ş.
Customer Name/Division

Nadiye BARUTÇU
Buyer/Buyer Code

UNKNOWN
Application

MATERIAL REPORTING

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

Submitted by IMDS or other customer format: **882697706 / 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
- ☐ Sub-Supplier or Material Source Change
- ☐ Change in Part Processing
- ☐ Parts Produced at Additional Location
- ☐ Other - Please specify

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 definied 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 **3 MOLDS / 32 CAVITIES / PLASTIC INJECTION MOLDING**

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 **26982** / **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 i.A. J.Fuchs Date **14.07.2021**

Print Name **i.A. J.Fuchs** Phone Nr. **06303/805-0** Fax Nr. **06303/3097**

Titel **CQE** E-mail **joerg.fuchs@itw-efc.com**

FOR CUSTOMER USE ONLY (IF APPLICABLE)

Part Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other

Customer Signature Date

Print Name Customer Tracking Number (optional)

ITW Deltar Fasteners
Division of ITW Automotive Group

Part Submission Warrant

Part Name: CABLE STRAP | Cust. Part Number: 6981453810

Shown on Drawing No.: 15-005771 | Org. Part Number: 15-005771-*A

Engineering Change Level: A | Dated: 5/1/19

Additional Engineering Changes: n/a | Dated: n/a

Safety and /or Government Regulation: ☐ Yes ☑ No | Purchase Order No.: 373417 | Weight (kg): 0.0019

Checking Aid No.: n/a | Checking Aid Engineering Change Level: n/a | Dated: n/a

ORGANIZATION MANUFACTURING INFORMATION

ITW DELTAR FASTENERS I009C
Supplier Name & Supplier/Vendor Code

21555 SOUTH HARLEM AVENUE
Street Address

FRANKFORT | IL | 60423 | USA
City | Region | Postal Code | Country

CUSTOMER SUBMITTAL INFORMATION

ITW Fasteners Products GmbH
Custmer Name/Division

-
Buyer/BuyerCode

Automotive
Application

MATERIALS REPORTING

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

Submitted by IMDS or other customer format: 832460755 / 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: Annual Submission

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

The results meet all drawing and specification requirements: ☒ Yes ☐ No (If "NO" - Explanation Required)

Mold / Cavity / Production Process: 3 Molds/ 32 Cavities / Plastic Injection Molding

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 26982 / 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

Organization Authorized Signature: Holly Minogue | Date: 7/13/2021

Print Name: Holly Minogue | Phone No.: 708-720-2600 | FAX No.: 708-720-2612

Title: PPAP Coordinator | Email: PPAPCoordinator@deltarfasteners.com

FOR CUSTOMER USE ONLY (IF APPLICABLE)

Part Warrant Disposition: ☒ Approved ☐ Rejected ☐ Other

Customer Signature: i.V. J. Fuchs | Date: 14.07.21

Print Name: J. Fuchs | Customer Tracking Number (optional):

ITW Deltar Fasteners
Division of ITW Automotive Group

Part Submission Warrant

Part Name: CABLE STRAP
Cust. Part Number: 6981453810
Shown on Drawing No.: 15-005771
Org. Part Number: 15-005771-*A
Engineering Change Level: A
Dated: 5/1/19
Additional Engineering Changes: n/a
Dated: n/a
Safety and /or Government Regulation: ☐ Yes ☑ No
Purchase Order No.: 373417
Weight (kg): 0.0019
Checking Aid No.: n/a
Checking Aid Engineering Change Level: n/a
Dated: n/a

ORGANIZATION MANUFACTURING INFORMATION

ITW DELTAR FASTENERS I009C
Supplier Name & Supplier/Vendor Code

21555 SOUTH HARLEM AVENUE
Street Address

FRANKFORT | IL | 60423 | USA
City | Region | Postal Code | Country

CUSTOMER SUBMITTAL INFORMATION

ITW Fasteners Products GmbH
Custmer Name/Division

-
Buyer/BuyerCode

Automotive
Application

MATERIALS REPORTING

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

Submitted by IMDS or other customer format: 832460755 / 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: Annual Submission

REQUESTED SUBMISSION LEVEL (Check one)

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- ☐ 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

The results meet all drawing and specification requirements: ☒ Yes ☐ No (If "NO" - Explanation Required)

Mold / Cavity / Production Process: 3 Molds/ 32 Cavities / Plastic Injection Molding

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 26982 / 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

Organization Authorized Signature: Holly Minogue Date: 7/13/2021

Print Name: Holly Minogue Phone No.: 708-720-2600 FAX No.: 708-720-2612

Title: PPAP Coordinator Email: PPAPCoordinator@deltarfasteners.com

FOR CUSTOMER USE ONLY (IF APPLICABLE)

Part Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other

Customer Signature Date

Print Name Customer Tracking Number (optional)

intertek
Total Quality. Assured.

CERTIFICATE
OF REGISTRATION

This is to certify that the management system of:

ITW Deltar Fasteners

Main Site: 21555 S. Harlem Avenue
Frankfort, Illinois 60423
United States

has been registered by Intertek as conforming to the requirements of:

ISO 14001:2015

The management system is applicable to:

Design and Manufacture of Injection Molded Plastic Specialty Fasteners for the Transportation Industry.

Certificate Number:
03-080

Initial Certification Date:
21 April 2003

Date of Certification Decision:
09 April 2021

Issuing Date:
09 April 2021

Valid Until:
20 April 2024

ISO 14001:2015 CERTIFICATION™
ANAB ACCREDITED ISO/IEC 17021 MANAGEMENT SYSTEMS CERTIFICATION BODY
Intertek

Calin Moldovean
President, Business Assurance

Intertek Testing Services NA, Inc.
900 Chelmsford Street, Lowell
MA 01851, USA

intertek
Total Quality. Assured.

CERTIFICATE OF REGISTRATION

This is to certify that the management system of:

ITW Deltar Fasteners

21555 S. Harlem Avenue, Frankfort, IL, 60423, USA

has been registered by Intertek as conforming to the requirements of:

IATF 16949:2016

The management system is applicable to:

Design and Manufacture of Injected Molded Plastic Specialty Fasteners.

Permissible exclusions include: None

IATF Certificate Number
0383143

Certificate Number:
2013-0098f

Certificate Issue Date:
30 January 2021

Certificate Expiry Date:
29 January 2024

Calin Moldovean
President, Business Assurance

Intertek – 4700 Broadmoor, Suite200
Kentwood MI 49512, USA

ITW Deltar Fasteners
Division of ITW Automotive Group

DELTAR

Laboratory Scope

Lab Contact: Robert Buhle, Quality Mgr.
PH: 708-720-7057
FAX: 708-720-2612

E-mail: rbuhle@deltarfasteners.com

Suppler Code: GM - 049816044
Ford - I009C
Chrysler – 65105
VW - 6002014238

ITW Deltar has the capability to perform the following tests:

A. Environmental
   a. Temperature/Humidity Chamber
   b. GM7400M DS85 Dimensional Stability
   c. Test method/procedure per customer print

B. Compression/Tensile
   1. Chatillon/Instron
   a. Insertion/Removal Testing per customer specifications
   b. Test method/procedure per customer print

