



Founded 1950

1175 CHURCH STREET • BOHEMIA, LONG ISLAND, NEW YORK 11716

AREA CODE 631 589-6300



Cert # 0767.01, 0767.02, 0767.03

7 May 2015  
414485-01-04-C15-0313

## Certificate of Conformance for Freight Container Mechanical Seal Testing

### Seal Classification: High Security

**Customer:** Shanghai PEARD Industry Co., Ltd.  
D05, The Third Floor, No. 215, North Fute Road  
China (Shanghai) Pilot Free Trade Zone  
Shanghai  
China  
**Attention:** Cora Lee

**Purchase Order No.:** PEARD0409  
**Sample Type:** Bolt Seal  
**Seal Name:** bolt seal (as provided by customer)  
**Model No.:** RZ bolt seal 01 (as provided by customer)  
**Serial Nos.:** DTB 1 through DTB 26  
**Specification No.:** ISO 17712:2013(E) Clauses: 4.1.3 and 5  
**Date Received:** 16 April 2015  
**Test Dates:** 24 and 25 April 2015

A total of 30 samples were received. Dayton T. Brown, Inc. certifies that 26 samples, 5 for each test and 1 for measurements, of the Seals referenced above were subjected to the following tests.

Test Name	Paragraph No.	Classification Rating
Bolt Seal Diameter Qualification	4.1.3	Meets Requirements
Tensile Test	5.2	High Security
Shear Test	5.3	High Security
Bending Test	5.4	High Security
Impact Test at Room Temp	5.5	High Security
Impact Test at Reduced Temp	5.5	High Security

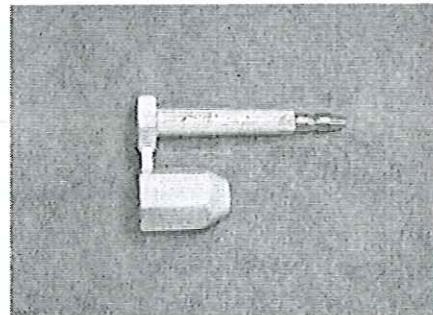
**Results:** The above listed tests were completed with no discrepancies noted. Refer to Test Report No. 414485-01-04-R15-0314 for complete details.

The test results contained herein pertain only to the specimens listed in this report. This report shall not be reproduced, except in full, without the written approval of Dayton T. Brown, Inc.

Prepared by:		J. Benincasa
Engineer:		T. Zimoulis

James Benincasa

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Date: 2015.05.07 16:21:51 -04'00'



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

TEST REPORT NO.: 414485-01-04-R15-0314

DAYTON T. BROWN, INC. JOB NO.: 414485-01-000

**CUSTOMER:** SHANGHAI PEARD INDUSTRY CO., LTD.  
D05, THE THIRD FLOOR, NO. 215, NORTH FUTE ROAD  
CHINA (SHANGHAI) PILOT FREE TRADE ZONE  
SHANGHAI  
CHINA

**SUBJECT:** FREIGHT CONTAINER MECHANICAL SEAL CLASSIFICATION TESTING  
PER ISO 17712:2013 (E) CLAUSES: 4.1.3 AND 5,  
CONDUCTED ON 26 BOLT SEALS, MODEL NO. RZ BOLT SEAL 01,  
SERIAL NOS. DTB 1 THROUGH DTB 26

**PURCHASE ORDER NO.:** PEARD0409

**ATTENTION:** CORA LEE

**SEAL CLASSIFICATION: HIGH SECURITY**

PREPARED BY	
TEST ENGINEER	
DATE	7 MAY 2015

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

James  
Benincasa

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T. Brown, Inc., cn=James Benincasa  
Date: 2015.05.07 16:21:10 -04'00'





## REVISION HISTORY

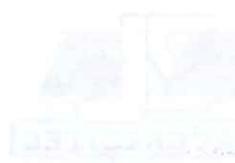
Revision	Date	Section Affected	Change
--	05/07/2015	--	--

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## 1.0 ABSTRACT

This test report details the results of freight container mechanical seal classification testing conducted on Bolt 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.

