



ENGINEERING AND TEST DIVISION
1175 CHURCH STREET, BOHEMIA, LONG ISLAND, NEW YORK 11716 (631) 589-6300

TEST REPORT NO.: 413832-26-04-R15-0752

DAYTON T. BROWN, INC. JOB NO.: 413832-26-000



CUSTOMER: MEGA FORTRIS (M) SDN BHD
NO. 29, JALAN ANGGERIK MOKARA 31/47
KOTA KEMUNING, SEKSYEN 31
SHAH ALAM
SELANGOR, 40460, MALAYSIA

SUBJECT: FREIGHT CONTAINER MECHANICAL SEAL CLASSIFICATION TESTING
PER ISO 17712:2013 (E) CLAUSE 5,
CONDUCTED ON 25 CABLE SEALS, MODEL NO. CCS 350,
SERIAL NOS. 000001 THROUGH 000025

PURCHASE ORDER NO.: MFM_PO-003900-2

ATTENTION: JILLIEN WONG

SEAL CLASSIFICATION: HIGH SECURITY

PREPARED BY	 J. BENINCASA
TEST ENGINEER	 T. ZIMOULIS
DATE	5 OCTOBER 2015

INFORMATION CONTAINED HEREIN MAY BE SUBJECT TO EXPORT CONTROL LAWS. REFER TO INTERNATIONAL TRAFFIC IN ARMS REGULATION (ITAR) OR THE EXPORT ADMINISTRATION REGULATION (EAR) OF 1979

THE DATA CONTAINED IN THIS REPORT WAS OBTAINED BY TESTING IN COMPLIANCE WITH THE APPLICABLE TEST SPECIFICATION AS NOTED





REVISION HISTORY

Revision	Date	Section Affected	Change
--	10/05/2015	--	--

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1.0 ABSTRACT

This test report details the results of freight container mechanical seal classification testing conducted on Cable Seals, under reference (a) to the requirements of reference (c).

Results of the tests are detailed in the following text.

Test data pertinent to this program will remain on file at Dayton T. Brown, Inc. for 90 days.

The testing and results contained in this report are in accordance with the testing requirements called out in ISO 17712:2013 and are only applicable to the specific units identified in the test report and do not address any individual manufacturer's compliance or non-compliance with all the requirements of ISO 17712:2013 which are the sole responsibility of each manufacturer and not part of the testing performed and recorded in this test report.

Dayton T. Brown, Inc. is not involved in any production quality inspections. All tests are based on the samples that are selected by the manufacturer and provided to Dayton T. Brown, Inc. without any Dayton T. Brown, Inc. involvement in said selection.

Dayton T. Brown, Inc. performs testing to ISO 17712:2013 under laboratory conditions. These tests do not measure and are not intended to measure all possible applications or installations of the seal assembly or components. In that event, the report will describe the particular application tested in detail. Dayton T. Brown, Inc. is not responsible for actual performance of any seal assembly as installed in any application.

This report shall not be reproduced, except in full, without the written approval of Dayton T. Brown, Inc.

2.0 REFERENCES

- (a) Customer Purchase Order No.: MFM_PO-003900-2
- (b) Dayton T. Brown, Inc. Job No.: 413832-26-000
- (c) Test Specification: ISO 17712:2013 (E) Clause 5

3.0 SEAL CLASSIFICATION

ISO 17712:2013 (E): (H)-High Security for Clause 5

4.0 ADMINISTRATIVE INFORMATION

Customer	Mega Fortris (M) Sdn Bhd No. 29, Jalan Anggerik Mokara 31/47 Kota Kemuning, Seksyen 31 Shah Alam Selangor, 40460, Malaysia
Sample Type	Cable Seal
Sample Name	Carrier Cable Seal 350 (as provided by customer)
Part/Model No.	CCS 350 (as provided by customer)
Serial Nos.	000001 through 000025
Quantity Received	30
Quantity Tested	25
Date Received	4 September 2015
Dates Tested	16 through 20 September 2015

5.0 TEST PROGRAM OUTLINE

Test	Test Item Description	Results
Tensile	Model No. CCS 350 Cable Seals, Serial Nos. 000001 through 000005	See Page 6.
Shear	Model No. CCS 350 Cable Seals, Serial Nos. 000006 through 000010	See Page 8.
Bending	Model No. CCS 350 Cable Seals, Serial Nos. 000011 through 000015	See Page 10.
Impact	Model No. CCS 350 Cable Seals, Serial Nos. 000016 through 000025	See Pages 12 and 13.
Test Equipment List and Test Item Photo	Model No. CCS 350 Cable Seal	See Pages 15 and 16.