C. Dimensional Measurement
   1. Comparator/Calipers/Micrometers
   a. Linear measurement to customer print

D. Torque Test
   1. Torque Wrench/Driver
   a. Torque test per customer print/control plan

E. Melt Index
   1. Test melt flow of material per material certification requirement

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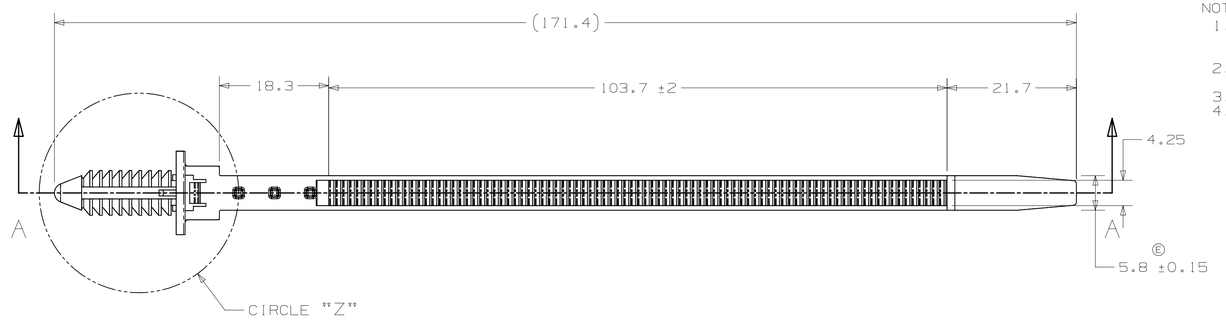
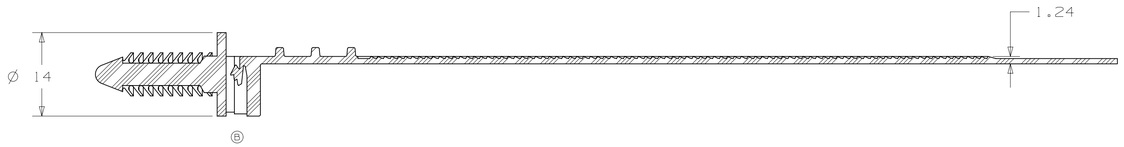
Calibrations performed per WI – 11.4

Robert R. Buhle, Quality Manager *January 1, 2021*

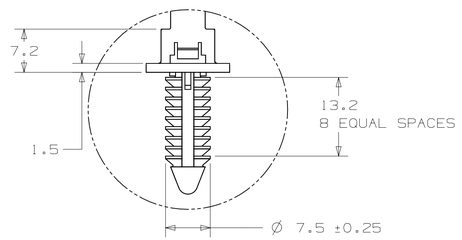


NOTES: (UNLESS OTHERWISE SPECIFIED)

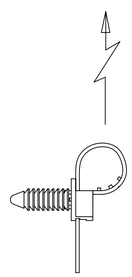
1. MATERIAL: PA66 - ZYTEL MT409A HS OR EQUIVALENT FLOWING MATERIAL
   COLOR: BLACK
2. CAVITY AND SUPPLIER I.D. TO APPEAR ON ALL CAVITIES.
3. CORNER RADII 0.5 MAX.
4. PERFORMANCE SPECIFICATION:
   - A. FASTENER TO THE PANEL
     PART MUST MEET A (25 LBS) MINIMUM PERPENDICULAR PULL-OUT FORCE PER DETAIL "Y" WHEN INSTALLED IN A Ø 6.5 +0/-0.15 HOLE IN A 1 THICK PANEL. PARTS TO BE TESTED D.A.M.R.T. AT 7.5 CM/MIN RATE.
   - B. FASTENER TO CONDUIT
     PART MUST MEET A (25 LBS) MINIMUM PERPENDICULAR PULL-OUT FORCE PER DETAIL "X". PARTS TO BE TESTED D.A.M.R.T. AT 7.5 CM/MIN RATE.
   - D C. PUSH-IN FORCE TO SHEET METAL TO BE 15 LBS MAX
5. © PART TO SUIT A TUBING RANGE OF Ø 6.5 TO Ø 32 AND PANEL THICKNESS OF 0.8 TO 2.5 MM



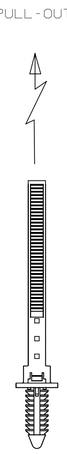
SECTION A - A



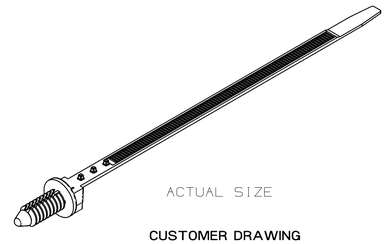
VIEW IN CIRCLE "Z"
ROTATED 90°



DETAIL X
SCALE 1:1



DETAIL Y
SCALE 1:1



ACTUAL SIZE

CUSTOMER DRAWING

NO.	REVISION NOTES	DWN	CHK	APP	DATE
E	5.8±0.15 WAS 5.8±0.07, PER ECR #9311	MM			10-19-06
D	PUSH-IN FORCE NOTE ADDED PER ECR #8606	LJA	YYB	JMS	09-16-05
C	ADDED "AND PANEL THICKNESS OF 0.8 TO 2.5 MM" TO NOTE 5; REVISED X, X.X TOLERANCE OF +/-0.5 TO +/-0.3 PER ECR # 8894	LJA	EMH	MM	11-21-03
B	MODIFIED LATCH FEATURE PER JOB START DATED 11-01-01	YYB	MM	JEC	11-02-01
A	RELEASED FOR PRODUCTION PER JOB START DATED 10-18-01	MM	GGG	JEC	10-24-01

TRW AUTOMOTIVE ENGINEERED FASTENERS
FASTENING SYSTEMS

SCALE	DRAWN	CHECKED	APPRD	DATE
4:1	M MASSENGILL	GGG	JEC	10-24-01

TOLERANCES IN MM (UNLESS OTHERWISE SPECIFIED)		TITLE		
x.xx	±0.3	CABLE STRAP		
x.xx	±0.25	MATERIAL: SEE NOTES	SHEET NUMBER 1 OF 1	PRODUCT CODE 01.1.2
ANGULAR	±3°	COLOR: SEE NOTES	PART NO. 69814538	

©

CAD FILENAME: 69814538E

REV.	DATE	DESCRIPTION	INIT./ECN
A	05/01/19	CREATE DELTAR P/N & RELEASE FOR PRODUCTION	12960

REVISION HISTORY

ALL DIMENSIONS SHOWN IN MM

TOLERANCES UNLESS OTHERWISE SPECIFIED
X.X ±
X.XX ±
X.XXX ±
ANGULAR ±

REFERENCE: 69814538

ITW Deltar Fasteners
Division of ITW Automotive Group

DELTAR

ENGINEER: TDP | DATE: 05/01/19 | SALES OFFICE PH: 248-589-2500

MATERIAL SPECIFICATION: SEE NOTES

PART NAME: CABLE STRAP | PRINT TYPE: CU

PART NUMBER: 15-005771 | REV.: *A

ITW Deltar Fasteners
Division of ITW Automotive Group

DELTAR

Production Part Approval
Dimension Test Results

ORGANIZATION:	ITW Deltar Fasteners	PART NUMBER:	**6981453810** 15-005771-*A
SUPPLIER CODE:	I009C	PART NAME:	CABLE STRAP
INSPECTION FACILITY:	Quality Engineering Services	DESIGN RECORD CHANGE LEVEL:	A
		ENGINEERING CHANGE DOCUMENTS:	

