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MANUAL REVISION TRANSMITTAL
MANUAL 148 (61-16-48)
Composite Spinner Maintenance Manual
REVISION 25 dated April 2024

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NOTE 1: Record the removal of a Temporary Revision on the Record of Temporary Revisions page in this manual.

NOTE 2: When the manual revision has been inserted in the manual, record the information required on the Record of Revisions pages in this manual.

NOTE 3: Pages distributed in this revision may include pages from previous revisions if they are on the opposite side of revised pages. This is done as a convenience to those users who wish to print a two-sided copy of the new revision.

Manual No. 148
61-16-48
Revision 25
April 2024

Composite Spinner Maintenance Manual

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REVISION 25 HIGHLIGHTS

Revision 25, dated April 2024, incorporates the following:

Front matter (Cover, Revision Highlights, etc.), has been revised to match this revision.

Minor language/format changes and renumbering, if applicable are marked with a revision bar, but are not listed below.

Removed references to “Hartzell Propeller Inc.”. Revised to “Hartzell Propeller LLC” where applicable.

- DESCRIPTION AND OPERATION
  - Revised Figure 1-1, "Identification of Composite Spinner Assembly Components"
- CHECK
  - Revised Table 5-1, "Component Inspection Criteria"
  - Added the section, "Spinner Mounting Ring"
- FINISH PROCEDURES
  - Revised Table 7-2, "Consumables and Applicability for Acry Glo® Series 571 Paints"
  - Removed Table 7-3, "Acry Glo® Series 571 Reducer Components and Blend Requirements". This table is now located in Hartzell Propeller Manual 202A, Volume 1 (61-01-02)
- ILLUSTRATED PARTS LIST
  - Incorporated TR-004 the changed the O/H disposition for the B-3851-0332 and B-3851-0532 washers to "Y", where applicable

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REVISION 25 HIGHLIGHTS

1. Introduction

   A. General

      (1) This is a list of current revisions that have been issued against this manual. Please compare to the RECORD OF REVISIONS page to make sure that all revisions have been added to the manual.

   B. Components

      (1) Revision No. indicates the revisions incorporated in this manual.

      (2) Issue Date is the date of the revision.

      (3) Comments indicates the level of the revision.

         (a) New Issue is a new manual distribution. The manual is distributed in its entirety. All the page revision dates are the same and no change bars are used.

         (b) Reissue is a revision to an existing manual that includes major content and/or major format changes. The manual is distributed in its entirety. All the page revision dates are the same and no change bars are used.

         (c) Major Revision is a revision to an existing manual that includes major content or minor format changes over a large portion of the manual. The manual is distributed in its entirety. All the page revision dates are the same, but change bars are used to indicate the changes incorporated in the latest revision of the manual.

         (d) Minor Revision is a revision to an existing manual that includes minor content changes to the manual. Only the revised pages of the manual are distributed. Each page retains the date and the change bars associated with the last revision to that page.

Revision No.	Issue Date	Comments
Rev. 1	Oct/97	Minor Revision
Rev. 2	Feb/04	Minor Revision
Rev. 3	Nov/07	Major Revision
Rev. 4	Dec/08	Major Revision
Rev. 5	May/10	Major Revision
Rev. 6	May/13	Minor Revision
Rev. 7	Sep/13	Minor Revision
Rev. 8	Mar/14	Minor Revision
Rev. 9	Apr/14	Minor Revision
Rev. 10	May/14	Minor Revision
Rev. 11	Sep/14	Minor Revision
Rev. 12	Dec/14	Minor Revision
Rev. 13	Sep/15	Minor Revision
Rev. 14	Dec/15	Minor Revision
Rev. 15	Jun/16	Minor Revision
Rev. 16	Aug/16	Minor Revision
Rev. 17	Nov/16	Minor Revision
Rev. 18	May/17	Minor Revision
Rev. 19	Jan/19	Minor Revision
Rev. 20	Mar/21	Minor Revision
Rev. 21	Jul/21	Minor Revision
Rev. 22	Dec/21	Minor Revision
Rev. 23	Feb/23	Minor Revision
Rev. 24	Aug/23	Major Revision
Rev. 25	Apr/24	Minor Revision

RECORD OF REVISIONS

This is a record of revisions inserted into this manual.
Revision 24 includes all prior revisions.

Revision Number	Issue Date	Date Inserted	Inserted By
24	Aug/23	Aug/23	HPI
25	Apr/24	Apr/24	Hartzell

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RECORD OF TEMPORARY REVISIONS

Update this page to show all Temporary Revisions inserted into this manual.
Revision 24 includes all prior temporary revisions, up to and including TR-003.

Temporary Revision	Section/ Page	Issue Date	Date Inserted	Inserted By	Date Removed	Removed By
TR-004	10-9	Dec/23	Dec/23	HPI	Apr/24	HP

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SERVICE DOCUMENT LIST

CAUTION 1: DO NOT USE OBSOLETE OR OUTDATED INFORMATION. PERFORM ALL INSPECTIONS OR WORK IN ACCORDANCE WITH THE MOST RECENT REVISION OF THE SERVICE DOCUMENT. INFORMATION CONTAINED IN A SERVICE DOCUMENT MAY BE SIGNIFICANTLY CHANGED FROM EARLIER REVISIONS. FAILURE TO COMPLY WITH INFORMATION CONTAINED IN A SERVICE DOCUMENT OR THE USE OF OBSOLETE INFORMATION MAY CREATE AN UNSAFE CONDITION THAT MAY RESULT IN DEATH, SERIOUS BODILY INJURY, AND/OR SUBSTANTIAL PROPERTY DAMAGE.

CAUTION 2: THE INFORMATION FOR THE DOCUMENTS LISTED INDICATES THE REVISION LEVEL AND DATE AT THE TIME THAT THE DOCUMENT WAS INITIALLY INCORPORATED INTO THIS MANUAL. INFORMATION CONTAINED IN A SERVICE DOCUMENT MAY BE SIGNIFICANTLY CHANGED FROM EARLIER REVISIONS. REFER TO THE APPLICABLE SERVICE DOCUMENT INDEX FOR THE MOST RECENT REVISION LEVEL OF THE SERVICE DOCUMENT.

Service Document Number	Incorporation Rev./Date
Service Bulletins:	
SB 160	Rev. 3 Nov/07

Service Document Number	Incorporation Rev./Date
Service Letters:	
HD-SL-61-012	Rev. 3 Nov/07
HD-SL-61-018	Rev. 1 Oct/97
HC-SL-61-287	Rev. 5 May/10
HC-SL-61-347	Rev. 15 Jun/16

SERVICE DOCUMENT LIST

Service Document Number	Incorporation Rev./Date

Service Document Number	Incorporation Rev./Date

AIRWORTHINESS LIMITATIONS

1. Airworthiness Limitations Information

   A. Life Limits

      (1) Certain component parts, as well as the entire propeller, may have specific life limits established by the FAA. Such limits require replacement of items after a specific number of hours of use.

      (2) For airworthiness limitations information, refer to the applicable Hartzell Propeller Owner's manual.

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1. General (Rev. 2)

A. Statement of Purpose

(1) This manual has been reviewed and accepted by the FAA. Additionally, this manual contains data that has been approved in a manner acceptable to the FAA Administrator.

(2) This manual provides minor repair, major repair, and overhaul procedures of composite spinner assemblies for use in propeller repair stations by personnel that are trained and experienced with Hartzell Propeller products. The text throughout this manual assumes that the spinner has been removed from the propeller assembly, except for certain minor repairs that often can be performed on the aircraft.

(a) This manual does not provide complete information for an inexperienced technician to attempt composite spinner overhaul without supervision.

(4) This manual is intended to be the primary source of overhaul information for composite spinner assemblies.

(a) Information published in Service Bulletins, Service Letters, Service Advisories, and Service Instructions may supersede information published in this manual. The reader must consult active Service Bulletins, Service Letters, Service Advisories, and Service Instructions for information that may not yet have been incorporated into the latest revision of this manual.

(5) Some components of a composite spinner may be metal. This manual only gives instructions for the overhaul of the composite components. For overhaul of the metal components, refer to Hartzell Propeller Metal Spinner Manual 127 (61-16-27).

(6) Where possible, this manual is written in the format specified by ATA iSpec 2200.

(7) This manual is not arranged sequentially in steps of the overhaul process. The sequence is provided in a “traveler”; however, differing spinner conditions, as well as individual shop requirements, may dictate a need for variation in the sequence of spinner overhaul. Although the sequence of events is not mandatory and may be rearranged to fit individual shop requirements, it is necessary that all steps of the overhaul process be completed during overhaul.

NOTE: Unless otherwise specified, the text of this manual addresses all composite spinner models.

B. Item References

(1) Item references throughout the text in this manual refer to item numbers in the Illustrated Parts List chapter of this manual. The item numbers appear in parentheses directly following the part name. Only the item base number will appear in the text of the manual. Item base numbers and the alpha variants of the base numbers will appear in the illustrated parts list. There are two reasons for the use of alpha variants:

(a) A part may be superseded, replaced, or obsoleted by another part. For example, the pitch change block unit (105733) that is item 320 was superseded by the pitch change block unit (105733-1) that is item 320A.

(b) An Illustrated Parts List may contain multiple configurations. Effectivity codes are used to distinguish different part numbers within the same list. For example, one configuration may use a piston (B-2419) that is item 80, yet another configuration uses a piston (104256) that is item 80A. Effectivity codes are very important in the determination of parts in a given configuration.

2. Reference Publications

A. Hartzell Propeller Publications

(1) Information published in Service Bulletins, Service Letters, Service Advisories, and Service Instructions may supersede information published in this manual. The reader must consult active Service Bulletins, Service Letters, Service Advisories, and Service Instructions for information that may have not yet been incorporated into the latest revision of this manual.

(2) In addition to this manual, one or more of the following publications are required for information regarding specific recommendations and procedures to maintain spinner assemblies that are included in this manual.

Manual No. (ATA No.)	Available at www.hartzellprop.com	Hartzell Propeller Manual Title
n/a	Yes	Active Hartzell Propeller Service Bulletins, Service Letters, Service Instructions, and Service Advisories
Manual 127 (61-16-27)	Yes	Metal Spinner Maintenance Manual
Manual 159 (61-02-59)	Yes	Application Guide
Manual 165A (61-00-65)	Yes	Illustrated Tool and Equipment Manual
Manual 180 (30-61-80)	Yes	Ice Protection System Manual
Manual 202A (61-01-02)	Vol. 7, Yes Vol. 11, Yes	Standard Practices Manual, Volumes 1 through 11

B. Vendor Publications

None.

3. Personnel Requirements (Rev. 2)

   A. Service and Maintenance Procedures in this Manual

      (1) Personnel performing the service and maintenance procedures in this manual are expected to have the required equipment/tooling, training, and certifications (when required by the applicable Aviation Authority) to accomplish the work in a safe and airworthy manner.

      (2) Compliance to the applicable regulatory requirements established by the Federal Aviation Administration (FAA) or international equivalent is mandatory for anyone performing or accepting responsibility for the inspection and/or repair of any Hartzell Propeller product.

         (a) Maintenance records must be kept in accordance with the requirements established by the Federal Aviation Administration (FAA) or international equivalent.

         (b) Refer to Federal Aviation Regulation (FAR) Part 43 for additional information about general aviation maintenance requirements.

4. Special Tooling and Consumable Materials (Rev. 2)

   A. Special Tooling

      (1) Special tooling may be required for procedures in this manual. For further tooling information, refer to Hartzell Propeller Illustrated Tool and Equipment Manual 165A (61-00-65).

         (a) Tooling reference numbers appear with the prefix “TE” directly following the tool name to which they apply. For example, a template that is reference number 133 will appear as: template TE133.

   B. Consumable Materials

      (1) Consumable materials are referenced in certain sections throughout this manual. Specific approved materials are listed in the Consumable Materials chapter of Hartzell Propeller Standard Practices Manual 202A (61-01-02).

         (a) Consumable material reference numbers appear with the prefix “CM” directly following the material to which they apply. For example, an adhesive that is reference number 16 will appear as: adhesive CM16. Only the material(s) specified can be used.

5. Safe Handling of Paints and Chemicals (Rev. 1)
   A. Instructions for Use
      (1) Always use caution when handling or being exposed to paints and/or chemicals during propeller overhaul and/or maintenance procedures.
      (2) Before using paint or chemicals, always read the manufacturer's label on the container(s) and follow specified instructions and procedures for storage, preparation, mixing, and/or application.
      (3) Refer to the product's Material Safety Data Sheet (MSDS) for detailed information about the physical properties, health, and physical hazards of any paint or chemical.

6. Calendar Limits and Long Term Storage (Rev. 3)
   A. Calendar Limits
      (1) The effects of exposure to the environment over a period of time create a need for propeller overhaul regardless of flight time.
      (2) A calendar limit between overhauls is specified in Hartzell Propeller Service Letter HC-SL-61-61Y.
      (3) Experience has shown that special care, such as keeping an aircraft in a hangar, is not sufficient to permit extension of the calendar limit.
      (4) The start date for the calendar limit is when the propeller is first installed on an engine.
      (5) The calendar limit is not interrupted by subsequent removal and/or storage.
      (6) The start date for the calendar limit must not be confused with the warranty start date, that is with certain exceptions, the date of installation by the first retail customer.
   B. Long Term Storage
      (1) Propellers that have been in storage have additional inspection requirements before installation. Refer to the Packaging and Storage chapter of Hartzell Propeller Standard Practices Manual 202A (61-01-02).

7. Component Life and Overhaul (Rev. 3)

WARNING: CERTAIN PROPELLER COMPONENTS USED IN NON-AVIATION APPLICATIONS ARE MARKED WITH DIFFERENT PART NUMBERS TO DISTINGUISH THEM FROM COMPONENTS USED IN AVIATION APPLICATIONS. DO NOT ALTER THE PART NUMBERS SHOWN ON PARTS DESIGNATED FOR NON-AVIATION APPLICATIONS OR OTHERWISE APPLY THOSE PARTS FOR USE ON AVIATION APPLICATIONS.

A. Component Life

(1) Component life is expressed in terms of hours of service (Time Since New, TSN) and in terms of hours of service since overhaul (Time Since Overhaul, TSO).

NOTE: TSN/TSO is considered as the time accumulated between rotation and landing, i.e., flight time.

(2) Time Since New (TSN) and Time Since Overhaul (TSO) records for the propeller hub and blades must be maintained in the propeller logbook.

(3) Both TSN and TSO are necessary for defining the life of the component. Certain components, or in some cases an entire propeller, may be "life limited," which means that they must be replaced after a specified period of use (TSN).

(a) It is a regulatory requirement that a record of the Time Since New (TSN) be maintained for all life limited parts.

(b) Refer to the Airworthiness Limitations chapter in the applicable Hartzell Propeller Owner's Manual for a list of life limited components.

(4) When a component or assembly undergoes an overhaul, the TSO is returned to zero hours.

(a) Time Since New (TSN) can never be returned to zero.

(b) Repair without overhaul does not affect TSO or TSN.

(5) Time Since New (TSN) and Time Since Overhaul (TSO) records must be maintained in the propeller logbook.

B. Overhaul

(1) Overhaul is the periodic disassembly, cleaning, inspecting, repairing as necessary, reassembling, and testing in accordance with approved standards and technical data approved by Hartzell Propeller.

(2) The overhaul interval is based on hours of service, i.e., flight time, or on calendar time.

(a) Overhaul intervals are specified in Hartzell Propeller Service Letter HC-SL-61-61Y.

(b) At such specified periods, the spinner assembly should be completely disassembled and inspected for cracks, wear, corrosion, and other unusual or abnormal conditions.

(3) Overhaul must be completed in accordance with the latest revision of the applicable component maintenance manual and other publications applicable to, or referenced in, the component maintenance manual.

(a) Parts that are not replaced at overhaul must be inspected in accordance with the Check chapter of this manual.

(b) Parts that must be replaced at overhaul are identified by a "Y" in the O/H column of the Illustrated Parts List chapter of this manual.

(4) The information in this manual supersedes data in all previously published revisions of this manual.

8. Damage/Repair Types (Rev. 2)

A. Airworthy/Unairworthy Damage

(1) Airworthy damage is a specific condition to a propeller component that is within the airworthy damage limits specified in the Check chapter of this manual.

(a) Airworthy damage does not affect the safety or flight characteristics of the spinner assembly and conforms to its type design.

(b) Airworthy damage does not require repair before further flight, but should be repaired as soon as possible to prevent degradation of the damage.

(2) Unairworthy damage is a specific condition to a spinner assembly that exceeds the air worthy damage limits as specified in the Check chapter of this manual.

(a) Unairworthy damage can affect the safety or flight characteristics of the spinner assembly and does not conform to its type design.

(b) Unairworthy damage must be repaired before the propeller is returned to service.

B. Minor/Major Repair

(1) Minor Repair

(a) Minor repair is that which may be done safely in the field by a certified aircraft mechanic.

1 For serviceable limits and repair criteria for Hartzell propeller components, refer to the applicable Hartzell Propeller component maintenance manual.

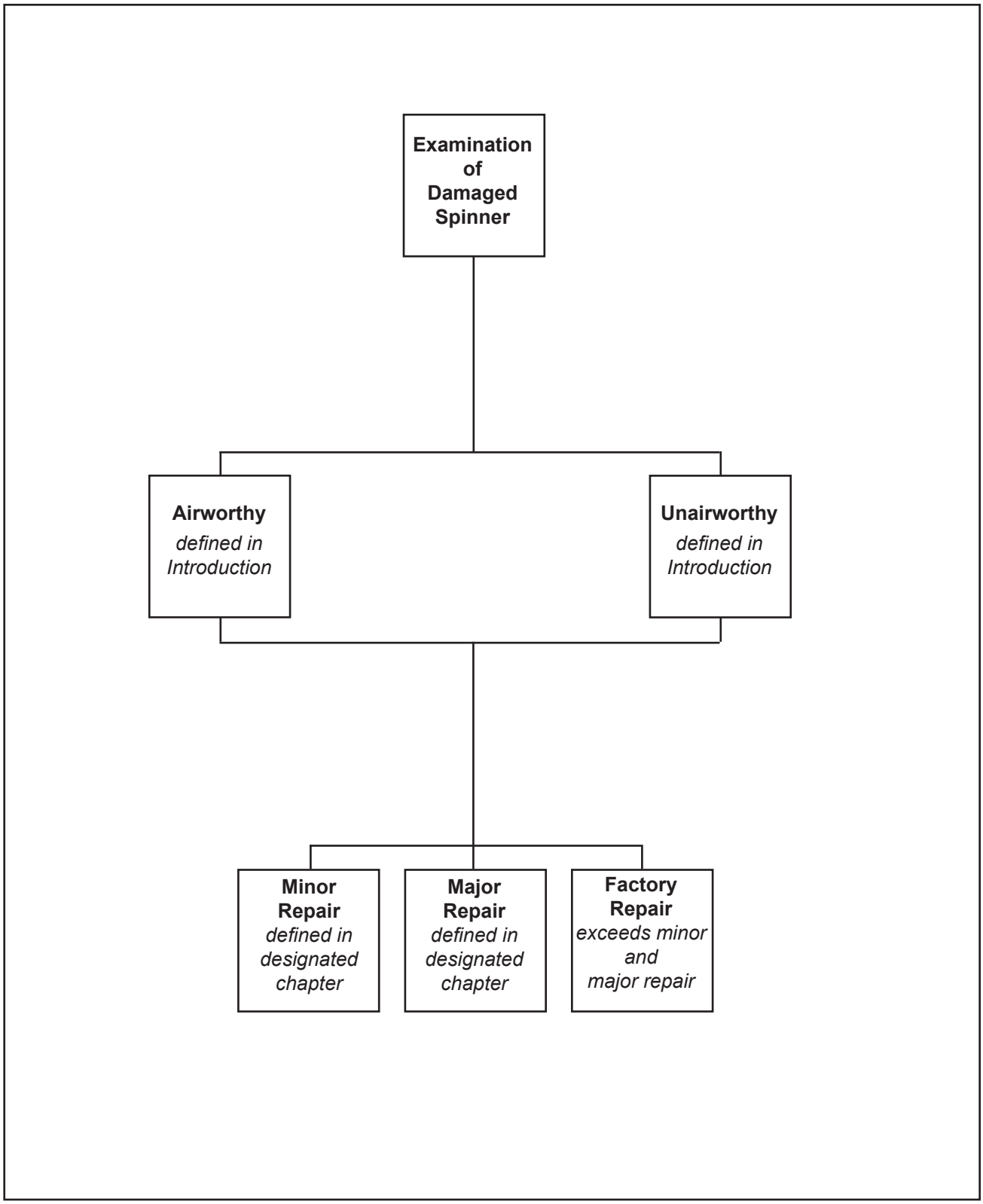
(2) Major Repair

(a) Major repair cannot be done by elementary operations.

(b) Major repair work must be accepted by an individual that is certified by the Federal Aviation Administration (FAA) or international equivalent.

1 Hartzell recommends that individuals performing major repairs also have a Factory Training Certificate from Hartzell Propeller.

2 The repair station must meet facility, tooling, and personnel requirements and is required to participate in Hartzell Propeller Sample Programs as defined in the Approved Facilities chapter of Hartzell Propeller Standard Practices Manual 202A (61-01-02).



Determination of Repair Flow Chart
Figure 1

9. Determination of Repair

A. General

(1) This manual is arranged such that damage and repair are treated separately. This gives the operators and repair facilities greater clarification and freedom in dealing with composite spinner damage.

(a) This chapter defines airworthy and unairworthy damage and there are sections designated for minor repair and major repair. The Check chapter lists the allowables for airworthy and unairworthy damage.

(b) The type of repair is not dictated by the type of damage received. For example, a spinner with airworthy damage may require a major repair.

(2) Upon inspection of a composite spinner, an operator should first determine the type of damage: airworthy or unairworthy. (Limits are in the Check chapter.) Figure 1 illustrates the determination of repair.

(a) If the damage is determined to be airworthy, the aircraft may continue in service; however, the operator should make arrangements to have repairs performed as soon as practical.

(b) If the damage is determined to be unairworthy, the spinner cannot be used until a repair is performed. Exceptions to this policy may be possible, but require written authorization from Hartzell Propeller.

(3) The operator should determine if the repair falls into the category of minor or major. Limits for each repair are in applicable chapters.

(4) Because of the infinite types of damage possible, not all types of damage that can be considered airworthy are included in this manual. If there is any doubt as to airworthiness of the spinner, contact Hartzell Propeller.

10. Warranty Service (Rev. 2)

A. Warranty Claims

(1) If you believe you have a warranty claim, contact the Hartzell Propeller Product Support Department to request a *Warranty Application* form. Complete this form and return it to Hartzell Product Support Department for evaluation **before proceeding with repair or inspection work**. Upon receipt of this form, the Product Support Department will provide instructions on how to proceed.

(a) For the Hartzell Propeller Product Support Department contact information, refer to the section, “Hartzell Propeller Contact Information” in this chapter.

11. Hartzell Propeller Contact Information (Rev. 3)

A. Product Support Department

(1) Contact the Hartzell Propeller Product Support Department about any maintenance problems or to request information not included in this publication.

NOTE: When calling from outside the United States, dial (001) before dialing the telephone numbers below.

(a) The Product Support Department may be reached during business hours (8:00 a.m. through 5:00 p.m., United States Eastern Time) at (937) 778-4379 or at (800) 942-7767, toll free from the United States and Canada.

(b) The Product Support Department can also be reached by fax at (937) 778-4215, and by e-mail at techsupport@hartzellprop.com.

(c) After business hours, you may leave a message on our 24 hour product support line at (937) 778-4376 or at (800) 942-7767, toll free from the United States and Canada.

1 A technical representative will contact you during normal business hours.

2 Urgent AOG support is also available 24 hours per day, seven days per week via this message service.

(d) Additional information is available on the Hartzell Propeller website at www.hartzellprop.com.

B. Technical Publications Department

(1) For Hartzell Propeller service literature and revisions, contact:

Hartzell Propeller LLC
Attn: Technical Publications Department
One Propeller Place
Piqua, Ohio 45356-2634 U.S.A.

Telephone: 937.778.4200
Fax: 937.778.4215
E-mail: manuals@hartzellprop.com

C. Recommended Facilities

(1) Hartzell Propeller recommends using Hartzell-approved distributors and repair facilities for the purchase, repair, and overhaul of Hartzell propeller assemblies or components.

(2) Information about the Hartzell Propeller worldwide network of aftermarket distributors and approved repair facilities is available on the Hartzell website at www.hartzellprop.com.

12. Definitions (Rev. 5)

A basic understanding of the following terms will assist in maintaining and operating Hartzell propeller systems.

Term	Definition
Annealed	Softening of material due to overexposure to heat
Aviation Certified	Intended for FAA or international equivalent type certificated aircraft applications. A TC and PC number must be stamped on the hub, and a PC number must be stamped on blades.
Aviation Experimental	Intended for aircraft/propeller applications not certified by the FAA or international equivalent. Products marked with an “X” at or near the end of the model number or part number are not certified by the FAA or international equivalent and are not intended to use on certificated aircraft.
Beta Operation	A mode of pitch control that is directed by the pilot rather than by the propeller governor
Beta Range	Blade angles between low pitch and maximum reverse blade angle
Beta System	Parts and/or equipment related to operation (manual control) of propeller blade angle between low pitch blade angle and full reverse blade angle
Blade Angle	Measurement of blade airfoil location described as the angle between the blade airfoil and the surface described by propeller rotation
Blade Centerline	An imaginary reference line through the length of a blade around which the blade rotates
Blade Station	Refers to a location on an individual blade for blade inspection purposes. It is a measurement from the blade “zero” station to a location on a blade, used to apply blade specification data in blade overhaul manuals. Note: Do not confuse *blade station* with *reference blade radius*; they may not originate at the same location.
Blemish	An imperfection with visible attributes, but having no impact on safety or utility

Term	Definition
Brinelling	A depression caused by failure of the material in compression
Bulge	An outward curve or bend
Camber	The surface of the blade that is directed toward the front of the aircraft. It is the low pressure, or suction, side of the blade. The camber side is convex in shape over the entire length of the blade.
Chord	A straight line distance between the leading and trailing edges of an airfoil
Chordwise	A direction that is generally from the leading edge to the trailing edge of an airfoil
Co-bonded	The act of bonding a composite laminate and simultaneously curing it to some other prepared surface
Composite Material	Kevlar®, carbon, or fiberglass fibers bound together with, or encapsulated within an epoxy resin
Compression Rolling	A process that provides improved strength and resistance to fatigue
Constant Force	A force that is always present in some degree when the propeller is operating
Constant Speed	A propeller system that employs a governing device to maintain a selected engine RPM
Corrosion (Aluminum)	The chemical or electrochemical attack by an acid or alkaline that reacts with the protective oxide layer and results in damage of the base aluminum. Part failure can occur from corrosion due to loss of structural aluminum converted to corrosion product, pitting, a rough etched surface finish, and other strength reduction damage caused by corrosion.

Term	Definition
Corrosion (Steel)	Typically, an electrochemical process that requires the simultaneous presence of iron (component of steel), moisture and oxygen. The iron is the reducing agent (gives up electrons) while the oxygen is the oxidizing agent (gains electrons). Iron or an iron alloy such as steel is oxidized in the presence of moisture and oxygen to produce rust. Corrosion is accelerated in the presence of salty water or acid rain. Part failure can occur from corrosion due to loss of structural steel converted to corrosion product, pitting, a rough etched surface finish and other strength reduction damage caused by corrosion.
Corrosion Product (Aluminum)	A white or dull gray powdery material that has an increased volume appearance (compared to non-corroded aluminum). Corrosion product is not to be confused with damage left in the base aluminum such as pits, worm holes, and etched surface finish.
Corrosion Product (Steel)	When iron or an iron alloy such as steel corrodes, a corrosion product known as rust is formed. Rust is an iron oxide which is reddish in appearance and occupies approximately six times the volume of the original material. Rust is flakey and crumbly and has no structural integrity. Rust is permeable to air and water, therefore the interior metallic iron (steel) beneath a rust layer continues to corrode. Corrosion product is not to be confused with damage left in the base steel such as pits and etched surface finish.
Crack	Irregularly shaped separation within a material, sometimes visible as a narrow opening at the surface
Debond	Separation of two materials that were originally bonded together in a separate operation
Defect	An imperfection that affects safety or utility
Delamination	Internal separation of the layers of composite material
Depression	Surface area where the material has been compressed but not removed
Distortion	Alteration of the original shape or size of a component

Term	Definition
Edge Alignment	Distance from the blade centerline to the leading edge of the blade
Erosion	Gradual wearing away or deterioration due to action of the elements
Exposure	Leaving material open to action of the elements
Face	The surface of the blade that is directed toward the rear of the aircraft. The face side is the high pressure, or thrusting, side of the blade. The blade airfoil sections are normally cambered or curved such that the face side of the blade may be flat or even concave in the midblade and tip region.
Face Alignment	Distance from the blade centerline to the highest point on the face side perpendicular to the chord line
Feathering	The capability of blades to be rotated parallel to the relative wind, thus reducing aerodynamic drag
Fraying	A raveling or shredding of material
Fretting	Damage that develops when relative motion of small displacement takes place between contacting parts, wearing away the surface
Galling	To fret or wear away by friction
Gouge	Surface area where material has been removed
Hazardous Propeller Effect	The hazardous propeller effects are defined in Title 14 CFR section 35.15(g)(1)
Horizontal Balance	Balance between the blade tip and the center of the hub
Impact Damage	Damage that occurs when a component strikes, or is struck by, an object while in flight or on the ground
Inboard	Toward the butt of the blade
Intergranular Corrosion	Corrosion that attacks along the grain boundaries of metal alloys
Jog	A term used to describe movement up/down, left/right, or on/off in short incremental motions

Term	Definition
Laminate	To unite composite material by using a bonding material, usually with pressure and heat
Lengthwise	A direction that is generally parallel to the pitch axis
Loose Material	Material that is no longer fixed or fully attached
Low Pitch	The lowest blade angle attainable by the governor for constant speed operation
Major Propeller Effect	The major propeller effects are defined in Title 14 CFR section 35.15(g)(2)
Minor Deformation	Deformed material not associated with a crack or missing material
Monocoque	A type of construction in which the outer skin carries all or a major part of the load
Nick	Removal of paint and possibly a small amount of material
Non-Aviation Certified	Intended for non-aircraft application, such as Hovercraft or Wing-in-Ground effect (WIG) applications. These products are certificated by an authority other than FAA. The hub and blades will be stamped with an identification that is different from, but comparable to TC and PC.
Non-Aviation Experimental	Intended for non-aircraft application, such as Hovercraft or Wing-In-Ground effect (WIG) applications. Products marked with an “X” at or near the end of the model number or part number are not certified by any authority and are not intended for use on certificated craft.
Onspeed	Condition in which the RPM selected by the pilot through the propeller control/condition lever and the actual engine (propeller) RPM are equal
Open Circuit	Connection of high or infinite resistance between points in a circuit which are normally lower
Outboard	Toward the tip of the blade
Overhaul	The periodic disassembly, inspection, repair, refinish, and reassembly of a propeller assembly to maintain airworthiness

Term	Definition
Overspeed	Condition in which the RPM of the propeller or engine exceeds predetermined maximum limits; the condition in which the engine (propeller) RPM is higher than the RPM selected by the pilot through the propeller control/condition lever
Pitch	Same as “Blade Angle”
Pitting	Formation of a number of small, irregularly shaped cavities in surface material caused by corrosion or wear
Pitting (Linear)	The configuration of the majority of pits forming a pattern in the shape of a line
Porosity	An aggregation of microvoids. See “voids”.
Propeller Critical Parts	A part on the propeller whose primary failure can result in a hazardous propeller effect, as determined by the safety analysis required by Title 14 CFR section 35.15
Reference Blade Radius	Refers to the propeller reference blade radius in an assembled propeller, e.g., 30-inch radius. A measurement from the propeller hub centerline to a point on a blade, used for blade angle measurement in an assembled propeller. An adhesive stripe (blade angle reference tape CM160) is usually located at the reference blade radius location. Note: Do not confuse *reference blade radius* with *blade station*; they may not originate at the same point.
Reversing	The capability of rotating blades to a position to generate reverse thrust to slow the aircraft or back up
Scratch	Same as “Nick”
Short Circuit	Connection of low resistance between points on a circuit between which the resistance is normally much greater
Shot Peening	Process where steel shot is impinged on a surface to create compressive surface stress, that provides improved strength and resistance to fatigue
Single Acting	Hydraulically actuated propeller that utilizes a single oil supply for pitch control

Term	Definition
Split	Delamination of spinner extending to a surface, such as a blade cutout or trimlinep
Station Line	See "Blade Station"
Synchronizing	Adjusting the RPM of all the propellers of a multi-engine aircraft to the same RPM
Synchrophasing	A form of propeller sychronization in which not only the RPM of the engines (propellers) are held constant, but also the position of the propellers in relation to each other
Ticking	A series of parallel marks or scratches running circumferentially around the diameter of the blade
Track	In an assembled propeller, a measurement of the location of the blade tip with respect to the plane of rotation, used to verify face alignment and to compare blade tip location with respect to the locations of the other blades in the assembly
Trailing Edge	The aft edge of an airfoil over which the air passes last
Trimline	Factory terminology referring to where the part was trimmed to length
Underspeed	The condition in which the actual engine (propeller) RPM is lower than the RPM selected by the pilot through the propeller control/condition lever
Unidirectional Material	A composite material in which the fibers are substantially oriented in the same direction
Variable Force	A force that may be applied or removed during propeller operation
Vertical Balance	Balance between the leading and trailing edges of a two-blade propeller with the blades positioned vertically
Voids	Air or gas that has been trapped and cured into a laminate
Windmilling	The rotation of an aircraft propeller caused by air flowing through it while the engine is not producing power
Woven Fabric	A material constructed by interlacing fiber to form a fabric pattern

Term	Definition
Wrinkle (aluminum blade)	A wavy appearance caused by high and low material displacement
Wrinkle (composite blade)	Overlap or fold within the material

13. Abbreviations (Rev. 2)

Abbreviation	Term
AD	Airworthiness Directives
AMM	Aircraft Maintenance Manual
AOG	Aircraft on Ground
AR	As Required
ATA	Air Transport Association
CSU	Constant Speed Unit
FAA	Federal Aviation Administration
FH	Flight Hour
FM	Flight Manual
FMS	Flight Manual Supplement
Ft-Lb	Foot-Pound
HMI	Human Machine Interface
ICA	Instructions for Continued Airworthiness
ID	Inside Diameter
In-Lb	Inch-Pound
IPL	Illustrated Parts List
IPS	Inches Per Second
kPa	Kilopascals
Lb(s)	Pound(s)
Max.	Maximum
Min.	Minimum
MIL-X-XXX	Military Specification
MPI	Major Periodic Inspection (Overhaul)
MS	Military Standard
MSDS	Material Safety Data Sheet

Abbreviation	Term
N	Newtons
N/A	Not Applicable
NAS	National Aerospace Standards
NASM	National Aerospace Standards, Military
NDT	Nondestructive Testing
NIST	National Institute of Standards and Technology
N•m	Newton-Meters
OD	Outside Diameter
OPT	Optional
PC	Production Certificate
PCP	Propeller Critical Part
PLC	Programmable Logic Controller
PMB	Plastic Media Blasting (Cleaning)
POH	Pilot's Operating Handbook
PSI	Pounds per Square Inch
RF	Reference
RPM	Revolutions per Minute
SAE	Society of Automotive Engineers
STC	Supplemental Type Certificate
TBO	Time Between Overhaul
TC	Type Certificate
TSI	Time Since Inspection
TSN	Time Since New
TSO	Time Since Overhaul
UID	Unique Identification
WIG	Wing-In-Ground-Effect

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Spinner Assembly Part Number	Composite Dome Part Number	Metal Bulkhead/Adapter Ring Unit Part Number
101298( )	101299( )	D-7084-1G (bulkhead)
103409( )	103410( )	C-2472-6P (bulkhead)
103585( )	103582( )	103584( ) (adapter ring unit)
103629( )	103627( )	103628( ) (adapter ring unit)
104888( )	104886( )	104887( ) (bulkhead)
105656( )	105651( )	105652( ) (bulkhead)
105675( )	105674( )	105672( ) (bulkhead)
105945( )	105943( )	105944( ) (adapter ring unit)
106040( )	106039( )	106348( ) (bulkhead)
106215( )	106214( )	C-2472-6( ) (bulkhead)
106574( )	103582( )	106573( ) (bulkhead)
106848( )	106847( )	106348( ) (bulkhead)
106871( )	106911( )	106910( ) (bulkhead)
107153( )	107151( )	107152( ) (bulkhead)
107376	107375( )	C-3283-5( ) (bulkhead)
107974( )	107973( )	107937( ) (bulkhead)
108482( )	108481( )	108480( ) (bulkhead)

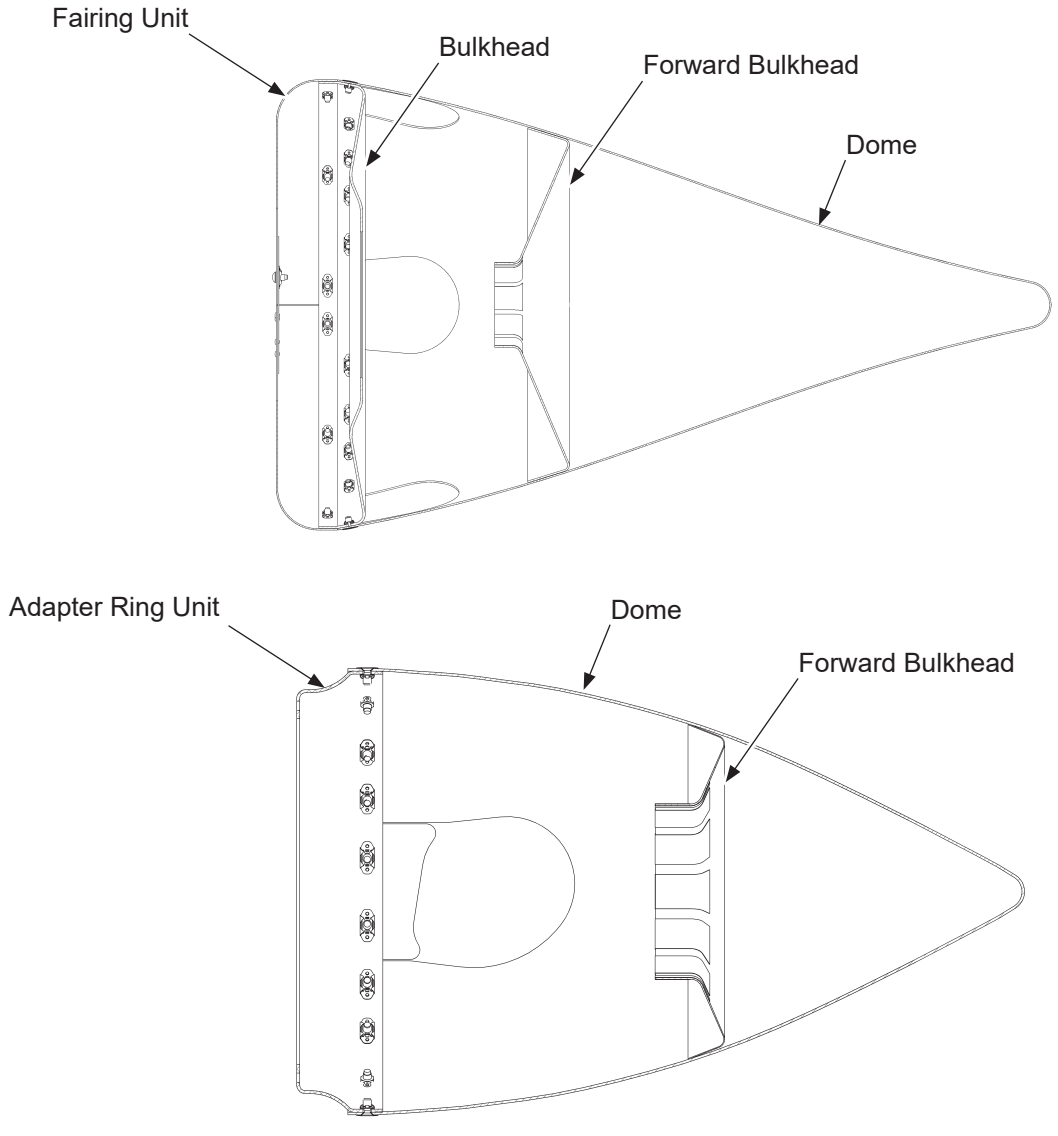
Hybrid Spinners
Table 1-1

1. Description

A. General

(1) Hartzell Propeller composite spinners streamline air flow over the propeller to improve performance, improve the cooling effect of air on air cooled engines, and improve airflow into turbine engine inlets for maximum power. Spinners also improve the appearance of the propeller.

(2) A "hybrid" spinner assembly has a composite dome and a metal bulkhead or metal adapter ring. Refer to Table 1-1 for a list of hybrid spinners.



Identification of Composite Spinner Assembly Components
Figure 1-1

2. Spinner Assembly Components

NOTE: Refer to Figure 1-1 for identification of composite spinner assembly components.

A. Dome

(1) The dome is the outer shell of the spinner assembly that is attached to the bulkhead by the dome mounting screws.

(2) The composite spinner dome is assembled from layers of composite laminates - fiberglass, carbon fiber, and Kevlar® - that are molded into the desired streamlined aerodynamic shape under high temperatures and pressure.

(3) A dome could have a bonded forward bulkhead.

B. Forward Bulkhead

(1) A forward bulkhead is a forward support for the dome.

(2) The forward bulkhead may be constructed of fiberglass, Kevlar® and/or carbon fiber, with a foam core or honeycomb layered between the laminates.

C. Bulkhead

(1) The bulkhead supports the spinner dome and attaches to the engine or propeller and may or may not be of composite material.

(2) A composite spinner bulkhead may be constructed of fiberglass, Kevlar® and/or carbon fiber, with a foam core or honeycomb layered between the laminates.

(3) Some bulkheads contain molded-in threaded inserts for attachment of hardware such as balance weights and ice protection system hardware.

D. Adapter Ring Unit

(1) An adapter ring unit supports the spinner dome and attaches to the engine.

E. Fairing Unit

(1) A fairing unit attaches to the engine-side of the main bulkhead, providing an aerodynamic cover.

3. Part Identification

A. Identification of the Spinner Dome

(1) A label or marking that shows the Hartzell Propeller part number and serial number can be found on the inside of the spinner dome, between the blade cutouts.

B. Identification of the Spinner Bulkhead

(1) A label or marking that shows the Hartzell Propeller part number and serial number can be found on the inside of the spinner bulkhead, between the blade cutouts.

C. Parts Numbers

(1) For part numbers, refer to the Illustrated Parts List chapter of this manual.

AUTOMATIC TEST REQUIREMENTS (NOT APPLICABLE) (Rev. 2)

NOTE: In accordance with ATA iSpec 2200 specification, this space is reserved for automatic test requirements. Such requirements are not applicable to the Hartzell Propeller composite spinners included in this manual.

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1. General Overhaul Requirements

   A. Requirements

      (1) For definitions and personnel requirements of overhaul, refer to the Introduction chapter of this manual.

      (2) Remove the spinner from the propeller assembly in accordance with the procedures detailed in the applicable Propeller Owner's Manual.

      (3) Though composite spinner overhaul is not mandatory, it is recommended that overhaul be performed at the time of composite propeller overhaul.

      (4) Repair all damage during overhaul.

      (5) Each spinner model has a different set of overhaul instructions. Outlines of these instructions are given in the form of a traveler.

      (6) A traveler lists all possible individual procedures required to perform a complete spinner overhaul. Individual procedures listed on a traveler are detailed in this chapter. After initial inspection, the spinner is assessed and the individual steps not required to perform overhaul are noted as N/R (not required) and initialed. Spinners may not require every individual procedure.

      (7) A traveler lists recommended steps of overhaul and provides quality control and maintenance records. It is not mandatory that these records are used, but it is highly recommended.

      (8) Inspection forms are used in conjunction with the traveler.

      (9) Make a record in the Repair section at the bottom of the traveler of any repair that is not listed on the traveler. Refer to the Minor Repair and Major Repair chapters in this manual for limits and procedures.

      (10) As stated in the Introduction chapter of this manual, spinner overhaul and major repair must be performed by an appropriately licensed repair facility with personnel trained and approved by Hartzell Propeller for the specific type of major repair involved.

      NOTE: Sample copies of the forms mentioned above may be found at the end of this chapter. The forms are the responsibility of each individual shop.

2. Overhaul Procedures

A. General

(1) Perform the following procedures during overhaul. To determine the specific steps for a particular spinner model, refer to the traveler for that spinner.

(2) For spinner assembly D-5253, return the spinner to Hartzell Propeller for overhaul and/or repair.

B. Clean

(1) Using a clean, dry cloth such as CM159, wipe away grease.

WARNING: ADHESIVES AND SOLVENTS ARE FLAMMABLE AND TOXIC TO THE SKIN, EYES, AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION ARE REQUIRED. AVOID PROLONGED CONTACT AND BREATHING OF VAPORS. USE SOLVENT RESISTANT GLOVES TO MINIMIZE SKIN CONTACT AND WEAR SAFETY GLASSES FOR EYE PROTECTION. USE IN A WELL VENTILATED AREA AWAY FROM SPARKS AND FLAME. READ AND OBSERVE ALL WARNING LABELS.

(2) Using a cloth dampened with solvent acetone CM173, MEK CM106, or MPK CM219, remove the remaining grease.

(3) Permit the solvent acetone CM173, MEK CM106, or MPK CM219 to evaporate.

C. UHMV Tape Removal

(1) Remove UHMV tape in accordance with the section "Replacement of the UHMW Tape CM137" in the Minor Repair chapter of this manual.

D. Erosion Mask Removal

(1) Remove the erosion mask in accordance with the section "Erosion Mask Removal and Installation" in the Finish Procedures chapter of this manual.

E. Paint Removal

CAUTION 1: KEEP THE SANDER MOVING AT ALL TIMES TO PREVENT OVERHEATING AND RESULTING PART DAMAGE. DOME AND BULKHEAD MATERIALS ARE VERY THIN IN CERTAIN AREAS. REMOVAL OF MATERIAL MAY AFFECT THE STRENGTH OF THE PART.

CAUTION 2: FOR SPINNER MODEL E-5579-( ), THE DOME HAS AN EROSION CAP. USE CARE WHEN REMOVING PAINT IN THIS AREA TO NOT REMOVE EROSION CAP MATERIAL.

(1) For a spinner that has Polane® T paint finish:

(a) Using 60 grit or finer sandpaper, sand smooth the entire surface of the part down to the primer filler. Avoid removal of composite material.

(2) For a spinner that has Acry Glo® Series 571 paint finish:

(a) Using 60 grit or finer sandpaper, sand smooth the entire surface of the part to the last layer before the composite material (the white layer below the black conductive coating).

1 Refer to Table 7-1 in the Finish Procedures chapter of this manual for the applicable Finish layers. Primer Sealer may not be present in factory finished components.

F. Initial Inspection

(1) Visually examine the spinner for any defects, such as those listed in the airworthiness limits in the Check chapter of this manual, as well as any other defect.

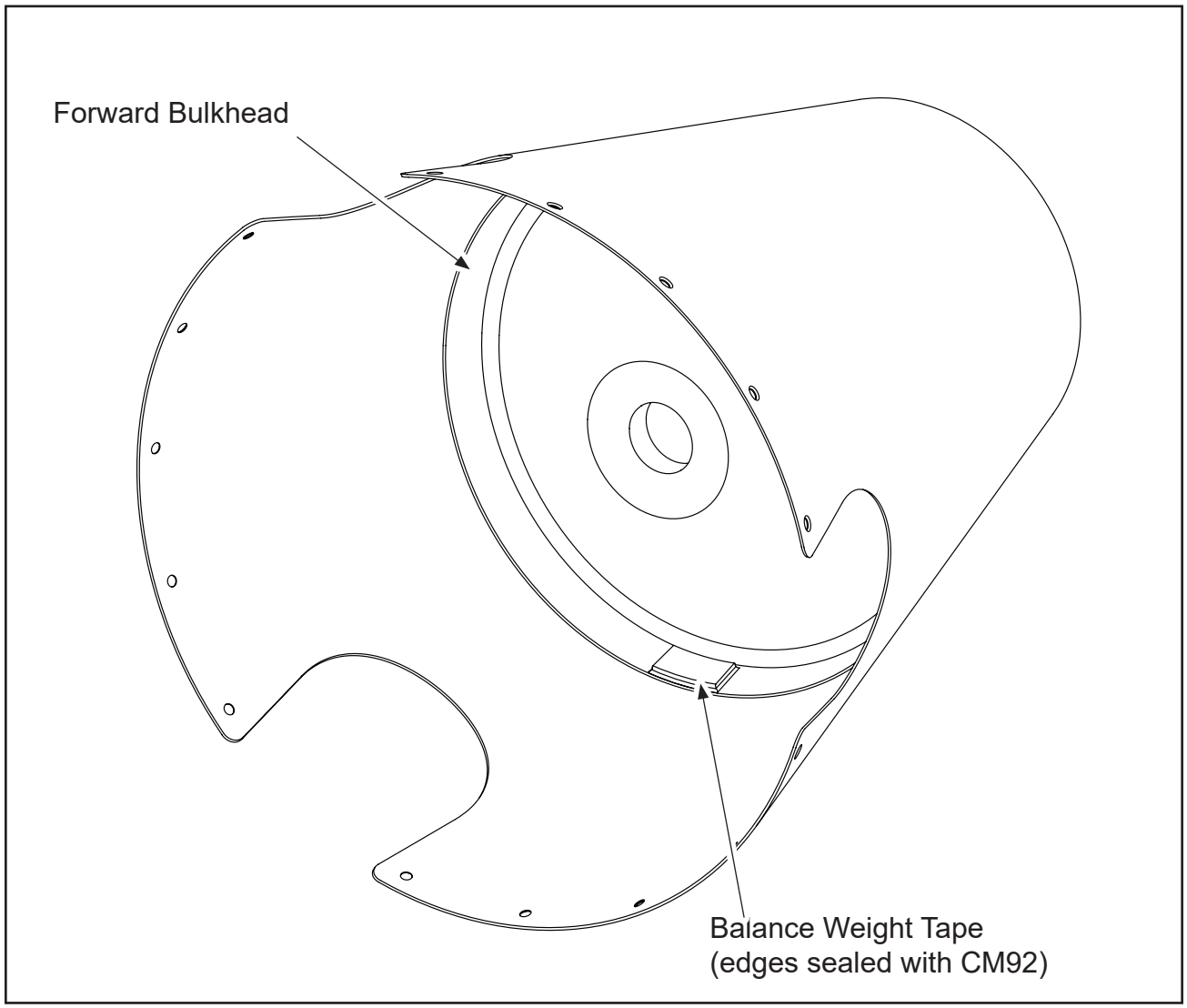
(2) Make a record of the defects on the Overhaul Inspection forms, listing the size and the location. Mark the form as incoming.

G. Balance Weight Tape - 105122( ) Spinner Domes Only

CAUTION: DO NOT REMOVE BALANCE WEIGHT TAPE FROM THE 105122( ) SPINNER DOME.

(1) Hartzell Propeller 105122( ) spinner domes are statically balanced at the factory. If required, balance weight tape is applied to the forward bulkhead. Refer to Figure 3-1. The edges of the balance weight tape are sealed with CM92. Do not remove the balance weight tape.

(a) If the balance weight tape is loose or if there is evidence that it has been removed or fallen off, contact the Hartzell Propeller Product Support Department.



Balance Weight Tape on the Forward Bulkhead of 105122( ) Spinner Dome
Figure 3-1

SPINNER MODEL
OVERHAUL TRAVELERS

Overhaul
TRAVELER
Spinner Model D-5253

Return the spinner to Hartzell Propeller for overhaul or repair

Overhaul
TRAVELER
Spinner Model D-5311-( )

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model D-5212-( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		
Bulkhead Model D-5313-( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		
7	Inspect and Repair Slip Ring	Hartzell Manual 180 (30-61-80)		
Filler Plate Model D-5315-( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model D-5362-( )

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model D-5363-( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model D-5364-( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See Below		
6	Refinish	Finish Procedures chapter		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model E-5579-( )

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model E-5580-( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model E-5581-( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model D-7409-( )

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model D-7408				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model D-7404				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model E-7480

Date _____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model D-7481				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model D-6666				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 101298 (Hybrid)

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 101299				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model D-7484-1G NOTE: This is an aluminum bulkhead.				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Manual 127		
2	Remove Paint	Manual 127		
3	Initial Inspection	Manual 127		
4	Repair	Manual 127		
5	Refinish	Manual 127		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 102870( )

Date _____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 102885( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 102892				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 103409( ) (Hybrid)

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 103410( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model C-2472-6( ) NOTE: This is an aluminum bulkhead.				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Manual 127		
2	Remove Paint	Manual 127		
3	Initial Inspection	Manual 127		
4	Determine if Field Repairable	Manual 127		
5	Repair	Manual 127		
6	Refinish	Manual 127		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 103585( ) (Hybrid)

Date _____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 103582( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Adapter Ring Unit Model 103584( ) NOTE: This is an aluminum part.				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Manual 127		
2	Remove Paint	Manual 127		
3	Initial Inspection	Manual 127		
4	Determine if Field Repairable	Manual 127		
5	Repair	Manual 127		
6	Refinish	Manual 127		

Filler Plate Model 103583 or 104001				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 103629( ) (Hybrid)

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 103627( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Adapter Ring Unit Model 103628( ) NOTE: This is an aluminum part.				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Manual 127		
2	Remove Paint	Manual 127		
3	Initial Inspection	Manual 127		
4	Determine if Field Repairable	Manual 127		
5	Repair	Manual 127		
6	Refinish	Manual 127		

Filler Plate Model 104001				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 104529

Date _____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

Fairing Unit Serial Number_____

TSN _____ TSO_____

Dome Model 104573				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 104572				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Fairing Unit 104571				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 104888-( ) (Hybrid)

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 104886( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 104887 NOTE: This is an aluminum bulkhead.				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Manual 127		
2	Remove Paint	Manual 127		
3	Initial Inspection	Manual 127		
4	Determine if Field Repairable	Manual 127		
5	Repair	Manual 127		
6	Refinish	Manual 127		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 105085( )

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 105122( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 105123( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 105127( )

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 105129( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 106015( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 105656( ) (Hybrid)

Date _____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 105651( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 105652 NOTE: This is an aluminum bulkhead.				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Manual 127		
2	Remove Paint	Manual 127		
3	Initial Inspection	Manual 127		
4	Determine if Field Repairable	Manual 127		
5	Repair	Manual 127		
6	Refinish	Manual 127		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 105675 (Hybrid)

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 105674				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 105672 NOTE: This is an aluminum bulkhead.				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Manual 127		
2	Remove Paint	Manual 127		
3	Initial Inspection	Manual 127		
4	Determine if Field Repairable	Manual 127		
5	Repair	Manual 127		
6	Refinish	Manual 127		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 105945( ) (Hybrid)

Date _____

Work Order No. _____ Customer _____

Adapter Ring Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 105943( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Adapter Ring Unit Model 105944( ) or C-885-3( ) NOTE: This is an aluminum part.				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Manual 127		
2	Remove Paint	Manual 127		
3	Initial Inspection	Manual 127		
4	Determine if Field Repairable	Manual 127		
5	Repair	Manual 127		
6	Refinish	Manual 127		

Filler Plate Model 104001				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 106040( )

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 106039( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 106348( ) NOTE: This is an aluminum bulkhead.				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Manual 127		
2	Remove Paint	Manual 127		
3	Initial Inspection	Manual 127		
4	Determine if Field Repairable	Manual 127		
5	Repair	Manual 127		
6	Refinish	Manual 127		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 106188( )

Date _____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 106184( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 106185( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 106215( ) (Hybrid)

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 106214( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model C-2472-6( ) NOTE: This is an aluminum bulkhead.				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Manual 127		
2	Remove Paint	Manual 127		
3	Initial Inspection	Manual 127		
4	Determine if Field Repairable	Manual 127		
5	Repair	Manual 127		
6	Refinish	Manual 127		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 106311( )

Date _____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 106322( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 106323( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 106574( ) (Hybrid)

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 103582( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 106573( ) NOTE: This is an aluminum bulkhead.				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Manual 127		
2	Remove Paint	Manual 127		
3	Initial Inspection	Manual 127		
4	Determine if Field Repairable	Manual 127		
5	Repair	Manual 127		
6	Refinish	Manual 127		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 106848( ) (Hybrid)

Date _____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 106847( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 106348( ) NOTE: This is an aluminum bulkhead.				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Manual 127		
2	Remove Paint	Manual 127		
3	Initial Inspection	Manual 127		
4	Determine if Field Repairable	Manual 127		
5	Repair	Manual 127		
6	Refinish	Manual 127		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 106871( ) (Hybrid)

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 106911( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 106910( ) NOTE: This is an aluminum bulkhead.				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Manual 127		
2	Remove Paint	Manual 127		
3	Initial Inspection	Manual 127		
4	Determine if Field Repairable	Manual 127		
5	Repair	Manual 127		
6	Refinish	Manual 127		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 106957( )

Date _____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

Fairing Unit Serial Number_____

TSN _____ TSO_____

Dome Model 106956				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 106955				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Fairing Unit 104571				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 107153 (Hybrid)

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 107151( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 107152( ) NOTE: This is an aluminum bulkhead.				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Manual 127		
2	Remove Paint	Manual 127		
3	Initial Inspection	Manual 127		
4	Determine if Field Repairable	Manual 127		
5	Repair	Manual 127		
6	Refinish	Manual 127		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 107376 (Hybrid)

Date _____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 107375( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model C-3283-5( ) NOTE: This is an aluminum bulkhead.				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Manual 127		
2	Remove Paint	Manual 127		
3	Initial Inspection	Manual 127		
4	Determine if Field Repairable	Manual 127		
5	Repair	Manual 127		
6	Refinish	Manual 127		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 107507( )

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 107505( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 107506( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 107554( )

Date _____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 107553( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 107552( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 107974( )

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 107973( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 107937( ) NOTE: This is an aluminum bulkhead.				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Manual 127		
2	Remove Paint	Manual 127		
3	Initial Inspection	Manual 127		
4	Determine if Field Repairable	Manual 127		
5	Repair	Manual 127		
6	Refinish	Manual 127		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Models 108013( )

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 108011( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 108009( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

Overhaul
TRAVELER
Spinner Model 108482( )

Date_____

Work Order No. _____ Customer _____

Bulkhead Serial Number _____ Dome Serial Number _____

TSN _____

TSO _____

Dome Model 108481( )				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Overhaul chapter		
2	Remove Paint	Overhaul chapter		
3	Initial Inspection	Overhaul chapter		
4	Determine if Field Repairable	Overhaul, Minor Repair, and Major Repair chapters		
5	Repair	See NOTES Below		
6	Refinish	Finish Procedures chapter		

Bulkhead Model 108480( ) NOTE: This is an aluminum bulkhead.				
Oper	**Operation Description**	**Per Inst.**	**Date**	**By**
1	Clean	Manual 127		
2	Remove Paint	Manual 127		
3	Initial Inspection	Manual 127		
4	Determine if Field Repairable	Manual 127		
5	Repair	Manual 127		
6	Refinish	Manual 127		

NOTES:

Unless otherwise specified, all procedures refer to the Overhaul chapter of Hartzell Propeller Composite Spinner Maintenance Manual 148 (61-16-48).

DOME OVERHAUL INSPECTION FORMS

DOME OVERHAUL INSPECTION FORM

Dome Model No. _____

Inspected By:_____

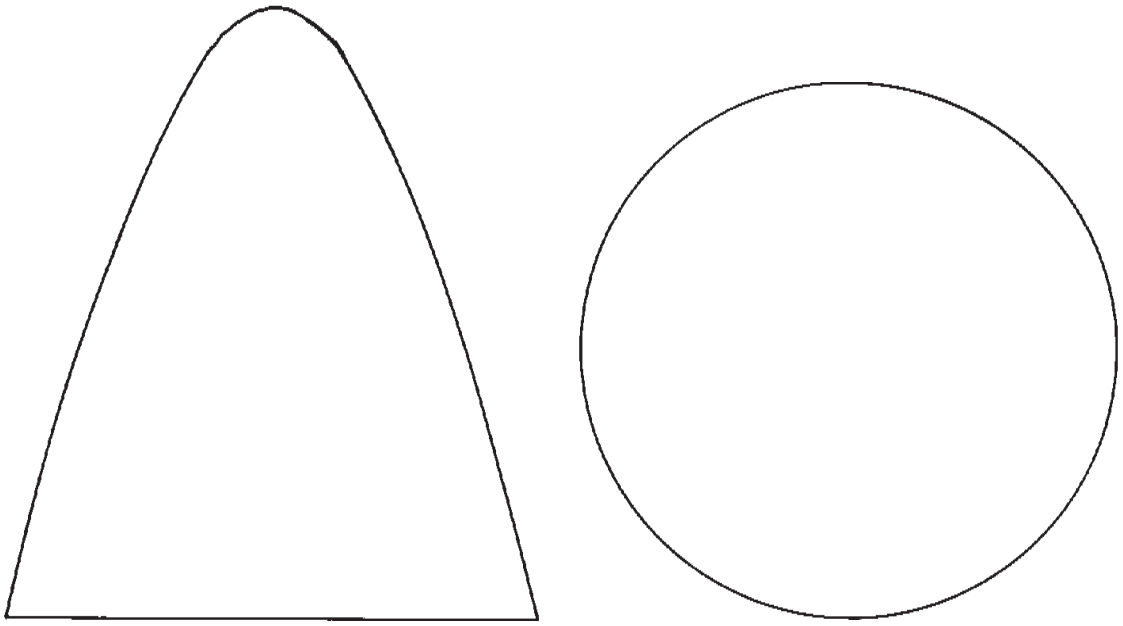
Date: _____

Serial No._____

Work Order Number: _____

☐ Incoming ☐ Outgoing

Resistance Check Inspection ____Pass ____Fail (Note location of failure)



APS1041

C = Crack **DB = Debond**
DL = Delamination **ER = Erosion**

I BULKHEAD OVERHAUL INSPECTION FORMS

OVERHAUL INSPECTION FORM
Bulkhead Model No. C-2472-6( ) (Aluminum)

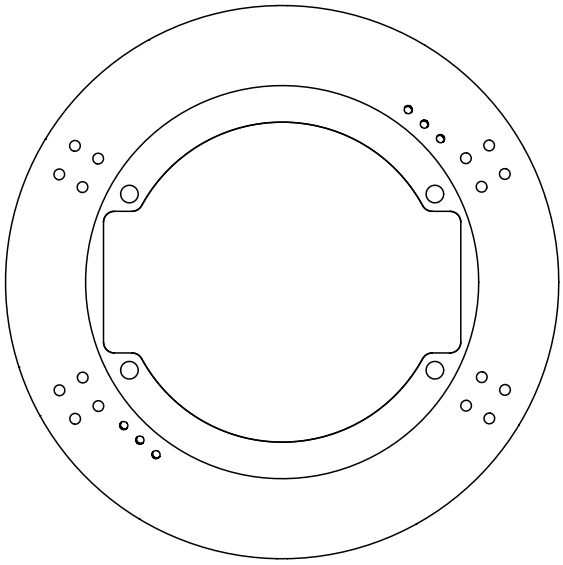
Inspected By:_____

Date: _____

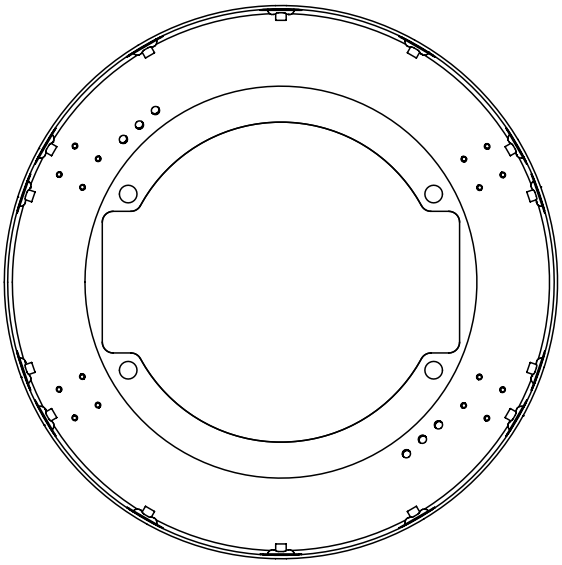
Serial No._____

Work Order Number: _____

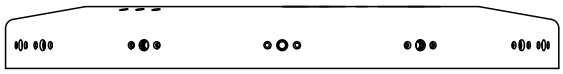
☐ Incoming ☐ Outgoing

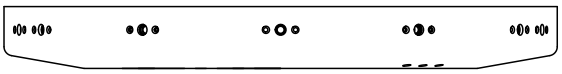


Propeller Side



Engine Side





TPI-C-2472-6

NOTE: This is an aluminum bulkhead.

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. C-3283-5( ) (Aluminum)

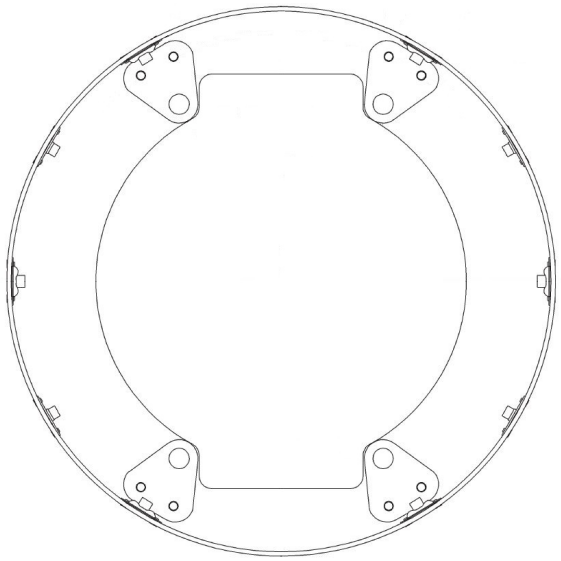
Inspected By:_____

Date: _____

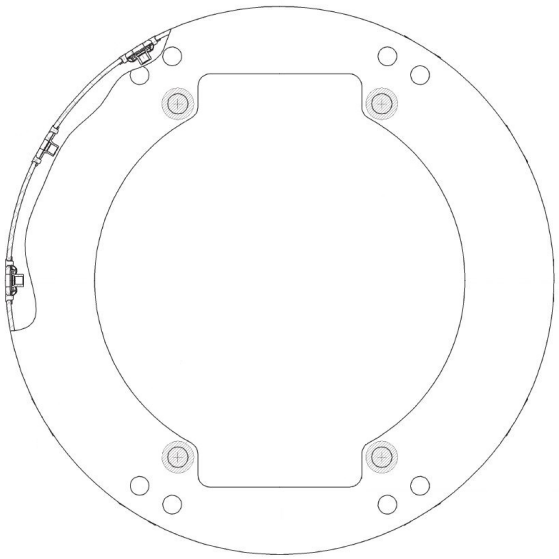
Serial No._____

Work Order Number: _____

☐ Incoming ☐ Outgoing



Propeller Side



Engine Side

TPI-JM-100101

NOTE: This is an aluminum bulkhead.

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

Bulkhead Model No. D-5264

Return the spinner to Hartzell Propeller for overhaul and/or repair.

OVERHAUL INSPECTION FORM
Bulkhead Model No. D-5313-( )

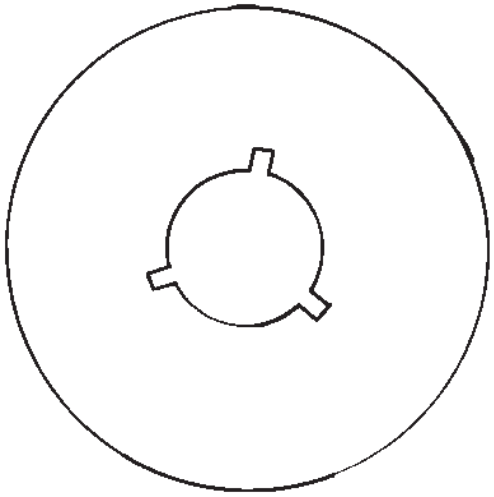
Inspected By:_____

Date: _____

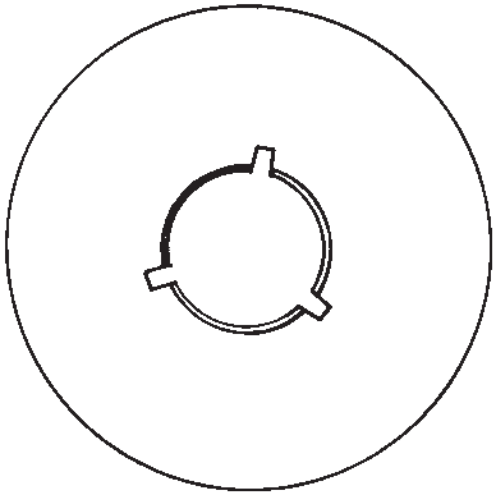
Serial No._____

Work Order Number: _____

☐ Incoming ☐ Outgoing



Propeller Side



Engine Side

APS-1038

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. D-5364-( )

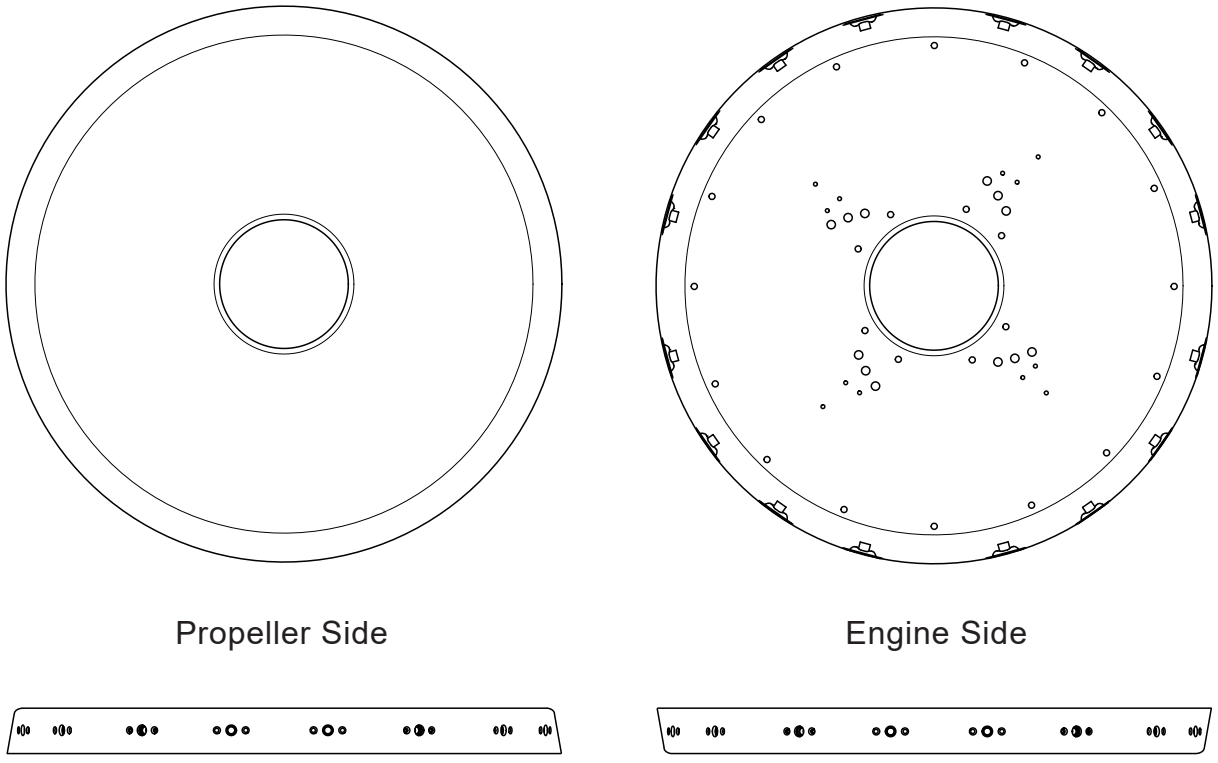
Inspected By:_____

Date: _____

Serial No._____

Work Order Number: _____

☐ Incoming ☐ Outgoing



Propeller Side

Engine Side

TPI-JM-000428

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. D-6666

Inspected By:_____

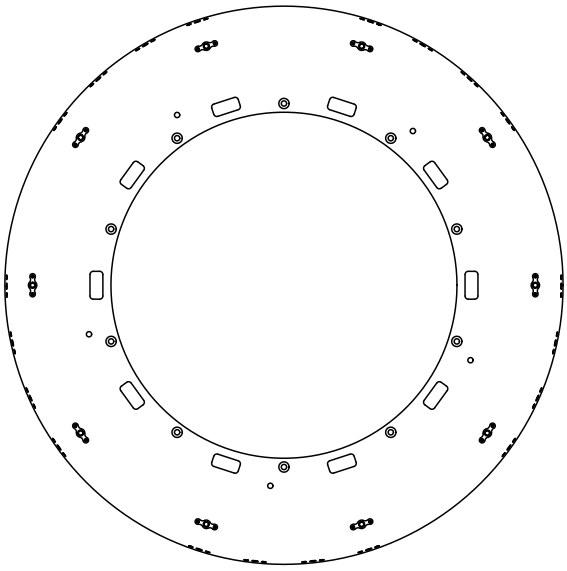
Date: _____

Serial No._____

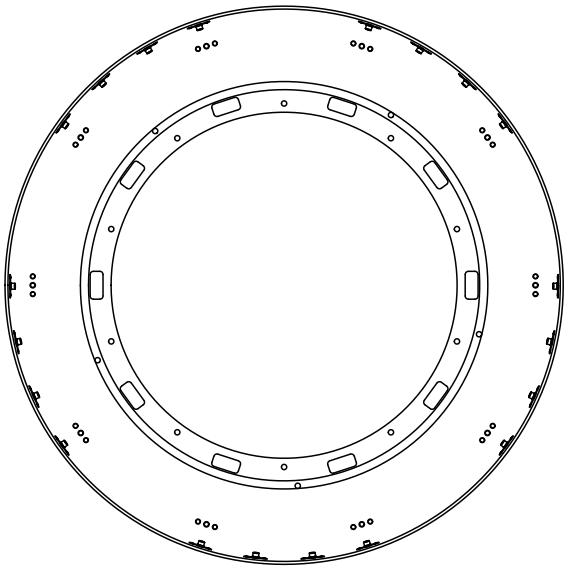
Work Order Number: _____

☐ Incoming ☐ Outgoing

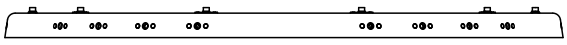
Resistance Check Inspection ____Pass ____Fail (Note location of failure)

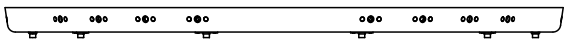


Propeller Side



Engine Side





TPI-D-6666

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. D-7404-( )

Inspected By:_____

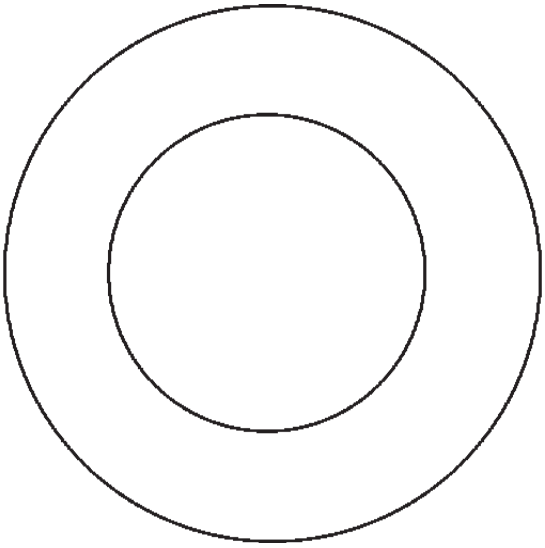
Date: _____

Serial No._____

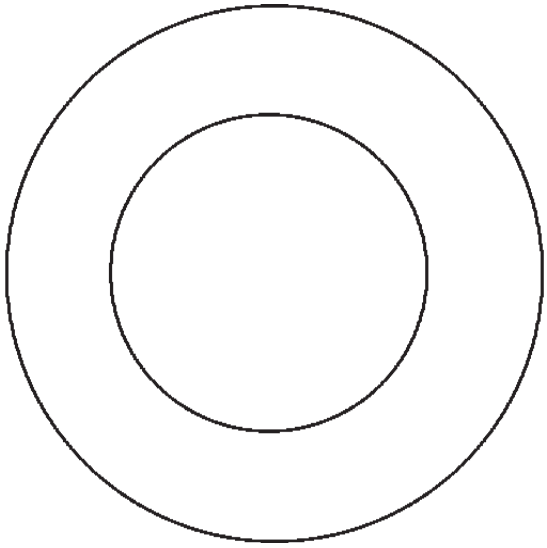
Work Order Number: _____

☐ Incoming ☐ Outgoing

Resistance Check Inspection ____Pass ____Fail (Note location of failure)



Propeller Side



Engine Side

APS-1039

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. D-7084-1G (Aluminum)

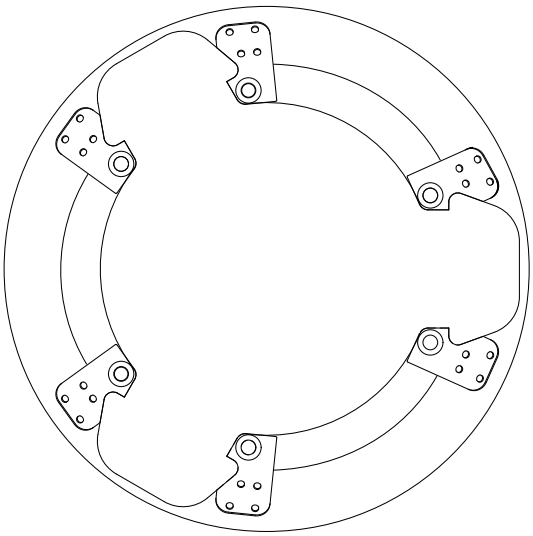
Inspected By:_____

Date: _____

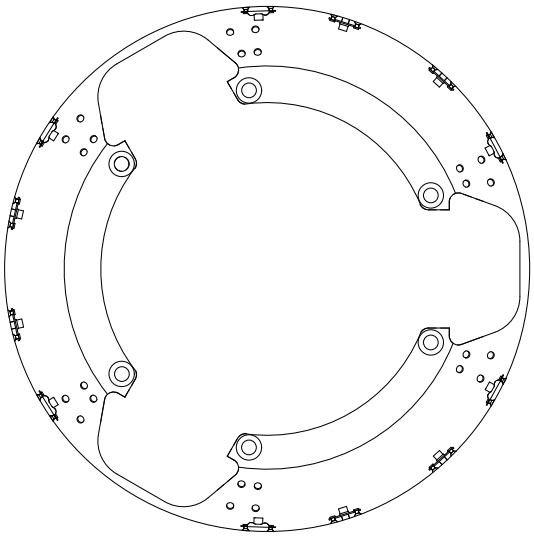
Serial No._____

Work Order Number: _____

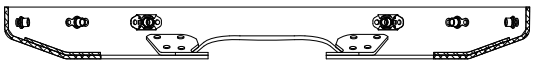
☐ Incoming ☐ Outgoing



Propeller Side



Engine Side



TPI-D-7084-1

NOTE: This is an aluminum bulkhead.