6.0 TEST RESULTS

Tensile Test and Results

TEST REQUIREMENT

The tensile test shall be conducted in accordance with reference (c).

TEST RESULTS

A pretest visual inspection of the test items revealed no anomalies.
 All testing was performed in accordance with the referenced specification.
 Test room ambient conditions: 20.9°C and 48.3%RH

TEST DATA

Date: 19 September 2015

Tensile Test at Room Temperature			
Specimen No.	Load (kN)	Class Rating	Remarks
000001	14.48	H	*
000002	14.89	H	**
000003	14.94	H	*
000004	14.80	H	**
000005	15.01	H	**

Tech: JB

* A post-test visual inspection of the test item revealed that the cable broke at the lower support bolt due to testing.

** A post-test visual inspection of the test item revealed that the cable broke at the upper support bolt due to testing.

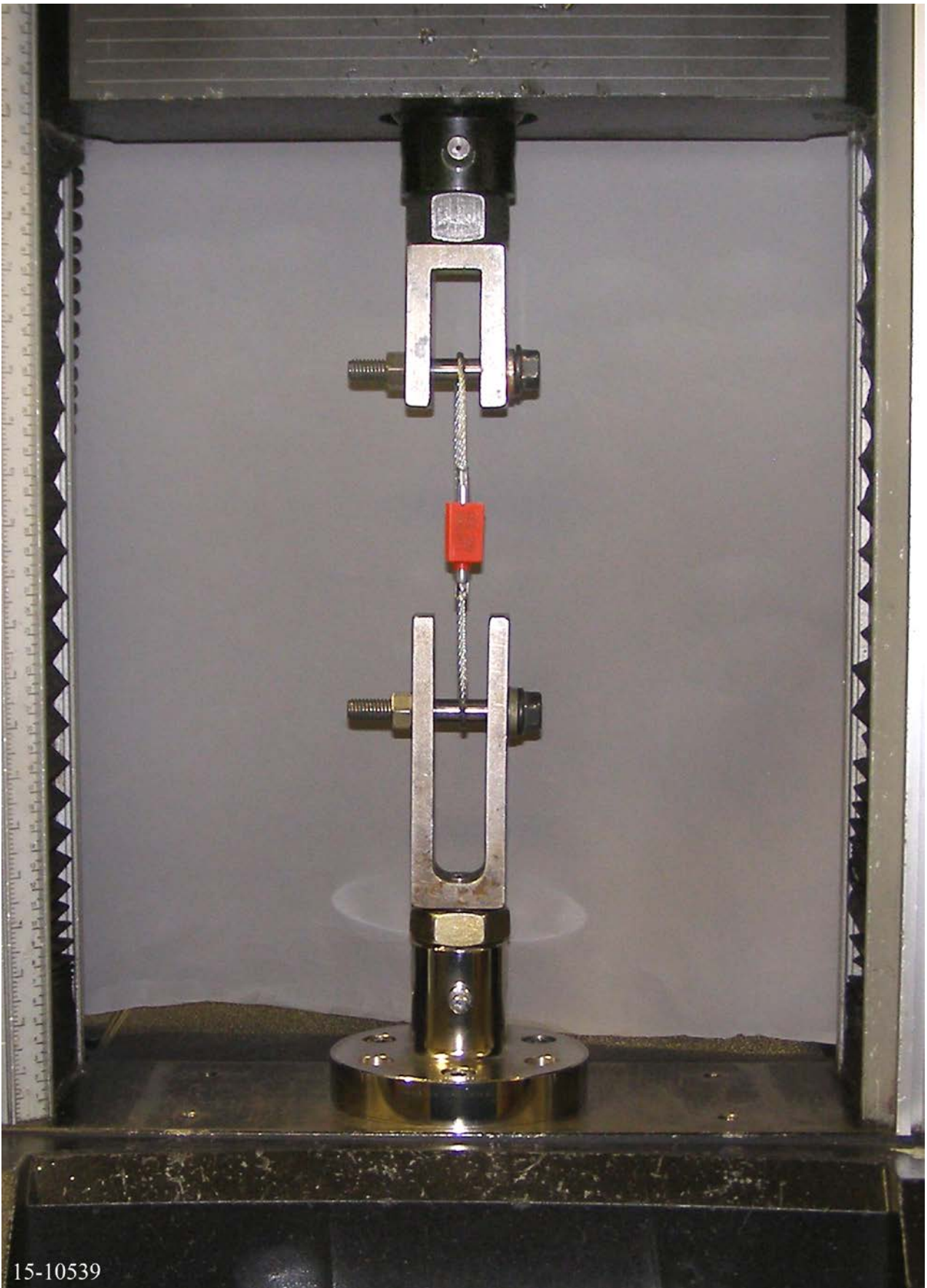
Classification Key

Rating Load to Failure

High Security (H): 10.0 kN

Security (S): 2.27 kN

Indicative (I): <2.27 kN



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TYPICAL PHOTO OF THE TENSILE TEST SETUP

19 SEPTEMBER 2015

FILE NO. 15-10539



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Shear Test and Results

TEST REQUIREMENT

The shear test shall be conducted in accordance with reference (c).

TEST RESULTS

A pretest visual inspection of the test items revealed no anomalies.
 All testing was performed in accordance with the referenced specification.
 Test room ambient conditions: 20.8°C and 49.2%RH

TEST DATA

Date: 20 September 2015

Shear Test at Room Temperature			
Specimen No.	Load (kN)	Class Rating	Remarks
000006	7.237	H	*
000007	8.264	H	*
000008	7.684	H	*
000009	7.896	H	*
000010	8.804	H	*

