

AMCOM ENGINEERING DIRECTIVE

(AMCOM Reg 750-11)

AED NO. AED- A2049

DATE
SEP 13 2000

PAGE
1 OF 5

TITLE

Removal of Organic Coatings from Army Aircraft Using the Boeing FLASHJET Process

TOLERANCES

Unless otherwise noted, dimensions are in inches and tolerances are:
 Fractional +/- 1/32
 Decimal +/- .010
 Angular +/- 1/2 degrees

APPLICABILITY

Aircraft and airframe structural components undergoing depot-level coatings removal.

REFERENCES FOR AMCOM USE ONLY

DATE

AGENX

PCA

DOCUMENT(S) AFFECTED

TM 55-1500-345-23 dated 12 June 1986

DOCUMENT CHANGE IS NOT REQUIRED

PURPOSE OR PROBLEM

BASIC: Interim authority to strip metallic skins pending further materials qualification study results.

WRITTEN BY

CURTIS YOUNG JR.

CHECKED BY

RICHARD A. CARDINALE

ENGINEERING RELEASE

KEVIN S. REES

1.0. SCOPE.

1.1. This document provides for the removal of organic coatings from the exterior surfaces of Army aircraft by the FLASHJET process. The FLASHJET process is proprietary to The Boeing Company and uses a xenon flashtube and carbon dioxide pellet stream to cause removal.

1.2. Limitations. This document does not authorize the use of Flashjet for the following:

- 1.2.1. Items not a part of airframe structure.
- 1.2.2. Laminated composites or items bonded with structural adhesives.
- 1.2.3. Metallic items other than aircraft skins.

2.0 APPLICABLE DOCUMENTS.

2.1. Military.

- 2.1.1. MIL-S-13165, Shot Peening of Metal Parts
- 2.1.2. TM 1-1500-343-23, Aircraft Cleaning and Corrosion Control

AMCOM ENGINEERING DIRECTIVE

(AMCOM Reg 750-11)

AED NO. AED - A2049

PAGE

2

OF

5

2.2. Non-Government

2.2.1. CGA G-6.2-1994. Compressed Gas Association Commodity Specification for Carbon Dioxide.

2.2.2. ANSI Z87.1, Practice for Occupational and Educational Eye and Face Protection.

2.2.3. Boeing P/N 71E220001, FLASHJET Operation and Maintenance Manual

3.0. REQUIREMENTS. The FLASHJET Operation and Maintenance Manual contains the essential requirements for use of the process. Information contained below is to augment and tailor the requirements for Army aircraft.

3.1. Facilities.

3.1.1. Equipment and installation shall conform to local codes and regulations.

3.1.2. Ventilation shall be adequate to limit accumulation of carbon dioxide in excess of OSHA requirements.

3.1.3. A platform lift or ramp structure shall be used to elevate aircraft for stripping head access to the underside. Jacks and hoists shall be avoided.

3.2. Consumable Materials.

3.2.1. Foil Paper and Tape, commercially available, for masking.

3.2.2. Carbon Dioxide per CGA G-6.2-1994

3.3. Operational Safety.

3.3.1. All FLASHJET equipment, work stands, and aircraft shall be properly grounded.

3.3.2. Services in industrial hygiene shall be used in order to determine exposure risks and personnel protective measures required, especially with regard to accumulation of carbon dioxide, the maintenance of filters, and the effectiveness of the effluent removal system in conditions of high humidity.

3.3.3. All areas within reach of industrial robots shall be cordoned and posted with warning signs.

3.3.4. All personnel must wear hearing protection capable of 25 dB noise reduction rating or greater when in the area of the operating stripping head.

3.3.4. All personnel must wear shaded-UV rated glasses (> or = 99% UV light absorption) within eyesight of the flashlamp.

AMCOM ENGINEERING DIRECTIVE

(AMCOM Reg 750-11)

AED NO. AED - A2049

PAGE

3

OF

5

3.3.5. Operators shall demonstrate competency during a course of training from The Boeing Company, or some other source approved by AMCOM Depot Maintenance Engineering. Training consists of a minimum of 16 hours of classroom instruction providing a thorough understanding of theory of operations, equipment description, system setup, programing, and maintenance, as well as a minimum of 24 hours of practical exercise in actual coatings removal. Any lapse in FLASHJET operational duties for a period of more than twelve months requires retraining.