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## 2.0 REFERENCES

- (a) Customer Purchase Order No.: PEARD0409
- (b) Dayton T. Brown, Inc. Job No.: 414485-01-000
- (c) Test Specification: ISO 17712:2013 (E) Clauses: 4.1.3 and 5

## 3.0 SEAL CLASSIFICATION

ISO 17712:2013 (E): (H)-High Security for Clauses: 4.1.3 and 5



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#### 4.0 ADMINISTRATIVE INFORMATION

<u>Customer</u>	Shanghai PEARD Industry Co., Ltd. D05, The Third Floor, No. 215, North Fute Road China (Shanghai) Pilot Free Trade Zone Shanghai China
Sample Type	Bolt Seal
Sample Name	bolt seal (as provided by customer)
Model No.	RZ bolt seal 01 (as provided by customer)
Serial Nos.	DTB 1 through DTB 26
Quantity Received	30
Quantity Tested	26
Date Received	16 April 2015
Dates Tested	24 and 25 April 2015

#### 5.0 TEST PROGRAM OUTLINE

Test	Test Item Description	Results
Bolt Seal Diameter Qualification	Model No. RZ bolt seal 01 Bolt Seal, Serial No. DTB 26	See Page 6.
Tensile	Model No. RZ bolt seal 01 Bolt Seals, Serial Nos. DTB 1 through DTB 5	See Page 8.
Shear	Model No. RZ bolt seal 01 Bolt Seals, Serial Nos. DTB 6 through DTB 10	See Page 10.
Bending	Model No. RZ bolt seal 01 Bolt Seals, Serial Nos. DTB 11 through DTB 15	See Page 12.
Impact	Model No. RZ bolt seal 01 Bolt Seals, Serial Nos. DTB 16 through DTB 25	See Pages 14 and 15.
Test Equipment List and Test Item Photo	Model No. RZ bolt seal 01 Bolt Seal	See Pages 17 and 18.



## 6.0 TEST RESULTS

### 4.1.3 - Bolt Seal Diameter Qualification Test and Results

#### TEST REQUIREMENT

The Bolt Seal Diameter Qualification test shall be conducted in accordance with reference (c).

#### TEST RESULTS

All testing was performed in accordance with the referenced specification.