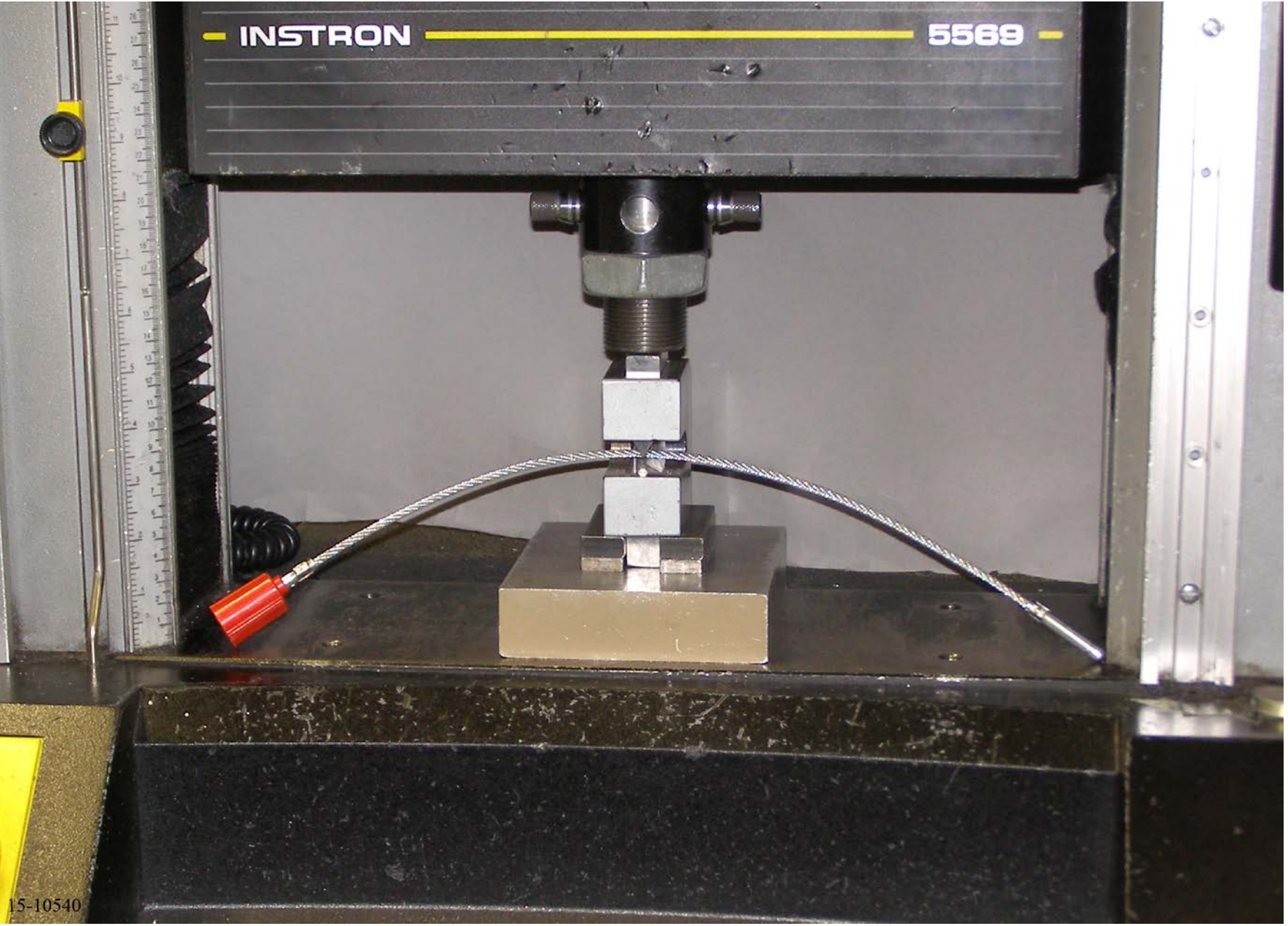
Tech: JB

* A post-test visual inspection of the test item revealed that the cutting blades severed cable of the seal.

Classification Key

Rating	Load to Failure
High Security: (H):	3.336 kN
Security (S):	2.224 kN
Indicative (I):	<2.224 kN

SAFETY PRECAUTIONS – Do not exceed a shear force greater than 8900 N (2001 lbf). If the specimen has not failed at that force, halt the test and unload the test equipment. Record a shear force of 8896 N (2000 lbf). Sudden and violent rupture of the test specimen can endanger personnel, equipment and property.



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TYPICAL PHOTO OF THE SHEAR TEST SETUP

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Bending Test and Results

TEST REQUIREMENT

The bending test shall be conducted in accordance with reference (c).

TEST RESULTS

A pretest visual inspection of the test items revealed no anomalies.
All testing was performed in accordance with the referenced specification.
Test room ambient conditions: 20.9°C and 49.2%RH

TEST DATA

Date: 20 September 2015

Bending Test at Room Temperature			
Specimen No.	Flex Cycles	Class Rating	Remarks
000011	>501	H	*
000012	>501	H	*
000013	>501	H	*
000014	>501	H	*
000015	>501	H	*

