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HARTZELL

MANUAL REVISION TRANSMITTAL

MANUAL 202A, VOLUME 7 (61-01-02)
Standard Practices Manual

REVISION 51 dated June 2021

Attached is a copy of Revision 51 to Hartzell Propeller Inc. Manual 202A, Volume 7.

Page Control Chart for Revision 51:

Remove Chapter/Page No.	**Insert** Chapter/Page No.
ENTIRE MANUAL	**ENTIRE MANUAL**

NOTE 1: When the manual revision has been inserted in the manual, record the information required on the Record of Revisions page in this manual.

This page may be discarded after proper filing of the revision.

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Manual No. 202A, Volume 7
61-01-02
Revision 51
June 2021

HARTZELL

Standard Practices Manual
Volume 7

Consumable Materials
Packaging and Storage

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202A, VOLUME 7 - REVISION 51 HIGHLIGHTS

Revision 51, dated June 2021 is a major revision distributed in its entirety.

REVISION 51 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 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 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 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
Original	Mar/93	New
Revision 1	Jun/94	Minor Revision
Revision 2	Apr/95	Minor Revision
Revision 3	Jun/95	Minor Revision
Revision 4	Apr/96	Minor Revision
Revision 5	Nov/96	Minor Revision
Revision 6	Mar/97	Minor Revision
Revision 7	Oct/97	Minor Revision
Revision 8	Jan/98	Minor Revision
Revision 9	Jun/98	Minor Revision
Revision 10	Dec/98	Minor Revision
Revision 11	Sep/99	Minor Revision
Revision 12	Nov/00	Minor Revision
Revision 13	Sep/01	Minor Revision
Revision 14	Feb/02	Minor Revision
Revision 15	May/02	Minor Revision
Revision 16	Sep/02	Minor Revision
Revision 17	Dec/02	Minor Revision
Revision 18	Aug/03	Minor Revision
Revision 19	Sep/03	Minor Revision
Revision 20	Oct/03	Minor Revision
Revision 21	Nov/03	Minor Revision
Revision 22	Dec/03	Minor Revision
Revision 23	Feb/04	Minor Revision
Revision 24	Apr/04	Minor Revision
Revision 25	Jun/04	Minor Revision
Revision 26	Aug/04	Minor Revision
Revision 27	Oct/04	Major Revision - Volume 7
Revision 28	Aug/05	Minor Revision
Revision 29	Aug/06	Minor Revision
Revision 30	Jan/07	Minor Revision
Revision 31	Aug/08	Minor Revision
Revision 32	Jun/09	Minor Revision
Revision 33	Jun/10	Minor Revision
Revision 34	Feb/12	Minor Revision
Revision 35	Oct/12	Minor Revision
Revision 36	May/14	Minor Revision
Revision 37	Feb/15	Minor Revision
Revision 38	Jun/15	Minor Revision
Revision 39	Nov/15	Minor Revision
Revision 40	Feb/16	Minor Revision
Revision 41	Apr/16	Minor Revision
Revision 42	Aug/16	Minor Revision
Revision 43	Jan/17	Minor Revision

Revision No.	Issue Date	Comments
Revision 44	Apr/17	Minor Revision
Revision 45	Oct/17	Minor Revision
Revision 46	Jul/18	Minor Revision
Revision 47	Jan/19	Minor Revision
Revision 48	May/19	Minor Revision
Revision 49	Jan/20	Minor Revision
Revision 50	Dec/20	Minor Revision
Revision 51	Jun/21	Minor Revision

RECORD OF REVISIONS

This is a permanent historical record of revisions inserted into this manual.
All previous revisions have been incorporated in Revision 51.

Revision Number	Issue Date	Date Inserted	Inserted By
51	Jun/21	Jun/21	HPI

Revision Number	Issue Date	Date Inserted	Inserted By

RECORD OF REVISIONS

This is a permanent historical record of revisions inserted into this manual.
All previous revisions have been incorporated in Revision 51.

Revision Number	Issue Date	Date Inserted	Inserted By

Revision Number	Issue Date	Date Inserted	Inserted By

RECORD OF TEMPORARY REVISIONS

Update this page to show all temporary revisions inserted into this manual.
Revision 34 includes all prior temporary revisions, up to and including TR-012.

Temporary Revision No.	Section/ Page	Issue Date	Date Inserted	Inserted By	Date Removed	Removed By
TR-013	1-30	Jun/12	Jun/12	HPI	Oct/12	HPI
TR-014	1-42	Feb/13	Feb/13	HPI	May/14	HPI
TR-015	1-43	Mar/15	Mar/15	HPI	Jun/15	HPI
TR-016	1-43	Sep/15	Sep/15	HPI	Nov/15	HPI
TR-017	1-10	Jul/16	Jul/16	HPI	Aug/16	HPI
TR-018	1-43	Jul/16	Jul/16	HPI	Aug/16	HPI
TR-019	1-43	Jun/18	Jun/18	HPI	Jul/18	HPI
TR-020	1-12	Mar/20	Mar/20	HPI	Dec/20	HPI
TR-021	1-44	Sep/20	Sep/20	HPI	Dec/20	HPI

RECORD OF TEMPORARY REVISIONS

Update this page to show all temporary revisions inserted into this manual.
Revision 34 includes all prior temporary revisions, up to and including TR-012.

Temporary Revision No.	Section/ Page	Issue Date	Date Inserted	Inserted By	Date Removed	Removed By

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 159A	Orig., Mar/93
Service Instructions:	
SI 209	Rev. 11, Sep/99

Service Document Number	Incorporation Rev./Date
Service Letters:	
HC-SL-61-170	Rev. 11, Sep/99
SL 212	Rev. 41, Apr/16
Service Advisories:	
SA 19	Orig., Mar/93

SERVICE DOCUMENT LIST

Service Document Number	Incorporation Rev./Date

Service Document Number	Incorporation Rev./Date

LIST OF EFFECTIVE PAGES

Chapter	Page	Rev. Level	Date
Cover/Inside Cover	Cover/Inside Cover	Rev. 51	Jun/21
Revision Highlights	1 thru 4	Rev. 51	Jun/21
Record of Revisions	1 and 2	Rev. 51	Jun/21
Record of Temporary Revisions	1 and 2	Rev. 51	Jun/21
Service Document List	1 and 2	Rev. 51	Jun/21
List of Effective Pages	1 and 2	Rev. 51	Jun/21
Table of Contents	1 and 2	Rev. 51	Jun/21
Introduction	1 thru 18	Rev. 51	Jun/21
Consumable Materials	1-1 thru 1-58	Rev. 51	Jun/21
Vendor Cross Reference	2-1 and 2-2	Rev. 51	Jun/21
Packaging and Storage	3-1 thru 3-32	Rev. 51	Jun/21

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TABLE OF CONTENTS

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INTRODUCTION - CONTENTS

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1. General

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 is to be used in propeller repair stations by personnel that are trained and experienced with Hartzell Propeller Inc. products.

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

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

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

2. Reference Publications

A. Hartzell Propeller Inc. 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) The Hartzell Propeller Inc. Standard Practices Manual 202A has several volumes. A complete set consists of the following:

Volume Number	Chapter Number	Chapter Name
Volume 1	1	Cleaning
	2	Paint and Finish
Volume 2	1	Eddy Current Inspection
	2	Magnetic Particle Inspection
	3	Penetrant Inspection
Volume 3	1	Aluminum Hub Overhaul
Volume 4	1	Steel Hub Overhaul
Volume 5	1	Blade Clamp Overhaul
Volume 6	1	Special Inspections
	2	Parts Identification and Marking
	3	Part Retirement Procedures
	4	Vendor Cross Reference
Volume 7	1	Consumable Materials
	3	Packaging and Storage (Available on the Hartzell Propeller Inc. website at www.hartzellprop.com)
Volume 8	1	Standard Repairs and Instructions
	2	Special Adhesive and Bonding
Volume 9	1	Shot Peening
	2	Approved Facilities
Volume 10	1	Hard Chrome Re-plating
	2	Cadmium Replating
	3	Chromic Acid Anodizing
Volume 11	1	Propeller Lubrication
	2	Static and Dynamic Balance

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

Manual No. (ATA No.)	Available at www.hartzellprop.com	Hartzell Propeller Inc. Manual Title
n/a	Yes	Active Hartzell Propeller Inc. Service Bulletins, Service Letters, Service Instructions, and Service Advisories
Manual 130B (61-23-30)	-	Mechanically Actuated Governors and Accessories 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	Propeller Ice Protection System Manual

B. Vendor Publications

None.

3. Personnel Requirements (Rev. 1)

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 Inc. 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. 1)

A. Special Tooling

(1) Special tooling may be required for procedures in this manual. For further tooling information, refer to Hartzell Propeller Inc. 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 this manual.

(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 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. Component Life

   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 Inc. 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) Blades and hubs are sometimes replaced while in service or at overhaul.

(a) Maintaining separate TSN and TSO histories for a replacement hub or blade is required.

(b) Hub replacement

1 If the hub is replaced, the replacement hub serial number must be recorded (the entry signed and dated) in the propeller logbook.

2 The propeller will be identified with the serial number of the replacement hub.

NOTE: Propeller assembly serial numbers are impression stamped on the hub. For stamping information, refer to the Parts Identification and Marking chapter of Hartzell Propeller Inc. Standard Practices Manual 202A (61-01-02).

3 The TSN and TSO of the replacement hub must be recorded and maintained in the propeller logbook.

4 If tracking any component(s) other than the hub/blades, maintain these TSN/TSO records separately in the propeller logbook.

NOTE: Hub replacement does not affect the TSN/TSO of any other propeller components.

7. Propeller Critical Parts (Rev. 1)

A. Propeller Critical Parts

(1) Procedures in this manual may involve Propeller Critical Parts (PCP).

(a) These procedures have been substantiated based on Engineering analysis that expects this product will be operated and maintained using the procedures and inspections provided in the Instructions for Continued Airworthiness (ICA) for this product.

(b) Refer to the Illustrated Parts List chapter in the applicable Hartzell Propeller Inc. maintenance manual to identify the Propeller Critical Parts.

(2) Numerous propeller system parts can produce a propeller Major or Hazardous effect, even though those parts may not be considered as Propeller Critical Parts.

(a) The operating and maintenance procedures and inspections provided in the ICA for this product are, therefore, expected to be accomplished for all propeller system parts.

8. Hartzell Propeller Inc. Contact Information (Rev. 2)

A. Product Support Department

(1) Contact the Product Support Department of Hartzell Propeller Inc. 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) Hartzell Propeller Inc. Product Support 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) Hartzell Propeller Inc. Product Support 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 Inc. website at www.hartzellprop.com.

B. Technical Publications Department

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

Hartzell Propeller Inc.
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 Inc. 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 Inc. worldwide network of aftermarket distributors and approved repair facilities is available on the Hartzell website at www.hartzellprop.com.

9. Definitions (Rev. 4)

A basic understanding of the following terms will assist in maintaining and operating Hartzell Propeller Inc. 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
Brinelling	A depression caused by failure of the material in compression

Term	Definition
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.
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.

Term	Definition
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
Dent	The permanent deflection of the cross section that is visible on both sides with no visible change in cross sectional thickness
Depression	Surface area where the material has been compressed but not removed
Distortion	Alteration of the original shape or size of a component
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

Term	Definition
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 the propeller blade or hub assembly 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
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

Term	Definition
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
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

Term	Definition
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
Split	Delamination of blade extending to the blade surface, normally found near the trailing edge or tip
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

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

10. 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
N	Newtons

Abbreviation	Term
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

CONSUMABLE MATERIALS - CONTENTS

LIST OF FIGURES

LIST OF TABLES

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1. Introduction

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 CHAPTER OF THE APPLICABLE OVERHAUL MANUAL(S) FOR THE IDENTIFICATION OF PROPELLER CRITICAL PARTS.

A. General

(1) This section contains information on materials most commonly used for cleaning, repair, painting, etc.

(2) If there is a need to use a material not listed in this section, contact Hartzell Propeller Inc. for approval and applicable control requirements.

(3) To order Sherwin-Williams paints that are specified in this manual, contact Hartzell Propeller Inc. Aftermarket Sales or refer to the Sherwin-Williams Product Finishes Global Finishes Group website at http://oem.sherwin-williams.com to find the location of the nearest distributor.

(a) The last four digits of a Sherwin-Williams part number, i.e., the 4311 in the following number F63TXB9629-4311, indicates the local Sherwin-Williams office and is not a part of the part number.

B. Material Control Requirements

(1) Table 1-1 lists the supply basis, cure time, pot life, storage temperature, and shelf life for consumables including adhesives, sealants, lubricants, paints, primers, and other miscellaneous materials.

(2) The listed specifications describe limitations for shelf life and temperature control.

(a) The following terms are used to define shelf life:

1 DOM: Date of Manufacture

2 DOS: Date of Shipment from supplier

3 mos: Months

4 MD: Use Manufaturer’s Expiration Date - Hartzell Accepts Manufacturer’s Expiration Date As-Is

(b) The following terms are used to define temperature control:

1 F: Frozen, Store below 0°F (-17° C)

2 F1 = Frozen, -40°F (-40°C) maximum

3 R: Refrigerate, 40° - 60°F (4° - 15°C)

4 RT: Controlled room temperature, 60° - 80°F (15° - 26°C)

5 UC: No special Hartzell Propeller Inc. requirement, follow manufacturer's requirements

6 SV: Store Vertically. Modifer code used as a suffix indicating liquids must be stored vertically in their container in order for the shelf life to be valid. Example, RTSV - controlled room temperature 60°-80°F, store vertically.

(3) Supply basis codes have been assigned to each consumable material to indicate if the item can be purchased from Hartzell Propeller Inc. The following supply basis codes have been assigned:

(a) Y = customer can get the consumable material either from Hartzell or from a local source

(b) N = Hartzell does not sell the consumable material, the customer must purchase it locally

(c) HPI = Hartzell is the only supplier of the consumable material, the customer must purchase the consumable material from Hartzell

(d) S = Customer can get the consumable material from any supplier as long as the material meets the requirements of the specification

(4) For materials purchased directly from Hartzell Propeller Inc., the expiration date control information required by Hartzell Propeller Inc. in Table 1-1 will be added to the package or container in a location different than the manufacturer's label. The Hartzell Propeller Inc. control information takes precedence over any conflicting information from the consumable manufacturer.

(5) Materials purchased directly from Hartzell Propeller Inc. will not have storage temperature control information added to the package or container. The temperature control information contained in Table 1-1 in this chapter takes precedence over any conflicting information from the manufacturer.

(6) For materials purchased from other sources, the purchaser is required to record the expiration date control information required by Hartzell Propeller Inc. on the package or container in accordance with Table 1-1 in this chapter. Storage temperature control information in Table 1-1 must be observed.

C. Date Code Formats

(1) The expiration date may be recorded using the letters “Exp” followed by a month and year. In this case, the shelf life of that material extends through the last day of the month and year recorded.

(2) The cure date for elastomeric products such as O-rings, gaskets, and hoses is normally recorded on the packaging using the numbers 1 through 4, the letter “Q,” and the last two numbers of the year. This marking indicates that the material was cured during a particular “quarter”, i.e., three month period, of the stated year.

(3) The cure date marking will suffice for control purposes. The actual date of expiration will occur after the last day of the quarter in the year projected from the cure date plus the allowable number of years for storage.

D. Consumable Material Management Procedures

(1) Rotate stock on a “first in-first out” basis.

(2) Epoxy and other materials normally require, at minimum, a room temperature cure. Lower temperatures may greatly increase the cure time. Temperatures below 60° F (15° C) may cause the epoxy to not cure at all.

(3) The maximum storage time for standard O-rings, gaskets, and diaphragms is 10 years from the date of cure.

(a) The maximum storage time for O-rings, part numbers 459413032, 459413112, 103043, and 103045 produced using Viton compound, is 20 years from the date of cure.

NOTE: Viton is a proprietary name for fluoroelastomer compound that complies with certain AMS standards.

(b) Color identification is optional for individually packaged O-rings.

(4) The maximum storage time for hoses is 8 years from the date of cure.

(5) Before the use of consumable materials, technicians are responsible to examine consumable material labels for specified shelf life and storage requirements and discard any consumable materials found with expired shelf life.

E. Revisions

(1) Alternate

(a) Alternate consumable materials are identified by the term "ALTERNATE is CM _____". Alternate consumable materials are considered acceptable for continued use and existing stock of consumable materials may be used for maintenance and/or repair. The consumable materials may be used interchangeably when ordering/stocking new consumable materials.

(2) Supersedure

(a) Consumable material changes are identified by the terms “SUPERSEDES CM _____” or “SUPERSEDED BY CM _____”. Superseded consumable materials are considered acceptable for continued use and existing stock of superseded consumable materials may be used for maintenance and/or repair. Superseded consumable materials may no longer be available, and the new consumable material number must be used when ordering/stocking new consumable materials.

