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3M™ Polyurethane Protective Propeller Spinner Dome Boots

Installation and Maintenance Instructions

Effective: May 17, 2024

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1.0 Introduction

1.1 Document Scope

This document provides supplemental information and instructions regarding material definition, part installation, damaged part criteria and actions, part removal, and part replacement for 3M™ Polyurethane Protective Propeller Spinner Dome Boots.

The purpose of these Instructions is to provide the owner/operator with the information necessary to ensure proper installation and maintenance of the boot. These Instructions supplement 3M document number ICA-001172, Instructions for Continued Airworthiness, 3M™ Polyurethane Protective Propeller Spinner Dome Boots.

NOTE: These Instructions and ICA-001172 must be placed in the airplane operator's maintenance manual and incorporated into the operator's scheduled maintenance program.

1.2 Purpose/Rationale for Installation

The purpose of spinner dome boots is to protect and prevent damage to aircraft propeller spinner domes The boots prevent damage caused by high velocity impacts with environmental effects such as rain, sand, dust, and smog.

1.3 Program for the Distribution of Changes to These Instructions

Significant changes to these Instructions are envisioned only in the event of a change to the components that comprise the boot which results in modification of any of the guidance in this document. In the case of significant changes, the latest version of the Instructions will be distributed directly to the airplane owner/operator in hard copy and/or electronic format upon completion of the changes.

For minor typographical or grammatical changes where no functional or operational characteristics are affected, no notice of change will be made.

1.4 Warnings, Cautions and Notes

Warnings, cautions, and notes may be used throughout this manual to emphasize important and critical instructions as follows:

WARNING:	**An operating procedure, practice, etc., which, if not correctly followed, could result in personal injury or loss of life.**
CAUTION:	**An operating procedure, practice, etc., which, if not strictly observed, could result in damage to, or destruction of equipment.**
NOTE:	An operating procedure, condition, etc., which is essential to highlight.

1.5 Material Definition

3M™ Polyurethane Protective Spinner Dome Boots are comprised of an abrasion-resistant polyurethane film, formulated for long-term resistance to ultraviolet light (UV), with a durable, solvent-resistant, pressure-sensitive, acrylic adhesive protected with an easy-release liner. This tape construction is then formed into a three-dimensional shape matching the spinner dome.

3M™ Polyurethane Protective Spinner Dome Boots can be applied to bare metal or painted surfaces and may be painted after installation in accordance with FAA (or other Civil Aviation Authority) approved maintenance documentation.

2.0 Part Fabrication (during installation)

2.1 Removal of Excess Material at Base of Dome Shape

3M™ Polyurethane Protective Propeller Spinner Boots are designed to cover the forward-facing surface of the spinner dome in the area most prone to damage. They typically do not cover the entire spinner dome. Boots may be supplied trimmed to size (ready to install) or with excess material from the manufacturing process at the base of the boot shape that will need to be trimmed prior to installation.

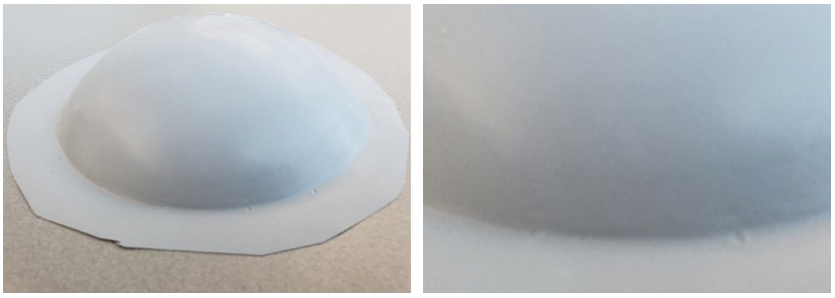
Boots may or may not be supplied with trim lines (3-dimensional indicators formed around the perimeter of the boot to indicate the approximate location for trimming) that can be used as a guide for final boot size. Most trim lines are located approximately 0.5 inches (12 mm) above the base of the boot. Trim lines have been chosen based on in-use field experience, but it is the installer's decision as to exactly where to trim the boot. 3M recommends trimming the boot to within 0.25 inches (6 mm) above the provided trim line. See **Figure 1**.

If a trim line is not present on the boot, 3M recommends trimming the boot within 1 inch (25 mm) of the base of the boot. See **Figure 2**.

Trim the boot with a pair of scissors, making clean, smooth cuts and avoid making jagged edges. See Section 3.6.

