TECHNICAL MANUAL

AVIATION UNIT MAINTENANCE (AVUM) AND AVIATION INTERMEDIATE MAINTENANCE (AVIM) MANUAL

NONDESTRUCTIVE INSPECTION PROCEDURES FOR H-60 HELICOPTER SERIES

HEADQUARTERS, DEPARTMENT OF THE ARMY
30 NOVEMBER 1996

CHANGE HEADQUARTERS
DEPARTMENT OF THE ARMY
NO. 2 WASHINGTON, D.C., 15 April 2002

AVIATION UNIT MAINTENANCE (AVUM) AND AVIATION INTERMEDIATE MAINTENANCE (AVIM) NONDESTRUCTIVE INSPECTION PROCEDURE FOR H–60 HELICOPTER SERIES

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1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a vertical bar next to the figure title. Text that flows to the following page is indicated by the current change number.

Remove pages	Insert pages
a through f	a through f
i and ii	i and ii
1–1 through 1–4	1–1 through 1–4
1–17 through 1–22	1–17 through 1–22
1–27 through 1–32	1–27 through 1–32
1–35 and 1–36	1–35 and 1–36
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2–5 through 2–8	2–5 through 2–8
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6–3 and 6–4	6–3 and 6–4
6–43 and 6–44	6–43 and 6–44
B–1 through B–4	B–1 through B–4

2. Retain these sheets in front of manual for reference purposes.

By Order of the Secretary of the Army:

ERIC K. SHINSEKI
General, United States Army
Chief of Staff

Official:

Joel B. Hudson

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
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CHANGE

NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC 2 October 1998

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e and f	e and f
i and ii	i and ii
2-1 through 2-4	2-1 through 2-4
2-39 through 2-42	2-39 through 2-41/(2-42 blank)
	2-42.1 and 2-42.2

2. Retain this sheet in front of manual for reference purposes.

By Order of the Secretary of the Army:

DENNIS J. REIMER
General, United States Army
Chief of Staff

Official:

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Administrative Assistant to the
Secretary of the Army
05098

DISTRIBUTION: To be distributed in accordance with Initial Distribution Number (IDN) 313682, requirements for TM 1-1520-265-23.

WARNING SUMMARY

Personnel performing inspections involving operations, procedures, and practices, which are included or implied in this technical manual, shall observe the following instructions.

WARNING

Highlights an operation, procedure, practice, condition, statement, etc., if not strictly observed, could result in injury to, or death of, personnel.

CAUTION

Highlights an operation, procedure, practice, condition, statement, etc., if not strictly observed, could result in damage to or destruction of equipment or loss of mission effectiveness.

NOTE

Highlights an essential operation, procedure, condition, or statement.

The following are general safety precautions that are not related to any specific procedures and, therefore do not appear elsewhere in this publication. These are recommended precautions that personnel must understand and apply during many phases of nondestructive inspections.

GENERAL

Assure compliance with safety requirements in Technical Manual, Nondestructive Inspection Methods, TM 1-1500-335-23.

Assure compliance with the safety and precautionary measures addressed in the applicable technical manuals listed in Table 1-1. Refer to these manuals for detailed information relating to safety considerations for the specific area or system on which the nondestructive inspection procedure is to be preformed.

WARNING

Aircraft Grounding

All aircraft shall be grounded in accordance with FM 55-41 at all times.

WARNING

Electrical Hazard

Assure that all safety precautions for using electrical equipment near aircraft fuel cells, oxygen systems, and stores have been met.

WARNING

Solvents

Most solvents are flammable. Keep away from heat and open flame. Vapors may be harmful. Use with adequate ventilation. Avoid prolonged or repeated breathing of vapor. Avoid contact with skin and eyes. Do not take internally. Comply with pollution control rules concerning photochemically reactive solvents.

WARNING

Keep Away From Live Circuits

Inspection personnel must at all times observe safety regulations. Do not replace components or make adjustments inside equipment with a high voltage supply turned on. Under certain conditions, dangerous potentials may exist even when the power control is in the off position, due to charges retained by capacitors. To avoid injuries, always remove power. Discharge and ground a circuit before touching it. Make sure that equipment is grounded to same earth ground as aircraft.

WARNING

Electrical and Electronic Equipment

Do not wear rings, watches, or metal jewelry when working around electrical equipment.

RESUSCITATION

Personnel working with or near high voltages should be familiar with modern methods of resuscitation. Such information may be obtained from the Office of Bioenvironment Health or is listed in FM 21-11.

WARNING

Cleaning Solvents

- Those areas where skin and clothing come in contact with cleaning solvents should be washed thoroughly and immediately after contact.
- Saturated clothing should be removed immediately.
- Areas where cleaning solvents are used should be adequately ventilated to keep vapors to a minimum.
- In case of contact with eyes, nose, or ears, flush them with generous quantities of water and then seek medical attention immediately.

WARNING

Foreign Object Damage

- Make sure area is clear of foreign objects before closing access doors, panels, and fairings.
- If area is not clear, damage to components or systems could result in personal injury or death.

WARNING

Lifting Components with Hoist

- Lifting or hoisting of components shall be done only by designated personnel.
- Before lifting, alert personnel in immediate areas.
- Before lifting, balance the load.
- Do not stand under load while it is being moved from one area to another on a hoist.
- Do not stand under load to do inspection work.

WARNING

Compressed Air

- Do not use more than 30 PSIG compressed air for cleaning purposes.
- Use eye protection to prevent injury to personnel.

The following are warnings and cautions related to specific procedures that appear elsewhere in this publication. These are precautions that personnel must understand and apply during nondestructive inspections.

WARNING

To prevent injury to personnel and damage to helicopter, stand only on designated surfaces. These areas are reinforced to withstand frequent use and are treaded to prevent slipping. All other surfaces are NO STEP areas.

WARNING

Maintenance Platforms/Workstands

Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

WARNING

Cleaning solvents P-D-680, Type II and MIL-C-38736 are flammable. Avoid eye and skin contact or breathing vapors. Protective equipment consisting of goggles, gloves, and respiratory protection is required.

WARNING

Electrical equipment shall not be operated in areas where combustible gases or vapors may be present, unless the equipment is explosion proof.

WARNING

- Black lights generate considerable heat during use. Extreme care must be exercised to prevent contacting the housing with any part of the body.
- To prevent injury to eyes, do not look directly into black light.
- Prolonged direct exposure of hands to the filtered black light's main beam may be harmful. Suitable gloves shall be worn when exposing hands to the main beam.

WARNING

Prolonged or repeated inhalation of vapors or powders may result in irritation of mucous membrane areas of the nose.

WARNING

Continual exposure to penetrant inspection material may cause skin irritation.

WARNING

Temperature in excess of 49°C (120°F) may cause bursting of pressurized cans and injury to personnel.

WARNING

Volatile fumes may occur, creating both a fire and health hazard.

WARNING

Prolonged breathing of vapor from organic solvents, degreasers, or paint thinners is dangerous. Use respirators in confined areas per Occupational and Environmental Health Respiratory Protection Program (TB MED 502 (DLAM 1000.2)). Have adequate ventilation. Avoid prolonged skin contact. Wear rubber gloves and goggles.

WARNING

Radiation Hazard

Radiation HazardAssure compliance with all applicable safety precautions set forth in TM 1-1500-335-23 (Non-destructive Inspection Methods manual). A hazard associated with exposure to ionizing radiation is that serious injury can be inflicted without pain, burning, or other sense of discomfort during the exposure period. Radiation protection shall be utilized in accordance with AR40-14/DLAR 1000.28.

WARNING

The laser pointer is very dangerous. Looking at the laser beam or its reflection from a shiny surface can cause permanent blindness. Under no conditions shall the laser beam be pointed at personnel.

WARNING

Acetone (Table 1–8) is flammable and toxic to eyes, skin, and respiratory tract. Wear protective gloves and goggles/face shield. Avoid repeated or prolonged contact. Use only in well ventilated areas (or use approved respirator as determined by local safety/industrial hygiene personnel). Keep away from open flames, sparks, or other sources of ignition.

WARNING

Isopropyl Alchohol (Table 1–8) is flammable and toxic to eyes, skin, and respiratory tract. Wear protective gloves and goggles/face shield. Avoid repeated or prolonged contact. Use only in well ventilated areas (or use approved respirator as determined by local safety/industrial hygiene personnel). Keep away from open flames, sparks, or other sources of ignition.

WARNING

DS–108 (Table 1–8) is combustable, reactive with strong oxidizers, and toxic to eyes, skin, and respiratory tract. Wear protective gloves and goggles/face shield. Avoid repeated or prolonged contact. Use only in well ventilated areas (or use approved respirator as determined by local safety/industrial hygiene personnel). Keep away from open flames, sparks, or other sources of ignition. Do not mix or cross–apply with other cleaners or chemicals.

WARNING

Electron (Table 1–8) is combustable, and toxic to eyes, skin, and respiratory tract. Wear protective gloves and goggles/face shield. Avoid repeated or prolonged contact. Use only in well ventilated areas. Use approved organic vapor respirator, with dust and mist filter, if exposed to vapor mist. Keep away from open flames, sparks, or other sources of ignition.

WARNING

Positron (Table 1–8) is combustable, and toxic to eyes, skin, and respiratory tract. Wear protective gloves and goggles/face shield. Avoid repeated or prolonged contact. Use only in well ventilated areas. Use approved organic vapor respirator, with dust and mist filter, if exposed to vapor mist. Keep away from open flames, sparks, or other sources of ignition.

WARNING

n–Propyl Bromide (Table 1–8) is toxic to eyes, skin, and respiratory tract. Wear protective gloves and goggles/ face shield. Avoid repeated or prolonged contact. Use only in areas with adequate mechanical or local exhaust ventilation (or use approved respirator as determined by local saftey/industrial hygiene personnel). Use approved organic vapor respirator, with dust and mist filter, if exposed to vapor mist. Keep away from open flames, sparks, or other sources of ignition.