(3) Replacement

(a) Consumable material changes identified by the terms "REPLACES CM _____” or “REPLACED BY CM _____” are considered acceptable for continued use, but must be replaced with the new consumable material at overhaul. Existing stock of consumable materials may not be used for maintenance and/or repair of effected assemblies. Replaced consumable materials may no longer be available, and the new consumable material number must be used when ordering/stocking consumable materials.

F. Hartzell Propeller Inc. Propeller Overhaul Kits

NOTE: Specific Hartzell Propeller Inc. manuals and service documents are available on the Hartzell Propeller Inc. website at www.hartzellprop.com. Refer to the Required Publications section in the Introduction chapter of this manual for the identification of these publications.

(1) Hartzell Propeller Inc. has compiled propeller overhaul kits for the convenience of its customers.

(2) Propeller overhaul intervals are published in Hartzell Propeller Inc. Service Letter HC-SL-61-61Y. Use of propeller overhaul kits at the time of overhaul is recommended, but is not required.

(3) A propeller overhaul kit part number is based on the propeller model number, followed by the letters “OH”. For example, the part number for an overhaul kit for a model HC-E4N-3G propeller is HC-E4N-3G-OH.

(a) Propeller overhaul kits for propeller models with more than 12 characters will not contain the “OH” suffix.

(4) A Hartzell Propeller Inc. overhaul kit contains the following:

(a) All consumable parts (O-rings, seals, gaskets, etc.) except as noted in Paragraph 1.F.(5)

(b) Duplicate parts that are propeller configuration specific, i.e. screws and washers for mounting beta pick-ups, plastic spring retainers, etc.

(c) The standard size only part for any part that is dimensionally specific or has an oversized alternate; i.e., dowel pins, bushings, blade needle bearings, etc.

(5) A Hartzell Propeller Inc. overhaul kit does not contain:

(a) Paint kit(s) and other consumable items, such as grease, sealants, and thread locking compounds used in propeller assembly

1 Hazardous material shipping restrictions prohibit shipping of these items

(b) De-ice boots, anti-icing boots, and any other de-ice hardware

1 Propeller de-ice hardware may be controlled by the airframe manufacturer, airframe STC holder, or in some cases by Hartzell Propeller Inc.

2 In all cases, the type certificate holder of the de-ice system is the final authority to determine which de-ice items are to be replaced at overhaul.

(c) Any part for which an overhaul procedure is provided for in the overhaul manual

(d) Steel hub reciprocating propeller hydraulic and valve parts

(e) Unknown Quantity or Floor Stock Items

1 Balance weights and associated hardware

2 Compact propeller high pitch adjustment washers

3 Feathering spring spacers

(f) Application Specific Items

1 Spinner mounting hardware

a Refer to Hartzell Propeller Inc. Application Guide Manual 159 (61-02-59), Hartzell Propeller Inc. Spinner Assembly Maintenance Manual 127 (61-16-27), or Hartzell Propeller Inc. Composite Spinner Assembly Maintenance Manual 148 (61-16-48) for application of specific spinner mounting hardware.

2 Nuts and washers used to clamp the hub halves together and are used for hub mounted bulkhead attachment

3 Mounting studs for F-flange or N-flange compact propellers

4 Compact propeller hub bolt-on extension hardware

5 Start lock mounting hardware

a Refer to Hartzell Propeller Inc. Application Guide Manual 159 (61-02-59), Hartzell Propeller Inc. Spinner Assembly Maintenance Manual 127 (61-16-27), or Hartzell Propeller Inc. Composite Spinner Assembly Maintenance Manual 148 (61-16-48) for application specific start lock mounting hardware.

6 Counterweight slug mounting hardware

a Refer to Hartzell Propeller Inc. Application Guide Manual 159 (61-02-59) for application specific counterweight slug mounting hardware.

(6) Propeller Overhaul Kit Expiration Date

(a) The **cure date** of a propeller overhaul kit is marked on the outside of the package when the overhaul kit is assembled at Hartzell Propeller Inc.

1 The cure date of the propeller overhaul kit package is the oldest cure date of all applicable parts contained in the propeller overhaul kit.

(b) The **expiration date** of a propeller overhaul kit is calculated using the cure date that is identified on the outside of the package.

1 The actual date of expiration of the propeller overhaul kit will occur after the last day of the quarter in the year projected from the cure date, plus 10 years for storage, in accordance with this chapter.

(c) Using the cure date marked on the outside of the propeller overhaul kit package, calculate the expiration date of the kit.

(d) Record the expiration date of the propeller overhaul kit on the outside of the package.

(7) Options when a propeller overhaul kit has expired before use:

(a) Option 1:

1 Open the propeller overhaul kit package.

2 Identify and remove the part(s) that has expired.

a Using the cure date of each part in the propeller overhaul kit, calculate its expiration date.

b The actual date of expiration of a part will occur after the last day of the quarter in the year projected from its cure date, plus 10 years for storage, in accordance with this chapter.

3 Replace any expired part(s) with an unexpired part(s).

4 Revise the expiration date on the propeller overhaul kit package to match the nearest upcoming expiration date of any parts in the overhaul kit.

5 Reseal the propeller overhaul kit package.

(b) Option 2:

1 Remove all contents from the propeller overhaul kit.

2 Using the cure date of each part in the propeller overhaul kit, calculate its expiration date in accordance with this chapter, if applicable.

3 Remove any parts that have expired.

4 Disperse the remaining individual parts into normal parts stock.

(8) All parts required to be replaced at overhaul are identified by a “Y” in the “OH” column in the Illustrated Parts List chapter of the applicable Hartzell Propeller Inc. Overhaul manual.

(a) Not all parts designated by the “Y” in the “OH” column of the Illustrated Parts List chapter of the Hartzell Propeller Inc. Overhaul manuals are included in the propeller overhaul kit.

(9) A list of the Hartzell Propeller Inc. propeller overhaul kits, including kit contents, and the revision level of the kit, is contained on the Hartzell Propeller Inc. Technical Documents Library on CD Rom.

(a) The list of propeller overhaul kits contained on the Hartzell Propeller Inc. Technical Documents Library on CD Rom is to be used for reference only, and does not include all mandatory overhaul replacement parts that are defined in the Illustrated Parts List chapter of the applicable propeller Overhaul Manual.

(b) The list of overhaul kits is updated each time a new revision of the Hartzell Propeller Inc. Technical Documents Library on CD Rom is issued.

NOTE: A subscription to the Hartzell Propeller Inc. Technical Documents Library on CD Rom may be purchased by contacting Hartzell Propeller Inc. New Parts Sales at newpartssales@hartzellprop.com.

(c) The contents of an overhaul kit that is contained on the Hartzell Propeller Inc. Technical Documents Library on CD Rom may not agree with the contents listed on the shipping documents for the overhaul kit.

1 Compare the revision level of the overhaul kit on the shipping paperwork with the revision level of the overhaul kit on the Hartzell Propeller Inc. Technical Documents Library on CD Rom.

2 If the parts lists of the two sources do not agree, refer to the overhaul kit information that has the most recent revision level.

3 If there is a question about a Hartzell Propeller Inc. propeller overhaul kit, contact Hartzell Propeller Inc. Aftermarket Sales.

G. Approved Lubricants

CAUTION: USE ONLY HARTZELL PROPELLER INC. APPROVED GREASE. DO NOT MIX DIFFERENT SPECIFICATIONS AND/OR BRANDS OF GREASE EXCEPT AS NOTED IN THIS SECTION.

NOTE: A label (Refer to Figure 1-1) identifying the type of grease used for previous lubrication (if used) is installed on the propeller piston or on the blade clamp. If the propeller is to be lubricated with a different type of grease, the propeller must be disassembled and cleaned of old grease before relubricating.

Lubrication Labels
Figure 1-1

(1) The following lubricants are approved for use in Hartzell Propeller Inc. propellers:

NOTE: Some propellers require a specified grease, refer to Hartzell Propeller Inc. Manual 159.

NYCO GN-3058 - Operates across a broad temperature range from -66° F (-54° C) to 247° F (175° C). Provides good stability resulting in reduced leakage and oil separation. Provides improved water washout and corrosion resistance.

Aeroshell 5 - Good high temperature qualities, very little oil separation or leakage. Cannot be used in temperatures colder than -40° F (-40° C). Aircraft serviced with this grease must be placarded to indicate that flight is prohibited if the outside air temperature is less than -40° F (-40° C).

Aeroshell 6 - “All purpose” grease. Used in most Hartzell Propeller Inc. propellers before January 6, 2020. Higher leakage/oil separation than Aeroshell 5 at higher temperatures (approximately 100° F [38° C]).

NOTE: Aeroshell 5 and Aeroshell 6 greases both have a mineral oil base and the same thickening agent; therefore, mixing of these two greases is permitted in Hartzell propellers.

WARNING: WHEN MIXING AEROSHELL 5 AND AEROSHELL 6 GREASES, THE AIRCRAFT MUST BE PLACARDED TO INDICATE THAT FLIGHT IS PROHIBITED IF THE OUTSIDE AIR TEMPERATURE IS LESS THAN -40° F (-40° C). AEROSHELL 5 GREASE MUST BE INDICATED ON THE LABEL.

Aeroshell 7 - Good low temperature grease, but high leakage/oil separation at higher temperatures. This grease has been associated with sporadic problems involving seal swelling.

Aeroshell 22 - Qualities similar to Aeroshell 7.

Royco 22CF - Not widely used. Qualities similar to Aeroshell 22.

(2) The following lubricants are approved for use in Hartzell Propeller Inc. A-38( ) bearings:

Exxon Andok 260 — High speed bearing lubrication. Only approved use is to grease the A-38( ) bearing.

Shell Gadus S2 V100 2 — High performance multipurpose grease. Only approved use is to grease the A-38( ) bearing.

CM No.	Hartzell Part No.	Description	Supply Basis	Manufacturer/Supplier Part Number/Specification	Cure Time	Pot Life	Storage Temp.	Shelf Life
1	n/a	Oil, Vacuum, 5 gallon	N	Duoseal, 54996-252	---	---	UC	60 mos DOS
2	n/a	Hose, Vacuum x foot	N	UA-6407-02	---	---	UC	---
3	n/a	Syringe, 30 cc, Disposable - 0.03 - 0.05 inch (0.7 - 1.2 mm) OD needle	N	---	---	---	UC	---
4	n/a	Electrolyte, Red, Quart	N	Chem-Etch/Kammerer, A-10	---	---	UC	---
5	n/a	Cleaner, Electrolyte, Quart	N	Monode/Kammerer, MSC-1	---	---	UC	---
6	n/a	Cleaner, Electrolyte, Oil	N	Kammerer, #90	---	---	UC	---
7	n/a	Use CM 129	n/a	---	---	---	---	---
8	n/a	Sealant Alternate is CM9	N	3M, EC801	Tack free: 24 hours Full: 7 days	---	UC	5 mos DOS
9	A-6741-9	Sealant, Industrial, 5 ounce	Y	3M, Scotch Seal, EC800	10-15 minutes	---	RT	5 mos DOS
10	A-6741-10	Adhesive, Rubber, quart Alternate is CM79	Y	3M, 1300L; Use Toluene formula ONLY. Adhesive without toluene has NOT been Hartzell tested or approved	Tack: 8 minutes Full: 3 days	---	RT	15 mos DOS

SUPPLY BASIS

CODE	DESCRIPTION
Y=	Customer can get the consumable material either from Hartzell or from a local source.
N=	Hartzell does not sell the consumable material, the customer must purchase it locally.
HPI=	Hartzell is the only supplier of the consumable material, the customer must purchase the consumable material from Hartzell.
S=	Customer can get the consumable material from any supplier as long as the material meets the requirements of the specification.

SHELF LIFE

CODE	DESCRIPTION
DOM=	Date of Manufacture
DOS=	Date of Shipment from supplier
mos=	Months
MD=	Manufacturer Expiration Date, use manufacturer's expiration date - Hartzell accepts manufacturer's expiration date as-is

STORAGE TEMP CLASSES

CODE	DESCRIPTION
F=	Frozen, store below 0°F (-17°C)
F1=	Frozen, -40°F (-40°C) maximum
R=	Refrigerate, 40°-60°F (4°-15°C)
RT=	Controlled Room Temperature - 60°-80°F (15°-26°C)
UC=	Uncontrolled, no special Hartzell requirements, follow manufacturer's requirements
SV=	Store Vertically (modifier code)

Consumable Materials
Table 1-1

CM No.	Hartzell Part No.	Description	Supply Basis	Manufacturer/Supplier Part Number/Specification	Cure Time	Pot Life	Storage Temp.	Shelf Life
11	n/a	Acetone, 5 gallon Alternate is CM173	N	---	---	---	UC	---
	n/a	Alcohol, Denatured, gallon (preferred for composites)	N	Denatured Alcohol - Denatured with Methanol Only	---	---	UC	---
	n/a	Acetone, 55 gallons	N	---	---	---	UC	---
12	n/a	Grease, 35 pound	N	Aeroshell, No. 5, 70025	---	---	UC	36 mos DOM
	A-6741-12-1-1	Grease, 14.1 ounce tube	N	Aeroshell, No. 5, 70025	---	---	UC	36 mos DOM
	A-6741-12-2	Grease, 55 gallon	N	Aeroshell, No. 6	---	---	UC	---
	A-6741-12-2-1	Grease, 35 pound	N	Aeroshell, No. 6, 70026	---	---	UC	---
	A-6741-12-2-2	Grease, 14 ounce	N	Aeroshell, No. 6, 70026	---	---	UC	---
	A-6741-12-3-1	Grease, 14 ounce	N	Aeroshell, No.7, 70027	---	---	UC	36 mos DOM
	n/a	Grease, 55 gallon	N	Aeroshell, No. 22	---	---	UC	---
	A-6741-12-4-1	Grease, 14.1 ounce tube superseded by 13.4 ounce tube	Y	Aeroshell, No. 22, 70022	---	---	UC	---
	n/a	Grease	N	Royco, No. 22C	---	---	UC	---
	n/a	Grease	N	Exxon, 5114EP	---	---	UC	---

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Consumable Materials
Table 1-1

CM No.	Hartzell Part No.	Description	Supply Basis	Manufacturer/Supplier Part Number/Specification	Cure Time	Pot Life	Storage Temp.	Shelf Life
12	A-6741-12-7	Grease, 400 pound drum (Hartzell Propeller Inc. preferred grease.)	N	NYCO, GN3058, 400 Lb Drum SAE-AMS-3058	---	---	UC	MD
	A-6741-12-7-1	Grease, 35 pound pail (Hartzell Propeller Inc. preferred grease.)	Y	NYCO, GN3058, 35 Lb Pail SAE-AMS-3058	---	---	UC	MD
	A-6741-12-7-2	Grease, 1 kg can (Hartzell Propeller Inc. preferred grease.)	Y	NYCO, GN3058, 1 Kg Can SAE-AMS-3058	---	---	UC	MD
	A-6741-12-7-3	Grease, 400 gram cartridge (Hartzell Propeller Inc. preferred grease.)	Y	NYCO, GN3058, 400 Gram Cartridge SAE-AMS-3058	---	---	UC	MD

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13	n/a	Ethyl Acetate, 5 gallon	N	---	---	---	UC	---
14	A-2328-21	Adhesive, Quart Kit Alternate for E13890K winding repairs only is a combination of CM192, CM193, and CM194	HPI	Henkel/Hysol, EA9330	Full: 5-7 days Handle: min. of 12 hrs @77°F (25°C)	60 mins @ 77°F (25°C), 100 gm mass	RT	12 mos DOS
	A-6741-14-1	Adhesive, EZ Pack, 25 grams Alternate for E13890K winding repairs only is a combination of CM192, CM193, and CM194	HPI	Henkel/Hysol, EA9330	Full: 5-7 days Handle: min. of 12 hrs @77°F (25°C)	60 mins @ 77°F (25°C), 100 gm mass	RT	12 mos DOS
	A-6741-14-2	Obsolete Use A-6741-14-1	n/a	---	---	---	---	---
15	n/a	Adhesive, Quart Kit	N	Loctite, Henkel/Hysol, EA9430	Min. 4 hrs @77°F (25°C)	50 mins @ 77°F (25°C), 250 gm mass	UC	12 mos DOM
16	A-6741-16	Epoxy Patch, 2.8 ounce Tube Kit	Y	Loctite, Henkel/Hysol, 0151	Full: 24 hours @77°F (25°C) or 2 hours @140°F (60°C)	60 minutes mixed	RT	36 mos DOM

