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UTC Aerospace Systems

SENSORS AND INTEGRATED SYSTEMS - OHIO

SERVICE NEWSLETTER

Pneumatic De-icer Warranty Claims
ATA Chapter 30

1. Planning Information

A. Effectivity

(1) Goodrich pneumatic de-icers returned for warranty consideration.

B. Reason

(1) To define warrantable defects versus non-warrantable damage to pneumatic de-icers, as well as describe consistent terminology to describe defects.

(2) To clarify the warranty timeframe for pneumatic de-icers and simplify the procedure for returning pneumatic de-icers for warranty claims.

C. Description

Evaluation of the returned de-icer is difficult and time-consuming when the damaged area is not marked and/or the de-icer is received in pieces and/or stuck together with remnants of installation adhesive. Information regarding flight hours, time since installation and the nature of the problem may be missing or misleading. This Service Newsletter provides guidelines for return of pneumatic de-icers, including proper nomenclature and required information to support a warranty claim.

D. Affected Documentation

30-10-31, Goodrich Pneumatic De-Icer Installation, Maintenance, and Repair Manual.

E. Required Materials

None - information only.

This document does not contain any export controlled technical data

2. Accomplishment Instructions

A. Warranty Timeframe

NOTE: Warranty timeframe may be different for pneumatic de-icers installed on certain aircraft models where special terms have been negotiated with the aircraft manufacturer.

Goodrich pneumatic de-icers are warranted to be free of defects in material and workmanship for 24 months or 3000 flight hours from date of installation, whichever occurs first, but not beyond 84 months from date of manufacture. Pneumatic de-icers that are beyond the warranty time frame should not be returned for warranty consideration.

B. Warranty Coverage

The Goodrich pneumatic de-icer warranty covers defects in material and workmanship.

C. Information Required for Warranty Claim

Part Number
Serial Number
Cure (Manufacture) Date
Installation Date (or if on a new aircraft, date of aircraft Entry Into Service - EIS)
Removal Date
Flight hours since installation
Description of warrantable condition

D. Physical Evidence Required for Warranty Claim

(1) Photographs

Sometimes photographs are sufficient to evaluate a warranty claim. Photographs may be submitted with the information listed in Paragraph C, above, to the Product Support group at **dssd.support@utas.utc.com** for preliminary evaluation.

NOTE: Warranty claims must be made through the point of purchase. For direct customers, it is mandatory to obtain a Quality Notification (QN) prior to shipping physical evidence of a warranty claim for a pneumatic de-icer. A QN may be obtained by contacting **amy.ryan@utas.utc.com**, or by calling 304-772-3869.

(2) Physical Evidence

If photographs are not possible or do not provide sufficient information, the laser brand (see Figure 1) and a small section of the pneumatic de-icer that shows the alleged warrantable defect should be cut from the de-icer and returned. The laser brand is generally located on the lower wing surface on the inboard end of the de-icer.

Refer to ATA 30-10-31 for warranty consideration de-icer removal procedure. The de-icer section should be packaged in a material that will not stick to any remaining adhesive. This is particularly important for *FAST*boot® de-icers, as the pressure sensitive adhesive is very difficult to pull apart and may damage the section, making evaluation impossible.

