

MIL-P-7034D  
 16 July 1982  
 SUPERSEDING  
 MIL-P-7034C  
 21 June 1976

## MILITARY SPECIFICATION

### PULLEYS, GROOVE, ANTIFRICTION-BEARING GREASE-LUBRICATED, AIRCRAFT

This specification is approved for use by all Departments  
 and Agencies or the Department of Defense.

#### 1. SCOPE

1.1 Scope. This specification covers requirements for single groove pulleys  
 for antifriction-bearings.

1.2 Classification. Pulleys shall be of the following types as specified (see  
 6.2):

- Type I - Nonmetallic sheave
- Type II - Metallic sheave

#### 2. APPLICABLE DOCUMENTS

##### 2.1 Government documents

- \* 2.1.1 Specifications and standards. Unless otherwise specified, the following  
 specifications and standards of the issue listed in that issue of the  
 Department of Defense Index of Specifications and Standards (DODISS), and  
 supplemental thereto, in effect on date of invitation for bids or request for  
 proposal, form a part of this specification to the extent specified herein.

#### SPECIFICATIONS

##### FEDERAL

QQ-A-225/6	Aluminum Alloy Bar, Rod, and Wire, Rolled, Drawn, or Cold Finished, 2024
QQ-P-416	Plating; Cadmium (Electrodeposited
TT-P-1757	Primer Coating, Zinc Chromate, Low Moisture, Sensitivity
PPP-B-566	Boxes, Folding, Paperboard
PPP-B-636	Box, Shipping, Fiberboard
PPP-B-665	Boxes, Paperboard, Metal Edged and Components
PPP-B-676	Boxes, Set-Up

Beneficial comments (recommendations, additions, deletions) and any  
 pertinent data which may be of use in improving this document should  
 be addressed to: ASD/ENESS, Wright-Patterson AFB, OH 45433 by using  
 the self-addressed Standardization Document Improvement Proposal  
 (DD Form 1426) appearing at the end of this document or by letter.

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## MILITARY

MIL-P-116	Preservation, Packaging, Methods of
MIL-B-7949	Bearing, Ball, Airframe, Antifriction
MIL-A-8625	Anodic Coatings, for Aluminum and Aluminum Alloys
MIL-G-23827	Grease, Aircraft and Instrument, Gear and Actuator Screw
MIL-I-45208	Inspection System Requirements
MIL-W-83420	Wire Rope, Flexible, for Aircraft Control

## STANDARDS

### MILITARY

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	Marking for Shipment and Storage
MIL-STD-130	Identification Marking for U.S. Military Property
MIL-STD-810	Environmental Test Methods
MIL-STD-1186	Cushioning, Anchoring, Bracing, Blocking, and Waterproofing, with Appropriate Test Methods
MS20219	Pulley, Groove, Secondary Control, Aircraft
MS20220	Pulley, Groove, Flight Control, Aircraft
MS20221	Pulley, Groove, Heavy Duty, Control, Aircraft
MS21443	Bearing, Ball, Airframe, Antifriction, Pulley Type
MS24566	Pulley, Control, Anti-Friction Bearing

(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific acquisition functions should be obtained from the procuring activity or as directed by the contracting officer.)

- \* 2.2 Other publications. The following documents form a part of this specification to the extent specified herein. The issues of the documents which are indicated as DOD adopted shall be the issues listed in the current DODISS and the supplement thereto, if applicable.

2.3 Order of Precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

### American National Standards Institute

ANSI B46.1 Surface Texture, Surface Roughness, Waviness and Lay

(Application for copies should be addressed to the American Standards Institute, 1430 Broadway, New York, New York 10018.)

### Society of Automotive Engineers

AMS 4037 Aluminum Alloy Sheet and Plate

(Application for copies should be addressed to the Society of Automotive Engineers, Incorporated, Two Pennsylvania Plaza, New York, New York 10001.)

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Uniform Classification Committee

## Uniform Freight Classification Rules

(Application for copies should be addressed to the Uniform Classification Committee, 202 Chicago Union Station, Chicago, Illinois 60606.)

■ 3. REQUIREMENTS

3.1 Qualification. The pulleys furnished under this specification shall be products which are qualified for listing on the applicable qualified products list at the time set for opening of bids. Any change in product design, description, materials, or processing procedures (see 4.3 and 6.3) shall require requalification of the product to an extent determined by the qualifying activity.

3.2 Materials, parts, and processes

3.2.1 Sheave material. Only sheave material approved by the qualifying agency shall be used.

3.2.1.1 Nonmetallic sheave, type I. Nonmetallic pulley sheaves shall be manufactured from fabric, or equivalent reinforcing material impregnated with a phenolic condensation product, the whole being subjected to a suitable combination of temperature and pressure for producing a finished product with uniform strength.

3.2.1.2 Metallic sheave, type II. Metallic pulley sheaves shall be manufactured from an aluminum alloy conforming to either QQ-A-225/6, temper T351 or AMS 4037, temper T351.