CAUTION

Do not use cleaning MIL-C-38736 on acrylic lacquer, as it may soften finish.

CAUTION

Penetrant-Emulsifier/Remover Combinations (lipophillic/hydrophilic) from one manufacturer may not be mixed or used in conjunction with materials from a different manufacturer.

CAUTION

Do not operate magnetic particle equipment within 36 inches of aircraft instruments.

CAUTION

Misinterpretation of indications can result in rejectable parts being accepted and acceptable parts being rejected. Only NDI personnel trained and qualified in accordance with applicable military standards and technical manuals shall perform and interpret nondestructive inspections.

LIST OF EFFECTIVE PAGES

Insert latest change pages; dispose of superseded pages in accordance with applicable policies.

NOTE: On a changed page, the portion of the text affected by the latest change is indicated by a vertical line in the outer margin of the page. Changes to illustrations are indicated by a vertical line in the outer margin of the page next to the illustration title.

Dates of issue for original and change pages are:

Original 0 . . . . 30 November 1996
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Change 2 . . . . 15 April 2002

The total number of pages in Volumes 1 through 11 is 13,856.

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TECHNICAL MANUAL
NO. 1-1520-265-23

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 30 NOVEMBER 1996

Aviation Unit Maintenance (AVUM) and Aviation Intermediate Maintenance (AVIM) Manual Nondestructive Inspection Procedures for

H-60 Helicopter Series

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes, or if you know of a way to improve these procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual directly to: Commander, US Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5230. You may also submit your recommended changes by E-mail directly to <2028@redstone.army.mil>. A reply will be furnished directly to you. Instructions for sending an electronic 2028 may be found at the back of this manual immediately preceding the hard copy 2028.

ENVIRONMENTAL INFORMATION

This document has been reviewed for the presence of Class I Ozone Depleting Chemicals. As of change 1, dated 02 October 1998, all references to Class I Ozone Depleting Chemicals have been removed from this document by substitution with chemicals that do not cause atmospheric ozone depletion.

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SECTION I
INTRODUCTION

1. INTRODUCTION.

a. This manual contains instructions for accomplishing Nondestructive Inspection (NDI) of the H-60 helico1pterse|es at the AVUM and AVIM levels. The procedures described in this manual are intended to provide instructions for the NDI of locations where service defects would prevent items from performing their designated functions, and of components for serviceability. These procedures were developed through review of H-60 series Technical Manual inspection requirements. The goal is to upgrade these requirements wherever possible using NDI methodology to improve inspection quality, decrease inspection time, and increase systems operational readiness. Other factors involved were maintenance engineering analysis, experience, and comparison with similar installations. Procedures shall be reviewed and changes and additions made during the service life of the equipment by continually evaluating the following: performance of the equipment, results of scheduled inspections, and thorough study of failure data. Local conditions, such as special utilization of climatic environment, may dictate more detailed inspections. Commanders and their maintenance officers are expected to exercise their prerogative to increase the frequency and scope of any inspection as required.

b. This manual may pertain to part, or all types and series, of a model, and may, therefore, contain requirements applicable to specific equipment that is not installed on an individual model. When this situation is encountered, those requirements that are not applicable should be disregarded.

c. This manual does not contain inspection level or frequency, acceptance and rejection limitations, nor instructions for correcting defective conditions. Inspection levels and frequency are provided in the inspection requirements manuals. Detailed acceptance and rejection criteria and instructions for correcting defective conditions are provided in applicable maintenance manuals and are, therefore, not contained in this manual. Decisions regarding the serviceability of components properly belong with maintenance technicians trained, skilled, and experienced in their particular specialty, such as airframe, hydraulic, or propulsion. Also, it would duplicate existing information and make the task of incorporating the numerous changes to inspection frequency and repair instructions impractical.

d. The inspection requirements are stated in such a manner as to address the following: (1) What part or area is to be inspected? (2) What conditions are to be sought? (3) What NDI method is to be used? (4) How is the method to be performed? In scope, the inspection procedures are designed to direct attention of maintenance personnel to components and areas where service defects can occur. The procedures also provide detailed instructions on the application of NDI in an effort to ensure the serviceability of these areas.

e. Nondestructive inspection methods require application by trained, experienced, and proficient technicians. This manual provides detailed procedures for the application of nondestructive methods to inspect specific areas or locations. However, it must be emphasized that the reliability of the inspection depends upon the proper evaluation of the results obtained from the inspection equipment.

f. While using this manual, such adjectives as left and right, upper and lower, front and rear, forward and aft, and clockwise and counterclockwise refer to the helicopter as viewed from the rear (aft), looking forward.

g. Changes and supplements to this manual will be published when necessary to add, delete, or change the scope of requirements. Such changes will be based on factual data accumulated as a result of maintenance experience with the equipment. Suggested new or revised field developed inspection procedures or changes to this manual are encouraged and should be made by submitting a DA Form 2028. Mail to: U.S. Army Aviation and Troop Command, ATTN: AMSAT-I-MP, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798.

h. .These NDI procedures are directive in nature, and deviation without prior approval is limited to compensation for differences in equipment output. Equipment settings, when given, are reference points only, due to the widely varying outputs from different inspection equipment. The condition that must be satisfied for accurate inspection is that the inspection equipment be adjusted to obtain the specified response from the set-up or defect standard, or the specified density reading on radiographic film. Trained NDI technicians are qualified to make these adjustments.

1.1 GENERAL INFORMATION.

CAUTION

Misinterpretation of indications can result in rejectable parts being accepted and acceptable parts being rejected. Only NDI personnel trained and qualified in accordance with applicable military standards and technical manuals shall perform and interpret nondestructive inspections.

a. .This manual provides necessary information to enable qualified personnel to perform NDI on H-60 helicopter series. The selection of components in this manual is based on a review of applicable technical manuals listed in Table 1-1. All existing NDI callouts were updated. New NDI procedures were developed for those parts that required check, inspect, or any other NDI related actions. Section I of this manual contains a list of special terms, abbreviations, acronyms, information on how to use he manual, use of NDI symbols, and a list of publications. Section I also contains general information on the H-60 helicopter, including descriptive data, access panels, major assemblies, stops, handholds, walkways, various NDI method descriptions, and rules of safety to be observed during nondestructive inspections.

b. .Additional information on inspection methods can be found in the Technical Manual, Nondestructive Inspection Methods, TM 1-1500-335-23. Detailed inspection instructions for each main aircraft group are given in Sections II and VI of this manual.

Table 1-1. Supporting Technical Documentation

Document	Description
AR40-14/DLAR 1000.28	Medical Services, Control and Recording Procedures for Exposure to Ionizing Radiation and Radioactive Materials
ASTM 1417	Inspection, Liquid Penetrant
ASTM-E1444	Standard Practice for Magnetic Particle Inspection
DA PAM 738-751	Functional Users Manual for the Army Maintenance Management System - Aviation (TAMMS-A)
DOD 6050.5 (HMIS)	Hazardous Materials Information System (HMIS)
FM 21-11	First Aid for Soldiers
MIL-STD-410	Nondestructive Testing, Personnel Qualification and Certification
MIL-STD-453	Inspection, Radiographic
MIL-STD-2154	Inspection, Ultrasonic, Wrought Metals, Process for
Deleted	
TB MED 502 (DLAM 1000.2)	Occupational and Environmental Health Respiratory Protection Program
TB MED 251	Surgeon General’s Hearing Conservation Criteria
TM 55-1500-335-23	Nondestructive Inspection Methods
TM 1-1500-344-23	Aircraft Weapons Systems Cleaning and Corrosion Control
TM 1-1520-237-23 (series)	technical Manual, Aviation Unit and Intermediate Maintenance for Army Models UH-60A, UH-60L, and EH-60A Helicopters
Chapter 1	Aircraft General
Chapter 2	Airframe
Chapter 3	Landing Gear System
Chapter 4	Power Plant
Chapter 5	Rotors
Chapter 6	Drive System
Chapter 7	Hydraulic and Pneumatic Systems
Chapter 11	Flight Control System
TM 1-2840-248-23 (series)	Aviation Unit and Intermediate Maintenance Instructions, Engine Aircraft, Turboshaft Model T700-GE-700

1.1.1. Special Terms, Abbreviations, and Acronyms.

AC	Alternating Current
APU	Auxiliary Power Unit
AVIM	Aviation Intermediate Maintenance
AVUM	Aviation Unit Maintenance
BL	Buttline
BT	Bond Testing Method
C	Celsius
CCW	Counterclockwise
CL	Centerline
CPG	Copilot/Gunner
CRT	Cathode Ray Tube
CW	Clockwise
DEC	Digital Electronic Control
DC	Direct Current
EDM	Electrically Discharged Machined Notches
EEC	Electrical Engine Control
ET	Eddy Current Method
F	Fahrenheit
FPS	Flight Path Stabilization
FSH	Full Screen Height
FWD	Forward
HdB	Horizontal Decibels (Gain)
H Pos	Horizontal Position
HPF	High Pass Filter
HIRSS	Hover Infrared Suppression System
ID	Inside Diameter
IR	Infrared
INBD	Inboard
KHz	Kilohertz
LCD	Liquid Crystal Display
LE	Leading Edge
LH	Left-hand (left side of aircraft aft looking forward)
LPF	Low Pass Filter
MAC	Maintenance Allocation Chart
MAX	Maximum
MHz	Megahertz
MIN	Minimum

MLG	Main Landing Gear
M/R	Main Rotor
MT	Magnetic Particle Method
NDI	Nondestructive Inspection
OUTBD	Outboard
P/N	Part Number
PSI	Pounds per Square Inch
PSIG	Pounds per Square Inch Gauged
PT	Fluorescent Penetrant Method
RH	Right-hand (right side of aircraft aft looking forward)
ROT	Rotation
RT	Radiographic Method
SAS	Stability Augmentation System
SPAD	Shear Pin Activated Decoupler
STA	Station
TLG	Tail Landing Gear
TM	Technical Manual
T/R	Tail Rotor
UT	Ultrasonic Method
VdB	Vertical Decibels (Gain)
V Pos	Vertical Position
WL	Waterline

1.1.2. How to Use This Manual. This manual is divided into six sections as follows:

I	Introduction
II	Rotor System
III	Drive System
IV	Airframe and Landing Gear System
V	Power Plant System
VI	Flight Control System

Section I contains the introduction and general information pertaining to the H-60 helicopter series and Nondestructive Inspections. Sections II through VI contain detailed inspection procedures for specific items located within each system. In general, inspection items are grouped with respect to part location and function. To use the manual, it is necessary to know the system and name of the inspection item.