Figure 1 – Laser Brand Example

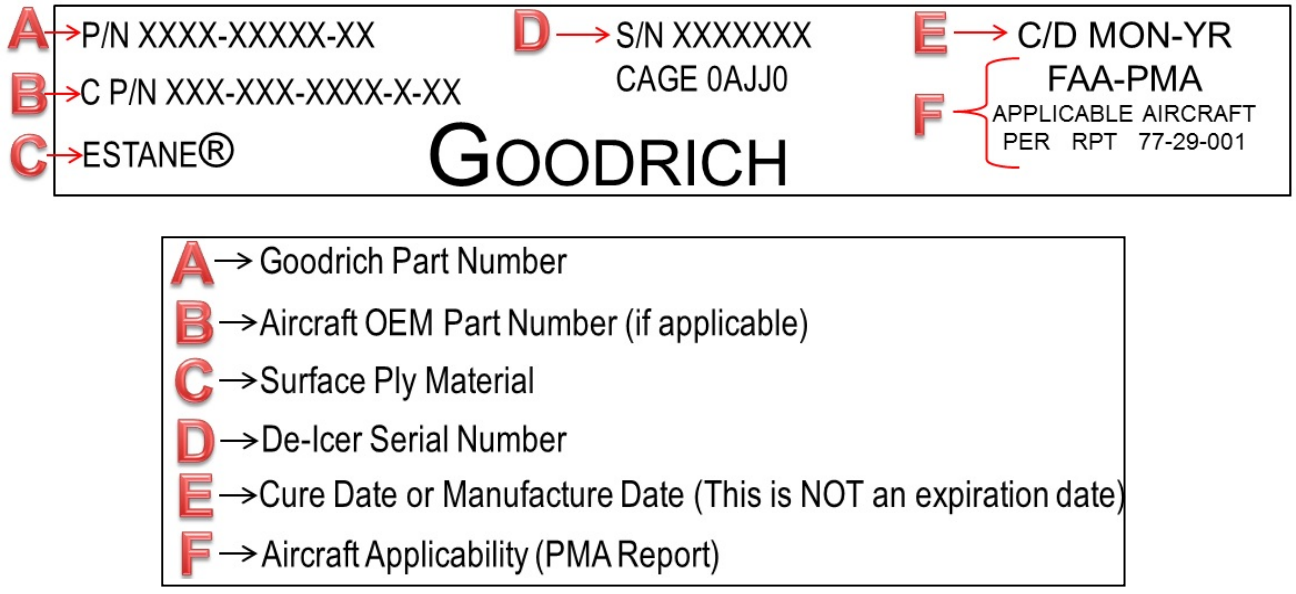
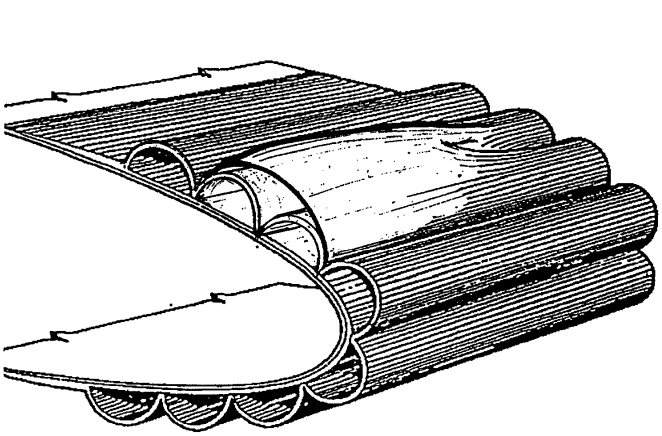


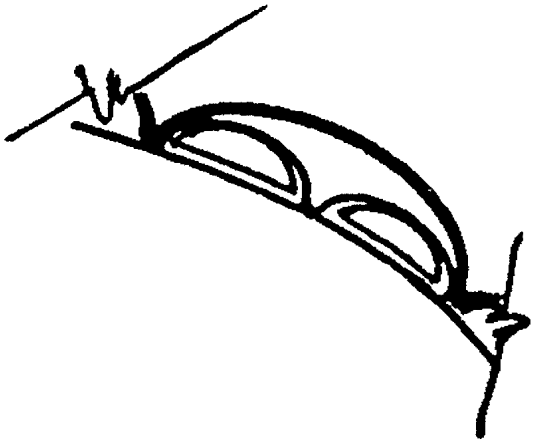
Figure 2 – Laser Brand Information

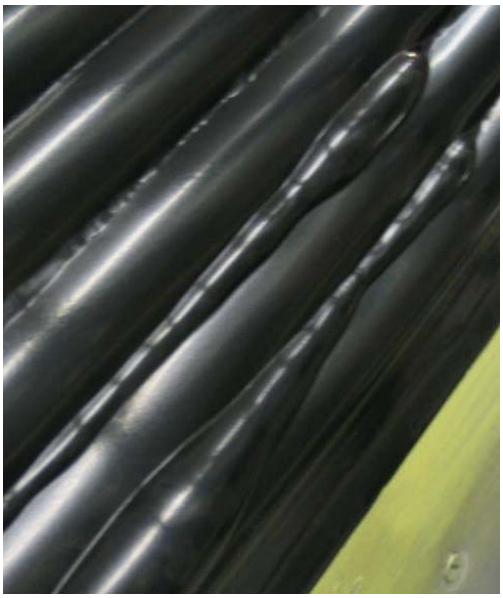
E. Definitions of Warrantable and Non-Warrantable Damage