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. E-5581-( )

Inspected By:_____

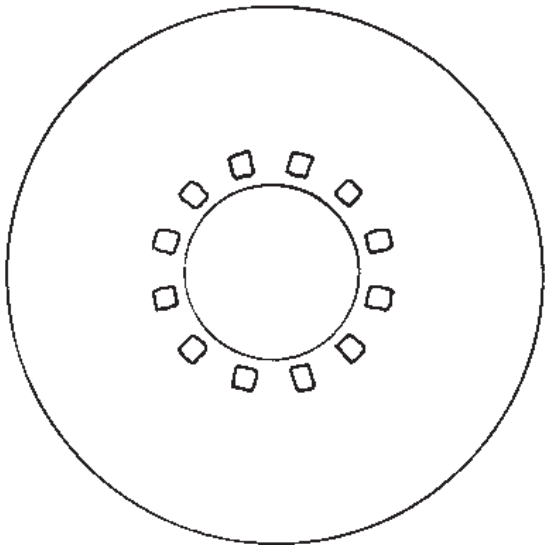
Date: _____

Serial No._____

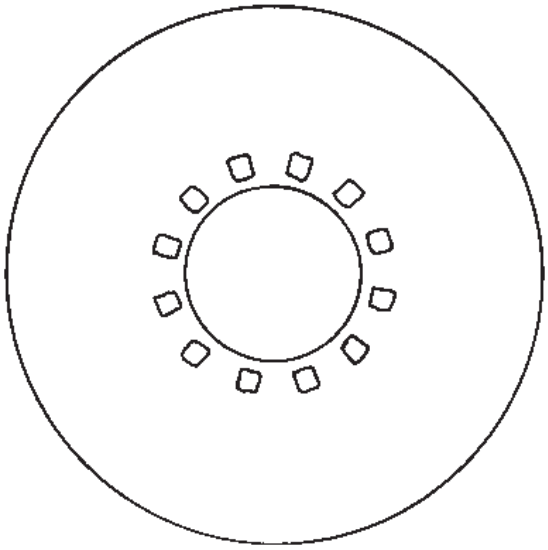
Work Order Number: _____

☐ Incoming ☐ Outgoing

Resistance Check Inspection ____Pass ____Fail (Note location of failure)



Propeller Side



Engine Side

APS-1039

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. 102892( )

Inspected By:_____

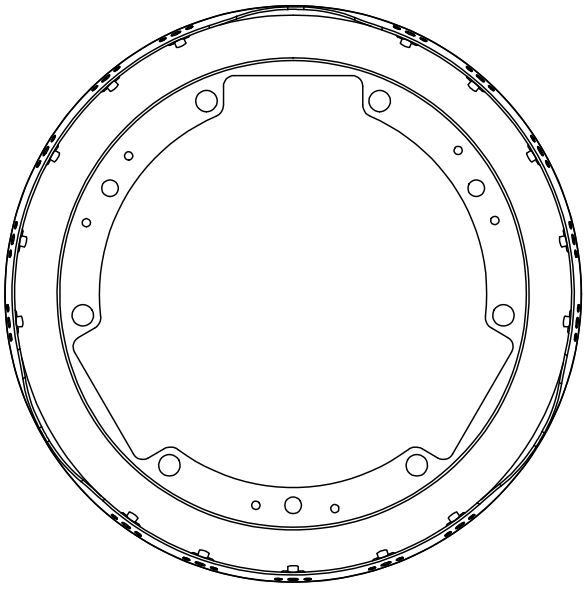
Date: _____

Serial No._____

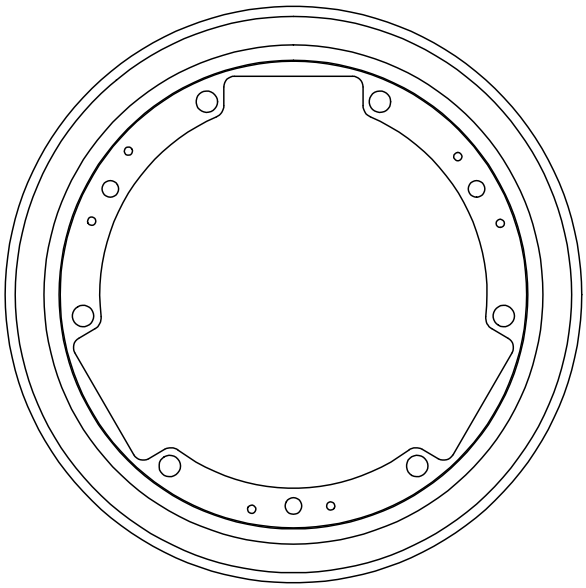
Work Order Number: _____

☐ Incoming ☐ Outgoing

Resistance Check Inspection ____Pass ____Fail (Note location of failure)



Propeller Side



Engine Side

TPI-C-2294-20

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. 104572

Inspected By:_____

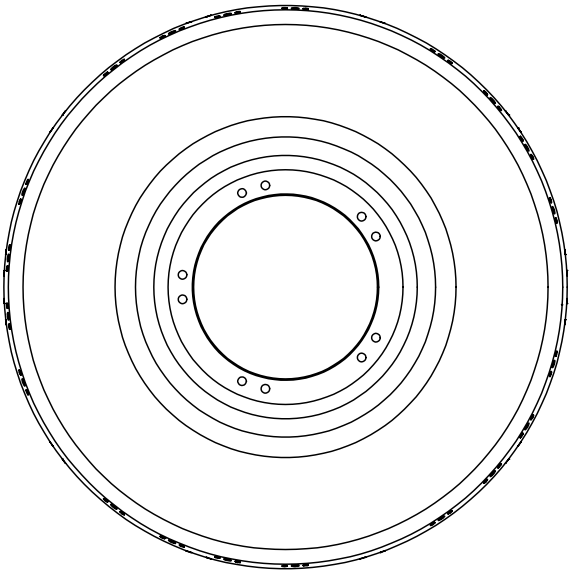
Date: _____

Serial No._____

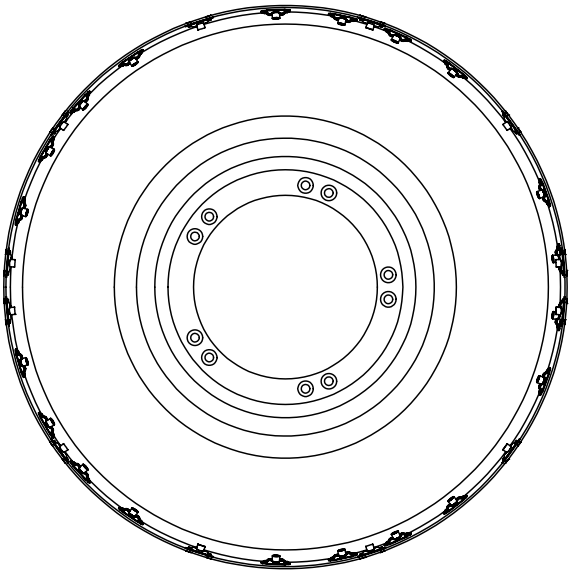
Work Order Number: _____

☐ Incoming ☐ Outgoing

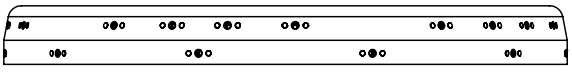
Resistance Check Inspection ____Pass ____Fail (Note location of failure)

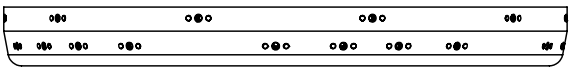


Propeller Side



Engine Side





TPI-104572

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. 104887 (Aluminum)

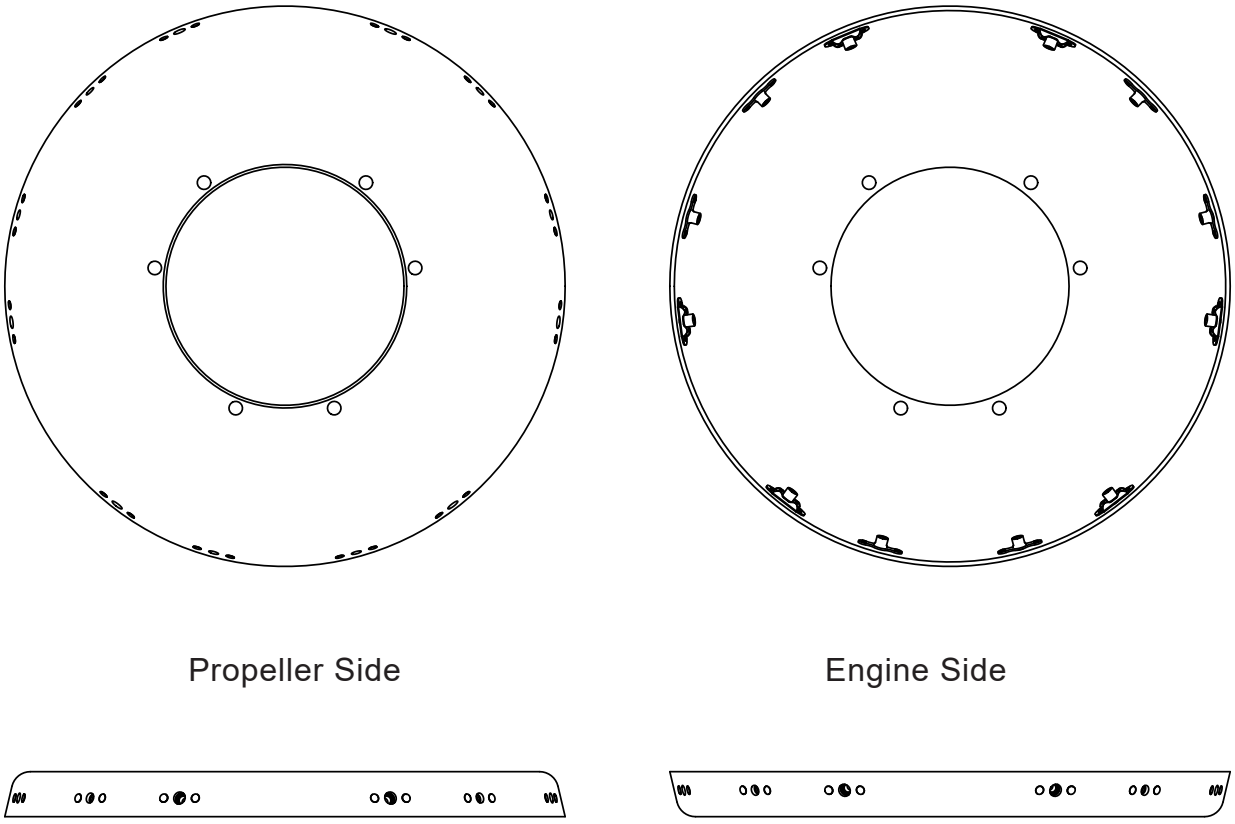
Inspected By:_____

Date: _____

Serial No._____

Work Order Number: _____

☐ Incoming ☐ Outgoing



Propeller Side

Engine Side

TPI-104887

NOTE: This is an aluminum bulkhead.

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. 105123( )

Inspected By:_____

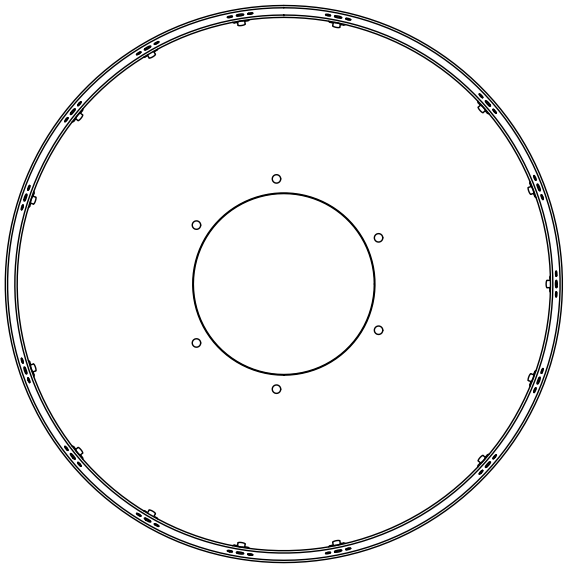
Date: _____

Serial No._____

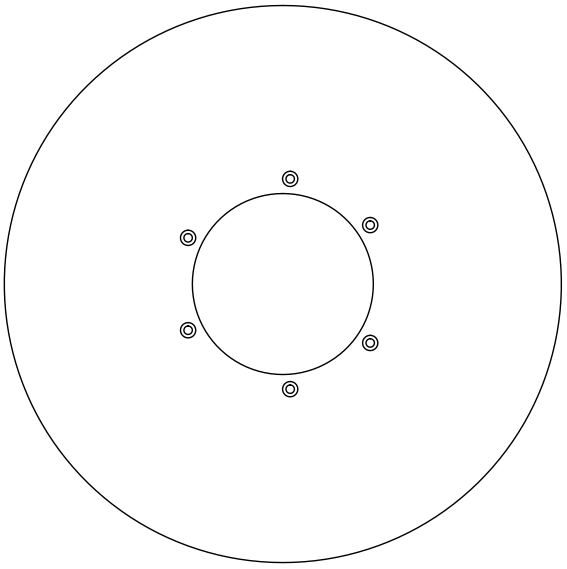
Work Order Number: _____

☐ Incoming ☐ Outgoing

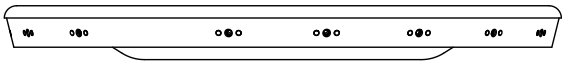
Resistance Check Inspection ____Pass ____Fail (Note location of failure)



Propeller Side



Engine Side



TPI-148-105123

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. 105652 (Aluminum)

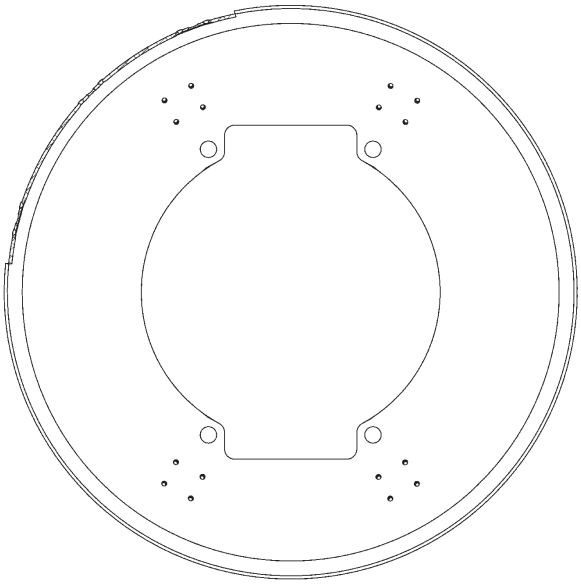
Inspected By:_____

Date: _____

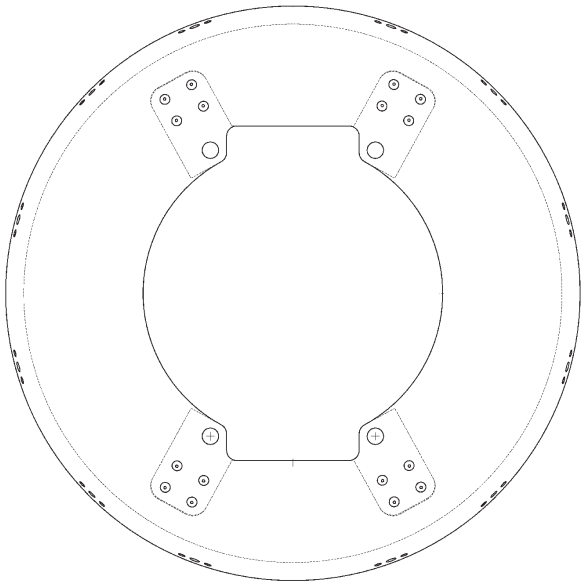
Serial No.: _____

Work Order Number: _____

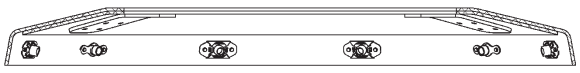
☐ Incoming ☐ Outgoing

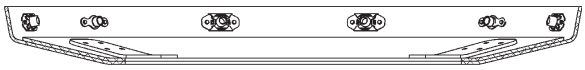


Propeller Side



Engine Side





TPI-105652

NOTE: This is an aluminum bulkhead.

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. 105672 (Aluminum)

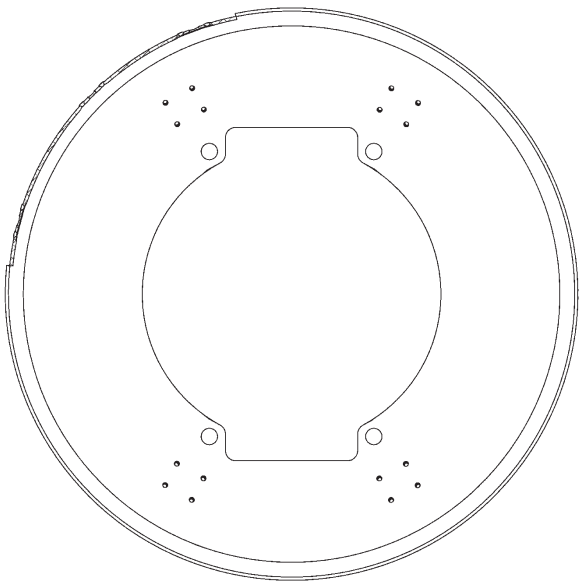
Inspected By:_____

Date: _____

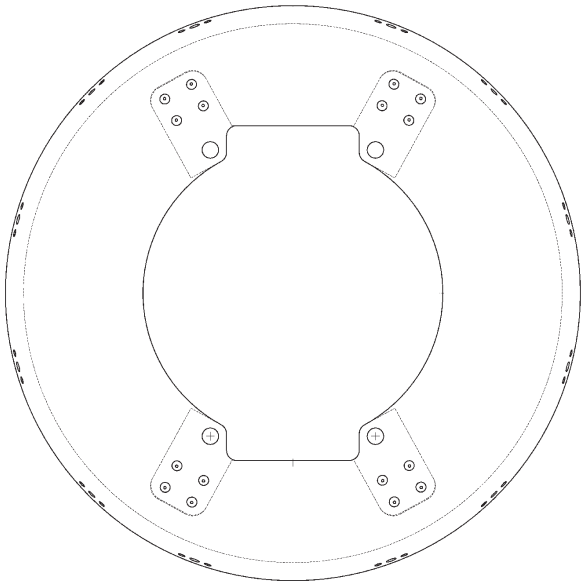
Serial No.: _____

Work Order Number: _____

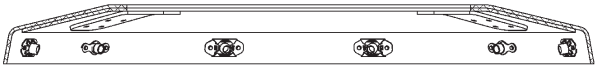
☐ Incoming ☐ Outgoing

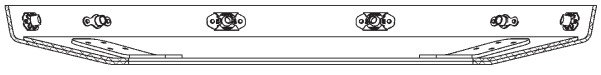


Propeller Side



Engine Side





TPI-105652

NOTE: This is an aluminum bulkhead.

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. 106015( )

Inspected By:_____

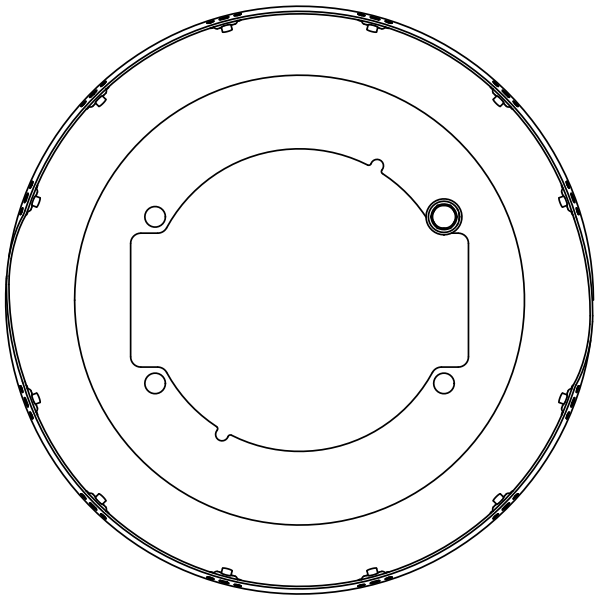
Date: _____

Serial No._____

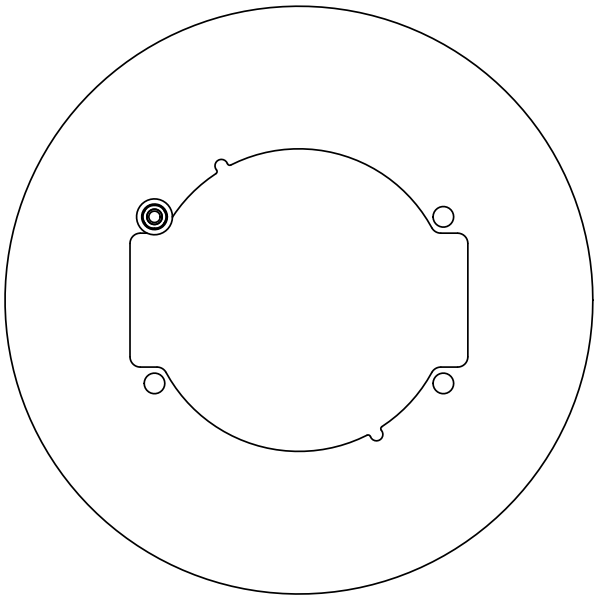
Work Order Number: _____

☐ Incoming ☐ Outgoing

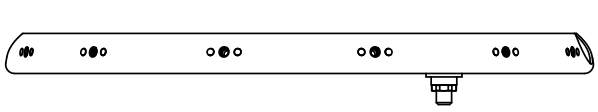
Resistance Check Inspection ____Pass ____Fail (Note location of failure)

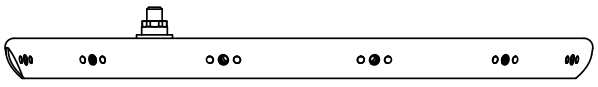


Propeller Side



Engine Side





TPI-JM-000429

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. 106185( )

Inspected By:_____

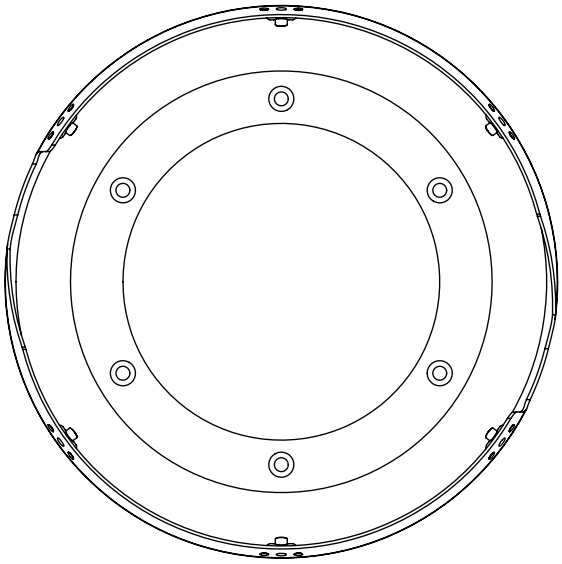
Date: _____

Serial No._____

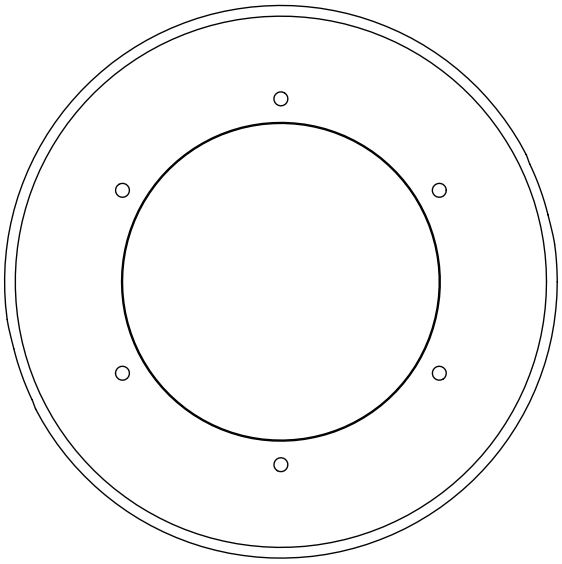
Work Order Number: _____

☐ Incoming ☐ Outgoing

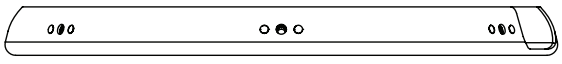
Resistance Check Inspection ____Pass ____Fail (Note location of failure)

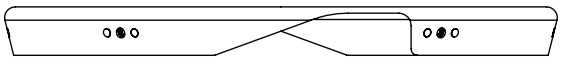


Propeller Side



Engine Side





TPI-MB-0091

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. 106323( )

Inspected By:_____

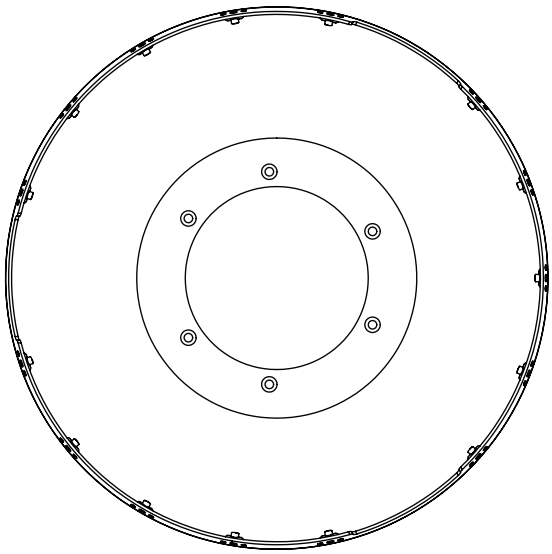
Date: _____

Serial No._____

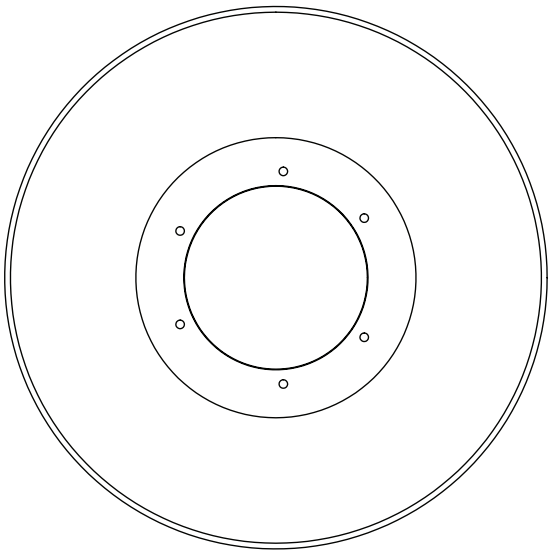
Work Order Number: _____

☐ Incoming ☐ Outgoing

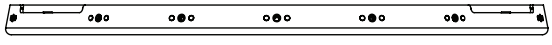
Resistance Check Inspection ____Pass ____Fail (Note location of failure)

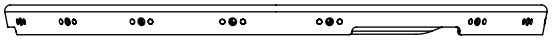


Propeller Side



Engine Side





TPI-MB-0124

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. 106348( ) (Aluminum)

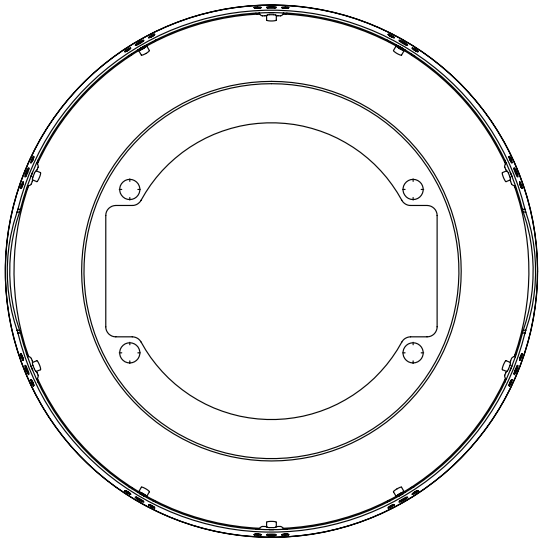
Inspected By:_____

Date: _____

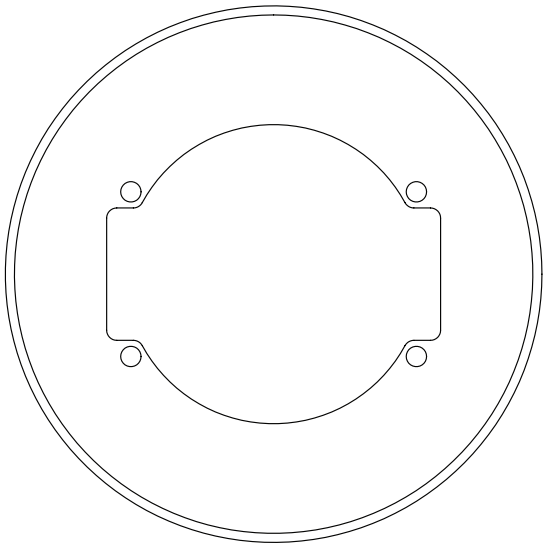
Serial No._____

Work Order Number: _____

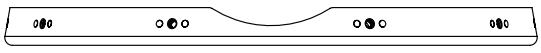
☐ Incoming ☐ Outgoing



Propeller Side



Engine Side



TPI-MB-0099

NOTE: This is an aluminum bulkhead.

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. 106573( ) (Aluminum)

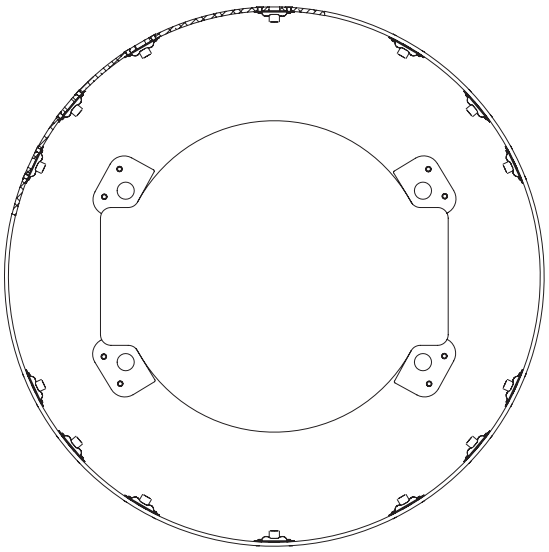
Inspected By:_____

Date: _____

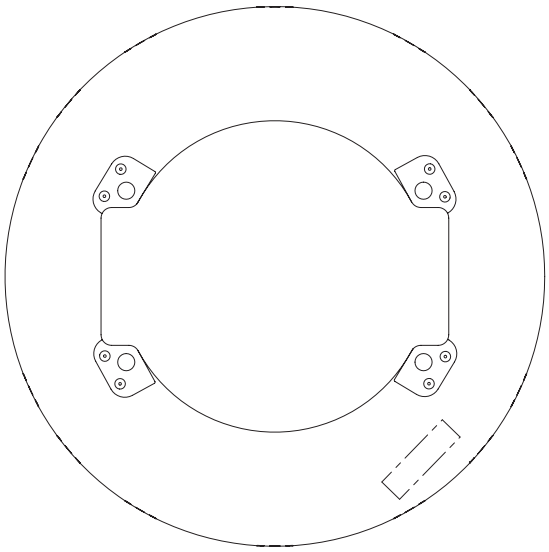
Serial No._____

Work Order Number: _____

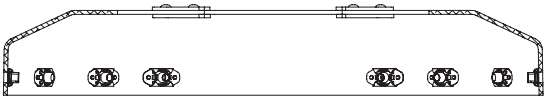
☐ Incoming ☐ Outgoing



Propeller Side



Engine Side



TPI-MB-0183

NOTE: This is an aluminum bulkhead.

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. 106910( ) (Aluminum)

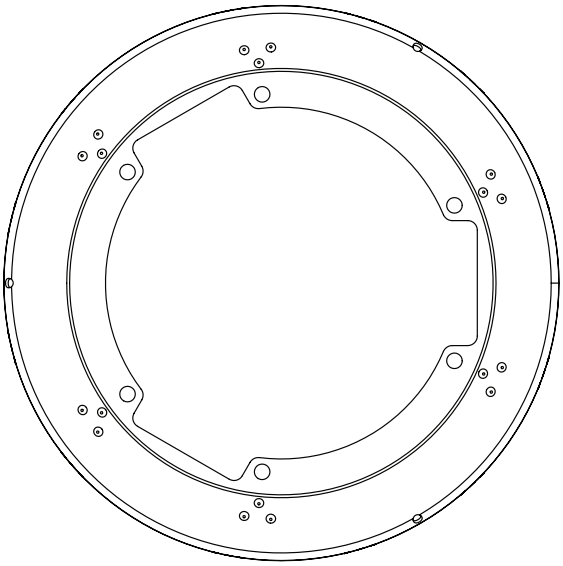
Inspected By:_____

Date: _____

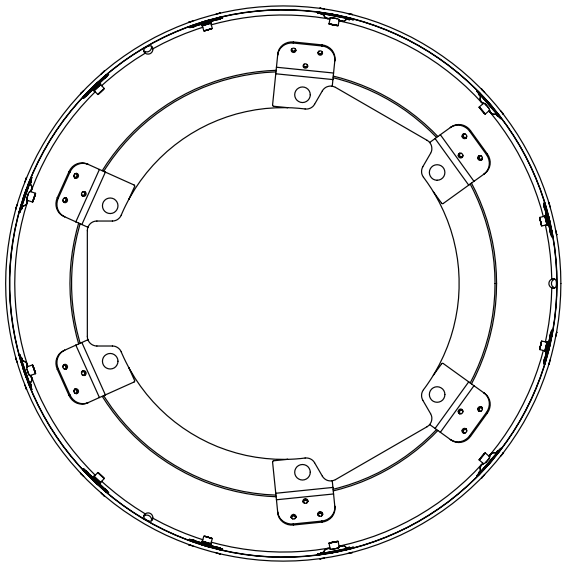
Serial No._____

Work Order Number: _____

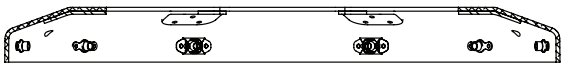
☐ Incoming ☐ Outgoing

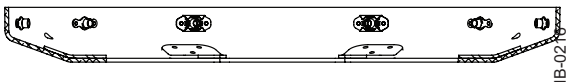


Propeller Side



Engine Side





TPI-MB-0216

NOTE: This is an aluminum bulkhead.

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. 106955

Inspected By:_____

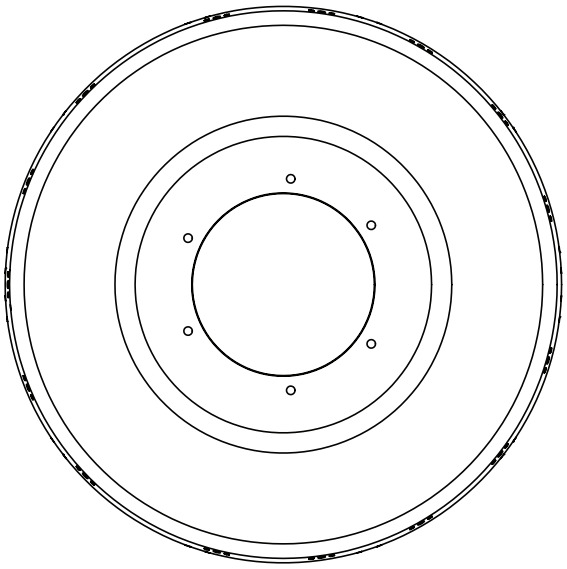
Date: _____

Serial No._____

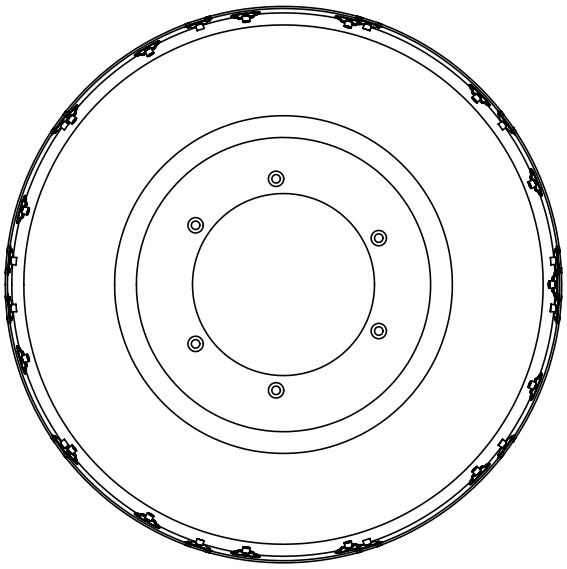
Work Order Number: _____

☐ Incoming ☐ Outgoing

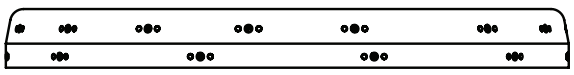
Resistance Check Inspection ____Pass ____Fail (Note location of failure)

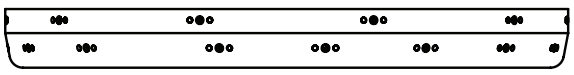


Propeller Side



Engine Side





TPI-MB-0220

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. 107152( ) (Aluminum)

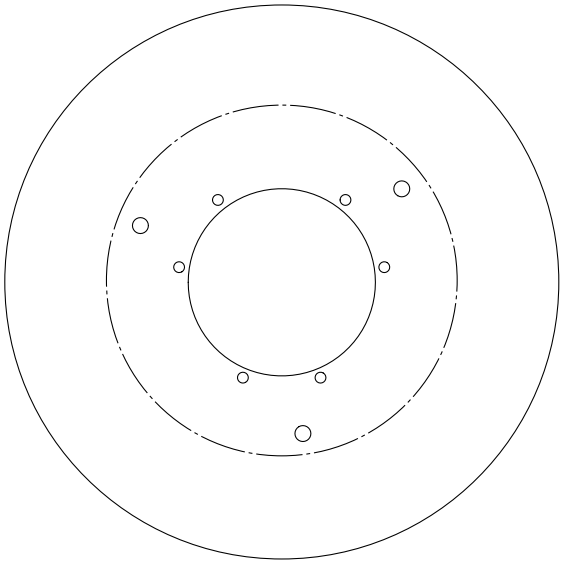
Inspected By:_____

Date: _____

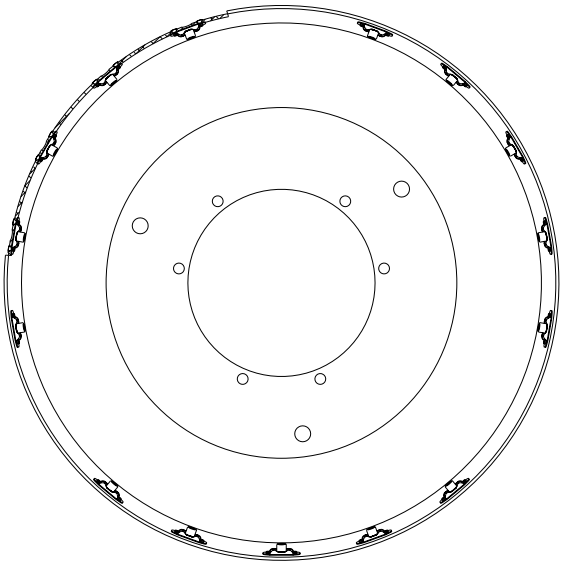
Serial No._____

Work Order Number: _____

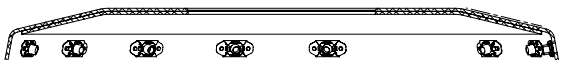
☐ Incoming ☐ Outgoing

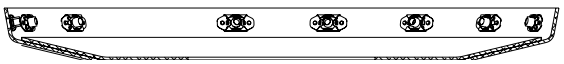


Propeller Side



Engine Side





TPI-JM-000102

NOTE: This is an aluminum bulkhead.

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. 107506( )

Inspected By:_____

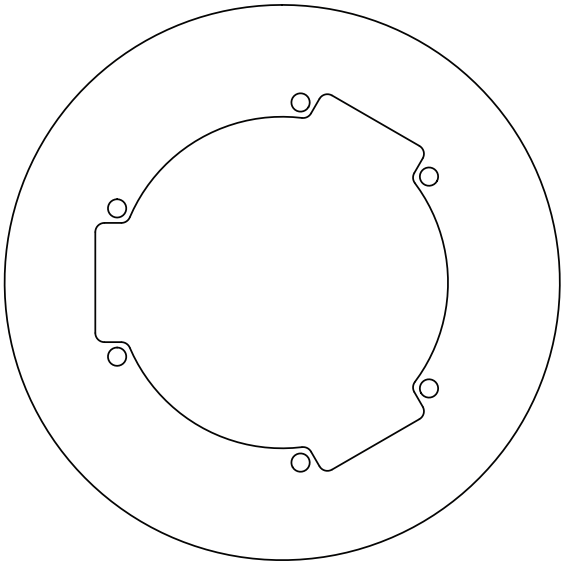
Date: _____

Serial No._____

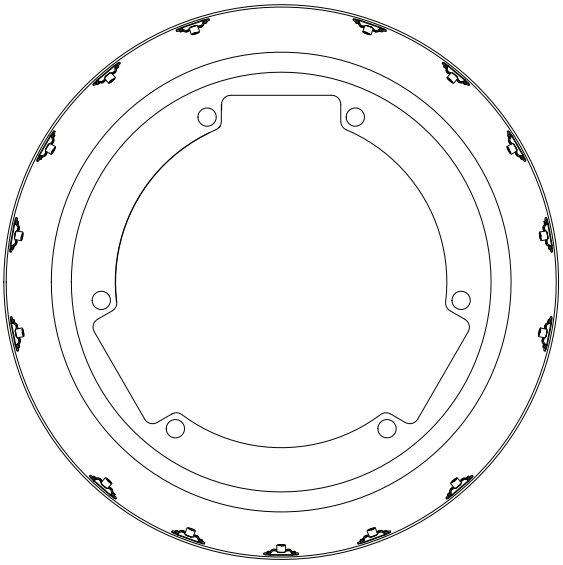
Work Order Number: _____

☐ Incoming ☐ Outgoing

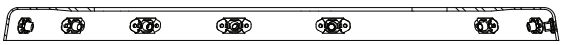
Resistance Check Inspection ____Pass ____Fail (Note location of failure)

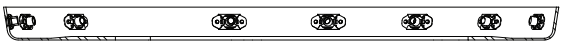


Propeller Side



Engine Side





TPI-JM-000110

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. 107552( )

Inspected By:_____

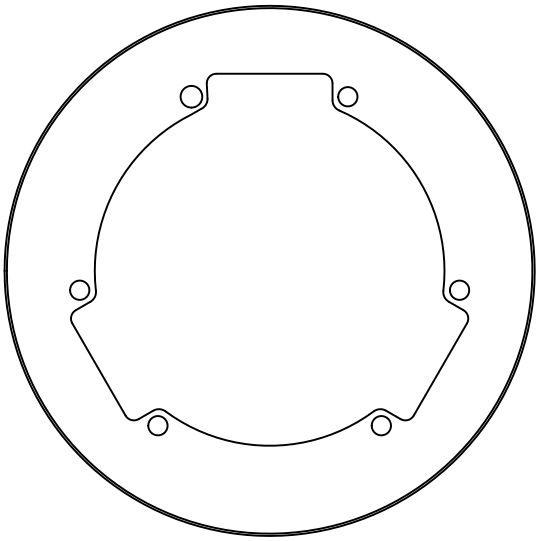
Date: _____

Serial No._____

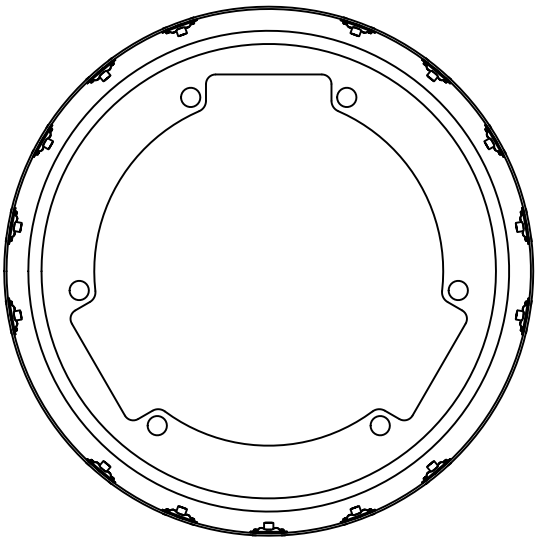
Work Order Number: _____

☐ Incoming ☐ Outgoing

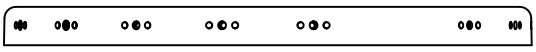
Resistance Check Inspection ____Pass ____Fail (Note location of failure)

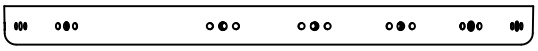


Propeller Side



Engine Side





TPI-JM-000264

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. 107937( ) (Aluminum)

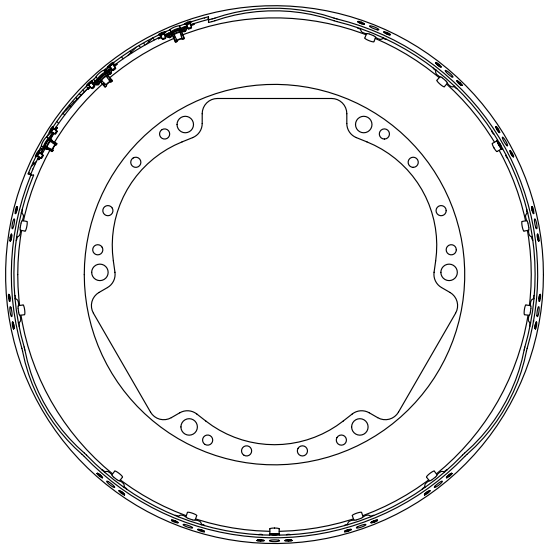
Inspected By:_____

Date: _____

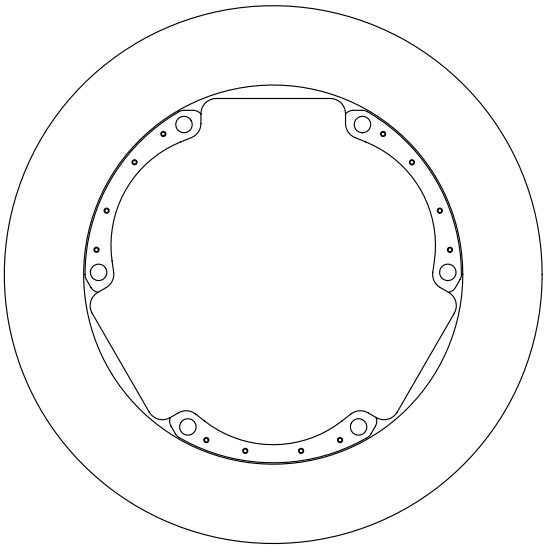
Serial No._____

Work Order Number: _____

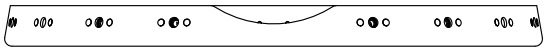
☐ Incoming ☐ Outgoing

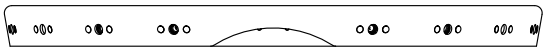


Propeller Side



Engine Side





TPI-JM-000263

NOTE: This is an aluminum bulkhead.

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. 108009( )

Inspected By:_____

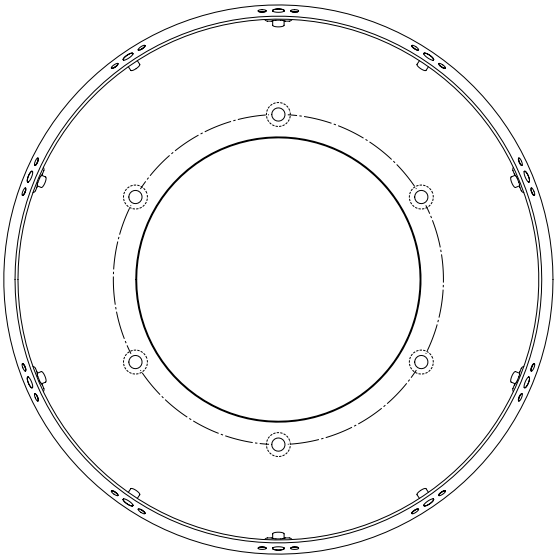
Date: _____

Serial No._____

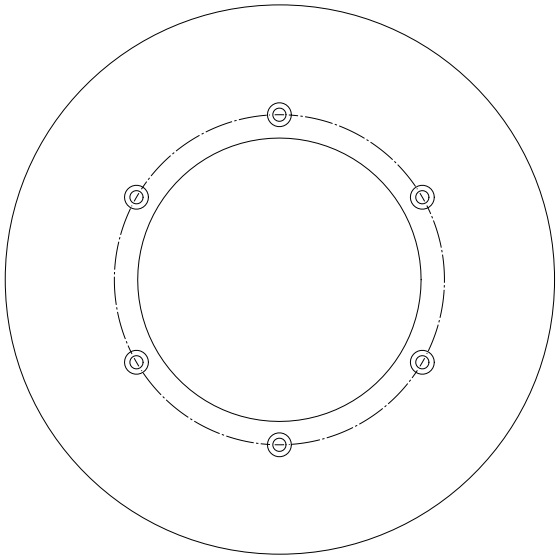
Work Order Number: _____

☐ Incoming ☐ Outgoing

Resistance Check Inspection ____Pass ____Fail (Note location of failure)



Propeller Side



Engine Side

TPI-JM-000362

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Bulkhead Model No. 108480( ) (Aluminum)

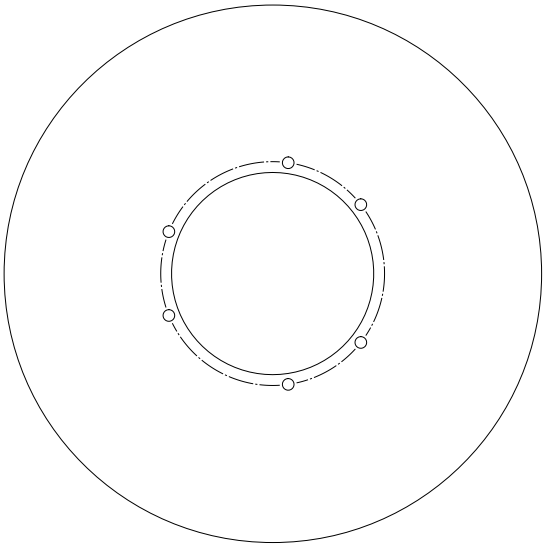
Inspected By:_____

Date: _____

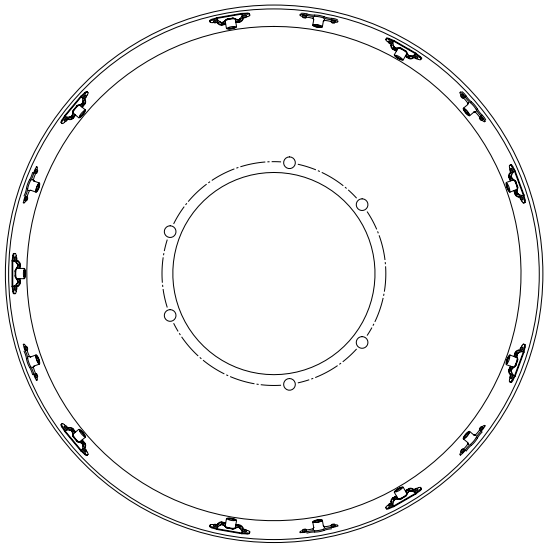
Serial No._____

Work Order Number: _____

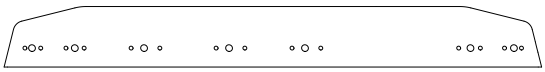
☐ Incoming ☐ Outgoing

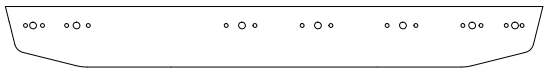


Propeller Side



Engine Side





TPI-JM-000363

NOTE: This is an aluminum bulkhead.

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

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ADAPTER RING UNIT
OVERHAUL INSPECTION FORMS

OVERHAUL INSPECTION FORM
Adapter Ring Unit Model No. C-885-3( ) (Aluminum)

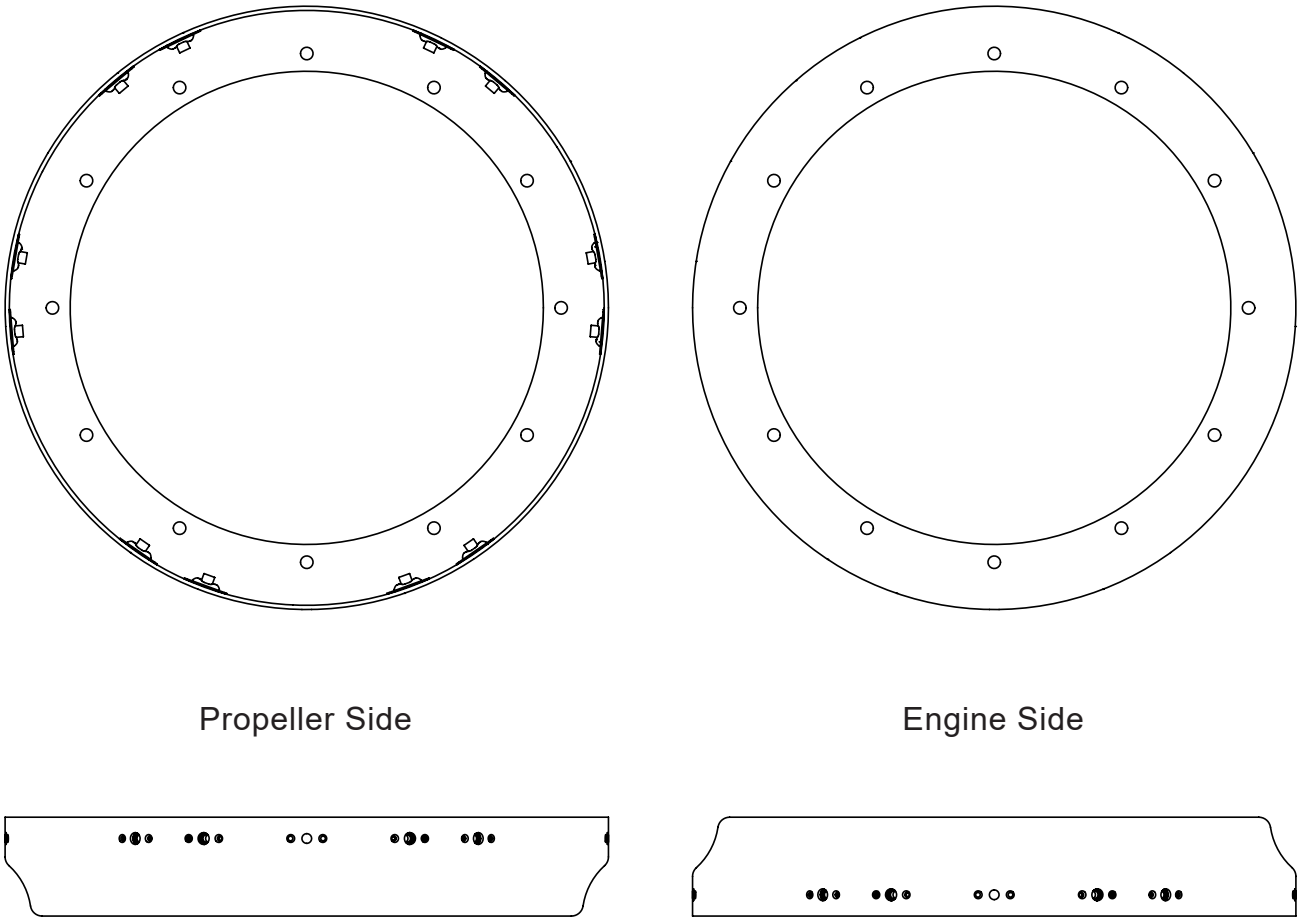
Inspected By:_____

Date: _____

Serial No.: _____

Work Order Number: _____

☐ Incoming ☐ Outgoing



Propeller Side

Engine Side

TPI-C-885-3

NOTE: This is an aluminum adapter ring unit.

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Adapter Ring Unit Model No. 103584( ) (Aluminum)

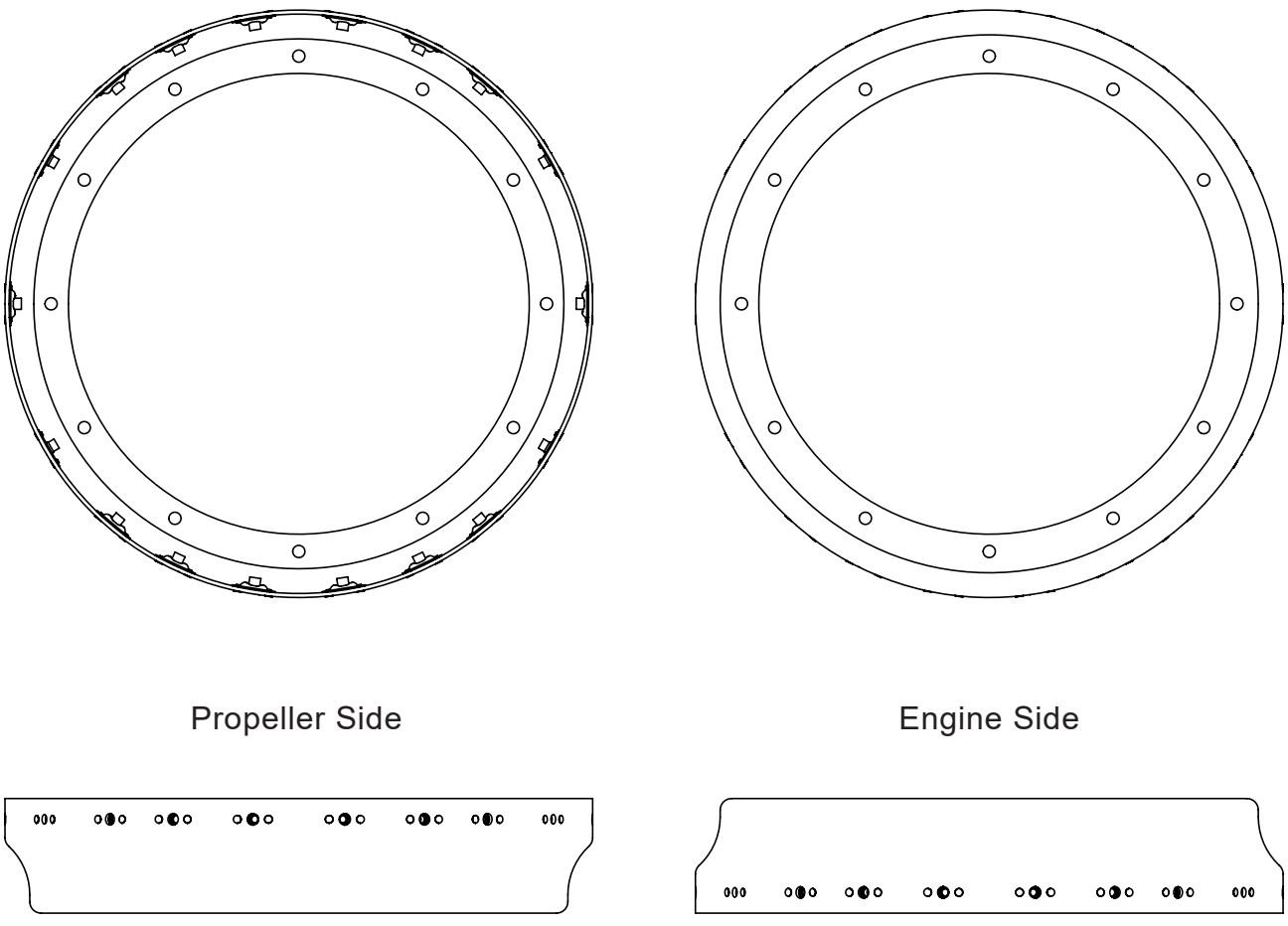
Inspected By:_____

Date: _____

Serial No._____

Work Order Number: _____

☐ Incoming ☐ Outgoing



Propeller Side

Engine Side

TPI-103584

NOTE: This is an aluminum adapter ring unit.

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Adapter Ring Unit Model No. 103628( ) (Aluminum)

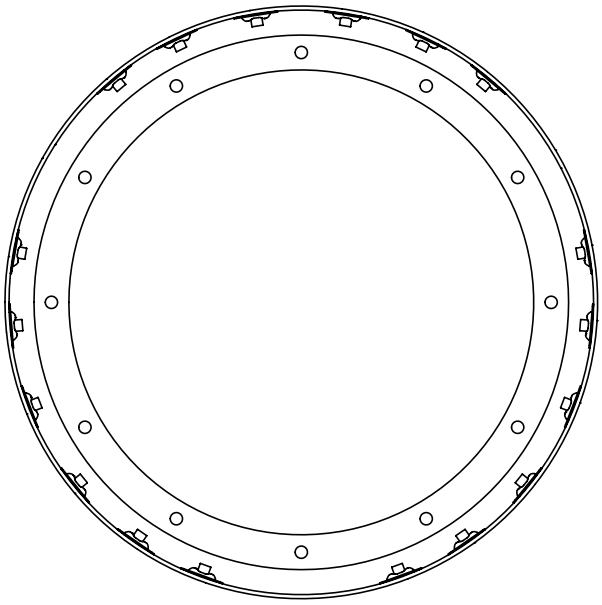
Inspected By:_____

Date: _____

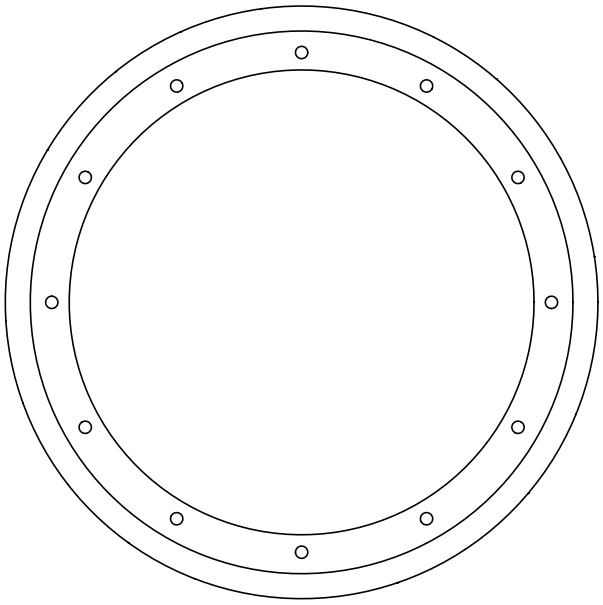
Serial No._____

Work Order Number: _____

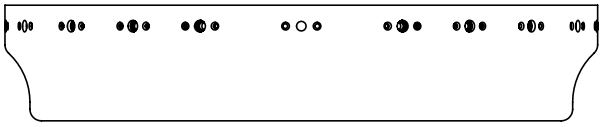
☐ Incoming ☐ Outgoing

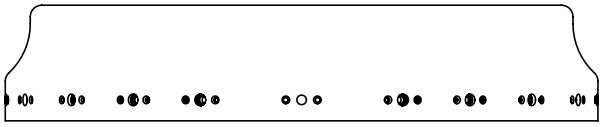


Propeller Side



Engine Side





TPI-103628

NOTE: This is an aluminum adapter ring unit.

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

OVERHAUL INSPECTION FORM
Adapter Ring Unit Model No. 105944( ) (Aluminum)

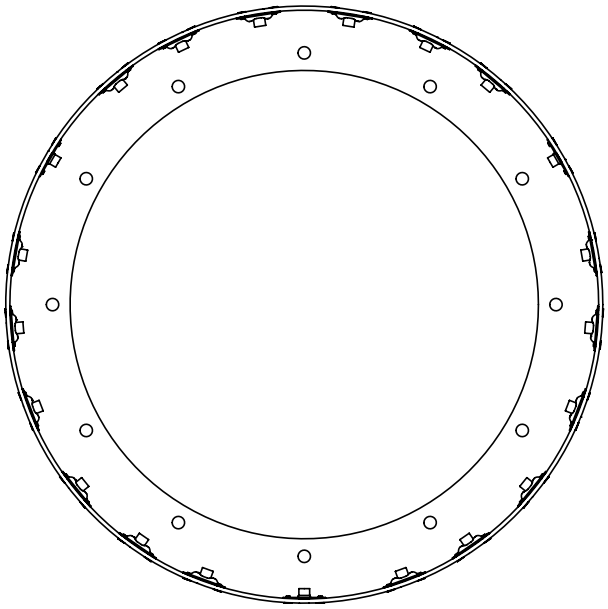
Inspected By:_____

Date: _____

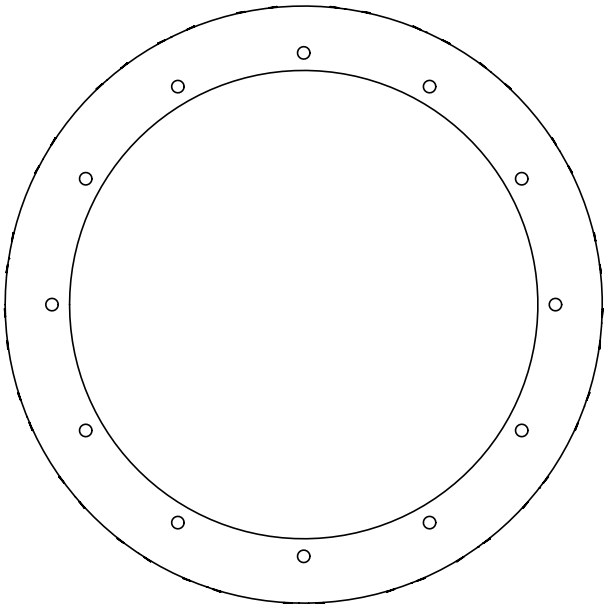
Serial No.: _____

Work Order Number: _____

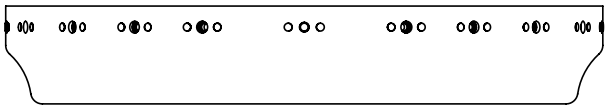
☐ Incoming ☐ Outgoing

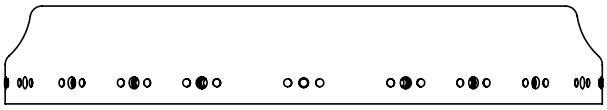


Propeller Side



Engine Side





TPI-105944

NOTE: This is an aluminum adapter ring unit.

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

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FAIRING UNIT OVERHAUL INSPECTION FORMS

OVERHAUL INSPECTION FORM
Fairing Unit Model No. 104571

Inspected By:_____

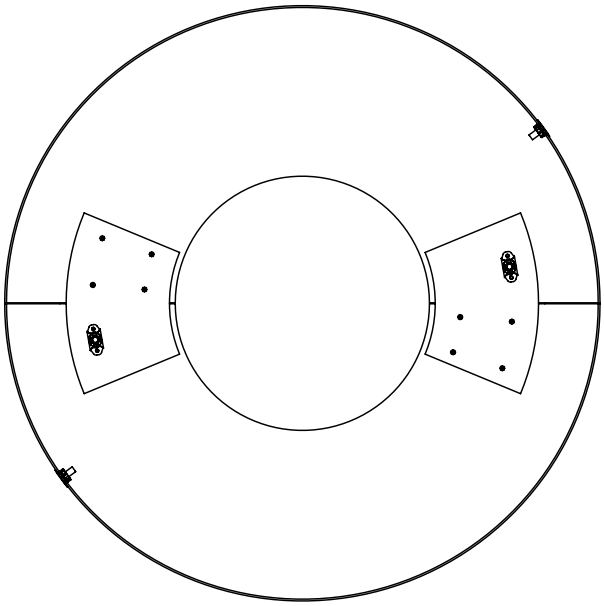
Date: _____

Serial No._____

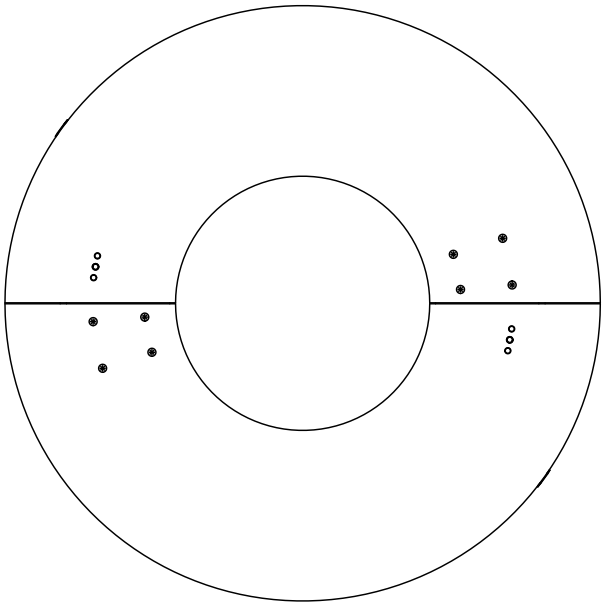
Work Order Number: _____

☐ Incoming ☐ Outgoing

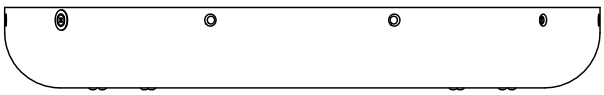
Resistance Check Inspection ____Pass ____Fail (Note location of failure)

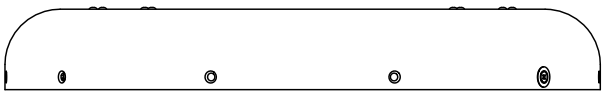


Propeller Side



Engine Side





TPI-104571

LS = Loose Stud
LNP = Loose Nutplate
M = Missing Material
C = Crack

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1. General

   A. General Information

      (1) For definitions and personnel requirements, refer to the Introduction chapter of this manual.

2. Dome

   A. Nose Erosion

      (1) This repair may be performed on erosion of the composite material at the dome nose of not more than one layer.

         (a) For cured ply thickness of the material, refer to Table 6-1 for cured ply thickness of the material.

         (b) If the damage is more than one layer, contact the Hartzell Propeller Product Support Department for evaluation.

         (c) This repair does apply to the repair of the dome erosion shield. For repair of the dome erosion shield refer to the Dome Erosion Shield Repair section in this chapter.

      (2) Using a grinder or sander with 140 grit or finer sandpaper, remove the paint from around the damaged area to produce a smooth transition from the damaged area to the dome surface.

      (3) Using clean cheesecloth CM159 or equivalent dampened with solvent acetone CM173, MEK CM106, or MPK CM219, clean the area.

      (4) Permit the solvent acetone CM173, MEK CM106, or MPK CM219 to evaporate.

      (5) Using adhesive CM14 or CM15, laminate enough fiberglass fabric CM42 or CM55 to the damaged area to achieve the original shape.

      (6) Permit the adhesive to cure in accordance with step 2.A.(6)(a) or step 2.A.(6)(b).

         (a) For 12 hours at room temperature above 70° F (21.1° C)

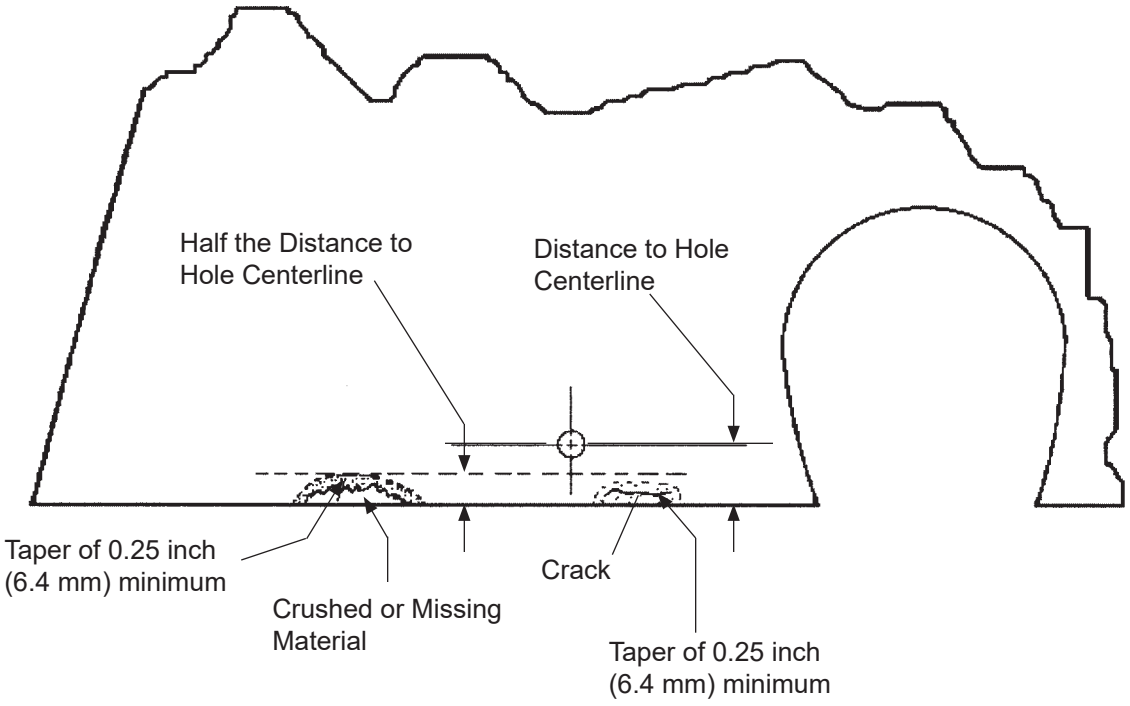
         (b) For a minimum of 2 hours at 130° to 145° F (55 to 62° C)

      (7) Sand the repaired area to the original shape.

      (8) Make an inspection of the repaired area in accordance with the section, "Coin-Tap Inspection Procedure" in the Check chapter of this manual.

         (a) Repair any debonds or voids.

      (9) Refinish in accordance with the Finish Procedures chapter of this manual.



Minor Repair Limits of Crushed or Missing Material for the Dome OD Trimline
Figure 4-1

B. Dome Erosion Shield Repair

(1) This repair may be performed for pin holes, pitting, and porosity forward of the dome/dome erosion shield parting line.

(2) Repair any defect or damage that is through the dome erosion shield into the graphite fiber and Kevlar® material in accordance with the steps in the Nose Erosion section of this chapter, before performing the repair of the dome erosion shield.

WARNING: WEAR VINYL OR LATEX GLOVES WHEN REPAIRING SPINNER DOME EROSION TO PREVENT TOXIC MATERIAL FROM CONTAMINATING SKIN.

(3) Repair Procedure

(a) Apply adhesive CM71 to the area to be repaired.

(b) Quickly remove excess adhesive and immediately apply talc powder CM72 on the adhesive.

(c) Using a swirling motion, push the talc powder CM72 into the damaged area.

(d) Permit the area to dry for approximately 5 minutes.

(e) Using 180 grit or finer sandpaper, carefully hand sand the area until smooth.

(f) Repeat steps 2.B.(3)(a) through 3.B.(3)(e), as necessary, to make sure of a smooth surface.

(g) Refinish in accordance with the Finish Procedures chapter of this manual.

C. Cracks and Crushed or Missing Material of the Dome OD Trimline

(1) This repair may be performed on a cracked or crushed area, or an area with missing material of the OD trimline up to half the distance to the center of the dome mounting hole. Refer to Figure 4-1.

(2) Using a grinder or sander with no coarser than 60 grit sandpaper, remove the desired material using 0.25 inch (6.4 mm) minimum radius.

(3) Using 150 grit or finer sandpaper, polish the edges.

D. Replacement of the UHMW Tape CM137

(1) General

(a) To determine if UHMW tape CM137 is applicable for the forward bulkhead of the dome, refer to the applicable parts list in the Illustrated Parts List chapter of this manual.

(b) For the location of the UHMW tape on the forward bulkhead of the dome, refer to the applicable figure in the Illustrated Parts List chapter of this manual.

(2) Materials

(a) UHMW tape CM137

(3) Removal Procedure

(a) For each piece of UHMW tape CM137 to be replaced, grip the edge of the UHMW tape CM137 and pull to remove it from the forward bulkhead of the dome.

(4) Cleaning

WARNING: ADHESIVES AND SOLVENTS ARE FLAMMABLE AND TOXIC TO THE SKIN, EYES, AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION ARE REQUIRED. AVOID PROLONGED CONTACT AND BREATHING OF VAPORS. USE SOLVENT RESISTANT GLOVES TO MINIMIZE SKIN CONTACT AND WEAR SAFETY GLASSES FOR EYE PROTECTION. USE IN A WELL VENTILATED AREA AWAY FROM SPARKS AND FLAME. READ AND OBSERVE ALL WARNING LABELS.

(a) Using cheesecloth CM159 or equivalent dampened with solvent acetone CM173, MEK CM106, or MPK CM219, wipe the surface clean where the UHMW tape CM137 will be installed on the forward bulkhead of the dome.

(5) Installation Procedure

(a) Cut pieces of UHMW tape CM137 that are approximately 2.5 inches (63 mm).

1 Cut the number of pieces of UHMW tape CM137 needed to complete the replacement.

(b) Install the UHMW tape CM137 in accordance with the applicable figure in the Illustrated Parts List chapter of this manual.

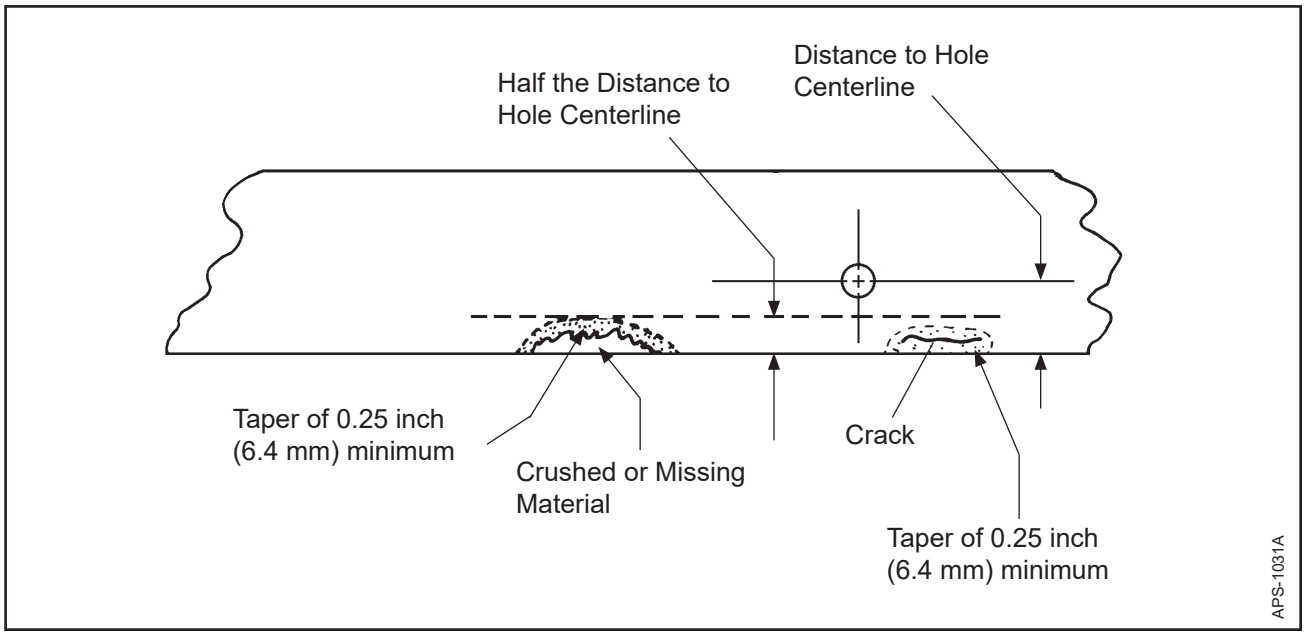
3. Main Bulkhead

A. Cracks and Crushed or Missing Material of the Bulkhead OD Trimline

(1) This repair may be performed on a cracked or crushed area, or an area with missing material of the OD trimline up to half the distance to the dome mounting hole center. Refer to Figure 4-2.

(2) Using a grinder or sander with no coarser than 60 grit sandpaper, remove the desired material using 0.25 inch (6.4 mm) minimum radius.

(3) Using 150 grit or finer sandpaper, polish the edges.



Minor Repair Limits of Crushed or Missing Material for the Main Bulkhead OD Trimline
Figure 4-2

B. De-ice Lead Wire Adel Clamp Attachment Point - Spinner Model: D-5311-( )

(1) This repair adds an Adel clamp reinforcement, part number B-5870( ), to each side of the bulkhead (70). The reinforcement provides protection from the screw head and the Adel clamp.

CAUTION: WHILE SANDING, USE EXTREME CAUTION NOT TO REMOVE COMPOSITE MATERIAL. THE LAMINATE IN THIS AREA IS THIN AND THE STRENGTH OF THE STRUCTURE MAY BE COMPROMISED IF MATERIAL IS REMOVED.

(2) Using 60 grit sandpaper or finer, sand the area around the Adel clamp attachment holes to remove the paint.

WARNING: ADHESIVES AND SOLVENTS ARE FLAMMABLE AND TOXIC TO THE SKIN, EYES, AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION ARE REQUIRED. AVOID PROLONGED CONTACT AND BREATHING OF VAPORS. USE SOLVENT RESISTANT GLOVES TO MINIMIZE SKIN CONTACT AND WEAR SAFETY GLASSES FOR EYE PROTECTION. USE IN A WELL VENTILATED AREA AWAY FROM SPARKS AND FLAME. READ AND OBSERVE ALL WARNING LABELS.

(3) Using clean cheesecloth CM159 or equivalent moistened with solvent acetone CM173, MEK CM106, or MPK CM219, clean both sides of the bulkhead.

(a) Let the solvent to evaporate.

(4) Using 60 grit sandpaper or finer, sand the mounting side of all reinforcements.

NOTE: This will “roughen” the material and permit solid adhesion.

(5) Using a clean cheesecloth CM159 or equivalent moistened with solvent acetone CM173, MEK CM106, or MPK CM219, clean the area.

(a) Let the solvent to evaporate.

(6) On the engine side of the bulkhead, apply masking tape to cover the holes.

NOTE: The masking tape must hold the adhesive. More than one layer may be necessary.

(7) Using adhesive CM20, fill the holes from the propeller side.

(a) If the bulkhead has depressions, fill them with adhesive CM20.

(b) Permit the adhesive CM20 to form above the original surface to account for shrinkage during the cure process.

(8) Let the adhesive CM20 cure for 12 hours at room temperature above 70° F (21.1° C) or for a minimum of 2 hours at 130° to 145° F (55 to 62° C).

(9) Remove the masking tape.

CAUTION: WHILE SANDING, USE EXTREME CAUTION NOT TO REMOVE COMPOSITE MATERIAL. THE LAMINATE IN THIS AREA IS THIN AND THE STRENGTH OF THE STRUCTURE MAY BE COMPROMISED IF MATERIAL IS REMOVED.

(10) Sand the cured adhesive until the surface is flush with the surrounding material.

(11) Apply adhesive CM20 to the propeller side of the bulkhead in the areas that will contact the Adel clamp reinforcements.

(12) Put the Adel clamp propeller side reinforcement in the center over the screw hole on the propeller side and lightly clamp it into position.

(13) Using clean dry cheesecloth CM159 or equivalent, remove the excess adhesive from the bulkhead.

(14) Let the adhesive CM20 cure for 12 hours at room temperature above 70° F (21.1° C) or for a minimum of 2 hours at 130° to 145° F (55 to 62° C)

(15) Back-drill the filled holes from the engine side to 0.1695 +0.006 -0.002 inch (4.305 +0.152 -0.051 mm) diameter.

(16) Apply adhesive CM20 on the engine side of the bulkhead in the area that will contact the Adel clamp engine side reinforcement and to the roughened side of the reinforcement.

(17) Put the Adel clamp propeller side reinforcement in the center over the screw hole, and lightly clamp the reinforcement into position.

(18) Using clean dry cheesecloth CM159 or equivalent, remove the excess adhesive from the bulkhead.

(19) Let the adhesive CM20 cure for 12 hours at room temperature above 70° F (21.1° C) or for a minimum of 2 hours at 130° to 145° F (55 to 62° C)

(20) From the propeller side, back-drill the holes to 0.1953 +0.006 -0.002 inch (4.961 +0.152 -0.051 mm) diameter.

(21) Using 140 grit sandpaper or finer, deburr the holes.

(22) Visually examine the repaired area.

(23) Repair any debonds or voids.

(24) Refinish in accordance with the Finish Procedures chapter of this manual.

C. Synchrophaser Target Attachment - Spinner Model: D-5311-( )

(1) This repair adds a synchrophaser target reinforcement, part number B-5870( ), to the propeller side of the bulkhead (70). This reinforcement provides protection from the screw heads used to mount the synchrophaser target.

CAUTION: WHILE SANDING, USE EXTREME CAUTION NOT TO REMOVE COMPOSITE MATERIAL. THE LAMINATE IN THIS AREA IS THIN AND THE STRENGTH OF THE STRUCTURE MAY BE COMPROMISED IF MATERIAL IS REMOVED.

(2) Using 60 grit sandpaper or finer, sand to remove the paint in the area surrounding the synchrophaser target screw holes.

WARNING: ADHESIVES AND SOLVENTS ARE FLAMMABLE AND TOXIC TO THE SKIN, EYES, AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION ARE REQUIRED. AVOID PROLONGED CONTACT AND BREATHING OF VAPORS. USE SOLVENT RESISTANT GLOVES TO MINIMIZE SKIN CONTACT AND WEAR SAFETY GLASSES FOR EYE PROTECTION. USE IN A WELL VENTILATED AREA AWAY FROM SPARKS AND FLAME. READ AND OBSERVE ALL WARNING LABELS.

(3) Using solvent acetone CM173, MEK CM106, or MPK CM219, thoroughly clean both sides of the bulkhead.

(4) Using 60 grit sandpaper or finer, sand the mounting side of all reinforcements.

NOTE: This will “roughen” the material to permit solid adhesion.

(5) On the engine side of the bulkhead, apply masking tape to cover the holes.

NOTE: The masking tape must hold the adhesive. More than one layer may be necessary.

(6) Using adhesive CM20, fill the holes from the propeller side.

(a) If the bulkhead has depressions, fill them with adhesive.

(b) Let the adhesive to form above the original surface to allow for shrinkage during the cure process.

(7) Let the adhesive CM20 cure for 12 hours at room temperature above 70° F (21.1° C) or for a minimum of 2 hours at 130° to 145° F (55 to 62° C).

(8) Remove the masking tape.

CAUTION: WHILE SANDING, USE EXTREME CAUTION NOT TO REMOVE COMPOSITE MATERIAL. THE LAMINATE IN THIS AREA IS THIN AND THE STRENGTH OF THE STRUCTURE MAY BE COMPROMISED IF MATERIAL IS REMOVED.

(9) Sand the cured adhesive CM20 until the surface is flush with the surrounding material.

(10) Apply adhesive CM20 to the propeller side of the bulkhead in the area that will contact the synchrophaser target reinforcement and to the roughened side of the synchrophaser target reinforcement.

(11) Put the reinforcement in the center over the screw holes and lightly clamp the patch into position.

(a) If using a clamp with a small clamping surface, use wood blocks covered with vacuum bag material CM45 to make sure of even pressure over the entire reinforcement area.

(12) Using a clean, dry cheesecloth CM159 or equivalent, remove the excess adhesive from the bulkhead.

(13) Let the adhesive CM20 cure for 12 hours at room temperature above 70° F (21.1° C) or for a minimum of 2 hours at 130° to 145° F (55 to 62° C)

(14) Back-drill the filled holes from the engine side to 0.1935 +0.006 -0.002 inch (4.915 +0.152 -0.051 mm) diameter.

(15) Using 140 grit sandpaper or finer, deburr the holes.

(16) Visually examine the repaired area.

(17) Repair any debonds or voids.

(18) Refinish in accordance with the Finish Procedures chapter of this manual.

