



AEROSPACE STANDARD

AS85052**REV. A**

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Reaffirmed 2015-07

Superseding AS85052

(R) Clamp Assembly, Loop Type, Cushioned,
General Specification for

RATIONALE

AS85052A has been reaffirmed to comply with the SAE five-year review policy.

1. SCOPE

1.1 Application

This SAE Aerospace Standard (AS) defines the requirements for loop type clamps primarily intended for general clamping of tubing for aircraft hydraulic systems.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

AS478	Identification Marking Methods
ARP1527	Color Coding - Elastomers for Tube Clamp Cushions
AS7003	Nadcap Program Requirements
AS7112/3	Nadcap Audit Criteria for Coupling and Formed Sheet Metal Components
AS85052/1	Clamp, Loop, Tube 17-7 PH CRES, 275 °F, Fuel and Petroleum Based Hydraulic Fluid Resistant
AS85052/2	Clamp, Loop, Tube 17-7 PH CRES, 275 °F, Phosphate Ester Fluid Resistant

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AS85052/3	Clamp, Loop, Tube 17-7 PH CRES, 500 °F
AS85052/4	Clamp Support, Loop Clamp
AMS3224	Nitrile-Butadiene Rubber Fuel, Fire, and Ozone Resistant 65-75
AMS3253	Ethylene Propylene Rubber Phosphate Ester Resistant 65-75
AMS3316	Silicone Rubber, Fiberglass Fabric Reinforced
AMS4944	Titanium Alloy Tubing, Seamless, Hydraulic, 3.0Al - 2.5V Cold Worked, Stress Relieved
AMS4945	Titanium Alloy Tubing, Seamless, Hydraulic 3Al - 2.5V, Controlled Contractile Strain Ratio, Cold Worked, Stress Relieved
AMS4946	Titanium Alloy Tubing, Seamless, Hydraulic 3Al - 2.5V, Texture Controlled, Cold Worked, Stress Relieved
AMS2700	Passivation of Corrosion Resistant Steels

2.1.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM A 582/A582M	Standard Specification for Free-Machining Stainless Steel Bars
ASTM D1149	Rubber Deterioration - Surface Ozone Cracking in a Chamber
ASTM D 3182	Rubber Material Equipment and Procedure for Mixing Standard Compounds and Preparing Standard Vulcanized Sheets
ASTM D 412	Vulcanized Rubber and Thermoplastic Elastomers - Tension
ASTM D 3951	Standard Practice for Commercial Packaging
ASTM E 18	Standard Test Method for Rockwell Hardness of Metallic Materials
ASTM G154	Standard Practice for Operating Florescent Light Apparatus for UV Exposure of Nonmetallic Materials

2.1.3 PRI Publications

Available from Performance Review Institute, 161 Thorn Hill Road, Warrendale, PA 15086-7527, Tel: 724-772-1616, www.pri-network.org.

PD2001	Qualified Product Management Council Procedures for Qualified Products Group
PD2101	Aerospace Quality Assurance, Product Standard, Qualification Procedures, Fluid Systems

2.1.4 ASME Publications

Available from American Society of Mechanical Engineers, 22 Law Drive, P.O. Box 2900, Fairfield, NJ 07007-2900, Tel: 973-882-1170, www.asme.org.

ASME Y14.5M Dimensioning and Tolerancing

2.1.5 Department of Defense Specifications

Available from the Document Automation and Production Service (DAPS), Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: 215-697-6257, <http://assist.daps.dla.mil/quicksearch/>.

MIL-STD-1916 DOD Preferred Methods for Acceptance of Product

MIL-PRF-83282 Hydraulic Fluid Fire Resistant, Synthetic Hydrocarbon Base, Metric NATO Code Number H-537

2.1.6 ASQ Publications

Available from American Society for Quality, 600 North Plankinton Avenue, Milwaukee, WI 53203, Tel: 800-248-1946 (United States or Canada) or +1-414-272-8575 (International), www.asq.org.