Item	DIMENSION/SPECIFICATION/LIMITS	TEST DATE	QTY. TESTED	ORGANIZATION MEASUREMENT RESULTS (DATA)/ CAVITY # 1	2	3	4	5	6	7	8	OK	NOT OK
1	18.3 ± 0.3	08/04/20	8	18.1	18.1	18.2	18.1	18.1	18.0	18.1	18.1	X	
2	171.4 REF	08/04/20	8	172.4	172.3	172.4	172.4	172.2	172.3	172.3	172.3	X	
3	103.7 ± 2	08/04/20	8	105.0	104.9	104.9	104.9	105.0	105.0	104.9	104.9	X	
4	21.7 ± 0.3	08/04/20	8	21.7	21.7	21.7	21.6	21.6	21.6	21.7	21.6	X	
5	4.25 ± 0.25	08/04/20	8	4.2	4.2	4.2	4.1	4.2	4.2	4.2	4.2	X	
6	5.8 ± 0.15	08/04/20	8	5.86	5.88	5.87	5.89	5.88	5.88	5.86	5.87	X	
7	14 ± 0.3	08/04/20	8	14.1	14.1	14.1	14.2	14.1	14.1	14.1	14.1	X	
8	1.24 ± 0.25	08/04/20	8	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	X	
9	1.5 ± 0.3	08/04/20	8	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	X	
10	7.2 ± 0.3	08/04/20	8	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	X	
11	13.2 ± 0.3	08/04/20	8	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	X	
12	7.5 ± 0.25	08/04/20	8	7.6	7.6	7.5	7.5	7.6	7.5	7.5	7.6	X	
13	Material	08/04/20	8	See Attached Material Test Results								X	
14	Note 2	08/04/20	8	Present - ITW								X	
15	Note 3	08/04/20	8	0.4 Max								X	
16	Note 4	08/04/20	8	See Attached Performance Test Results								X	
17	Note 5	08/04/20	8	Conforms								X	

Blanket statements of conformance are unacceptable for any test results.

SIGNATURE	TITLE	DATE
Peyton Tozer - QES	Metrologist	8/4/2020

ITW Deltar Fasteners
Division of ITW Automotive Group

DELTAR

Production Part Approval
Dimension Test Results

ORGANIZATION:	ITW Deltar Fasteners	PART NUMBER:	**6981453810** 15-005771-*A
SUPPLIER CODE:	I009C	PART NAME:	CABLE STRAP
INSPECTION FACILITY:	Quality Engineering Services	DESIGN RECORD CHANGE LEVEL:	A
		ENGINEERING CHANGE DOCUMENTS:	

Item	DIMENSION/SPECIFICATION/LIMITS	TEST DATE	QTY. TESTED	ORGANIZATION MEASUREMENT RESULTS (DATA)/ CAVITY # 9	10	11	12	13	14	15	16	OK	NOT OK
1	18.3 ± 0.3	07/01/20	8	18.4	18.4	18.4	18.4	18.3	18.0	18.1	18.3	X	
2	171.4 REF	07/01/20	8	172.6	172.6	172.5	172.5	172.4	172.5	172.5	172.5	X	
3	103.7 ± 2	07/01/20	8	105.0	104.9	105.0	105.1	105.2	105.2	105.2	105.0	X	
4	21.7 ± 0.3	07/01/20	8	21.9	21.9	21.9	21.9	21.8	21.8	21.7	21.9	X	
5	4.25 ± 0.25	07/01/20	8	4.35	4.32	4.36	4.35	4.31	4.32	4.33	4.35	X	
6	5.8 ± 0.15	07/01/20	8	5.82	5.84	5.82	5.83	5.84	5.83	5.82	5.82	X	
7	14 ± 0.3	07/01/20	8	14.2	14.1	14.2	14.1	14.1	14.1	14.1	14.1	X	
8	1.24 ± 0.25	07/01/20	8	1.21	1.22	1.22	1.22	1.20	1.21	1.19	1.19	X	
9	1.5 ± 0.3	07/01/20	8	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.5	X	
10	7.2 ± 0.3	07/01/20	8	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	X	
11	13.2 ± 0.3	07/01/20	8	13.0	13.1	13.0	13.1	13.1	13.1	13.1	13.1	X	
12	7.5 ± 0.25	07/01/20	8	7.58	7.56	7.54	7.54	7.57	7.55	7.57	7.57	X	
13	Material	07/01/20	8	See Attached Material Test Results								X	
14	Note 2	07/01/20	8	Present - ITW								X	
15	Note 3	07/01/20	8	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	X	
16	Note 4	07/01/20	8	See Attached Performance Test Results								X	
17	Note 5	07/01/20	8	Conforms								X	

Item	DIMENSION/SPECIFICATION/LIMITS	TEST DATE	QTY. TESTED	ORGANIZATION MEASUREMENT RESULTS (DATA)/ CAVITY # 17	18	19	20	21	22	23	24	OK	NOT OK
1	18.3 ± 0.3	07/01/20	8	18.4	18.3	18.2	18.3	18.4	18.5	18.4	18.3	X	
2	171.4 REF	07/01/20	8	172.6	172.4	172.6	172.4	172.4	172.4	172.5	172.6	X	
3	103.7 ± 2	07/01/20	8	105.1	105.1	105.1	105.0	105.1	105.2	105.1	105.0	X	
4	21.7 ± 0.3	07/01/20	8	21.8	21.9	21.8	21.8	21.9	21.8	21.9	21.9	X	
5	4.25 ± 0.25	07/01/20	8	4.38	4.32	4.36	4.33	4.39	4.32	4.34	4.34	X	
6	5.8 ± 0.15	07/01/20	8	5.84	5.86	5.89	5.82	5.87	5.85	5.88	5.86	X	
7	14 ± 0.3	07/01/20	8	14.1	14.2	14.2	14.2	14.2	14.1	14.1	14.1	X	
8	1.24 ± 0.25	07/01/20	8	1.23	1.19	1.20	1.20	1.23	1.22	1.22	1.23	X	
9	1.5 ± 0.3	07/01/20	8	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	X	
10	7.2 ± 0.3	07/01/20	8	7.3	7.3	7.3	7.3	7.3	7.3	7.3	7.3	X	
11	13.2 ± 0.3	07/01/20	8	13.1	13.1	13.1	13.1	13.1	13.1	13.0	13.1	X	
12	7.5 ± 0.25	07/01/20	8	7.56	7.56	7.58	7.58	7.55	7.58	7.59	7.55	X	
13	Material	07/01/20	8	See Attached Material Test Results								X	
14	Note 2	07/01/20	8	Present - ITW								X	
15	Note 3	07/01/20	8	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	X	
16	Note 4	07/01/20	8	See Attached Performance Test Results								X	
17	Note 5	07/01/20	8	Conforms								X	

Blanket statements of conformance are unacceptable for any test results.