3.2.2 Protective treatment

3.2.2.1 Metallic sheaves, type II. Pulley sheaves shall be anodized in accordance with MIL-A-8625, type II, before installing the bearing.

3.2.2.2 Aluminum bore surface, types I and II. Aluminum bore surfaces of types I and II sheaves shall be coated with zinc-chromate primer in accordance with TT-P-1757 before installing the bearing. The bearing shall be installed while the primer is still wet.

3.2.2.3 Bearings. Protective treatment for the bearing shall conform to the requirements of MIL-B-7949 and MS21443, Factory-new ball bearings shall be used.

■ 3.3 Design and construction

3.3.1 Lubrication. The bearings shall be packed with grease conforming to MIL-G-81322 or MIL-G-23827, as specified in MIL-B-7949, so that at least 80 percent of the bearings voids will be filled. Pulley bearings shall not be lubricated more than 24 months prior to the day of delivery of the pulley under contract or order.

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3.3.2 Bearing closures. The bearing shall contain seals as specified in MIL-B-7949 and MS21443,

3.3.3 Non-afterglow type I. When tested in accordance with 4.5.11, afterglow after ignition and flame extinction. The non-afterglow shall not bleed from the sheave material.

\* 3.3.4 Temperature. When tested in accordance with 4.5.2, the pulley assembly shall show no cracks, splits, warpage or seal leakage.

3.3.5 Corrosion. When tested in accordance with 4.5.3, the type I sheave material shall not corrode carbon steel coated with tin or zinc.

3.3.6 Fungus. When tested in accordance with 4.5.4, the type I sheave material shall not be adversely affected by fungus growth such as is encountered in tropical climates,

3.3.7 Dimensions, weights, and tolerances. The dimensions, weights, and tolerances shall be as specified on MS20219, MS20220, MS20221 and MS24566.

3.3.8 Surface roughness. The surface roughness of the metallic parts shall not exceed 160 roughness height rating. The surface roughness of the phenolic parts shall not exceed 500 roughness height rating in accordance with ANSI B46.1.

### 3.4 Performance

3.4.1 Eccentricity. When tested as specified in 4.5.5, eccentricity shall not exceed the values specified. The eccentricity of the periphery of the groove and groove flanges with respect to the longitudinal axis of the bearing shall be defined as the difference between the maximum and minimum radii. Eccentricity measurements shall be taken in such a manner that the bearing clearance is not included as eccentricity.

\* 3.4.2 Wobble clearance. When the pulley is tested in accordance with 4.5.7, the clearance between the pulley and a plane which is perpendicular to the bearing axis, and which contacts the end of the bearing inner race, shall be not less than the amount specified.

#### 3.4.3 Strength under static loads

\* 3.4.3.1 Bonding strength. When tested as specified in 4.5.8, the pulleys shall be capable of withstanding the bonding strength proof loads without failure of the bond between the pulley sheave and bearing by loosening, separation, shifting of the bearing, or other evidence of pulley failure.

\* 3.4.3.2 Flange Strength. When tested as specified in 4.5.9, the pulleys shall be capable of withstanding the specified flange strength loads without failure of the flange by checking or shearing.

\* 3.4.3.3 Sheave strength. When tested as specified in 4.5.10, the pulleys shall be capable of withstanding the sheave strength loads specified without buckling, splitting, or other types of failure of the sheave,

\* 3.4.4 Endurance. When tested in accordance with 4.5.6, types I and II pulleys shall be capable of enduring the conditions listed without reducing the groove diameter by the amount greater than the wear factor specified.

### 3.5 Identification of product

- \* 3.5.1 Pulley, type I and II. Each pulley shall be legibly marked for identification in accordance with MIL-STD-130. Type I nonmetallic pulleys shall also be marked with the sheave material lot designation adequate for traceability. Metal stamping is prohibited, The nomenclature shall be:

Manufacturer's name or trademark  
MS Part Number

- \* 3.5.2 Bearing. The bearing manufacturer's name and the type designation of the bearing shall be legibly and permanently marked on each bearing in such manner as to be discernible when installed in the pulley sheave.
- \* 3.6 Workmanship. Types I and II pulleys shall be free from cracks, splits, burrs, machine tool marks, and other defects which would adversely affect their operation and performance. The sides of all pulleys shall have a smooth surface without spokes or holes,

3.7 Data. Unless otherwise specified in the contract or order, no data (other than reports and drawings accompanying qualification samples) are required by this specification or any of the documents referenced in section 2 herein (see 6.2).

## 4. QUALITY ASSURANCE PROVISIONS

- \* 4.1 Responsibility for inspection. Unless otherwise specified In the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the contractor may use his own facilities for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspecting are deemed necessary to assure supplies and services conform to prescribed requirements. Contractor inspection systems shall conform to MIL-I-45208.

4.2 Classification of tests. The inspection and testing of pulleys shall be classified as:

- a. Qualification inspection (see 4.3)
- b. Quality conformance inspection (see 4.4).