D. De-ice Terminal Blocks - Spinner Model D-5311-( )

(1) This repair adds a Terminal Block Reinforcement, Part No. B-5870( ), to the engine side of the bulkhead (70). This reinforcement provides protection from the screw heads used to mount the terminal blocks.

WARNING: ADHESIVES AND SOLVENTS ARE FLAMMABLE AND TOXIC TO THE SKIN, EYES, AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION ARE REQUIRED. AVOID PROLONGED CONTACT AND BREATHING OF VAPORS. USE SOLVENT RESISTANT GLOVES TO MINIMIZE SKIN CONTACT AND WEAR SAFETY GLASSES FOR EYE PROTECTION. USE IN A WELL VENTILATED AREA AWAY FROM SPARKS AND FLAME. READ AND OBSERVE ALL WARNING LABELS.

(2) Using solvent acetone CM173, MEK CM106, or MPK CM219, thoroughly clean both sides of the bulkhead.

(3) Using 60 grit sandpaper or finer, sand the mounting side of all reinforcements and the engine side of the bulkhead that will be bonded to the reinforcements.

NOTE: This will “roughen” the material to permit solid adhesion.

(4) On the propeller side of the bulkhead, apply masking tape to cover the holes.

NOTE: This masking tape must hold the adhesive. More than one layer may be necessary.

(5) Fill the holes from the engine side with adhesive CM20.

(a) If the bulkhead has depressions, fill them with adhesive.

(b) Let the adhesive to form above the original surface to account for shrinkage during the cure process.

(6) Let the adhesive CM20 cure for 12 hours at room temperature above 70° F (21.1° C) or for a minimum of 2 hours at 130° to 145° F (55 to 62° C).

(7) Remove the masking tape.

CAUTION: WHILE SANDING, USE EXTREME CAUTION NOT TO REMOVE COMPOSITE MATERIAL. THE LAMINATE IN THIS AREA IS THIN AND THE STRENGTH OF THE STRUCTURE MAY BE COMPROMISED IF MATERIAL IS REMOVED.

(8) Sand the cured adhesive CM20 until the surface is flush with the surrounding material.

(9) Apply adhesive CM20 to the engine side of the bulkhead in the area that will contact the Terminal Block Reinforcement and to the roughened side of the Terminal Block Reinforcement.

(10) Put the reinforcement in the center over the screw holes, and lightly clamp the patch into position.

(a) If using a clamp with a small clamping surface, use wood blocks covered with vacuum bag material CM45 to make sure of even pressure over the entire reinforcement area.

(11) Using a clean, dry cheesecloth CM159 or equivalent, remove excess adhesive from the bulkhead.

(12) Let the adhesive CM20 cure for 12 hours at room temperature above 70° F (21.1° C) or for a minimum of 2 hours at 130° to 145° F (55 to 62° C)

(13) From the propeller side, back-drill the filled holes to 0.1695 +0.006 -0.002 inch (4.305 +0.152 -0.051 mm) diameter.

(14) Using 140 grit sandpaper or finer, deburr the holes.

(15) Visually examine the repaired area.

(16) Repair any debonds or voids.

(17) Refinish in accordance with the Finish Procedures chapter in this manual.

E. Insert Replacement

(1) General

(a) Over torquing the bolts during dynamic balance weight installation can loosen or break the inserts (230). The following is a repair for loose or missing inserts installed on the bulkhead.

WARNING: ADHESIVES AND SOLVENTS ARE FLAMMABLE AND TOXIC TO THE SKIN, EYES, AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION ARE REQUIRED. AVOID PROLONGED CONTACT AND BREATHING OF VAPORS. USE SOLVENT RESISTANT GLOVES TO MINIMIZE SKIN CONTACT AND WEAR SAFETY GLASSES FOR EYE PROTECTION. USE IN A WELL VENTILATED AREA AWAY FROM SPARKS AND FLAME. READ AND OBSERVE ALL WARNING LABELS.

(2) Insert Removal

(a) Using solvent acetone CM173, MEK CM106, or MPK CM219, thoroughly clean all oil and grease from both sides of the bulkhead (70) around the insert (230) to be removed.

CAUTION 1: USE EXTREME CAUTION WHEN DRILLING INTO THE THREADS OF THE INSERT TO AVOID DAMAGE TO THE COMPOSITE BULKHEAD. A DAMAGED BULKHEAD MUST BE RETURNED TO THE FACTORY.

CAUTION 2: THE BULKHEAD MUST BE PERPENDICULAR TO THE DRILL BIT TO PREVENT DRIFTING OF THE DRILL BIT.

(b) Using a 5/16 inch drill bit, drill into the threads of the insert (230) until the flange of the insert is separated from its center portion.

1 If the insert rotates, it may be necessary to install a 10-32 UNF bolt, with a jam nut installed, into the opposite side of the insert, and then clamp the bolt head in a vice to stop rotation.

(c) Remove both halves of the insert (230) from the bulkhead.

CAUTION: THE BULKHEAD MUST BE PERPENDICULAR TO THE DRILL BIT TO PREVENT DRIFTING OF THE DRILL BIT.

(d) Using a drill press and 9/16 inch drill bit, carefully remove any remaining adhesive from the hole in the bulkhead.

(e) Using 180 grit sandpaper or finer, deburr the edge of the hole.

(f) Using solvent acetone CM173, MEK CM106, or MPK CM219, clean the hole and the area around the hole.

(g) Visually examine the bulkhead (70) for damage.

1 If there is no damage, go to step (4) in this procedure.

2 If there is tearing or delamination of the composite material, go to step (3) in this procedure.

(3) Repair of the Insert Hole

(a) Using a grinder or sander, remove loose material from around the insert hole.

1 Some of the bulkhead material even though damaged, may remain on the bulkhead.

2 If the damaged material is fully intact, it should remain on the bulkhead.

3 If two or more layers of material remain on the bulkhead, but they are separated from each other, inject adhesive CM14 between these layers when the repair is made.

(b) Cut a sufficient amount of fiberglass CM55 to cover the repair area.

NOTE: Refer to Table 6-1 for cured ply thickness. The thickest part of the repair area divided by the cured ply thickness, equals the number of patterns required to make the repair. Include a few extra patterns to make sure that there will be sufficient material present for the grinding process.

(c) Using clean cheesecloth CM159 or equivalent dampened with solvent acetone CM173, MEK CM106, or MPK CM219, wipe the repair area.

(d) Permit the solvent acetone CM173, MEK CM106, or MPK CM219 to evaporate.

(e) Cut a piece of vacuum bag CM45 large enough to provide total coverage of the repair plus 3.0 to 4.0 inches (76 to 101 mm) of the bulkhead around the repair.

(f) Mix the adhesive CM14 thoroughly, in accordance with the directions on the container.

(g) If applicable, using a syringe CM3 or equivalent, inject adhesive CM14 between all the layers of the original material remaining in the damaged area.

(h) Laminate the fiberglass CM55 over the repair area on one side of the bulkhead.

1 Make sure that each layer is thoroughly saturated with adhesive and that the fiber angle changes 45 degrees with each pattern, if applicable.

(i) Put the pre-trimmed vacuum bag material CM45 over the repair area of the bulkhead.

(j) Prepare a plate of metal, plastic, masonite, or equivalent, large enough to cover the repair and to permit clamping outside of the repair area.

(k) Put a plate over the repair area on the bulkhead.

CAUTION: EXCESSIVE CLAMP FORCE WILL DAMAGE THE BULKHEAD.

(l) Install a clamp on each end of the plate, outside of the repair area, to hold the plate to the trailing edge of the blade.

(m) If repair to the insert hole on the other side of the bulkhead is necessary, follow steps (3)(a) through (3)(l) of this procedure.

(n) Let the adhesive CM14 cure for 12 hours at room temperature above 70° F (21.1° C) or for a minimum of 2 hours at 130° to 145° F (55 to 62° C)

(o) Remove the plates and the vacuum bag material CM45 from the bulkhead.

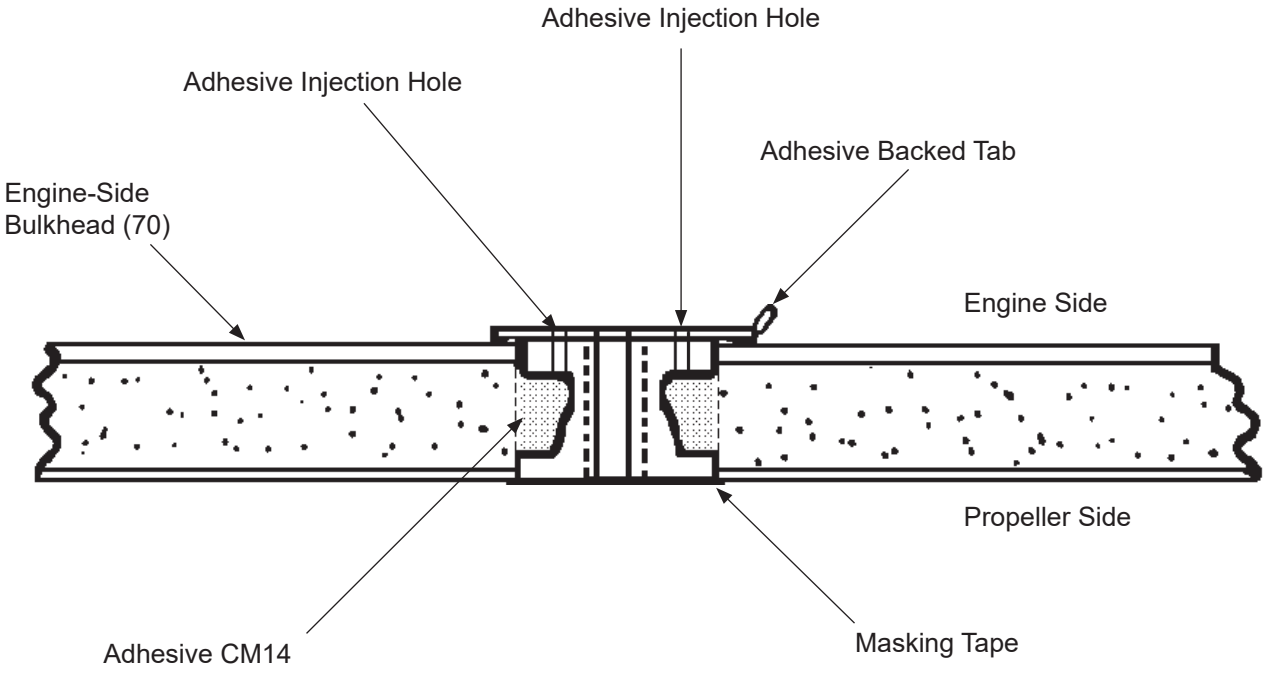
(p) Grind or sand to original shape.

(q) Inspect the repaired area in accordance with the section "Coin-tap Inspection Procedure" in the Check chapter of this manual.

1 Repair any delaminations or voids.

(r) Refinish the bulkhead in accordance with the Finish Procedures chapter of this manual.

(s) When the repair of the insert hole is successfully completed, go to step (4) of this procedure.



NOTE: One adhesive injection hole may be used to inject adhesive, and the other hole used to discharge air and adhesive.

B-6621-375M Insert
Figure 4-3

(4) Insert (230) Installation. Refer to Figure 4-3.

(a) Align the holes in the insert with the holes in the adhesive-backed tab and put the tab on the new insert (230) that is being installed.

(b) On the propeller side of the bulkhead (70), put a piece of masking tape across the hole for the new insert.

(c) Put the insert (230) in the hole, against the masking tape. Refer to Figure 4-3.

1 It is not necessary that the insert be flush on the engine side of the bulkhead.

WARNING: ADHESIVE CM14 MAY BE TOXIC TO THE SKIN AND EYES. SKIN AND EYE PROTECTION ARE REQUIRED. AVOID PROLONGED CONTACT. USE IN A WELL-VENTILATED AREA.

(d) Mix adhesive CM14 in accordance with the manufacturer's instructions.

(e) Using a syringe CM3 or equivalent, inject the adhesive CM14 through one hole in the insert (230) until all the air has been eliminated and adhesive comes out the other hole.

(f) Remove excess adhesive CM14.

(g) Let the adhesive CM14 cure for 12 hours at room temperature above 70° F (21.1° C) or for a minimum of 2 hours at 130° to 145° F (55 to 62° C)

(h) Remove the tab and the masking tape.

(i) Using 180 grit sandpaper or finer, remove any excess adhesive CM14 from the insert and the bulkhead.

CAUTION: OVER TORQUING THE DYNAMIC BALANCE WEIGHT BOLT MAY DAMAGE THE INSERT AND THE BULKHEAD.

(j) Install the dynamic balance weight bolt into the insert.

(k) Torque the dynamic balance weight bolt to 32 In-Lb (3.6 N•m) to test the insert installation.

1 Replace the insert if it rotates during the torque test.

2 Torque the dynamic balance weight bolts to 29-31 In-Lb (3.3-3.5 N•m) when the dynamic balance weights are installed.

(5) Refinish in accordance with the Finish Procedures chapter in this manual.

F. Replacement of Forward Bulkhead Bushing (60) on D-5312-1 Dome

(1) Examine the forward part of the dome for the bushing (60).

(2) If there is a bushing (60), remove it.

CAUTION: DO NOT DAMAGE THE FORWARD BULKHEAD WHEN REMOVING THE BUSHING (50).

(a) Put a non-metallic, flat, pointed instrument between the bushing (60) and the forward bulkhead at the bushing seam.

(b) Remove and discard the bushing (60) from the forward bulkhead (50).

(c) Using a 0.900 inch (22.85 mm) reamer, hand ream the hole in the forward bulkhead (50).

NOTE: There is very little material that has to be removed, so it takes very little effort to ream this hole.

(3) Using emery cloth or sandpaper, lightly sand both edges of the hole to remove any burrs.

(4) Remove shavings or pieces of the bushing from the nose part of the dome.

(5) Replace the bushing (60).

(a) Put the new bushing (60) in the center over the prepared hole.

1 Apply pressure until all six teeth are started.

2 Using steady pressure, push the bushing all the way into the hole until the teeth click onto the back of the hole.

(b) Visually examine the bushing (60) to make sure that the contact surface of the bushing is even all the way around the bulkhead/bushing mating surface.

(c) Apply a light film of grease to the inside diameter of the bushing (60).

1 Any grease used to lubricate the propeller is permitted.

(d) Using a 0.750 inch (19.05 mm) plug gauge make an inspection of the bushing (60) installation.

1 The gauge should fit snugly, but not require excessive force to move.

G. Replacing a Nutplate on a Composite Bulkhead

(1) Nutplate Removal, Method 1

WARNING: SOLVENTS ARE FLAMMABLE AND TOXIC TO THE SKIN, EYES, AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION ARE REQUIRED. AVOID PROLONGED CONTACT AND BREATHING OF VAPORS. USE SOLVENT RESISTANT GLOVES TO MINIMIZE SKIN CONTACT AND WEAR SAFETY GLASSES FOR EYE PROTECTION. USE IN A WELL VENTILATED AREA AWAY FROM SPARKS AND FLAME. READ AND OBSERVE ALL WARNING LABELS.

(a) Using solvent acetone CM173, MEK CM106, or MPK CM219, thoroughly clean all oil and grease from both sides of the bulkhead (70), around the nutplate to be removed.

(b) Apply masking material (aluminum foil tape) to the area around the nutplate to avoid damaging the composite material during grinding.

CAUTION 1: USE EXTREME CAUTION WHEN GRINDING THE RIVET SHANKS TO AVOID DAMAGE TO THE COMPOSITE BULKHEAD. A DAMAGED BULKHEAD MUST BE RETURNED TO HARTZELL PROPELLER.

CAUTION 2: DO NOT OVERHEAT THE COMPOSITE MATERIAL DURING GRINDING OF THE RIVET HEADS. IF NECESSARY, USE WATER TO COOL THE NUTPLATE DURING GRINDING.

(c) Using a small hand-grinder, remove the head of the rivets that hold the nutplate in place on the bulkhead (70).

CAUTION: USE EXTREME CAUTION WHEN REMOVING THE NUTPLATES TO AVOID PULLING THE RIVET HEADS THROUGH THE BULKHEAD. A DAMAGED BULKHEAD MUST BE RETURNED TO HARTZELL PROPELLER.

(d) Remove the nutplate from the bulkhead (70) by lightly pulling with pliers.

1 If the nutplate cannot be removed, use the grinder to remove more material from the nutplate and rivets until the nutplate can be removed.

(e) Remove the rivets from the bulkhead.

1 If necessary, remove the rivet heads from the back side of the bulkhead by using a small pin punch.

(f) Remove the masking material (aluminum foil tape).

(g) Using acetone CM173, MEK CM106, or MPK CM219, clean the hole and the area around the hole.

(2) Nutplate Removal, Method 2

WARNING: SOLVENTS ARE FLAMMABLE AND TOXIC TO THE SKIN, EYES, AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION ARE REQUIRED. AVOID PROLONGED CONTACT AND BREATHING OF VAPORS. USE SOLVENT RESISTANT GLOVES TO MINIMIZE SKIN CONTACT AND WEAR SAFETY GLASSES FOR EYE PROTECTION. USE IN A WELL VENTILATED AREA AWAY FROM SPARKS AND FLAME. READ AND OBSERVE ALL WARNING LABELS.

(a) Using solvent acetone CM173, MEK CM106, or MPK CM219, thoroughly clean all oil and grease from both sides of the bulkhead (70) around the nutplate to be removed.

(b) Using a No. 40 twist drill, drill through the rivets retaining the nutplate and discard the nutplates.

(3) Nutplate Installation

(a) Refer to the Illustrated Parts List chapter in this manual for the applicable part numbers.

(b) Visually examine the bulkhead for damage.

1 If there is tearing or delamination of the composite material, return the bulkhead to Hartzell Propeller.

(c) Using rivets and a pneumatic or hand rivet installation tool (customer supplied), fasten a new nutplate to the bulkhead (70).

1 Visually examine the replaced rivets to make sure that the rivet heads are flush with the surface of the bulkhead.

H. Replacing a Nutplate on a Filler Plate

(1) General

CAUTION: DO NOT DAMAGE THE FILLER PLATE (240) WHEN KEEPING IT FROM MOVING.

(a) Using a vise or other appropriate method, keep the filler plate (240) from moving during removal and installation of the nutplate (250).

(2) Nutplate Removal, Method 1

WARNING: ADHESIVES AND SOLVENTS ARE FLAMMABLE AND TOXIC TO THE SKIN, EYES, AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION ARE REQUIRED. AVOID PROLONGED CONTACT AND BREATHING OF VAPORS. USE SOLVENT RESISTANT GLOVES TO MINIMIZE SKIN CONTACT AND WEAR SAFETY GLASSES FOR EYE PROTECTION. USE IN A WELL VENTILATED AREA AWAY FROM SPARKS AND FLAME. READ AND OBSERVE ALL WARNING LABELS.

(a) Using solvent acetone CM173, MEK CM106, or MPK CM219, thoroughly clean all oil and grease from both sides of the filler plate (240), around the nutplate (250) to be removed.

(b) Apply masking material (aluminum foil tape) to the area around the nutplate (240) to avoid damaging the composite material during grinding.

CAUTION 1: USE EXTREME CAUTION WHEN GRINDING THE SHANKS OF THE RIVETS (260) TO AVOID DAMAGE TO THE FILLER PLATE (240).

CAUTION 2: DO NOT OVERHEAT THE COMPOSITE MATERIAL DURING GRINDING OF THE HEADS OF THE RIVETS (260).

(c) Using a small hand-grinder, remove the head of the rivets (260) that hold the nutplate (250) in place on the filler plate (240)

1 If necessary, use water to cool the nutplate (250) during grinding.

CAUTION: USE EXTREME CAUTION WHEN REMOVING THE NUTPLATES (250) TO AVOID PULLING THE HEADS OF THE RIVETS (260) THROUGH THE FILLER PLATE (240).

(d) Using pliers and pulling lightly, remove the nutplate (250) from the filler plate (240).

1 If the nutplate (250) cannot be removed from the filler plate (240), use the grinder to remove more material from the nutplate and rivets (260) until the nutplate can be removed.

(e) Remove the rivets (260) from the filler plate (240).

1 If necessary, remove the heads of the rivets (260) from the back side of the filler plate (240) by using a small pin punch.

(f) Remove the masking material (aluminum foil tape).

(g) Using solvent acetone CM173, MEK CM106, or MPK CM219, clean the hole and the area around the hole in the filler plate (240).

(3) Nutplate Removal, Method 2

WARNING: ADHESIVES AND SOLVENTS ARE FLAMMABLE AND TOXIC TO THE SKIN, EYES, AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION ARE REQUIRED. AVOID PROLONGED CONTACT AND BREATHING OF VAPORS. USE SOLVENT RESISTANT GLOVES TO MINIMIZE SKIN CONTACT AND WEAR SAFETY GLASSES FOR EYE PROTECTION. USE IN A WELL VENTILATED AREA AWAY FROM SPARKS AND FLAME. READ AND OBSERVE ALL WARNING LABELS.

(a) Using solvent acetone CM173, MEK CM106, or MPK CM219, thoroughly clean all oil and grease from both sides of the filler plate (240) around the nutplate (250) to be removed.

(b) Using a No. 40 twist drill, drill through each rivet (260) that attaches the nutplate (250) to the filler plate (240).

(c) Discard the nutplates (250).

(4) Nutplate Installation

(a) Refer to the Illustrated Parts List chapter in this manual for the applicable part numbers.

(b) Visually examine the filler plate (240) for damage.

1 If there is tearing or delamination of the composite material, return the filler plate (240) to Hartzell Propeller.

(c) Using rivets (260) and a pneumatic or hand rivet installation tool (customer supplied), fasten the nutplate (250) to the filler plate (240).

1 Visually examine the newly installed rivets (260) to make sure that the heads of the rivets are flush with the surface of the filler plate (240).

4. Fairing Unit

A. Cracks and Crushed or Missing Material on the Fairing Unit OD Trimline

(1) This repair may be performed on a cracked or crushed area, or an area with missing material on the OD trimline up to half the distance to the fairing unit mounting hole center. Refer to Figure 5-4.

(2) Using a grinder or sander with no coarser than 60 grit sandpaper, remove the desired material using 0.25 inch (6.4 mm) minimum radius.

(3) Using 150 grit or finer sandpaper, polish the edges.

B. Replacing Nutplates and Rivets on the Tab of the Fairing Unit

(1) General

(a) This procedure provides a method to replace a nutplate and rivets on the tab of the fairing unit in the area that is not attached to the fairing unit by rivets.

(b) Refer to the Check chapter of this manual for serviceable limits.

CAUTION: DO NOT MAKE THE HOLE OVERSIZE WHEN DRILLING OUT THE RIVET.

(2) Using the appropriate drill bit, drill out the rivet.

(3) Replace the nutplate and/or rivet in accordance with the procedures in the FAA Advisory Circular 43.13-1B.

C. Replacing a Rivet on the Tab of the Fairing Unit

(1) General

(a) This procedure provides a method to replace a rivet that attaches the tab to the fairing unit.

(b) Refer to the Check chapter of this manual for serviceable limits.

CAUTION: DO NOT DAMAGE THE FAIRING UNIT OR THE TAB WHEN KEEPING THEM FROM MOVING.

(c) Using a vise or other appropriate method, keep the fairing unit and tab from moving during removal and installation of the rivet (630).

(2) Rivet Removal, Method 1

WARNING: SOLVENTS ARE FLAMMABLE AND TOXIC TO THE SKIN, EYES, AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION ARE REQUIRED. AVOID PROLONGED CONTACT AND BREATHING OF VAPORS. USE SOLVENT RESISTANT GLOVES TO MINIMIZE SKIN CONTACT AND WEAR SAFETY GLASSES FOR EYE PROTECTION. USE IN A WELL VENTILATED AREA AWAY FROM SPARKS AND FLAME. READ AND OBSERVE ALL WARNING LABELS.

(a) Using solvent acetone CM173, MEK CM106, or MPK CM219, thoroughly clean all oil and grease from both sides of the fairing unit (600), around the rivet (630) to be removed.

(b) Apply masking material (aluminum foil tape) to the area around the rivet (630) to avoid damaging the composite material or the tab during grinding.

CAUTION 1: USE EXTREME CAUTION WHEN GRINDING THE SHANK OF THE RIVET (630) TO AVOID DAMAGE TO THE TAB OF THE FAIRING UNIT (600).

CAUTION 2: DO NOT OVERHEAT THE COMPOSITE MATERIAL DURING GRINDING OF THE HEADS OF THE RIVET (630).

(c) Using a small hand-grinder, remove the head of the rivet 630) that holds the tab in place on the fairing unit (600).

1 If necessary, use water to cool the tab of the fairing unit (600) during grinding.

CAUTION: USE EXTREME CAUTION WHEN REMOVING THE RIVET (630) TO AVOID PULLING THE HEADS OF THE RIVET THROUGH THE TAB OF THE FAIRING UNIT (600).

(d) Using pliers and pulling lightly, remove the rivet (630) from the tab of the fairing unit (600).

1 If the rivet (630) cannot be removed from the tab of the fairing unit (600), use the grinder to remove more material from the rivet (630) until the rivet can be removed.

2 If necessary, remove the head of the rivet (630) from the back side of the tab of the fairing unit (600) by using a small pin punch.

(e) Remove the masking material (aluminum foil tape).

(f) Using solvent acetone CM173, MEK CM106, or MPK CM219, clean the hole and the area around the hole in the filler plate (240).

(3) Rivet Removal, Method 2

WARNING: SOLVENTS ARE FLAMMABLE AND TOXIC TO THE SKIN, EYES, AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION ARE REQUIRED. AVOID PROLONGED CONTACT AND BREATHING OF VAPORS. USE SOLVENT RESISTANT GLOVES TO MINIMIZE SKIN CONTACT AND WEAR SAFETY GLASSES FOR EYE PROTECTION. USE IN A WELL VENTILATED AREA AWAY FROM SPARKS AND FLAME. READ AND OBSERVE ALL WARNING LABELS.

(a) Using solvent acetone CM173, MEK CM106, or MPK CM219, thoroughly clean all oil and grease from both sides of the fairing unit (600), around the rivet (630) to be removed.

(b) Using a No. 40 twist drill, drill through the rivet (630) that attaches the tab to the fairing unit (600).

(c) Discard the rivet (630).

(4) Rivet Installation

(a) Refer to the Illustrated Parts List chapter in this manual for the applicable part numbers.

(b) Visually examine the fairing unit (600) for damage.

1 If there is tearing or delamination of the composite material, return the fairing unit (600) to Hartzell Propeller.

(c) Using a rivet (630) fasten the tab to the fairing unit (600).

1 Visually examine the newly installed rivet (630) to make sure that the heads of the rivet are tight to the fairing unit (600).

5. Lightning Strike

A. Important Information

(1) For definitions and airworthy limits, refer to the Check chapter of this manual.

(2) Follow the applicable repair procedures in this chapter.

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1. Required Record-Keeping

   CAUTION: MAINTAINING A GOOD LOG BOOK RECORD IS PARTICULARLY IMPORTANT FOR COMPOSITE SPINNERS. DAMAGE AND/OR REPAIRS MAY SUFFER FURTHER DEGRADATION AFTER CONTINUED USE. SUCH DEGRADATION MAY BE EASILY OVERLOOKED. IT IS IMPORTANT FOR INSPECTORS TO HAVE ACCESS TO ACCURATE HISTORICAL DATA WHEN PERFORMING SUBSEQUENT INSPECTIONS.

   A. Important Information

      (1) Composite spinner damage and a description of its repair must be recorded in the propeller logbook.

2. Inspection Requirements

   A. Preflight Inspection

      (1) Follow propeller preflight inspection procedures as specified in the aircraft maintenance manual, the air carrier's operational specifications, or the propeller owner's manual.

   B. Overhaul

      (1) Unless otherwise required in the propeller maintenance manual, it is strongly recommended that composite spinners be overhauled at the time of composite propeller overhaul. Refer to Hartzell Propeller Service Letter HC-SL-61-61Y( ) for applicable propeller overhaul intervals.

      (2) Detailed requirements and procedures for composite spinner maintenance are specified in this manual.

3. Coin-Tap Inspection

   A. Coin-Tap Inspection Procedure

      (1) Composite spinners can be inspected for delaminations and debonds by tapping with a "metal washer".

      (2) Using a washer-shaped metal tapper, approximately 2.5 inches (63 mm) OD x 1.25 inches (31.7 mm) ID x 0.25 inch (6.3 mm) thick, and weighing no less than 3 ounces (85.05 g), tap the surface to be inspected.

         (a) If there is an audible change, sounding hollow or dead, a debond or delamination is likely.

         (b) If a suspected delamination or debond is found, a localized, make a thorough coin-tap inspection to define the precise area of delamination or debond.

      (3) Using a pencil, outline the suspected area to determine the approximate size of the damage.

      (4) Make a record of the damage/repairs in the propeller logbook.

4. Airworthy Damage

A. Airworthy Damage Information

(1) For definitions and determination of repair, refer to the Introduction chapter of this manual.

(2) Monitor areas of airworthy damage and repair as soon as practical.

(3) A crack that is associated with a delamination typically indicates impact damage. Contact the Hartzell Propeller Product Support Department if a crack associated with a delamination is identified.

(4) For airworthy damage limits, refer to Serviceable Limits in Table 5-1.

(a) Serviceable Limits in Table 5-1 provides the limits for airworthy damage and repair.

(b) Airworthy damage does not exceed the limits given in Serviceable Limits in Table 5-1.

(c) Airworthy damage does not affect the safety or flight characteristics of the propeller.

5. Unairworthy Damage

CAUTION: UNAIRWORTHY DAMAGE TO A HARTZELL PROPELLER COMPOSITE SPINNER MUST BE REPAIRED BEFORE THE NEXT FLIGHT.

A. Unairworthy Damage Information

(1) Refer to the Introduction chapter of this manual for definition and determination of repair.

(2) Any damage that is more than the permitted serviceable limits is unairworthy.

(3) Areas of unairworthy damage must be repaired before further flight.

(4) Exceptions to this policy may be possible, but require written authorization from Hartzell Propeller LLC.

6. Lightning Strike Damage

A. Lightning Strike Damage Information

(1) The following text addresses the composite spinner only. Refer to the applicable Propeller Overhaul Manual for complete overhaul procedures of the propeller assembly.

CAUTION: ANY COMPOSITE SPINNER SUSPECTED OF LIGHTNING STRIKE MUST BE INSPECTED AND MAY REQUIRE OVERHAUL.

(2) A lightning strike may enter a composite spinner anywhere on the dome, but the most probable locations are the spinner nose, or around the cutouts.

(a) In some instances, lightning has been known to exit the blade and enter the spinner, which causes damage around the cutouts.

(3) If there is a lightning strike, a darkened or burned area, usually in the proximity of the nose or blade cutout, is noticeable.

(4) If the propeller is suspected of sustaining a lightning strike, carefully examine the spinner for damage.

(a) Visually examine the spinner for burned areas and cracks.

(b) In suspect areas, use the coin-tap inspection procedure to determine if debond and/or delaminations are present.

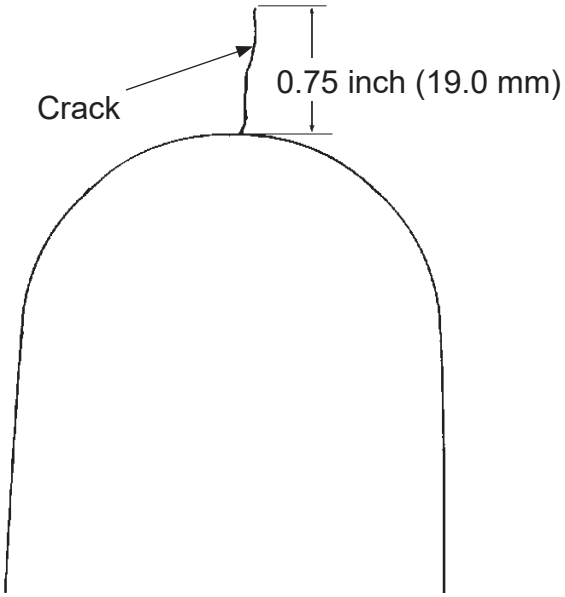
1 For the coin-tap inspection procedure, refer to the section Coin-tap Inspection Procedure in this chapter.

(5) Compare the damage to the serviceable limits. If all damage is within the limits specified, the damage is considered airworthy.

(6) If the damage is more than the permitted serviceable limits, contact the Hartzell Propeller Product Support Department for possible repair.

7. Spinner Assembly Component Checks:

CAUTION: INSTRUCTIONS AND PROCEDURES IN THIS CHAPTER MAY INVOLVE PROPELLER CRITICAL PARTS. REFER TO THE INTRODUCTION CHAPTER OF THIS MANUAL FOR INFORMATION ABOUT PROPELLER CRITICAL PARTS. REFER TO THE ILLUSTRATED PARTS LIST IN THIS MANUAL FOR IDENTIFICATION OF PROPELLER CRITICAL PARTS.



Crack at the Blade Cutout
Figure 5-1

Component Inspection Criteria
Table 5-1

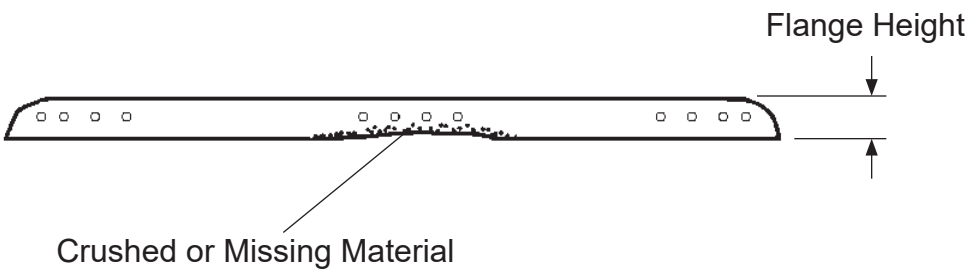
Inspect	Serviceable Limits	Corrective Action
A. Dome (Item 20)		
(1) Visually examine the blade cutouts for cracks. Refer to Figure 5-1.	The maximum permitted length of a crack at the blade cutout is 1.00 inch (25.4 mm). The maximum permitted number of cracks in a dome is three. The maximum permitted number of cracks in each cutout is one.	If the crack is within the Serviceable Limits, repair in accordance with the section, "Dome Repair - Cracks or Delaminations" in the Major Repair chapter of this manual. If a crack is greater than the Serviceable Limits, contact the Hartzell Propeller Product Support Department for evaluation.
(2) Visually examine the mounting holes for cracks.	The maximum permitted number of cracks heading from the mounting hole at half the distance to the washer OD is one. It is permitted to repair a crack within 1.00 inch (25.4 mm) of the trimline.	Repair a crack in accordance with the section, "Trimline Cracks At or Near the Mounting Hole" in the Major Repair chapter of this manual.
(3) Visually examine the trimline for cracks.	The maximum permitted number of cracks along the trimline heading toward a mounting hole at half the distance to the washer OD is one. The maximum permitted length of a crack is 0.50 inch (12.7 mm).	Repair is not permitted. If a crack is greater than the Serviceable Limits, contact the Hartzell Propeller Product Support Department for evaluation.
(4) Visually examine the dome for cracks not at the trim-line or mounting holes.	Contact the Hartzell Propeller Product Support Department for evaluation.	Contact the Hartzell Propeller Product Support Department for evaluation.
(5) Visually examine the dome for nose erosion.	The maximum permitted depth of erosion is one layer deep.	If the erosion is within the Serviceable Limits, repair in accordance with the section, "Nose Erosion" in the Minor Repair chapter of this manual. If the erosion is greater than the Serviceable Limits, contact the Hartzell Propeller Product Support Department for evaluation.
(6) Visually examine the dome for delamination.	Delamination on any spinner part is rare and each case is unique.	Contact Hartzell Propeller if a delamination is identified for evaluation.

Component Inspection Criteria
Table 5-1

Inspect	Serviceable Limits	Corrective Action
A. Dome, continued (Item 20)		
(7) Dome units with a bonded forward bulkhead:		
(a) Visually examine the bond between the forward bulkhead and the dome.	The maximum permitted looseness of the bond is 1/4 of the circumference.	A forward bulkhead that is bonded to the dome is not repairable. If the looseness of the forward bulkhead is greater than the Serviceable Limits, replace the spinner dome and the integral forward bulkhead.
(b) Visually examine the forward bulkhead for cracks.	A crack is not permitted.	A forward bulkhead that is bonded to the dome is not repairable. If there is a crack, replace the spinner dome and the integral forward bulkhead.
(c) Composite forward bulkhead only: Visually examine the composite forward bulkhead for delamination.	Delamination on any spinner part is rare and each case is unique.	Contact the Hartzell Propeller Product Support Department if a delamination is identified for evaluation.
(d) Metal forward bulkhead only: Visually examine the metal forward bulkhead for corrosion or pitting.	The maximum permitted depth of pitting is 0.003 inch (0.08 mm). The maximum permitted diameter of pitting is 0.063 inch (1.60 mm). Corrosion is not permitted.	Light polishing with an abrasive pad CM47 or equivalent is optional. It is recommended that an aluminum-type automotive polish be applied after polishing with an abrasive pad. A forward bulkhead that is bonded to the dome is not repairable. If the corrosion or pitting is greater than the Serviceable Limits, replace the spinner dome and the integral forward bulkhead.

Component Inspection Criteria
Table 5-1

Inspect	Serviceable Limits	Corrective Action
A. Dome, continued (Item 20)		
CAUTION: CONTINUED OPERATION OF A D-5312-( ) DOME WITH A DAMAGED OR MISSING BUSHING MAY MAKE THE SPINNER NON-REPAIRABLE. IT MAY ALSO MAKE THE PITCH CHANGE ROD UNAIRWORTHY.		
(8) D-5312-( ) Only - used with Spinner Assembly D-5311-( )		
(a) Visually examine the dome for a bushing (60) that is missing, loose, or worn.	A bushing that is loose or missing is not permitted. Wear must not interfere with the bushing fitting snugly to the pitch change rod.	If the bushing is loose, missing, or if the wear is greater than the Serviceable Limits, replace the bushing in accordance with the section, "Replacement of Forward Bulkhead Bushing (60) on 5312-1 Dome" in the Minor Repair chapter of this manual.
(b) Visually examine the dome for fretting wear at the radius of the dome cutout.	The maximum permitted area of fretting wear is 2.00 square inches (1290 square mm).	Repair is not permitted. If the damage is greater than the Serviceable Limits, contact the Hartzell Propeller Product Support Department for evaluation.
(9) E-5580-( ) Only - used with Spinner Assembly E-5579-( )		
(a) Visually examine the dome for a debond of the integral erosion shield (40).	The maximum permitted total area of a debond is 1.00 square inch (645 square mm).	Minor repair is not permitted. If the debond is greater than the Serviceable Limits, contact the Hartzell Propeller Product Support Department for evaluation.
(b) Visually examine the dome for exposed carbon material.	Exposed carbon composite material beneath the cap is not permitted.	Repair is not permitted. If carbon composite material is exposed, contact the Hartzell Propeller Product Support Department for evaluation.
(c) Examine the dome for pin holes, pitting, and porosity forward of the dome/dome erosion shield parting line.	Damage through the erosion shield and into the carbon composite material beneath the cap is not permitted.	Repair in accordance with the section, "Dome Erosion Shield Repair" in the Minor Repair chapter of this manual. If the damage is greater than the Serviceable Limits, contact the Hartzell Propeller Product Support Department for evaluation.



Crushed or Missing Material of the OD Trimline
Figure 5-2

Component Inspection Criteria
Table 5-1

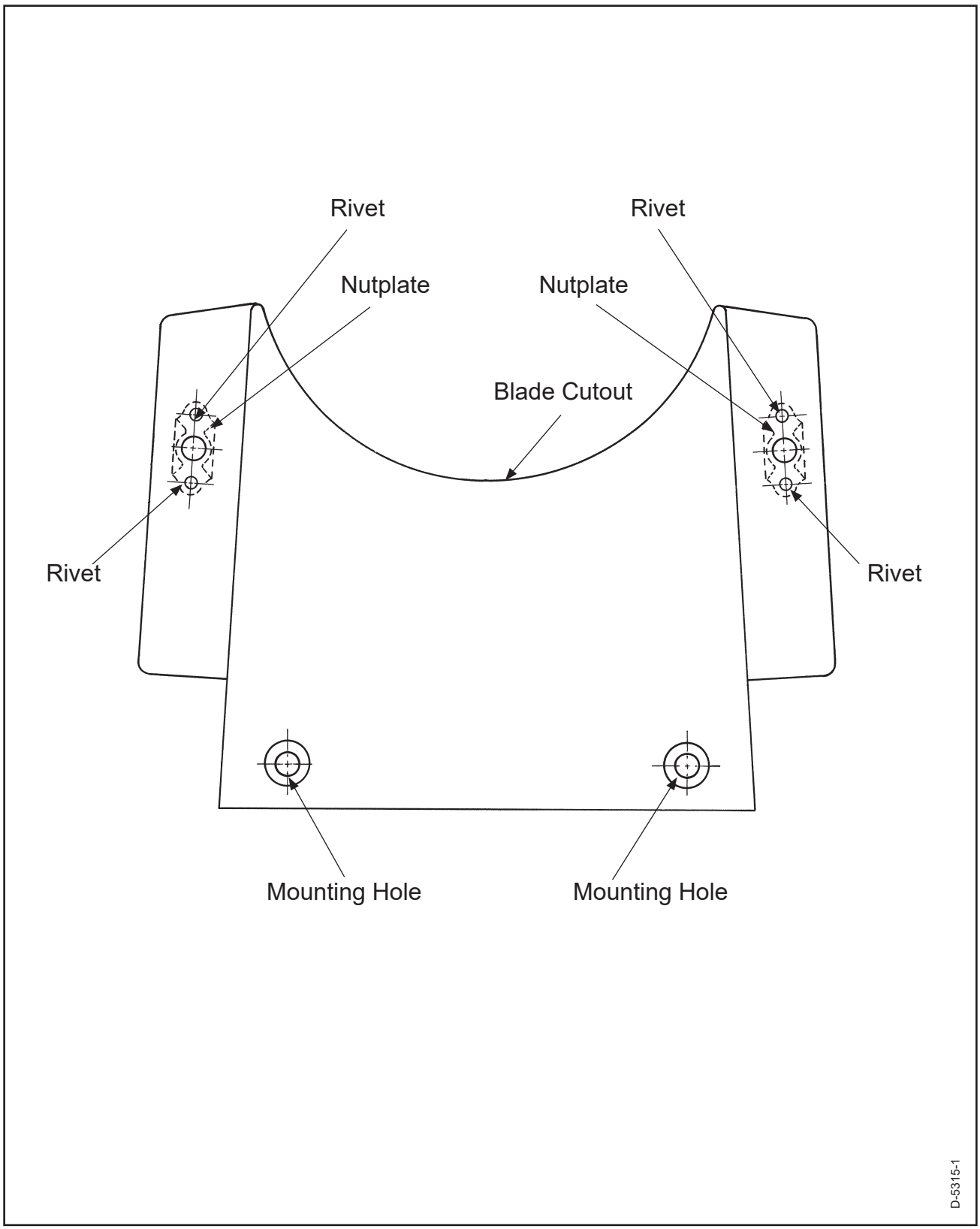
Inspect	Serviceable Limits	Corrective Action
B. Bulkhead (Item 70)		
(1) Visually examine the bulkhead for crushed material at the OD trimline. Refer to Figure 5-2.	A crushed area of the OD trimline up to half the distance to the dome mounting hole center is permitted.	If the amount of crushed material is within the Serviceable Limits, repair in accordance with the section, "Cracks and Crushed or Missing Material of the Bulkhead OD Trimline" in the Minor Repair chapter of this manual. If the crushed area is greater than the Serviceable Limits, contact the Hartzell Propeller Product Support Department for evaluation.
(2) Visually examine the bulkhead for cracks at the OD trim-line.	The maximum permitted number of cracks from the trimline to half the total flange height is one. The maximum permitted number of cracks at any nutplate location from the trim-line is one. The maximum permitted number of cracks for each filler plate location is one.	Cracked area of the OD trimline up to half the distance to the dome mounting hole center, may be repaired in accordance with the section, "Cracks and Crushed or Missing Material of the Bulkhead OD Trimline" in the Minor Repair chapter of this manual. Any crack up to the bulkhead radius or 1.50 inches (38.1 mm), whichever length is less, may be repaired in accordance with the section, "Bulkhead Repair of OD Cracks or Delaminations" in the Major Repair chapter of this manual. If the crack is greater than the bulkhead radius or 1.50 inches (38.1 mm), contact the Hartzell Propeller Product Support Department for evaluation.
(3) Visually examine the bulkhead for cracks not on the OD.	Contact the Hartzell Propeller Product Support Department for evaluation.	Contact the Hartzell Propeller Product Support Department for evaluation.

Component Inspection Criteria
Table 5-1

Inspect	Serviceable Limits	Corrective Action
B. Bulkhead, continued (Item 70)		
(4) Visually examine the bulkhead for missing material at the OD trimline. Refer to Figure 5-2.	Missing material at the OD trimline to a maximum of half the distance to the hole center is permitted. A maximum of four missing areas is permitted.	If the missing material is within the Serviceable Limits, repair in accordance with the section, "Cracks and Crushed or Missing Material of the Bulkhead OD Trimline" in the Minor Repair chapter of this manual. If the missing material is greater than the Serviceable Limits, contact the Hartzell Propeller Product Support Department for evaluation.
(5) Visually examine the bulkhead for a delamination.	Because a delamination on any spinner part is rare and each case is unique, contact the Hartzell Propeller Product Support Department for evaluation for evaluation when a delamination is identified.	Contact the Hartzell Propeller Product Support Department for evaluation.
(6) Visually examine the bulkhead for a damaged or loose rivet.	A damaged or loose rivet is not permitted.	If there is a damaged or loose rivet, replace the rivet in accordance with the section, "Replacing a Nutplate on a Composite Bulkhead" in the Minor Repair chapter of this manual.
(7) Visually examine the bulkhead for a missing rivet.	One missing rivet on each nutplate is permitted.	If more than one rivet on a nutplate is missing, replace the rivet in accordance with the section, "Replacing Nutplates and Rivets" in the Minor Repair chapter of this manual.
(8) Visually examine each nutplate for missing or damaged threads.	Threads must withstand the screw installation.	If the threads will not withstand screw installation satisfactorily, replace the nutplate in accordance with the section, "Replacing a Nutplate on a Composite Bulkhead" in the Minor Repair chapter of this manual.

Component Inspection Criteria
Table 5-1

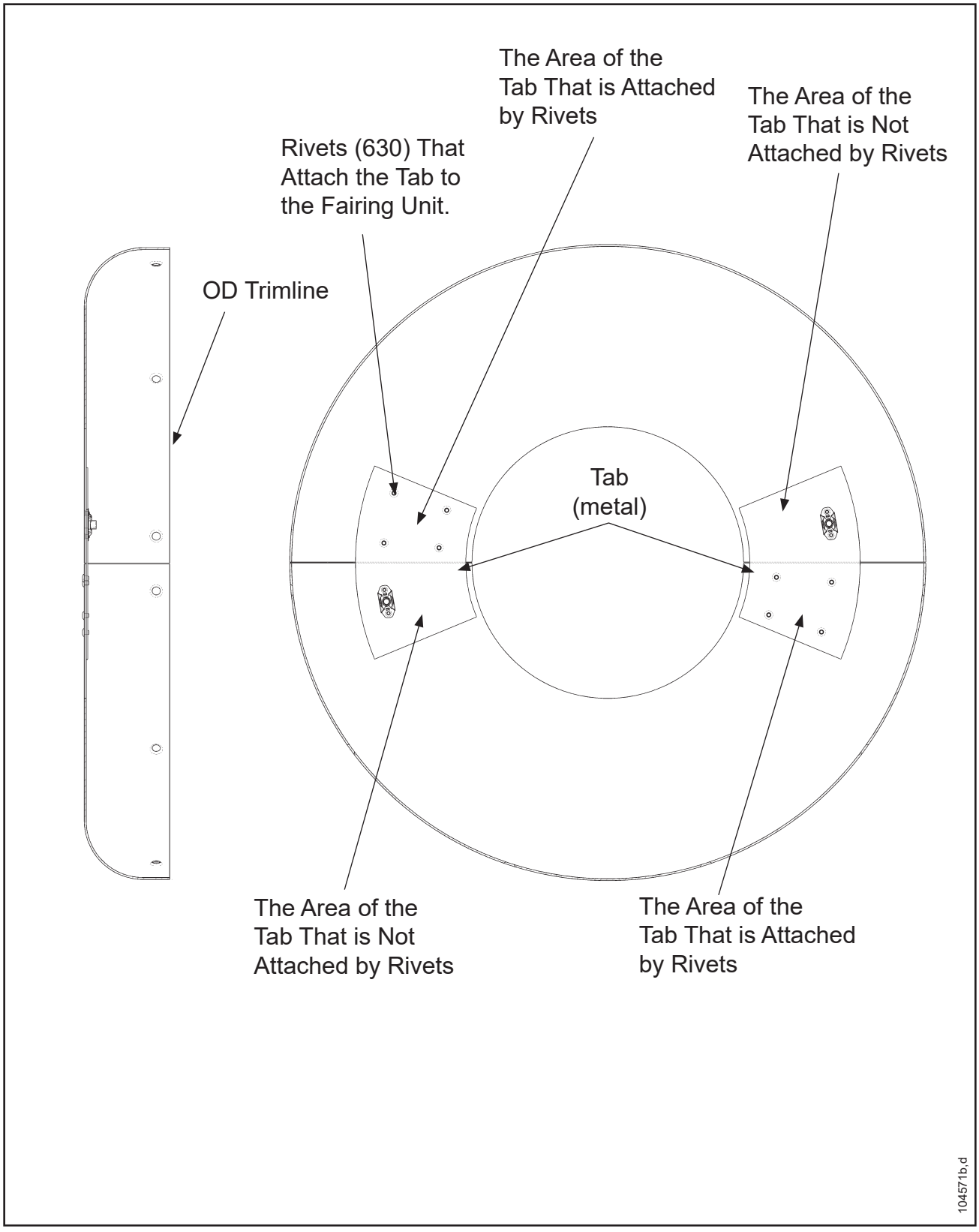
Inspect	Serviceable Limits	Corrective Action
B. Bulkhead, continued (Item 70)		
(9) D-5313-( ) Only - used with Spinner Assembly D-5311-( )		
(a) Visually examine the bulkhead for a missing or non-functional stud.	A missing or non-functional stud is not permitted.	If there is a missing or non-functional stud, contact the Hartzell Propeller Product Support Department for evaluation.
(10) D-5581 Only - used with Spinner Assembly D-5579-( )		
(a) Visually examine the bulkhead for loose or missing inserts (230).	A loose or missing insert is not permitted.	If the insert is loose or missing, replace the insert in accordance with the section, "Insert Replacement" in the Minor Repair chapter of this manual.



Filler Plate
Figure 5-3

Component Inspection Criteria
Table 5-1

Inspect	Serviceable Limits	Corrective Action
C. Filler Plate (Item 240)		
(1) Visually examine the filler plate for cracks at the blade cutout.	A maximum of three cracks for each filler plate is permitted. The maximum permitted length of a crack is 0.75 inch (19.0 mm). If the length of the crack is greater than the permitted limit, contact the Hartzell Propeller Product Support Department for evaluation.	Minor repair is not permitted. Repair in accordance with the section, "Repairing a Crack at the Blade Cutout" in the Major Repair chapter of this manual.
(2) Visually examine the filler plate for cracks at the nutplates.	The maximum permitted length of a crack is half the distance to the filler plate edge. If the length of the crack is greater than the permitted limit, contact the Hartzell Propeller Product Support Department for evaluation.	Repair is not permitted. If a crack is greater than the Serviceable Limits, replace the filler plate.
(3) Visually examine the filler plate for a damaged or loose rivet.	A damaged or loose rivet is not permitted.	If there is a damaged or loose rivet, replace the rivet in accordance with the section, "Replacing a Nutplate on a Filler Plate" in the Minor Repair chapter of this manual.
(4) Visually examine the filler plate for a missing rivet.	One missing rivet on each nutplate is permitted.	If more than one rivet on a nutplate is missing, replace the rivet in accordance with the section, "Replacing a Nutplate on a Filler Plate" in the Minor Repair chapter of this manual.
(5) Examine each nutplate for missing or damaged threads.	Threads must withstand the screw installation.	If the threads will not withstand screw installation satisfactorily, replace the nutplate in accordance with the section, "Replacing a Nutplate on a Filler Plate" in the Minor Repair chapter of this manual.
(6) Visually examine the filler plate for other cracks or damage.	Contact the Hartzell Propeller Product Support Department for evaluation.	Contact the Hartzell Propeller Product Support Department for evaluation.



Fairing Unit
Figure 5-4

Component Inspection Criteria
Table 5-1

Inspect	Serviceable Limits	Corrective Action
D. Fairing Unit, Except the Metal Tab (Item 600) Refer to Figure 5-4.		
(1) Visually examine the fairing unit for crushed material at the OD trimline.	A crushed area of the OD trimline up to half the distance to the bulkhead mounting hole center is permitted.	If the amount of crushed material is within the Serviceable Limits, repair the crushed area in accordance with the section, "Cracks and Crushed or Missing Material on the Fairing Unit OD Trimline" in the Minor Repair chapter of this manual.
		If the amount of crushed material is greater than the Serviceable Limits, contact the Hartzell Propeller Product Support Department for evaluation.
(2) Visually examine the fairing unit for cracks at the OD trimline.	The maximum permitted number of cracks from the fairing unit OD trimline to half the total flange height is one. A cracked area of the OD trimline up to half the distance to the dome mounting hole center may be repaired.	If a cracked area of the OD trimline is within the Serviceable Limits, repair it in accordance with the section, "Cracks and Crushed or Missing Material on the Fairing OD Trimline" in the Minor Repair chapter of this manual.
	A crack up to the fairing unit radius or 1.75 inches (44.4 mm), whichever length is less may me repaired.	If a crack (up to the fairing unit radius) is within the Serviceable Limits, repair it in accordance with the section, "Fairing Repair of OD Cracks or Delaminations" in the Major Repair chapter of this manual.
(3) Visually examine the fairing unit for cracks not on the OD.	Contact the Hartzell Propeller Product Support Department for evaluation.	Contact the Hartzell Propeller Product Support Department for evaluation.

Component Inspection Criteria
Table 5-1

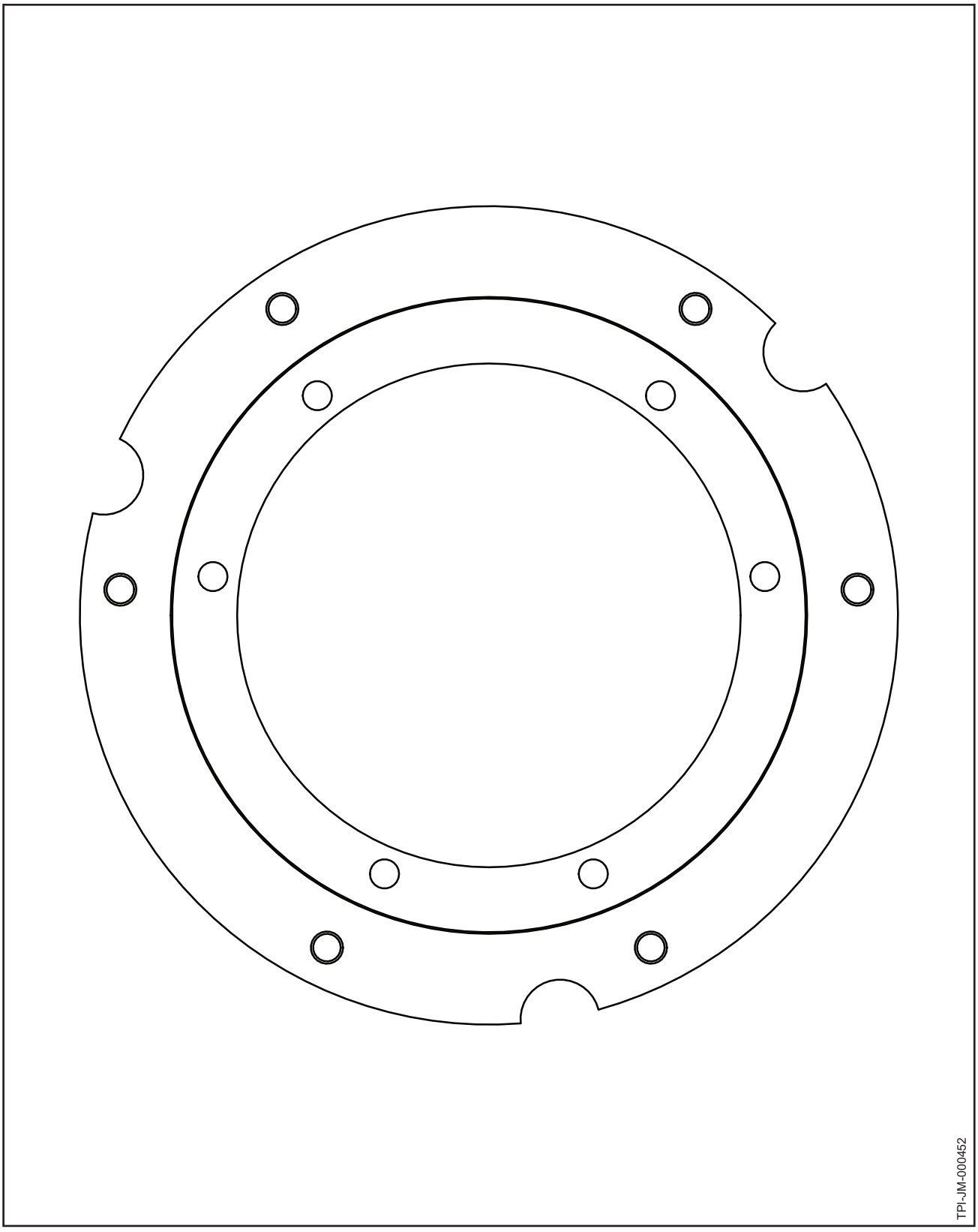
Inspect	Serviceable Limits	Corrective Action
D. Fairing Unit, Except the Metal Tab, continued (Item 600) Refer to Figure 5-4.		
(4) Visually examine the fairing unit for missing material at the OD trimline.	Missing material at the OD trimline to a maximum of half the distance to the hole center is permitted. A maximum of four crushed or missing areas is permitted.	If the amount of missing material is within the Serviceable Limits, repair in accordance with the section, "Cracks and Crushed or Missing Material on the Fairing OD Trimline" in the Minor Repair chapter of this manual. If the amount of missing material is greater than the Serviceable Limits, contact the Hartzell Propeller Product Support Department for evaluation.
(5) Visually examine the fairing unit for delamination.	Because a delamination on any spinner part is rare and each case is unique, contact the Hartzell Propeller Product Support Department if a delamination is identified.	Minor repair is not permitted. The maximum permitted area of delamination is 2.00 inches x 3.00 inches (50.8 mm x 76.2 mm).

Component Inspection Criteria
Table 5-1

Inspect	Serviceable Limits	Corrective Action
E. Fairing Unit, Metal Tab Only (Item 600) Refer to Figure 5-4.		
(1) Visually examine the metal tab for cracks in the area not attached by rivets.	A crack is not permitted.	If there is a crack in the metal tab, replace the fairing unit.
(2) Visually examine each nutplate for a loose rivet.	A loose rivet is not permitted.	If the rivet is loose, replace the rivet in accordance with the section, "Replacing Nutplates and Rivets on the Tab of the Fairing Unit" in the Minor Repair chapter of this manual.
(3) Visually examine each nutplate for missing or damaged threads.	Threads must withstand the screw installation.	If the threads will not withstand screw installation satisfactorily, replace the nutplate in accordance with the section, "Replacing Nutplates and Rivets on the Tab of the Fairing Unit" in the Minor Repair chapter of this manual.
(4) Visually examine the rivets (630) that attach the tab to the fairing unit.	A missing rivet is not permitted.	If a rivet is missing, replace the rivet in accordance with the section, "Replacing a Rivet on the Tab of the Fairing Unit" in the Minor Repair chapter of this manual.

Component Inspection Criteria
Table 5-1

Inspect	Serviceable Limits	Corrective Action
F. Forward Bulkhead Unit, P/N 106187 (Item 50)		
(1) Visually examine the forward bulkhead unit for cracks and/or broken material.	Cracks and/or broken material are not permitted.	If there are cracks and/or broken material, replace the forward bulkhead unit.
(2) Visually examine the forward bulkhead unit for cuts or gouging.	Cuts or gouges that extend through the entire surface of the forward bulkhead unit are not permitted. Cuts or gouges that reduce the rigidity of the forward bulkhead unit are not permitted.	If a cut or gouge extends through the entire surface or reduces the rigidity of the forward bulkhead unit, replace the forward bulkhead unit.
(3) Visually examine the forward bulkhead unit for abnormal wear or deformation.	Wear or deformation must not interfere with, or affect the fit, function, or rigidity of the forward bulkhead unit.	If wear or deformation is greater than the permitted Serviceable Limits, replace the forward bulkhead unit.



Spinner Mounting Ring
Figure 5-5

Component Inspection Criteria
Table 5-1

Inspect	Serviceable Limits	Corrective Action
G. Spinner Mounting Ring (Item 1210) Refer to Figure 5-5.		
(1) Visually examine the spinner mounting ring for corrosion product and pitting.	Corrosion product is not permitted. The maximum permitted depth of pitting is 0.005 inch (0.12 mm).	Light corrosion product may be removed by using glass bead cleaning in accordance with the Cleaning chapter of Hartzell Propeller Standard Practices Manual 202A (61-01-02). Local polishing to a maximum of 0.010 inch deep (0.25 mm) is permitted to a maximum area of 0.50 square inch (322 square mm) of total accumulated repair for each side of the spinner mounting ring. Local polishing that intersects any part of a hole circumference is not permitted. If corrosion product or pitting is greater than the permitted serviceable limits or the corrective action limits, replace the spinner mounting ring.
(2) Visually examine the spinner mounting ring for scratches or damage.	The maximum permitted depth of a scratch or damage is 0.005 inch (0.12 mm).	Local polishing to a maximum of 0.010 inch deep (0.25 mm) is permitted to a maximum area of 0.50 square inch (322 square mm) of total accumulated repair for each side of the spinner mounting ring. Local polishing that intersects any part of a hole circumference is not permitted. If scratches or damage is greater than the permitted serviceable limits or the corrective action limits, replace the spinner mounting ring.

Component Inspection Criteria
Table 5-1

Inspect	Serviceable Limits	Corrective Action
G. Spinner Mounting Ring, Continued (Item 1210) Refer to Figure 5-5.		
(3) Penetrant inspect the spinner mounting ring in accordance with the Penetrant Inspection chapter of Hartzell Propeller Standard Practices Manual 202A (61-01-02).	A relevant indication is not permitted.	If there is a relevant indication, replace the spinner mounting ring.
(4) Inspect each through hole for damage.	Damage that interferes with the piloting of the associated fastener is not permitted.	If the damage to the hole is greater than the permitted serviceable limits, replace the spinner mounting ring.

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MAJOR REPAIR - CONTENTS

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1. General

A. General Information

(1) For definitions and personnel requirements of major repair, refer to the Introduction chapter of this manual.

(2) Personnel performing major repairs in the field are urged to consult with Hartzell Propeller whenever there is a question about major repairs. Most incidents that require major repairs are unique in the location/degree of damage and/or the extent of repair required. Hartzell Propeller assistance is available and, in many cases, essential.

2. Dome

A. Dome Repair of Cracks or Delaminations

(1) Repair Limits

(a) This repair may be performed on a crack that is within the major repair limits. Refer to the Airworthy Limits table in the Check chapter of this manual.

(b) This repair may be performed on a delamination that is within the major repair limits. Refer to the Airworthy Limits table in the Check chapter of this manual.

(c) If a delamination is associated with (coincident with) a crack, the delamination and the crack may be repaired at the same time.

(d) If the damage is greater than the permitted limit, contact the Hartzell Propeller Product Support Department for evaluation.

(2) Repair Overview

(a) This repair may be performed on any crack or delamination that is within the repair limit for the spinners listed in Table 6-1.

(b) If the outer surface crack depth is greater than 50 percent of the laminate thickness, the repair procedure requires access to both sides of the spinner dome.

1 Some cracks located in the region between the tip and the forward bulkhead may not be repairable because of limited or no access to the inside surface of the dome.

(c) For a crack that is greater than 50 percent of the laminate thickness or a through crack, the repair is performed in steps because the structure of the original material is used to restore the correct dome shape.

1 The Step 1 Repair Procedure restores one surface. This repair uses the original dome material to maintain the dome shape.

2 The Step 2 Repair Procedure restores the other surface. This part of the repair uses the newly performed repair in the Step 1 Repair Procedure to maintain the dome shape.

(d) For a crack that has a maximum depth of 50 percent of the laminate thickness, the repair can be made by performing the Step 1 Repair Procedure.

(e) For a spinner dome that contains a Kevlar® layer that is on the inside of the dome, an extra step may be required that replaces the Kevlar® inside layer.

(f) For repairs that encompass a hole, the area is fully repaired and then the hole is created.

(3) Inspection Before Repair

(a) Examine the crack and/or delamination to make sure that it is within the repairable limits. For the repair limits, refer to the Check chapter in this manual.

1 For a crack, measure the length of the crack.

2 For a delamination:

a Make a visual inspection of the area of delamination.

b Make an inspection of the area of delamination in accordance with the section "Coin-Tap Inspection Procedure" in the Check chapter of this manual.

(b) In the area surrounding the crack, inspect for delaminations in accordance with the section "Coin-Tap Inspection Procedure" in the Check chapter of this manual.

1 An area of delamination that is within the delamination size limitations may be repaired if the entire delamination area is entirely within 1 inch (25.4 mm) of the crack.

2 If either the crack or the delamination is greater than the repairable limits, contact Hartzell Propeller because there may be a factory only repair that can be performed. For the repair limits, refer to the Check chapter in this manual.

(c) If a delamination is found, determine if the delamination is closer to the outside or inside surface of the dome.

1 Coin-tap the inside and then the outside of the dome.

2 The side of the dome where the tap sound is more pronounced is the closer surface.

(d) A delamination can also be detected visually or by feeling the surface of the dome.

1 The delamination is typically closer to the most disrupted surface of the dome.

(e) Determine the thickness of the laminate in the center of the area to be repaired.

(4) Step 1 Repair Procedure

(a) Start on the side that was determined to be closest to the delamination, or the side with the most severe crack or crack damage.

CAUTION: DO NOT REMOVE MATERIAL ANY DEEPER THAN NECESSARY TO FULLY REMOVE THE DAMAGE. IF THE DAMAGE REMAINS AND 50 PERCENT OF THE LAMINATE HAS BEEN REMOVED, DO NOT GRIND DEEPER.

(b) Using a grinder or sander with 60 grit or finer sandpaper, remove material in the area to be repaired.

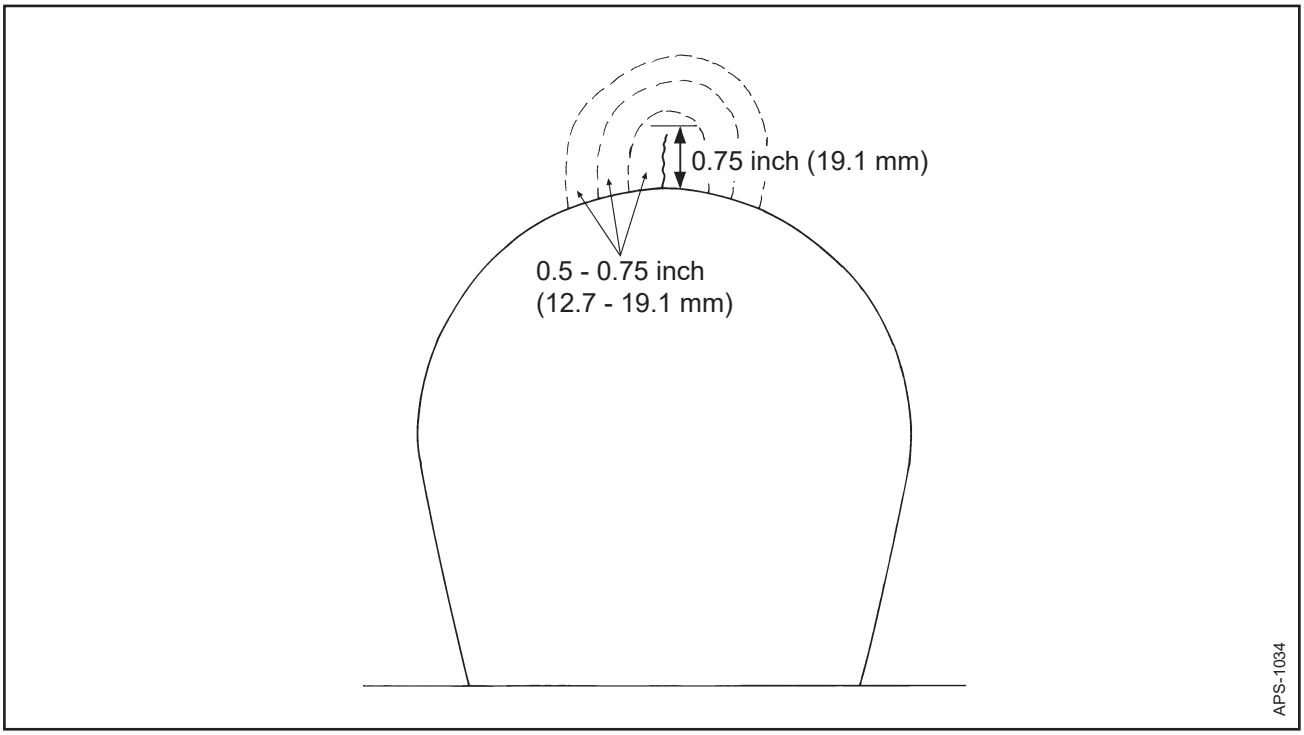
1 Make a bevel 0.50 to 1.00 inch wide (12.7 to 25.4 mm) for each 0.010 inch (0.25 mm) of depth.

2 While removing material, stop periodically and examine the progress of removing the crack or delamination.

NOTE: Wiping the area with a clean cloth dampened with solvent acetone CM173, MEK CM106, or MPK CM219 can help to visually find the defect.

3 If the area requiring removal extends to an edge, maintain the bevel to the edge.

4 Refer to Figure 6-1 for an example.



Tapering Around a Crack on the Top of the Blade Cutout
Figure 6-1

Spinner Assembly Part Number	Dome Unit Part Number	Bulkhead/ Adapter Ring Part Number	Construction	Repair Material	Cured Ply Thickness	Kevlar® Inside Layer
D-5253						
	D-5263		Carbon	CM111	0.0075 inch (0.190 mm)	NO
		D-5264	Carbon	CM111	0.0075 inch (0.190 mm)	NO
D-5311-( )						
	D-5312-( )		Carbon	CM111	0.0075 inch (0.190 mm)	YES
		D-5313-( )	Carbon	CM111	0.0075 inch (0.190 mm)	NO
D-5362						
	D-5363		Carbon	CM111	0.0075 inch (0.190 mm)	NO
		D-5364	Carbon	CM111	0.0075 inch (0.190 mm)	NO
E-5579-( )						
	E-5580-4		Carbon	CM111	0.0075 inch (0.190 mm)	NO
		E-5581	Carbon	CM111	0.0075 inch (0.190 mm)	NO
D-7409-( )						
	D-7408-( )		Carbon	CM111	0.0075 inch (0.190 mm)	NO
		D-7404-( )	Carbon	CM111	0.0075 inch (0.190 mm)	NO
E-7480						
	E-7481		Carbon	CM111	0.0075 inch (0.190 mm)	NO
		D-6666	Carbon	CM111	0.0075 inch (0.190 mm)	NO
101298						
	101299		Carbon	CM111	0.0075 inch (0.190 mm)	NO
		D-7084-1G	Metal	---	---	NO
102870( )						
	102885( )		Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		102892	Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
103409( )						
	103410( )		Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		C-2472-6P	Metal	---	---	NO

Spinner Repair Materials
Table 6-1

Spinner Assembly Part Number	Dome Unit Part Number	Bulkhead/ Adapter Ring Part Number	Construction	Repair Material	Cured Ply Thickness	Kevlar® Inside Layer
103585( )						
	103582( )		Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		103584( ) Adapter Ring Unit	Metal	---	---	NO
103629( )						
	103627( )		Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		103628( ) Adapter Ring Unit	Metal	---	---	NO
104529						
	104573		Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		104572	Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		104571 Fairing Unit (Does Not Include the Tab)	Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
104888-( )						
	104886( )		Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		104887	Metal	---	---	NO
105085( )						
	105122( )		Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		105123( )	Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
105127( )						
	105129( )		Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		106015( )	Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
105656( )						
	105651( )		Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		105652( )	Metal	---	---	NO
105675						
	105674		Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		105672	Metal	---	---	NO

Spinner Repair Materials
Table 6-1, continued

Spinner Assembly Part Number	Dome Unit Part Number	Bulkhead/ Adapter Ring Part Number	Construction	Repair Material	Cured Ply Thickness	Kevlar® Inside Layer
105945( )						
	105943( )		Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		105944( ) or C-885-3( ) Adapter Ring Unit	Metal	---	---	NO
106040( )						
	106039( )		Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		106348( )	Metal	---	---	NO
106188( )						
	106184( )		Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		106185( )	Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
106215( )						
	106214( )		Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		C-2472-6P	Metal	---	---	NO
106311( )						
	106322( )		Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		106323( )	Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
106574( )						
	103582( )		Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		106573( )	Metal	---	---	NO
106848( )						
	106847( )		Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		106348( )	Metal	---	---	NO
106871( )						
	106911( )		Carbon	CM111	0.0075 inch (0.190 mm)	NO
		106910( )	Metal	---	---	NO

Spinner Repair Materials
Table 6-1, continued

Spinner Assembly Part Number	Dome Unit Part Number	Bulkhead/ Adapter Ring Part Number	Construction	Repair Material	Cured Ply Thickness	Kevlar® Inside Layer
106957( )						
	106956( )		Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		106955( )	Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		104571 Fairing Unit (Does Not Include the Tab)	Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
107153( )						
	107151( )		Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		107152( )	Metal	---	---	NO
107376( )						
	107375( )		Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		C-3283-5( )	Metal	---	---	NO
107507( )						
	107505( )		Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		107506( )	Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
107554( )						
	107553( )		Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		107552( )	Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
107974( )						
	107973( )		Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		107937( )	Metal	---	---	NO
108013( )						
	108011( )		Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		108009( )	Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
108482( )						
	108481( )		Carbon/ Fiberglass	CM55	0.0085 inch (0.215 mm)	NO
		108480( )	Metal	---	---	NO

Spinner Repair Materials
Table 6-1, continued

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(c) When the full depth or the bottom of the defect has been reached, make sure that the repair area meets the bevel requirements.

(d) Using a clean cloth dampened with solvent acetone CM173, MEK CM106, or MPK CM219, thoroughly clean the area to be repaired.

(e) Permit the solvent to evaporate completely.

(f) Cut the repair material pattern pieces.

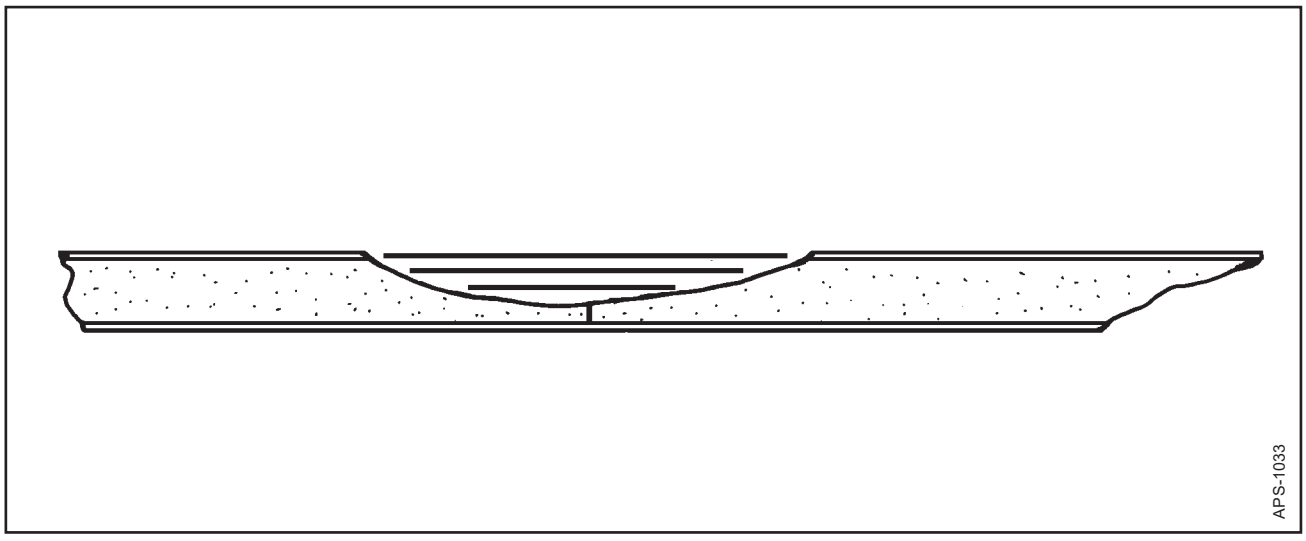
1 From Table 6-1 choose the correct repair materials and make a note of the cured ply thicknesses.

2 Alternating the layers of material at ±45 degrees, 0 - 90 degrees, cut the repair materials layer by layer to match the shape of the beveled area to create a stair step pattern when laminating. Refer to Figure 6-2.

3 Cut an extra layer or two of the material, also at alternating angles, to put on top of the repair.

NOTE: The extra layers provide additional thickness that will be removed later resulting in a smooth repaired area.

a Optionally, laminate layers of fiberglass fabric CM42 on top of the material pattern pieces, blending the new material to the original surface.



Laminating Pattern
Figure 6-2

(g) Using a clean cloth dampened with solvent acetone CM173, MEK CM106, or MPK CM219, thoroughly clean the area to be repaired.

(h) Permit the solvent to evaporate completely.

(i) In a container free from contamination, mix enough adhesive CM14 or CM15 to perform the repair.

1 Mix the adhesive CM14 or CM15 in accordance with the manufacturer's instructions.

(j) Laminate the repair material pattern piece layers.

1 Apply adhesive CM14 or CM15 to the area to be repaired.

CAUTION: MAKE SURE THAT EACH LAYER BECOMES THOROUGHLY SATURATED WITH ADHESIVE CM14 OR CM15 AS THE LAYER LAMINATES TO THE REPAIR AREA.

2 Apply the repair material pattern piece layers over the repair area to achieve the original shape. Refer to Figure 6-2.

NOTE: The repair material pattern pieces were cut so the weave direction will alternate between ±45 degrees, 0 – 90 degrees.

a Beginning with the smallest repair material pattern piece, laminate progressively larger material pattern pieces, making sure that each repair material pattern piece is thoroughly saturated before applying the next layer. Additional adhesive CM14 or CM15 may be applied if necessary.

b Optionally, laminate layers of fiberglass fabric CM42 on top of the material pattern pieces, blending the new material to the original surface.

(k) Cure the Step 1 repair in accordance with the section "Curing a Repair" in this chapter.

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Spinner Assembly Part No.	Dome/Hoop Part No.	Dome Mounting Hole Diameter	Filler Plate Mounting Hole Diameter
D-5253-( )	D-5263 (Dome)	0.357 inch (+0.007, -0.002) [9.06 mm (+0.17, -0.05)]	---
D-5311-( )	D-5312-1 (Dome)	0.359 inch (+0.007, -0.002) [9.11 mm (+0.17, -0.05)]	0.250 inch (+0.006, -0.002) [6.35 mm (+0.15, -0.05)]
D-5362-( )	D-5363 (Dome)	0.357 inch (+0.007, -0.002) [9.06 mm (+0.17, -0.05)]	---
	D-5433 (Hoop)	0.250 inch (+0.010, -0.002) [8.26 mm (+0.25, -0.05)]	---
E-5579-( )	E-5580-4 (Dome)	100° Countersink 0.375 inch (+0.007, -0.002) [9.52 mm (+0.17, -0.05)]	---
E-7480-( )	E-7481 (Dome)	100° Countersink 0.375 inch (9.06 mm)	---
101298	101299 (Dome)	0.250 inch (+0.006, -0.002) [6.35 mm (+0.15, -0.05)] Located 28 degrees from each blade centerline	---
		0.194 inch (+0.006, -0.002) [4.92 mm (+0.15, -0.05)] Located 47.5 degrees from each blade centerline	---
102870( )	102885( ) (Dome)	100° Countersink 0.375 inch (+0.007, -0.002) [9.52 mm (+0.17, -0.05)]	---
103409( )	103410( ) (Dome)	Through Hole 0.250 inch (+0.006, -0.002) [6.35 mm (+0.15, -0.05)] 100° Countersink 0.375 inch (+0.007, -0.002) [9.52 mm (+0.17, -0.05)]	---
103585( )	103582( ) (Dome)	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	---
103629( )	103627( ) (Dome)	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	---
104529	104573 (Dome)	100° Countersink 0.375 inch (+0.007, -0.002) [9.52 mm (+0.15, -0.05)]	---

Dimensions for Mounting Hole Diameter
Table 6-2, Page 1 of 4

Spinner Assembly Part No.	Dome/Hoop Part No.	Dome Mounting Hole Diameter	Filler Plate Mounting Hole Diameter
104888-( )	104886( ) (Dome)	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	---
105085( )	105122( ) (Dome)	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	---
105127( )	105129( ) (Dome)	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	---
105656( )	105651( ) (Dome)	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	---
105675	105674 (Dome)	Refer to Hartzell Propeller Spinner Build Instruction Drawing 105676. NOTE: The drawing is part of the parts list for the propeller assembly. Refer to the Illustrated Parts List chapter in this manual.	---
105945( )	105943( ) (Dome)	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	---
106040( )	106039( ) (Dome)	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	---
106188( )	106184( )	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	

Dimensions for Mounting Hole Diameter
Table 6-2, Page 2 of 4

Spinner Assembly Part No.	Dome/Hoop Part No.	Dome Mounting Hole Diameter	Filler Plate Mounting Hole Diameter
106215( )	106214( ) (Dome)	100° Countersink 0.375 inch (+0.007, -0.002) [9.52 mm (+0.17, -0.05)] Maximum Hole Diameter is 0.256 inch (6.73 mm)	---
106311( )	106322( ) (Dome)	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	---
106574( )	103582( ) (Dome)	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	---
106848( )	106847( ) (Dome)	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	---
106871( )	106911( ) (Dome)	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	---
106957( )	106956( ) (Dome)	100° Countersink 0.375 inch (+0.007, -0.002) [9.52 mm (+0.17, 0.05)]	---
107153( )	107151( ) (Dome)	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	---
107376( )	107375( ) (Dome)	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	---
107507( )	107505( ) (Dome)	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	---

Dimensions for Mounting Hole Diameter
Table 6-2, Page 3 of 4

Spinner Assembly Part No.	Dome/Hoop Part No.	Dome Mounting Hole Diameter	Filler Plate Mounting Hole Diameter
107554( )	107553( ) (Dome)	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	---
107974( )	107973( )	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	---
108013( )	108011( )	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	---
108482( )	108481( )	100° Countersink 0.375 inch (+0.015, -0.010) [9.52 mm (+0.38, -0.25)] Maximum Hole Diameter is 0.271 inch (6.88 mm)	---

Dimensions for Mounting Hole Diameter
Table 6-2, Page 4 of 4

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(l) Sand the repair

CAUTION: DO NOT REMOVE ORIGINAL MATERIAL WHEN SANDING.

