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NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

DELTA PROCESS STANDARD 9001-1
NO. 18/21 EXCERPT ON CLEANING

(12 PAGES)

PROCESS STANDARD

DELTA AIR LINES

PAINT STRIPPING, DRY FILM LUBRICANT AND CARBON REMOVAL - TANK METHOD

1. SCOPE AND USE:

This Process Standard covers the approved materials and procedures for cleaning, dry film lubricant and carbon removal and paint stripping of various aircraft and engine parts including, primarily, aircraft wheels, landing gear parts, seat parts, and miscellaneous engine parts. These materials and procedures should be used only when and as specified in other approved documents such as O/H, Mtc. and Component manuals and in lieu of any other similar procedures.

These materials are safe for use on all metals as indicated in flow charts herein.

2. APPLICABLE PROCESS STANDARDS:

NUMBER	TITLE
900-1-1 No. 06	Cleaner - Alkaline Rust Remover
900-1-1 No. 07	Two Layer, Hot-Tank Paint Stripper
900-1-1 No. 08	Grease and Carbon Removal - Hot Tank Method
900-1-1 No. 14	Shell Blasting
900-1-1 No. 21	Plastic Media Blasting

3. MATERIAL AND SPECIAL EQUIPMENT:

STOCK NO.	DESCRIPTION	MANUFACTURER
Nonstock	*Stripper & Decarbonizer - Paint, Hot Tank, Alkaline,Non-chromated, Non-phenolic, Combustible (210°F): Turco 5555-B (OR) Ardrox 2302	Turco Products / Ardrox
0312 02076	Stripper - Paint, Hot Tank, Alkaline, Ethanolamine Type, Non-chromated, Non-phenolic (210°F) Combustible F.O. 623	Fine Organics
Nonstock	Stripper - Paint, Hot Tank, Alkaline, Ethanolamine Type, Non-chromated, Non-phenolic (210°F) Combustible F.O. 606	Fine Organics

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0312 01395	* Additive - Solvent, Stripper Solution, T-5769	Turco Products
Nonstock	* Additive - Inhibitor, Stripper Solution, T-5936	Turco Products
Nonstock	* Additive - Solvent, Stripper Solution, T-6252	Turco Products
0312 01942	Stripper - Paint/Carbon/Dry Film Lubricant, Solvent Amine alkaline Type, Hot Tank, Non-chromated, Non-phenolic, (Non-flammable) Turco 6453	Turco Products
0322 01506	Cleaner, Alkaline, Amine Type, Non-chromated, Non-phenolic, (Non-flammable), Turco 5948R	Turco Products
0342 01005	Compound - Rust Preventive, Turco 2858, Aquasorb, Non-chromated, Non-phenolic, Combustible (140°F)	Turco Products
In-house Mix	Fluid Film/Varsol Mix per P.S. 900-8 #05	DAL Spec.
Shop	Tank - Mild Steel	Commercial
0312 02060	Paint Stripper - Polyurethane, Non-Phenolic, Non-Chromated, Non-flam, Turco 5668	Turco Product
0322 01045	Cleaner - Alkaline Rust Remover, Non-chromated, Non-phenolic, Non-flam., Turco 4181	Turco Prod

*NOTE: Used in Dept. 435-2 Turco 5555-B Tank Solution only.

INSTRUCTIONS:

A. Precautions

(1) Use these materials in a well ventilated area. Avoid prolonged breathing of vapors and contact with the skin. If splashed into the eyes, flush with water and immediately seek medical attention. Proper protective equipment should be worn when working with the materials.

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B. General Description

(1) Turco 5948R

Used as a pre-cleaner for engine parts. A non-sudsing, free rinsing, alkaline compound. Safe for use on all metals.

(2) Turco 5555B/Ardrox 2302

Used on aircraft parts, including aircraft wheels. Safe on all metals. Removes heavy deposits of carbon. Recommended for stripping acrylics, nitrocellulose lacquers and other easier to remove finishes.