ASQ Z1.4 Sampling Procedures and Tables for Inspection by Attributes

3. TECHNICAL REQUIREMENTS

3.1 Standard Sheets

The individual item requirements shall be as specified herein and in accordance with the applicable standard sheets. In the event of any conflict between the requirements of this standard and the standard sheet, the requirements of the standard sheet shall govern.

3.2 Qualification

Clamps supplied in accordance with this document shall be representative of products which have been subjected to and which have successfully passed the qualification tests specified in this standard.

3.2.1 Manufacturer Qualification

A manufacturer producing a product in conformance to this procurement specification shall be accredited in accordance with the requirements of PD2101, AS7003 and AC7112/3, and shall be listed in a Performance Review Institute (PRI) Qualified Manufacturers List (QML).

3.2.2 Product Qualification

All products shall conform to the requirements of this procurement specification and shall be approved in accordance with the requirements of PD2001 and PD2101 for listing in a PRI Qualified Products List (QPL) PRI-QPL-AS85052. See www.eauditnet.com for current QPL on-line.

3.3 Materials

Clamp band material and cushioning material shall be as specified on the applicable standard sheet.

3.4 Design and Construction

The design and construction of the clamp shall be as specified herein and in accordance with the applicable standard sheets.

3.4.1 Dimensions and Tolerances

Dimensions and tolerances shall be as specified on the applicable standard sheet.

3.5 Performance

Clamp cushions, clamp bands and clamp assemblies shall conform to the requirements of this specification and the applicable standard sheet when subjected to the applicable tests specified in this specification and the applicable standard sheets.

3.5.1 Clamp Cushion Performance

3.5.1.1 Physical Properties

When tested in accordance with 4.5.3.1, cushion material must meet the physical property requirements specified in the applicable material specification.

3.5.1.2 Compression Set

The average compression set value of three cushion material specimens shall not exceed the value specified in the applicable cushion material specification (see 4.5.3.2).

3.5.1.3 Flammability

The cushion material shall be tested for flammability in accordance with the applicable cushion material specification and as specified herein (see 4.5.3.3).

3.5.1.4 Titanium Compatibility

When tested in accordance with 4.5.3.4, there shall be no evidence of cracking or pitting of the titanium tubing when observed with a 5 to 10 power magnifying glass.

3.5.1.5 Color Coding

The cushion material shall be color coded in accordance with ARP1527 as specified on the applicable cushion material specification.

3.5.2 Clamp Band Performance

3.5.2.1 Clamp Band Hardness

When tested in accordance with 4.4.4, clamp band hardness shall be 51-59 hardness reading (HR) Rockwell Superficial Scale, 30N.

3.5.3 Clamp Assembly Performance

3.5.3.1 Diametral Retention

Each clamp sample shall be tested in accordance with diametral retention test (see 4.5.4.1) both before and after being subjected to the vibration test (see 4.5.4.2). When tested in accordance with 4.5.4.1, each clamp shall withstand an axial mandrel force as specified below:

Clamp Band Thickness (Inch)	Axial Force (lb)
0.020	15 - 45
0.032	25 - 55
0.040	35 - 65

3.5.3.2 Vibration and Transmissibility

When tested in accordance with 4.5.4.2, no clamp shall exhibit any evidence of cushion separation or other deterioration. There shall be no cracking or separation of metal components. The transmissibility ratio shall be recorded.

3.5.3.3 Ozone Resistance (AS85052/1)

When tested in accordance with 4.5.4.3, the clamps shall not exhibit any evidence of cracking on the outside circumference of the cushion visible to the unaided eye. Cracks in cushion material pinched between the metal band feet shall not cause the test to be considered a failure.

3.5.3.4 Thermal Shock

When tested in accordance with 4.5.4.4, the clamps shall not exhibit evidence of cracking, tackiness, or degradation of the cushion material.

3.6 Surface Texture

All surfaces shall have a smooth finish and be free from burrs and sharp edges. The inside edges of the clamp band shall be rolled or provided with a radius to eliminate sharp edges.

3.7 Identification of Product

3.7.1 Identification of Clamps

All clamps shall be marked as specified on the applicable standard sheet.

3.7.2 Part Numbering and Drawing Numbering

The manufacturer's basic part number and drawing number shall be the same.