The following definitions may be helpful in describing the de-icer damage. Not all of these terms indicate a warrantable defect, as noted. Refer to Goodrich ATA 30-10-31 for allowable repair limits.

(1) Delamination - internal plies of the de-icer have separated. If the delamination is of the surface ply only (see Figure 3a), it is possible that it may be repaired if within the repair limits. If the delamination is of a ply other than the surface ply (see Figure 3b), there is no repair. Delamination may indicate a warrantable defect or a non-warrantable wear-out failure depending on time and flight hours since installation.







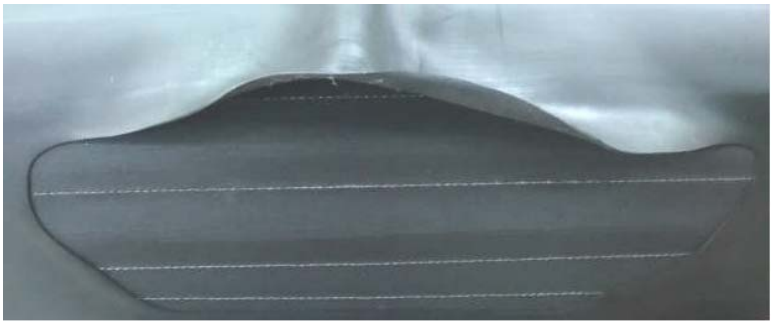


Figure 3a - Surface Ply Delamination

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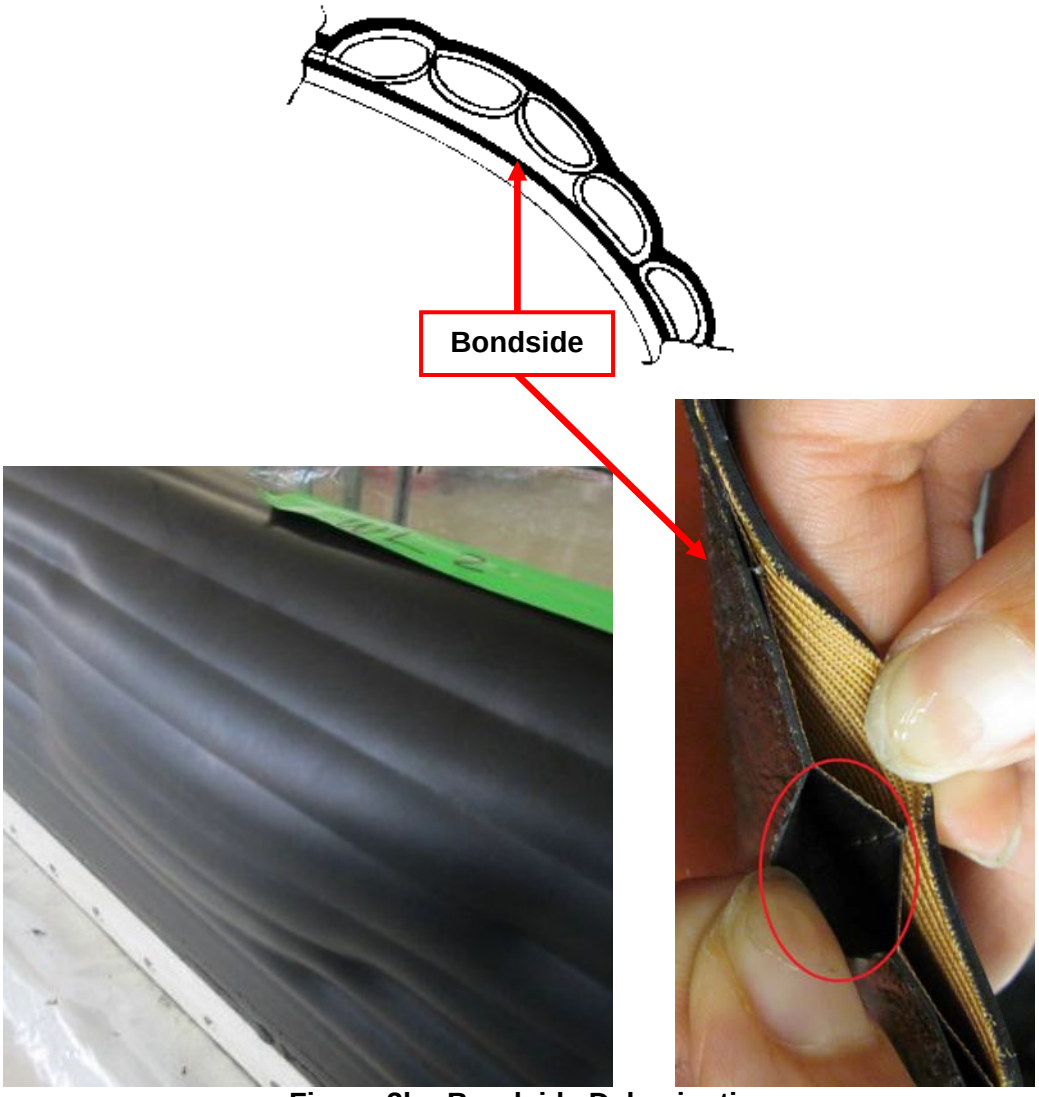