When the system and part name are known:

a. Turn to the applicable section of the manual covering that system. Refer to the system inspection index table at the beginning of the section. If the item is listed, the corresponding paragraph and figure number will be referenced in the table.
b. Turn to referenced inspection paragraph and figure for detailed inspection information.

1.1.3. Inspection Item Code. When inspection items, due to their proximity, are grouped in one illustration, the figure will be indexed using the inspection item code. This code consists of digits separated by dashes.

In the text, the inspection item is identified as follows:

a. The first digit refers to the section of the manual in which the item appears. Example: Paragraph 2.5 is found in Section II.
b. The second digit refers to the item number or order that the part procedure occurs in the manual section. Example: Paragraph 2.5 refers to item number 5.

1.1.4. Use of NDI Symbols. Nondestructive inspection symbols and their application to detail inspection figures are shown in Figure 1-1. In the main figures of each section, NDI symbols representing the type of inspection associated with a part will appear next to the item number on the figure.

1.1.5. Use of Reference Publications. This manual is applicable to the H-60 helicopter series. The technician shall be responsible for using the applicable referenced TM for the helicopter being inspected.

1.1.6. Related Publications. Supporting TMs and reference materials are listed in Table 1-1.

1.1.7. Description. The H-60 helicopter series are twin turbo shaft engine aircraft. The primary mission of the UH-60A and the UH-60L is the transportation of troops, litter patients, and equipment. The EH-60A primary mission is electronic surveillance of selected targets using sophisticated intercept and direction-finding equipment. The UH-60A and EH-60A helicopters are powered by T700-GE-700 engines while the UH-60L is powered by T700-GE-701 C engines. The T700-GE-701 C has a digital electronic engine control (DEC) while the -700 has an electrical engine control (EEC) unit.

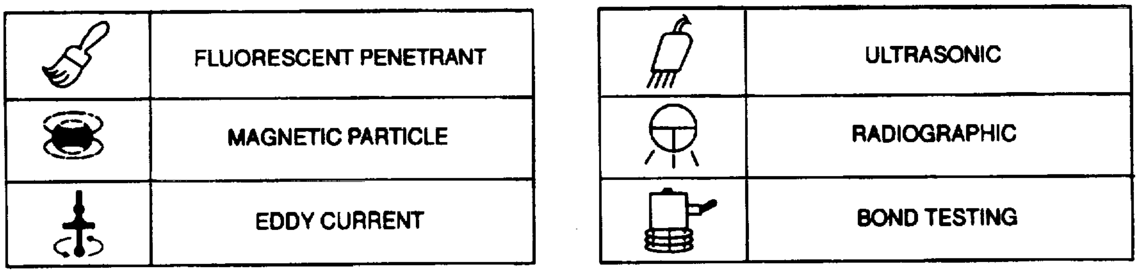
The primary structure is aluminum alloy with titanium, steel, and reinforced plastic in secondary and nonstructural members. The UH-60A and UH-60L have 12 troop seats in the helicopter midsection. The EH-60A has a mission operator and an observer seat along with surveillance equipment in the same area. All H-60 helicopter series have pilot/copilot accommodations.

1.1.8. Configuration. The general configuration of the H-60 helicopter series is shown in Figure 1-2.

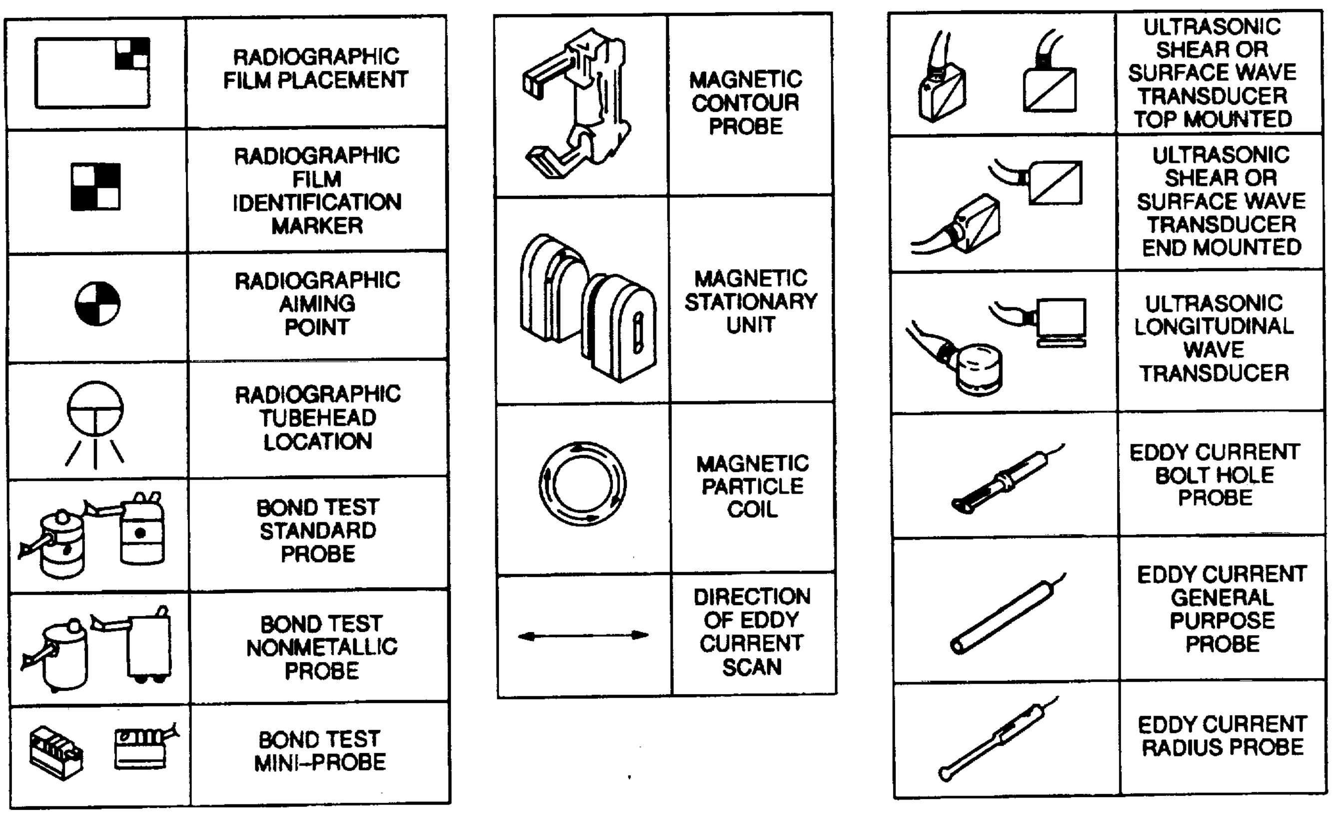
1.1.9. Stations, Waterlines, and Buttlines. Stations, waterlines, and buttlines (in inches) are used as an accurate method of locating or Installing equipment in the airframe. See Figure 1-3 for stations, waterlines, and buttlines for this helicopter.