3.8 Workmanship

Workmanship shall be of a sufficiently high grade to insure that clamps are of uniform quality and free from burrs, slivers, sharp edges, or other defects which would affect their service, and shall be uniform in appearance without any mold flash.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the procuring activity. The procuring activity reserves the right to perform any of the inspections set forth in the specification, where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Classification of Inspections

The examination and testing of clamps shall be classified as:

- a. Qualification Inspection (see 4.3)
- b. Conformance Inspection (see 4.4)

4.3 Qualification Inspection

4.3.1 Qualification Test Samples

Test samples for qualification tests of AS85052/1, AS85052/2, and AS85052/3 shall consist of 12 clamps of size -02, -04, -06, -08, -10, -12, -16, -20 and -24, plus 20 additional size of -16 clamps for each standard sheet. For the AS85052/1 clamp only, submit 20 additional size -02 clamps. In addition, 20 clamp cushion material slabs shall be provided conforming to ASTM D3182 for each type of cushion material to be tested. Each slab shall identify with the standard sheet number and the direction of weave for fabric reinforced material. Both clamps and material test slabs shall be supplied for each standard sheet to be qualified in the quantities as indicated herein.

4.3.2 Inspection Routine

Sample units shall be subjected to the qualification inspection specified in Table 1 in the order specified, conducted on applicable specimens.

TABLE 1 - QUALIFICATION TESTS

TABLE 1A - CLAMP CUSHION

Examination or Test	Requirement	Test	Number of Samples
Physical Properties	3.5.1.1	4.5.3.1	(See 4.3.1)
Compression Set	3.5.1.2	4.5.3.2	(See 4.3.1)
Flammability	3.5.1.3	4.5.3.3	(See 4.3.1)
Titanium Compatibility	3.5.1.4	4.5.3.4	(See 4.3.1)

TABLE 1B - CLAMP ASSEMBLY

Examination or Test	Requirement	Test	Number of Samples
Examination of Product	3.4	4.5.2	58
Diametral Retention	3.5.3.1	4.5.4.1	48
Vibration and Transmissibility	3.5.3.2	4.5.4.2	48
Ozone Resistance ¹	3.5.3.3	4.5.4.3	15 (See 4.3.1)
Thermal Shock	3.5.3.4	4.5.4.4	5 (See 4.3.1)

¹ When specified on applicable material specification sheet.

4.3.3 Retention of Qualification

To retain qualification the manufacturer shall meet the requirements specified in 3.2.1 and 3.2.2.

4.3.4 Identification of Test Samples

Sample for each size code shall be separately packaged and forwarded to the test facility specified by the qualifying activity. Samples shall be plainly identified by securely attached durable tags marked with the following information:

- a. Sample for Qualification Test
- b. Specification AS85052 Clamp, Loop, Cushion
- c. Standard Sheet Part Number
- d. Manufacturer's Part Number
- e. Name of Manufacturer/Manufacturer's CAGE CODE
- f. Submitted (Date) Under Authorization (Reference Letter Authorizing the Test)

4.3.5 Test Report

The supplier shall furnish the agency responsible for qualification with a certified test report showing quantitative results for tests required by this specification. The report shall designate the standard sheet part number of the clamps submitted. The report shall also include the manufacturer's drawing specifying the dimensions of the clamp in the open and in the closed position, and the manufacturer of the cushion material.

4.4 Conformance Inspection

Conformance inspection shall consist of the tests and inspections specified in Table 2.

TABLE 2 - CONFORMANCE INSPECTION

Examination or Test	Requirement	Test	Inspection Level	AQL
Examination of Product	3.4	4.5.2	I	1.0%
Clamp Band Hardness	3.5.2.1	4.4.4	S-1	1.0%
Cushion Tensile	3.5.1.1	4.5.3.1	S-1	1.0%
Cushion Elongation	3.5.1.1	4.5.3.1	S-1	1.0%
Ozone Resistance ¹	3.5.3.3	4.5.4.3	S-1	1.0%

¹ This test may be waived by procuring activity (see 6.2d).