Figure 3b - Bondside Delamination

(2) Broken stitch - stitching that separates the air tubes in the de-icer has broken, making two separate tubes appear as one in the area of the broken stitch. A broken stitch cannot be repaired. A broken stitch may indicate a warrantable defect or a non-warrantable environmental failure such as foreign object damage (FOD), static burn or lightning strike, or a wear-out failure, depending on time and flight hours since installation.

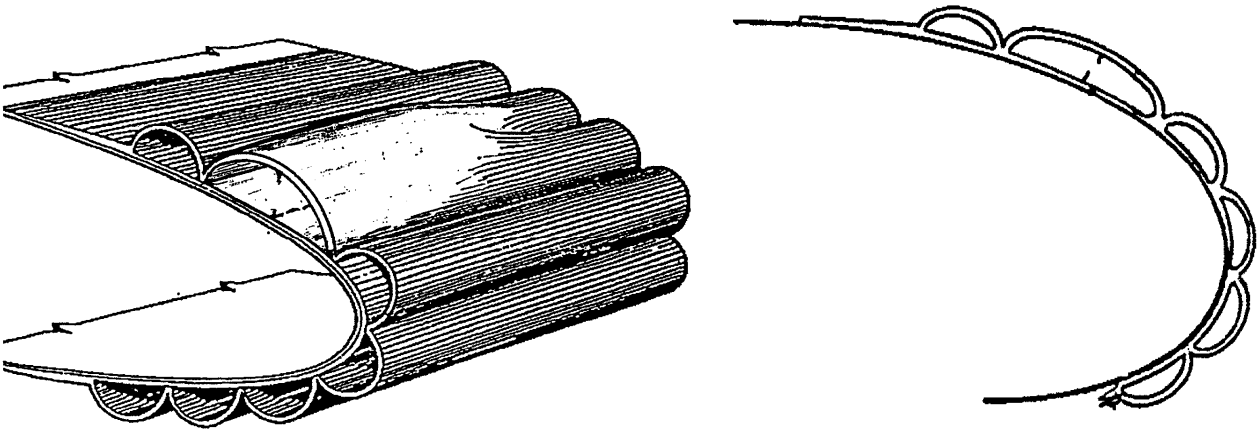


Figure 4 - Broken Stitch

(3) Debonding - bond (back) side of the de-icer has pulled away from the installation surface. Although an attempt can be made to rebond the de-icer, depending on the location of the debonded area, such a repair is risky and may be unacceptable in functionality and/or cosmetics. Generally speaking debonding does not indicate a warrantable defect; rather it indicates contamination during installation or improper installation.