METHOD OF INSPECTION

USED IN ILLUSTRATIONS TO IDENTIFY THE TYPE OF INSPECTION METHODS BEING ILLUSTRATED

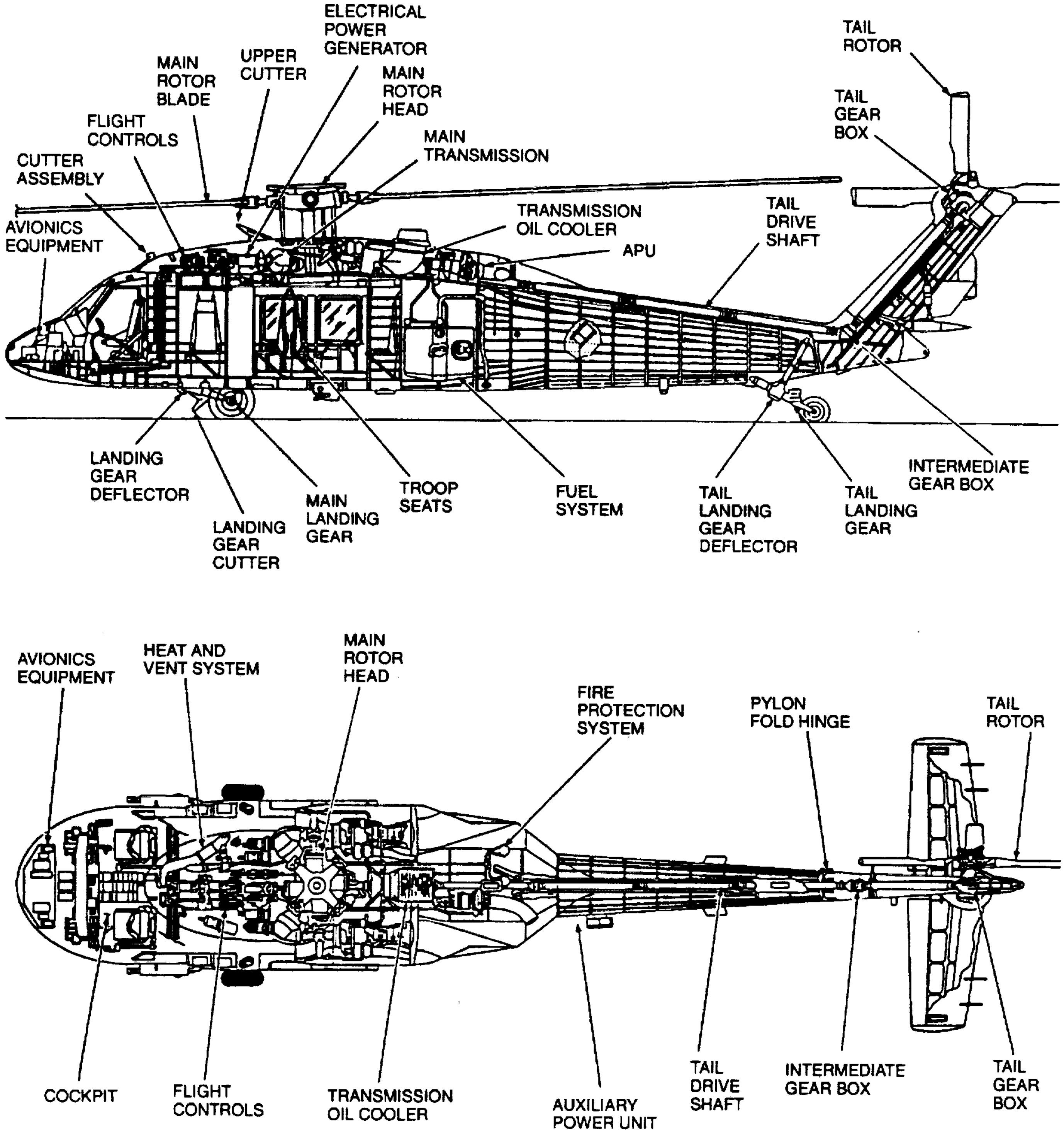


SUPPLEMENTAL SYMBOLS



NDI_H-60_F1_1

Figure 1-1. Nondestructive Inspection Symbols



NDI_H60_FI_2

Figure 1-2. General Configuration of UH-60A Helicopter

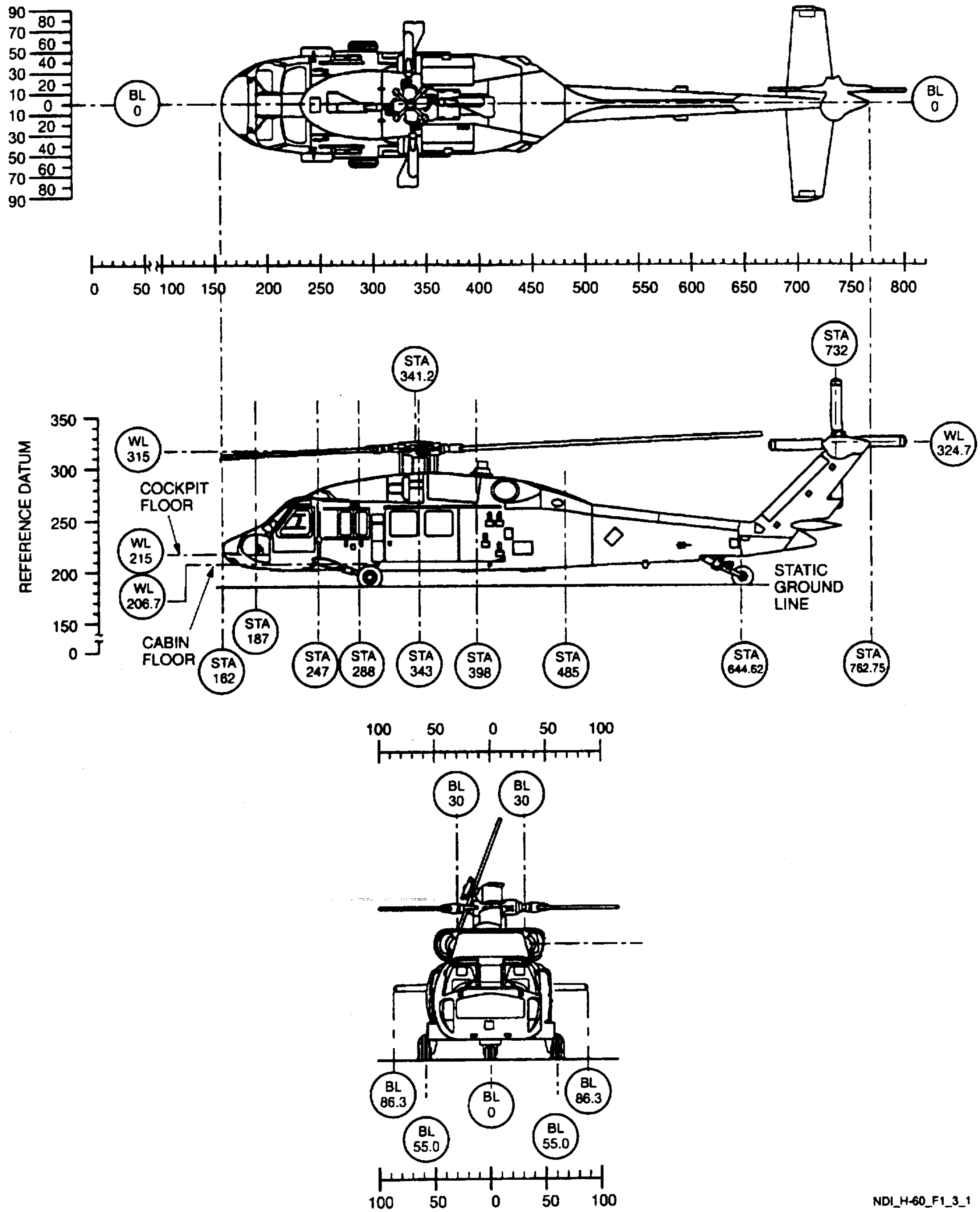


Figure 1-3. Stations, Waterlines, and Buttlines (Sheet 1 of 2)

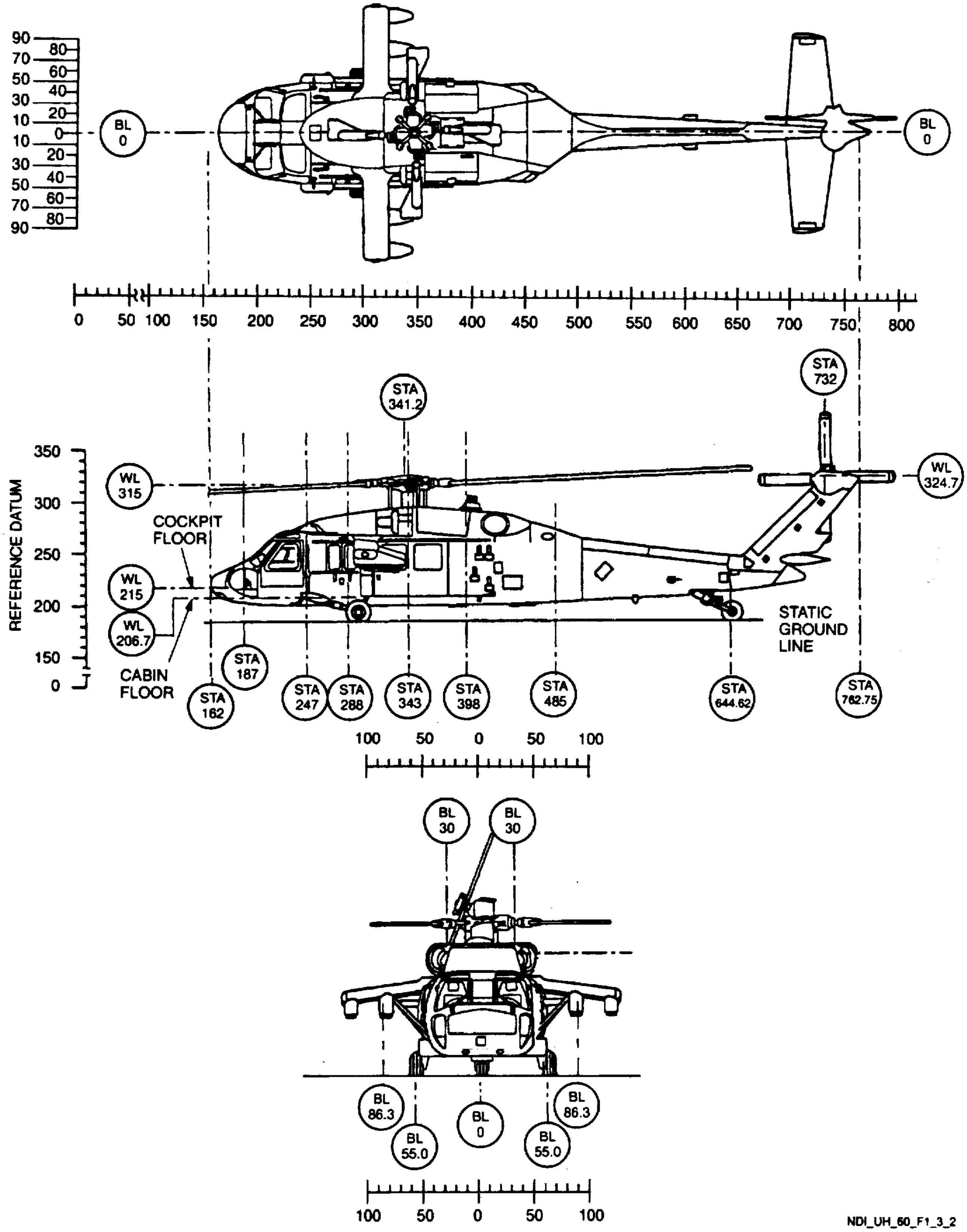


Figure 1-3. Stations, Waterlines, and Buttlines (Sheet 2 of 2)

a. Stations. Stations (STA) are distances from a point in front of the helicopter nose. The first station is zero (0.00).
b. Waterlines. Waterlines (WL) are distances from a point below the helicopter.
c. Buttlines. Buttlines (BL) are distances from the center of the helicopter. They start at the center and show the distance to each side of the helicopter. Buttlines will be either to the left or right side.