4.4.1 Inspection Lot

An inspection lot shall consist of clamps for a particular size, and material produced under essentially the same manufacturing conditions and presented for inspection at the same time.

4.4.2 Sampling for Nondestructive Tests

A random sample shall be selected from each inspection lot in accordance with ASQ Z1.4, Inspection Level I with Acceptance Quality Level AQL of 1.0%, and acceptance number zero (see Table 2). A preventative based quality system may be used in lieu of sampling inspection in accordance with MIL-STD-1916.

4.4.3 Sampling for Destructive Tests

Sampling shall be performed in accordance with special inspection levels of ASQ Z1.4, Single Sampling Plan, Inspection Level S-1 with Acceptance Quality Level AQL of 1.0% and acceptance number zero (see Table 2). A preventative based quality system may be used in lieu of sampling inspection in accordance with MIL-STD-1916. Cushion material test specimens shall be cut from clamp cushions and shall be of sufficient size to be tested in accordance with the applicable test methods of the applicable material specification sheet. Tensile and elongation cushion material test specimens may be cut from larger size clamp cushions of the same inspection lot, and shall be provided by the manufacturer.

4.4.4 Clamp Band Hardness Test

Samples from each heat treated lot of clamp bands shall be tested in accordance with the Rockwell Superficial Hardness of ASTM E18. The clamp bands shall meet the requirements specified herein (see 3.5.2.1).

4.5 Test Methods

4.5.1 Test Conditions

4.5.1.1 Environment

Unless otherwise specified, all testing shall be performed at room temperature (60 to 90 °F).

4.5.1.2 Tolerances

Unless otherwise specified, test temperature tolerance shall be ± 5 °F and test time tolerance shall be $\pm 1\%$ of the total test time.

4.5.1.3 Test Mandrel

Unless otherwise specified, all test mandrels shall be tool steel drill rod in accordance with ASTM A 582. Unless otherwise specified, all dimensions shall be as specified in Table 4 with surface texture of 32 micro inches maximum. Spacing A and B shall be as shown in Figure 2.

4.5.2 Examination of Product

Clamps shall be examined to determine compliance with the requirements of this standard and applicable standard sheets with respect to material, workmanship, configuration, marking and dimensions as specified in 3.4. Any variation beyond the dimensions, plus allowable tolerances, shall be classified as major or minor as specified in Table 3.

TABLE 3 - CLASSIFICATION OF DEFECTS

Test	ASQ-Z1.4, Inspection Level I	
	Major	Minor
Examination of Product (see 4.5.2) ¹		
A. Dimensions (see applicable standard sheet)		
1. Clamp cushion		
a. Material thickness	X	
b. Inside width	X	
c. Color (see applicable specification sheet)	X	
2. Clamp band		
a. Material thickness	X	
b. Width	X	
c. Bolt hole diameter		X
d. Edge de-burring		X
3. Clamp band		
a. Loop diameter D (see 4.5.4.1)		X
b. Centerline of loop to centerline of bolt hole E		X
B. Workmanship and marking		X

¹ AQL for major and minor shall be as specified in the contract (see 6.2) or by the qualifying activity.

TABLE 4 - TEST MANDREL DIMENSIONS AND CLAMP SPACING

Clamp Size	Mandrel		Clamp Spacing (See Figure 2)	
	Diameter $\pm .001$	Length $\pm .015$	A $\pm .06$	B $\pm .06$
-02	.125	6.000		
-04	.250	17.500	6.00	2.75
-06	.375	21.000	8.00	2.50
-08	.500	23.000	9.00	2.50
-10	.625	25.000	10.00	2.50
-12	.750	29.000	12.00	2.50
-16	1.000	29.000	12.00	2.50
-20	1.250	22.500	2.75	8.50
-24	1.500	22.500	2.75	8.50

4.5.2.1 Examination of Product (Qualification Inspection)

For quality conformance testing, examination of product shall consist of examining factors outlined in Table 2. AQL for major and minor shall be as specified in the contract (see 6.2) or by the qualifying activity.

4.5.3 Clamp Cushion Tests

4.5.3.1 Physical Properties Test

Tests shall be conducted in accordance with the test methods specified in the applicable material specification. Cushion material samples shall meet the requirements specified in 3.5.1.1.