#### TEST DATA

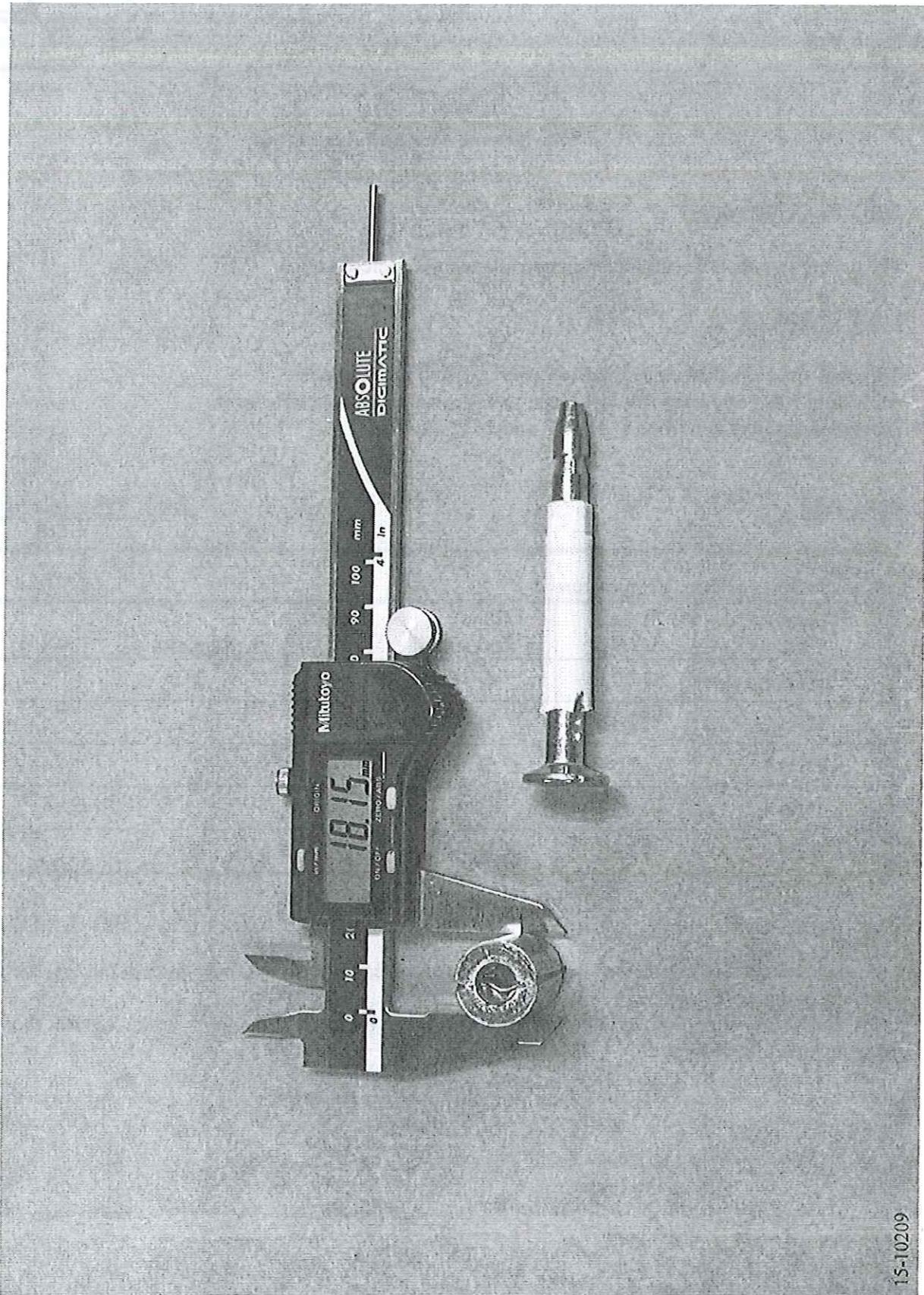
Date: 24 April 2015

Bolt Seal Diameter Qualification Test at Room Temperature			
Specimen No.	Measurement (mm)		Remarks
	Pin Head	Lock Body	
DTB 26	18.22	18.15	Meets Requirements

Tech: JB

#### Test Requirements

The minimum diameter (or minimum widest cross-dimension) for the metal components of a bolt seal shall be 18mm.



15-10209

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TYPICAL PHOTO OF THE BOLT SEAL DIAMETER QUALIFICATION TEST SETUP  
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## 5.2 - 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: 19.9°C and 26.2%RH

### TEST DATA

Date: 25 April 2015

Tensile Test at Room Temperature			
Specimen No.	Load (kN)	Class Rating	Remarks
DTB 1	17.23	H	*
DTB 2	17.31	H	*
DTB 3	17.55	H	*
DTB 4	17.23	H	**
DTB 5	17.67	H	*