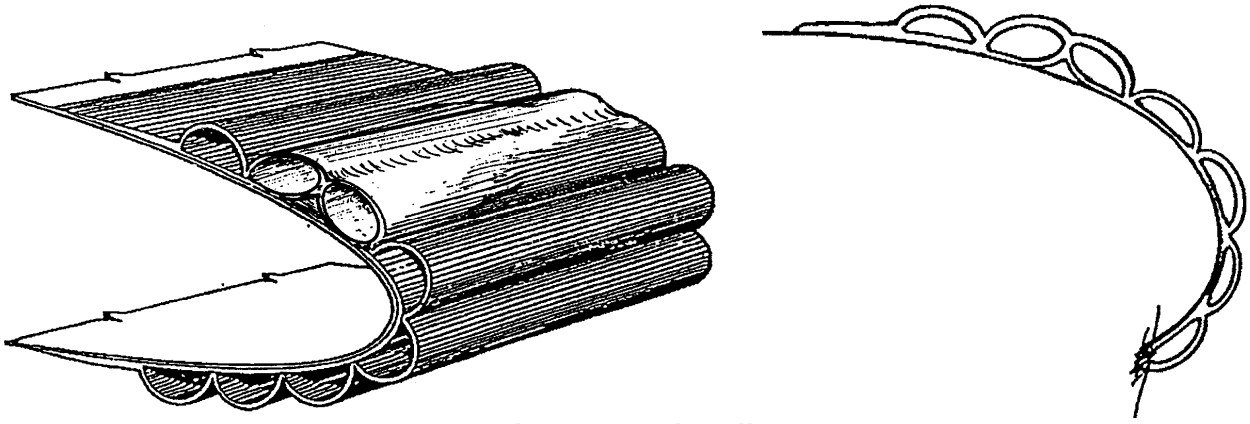
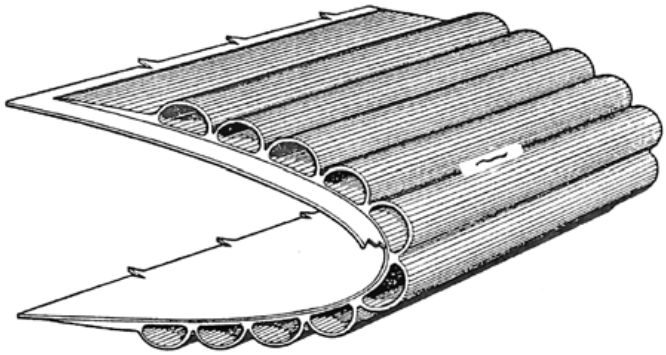


Figure 5 - Debonding

(4) Erosion - wear and tear on the de-icer surface ply due to environmental conditions experienced in flight. Erosion is not a warrantable defect.

Figure 6 – Erosion Example

(5) Tear, rip, split - air leaking break in the de-icer surface that can be of varying depths. Generally speaking these are not warrantable defects; rather are due to FOD, cold-cracking, cold impact damage, excess waxes or coatings. Depending on size and depth, these can usually be patched.