4.5.3.2 Compression Set Test

Compression set test shall be conducted in accordance with the test method specified in applicable material specification. Cushion material samples shall meet the requirements specified in 3.5.1.2.

4.5.3.3 Flammability Test

The flammability tests shall be performed as specified below. The flame source shall be a Bunsen burner or similar burner having a nominal tube internal diameter of .375 inch. The burner shall be adjusted to provide a 1.50 inch high flame of blue intensity. Verify flame temperature to be a minimum of 1550 °F, at the center of the flame, with the use of a thermocouple.

4.5.3.3.1 Preconditioning

All specimens shall be preconditioned at 70 °F $\pm$ 5 °F and 50% $\pm$ 5% relative humidity for a period of 24 hours prior to testing. Clamps used for vertical burn test shall be uncurled until straight before being placed in the preconditioning chamber.

The cushion shall not be removed from the clamp band.

4.5.3.3.2 Vertical Burn Test

Three of size -16 clamps shall be used for vertical burn test (see 4.5.3.3.1). Remove the specimens one at a time from the preconditioning chamber immediately before performing test. Slide the cushion to one end of the clamp band. Position the specimen in the vertical position with the centerline of the cushion material .75 inch above the top edge of the burner tube. Apply flame for 12 seconds and then remove. Testing shall be performed in a draft free environment. The average burn time of the three samples after removal of flame shall not exceed 15 seconds. The average burn length shall be less than the length of one of the specimens (cushion). Drippings from the burning specimens shall not continue to flame for more than 5 seconds after falling (see Figure 3).

4.5.3.3.3 Horizontal Burn Test

Three specimens fabricated of any size in accordance with ASTM D 3182 shall be used for the horizontal burn test. The specimens shall be removed one at a time from the preconditioning chamber and positioned so that the centerline of the edge being burned shall be .75 inch above the top edge of the burner tube. The flame shall be applied for 15 seconds and then removed. Permit a minimum 1.50 inches to burn to calculate the burn rate. The burn rate shall not exceed 2.50 inches per minute. Record burn rate (see Figure 3).

4.5.3.4 Titanium Compatibility Test

Mount five -16 size clamps on a piece of titanium alloy tubing conforming to AMS4944, AMS4945, or AMS4946 with no spacer between the feet. The tubing with clamps shall be filled with MIL-PRF-83282 fluid and exposed to the clamp maximum rated service temperature as specified in the applicable standard sheet for 12 days. Pressure in the tube shall be maintained at 3000 psi during the 12 day exposure. The test apparatus shall be removed and placed in an atmosphere of 158 °F and 95% relative humidity for 20 days. Performance requirements shall be as specified in 3.5.1.4.

4.5.4 Clamp Assembly Tests

4.5.4.1 Diametral Retention Test

Six clamps of each size -04, -06, -08, -10, -12, -16, -20 and -24 shall be subjected to this test, unless otherwise specified, both before and after the vibration test specified in 4.5.4.2. The test clamp shall be installed on a clean, dry mandrel conforming to 4.5.1.2 (a shorter length may be used). Mount the clamp with a .190-32 UNF-3A bolt, free running nut, and a .0625 inch $\pm$.0005 inch thick spacer between the clamp feet. Tighten the bolt to a 30 lb-in torque. The mandrel shall be slowly forced to slide longitudinally through the clamp as shown in Figure 1. The cushion shall not roll or slip off the band. The force to move the mandrel one inch shall be recorded. The clamps shall meet the requirements specified in 3.5.3.1.