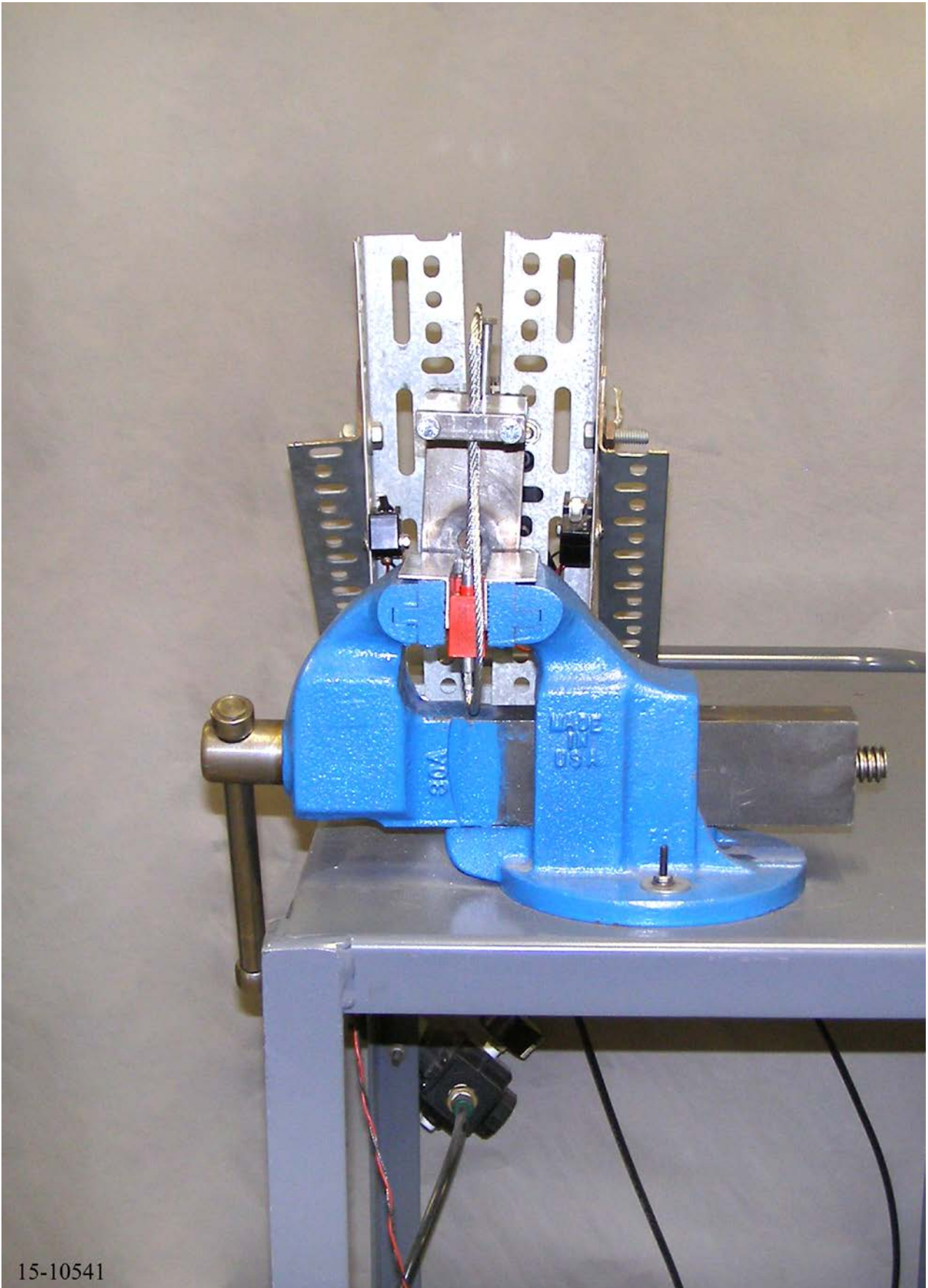
Tech: JB

* A post-test visual inspection of the test item revealed no anomalies due to testing.

Classification Key

Rating Flexible Seals
 Cycles to Failure

High Security (H): 501
Security (S): 251
Indicative (I): <251



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TYPICAL PHOTO OF THE BENDING TEST SETUP

20 SEPTEMBER 2015

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Impact Test and Results

TEST REQUIREMENT

The impact test shall be conducted in accordance with reference (c).

TEST RESULTS

A pretest visual inspection of the test items revealed no anomalies.
 All testing was performed in accordance with the referenced specification.
 Test chamber conditions: 18.3°C and 71.7%RH

TEST DATA

Date: 16 September 2015

Impact Test at Room Temperature (required 18 ± 3°C)					
Specimen No.	Number of Successful Impacts Per Load (J)			Class Rating	Remarks
	13.56	27.12	40.68		
000016	5	5	5	H	*
000017	5	5	5	H	*
000018	5	5	5	H	*
000019	5	5	5	H	*
000020	5	5	5	H	*

Tech: JB

* A post-test visual inspection of the test item revealed that portions of the seal deformed due to testing. The cable and lock of the seal remained intact.