1 Sand the repaired area to the original shape using caution not to remove original material.

2 Using progressively finer grit sand paper, sand until the original shape is achieved.

3 Use 140 grit or finer sandpaper for final sanding.

4 Make a visual inspection of the repaired area.

5 Make an inspection of the repaired area in accordance with the section "Coin-Tap Inspection Procedure" in the Check chapter of this manual.

a Delaminations or voids are not permitted.

b If the area of repair is not within the limits specified, repair in accordance with the applicable repair instructions.

c Repeat the inspections and repair until the repair is satisfactory.

(m) After completion of the Step 1 Repair Procedure:

1 If damaged material remains on the opposite side, follow the steps in the section "Step 2 Repair Procedure" in this chapter.

2 If the repair is complete, but the dome requires a Kevlar® layer that is on the inside of the dome, follow the steps in the section "Kevlar® Inside Layer Replacement Procedure" in this chapter.

a Refer to Table 6-1 to determine if the dome has a Kevlar® layer on the inside of the dome.

(n) When all repairs have been completed and the Kevlar® layer that is on the inside of the dome has been replaced, if applicable:

1 If the repair included a mounting hole, redrill the hole in the same location in accordance with Table 6-2.

a Use the mating part, for example the bulkhead, to determine the location of the hole to be drilled.

2 Refinish the dome in accordance with the Finish Procedures chapter in this manual.

(5) Step 2 Repair Procedure

(a) If damaged material remains on the opposite side of the dome after completion of the Step 1 repair, repeat the applicable steps of the Step 1 repair.

(b) After completion of the Step 2 Repair Procedure:

1 If the repairs are complete, but the dome requires a Kevlar® layer that is on the inside of the dome, follow the steps in the section "Kevlar® Inside Layer Replacement Procedure" in this chapter.

a Refer to Table 6-1 to determine if the dome has a Kevlar® layer on the inside of the dome.

(c) When all repairs have been completed and the Kevlar® layer that is on the inside of the dome has been replaced, if applicable:

1 If the repair encompassed a mounting hole, redrill the hole in accordance with Table 6-2.

a Use the mating part, for example the bulkhead, to determine the location of the hole to be drilled.

2 Refinish the dome in accordance with the Finish Procedures chapter in this manual.

(6) Kevlar® Inside Layer Replacement Procedure

(a) If the dome requires a Kevlar® layer that is on the inside of the dome, follow the steps in this section for replacement of the layer after repairs are completed.

1 Refer to Table 6-1 to determine if the dome has a Kevlar® layer on the inside of the dome.

(b) Using a grinder or sander with 60 grit or finer sandpaper, sand the area that was repaired to remove only enough material to permit one layer of Kevlar® drycloth CM113 to be applied flush with the surrounding original material.

1 The cured ply thickness of the Kevlar® drycloth CM113 is 0.008 inch (0.20 mm).

(c) Using a clean cloth dampened with solvent acetone CM173, MEK CM106, or MPK CM219, thoroughly clean the area where the Kevlar® will be applied.

(d) Permit the solvent to evaporate completely.

(e) In a container free from contamination, mix enough adhesive CM14 or CM15 to complete the Kevlar® replacement.

1 Mix the adhesive CM14 or CM15 in accordance with the manufacturer's instructions.

(f) Cut a piece of Kevlar® drycloth CM113.

1 Match the weave direction of the piece to that of the original material.

2 Cut the piece large enough that there will be an overlap of 0.25 to 0.50 inch (6.3 to 12.7 mm) to the original material.

(g) Apply adhesive CM14 or CM15 to the area where the Kevlar® drycloth CM113 will be applied.

(h) Laminate the Kevlar® drycloth CM113 over the applicable area making sure that:

1 The weave direction of the Kevlar® drycloth CM113 matches the weave direction of the original material.

2 There is an overlap of the Kevlar® drycloth CM113 onto the original material.

3 The Kevlar® drycloth CM113 is as smooth as possible with no wrinkles or bubbles.

(i) Cure the Kevlar® inside layer replacement in accordance with the section "Curing a Repair" in this chapter.

(j) Sand the repair.

CAUTION: DO NOT REMOVE THE KEVLAR® INSIDE LAYER WHEN SANDING.

1 The application of the Kevlar® inside layer should have resulted in a smooth layer that does not require sanding.

a If sanding is desired because of excess adhesive, use minimal sanding to remove only the excess adhesive, using caution not to remove the Kevlar® inside layer.

2 If the Kevlar® inside layer overlaps in an area that will interface with the bulkhead, remove by sanding with 60 grit or finer sandpaper the Kevlar® inside layer as necessary to achieve the original thickness.

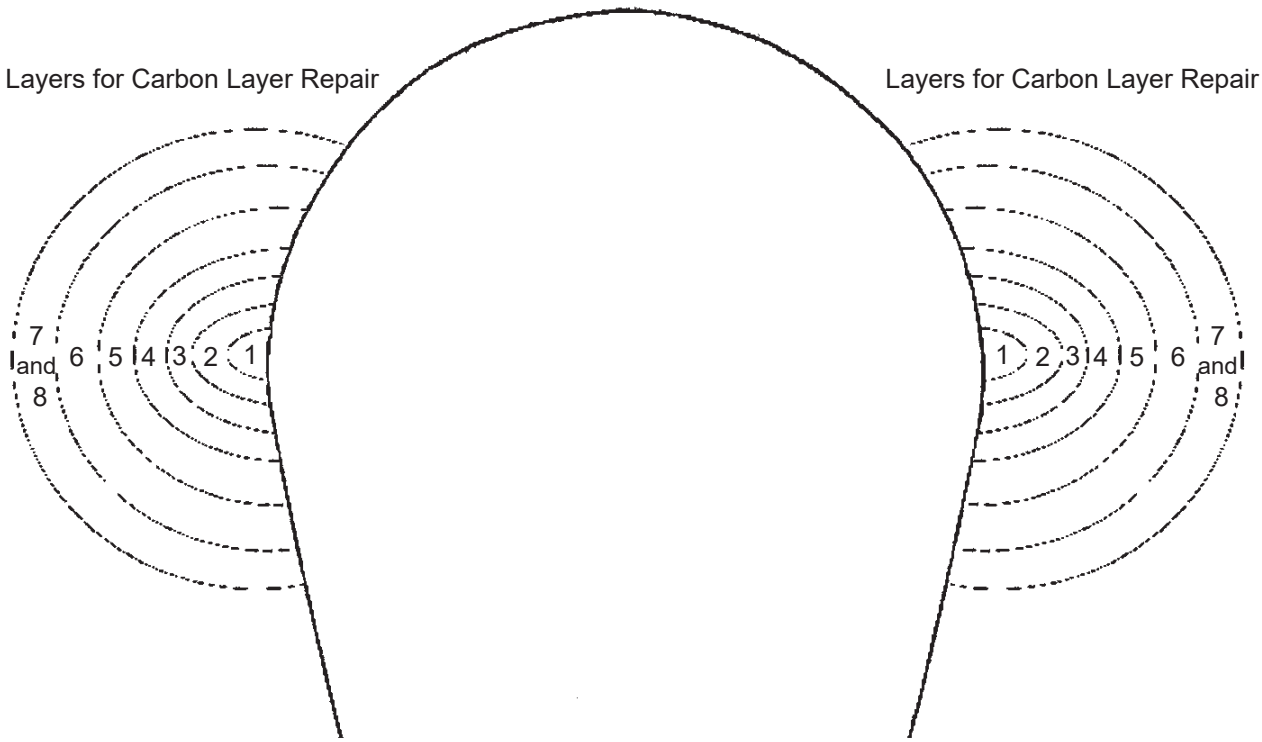
3 Make a visual inspection of the repaired area.

a If the area of repair has a wrinkle or a void, repair in accordance with the applicable repair instructions.

b Repeat the inspection and repair until the repair is satisfactory.

CARBON LAYER REPAIR

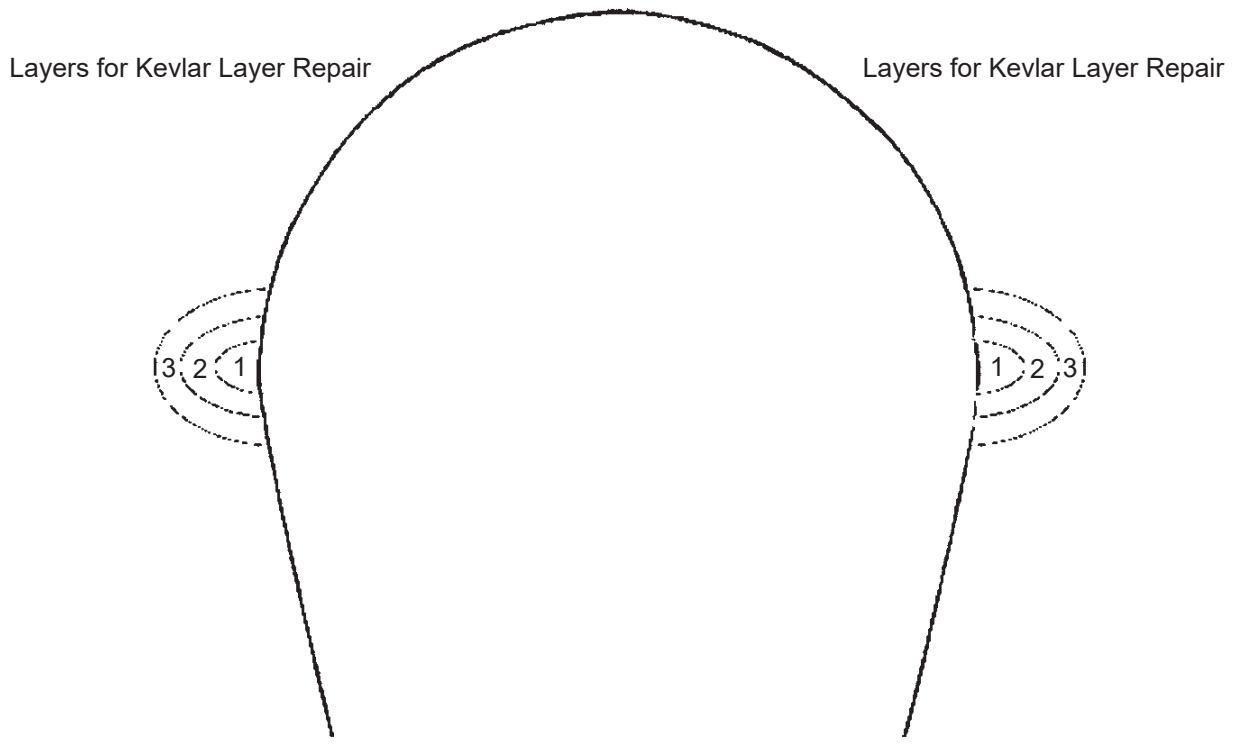
Layer		Description	Orientation
1	-	Carbon cloth CM111	0-90 degrees
2	-	Carbon cloth CM111	± 45 degrees
3	-	Carbon cloth CM111	0-90 degrees
4	-	Carbon cloth CM111	± 45 degrees
5	-	Kevlar cloth CM113	0-90 degrees
6	-	E-glass CM55	0-90 degrees
7	-	Fiberglass fabric CM42	0-90 degrees
8	-	Fiberglass fabric CM42	0-90 degrees



Repair of Fretting Wear at the Radius of the Dome Blade Cutout
Figure 6-3, Page 1 of 2

KEVLAR® LAYER REPAIR

Layer	Description	Orientation
1	- Kevlar cloth CM113	0-90 degrees
2	- E-glass CM55	0-90 degrees
3	- Fiberglass fabric CM42	0-90 degrees
4	- Fiberglass fabric CM42	0-90 degrees



Repair of Fretting Wear at the Radius of the Dome Blade Cutout
Figure 6-3, Page 2 of 2

B. Repair of Fretting Wear at the Radius of the Dome Blade Cutout for the D-5311-( ) Spinner Assembly

(1) Repair Limits

(a) This repair may be performed on fretting wear at the radius of the dome cutout that is within the major repair limits. Refer to the Airworthy Limits table in the Check chapter of this manual.

(b) If the damage is greater than permitted, contact the Hartzell Propeller Product Support Department for evaluation.

(2) Repair Procedure

(a) Using a grinder or sander with 60 grit or finer sandpaper, lightly sand the area to be repaired, removing any damaged material.

1 Make a bevel, tapering each layer removed approximately 1 inch (25.4 mm).

(b) Using a clean cloth dampened with solvent acetone CM173, MEK CM106, or MPK CM219, clean the dome areas.

(c) Permit the solvent to evaporate completely.

(d) Cut the repair material pattern pieces. Refer to Figure 6-3.

1 From Figure 6-3 choose the correct repair material and note the cured ply thickness.

2 Alternating the layers of material at ±45 degrees, 0 - 90 degrees, cut the repair materials layer by layer to match the shape of the beveled area to create a stair step pattern when laminating.

(e) Laminate the repair material pattern pieces.

1 In a container free from contamination, mix enough adhesive CM14 or CM15 to complete the repair.

a Mix the adhesive CM14 or CM15 in accordance with the manufacturer's instructions.

2 Apply adhesive CM14 or CM15 to the area to be repaired.

CAUTION: MAKE SURE THAT EACH LAYER BECOMES THOROUGHLY SATURATED WITH ADHESIVE CM14 OR CM15 AS THE LAYER LAMINATES TO THE REPAIR AREA.

3 Using adhesive CM14 or CM15, laminate the repair material pattern pieces in accordance with Figure 6-3 to match those layers removed by sanding.

a Beginning with the smallest repair material pattern piece, laminate progressively larger material pattern pieces.

4 Laminate the layers of fiberglass fabric CM42 on top of the material pattern pieces, blending the new material to the original surface.

(f) Cure the repair in accordance with the section "Curing a Repair" in this chapter.

(g) Using 80 grit or finer sandpaper, sand the area of the repair until smooth.

(h) Inspect the repaired area.

1 Make a visual inspection of the repaired area.

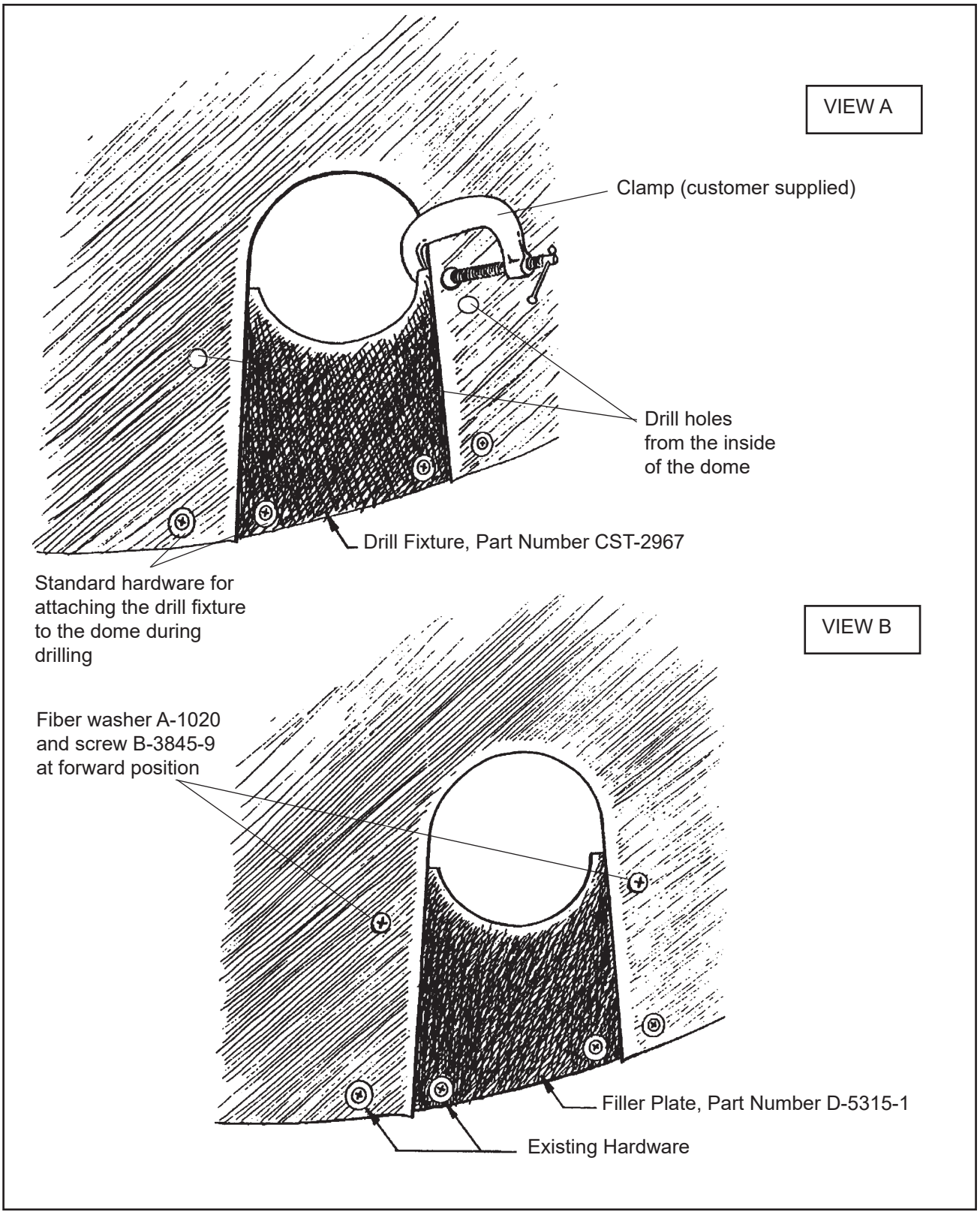
2 Make an inspection of the repaired area in accordance with the section "Coin-Tap Inspection Procedure" in the Check chapter of this manual.

a Wrinkles, delaminations, or voids are not permitted.

b If the area of repair is not within the limits specified, repair in accordance with the applicable repair instructions.

c Repeat the inspections and repair until the repair is satisfactory.

(i) Refinish the dome in accordance with the Finish Procedures chapter in this manual.



Installation of the D-5315-1 Filler Plate
Figure 6-4

C. Modification of the D-5311 Spinner Assembly

(1) General

(a) This modification applies to all spinner assemblies, part number D-5311 used on HC-A6A-3/A10460E propellers installed on Shorts 50-360 Aircraft.

(b) Service experience has shown that D-5312 spinner dome prematurely wears because of movement between the dome and the D-5315 filler plates. This wear could result in separation of the filler plate from the spinner assembly. This condition is corrected by incorporation of a filler plate of new design, part number D-5315-1, and by the addition of mechanical fasteners that attach the filler plate to the dome.

(c) A filler plate replacement kit, part number A-3706, is available for this procedure. Refer to the Illustrated Parts List in this manual.

NOTE: Filler plate replacement kit, part number A-3706 includes parts and instructions for compliance with Goodrich Corporation Service Bulletin E88-74, that may be performed concurrently with this modification procedure.

(d) Drill Fixture, part number CST-2967, consists of a spinner bulkhead and a filler plate.

(2) Tools Required

(a) CST-2967 Drill Fixture

(b) 7/32 inch diameter Drill Bit

(3) Procedure

(a) Remove the dome and filler plates.

(b) Remove and discard the old filler plates, part number D-5315.

NOTE: The part number is not shown on the old parts. The redesigned filler plates are identified with the new part number.

CAUTION: EXAMINE FOR WEAR IN THE SPINNER DOME WITHIN A 0.75 INCH (19.0 mm) RADIUS OF THE NEW SCREW HOLE LOCATIONS. WEAR IN THIS AREA MAY NOT BE MORE THAN ONE LAYER OF THE COMPOSITE MATERIAL. THIS SINGLE LAYER IS KEVLAR® MATERIAL (YELLOW IN COLOR). EXPOSURE OF THE GRAPHITE MATERIAL (BLACK IN COLOR) BENEATH IS PERMITTED, BUT WEAR INTO THIS SURFACE IS NOT PERMITTED. IF THERE IS EXCESSIVE WEAR, CONTACT HARTZELL PROPELLER, INC FOR FURTHER PROCEDURES.

(c) Using standard hardware MS2469C2032-R9 screws and NAS1139C10L washers, or equivalent, attach the spinner dome to the bulkhead portion of the drill fixture, part number CST-2967.

(d) Attach the filler plate part of the provided drill fixture to the bulkhead part of the drill fixture. Clamp the filler plate part to the dome as shown in Figure 6-4, View A.

(e) Using a 7/32 inch drill bit, drill two holes from the inside of the dome. Refer to Figure 6-4, View A.

(f) Remove the dome drilling fixture.

(g) Repeat the drilling procedure for the remaining blade openings.

(h) Using sandpaper on the outer surface of the dome, lightly deburr the newly drilled holes.

(4) Reinstall the dome.

(a) Loosely attach the new filler plates, part number D-5315-1, to the existing bulkhead.

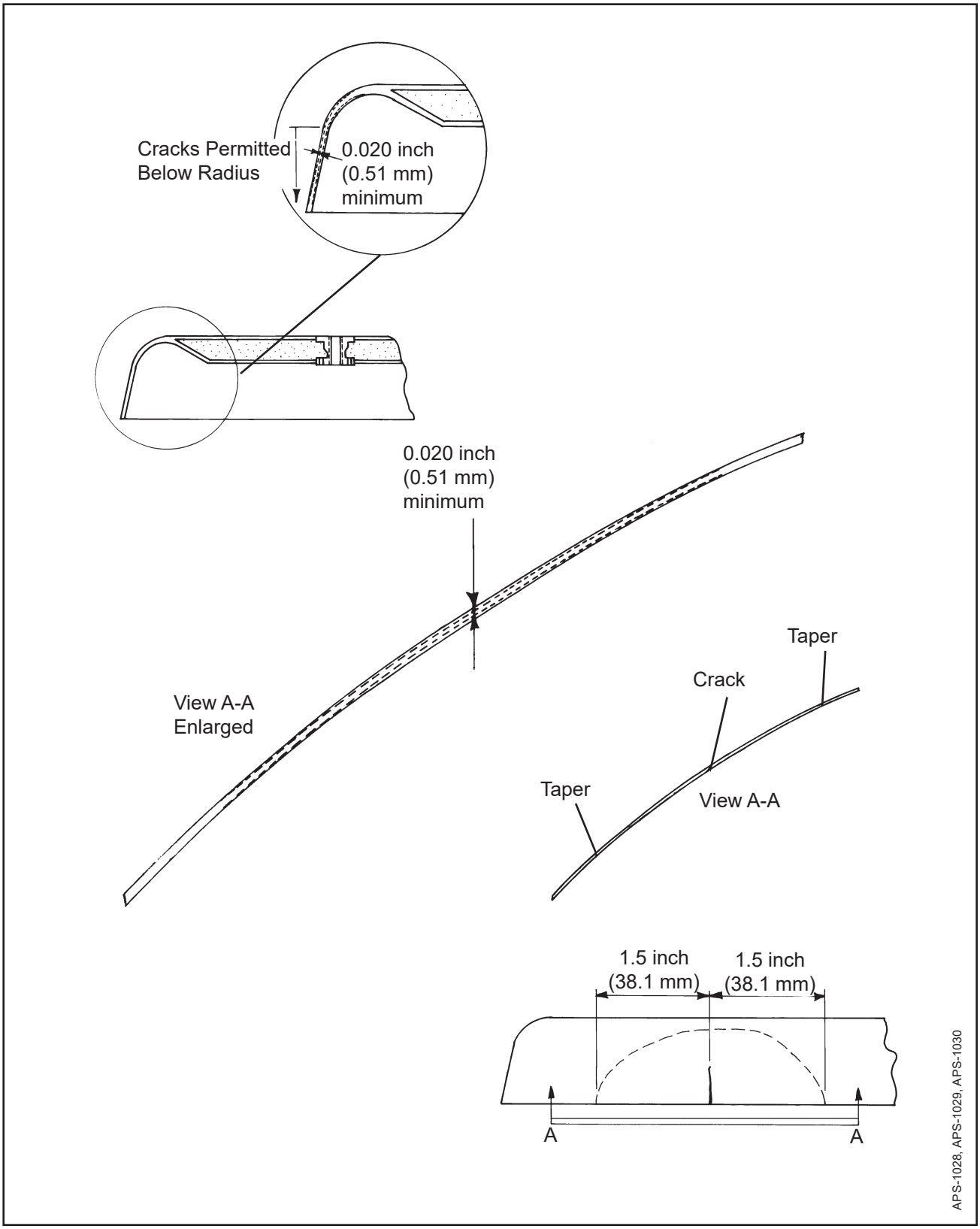
(b) Using a black permanent marker, write a “-1" after the dome part number on the inside of the dome.

(c) Install the dome over the filler plates.

(d) Using a fiber washer, part number A-1020, and a screw, part number B-3845-9, attach the filler plates to the dome at the forward location. Refer to Figure 6-4, View B.

(e) Using existing hardware, attach the dome to the bulkhead.

(f) Make an entry in the propeller logbook to indicate compliance with this procedure.



Tapering a Crack in the Bulkhead OD
Figure 6-5

3. Bulkhead

A. Bulkhead Repair of OD Cracks or Delaminations

(1) Repair Limits

(a) This repair may be performed on an OD crack that is within the major repair limit. Refer to the Airworthy Limits table in the Check chapter of this manual.

(b) This repair may be performed on a delamination that is within the major repair limits. Refer to the Airworthy Limits table in the Check chapter of this manual.

(c) If a delamination is associated with (coincident with) a crack, the delamination and the crack may be repaired at the same time.

(d) A crack and/or delamination repair may extend around the radius of the bulkhead.

(e) If the damage is more than the permitted limits, contact the Hartzell Propeller Product Support Department for evaluation.

(2) Repair Overview

(a) This repair may be performed on any crack or delamination, that is within the repair limit, for the spinners listed in Table 6-1.

(b) If the outer surface crack depth is greater than 50 percent of the laminate thickness, the repair procedure requires access to both sides of the bulkhead.

(c) For a crack that is greater than 50 percent of the laminate thickness or a through crack, the repair is performed in steps because the structure of the original material is used to restore the correct bulkhead shape.

1 The Step 1 Repair Procedure restores one surface. This repair uses the original dome material to maintain the bulkhead shape.

2 The Step 2 Repair Procedure restores the other surface. This part of the repair uses the newly performed repair in the Step 1 Repair Procedure to maintain the bulkhead shape.

(d) For a crack that has a maximum depth of 50 percent of the laminate thickness, the repair can be made by performing the Step 1 Repair Procedure.

(e) For repairs that encompass a hole, the area is fully repaired and then the hole is created.

(3) Inspection Before Repair

(a) Examine the crack and/or delamination to make sure that it is within the repairable limits. For the repair limits, refer to the Check chapter in this manual.

1 For a crack, measure the length of the crack.

2 For a delamination:

a Make a visual inspection of the area of delamination.

b Make an inspection of the area of delamination in accordance with the section "Coin-Tap Inspection Procedure" in the Check chapter of this manual.

(b) In the area surrounding the crack, inspect for delaminations in accordance with the section "Coin-Tap Inspection Procedure" in the Check chapter of this manual.

1 An area of delamination that is within the delamination size limitations may be repaired if the entire delamination area is entirely within 1 inch (25.4 mm) of the crack.

2 If either the crack or the delamination is greater than the repairable limits, contact Hartzell Propeller because there may be a factory only repair that can be performed. For the repair limits, refer to the Check chapter in this manual.

(c) If a delamination is found, determine if the delamination is closer to the outside or inside surface of the bulkhead.

1 Tap the inside and then the outside of the bulkhead.

2 The side of the bulkhead where the tap sound is more pronounced is the closer surface.

(d) A delamination can also be detected visually or by feeling the surface of the bulkhead.

1 The delamination is typically closer to the most disrupted surface of the bulkhead.

(e) Determine the thickness of the laminate in the center of the area to be repaired.

(4) Step 1 Repair Procedure

(a) Start on the side that was determined to be closest to the delamination, or the side with the most severe crack or crack damage.

CAUTION: DO NOT REMOVE MATERIAL ANY DEEPER THAN NECESSARY TO FULLY REMOVE THE DAMAGE. IF THE DAMAGE REMAINS AND 50 PERCENT OF THE LAMINATE HAS BEEN REMOVED, DO NOT GRIND DEEPER.

(b) Using a grinder or sander with 60 grit or finer sandpaper, remove material in the area to be repaired.

1 Make a bevel 0.50 to 1.00 inch wide (12.7 to 25.4 mm) for each 0.010 inch (0.25 mm) of depth.

2 While removing material, stop periodically and examine the progress of removing the crack or delamination.

NOTE: Wiping the area with a clean cloth dampened with solvent acetone CM173, MEK CM106, or MPK CM219 sometimes helps to visually find the defect.

3 If the area requiring removal extends to an edge, maintain the bevel to the edge.

4 Refer to Figure 6-1 and Figure 6-5 for examples.

(c) When the full depth or the bottom of the defect has been reached, make sure that the repair area meets the bevel requirements.

(d) Using a clean cloth dampened with solvent acetone CM173, MEK CM106, or MPK CM219, thoroughly clean the area to be repaired.

(e) Permit the solvent to evaporate completely.

(f) Cut the repair material pattern pieces.

1 From Table 6-1 choose the correct repair materials and make a note of the cured ply thicknesses.

2 Alternating the layers of material at ±45 degrees, 0 - 90 degrees, cut the repair materials layer by layer to match the shape of the beveled area to create a stair step pattern when laminating. Refer to Figure 6-2.

3 Cut an extra layer or two of the material, also at alternating angles, to put on top of the repair.

NOTE: The extra layers provide extra thickness that will be removed later resulting in a smooth repaired area.

a Optionally, laminate layers of fiberglass fabric CM42 on top of the material pattern pieces, blending the new material to the original surface.

(g) Using a clean cloth dampened with solvent acetone CM173, MEK CM106, or MPK CM219, thoroughly clean the area to be repaired.

(h) Permit the solvent to evaporate completely.

(i) In a container free from contamination, mix enough adhesive CM14 or CM15 to perform the repair.

1 Mix the adhesive CM14 or CM15 in accordance with the manufacturer's instructions.

(j) Laminate the repair material pattern piece layers.

1 Apply adhesive CM14 or CM15 to the area to be repaired.

CAUTION: MAKE SURE THAT EACH LAYER BECOMES THOROUGHLY SATURATED WITH ADHESIVE CM14 OR CM15 AS THE LAYER LAMINATES TO THE REPAIR AREA.

2 Apply the repair material pattern piece layers over the repair area to achieve the original shape. Refer to Figure 6-2.

NOTE: The repair material pattern pieces were cut so the weave direction will alternate between ±45 degrees, 0 – 90 degrees.

a Beginning with the smallest repair material pattern piece, laminate progressively larger material pattern pieces, making sure that each repair material pattern piece is thoroughly saturated before applying the next layer. Additional adhesive CM14 or CM15 may be applied if necessary.

b Optionally, laminate layers of fiberglass fabric CM42 on top of the material pattern pieces, blending the new material to the original surface.

(k) Cure the Step 1 repair in accordance with the section "Curing a Repair" in this chapter.

(l) Sand the repair

CAUTION: DO NOT REMOVE ORIGINAL MATERIAL WHEN SANDING.

1 Sand the repaired area to the original shape using caution not to remove original material.

2 Using progressively finer grit sand paper, sand until the original shape is achieved.

3 For final sanding, use 140 grit or finer sandpaper.

4 Make a visual inspection of the repaired area.

5 Make an inspection of the repaired area in accordance with the section "Coin-Tap Inspection Procedure" in the Check chapter of this manual.

a Delaminations or voids are not permitted.

b If the area of repair is not within the limits specified, repair in accordance with the applicable repair instructions.

c Repeat the inspections and repair until the repair is satisfactory.

(m) After completion of the Step 1 Repair Procedure:

1 If damaged material remains on the opposite side of the bulkhead, follow the steps in the section "Step 2 Repair Procedure" in this chapter.

(n) When all repairs have been completed:

1 If the repair included a mounting hole, redrill the hole in the same location in accordance with Table 6-2.

a Use the mating part, for example the spinner dome, to determine the location of the hole to be drilled.

2 Refinish the bulkhead in accordance with the Finish Procedures chapter in this manual.

(5) Step 2 Repair Procedure

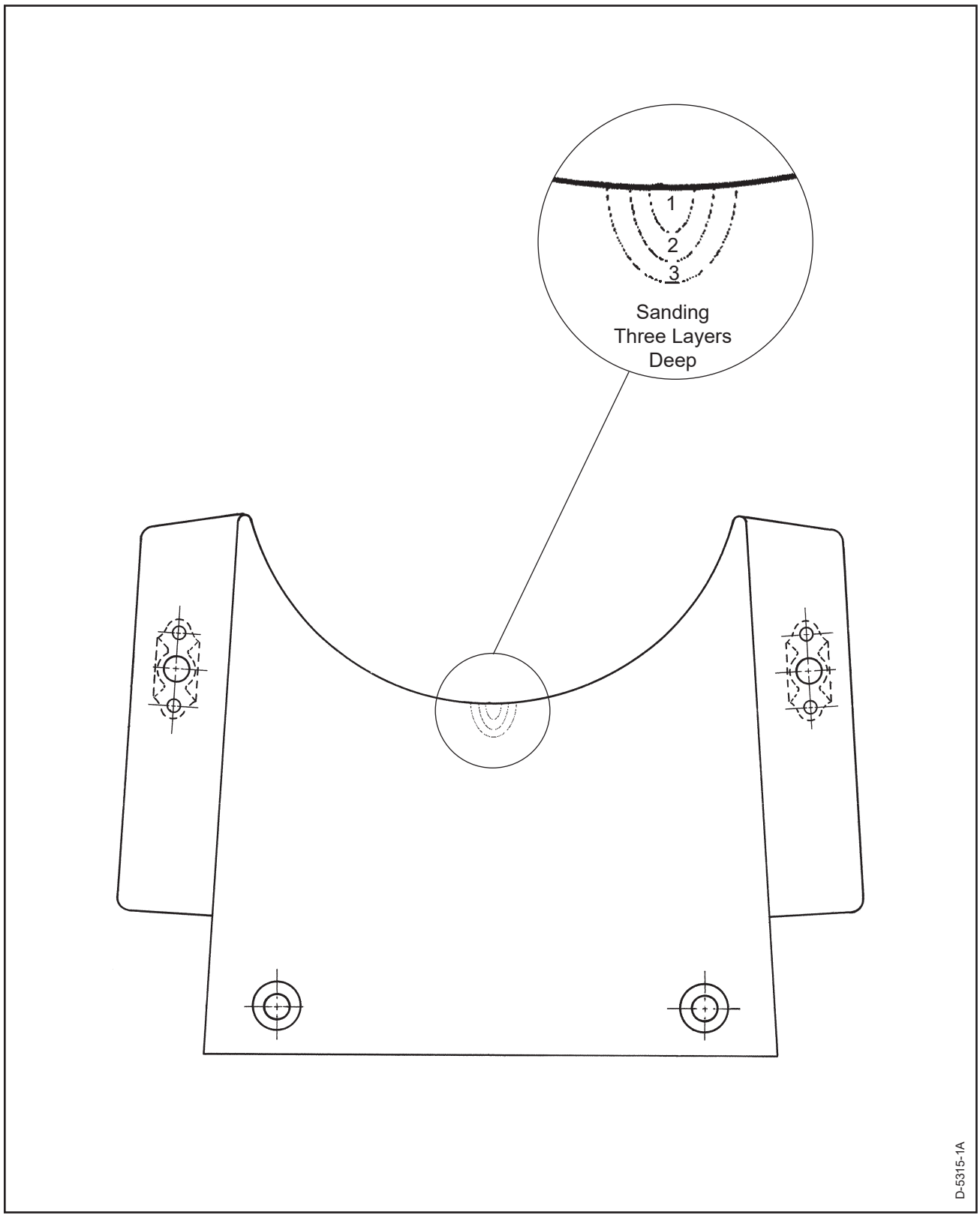
(a) If damaged material remains on the opposite side of the bulkhead after completion of the Step 1 repair, repeat the applicable steps of the Step 1 repair.

(b) When all repairs have been completed:

1 If the repair included a mounting hole, redrill the hole in accordance with Table 6-2.

a Use the mating part, for example the spinner dome, to determine the location of the hole to be drilled.

2 Refinish the bulkhead in accordance with the Finish Procedures chapter in this manual.



Repairing a Crack at the Blade Cutout of the Filler Plate
Figure 6-6

4. Filler Plate

A. Repairing a Crack at the Blade Cutout

(1) Repair Limits

(a) This repair may be performed on a crack that is within the major repair limits. Refer to the Airworthy Limits table in the Check chapter of this manual.

(b) If the crack is greater than the permitted limit, contact the Hartzell Propeller Product Support Department for evaluation.

(2) Inspection Before Repair

(a) Examine the length of the crack and make sure that it is within the repairable limits.

(b) Determine the number of layers of repair material needed to repair each side of the filler plate.

(3) Repair Procedure

(a) Using a grinder or sander with 80 grit or finer sandpaper, remove material on the inside of the filler plate, three layers deep around the crack, creating a bevel that extends from the crack. Refer to Figure 6-6.

(b) Using a clean cloth dampened with solvent acetone CM173, MEK CM106, or MPK CM219, clean the area to be repaired on the inside and on the outside of the filler plate.

(c) Permit the solvent to evaporate completely.

(d) Cut the repair material pattern pieces.

1 Cut the repair material pattern pieces of fiberglass material CM42 to match the shape of the beveled area.

a Cut the repair material pattern pieces to create a stair step pattern when laminating. Refer to Figure 6-2.

b Cut each alternating layer at ±45 degrees, 0 - 90 degrees.

2 For cover layers, cut fiberglass material CM42 slightly larger than the repair area, at an angle to match the angle of the top layer of filler plate material.

a On the inside of the filler plate, the cover layer will be the largest and last fiberglass pattern laminated.

b On the outside of the filler plate, the cover layer will be used to help blend the new material to the old surface.

(e) Laminate the repair material pattern piece layers.

1 In a container free from contamination, mix enough adhesive CM14 or CM15 to perform the repair.

a Mix the adhesive CM14 or CM15 in accordance with the manufacturer's instructions.

2 Apply adhesive CM14 or CM15 to the area to be repaired.

CAUTION: MAKE SURE THAT EACH LAYER BECOMES THOROUGHLY SATURATED WITH ADHESIVE CM14 OR CM15 AS THE LAYER LAMINATES TO THE REPAIR AREA.

3 Laminate the repair material pattern piece layers over the repair area on both sides of the filler plate to achieve the original shape.

NOTE: The repair material pattern pieces were cut so the weave direction will alternate between ±45 degrees, 0 – 90 degrees.

a Beginning with the smallest repair material pattern piece, laminate progressively larger material pattern pieces, making sure that each repair material pattern piece is thoroughly saturated before applying the next layer. Additional adhesive CM14 or CM15 may be applied if necessary.

b Optionally, laminate layers of fiberglass fabric CM42 on top of the material pattern pieces, blending the new material to the original surface.

(f) Cure the repair in accordance with the section "Curing a Repair" in this chapter.

(g) Using 80 grit or finer sandpaper, sand to the original shape until smooth.

(h) Make a visual inspection of the repaired area.

(i) Make an inspection of the repaired area in accordance with the section "Coin-Tap Inspection Procedure" in the Check chapter of this manual.

1 If the area of repair is not within the limits specified, repair in accordance with the applicable repair instructions.

2 Repeat the inspections and repair until the repair is satisfactory.

(j) Refinish the filler plate in accordance with the Finish Procedures chapter in this manual.

5. Fairing Unit

A. Fairing Unit Repair of OD Cracks or Delaminations

(1) Repair Limits

(a) This repair may be performed on an OD crack that is within the major repair limit. Refer to the Airworthy Limits table in the Check chapter of this manual.

(b) This repair may be performed on a delamination that is within the major repair limits. Refer to the Airworthy Limits table in the Check chapter of this manual.

(c) If a delamination is associated with (coincident with) a crack, the delamination and the crack may be repaired at the same time.

(d) A crack and/or delamination repair may extend around the radius of the fairing unit.

(e) If the damage is more than the permitted limits, contact the Hartzell Propeller Product Support Department for evaluation.

(2) Repair Overview

(a) This repair may be performed on any crack or delamination that is within the repair limit for the spinners listed in Table 6-1.

(b) If the outer surface crack depth is greater than 50 percent of the laminate thickness, the repair procedure requires access to both sides of the fairing unit.

(c) For a crack that is greater than 50 percent of the laminate thickness or a through crack, the repair is performed in steps because the structure of the original material is used to restore the correct fairing unit shape.

1 The Step 1 Repair Procedure restores one surface. This repair uses the original fairing unit material to maintain the fairing unit shape.

2 The Step 2 Repair Procedure restores the other surface. This part of the repair uses the newly performed repair in the Step 1 Repair Procedure to maintain the fairing unit shape.

(d) For a crack that has a maximum depth of 50 percent of the laminate thickness, the repair can be made by performing the Step 1 Repair Procedure.

(e) For repairs that encompass a hole, the area is fully repaired and then the hole is created.

(3) Inspection Before Repair

(a) Examine the crack and/or delamination to make sure that it is within the repairable limits. For the repair limits, refer to the Check chapter in this manual.

1 For a crack, measure the length of the crack.

2 For a delamination:

a Make a visual inspection of the area of delamination.

b Make an inspection of the area of delamination in accordance with the section "Coin-Tap Inspection Procedure" in the Check chapter of this manual.

(b) In the area surrounding the crack, inspect for delaminations in accordance with the section "Coin-Tap Inspection Procedure" in the Check chapter of this manual.

1 An area of delamination that is within the delamination size limitations may be repaired if the entire delamination area is entirely within 1 inch (25.4 mm) of the crack.

2 If either the crack or the delamination is greater than the repairable limits, contact Hartzell Propeller because there may be a factory only repair that can be performed. For the repair limits, refer to the Check chapter in this manual.

(c) If a delamination is found, determine if the delamination is closer to the outside or inside surface of the fairing unit.

1 Tap the inside and then the outside of the fairing unit.

2 The side of the fairing unit where the tap sound is more pronounced is the closer surface.

(d) A delamination can also be detected visually or by feeling the surface of the fairing unit.

1 The delamination is typically closer to the most disrupted surface of the fairing unit.

(e) Determine the thickness of the laminate in the center of the area to be repaired.

(4) Step 1 Repair Procedure

(a) Start on the side that was determined to be closest to the delamination, or the side with the most severe crack or crack damage.

CAUTION: DO NOT REMOVE MATERIAL ANY DEEPER THAN NECESSARY TO FULLY REMOVE THE DAMAGE. IF THE DAMAGE REMAINS AND 50 PERCENT OF THE LAMINATE HAS BEEN REMOVED, DO NOT GRIND DEEPER.

(b) Using a grinder or sander with 60 grit or finer sandpaper, remove material in the area to be repaired.

1 Make a bevel 0.50 to 1.00 inch wide (12.7 to 25.4 mm) for each 0.010 inch (0.25 mm) of depth.

2 While removing material, stop periodically and examine the progress of removing the crack or delamination.

NOTE: Wiping the area with a clean cloth dampened with solvent acetone CM173, MEK CM106, or MPK CM219 sometimes helps to visually find the defect.

3 If the area requiring removal extends to an edge, maintain the bevel to the edge.

4 Refer to Figure 6-1 and Figure 6-5 for examples.

(c) When the full depth or the bottom of the defect has been reached, make sure that the repair area meets the bevel requirements.

WARNING: ADHESIVES AND SOLVENTS ARE FLAMMABLE AND TOXIC TO THE SKIN, EYES, AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION ARE REQUIRED. AVOID PROLONGED CONTACT AND BREATHING OF VAPORS. USE SOLVENT RESISTANT GLOVES TO MINIMIZE SKIN CONTACT AND WEAR SAFETY GLASSES FOR EYE PROTECTION. USE IN A WELL VENTILATED AREA AWAY FROM SPARKS AND FLAME. READ AND OBSERVE ALL WARNING LABELS.

(d) Using a clean cloth dampened with solvent acetone CM173, MEK CM106, or MPK CM219, thoroughly clean the area to be repaired.

(e) Permit the solvent to evaporate completely.

(f) Cut the repair material pattern pieces.

1 From Table 6-1 choose the correct repair materials and make a note of the cured ply thicknesses.

2 Alternating the layers of material at ±45 degrees, 0 - 90 degrees, cut the repair materials layer by layer to match the shape of the beveled area to create a stair step pattern when laminating. Refer to Figure 6-2.

3 Cut an extra layer or two of the material, also at alternating angles, to put on top of the repair.

NOTE: The extra layers provide extra thickness that will be removed later resulting in a smooth repaired area.

a Optionally, laminate layers of fiberglass fabric CM42 on top of the material pattern pieces, blending the new material to the original surface.

WARNING: ADHESIVES AND SOLVENTS ARE FLAMMABLE AND TOXIC TO THE SKIN, EYES, AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION ARE REQUIRED. AVOID PROLONGED CONTACT AND BREATHING OF VAPORS. USE SOLVENT RESISTANT GLOVES TO MINIMIZE SKIN CONTACT AND WEAR SAFETY GLASSES FOR EYE PROTECTION. USE IN A WELL VENTILATED AREA AWAY FROM SPARKS AND FLAME. READ AND OBSERVE ALL WARNING LABELS.

(g) Using a clean cloth dampened with solvent acetone CM173, MEK CM106, or MPK CM219, thoroughly clean the area to be repaired.

(h) Permit the solvent to evaporate completely.

(i) In a container free from contamination, mix enough adhesive CM14 or CM15 to perform the repair.

1 Mix the adhesive CM14 or CM15 in accordance with the manufacturer's instructions.

(j) Laminate the repair material pattern piece layers.

1 Apply adhesive CM14 or CM15 to the area to be repaired.

CAUTION: MAKE SURE THAT EACH LAYER BECOMES THOROUGHLY SATURATED WITH ADHESIVE CM14 OR CM15 AS THE LAYER LAMINATES TO THE REPAIR AREA.

2 Apply the repair material pattern piece layers over the repair area to achieve the original shape. Refer to Figure 6-2.

NOTE: The repair material pattern pieces were cut so the weave direction will alternate between ±45 degrees, 0 – 90 degrees.

a Beginning with the smallest repair material pattern piece, laminate progressively larger material pattern pieces, making sure that each repair material pattern piece is thoroughly saturated before applying the next layer. Additional adhesive CM14 or CM15 may be applied if necessary.

b Optionally, laminate layers of fiberglass fabric CM42 on top of the material pattern pieces, blending the new material to the original surface.

(k) Cure the Step 1 repair in accordance with the section "Curing a Repair" in this chapter.

(l) Sand the repair

CAUTION: DO NOT REMOVE ORIGINAL MATERIAL WHEN SANDING.

1 Sand the repaired area to the original shape using caution not to remove original material.

2 Using progressively finer grit sand paper, sand until the original shape is achieved.

3 For final sanding, use 140 grit or finer sandpaper.

4 Make a visual inspection of the repaired area.

5 Make an inspection of the repaired area in accordance with the section "Coin-Tap Inspection Procedure" in the Check chapter of this manual.

a Delaminations or voids are not permitted.

b If the area of repair is not within the limits specified, repair in accordance with the applicable repair instructions.

c Repeat the inspections and repair until the repair is satisfactory.

(m) After completion of the Step 1 Repair Procedure:

1 If damaged material remains on the opposite side of the fairing unit, go to step (5), "Step 2 Repair Procedure" in this section.

(n) When all repairs have been completed:

1 If the repair included a mounting hole, redrill the hole in the same location in accordance with Table 6-2.

a Use the mating part, for example the spinner bulkhead, to determine the location of the hole to be drilled.

2 Refinish the fairing unit in accordance with the Finish Procedures chapter in this manual.

(5) Step 2 Repair Procedure

(a) If damaged material remains on the opposite side of the fairing unit after completion of the Step 1 repair, repeat the applicable steps of the Step 1 repair.

(b) When all repairs have been completed:

1 If the repair included a mounting hole, redrill the hole in accordance with Table 6-2.

a Use the mating part, for example the spinner bulkhead, to determine the location of the hole to be drilled.

2 Refinish the fairing unit in accordance with the Finish Procedures chapter in this manual.

6. Curing a Repair

A. Procedure

(1) Cut a piece of Teflon® bleeder cloth CM58 large enough to cover the repaired area and extend beyond the edges of the repaired area.

NOTE: Making the Teflon® bleeder cloth CM58 approximately 1 inch (25.4 mm) larger than the repaired area will prevent sticking of the vacuum bagging material to the repaired area.

(2) Put the piece of Teflon® bleeder cloth CM58 over the repaired area.

CAUTION: DO NOT APPLY MASKING TAPE TO THE AREA TO BE REPAIRED.

(a) If necessary to hold in place, apply masking tape to the edges of the Teflon® bleeder cloth CM58 outside of the area to be repaired.

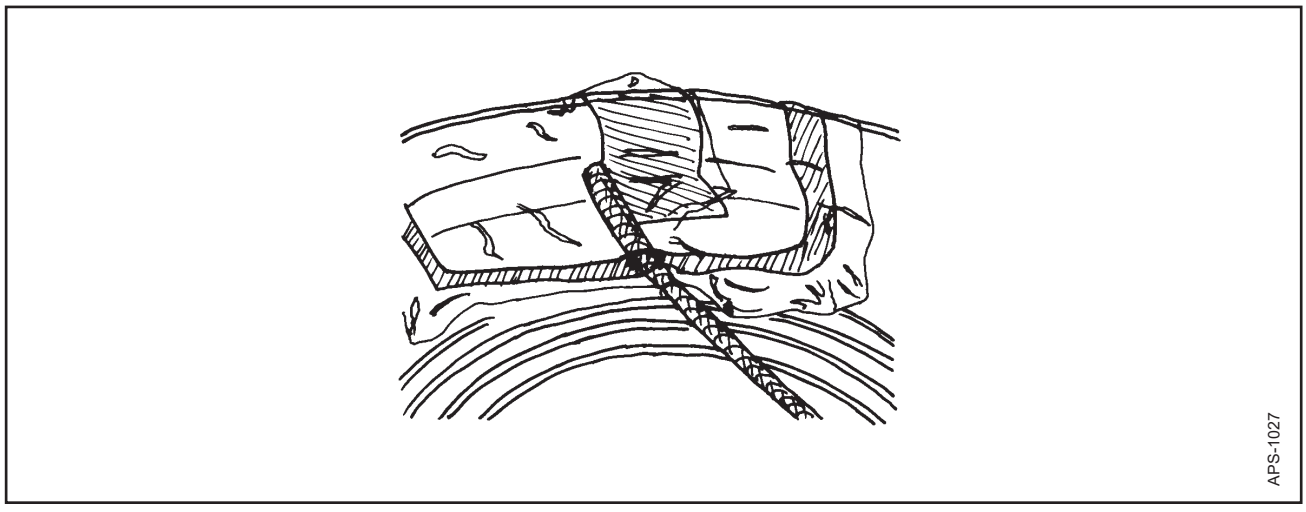
(3) Cut a piece of polyester absorbent cloth CM59 slightly smaller than the Teflon® bleeder cloth CM58.

NOTE: This will make sure that there is pressure applied to the repaired area.

(4) Put the polyester absorbent cloth CM59 over the Teflon® bleeder cloth CM58.

(a) If necessary to hold in place, apply masking tape to the edges of the polyester absorbent cloth CM59.

(5) If the repair is for a through crack, cut another piece of polyester absorbent cloth CM59 that is the same size as the one previously cut.



Applying Vacuum When Repairing a Crack in the Bulkhead OD
Figure 6-7

(6) Tape a piece of polyester absorbent cloth CM59 in place on the opposite side of the dome.

(a) Use enough polyester absorbent cloth CM59 to make sure that there is a vacuum path to both sides of the repaired area.

(b) If necessary to hold in place, apply masking tape to the edges of the polyester absorbent cloth CM59.

(7) Using vacuum bag CM45 and sealant tape CM51 make a vacuum bag that covers the repaired area and, if necessary, the opposite side of the repaired area.

(a) Cut a piece of vacuum bag CM45 material large enough to cover the repaired area.

(b) Put the cut piece of vacuum bag CM45 material over the repaired area.

(c) If the repair is for a through crack, make a bag large enough to cover both sides of the repaired area.

(8) Cut a double layer of polyester absorbent cloth CM59 large enough to cover the tip end of the vacuum hose CM2.

(9) Fold the double layer of polyester absorbent cloth CM59 over the tip end of the vacuum hose CM2.

(10) Using masking tape, tape the polyester absorbent cloth CM59 in place on the vacuum hose CM2.

(11) Insert the tip of the vacuum hose CM2 in the bag, making sure that there is an overlap onto the polyester bleeder cloth CM59 that extends beyond the repaired area.

(12) If desired, tape the vacuum hose CM2 in place on the part using masking tape.

(a) For an example of applying a vacuum to a repair, refer to Figure 6-7.

(13) Permit the adhesive CM14 or CM15 to cure for 12 hours at room temperature or 2 hours at 140° - 150° F (60° - 65.5° C), maintaining a minimum vacuum of 26 inches Hg (661 millimeters Hg).

(14) When the cure cycle is complete, remove the repair components from the repaired area.

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1. Finish Procedures

WARNING: SOLVENTS ACETONE CM173, MEK CM106, AND MPK CM219 ARE FLAMMABLE AND TOXIC TO THE SKIN, EYES AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION ARE REQUIRED. AVOID PROLONGED CONTACT. USE IN WELL VENTILATED AREA.

A. General

CAUTION: DO NOT APPLY MIXTURES WHEN THE ROOM TEMPERATURE IS LESS THAN 60° F (15° C).

(1) When applying a mixture, make sure that the room temperature is 60° F (15° C) or above.

(2) For special instructions, recommendations, mixture proportions, and other information, refer to Paint and Finish chapter of Hartzell Propeller Standard Practices Manual 202A (61-01-02).

(3) The steps in the section "Minor Blemish Correction" in this chapter may be performed at any time during the Primer Filler or Primer Sealer procedures.

(4) For the finish procedures applicable to each spinner assembly, refer to Table 7-1, "Finish Procedures", unless otherwise stated.

(a) The "X" mark indicates that the finish procedure is applicable for the spinner assembly model indicated.

(5) Make sure to follow the finish sequence and the paint thickness requirements.

(a) The finish sequence and the paint thickness are important for static dissipation.

(b) Too much paint, too many layers of paint, or paint layers applied in the incorrect sequence will affect the static dissipation property of the part.

Finish Sequence	Finish Procedure	Spinner Assembly D-5253-( )		Spinner Assembly D-5311-( )		Spinner Assembly D-5362-( )	
		Dome D-5263	Bulkhead D-5264	Dome D-5312-( )	Bulkhead D-5313-( )	Dome D-5363	Bulkhead D-5364
1	Masking	---	---	---	---	---	---
2	Primer Filler	X	X	X	X	X	X
3	Minor Blemish Correction See NOTE 1	X	X	X	X	X	X
4	Primer Sealer	X	X	X	X	X	X
5	Conductive Coating	---	---	---	---	---	---
6	Masking Instruction 2	---	---	---	---	---	---
7	Wash Primer	---	---	---	---	---	---
8	Primer Sealer	---	---	---	---	---	---
9	Finish Paint See NOTE 2	Instruction 1	Instruction 1	Instruction 1	Instruction 1	Instruction 1	Instruction 1
10	Paint Inspection	X	X	X	X	X	X
11	Dome Resistance Check	---	---	---	---	---	---
12	Bulkhead Resistance Check	---	---	---	---	---	---
13	Erosion Mask Removal and Installation	---	---	---	---	---	---
14	Identification	X	X	X	X	X	X

NOTE 1: The steps in the section, "Minor Blemish Correction" in this chapter may be performed at any time during the Primer Filler or Primer Sealer procedures.

NOTE 2: Any Hartzell Propeller approved Polane® T or Acry Glo® Series 571 (including metallic, H code) paint colors may be used as finish paint for these components.

Finish Procedures
Table 7-1

Finish Sequence	Finish Procedure	Spinner Assembly E-5579-( )		Spinner Assembly D-7409-( )		Spinner Assembly E-7480-( )	
		Dome E-5580-( )	Bulkhead E-5581	Dome D-7408	Bulkhead D-7404	Dome E-7481	Bulkhead D-6666
1	Masking	Instruction 1	Instruction 2	Instruction 2	Instruction 2	Instruction 2	Instruction 3
2	Primer Filler	X	X	X	X	X	X
3	Minor Blemish Correction See NOTE 1	X	X	X	X	X	X
4	Primer Sealer	X	X	X	X	X	X
5	Conductive Coating	---	---	---	---	---	---
6	Masking Instruction 2	---	---	---	---	---	---
7	Wash Primer	---	---	---	---	---	---
8	Primer Sealer	---	---	---	---	---	---
9	Finish Paint See NOTE 2	Instruction 1	Instruction 1	Instruction 1	Instruction 1	Instruction 1	Instruction 2
10	Paint Inspection	X	X	X	X	X	X
11	Dome Resistance Check	X	---	X	---	X	---
12	Bulkhead Resistance Check	---	X	---	X	---	X
13	Erosion Mask Removal and Installation	X	---	---	---	X	---
14	Identification	X	X	X	X	X	X

NOTE 1: The steps in the section, "Minor Blemish Correction" in this chapter may be performed at any time during the Primer Filler or Primer Sealer procedures.

NOTE 2: Any Hartzell Propeller approved Polane® T or Acry Glo® Series 571 (including metallic, H code) paint colors may be used as finish paint for these components.

Finish Procedures
Table 7-1, Continued

Finish Sequence	Finish Procedure	Spinner Assembly 101298		Spinner Assembly 102870( )		Spinner Assembly 103409( )	
		Dome 101299	Bulkhead D-7084-1G	Dome 102885( )	Bulkhead 102892	Dome 103410( )	Bulkhead C-2472-6( )
1	Masking	---	---	---	---	---	---
2	Primer Filler	X	---	X	X	X	---
3	Minor Blemish Correction See NOTE 1	X	---	X	X	X	---
4	Primer Sealer	X	---	X	X	X	---
5	Conductive Coating	---	---	X	---	X	---
6	Masking Instruction 2	---	X	---	---	X	X
7	Wash Primer	---	X	---	---	---	X
8	Primer Sealer	---	---	---	---	X	---
9	Finish Paint See NOTE 2	Instruction 1	Instruction 1	Instruction 1	Instruction 1	Instruction 1	Instruction 1
10	Paint Inspection	X	X	X	X	X	X
11	Dome Resistance Check	X	---	X	---	X	---
12	Bulkhead Resistance Check	---	---	---	X	---	---
13	Erosion Mask Removal and Installation	---	---	---	---	---	---
14	Identification	X	X	X	X	X	X

NOTE 1: The steps in the section, "Minor Blemish Correction" in this chapter may be performed at any time during the Primer Filler or Primer Sealer procedures.

NOTE 2: Any Hartzell Propeller approved Polane® T or Acry Glo® Series 571 (including metallic, H code) paint colors may be used as finish paint for these components.

Finish Procedures
Table 7-1, Continued

Finish Sequence	Finish Procedure	Spinner Assembly 103585( )			Spinner Assembly 103629( )	
		Dome 103582( )	Adapter Ring 103584( )	Filler Plate 103583 or 104001	Dome 103627( )	Adapter Ring 103628( )
1	Masking	---	---	---	---	---
2	Primer Filler	X	---	X	X	---
3	Minor Blemish Correction See NOTE 1	X	---	X	X	---
4	Primer Sealer	X	---	X	X	---
5	Conductive Coating	X	---	X	X	---
6	Masking Instruction 2	X	X	X	X	X
7	Wash Primer	---	X	---	---	X
8	Primer Sealer	X	---	X	X	---
9	Finish Paint See NOTE 2	Instruction 1	Instruction 1	Instruction 1	Instruction 1	Instruction 1
10	Paint Inspection	X	X	X	X	X
11	Dome Resistance Check	X	---	X	X	---
12	Bulkhead Resistance Check	---	---	---	---	---
13	Erosion Mask Removal and Installation	---	---	---	---	---
14	Identification	X	X	X	X	X

NOTE 1: The steps in the section, "Minor Blemish Correction" in this chapter may be performed at any time during the Primer Filler or Primer Sealer procedures.

NOTE 2: Any Hartzell Propeller approved Polane® T or Acry Glo® Series 571 (including metallic, H code) paint colors may be used as finish paint for these components.

Finish Procedures
Table 7-1, Continued

Finish Sequence	Finish Procedure	Spinner Assembly 104529				Spinner Assembly 104888-( )	
		Dome 104573	Bulkhead 104572	Fairing Unit 104571 (Does Not Include the Tab)	Fairing Unit 104571 (For the Tab Only)	Dome 104886( )	Bulkhead 104887
1	Masking	---	---	---	---	---	---
2	Primer Filler	X	X	X	---	X	---
3	Minor Blemish Correction See NOTE 1	X	X	X	---	X	---
4	Primer Sealer	X	X	X	---	X	---
5	Conductive Coating	X	---	X	X	X	---
6	Masking Instruction 2	---	---	---	X	X	X
7	Wash Primer	---	---	---	X	---	X
8	Primer Sealer	---	---	---	---	X	---
9	Finish Paint See NOTE 2	Instruction 1	Instruction 1	Instruction 1	Instruction 1	Instruction 1	Instruction 1
10	Paint Inspection	X	X	X	X	X	X
11	Dome Resistance Check	X	---	---	---	X	---
12	Bulkhead Resistance Check	---	X	Fairing Unit Resistance Check	---	---	---
13	Erosion Mask Removal and Installation	---	---	---	---	---	---
14	Identification	X	X	X	X	X	X

NOTE 1: The steps in the section, "Minor Blemish Correction" in this chapter may be performed at any time during the Primer Filler or Primer Sealer procedures.

NOTE 2: Any Hartzell Propeller approved Polane® T or Acry Glo® Series 571 (including metallic, H code) paint colors may be used as finish paint for these components.

Finish Procedures
Table 7-1, Continued

Finish Sequence	Finish Procedure	Spinner Assembly 105085( )		Spinner Assembly 105127( )		Spinner Assembly 105656( )	
		Dome 105122( )	Bulkhead 105123( )	Dome 105129( )	Bulkhead 106015( )	Dome 105651( )	Bulkhead 105652( )
1	Masking	---	---	---	---	---	---
2	Primer Filler	X	X	X	X	X	---
3	Minor Blemish Correction See NOTE 1	X	X	X	X	X	---
4	Primer Sealer	X	X	X	X	X	---
5	Conductive Coating	X	---	X	---	X	---
6	Masking Instruction 2	---	---	---	---	---	X
7	Wash Primer	---	---	---	---	---	X
8	Primer Sealer	---	---	---	---	---	---
9	Finish Paint See NOTE 2	Instruction 1	Instruction 1	Instruction 1	Instruction 1	Instruction 1	Instruction 1
10	Paint Inspection	X	X	X	X	X	X
11	Dome Resistance Check	X	---	X	---	X	---
12	Bulkhead Resistance Check	---	X	---	X	---	---
13	Erosion Mask Removal and Installation	---	---	---	---	---	---
14	Identification	X	X	X	X	X	X

NOTE 1: The steps in the section, "Minor Blemish Correction" in this chapter may be performed at any time during the Primer Filler or Primer Sealer procedures.

NOTE 2: Any Hartzell Propeller approved Polane® T or Acry Glo® Series 571 (including metallic, H code) paint colors may be used as finish paint for these components.

Finish Procedures
Table 7-1, Continued

Finish Sequence	Finish Procedure	Spinner Assembly 105675		Spinner Assembly 105945( )		
		Dome 105674	Bulkhead 105672	Dome 105943( )	Adapter Ring 105944( ) or C-885-3	Filler Plate 104001
1	Masking	---	---	---	---	---
2	Primer Filler	X	---	X	---	X
3	Minor Blemish Correction See NOTE 1	X	---	X	---	X
4	Primer Sealer	X	---	X	---	X
5	Conductive Coating	X	---	X	---	X
6	Masking Instruction 2	---	X	X	X	X
7	Wash Primer	---	X	---	X	---
8	Primer Sealer	---	---	X	---	X
9	Finish Paint See NOTE 2	Instruction 1	Instruction 1	Instruction 1	Instruction 1	Instruction 1
10	Paint Inspection	X	X	X	X	X
11	Dome Resistance Check	X	---	X	---	X
12	Bulkhead Resistance Check	---	---	---	---	---
13	Erosion Mask Removal and Installation	---	---	---	---	---
14	Identification	X	X	X	X	X

NOTE 1: The steps in the section, "Minor Blemish Correction" in this chapter may be performed at any time during the Primer Filler or Primer Sealer procedures.

NOTE 2: Any Hartzell Propeller approved Polane® T or Acry Glo® Series 571 (including metallic, H code) paint colors may be used as finish paint for these components.

Finish Procedures
Table 7-1, Continued

Finish Sequence	Finish Procedure	Spinner Assembly 106040( )		Spinner Assembly 106188( )		Spinner Assembly 106215( )	
		Dome 106039( )	Bulkhead 106348( )	Dome 106184( )	Bulkhead 106185( )	Dome 106214( )	Bulkhead C-2472-6( )
1	Masking	---	---	---	---	---	---
2	Primer Filler	X	---	X	X	X	---
3	Minor Blemish Correction See NOTE 1	X	---	X	X	X	---
4	Primer Sealer	X	---	X	X	X	---
5	Conductive Coating	X	---	X	---	X	---
6	Masking Instruction 2	---	X	---	---	X	X
7	Wash Primer	---	X	---	---	---	X
8	Primer Sealer	---	---	---	---	X	---
9	Finish Paint See NOTE 2	Instruction 1	Instruction 1	Instruction 1	Instruction 1	Instruction 1	Instruction 1
10	Paint Inspection	X	X	X	X	X	X
11	Dome Resistance Check	X	---	X	---	X	---
12	Bulkhead Resistance Check	---	---	---	X	---	---
13	Erosion Mask Removal and Installation	---	---	---	---	---	---
14	Identification	X	X	X	X	X	X

NOTE 1: The steps in the section, "Minor Blemish Correction" in this chapter may be performed at any time during the Primer Filler or Primer Sealer procedures.

NOTE 2: Any Hartzell Propeller approved Polane® T or Acry Glo® Series 571 (including metallic, H code) paint colors may be used as finish paint for these components.

Finish Procedures
Table 7-1, Continued

Finish Sequence	Finish Procedure	Spinner Assembly 106311( )		Spinner Assembly 106574( )		Spinner Assembly 106848( )	
		Dome 106322( )	Bulkhead 106323( )	Dome 103582( )	Bulkhead 106573( )	Dome 106847( )	Bulkhead 106348( )
1	Masking	---	---	---	---	---	---
2	Primer Filler	X	X	X	---	X	---
3	Minor Blemish Correction See NOTE 1	X	X	X	---	X	---
4	Primer Sealer	X	X	X	---	X	---
5	Conductive Coating	X	---	X	---	---	---
6	Masking Instruction 2	---	---	X	X	---	X
7	Wash Primer	---	---	---	X	---	X
8	Primer Sealer	---	---	X	---	---	---
9	Finish Paint See NOTE 2	Instruction 1	Instruction 1	Instruction 1	Instruction 1	Instruction 1	Instruction 1
10	Paint Inspection	X	X	X	X	X	X
11	Dome Resistance Check	X	---	X	---	X	---
12	Bulkhead Resistance Check	---	X	---	---	---	---
13	Erosion Mask Removal and Installation	---	---	---	---	---	---
14	Identification	X	X	X	X	X	X

NOTE 1: The steps in the section, "Minor Blemish Correction" in this chapter may be performed at any time during the Primer Filler or Primer Sealer procedures.

NOTE 2: Any Hartzell Propeller approved Polane® T or Acry Glo® Series 571 (including metallic, H code) paint colors may be used as finish paint for these components.

Finish Procedures
Table 7-1, Continued

Finish Sequence	Finish Procedure	Spinner Assembly 106871( )		Spinner Assembly 106957( )			
		Dome 106911( )	Bulkhead 106910( )	Dome 106956( )	Bulkhead 106955( )	Fairing Unit 104571 (Does Not Include the Tab)	Fairing Unit 104571 (For the Tab Only)
1	Masking	Instruction 2	---	---	---	---	---
2	Primer Filler	X	---	X	X	X	---
3	Minor Blemish Correction See NOTE 1	X	---	X	X	X	---
4	Primer Sealer	X	---	X	X	X	---
5	Conductive Coating	---	---	X	---	X	X
6	Masking Instruction 2	---	X	---	---	---	X
7	Wash Primer	---	X	---	---	---	X
8	Primer Sealer	---	---	---	---	---	---
9	Finish Paint See NOTE 2	Instruction 1	Instruction 1	Instruction 1	Instruction 1	Instruction 1	Instruction 1
10	Paint Inspection	X	X	X	X	X	X
11	Dome Resistance Check	X	---	X	---	---	---
12	Bulkhead Resistance Check	---	---	---	X	Fairing Unit Resistance Check	---
13	Erosion Mask Removal and Installation	---	---	---	---	---	---
14	Identification	X	X	X	X	X	X

NOTE 1: The steps in the section, "Minor Blemish Correction" in this chapter may be performed at any time during the Primer Filler or Primer Sealer procedures.

NOTE 2: Any Hartzell Propeller approved Polane® T or Acry Glo® Series 571 (including metallic, H code) paint colors may be used as finish paint for these components.

Finish Procedures
Table 7-1, Continued

Finish Sequence	Finish Procedure	Spinner Assembly 107153( )		Spinner Assembly 107376( )	
		Dome 107151( )	Bulkhead 107152( )	Dome 107375( )	Bulkhead C-3283-5( )
1	Masking	---	---	---	---
2	Primer Filler	X	---	X	---
3	Minor Blemish Correction See NOTE 1	X	---	X	---
4	Primer Sealer	X	---	X	---
5	Conductive Coating	X	---	X	---
6	Masking Instruction 2	---	X	---	X
7	Wash Primer	---	X	---	X
8	Primer Sealer	---	---	---	---
9	Finish Paint See NOTE 2	Instruction 1	Instruction 1	Instruction 1	Instruction 1
10	Paint Inspection	X	X	X	X
11	Dome Resistance Check	X	---	X	---
12	Bulkhead Resistance Check	---	---	---	---
13	Erosion Mask Removal and Installation	---	---	---	---
14	Identification	X	X	X	X

NOTE 1: The steps in the section, "Minor Blemish Correction" in this chapter may be performed at any time during the Primer Filler or Primer Sealer procedures.

NOTE 2: Any Hartzell Propeller approved Polane® T or Acry Glo® Series 571 (including metallic, H code) paint colors may be used as finish paint for these components.

Finish Procedures
Table 7-1, Continued

Finish Sequence	Finish Procedure	Spinner Assembly 107507( )		Spinner Assembly 107554( )	
		Dome 107505( )	Bulkhead 107506( )	Dome 107553( )	Bulkhead 107552( )
1	Masking	---	---	---	---
2	Primer Filler	X	X	X	X
3	Minor Blemish Correction See NOTE 1	X	X	X	X
4	Primer Sealer	X	X	X	X
5	Conductive Coating	X	---	X	---
6	Masking Instruction 2	---	---	---	---
7	Wash Primer	---	---	---	---
8	Primer Sealer	---	---	---	---
9	Finish Paint See NOTE 2	Instruction 1	Instruction 1	Instruction 1	Instruction 1
10	Paint Inspection	X	X	X	X
11	Dome Resistance Check	X	---	X	---
12	Bulkhead Resistance Check	---	X	---	X
13	Erosion Mask Removal and Installation	---	---	---	---
14	Identification	X	X	X	X

NOTE 1: The steps in the section, "Minor Blemish Correction" in this chapter may be performed at any time during the Primer Filler or Primer Sealer procedures.

NOTE 2: Any Hartzell Propeller approved Polane® T or Acry Glo® Series 571 (including metallic, H code) paint colors may be used as finish paint for these components.

Finish Procedures
Table 7-1, Continued

Finish Sequence	Finish Procedure	Spinner Assembly 107974( )		Spinner Assembly 108013( )	
		Dome 107973( )	Bulkhead 107937( )	Dome 108011( )	Bulkhead 108009( )
1	Masking	---	---	---	---
2	Primer Filler	X	---	X	X
3	Minor Blemish Correction See NOTE 1	X	---	X	X
4	Primer Sealer	X	---	X	X
5	Conductive Coating	X	---	X	---
6	Masking Instruction 2	---	X	---	---
7	Wash Primer	---	X	---	---
8	Primer Sealer	---	---	---	---
9	Finish Paint See NOTE 2	Instruction 1	Instruction 1	Instruction 1	Instruction 1
10	Paint Inspection	X	X	X	X
11	Dome Resistance Check	X	---	X	---
12	Bulkhead Resistance Check	---	---	---	X
13	Erosion Mask Removal and Installation	---	---	---	---
14	Identification	X	X	X	X

NOTE 1: The steps in the section, "Minor Blemish Correction" in this chapter may be performed at any time during the Primer Filler or Primer Sealer procedures.

NOTE 2: Any Hartzell Propeller approved Polane® T or Acry Glo® Series 571 (including metallic, H code) paint colors may be used as finish paint for these components.

Finish Procedures
Table 7-1, Continued

Finish Sequence	Finish Procedure	Spinner Assembly 108482( )	
		Dome 108481( )	Bulkhead 108480( )
1	Masking	---	---
2	Primer Filler	X	---
3	Minor Blemish Correction See NOTE 1	X	---
4	Primer Sealer	X	---
5	Conductive Coating	X	---
6	Masking Instruction 2	---	X
7	Wash Primer	---	X
8	Primer Sealer	---	---
9	Finish Paint See NOTE 2	Instruction 1	Instruction 1
10	Paint Inspection	X	X
11	Dome Resistance Check	X	---
12	Bulkhead Resistance Check	---	---
13	Erosion Mask Removal and Installation	---	---
14	Identification	X	X

NOTE 1: The steps in the section, "Minor Blemish Correction" in this chapter may be performed at any time during the Primer Filler or Primer Sealer procedures.

NOTE 2: Any Hartzell Propeller approved Polane® T or Acry Glo® Series 571 (including metallic, H code) paint colors may be used as finish paint for these components.

Finish Procedures
Table 7-1, Continued

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B. Masking

NOTE: For the finish procedures applicable to each spinner assembly, refer to Finish Procedures Table 7-1 in this chapter.

(1) Instruction 1

(a) Apply masking material, for example tape, paper, or shields, as required to restrict overspray.

NOTE: A screw and washer combination is a good shield for masking a screw hole.

(b) Apply masking material to the dome erosion shield.

(c) Apply masking material at each screw hole in the dome and each screw hole in the bulkhead.

(d) Remove masking materials if used, before applying paint.

(2) Instruction 2

(a) Apply masking material, for example tape, paper, or shields, as required to restrict overspray.

NOTE: A screw and washer combination is a good shield for masking a screw hole.

(b) Apply masking material of approximately 0.625 inch (15.87 mm) diameter at each screw hole in the dome and at each screw hole in the bulkhead or adapter ring.

(3) Instruction 3

(a) Apply masking material, for example tape, paper, or shields, as required to restrict overspray.

NOTE: A screw and washer combination is a good shield for masking a screw hole.

(b) On the smooth side of the bulkhead, apply masking material of approximately 0.625 inch (15.87 mm) diameter at each mounting screw hole in the bulkhead.

(c) On the rough side of the bulkhead, using 280 grit sandpaper, sand the bulkhead mounting surface by hand to completely scuff the surface.

NOTE: The bulkhead mounting surface is the raised surface adjacent to the ID on the rough side of the bulkhead.

(d) On the rough side of the bulkhead, apply masking material to cover the part number and serial number.

C. Wash Primer (Mixture Number 3)

NOTE: For the finish procedures applicable to each spinner assembly, refer to Finish Procedures Table 7-1 in this chapter.

(1) General

CAUTION: DO NOT USE WASH PRIMER (MIXTURE NUMBER 3) ON A COMPOSITE PART.

(a) Wash Primer is used before painting on the metal bulkhead or the adapter ring unit of a hybrid spinner.

(2) Application

(a) Prepare wash primer (Mixture Number 3) in accordance with the mixture proportions. For mixture proportions, refer to the Paint and Finish chapter of Hartzell Propeller Standard Practices Manual 202A (61-01-02).

(b) Using clean cheesecloth CM159 or equivalent dampened with solvent acetone CM173, MEK CM106, or MPK CM219, wipe all surfaces to be painted.

(c) Let the solvent acetone CM173, MEK CM106, or MPK CM219 dry completely.

(d) Apply a light layer of wash primer (Mixture Number 3) on the surface to be painted.

(e) Let the wash primer (Mixture Number 3) dry for approximately five minutes.

D. Primer Filler (Mixture Number 1)

NOTE 1: For the finish procedures applicable to each spinner assembly, refer to Finish Procedures Table 7-1 in this chapter.

NOTE 2: It is not necessary to apply primer filler to the rough side of the bulkhead.

(1) General

NOTE: Primer Filler (Mixture Number 1) is not used for the metal bulkhead or the adapter ring unit of a hybrid spinner assembly.

(a) The primary purpose of this layer is to fill small pits and blemishes in the composite part surface.

1 If the surface is sufficiently smooth, the primer filler procedure may be used only where necessary, or omitted entirely.

(b) Recommended Film Thickness

1 Apply a minimum thickness for filling pits and blemishes.

(c) The steps in the section "Minor Blemish Correction" in this chapter may be performed at any time during the Primer Filler procedure.

(2) Application

(a) Prepare primer filler (Mixture Number 1) in accordance with the mixture proportions. For mixture proportions, refer to the Paint and Finish chapter of Hartzell Propeller Standard Practices Manual 202A (61-01-02).

(b) Using clean cheesecloth CM159 or equivalent dampened with solvent acetone CM173, MEK CM106, or MPK CM219, wipe the surfaces of the composite part.

(c) Let the solvent acetone CM173, MEK CM106, or MPK CM219 dry completely.

CAUTION: DO NOT APPLY PRIMER FILLER IN THE DOME MOUNTING HOLES OF THE DOME OR THE BULKHEAD.

(d) Roll a light layer of primer filler (Mixture Number 1) on the surface of the composite part.

(e) Let the primer filler (Mixture Number 1) dry for three to four hours at room temperature (65° to 77° F/18° to 25° C) or one hour at 140° to 150° F (60° to 65.5° C).

CAUTION: USE CAUTION WHEN SANDING NOT TO REMOVE COMPOSITE MATERIAL. THE LAMINATE IS THIN AND THE STRENGTH OF THE STRUCTURE MAY BE COMPROMISED IF COMPOSITE MATERIAL IS REMOVED.

(f) Using a vibratory sander with 150 grit sandpaper, lightly sand the entire surface area, leaving a minimum thickness for filling pits and blemishes only, while removing as much primer filler (Mixture Number 1) as possible.

E. Minor Blemish Correction

NOTE 1: For the finish procedures applicable to each spinner assembly, refer to Finish Procedures Table 7-1 in this chapter.

NOTE 2: It is not necessary to correct blemishes on the rough side of the bulkhead.

(1) General

NOTE: Minor Blemish Correction is not used for the metal bulkhead or the adapter ring unit of a hybrid spinner assembly.

(a) The purpose of this procedure is to fill small pits and blemishes in the composite spinner surface that the layer of Primer Filler (Mixture Number 1) did not fill.

(b) The steps in this section may be performed at any time during the Primer Filler or Primer Sealer procedures.

(2) Procedure

WARNING: MAKE SURE TO WEAR VINYL OR LATEX PROTECTIVE GLOVES FOR THIS PROCEDURE TO PREVENT CONTACT WITH THE ADHESIVE.

(a) Apply a small amount of adhesive CM71 to the blemish area (pitting, pin-holes, etc.).

(b) Quickly remove the excess adhesive CM71 and immediately apply a small amount of talc CM72.

(c) Let the adhesive CM71 dry.

(d) Sand the area smooth using the appropriate grit sandpaper and equipment for the stage of finish being accomplished.

(e) Using clean cheesecloth CM159 or equivalent dampened with solvent acetone CM173, MEK CM106, or MPK CM219, wipe the part.

(f) Let the solvent acetone CM173, MEK CM106, or MPK CM219 dry.

(g) Repeat the procedure as necessary to make sure of smoothness.

F. Primer Sealer (Mixture Number 2)

NOTE 1: For the finish procedures applicable to each spinner assembly, refer to Finish Procedures Table 7-1 in this chapter.

NOTE 2: It is not necessary to apply primer sealer to the rough side of the bulkhead.

(1) General

NOTE: Primer Sealer (Mixture Number 2) is not used for the metal bulkhead or the adapter ring unit of a hybrid spinner assembly.

(a) Recommended Film Thickness

1 Two layers measuring a total of approximately 2 mils when dry.

(b) The steps in the section "Minor Blemish Correction" in this chapter may be performed at any time during the Primer Sealer procedure.

(2) Application

(a) Prepare primer sealer (Mixture Number 2) in accordance with the mixture proportions. For mixture proportions, refer to the Paint and Finish chapter of Hartzell Propeller Standard Practices Manual 202A (61-01-02).

(b) Using clean cheesecloth CM159 or equivalent dampened with solvent acetone CM173, MEK CM106, or MPK CM219, wipe all surfaces of the part to be painted.

(c) Permit the solvent acetone CM173, MEK CM106, or MPK CM219 to dry.

(d) Spray one layer of primer sealer (Mixture Number 2) over the part, no thicker than 2 mils when dry.

(e) If any pronounced fibers are present:

1 Let the primer sealer (Mixture Number 2) dry.

(a) Dry at room temperature (65° to 77° F/18° to 25° C) until the part can be successfully sanded.

(b) Optionally, heat cure in an oven at 140° F +10° F (60° C +5.6° C) for approximately one hour.

2 Lightly sand the affected area.

3 Using clean cheesecloth CM159 or equivalent dampened with solvent acetone CM173, MEK CM106, or MPK CM219, wipe the affected area.

4 Let the solvent acetone CM173, MEK CM106, or MPK CM219 dry.

5 Perform "Minor Blemish Correction" in this chapter if necessary.

6 Using cheesecloth CM159 or equivalent dampened with solvent acetone CM173, MEK CM106, or MPK CM219, wipe the affected area.

7 Let the solvent acetone CM173, MEK CM106, or MPK CM219 dry.

8 Apply Primer Sealer (Mixture Number 2) to the affected area.

9 Repeat the steps (2)(e)1 through (2)(e)8 as necessary until the surface quality of the part is satisfactory.

(f) Spray a second layer of primer sealer (Mixture Number 2) over the part.

(g) Let the primer sealer (Mixture Number 2) dry for at least one hour at room temperature 65° to 77° F (18° to 25° C) before applying additional layers.

1 Before sanding, up to eight hours of drying time may be required, depending on environmental conditions.

2 Optionally, the primer sealer (Mixture Number 2) may be heat cured in an oven at 140° F +10° (60° C +5.6°). Typically, one hour is sufficient time for the heat cure.

(h) Using 400 grit sandpaper, hand sand the surface until it has the desired finish and the primer sealer (Mixture Number 2) is no thicker than 2 mils.

(i) Remove the masking material if applicable.

(j) Examine the finish for smoothness.

1 Repeat the applicable steps in this section as required to achieve the desired surface quality while maintaining the recommended film thickness and coverage.

G. Conductive Coating (Mixture Number 13)

NOTE: For the finish procedures applicable to each spinner assembly, refer to Finish Procedures Table 7-1 in this chapter.

CAUTION 1: DO NOT APPLY CONDUCTIVE COATING (MIXTURE NUMBER 13) UNLESS IT WILL BE COVERED BY AN ADDITIONAL COATING WITHIN 4 HOURS.

CAUTION 2: DO NOT SAND CONDUCTIVE COATING (MIXTURE NUMBER 13) BECAUSE SANDING MAY DAMAGE THE STATIC PATH.

(1) General

NOTE: Conductive Coating (Mixture Number 13) is not used for the metal bulkhead or the adapter ring unit of a hybrid spinner assembly.