4.5.4.2 Vibration and Transmissibility Test

Three clamps of each size of -04, -06, -08, -10, -12, -16, -20 and -24 shall be tested. Mount the clamps on a mandrel conforming to 4.5.1.3 with spacing and dimensions as specified in Table 4, and as shown in Figure 2. The assembly shall be installed on a vibration fixture and vibration Table as shown in Figure 2. Clamps shall be mounted flat on the vibration fixture with .190-32 UNF-3A bolts (160 ksi or higher strength). A flat washer (NAS1149C0363R or equivalent) shall be used beneath the head of the mounting bolt with smooth edge against the clamp foot. An accelerometer measuring input shall be mounted on the vibration fixture adjacent to but not touching the center clamp (see Figure 2). A second accelerometer measuring output shall be mounted on the test mandrel adjacent to but not touching the center clamp (see Figure 2). The clamp shall be subjected to a simple harmonic motion having a vibratory acceleration of 2G thru a frequency range of 50 to 500 to 50 Hz. The sweep rate shall be logarithmic, requiring 5 minutes/cycle. One frequency cycle shall consist of 50 to 500 to 50 Hz. A resonance search shall be made and each resonance recorded (frequency and acceleration peak).

4.5.4.2.1 Transmissibility

Transmissibility ratio ($TR = G \text{ output}/G \text{ input}$) shall be calculated for each resonance peak and recorded. The clamps shall then be dwelled at the most severe resonance peak for 30 minutes at a constant sinusoidal vibratory acceleration of 10G. All clamps shall meet the requirements specified herein (see 3.5.3.2). The vibration test shall be repeated with three new clamps of the same size as specified. Upon completion of vibration test, each clamp shall be subjected to the retention test as specified in 4.5.4.1.

4.5.4.3 Ozone Resistance Test for Qualification

When specified on applicable material specification sheet, fifteen test clamps of size -02 shall be separated into 3 sets of five. Each set of five shall be assembled with appropriate fasteners around $.125 \pm .001$ diameter steel mandrels. The first set shall be exposed to ultraviolet light as specified in 4.5.4.3.1. The second set shall be conditioned for 70 hours at 212 °F. The third set shall not be subject to any preconditioning prior to the ozone test. The three mandrels with the five clamps each shall be immersed in an ozone environment of 600 parts per hundred million (PPHM) concentration for 6 hours at 125 °F. Clamps shall meet the requirements specified in 3.5.3.3.

4.5.4.3.1 Ultraviolet Exposure

The sample shall be exposed to ultraviolet (UV) light in accordance with ASTM G 154 without water exposure for 72 hours at 125 °F. The ultraviolet light source shall be UVA-340 lamps as specified in ASTM G 154. See 6.3 for recommended UV exposure equipment.

4.5.4.3.2 Ozone Resistance Test (Conformance Inspection Only)

The ozone resistance test conducted for qualification inspection (see 4.5.4.3) shall be conducted for the conformance test. When cushions larger than size -02 are being tested, the larger cushions shall be removed from the clamp band, cut to length and assembled and tested on size -02 band for mounting on the mandrel.

4.5.4.4 Thermal Shock Test

Five test clamps of size -16 shall be mounted on a test mandrel conforming to 4.5.1.2. The clamps installed shall be exposed to 5 cycles of 30 minutes exposure at -65 °F, 15 minutes rest at room temperature, followed by 30 minutes exposure at the maximum rated service temperature (see Applicable Cushion Material Specification Sheet).

5. PREPARATION FOR DELIVERY

5.1 Preservation and Packaging

Preservation and packaging shall be in accordance with ASTM D 3951 unless otherwise specified by the customer (see 6.2).

5.2 Packing

Packing shall be in accordance with the customer requirements or as specified in the contract.

5.3 Marking

Interior and exterior containers shall be marked in accordance with customer requirements.

6. NOTES

6.1 Intended Use

The clamps are intended for use in general clamping of hydraulic tubing, electrical systems and rigid tubing. The clamps may be used within the cushion temperature classifications established (see applicable specification sheet).

6.2 Ordering Data

Procurement documents should specify:

- a. Title, number, and date of this document
- b. Standard sheet part number (see AS85052/1 through AS85052/4)
- c. Applicable level of preservation, packaging, and marking (see 5.1 and 5.2)
- d. On orders less than 5000 total parts of a single size, waiver of quality conformance ozone test (see 4.5.4.2.1)

6.3 UV Exposure Equipment

The recommended UV exposure equipment is Q-PANEL LAB PRODUCTS, Cage Code 1PX28, Model QUV/Basic, or similar.