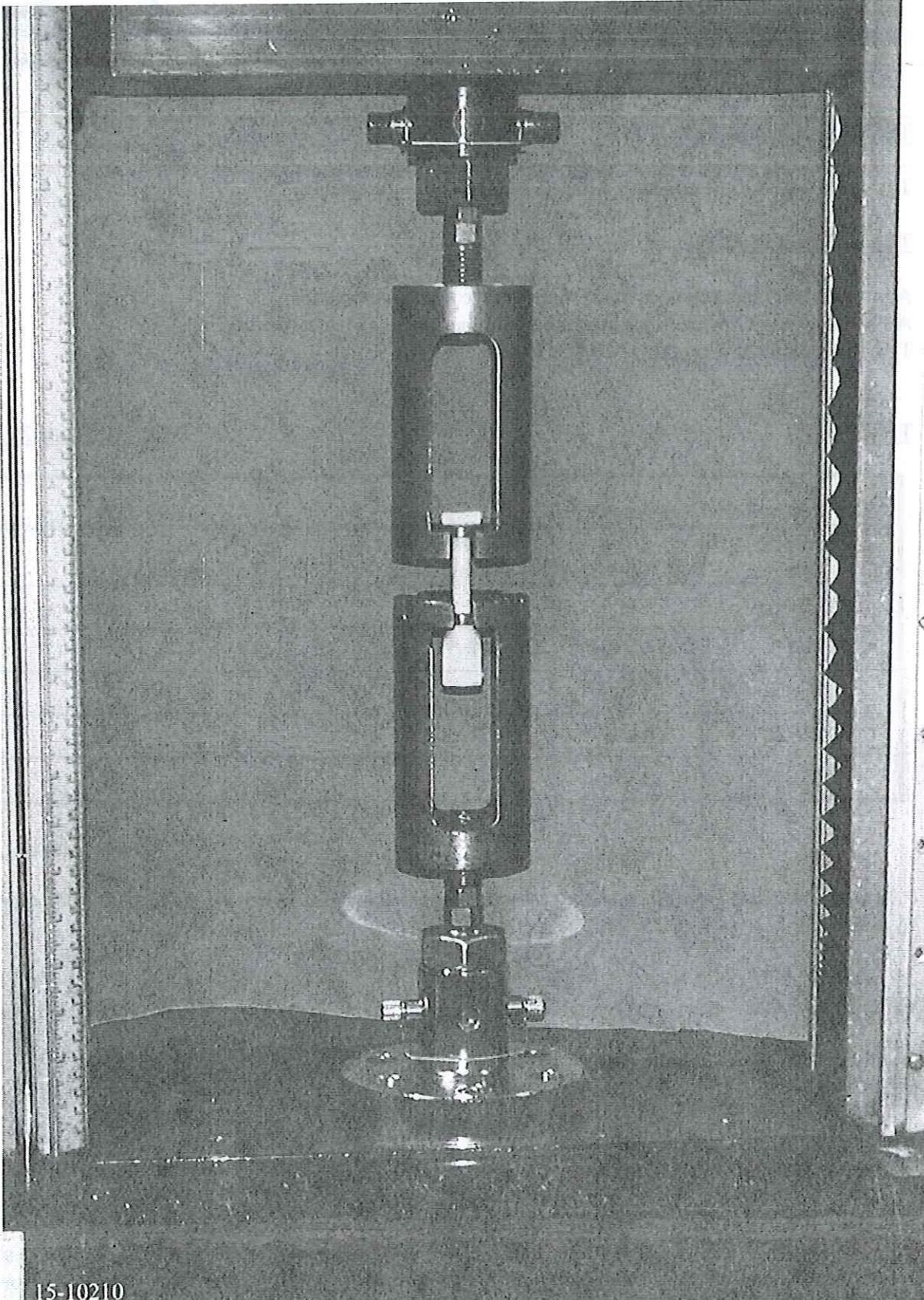
Tech: JB

\* A post-test visual inspection of the test item revealed that the bolt pulled out of the lock mechanism due to testing.

\*\* A post-test visual inspection of the test item revealed that the bolt broke out of the lock mechanism 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



15-10210

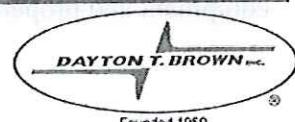
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TYPICAL PHOTO OF THE TENSILE TEST SETUP

25 APRIL 2015

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### 5.3 - 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: 19.9°C and 26.3%RH

#### TEST DATA

Date: 25 April 2015

Shear Test at Room Temperature			
Specimen No.	Load (kN)	Class Rating	Remarks
DTB 6	8.896	H	*
DTB 7	8.896	H	*
DTB 8	8.896	H	*
DTB 9	8.896	H	*
DTB 10	8.896	H	*