SIGNATURE	TITLE	DATE
Peyton Tozer- QES	Metrologist	7/1/2020

ITW Deltar Fasteners
Division of ITW Automotive Group

DELTAR

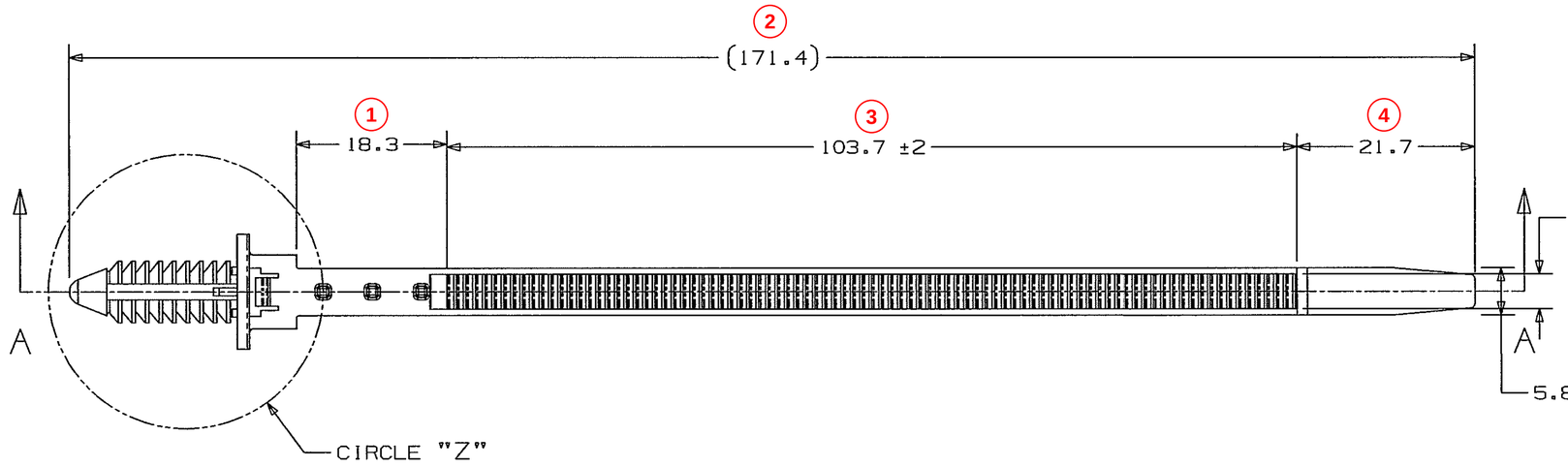
Production Part Approval
Dimension Test Results

ORGANIZATION:	ITW Deltar Fasteners	PART NUMBER:	**6981453810** 15-005771-*A
SUPPLIER CODE:	I009C	PART NAME:	CABLE STRAP
INSPECTION FACILITY:	Quality Engineering Services	DESIGN RECORD CHANGE LEVEL:	A
		ENGINEERING CHANGE DOCUMENTS:	

Item	DIMENSION/SPECIFICATION/LIMITS	TEST DATE	QTY. TESTED	ORGANIZATION MEASUREMENT RESULTS (DATA)/ CAVITY # 25	26	27	28	29	30	31	32	OK	NOT OK
1	18.3 ± 0.3	09/17/20	8	18.34	18.32	18.36	18.39	18.41	18.34	18.36	18.34	X	
2	171.4 REF	09/17/20	8	172.0	171.9	171.9	171.9	172.0	172.0	171.9	171.9	X	
3	103.7 ± 2	09/17/20	8	104.3	104.3	104.3	104.3	104.3	104.3	104.3	104.4	X	
4	21.7 ± 0.3	09/17/20	8	21.94	21.96	21.95	21.93	21.96	21.90	21.88	21.89	X	
5	4.25 ± 0.25	09/17/20	8	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	X	
6	5.8 ± 0.15	09/17/20	8	5.82	5.84	5.83	5.82	5.84	5.86	5.82	5.81	X	
7	14 ± 0.3	09/17/20	8	14.0	13.9	13.9	14.0	14.0	14.0	13.9	14.0	X	
8	1.24 ± 0.25	09/17/20	8	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	X	
9	1.5 ± 0.3	09/17/20	8	1.47	1.47	1.48	1.50	1.47	1.48	1.50	1.50	X	
10	7.2 ± 0.3	09/17/20	8	7.20	7.19	7.21	7.20	7.20	7.20	7.20	7.22	X	
11	13.2 ± 0.3	09/17/20	8	13.14	13.08	13.04	13.07	13.16	13.04	12.96	13.02	X	
12	7.5 ± 0.25	09/17/20	8	7.4	7.4	7.4	7.4	7.5	7.4	7.5	7.4	X	
13	Material	09/17/20	8	See Attached Material Test Results								X	
14	Note 2	09/17/20	8	Present - ITW								X	
15	Note 3	09/17/20	8	0.4 Max								X	
16	Note 4	09/17/20	8	See Attached Performance Test Results								X	
17	Note 5	09/17/20	8	Conforms								X	

Blanket statements of conformance are unacceptable for any test results.

SIGNATURE	TITLE	DATE
Peyton Tozer - QES	Metrologist	9/17/2020



NOTES: (UNLESS OTHERWISE SPECIFIED)

13 1. MATERIAL: PA66 - ZYTEL MT409A HS OR EQUIVALENT FLOWING MATERIAL COLOR: BLACK

14 2. CAVITY AND SUPPLIER I.D. TO APPEAR ON ALL CAVITIES.

15 3. CORNER RADII 0.5 MAX.

4. PERFORMANCE SPECIFICATION:

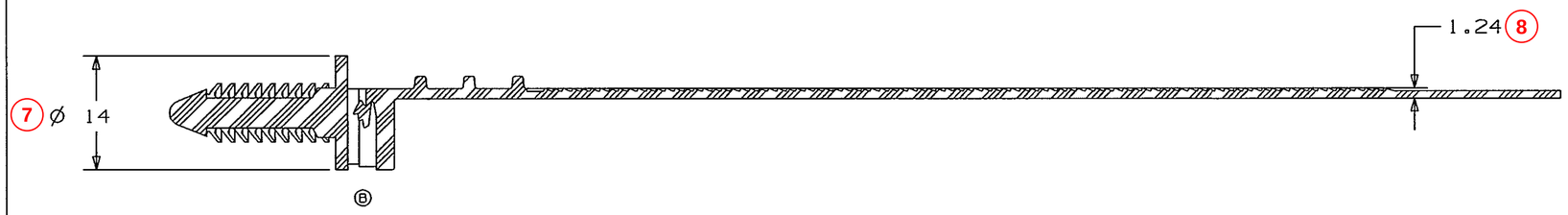
A. FASTENER TO THE PANEL PART MUST MEET A (25 LBS) MINIMUM PERPENDICULAR PULL-OUT FORCE PER DETAIL "Y" WHEN INSTALLED IN A Ø 6.5 +0/-0.15 HOLE IN A 1 THICK PANEL. PARTS TO BE TESTED D.A.M.R.T. AT 7.5 CM/MIN RATE.

16 B. FASTENER TO CONDUIT PART MUST MEET A (25 LBS) MINIMUM PERPENDICULAR PULL-OUT FORCE PER DETAIL "X". PARTS TO BE TESTED D.A.M.R.T. AT 7.5 CM/MIN RATE.

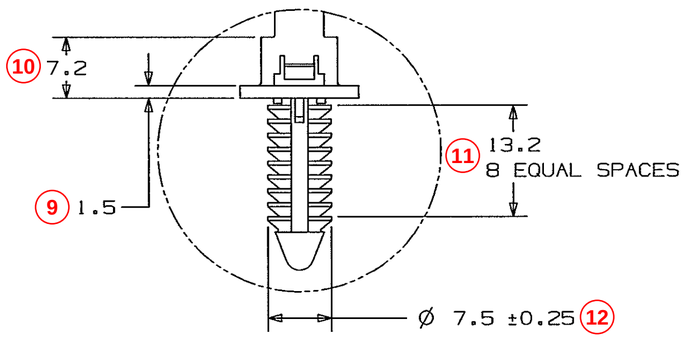
Ⓓ C. PUSH-IN FORCE TO SHEET METAL TO BE 15 LBS MAX