6.4 Recommended Mounting Methods

Mounting methods affect the vibration capabilities of these clamps. Typical mounting methods and vibration rating are shown on Figure 4, 5, and 6. The method shown on Figure 5 is recommended whenever possible. The method shown on Figure 6 should be used in very high vibration area or as necessary.

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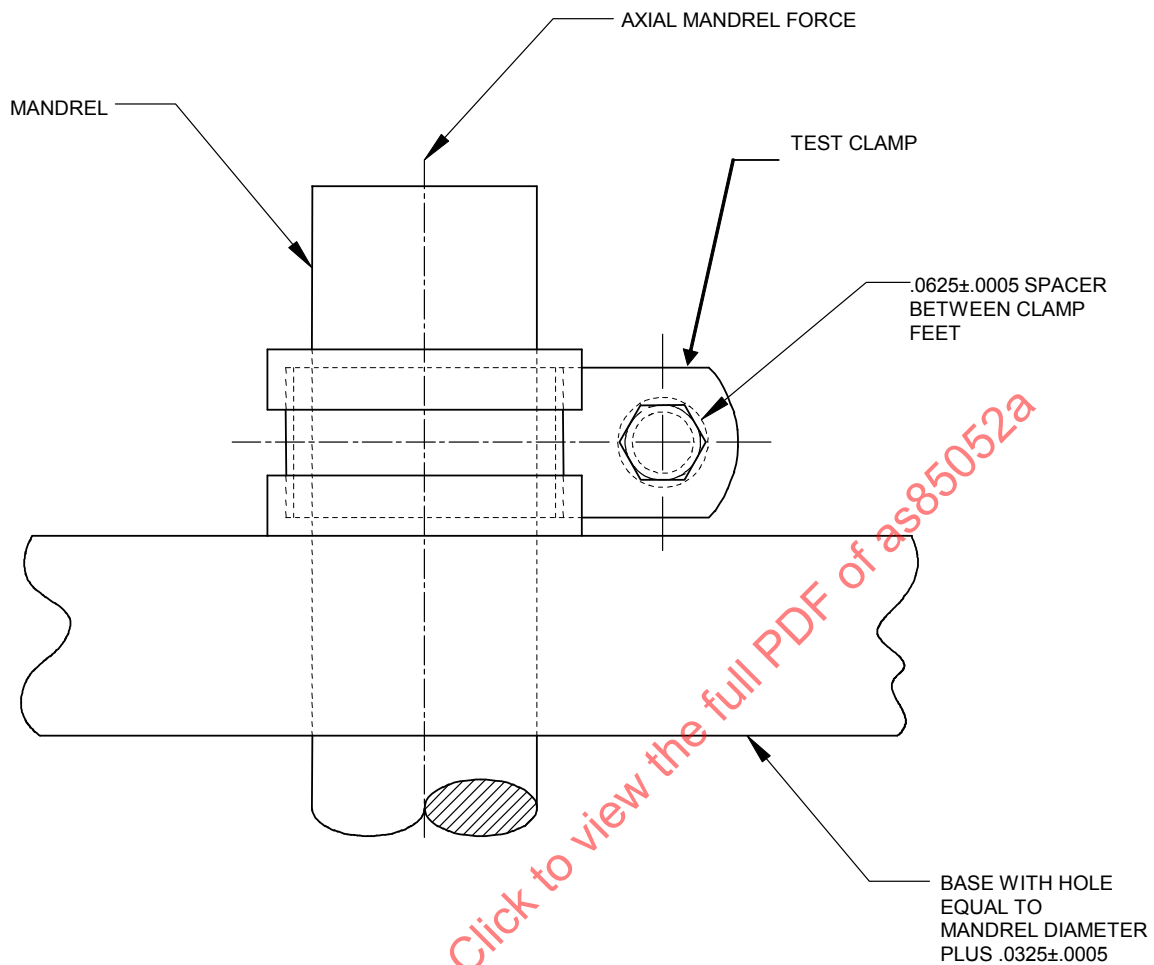


FIGURE 1 - CLAMP SET-UP FOR DIAMETRAL RETENTION TEST