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17	n/a	Media, Blast,Plastic, 275 pound	N	A & B Deburring #PMB2-2030	---	---	UC	---
18		Use CM59	n/a	---	---	---	---	---
19	A-6741-19	Mold Release, gallon Alternate - CM362	Y	Lilly-RAM Chemical Company, LLC/RAM Composite Products, #87-X26 Mold Release 225	Flash Off	---	RT	12 mos DOS
	A-6741-19-1	Mold Release, 4 ounce Alternate - CM362	Y	Lilly-RAM Chemical Company, LLC/RAM Composite Products, #87-X26 Mold Release 225	Flash Off	---	RT	12 mos DOS
20	A-6741-20	Epoxy, Quart Kit	Y	Loctite, EA9309.3NA	12 hrs @70°F (21°C) or 2 hrs @140°F (60°C)	35 min @ 77°F (25°C) 450 gm mass	RT	12 mos DOS
21	A-6741-21	Threadlocker, low strength, 250 cc	Y	Loctite, 222	6 hrs @72°F (22°C)	---	RT	24 mos DOS
	A-6741-21-1	Threadlocker, low strength, 50 cc	Y	Loctite, 222	6 hrs @72°F (22°C)	---	RT	24 mos DOS
22	n/a	Lacquer Thinner, 55 gallon	N	---	---	---	UC	---

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STORAGE TEMP CLASSES

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F=	Frozen, store below 0°F (-17°C)
F1=	Frozen, -40°F (-40°C) maximum
R=	Refrigerate, 40°-60°F (4°-15°C)
RT=	Controlled Room Temperature - 60°-80°F (15°-26°C)
UC=	Uncontrolled, no special Hartzell requirements, follow manufacturer's requirements
SV=	Store Vertically (modifier code)

Consumable Materials
Table 1-1

CM No.	Hartzell Part No.	Description	Supply Basis	Manufacturer/Supplier Part Number/Specification	Cure Time	Pot Life	Storage Temp.	Shelf Life
23	n/a	Stoddard Solvent, gallon	N	Kwik Dry Alternates - Naphtha Safety Solvent, Petroleum Solvent, PD-680, Varnoline, Spotting Naphtha, Texsolve, Varsol, and Lotoxane	---	---	UC	---
	n/a	Parts Cleaning Fluid	N	ERS Australia Pty Ltd.	---	---	UC	---
	n/a	Solvent, Safety, Red	N	Enviro Solve UK Ltd, 103570R1	---	---	UC	---
24	A-6741-24	Wash Primer, gallon	Y	ASG/Randolph Paints MIL-C-8514	---	---	UC	24 mos DOM
	A-6741-24-1	Wash Primer, quart	Y	ASG/Randolph Paints MIL-C-8514	---	---	UC	24 mos DOM
25	A-6741-25	Reducer, Wash Primer, gallon	Y	Randolph Paints, T-54	---	---	UC	24 mos DOS
	A-6741-25-1	Reducer, Wash Primer, quart	Y	Randolph Paints, T-54	---	---	UC	24 mos DOS
26	A-6741-26	Obsolete, use A-6741-26-1	n/a	---	---	---	---	---
	A-6741-26-1	Acid Diluent, quart	Y	Randolph Paints, 120AC-1	---	---	UC	24 mos DOS

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SHELF LIFE

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mos=	Months
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STORAGE TEMP CLASSES

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Consumable Materials
Table 1-1

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27	n/a	Spray Fill, gallon Use with CM28 Alternate - CM84	N	Sherwin-Williams, D61-A-23	---	---	UC	36 mos DOM
28	n/a	Catalyst Use with CM27	n/a	Sherwin-Williams, V66V27	---	---	---	12 mos DOM
29	A-6741-29	Primer Sealer, Dark Gray, gallon Alternate - CM318	Y	Sherwin-Williams, E65XXA28960-4311	---	---	UC	36 mos DOM
	A-6741-29-1	Primer Sealer, Dark Gray, quart Alternate - CM318	Y	Sherwin-Williams, E65XXA28960-4311	---	---	UC	36 mos DOM
30	A-6741-30	Catalyst, gallon	Y	Sherwin-Williams, V66V29	---	---	UC	24 mos DOM
	A-6741-30-1	Catalyst, quart	Y	Sherwin-Williams, V66V29	---	---	UC	24 mos DOM
31	A-6741-31	Accelerator, gallon	Y	Sherwin-Williams, V66VB11	---	---	UC	12 mos DOM
	A-6741-31-1	Accelerator, quart	Y	Sherwin-Williams, V66VB11	---	---	UC	12 mos DOM

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Consumable Materials
Table 1-1

CM No.	Hartzell Part No.	Description	Supply Basis	Manufacturer/Supplier Part Number/Specification	Cure Time	Pot Life	Storage Temp.	Shelf Life
32	A-6741-32	Polane Reducer, gallon	Y	Sherwin-Williams, R7K69, superseded by Sherwin-Williams, K69	---	---	UC	36 mos DOM
	A-6741-32-1	Polane Reducer, quart	Y	Sherwin-Williams, R7K69, superseded by Sherwin-Williams, K69	---	---	UC	36 mos DOM
33	A-6741-33	Paint, Polane, Black, gallon	Y	Sherwin Williams, F63TXB9629-4311	---	---	UC	36 mos DOM
	A-6741-33-1	Paint, Polane, Black, quart	Y	Sherwin Williams F63TXB9629-4311	---	---	UC	36 mos DOM
34	A-6741-34	Paint, Polane, Gray, gallon	Y	Sherwin-Williams F63TXA9920-4311	---	---	UC	36 mos DOM
	A-6741-34-1	Paint, Polane, Gray, quart	Y	Sherwin-Williams F63TXA9920-4311	---	---	UC	36 mos DOM
35	A-6741-35	Paint, Polane, Gray, Metallic, gallon	Y	Sherwin-Williams F63TXS9851-4311	---	---	UC	36 mos DOM
	A-6741-35-1	Paint, Polane, Gray, Metallic, quart	Y	Sherwin-Williams F63TXS9851-4311	---	---	UC	36 mos DOM

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Consumable Materials
Table 1-1

CM No.	Hartzell Part No.	Description	Supply Basis	Manufacturer/Supplier Part Number/Specification	Cure Time	Pot Life	Storage Temp.	Shelf Life
36	A-6741-36	Paint, Polane, Flat White, gallon	Y	Sherwin Williams F63TXW9627-4311	---	---	UC	36 mos DOM
	A-6741-36-1	Paint, Polane, Flat White, quart	Y	Sherwin Williams F63TXW9627-4311	---	---	UC	36 mos DOM
37	n/a	Use CM164	n/a	---	---	---	---	---
38	n/a	Use CM164	n/a	---	---	---	---	---
39	n/a	Use CM170	n/a	---	---	---	---	---
40	n/a	Use CM170	n/a	---	---	---	---	---
41	A-6741-41	Toluene, gallon	Y	---	---	---	UC	---
	A-6741-41-1	Toluene, quart	Y	---	---	---	UC	---
42	A-6741-42	Fiberglass, Fabric, 2 ounce, 38 inch (965 mm) wide x foot	HPI	---	---	---	UC	---
43	n/a	Use TE209	n/a	---	---	---	---	---
44	n/a	1,1,1 Trichloroethane, pound	N	---	---	---	UC	---
45	A-6741-45	Vacuum Bag, 16 inch (406 mm) Tube X 0.004 inch (0.10 mm) Thick Polybutylene x foot	Y	New Tech Plastics	---	---	UC	---

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Consumable Materials
Table 1-1

CM No.	Hartzell Part No.	Description	Supply Basis	Manufacturer/Supplier Part Number/Specification	Cure Time	Pot Life	Storage Temp.	Shelf Life
46	A-6741-46	Gasket Sealant, 7 ounce	Y	Loctite, #1 Superseded by Henkel/Loctite, #1, P/N 30512	Operational: 2 hours, Full: 24 hours	---	RT	12 mos DOS
			Y	Henkel/Loctite, #1, P/N 30512 Supersedes Loctite, #1	Operational: 2 hours, Full: 24 hours	---	RT	12 mos DOS
	n/a	Gasket Sealant	N	Permatex Form-A-Gasket No. 1	Operational: 2 hours, Full: 24 hours	---	UC	12 mos DOS
47	n/a	Abrasive Pad, 1 each	N	3M, Scotch Brite® Pad, white, light duty	---	---	UC	---
	n/a	Abrasive Pad, 1 each	N	3M, Scotch Brite® Pad, very fine	---	---	UC	---
	n/a	Abrasive Pad, 1 each	N	3M, Scotch Brite® Pad, red, very fine, #7447	---	---	UC	---
48	n/a	Use CM14	n/a	---	---	---	---	---

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Consumable Materials
Table 1-1

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49	A-6741-49	Sealer, quart	Y	3M, EC No. 776	10 minutes @ 77°F(25°C)	---	RT	12 mos DOS
50	A-6741-50	Nozzle, Mixing	Y	3M, 62-9742-9935-6 superseded by 3M, 62-9178-9150-9	---	---	UC	---
51	n/a	Sealant Tape, 0.5 inch (12 mm), 1 case	N	Cytec Solvay Group, RS200	---	---	UC	---
	n/a	Sealant Tape, 0.5 inch (12 mm), 1 case, Alternate	N	Northern Composites, NST-200	---	---	UC	---
52	n/a	Brush, Acid, 0.5 inch (12 mm)	N	---	---	---	UC	---
53	n/a	Use CM130	n/a	---	---	---	---	---
54	n/a	Gel, Ultrasonic Inspection	N	Ultra II Gel or E-Z Gel	---	---	UC	36 mos DOS
	n/a	Gel, Ultrasonic Inspection	N	Sonotech, Inc. Thermasonic Mid-Temp Grade 60", NSN : 6850-01-157-4348	---	---	UC	36 mos DOS
55	A-6741-55	E-Glass 38 inch (965 mm) wide x foot	Y	7781 style cloth finished for an epoxy resin system per AMS-3824A	---	---	UC	---

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Consumable Materials
Table 1-1

CM No.	Hartzell Part No.	Description	Supply Basis	Manufacturer/Supplier Part Number/Specification	Cure Time	Pot Life	Storage Temp.	Shelf Life
56	A-6741-56	Fiberglass, Milled, 0.062 in (1.57 mm), pound	Y	---	---	---	UC	---
57	A-6741-57	Primer, Adhesive, quart	Y	Bostik, (L)1007M	---	---	RT	9 mos DOS
58	A-6741-58	Cloth, Bleeder, Teflon®, yard (0.8 ounce/yard)	Y	Northern Fiberglass, 200TFP-1	---	---	UC	---
59	A-6741-59	Polyester Absorbent Cloth, 60 inch (1524 mm) x foot	Y	---	---	---	UC	---
60	n/a	Oil, Turbine Engine	N	MIL-L-23699	---	---	UC	---
61	n/a	Use CM 74	n/a	---	---	---	---	---
62	n/a	Use CM129	n/a	---	---	---	---	---
63	A-6741-63	Paint, Polane, Cream, gallon	Y	Sherwin-Williams F63TXH12151-4311	---	---	UC	36 mos DOM
	A-6741-63-1	Paint, Polane, Cream, quart	Y	Sherwin-Williams F63TXH12151-4311	---	---	UC	36 mos DOM
64	n/a	Tape, Aluminum Foil, 1 inch square	N	3M, No. 425	---	---	UC	---

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Consumable Materials
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CM No.	Hartzell Part No.	Description	Supply Basis	Manufacturer/Supplier Part Number/Specification	Cure Time	Pot Life	Storage Temp.	Shelf Life
65	n/a	Use CM118	n/a	---	---	---	---	---
66	n/a	RTV, 2.8 ounce Alternate - CM92, CM257	N	GE, RTV102 Superseded by Momentive, RTV102	Tack Free: 30 minutes	Use while tacky	RT	---
	n/a	RTV, 2.8 ounce Alternate - CM92, CM257	N	Momentive, RTV102 Supersedes GE, RTV102	Tack Free: 20 minutes	Use while tacky	RT	---
67	n/a	Primer, Zinc Chromate, gallon	N	Randolph Products, P/N 1757B1C-Y-GL (Sherwin Williams is an eligible supplier, no specific p/n) TT-P-1757, Type 1, Class C, Yellow	---	---	UC	---
	n/a	Primer, Zinc Phosphate, gallon Alternate	N	Sherwin-Williams, E90RC38 TT-P-644D	---	---	UC	---
	n/a	Primer, Zinc Molybdate, gallon Alternate	N	Sherwin-Williams, N42Y100 TT-P-645B	---	---	UC	---
	n/a	Primer, Epoxy Alternate	N	Akzo Nobel Advanced Coatings 37035A EFA Spec SP-J-513-A-0016 Type 1, Class A	30 min set to touch, 4 hours hard dry	8 hours	RT	24 mos DOM

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Consumable Materials
Table 1-1

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67 (cont.)	n/a	Primer, Epoxy Alternate	N	Akzo Nobel Advanced Coatings 10P8-11 VOC MIL-PRF-23377 Type 1, Class C2 performance	2 hours dry topcoat, 7 days air dry full cure	4 hours	RT	24 mos DOM
	n/a	Primer, Zinc Chromate, 16 ounce, spray can, Alternate	N	Aircraft Spruce, P/N 09-00895 TT-P-1757, Type 1, Class C	---	---	RTSV	12 mos DOM
	n/a	Primer, Zinc Phosphate, 16 ounce, spray can Alternate	N	Aircraft Spruce, A-702, P/N 09-00895 TT-P-1757, Type 1, Class C	---	---	RTSV	12 mos DOM
	n/a	Primer, Zinc Phosphate, 12 ounce, spray can, Alternate	N	Aircraft Spruce, P/N A-702 TT-P-1757, Type 1, Class C	---	---	RTSV	12 mos DOM
68	A-6741-68	Epoxy, 5-minute, 1 to 1 Mix, 25 ml Tube	Y	Devcon, 14250	Handle: 15 min Full: 1 hr @ 75°F(24°C)	3-4 min @ 75°F(24°C)	UC	12 mos DOS open 48 mos DOS unopened
	n/a	Epoxy, 5-minute, 1 to 1 Mix, 25 ml Tube - Alternate	N	Devcon, S-208, 20845	Handle: 15 min Full: 1 hr @ 75°F(24°C)	3-4 min @ 75°F(24°C)	UC	12 mos DOS open 48 mos DOS unopened

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Consumable Materials
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68 (cont)	n/a	Epoxy, 5-minute, 1 to 1 Mix, gallon	Y	Devcon, 14630	Handle: 15 min Full: 1 hr @ 75°F(24°C)	3-4 min @ 75°F(24°C)	UC	12 mos DOS open 48 mos DOS unopened
69	n/a	Ink, White Opaque, 4 ounce	N	Specialty Ink Co., 352	---	---	UC	---
70	n/a	Ink, Black Opaque	N	---	---	---	UC	---
71	A-6741-71	Adhesive Super Bonder, 1 ounce	Y	Loctite, 495	Fixture (20% max): 20 sec Full: 8 hours	---	R	12 mos DOS
72	n/a	Powder, Talc, 16 pound	N	Fiber Glast Development Corp., 1131-B	---	---	UC	---
73	n/a	Use CM129	n/a	---	---	---	---	---
74	A-6741-74	Retaining Compound, 8.5 ounce Alternate - CM140	Y	Loctite, RC675 (Green)	---	---	RT	12 mos DOS
75	A-6741-75	Coating, Rust Preventative, 5 gallon	Y	E. F Houghtin & Co., Rust Veto 342	---	---	UC	---
	A-6741-75-1	Coating, Rust Preventative, gallon	Y	E. F Houghtin & Co., Rust Veto 342	---	---	UC	---

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Consumable Materials
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CM No.	Hartzell Part No.	Description	Supply Basis	Manufacturer/Supplier Part Number/Specification	Cure Time	Pot Life	Storage Temp.	Shelf Life
76	n/a	Use CM24	n/a	---	---	---	---	---
77	n/a	Obsolete	n/a	---	---	---	---	---
78	n/a	Obsolete	n/a	---	---	---	---	---
79	n/a	Obsolete	n/a	---	---	---	---	---
	A-6741-79-1	Adhesive, quart	N	Bostik, 1096MR, supersedes Bostik, 1096M	---	---	RT	9 mos DOM
80	n/a	No. 4 Oil, 55 gallon	N	Petro Lube Inc, Way Pure 220	---	---	UC	---
	n/a	No. 4 Oil, 55 gallon, alternate	N	Mobil Vactra #4	---	---	UC	---
81	n/a	Use CM164	n/a	---	---	---	---	---
82	n/a	Use CM164	n/a	---	---	---	---	---
83	n/a	Use CM164	n/a	---	---	---	---	---
84	A-6741-84	Spray Fill, gallon Use with CM85 Alternate - CM27	Y	Sherwin-Williams, D61XXH23316-431	---	---	UC	24 mos DOM
	A-6741-84-1	Spray Fill, quart Use with CM85 Alternate - CM27	Y	Sherwin-Williams, D61H75	---	---	UC	24 mos DOM

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Consumable Materials
Table 1-1