Ⓒ 5. PART TO SUIT A TUBING RANGE OF Ø 6.5 TO Ø 32 AND PANEL THICKNESS OF 0.8 TO 2.5 MM

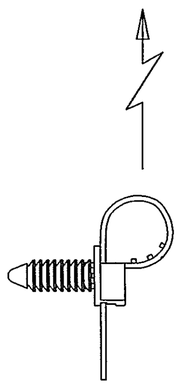
17



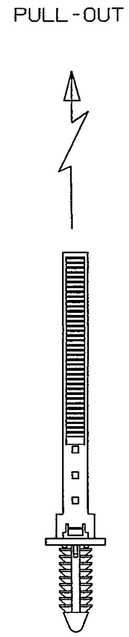
SECTION A - A



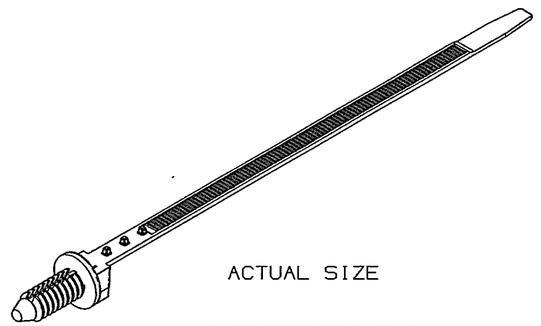
VIEW IN CIRCLE "Z"
ROTATED 90°



DETAIL X
SCALE 1:1



DETAIL Y
SCALE 1:1



ACTUAL SIZE

CUSTOMER DRAWING

NO.	REVISION NOTES	DWN	CHK	APP	DATE
E	5.8±0.15 WAS 5.8±0.07, PER ECR #9311	MM	YYB	JMS	10-19-06
D	PUSH-IN FORCE NOTE ADDED PER ECR #6606	LJA	YYB	JMS	09-16-05
C	ADDED "AND PANEL THICKNESS OF 0.8 TO 2.5 MM" TO NOTE 5; REVISED X, X.X TOLERANCE OF +/-0.5 TO +/-0.3 PER ECR # 8894	LJA	EMH	MM	11-21-03
B	MODIFIED LATCH FEATURE PER JOB START DATED 11-01-01	YYB	MM	JEC	11-02-01
A	RELEASED FOR PRODUCTION PER JOB START DATED 10-18-01	MM	GGG	JEC	10-24-01

TRW AUTOMOTIVE ENGINEERED FASTENERS
FASTENING SYSTEMS

SCALE	DRAWN	CHECKED	APPRD	DATE
4:1	M MASSENGILL	GGG	JEC	10-24-01

TOLERANCES IN MM (UNLESS OTHERWISE SPECIFIED)
X.XX ±0.3
X.XX ±0.25
ANGULAR ±3°

TITLE: CABLE STRAP

MATERIAL: SEE NOTES

SHEET NUMBER: 1 OF 1

PRODUCT CODE: 01.1.2

COLOR: SEE NOTES

PART NO.: 69814538

CAD FILENAME: 69814538E

CERTIFICATE OF ACCREDITATION

The ANSI National Accreditation Board

Hereby attests that

Quality Engineering Service of the Chippewa Valley, Inc.

345 Frenette Drive, Suite 1
Chippewa Falls, WI 54729

Fulfills the requirements of

ISO/IEC 17025:2017

and

ANSI/NCSL Z540-1-1994 (R2002)

In the fields of

TESTING, DIMENSIONAL MEASUREMENT and CALIBRATION

This certificate is valid only when accompanied by a current scope of accreditation document.
The current scope of accreditation can be verified at www.anab.org.

R. Douglas Leonard Jr., VP, PILR SBU

Expiry Date: 22 September 2022
Certificate Number: ACT-1189

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017 AND ANSI/NCSL Z540-1-1994 (R2002)

Quality Engineering Service of the Chippewa Valley, Inc.

345 Frenette Drive, Suite 1
Chippewa Falls, WI 54729
Timothy A. Tozer
715-861-7723

TESTING, DIMENSIONAL MEASUREMENT AND CALIBRATION

Valid to: **September 22, 2022** Certificate Number: **ACT-1189**

TESTING

Mechanical

Specific Tests and/or Properties Measured	Specification, Standard, Method, or Test Technique	Items, Materials or Product Tested	Key Equipment or Technology
Compression force, Insertion	CUP-T1001	Plastic Fasteners, Screws, Adhesives, 3-D objects within equipment operational range	Tensile Testing Machine Up to 1 000 lbs.
Tensile Force, Extraction	CUP-T1002	Plastic Fasteners, Screws, Adhesives, 3-D objects within equipment operational range	Tensile Testing Machine Up to 1 000 lbs.
Tensile, Breaks	CUP-T1004	Plastic Fasteners, Screws, Adhesives, 3-D objects within equipment operational range	Tensile Testing Machine Up to 1 000 lbs.
Shear, Breaks, Adhesion Strength	CUP-T1003 CUP-D1002	Plastic Fasteners, Screws, Adhesives, 3-D objects within equipment operational range	Tensile Testing Machine Up to 1 000 lbs.
Strip Torque, Drive Torque, Torsional Strength	CUP-F.I.P 1000	Screws, Grommets, Bolts	Torque Wrench Up to 300 in-lbs.
Ductility Testing	CUP-F.I.P 1000	Screws & Bolts	Visual
Drive Test	CUP-F.I.P 1000	Screws & Bolts	Visual
Part Weights	RFM-0025	Plastic Fasteners, Screws, Small parts, 3-D objects	Balance Up to 310 g

DIMENSIONAL MEASUREMENT

1 Dimensional

Parameter	Range	Expanded Uncertainty of Measurement (+/-) [2]	Reference Standard, Method, and/or Equipment
Dimensional Measurement 1D	Up to 60 in	(1 400 + 14*L*) µin	Caliper, Length Gage
	Up to 12 in	1 500 µin	Height Gage
	Up to 2 in	(170 + 7.9*L*) µin	Micrometer
	Up to 6 in	1 200 µin	Depth Micrometer
	Up to 2 in	(220 + 4.2*L*) µin	Drop Indicator
	Up to 0.003 in	430 µin	Test Indicator
	(0.011 to 1.000) in	630 µin	Pin Gages
	Up to 180 °	1.3°	Protractors
	(0.01 to 2.00) in	3 700 µin	Radius Gages
	Up to 0.5 in Angular: 90 °	2 900 µin 1.6 °	Handheld Microscope (7x)
	Up to 1 in	120 µin	Laser Micrometer
Dimensional Visual Comparison	Pitches UNC (4 to 84)	Nearest 2 teeth per Inch	Screw Pitch Gage

2 Dimensional

Parameter	Range	Expanded Uncertainty of Measurement (+/-)	Reference Standard, Method, and/or Equipment
Dimensional Measurement 2D	Up to 14 in Dia. & Angular: 360 °	320 µin 0.24 °	Optical Comparator (10x)
	Up to 10 in x 6 in Angular: 360 °	400 µin 0.18 °	Profile Projector (5x, 10x, 20x)

3 Dimensional

Parameter	Range	Expanded Uncertainty of Measurement (+/-) [2]	Reference Standard, Method, and/or Equipment
Dimensional Measurement 3D	Vision X & Y = Up to 12 in Z = Up to 9.8 in	(200 + 3.5*L*) µin	Video Measuring System – Vertex 312, Vertex 420, Sol 161
	Touch Trigger Probe X & Y = Up to 12 in Z = Up to 9.8 in	(210 + 3.3*L*) µin	Vertex 312 Renishaw Touch Probe
	X & Y = Up to 40 in Z = Up to 24 in	(120 + 9.1*L*) µin	Coordinate Measuring Machine – Zeiss Contura G2 Scanning