Classification Key

Rating Load to Failure
 (5 impacts at each load)

High Security (H): 40.68 J
 Security (S): 27.12 J
 Indicative (I): <27.12 J

Impact Test and Results

Test chamber conditions: -26.8°C and 86.3%RH

TEST DATA – (Continued)

Date: 17 September 2015

Impact Test at Reduced Temperature (required $-27 \pm 3^{\circ}\text{C}$)					
Specimen No.	Number of Successful Impacts Per Load (J)			Class Rating	Remarks
	13.56	27.12	40.68		
000021	5	5	5	H	*
000022	5	5	5	H	*
000023	5	5	5	H	*
000024	5	5	5	H	*
000025	5	5	5	H	*

Tech: JB

* A post-test visual inspection of the test item revealed that portions of the seal deformed due to testing. The cable and lock of the seal remained intact.

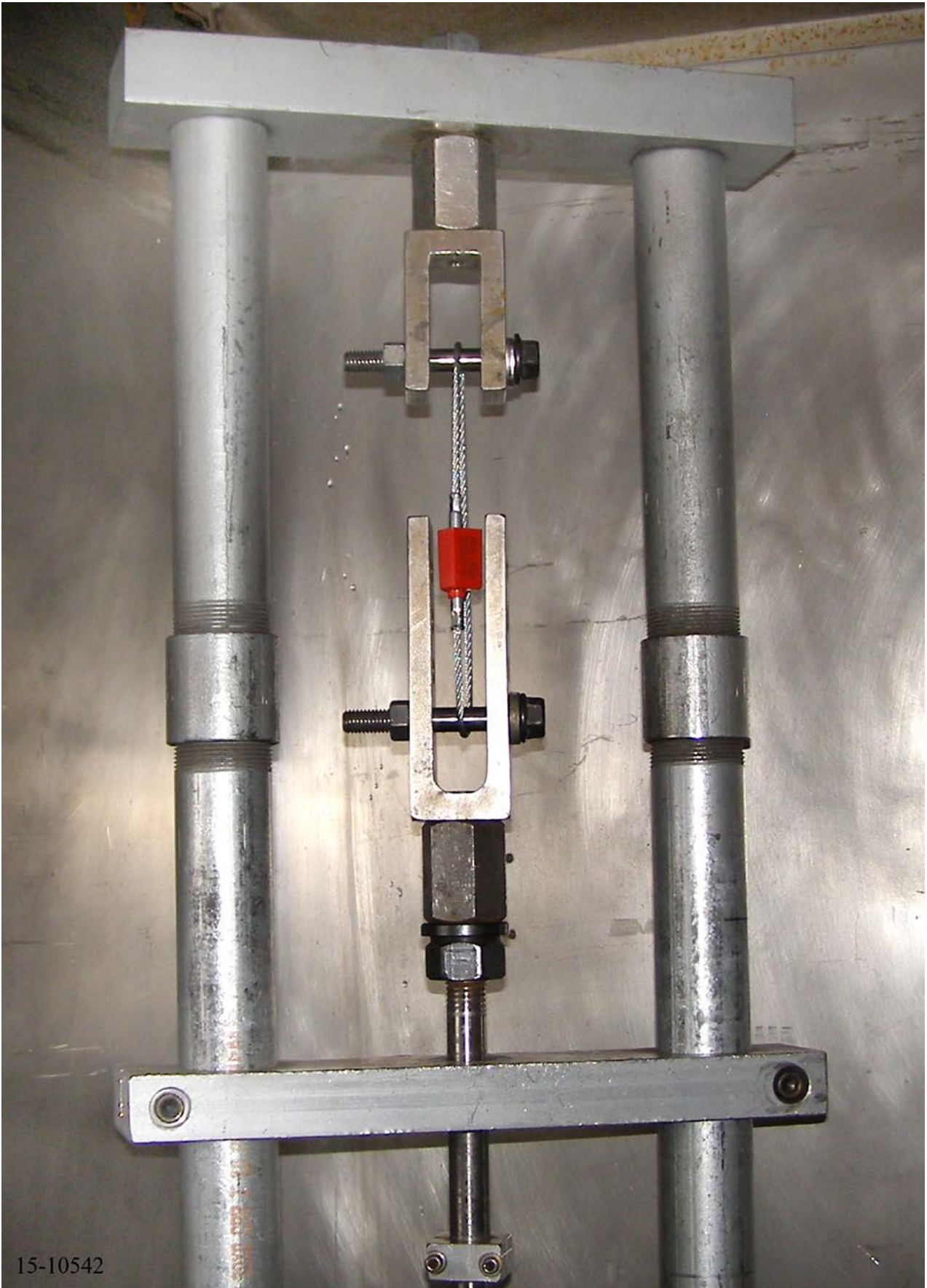
Classification Key

Rating Load to Failure
 (5 impacts at each load)

High Security (H): 40.68 J

Security (S): 27.12 J

Indicative (I): <27.12 J



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TYPICAL PHOTO OF THE IMPACT TEST SETUP

16 SEPTEMBER 2015
FILE NO. 15-10542



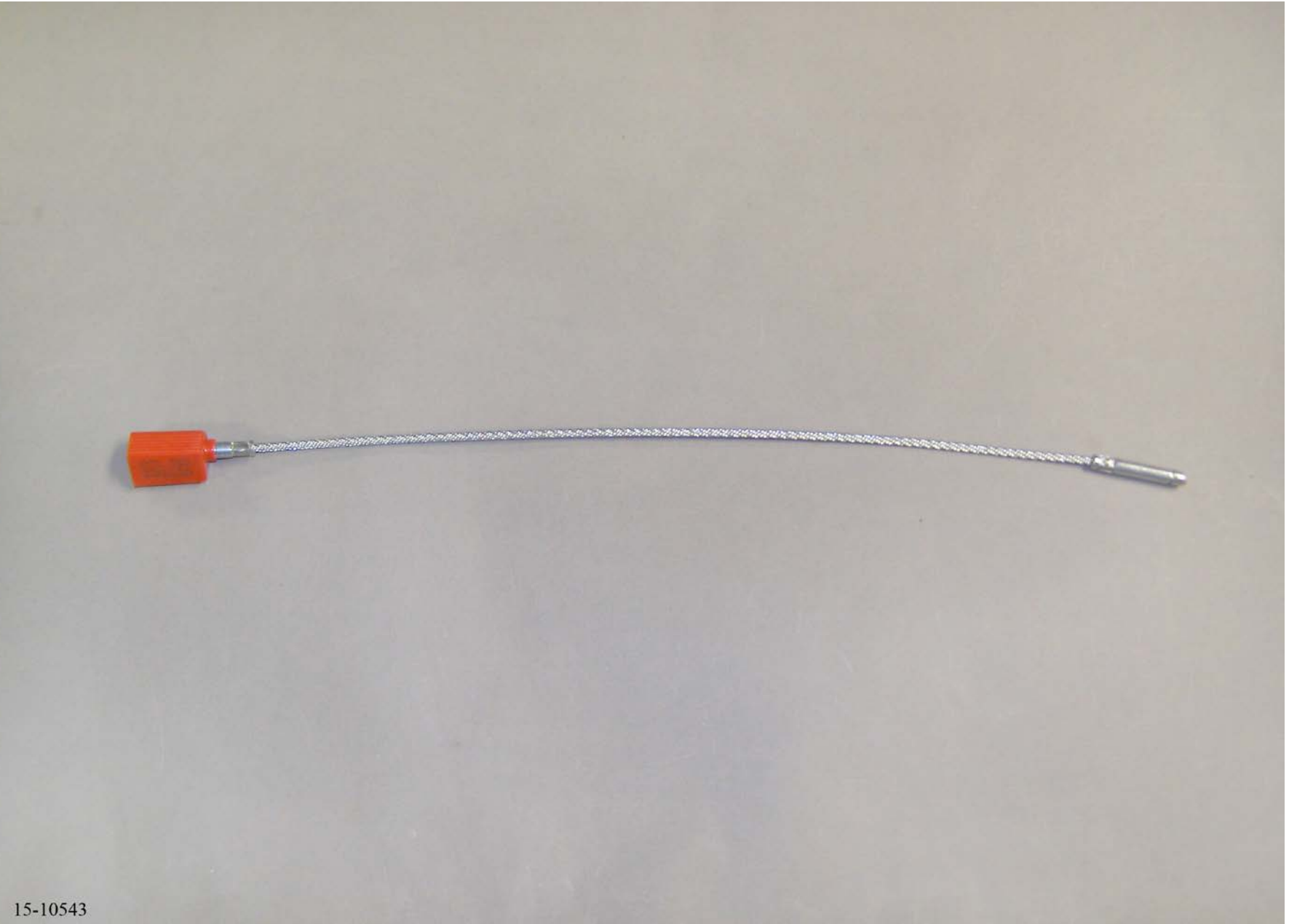
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Test equipment utilized for the program reported herein was within its assigned interval of calibration. Details are on file at Dayton T. Brown, Inc. and will be made available upon request.