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85	A-6741-85	Catalyst, gallon Use with CM84	Y	Sherwin-Williams, V66V44 Superseded by Sherwin-Williams, V66V47	---	---	UC	24 mos DOM
	A-6741-85-1	Catalyst, quart Use with CM84	Y	Sherwin-Williams, V66V44 Superseded by Sherwin-Williams, V66V47	---	---	UC	24 mos DOM
86	n/a	Adhesive, Industrial, 5 ounce	N	3M, EC No. 847	---	---	RT	12 mos DOS
87	n/a	Use CM90	n/a	---	---	---	---	---
88	n/a	Use CM90	n/a	---	---	---	---	---
89	n/a	Use CM71	n/a	---	---	---	---	---
90	A-6741-90	Epoxy Adhesive, Gray, 48.5 ml or 50 ml	Y	3M, DP-190	Handle: 8 hrs @75°F (24°C), Full: 24 hours	90 min, Full Bond in 24 hours	RT	15 mos DOS
91	n/a	Use CM9	n/a	---	---	---	---	---

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92	A-6741-92	RTV, 10.1 ounce Alternate - CM66, CM257	Y	GE, IS 802 Superseded by Momentive, IS 802	---	---	RT	12 mos DOS
	A-6741-92	RTV, 3 ounce Alternate - CM66	Y	Momentive, IS 802 Supersedes GE, IS 802	---	---	RT	12 mos DOS
93	n/a	RTV, 2.8 ounce	N	GE, RTV6703 Superseded by Momentive, RTV6703	---	---	RT	12 mos DOS
			N	Momentive, RTV6703 Supersedes GE, RTV6703	---	---	RT	12 mos DOS
	A-6741-93-1	RTV, Black, 10 ounce	Y	GE, RTV123 Superseded by Momentive, RTV123	---	---	RT	12 mos DOS
			Y	Momentive, RTV123 Supersedes GE, RTV123	---	---	RT	12 mos DOS
94	A-6741-94	Adhesive, quart	Y	Henkel/Hysol, EA9309.NA	---	---	UC	12 mos DOS
95	n/a	Adhesive, quart Replaced by CM314	N	Henkel/Hysol, EA9346.5	---	14 days	F	12 mos DOS

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Consumable Materials
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96	A-6741-96	Adhesive - Quick Set, 1/3 ounce	Y	Loctite, 404	---	---	R	12 mos DOS
97	n/a	Adhesive, 50 ml	N	Loctite, 324	---	---	UC	12 mos DOS
98	A-6741-98	Adhesive, Depend, 0.85 ounce (2 part kit includes: A-6741-98-1 and A-6741-98-2)	Y	Loctite, 330 Product Number 20251 Kit	Fixture: 5 min Full: 4 to 24 hours	---	RT	12 mos DOS
	A-6741-98-1	Loctite, 330 Depend adhesive	n/a	Part 1 of 20251 Kit	---	---	---	12 mos DOS
	A-6741-98-2	Loctite, 7387 Depend activator	n/a	Part 2 of 20251 Kit	---	---	---	12 mos DOS
99	n/a	Oakite	N	Chemetall, Oakite 31, TT-C-490C, Method VI, MIL-C-10578CD Type V, MIL-C-46487 Type II	---	---	UC	---
100	n/a	Coating, Chemical Conversion	N	Chemetall Oakite, Chromicoat L-25 MIL-C-81706, MIL-C-5541, Class1A & Class 3	---	---	UC	---

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101	n/a	Cleaner, Alkaline, pound	N	Turco, 4215NC-LT	---	---	UC	---
102	n/a	Obsolete Use CM17	n/a	---	---	---	---	---
103	n/a	Solvent, gallon	N	Whitford Worldwide, 99 Solvent	---	---	UC	---
104	n/a	Solvent, gallon	N	Whitford Worldwide, 99B Solvent	---	---	UC	---
105	n/a	Coating, Xylan®, gallon	N	Xylan®, 1052/399 Olive	---	---	UC	12 mos DOM
	A-6741-105-1	Coating, Xylan®, quart	Y	Xylan®, 1052DF/399 Olive Alternate - Xylan®, 1053/399A	---	---	UC	12 mos DOM
106	n/a	Methyl-Ethyl-Ketone (MEK), 5 gallon	N	MEK	---	---	RT	24 mos DOM
	n/a	Methyl-Ethyl-Ketone (MEK), 55 gallon	N	MEK	---	---	RT	24 mos DOM
107	n/a	Activator, Spray	N	Loctite, 7387 Depend Activator	---	---	RT	---
108	A-6741-108	Lubricant, gallon	Y	Starrett, M1	---	---	UC	---
	A-6741-108-1	Lubricant, Aerosol, 12 ounce	Y	Starrett, M1	---	---	UC	---
109	n/a	Spray Clean Alternate is CM128	N	---	---	---	UC	---

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110	n/a	Powder, Aluminum, 2.5 pound	N	Freeman Manufacturing & Supply Co., 406383	---	---	UC	---
	n/a	Powder, Aluminum, pound	N	Kindt-Collins Co., 9122A	---	---	UC	---
	n/a	Powder, Aluminum, ounce	N	Freeman Manufacturing & Supply Co., 406383	---	---	UC	---
	n/a	Powder, Aluminum, ounce	N	Kindt-Collins Co., 9122A	---	---	UC	---
111	A-6741-111	Cloth, Carbon, 38 inch (965 mm) wide x foot	HPI	---	---	---	UC	---
112	n/a	Steel Wool, #0000	N	---	---	---	UC	---
113	A-6741-113	Kevlar®, Drycloth, #549, 60 inch (1524 mm) wide x foot	HPI	---	---	---	UC	---
114	A-6741-114	Accelerator, Adhesive, 4 ounce, superseded by A-6741-114-1	Y	Bostik, Boscodur, #9R	---	---	RT	6 mos DOS
	A-6741-114-1	Obsolete	n/a	---	---	---	---	---
	A-6741-114-2	Curing Agent, Adhesive, 4 ounce, supersedes A-6741-114 and A-6741-114-1	Y	Bostik, Boscodur, 4L	---	---	RT	12 mos DOM

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115	n/a	Obsolete	n/a	---	---	---	---	---
116	A-6741-116	Threadlocker, Removable, 50 cc	Y	Loctite, 242	---	---	RT	MD
117	n/a	Use CM60	n/a	---	---	---	---	---
118	A-3338-4	Anti-Seize Compound, 1/3 ounce	Y	MIL-PRF-83483	---	---	UC	---
	A-3338-7	Anti-Seize Compound, 8 ounce	Y	MIL-PRF-83483	---	---	UC	---
119	A-6741-119	Mat, Carbon Fiber, 28 inch (711 mm) wide x foot	HPI	---	---	---	UC	---
120	A-6741-120	Paint, Polane, Red, gallon	Y	Sherwin-Williams, F63TXR9853-4311	---	---	UC	36 mos DOM
	A-6741-120-1	Paint, Polane, Red, quart	Y	Sherwin-Williams, F63TXR9853-4311	---	---	UC	36 mos DOM
121	A-6741-121	Lubricant, Metal Protect, 13.6 kg	Y	Molykote by Dow Corning, “Metal Protective Coating”	---	---	UC	---
	A-6741-121-1	Lubricant, Metal Protect, quart	Y	Molykote by Dow Corning, “Metal Protective Coating”	---	---	UC	---
122	A-6741-122	Leak Detector, 4 ounce	Y	Leak Tec, 372	---	---	UC	---

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Consumable Materials
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123	n/a	Use CM21	n/a	---	---	---	---	---
124	A-6741-124	Adhesive Promoter, pint	Y	3M, 86A	---	---	RT	24 mos DOM
125	A-6741-125	Replication Putty, 2 pound	Y	Dynamold Inc. - p/n DMR-503 P.O. Box 9617 Fort Worth, TX Phone: 817.335.0862 Fax: 817.877.5203	30 min.	---	UC	12 mos DOM
	n/a	Replication Putty	N	3M Impregum F	---	---	UC	---
126	n/a	Coating, Chemical Conversion	N	Parker + Amchem	---	---	UC	---
127	A-6741-127	Primer T, 4.5 ounce	Y	Loctite, Locquic, T7471 Mil-S-22473E Grade T Form R, ASTM-D5363	1 minute	---	RSV	24 mos DOS
	A-6741-127-1	Primer T, 1 gallon	Y	Loctite, Locquic, T7471 Mil-S-22473E Grade T Form R, ASTM-D5363	1 minute	---	R	24 mos DOS
128	n/a	Cleaner, Electronics, 12 ounce	N	Contax HP, 90393	---	---	UC	---
129	n/a	Protective Spray, Clear, 11 ounce	N	Krylon 1301 Crystal Clear (preferred), Ace Polyurethane 1037795, or Semi-gloss Krylon 8118	---	---	RTSV	---

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130	n/a	Freeze Mist II, 10 ounce	N	Freeze Mist II	---	---	UC	---
		Spray, Freeze, 10 ounce	N	TechSpray, Envi-Ro-Tech™ 1672	---	---	UC	---
131	A-6741-131	Wire, Stainless Steel - 0.032 inch (0.81 mm) diameter, pound	Y	MS20995C32	---	---	UC	---
132	A-6741-132	Wire, Stainless Steel - 0.020 inch (0.50 mm) diameter, pound	Y	MS20995C20	---	---	UC	---
133	A-6741-133	Adhesive - Retaining Compound, 250 cc	N	Loctite, RC 635	72 hrs @ room temperature	---	RT	12 MOS DOS
134	A-6741-134	Sealant, Hydraulic, 250 cc	Y	Loctite, #569	24 hours	---	RT	36 mos DOS
135	A-6741-135	Adhesive, - Retaining Compound, 50 cc	Y	Loctite, 272	6 hours, can accelerate with Primer T	---	RT	24 mos DOM
136	A-6741-136	Sealant - Gasket Eliminator, 50 cc	Y	Loctite, 510	15 hours, can be accelerated to 6 hours with Primer N	---	RT	36 mos DOS

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137	B-6654-100	Tape, UHMW - 1 inch x 36 yard (25.4 x 32.92 M) roll	Y	Saint-Gobain, 2302-5R x 1.00	---	---	UC	---
	B-6654-100-1	Tape, UHMW - 1 inch x 36 inch (25.4 x 914.4 mm)	Y	Saint-Gobain, 2302-5R x 1.00	---	---	UC	---
	B-6654-150	Tape, UHMW - 1.5 inch x 36 yard (38.1 mm x 32.92 M) roll	Y	Saint-Gobain, 2302-5R x 1.5	---	---	UC	---
138	n/a	Cleaning Formula	N	Branson, p/n MC-3 Eagle Road Danbury, CT 06810-1961 Phone: 203.796.0400 Fax: 203.796.2240	---	---	UC	---
139	A-6741-139-1	Grease, 2.5 pound superseded by A-6741-139-2	HPI	---	---	---	UC	---
	A-6741-139-2	Grease, 14 ounce supersedes A-6741-139-1	Y	Shell, Alvania RL2 Superseded by Shell, Gadus S2 V100 2, 550027712	---	---	UC	---
140	n/a	Adhesive - Retaining Compound, 250 ml Alternate - CM74	N	Loctite, RC 609	---	---	UC	---

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141	n/a	Use CM132	n/a	---	---	---	---	---
142	n/a	Use CM131	n/a	---	---	---	---	---
143	A-6741-143	Accelerator, Adhesive, Locquic Primer N	N	Loctite, N7649	---	---	UC	---
144	n/a	Solvent, Safety, Red, Manpower Alternate - CM23	N	Enviro Solve UK Ltd, 103570R1	---	---	UC	---
145	A-6741-145-1	Paint, Touch-up, Black, 12 ounce	Y	Sherwin-Williams, F75KXB9958-4311	1-2 hours	---	UCSV	24 mos DOM
	A-6741-145-2	Paint, Touch-up, Black	N	Tempo, A-150	1 hour	---	UC	24 mos DOM
146	A-6741-146-1	Paint, Touch-up, Gray, 12 ounce	Y	Sherwin-Williams, F75KXA10445-4311	1-2 hours	---	UCSV	24 mos DOM
	A-6741-146-2	Paint, Touch-up, Gray	N	Tempo, A-151	1 hour	---	UC	24 mos DOM
147	A-6741-147-1	Paint, Touch-up, White, 12 ounce	Y	Sherwin-Williams, F75KXW10309-4311	1-2 hours	---	UCSV	24 mos DOM
	A-6741-147-2	Paint, Touch-up, White	N	Tempo, A-152	1 hour	---	UC	24 mos DOM
	A-6741-147-3	Paint, Touch-up, White, 6 ounce	Y	Sherwin-Williams, F75KXW10309-4311	1-2 hours	---	UCSV	24 mos DOM

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148	A-6741-148-1	Paint, Touch-up, Gray Metallic, 12 ounce	Y	Sherwin-Williams, F75KXS9754-4311	1-2 hours	---	UCSV	24 mos DOM
149	A-6741-149-1	Paint, Touch-up, Red, 12 ounce	Y	Sherwin-Williams, F75KXR12320-4311	1-2 hours	---	UCSV	24 mos DOM
	A-6741-149-2	Paint, Touch-up, Red	N	Tempo, A-153	1 hour	---	UC	24 mos DOM
	A-6741-149-3	Paint, Touch-up, Red, 6 ounce	Y	Sherwin-Williams, F75KXR12320-4311	1-2 hours	---	UCSV	24 mos DOM
150	A-6741-150-1	Paint, Touch-up, Yellow, 12 ounce	Y	Sherwin-Williams, F75KXY11841-4311	1-2 hours	---	UCSV	24 mos DOM
	A-6741-150-2	Paint, Touch-up, Yellow	N	Tempo, A-154	1 hour	---	UC	24 mos DOM
151	A-6741-151	Lubricant, Anti-seize, 1 pound	Y	Loctite, 767, MIL-A-907E	---	---	UC	36 mos DOM
152	A-6741-152	Threadlocker, 1.69 ounce	Y	Loctite, 26231	20 min.-fixture 5 min.w/ primer 24 hours-full	---	RT	12 mos DOS

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Consumable Materials
Table 1-1

CM No.	Hartzell Part No.	Description	Supply Basis	Manufacturer/Supplier Part Number/Specification	Cure Time	Pot Life	Storage Temp.	Shelf Life
153	n/a	Use CM98	n/a	---	---	---	---	---
154	n/a	Sealant - Form-a-Gasket	N	Loctite #30516 Aviation Gasket Sealant	---	---	UC	---
155	A-6741-155-2	Tape, Teflon® - 0.5 inch wide X 0.010 inch thick X 100 foot (12 X 0.25 X 30480 mm) roll - preferred thickness. Alternate is CM156	Y	Datwyler Sealing Solutions USA, Inc. TS 1/2 X 0.010 X 100 PTFE (Teflon®) film per AMS3652, 0.010 ± 0.0005 inch (0.25 ± 0.0125 mm) thick, etch one side per AMS 2491	---	---	UC	---
	B-4256-2	Tape, Teflon® - 0.5 inch wide X 0.010 inch thick X 10.62 inch (12 X 0.25 X 269.7 mm) cut - preferred thickness. Alternate is CM156	Y	Datwyler Sealing Solutions USA, Inc. VT00SX.500EFT PTFE (Teflon®) film per AMS3652, 0.010 ± 0.0005 inch (0.25 ± 0.0125 mm) thick, etch one side per AMS 2491	---	---	UC	---
	103842-2	Tape, Teflon® - 0.5 inch wide X 0.010 inch thick X 14.18 inch (12 X 0.25 X 360.2 mm) cut - preferred thickness. Alternate is CM156	Y	Datwyler Sealing Solutions USA, Inc. VT00SX.500EFT PTFE (Teflon®) film per AMS3652, 0.010 ± 0.0005 inch (0.25 ± 0.0125 mm) thick, etch one side per AMS 2491	---	---	UC	---

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CM No.	Hartzell Part No.	Description	Supply Basis	Manufacturer/Supplier Part Number/Specification	Cure Time	Pot Life	Storage Temp.	Shelf Life
155 (cont.)	A-6741-155	Tape, Teflon® - 0.5 inch wide X 0.005 inch thick X 100 foot (12 X 0.12 X 30480 mm) roll Alternate is CM156	Y	Datwyler Sealing Solutions USA, Inc. TS 1/2 X 0.005 X 100 PTFE (Teflon®) film per AMS3652, 0.005 ± 0.0005 inch (0.12 ± 0.0125 mm) thick, etch one side per AMS 2491	---	---	UC	---
	B-4256	Tape, Teflon® - 0.5 inch wide X 0.005 inch thick X 10.62 inch (12 X 0.12 X 269.7 mm) cut Alternate is CM156	Y	Datwyler Sealing Solutions USA, Inc. VT00SX.500EFT PTFE (Teflon®) film per AMS3652, 0.005 ± 0.0005 inch (0.12 ± 0.0125 mm) thick, etch one side per AMS 2491	---	---	UC	---
156	n/a	Tape, Teflon® - 0.75 inch wide X 0.010 inch thick X 100 feet (19.0 X 0.25 X 30480 mm) long - preferred thickness. Alternate is CM155	N	Datwyler Sealing Solutions USA, Inc. PTFE (Teflon®) film per AMS3652, 0.010 ± 0.0005 inch (0.25 ± 0.0125 mm) thick, etch one side per AMS 2491	---	---	UC	---
	n/a	Tape, Teflon® - 0.75 inch wide X 0.005 inch thick X 100 feet (19.0 X 0.12 X 30480 mm) long Alternate is CM155	N	Datwyler Sealing Solutions USA, Inc. PTFE (Teflon®) film per AMS3652, 0.005 ± 0.0005 inch (0.12 ± 0.0125 mm) thick, etch one side per AMS 2491	---	---	UC	---