CALIBRATION

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-) [2]	Reference Standard, Method, and/or Equipment
Calipers, Length Gages	Up to 60 in	(580 + 11*L*) µin	Caliper Calibration Set Gage Blocks Cal-001
Height Gages	Up to 20 in	(580 + 0.37*L*) µin	Gage Blocks Cal-001
Micrometers (ID, OD, Depth)	Up to 12 in	(80 + 6.7*L*) µin	Gage Blocks Cal-002, Cal-017, Cal-020
Drop or Dial Indicators	(0.000 1 to 6) in	(74 + 9.4*L*) µin	Gage Blocks Cal-003
Test Indicators	(0.000 1 to 0.1) in	180 µin	Gage Blocks Cal-004
Radius Gages	Up to 10 in	(200 + 1.5*L*) µin	Video Measurement System Cal-013
Protractors	Up to 180 °	0.78°	Angle Blocks Cal-015
Pin Gages	(0.01 to 1) in	30 µin	Laser Micrometer Cal-018

Length – Dimensional Metrology

Parameter/Equipment	Range	Expanded Uncertainty of Measurement (+/-) [2]	Reference Standard, Method, and/or Equipment
Thickness Gages & Other Fixed Gages	Up to 2 in	(220 + 4.2*L*) µin	Digital Indicator Cal-014, Cal-019
	Up to 12 in	(200 + 1.5*L*) µin	Video Measurement System Cal-014, Cal-019
Report of Values Only	Up to 40 in Angular: 360 °	(120 + 4.9*L*) µin 0.065°	Coordinate Measuring Machine – Zeiss Contura G2 Cal-012, Cal-014
Steel Rules	Up to 36 in	4 300 µin	Microscope Handheld / Master Steel Rule Cal-016

Calibration and Measurement Capability (CMC) is expressed in terms of the measurement parameter, measurement range, expanded uncertainty of measurement and reference standard, method, and/or equipment. The expanded uncertainty of measurement is expressed as the standard uncertainty of the measurement multiplied by a coverage factor of 2 (k=2), corresponding to a confidence level of approximately 95%.

Notes:

1. On-site calibration service is available for this parameter, since on-site conditions are typically more variable than those in the laboratory, larger measurement uncertainties are expected on-site than what is reported on the accredited scope.
2. L = Length in inches.
3. This scope is formatted as part of a single document including Certificate of Accreditation No. ACT-1189.

R. Douglas Leonard Jr., VP, PILR SBU

ITW Deltar Fasteners
Division of ITW Automotive Group

DELTAR

Production Part Approval
Material Test Results

ORGANIZATION: ITW Deltar Fasteners	PART NUMBER: **6981453810** 15-005771-*A
SUPPLIER CODE: I009C	PART NAME: CABLE STRAP
MATERIAL SUPPLIER: ASCEND	DESIGN RECORD CHANGE LEVEL: A
* CUSTOMER SPECIFIED SUPPLIER/VENDOR CODE:	ENGINEERING CHANGE DOCUMENTS: n/a
* If source approval is req'd, include the Supplier (Source) & Customer assigned code.	NAME of LABORATORY: ASCEND

MATERIAL SPEC. NO. REV /DATE	SPECIFICATION / LIMITS	TEST DATE	QTY. TESTED	SUPPLIER TEST RESULTS (DATA)	OK	NOT OK
Nylon 66	See cert	07/13/21	1	See material certification	X	

Blanket statements of conformance are unacceptable for any test results.

SIGNATURE	TITLE	DATE
	PPAP Coordinator	7/13/2021

Ascend Performance Materials Operations LLC
Nylon Plastics and Polymers
3000 Chemstrand Road
Cantonment, FL 32533
Telephone : (850)968-7000

ECM&S
8296 COMMERCE PARKWAY
CHIPPEWA FALLS WI 54729-5063
Attention : MELANIE KRAMER

Certificate Date : 16-Apr-21
Delivery No : 382561722
Shipped Qty : 30,400.000 Lbs
13,789.440 Kgs
Customer P.O. No: 700112-132-60
Container : RANDS TRUCKING 861

Certificate of Analysis

This certifies that Nylon Resin shipped to you from Ascend Performance Materials Operations LLC has been tested and found to meet required specifications.

This material was produced under a Quality System that meets ISO 9001:2015 and IATF 16949:2016 criteria.

If you have questions or concerns about this Certificate of Analysis, please contact Ascend Performance Materials Customer Operations at 1-888-927-2363.

This product meets the requirements of the following specifications: SAE J1639, SAE J1639 PA0171, ASTM D6779-PA0161-Z1Z2, ASTM 4066 PA0161, FMVSS 302, Chrysler CPN-1826, Delphi M53125, ESB-M4D178-A2, WSS-M99P23-C1/C2, WSS-M99P9999-A1, WSS-M4D706B1, WSS-M99P1111-A, WSK-M4D706-A, GMW16447P-PA66-T2, and GMP.PA66.015.

Material: VYDYNE 47H BK0501 Q511 **Material No:** 10375620 **Batch No:** JC19FY09 **Date of Mfg:** 19-Mar-2021

Ascend Performance Materials Operations LLC Specification

Lot Data Property	Test Method	Min	Max	Result	Units
Moisture	STM 00835	0.10	0.20	0.14	%

CERTIFICATE OF REGISTRATION

This is to certify that

Ascend Performance Materials Operations LLC

Nylon Resins
3000 Old Chemstrand Rd., Cantonment, Florida, 32533-8926, USA

operates a

Quality Management System

which complies with the requirements of

IATF 16949:2016 - FIRST EDITION

for the following scope of certification

The design and manufacture of Ascend and Vydyne Nylon Resins for extrusion, molding and fiber applications.

Certificate No.:	001361-1	Issue Date:	March 3, 2021	
IATF Database No.:	0388282	Expiry Date:	March 2, 2024	Page 1 of 1

Frank Camasta
Global Head of Technical Services
SAI Global Assurance

Dusan Nikolic
Automotive Technical Manager
Global Scheme Owner

Certified System
IATF 16949

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

ASCEND PERFORMANCE MATERIALS
3000 Old Chemstrand Road
Cantonment, FL 32533
Patrick O'Neal Phone: 850 968 8769

CHEMICAL

Valid To: December 31, 2022 Certificate Number: 0112.02

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on plastics:

Test	Test Method
Ash Analysis	ASTM D5630
Copper Content of Vydyne Resins	Ascend STM 00792
Moisture Analysis	ASTM D6869
Relative Viscosity - Brookfield	ASTM D789
Relative Viscosity - Capillary	ASTM D789
X-Ray Analysis for Additives in Polymers	Ascend STM 00667

5202 Presidents Court, Suite 220 | Frederick, MD 21703-8515 | Phone: 301 644 3248 | Fax: 240 454 9449 | www.A2LA.org

Accredited Laboratory

A2LA has accredited

ASCEND PERFORMANCE MATERIALS

Gonzalez, FL

for technical competence in the field of

Chemical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 13th day of January 2021.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 112.02
Valid to December 31, 2022

For the tests to which this accreditation applies, please refer to the laboratory's Chemical Scope of Accreditation.