### \* 4.3 Qualification inspection

4.3.1 Qualification tests samples. Twenty-five samples of each size of types I and II pulleys offered for qualification shall be submitted to the qualification testing facility. Drawings containing complete dimensions, construction, materials, heat treatment, and date of latest revision shall be furnished for each size and type pulley submitted (see table I).

4.3.2 Tests. The qualification inspection and tests shall consist of all the tests as listed in table II.

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\*TABLE 1. Qualification Inspection sample.

Examination		Number
4.5.1	Examination of product	25 each
4.5.2	Temperature	5 each
4.5.3	Corrosion	5 each
4.5.4	Fungus growth	5 each
4.5.5	Eccentricity	10 each
4.5.6	Endurance	5 each
4.5.7	Wobble clearance and bearing strength	10 each
4.5.8	Bonding strength	5 each
4.5.9	Flange strength	5 each
4.5.10	Sheave strength	5 each
4.5.11	Non-afterglow, type I	3 each

NOTE: The examinations in table I are arranged in the numerical order as they occur in this specification. To minimize the number of test pulleys required, testing shall be sequenced so that the non-destructive tests precede the more destructive tests. A suggested sequence might be: 4.5.1, 4.5.5, 4.5.7, 4.5.6, 4.5.8 through 4.5.10, 4.5.2 through 4.5.4, and 4.5.11.

\*TABLE II. Qualifications tests and quality conformance tests and inspections.

TESTS	REQUIREMENT PARAGRAPH	QUALIFICATION PARAGRAPH	QUALITY CONFORMANCE PARAGRAPH
Examination of product	3.5 - 3.6	4.5.1	4.5.1
Temperature	3.3.4	4.5.2	--
Corrosion	3.3.5	4.5.3	--
Fungus growth	3.3.6	4.5.4	--
Eccentricity	3.4.1	4.5.5	--
Endurance	3.4.4	4.5.6	--
Wobble clearance and bearing strength	3.4.2	4.5.7	--
Bonding strength	3.4.3.1	4.5.8	4.5.8
Flange strength	3.4.3.2	4.5.9	4.5.9
Sheave strength	3.4.3.3	4.5.10	4.5.10
Non-afterglow, type I	3.3.3	4.5.11	4.5.11

4.3.3 Retention of qualification. To retain qualification, the manufacturer shall forward certification at 2-year intervals to the qualifying activity stating that the company still has the capabilities and facilities necessary to produce the item and that the product has not been changed in any way. The qualifying activity shall establish the initial reporting date.

4.4 Quality conformance inspection. Quality conformance inspection for types I and 11 pulleys shall consist of an individual test and a sampling plan.

4.4.1 Individual test. Individual test shall consist of the following:

Examination of product (4.5.1)

4.4.2 Sampling plan

\* 4.4.2.1 Samples. Sample pulleys shall be selected in accordance with MIL-STD-105, inspection level S-3, acceptance number zero, for all tests specified in 4.4.3, except examination of product. Samples shall be selected in accordance with inspection level I, AQL of 6.5 percent defective for examination of product.

4.4.2.2 Lot. The lot definition, formation, and size shall be in accordance with MIL-STD-105.

4.4.3 Sampling tests. Sampling tests shall be performed in accordance with the following paragraphs:

Bonding strength (4.5.8)

Flange strength (4.5.9)

Sheave strength (4.5.10)

Non-afterglow - type I (4.5.11)

## 4.5 Test methods

\* 4.5.1 Examination of product. Each sample pulley shall be carefully examined to determine conformance with this specification and the applicable MS with respect to dimensions, tolerance, weight, finish, identification of product, and workmanship,

\* 4.5.2 Temperature. The pulley assembly shall be subjected to a temperature of  $-53.9^{\circ}\text{C}$  ( $-65^{\circ}\text{F}$ ) for 48 hours and to a temperature of  $121^{\circ}\text{C}$  ( $250^{\circ}\text{F}$ ) for 48 hours. Any pulley assembly showing cracks, splits, warpage, or seal leakage as a result of this test shall be cause for rejection of the pulley.