(a) Recommended Film Thickness

1 Two layers measuring a total of approximately 0.6 to 1.0 mil when dry.

(2) Application

(a) Prepare the conductive coating (Mixture Number 13) in accordance with the mixture proportions. For mixture proportions, refer to the Paint and Finish chapter of Hartzell Propeller Standard Practices Manual 202A (61-01-02).

(b) Using cheesecloth CM159 or equivalent dampened with solvent acetone CM173, MEK CM106, or MPK CM219, wipe all surfaces of the part to be painted.

(c) Let the solvent acetone CM173, MEK CM106, or MPK CM219 dry.

(d) Spray one layer of conductive coating (Mixture Number 13) over the entire surface.

CAUTION: CONDUCTIVE COATING (MIXTURE NUMBER 13) MUST BE COVERED BY AN ADDITIONAL COATING WITHIN FOUR HOURS.

(e) Let the conductive coating (Mixture Number 13) cure for a maximum of four hours before applying any additional coating.

H. Finish Paint

CAUTION 1: REFINISHING THE COMPOSITE SPINNER DOME AND FILLER PLATES CAN ALTER THE P-STATIC DISSIPATION OF THESE COMPONENTS. IMPROPER P-STATIC DISSIPATION COULD LEAD TO DISTORTION OR DAMAGE OF THE ELECTRONIC COMPONENTS IN THE AIRCRAFT, INCLUDING NAVIGATIONAL EQUIPMENT.

CAUTION 2: DO NOT APPLY ADDITIONAL PAINT OVER THE EXISTING MANUFACTURER'S FINISH. ADDITIONAL LAYERS OF PAINT APPLIED OVER THE P-STATIC COATING WILL AFFECT THE DISSIPATION OF STATIC ELECTRICITY.

NOTE 1: For the finish procedures applicable to each spinner assembly, refer to Finish Procedures Table 7-1 in this chapter.

NOTE 2: If Acry Glo® Series 571 paint is desired, refer to "Acry Glo® Series 571 Paint" in the finish paint section.

(1) Instruction 1

(a) Use of alternate top coat paint

1 Hartzell Propeller has performed testing and has practical experience only with Polane® T and Acry-Glo® paints as the spinner top coat.

a Based on this experience, Hartzell Propeller highly recommends using Polane® T or Acry-Glo® paints when possible.

2 An alternate paint other than Polane® T or Acry-Glo® paint can be applied as a top coat on a spinner at the OEM or at an overhaul/repair facility; however it must be applied over the Hartzell required primer/P-static paint and is limited to a maximum thickness of 4 mils.

3 Regardless of the type of top coat paint applied, the application of primer and P-static layers to the spinner must meet Hartzell Propeller's existing specifications to satisfy both electrical and UV protection requirements.

4 Hartzell Propeller accepts no responsibility for wear, peeling, or other problems related to the application of any alternate paints.

(b) Polane® T Paint

1 General

a Recommended Film Thickness

(1) Two layers of Polane® T paint measuring a total of 2 to 4 mils when dry.

(a) The maximum accumulated thickness of primer sealer, paint, and clear coat (if applicable) is 7 mils when dry.

b The curing time of paint for maximum abrasion resistance and impact strength is seven days.

c A spinner part may be painted with any approved Polane® T paint mixture. For approved Polane® T paint mixtures, refer to the Paint and Finish chapter of Hartzell Propeller Standard Practices Manual 202A (61-01-02).

d Before applying Polane® T paint, remove any masking material, if used, from the erosion shield of the E-5580-( ) dome.

2 Application

a Prepare the desired paint mixture in accordance with the mixture proportions. For mixture proportions, refer to the Paint and Finish chapter of Hartzell Propeller Standard Practices Manual 202A (61-01-02).

b Using cheesecloth CM159 or equivalent dampened with solvent acetone CM173, MEK CM106, or MPK CM219, wipe all surfaces of the part to be painted.

c Let the solvent acetone CM173, MEK CM106, or MPK CM219 dry.

d Paint the entire surface with the specified paint mix using a smooth, even spraying motion in three passes until the entire surface to be painted is covered.

NOTE: Three passes of paint over the surface is considered to be one layer of paint.

Part Number	CM Number	Description	Quantity	Applicability	
				Paint Primed Components	Refinish Painted Components
N/A	N/A	Sandpaper, 60 grit or finer (removal)	A/R		x
N/A	N/A	Sandpaper, 400 grit (between layers)	A/R	x	x
N/A	CM159	Cheesecloth, or equivalent	A/R	x	x
Alternate Solvents					
N/A	CM173	Solvent - Acetone	A/R		
N/A	CM106	Solvent - Methyl Ethyl Ketone (MEK)	A/R		
N/A	CM219	Solvent - Methyl Propyl Ketone (MPK)	A/R		
Finish Paint - Acry Glo® Series 571 Paint					
A-6741-282 OR A-6741-291 OR ----------	CM282 CM291 ---------	Mixture 15, Matterhorn White Acry Glo® Series 571 Mixture 25, Sterling Silver Metallic (H code) Acry Glo® Series 571 -or use any Acry Glo® Series 571 color	3 parts		
A-6741-283	CM283	Catalyst - with NON-metallic paint	1 part		
A-6741-283	CM283	Catalyst- with metallic paint	1/2 part		
A-6741-292	CM292	Acry Glo® Stabilizer - with metallic (H code) paints only	1/2 part		
A-6741-( )	N/A	Reducer (Blended, refer to Hartzell Standard Practices Manual 202A)	A/R		
A-6741-288	N/A	Reducer (Urethane Grade MEK)	A/R		
A-6741-287	CM287	Accelerator	A/R		
A-6741-290	CM290	Mixture 25, Conventional Clear Acry Glo® - with metallic (H code) paints only	A/R		

Consumables and Applicability for Acry Glo® Series 571 Paints
Table 7-2

e Let the painted surface dry in accordance with the paint manufacturer's instructions until it is dry to the touch.

(1) For adequate layer-to-layer paint adhesion, the maximum time between coats of paint is four hours.

(2) If it has been longer than four hours since the previous layer of paint was applied:

(a) Using 400 grit sandpaper, lightly sand the cured surface

(b) Using clean, dry cheesecloth CM159 or equivalent, wipe the sanded cured surface before applying a subsequent layer of paint.

f Repeat the paint application using three passes to apply a second layer of paint, making sure that the surface of the part is fully covered.

g If the part will be put in an airtight plastic bag, cure the part for a minimum of 24 hours.

(c) Acry Glo® Series 571 Paint

1 General

a Recommended Film Thickness

(1) The maximum permitted film thickness of the Acry Glo® Series 571 paint is 2 mils when dry.

(a) The maximum accumulated thickness of primer sealer, paint, and clear coat (if applicable) is 7 mils when dry.

b The curing time of paint for maximum abrasion resistance and impact strength is seven days.

c A spinner may be painted with any approved Acry Glo® Series 571 paint mixture. For approved Acry Glo® Series 571 paint mixtures, refer to Table 7-2 and Hartzell Propeller Standard Practices Manual 202A (61-01-02).

(1) The mix of paint, catalyst, reducer, accelerator, and stabilizer (for metallic H code colors only) applies to all colors of Acry Glo® Series 571 paint (including metallic, H code colors).

(2) Contact any Sherwin Williams® location to identify a local distributor for aircraft paint (from the Sherwin Williams® website, select Aerospace Finishes) for assistance procuring the correct paint.

2 Application

a Prepare the desired paint mixture in accordance with the mixture proportions.

b Using cheesecloth CM159 or equivalent dampened with solvent acetone CM173, MEK CM106, or MPK CM219, wipe all surfaces of the part to be painted.

c Let the solvent acetone CM173, MEK CM106, or MPK CM219 dry.

d Paint the entire surface with the specified paint mix using a smooth, even spraying motion in three passes until the entire surface to be painted is covered.

NOTE: Three passes of paint over the surface is considered to be one layer of paint.

(1) The maximum permitted film thickness of the paint (color) is 2 mils when dry.

(a) The equivalent of 5 mils wet coat = 2 mils dry coat.

(b) Wet coat thickness can be measured using a Sherwin Williams® wet film/mil gauge standard.

e Let the painted surface dry in accordance with the paint manufacturer's instructions until it is dry to the touch.

(1) For adequate layer-to-layer paint adhesion, the maximum permitted time between layers of paint is four hours.

CAUTION: DO NOT SAND THE FINAL LAYER OF PAINT BEFORE APPLYING THE CLEAR COAT. IF IT HAS BEEN LONGER THAN FOUR HOURS SINCE THE FINAL LAYER OF PAINT WAS APPLIED, REMOVE THE PAINT IN ACCORDANCE WITH THE SECTION, "PAINT REMOVAL" IN THE OVERHAUL CHAPTER OF THIS MANUAL.

(2) If it has been longer than four hours since the previous layer of paint was applied:

(a) Using 400 grit sandpaper, lightly sand the cured surface.

(b) Using clean, dry cheesecloth CM159 or equivalent, wipe the sanded cured surface before applying a subsequent layer of paint.

(c) Re-paint in accordance with the section, "Acry Glo® Series 571 Paint" in this chapter.

CAUTION: ACRY GLO® SERIES 571 METALLIC (H CODE) PAINTS REQUIRE THE USE OF A CLEAR COAT.

f For Acry Glo® Series 571 metallic (H code) paint, a clear coat must be applied.

CAUTION: DO NOT EXCEED 24 HOURS BETWEEN THE LAST LAYER OF PAINT AND THE LAYER OF CM292 CONVENTIONAL CLEAR.

(1) Using the same application procedure as used for the color, apply CM292 Conventional Clear over the metallic paint.

(2) The maximum allowable film thickness of the clear coat is 2 mils when dry.

(a) The equivalent of 5 mils wet coat = 2 mils dry coat.

(b) Wet coat thickness can be measured using a Sherwin Williams® wet film/mil gauge standard.

(2) Instruction 2

(a) Use of alternate top coat paint

1 Hartzell Propeller has practical experience only with Polane® T paints as the top coat on some spinners.

a Based on this experience, Hartzell Propeller only recommends using Polane® T paints on these spinners.

2 Hartzell Propeller accepts no responsibility for wear, peeling, or other problems related to the application of any alternate paints.

(b) Polane® T Paint

1 General

a Recommended Film Thickness

(1) Two layers of Polane® T paint measuring a total of 2 to 4 mils when dry

(a) On the smooth side of the bulkhead, the maximum total thickness of primer sealer, paint, and clear coat (if applicable) is 7 mils when dry.

(b) On the rough side of the bulkhead, only two layers of Polane® T paint is required.

b The curing time of paint for maximum abrasion resistance and impact strength is seven days.

c A spinner part can be painted with any approved Polane® T paint mixture.

(1) For approved Polane® T paint mixtures, refer to the Paint and Finish chapter of Hartzell Propeller Standard Practices Manual 202A (61-01-02).

d If a screw and washer combination was used to mask the mounting screw holes on the smooth side of the bulkhead, remove the hardware before applying Polane® T paint to the rough side of the bulkhead.

2 Application

a Prepare the desired paint mixture in accordance with the mixture proportions.

(1) For mixture proportions, refer to the Paint and Finish chapter of Hartzell Propeller Standard Practices Manual 202A (61-01-02).

b On the smooth side of the bulkhead using cheesecloth CM159 or equivalent dampened with MEK CM106, wipe the entire surface, including the ID.

c On the rough side of the bulkhead using cheesecloth CM159 or equivalent dampened with MEK CM106, wipe the bulkhead mounting surface.

NOTE: The bulkhead mounting surface is the raised surface adjacent to the ID on the rough side of the bulkhead.

d Let the MEK CM106 dry.

e On the smooth side of the bulkhead paint the entire surface with the specified paint mix using a smooth, even spraying motion in three passes.

NOTE: Three passes of paint over the surface is considered to be one layer of paint.

f Let the painted surface dry in accordance with the paint manufacturer's instructions until it is dry to the touch.

(1) For sufficient layer-to-layer paint adhesion, the maximum time between coats of paint is four hours.

(2) If it has been longer than four hours since the previous layer of paint was applied:

(a) Using 400 grit sandpaper, lightly sand the cured surface.

(b) Using clean, dry cheesecloth CM159 or equivalent, wipe the sanded cured surface before applying a subsequent layer of paint.

g On the smooth side of the bulkhead, repeat the paint application using three passes to apply a second layer of paint, making sure that the surface of the part is fully covered.

h Remove the masking material from the mounting screw holes in the bulkhead.

(1) On the rough side of the bulkhead, leave the masking material in place that covers the part number and serial number.

i On the rough side of the bulkhead, paint the bulkhead mounting surface with the specified paint mix using a smooth, even spraying motion in three passes.

NOTE: Three passes of paint over the surface is considered to be one layer of paint.

(1) If the rough side of the bulkhead mounting surface has been painted before, apply one layer of paint.

(2) If the rough side of the bulkhead mounting surface has never been painted before, apply two layers of paint.

(3) Let the painted surface dry in accordance with the paint manufacturer's instructions until it is dry to the touch.

(4) For sufficient layer-to-layer paint adhesion, the maximum time between coats of paint is four hours.

(5) If it has been longer than four hours since the last layer of paint was applied:

(a) Using 400 grit sandpaper, lightly sand the cured surface.

(b) Using clean, dry cheesecloth CM159 or equivalent, wipe the sanded cured surface before applying the second layer of paint.

(6) Repeat the paint application using three passes to apply a second layer of paint, making sure that the surface of the part is fully covered.

j If the part will be put in an airtight plastic bag, cure the part for a minimum of 24 hours.

I. Paint Inspection

NOTE: For the finish procedures applicable to each spinner assembly, refer to Finish Procedures Table 7-1 in this chapter.

(1) Inspection of Polane® T Paint

(a) Examine the surface for satisfactory paint coverage.

1 If the paint coverage is not satisfactory:

a Sand the Polane® T paint layer from the entire part.

CAUTION: APPLY POLANE® T PAINT ONLY TO THE DEGREE REQUIRED TO UNIFORMLY COVER THE PART. AVOID EXCESSIVE PAINT BUILDUP TO AVOID CHANGING THE PROFILE OF THE PART AND/OR THE CONDUCTIVE COATING CHARACTERISTICS.

b Repaint the part in accordance with the section "Polane® T Paint" in this chapter.

c Optionally, follow the instructions in the section "Refinishing after Repair" in this chapter.

(2) Inspection of Acry Glo® Series 571 Paint

(a) Examine the surface for satisfactory paint coverage.

1 If the paint coverage is not satisfactory:

a Sand the Acry Glo® Series 571 paint layer from the entire part.

CAUTION: APPLY ACRY GLO® SERIES 571 PAINT ONLY TO THE DEGREE REQUIRED TO UNIFORMLY COVER THE PART. AVOID EXCESSIVE PAINT BUILDUP TO AVOID CHANGING THE PROFILE OF THE PART AND/OR THE CONDUCTIVE COATING CHARACTERISTICS.

b Repaint the part in accordance with the section, "Acry Glo® Series 571 Paint" in this chapter.

c Optionally, follow the instructions in the section "Refinishing after Repair" in this chapter.

J. Erosion Mask Removal and Installation

(1) Erosion Mask Removal

(a) Lift one edge of the erosion mask (510) off of the dome.

(b) Work around the perimeter of the erosion mask (510), lifting the edges of the erosion mask (510) from the dome.

(c) Grip the edges of the erosion mask (510) and pull to remove it from the dome.

(d) Discard the removed erosion mask (510).

WARNING: ADHESIVES AND SOLVENTS ARE FLAMMABLE AND TOXIC TO THE SKIN, EYES, AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION ARE REQUIRED. AVOID PROLONGED CONTACT AND BREATHING OF VAPORS. USE SOLVENT RESISTANT GLOVES TO MINIMIZE SKIN CONTACT AND WEAR SAFETY GLASSES FOR EYE PROTECTION. USE IN A WELL VENTILATED AREA AWAY FROM SPARKS AND FLAME. READ AND OBSERVE ALL WARNING LABELS.

(e) Using cheesecloth CM159 or equivalent dampened with solvent toluene CM41, MEK CM106, or MPK CM219, wipe the surface to remove adhesive residue from the dome.

(2) Erosion Mask Installation

NOTE: For the finish procedures applicable to each spinner assembly, refer to Finish Procedures Table 7-1 in this chapter.

(a) Inspect for missing paint, pin holes, pitting, and porosity as follows:

1 Visually examine the dome erosion shield forward of the dome erosion shield parting line.

2 Visually examine the spinner dome aft of the dome erosion shield parting line.

3 Repair any defect in accordance with the section "Dome Erosion Shield Repair" in the Minor Repair chapter of this manual.

(b) Inspect the spinner dome aft of the dome erosion shield parting line.

1 Repair any major defects in accordance with the procedures in the Major Repair chapter of this manual.

(c) If the dome erosion shield and spinner dome do not require repairs, continue with the steps in the following Installation Procedure.

(d) Installation Procedure

CAUTION 1: DO NOT TRIM THE EROSION MASK ON THE SPINNER DOME BECAUSE DAMAGE TO THE SPINNER DOME WILL OCCUR.

CAUTION 2: DO NOT INSTALL THE EROSION MASK ON THE DOME EROSION SHIELD UNTIL THE PAINT HAS CURED FOR A MINIMUM OF EIGHT (8) HOURS OR THE EROSION MASK WILL NOT ADHERE PROPERLY.

1 Except for trimming the erosion mask when installed on the spinner, follow the manufacturer's instructions for making a template and trimming the customer procured erosion mask.

a Using a measurement of 5.0 inches (127.0 mm) along the surface of the erosion mask, from the top centerline down the side of the erosion mask produces a mask of satisfactory size.

2 Install the erosion mask to the dome erosion shield in accordance with manufacturer's installation instructions.

a The erosion mask must be smooth over the dome erosion shield and the spinner dome with no air pockets.

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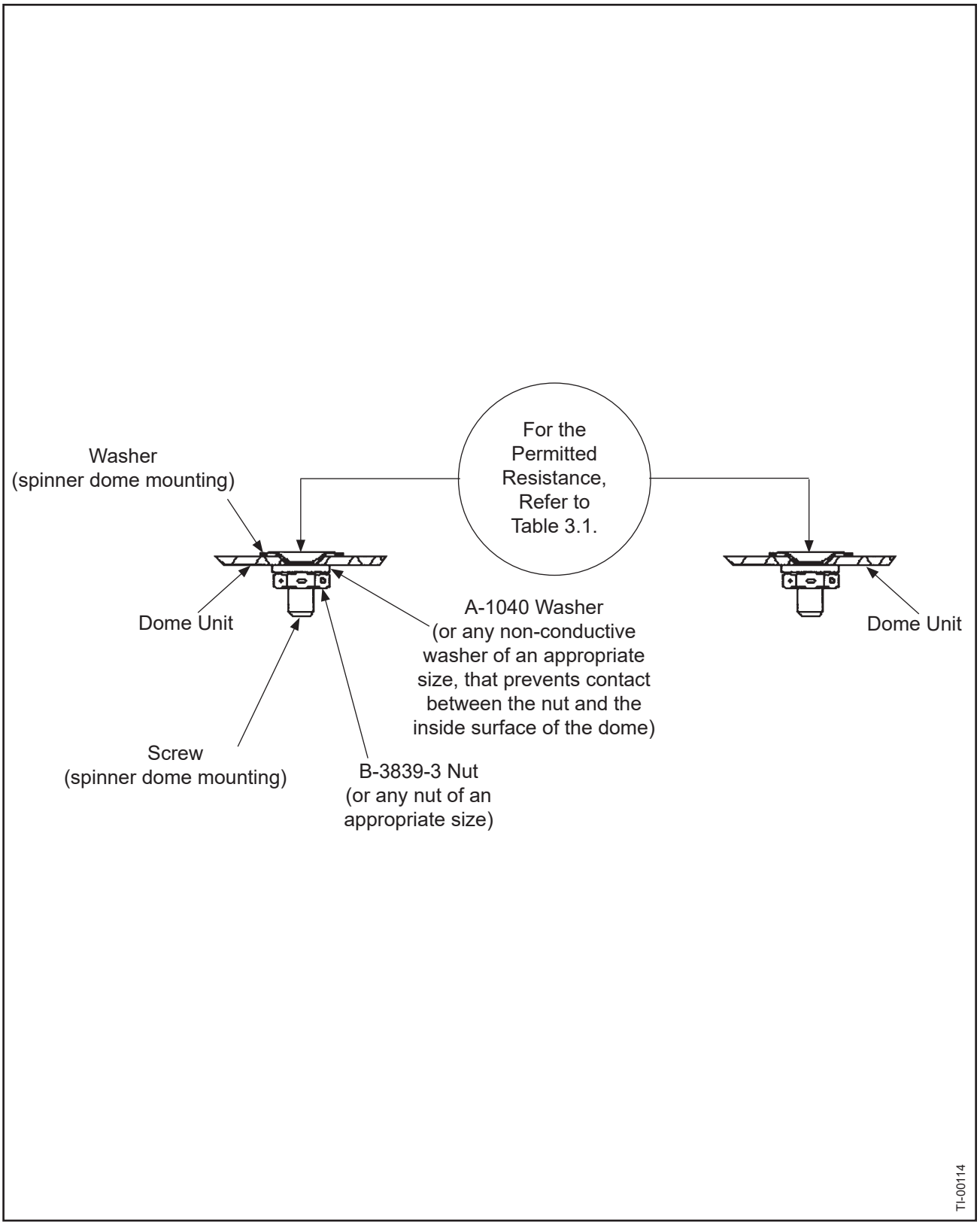


Resistance Check of the Dome
Figure 7-1

Spinner Assembly Part Number	Dome Part Number	Maximum Permitted Resistance
D-7409-( )	D-7408-( )	2 ohms
E-5579-( )	E-5580-( )	2 ohms
E-7480	E-7481-( )	2 ohms
101298	101299	2 ohms
102870	102885	0.1 Megohm
103409( )	103410( )	0.1 Megohm
103585( )	103582( )	0.1 Megohm
103629( )	103627( )	0.1 Megohm
104529	104573	0.1 Megohm
104888-( )	104886( )	0.1 Megohm
105085( )	105122( )	0.1 Megohm
105127( )	105129( )	0.1 Megohm
105656( )	105651( )	0.1 Megohm
105945( )	105943( )	0.1 Megohm
106040( )	106039( )	0.1 Megohm
106188( )	106184( )	0.1 Megohm
106215( )	106214( )	0.1 Megohm
106311( )	106322( )	0.1 Megohm
106574( )	103582( )	0.1 Megohm
106848( )	106847( )	0.1 Megohm
106871( )	106911( )	2 ohms
106957( )	106956( )	0.1 Megohm
107153( )	107151( )	0.1 Megohm
107376( )	107375( )	0.1 Megohm
107507( )	107505( )	0.1 Megohm
107554( )	107553( )	0.1 Megohm
108013( )	108011( )	0.1 Megohm
108482( )	108481( )	0.1 Megohm

Resistance Check of the Dome
Table 7-3

K. Resistance Check of the Dome

NOTE 1: For the finish procedures applicable to each spinner assembly, refer to Finish Procedures Table 7-1 in this chapter.

NOTE 2: The dome is not installed on the bulkhead or the adapter ring unit.

(1) Install a screw with washers and a nut in each of two dome mounting holes with the maximum distance possible between them, in accordance with the information in Figure 7-1 and Table 7-3.

(2) Using an ohm meter capable of accurately measuring the required resistance in accordance with Table 7-3, perform the following resistance checks:

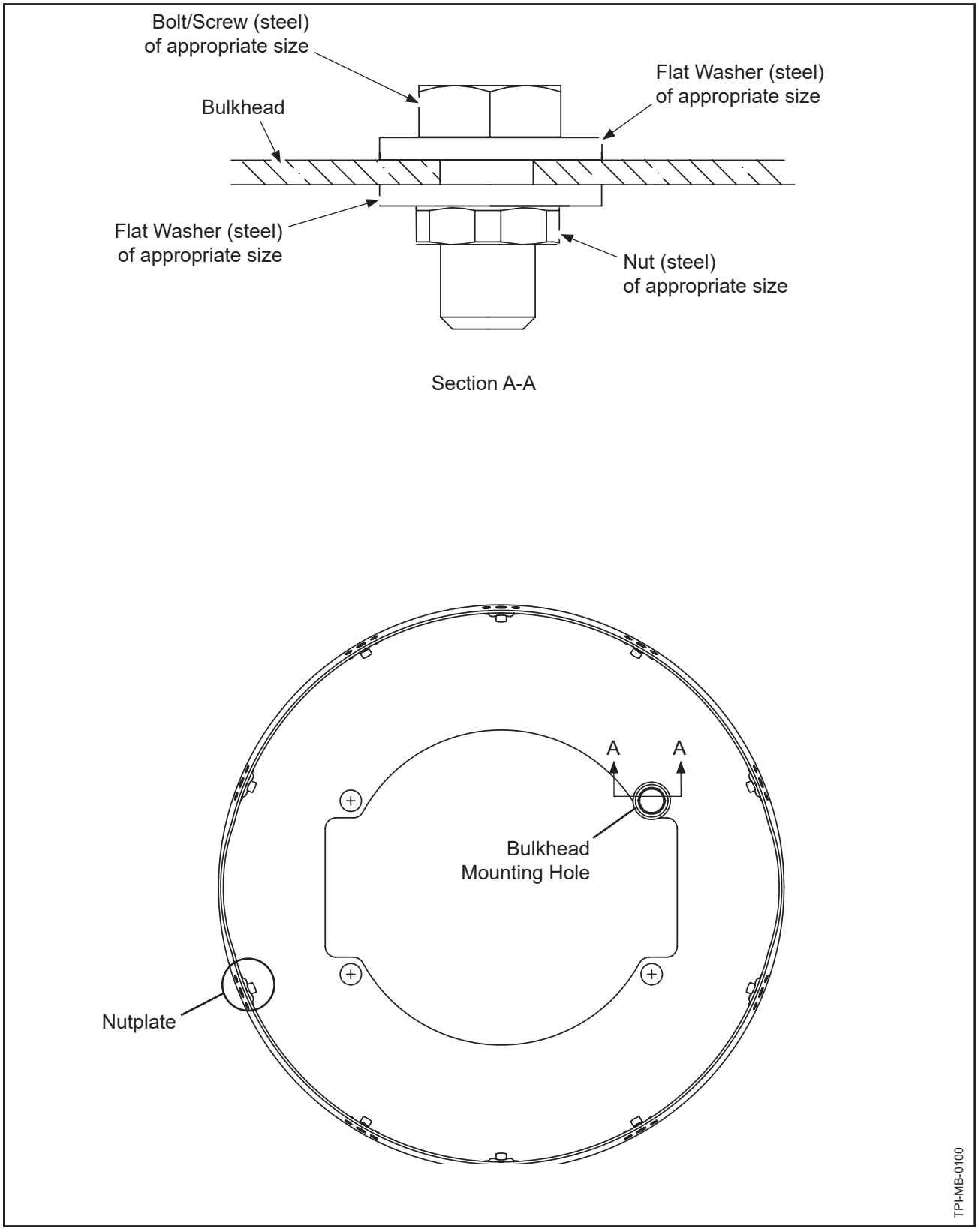
(a) Measure the resistance from the screw in one dome mounting hole to the screw in another dome mounting hole. Refer to Figure 7-1.

WARNING: ADHESIVES AND SOLVENTS ARE FLAMMABLE AND TOXIC TO THE SKIN, EYES, AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION ARE REQUIRED. AVOID PROLONGED CONTACT AND BREATHING OF VAPORS. USE SOLVENT RESISTANT GLOVES TO MINIMIZE SKIN CONTACT AND WEAR SAFETY GLASSES FOR EYE PROTECTION. USE IN A WELL VENTILATED AREA AWAY FROM SPARKS AND FLAME. READ AND OBSERVE ALL WARNING LABELS.

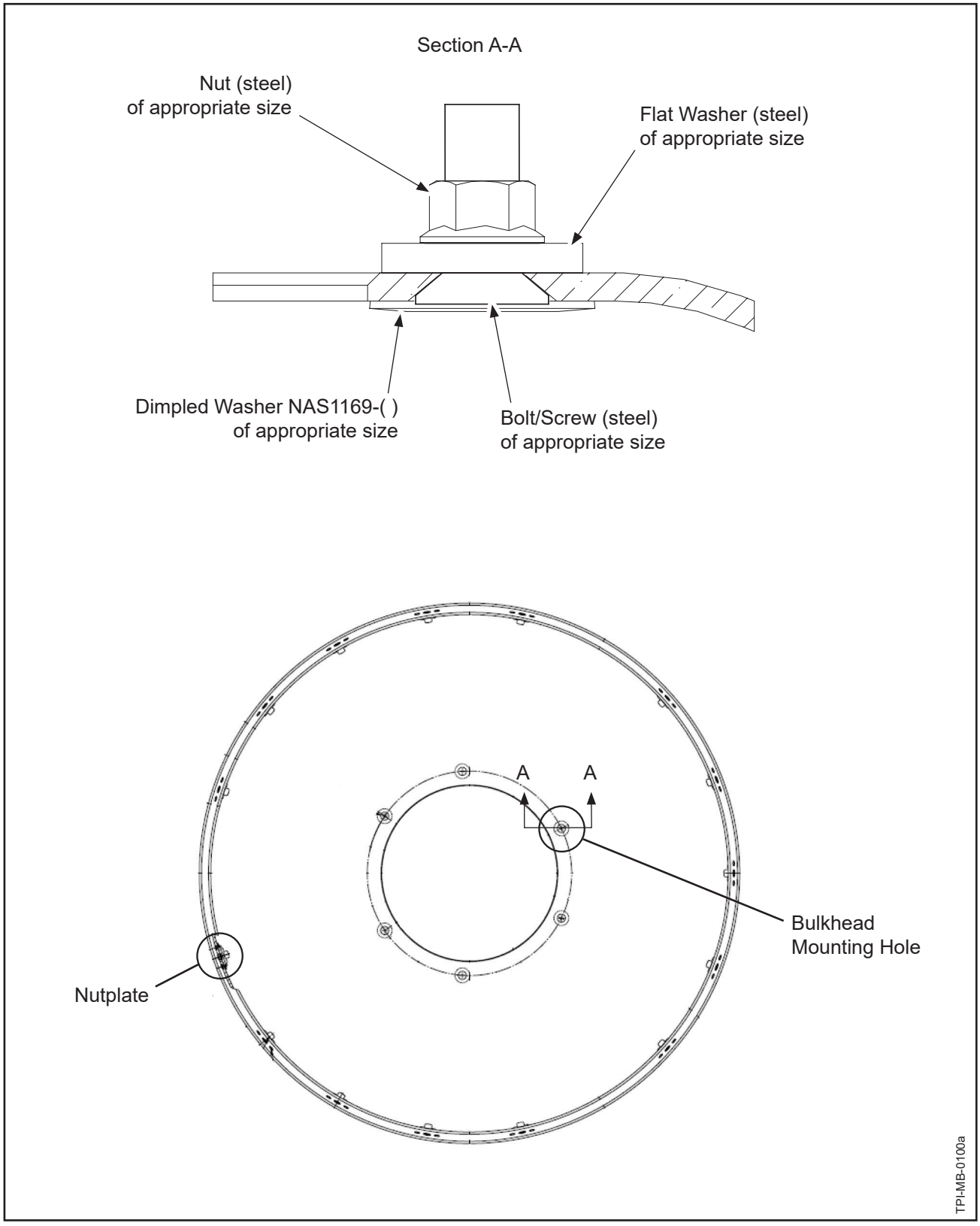
1 If the resistance measurement is not satisfactory, clean the contact points using a solvent such as CM23 or equivalent and repeat the resistance measurement.

a Repeat steps (1) through (2)(a)1 of this procedure using different holes until the resistance measurement is satisfactory.

(3) Remove the hardware that was used for the resistance check of the dome from the dome mounting holes.



Resistance Check of the Bulkhead
Figure 7-2



Resistance Check of the Bulkhead
Figure 7-3

L. Resistance Check of the Bulkhead

NOTE 1: For the finish procedures applicable to each spinner assembly, refer to Finish Procedures Table 7-1 in this chapter.

NOTE 2: The dome is not installed on the bulkhead.

(1) In one bulkhead mounting hole, install the hardware for the resistance check in accordance with the applicable Figure referenced in Table 7-4.

(2) Install one spinner dome mounting screw in the nutplate that is the maximum possible distance from the hardware installed in the bulkhead mounting hole. Refer to the applicable Figure referenced in Table 7-4.

Spinner Assembly Part Number	Bulkhead/Adapter Ring Part Number	Maximum Permitted Resistance	Refer to:
E-5579-( )	E-5581	2 ohms	Figure 7-2
D-7409-( )	D-7404	2 ohms	Figure 7-2
E-7480	D-6666	2 ohms	Figure 7-3
102870( )	102892	2 ohms	Figure 7-2
104529	104572	2 ohms	Figure 7-3
105085( )	105123( )	2 ohms	Figure 7-3
105127( )	106015( )	2 ohms	Figure 7-2
106188( )	106185( )	2 ohms	Figure 7-3
106311( )	106323( )	2 ohms	Figure 7-3
106957( )	106955( )	2 ohms	Figure 7-3
107507( )	107506( )	2 ohms	Figure 7-2
107554( )	107552( )	2 ohms	Figure 7-2
108013( )	108009( )	2 ohms	Figure 7-3

Resistance Check of the Bulkhead
Table 7-4

(3) Using an ohm meter capable of accurately measuring the required resistance in accordance with Table 7-4, perform the following resistance checks:

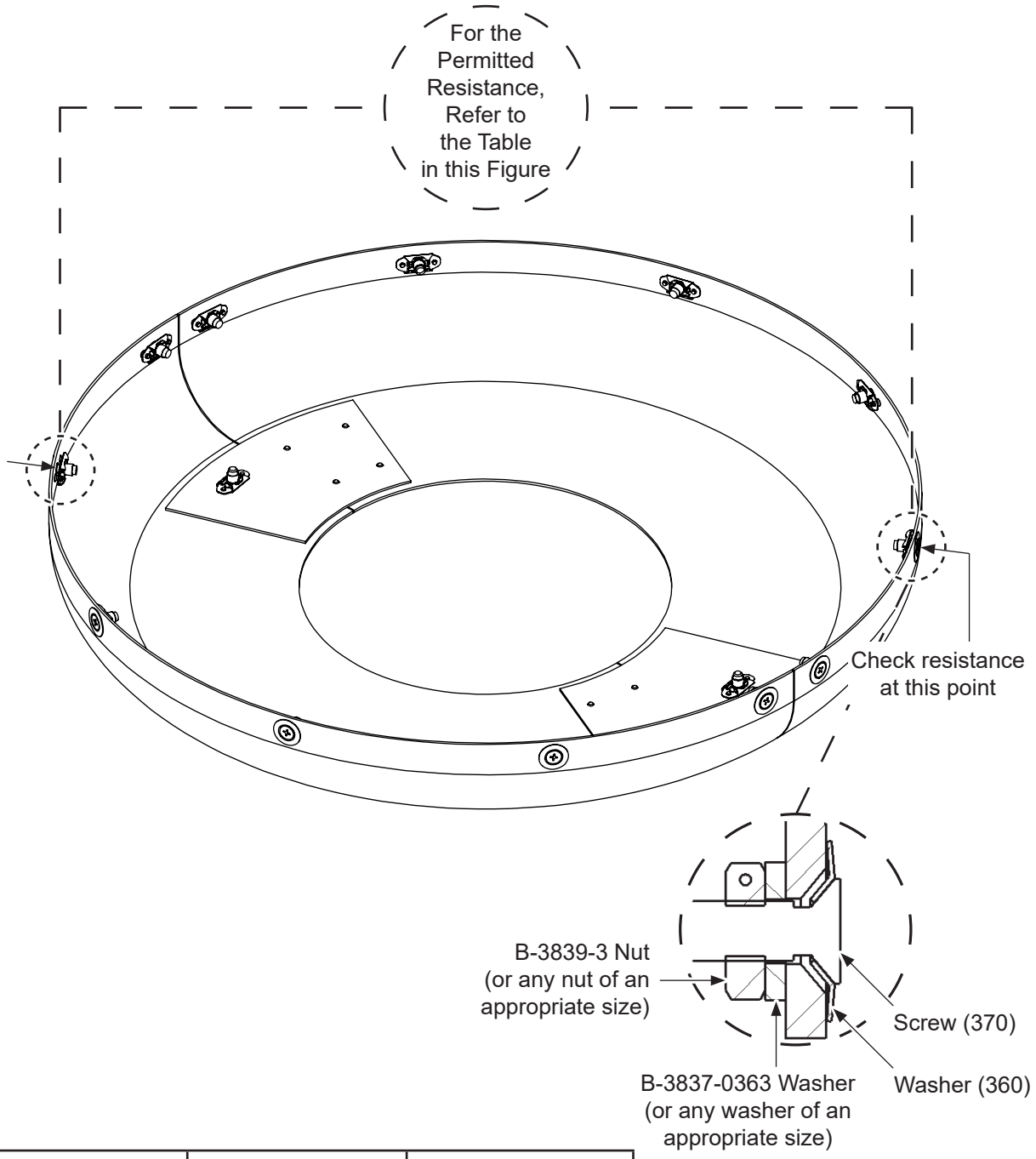
(a) Measure the resistance from the hardware installed in the bulkhead mounting hole to the spinner dome mounting screw installed in the nutplate. Refer to Table 7-4 for the maximum permitted resistance.

WARNING: ADHESIVES AND SOLVENTS ARE FLAMMABLE AND TOXIC TO THE SKIN, EYES, AND RESPIRATORY TRACT. SKIN AND EYE PROTECTION ARE REQUIRED. AVOID PROLONGED CONTACT AND BREATHING OF VAPORS. USE SOLVENT RESISTANT GLOVES TO MINIMIZE SKIN CONTACT AND WEAR SAFETY GLASSES FOR EYE PROTECTION. USE IN A WELL VENTILATED AREA AWAY FROM SPARKS AND FLAME. READ AND OBSERVE ALL WARNING LABELS.

1 If the resistance measurement is not satisfactory, clean the contact points using a solvent such as CM23 or equivalent and repeat the resistance measurement.

a Repeat steps (1) through (3)(a)1 of this procedure using different holes until the resistance measurement is satisfactory.

(4) Remove the resistance check hardware from the bulkhead.



Spinner Assembly Part Number	Fairing Unit Part Number	Maximum Permitted Resistance
104529	104571	0.1 megohm
106957( )	104571	0.1 megohm

Resistance Check of the Fairing Unit
Figure 7-4

M. Resistance Check of the Fairing Unit

NOTE 1: For the finish procedures applicable to each fairing unit, refer to Finish Procedures Table 7-1 in this chapter.

NOTE 2: The fairing unit is not installed on the bulkhead.

(1) In one fairing unit mounting hole, install a screw with washers and a nut in accordance with the information in Figure 7-4.

(2) Using an ohm meter capable of 20 Megohms, perform the following resistance checks.

(a) Measure the resistance between two screws installed in the fairing unit. Refer to Figure 7-4.

1 The measurement must be taken from:

a The head of the screws

b Between two screws that are at the maximum distance away from each other.

(b) If the resistance measurement is not satisfactory, clean the contact points using a solvent such as CM23 or equivalent and repeat the resistance measurement.

1 If the resistance measurement is not satisfactory after cleaning for the two holes, use two different locations with the maximum distance possible between them and repeat the measurement.

a Repeat the measurement using different locations with the maximum distance possible between them until the resistance measurement is satisfactory.

(3) Remove the hardware that was used for the resistance check of the fairing unit from the fairing unit mounting holes.

N. Identification

NOTE: For the finish procedures applicable to each spinner assembly, refer to Finish Procedures Table 7-1 in this chapter.

(1) Label Application

(a) Using a customer procured label that shows the serial number and the part number, install the label as shown in the applicable figure in this chapter.

(2) Ink Stamp Application

(a) Using a customer procured stamp that shows the serial number and the part number, put a stamp mark in white ink CM69 or equivalent, as shown in the applicable figure in this chapter.

(3) Coating Application

(a) Spray a layer of clear polyurethane CM129, or equivalent over each label and ink stamp mark.

O. Refinishing After Repair

NOTE: For the finish procedures applicable to each spinner assembly, refer to Finish Procedures Table 7-1 in this chapter.

(1) For Polane® T Paint Finish

(a) Examine the surface for satisfactory paint coverage.

1 If the paint coverage is not satisfactory:

a Sand the Polane® T paint layers from the entire part.

b Sand the conductive coating layer if applicable from the entire part.

CAUTION: APPLY POLANE® T PAINT ONLY TO THE DEGREE REQUIRED TO UNIFORMLY COVER THE PART. AVOID EXCESSIVE PAINT BUILDUP TO AVOID CHANGING THE PROFILE OF THE PART AND/OR THE CONDUCTIVE COATING CHARACTERISTICS.

c Repaint the part in accordance with the finish procedures, as indicated in Table 7-1 in this chapter.

(1) Optionally, the primer filler and the primer sealer may be applied only to the areas necessary to blend to the existing primer filler and primer sealer layers.

(2) For Acry Glo® Series 571 Paint Finish

(a) Examine the surface for satisfactory paint coverage.

1 If the paint coverage is not satisfactory:

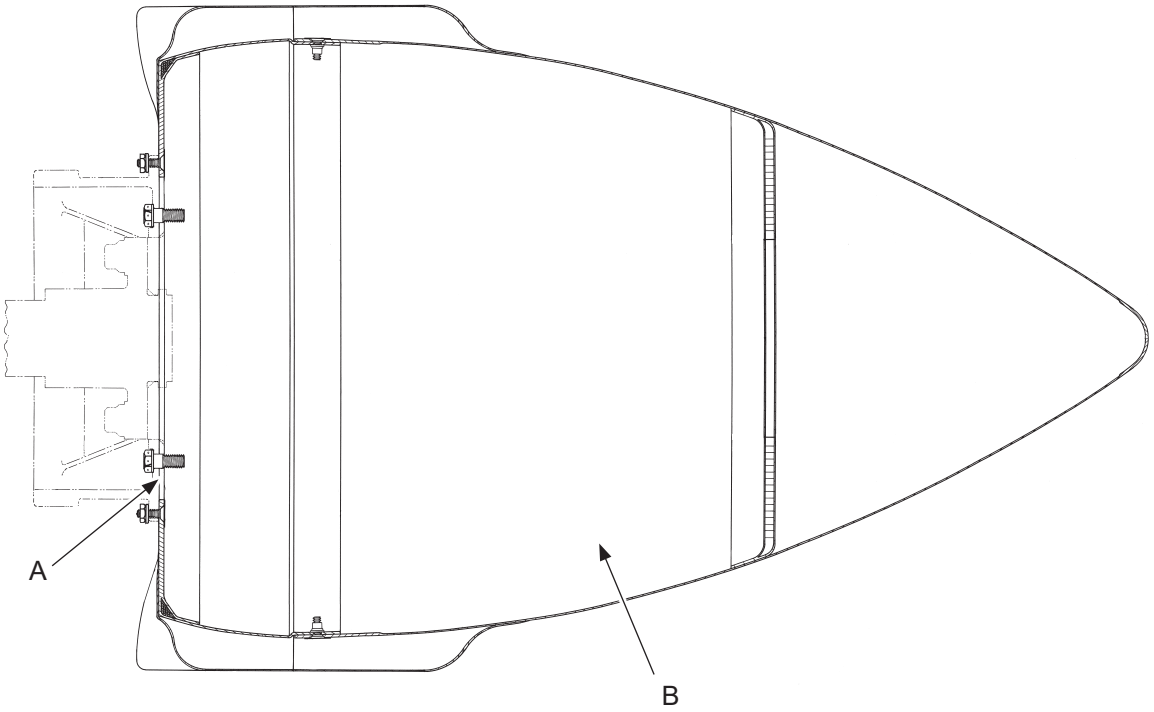
a Sand the Acry Glo® Series 571 paint layers from the entire part.

b Sand the conductive coating layer if applicable from the entire part.

CAUTION: APPLY ACRY GLO® SERIES 571 PAINT ONLY TO THE DEGREE REQUIRED TO UNIFORMLY COVER THE PART. AVOID EXCESSIVE PAINT BUILDUP TO AVOID CHANGING THE PROFILE OF THE PART AND/OR THE CONDUCTIVE COATING CHARACTERISTICS.

c Repaint the part in accordance with the finish procedures, as indicated in Table 7-1 in this chapter.

(1) Optionally, the primer filler and the primer sealer may be applied only to the areas necessary to blend to the existing primer filler and primer sealer layers.

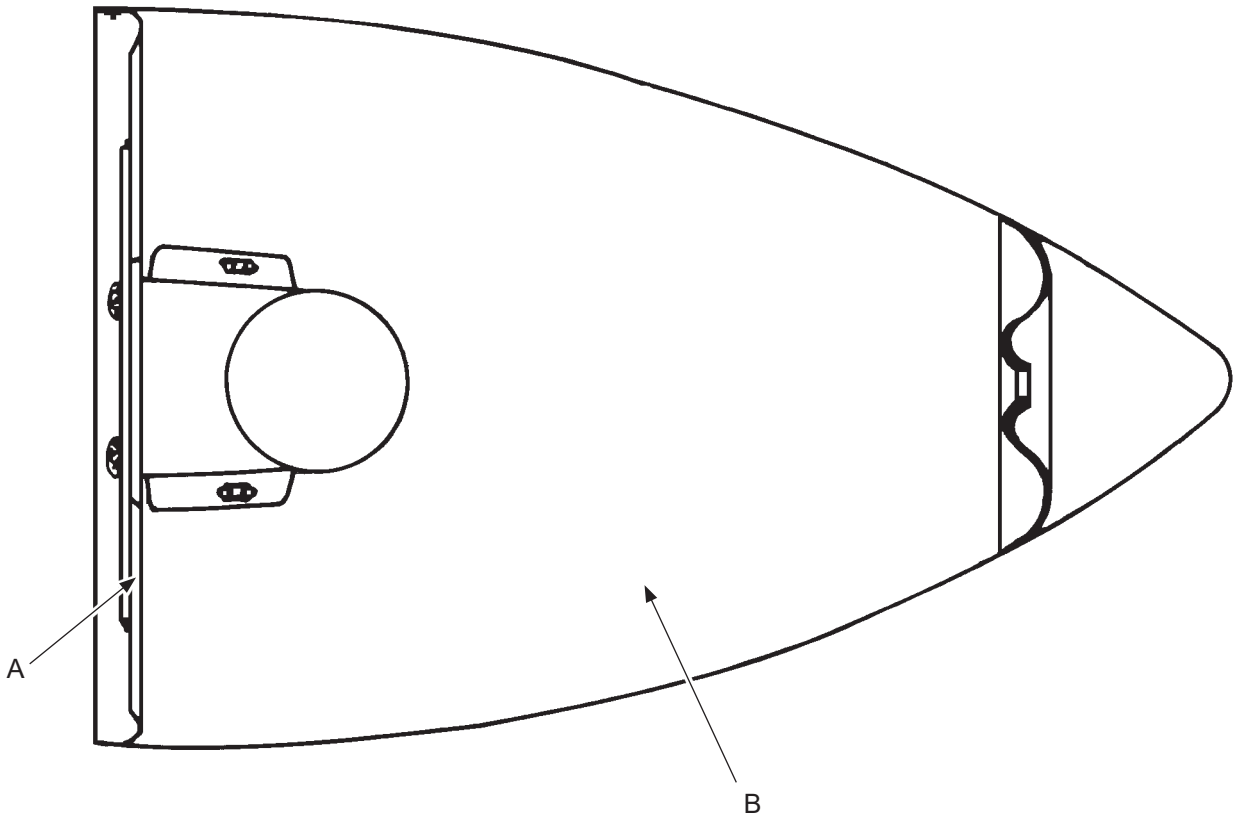


A - location of the label on the inside surface of the bulkhead

B - location of the label on the inside surface of the dome

D-5253A1

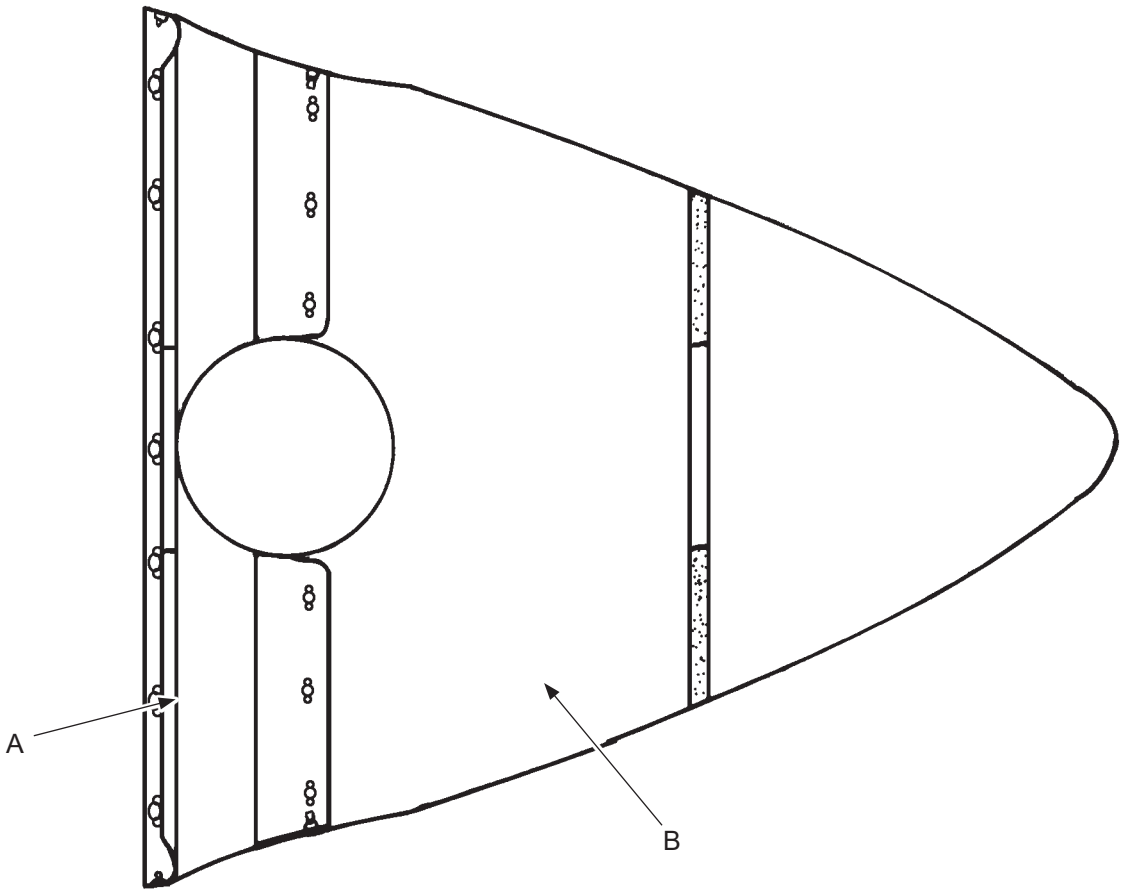
Model D-5253-( )
Figure 7-5



A - location of the label on the inside surface of the bulkhead

B - location of the label on the inside surface of the dome

Model D-5311-( )
Figure 7-6

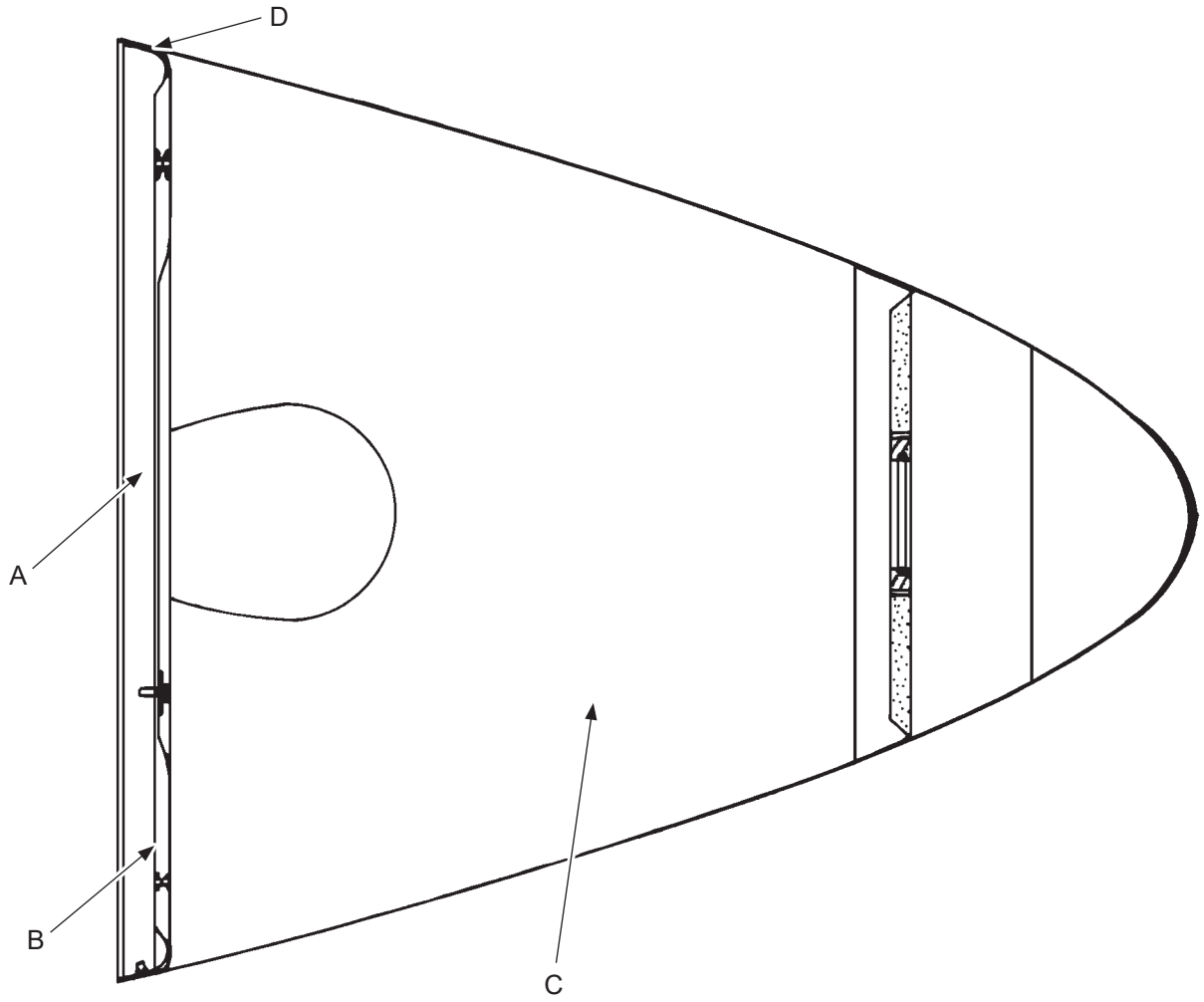


A - location of the label on the inside surface of the bulkhead

B - location of the label on the inside surface of the dome

APS-1022

Model D-5362-( )
Figure 7-7



A - ink stamp on OD, one time, centered on the blade centerline reference

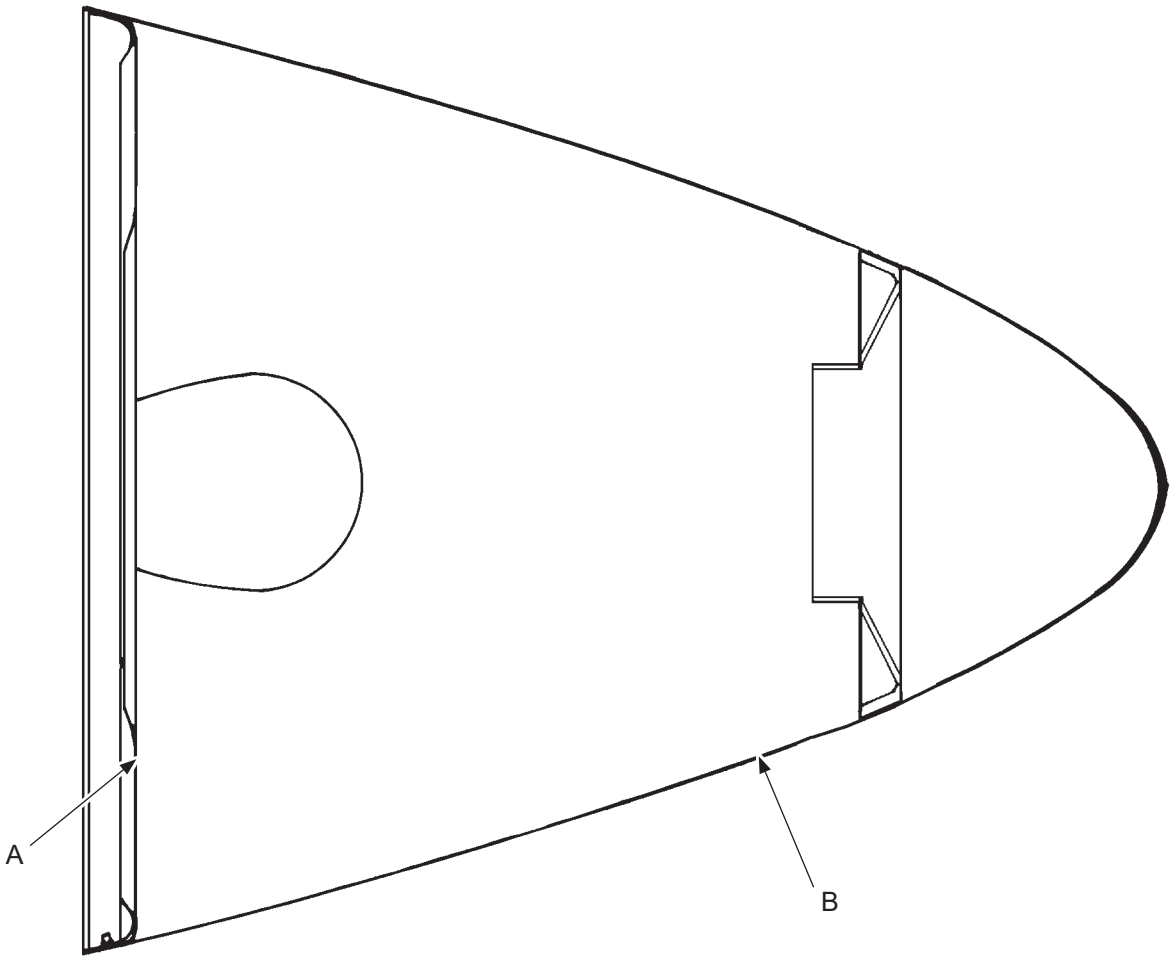
B - ink stamp beyond the 10.00 inch (254 mm) radius reference

C - ink stamp on the inside surface reference

D - ink stamp on the outside surface, one time for each reference

APS-1021

Model E-5579-( )
Figure 7-8

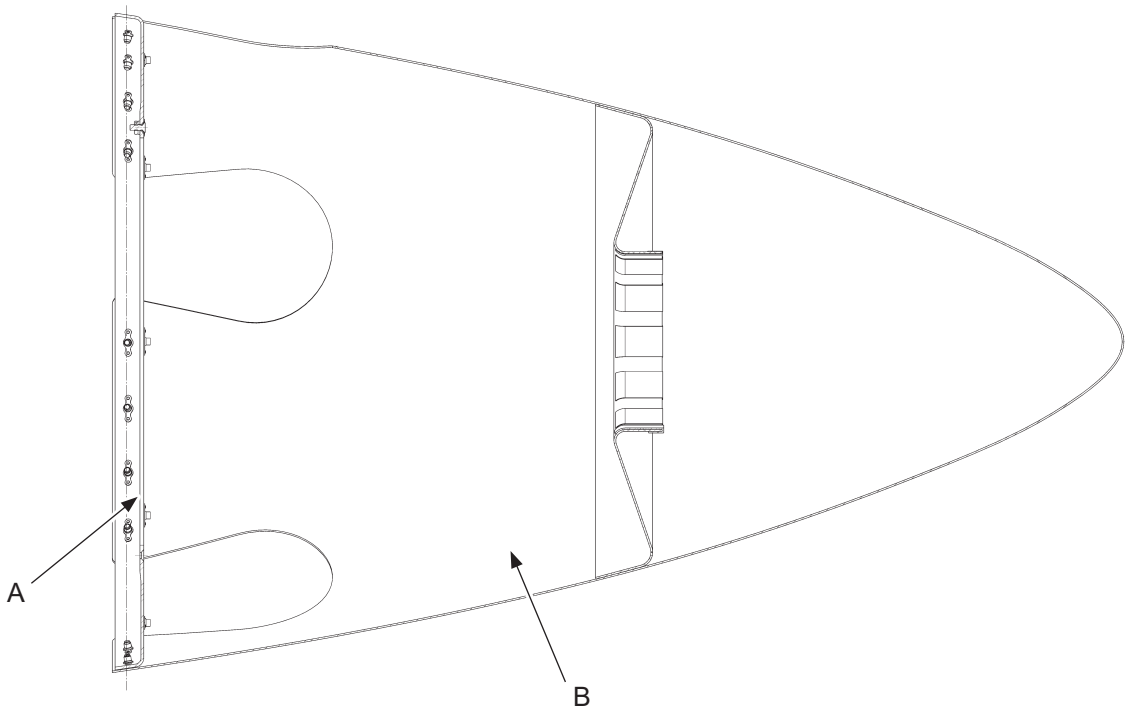


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

W10303

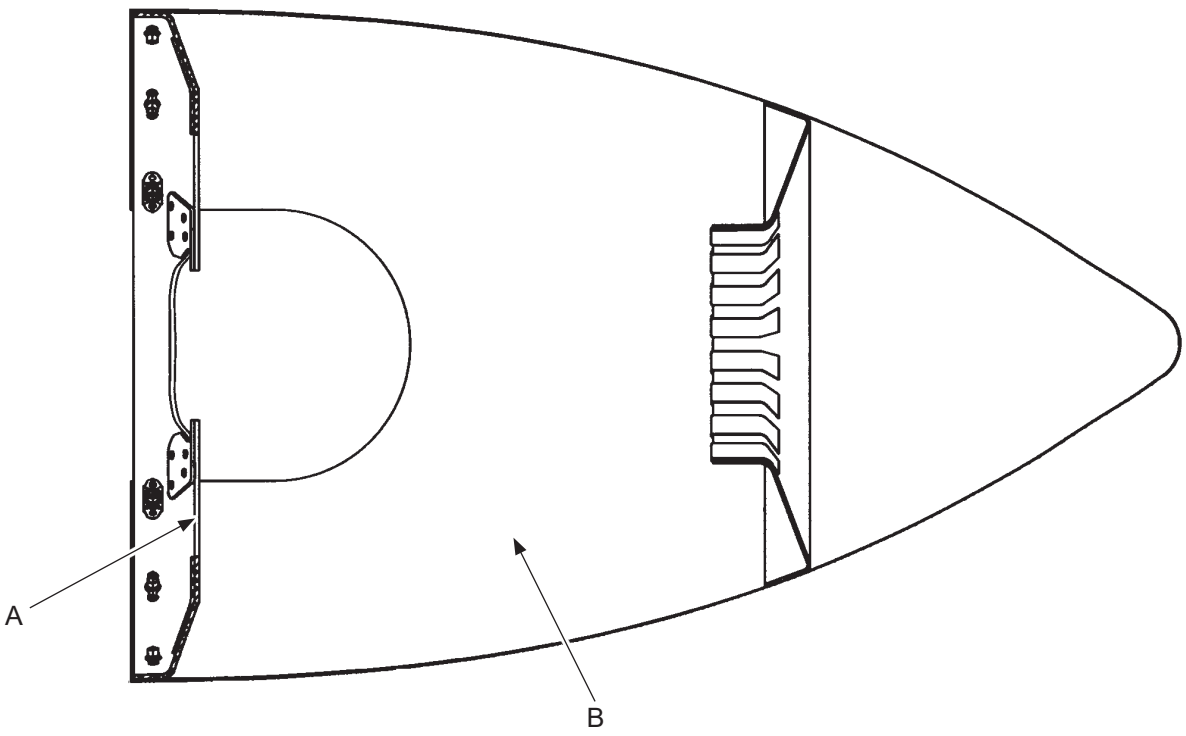
Model D-7409-( )
Figure 7-9



A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

Model E-7480-( )
Figure 7-10

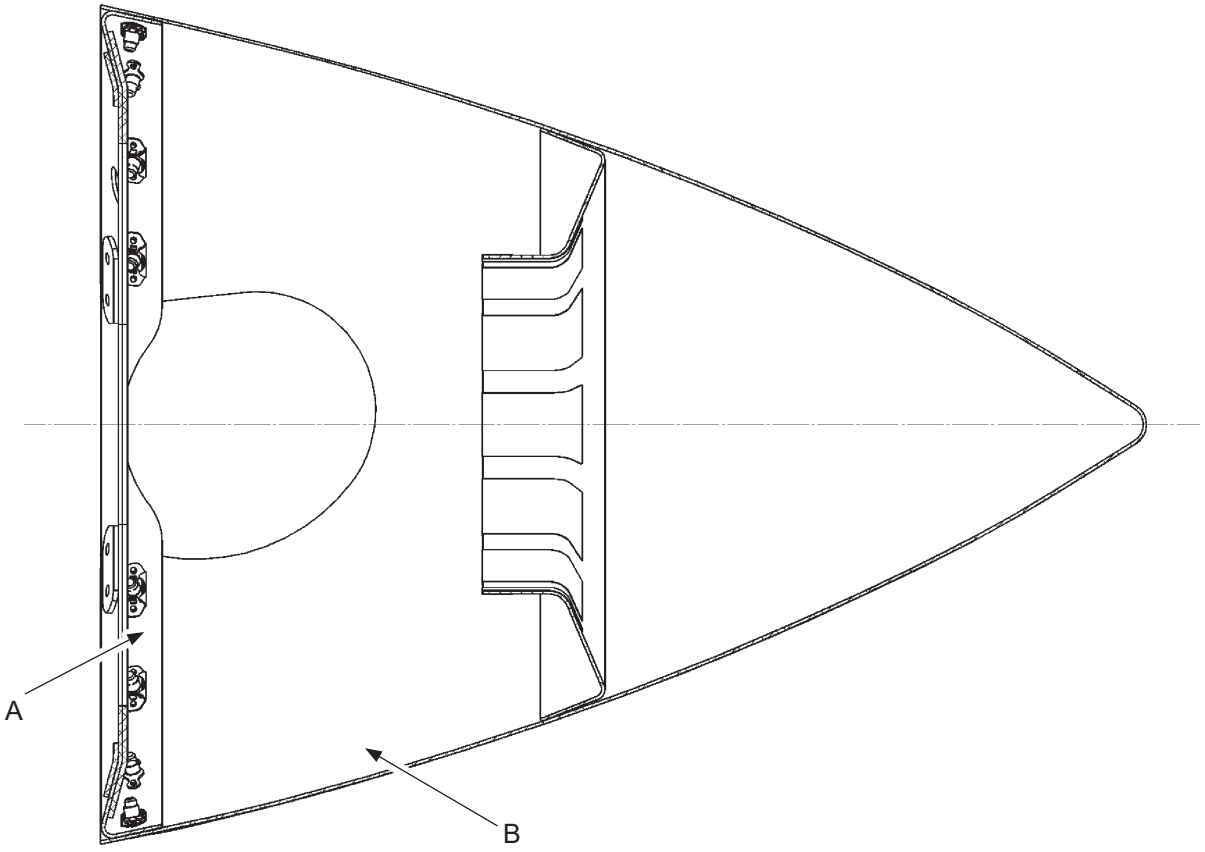


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

101298

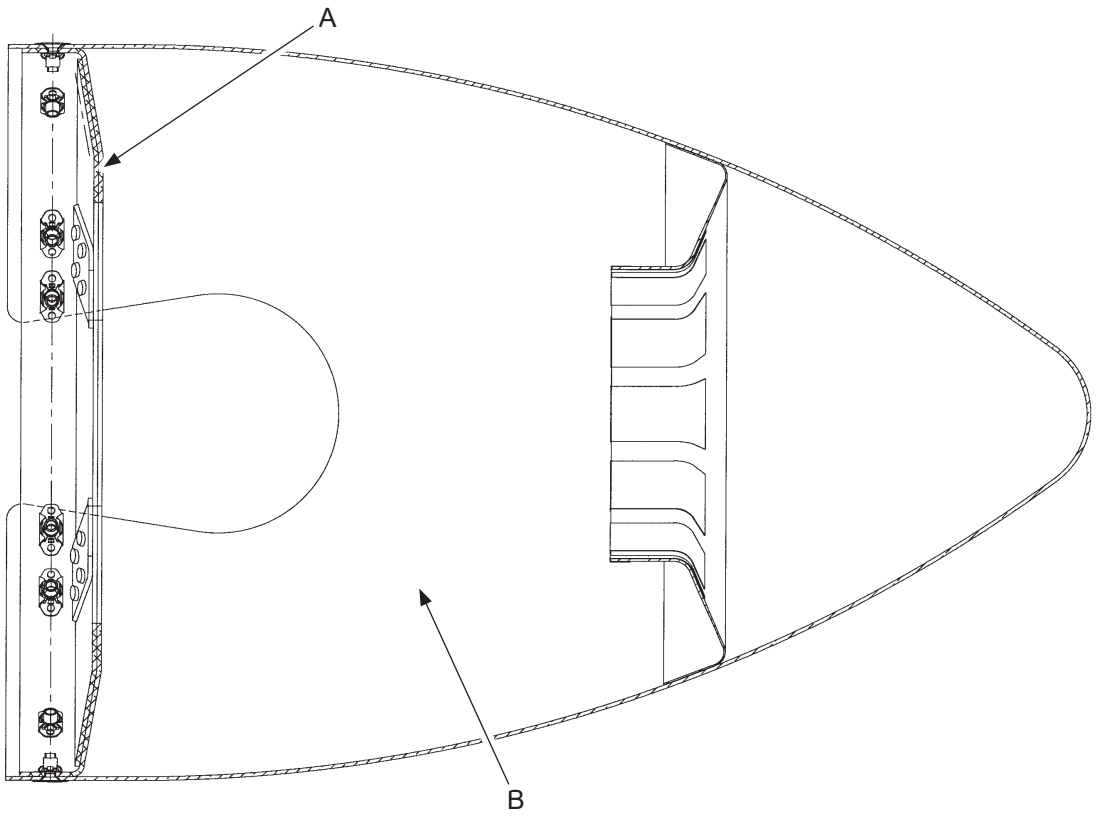
Model 101298
Figure 7-11



A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

Model 102870( )
Figure 7-12

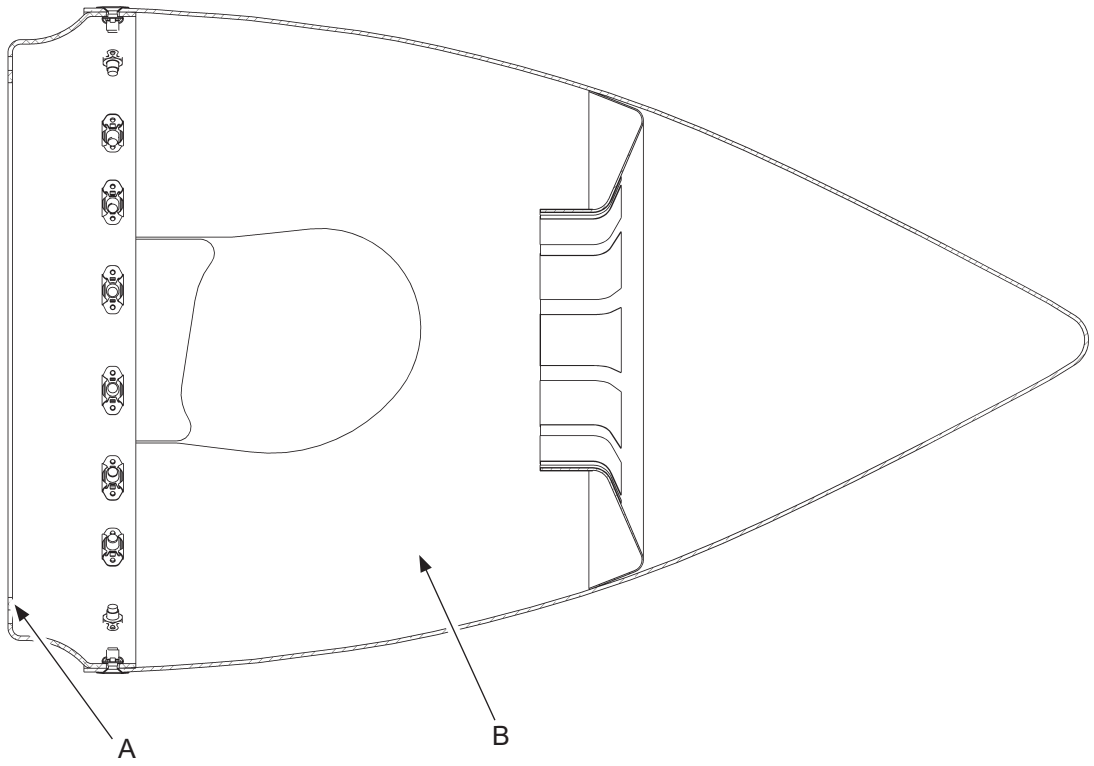


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

103409

Model 103409( )
Figure 7-13

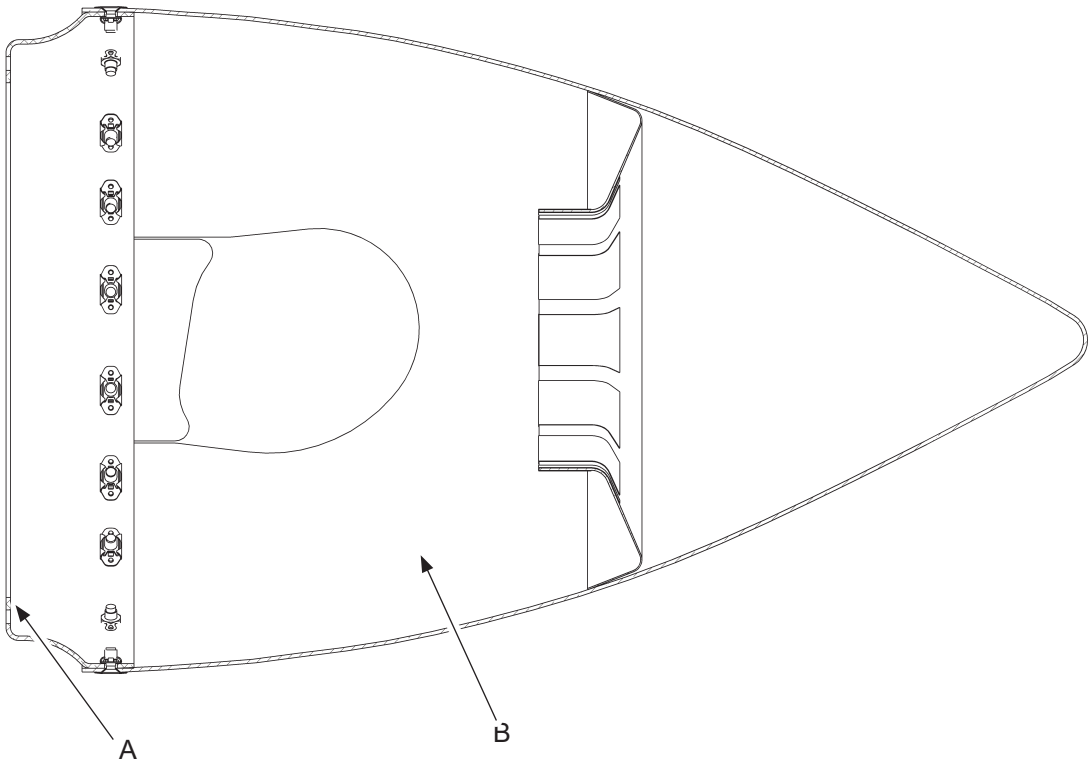


A - location of label on the inside surface of the adapter ring

B - location of label on the inside surface of the dome

103585

Model 103585( )
Figure 7-14

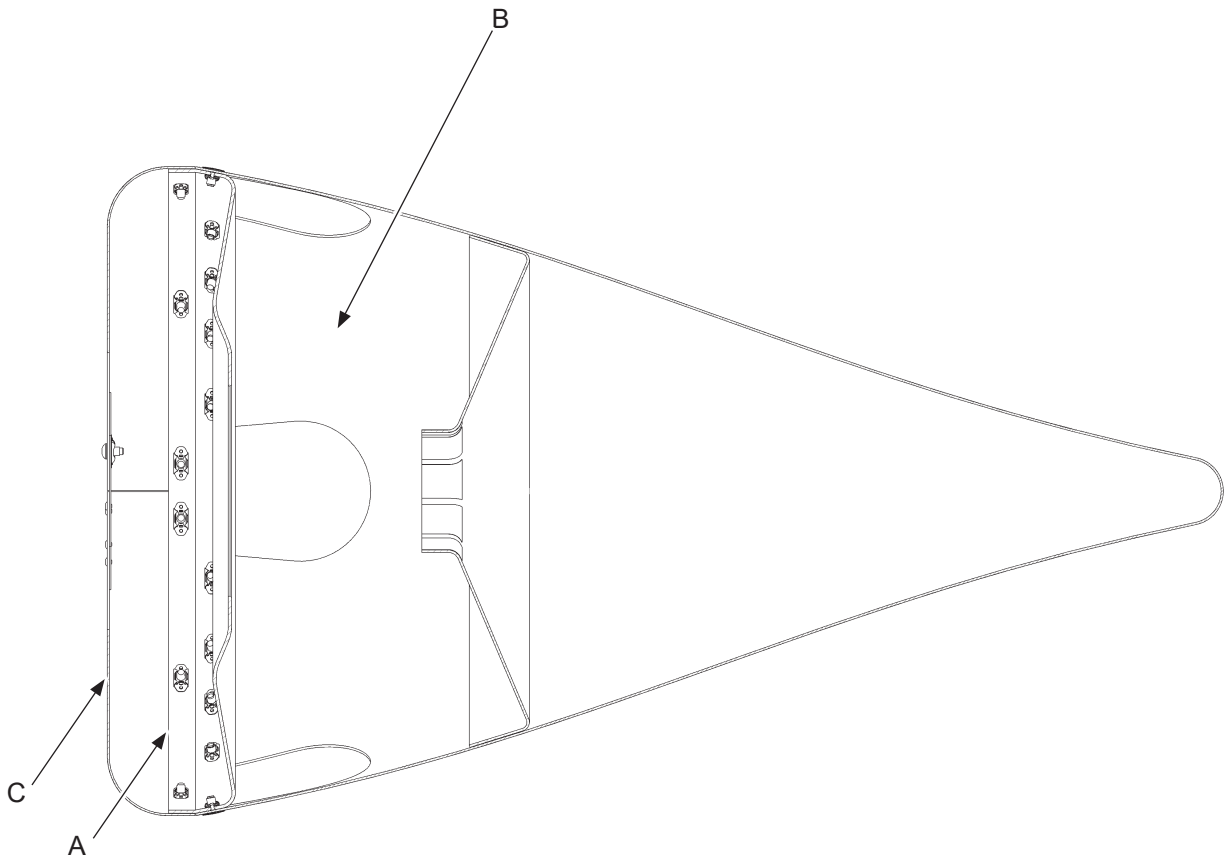


A - location of label on the inside surface of the adapter ring

B - location of label on the inside surface of the dome

103585

Model 103629( )
Figure 7-15



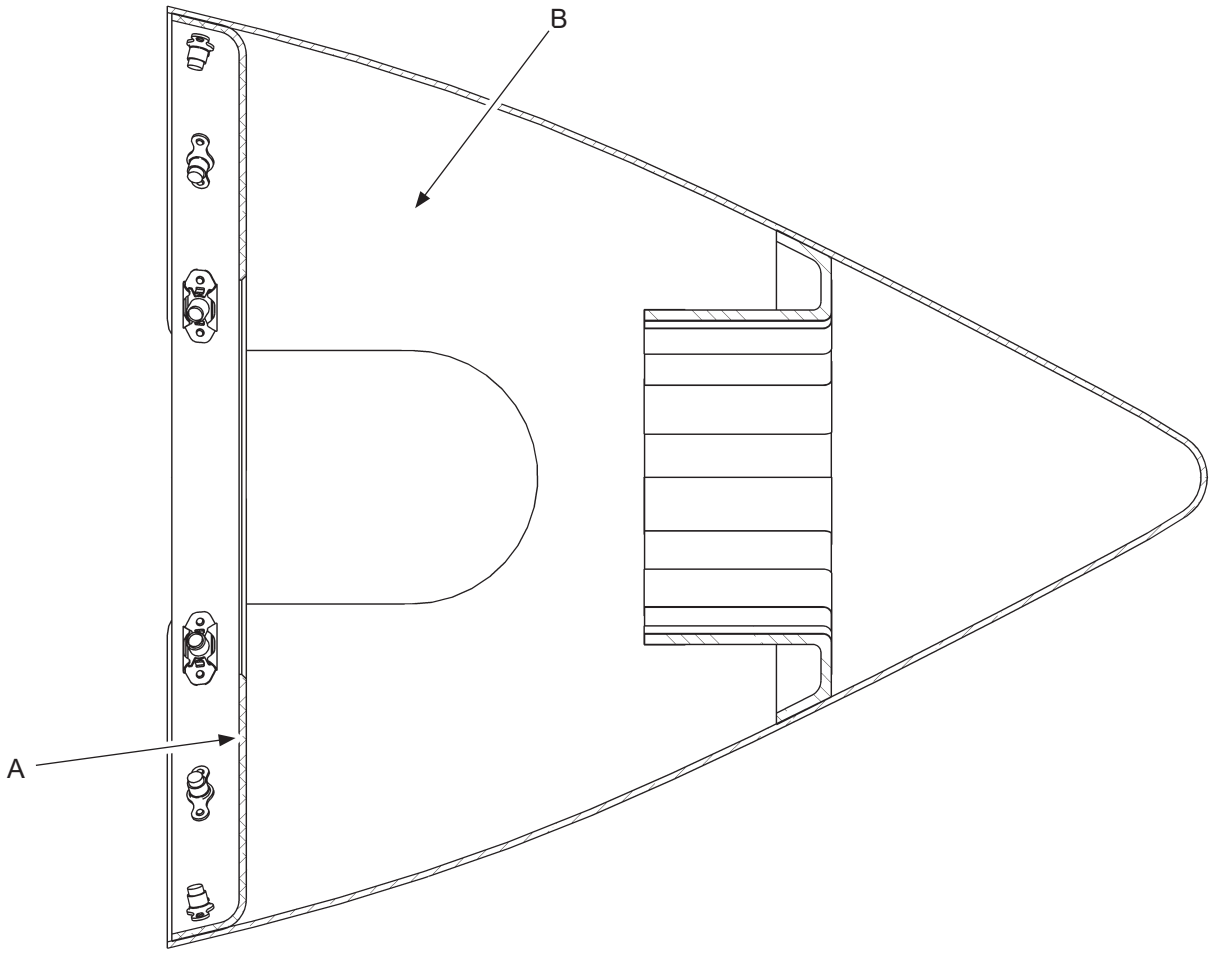
A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