3.4. Pre-Processing.

3.4.1. The aircraft shall be defueled and the fuel system preserved or made inert in accordance with existing requirements. The aircraft item shall be grounded

3.4.1. When economical, some items may be removed from the work piece in order to reduce the amount of post-processing required.

3.4.2. Any item to be stripped requires pre-inspection to verify standard configuration that will not interfere with the path of the stripping head.

3.4.3. Detailed pre-cleaning is generally not required for coatings removal. Remove gross accumulations of debris. More stringent cleaning may be required for post-processing operations other than stripping and painting.

3.4.4. The Depot shall develop local process documents detailing coatings removal procedures that are specific to the item to be stripped, such as item configuration, masking, programing parameters and boundaries, etc.

3.5. Process Parameters. The equipment operates with variable parameters that must be set for the particular item and coating system undergoing processing. Individualized parameters shall be documented and are subject to the approval of engineers working in AMCOM Aircraft Support Division. A suggested format is shown at Figure 1. The following are guidelines for nominal settings.

3.5.1. Flashlamp voltage. As the flashlamp ages, higher voltage will be required. The minimum necessary for stripping most current coatings is 1600 volts. Nominal setting is 2100 volts.

3.5.2. Standoff Distance. Nominal setting is 2.19 inches. In operation, standoff distance shall not vary by more than plus or minus 0.10 inches.

3.5.3. Flash Frequency. The nominal setting is 4 flashes per second.

3.5.4. Strip Head Speed. The nominal setting is 1.00 inch per second.

3.5.5. Pellet Blast. The nominal is 120 psig as measured at the nozzle plenum. Use 40% pellet flow rate. Blast parameters shall result in an almen strip deflection that is less than 0.001 inch per MIL-S-13165 Test Strip N upon 2024-T3 aluminum alloy.

AMCOM ENGINEERING DIRECTIVE

(CONTINUATION SHEET)

AED NO. AED - A2049

PAGE

4

OF

5

Active Stripping Parameters					
Part Description: UH-60A Fuselage					
Program Description: Sector 3, FS 243-FS 398, above WL 260 (non-ESSS)					
Flashlamp Voltage	2000	Volts	Strip Velocity	1.00	ips
Flash Frequency	4.00	Hz	Index Velocity	6.00	ips
Index Distance	11.00	Inches	Approach Velocity	6.00	ips
Return Tool Clearance	6.00	Inches	Exit Velocity	6.00	ips
Undertavel	0.00	Inches	Stand-off Sensors	On	
Overtravel	0.00	Inches	Bound Beginning	✓	
Stand-Off Distance			Bound End	✓	
Left Front	2.19	Inches	Color Sensor Enabled		
Right Front	2.19	Inches	Color Scheme ID	299	
Left Rear	2.19	Inches	OPL File	FLASHJET.OPL	
Right Rear	2.19	Inches	IPL File	UH60A.IPL	
			SPF File	ROOF1.SPF	
			Robot File		
Remarks: Operator Controls Number of Passes and Flashlamp Voltage on Final Pass.					
Engineering Review: <i>Phil Jernanorth</i>					

Figure 1. Sample of Active Stripping Parameters.

AMCOM ENGINEERING DIRECTIVE

(AMCOM Reg 750-11)

AED NO. AED - A2049

PAGE

5

OF

5

3.6 Coatings Removal. Programing and stripping shall proceed per instructions provided by Boeing, using parameters authorized by AMCOM.

3.6.1. Coating Thickness. Remove only the topcoat. Do not strip to the substrate. Leave the primer. Coating thickness varies due to prior touchup, stenciling, etc., so the FlashJet operator must monitor each pass of the stripping head in order to determine when to advance the scan path. It is acceptable to leave some topcoat as required to assure that the substrate is not exposed. Partially stripped topcoat shall be smooth and adhere to the underlying layers.

3.6.2. Substrate Damage. Excessive heating of the substrate can cause damage undetectable by the human eye. Any equipment malfunction that would increase flashlamp strobing, or decrease carbon dioxide delivery, beyond authorized limits over an area shall be reported to AMCOM Engineering for disposition.