(3) Turco 4181

Used on ferrous and titanium aircraft and engine parts. Alkaline Rust Remover is highly alkaline and will cause caustic burns. Therefore, use rubber gloves, apron and face shields or goggles when cleaning parts or charging tank. For additional information pertaining to aircraft shop use, see P.S. 900-1-1 No. 06; for engine shop tank solution control procedures, see P.S. 900-1-3-2 No. 03.

(4) Turco 5668

Used to remove difficult to strip epoxy, polyurethane or other similar paint system coatings from aircraft and engine parts. This material is safe on all metals, however, prolonged soaking of parts is not recommended. Additional information for tank solution control and aircraft shop use can be found in P.S. 900-1-1 No. 07. CAUTION: PARTS MUST BE FREE FROM WATER OR MOISTURE BEFORE IMMERSION.

(5) Fine Organics F.O. 623 / 606

Used to remove polyurethane paint from aircraft seat parts and other miscellaneous parts. Safe for use on all metal except titanium. Recommended for stripping more difficult to remove finishes.

(6) Turco 6453

Used to soften dry film lubricants/antigalliants, carbon and epoxy/polyurethane paints from engine parts. Safe for use on all metals. Usually followed by shell or plastic media blasting.

C. Tank Solution Control/Mixing Procedures

PROCESS STANDARD

(1) Turco 5948R Cleaner

(a) Complete Charge and Solution Addition

1) Maintain tank solution at normal operating level with Turco 5948R mixed one (1) part cleaner to 4 parts water at 145°-155°F.

2) No laboratory test procedure is required for this tank solution. Dump and recharge tank whenever cleaning solution effectiveness decrease warrants.

(2) Turco 5555B/Ardrox 2302 Carbon Remover/Paint Stripper

(a) Complete Charge and Solution Addition

1) Use material as it comes from manufacturer. Be sure to use the entire contents of the container (drum) when adding material to the tank. Maintain tank solution at 150°F + 5°F.

(b) Tank Additives

1) Check tank solution weekly using Turco 5555B or Ardrox 2302 lab test procedures. Maintenance Stds. Testing Shop will indicate from lab test procedures, amounts of stripper additives to maintain tank solution at required performance level.

2) Add either Turco T-5768/201238, T202338, T5769, T5936 or T6252 or applicable Ardrox tank additives as specified by the Maintenance Standards Testing Shop.

(3) Turco 4181 Alkaline Rust Remover Cleaner

(a) Refer to P.S. 900-1-1 No. 06 for aircraft shop and 900-1-3-2 No. 03 for engine shop tank solution control procedures.

(4) Turco 5668 Paint Stripper

(a) Refer to P.S. 900-1-1 No. 07 for tank solution control procedures.

(5) Fine Organics F.O. 623 / 606 Paint Stripper.

(a) Complete Charge and Solution Addition

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1) Use material as received from manufacturer. Maintain tank solution at 160°F + 5°F.

(b) Tank additivies

1) Check tank solution monthly using Fine Organics lab test procedures.

2) Add F.O. 606 or 623 additive as applicable and as specified by Fine Organics lab test report to maintain tank solution in proper chemical balance.

3) Add mineral oil as required to maintain seal layer at 10-15% of tank solution volume level.

(6) Turco 6453 Dry Film Lubricant/Carbon/Paint Stripper

(a) Complete Charge and Solution Addition

1) Use material as received from manufacturer. Be sure to use the entire contents of the container (drum) when adding material to the tank. Maintain tank solution at ambient - 150°F.

2) Maintain upper water seal level at 4 inches in depth and 13-15% of total tank solution volume by addition of clean water. Check seal level daily.

D. Pre-Cleaning Parts

(1) Engine Shop (Dept. 271), Refer to Section L for recommended parts flow.

(a) Immerse parts in Turco 5948R Tank for 5-30 minutes.

(b) Remove parts from tank and allow excess material to drain back into tank using water spray to remove trapped soap residue.