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157	n/a	Oil, Hydraulic, gallon	N	Shell, 60421, MIL-H-5606	---	---	UC	24 mos DOM
158	A-6741-158	Erosion Tape, Polyurethane, 108 foot roll	Y	3M, 8672-2	---	---	RT	24 mos DOS
	A-6741-158-1	Erosion Tape, Polyurethane x foot	Y	3M, 8672-2	---	---	RT	24 mos DOS
159	n/a	Cheesecloth	S	AMS 3819, Class 1, Grade A, Form 1 CCP Industries, p/n CCR588043 P.O. Box 6500 Cleveland, Ohio 44101 Phone: 1-800-321-2840 Alternate - American Fiber & Finishing, Inc., 588074C	---	---	UC	---
160	A-6741-160	Tape, Reference Stripe, Yellow - 1/8 inch X 2 inch (Available for purchase from Hartzell Propeller Inc. only in multiples of 100 each on a single sheet.)	Y	Material: 3M 7125 Vinyl, Color: Pantone 109C	---	---	UC	---

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161	A-6741-161	Sealant, 4 ounce Kit	Y	PRC-Desoto International PR1422A-1/2 or PR1440A-1/2	Tack: 2 hours Full: 35 hours	30 minutes	RT	9 mos DOM
	A-6741-161-1	Sealant, 6 ounce Kit	Y	PRC-Desoto International PR1422B-1/2	Tack: 2 hours Full: 35 hours	30 minutes	RT	9 mos DOM
	A-6741-161-1-1	Sealant, 2.5 ounce Semkit	Y	PRC-Desoto International PR1422B-1/2	Tack: 2 hours Full: 35 hours	30 minutes	RT	9 mos DOM
162	A-6741-162-1	Pencil, Non-graphite, Carmine Red, 1 dozen	Y	Sanford, SAN-02450	---	---	UC	---
	A-6741-162-2	Pencil, Non-graphite, Silver, 1 dozen	Y	Sanford, SAN-02460	---	---	UC	---
163	A-6741-163	Paint, Polane, Silver, gallon	Y	Sherwin-Williams, F63TXS30880-4311	---	---	UC	36 mos DOM
	A-6741-163-1	Paint, Polane, Silver, quart	Y	Sherwin-Williams, F63TXS30880-4311	---	---	UC	36 mos DOM

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Consumable Materials
Table 1-1

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164	A-2328-30	Kit, Conductive Coating, 2 gallon Contains: A-6741-164-(5, 6)	Y	PRC-Desoto	4 hours	4 hours	RT	12 mos DOM
	A-2328-13	Kit, Conductive Coating, quart Contains: A-6741-164-(5, 6)	Y	PRC-Desoto	4 hours	4 hours	RT	12 mos DOM
	n/a	528X310 Coating, Conductive - Base, Black Not sold separately.	N	PRC-Desoto, 528X310	4 hours	4 hours	RT	12 mos DOM
	n/a	910X464 Coating, Conductive/ Anti-static- Activator Not sold separately.	N	PRC-Desoto, 910X464	4 hours	4 hours	RT	12 mos DOM
165	A-6741-165	Paint, Polane, Yellow, gallon	Y	Sherwin-Williams, F63TXY9791-4311	---	---	UC	36 mos DOM
	A-6741-165-1	Paint, Polane, Yellow, quart	Y	Sherwin-Williams F63TXY9791-4311	---	---	UC	36 mos DOM
166	A-6741-166	Use CM33 - A-6741-33	Y	---	---	---	---	---
	A-6741-166-1	Use CM33 - A-6741-33-1	Y	---	---	---	---	---

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Consumable Materials
Table 1-1

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167	A-6741-167	Reducer, Acrylic Urethane, gallon	Y	Sherwin-Williams, R7K 6202 (Automotive Finishes)	---	---	UC	24 mos DOM
	A-6741-167-1	Reducer, Acrylic Urethane, 8 ounce	Y	Sherwin-Williams, R7K 6202 (Automotive Finishes)	---	---	UC	24 mos DOM
168	A-6741-168	Paint, Acrylic Urethane, Gold Metallic, gallon	Y	Sherwin-Williams, J6-4802 (Automotive Finishes)	Mixed: 1 hour @140°F (60°C) or 16 hours @75°F (24°C)	---	UC	24 mos DOM
	A-6741-168-1	Paint, Acrylic Urethane, Gold Metallic, pint	Y	Sherwin-Williams, J6-4802 (Automotive Finishes)	Mixed: 1 hour @140°F (60°C) or 16 hours @75°F (24°C)	---	UC	24 mos DOM
169	A-6741-169	Catalyst, Acrylic Urethane, quart	Y	Sherwin-Williams, V6V769 (Automotive Finishes)	---	---	UC	24 mos DOM
	A-6741-169-1	Catalyst, Acrylic Urethane, 4 ounce	Y	Sherwin-Williams, V6V769 (Automotive Finishes)	---	---	UC	24 mos DOM

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Consumable Materials
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170	A-2328-8	Paint, Comp Blade, Repair Kit, Lightning	Y	Spraylat, 599-A8574-1ABC	---	---	UC	6 mos DOM
	A-6741-170-5	Catalyst, Coating, Conductive Solution - Lightning Guard, Part A - Not sold separately, part of A-2328-8 Paint Kit	N	PPG, 599-A8574-1A	---	---	UC	6 mos DOM
	A-6741-170-6	Paint, Copper Filled, Lightning Guard, Part B - Not sold separately, part of A-2328-8 Paint Kit	N	PPG, 599-A8574-1B	---	---	UC	6 mos DOM
	A-6741-170-7	Retardant, Coating, Conductive, Lightning Guard, Part C - Not sold separately, part of A-2328-8 Paint Kit	N	PPG, 599-A8574-1C	---	---	UC	6 mos DOM
173	n/a	Acetone, 5 gallon	N	---	---	---	UC	---
175	n/a	Shield, Erosion, Dome	N	PM-192 (PM Research), SJ-8665 FP-408 (3M)	---	---	UC	---

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178	A-6741-178	Adhesive, 0.70 ounce container	Y	Loctite 480, 48040	1 hour	---	R	MD
179	A-6741-179	Primer, 1.75 ounce container	Y	Loctite 770, 18396	---	---	RT	36 mos DOS
183	n/a	70% or higher Isopropyl Alcohol	N	---	---	---	UC	---
184	n/a	Adhesive, Threadlocker, 50 ml	N	Loctite, 2760	24 hours can accelerate with Primer T	---	RT	24 mos DOS
185	n/a	Cleaning Agent	N	Radiaze L.F, Diverseylever (Dubois Chemical)	---	---	UC	---
	n/a	Cleaning Agent	N	Dubois Power Lift Cleaner (Dubois Chemical)	---	---	UC	---
187	n/a	Threadlocker, 50 ml	N	Loctite, 290	24 hours Steel @ 77°F (25°C)	---	RT	12 mos DOS
188	A-6741-188-1	Grease, silicon carbide, 400 grit	N	Loctite, 39523 - 1 pound Alternate - Loctite, 39522 - 4 ounce	--- ---	--- ---	RT	---
188	A-6741-188-2	Grease, silicon carbide, 600 grit	N	Loctite, 39549 - 1 pound Alternate - Loctite, 39548 - 4 ounce	--- ---	--- ---	RT	---

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190	A-6741-190-1	Paint, Touch-up, Silver, 12 ounce	Y	Sherwin-Williams, F75KXS13564-4311	1-2 hours	---	UCSV	24 mos DOM
192	n/a	Resin	N	Shell Cherie/Glycidather 162	12 hours at room temp.	40 min at room temp. mixed with CM193	RT	6 mos DOS
193	n/a	Hardener	N	Shell Cherie/Epikure 113	18 hours at 140° F (60°C)	40 min at room temp. mixed with CM192	RT	6 mos DOS
194	n/a	Fiber, roving	N	Saint Gobain Vetrotex: EC2400P185 E Glass Roving	---	---	RT	
195	n/a	Solder, 0.062 Dia., 63/37 alloy	N	Kester/Type 24-6337-0061	---	---	---	---
196	n/a	Solder, 0.062 Dia., 60/40 alloy	N	Kester/Type 24-6040-0061	---	---	---	---
199	A-6741-199	Sealant, Electrically Conductive Alternate is A-6741-199-1	Y	PRC-Desoto/PR-2200 Class B	6 hours at room temp.	---	RT	6 mos DOS
	A-6741-199-1	Sealant, Electrically Conductive Alternate is A-6741-199	Y	PRC-Desoto/PR-2201 Class B	5 hours at room temp.	---	RT	6 mos DOS

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200	A-6741-200	Paint, Bright Red Polane, gallon	Y	Sherwin -Williams, F63TXR16285-4311	---	---	UC	36 mos DOM
	A-6741-200-1	Paint, Bright Red Polane, quart	Y	Sherwin -Williams, F63TXR16285-4311	---	---	UC	36 mos DOM
	A-6741-200-5	Paint, Touch-up, Bright Red, can	Y	Sherwin -Williams, F63TXR16285-4311	1-2 hours	---	UCSV	24 mos DOM
201	A-6741-201	Paint, Bright Yellow Polane, gallon	Y	Sherwin -Williams, F63TXY16286-4311	---	---	UC	36 mos DOM
	A-6741-201-1	Paint, Bright Yellow Polane, quart	Y	Sherwin -Williams, F63TXY16286-4311	---	---	UC	36 mos DOM
	A-6741-201-5	Paint, Touch-up, Bright Yellow, can	Y	Sherwin -Williams, F63TXY16286-4311	1-2 hours	---	UCSV	24 mos DOM
203	A-6741-203	Paint Bright Silver Polane, gallon	Y	Sherwin-Williams, F63TXS16768-4311	---	---	UC	36 mos DOM
	A-6741-203-1	Paint Bright Silver Polane, quart	Y	Sherwin-Williams, F63TXS16768-4311	---	---	UC	36 mos DOM
	A-6741-203-5	Paint, Touch up, Bright Silver, can	Y	Sherwin-Williams, F63TXS16768-4311	1-2 hours	---	UCSV	24 mos DOM

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F1=	Frozen, -40°F (-40°C) maximum
R=	Refrigerate, 40°-60°F (4°-15°C)
RT=	Controlled Room Temperature - 60°-80°F (15°-26°C)
UC=	Uncontrolled, no special Hartzell requirements, follow manufacturer's requirements
SV=	Store Vertically (modifier code)

Consumable Materials
Table 1-1

CM No.	Hartzell Part No.	Description	Supply Basis	Manufacturer/Supplier Part Number/Specification	Cure Time	Pot Life	Storage Temp.	Shelf Life
204	A-6741-204	Paint, Prop Gold Polane, gallon	Y	Sherwin-Williams, F63TXS17221-4311	---	---	UC	36 mos DOM
	A-6741-204-1	Paint, Prop Gold Polane, quart	Y	Sherwin-Williams, F63TXS17221-4311	---	---	UC	36 mos DOM
	A-6741-204-5	Paint, Touch up, Prop Gold, 12 ounce	Y	Sherwin-Williams, F63TXS17221-4311	1-2 hours	---	UCSV	24 mos DOM
208	A-6741-208	Epoxy, Adhesive, 50 ml Duo Pak	Y	3M/DP110 Gray	48 hours full cure	8-13 minutes	RT	15 mos DOS
209	n/a	Use TE209	n/a	---	---	---	---	---
210	n/a	Oil Dye, Red 5 gallon	N	Innospec, Oil Dye Red B4 Liquid	---	---	UC	---
	A-6741-210-1	Oil Dye, Red pint	Y	Innospec, Oil Dye Red B4 Liquid Cessna P/N A-4880-1PT	---	---	UC	---
211	A-6741-211	Sealent, Thread, 250 CC	Y	Loctite, 565	Operational: 2 hours, Full: 24 hours	---	RT	---

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215	A-6741-215	5 Minute Epoxy Gel Adhesive	Y	Devcon 14240	12 hours full cure	4-7 minutes	RT	MD
	n/a	5 Minute Epoxy Gel Adhesive, alternate	N	Devcon S-210	12 hours full cure	4-7 minutes	RT	MD
216	n/a	Primer, Adhesive	N	Bostik, 9252 Primer	---	---	RT	6 mos DOS
217	n/a	Adhesive	N	Bostik, 2402 Adhesive	---	---	RT	6 mos DOS
218	n/a	Curing Agent, Adhesive	N	Bostikure D Curing Agent	---	---	RT	9 mos DOM
219	n/a	Methyl Propyl Ketone (MPK)	N	---	---	---	UC	---
220	n/a	Tape, Vinyl, 1/8 inch width A part of PL Paint Kit A-6741-233-1	N	Defense Holdings Inc., AG104	---	---	RT	---
221	n/a	Tape, Vinyl, 1/4 inch width A part of PL Paint Kit A-6741-233-1	N	Defense Holdings Inc., AG105	---	---	RT	---

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Consumable Materials
Table 1-1

CM No.	Hartzell Part No.	Description	Supply Basis	Manufacturer/Supplier Part Number/Specification	Cure Time	Pot Life	Storage Temp.	Shelf Life
222	n/a	Funnel/Filter A part of PL Paint Kit A-6741-233-1	N	Defense Holdings Inc., AG106	---	---	UC	---
223	n/a	Stick, Stir A part of PL Paint Kit A-6741-233-1	N	Defense Holdings Inc., AG107	---	---	UC	---
224	n/a	Paint, Polane White, PL Base A part of PL Paint Kit A-6741-233-1	N	Defense Holdings Inc., AG108	---	4 hours after mixing	RT	12 mos DOM
225	n/a	Hardener, PL Base Coat A part of PL Paint Kit A-6741-233-1	N	Defense Holdings Inc., AG109	---	4 hours after mixing	RT	12 mos DOM
226	n/a	Paint, Photoluminescent A part of PL Paint Kit A-6741-233-1	N	Defense Holdings Inc., AG110	---	4 hours after mixing	RT	12 mos DOM
227	n/a	Hardener, Photoluminescent A part of PL Paint Kit A-6741-233-1	N	Defense Holdings Inc., AG111	---	4 hours after mixing	RT	12 mos DOM

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Consumable Materials
Table 1-1

CM No.	Hartzell Part No.	Description	Supply Basis	Manufacturer/Supplier Part Number/Specification	Cure Time	Pot Life	Storage Temp.	Shelf Life
228	n/a	Reducer, Photoluminescent A part of PL Paint Kit A-6741-233-1	N	Defense Holdings Inc., AG112	---	4 hours after mixing	RT	12 mos DOM
229	n/a	Coating, PL Clear Coat A part of PL Paint Kit A-6741-233-1	N	Defense Holdings Inc., AG113	---	4 hours after mixing	RT	12 mos DOM
230	n/a	Reducer, PL Clear Coat A part of PL Paint Kit A-6741-233-1	N	Defense Holdings Inc., AG114	---	4 hours after mixing	RT	12 mos DOM
231	n/a	Hardener, PL Clear Coat A part of PL Paint Kit A-6741-233-1	N	Defense Holdings Inc., AG115	---	4 hours after mixing	RT	12 mos DOM
232	n/a	Rag, Tack A part of PL Paint Kit A-6741-233-1	N	Defense Holdings Inc., AG116	---	---	UC	---

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233	A-6741-233-1	Kit, Photoluminescent Includes: CM220 CM221 CM222 CM223 CM224 CM225 CM226 CM227 CM228 CM229 CM230 CM231 CM232	HPI	Defense Holdings Inc., AGPK100	---	---	RT	12 mos DOM
238	A-6741-238	RTV, Silicone	Y	GE RTV 627	---	---	RT	12 mos DOS
244	n/a	Lead Wool	N	Avril - GA, lead wool,	--- 50 pound bag	---	UC	---
257	A-6741-257	Sealant, Silicone, 430 gm	Y	ThreeBond, 1216E430G or 1216E455G/JCL-US	Tack Free 6 minutes	---	RT	9 mos DOM

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Consumable Materials
Table 1-1