These dimensions help you find any point on the helicopter. Each point shown on the following pages is a part of the helicopter you can see.

1.2. TYPE OF CONSTRUCTION.

NOTE

The following paragraphs describe the type of construction and materials used in the manufacture of the major H-60 helicopter series components.

1.2.1. Rotor System. Four main rotor blades are installed on the main rotor head. The main rotor blade has a pressurized titanium spar, Nomex honeycomb core, fiberglass skin, nickel and titanium abrasion strips, a removable swept-back tip fairing, and a resistive heating mat used when the blade de-ice system is activated. A titanium cuff and expandable pins attach the blade to the rotor head.

The main rotor head transmits the movements of the flight controls to the four main rotor blades. The main rotor head turns in a counter clockwise direction. The head is supported by the main rotor shaft extension that is splined to the main transmission main shaft, which drives the head.

The canted tail rotor head is driven by the tail gearbox which is driven by a drive shaft from the main transmission. The tail rotor blades are attached to the tail rotor head. Tail rotor blades are built around two graphite composite spars running from tip-to-tip and crossing each other at the center to form the four blades. The blade spars are covered with crossply fiberglass to form the airfoil shape. Polyurethane and nickel abrasion strips are bonded to the leading edge of the blades.

1.2.2. Drive System. The transmission system carries engine torque to the main rotor and the tail rotor. It consists of a main transmission with oil cooler, intermediate gearbox, and drive shafts. The main transmission drives the main rotor, tail rotor, main transmission oil cooler fan, No. 1 and No. 2 hydraulic pump modules, and No. 1 and No. 2 generators.

The intermediate gearbox, driven by tail rotor drive shafts, is mounted at the base of the pylon. The intermediate gearbox carries main transmission torque to the tail gearbox. The tail gearbox, mounted at the top of the pylon, holds the tail rotor head to which the tail rotor blades are attached.

1.2.3. Airframe and Landing Gear System. The helicopter airframe is divided into six sections: cockpit (nose section), cabin, transition section, tail cone, tail rotor pylon, and main rotor pylon. The primary structure is aluminum alloy. Some titanium and steel are used for firewalls and various fittings. Nonstructural members are primarily made of reinforced plastic. The fuselage is semi-monocoque construction with horizontal anti-plough beams extending through the tub from the cockpit to the transition section.

The landing gear system consists of two fixed main landing gears and a tail landing gear. Each main landing gear has a self-adjusting brake assembly. The landing gear system enables the helicopter to maneuver during ground operations, absorb landing loads through the shock strut assemblies, and insulates the airframe and occupants from shock.

1.2.4. Power Plant System. Two General Electric T700-GE-700 engines power the UH-6OA and the EH-60A helicopters while two General Electric T-700-GE-701C engines power the UH-60L helicopter. The biggest difference is that the -700 engines have electrical engine control (EEC) units and a history recorder, while the -701 C has a digital electronic control (DEC).

The demountable power packages are mounted on each side of the main transmission. A drive shaft assembly and forward support tube connect the engine to the input gearbox module of the main transmission. A power turbine shaft extending through the engine drives the input gearbox module.

Each power package allows a quick change of engines with all components installed, for ease of maintenance and handling.

1.2.5. Flight Control System. The flight controls consist of the collective, cyclic, and tail rotor (directional) control systems. These systems use a series of push-pull rods, bellcranks, cables, pulleys, and servos that transmit control movements from the cockpit to the main and tail rotors. The pilot and copilot have dual controls. Hydraulic power is supplied by the first stage, second stage, and backup hydraulic systems. Electrical power is provided by the AC and DC electrical system. Assistance for the pilot or copilot in pitch, roll, and yaw control is provided by the stability augmentation system (SAS), flight path stabilization (FPS), and electromechanical trim.

1.2.6. Access and Inspection Provisions. Access and inspection provisions consist of access doors, covers, panels, platforms, screens, and openings used for maintenance, servicing, and inspection of the helicopter and its components. Principal access and inspection openings are shown in Figure 1-4 and listed in Table 1-2.

WARNING

To prevent injury to personnel and damage to helicopter, stand only on designated surfaces. These areas are reinforced to withstand frequent use and are treaded to prevent slipping. All other surfaces are NO STEP areas.

1.2.7. Steps, Handholds, and Walkways. Steps, handholds, and walkways aid in doing maintenance, inspections, and servicing on the helicopter.

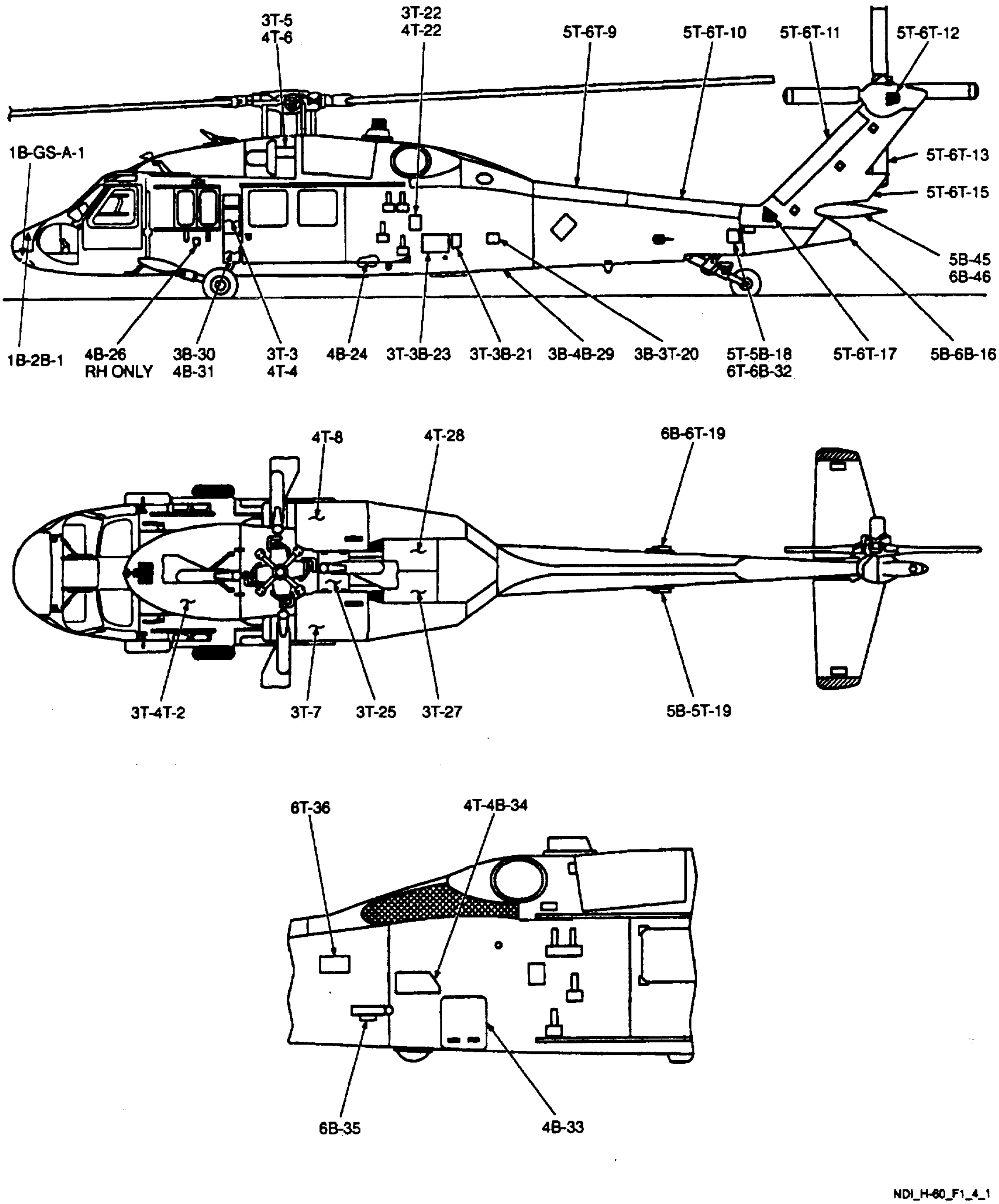


Figure 1-4. Access and Inspection Provisions (Sheet 1 of 2)