(c) Immerse parts in ambient rinse tank with mild agitation until all soap residue is removed. If necessary, scrub part with soft non-metallic bristle brush and flush part with water. If further wet cleaning is to be accomplished, step (d) & (e) can be omitted.

(d) Immerse in a hot water (150-200°F) rinse tank until part equals the temperature of the tank. This will allow for flash drying of most parts upon removal.

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(e) Remove parts and allow excess water to drain back into tank. Clean, dry compressed air or vacuum can be used to remove trapped water if necessary.

(2) Aircraft Shop (Dept. 436), Refer to Section L for recommended parts flow.

(a) Clean parts per P.S. 900-1-1 No. 08 or P.S. 900-1 No. 02 prior to placing in Turco 5555-B/Ardrox 2302 or Fine Organics F.O. 606/623 Stripper Tank, to remove oils and grease and prevent contamination of stripper materials.

E. Paint Stripping/Carbon Removal Procedures - Turco 5555B/Ardrox 2302 - (Aircraft Shop)

(1) Immerse parts in Turco 5555-B/Ardrox 2302 Tank for 30 minutes or until all paint or carbon is removed.

(2) Remove parts from tank and allow excess material to drain back into tank.

(3) Thoroughly rinse parts with high pressure water.

NOTE: Wheels can be shell blasted, as required, to facilitate removal of paint and rubber residue.

(4) Apply rust preventive compound as required (steel and magnesium).

F. Cleaning/Stripping Procedures - Turco 4181L Alkaline Rust Remover - Engine Shop

CAUTION: DO NOT PROCESS ALUMINUM PARTS PER THIS PROCEDURE. WHEN PROCESSING TITANIUM PER THIS PROCEDURE, DO NOT BATCH WITH OTHER BASE METAL PARTS AND STRICKLY MAINTAIN SOLUTION CONCENTRATION AND IMMERSION TIME.

(1) Solution concentration 7-9 ounces per gallon of water. Temperature 180° -190°F. Immersion time 10-15 minutes maximum.

(2) Pressure spray or dip rinse in water. Followed by hot water rinse (135°-200°F).

(3) Apply rust preventive compound, as required (steel and magnesium).

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G. Cleaning/Stripping Procedures - Turco 4181L Alkaline Rust Remover - (Aircraft Shop)

(1) See "CAUTION", Para. 4.F. above.

(2) Solution concentration 32-48 ounces per gallon water. Operating temperature 180°-200°F. Immersion time 4 minutes maximum for titanium; other metals, except aluminum, 30 minutes maximum.

(3) Pressure spray or dip rinse in water, followed by hot water rinse (140°-180°F).

(4) Apply rust preventive compound, as required (steel and magnesium).

H. Paint Stripper Procedures - Turco 5668 - (Aircraft and Engine Shops)

(1) Pre-clean parts per P.S. 900-1-1 No. 08 or P.S. 900-1 No. 02 to remove heavy accumulations of grease, oils and soils.

CAUTION: PARTS MUST BE DRY PRIOR TO IMMERSION IN PAINT STRIPPER.

(2) Immerse dry part in paint stripper solution for 1-5 hours, as required. Be sure parts are totally immersed in lower layer for upper seal layer has no cleaning/stripping ability and may be corrosive.

(3) Remove parts and spray/immersion hot water rinse. Do not rinse parts over tank charged with Turco 5668.

(4) Apply rust preventive compound, as required (steel and magnesium).

I. Paint Stripping Procedures - Fine Organics F.O. 623 / 606 - (Aircraft Shop)

(1) Pre-clean parts per P.S. 900-1-1 No. 08 or P.S. 900-1 No. 02 to remove heavy accumulations of oils, grease and soils.

(2) Immerse part in paint stripper solution for 1/2 hour, or as required to remove paint. Be sure parts are totally immersed in lower layer since upper seal layer has no stripping ability and may be corrosive.

(3) Remove parts and spray/immersion hot water rinse.