CM No.	Hartzell Part No.	Description	Supply Basis	Manufacturer/Supplier Part Number/Specification	Cure Time	Pot Life	Storage Temp.	Shelf Life
259	A-6741-259	Tape, Polyurethane, 36 yard roll	Y	3M, 8681HS or 8671	---	---	UC	24 mos DOM
282	A-6741-282	Paint, Matterhorn White, gallon	Y	Sherwin-Williams, Acry Glo, W00150	---	---	RT	36 mos DOM
283	A-6741-283	Catalyst, Acry Glo, quart	Y	Sherwin-Williams, CM0571081	---	---	RT	24 mos DOM
284	A-6741-284	Reducer, Acry Glo, Med, Tmp, gallon	Y	Sherwin-Williams, CM0110701	---	---	RT	24 mos DOM
285	A-6741-285	Reducer, Acry Glo, Low, Tmp, gallon	Y	Sherwin-Williams, CM0110755	---	---	RT	24 mos DOM
286	A-6741-286	Reducer, Acry Glo, Hi Tmp, gallon	Y	Sherwin-Williams, CM0110821	---	---	RT	24 mos DOM
287	A-6741-287	Accelerator, Acry Glo, pint	Y	Sherwin-Williams, CM0571082	---	1 hour, 2-3 hrs gelled	RT	24 mos DOM
288	A-6741-288	Obsolete Use A-6741-106	n/a	---	---	---	---	---
290	A-6741-290	Paint, Conventional Clear, gallon	Y	Sherwin-Williams, Acry Glo, CM0571080	---	---	RT	36 mos DOM

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CM No.	Hartzell Part No.	Description	Supply Basis	Manufacturer/Supplier Part Number/Specification	Cure Time	Pot Life	Storage Temp.	Shelf Life
291	A-6741-291	Paint, Sterling Silver Met, gallon	Y	Sherwin-Williams, Acry Glo, CM0571186	---	---	RT	36 mos DOM
292	A-6741-292	Stabilizer, Acry Glo, pint	Y	Sherwin-Williams, Acry Glo, CM0571085	---	---	RT	36 mos DOM
293	A-6741-293	Tubing, Heat Shrink	Y	Alpha Wire Fit 105-1/8	---	---	RT	---
294	A-6741-294	Tubing, Heat Shrink	Y	Alpha Wire Fit-Clear-1/8	---	---	RT	---
301	A-6741-301	Oil, case (6 quart)	Y	Shell Rotella T4 10W-30	---	---	UC	---
	A-6741-301-1	Oil, quart	Y	Shell Rotella T4 10W-30	---	---	UC	---
302	A-6741-302	Oil, case (6 quart)	Y	Shell Rotella T6 5W-40	---	---	UC	---
	A-6741-302-1	Oil, quart	Y	Shell Rotella T6 5W-40	---	---	UC	---
303	A-6741-303	Paint, Sterling, Polane, gallon	Y	Sherwin-Williams, F63TXS23947-4311	---	---	UC	36 mos DOM
314	n/a	Structural Adhesive, 6 ounce Alternate for CM95	N	Scotch-Weld EC-3448	60 minutes at 250° F (121° C)	---	F	6 mos DOS
316	n/a	Thinner, gallon	N	MIL-T-81772B Type III Thinner Chemsol/Sherwin Williams 1000-7406	---	---	UC	---

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Consumable Materials
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CM No.	Hartzell Part No.	Description	Supply Basis	Manufacturer/Supplier Part Number/Specification	Cure Time	Pot Life	Storage Temp.	Shelf Life
317	A-6741-317	Paint, Polane®, Ghost Gray, gallon	Y	Sherwin-Williams, F63TXA27973-4311, FED STD 36375	---	---	UC	24 mos DOM
	A-6741-317-1	Paint, Polane®, Ghost Gray, quart	Y	Sherwin-Williams, F63TXA27973-4311 FED STD 36375	---	---	UC	24 mos DOM
318	n/a	Primer Sealer, gallon Alternate - CM29	N	Sherwin-Williams, E65-A-4	---	---	UC	36 mos DOM
	n/a	Primer Sealer, quart Alternate - CM29	N	Sherwin-Williams, E65-A-4	---	---	UC	36 mos DOM
335	A-6741-335	Composite Blade Cosmetic Touch-up Kit	Y	Sherwin-Williams 1007-10490	1-2 hours	---	UC	24 mos DOM
338	A-6741-338	Wash Primer	S	Sherwin-Williams E90GIG/V93V17 (for metal blades only)	---	---	UC	24 mos DOM
341	A-6741-341	Lube, Anticorit “Windsor 307”	Y	Anticorit 307 “Winsor 307”	---	---	UC	---
342	A-6741-342	Solvent, Loctite SF 768	Y	Loctite SF 768 Clean Up Solvent Alternate - Loctite 768 X-NMS Cleanup Solvent	---	---	RT	---

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343	A-6741-343	Tubing, Heat Shrink, Roll	Y	Alpha Wire Fit 105-3/32 AMS-DTL-23053/2 Class 1 exc Longitudinal Shrinkage	---	---	UC	12 mos DOS
344	A-6741-344	Silicone Foam Sheet, 12” X 12”	Y	McMaster Carr 8785K86 Extra Soft	---	---	UC	---
345	A-6741-345	Compound, Anti-Corrosion, 13 ounce	Y	Lear Chemical ACF-50 Anti-Corrosion Compound	---	---	RT	24 mos DOM
346	A-6741-346	Polishing Cmpd, 200 Grit, Formax	N	200 Grit Formax Mfg. Corp Satin-Glo Greaseless Polishing Compound	---	---	UC	---
	A-6741-346-1	Polishing Cmpd 240 Grit, Formax	N	240 Grit Formax Mfg. Corp. Satin-Glo Greaseless Polishing Compound	---	---	UC	---
	A-6741-346-2	Polishing Cmpd 200 Gr, Jackson	N	200 Grit Jackson Lea Greaseless Abrasive Composition	---	---	UC	---
	A-6741-346-3	Polishing Cmpd 240 Gr, Jackson	N	240 Grit Jackson Lea Greaseless Abrasive Composition	---	---	UC	---

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CM No.	Hartzell Part No.	Description	Supply Basis	Manufacturer/Supplier Part Number/Specification	Cure Time	Pot Life	Storage Temp.	Shelf Life
352	n/a	Corrosion Inhibitor, 13 ounce Aerosol	N	Chemetall Aerospace Technologies/Ardrox AV30	3 hours at ambient	---	RT	36 mos DOS
	n/a	Corrosion Inhibitor, 1 liter liquid	N	Chemetall Aerospace Technologies/Ardrox AV30	3 hours at ambient	---	RT	36 mos DOS
360	A-6741-360	Shim Stock, Plastic	Y	Precision Brand/Grainger Grainger P/N 3L881 Mfr. Model #44905	---	---	UC	---
361	A-6741-361	Oil, quart	Y	Mobil Jet Oil II	---	---	UC	---
362	A-6741-362	Mold Release, Gallon	Y	Chem-Trend LLC, #PU-16212, Release Agent	Flash Off	---	RT	12 mos DOS
367	A-6741-367	Nozzle, Mixing	Y	3M, #62-9154-9148-4	---	---	UC	---
368	A-6741-368	Torque Marker, Dykem, 1 ounce tube	Y	Dykem / 83314	---	---	RT	---
399	A-6741-399	Threadlocker, 1.69 fluid ounce	Y	Loctite, 243	---	---	RT	MD

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Consumable Materials
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VENDOR CROSS REFERENCE

The information that was in this chapter is now in Hartzell Propeller Inc. Standard Practices Manual 202A (61-01-02), Volume 6.

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PACKAGING AND STORAGE - CONTENTS

PACKAGING AND STORAGE - CONTENTS, CONTINUED

LIST OF FIGURES

1. Packaging and Storage Guidelines

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 CHAPTER OF THE APPLICABLE OVERHAUL MANUAL(S) FOR THE IDENTIFICATION OF SPECIFIC PROPELLER CRITICAL PARTS.

NOTE: For criteria for preferred conditions, refer to the section "Environmental Conditions" in this chapter.

A. General

(1) For packaging and storage requirements for parts, refer to the section "Packaging and Storage Parts Shipped from Hartzell Propeller Inc."

(2) For packaging and storage requirements for a governor assembly, refer to the section "Packaging and Storage of a Governor Assembly Shipped from Hartzell Propeller Inc."

(3) For packaging and storage requirements for a Propeller Assembly, refer to the section "Packaging and Storage of a Propeller Assembly Shipped From Hartzell Propeller Inc."

(4) Hartzell Propeller Inc. does not warrant propellers against corrosion if they are stored outside of the "Preferred Conditions" outlined below. The following storage criteria is considered "Preferred Conditions":

(5) Environmental Conditions

(a) Annually evaluate the propeller storage conditions to confirm the environment still meets the preferred conditions.

1 If the storage area evaluation indicates possible problems, inspect the propeller in accordance with the section, "Inspecting a Propeller Assembly That Has Been in Storage and Will Be Returned to Storage".

(b) Criteria for "Preferred Conditions":

1 Low humidity environment

a Storage facility average humidity is maintained below 85%

2 Salt-free environment

a Storage facility salt levels are less than 0.8 NaCl/dm^2

NOTE: In general, NaCl air content drops to acceptable levels at 400 meters from ocean/salt water.

3 Non-corrosive environment

a The product is stored in a separate facility from corrosive chemicals

4 Negligible air pollution exposure

a Average Air Quality Index (AQI) rating below 100

5 Stable storage temperatures

a Acceptable storage temperature conditions are dependent on the humidity level, but wide temperature fluctuations of +/- 50° F (+/- 10° C) should be avoided.

b Propeller storage container temperatures must be less than 150° F (66° C).

(6) Short Term Storage Definition

(a) Propeller stored for less than two years in standard packaging in preferred conditions

(b) Propeller stored for less than four years in preservation packaging in preferred conditions

(7) Long Term Storage Definition

(a) Propeller stored for more than two years in standard packaging in preferred conditions

(b) Propeller stored for more than four years in preservation packaging in preferred conditions

2. Packaging and Storage of Parts Shipped From Hartzell Propeller Inc.

A. Important Information

(1) This section provides information about the use of Hartzell Propeller Inc. standard packaging for parts shipped from Hartzell Propeller Inc.

(a) Parts shipped from Hartzell Propeller Inc. do not include propeller assemblies or governor assemblies.

(b) The term "Standard Packaging" refers to the standard packaging used by Hartzell Propeller Inc. for shipment of parts from Hartzell Propeller Inc.

1 This standard packaging is not designed for use as a container for long-term storage.

2 The standard packaging is designed to preserve the part under preferred conditions for six months.

3 Non-preferred conditions can reduce the storage time.

(c) Hartzell Propeller Inc. is not responsible for a part stored in preferred conditions for more than six months using standard packaging.

(d) Hartzell Propeller Inc. is not responsible for a part stored in non-preferred conditions for more than thirty days using standard packaging.

(e) Hartzell Propeller Inc. is not responsible for a part repackaged and stored.

(f) Standard packaging is intended for protection during non-ocean surface freight transit only and for storage that is dependent on certain environmental conditions.

1 For information about standard packaging, refer to the section "Standard Packaging" in this chapter.

2 For information about environmental conditions, refer to the section "Environmental Conditions" in this chapter.

(g) Hartzell Propeller Inc. does not provide "Preservation Packaging" for parts shipped from Hartzell Propeller Inc.

(h) Inspection for Individual Parts That are Stored in Standard Packaging

1 Hartzell Propeller Inc. requires that the stored parts be inspected every six months to make sure that corrosion is not developing.

a When the parts are inspected, if applicable, replace the desiccant bag or corrosion preventative.

3. Packaging and Storage of a Governor Assembly Shipped from Hartzell Propeller Inc.

A. Overview

(1) The governor is lubricated and stored in a sealed plastic bag when shipped from Hartzell Propeller Inc.

(a) This standard packaging is not designed for use as a container for long-term storage.

(b) The packaging is designed to preserve the governor under preferred conditions for less than two years.

(c) Non-preferred conditions can reduce the storage time.

(2) Hartzell Propeller Inc. will guarantee a governor stored for less than two years when stored in the original Hartzell Propeller Inc. packaging and the sealed bag is still sealed.

(3) Hartzell Propeller Inc. is not responsible for a governor stored for more than two years when stored in the original Hartzell Propeller Inc. packaging and the sealed bag is still sealed.

(4) Hartzell Propeller Inc. is not responsible for a governor stored for more than thirty days in non-preferred conditions if the original Hartzell Propeller Inc. packaging and the sealed bag has been opened.

(5) Hartzell Propeller Inc. is not responsible for a governor repackaged and stored.

B. General

(1) A flight hour/calendar limit between overhauls is specified by Hartzell Propeller Inc. Refer to Hartzell Propeller Inc. Service Letter HC-SL-61-61Y.

(a) The start date for the flight hour/calendar limit is when the governor is first installed on an engine.

(2) These procedures apply to new governors, governors with zero hours since overhaul, and governors with time-in-service that have been in long-term storage.

(3) The start date for long-term storage begins at the original ship date, the date of overhaul, or the date the governor was removed from the aircraft, whichever occurs last.

C. Activating A Governor Assembly That Has Been in Short Term Storage

(1) For the procedures for activating a governor, refer to the section "Activating a Governor Assembly That Has Been in Short Term Storage" or the section "Activating a Governor Assembly That Has Been in Long Term Storage", as applicable.

(2) General

(a) A governor that has been in short term storage is:

1 A governor that has been in storage for less than two years and is stored in the original Hartzell Propeller Inc. packaging and the sealed bag is still sealed

2 A governor that has been in storage for less than thirty days but the original Hartzell Propeller Inc. packaging and the sealed bag have been opened

(b) For a governor in storage, if the governor calendar limit is more than the calendar limits specified in Hartzell Propeller Inc. Service Letter HC-SL-61-61Y, overhaul the governor before further flight.

1 New governors, governors with zero hours, or governors with time in service and the calendar limit has not been exceeded do not require overhaul.

(3) Procedure

(a) Remove the governor from the sealed bag.

(b) Visually examine the governor for corrosion and damage.

1 If there is corrosion or damage, repairs must be performed by a certified governor service facility in accordance with Hartzell Propeller Inc. Mechanically Actuated Governors and Accessories Maintenance Manual 130B (61-23-30).

2 If corrosion or damage is not found, lubricate the governor with oil and seal in a plastic bag.

(c) Review current FAA Airworthiness Directives and Hartzell Propeller Inc. Service Documentation.

1 There may be documents that have been issued since the date that the governor was put into storage.

a Compliance with documents that have been issued since the date that the governor was put into storage is required.

(d) Return the governor in the sealed bag to storage.

D. Activating a Governor Assembly That Has Been in Short Term Storage

(1) General

(a) A governor that has been in short term storage is:

1 A governor that has been in storage for less than two years and is stored in the original Hartzell Propeller Inc. packaging and the sealed bag is still sealed

2 A governor that has been in storage for less than thirty days but the original Hartzell Propeller Inc. packaging and the sealed bag have been opened

(b) For a governor in storage, if the governor calendar limit is more than the calendar limits specified in Hartzell Propeller Inc. Service Letter HC-SL-61-61Y, overhaul the governor before further flight.

1 New governors, governors with zero hours, or governors with time in service and the calendar limit has not been exceeded do not require overhaul.

(2) Procedure

(a) Remove the governor from the sealed bag.

(b) Visually examine the governor for corrosion and damage.

1 If there is corrosion or damage, repairs must be performed by a certified governor service facility in accordance with Hartzell Propeller Inc. Mechanically Actuated Governors and Accessories Maintenance Manual 130B (61-23-30).

(c) Review current FAA Airworthiness Directives and Hartzell Propeller Inc. Service Documentation.

1 There may be documents that have been issued since the date that the governor was put into storage.

a Compliance with documents that have been issued since the date that the governor was put into storage is required.

(d) Return the governor to service.

E. Activating a Governor Assembly that has been in Long Term Storage

(1) General

(a) A governor that has been in long term storage is:

1 A governor that has been in storage for more than two years and is stored in the original Hartzell Propeller Inc. packaging and the sealed bag is still sealed

2 A governor that has been in storage for more than thirty days but the original Hartzell Propeller Inc. packaging and the sealed bag have been opened

(2) Procedure

(a) The requirements in this section must be completed by a certified governor service facility in accordance with Hartzell Propeller Inc. Mechanically Actuated Governors and Accessories Maintenance Manual 130B (61-23-30).

(b) Remove the governor from the sealed bag.

(c) Visually examine the governor internally and externally for damage or corrosion.

1 Removal of paint and plating is not required.

2 If there is corrosion or damage, repairs must be performed by a certified governor service facility in accordance with Hartzell Propeller Inc. Mechanically Actuated Governors and Accessories Maintenance Manual 130B (61-23-30).

3 Replace all seals (O-ring, seal washer, gaskets, etc.).

(d) The governor must be tested in compliance with the Assembly and Testing chapter of Hartzell Propeller Inc. Mechanically Actuated Governors and Accessories Maintenance Manual 130B (61-23-30).

1 If test results do not meet the requirements, a complete governor overhaul must be performed.

(e) Governors stored longer than five years in standard packaging require an internal seal replacement.