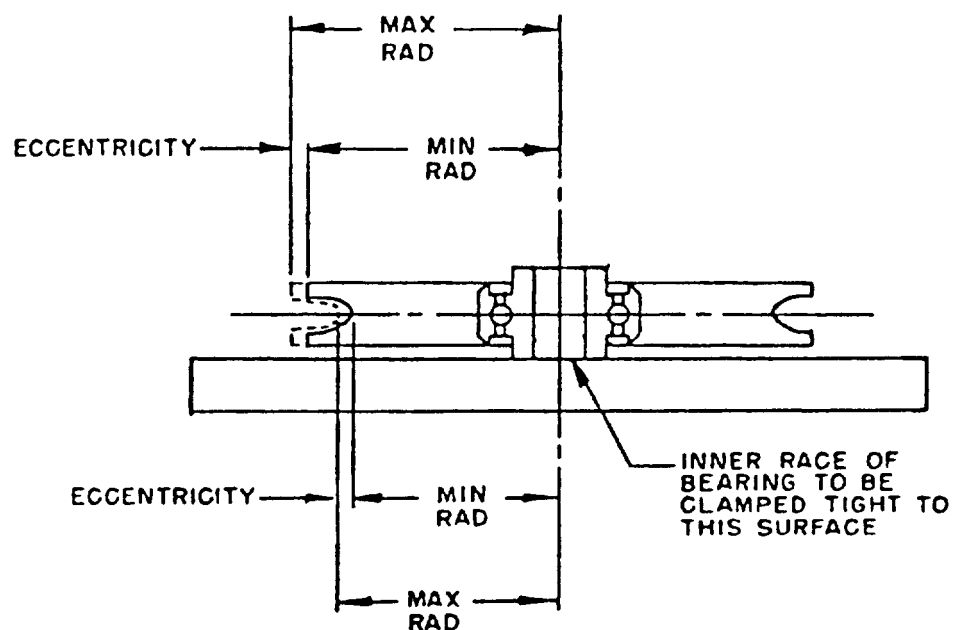
4.5.3 Corrosion. Type I nonmetallic pulleys shall be exposed to 95 percent relative humidity at  $37.8^{\circ}\text{C}$  ( $100^{\circ}\text{F}$ ) for 48 hours. The pulleys shall be removed from the humidity chamber and the pulley surfaces tested for the presence of efflorescent chloride salts by placing a drop of 20 percent nitric acid and a drop of 3.0 percent silver nitrate solution on the same spot of the humidified pulley. Formation of the insoluble white silver chloride salts is indication that the sheave material is corrosive to tin or zinc coated carbon steel cable, and shall constitute failure of the pulley.

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- \* 4.5.4 Fungus growth. Type I nonmetallic pulleys shall be tested in accordance with method 508.1 of MIL-STD-810. Samples shall be considered to have failed if they support fungus of an amount that prevents or repairs flange strength or sheave strength testing.
  
- 4.5.5 Eccentricity. The inner bearing race shall be securely held in a suitable fixture as shown in figure 1a, and the eccentricity measured while the pulley is rotated through one revolution as shown in figure 1b.
  
- \* 4.5.6 Endurance. The general arrangement of the testing machine shall be as shown in figure 2a. The wire rope employed shall conform to MIL-W-83420, and shall be of the size specified in figure 2b for the pulley being tested. The machine shall be operated under the applicable conditions of figure 2b. Atmospheric temperature shall be not less than 10°C (50°F). Cable temperature shall not exceed 100°C (212°F).
  
- \* 4.5.6.1 Failure under endurance test. A pulley shall be Considered to have failed when any of the following conditions develop, either during the test or at the conclusion of the test:
  - a. The root diameter is reduced more than 1/32 inch as specified in figure 2b.
  - b. The pulley fails when subjected to the wobble clearance and bearing strength test as specified in 4.5.7.
  - c. The pulley fails when subjected to the bonding strength test as specified in 4.5.8.
  
- 4.5.7 Wobble clearance and bearing strength. The inner bearing race shall be secured to a plane surface and the limit load applied with 180 degrees cable wrap and 2 degrees pulloff as shown on figure 3a. The minimum clearance between the plane surface and the pulley flange, measured at the point of load application, shall be determined by placing the load at various positions about the complete circumference of the pulley as shown on figure 3b. The test shall be repeated with the pulley inverted,
  
- \* 4.5.8 Bonding strength. The pulley shall be supported in a suitable jig as shown on figure 4a. The bearing shall be unsupported and free to be pushed out of the sheave in case of failure. The load specified in figure 4b for the particular size pulley under test shall be applied gradually to the inner race of the bearing perpendicular to the plane of the pulley. The maximum load shall be maintained for not less than 10 seconds. The test shall be repeated with the pulley inverted.
  
- \* 4.5.9 Flange strength. The pulley shall be clamped in a jig as shown on figure 4, in such manner as to hold the sheave rigidly. The diameter of the gage disk shall be as specified on figure 5a. The load specified in figure 5b or the particular size pulley under test shall be applied to the inside of the flange perpendicular to the plane of the pulley, through the loading block in line with the root diameter. Test both flanges, the load being applied 90 degrees apart. The maximum load shall be maintained for not less than 10 seconds.