J. Dry Film Lubricant/Carbon/Paint Removal Procedures - Turco 6453 - (Engine Shop)

PROCESS STANDARD

(1) Immerse parts in stripper solution for up to 6 hours maximum, as required.

(a) Titanium parts must be processed on an individual batch basis separate from other metals.

(b) When placing parts in stripper solution, make certain parts are placed at least 2 inches below bottom of seal layer (parts placed in seal layer will corrode).

(2) Remove parts from tank and allow excess solution to drain back into tank.

(3) Thoroughly rinse parts using cold water pressure spray rinse.

(4) Allow parts to dry.

(5) Dry Film Lubricant coated parts/painted parts: Inspect parts for complete removal of coatings/paint. If any coating or paint is remaining, reprocess through Step 4.J. above, or if Shell or Plastic Media Blasting is specified on JPC/JIC for part being processed, lightly Shell Blast per P.S. 900-1-1 No. 14 or Plastic Media Blast per P.S. 900-1-1 No. 21.

(6) Apply rust preventive compound, as required (steel and magnesium parts).

K. Storage

(1) Store Turco 5555B/Ardrox 2302 in a protected area at a temperature of 40°-120°F.

(2) Turco 5948R - Store in a protected area at a temperature of 40°-120°F.

(3) Turco 4181 - Store in dry area with container tightly closed.

(4) Turco 5668 - Store in protected area, out of direct sunlight, preferably at temperature not less than 40°, and not to exceed 120°. Avoid freezing and heating of containers.

(5) Outdoor storage for F.O. 606 is acceptable within 20°-120°F temperature range.

(6) Turco 6453 - Store in a protected area at a temperature of 40°-120°F.

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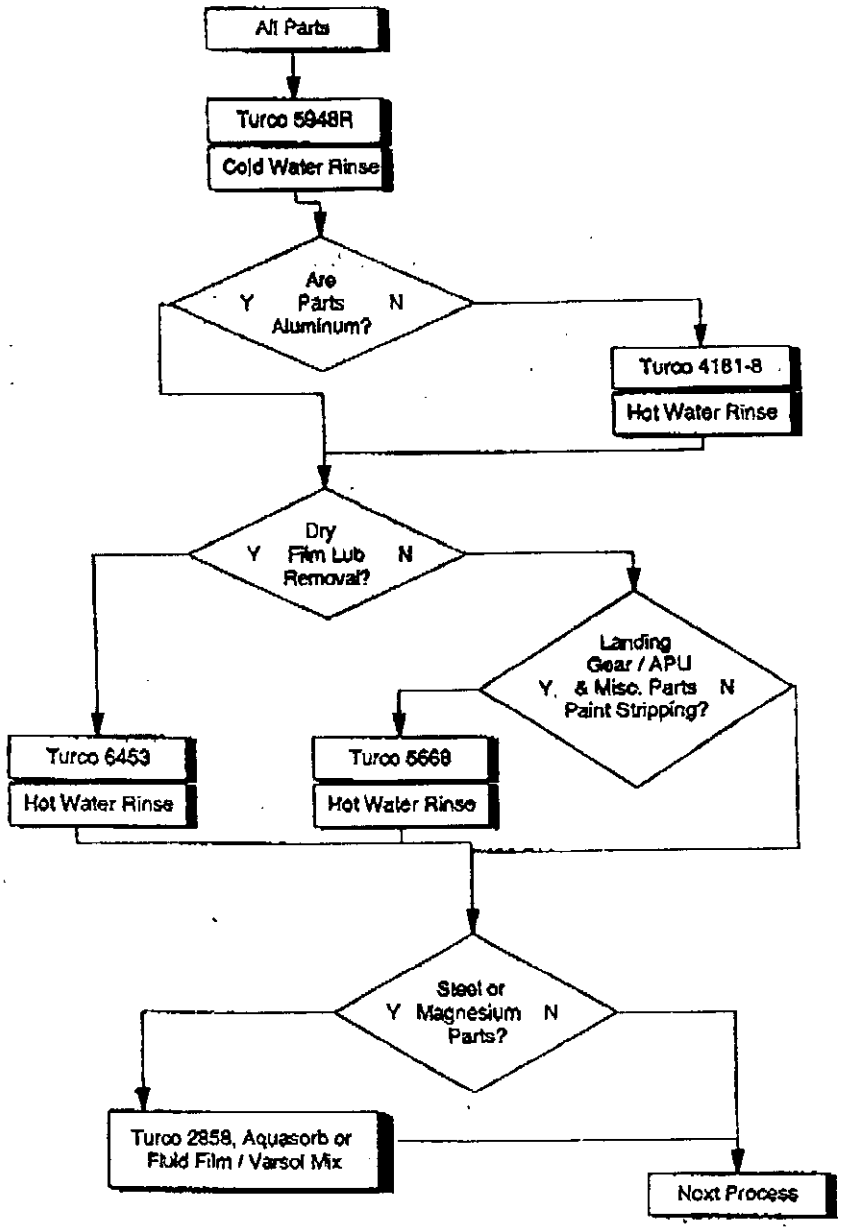
L. Recommended Parts Flow Chart (Engine Shop)