(1) The governor must be tested in accordance with the Assembly and Testing chapter of Hartzell Propeller Inc. Mechanically Actuated Governors and Accessories Maintenance Manual 130B (61-23-30).

(a) If the test results do not meet the requirements, a complete governor overhaul must be performed.

(f) Review current FAA Airworthiness Directives and Hartzell Propeller Inc. Service Documentation.

1 There may be documents that have been issued since the date that the governor was put into storage.

a Compliance with documents that have been issued since the date that the governor was put into storage is required.

(g) Return the governor to service.

4. Packaging and Storage of a Propeller Assembly Shipped From Hartzell Propeller Inc.

A. Standard Packaging

CAUTION: STANDARD PACKAGING IS NOT RECOMMENDED WHEN SHIPPING BY OCEAN SURFACE FREIGHT. PRESERVATION PACKAGING IS HIGHLY RECOMMENDED FOR PROPELLER PROTECTION DURING TRANSIT BY OCEAN SURFACE FREIGHT.

(1) The term "Standard Packaging" refers to the standard packaging used by Hartzell Propeller Inc. for shipment of a propeller assembly from Hartzell Propeller Inc.

(a) Standard packaging is intended for propeller protection during non-ocean surface freight transit only and for storage that is dependent on certain environmental conditions.

1 For information about environmental conditions, refer to the section "Environmental Conditions" in this chapter.

(2) Standard packaging is not intended for:

(a) Propeller storage that is more than 30 days in non-preferred conditions

(b) Propeller storage that is more than two years in preferred conditions

(3) Hartzell Propeller Inc. will guarantee a propeller stored in the original standard packaging in confirmed preferred conditions for up to six months from the date that the propeller was originally shipped from Hartzell Propeller Inc.

(4) Hartzell Propeller Inc. will guarantee a propeller stored in the original standard packaging in non-preferred conditions for up to 30 days from the date that the propeller was originally shipped from Hartzell Propeller Inc.

(5) Hartzell Propeller Inc. is not responsible for corrosion on a propeller that is stored in standard packaging for more than six months in preferred conditions or more than 30 days in non-preferred conditions.

(6) Inspection for a Propeller that is Stored in Standard Packaging and will be Returned to Storage

(a) When a propeller has been stored for two years, the propeller must be removed from the standard packaging, inspected, and resealed in accordance with the section "Inspecting a Propeller Assembly That Has Been in Storage and Will Be Returned to Storage" in this chapter.

1 After compliance with the section "Inspecting a Propeller Assembly That Has Been in Storage and Will Be Returned to Storage" in this chapter, the propeller should be repackaged using appropriate packaging.

(a) To determine the correct packaging to be used, refer to the sections "Environmental Conditions", "Standard Packaging", and "Preservation Packaging for a Propeller Assembly" in this chapter.

2 Without prior written agreement, Hartzell Propeller Inc. is not responsible for corrosion on propellers repackaged after leaving Hartzell Propeller Inc.

(7) When activating a propeller that has been in storage, follow the applicable steps in the section "Activating a Propeller After Storage" in this chapter.

B. Preservation Packaging for a Propeller Assembly

CAUTION: PRESERVATION PACKAGING IS HIGHLY RECOMMENDED FOR PROTECTION OF THE PROPELLER DURING TRANSIT BY OCEAN SURFACE FREIGHT.

(1) Preservation Packaging

(a) The term "Preservation Packaging" refers to the specific preservation packaging used by Hartzell Propeller Inc. for shipment of a propeller assembly from Hartzell Propeller Inc.

(b) Preservation packaging is intended for propeller protection during ocean surface freight and for storage that is dependent on certain environmental conditions.

1 For information about environmental conditions, refer to the section "Environmental Conditions" in this chapter.

(2) Preservation packaging is intended for:

(a) Propeller protection during transit by ocean surface freight

(b) Propeller storage up to two years in non-preferred conditions

(c) Propeller storage up to four years in preferred conditions.

(3) Hartzell Propeller Inc. is not responsible for corrosion on propellers shipped by ocean surface freight without preservation packaging.

(4) Hartzell Propeller Inc. recommends preservation packaging for:

(a) A propeller that will be stored more than 30 days in non-preferred conditions

(b) A propeller that will be stored for more than two years in preferred conditions

(c) A propeller that will be shipped with a partially disassembled aircraft

(d) For preservation packaging instructions, refer to the section "Preservation Packaging Instructions for Storage or Shipping of a Propeller" in this chapter.

(5) A propeller should never be stored in preservation packaging for more than four years, even under preferred conditions.

(6) If the propeller is stored under confirmed preferred conditions, Hartzell Propeller Inc. will guarantee a propeller stored in the original Hartzell Propeller Inc. preservation packaging for up to four years from the date the propeller was originally shipped from Hartzell Propeller Inc.

(7) If the propeller is stored under non-preferred conditions, Hartzell Propeller Inc. will guarantee a propeller stored in the original Hartzell Propeller Inc. preservation packaging for up to two years from the date the propeller was originally shipped from Hartzell Propeller Inc.

(8) Hartzell Propeller Inc. is not responsible for corrosion on a propeller that is stored in the original Hartzell Propeller Inc. preservation packaging for more than four years in preferred conditions or for more than two years in non-preferred conditions.

(9) When a propeller has been stored for two years in non-preferred conditions, the propeller must be removed from the preservation packaging, inspected, and resealed in accordance with the section, "Inspecting a Propeller Assembly that has Been in Storage" in this chapter.

(a) If the propeller is repackaged after the removal from the preservation packaging, inspection, and reseal, appropriate packaging should be used.

1 To determine the correct packaging to be used, refer to the sections "Environmental Conditions", "Standard Packaging", and "Preservation Packaging for a Propeller Assembly" in this chapter.

(b) Without prior written agreement, Hartzell Propeller Inc. is not responsible for corrosion on propellers repackaged after leaving Hartzell Propeller Inc.

(10) When a propeller has been stored for four years in preferred conditions, the propeller must be removed from the preservation packaging, inspected, and resealed in accordance with the section, "Inspecting a Propeller Assembly That Has Been in Storage" in this chapter.

(a) If the propeller is repackaged after the removal from the preservation packaging, inspection, and reseal, appropriate packaging should be used.

1 To determine the correct packaging to be used, refer to the sections "Environmental Conditions", "Standard Packaging", and "Preservation Packaging" in this chapter.

(b) Without prior written agreement, Hartzell Propeller Inc. is not responsible for corrosion on propellers repackaged after leaving Hartzell Propeller Inc.

5. Inspecting a Propeller Assembly That Has Been in Storage and Will Be Returned to Storage

A. General

(1) The requirements in this section must be completed by a certified propeller repair station with the appropriate rating in accordance with the applicable Hartzell Propeller Inc. instruction or overhaul manual.

(2) This procedure applies to:

(a) A propeller that has been in storage for two years in standard packaging

(b) A propeller that has been in storage for two years in preservation packaging in non-preferred conditions

(c) A propeller that has been in storage for four years in preservation packaging in preferred conditions

(3) The inspections in this section are for a propeller that will be returned to storage.

(a) If the propeller will be activated instead of stored, follow the steps in the section "Activating a Propeller Assembly That Has Been in Storage" in this chapter.

B. Procedure

(1) Using a clean cloth soaked with solvent CM109, remove the corrosion preventative that may have been added at the time of storage.

(2) Visually examine the propeller externally for damage or corrosion.

(a) Removal of paint and plating is not required.

(b) Total disassembly of the propeller, such as removing the counterweights, is not necessary unless there is corrosion or damage.

1 If there is corrosion or damage, refer to the Check chapter of the applicable propeller overhaul manual.

(c) Make sure that the boots are still bonded with no signs of blistering or peeling in accordance with Hartzell Propeller Inc. Propeller Ice Protection System Manual 180 (30-61-80), as applicable.

(3) Repaint and/or replate components as required.

(4) When the propeller is repackaged after the removal from the standard packaging or preservation packaging, inspected, and resealed, the appropriate packaging should be used.

(a) To determine the correct packaging to be used, refer to the sections "Environmental Conditions", "Standard Packaging", and "Preservation Packaging" in this chapter.

(5) Without prior written agreement, Hartzell Propeller Inc. is not responsible for corrosion on propellers repackaged after leaving Hartzell Propeller Inc.

6. Activating a Propeller Assembly After Storage

A. General

(1) A flight hour/calendar limit between overhauls is specified by Hartzell Propeller Inc. Refer to Hartzell Propeller Inc. Service Letter HC-SL-61-61Y.

(a) The start date for the flight hour/calendar limit is when the propeller is first installed on an engine.

(2) These procedures apply to new propellers, propellers with zero hours since overhaul, and propellers with time-in-service that have been in storage.

(3) The start date for storage begins at the date of shipment from Hartzell Propeller Inc., the date of last overhaul or the date the propeller was removed from the aircraft and placed in storage, whichever occurred last.

(4) For the procedures for activating a propeller, refer to the section "Activating a Propeller Assembly That Has Been in Short Term Storage" or the section "Activating a Propeller Assembly That Has Been in Long Term Storage", as applicable.

B. Activating a Propeller Assembly That Has Been in Short Term Storage

NOTE: For criteria for preferred conditions, refer to the section "Environmental Conditions" in this chapter.

(1) General

(a) A propeller that has been in short term storage is:

1 A propeller that has been in storage for less than thirty days in standard packaging in non-preferred conditions

2 A propeller that has been in storage for less than two years in standard packaging in preferred conditions

3 A propeller that has been in storage for less than two years in preservation packaging in non-preferred conditions

4 A propeller that has been in storage for less than four years in preservation packaging in preferred conditions

(b) For a propeller in storage with time in service, if the propeller calendar limit is more than the calendar limits specified in Hartzell Propeller Inc. Service Letter HC-SL-61-61Y, overhaul the propeller before further flight.

1 New propellers, propellers with zero hours time since overhaul, or propellers with time in service and the calendar limit has not been exceeded do not require overhaul.

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) Procedure

(a) Using a clean cloth soaked with solvent CM109, remove the corrosion preventative that may have been added at the time of storage.

(b) Make a general visual examination of the condition of the parts.

1 As necessary, rework and correct any questionable conditions. Refer to the Check chapter of the applicable propeller overhaul manual.

(c) Test the ice protection system including the de-ice or anti-icing boots in accordance with Hartzell Propeller Inc. Propeller Ice Protection System Manual 180 (30-61-80).

1 Make sure that the boots are still correctly bonded with no signs of blistering or peeling in accordance with Hartzell Propeller Inc. Propeller Ice Protection System Manual 180 (30-61-80), as applicable.

2 If the propeller is equipped with an ice protection system that uses components supplied by Hartzell Propeller Inc., applicable instructions and technical information for the components supplied by Hartzell Propeller Inc. can be found in Hartzell Propeller Inc. Manual 180 (30-61-80) - Propeller Ice Protection System Manual available on the Hartzell Propeller Inc. website at www.hartzellprop.com.

3 Propeller ice protection system components not supplied by Hartzell Propeller Inc. are controlled by the applicable TC or STC holder's Instructions for Continued Airworthiness (ICA).

(d) Review current FAA Airworthiness Directives and Hartzell Propeller Inc. Service Documentation.

1 Compliance with documents that have been issued since the date that the propeller was put into storage is required.

(e) After accomplishing the required procedures, the propeller may be released for the remaining overhaul and flight and calendar time.

C. Activating A Propeller Assembly That Has Been In Long Term Storage

(1) General

(a) A propeller that has been in long term storage is:

1 A propeller that has been in storage for more than two years in standard packaging

2 A propeller that has been in storage for more than two years in preservation packaging in non-preferred conditions

3 A propeller that has been in storage for more than four years in preservation packaging in preferred conditions

(b) The requirements in this section must be completed by a certified propeller repair station with the appropriate rating in accordance with the applicable Hartzell Propeller Inc. instruction or overhaul manual.

(c) For a propeller in storage, if the propeller calendar limit is more than the calendar limits specified in Hartzell Propeller Inc. Service Letter HC-SL-61-61Y, overhaul the propeller before further flight.

1 New propellers, propellers with zero hours, or propellers with time in service and the calendar limit has not been exceeded do not require overhaul.

(d) A customer/end user may remove the propeller from long term storage and overhaul it in accordance with this section.

1 The propeller can then be stored for up to two years, installed on an aircraft, if needed, during that two year storage period.

(2) Procedure

(a) Using a clean cloth soaked with solvent CM109, remove the corrosion preventative that may have been added at the time of storage.

(b) Visually examine the propeller internally and externally for damage or corrosion.

1 Removal of paint and plating is not required.

2 Total disassembly of the propeller assembly, such as removing counterweights, is not necessary unless there is corrosion or damage.

a If there is corrosion or damage, refer to the Check chapter of the applicable propeller overhaul manual.

(c) Replace all seals (O-rings, seal washers, gaskets, etc.).

(d) Replace the lubricant in accordance with the Propeller Lubrication chapter of Hartzell Propeller Inc. Standard Practices Manual 202A (61-01-02).

(e) Test the ice protection system including the de-ice or anti-icing boots in accordance with Hartzell Propeller Inc. Propeller Ice Protection System Manual 180 (30-61-80).

1 Make sure that the boots are still correctly bonded with no signs of blistering or peeling in accordance with Hartzell Propeller Inc. Propeller Ice Protection System Manual 180 (30-61-80), as applicable.

2 If the propeller is equipped with an ice protection system that uses components supplied by Hartzell Propeller Inc., applicable instructions and technical information for the components supplied by Hartzell Propeller Inc. can be found in Hartzell Propeller Inc. Manual 180 (30-61-80) - Propeller Ice Protection System Manual available on the Hartzell Propeller Inc. website at www.hartzellprop.com.

3 Propeller ice protection system components not supplied by Hartzell Propeller Inc. are controlled by the applicable TC or STC holder's Instructions for Continued Airworthiness (ICA).

(f) Repaint and/or replate components as required.

(g) Review current FAA Airworthiness Directives and Hartzell Propeller Inc. Service Documentation.

1 Compliance with documents that have been issued since the date that the propeller was put into storage is required.

(h) After accomplishing the required procedures, the propeller may be released for the remaining overhaul and flight and calendar time.

7. Packaging Guidelines When Sending a Propeller to a Repair Station

A. General

(1) This section provides guidelines for packaging a propeller to send it to a repair station.

B. Guidelines

(1) The container must support the propeller using the hub, not the bulkhead, the slip ring, or the beta ring.

(2) Parts must not be loose in the container.

(3) A stand-alone aluminum hub must have both halves attached to each other to prevent damage.

(a) Optionally, ship each half of the hub in a separate container.

(4) The container must be longer than the blade to permit space for padding between the container and blade tip.

8. Preservation Packaging Instructions for Storage or Shipping of a Propeller

CAUTION 1: A PROPELLER THAT HAS A DESTINATION THAT WILL REQUIRE LONG TERM STORAGE OR OCEAN SURFACE FREIGHT SHOULD BE PACKAGED IN ACCORDANCE WITH THE INSTRUCTIONS GIVEN IN THIS SECTION.

CAUTION 2: HARTZELL PROPELLER INC. IS NOT RESPONSIBLE FOR CORROSION THAT MAY DEVELOP ON PROPELLERS THAT ARE PRESERVATION PACKAGED IN ACCORDANCE WITH THE INSTRUCTIONS IN THIS SECTION.

CAUTION 3: STANDARD PACKAGING IS NOT RECOMMENDED WHEN SHIPPING BY OCEAN SURFACE FREIGHT. PRESERVATION PACKAGING IS HIGHLY RECOMMENDED FOR PROPELLER PROTECTION DURING TRANSIT BY OCEAN SURFACE FREIGHT.

A. General

(1) This section provides instructions for preservation packaging of a propeller assembly.

(2) This section provides for the procedure used by Hartzell Propeller Inc. for Preservation Packaging of a three blade steel hub propeller.

(3) This section provides instructions for building a wooden shipping box that is suitable for long term storage or for shipping a propeller.

(a) The wood used to build the wooden shipping box should comply with international shipping container standard ISPM 15.

B. Materials And Tools

(1) When using the wooden shipping box for storage:

(a) 1/2 inch or 3/8 inch plywood

(b) 1 inch x 4 inch (wood external bracing that is in compliance with ISPM 15)

(c) 4-mil thick Cortec VCI impregnated shrink wrap or equivalent

(d) Closed cell foam padding material

(e) Duct tape or packaging tape

(f) MIL-D-3464, Type I, 16 Units

(g) Nails, screws, and if desired, a latching system

(h) Nox-Rust Vapor Wrapper or equivalent

(i) Black permanent marker

Wooden Shipping Box
Figure 3-1

In this Figure the propeller is shown in a box. Put the propeller in a similar postion when using a shipping pallet.