Tech: JB

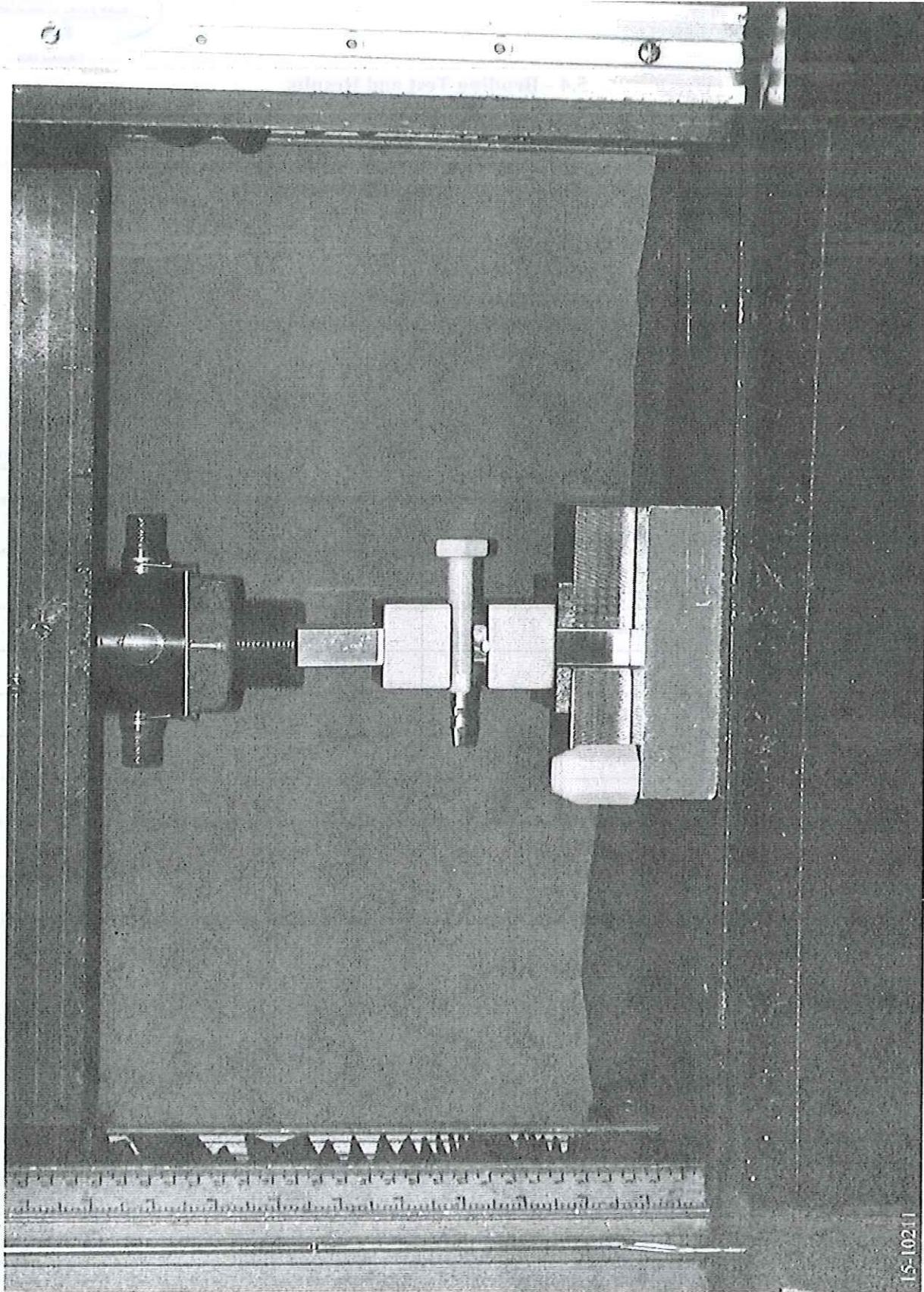
\* A post-test visual inspection of the test items revealed a slight indent on the shaft of the bolts due to testing.

#### 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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## 5.4 - 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: 19.9°C and 26.2%RH

### TEST DATA

Date: 25 April 2015

Bending Test at Room Temperature			
Specimen No.	Load Force (Nm)	Class Rating	Remarks
DTB 11	65.93	H	*
DTB 12	59.66	H	*
DTB 13	69.62	H	*
DTB 14	61.55	H	*
DTB 15	63.44	H	*