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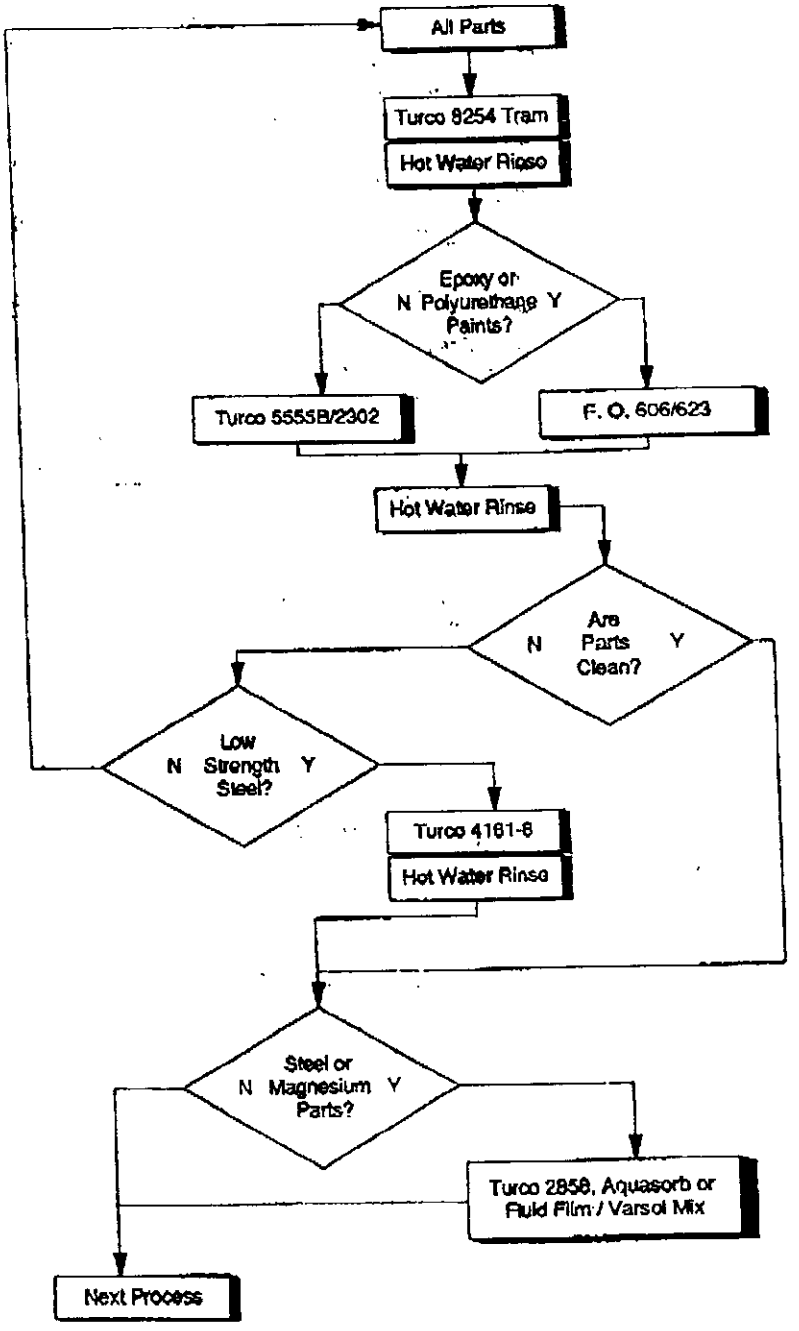
L. Recommended Parts Flow Chart (Aircraft Shops)