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

ASCEND PERFORMANCE MATERIALS
3000 Old Chemstrand Road
Cantonment, FL 32533
John Harris Phone: 850 490 0323

MECHANICAL

Valid To: December 31, 2022 Certificate Number: 0112.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following tests on plastics:

Test	Test Method(s)
Conditioning Plastics for Testing	ASTM D618
Tensile Properties (except Poisson Ratio)	ASTM D638; ISO 527-1, -2
Flexural Properties	ASTM D790; ISO 178
Impact (Izod)	ISO 180 (Type A)
Impact (Charpy)	ISO 179-1
Heat Deflection Temperature (HDT)	ASTM D648; ISO 75-1, -2
Specific Gravity/Density	ISO 1183-3
Transition Temperature (DSC)	ASTM D3418
Mold Shrinkage	ISO 294 -4
Road Vehicles and Tractors and Machinery for Agriculture and Forestry – Determination of Burning Behaviour of Interior Materials	ISO 3795
Flammability	UL 94V, UL 94HB
Dielectric Breakdown Voltage and Dielectric Strength	ASTM D149
Determination of Tensile-Impact Strength	ASTM D1882

5202 Presidents Court, Suite 220 | Frederick, MD 21703-8515 | Phone: 301 644 3248 | Fax: 240 454 9449 | www.A2LA.org

Accredited Laboratory

A2LA has accredited

ASCEND PERFORMANCE MATERIALS

Cantonment, FL

for technical competence in the field of

Mechanical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 22nd day of December 2020.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 0112.01
Valid to December 31, 2022

For the tests to which this accreditation applies, please refer to the laboratory's Mechanical Scope of Accreditation.

ITW Deltar Fasteners
Division of ITW Automotive Group

Frankfort Facility
21555 S. Harlem Ave.
Frankfort, IL 60423
Ph. 708.720.2600

ENGINEERING TEST REPORT

PART NUMBER: 15-005771-*A
PART NAME: CABLE STRAP WITH TREE
CUSTOMER: VARIOUS
CUSTOMER P/N:

ENGINEER: BENOIT
TESTED BY: BENOIT DATE: 9/21/20
MATERIAL: NYLON 6/6 BLACK (5049)
MOISTURE CONDITION: NOTED BELOW

TEST PERFORMED: 1) TREE ASSEMBLY(MOISTURE) 2) TREE REMOVAL(DAM) 3) STRAP RETENTION NORMAL (DAM)
REASON FOR TEST: VALIDATE PARTS FROM TRANSFER TOOL (CAVITIES 1-8)
CUSTOMER SPEC OR TARGET: SEE BELOW

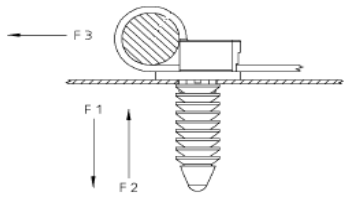
EQUIPMENT USED: CHATILLON
RATE: 7.5 CM/MIN (3"/MIN)

TEST PANEL(S): TEST PANEL
HOLE SIZE: 6.5MM
PANEL THICKNESS: 1.0 MM
PANEL MATERIAL: STAINLESS STEEL

TUBE(S) USED: N/A
DIAMETER: N/A
MATERIAL: N/A

MISC EQUIPMENT:

Insert sketches, part views, test set-up, etc.



UNITS: N

Test Specification	Requirements/Limits	Date Tested	# Parts Tested	Cavity 1	Cavity 2	Cavity 3	Cavity 4	Cavity5	Cavity 6	Cavity 7	Cavity 8	✓/ x
TREE ASSEMBLY FORCE (MOISTURIZED)	67N MAX		24	26	26	22	36	34	37	28	32	✓
				26	31	25	29	34	36	28	33	✓
				26	30	26	28	32	36	25	33	✓
TREE REMOVAL FORCE (DAM)	110N MIN		24	263	265	270	232	306	311	186	204	✓
				253	256	258	241	322	312	180	205	✓
				257	227	266	242	304	292	194	200	✓
STRAP PERPENDICULAR RETENTION (DAM)	110N MIN		24	232	159	164	160	181	186	313	265	✓
				241	163	164	165	170	187	326	256	✓
				242	166	160	166	175	187	321	227	✓

ITW Deltar Fasteners
Division of ITW Automotive Group

DELTAR
Frankfort Facility
21555 S. Harlem Ave.
Frankfort, IL 60423
Ph. 708.720.2600

ENGINEERING TEST REPORT

PART NUMBER: 15-005771-*A
PART NAME: CABLE STRAP WITH TREE
CUSTOMER: VARIOUS
CUSTOMER P/N:

ENGINEER: BENOIT
TESTED BY: BENOIT DATE: 9/21/20
MATERIAL: NYLON 6/6 BLACK (5049)
MOISTURE CONDITION: NOTED BELOW

TEST PERFORMED: 1) TREE ASSEMBLY(MOISTURE) 2) TREE REMOVAL(DAM) 3) STRAP RETENTION NORMAL (DAM)
REASON FOR TEST: VALIDATE PARTS FROM TRANSFER TOOL (CAVITIES 9-24)
CUSTOMER SPEC OR TARGET: SEE BELOW

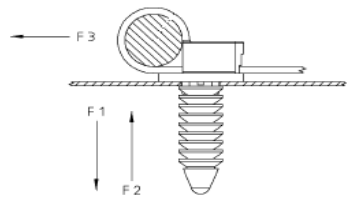
EQUIPMENT USED: CHATILLON
RATE: 7.5 CM/MIN (3"/MIN)

TEST PANEL(S): TEST PANEL
HOLE SIZE: 6.5MM
PANEL THICKNESS: 1.0 MM
PANEL MATERIAL: STAINLESS STEEL

TUBE(S) USED: N/A
DIAMETER: N/A
MATERIAL: N/A

MISC EQUIPMENT:

Insert sketches, part views, test set-up, etc.



UNITS: N

Test Specification	Requirements/Limits	Date Tested	# Parts Tested	Cavity 9	Cavity 10	Cavity 11	Cavity 12	Cavity 13	Cavity14	Cavity 15	Cavity 16	✓/ x
TREE ASSEMBLY FORCE (MOISTURIZED)	67N MAX		24	23	24	29	23	24	29	28	23	✓
				26	22	21	29	28	32	30	24	✓
				22	23	26	26	28	25	28	23	✓
				Cavity17	Cavity 18	Cavity 19	Cavity 20	Cavity 21	Cavity 22	Cavity 23	Cavity 24	✓/ x
TREE ASSEMBLY FORCE (MOISTURIZED)	67N MAX		24	30	30	28	26	26	22	36	34	✓
				36	29	26	26	31	25	29	34	✓
				29	31	31	26	30	26	28	32	✓
				Cavity 9	Cavity 10	Cavity 11	Cavity 12	Cavity 13	Cavity14	Cavity 15	Cavity 16	✓/ x
TREE REMOVAL FORCE (DAM)	110N MIN		24	305	263	228	277	283	249	257	318	✓
				309	253	275	257	288	249	290	302	✓
				311	257	264	268	278	263	280	337	✓
				Cavity17	Cavity 18	Cavity 19	Cavity 20	Cavity 21	Cavity 22	Cavity 23	Cavity 24	✓/ x
TREE REMOVAL FORCE (DAM)	110N MIN		24	336	313	265	270	232	306	311	236	✓
				327	326	256	258	241	322	312	260	✓
				335	321	227	266	242	304	292	234	✓
				Cavity 9	Cavity 10	Cavity 11	Cavity 12	Cavity 13	Cavity14	Cavity 15	Cavity 16	✓/ x
STRAP PERPENDICULAR RETENTION (DAM)	110 N MIN		24	184	185	142	152	155	155	147	160	✓
				183	186	136	150	150	141	143	165	✓
				189	188	136	146	151	147	141	166	✓
				Cavity17	Cavity 18	Cavity 19	Cavity 20	Cavity 21	Cavity 22	Cavity 23	Cavity 24	✓/ x
STRAP PERPENDICULAR RETENTION (DAM)	110 N MIN		24	313	265	270	232	159	164	155	147	✓
				326	256	258	241	163	164	141	143	✓
				321	227	266	242	166	160	147	141	✓