Figure 1: Representative trim lines provided on boots.

Figure 2: Representative boot without a trim line.



3.0 Part Installation

The following is a list of steps to install 3M™ Polyurethane Protective Propeller Spinner Dome Boots.

To maximize the effectiveness and longevity of the protective boot, the boot should be installed without wrinkles, blisters, or other contaminants in the bond line (area of contact between the spinner dome surface and the boot adhesive), without excessive abrasion/scuffing of the boot film surface and avoiding cuts or punctures in the film.

Please follow the instructions contained in this document and other applicable instructional documentation (such as technical data sheets, installation videos, service bulletins, etc.).

Please contact your 3M Engineering Representative prior to installation if clarification is required.

NOTE: When installing polyurethane protective boots, it is important not to contaminate the surface of the aircraft part or the adhesive on the boot. Use of clean, silicone-free and dust-free gloves and appropriate personal protective equipment is recommended.

3.1 Safety Notes

NOTE: Before handling any chemical products used for cleaning and installation of the boot, always read the container label and the Safety Data Sheet (SDS).

When using solvents, extinguish all ignition sources, including pilot lights. Read and follow manufacturer's warnings and directions for use.

Local air quality regulations may regulate or prohibit the use of surface preparation and cleaning materials based on solvent (VOC) content.

3.2 Fit Check

Overall dimensions of the boots vary based on the spinner dome type being protected. Boots are provided in a form intended to fit a specific spinner dome snugly. Prior to installation, confirm the boot fits the spinner dome properly by placing the boot with the adhesive liner still attached onto the surface of the spinner dome.

3.3 Spinner Dome Condition

The spinner dome must be in good condition before a boot is applied. The surface must be smooth without dirt or heavy oxidation.

3.4 Preparation of Application Solution

3M™ Polyurethane Protective Propeller Spinner Boots may be provided with a spray bottle to be used to apply the recommended application solution. The application solution can be made by mixing 75% water and 25% isopropanol along with 3 or 4 drops of a non-ionic detergent, such as Joy® Dishwashing detergent. An example solution would be 300 grams of water mixed with 100 grams of isopropanol and 3 drops of Joy® Dishwashing detergent. Alternatively, this solution can be purchased premade from 3M as 3M™ Protective Tape Application Solution.

3.5 Propeller Spinner Dome and Boot Cleaning

Using a clean, lint-free cloth or cheese cloth, clean the spinner dome surface with the application solution prepared in Section 3.4. Additionally, clean both sides of the boot with application solution to remove the white powder on the boot (used to prevent multi-pack boots from adhering to each other).

Figure 3: Representative image — Cleaning dome and boot.

3.6 Boot Trimming

Unless the boot is supplied trimmed-to-fit (ready to install), there will be excess material from the manufacturing process around the base of the boot (See Section 2.1 for guidance). See **Figure 4**.

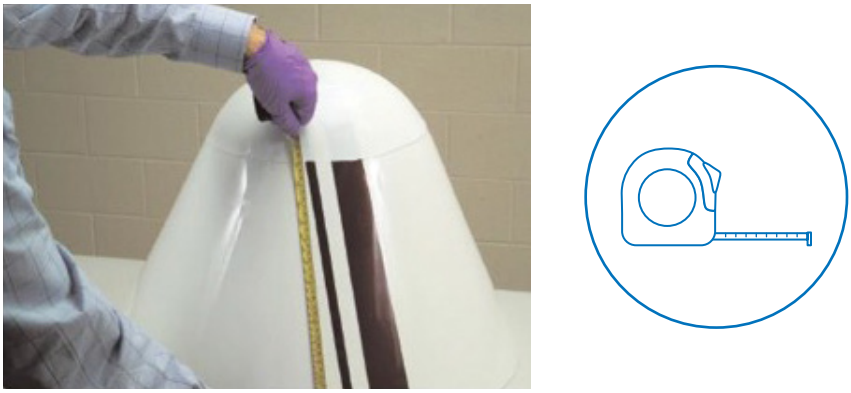
Figure 4: Representative image — Trimming of the boot.

3.7 Boot Positioning

Position the boot over the spinner dome (adhesive liner side down against the dome). Measure the distance from the bottom of the boot to the base of the dome at several points around the circumference to ensure it is centered and properly positioned. See **Figure 5**.

NOTE: Spinner dome boots may not require measurements and alignment markings.