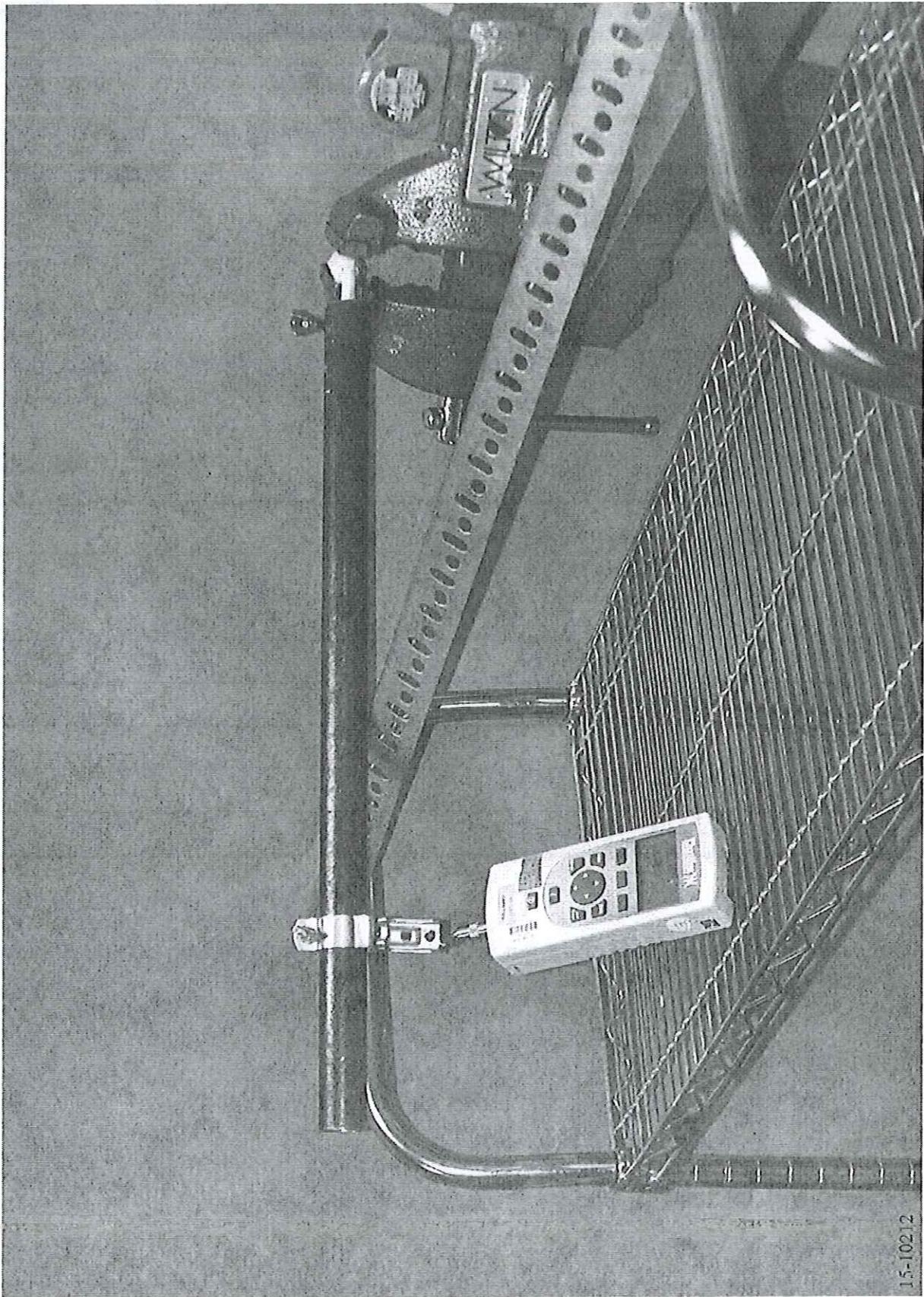
Tech: JB

\* A post-test visual inspection of the test items revealed that the shaft of the seals bent due to testing.

### Classification Key

Rigid Seals  
Rating      Moment to Failure

High Security (H):    50 Nm  
Security (S):        22 Nm  
Indicative (I):      <22 Nm



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TYPICAL PHOTO OF THE BENDING TEST SETUP

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## 5.5 - 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: 17.9°C and 25.6%RH

### TEST DATA

Date: 24 April 2015

Impact Test at Room Temperature (required $18 \pm 3^\circ\text{C}$ )					
Specimen No.	Number of Successful Impacts Per Load (J)			Class Rating	Remarks
	13.56	27.12	40.68		
DTB 16	5	5	5	H	*
DTB 17	5	5	5	H	*
DTB 18	5	5	5	H	*
DTB 19	5	5	5	H	*
DTB 20	5	5	5	H	*

Tech: Jay B

\* A post-test visual inspection of the test item revealed that plastic portions of the seal broke or deformed due to testing. The bolt 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



## 5.5 - Impact Test and Results

Test chamber conditions: -26.6°C and 51.9%RH

TEST DATA – (Continued)