ITW Deltar Fasteners
Division of ITW Automotive Group

Frankfort Facility
21555 S. Harlem Ave.
Frankfort, IL 60423
Ph. 708.720.2600

ENGINEERING TEST REPORT

PART NUMBER: 15-005771-*A
PART NAME: CABLE STRAP WITH TREE
CUSTOMER: VARIOUS
CUSTOMER P/N:

ENGINEER: BENOIT
TESTED BY: BENOIT DATE: 9/21/20
MATERIAL: NYLON 6/6 BLACK (5049)
MOISTURE CONDITION: NOTED BELOW

TEST PERFORMED: 1) TREE ASSEMBLY(MOISTURE) 2) TREE REMOVAL(DAM) 3) STRAP RETENTION NORMAL (DAM)
REASON FOR TEST: VALIDATE PARTS FROM TRANSFER TOOL (CAVITIES 33-40)
CUSTOMER SPEC OR TARGET: SEE BELOW

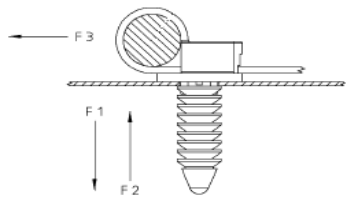
EQUIPMENT USED: CHATILLON
RATE: 7.5 CM/MIN (3"/MIN)

TEST PANEL(S): TEST PANEL
HOLE SIZE: 6.5MM
PANEL THICKNESS: 1.0 MM
PANEL MATERIAL: STAINLESS STEEL

TUBE(S) USED: N/A
DIAMETER: N/A
MATERIAL: N/A

MISC EQUIPMENT:

Insert sketches, part views, test set-up, etc.

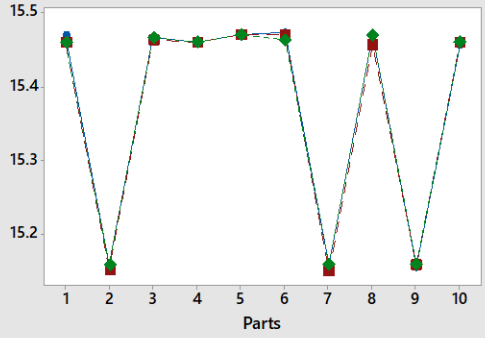


UNITS: N

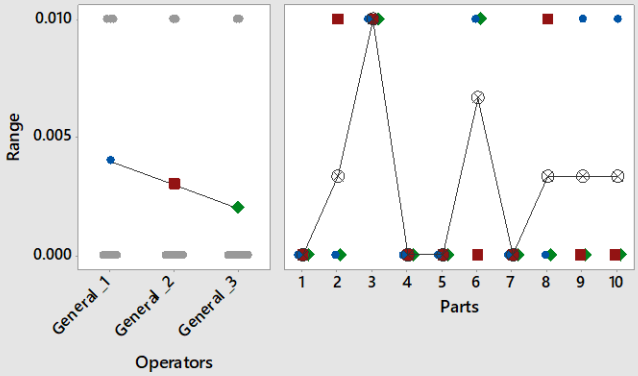
Test Specification	Requirements/Limits	Date Tested	# Parts Tested	Cavity33	Cavity 34	Cavity 35	Cavity 36	Cavity 37	Cavity 38	Cavity39	Cavity 40	✓/ x
TREE ASSEMBLY FORCE (MOISTURIZED)	67N MAX		24	29	29	37	28	32	29	29	27	✓
				27	30	36	28	33	29	27	25	✓
				28	32	36	25	33	28	29	28	✓
TREE REMOVAL FORCE (DAM)	110N MIN		24	176	164	167	170	186	204	181	169	✓
				170	165	159	173	180	205	190	169	✓
				170	172	187	201	194	200	187	168	✓
STRAP PERPENDICULAR RETENTION (DAM)	110N MIN		24	210	181	196	186	188	183	193	185	✓
				172	170	181	190	183	181	191	196	✓
				174	175	188	188	184	188	191	191	✓

Gage R&R Study for Cailper Measurements 9/25/2020
Variation Report

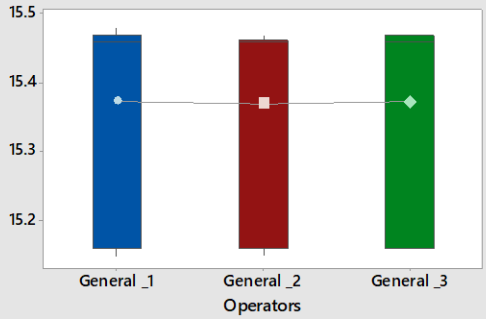
Reproducibility — Operator by Part Interaction
Look for abnormal points or patterns.



Test-Retest Ranges (Repeatability)
Operators and Parts with larger ranges have less consistency.



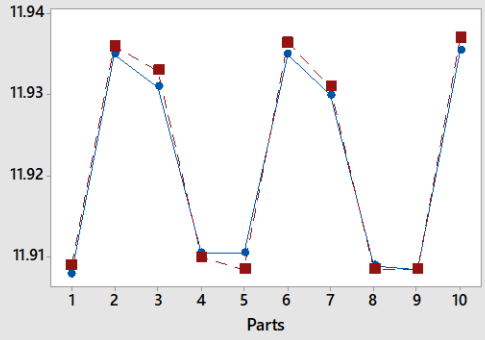
Reproducibility — Operator Main Effects
Look for operators with higher or lower averages.



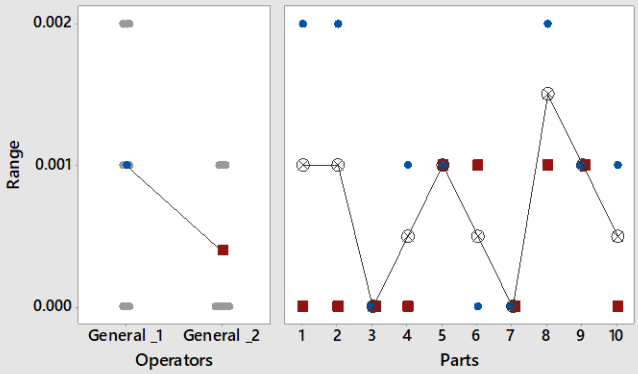
Source	StDev	%Study Variation
Total Gage	0.005	3.33
Repeatability	0.003	2.13
Reproducibility	0.004	2.56
Operator	0.002	1.09
Operator by Part	0.003	2.32
Part-to-Part	0.148	99.94
Study Variation	0.148	100.00

Gage R&R Study for Gram Scale ITW 1121183552 9/25/2020
Variation Report

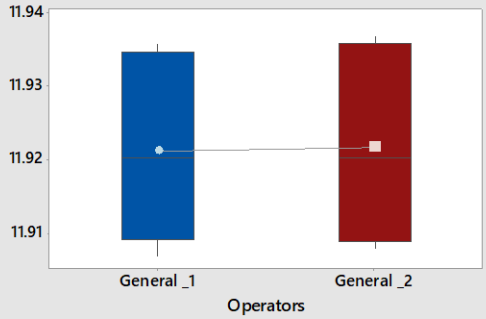
Reproducibility — Operator by Part Interaction
Look for abnormal points or patterns.



Test-Retest Ranges (Repeatability)
Operators and Parts with larger ranges have less consistency.



Reproducibility — Operator Main Effects
Look for operators with higher or lower averages.



Source	StDev	%Study Variation
Total Gage	0.001	7.72
Repeatability	0.001	5.33
Reproducibility	0.001	5.59
Operator	0.000	1.68
Operator by Part	0.001	5.33
Part-to-Part	0.013	99.70
Study Variation	0.013	100.00