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This Process is used to remove dry film in blade slots.

PROCESS STANDARD

DELTA

PLASTIC MEDIA BLASTING

1. SCOPE AND USE:

This Process Standard covers the materials and procedures for cleaning aircraft and engine parts using dry plastic abrasive blasting media, and shall be used as specified in approved documents and in lieu of any other similar procedures.

Plastic Media Blasting per this Process Standard is safe for use on aircraft and engine ferrous and titanium parts as specified by applicable A/C and Engine O/H and Maintenance Manuals.

2. APPLICABLE PROCESS STANDARDS:

NUMBER	TITLE
900-1-1 No. 09	Cleaning - Aircraft and Engine Parts in the Vapor Degreaser
900-1-1 No. 11	Mineral Spirits - Cleaning

3. MATERIALS AND SPECIAL EQUIPMENT:

STOCK NO.	DESCRIPTION	MANUFACTURER
Shop	Blasting Machine	Commercial
0342 01005	Compound - Rust Preventive, Turco 2858 Aquasorb, Combustible (140°F)	Turco Products
In-house Mix	Fluid Film/Varsol per P.S. 900-8 No. 05	DAL Spec.
0272 01493	*Media, Blasting, Plastic (Poly Urea Formaldehyde), Polyplus 16-20	U.S. Plastic & Chemical
0272 01494	*Media, Blasting, Plastic (Poly Urea Formaldehyde), Polyplus 30-40	U.S. Plastic & Chemical

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INSTRUCTIONS:

General

(1) Dry plastic media abrasive can be used for removal of heat scale, carbon deposits, corrosion and rust and for stripping paint in preparation for repainting on steel and titanium parts.

(2) Do not use this plastic media on aluminum parts except as specified by applicable A/C and Engine O/H and Maintenance Manuals.

(3) The plastic blasting material must meet the manufacturer's own material specification as well as Pratt & Whitney Specifications PMC3300-2 and SPOP 19.

Precautions

(1) Parts must be masked properly to protect plated, machined and other surfaces which must not be exposed to abrasive blasting and to prevent abrasives from entering part cavities, ports, tube ends and other entrapment areas where abrasive media is difficult to detect.

(2) Personnel operating blasting equipment should wear proper protective clothing/equipment.

Procedures

(1) Vapor degrease parts per Process Standard 900-1-1 No. 09 or clean per P.S. 900-1-1 No. 11, as applicable.

(2) The blasting operation should be performed so that the gun nozzle will not be allowed to dwell in any one particular spot on the part. The best method is to direct the blast stream at such an angle as to sweep across the surface being cleaned. Use nozzle air pressure of 40 PSI for pressure-type machine and 80 PSI for suction-type machine. Nozzle distance from part surface should be 6-8 inches.

(3) After blasting, blow clean with air.

(4) Thoroughly inspect all part surfaces and cavities to assure that no blasting media is entrapped or remaining on surfaces.

(5) Dip part in Rust Preventive Aquasorb, as required.

(a) Alternately, parts may be protected by spraying with a mixture of 5 parts Fluid Film "A" mixed with 15 parts new Varsol. (Ref. P.S. 900-8 No. 05)