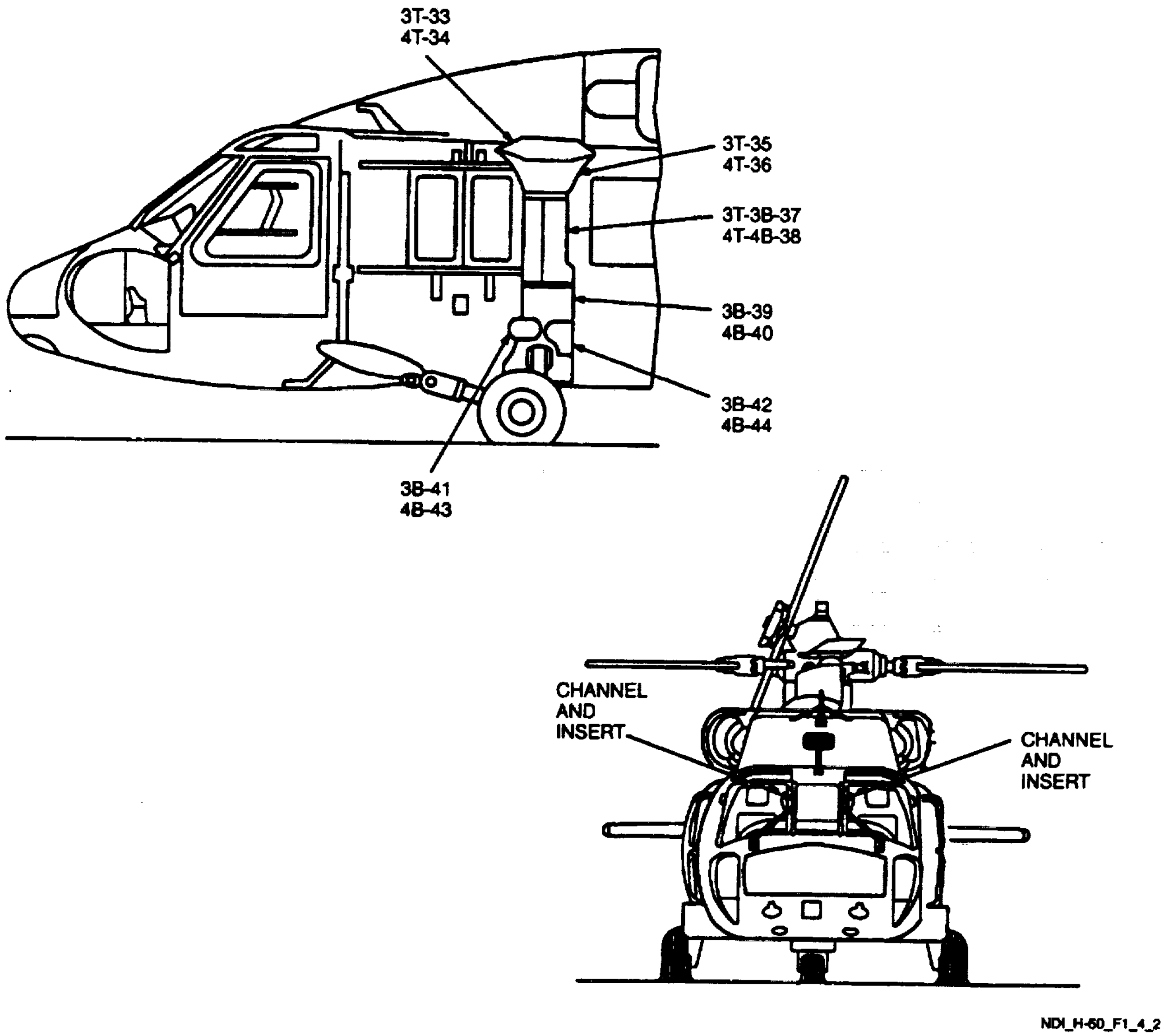


Figure 1-4. Access and Inspection Provisions (Sheet 2 of 2)

Table 1-2. Access Panels and Fairing

Item Number	Item	Access To
1 B-GS-A-1	Glide Slope Antenna Fairing	Nose Vibration Damper
1B-2B-1	Nose Door (Hinged)	Electronics
4B-26	Access Panel	External Power
3T-3 4T-4	Access Panel (Hinged)	Shock Strut
3B-30 4B-31	Access Panel (2 parts)	Shock Strut
3T-4T-2	Sliding Cover (on tracks)	Controls/Accessories
3T-7 4T-8	Engine Cowl (hinged)	Engine
3T-5 4T-6	Access Panel	Anti-Icing Valve
4B-24	Access Cover	Cargo Hook
3T-25	Access Panel (hinged)	Oil Cooler
3T-27	Access Panel (hinged)	APU
4T-28	Access Panel (hinged)	Fire Extinguishers
3T-22 4T-22	Access Panel (hinged)	Gravity Fuel
3T-3B-23	Access Panel (hinged)	Pressure Fuel
3T-3T-21	Access Panel (hinged)	Pneumatic Ground Start
3B-3T-20	Access Panel	Mag Flux Valve
5T-6T-9	Access Panel (hinged)	Drive Shaft
5T4T-10	Access Panel (hinged)	Drive Shaft
5T-6T-17	Intermediate Gearbox Cover	Intermediate Gearbox
5T-6T-11	Pylon Drive Shaft Cov-er/#1 FM Antenna	Drive Shaft
5T-5B-18 6T-6B-32	Access Panel	Pylon Fold Hinge Bolds
5T-6T-12	Tail Gearbox Cover	Tail Gearbox
5T-6T-15	Fairing	Pylon Trailing Edge
5B-6B-16	Fairing	Lower Pylon
5B -4 5 6B -4 6	Cover	Stabilator Attach Fittings
5B-5T-19 6B-6T-19	VOR/LOC Antenna	
5T-6T-13	Troop Commander An-tenna	
5T-14	Access Panel (hinged)	Upper Actuator Attach
4B-33	Access Panel (hinged) (NOTE 2)	Electronics

Table 1-2. Access Panels and Fairing - Continued

Item Number	Item	Access To
4T-4B-34	Access Panel (hinged) (NOTE 2)	
6B-35	Access Panel (hinged) (NOTE 2)	Filter
6T-36	Access Panel, Flux Valve (NOTE 2)	Mag Flux Valve
3T-33 4T-34	Fairing and Platform (2-part hinged) (NOTE 1)	ESSS Maintenance Crane Attachment
3T-35 4T-36	Cap Fairing (NOTE 1)	ESSS
3T-3B-37 4T-4B-38	Access Panel (hinged) (NOTE 1)	Step/Shock Strut
3B-39 4B-40	Access Panel (NOTE 1)	Shock Strut
3B-41	Lower Fairing STA 295 (NOTE 1)	ESSS
3B-42	Lower Fairing STA 308 (NOTE 1)	ESSS
4B -4 3	Lower Fairing STA 295 (NOTE 1)	ESSS
4B - 4	Lower Fairing STA 308 (NOTE 1)	ESSS

NOTES

1. ESSS
2. EH-60A

NUMBER CODE

1 Left Side Cockpit
2 Right Side Cockpit
3 Left Side Cabin
4 Right Side Cabin
5 Left Side Tail Cone and Pylon
6 Right Side Tail Cone and Pylon
T Top above WL 232
B Bottom below WL 232

1.3. MARKING AND/OR RECORDING OF INSPECTION RESULTS.

NOTE

Only approved marking pencils listed in Table 1-8 are to be used for temporary marking of indications found during an NDI inspection. The color of the markings shall contrast with the color of the part.

a. Wipe the area to be marked with low-lint cleaning cloth, MIL-C-85043.

b. Mark surface with appropriate color aircraft marking pencil, MIL-P-83953, using a light touch.

c. Remove markings as soon as there is no further need for them with a low-lint cloth, MIL-C-85043, dampened with tap water. It is allowable for a shadow of the marking to remain on surfaces after removal.

WARNING

Cleaning solvents P-D-680, Type II and MIL-C-38736 are flammable. Avoid eye and skin contact or breathing of vapors. Protective equipment consisting of goggles, gloves, and respiratory protection is required.

CAUTION

Do not use cleaning solvent MIL-C-38736 on acrylic lacquer, as it may soften finish.

d. Dry-cleaning solvent, P-D-680, Type II shall be used for removal of markings on acrylic lacquer surfaces.

e. Record inspection results as required by the applicable technical manuals listed in Table 1-1.

1.4. NONDESTRUCTIVE INSPECTION METHODS.

1.4.1. Purpose of Nondestructive Inspection (NDI). Methods used in NDI are those that may be applied to inspect a structure or component to determine its ability to perform its intended function without damaging or causing any change in the characteristics of the structure or component. During manufacture, aircraft components are given in-process and final inspections. The most commonly used methods are magnetic particle and liquid penetrant because these two methods are bulk processes that provide 100 percent inspection coverage, and are highly effective. It is unusual, but possible, for NDI personnel to locate defects that are inherent (associated with the production of the material) or related to the manufacturing operations. It follows that nearly all maintenance nondestructive inspection requirements are to locate defects that have developed during service (i.e., corrosion and corrosion-induced cracking; fatigue cracks; and defects resulting from mechanical damage, improper maintenance, or inappropriate use). It is important that NDI personnel shall be able to distinguish between inherent or in-service defects. A general knowledge of typical sites for in-service defect occurrence and specific knowledge of the mode and location of previous cracking problems for a particular part are relevant. This knowledge will assure that the crack prone areas are identified for inspection and time will not be wasted inspecting areas not subject to in-service cracking.

This manual summarizes the steps necessary to perform satisfactory inspections. It includes the preparation of the helicopter, the inspection area for NDI, safety rules to be observed, highlights of each inspection method, and specific safety precautions for each of these methods. For a detailed description of each method and its application, refer to the Technical Manual, Nondestructive Inspection Methods, TM 1-1500-335-23. Specific instructions peculiar to each part being inspected will be included in the discussion of that inspection item as it is covered in this manual.