Date: 24 April 2015

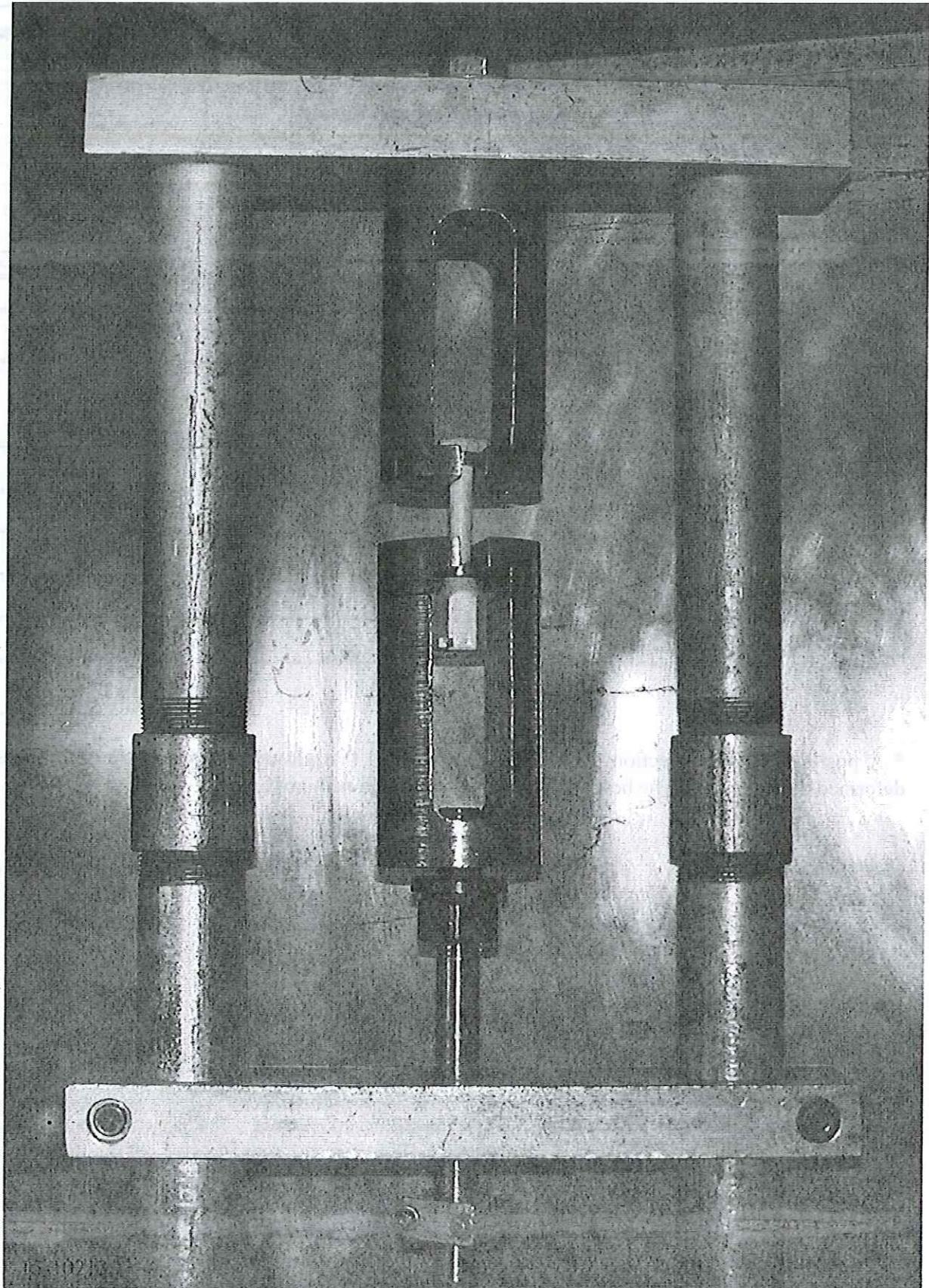
Impact Test at Reduced Temperature (required $-27 \pm 3^\circ\text{C}$ )					
Specimen No.	Number of Successful Impacts Per Load (J)			Class Rating	Remarks
	13.56	27.12	40.68		
DTB 21	5	5	5	H	*
DTB 22	5	5	5	H	*
DTB 23	5	5	5	H	*
DTB 24	5	5	5	H	*
DTB 25	5	5	5	H	*

Tech: Jay B

\* A post-test visual inspection of the test item revealed that plastic portions of the seal broke or deformed due to testing. The bolt 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