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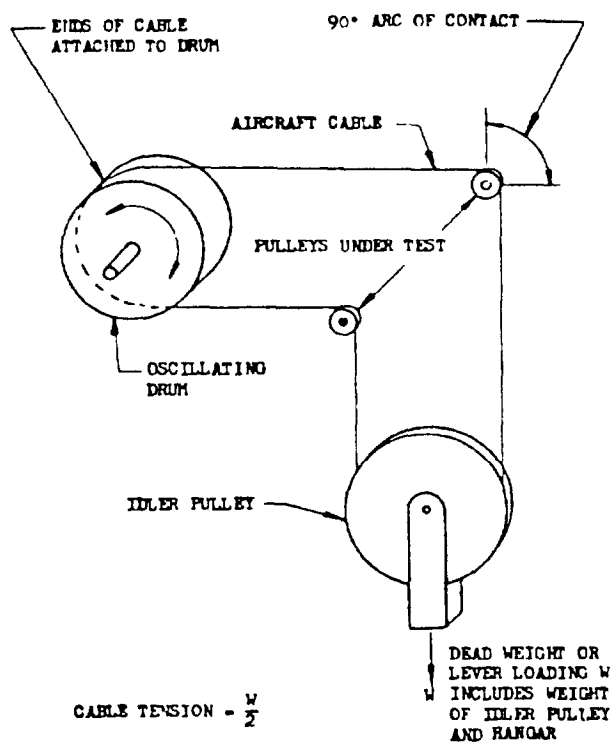
\*Figure 1a. Eccentricity test setup.

Pulley Part No.	Eccentricity Max. tolerance (Inches)
MS20219-1, -A1	0.006
-2, -A2	.006
-3, -A3	.006
-4, -A4	.007
-5, -A5	.007
MS20220-1, -A1	.007
-2, -A2	.007
-3, -A3	.010
-4, -A4	.010
MS20221(*), -A1	.007
-2, -A2	.007
-3, -A3	.010
MS24566-1B	.006
-2B	.006
-3B	.006
-4B	.010
-5B	.010
-6B	.010

\*MS20221-1 removed from specification

Figure 1b. Eccentricity tolerances.

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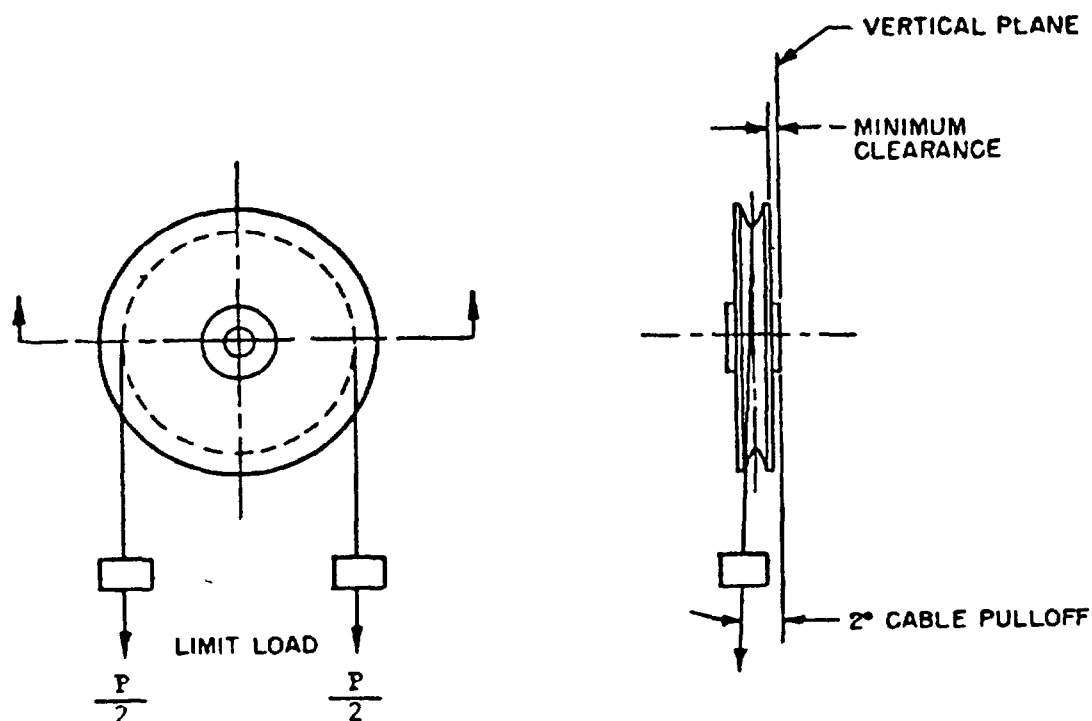
\*Figure 2a. Endurance test setup.

Pulley Part No.	Cable Dia Inch	Cable Travel Inch	Cable Tension lbs	Total Reversals	Cable Wrap	Max Wear Inch
MS20219-1, -A1	3/32	20	120	7,850	90°	1/32
-2, -A2	3/32	20	120	11,250	90°	1/32
-3, -A3	3/32	20	120	11,250	90°	1/32
-4, -A4	3/32	20	230	18,100	90°	1/32
-5, -A5	3/32	20	230	18,100	90°	1/32
MS20220-1, -A1	3/16	20	125	9,800	90°	1/32
-2, -A2	3/16	20	420	20,000	90°	1/32
-3, -A3	3/16	20	625	29,200	90°	1/32
-4, -A4	3/16	20	625	40,000	90°	1/32
MS20221(*), -A1	1/4	20	700	15,650	90°	1/32
-2, -A2	1/4	20	1225	27,400	90°	1/32
-3 -A3	1/4	20	1750	40,000	90°	1/32
MS24566-1B	3/32	20	* 75	7,650	90°	1/32
-2B	3/32	20	* 125	17,400	90°	1/32
-3B	3/16	20	* 150	11,850	90°	1/32
-4B	3/16	20	* 300	23,600	90°	1/32
-5B	1/4	20	* 750	34,300	90°	1/32
-6B	1/4	20	* 1000	42,100	90°	1/32

\*MS20221-1 removed from specification

1/ The number of reversals indicated above is equivalent to 50,000 revolutions.