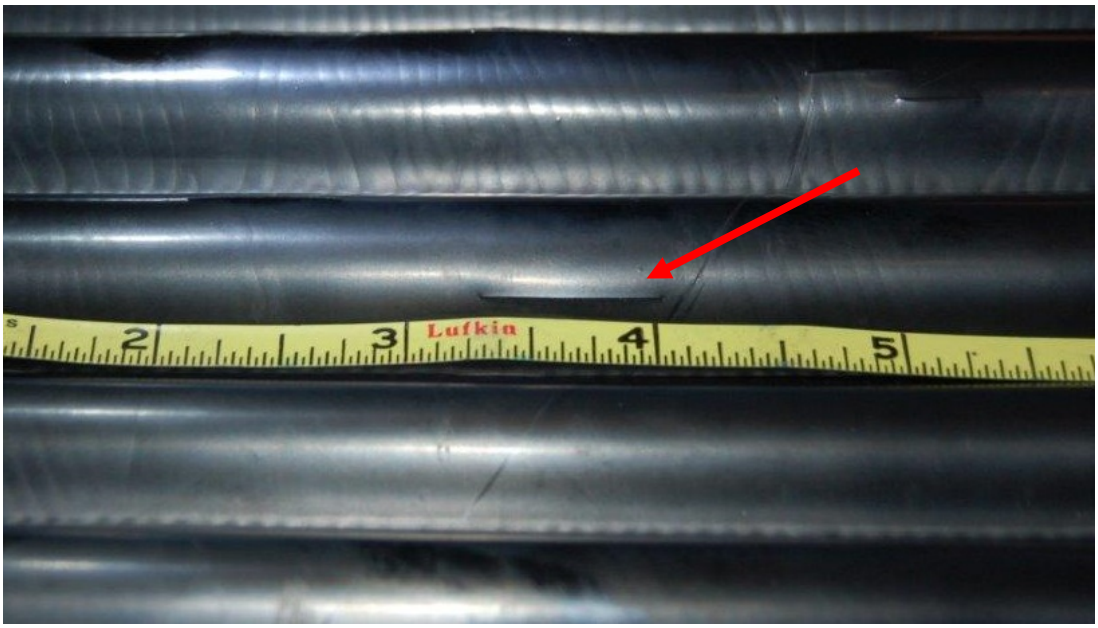


Figure 7 - Split Example

(6) Pinholes - means any air leaking hole 1/16 inch (0.0625 in./1.6 mm) or smaller, often caused by static burns on the de-icer. Generally speaking, pinholes are not a warrantable defect; rather are due to improper or worn conductive edge sealer, electrical storms or by erosion through the de-icer surface ply. Pinholes can usually be repaired depending on number.

Figure 8 – Pinhole caused by static (left) or FOD (right)

(7) Lightning strike - may cause a significant hole burned through the de-icer. Damage to the de-icer from lightning strike is not a warrantable defect.

(8) Cold-cracking - long slits or cracks in the de-icer that appear relatively straight and usually in the middle of the air tubes. Cold-cracking occasionally occurs when de-icers are cold-soaked below their designed operating parameters (-40 °F/-40 °C) and inflated while brittle. Cold-cracking is not a warrantable defect. Cold-cracking may be repaired depending on the extent of the damage.

Figure 9 – Cold-cracking Example

(9) Cold impact damage - small dents or cracks, often in a curved or half-moon shape. Cold impact damage occasionally occurs when de-icers are cold-soaked below their designed operating parameter (-40 °F/-40 °C) and encounter environmental foreign objects such as ice crystals or hail in flight. Cold impact damage is not a warrantable defect. Cold impact damage may be repaired depending on the extent of the damage.

Figure 10 – Cold Impact Damage Example

(10) Contamination - a foreign substance such as oil, fuel, grease, unauthorized coatings or repair materials, or improper application of authorized coatings or repair materials. Damage due to contamination is not a warrantable defect.

Figure 11 – Fuel Contamination Example

F. Abbreviated Definition Sheet

The following quick definitions may be helpful in describing the de-icer damage when full document is not available. As referenced below, additional information may be available in Section E of this Service Newsletter.

Balloon:	Surface ply delamination	(Refer to Section 2.E.1)
Cold-cracking:	Long, defined slits	(Refer to Section 2.E.8)
Contamination:	Damage from foreign substance	(Refer to Section 2.E.10)
Crazing:	Shallow surface cracking	
Debond:	Lifting of de-icer from leading edge	(Refer to Section 2.E.3)
Delamination:	Internal ply separation	(Refer to Section 2.E.1)
Erosion:	Surface wear	(Refer to Section 2.E.4)
Ice impact damage:	Curved dents/cracks	(Refer to Section 2.E.9)
Pinhole:	1/16 inch (or smaller) hole	(Refer to Section 2.E.6)
Quilting:	Surface swelling	(Refer to Section 2.E.10)
Rip/Slit/Split/Tear:	Air-leaking break	(Refer to Section 2.E.5)
Rupture:	Burst open with exposed layers	