C - location of label on the inside surface of the fairing unit

104529

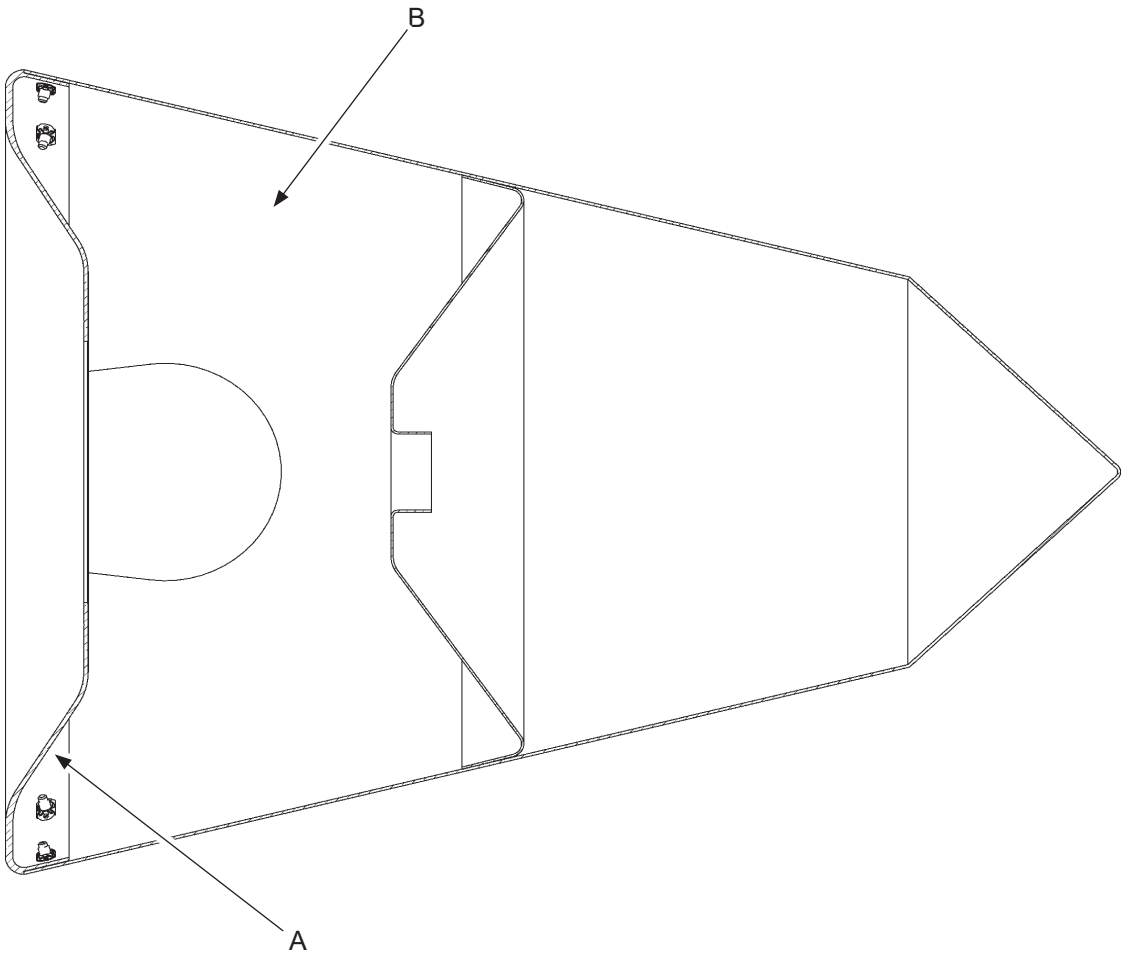
Model 104529
Figure 7-16



A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

Model 104888-( )
Figure 7-17

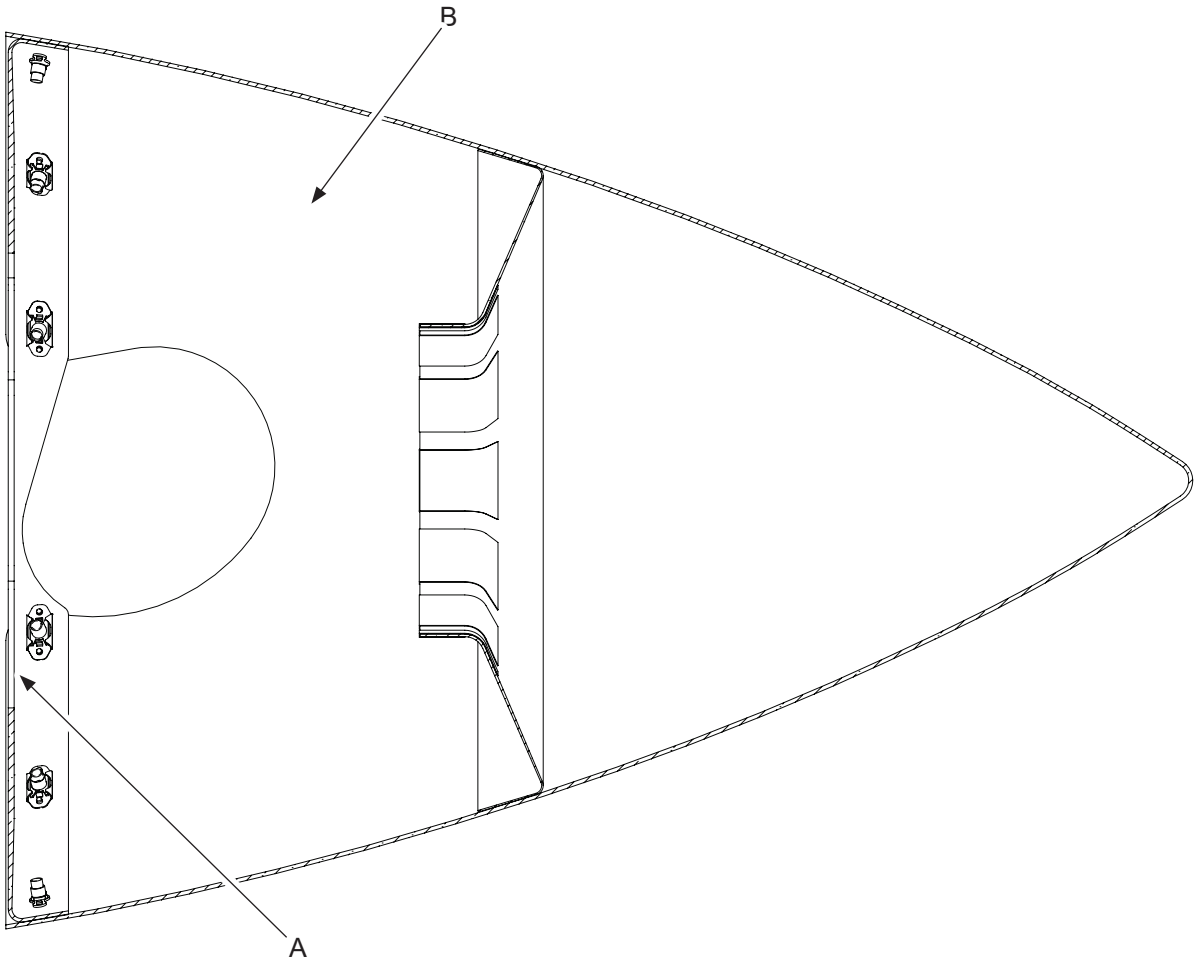


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

TPI-148-105085a

Model 105085( )
Figure 7-18

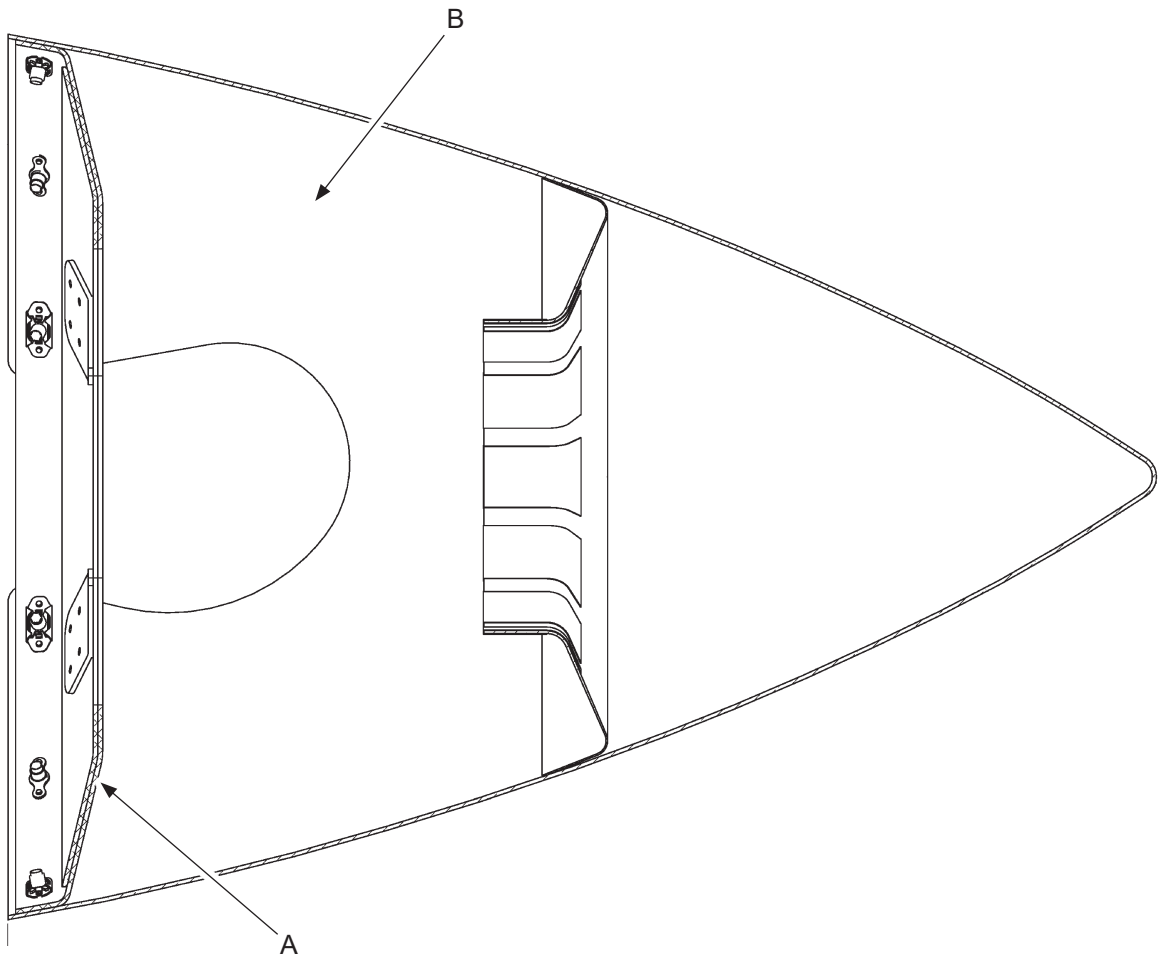


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

TPI-MB-01707

Model 105127( )
Figure 7-19

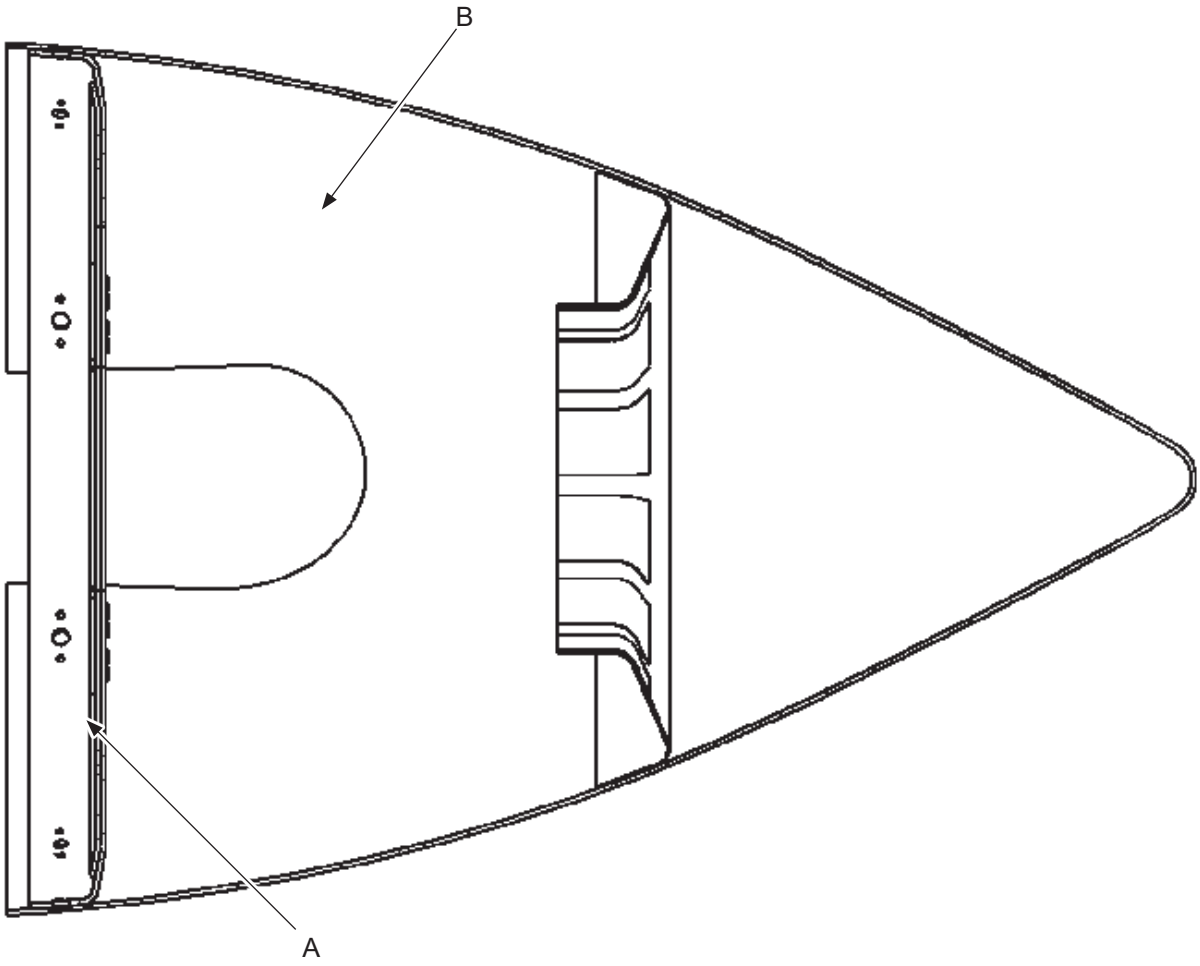


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

TPI-105656

Model 105656( )
Figure 7-20

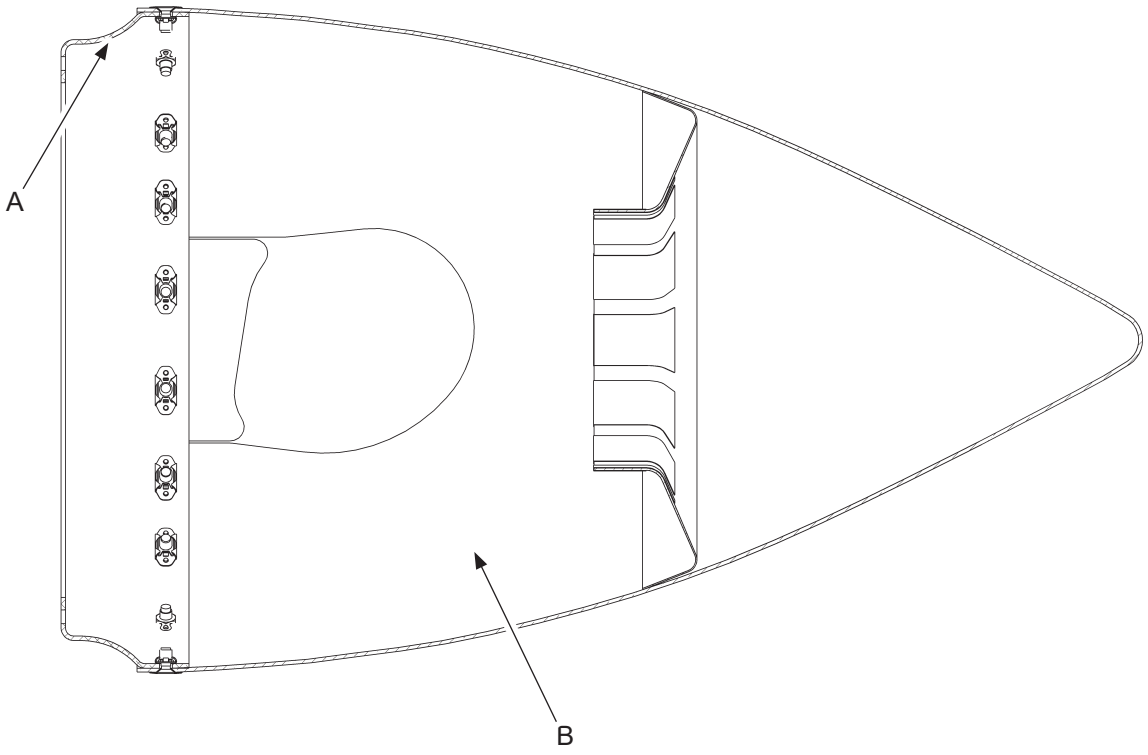


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

TPI-105656

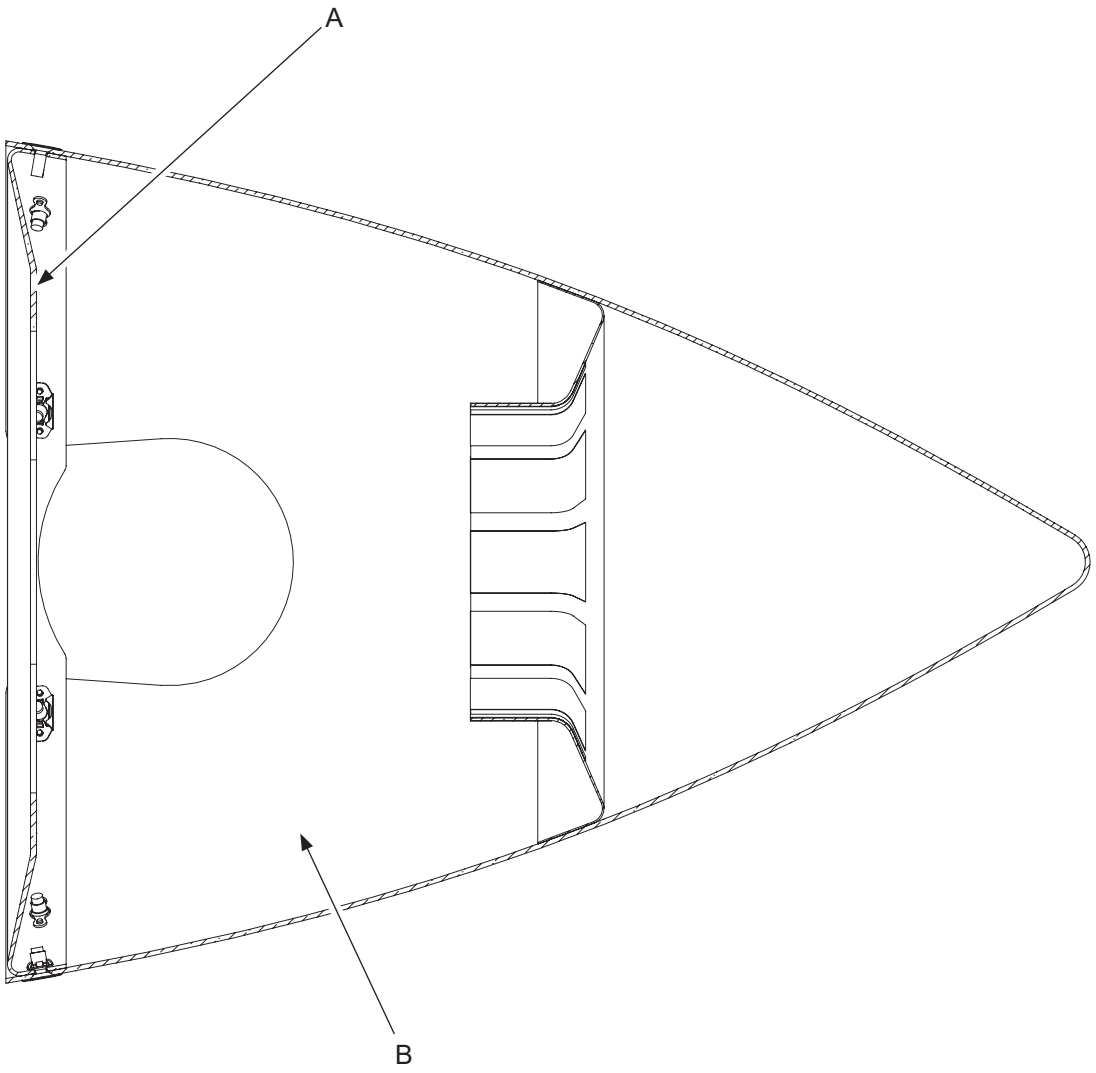
Model 105675
Figure 7-21



A - location of label on the inside surface of the adapter ring

B - location of label on the inside surface of the dome

Model 105945( )
Figure 7-22

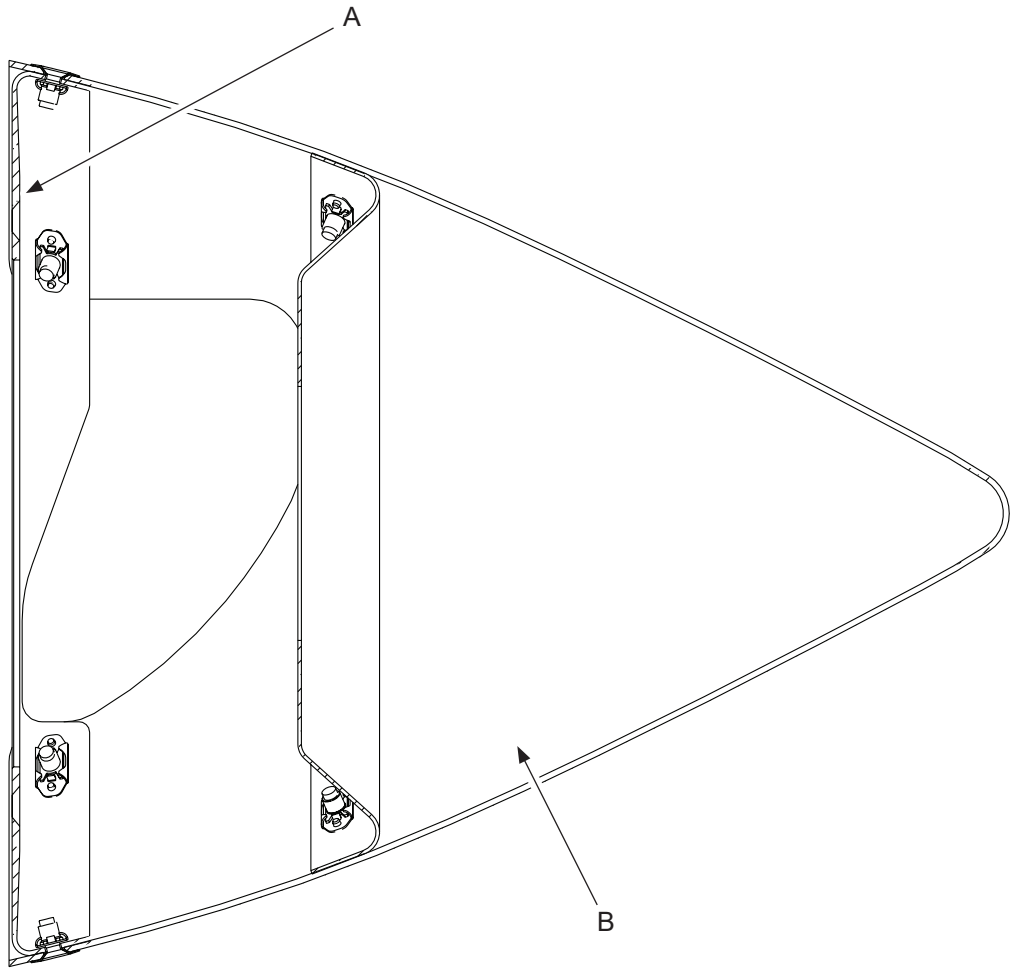


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

TPI-MB-0094

Model 106040( )
Figure 7-23

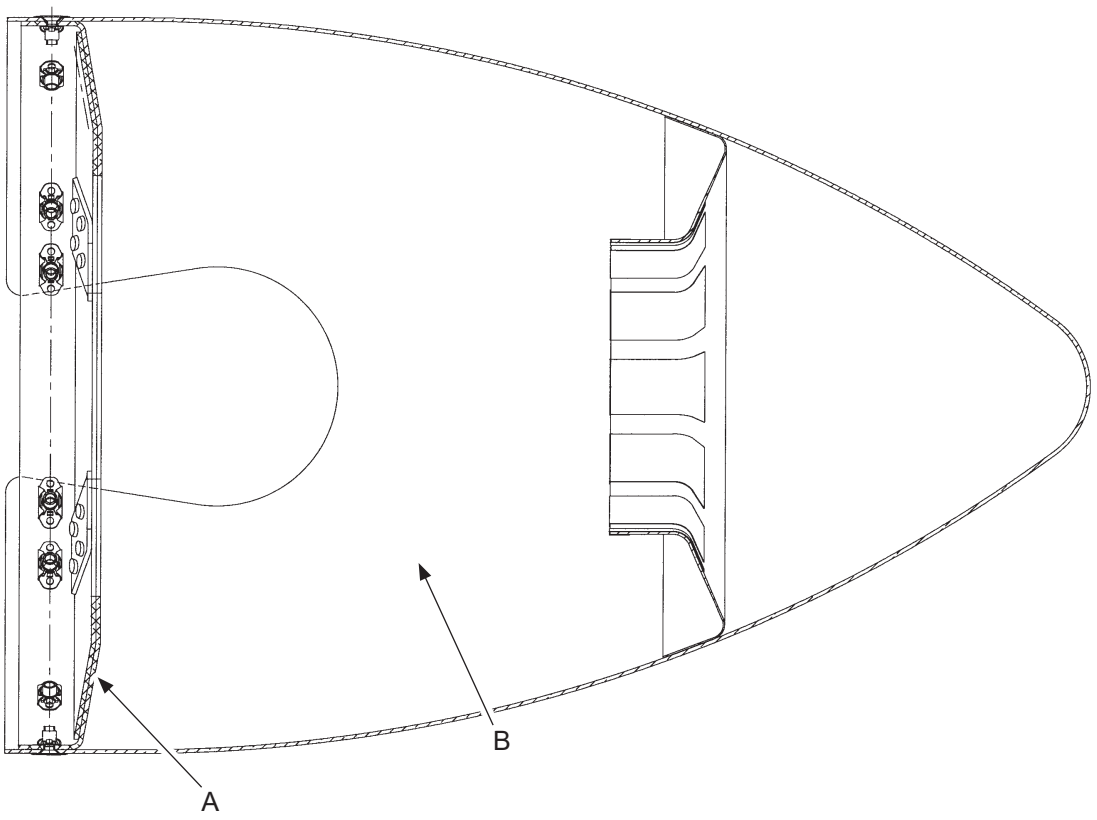


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

TPI-MB-0090

Model 106188( )
Figure 7-24

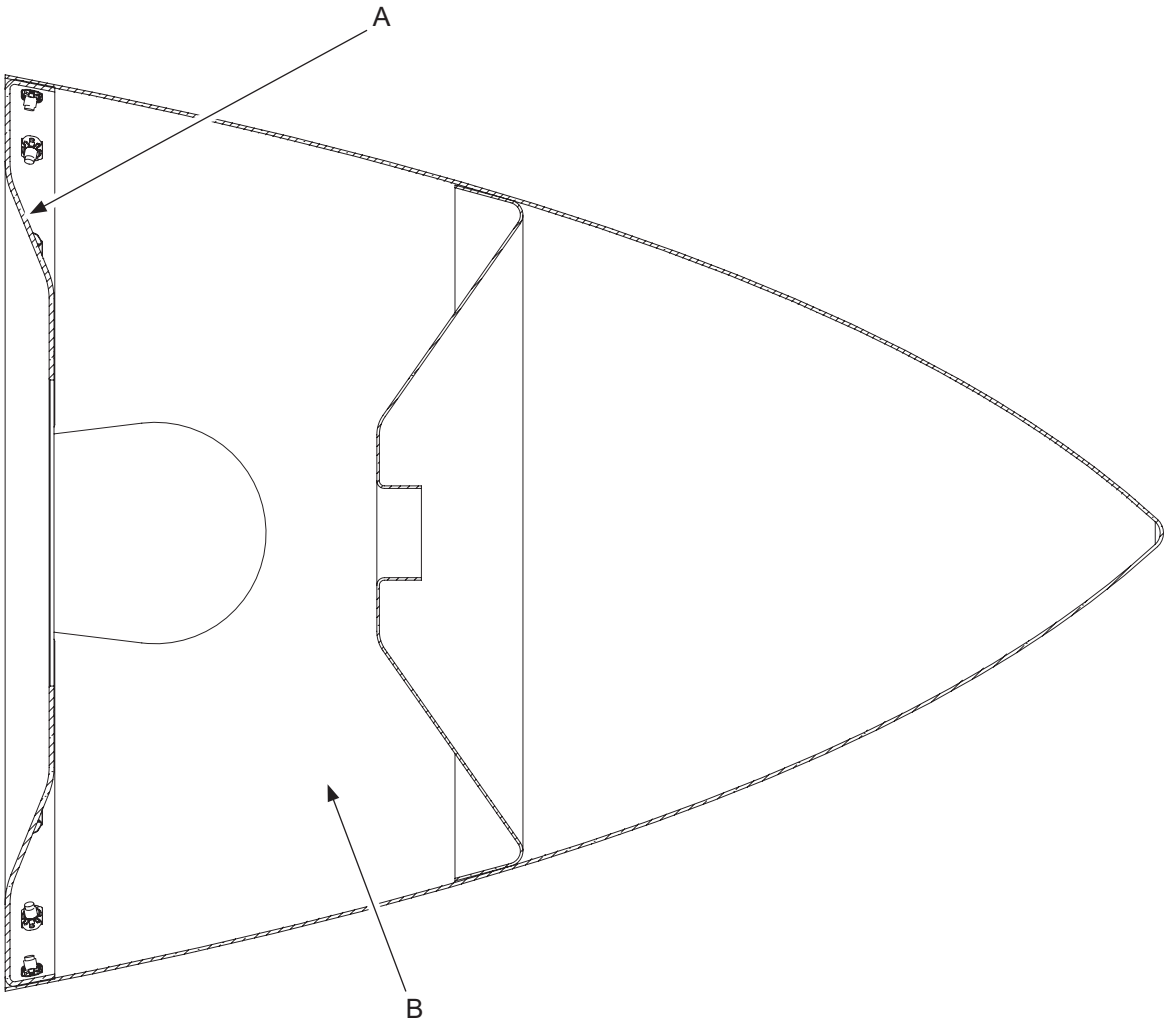


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

103409

Model 106215( )
Figure 7-25

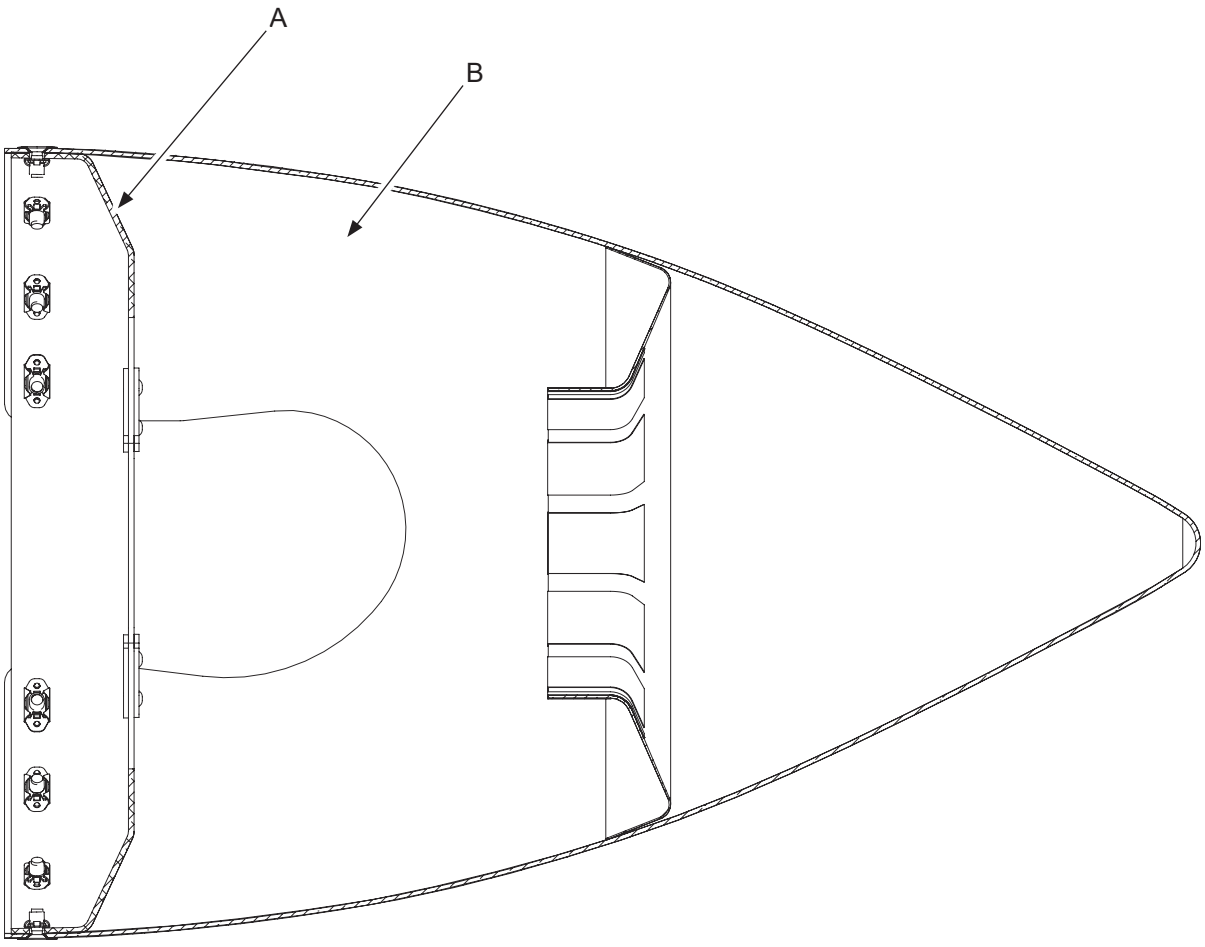


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

TPI-MB-0125

Model 106311( )
Figure 7-26

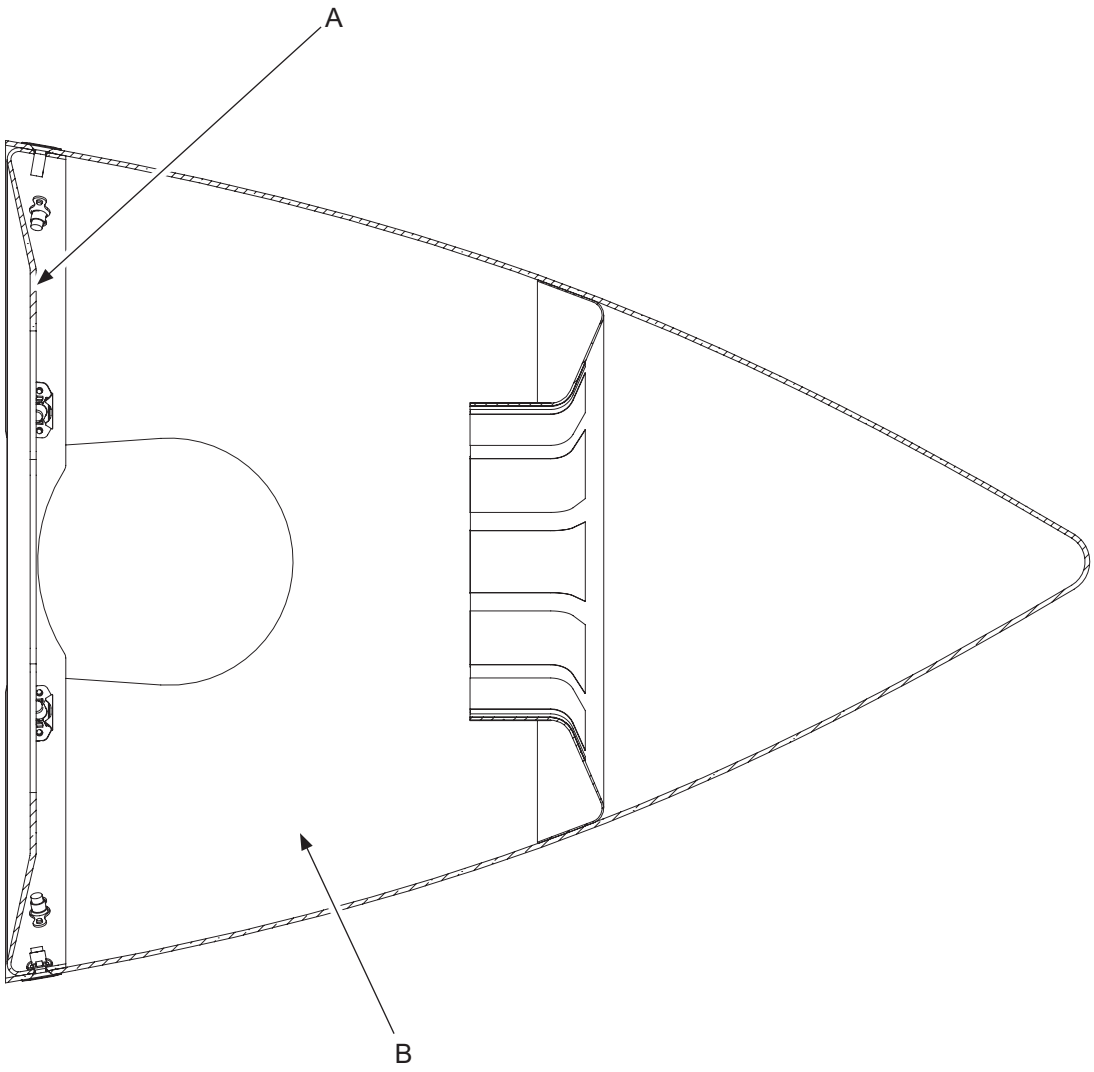


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

TPI-MB-00179

Model 106574( )
Figure 7-27

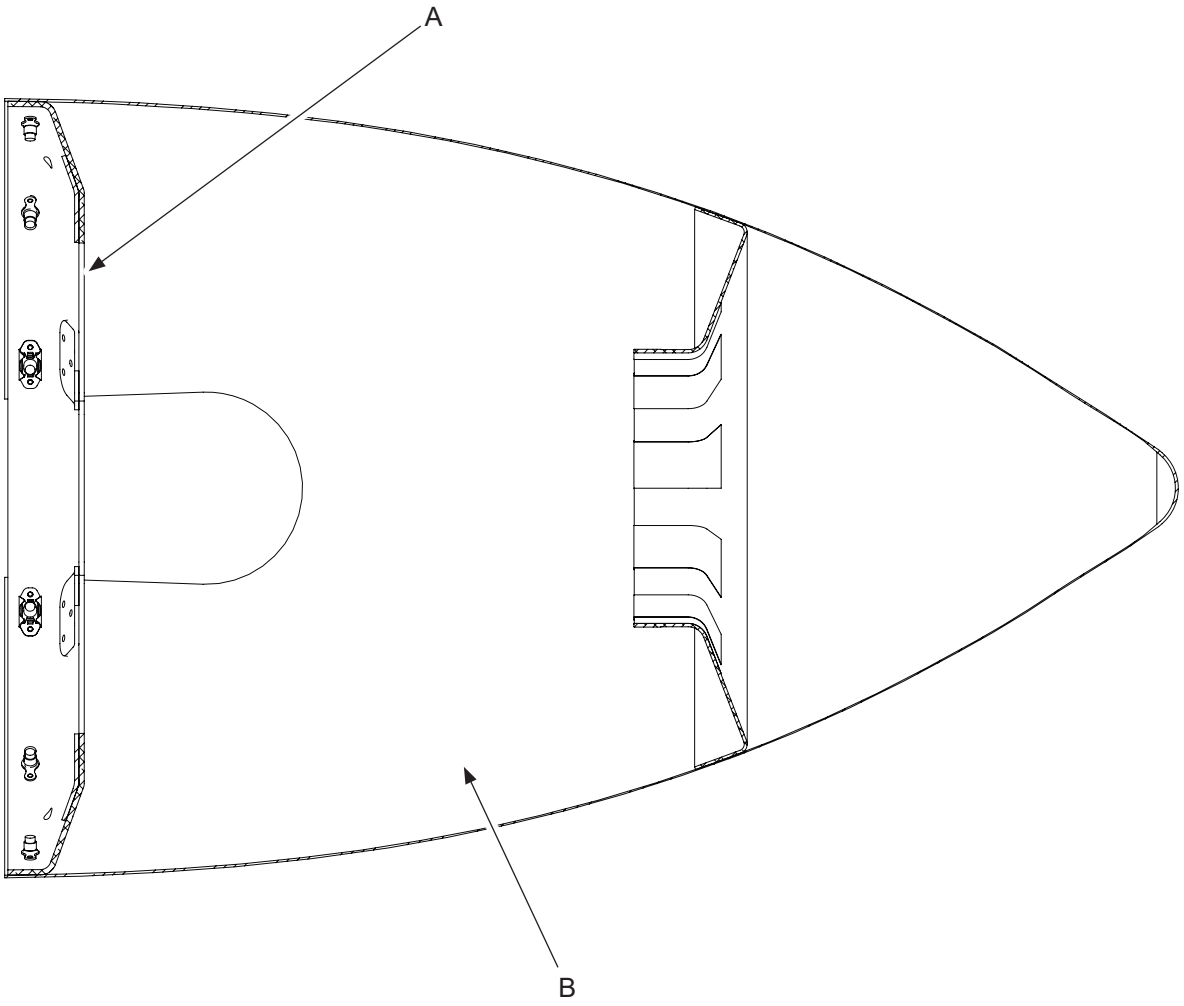


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

TPI-MB-0094

Model 106848( )
Figure 7-28

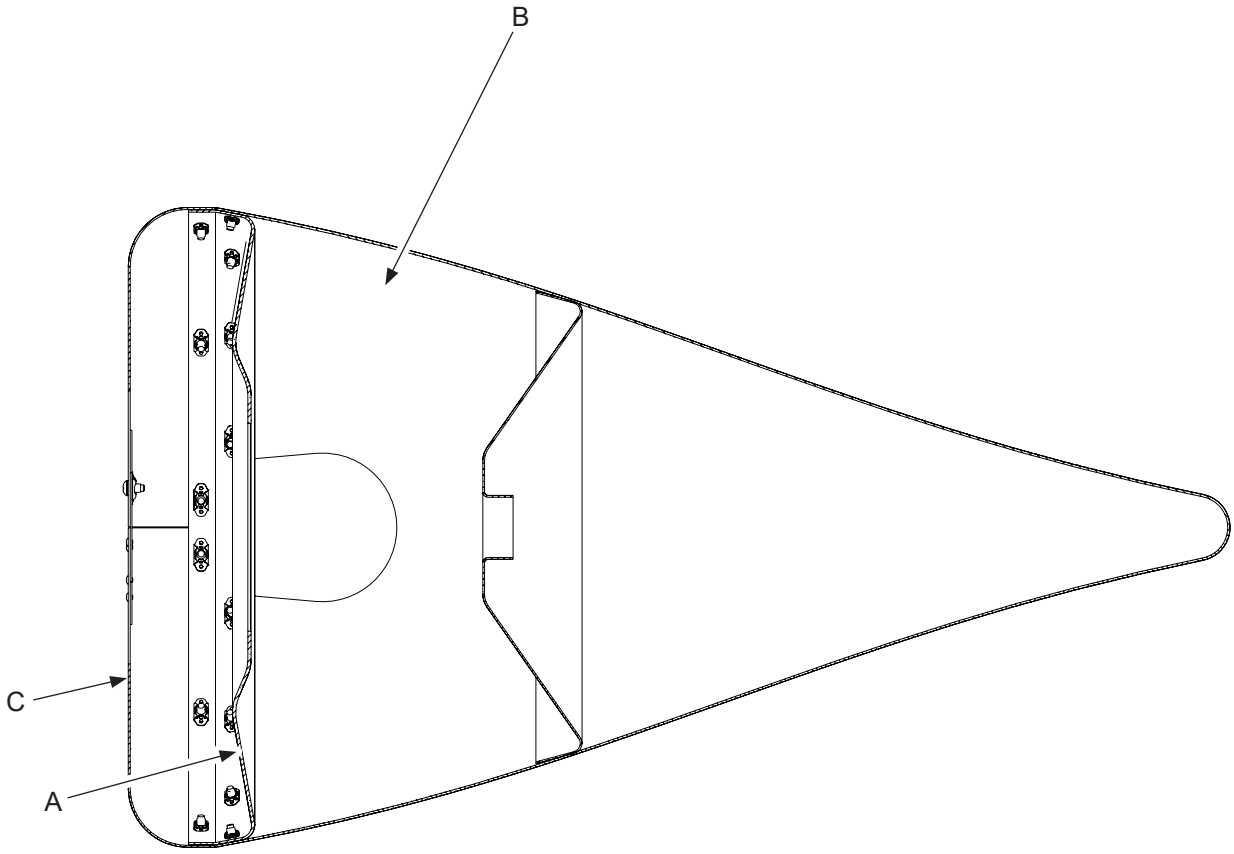


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

TPI-MB-0217

Model 106871( )
Figure 7-29



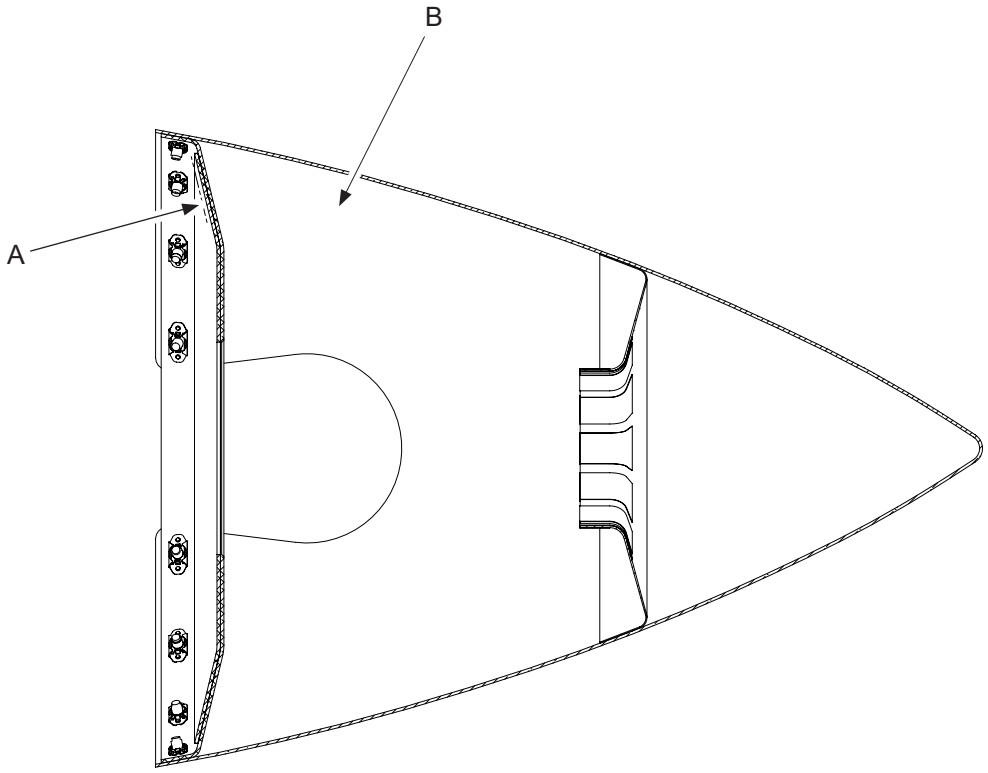
A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

C - location of label on the inside surface of the fairing unit

104529

Model 106957( )
Figure 7-30

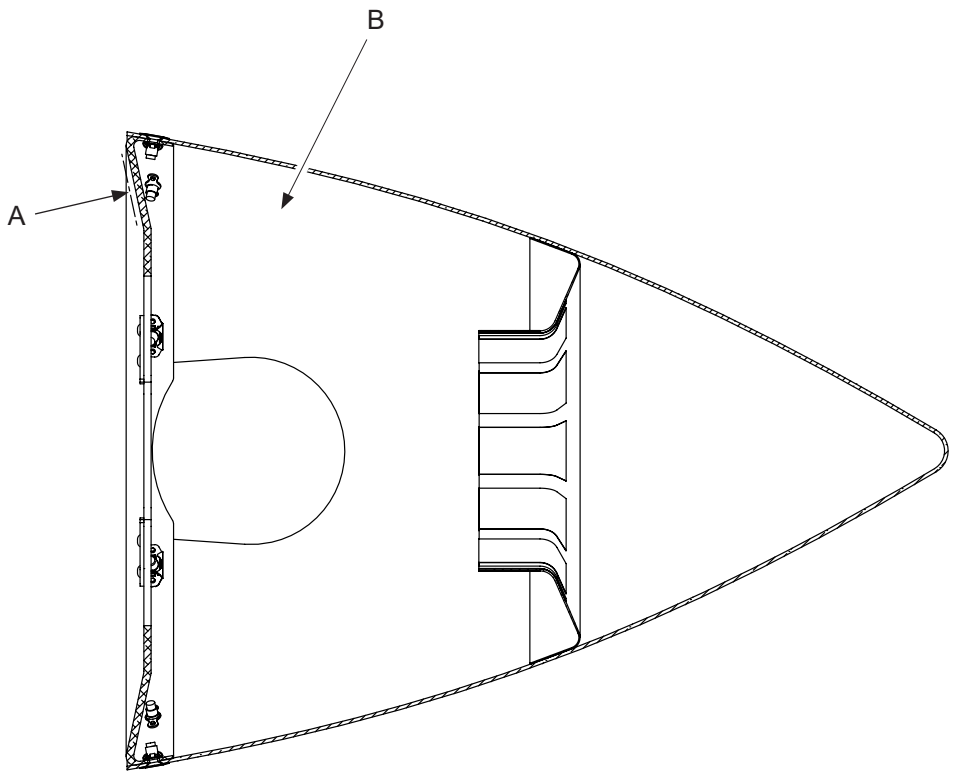


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

TPI-JM-000098

Model 107153( )
Figure 7-31

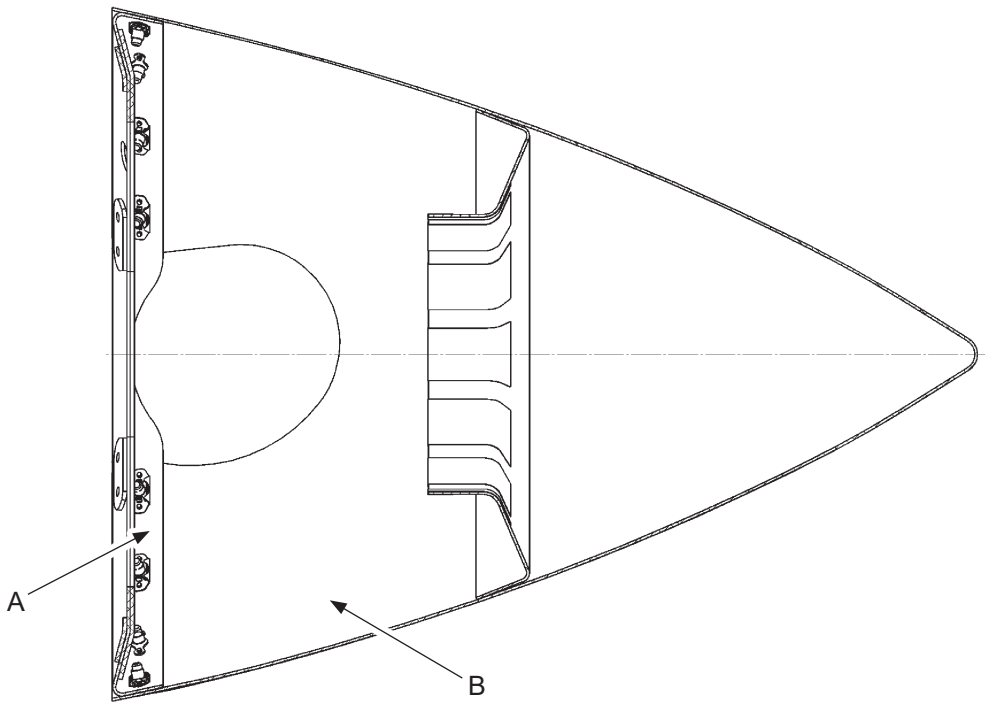


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

TPI-JM-000099

Model 107376( )
Figure 7-32

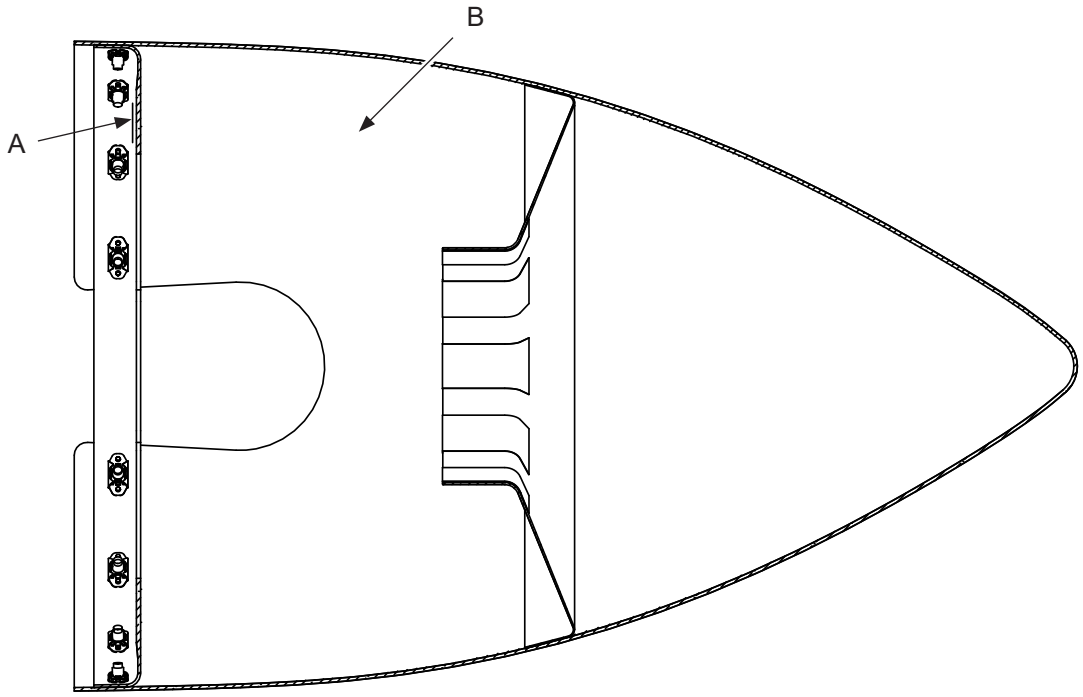


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

TPI-JM-000108

Model 107507( )
Figure 7-33

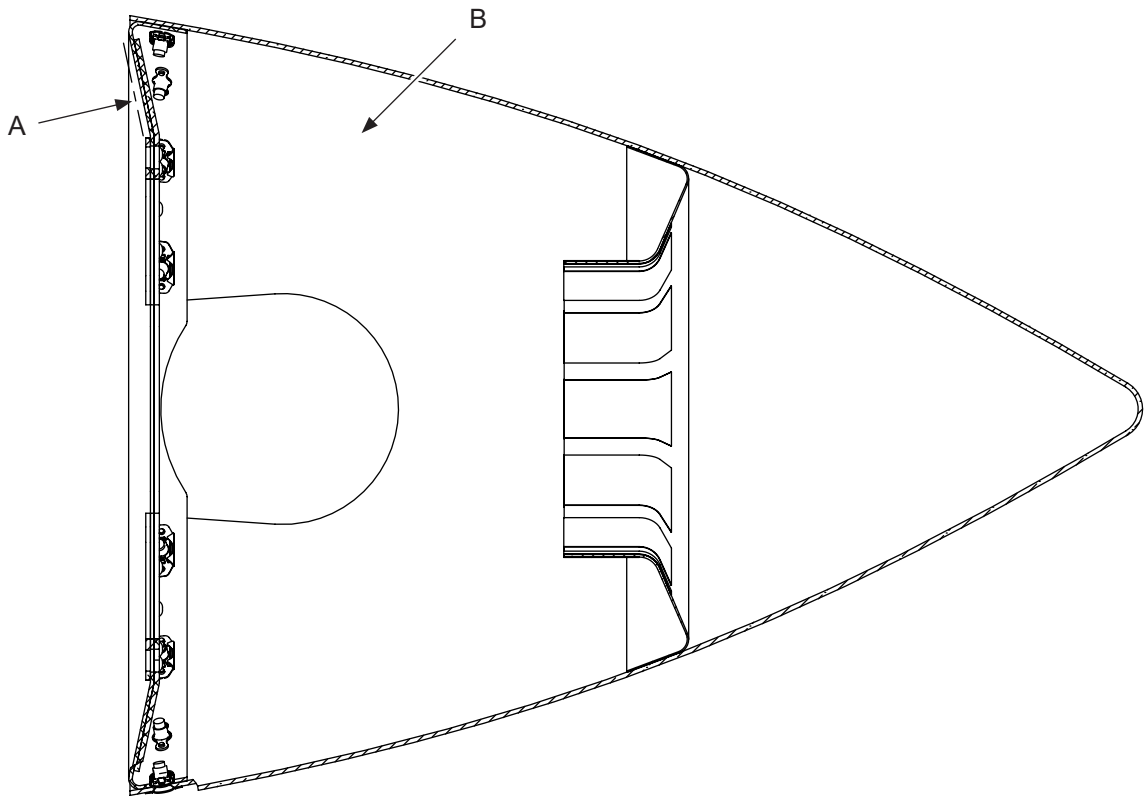


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

TPI-JM-000108

Model 107554( )
Figure 7-34

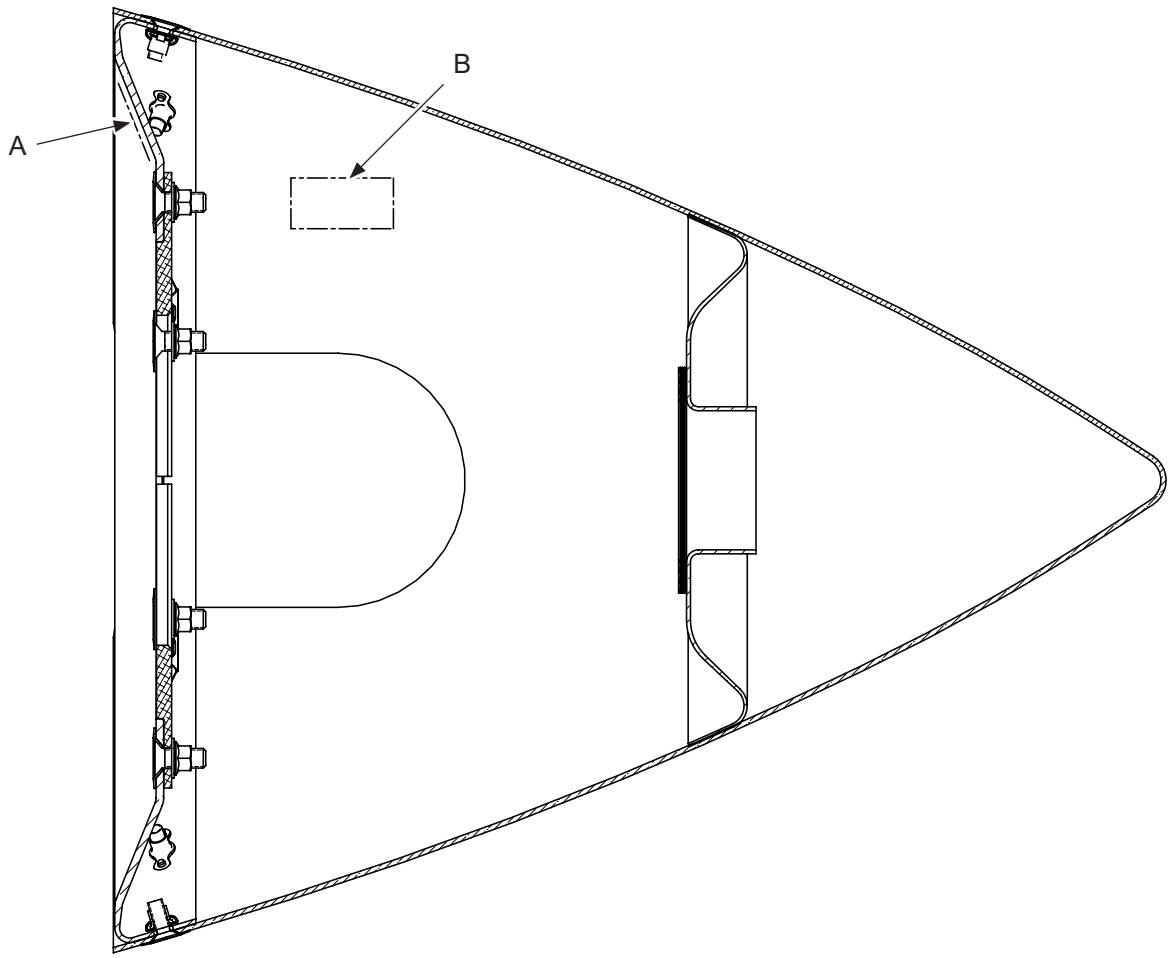


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

TPI-JM-000099

Model 107974( )
Figure 7-35

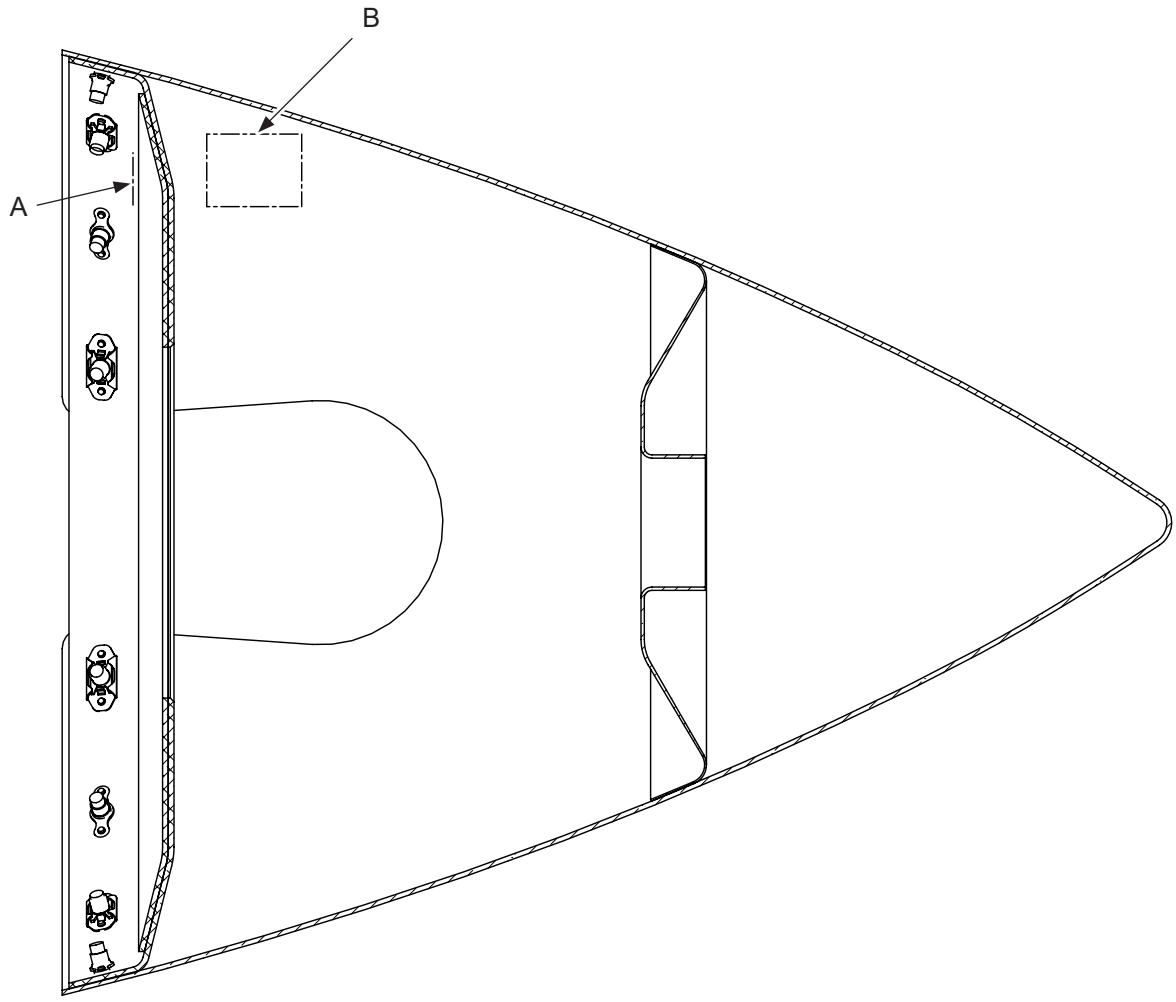


A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

TPI-JM-000364

Model 108013( )
Figure 7-36



A - location of label on the inside surface of the bulkhead

B - location of label on the inside surface of the dome

TPI-JM-000365

Model 108482( )
Figure 7-37

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1. Torque Values

A. General

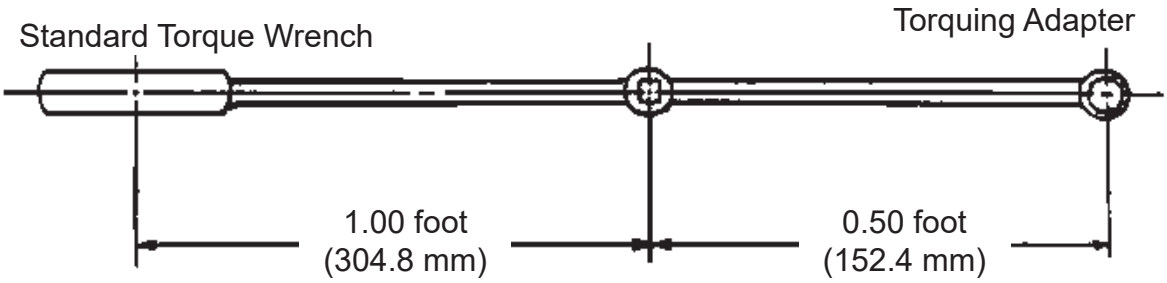
(1) Threaded fasteners and hardware are the weakest components in an assembly. Vibration can cause an improperly tightened fastener to fail in a matter of minutes.

(a) Proper tension in a fastener depends on a variety of known load factors and can influence fastener service life.

(b) Proper tension is achieved by application of measured torque.

(2) Accurate wrenches and professional procedures will result in precision tension.

(3) When an adapter is used with a torque wrench, use the equation in Figure 8-1 to determine the torque value.



$$\frac{\text{(actual torque required) x (torque wrench length)}}{\text{(torque wrench length) + (length of adapter)}} = \text{torque wrench reading to achieve required actual torque}$$

EXAMPLE:

$$\frac{\text{100 Ft-Lb (136 N•m) x 1 ft (304.8 mm)}}{\text{1 ft (304.8 mm) + 0.50 ft (152.4 mm)}} = \text{66.7 Ft-Lb (9.1 N•m)} < \text{reading on torque wrench with 6-inch (152.4 mm) adapter for actual torque of 100 Ft-Lb (136 N•m)}$$

The correction shown is for an adapter that is aligned with the centerline of the torque wrench. If the adapter is angled 90 degrees relative to the torque wrench centerline, the torque wrench reading and actual torque applied will be equal.

APS212

Determining Torque Value of a Standard Torque Wrench with an Adapter
Figure 8-1

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B. Special Tooling 9-3
C. Facilities 9-3

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1. Tooling and Facility Requirements

   A. Standard Tooling

      (1) Propeller repair stations certified by the FAA or international equivalent to overhaul Hartzell spinners are expected to possess precision fixtures, tools, and benches for inspection and repair.

         (a) Except as specifically required in this manual, locally fabricated tooling is acceptable for most repair and inspection operations.

   B. Special Tooling

      (1) Special tooling may be required for procedures in this manual. For further tooling information, refer to Hartzell Propeller Illustrated Tool and Equipment Manual 165A (61-00-65).

         (a) Tooling reference numbers appear with the prefix “TE” directly following the tool name to which they apply. For example, a template that is reference number 133 will appear as: template TE133.

         (b) It is the responsibility of the repair station or the technician performing the repair or servicing to use these special tools as required.

   C. Facilities

      (1) Grinding, plating, and painting of spinner components can create health and safety hazards beyond that of other areas of a typical workshop.

         (a) Areas where grinding, plating, and painting are performed should comply with governmental regulations for occupational safety and health, industry standards, and environmental regulations.

      (2) Workshop areas need to be segregated to prevent contamination.

         (a) Separate areas should be designated for cleaning, inspection, painting, plating, and assembly.

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1. Introduction

WARNING: ANY PART IDENTIFIED AS AN EXPERIMENTAL OR NON-AVIATION PART MUST NOT BE USED IN AN FAA OR INTERNATIONAL EQUIVALENT TYPE CERTIFICATED PROPELLER. A PART IDENTIFIED AS EXPERIMENTAL OR NON-AVIATION DOES NOT HAVE FAA OR INTERNATIONAL EQUIVALENT APPROVAL EVEN THOUGH IT MAY STILL SHOW AN AVIATION TC OR PC NUMBER STAMP. USE ONLY THE APPROVED ILLUSTRATED PARTS LIST PROVIDED IN THE APPLICABLE OVERHAUL MANUAL OR ADDITIONAL PARTS APPROVED BY AN FAA ACCEPTED DOCUMENT FOR ASSEMBLY OF A PROPELLER. THE OPERATOR ASSUMES ALL RISK ASSOCIATED WITH THE USE OF EXPERIMENTAL PARTS. USE OF EXPERIMENTAL PARTS ON AN AIRCRAFT MAY RESULT IN DEATH, SERIOUS BODILY INJURY, AND/OR SUBSTANTIAL PROPERTY DAMAGE.

A. General

CAUTION: INSTRUCTIONS AND PROCEDURES IN THIS CHAPTER MAY INVOLVE PROPELLER CRITICAL PARTS. REFER TO THE INTRODUCTION CHAPTER OF THIS MANUAL FOR INFORMATION ABOUT PROPELLER CRITICAL PARTS.

(1) This chapter includes the parts lists and applicable illustrations for spinner assemblies included in this manual.

CAUTION: THE ILLUSTRATIONS IN THIS CHAPTER ARE PROVIDED FOR PART IDENTIFICATION AND LOCATION REFERENCE ONLY. THEY SHOULD NOT BE USED FOR ASSEMBLY.

(2) The illustrations in this chapter use some general views of parts that may not exactly depict every spinner configuration.

B. Spinner Assemblies/Mounting Hardware

(1) Every effort has been made to include all of the spinner assemblies and configurations manufactured by Hartzell Propeller. If a repair station has questions about a spinner assembly as stated in the Illustrated Parts List, contact the Hartzell Propeller Product Support Department.

(2) It is the responsibility of the propeller maintenance facility to make sure that the appropriate spinner and mounting parts have been installed. Refer to the Hartzell Propeller Application Guide Manual 159 (61-02-59) for spinner assembly application information.

(3) Spinner assemblies and the applicable mounting hardware are application specific. Refer to the Hartzell Propeller Application Guide Manual 159 (61-02-59).

C. Ice Protection System Components

(1) Ice protection systems are application specific. Refer to the Hartzell Propeller Application Guide Manual 159 (61-02-59).

(a) For components of ice protection systems supplied by Hartzell, refer to the Hartzell Propeller Ice Protection System Manual 180 (30-61-80).

(b) For components of ice protection systems not supplied by Hartzell, refer to the applicable TC or STC holder's Instructions for Continued Airworthiness (ICA).

2. Description of Columns (Rev. 2)

A. Fig/Item Number

(1) Figure Number refers to the illustration where items appear.
Item Numbers refer to the specific part callout in the applicable illustration.

(a) Item Numbers that are listed but not shown in the illustration are identified by a dash to the left of the item number. (example: "-800")

(b) Alpha variants may be used to add additional items. There are two reasons for the use of alpha variants:

1 A part may have an alternate, or may be superseded, replaced, or obsoleted by another part.

a For example, the filler plate (103583) that is item 240 was superseded by the filler plate (104001) that is item 240A.

2 An Illustrated Parts List may contain multiple configurations. Effectivity codes are used to distinguish different part numbers within the same list.

a For example, one propeller configuration may use a mounting bolt (B-3339-1) that is item 30, yet another propeller configuration uses a mounting bolt (B-3347) that is item 30A. Effectivity codes are very important in the determination of parts in a given configuration.

B. Part Number

(1) The Part Number is the Hartzell Propeller identification number for the part.

(2) Use the Hartzell Propeller part number when ordering the part from Hartzell or a Hartzell-approved distributor.

C. Description

(1) This column provides the Hartzell Propeller description of the part.

(2) Bullets and indentations are used to indicate parts that are components of a sub-assembly.

(a) For example, a Bulkhead Unit that is part of a D-5252 composite spinner assembly will have one bullet (•) before the description. This indicates that the Composite Bulkhead Unit is part of the spinner assembly.

1 A Nutplate that is part of the Bulkhead Unit will appear directly below the Bulkhead Unit with two bullets (• •) before the description. This indicates that the Nutplate is part of the Bulkhead Unit - that is part of the Spinner Assembly.

a Example: D-5252
• Bulkhead Unit
• • Nutplate

(3) If applicable, information regarding part alternatives, supersedures, replacements, or obsolescence will appear in the Description column.

(a) Refer to the section, "Description of Terms" in this chapter for definitions and requirements for part "alternates", "supersedures", etc.

(b) When part alternatives, supersedures, replacements, etc. are listed, the service document number related to the change may be included for reference.

(4) If applicable, vendor CAGE codes will be listed in the Description column.

D. Effectivity Code (EFF CODE)

(1) This column is used when additional information about a part is required.

(a) Effectivity codes can be used to identify parts that are only used on a particular model, or to direct the user to additional information in the "Effectivity" box at the bottom of the page.

(b) Whenever an effectivity code is present, refer to the "Effectivity" box at the bottom of the page for the applicable information.

E. Units Per Assembly (UPA)

(1) Designates the total quantity of an item required for the next higher assembly or subassembly.

F. Overhaul (O/H)

(1) Designates the parts to be replaced at overhaul. A "Y" identifies the parts that must be replaced at overhaul.

NOTE: An overhaul kit may not contain all the parts identified with a "Y" for a particular model propeller. An example of parts that may not be included in the overhaul kit is spinner mounting parts.

3. Description of Terms (Rev. 1)

A. Alternate

(1) Alternate parts are identified by the term "ALTERNATE" in the Description column. Alternate items are considered airworthy for continued flight and existing stock of parts may be used for maintenance and/or repair. The new or alternate part number may be used interchangeably when ordering/stocking new parts.

B. Supersedure

(1) Part changes are identified by the terms “SUPERSEDES ITEM _____” or “SUPERSEDED BY ITEM _____” in the Description column. Superseded items are considered airworthy for continued flight and existing stock of superseded parts may be used for maintenance and/or repair. Once the superseding part has been incorporated/installed into an assembly, the original superseded part may no longer be used. Superseded parts may no longer be available, and the new part number must be used when ordering/stocking new parts.

C. Replacement

(1) Part changes identified by the terms "REPLACES ITEM _____” or “REPLACED BY ITEM _____” in the Description column are considered airworthy for continued flight, but must be replaced with a part with the new part number at overhaul. Existing stock of replaced parts may not be used for maintenance and/or repair of effected assemblies. Replaced parts may no longer be available, and the new part number must be used when ordering/stocking new parts.

D. Obsolete

(1) Obsolete parts are identified by "OBS” in the Units Per Assembly (UPA) column. Obsolete parts are considered unairworthy for continued flight.

4. Vendor Supplied Hardware

A. Important Information

(1) Many O-rings, fasteners, and other vendor supplied hardware listed in Hartzell Propeller manuals have previously been specified with AN, MS, NAS or vendor part number. To provide internal controls and procurement flexibility, Hartzell part numbers have been assigned to all O-rings, fasteners, and hardware. Part shipments from Hartzell Propeller will specify only the Hartzell part numbers.

(2) Some O-rings, fasteners, and hardware manufactured in accordance with established industry specifications (certain AN, MS, NAS items) are acceptable for use in Hartzell Propeller products without additional standards imposed by Hartzell.

(a) For a listing of part number interchangeability, refer to the Vendor Cross Reference chapter of Hartzell Propeller Standard Practices Manual 202A (61-01-02).

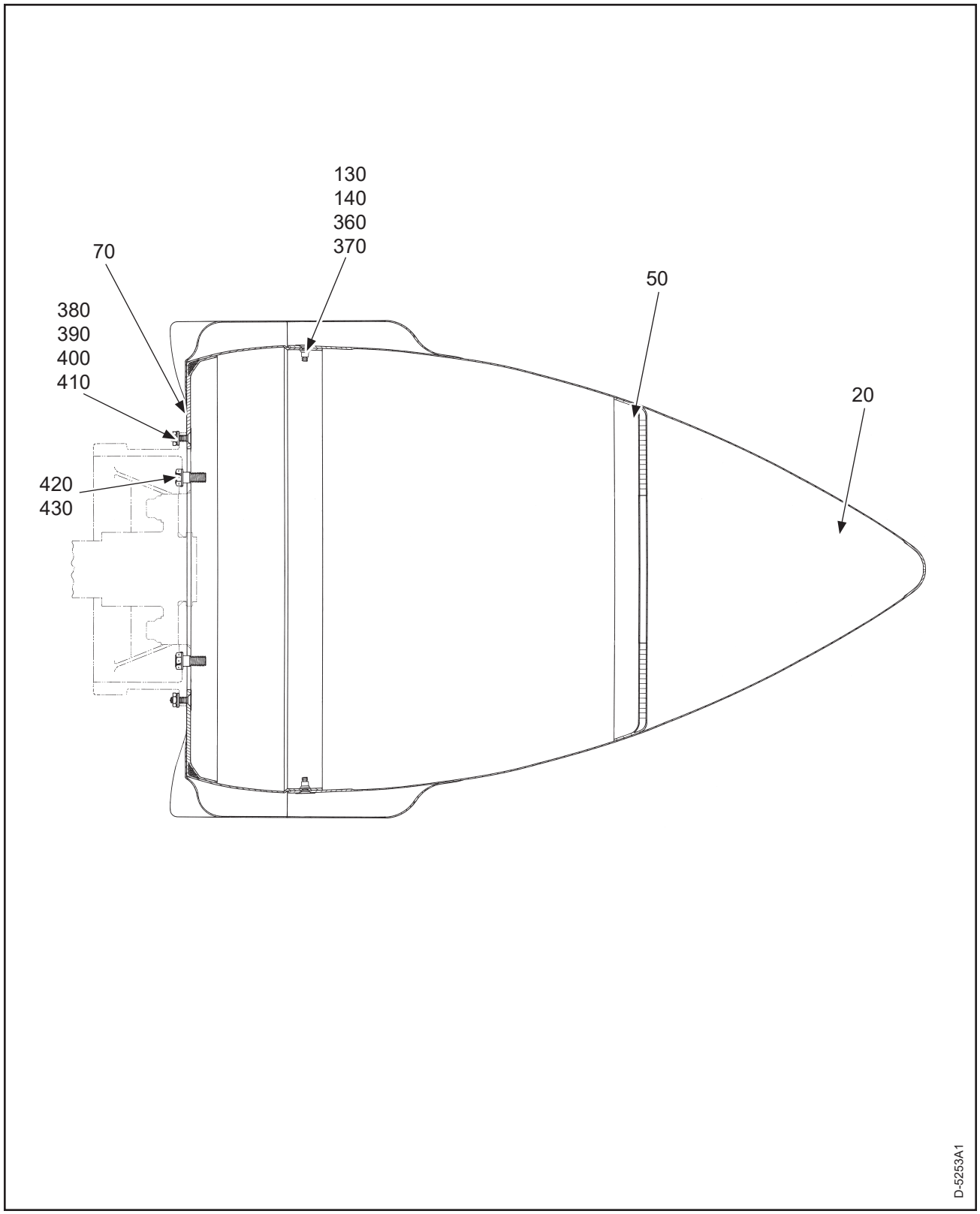
(b) Where permitted, both the Hartzell part number item and AN, MS, NAS, and other specified vendor number items can be used interchangeably.

(c) The Hartzell part number must be used when ordering these parts from Hartzell Propeller.

(3) Operators are encouraged to purchase the erosion mask, Item Number 510 from one of the approved vendors listed below. Use the part number listed with the vendor information.