Figure 2b. Endurance test tolerances.



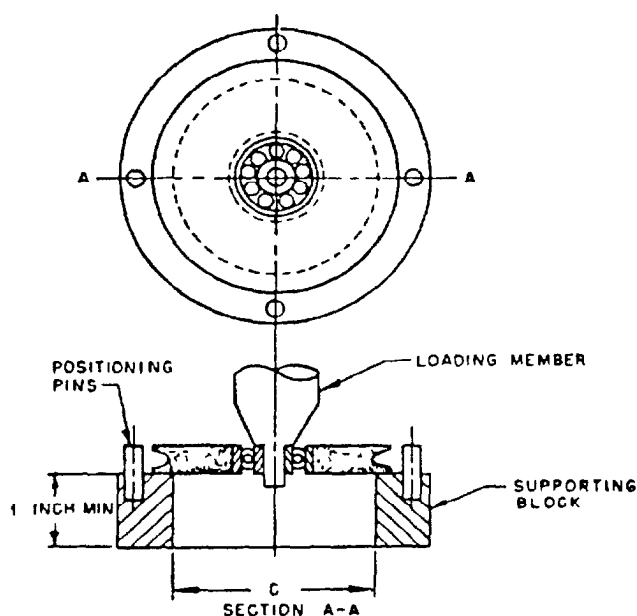
\*Figure 3a. Wobble clearance test setup.

Pulley Part No.	Pulley Limit Load (P) lbs	Wobble Clearance Inch
MS20219-1, -A1	480	0.005
-2, -A2	480	.005
-3, -A3	480	.005
-4, -A4	920	.005
-5, -A5	920	.005
MS20220-1, -A1	500	.005
-2, -A2	1680	.005
-3, -A3	2500	.005
-4, -A4	2500	.005
MS20221(*) -A1	2800	.005
-2, -A2	4900	.005
-3, -A3,	7000	.005
MS24566-1B	300	.002
-2B	500	.002
-3B	* 600	.002
-4B	*1200	.002
-5B	3000	.002
-6B	4000	.002

\*MS20221-1 removed from specification.

\*Figure 3b. Wobble clearance tolerance.

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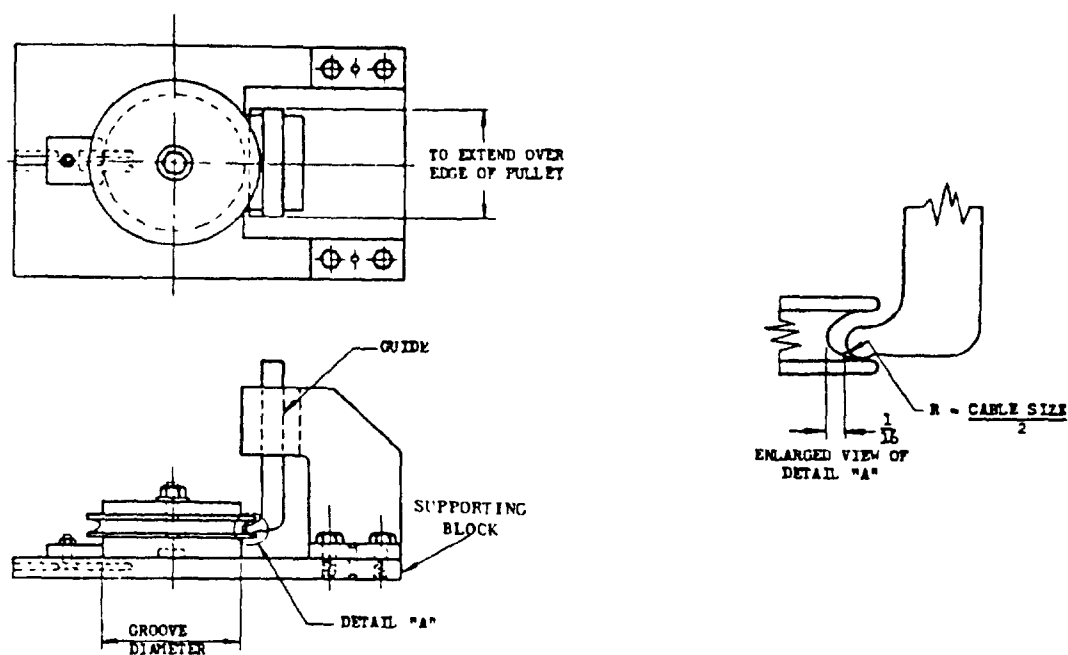
\*Figure 4a. Bonding strength test setup.