Putting the Propeller on the Foam Blocks
Figure 3-2

(2) Additionally, when using the wooden shipping box for shipping:

(a) Method to stamp ISPM 15 compliance symbol

(b) Banding materials - Steel banding, nylon banding or equivalent and the applicable banding equipment

(c) Liquid adhesive or self-adhering see-through bags and staples

(d) Appropriate shipping label

(e) Stickers with the word "Fragile"

(f) Copy of the applicable forms

C. Procedure

(1) Using materials compliant with international shipping container standard ISPM 15, build a wooden shipping box of minimum 1/2 inch or 3/8 inch plywood and 1 x 4 inch (25.4 x 101.6 mm) minimum wood external bracing. Refer to Figure 3-1.

(a) The internal dimensions of the wooden shipping box with padding allowance must be of a sufficient size to permit the propeller to rest securely and permit padding between the blade tips and the sides of the box.

1 The padding allowance is 2 inches (50.8 mm) minimum on the top, bottom, and all sides of the wooden shipping box that adds approximately 4 inches (101.6 mm) in each direction.

2 Extra depth is permitted.

(b) Construct the wooden shipping box with skids on the bottom near both edges and in the center so that the wooden shipping box can be handled with a forklift.

(c) Stamp the international shipping container standard ISPM 15 compliance symbol on at least two opposite sides of the wooden shipping box. Refer to the ISPM 15 specifications.

(2) Put a layer of 4-mil thick Cortec VCI impregnated shrink wrap across the bottom of the inside of the wooden shipping box, with the edges of the shrink wrap lapping over the sides as necessary to have enough material to completely encase the propeller.

In this Figure the propeller is shown in a box. Put the propeller in a similar postion when using a shipping pallet.

Conforming the Paper
Figure 3-3

In this Figure the propeller is shown in a box. Put the propeller in a similar postion when using a shipping pallet.

Forming a Wrap Around the Propeller
Figure 3-4

(3) Put 2 inches (50.8 mm) of closed cell foam padding materials on the Cortec VCI impregnated shrink wrap in the bottom of the wooden shipping box.

CAUTION: THE PROPELLER MUST BE SUPPORTED BY THE HUB, NOT THE BULKHEAD, THE BETA RING, OR THE SLIP RING.

(a) Put one piece of foam padding material that is approximately 15 x 15 inches (381 x 381 mm) on the centerline across the shorter dimension of the wooden shipping box and center the foam padding material approximately 1/3 of the way between the opposite sides, so that the propeller hub flange will be approximately centered on the pad when put in the box.

1 If necessary, cut material to make a center hole cut-out.

(b) Put pieces of foam padding material, approximately 8 x 8 inches (203 x 203 mm), under where the blade trail edges will be, positioned from the hub center so that the foam will contact the blade trail edges, but the weight of the propeller is still supported by the hub flange.

CAUTION: THE PROPELLER MUST BE SUPPORTED BY THE HUB, NOT THE BULKHEAD, THE BETA RING, OR THE SLIP RING.

(4) Put the propeller on the foam padding material with the blade tips equal distance from the walls of the wooden shipping box.

(5) Wrap the propeller blades in 1/8 inch closed cell foam sheets, covering the blade tips completely. Refer to Figure 3-2.

(6) Wrap the bag of propeller mounting hardware with foam padding or bubble wrap.

(7) Attach the wrapped bag to the bottom pad inside of the wooden shipping box.

(8) Put the appropriate amount of desiccant bags in accordance with MIL-D-3464, Type I, inside the Cortec VCI impregnated shrink wrap.

(9) Put a sheet of Nox-Rust Vapor Wrapper over the hub and piston area of the propeller, conforming the paper to the general shape of the hub and piston area. Refer to Figure 3-3.

(10) Fold the Cortec VCI impregnated shrink wrap over the propeller.

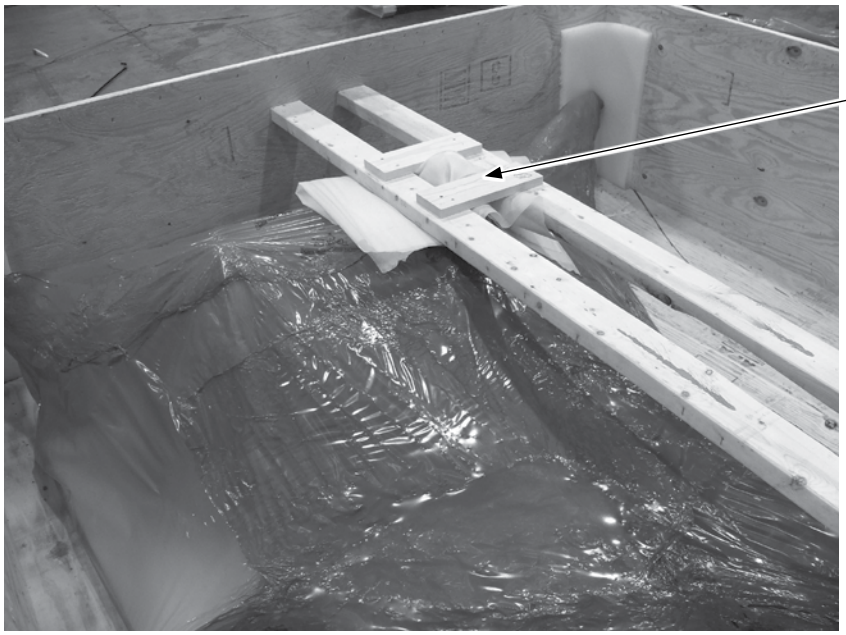
(a) Trim the Cortec VCI impregnated shrink wrap as necessary to form a wrap that will completely cover the propeller assembly. Refer to Figure 3-4.

CAUTION: DO NOT PERMIT TOO MUCH DWELL TIME WITH THE SEALING TORCH OVER THE ALUMINUM PROPELLER COMPONENTS.

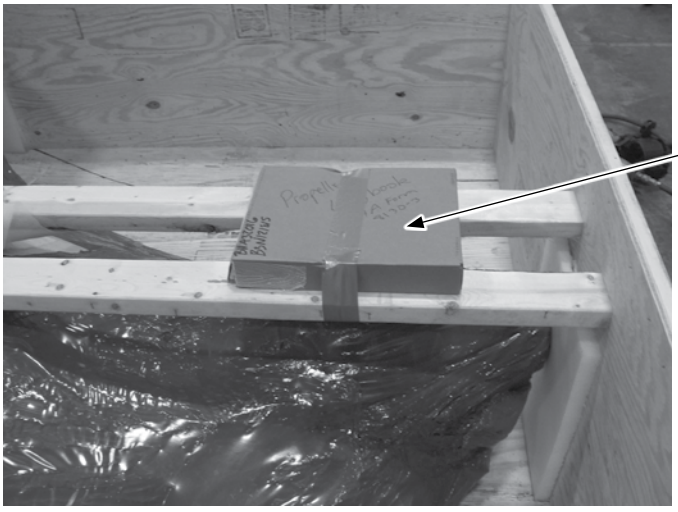
(11) Using a gas sealing torch, seal and shrink the Cortec VCI impregnated shrink wrap. Refer to Figure 3-4.

Protecting the Blade Tips
Figure 3-5

Securing the Box Containing the Beta Valve Assembly
Figure 3-6



Making a Cage for the Propeller
Figure 3-7



Attaching the Propeller Owner's Manual Logbook
Figure 3-8

Attaching the Lid
Figure 3-9

Shipping Information on the Wooden Shipping Box
Figure 3-10

(12) Install pieces of 2 inch (50.8 mm) closed cell foam to protect the blade tips.

(a) Bend the closed cell foam at the corners to protect the tip of each blade.

(b) Put one piece of closed cell foam between any blade tip and the side wall. Refer to Figure 3-5.

(c) If the corners of the wooden shipping box are too tight to use the 2 inch (50.8 mm) foam thickness, it is permitted to neatly cut down the foam thickness.

1 If the foam thickness is cut, the smooth side of the foam should be the side contacting the blade tips.

(13) Put a piece of 1/8 inch (3.18 mm) foam sheeting over the top of the Cortec VCI impregnated shrink wrap covering the piston.

(14) Cut two 2 inch x 4 inch (50.8 mm x 101.6 mm) planks to span the inside of the wooden shipping box.

(15) Put the 2 inch x 4 inch (50.8 mm x 101.6 mm) planks on opposite sides of the piston or spinner to hold it with gentle contact against the foam sheet.

(16) Using nails or screws, attach the 2 inch x 4 inch (50.8 mm x 101.6 mm) planks to the side wall of the wooden shipping box.

(17) Cut two short 2 inch x 4 inch (50.8 mm x 101.6 mm) pieces to hold the piston or spinner perpendicular to the 2 inch x 4 inch (50.8 mm x 101.6 mm) planks.

(18) Using nails, attach the 2 x 4 inch (25.4 x 101.6 mm) pieces, with light contact against the foam sheet to form a four-sided “cage” for the piston or spinner. Refer to Figure 3-7.

NOTE: Figure 3-7 shows a propeller that has a spinner.

(19) Using duct tape or packaging tape, attach the Owner’s Manual & Logbook box to two of the horizontal 2 x 4 inch (25.4 x 101.6 mm) pieces.

NOTE: Double banding is recommended over the single banding shown in Figure 3-8.

(20) Cut a 2 x 4 inch (25.4 x 101.6 mm) plank to span the inside of the box.

(21) Cut two plywood pieces of the appropriate size to make a box cover.

(a) To prevent interference with the “cage” structure, the seam of the lid pieces must not be on the propeller centerline.

(22) Using nails or screws, attach the plank to the side walls in position to support the two lid pieces below the seam between them.

(23) Using nails, screws, or a latching system, attach the lid pieces in place along all the outer edges and along the supporting plank. Refer to Figure 3-9.

(a) To prevent interference with the “cage” structure, the seam of the lid pieces must not be on the propeller centerline.

(24) When shipping the propeller, use the following steps:

(a) Using banding material, band the box in two places on opposite sides of the box.

(b) Using a black permanent marker, identify the contents of the box, as appropriate.

(c) Using a black permanent marker, write the following instructions on at least two sides of the wooden shipping box: Refer to Figure 3-10.

1 Box orientation (“Up” with an arrow ↑)

2 “Handle With Care”

(d) Using liquid adhesive or self-adhering transparent bags attached with staples as appropriate, attach the following documents to the side of the wooden shipping box:

1 Appropriate shipping label

2 “Fragile” stickers

9. Packaging of Propellers Shipping with Partially Disassembled Aircraft/Intermodal Containers

CAUTION 1: IF THE PROPELLER WILL BE PUT IN LONG TERM STORAGE AFTER THE ARRIVAL TO THE FINAL DESTINATION OF THE PROPELLER, USE THE PRESERVATION PACKAGING INSTRUCTIONS IN SECTION 8 OF THIS MANUAL. THIS INSTRUCTION IS INTENDED FOR PREVENTION OF CORROSION ON PROPELLERS DURING SHIPMENT WITH A PARTIALLY DISASSEMBLED AIRCRAFT/INTERMODAL CONTAINERS. HARTZELL PROPELLER INC. INTENDS FOR THE PROPELLER(S) THAT WAS PACKAGED IN ACCORDANCE WITH THIS SECTION TO BE REMOVED AND INSTALLED ONTO THE ASSEMBLED AIRCRAFT UPON ITS ARRIVAL AT THE FINAL DESTINATION.

CAUTION 2: A PROPELLER THAT HAS A DESTINATION THAT WILL REQUIRE OCEAN SURFACE FREIGHT SHOULD BE PACKAGED IN ACCORDANCE WITH THE INSTRUCTIONS GIVEN IN THIS SECTION.

CAUTION 3: HARTZELL PROPELLER INC. IS NOT RESPONSIBLE FOR CORROSION THAT MAY DEVELOP ON PROPELLERS THAT ARE PRESERVATION PACKAGED IN ACCORDANCE WITH THE INSTRUCTIONS IN THIS SECTION.

CAUTION 4: STANDARD PACKAGING IS NOT RECOMMENDED WHEN SHIPPING BY OCEAN SURFACE FREIGHT. PRESERVATION PACKAGING IS HIGHLY RECOMMENDED FOR PROPELLER PROTECTION DURING TRANSIT BY OCEAN SURFACE FREIGHT.

A. General

(1) This section requires removal of the propeller from the aircraft before preservation packaging of a propeller assembly.

(2) This section provides procedures recommended by Hartzell Propeller Inc. for Preservation Packaging of a propeller that has been removed from the aircraft and that will be shipped on a shipping pallet in a shipping container.

(3) This section provides instructions for attaching a propeller assembly to a shipping pallet that is suitable for use in a shipping container.

B. Materials And Tools

(1) When shipping a propeller assembly in a shipping container:

(a) 4-mil thick Cortec VCI impregnated shrink wrap or equivalent

(b) Closed cell foam padding material

(c) Duct tape or packaging tape

(d) MIL-D-3464, Type I, 16 Units

(e) Plastic tie straps

(f) Nox-Rust Vapor Wrapper or equivalent

(g) Black permanent marker

C. Procedure

(1) The dimensions of the shipping pallet with padding allowance must be of a sufficient size to permit the propeller to rest safely and permit padding between the blade tips and the sides of the shipping container.

(a) The padding allowance between the blade tips and the sides of the shipping container should be approximately 4 inches (101.6 mm) in each direction.

(b) The shipping pallet should have skids on the bottom near both edges and in the center so that the shipping pallet can be handled with a forklift.

(2) Put a layer of 4-mil thick Cortec VCI impregnated shrink wrap across the shipping pallet, with enough of the shrink wrap lapping over the sides as necessary to have enough material to completely encase the propeller.

(3) Put 2 inches (50.8 mm) of closed cell foam padding materials on the Cortec VCI impregnated shrink wrap in the center of the shipping pallet.

CAUTION: THE PROPELLER MUST BE SUPPORTED BY THE HUB, NOT THE BULKHEAD, THE BETA RING, OR THE SLIP RING.

(a) Put one piece of foam padding material that is approximately 15 x 15 inches (381 x 381 mm) on the centerline across the shorter dimension of the shipping pallet and center the foam padding material approximately 1/3 of the way between the opposite sides, so that the propeller hub flange will be approximately centered on the pad when put on the pallet. Refer to Figure 3-2.

1 If necessary, cut material to make a center hole cut-out.

(b) Put pieces of foam padding material, approximately 8 x 8 inches (203 x 203 mm), where the blade trail edges will be, positioned from the hub center so that the foam will contact the blade trail edges, but the weight of the propeller is still supported by the hub flange Refer to Figure 3-2.

CAUTION: THE PROPELLER MUST BE SUPPORTED BY THE HUB, NOT THE BULKHEAD, THE BETA RING, OR THE SLIP RING.

(4) Put the propeller on the foam padding material with the blade tips equal distance from the edges of the shipping pallet. Refer to Figure 3-2.

(5) Wrap the propeller blades in 1/8 inch (3.18 mm) closed cell foam sheets, covering the blade tips completely. Refer to Figure 3-2.

(6) Wrap the bag of propeller mounting hardware with foam padding or bubble wrap.

(7) Attach the wrapped bag to the bottom of the shipping pallet.

(8) Put the appropriate amount of desiccant bags in accordance with MIL-D-3464, Type I, inside the Cortec VCI impregnated shrink wrap.

(9) Put a sheet of Nox-Rust Vapor Wrapper over the hub and piston area of the propeller, conforming the paper to the general shape of the hub and piston area. Refer to Figure 3-3.

(10) Fold the Cortec VCI impregnated shrink wrap over the propeller.

(a) Trim the Cortec VCI impregnated shrink wrap as necessary to form a wrap that will completely cover the propeller assembly. Refer to Figure 3-4.

CAUTION: DO NOT PERMIT TOO MUCH DWELL TIME WITH THE SEALING TORCH OVER THE ALUMINUM PROPELLER COMPONENTS.

(11) Using a gas sealing torch, seal and shrink the Cortec VCI impregnated shrink wrap. Refer to Figure 3-4.

(12) Install pieces of 2 inch (50.8 mm) closed cell foam to protect the blade tips.

(a) Bend the closed cell foam at the corners to protect the tip of each blade.

(b) Using duct tape or packaging tape, attach one piece of closed cell foam around any blade tip.

1 If the foam thickness is cut, the smooth side of the foam should be the side contacting the blade tips.

(13) Put a piece of 1/8 inch (3.18 mm) foam sheeting over the top of the Cortec VCI impregnated shrink wrap covering the piston.

(14) Using duct tape or packaging tape, attach the Owner’s Manual & Logbook box to the shipping pallet.

(15) Using plastic tie straps, attach the packaged propeller to the shipping pallet.

(a) Under each plastic tie strap, put a piece of cardboard or other material to prevent the plastic tie straps from damaging the blades.

(b) Put the plastic tie straps inboard near the propeller hub. This is the thickest part of the blade.

(16) Secure the shipping pallet in the shipping container to prevent movement of the shipping pallet.

(a) Make sure that there is a minimum of 4 inches (101.6 mm) clearance between the tips of the propeller blades and the side of the shipping container.