1.4.2 Selecting the NDI Method**.** Factors governing the selection of an inspection method are: accessibility, portability of equipment, type of suspected damage, material composition of part to be inspected, surface condition, and degree of sensitivity required for the inspection. In many cases the method selected will depend primarily on accessibility and practicality. For example, a threaded item that may qualify for eddy current inspection may instead require the substitution of an ultrasonic inspection due to accessibility constraints. However, the ultrasonic inspection must be capable of providing equivalent sensitivity. Also, the type of inspection desired may adversely affect adjacent parts. Inspection methods in this manual were selected in order to provide maximum detection sensitivity while requiring a minimum of removal or disassembly; and at the same time, protect adjacent areas from damage. Radiographic inspection is used only to examine areas partly or totally hidden, or where the suspected damage is internal to the part. Where one method of inspection (primary) reveals an indication of a crack, another method (backup) should be used to verify if a crack is actually present. Quite often backup procedures are limited to disassembly and a good visual inspection. Certain cases may arise when another NDI method could be used to prevent needless or complicated disassembly. For example, a crack in a spar cap may not appear clearly on radiographic film due to cloudiness caused by sealant or substructure clutter. A backup eddy current or ultrasonic method could be used for verification and if no indications were observed, disassembly would not be necessary. Whenever a backup method is used, it shall be specified in every case where the initial damage indication may not be positive proof that a reject condition exists.

1.4.3 Preparation of Helicopter for NDI**.** Prior to NDI, the helicopter shall be prepared for safe ground maintenance in accordance with applicable technical manuals listed in Table 1-1.

1.4.4 Preparation of Part or Area for NDI**.**

WARNING

> Prolonged breathing of vapor from organic solvents, degreasers, or paint thinners is dangerous. Use respirators in confined areas per Occupational and Environmental Health Respiratory Protection Program (TB MED 502 (DLAM 1000.2)). Have adequate ventilation. Avoid prolonged skin contact. Wear rubber gloves and goggles.

All NDI methods require proper cleanliness of the part or area being inspected. Refer to Table 1-1 for the applicable cleaning and corrosion control manual. The cleaning technique to be used will be determined by the type of foreign matter present, NDI method to be performed, and if the part is plated, painted, or has a protective coating. Scale and corrosion shall be removed completely before inspection. If removal of protective coatings, such as paint, phosphate coatings, black oxide, etc., is required, do not use removal methods that mechanically abrade the surface of the part to be inspected since this may cause damage or mask over potential surface cracks on the part. Some inspection methods, by their particular nature, will require that small openings and/or oil holes leading to obscure passages or cavities be plugged, such as the case of engine parts. A suitable nonabrasive material (i.e., Vaseline, grease, paraffin) should be used that is soluble in oil and can be readily removed. Effective masking shall be used to protect those components, such as bearings and certain nonmetallics, that may be damaged by contact with the inspection solution or medium.

1.4.5 NDI General Safety Precautions.

WARNING

Electrical equipment shall not be operated in areas where combustible gases or vapors may be present, unless the equipment is explosion proof.

Prior to conducting an NDI inspection, survey the general area in advance. Eliminate possible hazards created by loose structures, protruding work stands, and support equipment. Secure loose electric cords and remove toxic fluids or fumes. If AC power is supplied to equipment, be sure that equipment is well grounded to prevent electrical hazards. Specific safety instructions for each NDI method used in this manual are contained in the paragraph immediately following the discussion of that method.

1.4.6 Bond Testing (BT) Method.

NOTE

Inspection of bonded structures shall be performed in accordance with the general applications and techniques in TM 1-1500-335-23 (Nondestructive Inspection Methods manual) and the specific requirements of this technical manual.

A number of different methods of NDI can be applied to the many configurations and types of bonded structures that are in use. Variables such as skin materials and thickness, adhesive type and thickness, underlying structure, and accessibility are all factors in the development of specific inspection procedures. Because of the many inspection methods and structural configurations, each application must be considered and reference standards representative of the structure must be evaluated to verify proposed techniques.

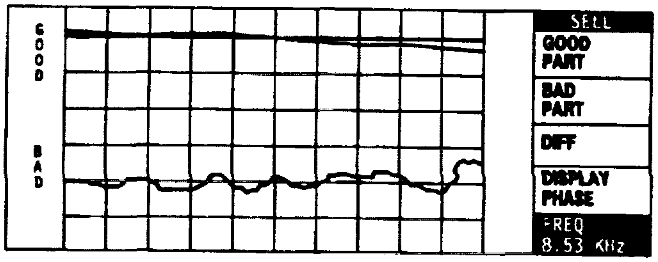
1.4.6.1 Bond Testing Equipment. The bond testing equipment, Bondmaster, used in the procedures in this manual, operates by generating a mechanical vibration into the material being tested. This equipment is designed to detect flaws in bonded metallic and composite structures. The instrument is capable of determining bad bonds, delaminations, unbonds, and crushed honeycomb core defects. The Bondmaster has the following features:

a. Resonance. Detects unbonds and delaminations by changes in phase and amplitude at probe resonance. Couplant is required.

b. Pitch Catch Swept. Measures amplitude and phase changes using a swept frequency method to detect unbonds and deeper defects. Requires no couplant.

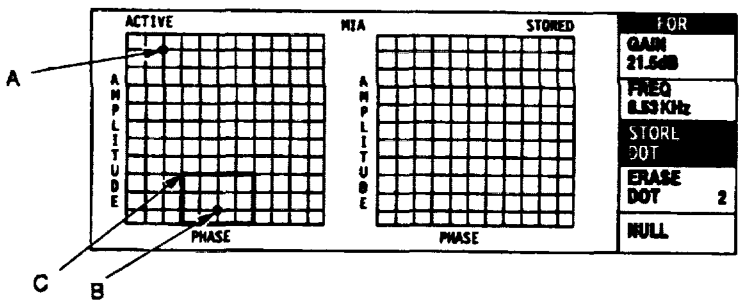
c. Pitch Catch Impulse. Measures amplitude and phase changes using a short burst of energy to detect unbonds, Requires no couplant.

d. Mechanical Impedance Analysis (MIA). Measures the effect of generated sound waves and the effect of loading as drive frequency is swept in the range of 2.5 KHz to 10 KHz. This method can be used on unbonds, crushed core, and defects on the inside of composites. Requires no couplant. See Figure 1-5, Bond Testing Reference Block Displays.



MIA SET MENU

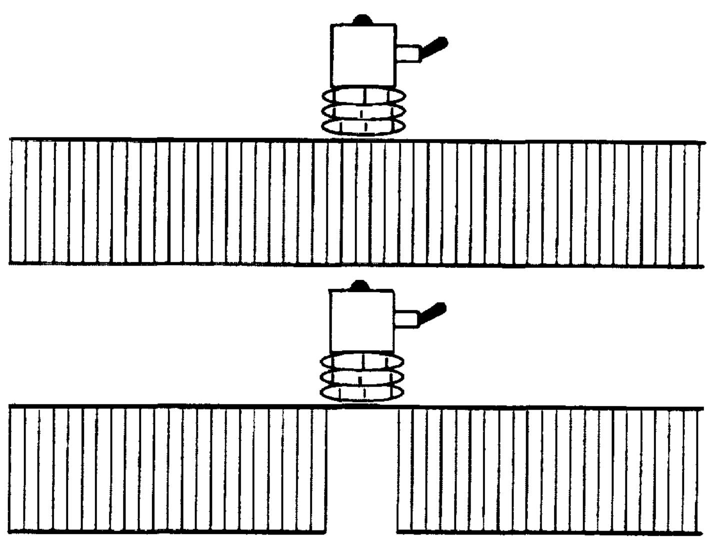
(DISPLAYS DIFFERENCE BETWEEN GOOD AND
BAD AREAS AT A PARTICULAR OPERATING FREQUENCY)



MIA RUN MENU

(A) RESPONSE OF FLYING SPOT ON GOOD AREA
(B) RESPONSE OF FLYING SPOT ON BAD AREA
(C) ALARM GATE

A–PROBE ON GOOD AREA



B–PROBE ON CUT OUT AREA

NDI_H-60_F1_5

Figure 1-5. Bond Testing Reference Block Displays

Mechanical vibration energy generated by resonance test equipment can be measured, analyzed by the tester, then displayed on a screen. There are several ways this energy can be applied to material and then be analyzed. Because bonded metallic and composite material properties differ substantially, no one test method will detect flaws in all types of material. For this reason, current bond testing equipment incorporates at least one or more of the aforementioned features.

1.4.6.2 Safety Precautions During Bond Testing. Follow safety precautions and instructions contained in this manual and the Nondestructive Inspection Methods manual listed in Table 1-1.

WARNING

Electrical equipment shall not be operated in areas where combustible gases or vapors may be present, unless the equipment is explosion proof.

a. If instrument is operated using AC power, use a grounded power cord.

b. Turn power OFF before connecting or disconnecting probe cable or power cable.

1.4.7 Fluorescent Penetrant (PT) Method.

NOTE

Fluorescent penetrant inspections shall be performed in accordance with the general applications and techniques in TM 1-1500-335-23 (Nondestructive Inspection Methods manual) and the specific requirements of this technical manual.

The basic purpose of fluorescent penetrant inspection is to increase the visible contrast between a discontinuity and its background. This method is performed by applying a fluorescent penetrant solution to the inspection area which enters the surface opening of the discontinuity. The area is then wiped or rinsed and a developer is added to draw the fluorescent material from the discontinuity. A flaw or crack in the part will then become visible under the influence of ultraviolet light (black light). This method is effective for detecting surface flaws in forgings, castings, extrusions, formed sections, webs, and skins of materials. The penetrant method of inspection requires that the surface of the inspection area be thoroughly cleaned. Paint on the part must be removed before inspection.

CAUTION

Penetrant-Emulsifier/Remover Combinations (lipophilic/hydrophilic) from one manufacturer may not be mixed or used in conjunction with materials from a different manufacturer.