Pulley Part No.	Groove Diameter (C)	Bonding Strength	
		Min Proof Load	Tolerance
	inches	lbs	
MS20219-1, -A1	1.000	* 300	
-2, -A2	1.437	* 300	
-3, -A3	1.437	* 300	
-4, -A4	2.312	* 300	
-5, -A5	2.312	* 300	
MS20220-1, -A1	1.250	* 300	
-2, -A2	2.500	* 500	
-3, -A3	3.750	* 500	
-4, -A4	5.000	* 500	
MS20221(*) -A1	2.000	* 600	
-2, -A2	3.500	800	
-3, -A3	5.000	800	
MS24566-1B	.972	200	
-2B	2.222	200	
-3B	1.510	280	
-4B	3.010	280	
-5B	4.374	800	
-6B	5.374	800	

\*MS20221-1 removed from specification

\*Figure 4b. Bonding strength test tolerances.

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\*Figure 5a. Flange strength test setup.

Pulley Part No.	Flange Strength Load Minimum Tolerance
	lbs
MS20219-1, -A1	75
-2, -A2	75
-3, -A3	75
-4, -A4	75
-5, -A5	75
MS20220-1, -A1	125
-2, -A2	175
-3, -A3	175
-4, -A4	175
MS20221(*) -A1	250
-2, -A2	250
-3, -A3	250
MS24566-1B	50
2B	50
-3B	175
-4B	175
-5B	250
-6B	250

\*MS20221-1 removed from specifications.

Figure 5b. Flange strength test tolerances.

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4.5.10 Sheave strength. The pulley shall be mounted in the jig as shown on figure 6a in such manner as to permit rotation. The load specified in figure 6b for the particular size pulley under test shall be applied gradually by means of a pressure plate of the size specified in figure 6b. The maximum load shall be maintained for not less than 10 seconds. During the test, the pulley shall receive no side support from the jig. Failure of bearing under this test shall not be cause for rejection of the pulley.

4.5.11 Non-afterglow, type I. Type I nonmetallic pulleys shall be clamped in a support, then a Bunsen burner or an alcohol lamp, with blue flame 0.5 to 0.75-inch (12.7 mm to 19.05 mm) high, shall be placed under the sheave so the flame tip contacts the edge of one flange. After 30 seconds, the flame shall be removed. After removal of the flame, sufficient airblast to extinguish the blaze in from 1 to 2 seconds shall be applied. Eight to 10 seconds later the airblast shall again be applied. There shall be no afterglow nor bleeding of the anti-afterglow. The test shall be repeated on the same area. There shall be no afterglow nor bleeding of the anti-afterglow. Three pulleys shall be tested.

## 5. PACKAGING

5.1 Preservation and packaging Preservation and packaging shall be level A, B, or C, as specified (see 6.2).

### 5.1.1 Level A

5.1.1.1 Cleaning. Pulleys shall be thoroughly cleaned prior to preservation and packaging. The item shall be cleaned in accordance with process C-1, MIL-P-116.

5.1.1.2 Drying. Immediately after cleaning, the pulleys shall be dried in accordance with procedures D-2, D-3 or D-4, MIL-P-116.

\*5.1.1.3 Preservative application. Immediately after cleaning and drying, the bore surface and the exposed cadmium plated surface of the bearing shall be coated with the type grease used in the bearing.

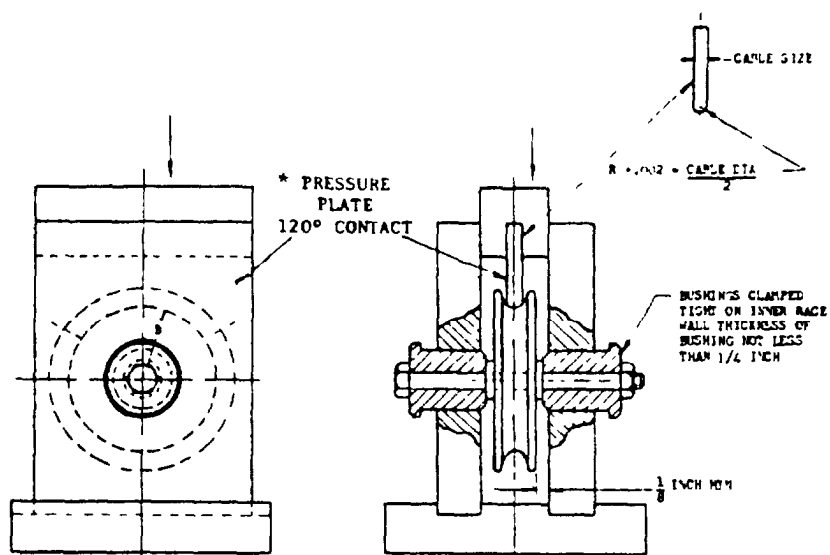
5.1.1.4 Unit packaging. Pulleys shall be packaged one each in accordance with method IA-8, MIL-P-116.