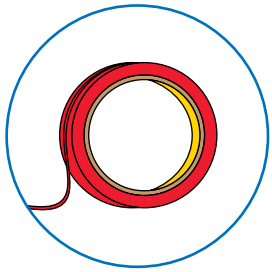
Figure 5: Representative image — Measurement of dome boot placement.



3.8 Alignment Marking

Use 3M™ Vinyl Tape 471 to mark three index points on the dome around the circumference and along the edge of the boot (one on the top of the dome and two on the sides of the dome approximately 90° from the center mark) clearly establishing the top, center point, so the boot can be repositioned properly. Then mark the three index points on the boot edge aligned with the marks on the dome. See **Figure 6**.

Figure 6: Representative image — Placement of alignment marks on dome and boot.



3.9 Preparation for Liner Removal

Remove the boot from the dome and turn the boot inside out such that the adhesive liner is facing out, taking care not to wrinkle the boot.

Liberally spray the dome and both surfaces (film and liner) of the boot with the application solution.

3.10 Liner Removal

Place the boot back on the dome (liner will be facing up), using the dome as a holder to prevent the boot from adhering to itself during liner removal (which would make the boot unusable). Lift the edge of the adhesive liner from the boot to expose a portion of the adhesive. Spray application solution on the adhesive. Carefully remove the remainder of the adhesive liner while continuously spraying application solution on the exposed adhesive. This will further prevent the boot from sticking to itself during liner removal and installation. See **Figure 7**.

Figure 7: Representative image — Removal of liner and continuously spraying adhesive surface.

3.11 Preparation for Repositioning

Remove the boot from the dome and turn it inside out such that the adhesive side is facing the dome. Heavily spray the dome and boot with the application solution, enabling easy repositioning. See **Figure 8.**

Figure 8: Representative image — Spraying dome surface with 3M™ Protective Tape Application Solution.

3.12 Boot Repositioning on Propeller Spinner Dome

Apply the boot to the dome, aligning the index points at the top and sides of the dome. Reposition and reapply the application solution as needed until proper fit is achieved. See **Figure 9.**

Figure 9: Representative image — Application of boot to surface of dome and alignment with index points.

3.13 Boot Adhesion to Propeller Spinner Dome

Apply additional application solution to the outside of the boot. Using the 3M yellow applicator squeegee, press the boot down at the center of the dome and use one to two-inch strokes outward to smooth out the boot. This will remove trapped application solution and air bubbles. Apply only light pressure to squeegee and use a clean, lint-free cloth to absorb excess application solution as it is pressed out. See **Figure 10.**

Firmly press the squeegee down in short strokes, working away from the center of the polyurethane protective boot and toward the trailing edge, removing excess application solution. If a bubble is trapped, carefully peel the boot back, reapply the application solution and use the squeegee to re-adhere.

Remove index markings if they have been applied.

Figure 10: Representative image — Process of smoothing out boot with the yellow squeegee.

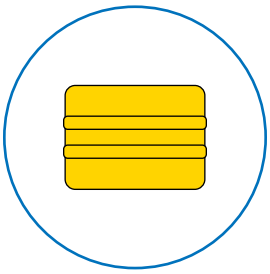
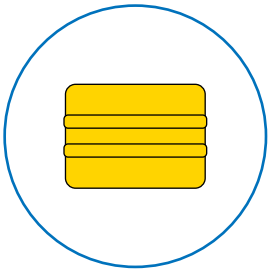


Figure 11: Representative image — Applying and smoothing out boot with the yellow squeegee.



3.14 Final Step

Dry the surface of the polyurethane protective boot with a clean cloth. If the boot is installed on an aircraft, allow it to dwell 6 to 8 hours at 70°F (21°C) before flight.

4.0 Maintenance Instructions

4.1 Scheduling Information

The boot does not require periodic inspection, cleaning, adjustment, test, etc., to maintain its continued airworthiness. Replacement may occur as determined necessary during the course of ordinary airplane maintenance activities.

4.2 Recommended Overhaul Periods

As with any product, environmental factors, age and use affect the materials and performance of boots. Accordingly, the manufacturer recommends replacing the airplane's boot at approximately five (5) year intervals. Use in harsh environments may necessitate more frequent replacement.

This replacement interval, however, is optional, at the owner/operator's discretion, and is in no way mandatory as a means to achieve the continued operational safety of the airplane.

4.3 Inspection Program

NOT APPLICABLE — This section is not applicable as the boot does not require a periodic inspection to maintain its continued airworthiness.