TEST: FREIGHT CONTAINER MECHANICAL SEAL CLASSIFICATION TESTING						
Item	Manufacturer	Model	DTB No.	Accuracy	Last Cal Date	Cal Due Date
THERMOTRON, 275	THERMOTRON	FX-82-CHV-25-25	04E-006	N/A	-	N.C.R.
CONDITIONING ROOM	DAYTON T. BROWN	N/A	04S-001	N/A	-	N.C.R.
RECORDER, CHART TRULINE	HONEYWELL	DR4500	12-12	TYPE T $\pm 0.7^{\circ}\text{F}$	09/29/2014	09/27/2015
LOGGER, RH AND TEMPERATURE	HART SCIENTIFIC	1620A	12-39	59 TO 95 $^{\circ}\text{F}$ $\pm 0.75^{\circ}\text{F}$; 10 TO 70% RH $\pm 2\%$ RH	12/02/2014	11/29/2015
CONTROLLER, ENVIRONMENTAL SYSTEM	JC SYSTEMS	620	25-55	RTD $\pm 1.08^{\circ}\text{F}$, RH $\pm 1\%$ RH	03/12/2015	03/06/2016
TESTER, UNIVERSAL TENSILE W/STATIC LOAD CELLS (2)	INSTRON	5569	29-2	$\pm 1\%$ OF READING	07/13/2015	07/10/2016
TRANSMITTER, TEMPERATURE & HUMIDITY	VAISALA	HMT337	31-66	MFR	08/20/2015	02/14/2016
WEIGHT, DEAD BLOW	DAYTON T. BROWN	JB-1	38-55	± 0.01 KGRAMS	05/30/2014	05/29/2016
TIMER, DIGITAL	FISHER SCIENTIFIC	14-649-17	47-55	± 8.64 Sec/24 hr	05/06/2015	05/01/2016
IMPACT TESTER, FREIGHT CONTAINER MECHANICAL SEAL	DAYTON T. BROWN	ISO 17712:2013	61-10	N/A	-	N.C.R.
PROTRACTOR, DIGITAL	PRO PRODUCTS	PRO 3600	67-15	$\pm 0.2^{\circ}$ OF RANGE	06/19/2015	06/19/2016
FIXTURE, SHACKLE CUTTING AND 2 BLADES	DAYTON T. BROWN	ISO 17712:2013	68-390	MFR	06/15/2015	06/12/2016
CALIPER, DIGITAL 4"	MITUTOYO	500-195-20	68-466	± 0.001 "	02/18/2015	02/14/2016
TAPE MEASURE, 16' X 3/4"	LUFKIN	HV1035CME	68-486	$\pm 1/16$ "	12/04/2013	N.P.C.R.



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MODEL NO. CCS 350 CABLE SEAL

2 OCTOBER 2015
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