5.1.1.5 Intermediate packaging. Pulleys, unit packaged as specified in 5.1.1.4, shall be further packaged in intermediate containers conforming to PPP-B-566, PPP-B-636, PPP-B-665, or PPP-B-676. The selected container shall provide a snug fit for the contents. Containers shall be closed in accordance with the container specification or appendix thereto. The gross weight of intermediate containers shall not exceed 10 pounds and only identical pulleys shall be packaged therein.

5.1.2 Level B. Pulleys shall be packaged in accordance with method III of MIL-P-116.

5.1.3 Level C. Cleaning, drying, preservation, and packaging shall be in accordance with the manufacturer's commercial practice.

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\*Figure 6a. Sheave strength test setup.

Pulley Part No.	(B) Groove Rad. Tolerance $\pm .004$ Inches	Cable Dia. Inches	Sheave Strength Min. Load Tolerance lbs.	Pressure Plate Wrap Angle
MS20219-1, -A1	.500	3/32	960	120°
-2, -A2	.724	3/32	960	120°
-3, -A3	.724	3/32	960	120°
-4, -A4	1.161	3/32	1840	120°
-5, -A5	1.161	3/32	1840	120°
MS20220-1, -A1	.630	3/16	1000	120°
-2, -A2	1.255	3/16	3360	120°
-3, -A3	1.880	3/16	5000	120°
-4, -A4	2.505	3/16	5000	120°
MS20221(*) -A1	1.005	1/4	5600	120°
-2, -A2	1.755	1/4	9800	120°
-3, -A3	2.505	1/4	14000	120°
MS24566-1B	.486	3/32	600	120°
-2B	1.111	3/32	1000	120°
-3B	.755	3/16	*1200	120°
-4B	1.505	3/16	*2400	120°
-5B	2.187	1/4	*6000	120°
-6B	2.687	1/4	*8000	120°

\*MS20221-1 removed from specification.

\*Figure 6b. Sheave strength test tolerances.

MIL-P-7034D

5.2 Packing. Packing shall be level A, B, or C, as specified (see 6.2).

5.2.1 Level A. Pulleys preserved and packaged as specified in 5.1, shall be packed in containers conforming to PPP-B-601, type CF, class weather-resistant, grade V3C. As far as practical, exterior containers shall be of uniform shape and size and shall contain identical quantities. The gross weight of each pack shall be as specified in the container specification. Containers shall be closed and strapped in accordance with the appendix of PPP-B-636.

5.2.2 Level B. Pulleys preserved and packaged as specified in 5.1, shall be packed in containers conforming to PPP-B-636, type CF, class weather-resistant, grade 350. As far as practical, exterior containers shall be of uniform shape and size and shall contain identical quantities. The gross weight of each pack shall be as specified in the container specification. Containers shall be closed and strapped in accordance with the appendix of PPP-B-636.

5.2.3 Level C. Pulleys packaged as specified in 5.1, shall be packed in a manner to insure carrier acceptance and safe delivery at destination. Containers shall be in accordance with Uniform Freight Classification Rules or regulations of other carriers applicable to the mode of transportation.

5.3 Physical protection. Shipping containers shall be blocked, braced, and cushioned in accordance with MIL-STD-1186. Testing free-fall drop test, edgewise-drop test, and cornerwise-drop test, shall be in accordance with appendix A, MIL-STD-1186. The tests are not required when level C packing is specified.

5.4 Marking of shipments. Interior packages and exterior shipping containers shall be in accordance with MIL-STD-129, and shall include:

Pulleys, Groove, Antifriction-Bearing, Grease-Lubricated, Aircraft  
MIL-P-7034  
Size  
Applicable drawing and dash numbers  
Manufacturer's name and Part No.  
Date of lubrication of bearing, month, year.

## 6. NOTES

6.1 Intended use. Pulleys are intended for use in aircraft control systems, brake installations, and such other places in aircraft where pulleys of this type are required and are designed to give satisfactory service, provided that the design load on the pulley does not exceed the maximum allowable limit load specified on the applicable standard.



6.2 Ordering data. Procurement documents should specify:

- a. Title, number, and date of this specification
- b. Quantities and type required
- c. Levels of preservation, packaging, and packing (see 5.1 and 5.2)
- d. Data requirements (see 3.7)

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are at the time set for opening of bids, qualified for Inclusion in the applicable Qualified Products List whether or not such products have actually been listed by that date. Attention of the contractors is called to this requirement, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or orders for the products covered by this specification. The activity responsible for the Qualified Products List is the Aeronautical Systems Division, ATTN: ENFEM, Wright-Patterson Air Force Base, Ohio 45433 and information pertaining to qualification of products may be obtained from that activity.

\*6.4 Revision notations. The outside margins of this specification have been marked (\*) to indicate where changes (deletions, additions, etc.) from the previous issue have been made. This has been done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies on these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content as written irrespective of the marginal notation and relationship to last issue.

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Review activity:

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