5.0 Troubleshooting/Damaged Part Criteria

5.1 Damage Types and Actions

Recommendations to replace the boot for any of the damage types below apply before, during, and after installation.

Torn/Cut/ Punctured Boot	If there is a tear, cut, or puncture in the boot above the trim line, in the area that will be installed on the spinner dome, the boot should not be used and should be replaced. If the tear, cut, or puncture is located in the area at the base of the boot, that will get trimmed off, the boot can be used and installed as recommended.
Wrinkles (non-permanent)	Wrinkles in the boot are acceptable if the wrinkle is a non-permanent deformation. If the boot with the adhered adhesive liner can be smoothed out and laid flat upon the spinner dome, this would be considered a non-permanent deformation. If the boot contains wrinkle(s) that are considered non-permanent deformations, the boot can be used and installed as recommended.
Wrinkles (permanent)	If the wrinkle is such that the boot film cannot be laid flat on the spinner dome, e.g., the adhesive is adhered to itself or the urethane film has a fold-over or inherent wrinkle, this would be considered a permanent deformation. If a permanent deformation exists above the trim line, in the area that will be installed on the spinner dome, the boot should not be used and should be replaced. If there is a permanent deformation located in the area at the base of the boot, that will get trimmed off, the boot can be used and installed as recommended.
Surface Abrasions/ Scuff Marks	If the boot has abrasions or scuff marks that do not wash off when cleaning with 3M™ Protective Tape Application Solution above the trim line, in the area that will be installed on the spinner dome, the boot should not be used and should be replaced. If surface abrasions or scuff marks are located in the area at the base of the boot, that will get trimmed off, the boot can be used and installed as recommended.

The aircraft owner/operator should make the final decision on accepting rejecting a part.
3M Engineering Representatives will provide aid or guidance upon request.

6.0 Part Repair

NOT APPLICABLE — 3M does not recommend repair for damaged boots. Damaged boots should be replaced.

7.0 Part Removal Instructions

3M™ Polyurethane Protective Propeller Spinner Dome Boots should be removed carefully to prevent damage to the spinner dome.

The boot can be removed by peeling up the edge of the boot and pulling it toward the center of the boot, carefully peeling back the boot at 180° (back against itself).

If the boot leaves adhesive residue on the aircraft surface, this can be removed with a 50/50 mixture of isopropanol and water and a cheese cloth. 3M™ Tape and Residue Remover can also be used to remove the boot and/or adhesive residue.

8.0 Part Replacement

Replacement boots (and the following items to assist in the installation of the boots) can be ordered directly from 3M Company.

Name	3M Product #	3M ID #
3M™ Protective Tape Application Solution	56800	70202272194
3M™ Polyurethane Protective Tape Applicator Squeegee, Yellow, 5 each/pack	(no product #)	87330002301
3M™ Vinyl Tape 471	471	70006747672
3M™ Tape and Residue Remover, 16 oz. tub, 6 per case	35975	60430050793

Please contact a 3M customer service or sales representative for ordering information. See Section 15.0.

9.0 Other General Procedural Instructions

NOT APPLICABLE — This section is not applicable as the boot does not require system testing, symmetry checks, does not affect the center of gravity, lifting and shoring, nor storage limitations.

10.0 Boot Access

The boot is installed on the exterior surface of the propeller spinner dome (exterior surface of the airplane). No modification of the airplane is required to gain access for inspection.

11.0 Special Inspection Techniques

NOT APPLICABLE — This section is not applicable as the boot does not require any special inspection techniques to determine suitability for continued use or replacement.

12.0 Protective Treatments

NOT APPLICABLE — This section is not applicable as the boot does not require any protective treatments be applied to the airplane due to its installation, maintenance, removal or replacement.

13.0 Fasteners

NOT APPLICABLE — This section is not applicable as the boot does not involve the use of fasteners of any type.

14.0 Special Tools

It is recommended that a 3M yellow applicator squeegee be used for the installation of boots (See **Figure 12** and Section 3.13). These may be provided with the boots as delivered or can be ordered directly from 3M Company. See Section 8.0.

Figure 12: 3M yellow applicator squeegee.

15.0 Manufacturer Contact Information

Airplane owner/operators may contact the manufacturer at:

3M Company
3M Corporate Headquarters
3M Center
St. Paul, MN 55144-1000

3M Aerospace Customer Service
1-800-235-2376 Call Monday – Friday
8AM to 5PM Central Time

Website
3M.com/Aerospace