JOB NO. 414485-01-000

414485-01-04-R15-0314

TYPICAL PHOTO OF THE IMPACT TEST SETUP

24 APRIL 2015

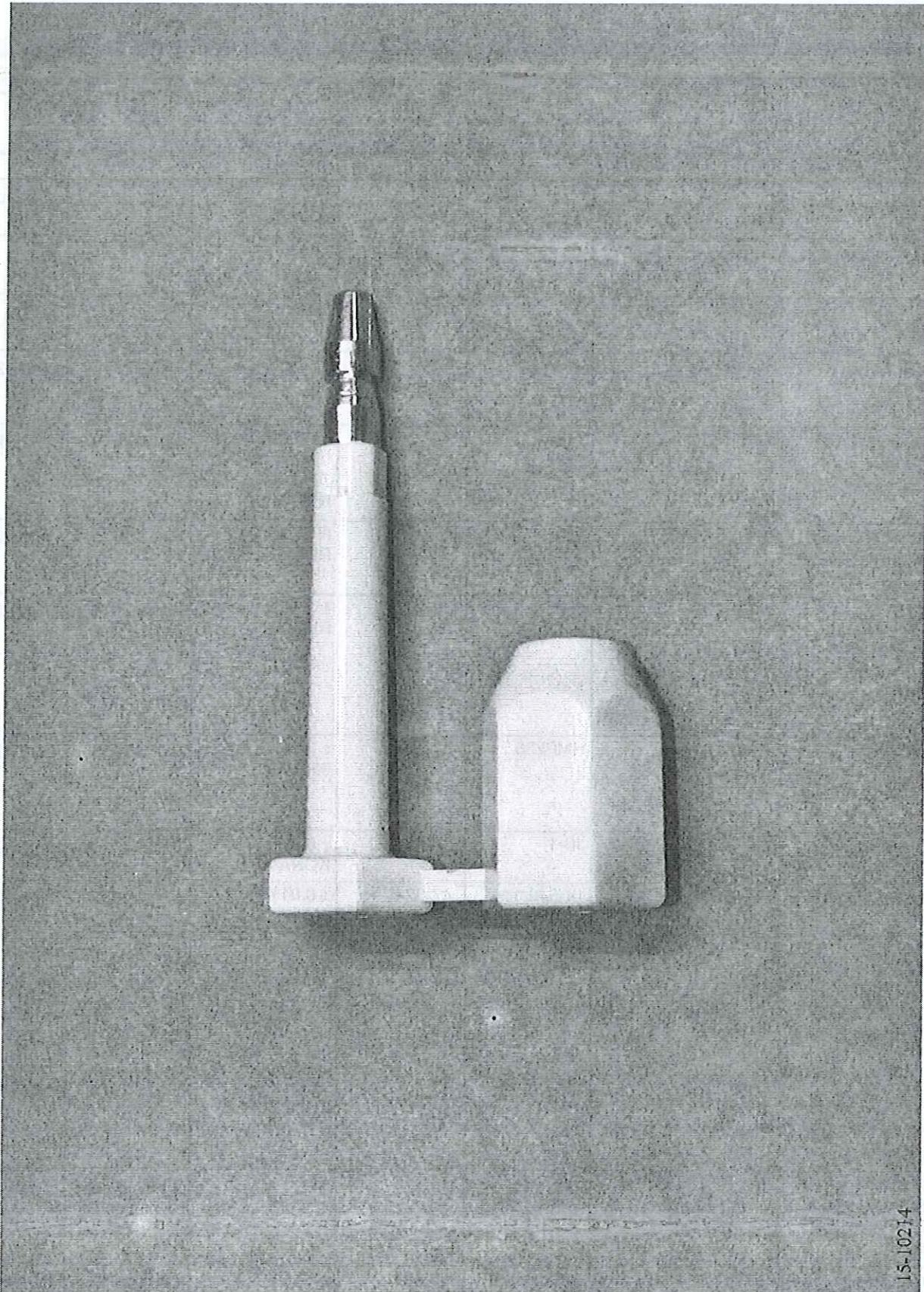
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Test equipment utilized for the program reported herein was within its assigned interval of calibration.  
Details are on file at Dayton T. Brown, Inc. and will be made available upon request.



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°F	09/29/2014	09/27/2015
LOGGER, RH AND TEMPERATURE	HART SCIENTIFIC	1620A	12-39	59 TO 95°F $\pm$ 0.75°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°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	08/14/2014	08/09/2015
TRANSMITTER, HUMIDITY AND TEMPERATURE	VAISALA	HMP235	31-86	$\pm$ 2% 10 TO 95% RH	03/13/2015	06/07/2015
WEIGHT, DEAD BLOW	DAYTON T. BROWN	JB-1	38-55	$\pm$ 0.01 KGRAMS	05/30/2014	05/29/2016
TIMER, DIGITAL	FISHER SCIENTIFIC	14-649-17	47-62	$\pm$ 0.01%	05/12/2014	05/10/2015
IMPACT TESTER, FREIGHT CONTAINER MECHANICAL SEAL	DAYTON T. BROWN	ISO 17712:2013	61-10	N/A	-	N.C.R.
GAUGE, DIGITAL FORCE 50 LBS. FULL SCALE	CHATILLON	DFS-050	61-8	$\pm$ 0.5% OF FULL SCALE	07/22/2014	07/19/2015
Fixture, Shackle Cutting and 2 blades	DAYTON T. BROWN	ISO 17712:2013	68-318	MFR	11/21/2014	11/15/2015
CALIPER, DIGITAL 4"	MITUTOYO	500-195-20	68-466	$\pm$ 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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JOB NO. 414485-01-000

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MODEL NO. RZ BOLT SEAL 01 BOLT SEAL

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