(a) PM Research
4110 Niles Hill Rd.
Wellsville, NY 14895
Tele: 716.593.3169
Fax: 716.593.5637

(b) 3M Company
3M Bldg. 220-8E
St. Paul, MN 55144
Tele: 1.800.362.3550
Fax: 612.733.9175



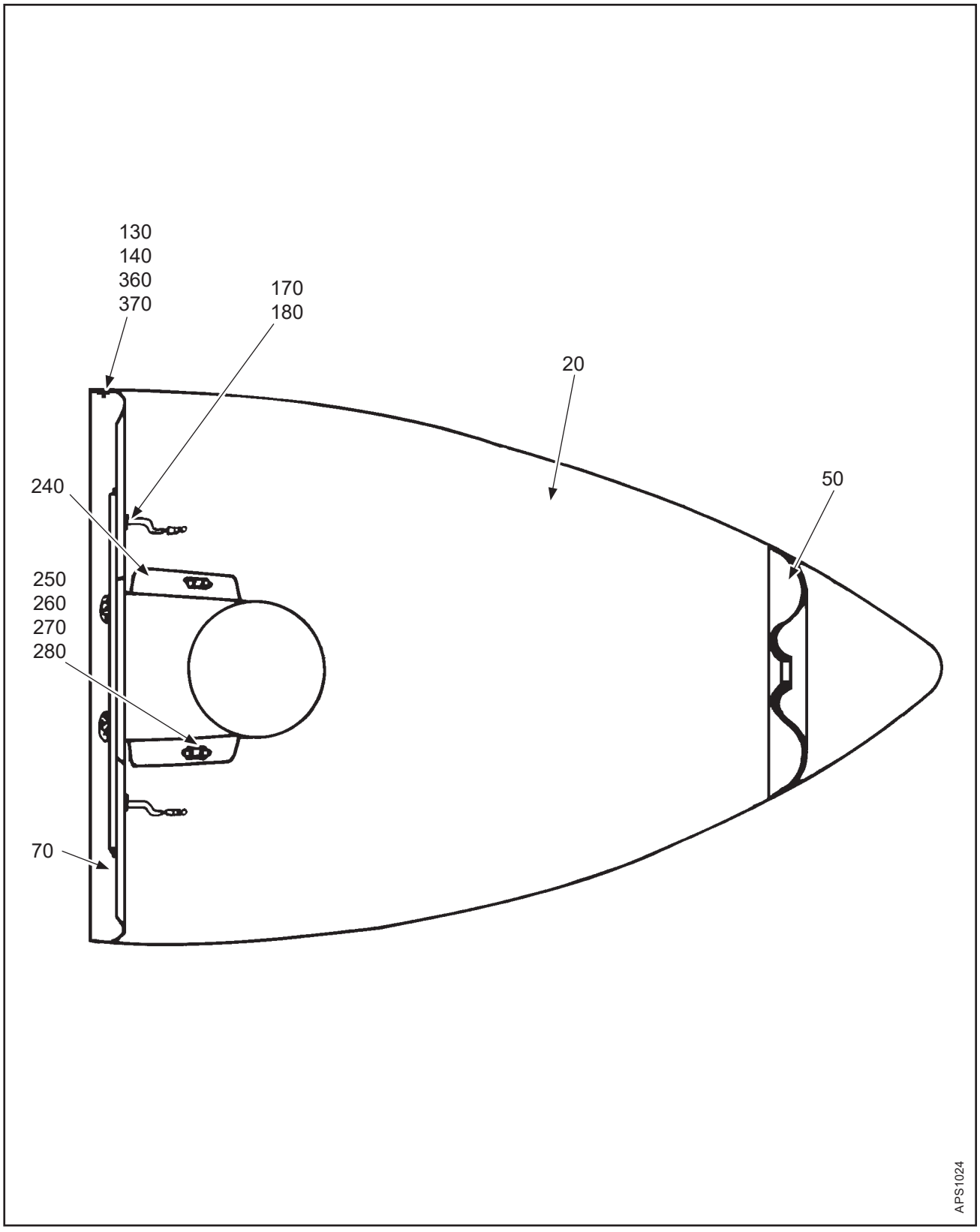
Spinner Model D-5253
Figure 10-1

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-1					
-10	D-5253	**COMPOSITE SPINNER ASSEMBLY**			
20	D-5263	• DOME UNIT, COMPOSITE, 3-BLADE		1	
50	D-5251	• • FORWARD BULKHEAD, COMPOSITE (INTEGRAL)		1	
70	D-5264	• BULKHEAD UNIT, COMPOSITE		1	
130	B-3878-3-4	• • RIVET, 100° HEAD, 0.094 DIA, CRES		24	
140	B-3858-3	• • NUTPLATE, FIXED, CRES		12	
360	B-3860-10L	• WASHER, DIMPLED, 100° HEAD, CRES (SPINNER DOME MOUNTING)		12	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		12	Y
380	B-3860-10L	• WASHER, DIMPLED, 100° HEAD, CRES		12	
390	B-3867-273	• SCREW, 10-32, 100° HEAD, CRES		12	
400	B-3851-0332	• WASHER		12	Y
410	B-3808-3	• NUT, HEX, SELF-LOCKING		12	
420	B-3851-0532	• WASHER		6	Y
430	B-3385-4H	• BOLT, 5/16-24, HEX HEAD		6	

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

Spinner Model D-5253



Spinner Model D-5311-1
Figure 10-2

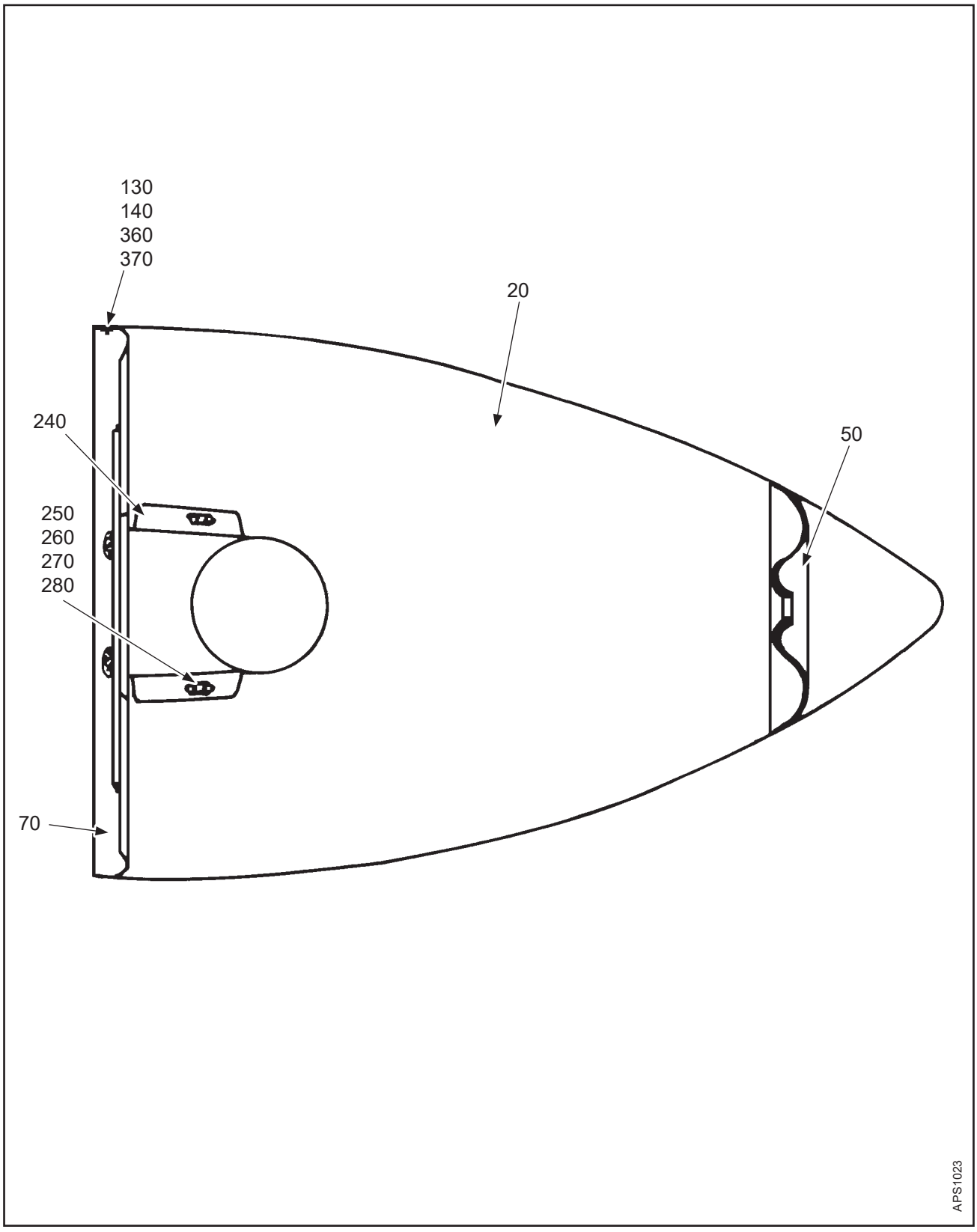
FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-2					
-10	**D-5311**	**COMPOSITE SPINNER ASSEMBLY REPLACED BY ITEM 10A, SEE NOTE**			
-10A	**D-5311-1**	**COMPOSITE SPINNER ASSEMBLY REPLACES ITEM 10, POST SB160**			
20	D-5312-1	• DOME UNIT, COMPOSITE, 6-BLADE		1	
50	D-5314	• • FORWARD BULKHEAD UNIT, COMPOSITE (INTEGRAL)		1	
60	B-6045-12-4	• • • BUSHING, COMPOSITE		1	
70	D-5313-1	• BULKHEAD ASSEMBLY, COMPOSITE		1	
130	B-3878-3-4	• • RIVET, 100° HEAD, 0.094 DIA, CRES		48	
140	B-3858-3	• • NUTPLATE, FIXED, CRES		24	
-160	4H2811-2	• • SLIP RING ASSEMBLY		RF	
-160A	7931-4E2811-2	• • SLIP RING ASSEMBLY, ALTERNATE FOR ITEM 160		RF	
170	A-1020	• • WASHER, FIBER		12	
180	B-6641-205	• • NUT, HEX, BRASS		12	
240	D-5315-1	• FILLER PLATE, COMPOSITE		6	
250	B-3849-3	• • NUTPLATE, FLOATING		2	
260	B-6673-0310	• • RIVET, 100° HEAD, POP-TYPE		4	
270	B-3845-9	• SCREW		12	Y
280	A-1020	• WASHER, FIBER		12	Y
360	B-3860-10L	• WASHER, DIMPLED, 100° HEAD, CRES (SPINNER DOME MOUNTING)		24	Y
370	B-3867-273	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		24	Y

NOTE: COMPOSITE SPINNER ASSEMBLY D-5311 MAY BE MODIFIED TO THE D-5311-1 CONFIGURATION IN ACCORDANCE WITH THE SECTION "MODIFICATION OF THE D-5311 SPINNER ASSEMBLY" IN THE MAJOR REPAIR CHAPTER OF THIS MANUAL.

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

Spinner Model D-5311-1



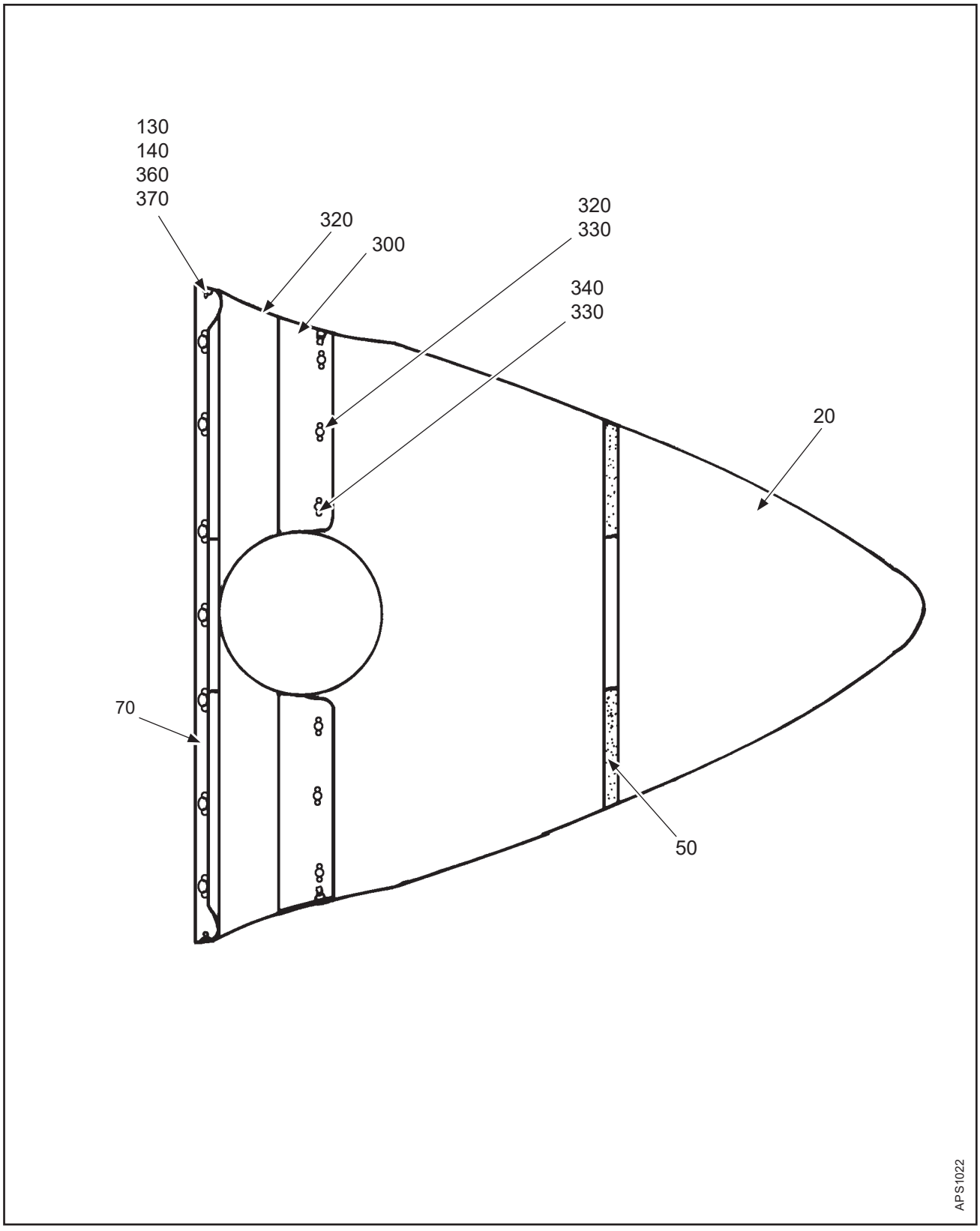
Spinner Model D-5311-2
Figure 10-3

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-3					
-10	**D-5311-2**	**COMPOSITE SPINNER ASSEMBLY**			
20	D-5312-1	• DOME UNIT, COMPOSITE , 6-BLADE		1	
50	D-5314	• • FORWARD BULKHEAD UNIT, COMPOSITE (INTEGRAL)		1	
-60	B-6045-12-4	• • • BUSHING, COMPOSITE		1	
70	D-5313	• BULKHEAD ASSEMBLY, COMPOSITE		1	
130	B-3878-3-4	• • RIVET, 100° HEAD, 0.094 DIA, CRES		48	
140	B-3858-3	• • NUTPLATE, FIXED, CRES		24	
-160	4H2811-2	• • SLIP RING ASSEMBLY		RF	
-160A	7931-4E2811-2	• • SLIP RING ASSEMBLY, ALTERNATE FOR ITEM 160		RF	
240	D-5315-1	• FILLER PLATE UNIT		6	
250	B-3849-3	• • NUTPLATE, FLOATING		2	
260	B-6673-0310	• • RIVET, 100° HEAD, POP-TYPE		4	
270	B-3845-9	• SCREW, 10-32, TRUSS HEAD		12	
280	A-1020	• WASHER, FIBER		12	
360	B-3860-10L	• WASHER, DIMPLED, 100° HEAD, CRES (SPINNER DOME MOUNTING)		24	Y
370	B-3867-273	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		24	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

Spinner Model D-5311-2

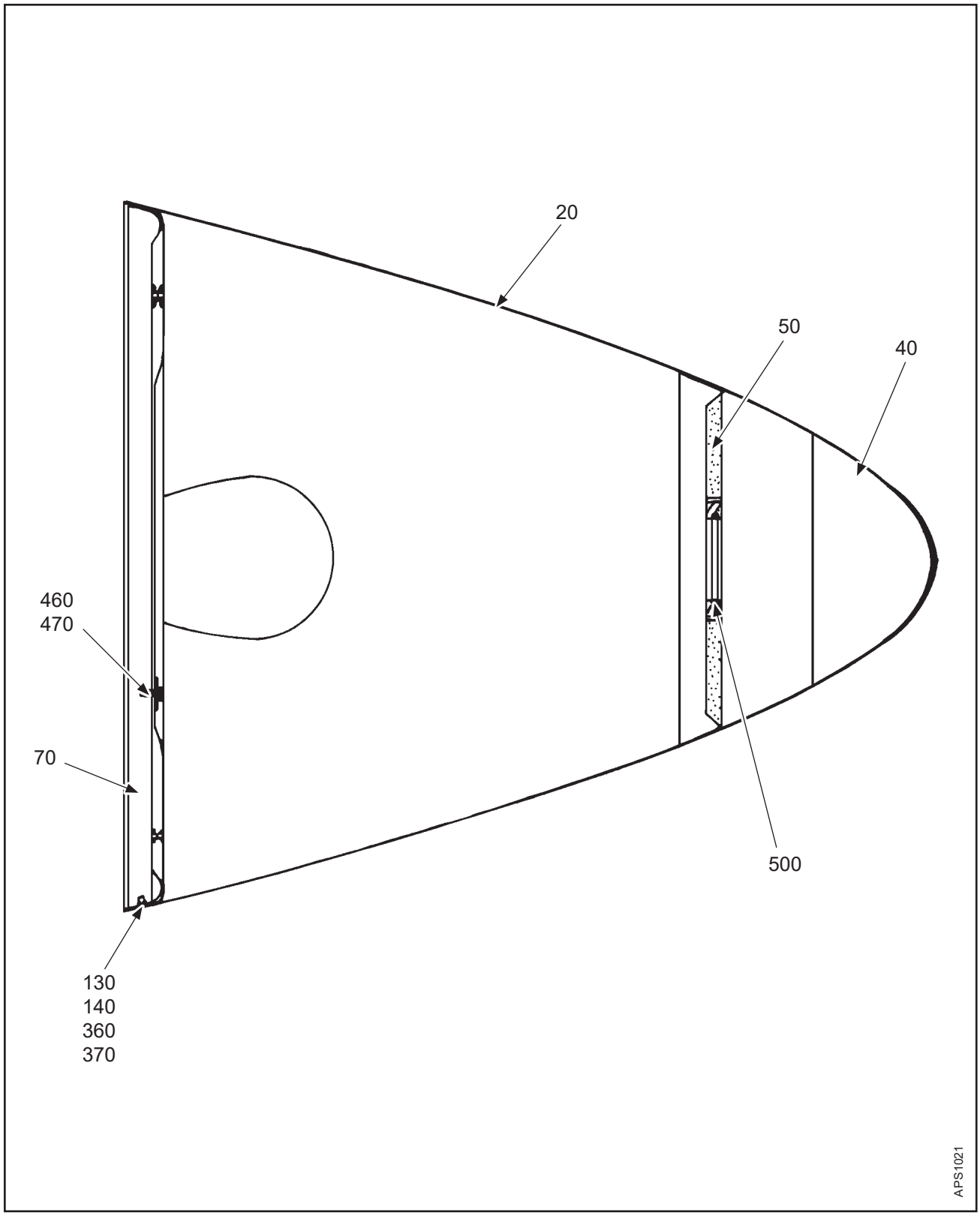


Spinner Model D-5362
Figure 10-4

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-4					
-10	**D-5362**	**COMPOSITE SPINNER ASSEMBLY**			
20	D-5363	• DOME UNIT, COMPOSITE, 4-BLADE		1	
50	D-5434	• • FORWARD BULKHEAD, COMPOSITE (INTEGRAL)		1	
70	D-5364	• BULKHEAD UNIT, COMPOSITE		1	
130	B-3878-3-4	• • RIVET, 100° HEAD, 0.094 DIAMETER		32	
140	B-3858-3	• • NUTPLATE, FIXED, CRES		16	
300	D-5433	• HOOP UNIT, COMPOSITE		1	
320	B-3858-3	• • NUTPLATE, FIXED, CRES		8	
330	B-3878-3-4	• • RIVET, 100° HEAD, 0.094 DIA, CRES		32	
340	7933147602	• • 4760-02 NUTPLATE (S.P.S.)		8	
360	B-3860-10L	• WASHER, DIMPLED, 100° HEAD, CRES (SPINNER DOME MOUNTING)		32	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		32	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED



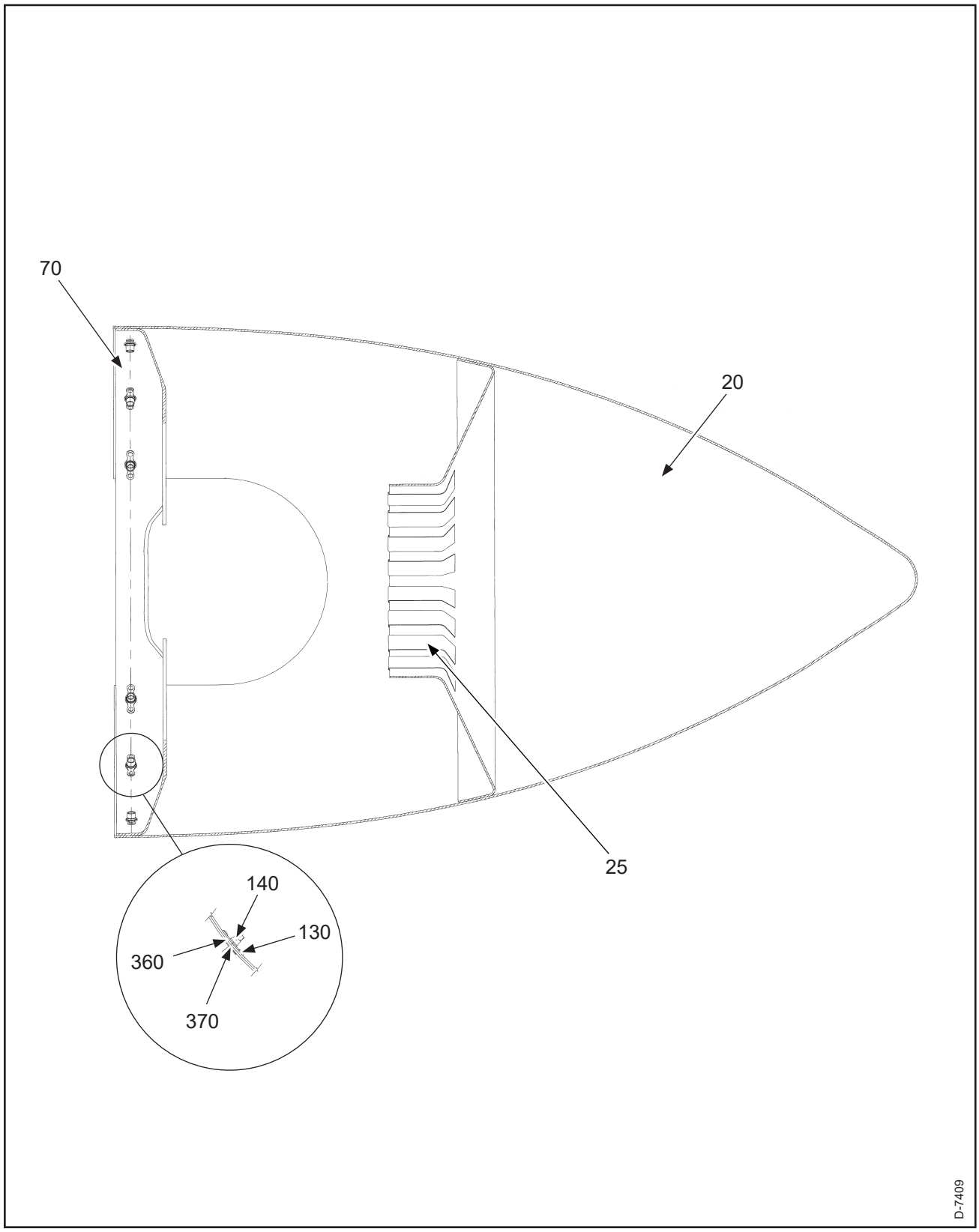
Spinner Model E-5579-6
Figure 10-5

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-5					
-10	E-5579-6	COMPOSITE SPINNER ASSEMBLY			
20	E-5580-4	• DOME UNIT, COMPOSITE		1	
40	B-5712	• • SHIELD, EROSION, DOME		1	
50	D-5586-2	• • FORWARD BULKHEAD, COMPOSITE (INTEGRAL)		1	
70	E-5581	• BULKHEAD UNIT, COMPOSITE		1	
130	B-3878-3-4	• • RIVET, 100° HEAD, 0.094 DIA, CRES		48	
140	B-3858-3	• • NUTPLATE, FIXED, CRES		24	
-230	B-6621-375M	• • INSERT, 0.190-32, CRES, MOLDED IN		12	
360	B-3860-10L	• WASHER, DIMPLED, 100° HEAD, CRES (SPINNER DOME MOUNTING)		24	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		24	Y
-440	B-3860-416	• WASHER, DIMPLED, 100° HEAD, CRES		2	
-450	B-3872-2	• SCREW, 1/4-28, 100° HEAD, CRESS		2	
460	B-3384-1	• BOLT, 1/4-28, HEX HEAD		10	Y
470	A-5711	• STAINLESS STEEL WASHER		10	
500	C-3317-233-4	• O-RING		1	Y
-510	792200091	• EROSION MASK		1	
-510A	SJ8665FP202	• EROSION MASK - 3M COMPANY (REFER TO SECTION 4.A.(3) IN THIS CHAPTER)		1	
-510B	PM-91	• EROSION MASK - PM RESEARCH (REFER TO SECTION 4.A.(3) IN THIS CHAPTER)		1	

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

Spinner Model E-5579-6

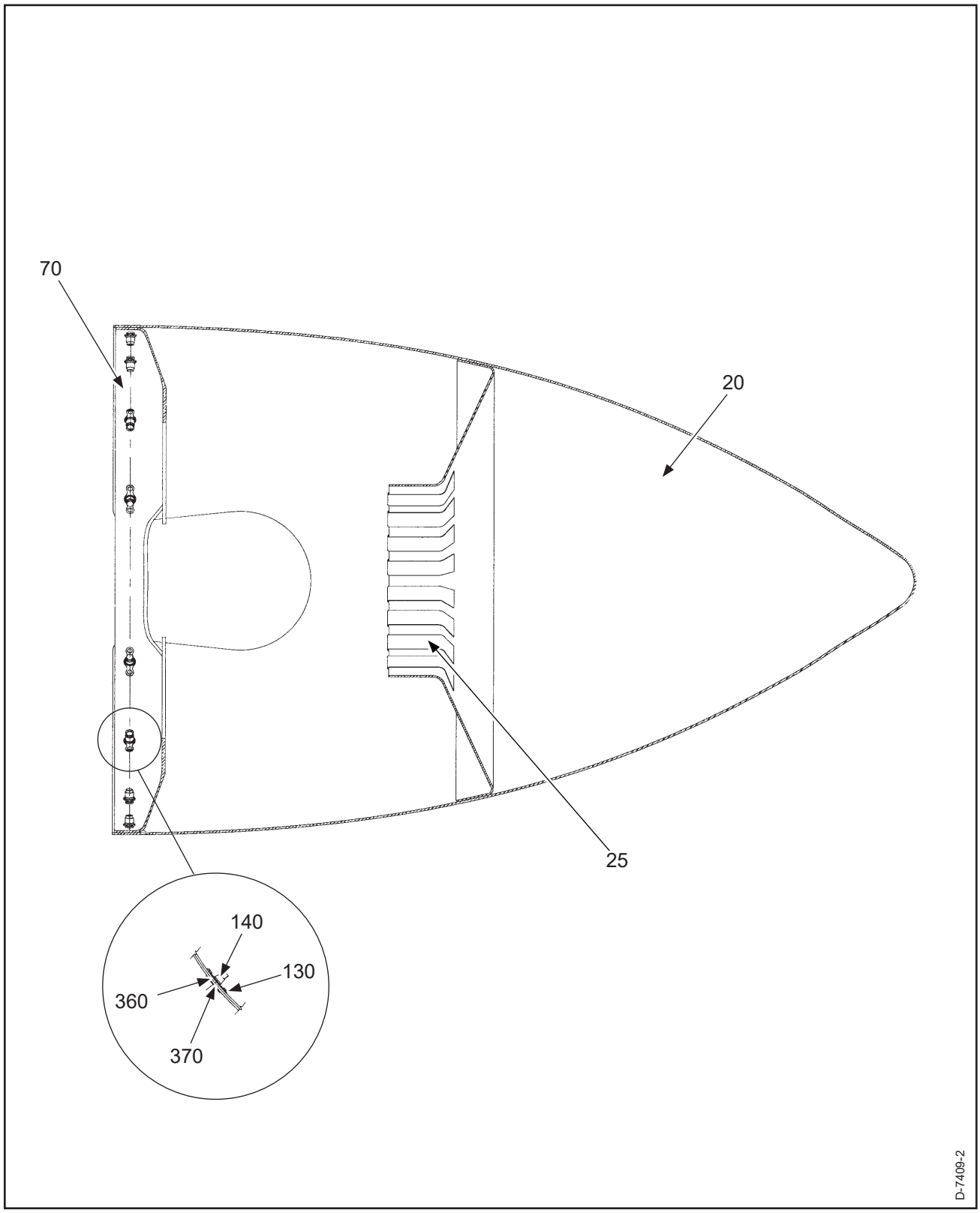


Spinner Model D-7409
Figure 10-6

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-6					
-10	**D-7409**	**COMPOSITE SPINNER ASSEMBLY**			
20	D-7408	• DOME UNIT, COMPOSITE, 3-BLADE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	D-7404	• BULKHEAD UNIT, COMPOSITE		1	
130	B-3878-3-4	• • RIVET, 100° HEAD, 0.094 DIA, CRES		48	
140	B-3858-3	• • NUTPLATE, FIXED, CRES		24	
360	B-3860-10L	• WASHER, DIMPLED, 100° HEAD, CRES (SPINNER DOME MOUNTING)		24	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		24	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED



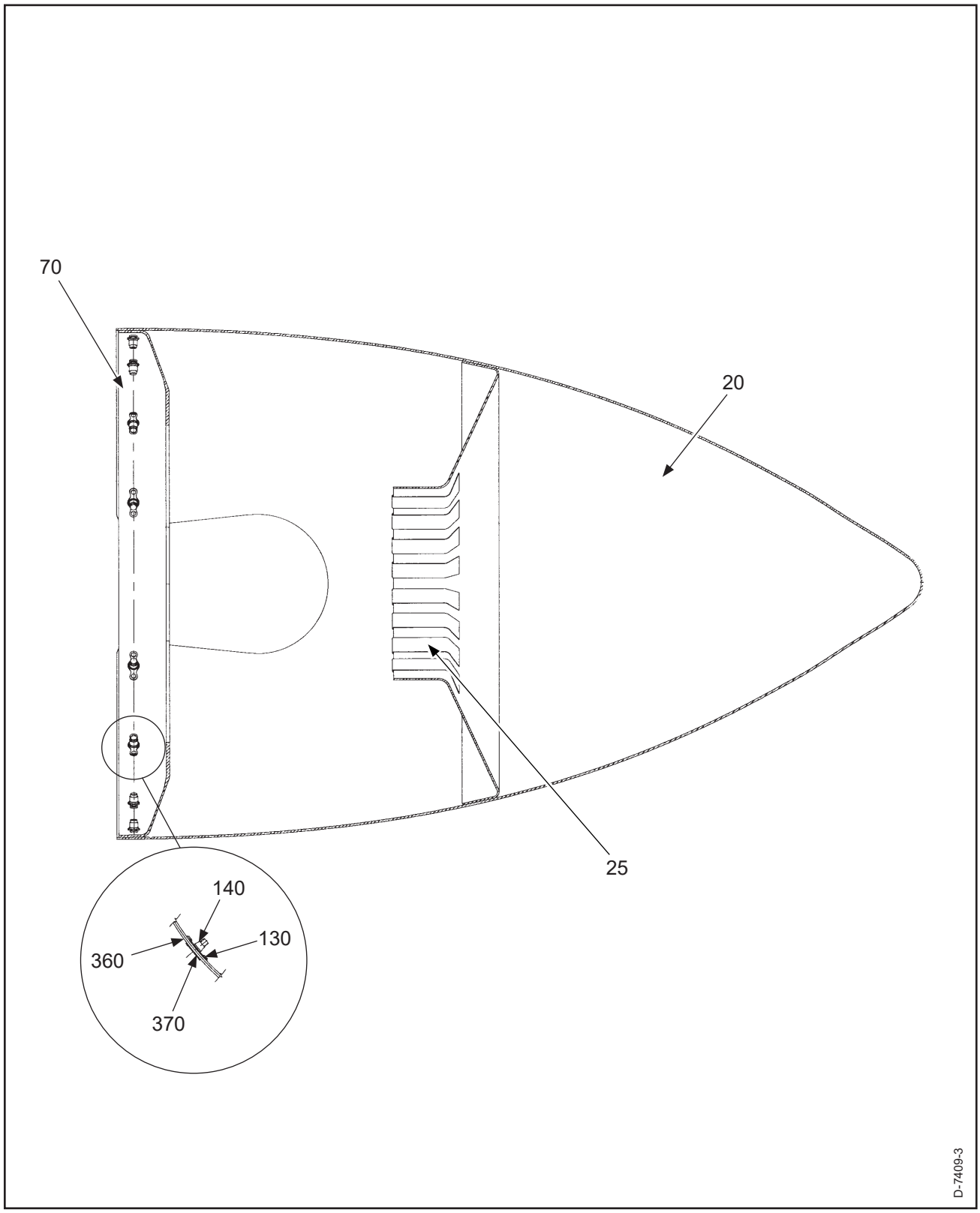
Spinner Model D-7409-2
Figure 10-7

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-7					
-10	**D-7409-2**	**COMPOSITE SPINNER ASSEMBLY**			
20	D-7408-2	• DOME UNIT, COMPOSITE, 3-BLADE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	D-7404-2	• BULKHEAD UNIT, COMPOSITE		1	
130	B-3878-3-4	• • RIVET, 100° HEAD, 0.094 DIA, CRES		30	
140	B-3858-3	• • NUTPLATE, FIXED, CRES		15	
360	B-3860-10L	• WASHER, DIMPLED, 100° HEAD, CRES (SPINNER DOME MOUNTING)		15	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		15	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

Spinner Model D-7409-2

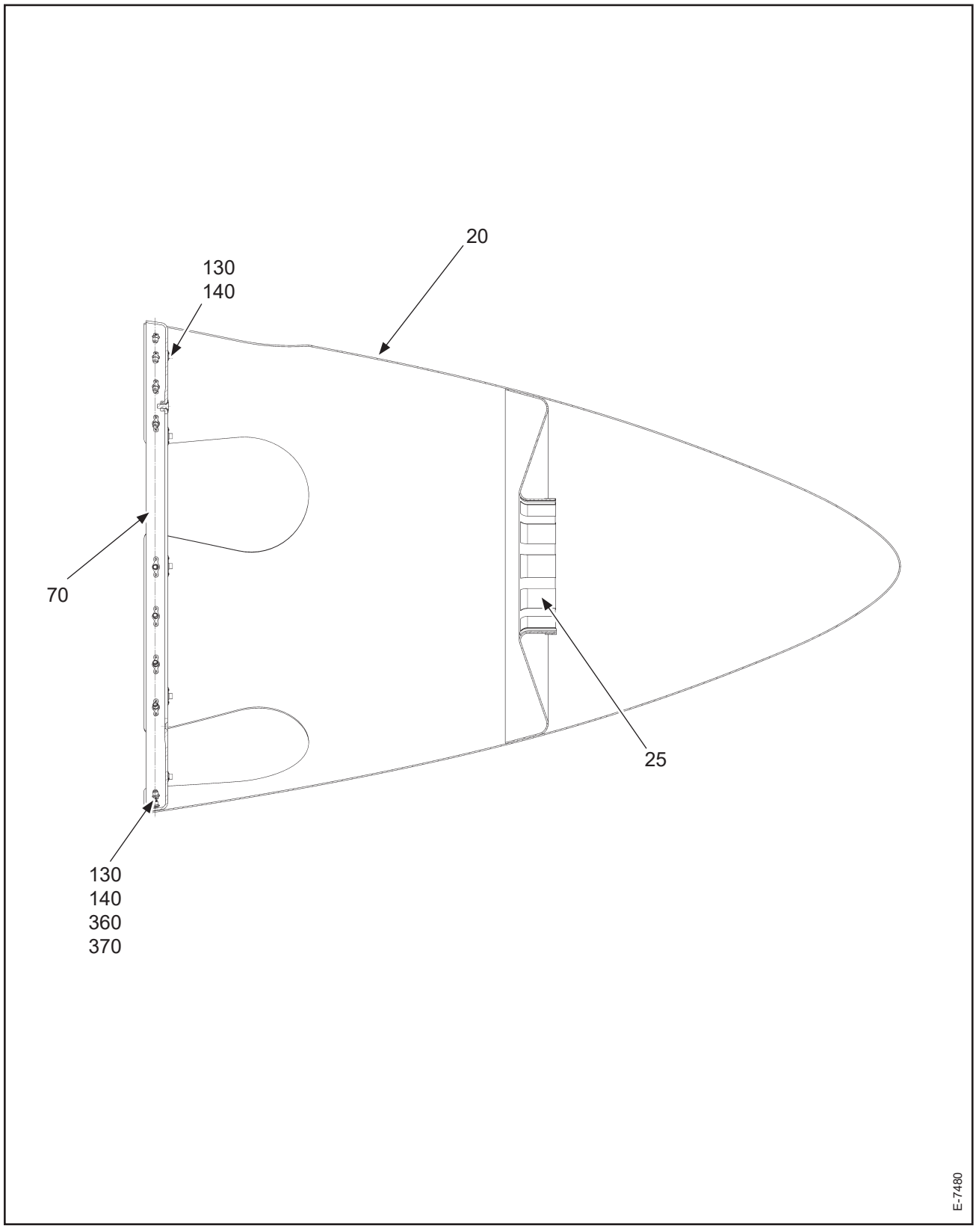


Spinner Model D-7409-3
Figure 10-8

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-8					
-10	**D-7409-3**	**COMPOSITE SPINNER ASSEMBLY**			
20	D-7408-3	• DOME UNIT, COMPOSITE, 3-BLADE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	D-7404-3	• BULKHEAD UNIT, COMPOSITE		1	
130	B-3878-3-4	• • RIVET, 100° HEAD, 0.094 DIA, CRES		30	
140	B-3858-3	• • NUTPLATE, FIXED, CRES		15	
360	B-3860-10L	• WASHER, DIMPLED, 100° HEAD, CRES (SPINNER DOME MOUNTING)		15	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		15	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

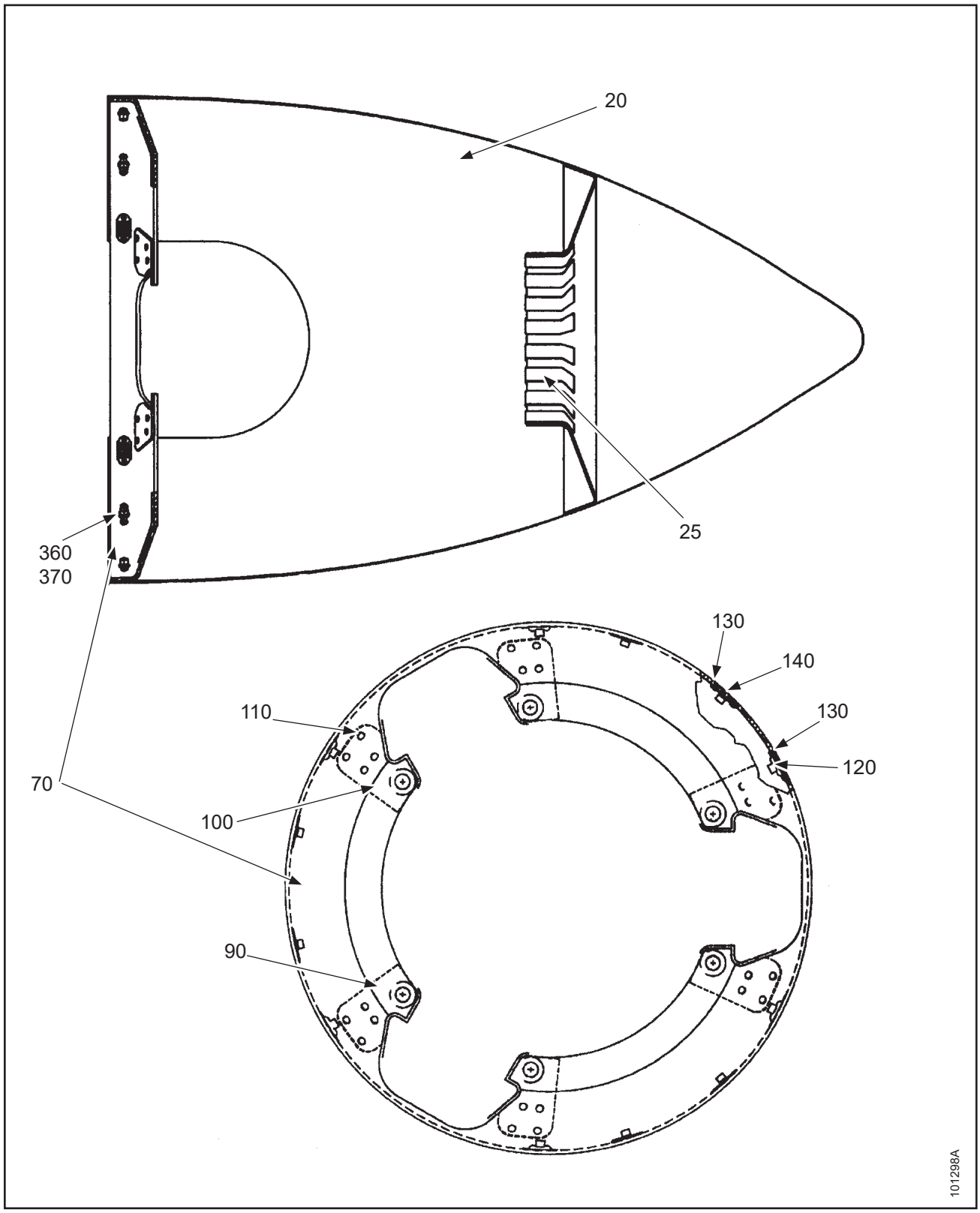


Spinner Model E-7480
Figure 10-9

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-9					
-10	**E-7480**	**COMPOSITE SPINNER ASSEMBLY**			
20	E-7481	• DOME UNIT COMPOSITE 5-BLADE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	D-6666	• BULKHEAD UNIT, COMPOSITE		1	
130	B-3878-3-4	• • RIVET, 100° HEAD, 0.094 DIA, CRES		60	
140	B-3858-3	• • NUTPLATE, FIXED, CRES		30	
360	B-3860-10L	• WASHER, DIMPLED, 100° HEAD, CRES (SPINNER DOME MOUNTING)		20	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		20	Y
-510A	SJ8665FP408	• EROSION MASK - 3M COMPANY (REFER TO SECTION 4.A.(3) IN THIS CHAPTER)		1	
-510B	PM-192	• EROSION MASK - PM RESEARCH (REFER TO SECTION 4.A.(3) IN THIS CHAPTER)		1	

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED



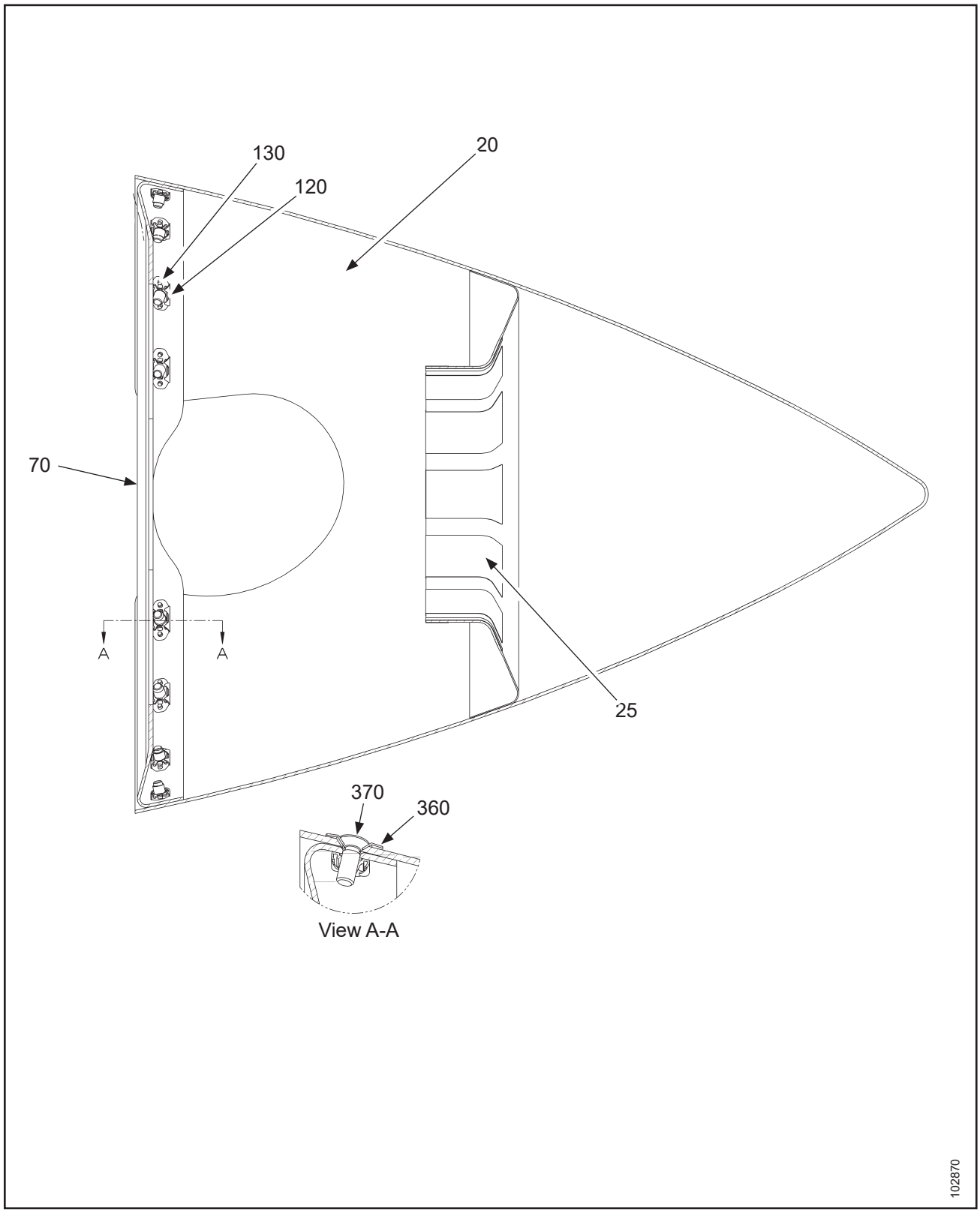
Spinner Model 101298 (Hybrid)
Figure 10-10

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-10					
-10	**101298**	**COMPOSITE SPINNER ASSEMBLY (HYBRID)**			
20	101299	• DOME UNIT, COMPOSITE, 3-BLADE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	D-7084-1G	• BULKHEAD UNIT (METAL)		1	
90	B-7217-2L	• • DOUBLER, MOUNTING, BULKHEAD		3	
100	B-7217-2	• • DOUBLER, MOUNTING, BULKHEAD		3	
110	B-3861-6	• • RIVET, UNIVERSAL HEAD, 0.125 DIA, ALUMINUM		24	
120	B-3849-3	• • NUTPLATE, FLOATING		6	
130	B-3847-6	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		24	
140	B-3846-3	• • NUTPLATE, FIXED		6	
360	A-1020	• WASHER, FIBER (SPINNER DOME MOUNTING)		12	Y
370	B-3845-8	• SCREW, 10-32, TRUS HEAD (SPINNER DOME MOUNTING)		12	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

Spinner Model 101298 (Hybrid)

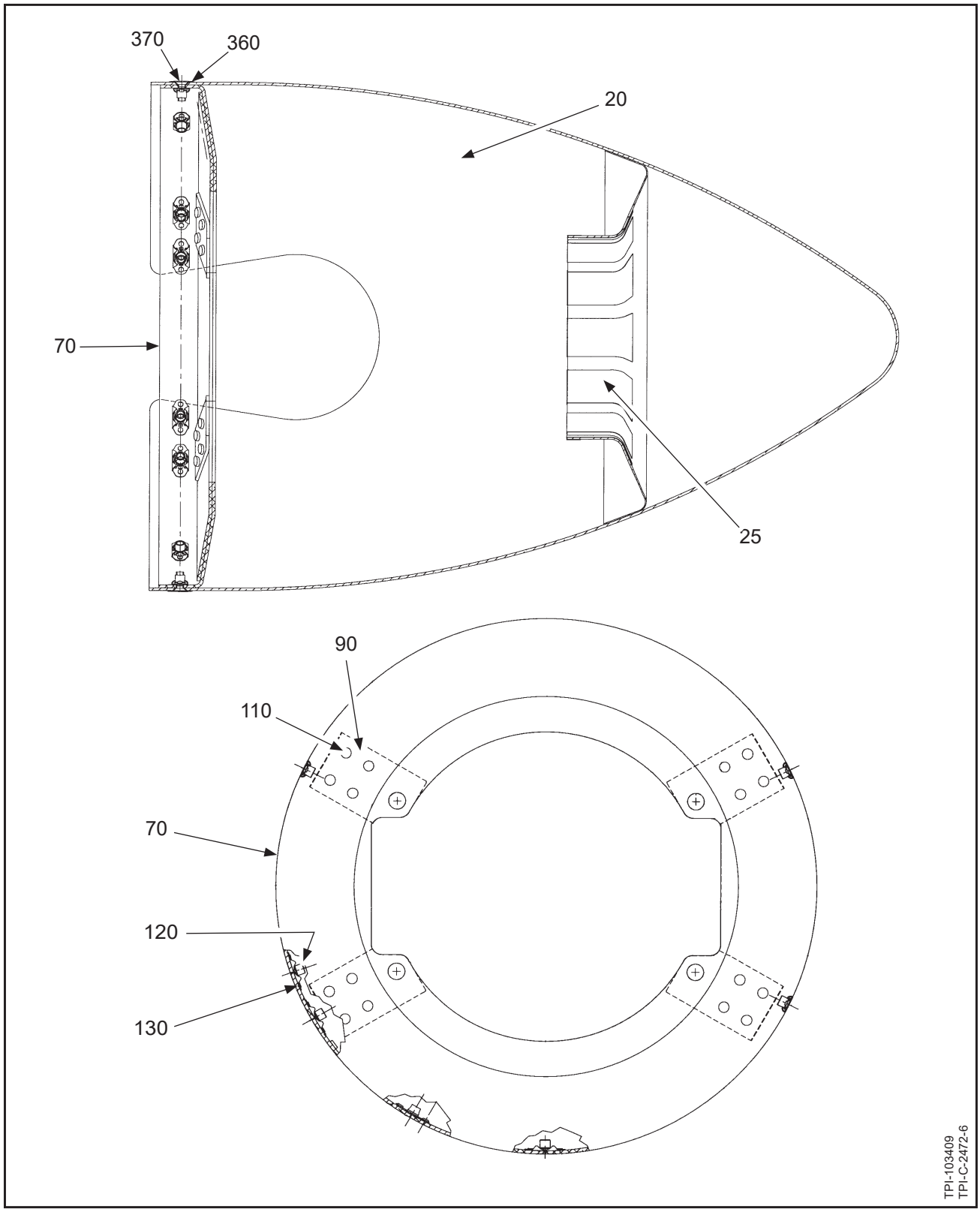


Spinner Model 102870( )
Figure 10-11

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-11					
-10	**102870( )**	**COMPOSITE SPINNER ASSEMBLY**			
20	102885( )	• DOME UNIT, COMPOSITE, 3-BLADE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	102892( )	• BULKHEAD UNIT, COMPOSITE		1	
120	B-3849-3	• • NUTPLATE, FLOATING		15	
120A	MS21059L3	• • NUTPLATE, FLOATING, ALTERNATE FOR ITEM 120		15	
130	B-3878-3-4	• • RIVET, 100° HEAD. 0.094 DIA, CRES		30	
130A	MS20427F3-4	• • RIVET, 100° HEAD. 0.094 DIA, CRES ALTERNATE FOR ITEM 130		30	
130B	MS20426-3	• • RIVET, ALTERNATE FOR ITEM 130		30	
130C	CCR264SS-3-( )	• • RIVET, ALTERNATE FOR ITEM 130		30	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		15	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		15	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

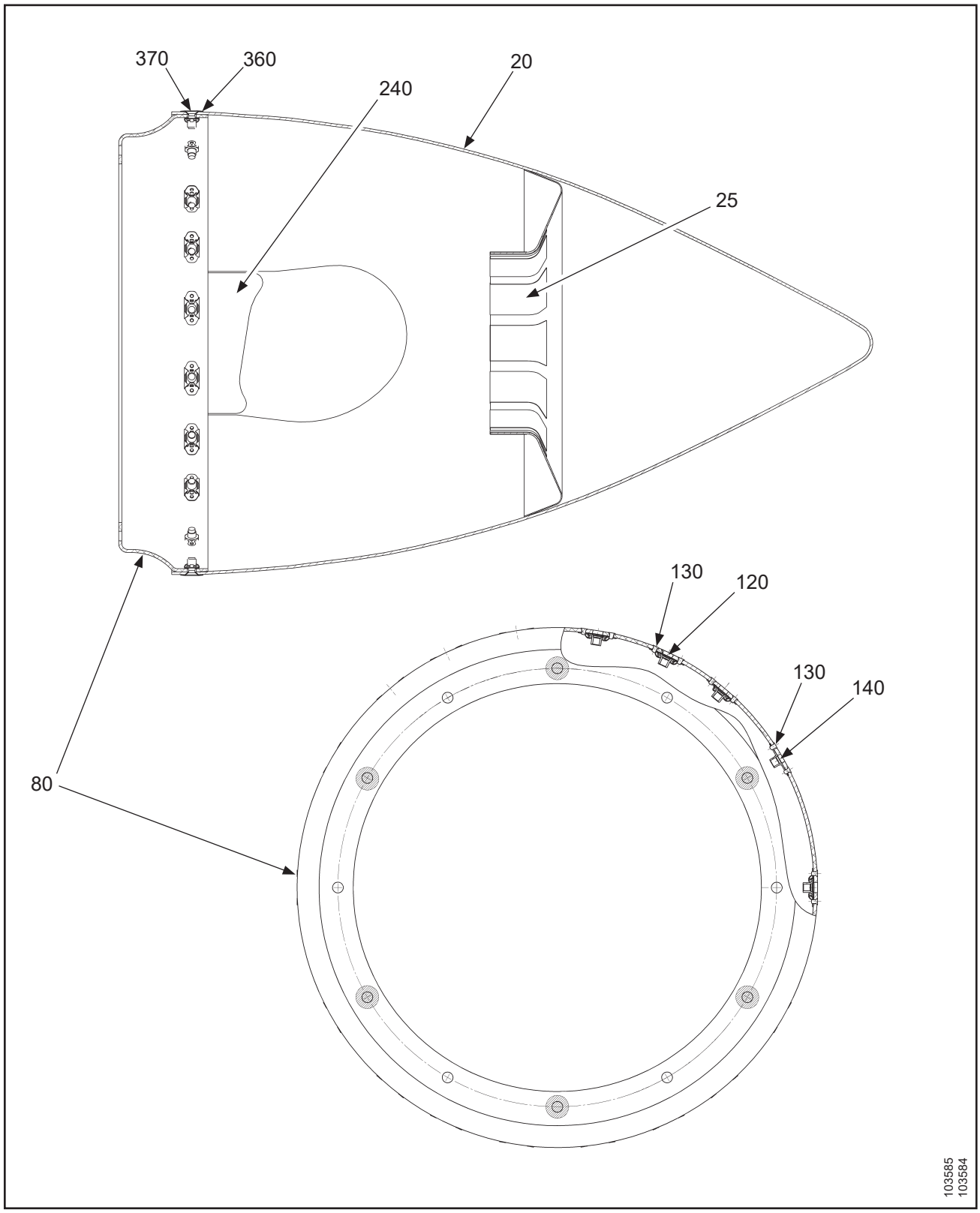


Spinner Model 103409( ) (Hybrid)
Figure 10-12

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-12					
-10	**103409( )**	**COMPOSITE SPINNER ASSEMBLY (HYBRID)**			
20	103410( )	• DOME UNIT, COMPOSITE, 2-BLADE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	C-2472-6( )	• BULKHEAD UNIT		1	
90	A-3263-3	• • DOUBLER, MOUNTING, BULKHEAD		4	
110	B-3848-6	• • RIVET, 100° HEAD, 0.125 DIA, ALUMINUM		16	
120	B-3849-3	• • NUTPLATE, FLOATING		14	
130	B-3847-4	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		28	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		14	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		14	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED



Spinner Model 103585( ) (Hybrid)
Figure 10-13

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-13					
-10	**103585( )**	**COMPOSITE SPINNER ASSEMBLY (HYBRID)**			
20	103582( )	• DOME UNIT, COMPOSITE, 2 BLADE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
80	103584( )	• ADAPTER RING UNIT (ALUMINUM)		1	
80A	C-4549-1( )	• ADAPTER RING UNIT, ALTERNATE FOR ITEM 80	A	1	
120	B-3849-3	• • NUTPLATE, FLOATING		14	
	B-3849-3	• • NUTPLATE, FLOATING	B	10	
130	B-3847-5	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		36	
	B-3847-5	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM	B	28	
140	B-3846-3	• • NUTPLATE, FIXED		4	
	B-3846-3	• • NUTPLATE, FIXED	B	4	
240	103583	• FILLER PLATE, COMPOSITE SUPERSEDED BY ITEM 240A		2	
240A	104001	• FILLER PLATE, COMPOSITE SUPERSEDES ITEM 240		2	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		18	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		18	Y

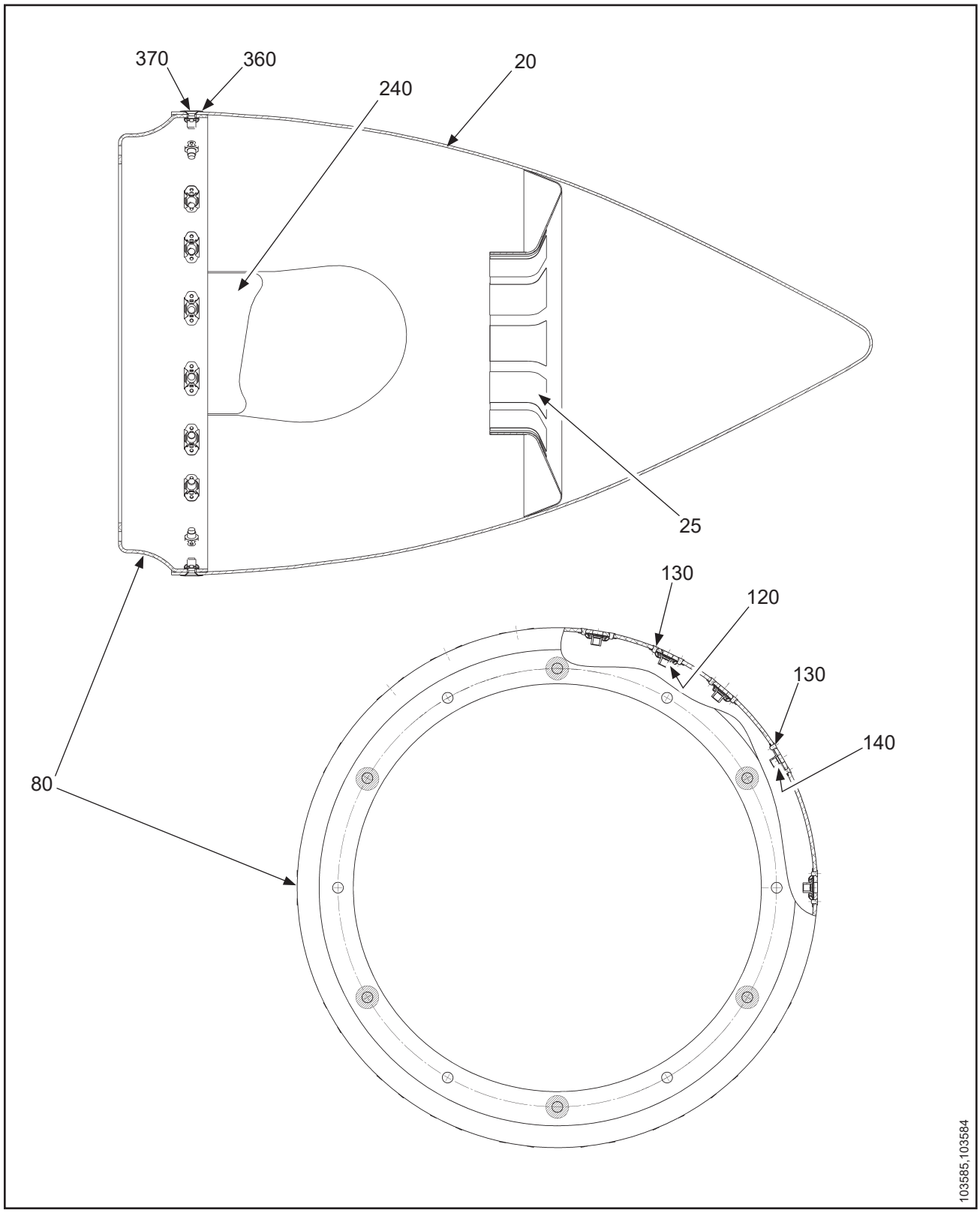
EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

A WHEN THE C-4549-1( ) METAL ADAPTER RING IS USED, INSTALLATION OF THE 103583 OR 104001 COMPOSITE FILLER PLATE IS OPTIONAL. IF THE FILLER PLATE IS INSTALLED, MODIFY THE C-4549-1( ) ADAPTER RING UNIT IN ACCORDANCE WITH HC-ASB-61-332.

B USE WITH C-4549-1( ) ADAPTER RING UNIT

- ITEM NOT ILLUSTRATED

Spinner Model 103585( ) (Hybrid)



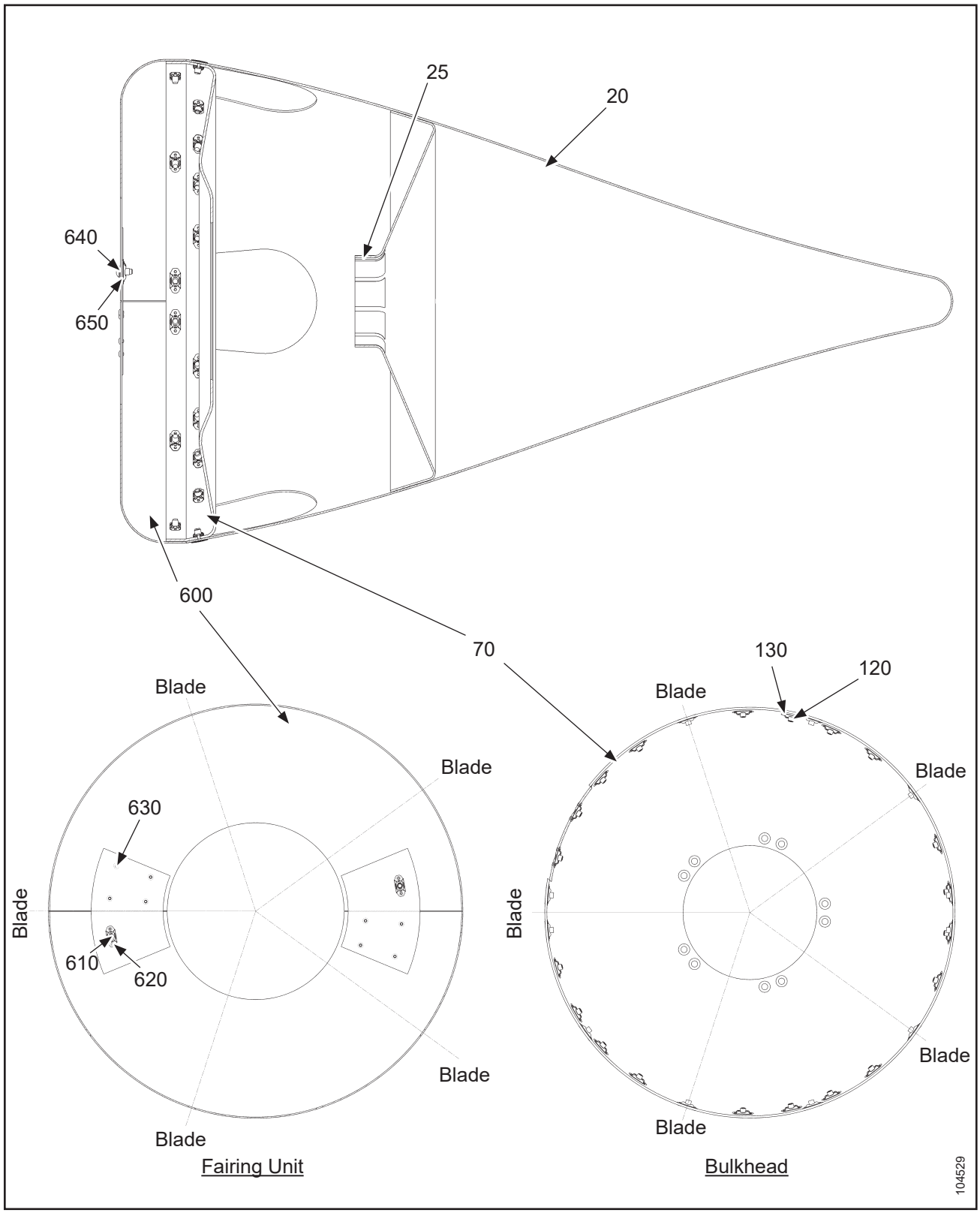
Spinner Model 103629( ) (Hybrid)
Figure 10-14

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-14					
-10	**103629( )**	**COMPOSITE SPINNER ASSEMBLY (HYBRID)**			
20	103627( )	• DOME UNIT, COMPOSITE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
80	103628( )	• ADAPTER RING UNIT (ALUMINUM)		1	
120	B-3849-3	• • NUTPLATE, FLOATING		18	
130	B-3847-5	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		42	
140	B-3846-3	• • NUTPLATE, FIXED		3	
240	104001	• FILLER PLATE, COMPOSITE		3	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		21	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		21	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

Spinner Model 103629( ) (Hybrid)

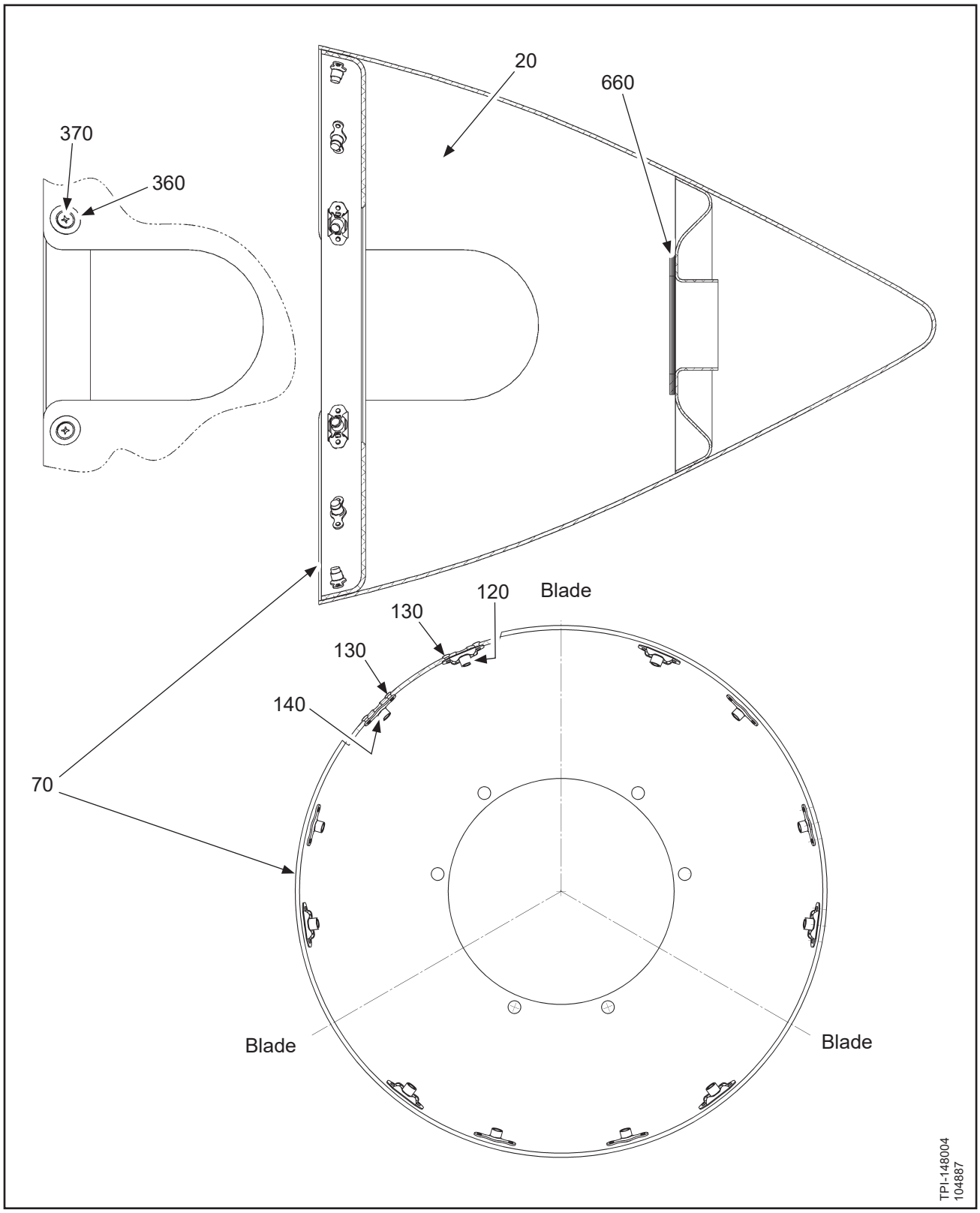


Spinner Model 104529
Figure 10-15

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-15					
-10	**104529**	**COMPOSITE SPINNER ASSEMBLY**			
20	104573	• DOME, COMPOSITE, 5 BLADE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	104572	• COMPOSITE BULKHEAD UNIT		1	
120	B-3849-3	• • NUTPLATE, FLOATING		32	
130	B-3878-3-4	• • RIVET, 100° HEAD, 0.094 DIA, CRES		64	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME AND FAIRING UNIT MOUNTING)		32	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME AND FAIRING UNIT MOUNTING)		32	Y
600	104571	• FAIRING UNIT		1	
610	B-3849--3	• • NUTPLATE, FLOATING		2	
620	B-3878-3-4	• • RIVET, 100° HEAD, 0.094 DIA, CRES		4	
630	B-3861-6	• • RIVET, UNIVERSAL HEAD, 0.125 DIA. ALUMINUM		8	
640	A-1020	• WASHER, FIBER		2	Y
650	B-3845-8	• SCREW, 10-32, TRUSS HEAD		2	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED



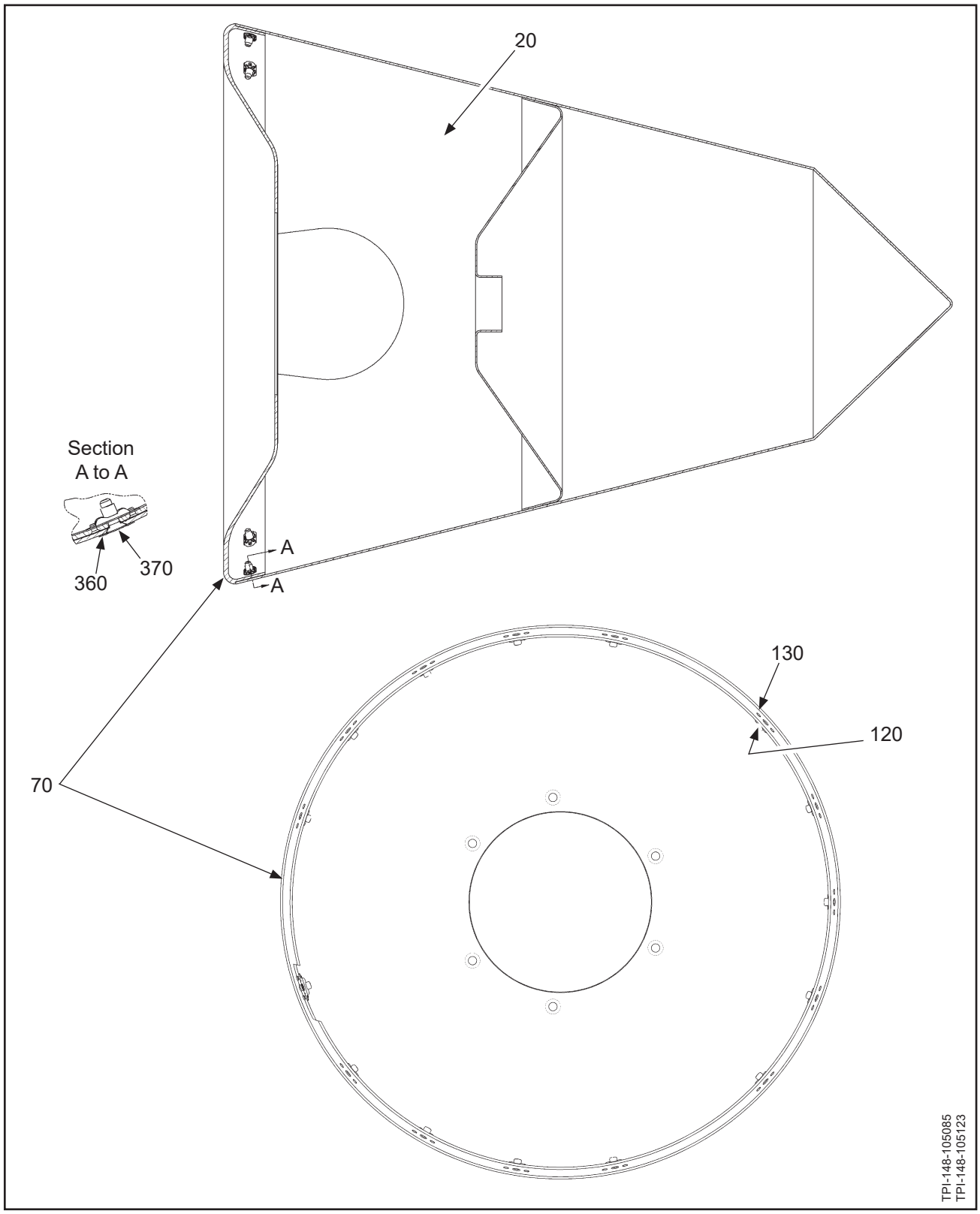
Spinner Model 104888-( ) (Hybrid)
Figure 10-16

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-16					
-10	**104888-( )**	**COMPOSITE SPINNER ASSEMBLY (HYBRID)**			
20	104886-( )	• DOME, COMPOSITE, 3 BLADE		1	
70	104887	• BULKHEAD UNIT		1	
120	B-3849-3	• • NUTPLATE, FLOATING		6	
130	B-3847-4	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		24	
140	B-3846-3	• • NUTPLATE, FIXED		6	
360	B-3860-10L	• WASHER, DIMPLED, 100°, CRES (SPINNER DOME MOUNTING)		12	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		12	Y
660	105542	• SPACER		A/R	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

Spinner Model 104888-( ) (Hybrid)

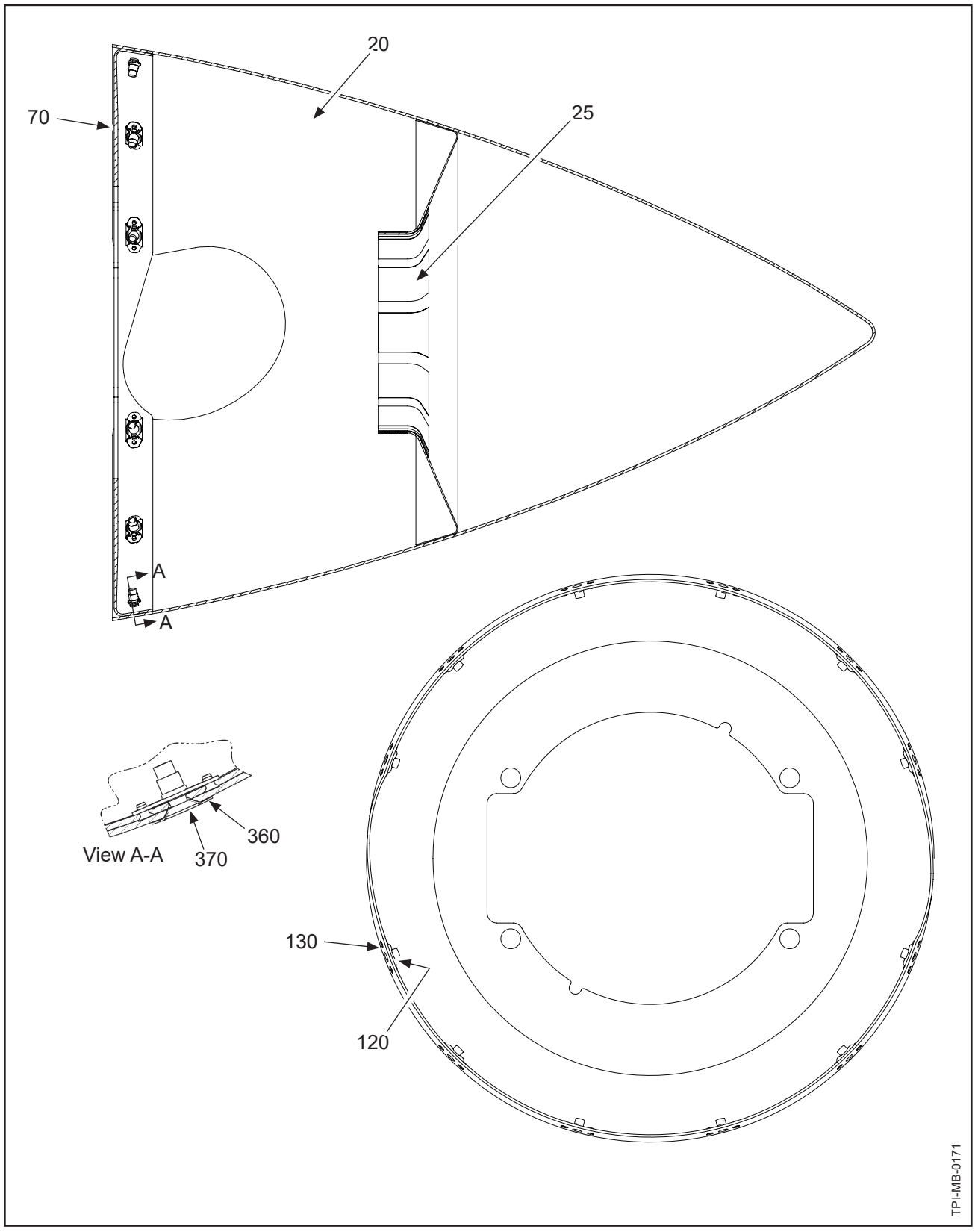


Spinner Model 105085( )
Figure 10-17

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-17					
-10	**105085( )**	**COMPOSITE SPINNER ASSEMBLY**			
20	105122( )	• DOME UNIT, COMPOSITE, 3-BLADE		1	
70	105123( )	• BULKHEAD UNIT, COMPOSITE		1	
120	B-3849-3	• • NUTPLATE, FLOATING		15	
130	B-3878-3-4	• • RIVET, 100° HEAD, 0.094 DIA, CRES		30	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		15	Y
370	102612-S50	• SCREW, 10-32, 100° DEG HEAD (SPINNER DOME MOUNTING)		15	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

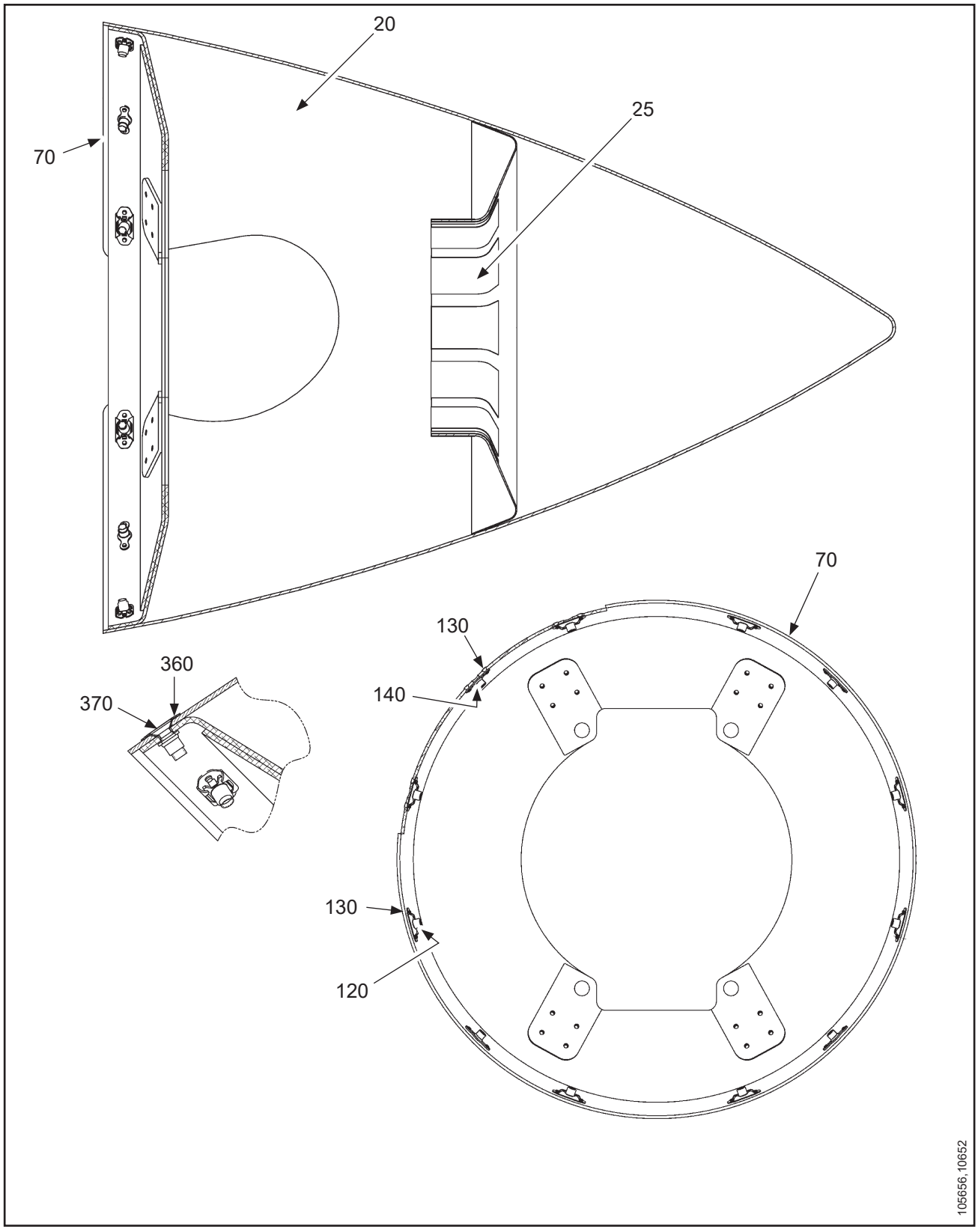


Spinner Model 105127( )
Figure 10-18

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-18					
-10	**105127( )**	**COMPOSITE SPINNER ASSEMBLY**			
20	105129( )	• DOME, COMPOSITE, 2 BLADE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	106015( )	• BULKHEAD UNIT, COMPOSITE		1	
120	B-3849-3	• • NUTPLATE, FLOATING		12	
120A	MS21059L3	• • NUTPLATE, FLOATING, ALTERNATE FOR ITEM 120		12	
130	B-3878-3-4	• • RIVET, 100° HEAD, 0.094 DIA, CRES		24	
130A	MS20427F3-4	• • RIVET, 100° HEAD, 0.094 DIA, CRES ALTERNATE FOR ITEM 130		24	
130B	MS20426-3	• • RIVET, ALTERNATE FOR ITEM 130		24	
130C	CCR264SS-3-( )	• • RIVET, ALTERNATE FOR ITEM 130		24	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		12	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		12	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED



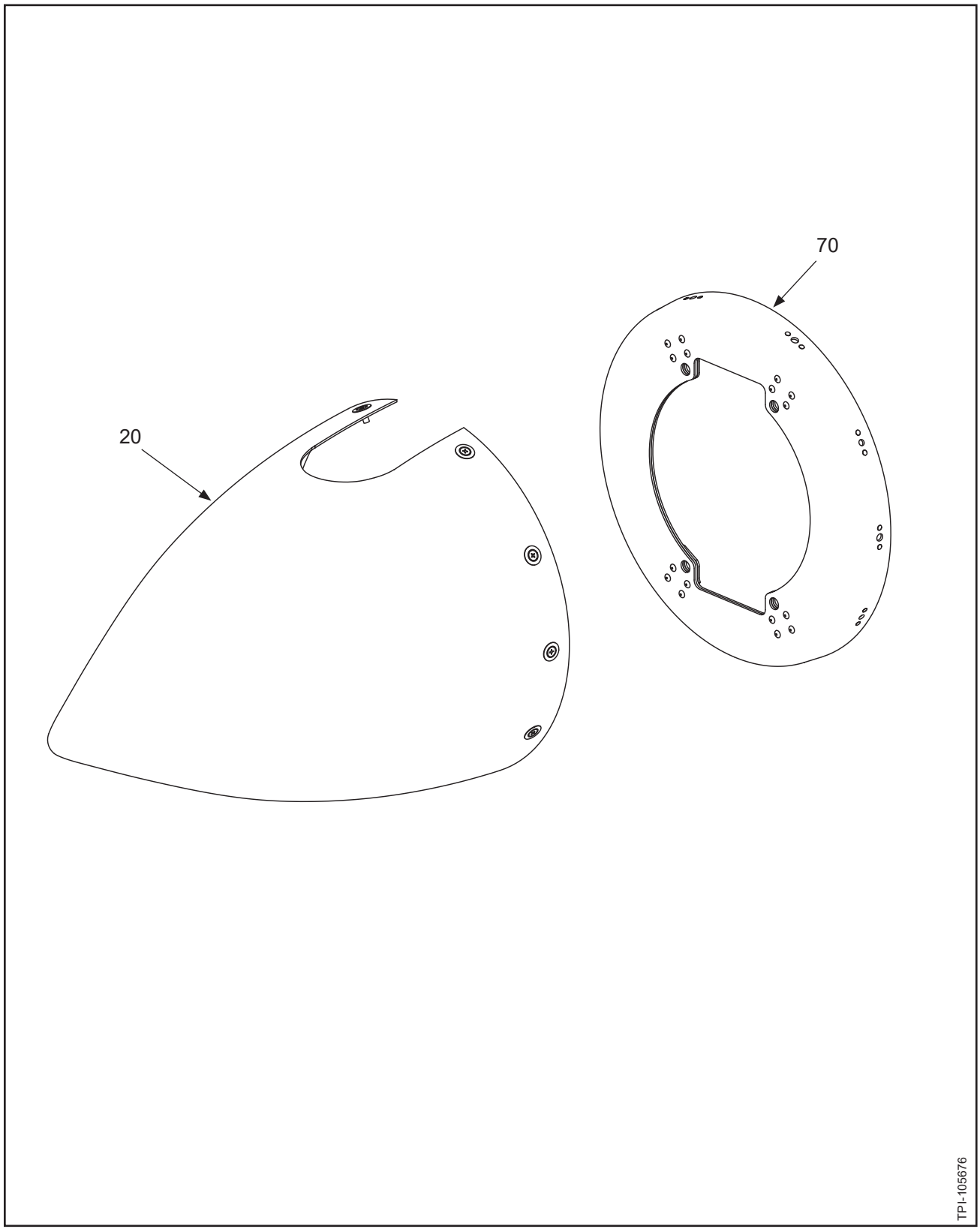
Spinner Model 105656( )
Figure 10-19

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-19					
-10	**105656( )**	**COMPOSITE SPINNER ASSEMBLY**			
20	105651( )	• DOME UNIT, COMPOSITE, 2 BLADE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	105652( )	• BULKHEAD UNIT		1	
90	A-3263-6	• • DOUBLER, MOUNTING, BULKHEAD		4	
110	B-3861-7	• • RIVET, UNIVERSAL HEAD, 0.125 DIA, ALUMINUM		16	
120	B-3849-3	• • NUTPLATE, FLOATING		8	
130	B-3847-5	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		24	
140	B-3846-3	• • NUTPLATE, FIXED		4	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		12	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		12	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

Spinner Model 105656( ) (Hybrid)



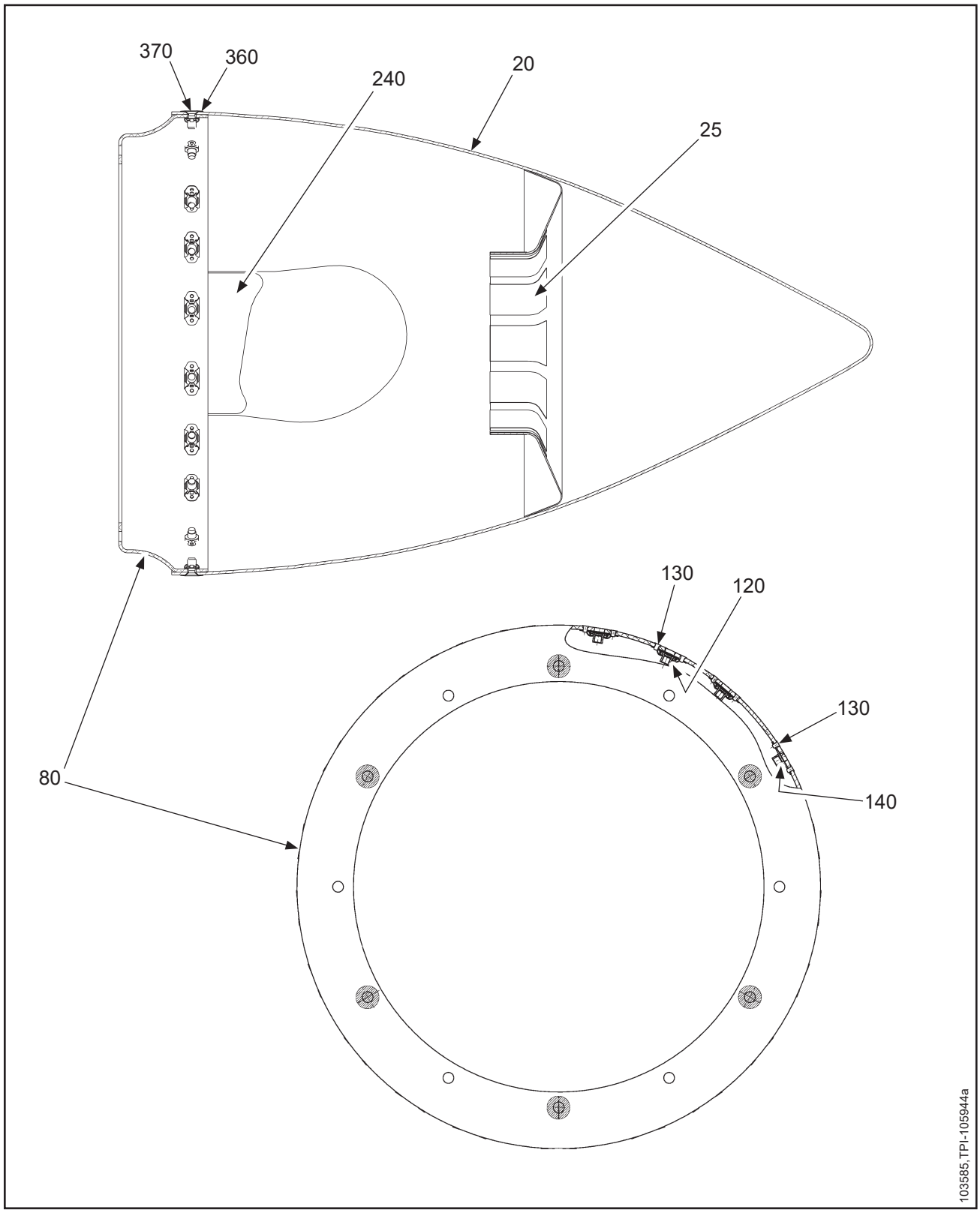
Spinner Model 105675 (Hybrid)
Figure 10-20

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-20					
-10	**105675**	**COMPOSITE SPINNER ASSEMBLY KIT**	**A**		
20	105674	• DOME UNIT, COMPOSITE, 2 BLADE		1	
70	105672	• BULKHEAD UNIT, COMPOSITE		1	
-	105718	• HARDWARE KIT - SPINNER ASSEMBLY		1	
-	105676	• SPINNER BUILD INSTRUCTION		1	

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL
A - REQUIRES LOCAL FABRICATION IN ACCORDANCE WITH SPINNER BUILD INSTRUCTION 105676			

- ITEM NOT ILLUSTRATED

Spinner Model 105675 (Hybrid)



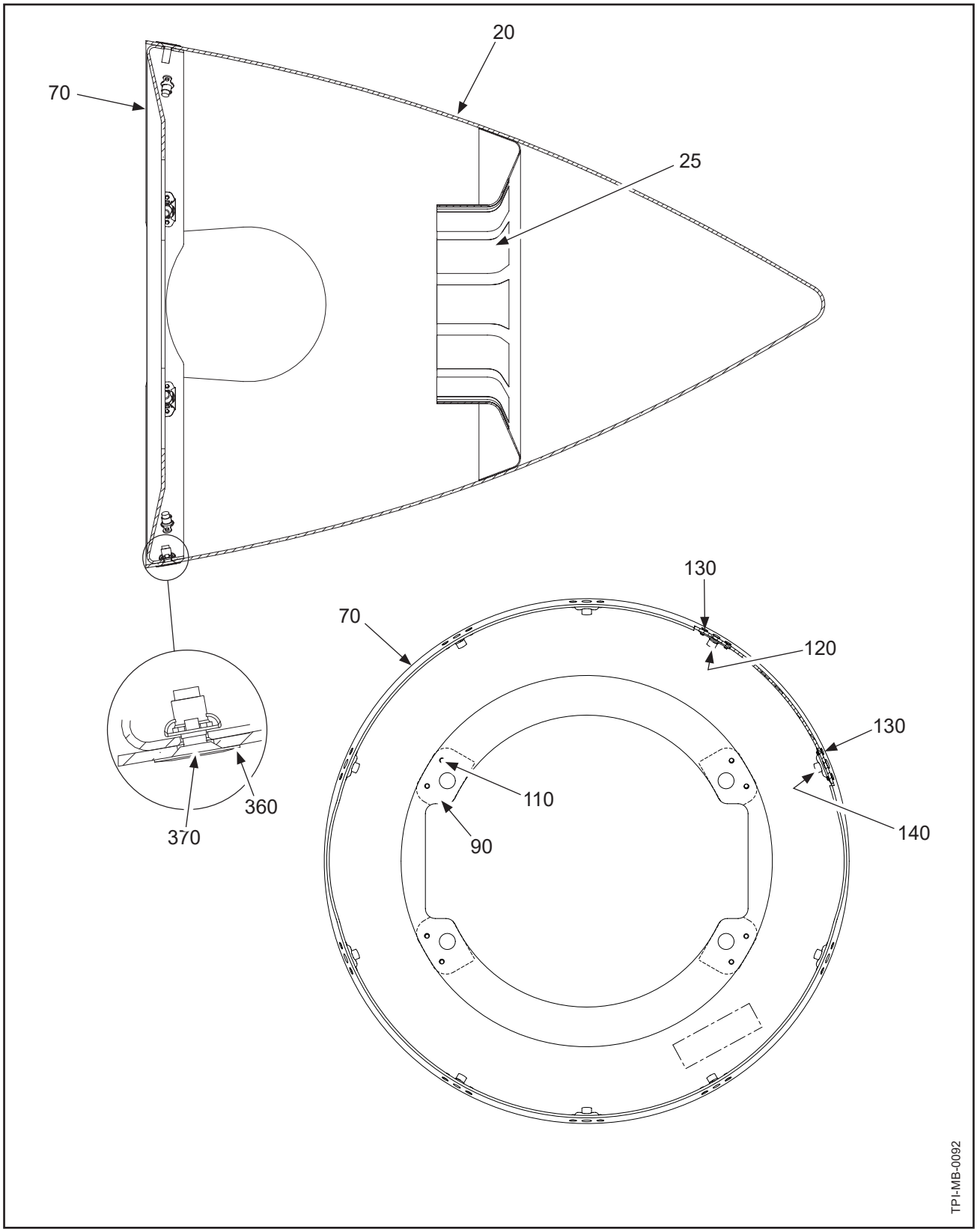
Spinner Model 105945( ) (Hybrid)
Figure 10-21

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-21					
-10	**105945( )**	**COMPOSITE SPINNER ASSEMBLY (HYBRID)**			
20	105943( )	• DOME UNIT, COMPOSITE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
80	105944( )	• ADAPTER RING UNIT (ALUMINUM) USED WITH ITEM 240		1	
120	B-3849-3	• • NUTPLATE, FLOATING		18	
130	B-3847-5	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		42	
140	B-3846-3	• • NUTPLATE, FIXED		3	
240	104001	• FILLER PLATE, COMPOSITE		3	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		21	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		21	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

Spinner Model 105945( ) (Hybrid)

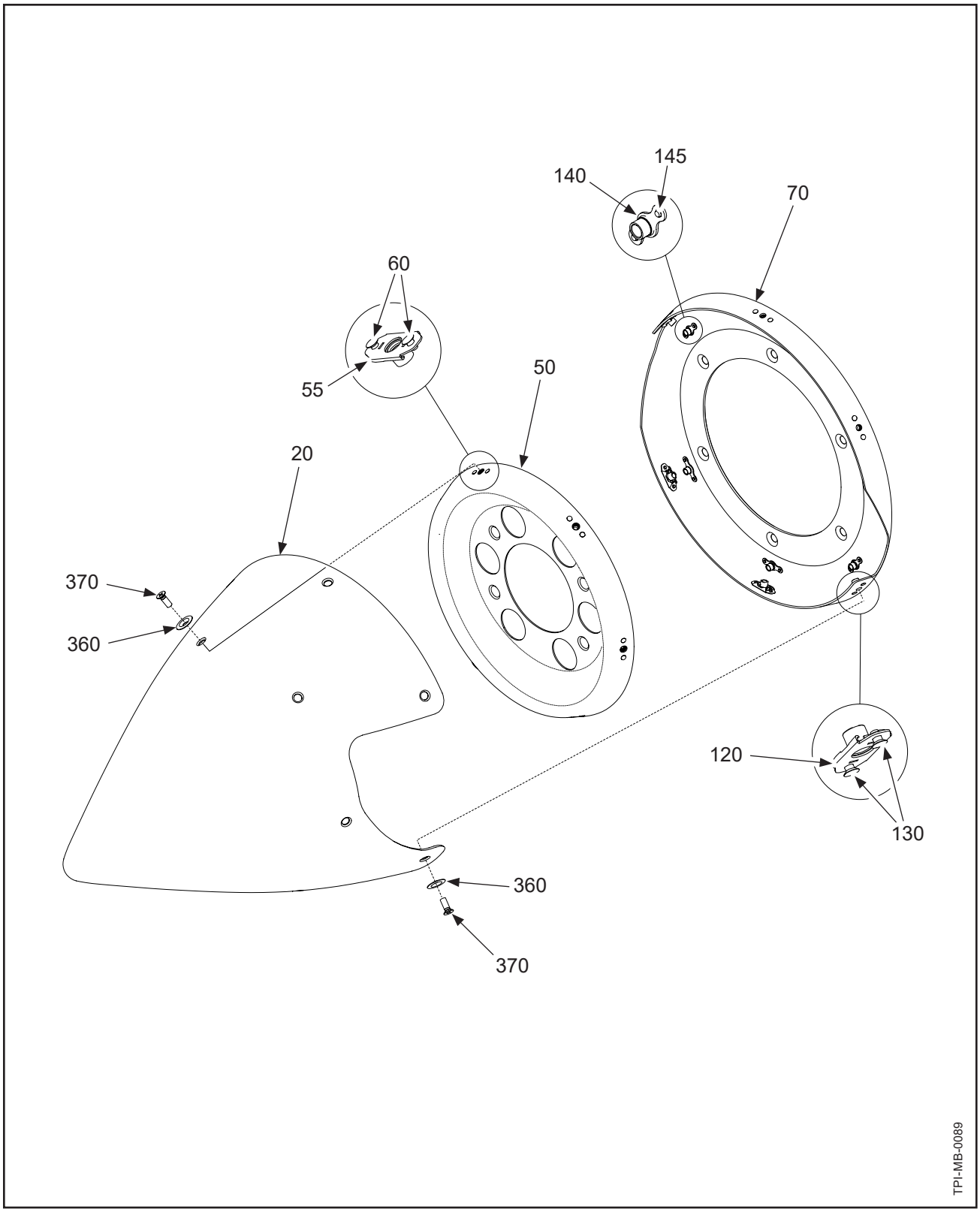


Spinner Model 106040( ) (Hybrid)
Figure 10-22

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-22					
-10	**106040( )**	**COMPOSITE SPINNER ASSEMBLY (HYBRID)**			
20	106039( )	• DOME UNIT, COMPOSITE, 2 BLADE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	106348( )	• BULKHEAD UNIT		1	
90	A-3263-15	• • DOUBLER, MOUNTING, BULKHEAD		4	
110	B-3861-7	• • RIVET, UNIVERSAL HEAD, 0.125 DIA, ALUMINUM		8	
120	B-3849-3	• • NUTPLATE, FLOATING		10	
130	B-3847-4	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		20	
140	B-3846-3	• • NUTPLATE, FIXED		4	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		10	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		10	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED



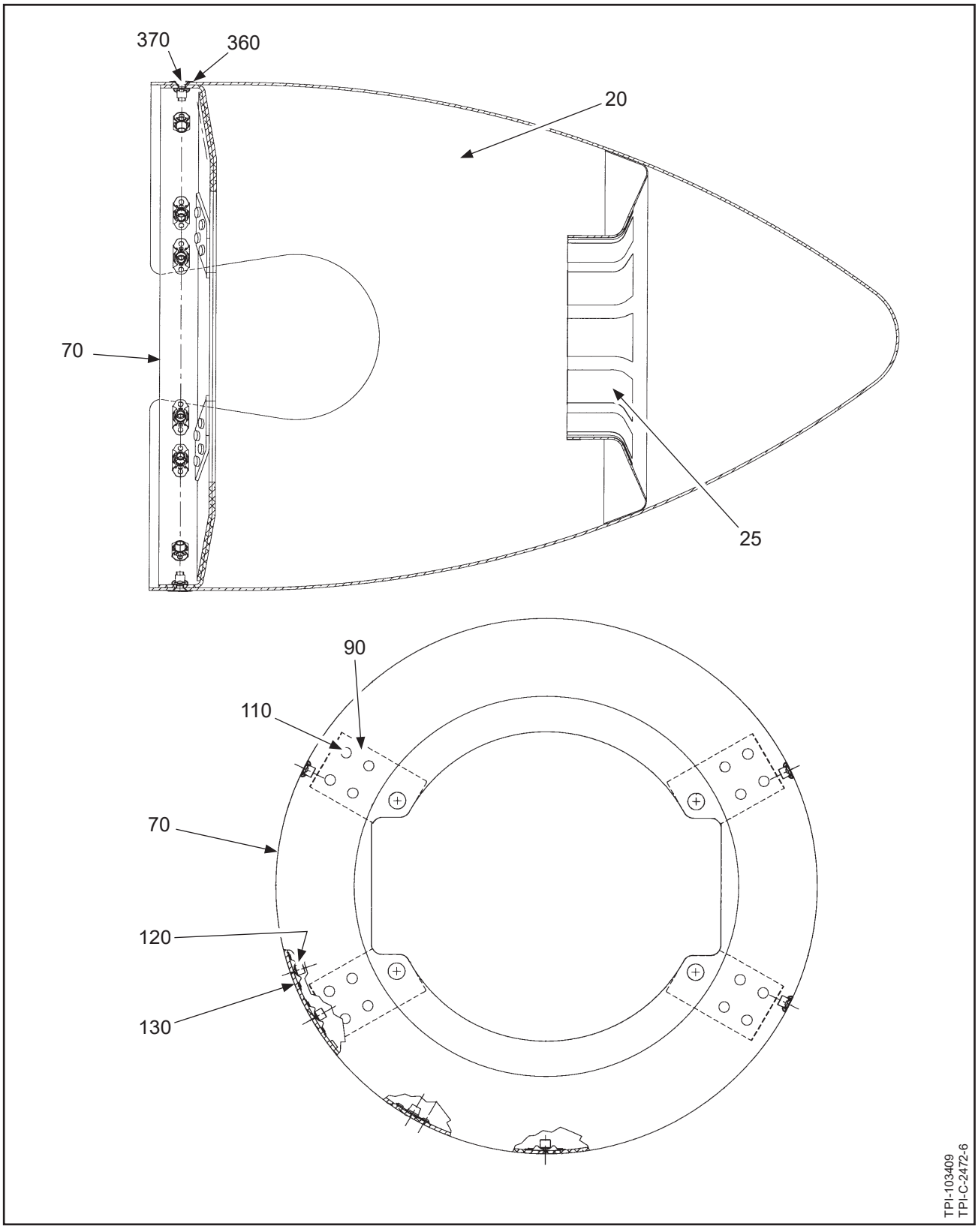
Spinner Model 106188( )
Figure 10-23

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-23					
-10	**106188( )**	**COMPOSITE SPINNER ASSEMBLY**			
20	106184( )	• DOME UNIT, COMPOSITE, 2 BLADE		1	
50	106187	• FORWARD BULKHEAD UNIT		1	
55	B-3849-3	• • NUTPLATE, FLOATING		6	
60	B-3847-4	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		12	
70	106185( )	• BULKHEAD UNIT, COMPOSITE		1	
120	B-3849-3	• • NUTPLATE, FLOATING		6	
130	B-3847-4	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		12	
140	B-3858-3	• • NUTPLATE, FIXED, CRES		6	
145	B-3847-5	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		12	
360	B-3860-10L	• WASHER, DIMPLED, 100°, CRES (SPINNER DOME MOUNTING)		12	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		12	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

Spinner Model 106188( )

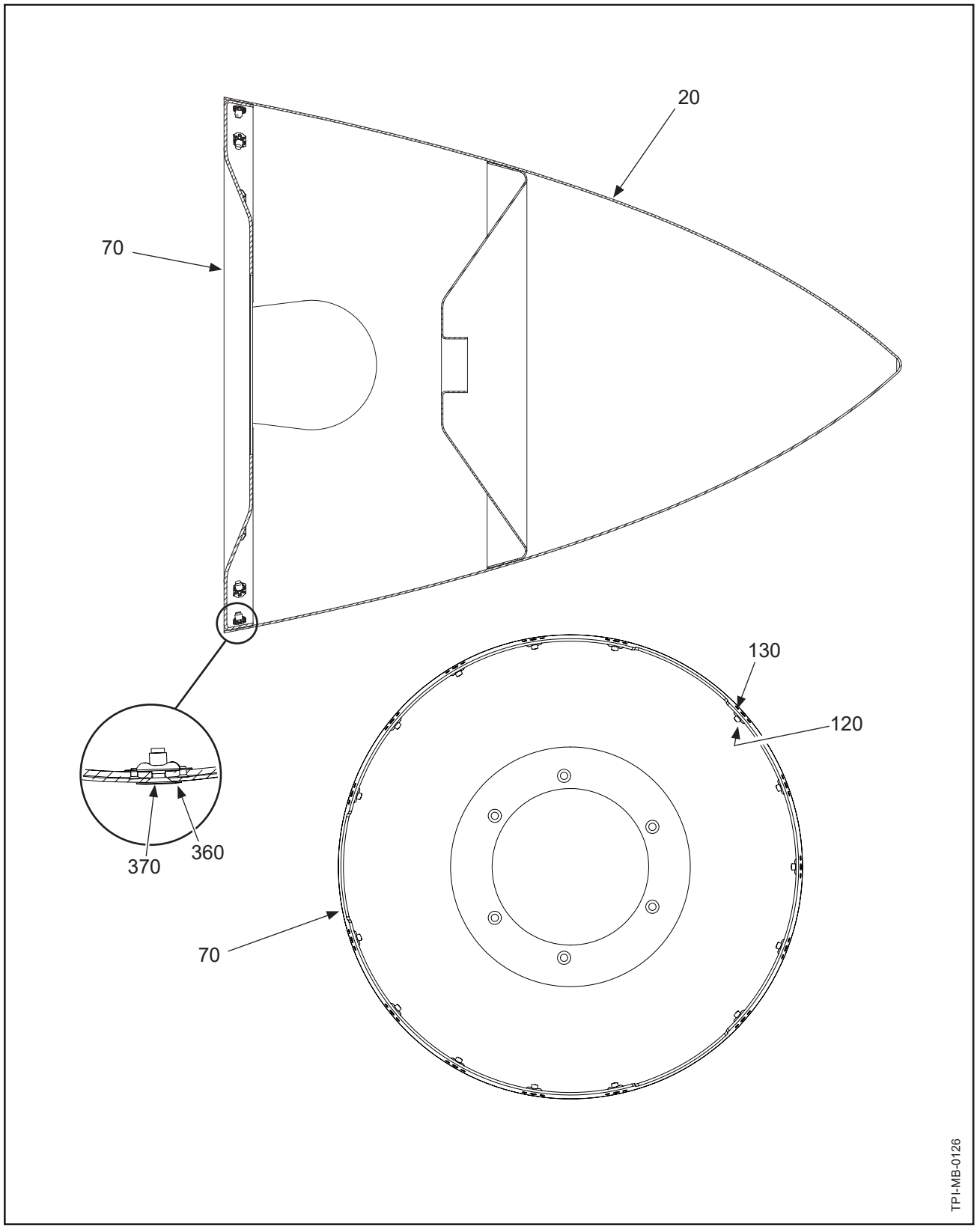


Spinner Model 106215( ) (Hybrid)
Figure 10-24

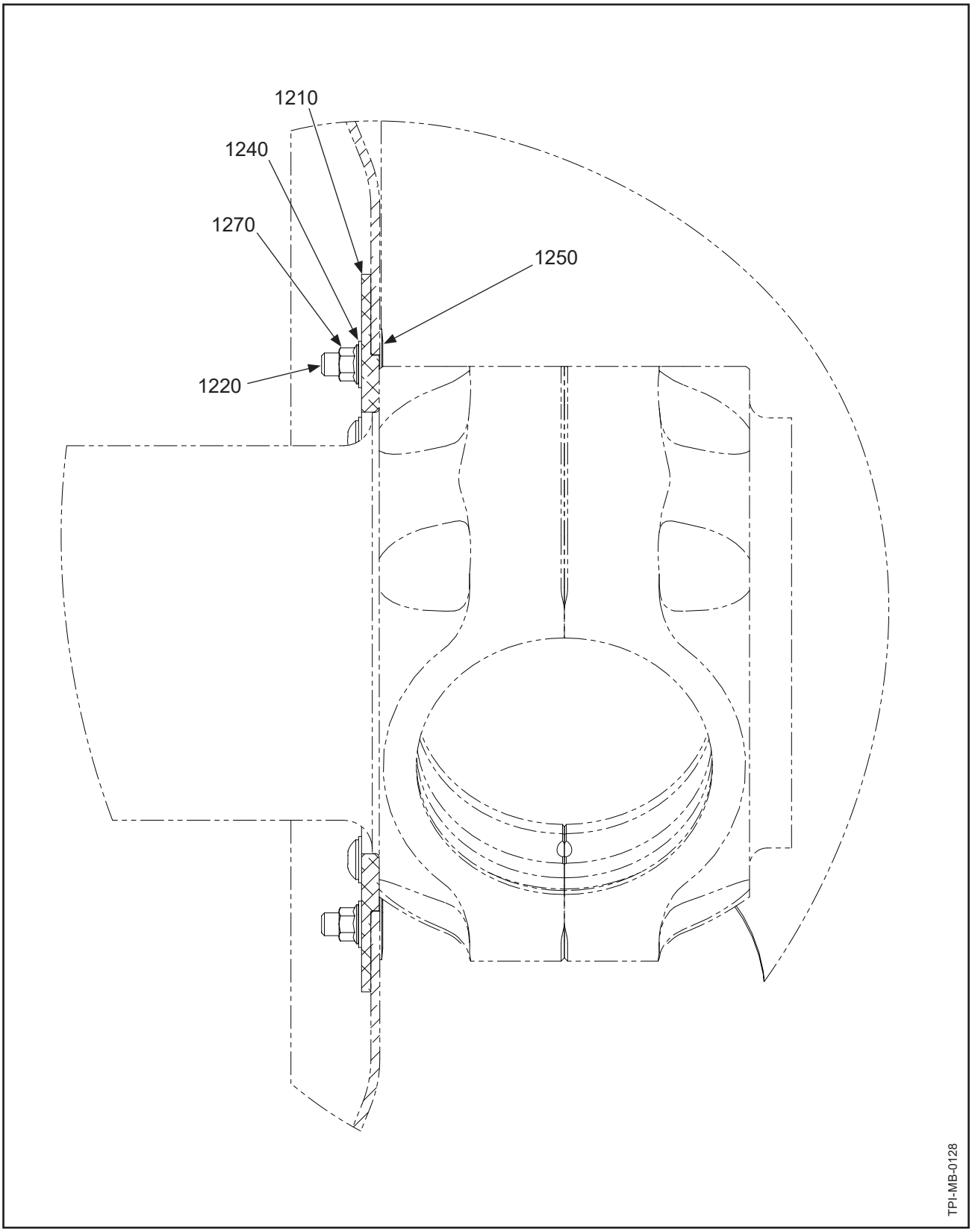
FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-24					
-10	**106215( )**	**COMPOSITE SPINNER ASSEMBLY (HYBRID)**			
20	106214( )	• DOME UNIT, COMPOSITE, 2-BLADE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	C-2472-6(P)	• BULKHEAD UNIT		1	
90	A-3263-3	• • DOUBLER, MOUNTING, BULKHEAD		4	
110	B-3861-7	• • RIVET, UNIVERSAL HEAD, 0.125 DIA, ALUMINUM		16	
120	B-3849-3	• • NUTPLATE, FLOATING		14	
130	B-3847-4	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		28	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		14	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		14	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED



Spinner Model 106311( )
Figure 10-25, page 1 of 2



Spinner Model 106311( )
Figure 10-25, page 2 of 2

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-25					
-10	**106311( )**	**COMPOSITE SPINNER ASSEMBLY**			
20	106322( )	• DOME UNIT, COMPOSITE		1	
70	106323( )	• BULKHEAD UNIT, COMPOSITE		1	
120	B-3849-3	• • NUTPLATE, FLOATING		15	
130	B-3878-3-4	• • RIVET, 100° HEAD, 0.094 DIA, CRES		30	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		15	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		15	Y
1210	105124-2	• RING, MOUNTING SPINNER		1	
1220	104789	• SCREW, 1/4-28, 100° HEAD		6	Y
1240	B-3837-0432	• WASHER, CRES		6	Y
1250	B-3860-416	• WASHER, DIMPLED, 100° CRES		6	Y
1270	B-3814	• NUT, 1/4-28, HEX, SELF-LOCKING		6	

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

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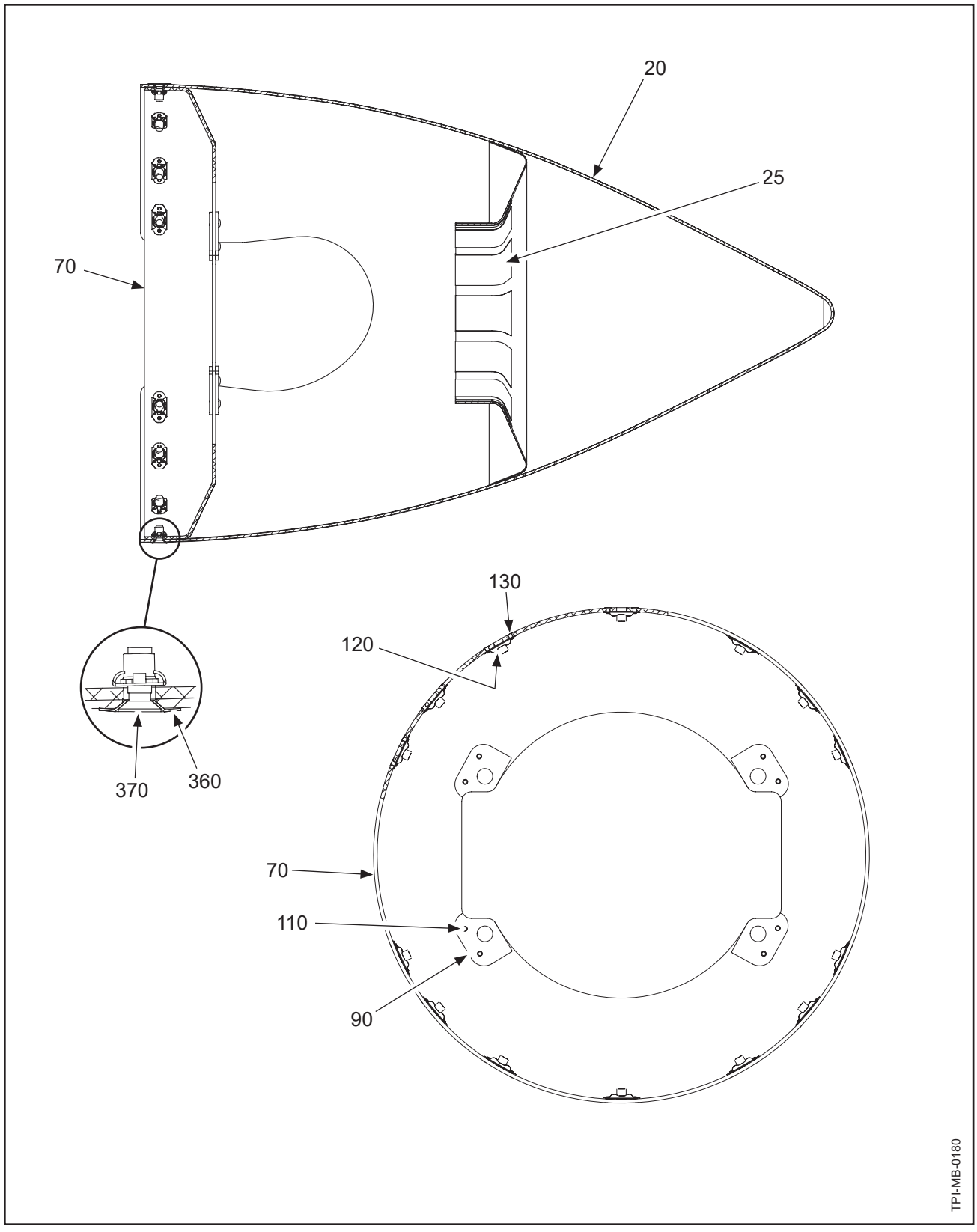


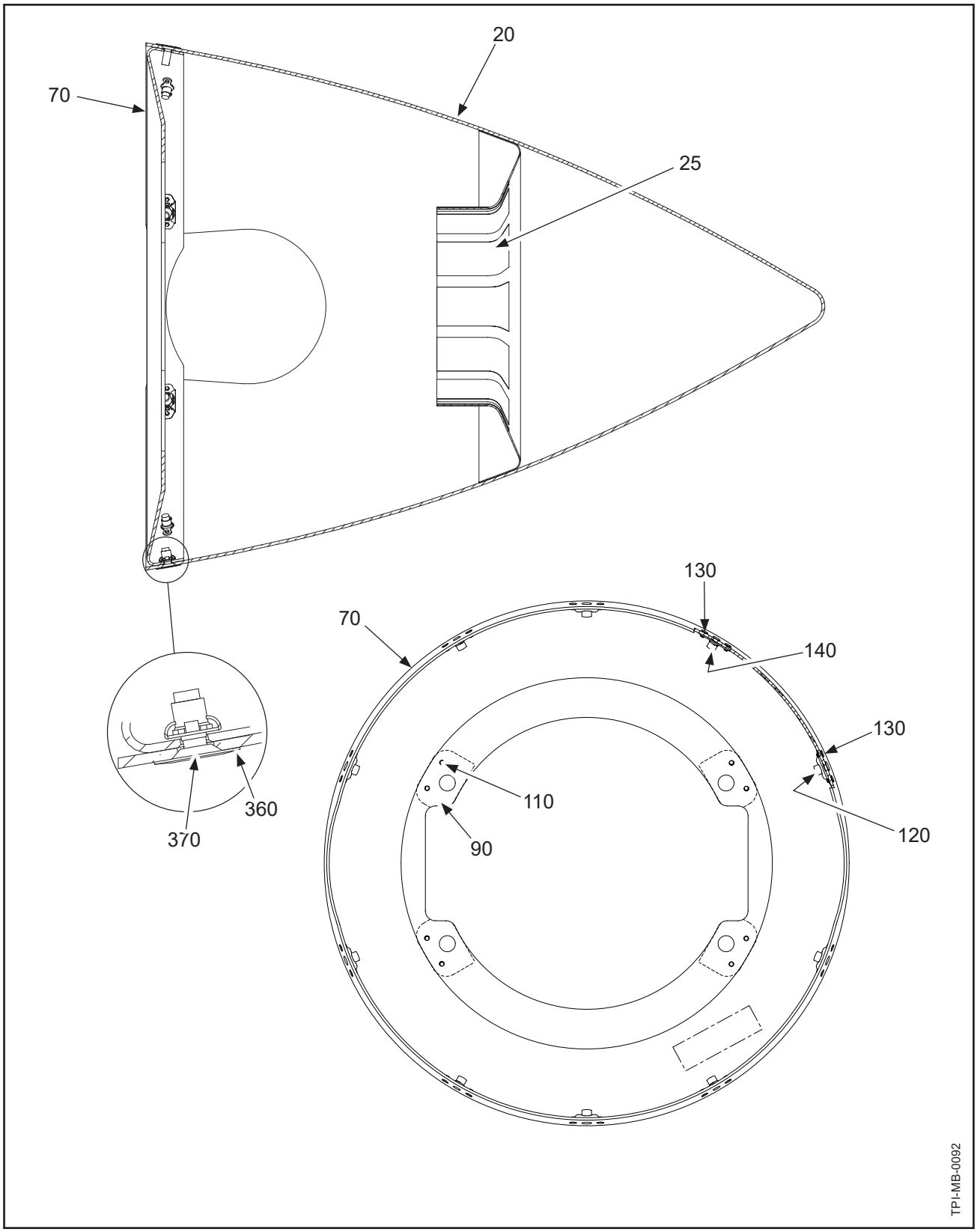
Spinner Model 106574( ) (Hybrid)
Figure 10-26

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-26					
-10	**106574( )**	**COMPOSITE SPINNER ASSEMBLY (HYBRID)**			
20	103582( )	• DOME UNIT, COMPOSITE, 2 BLADE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	106573( )	• BULKHEAD UNIT		1	
90	A-3263-15	• • DOUBLER, MOUNTING, BULKHEAD		8	
110	B-3861-7	• • RIVET, UNIVERSAL HEAD, 0.125 DIA, ALUMINUM		8	
120	B-3849-3	• • NUTPLATE, FLOATING		10	
130	B-3847-5	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		28	
140	B-3846-3	• • NUTPLATE, FIXED		4	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		14	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		14	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

Spinner Model 106574( ) (Hybrid)

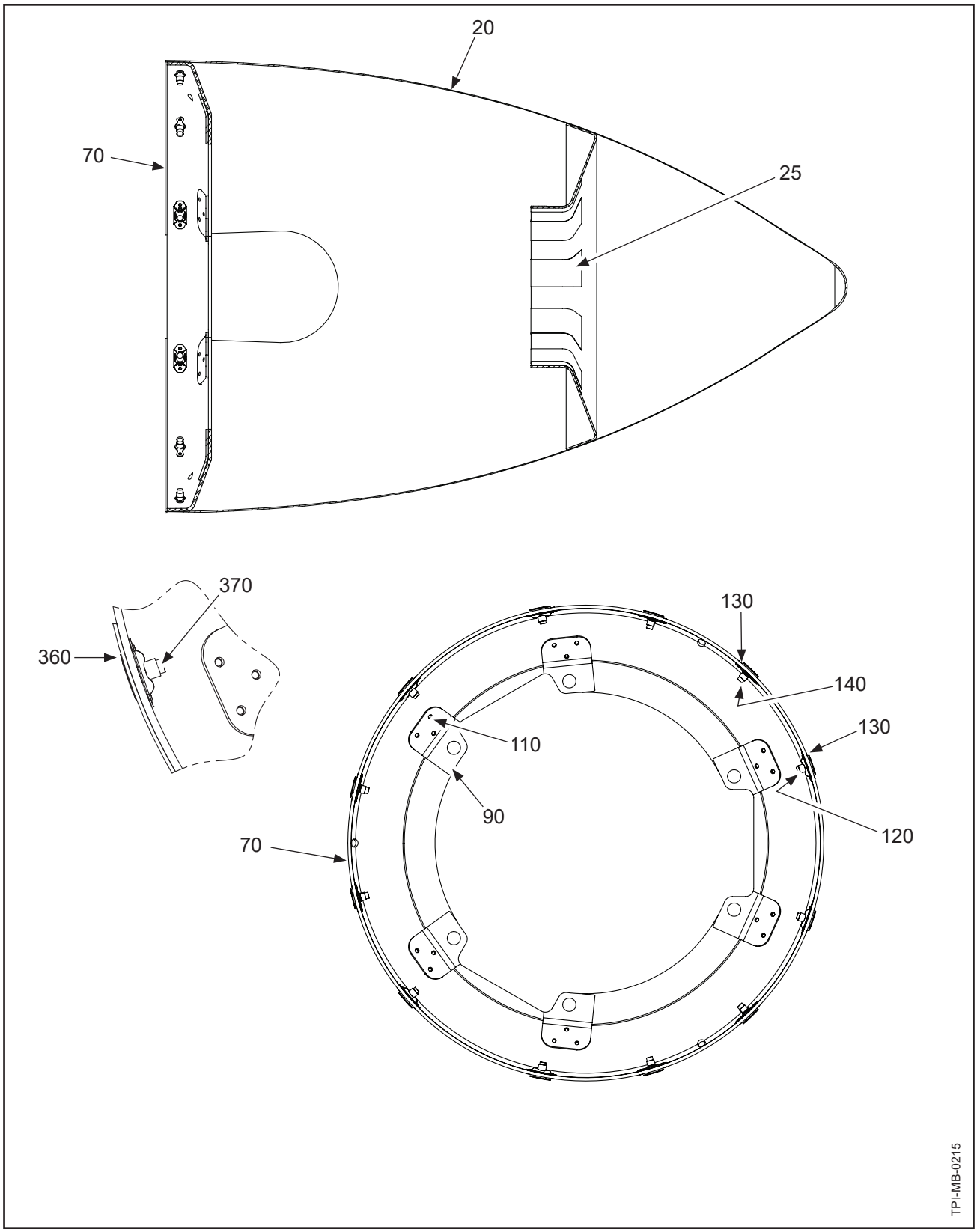


Spinner Model 106848( ) (Hybrid)
Figure 10-27

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-27					
-10	**106848( )**	**COMPOSITE SPINNER ASSEMBLY (HYBRID)**			
20	106847( )	• DOME UNIT, COMPOSITE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	106348( )	• BULKHEAD UNIT		1	
90	A-3263-15	• • DOUBLER, MOUNTING, BULKHEAD		4	
110	B-3861-7	• • RIVET, UNIVERSAL HEAD, 0.125 DIA, ALUMINUM		8	
120	B-3849-3	• • NUTPLATE, FLOATING		6	
130	B-3847-4	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		20	
140	B-3846-3	• • NUTPLATE, FIXED		4	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		10	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		10	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED



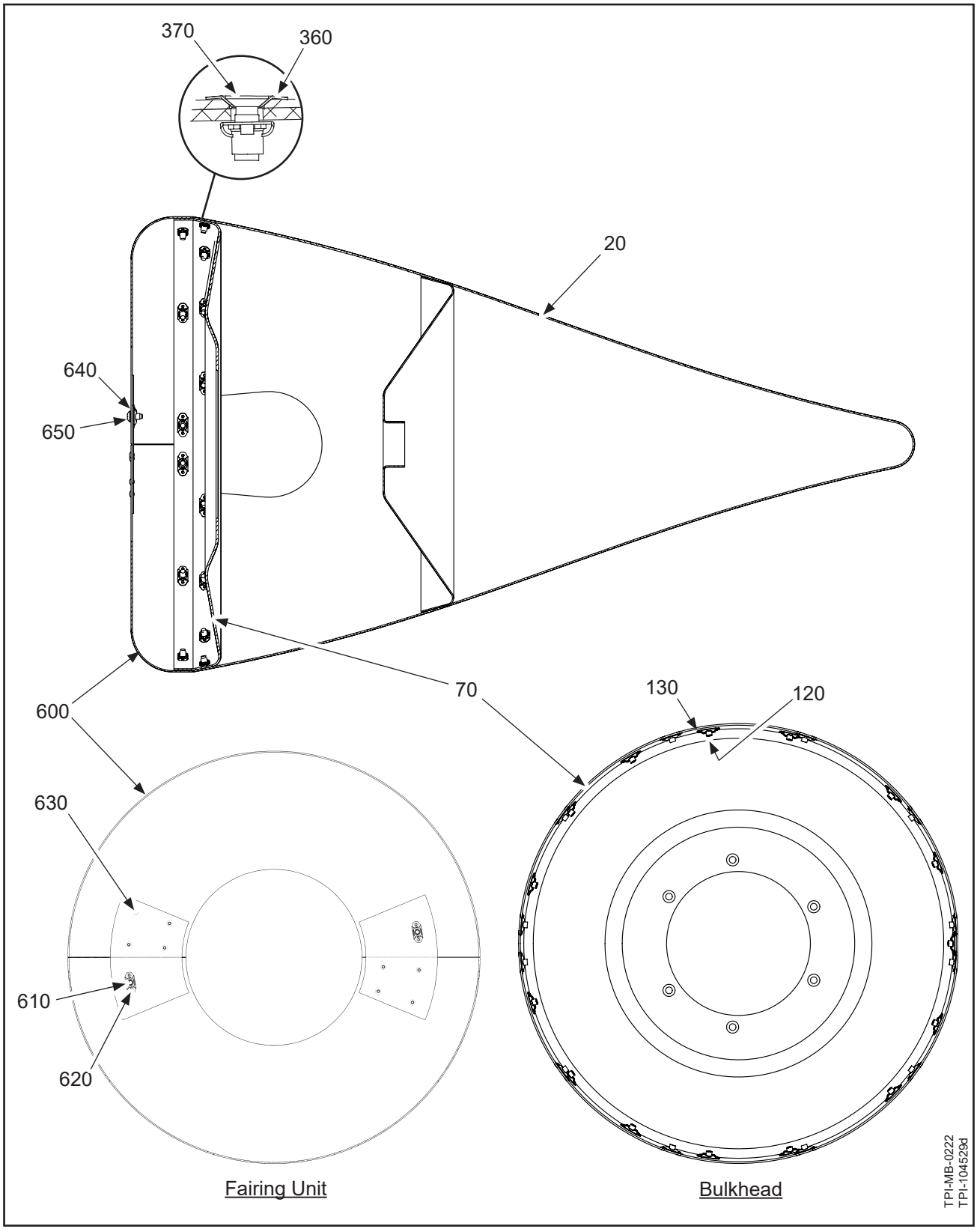
Spinner Model 106871( ) (Hybrid)
Figure 10-28

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-28					
-10	**106871( )**	**COMPOSITE SPINNER ASSEMBLY (HYBRID)**			
20	106911( )	• DOME UNIT, COMPOSITE		1	
25	B-6654-100	• • TAPE, UHMW 1 INCH X 36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1 INCH X 36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5 INCH X 36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	106910( )	• BULKHEAD UNIT		1	
90	B-7217	• • DOUBLER, MOUNTING, BULKHEAD		6	
110	B-3861-6	• • RIVET, UNIVERSAL HEAD, 0.125 DIA, ALUMINUM		18	
120	B-3849-3	• • NUTPLATE, FLOATING		6	
130	B-3847-5	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		24	
140	B-3846-3	• • NUTPLATE, FIXED		6	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		12	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		12	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

Spinner Model 106871( ) (Hybrid)



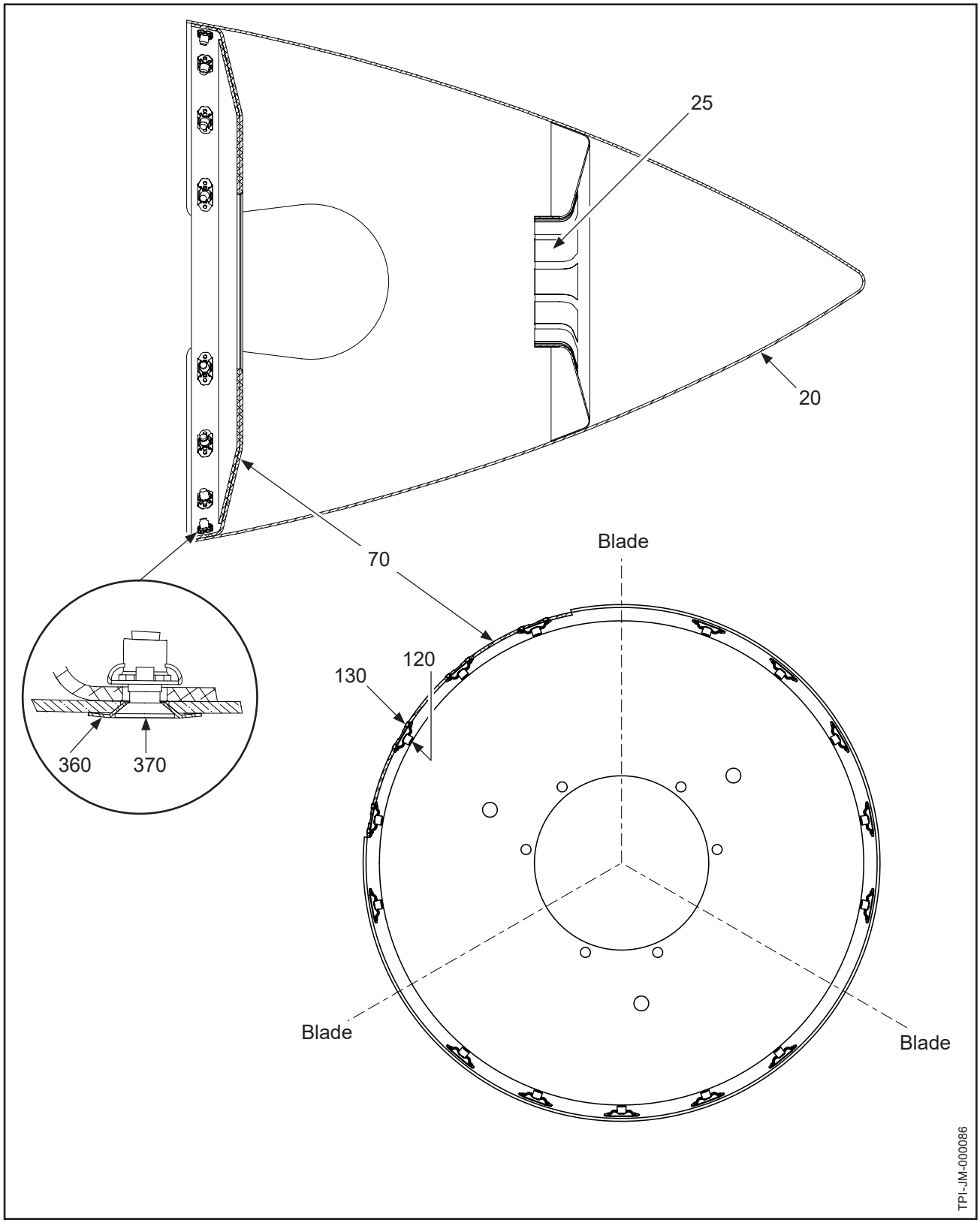
Spinner Model 106957( )
Figure 10-29

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-29					
-10	**106957( )**	**COMPOSITE SPINNER ASSEMBLY**			
20	106956( )	• DOME UNIT, COMPOSITE, 5 BLADE		1	
70	106955( )	• BULKHEAD UNIT - COMPOSITE		1	
120	B-3849-3	• • NUTPLATE, FLOATING		27	
130	B-3878-3-4	• • RIVET, 100° HEAD, 0.094 DIA, CRES		54	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME AND FAIRING UNIT MOUNTING)		27	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME AND FAIRING UNIT MOUNTING)		27	Y
600	104571	• FAIRING UNIT		1	
610	B-3849-3	• • NUTPLATE, FLOATING		2	
620	B-3878-3-4	• • RIVET, 100° HEAD, 0.094 DIA, CRES		4	
630	B-3861-6	• • RIVET, UNIVERSAL HEAD, 0.125 DIA, ALUMINUM		8	
630A	CR3213	• • CHERRYMAX® RIVET, NOMINAL DIAMETER UNIVERSAL HEAD, ALTERNATE FOR ITEM 630		8	
640	A-1020	• WASHER, FIBER		2	Y
650	B-3845-8	• SCREW, 10-32, TRUSS HEAD		2	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

Spinner Model 106957( )



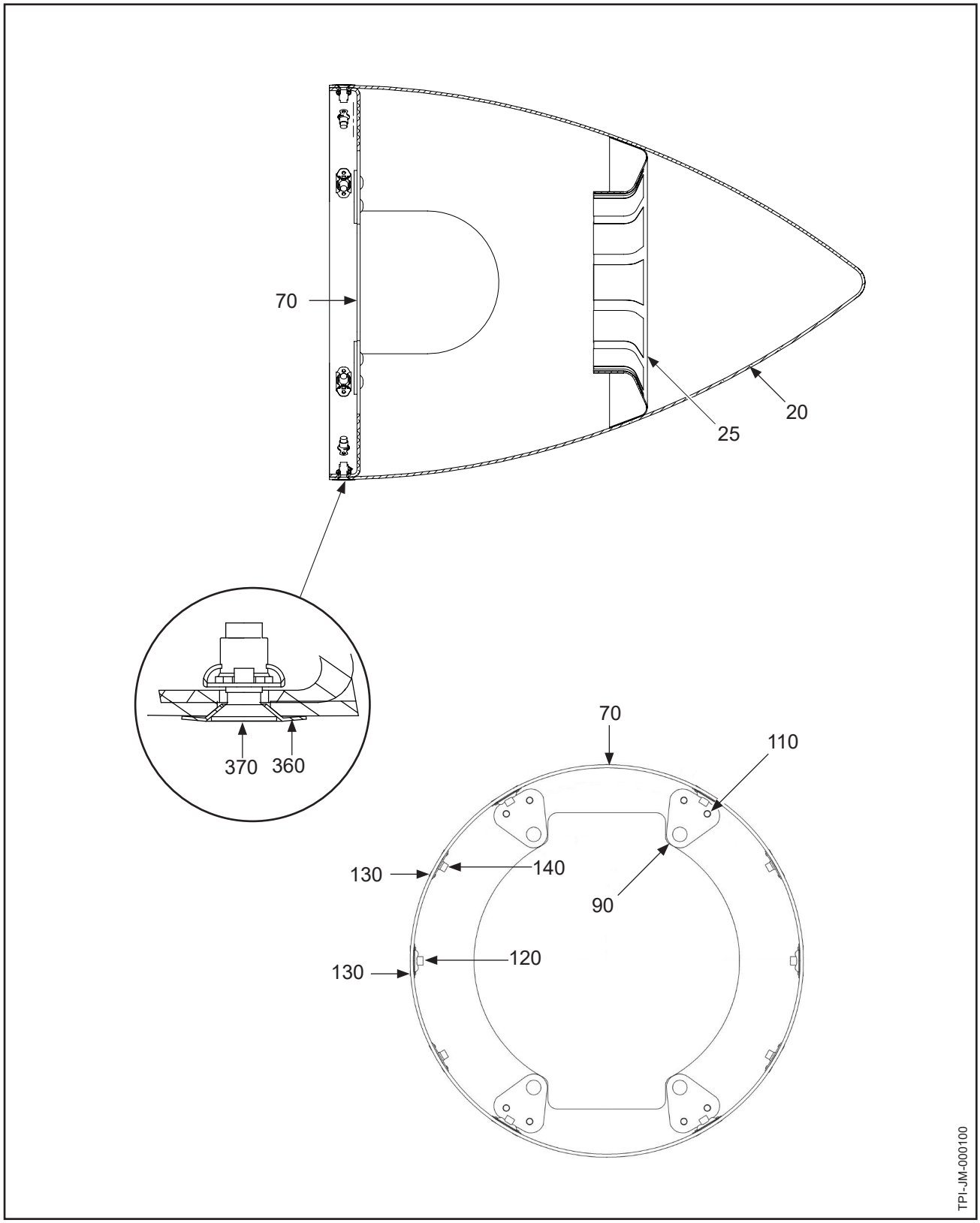
Spinner Model 107153( ) (Hybrid)
Figure 10-30

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-30					
-10	**107153( )**	**COMPOSITE SPINNER ASSEMBLY**			
20	107151( )	• DOME UNIT, COMPOSITE, 3-BLADE		1	
25	B-6654-100	• • 2302-5 TAPE, 1X36 YRD ROLL CM137		A/R	
25A	B-6654-100-1	• • 2302-5 TAPE, 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • 2302-5 TAPE, 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	107152( )	• BULKHEAD UNIT		1	
120	B-3849-3	• • NUTPLATE, FLOATING		15	
130	B-3847-5	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		30	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES		15	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES		15	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

Spinner Model 107153( ) (Hybrid)



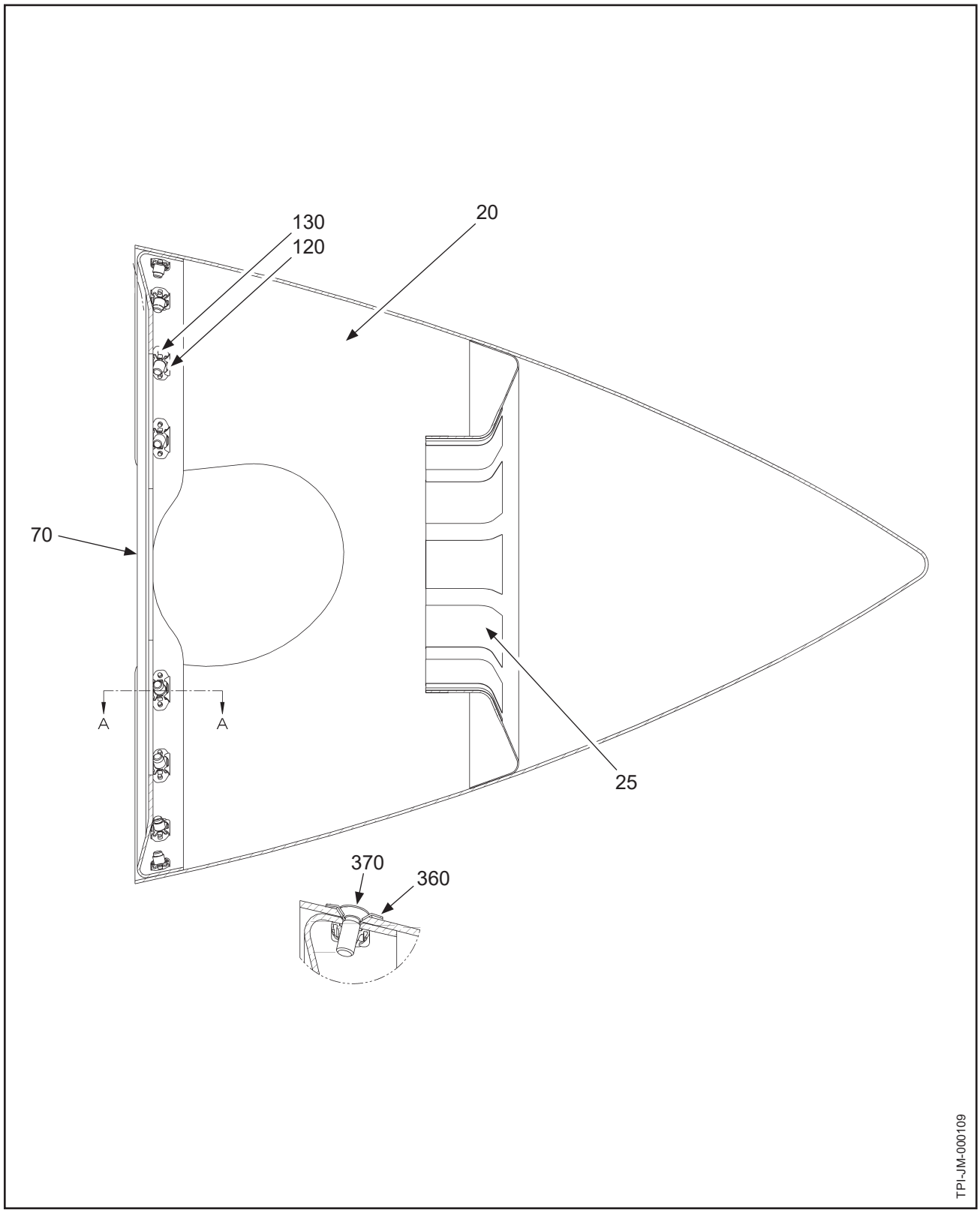
Spinner Model 107376( ) (Hybrid)
Figure 10-31

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-31					
-10	**107376( )**	**COMPOSITE SPINNER ASSEMBLY**			
20	107375( )	• DOME UNIT, COMPOSITE, 2-BLADE		1	
25	B-6654-100	• • 2302-5 TAPE, 1X36 YRD ROLL CM137		A/R	
25A	B-6654-100-1	• • 2302-5 TAPE, 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • 2302-5 TAPE, 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	C-3283-5( )	• BULKHEAD UNIT		1	
90	C-7737-4	• • DOUBLER, MOUNTING, BULKHEAD		4	
110	B-3862-7	• • RIVET, UNIVERSAL HEAD, 0.188 DIA, ALUMINUM		8	
120	B-3849-3	• • NUTPLATE, FLOATING		4	
130	B-3847-5	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		20	
140	B-3846-3	• • NUTPLATE, FIXED		6	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		10	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		10	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

Spinner Model 107376( ) (Hybrid)

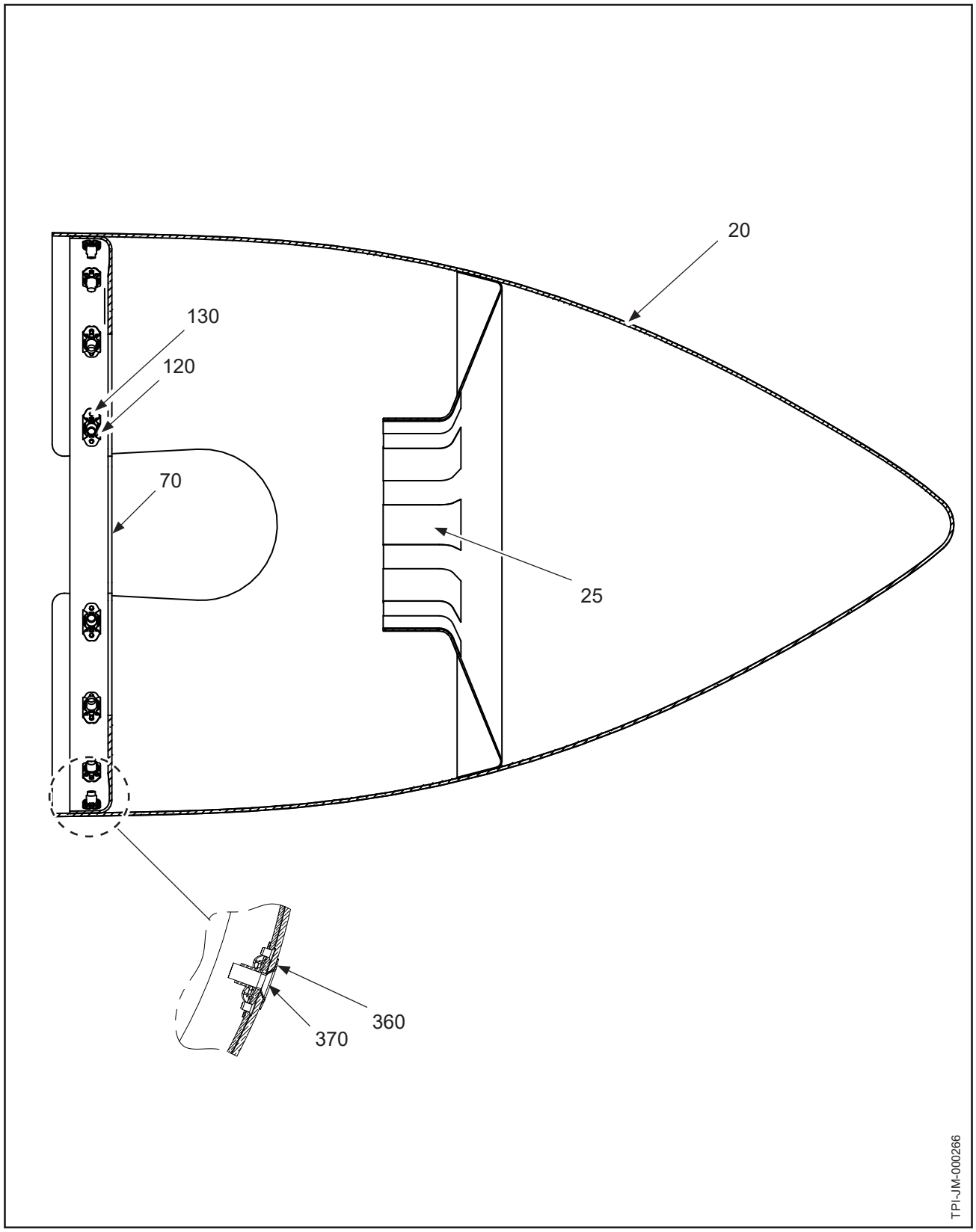


Spinner Model 107507( )
Figure 10-32

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-32					
-10	**107507( )**	**COMPOSITE SPINNER ASSEMBLY**			
20	107505( )	• DOME UNIT, COMPOSITE, 3-BLADE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	107506( )	• BULKHEAD UNIT, COMPOSITE		1	
120	B-3849-3	• • NUTPLATE, FLOATING		15	
130	B-3878-3-4	• • RIVET, 100° HEAD, 0.094 DIA, CRES		30	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		15	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		15	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

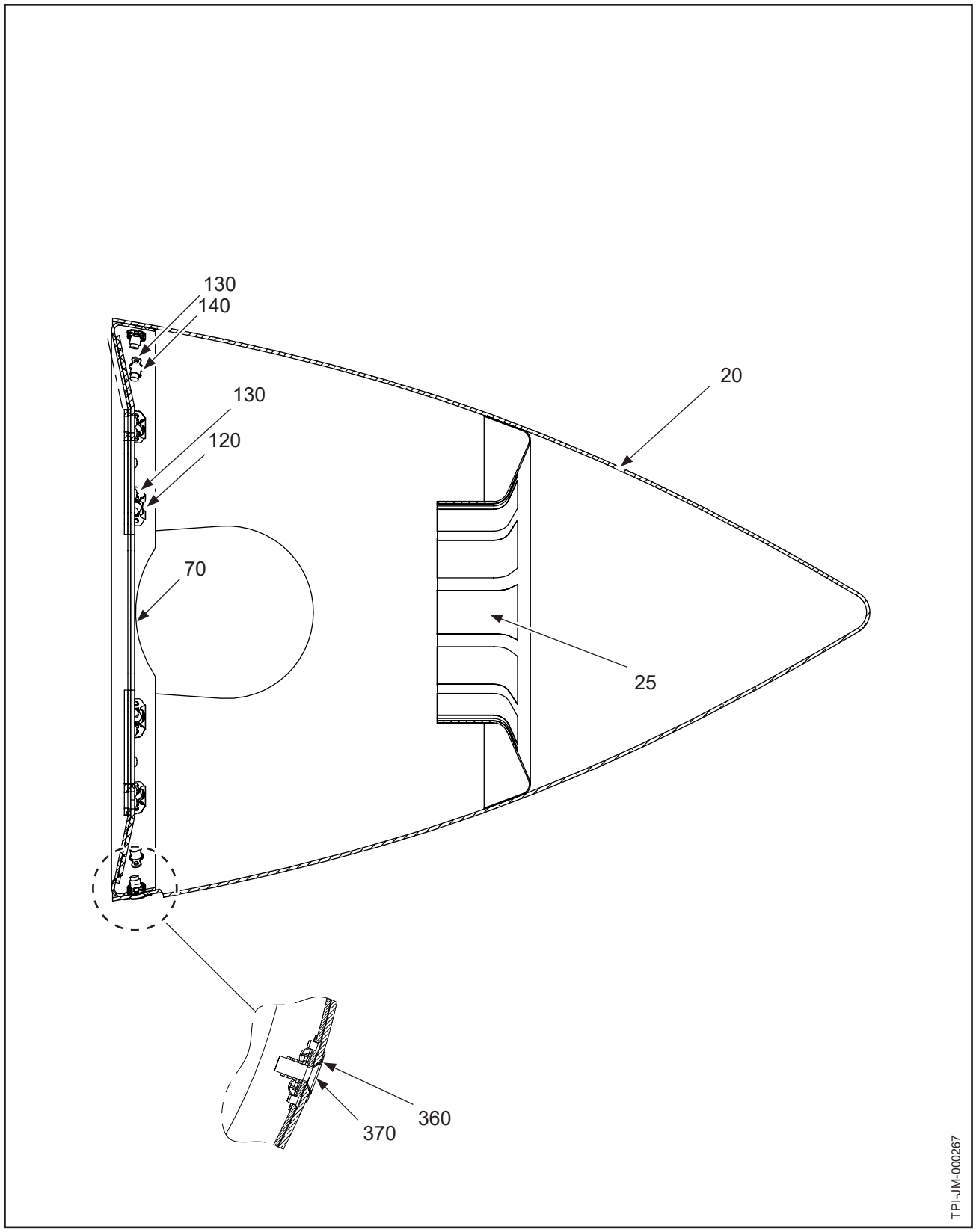


Spinner Model 107554( )
Figure 10-33

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-33					
-10	**107554( )**	**COMPOSITE SPINNER ASSEMBLY**			
20	107553( )	• DOME UNIT, COMPOSITE, 3-BLADE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	107552( )	• BULKHEAD UNIT, COMPOSITE		1	
120	B-3849-3	• • NUTPLATE, FLOATING		15	
130	B-3878-3-4	• • RIVET, 100° HEAD, 0.094 DIA, CRES		30	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		15	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		15	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED



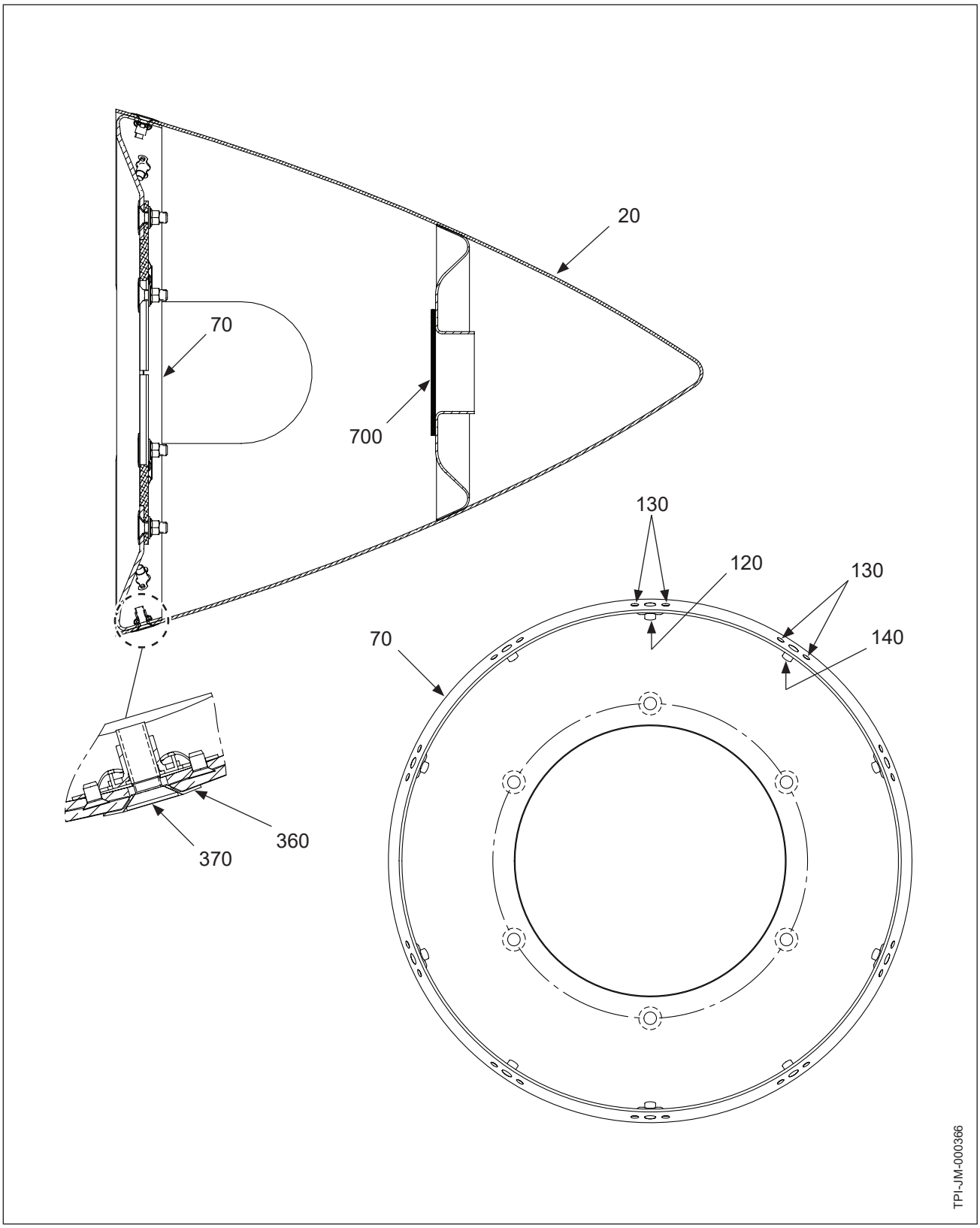
Spinner Model 107974( ) (Hybrid)
Figure 10-34

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-34					
-10	**107974( )**	**COMPOSITE SPINNER ASSEMBLY**			
20	107973( )	• DOME UNIT, COMPOSITE, 3-BLADE		1	
25	B-6654-100	• • TAPE, UHMW 1X36 YARD ROLL CM137		A/R	
25A	B-6654-100-1	• • TAPE, UHMW 1X36 INCH LENGTH CM137 ALTERNATE FOR ITEM 25		A/R	
25B	B-6654-150	• • TAPE, UHMW 1.5X36 YARD ROLL CM137 ALTERNATE FOR ITEM 25		A/R	
70	107937( )	• BULKHEAD UNIT		1	
120	B-3849-3	• • NUTPLATE, FLOATING		12	
130	B-3847-4	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		30	
140	B-3846-3	• • NUTPLATE, FIXED		3	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		15	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		15	Y

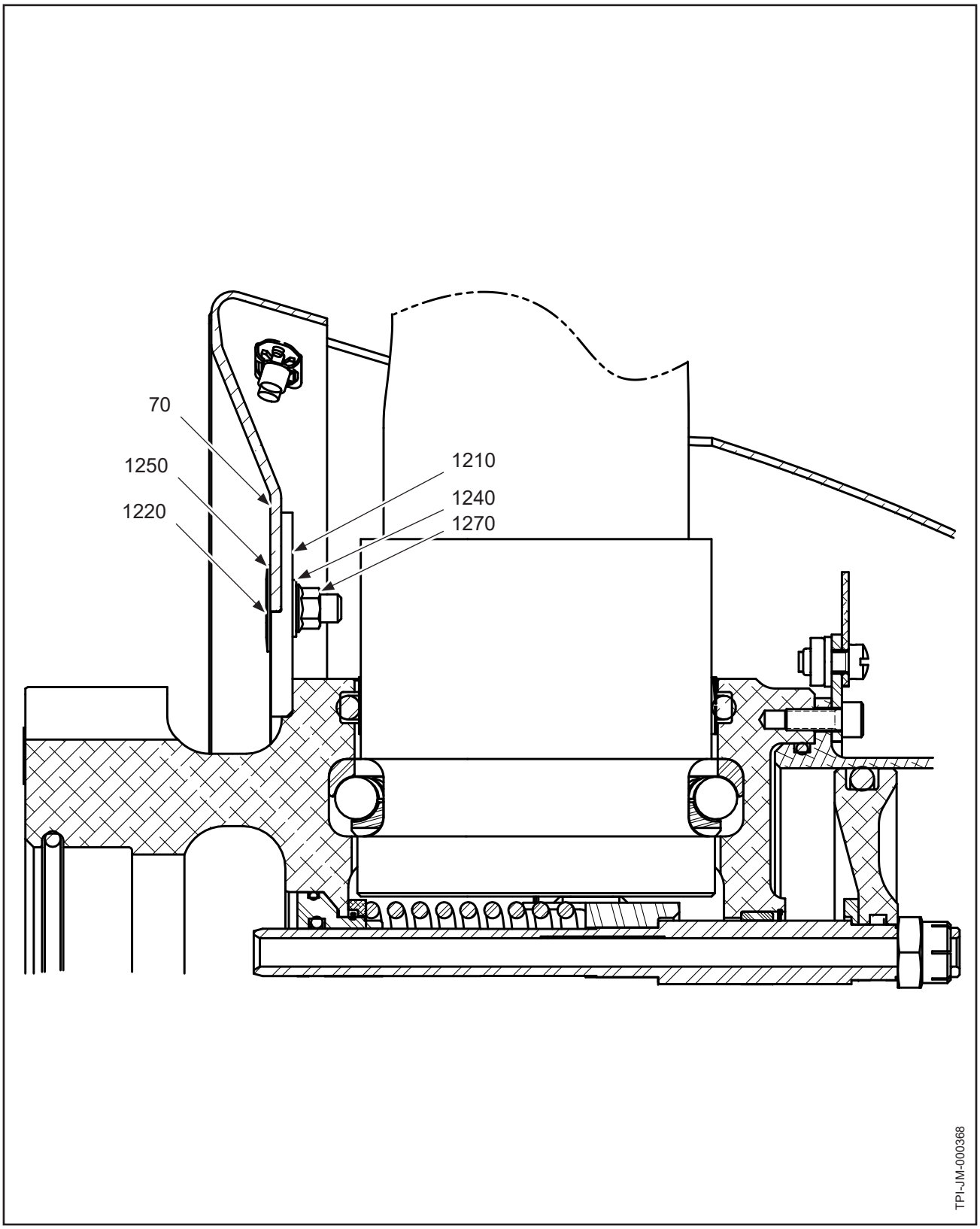
EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

Spinner Model 107974( ) (Hybrid)



Spinner Model 108013( )
Figure 10-35, page 1 of 2



Spinner Model 108013( )
Figure 10-35, page 2 of 2

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-35					
-10	**108013( )**	**COMPOSITE SPINNER ASSEMBLY**			
20	108011( )	• DOME UNIT, COMPOSITE		1	
70	108009( )	• BULKHEAD UNIT, COMPOSITE		1	
120	B-3849-3	• • NUTPLATE, FLOATING		6	
130	B-3847-4	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		20	
140	B-3846-3	• • NUTPLATE, FIXED		4	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		10	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		10	Y
700	105542	• SHIM, SPINNER		10	
1210	107134	• RING, MOUNTING, SPINNER	A	1	
	106094	• RING, MOUNTING, SPINNER	B	1	
1220	104789	• SCREW, 1/4-28, 100° HEAD		6	Y
1240	B-3837-0432	• WASHER, CRES		6	Y
1250	B-3860-416	• WASHER, DIMPLED, 100°, CRES		6	Y
1270	B-3814	• NUT, 1/4-28, HEX, SELF-LOCKING		6	

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL
A	108013 spinner assembly		
B	108013-1 spinner assembly		

- ITEM NOT ILLUSTRATED

Spinner Model 108013( )

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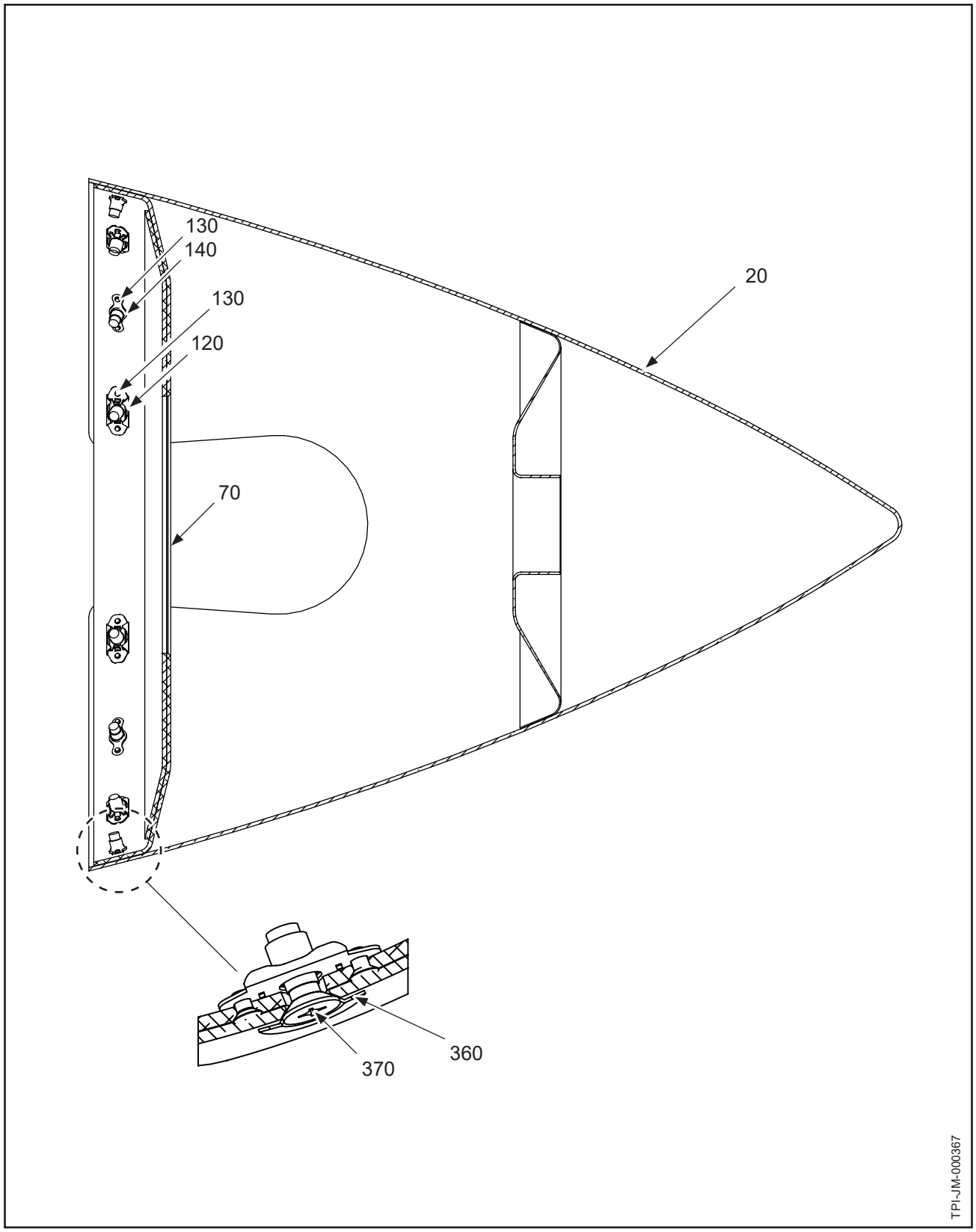

Spinner Model 108482( ) (Hybrid)
Figure 10-36

FIG./ITEM NUMBER	PART NUMBER	DESCRIPTION	EFF CODE	UPA	O/H
10-36					
-10	**108482( )**	**COMPOSITE SPINNER ASSEMBLY**			
20	108481( )	• DOME UNIT, COMPOSITE		1	
70	108480( )	• BULKHEAD UNIT		1	
120	B-3849-3	• • NUTPLATE, FLOATING		9	
130	B-3847-5	• • RIVET, 100° HEAD, 0.094 DIA, ALUMINUM		30	
140	B-3846-3	• • NUTPLATE, FIXED		6	
360	B-3860-10L	• WASHER, DIMPLED, 100° CRES (SPINNER DOME MOUNTING)		15	Y
370	B-3867-272	• SCREW, 10-32, 100° HEAD, CRES (SPINNER DOME MOUNTING)		15	Y

EFFECTIVITY	MODEL	EFFECTIVITY	MODEL

- ITEM NOT ILLUSTRATED

Spinner Model 108482( ) (Hybrid)

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