Four penetrant procedures are given in Tables 1-3, 1-4, 1-5, and 1-6. All four inspections shall be conducted using fluorescent penetrant, AMS 2644, Type I, Method A, B, C, or D, Sensitivity Level 3 or 4. Refer to the Nondestructive Inspection Methods manual listed in Table 1-1 for more detailed instructions. Table 1-5 describes the procedure for using Type I, Method C, Level 3 or 4 on a removed part or parts attached either to a component or to the helicopter. This procedure supports the accomplishment of fluorescent penetrant inspection at the AVUM and AVIM levels regardless of geographic location. Therefore, the procedure in Table 1-5 will be the one most frequently referred to in this manual. Table 1-7 lists the equipment and Table 1-8 lists the fluorescent penetrant materials to be used.

Table 1-3. Penetrant Procedure (Type I, Method A)

Task	Description
a. Preparation of Part:	Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.
b. Precleaning Procedure:	Refer to TM 1-1500-344-23.
c. Penetrant Application:	The Penetrant may be applied by brushing, spraying, or dipping.
d. Penetrant Dwell:	Allow a minimum of 30 minutes dwell time to a maximum of 240 minutes. Extended dwell time may require rewetting of parts.
e. Penetrant Removal/Rinse:	Rinse the part by waterwash using a low-pressure spray (pressure not to exceed 20 PSI) and a temperature of 16°C to 38°C (60°F to 100°F). DO NOT OVERRINSE.
f. Drying Operation:	The parts should be dried in a circulating air dryer with a temperature range from 38°C to 60°C (1 00°F to 1 40°F). The time in the dryer should not exceed the time necessary to completely dry the surface of the parts.
9. Developer Application:	The dry developer is sprayed or dusted lightly over the part to be inspected. Shake or blow off with low, oil-free air to remove excess developer.
h. Inspect:	Perform inspection under black light.
i. Materials:	Type I, Method A, Level 3 or 4 (water washable) Penetrant.

Table 1-4. Penetrant Procedure (Type I, Method B)

Task	Description
a. Preparation of Part:	Refer to Preparation of Part of Area for NDI, paragraph 1.4.4.
b. Precleaning Procedure:	Refer to TM 1-1500-344-23.
c. Penetrant Application:	The penetrant may be applied by brushing, spraying, or dipping.
d. Penetrant Dwell:	Allow a minimum of 30 minutes dwell time to a maximum of 240 minutes. Extended dwell time may require rewetting of parts.
e. Emulsifier Application:	The emulsifier may be applied by dipping or spraying. The preferred method of application is by dipping the part in the emulsifier. Do not permit emulsifier to remain on the part over 3 minutes.
f. Rinse:	Rinse the part by waterwash using a low-pressure spray (pressure not to exceed 40 PSIG) and a temperature of 16°C to 38°C (60°F to 100°F).
g. Drying/Developer Operation:	If a dry nonaqueous developer is to be used, first dry the part in a drying oven at a temperature not to exceed 60°C (140°F) until dry. Then apply the developer. If an aqueous developer is to be used, then submerge the part in the developer solution immediately after washing. Follow by drying the part in a drying oven as mentioned above. In either case, parts shall be removed from the drying oven as soon as they are dry.
h. Inspect:	Perform inspection under black light.
i. Materials:	Type I, Method B, Level 3 or 4 (post emulsifiable-lypophilic) Penetrant (Refer to Table 1-8).

Table 1-5. Penetrant Procedure-Portable or Field Application (Type I, Method C)

Task	Description
a. Preparation of Part:	Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.
b. Precleaning Procedure:	Refer to TM 1-1500-344-23.
c. Penetrant Application:	Apply penetrant either by brushing or spraying. In a confined area, apply with brush to prevent overspray.
d. Penetrant Dwell:	Allow a minimum of 30 minutes penetrant dwell time. In temperature below 16°C (60°F), refer to Nondestructive Inspection. Methods manual listed in Table 1-1 for dwell time compensations.
e. Penetrant Removal:	Wipe dry with a dry, lint-free cloth. Wipe down with a solvent-moistening cloth. Check area to be inspected with black light to be sure all surface penetrant has been removed before applying developer. Do not spray cleaner directly onto part.
f. Developer Application:	Spray a light film of developer over area to be inspected.
g. Inspect:	Perform inspection under black light. Observe any obvious bleed-out as developer dries. Complete inspection after developer dwell time is complete.
h. Materials:	Type I, Method C, Level 3 or 4, Solvent - Removable Fluorescent Dye Penetrant (Refer to Table 1-8).

Table 1-6. Penetrant Procedure (Type I, Method D)

Task	Description
a. Preparation of Part:	Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.
b. Precleaning Procedure:	Refer to TM 1-1500-344-23.
c. Penetrant Application:	The penetrant may be applied by brushing, spraying, or dipping.
d. Penetrant Dwell:	Allow a minimum of 30 minutes dwell time to a maximum of 240 minutes. Extended dwell times may require rewetting of parts.
e. Penetrant Prerinse:	Prerinse part with a water spray at a temperature of 16°C to 38°C (60°F to 100°F) and a spray pressure of 40 PSIG maximum. Do not overrinse.
f. Remover Application:	Apply a solution as recommended by manufacturer of the specific hydrophilic remover in water to surface of the part. Dwell time shall be kept to an absolute minimum consistent with complete removal of excess penetrant.
g. Postrinse Operation:	Postrinse part with a water spray at a temperature of 16°C to 38°C (60°F to 100°F) and a spray pressure of 40 PSIG maximum. Do not overrinse. Rinse effectiveness should be checked with a black light to ensure complete removal of penetrant remover.
h. Drying/Developer Operation:	If a dry nonaqueous developer is to be used, first dry the part in a drying oven at a temperature not to exceed 60°C (140°F) until dry. Then apply the developer. If an aqueous developer is to be used, then submerge the part in the developer solution immediately after washing. Follow by drying the part in a drying oven as mentioned above. In either case, parts shall be removed from the drying oven as soon as they are dry.
i. Inspect:	Perform inspection under black light.
j. Materials:	Type I, Method D, Level 3 or 4 (hydrophilic remover) Penetrant (Refer to Table 1-8).

1.4.7.1 Safety Precautions During Fluorescent Penetrant Inspection. Follow safety precautions and instructions contained in this manual and the Nondestructive Inspection Methods manual listed in Table 1-1.

WARNING

- **Black lights generate considerable heat during use. Extreme care must be exercised to prevent contacting the housing with any part of the body.**
- **To prevent injury to eyes, do not look directly into black light.**
- **Prolonged direct exposure of hands to the filtered black light's main beam may be harmful. Suitable gloves shall be worn when exposing hands to the main beam.**

a. Follow manufacturer's instructions when using black lights and filter.

b. Do not wear sunglasses or glasses with light-sensitive lenses during fluorescent penetrant inspections. They can contribute to improper interpretation of defects.

WARNING

Prolonged or repeated inhalation of vapors or powders may result in irritation of mucous membrane areas of the nose.

c. Provide adequate ventilation when handling cleaner, emulsifier, penetrants, or developers.

WARNING

Continual exposure to penetrant inspection material may cause skin irritation.

d. Observe the following when handling cleaners, emulsifiers, penetrants, or developers.

(1) Avoid contact with penetrant inspection materials by wearing neoprene gloves.

(2) Wash inside and outside of gloves.

(3) Wash exposed areas of body with soap and water.

(4) Check for traces of fluorescent penetrant materials on skin, clothing, and gloves using a black light source.

WARNING

Temperatures in excess of 49°C (120°F) may cause bursting of pressurized cans and injury to personnel.

e. Store all pressurized spray cans in a cool, dry area protected from direct sunlight. Avoid exposure of pressurized spray cans to open flame.

WARNING

Volatile fumes may occur, creating both a fire and a health hazard.

f. Exercise extreme caution when handling penetrants that have been heated to a point where some lighter constituents are driven off.

1.4.7.2 Controlling Excess Fluorescent Penetrant. After fluorescent penetrant inspection, the part shall be thoroughly cleaned to ensure all excess penetrant is removed from the part. This shall include removing the penetrant from cracks as much as possible before disposition of the part. This can be easily accomplished by performing cleaning operations under a black light.

1.4.8 Magnetic Particle (MT) Method.

NOTE

Magnetic particle inspection shall be performed in accordance with the general application and techniques in TM 1-1500-335-23 (Nondestructive Inspection methods manual) and the specific requirements of this technical manual.

NOTE

During magnetic particle inspections performed with portable equipment, the operator shall keep the can of magnetic particle media constantly agitated by continuously shaking the can prior to application.

Magnetic particle is a method of detecting cracks or other flaws on the surface or near the surface of materials that are ferromagnetic. This method will produce good indications of discontinuities, provided the part is free from grease, oil, loose scale, or other surface contaminants. The inspection is accomplished on either assembled or disassembled parts. As specified in the procedure, the inspection is accomplished by inducing a magnetic field in the part and applying a liquid suspension of iron oxide particles to the surface to be inspected. By controlling the direction of the magnetic flux, the lines of magnetic force shall be positioned perpendicular to the crack or flaw. All magnetic particle inspections in this manual shall be of the wet continuous method using fluorescent magnetic particles.

1.4.8.1 Magnetic Particle Inspection Equipment. Considerations involved in the selection of magnetic particle inspection equipment include the type of magnetizing current and the location and nature of the inspection. The purpose of this manual is to support the accomplishment of NDI at the AVUM and AVIM levels. This dictates equipment that can be used on or off the helicopter at remote sites. Therefore, magnetic particle procedures in this manual use the electromagnetic yokes or probes and hand-held coils as shown in Figure 1-6. This equipment is common and readily available to AVUM and AVIM levels. Stationary magnetic particle equipment can be used if facilities, required shop equipment, and qualified NDI technicians are available. Refer to TM 1-1500-335-23 (Nondestructive Inspection Methods manual) for stationary magnetic particle inspection techniques.

1.4.8.1.1 Magnetic Yokes and Probes.. Portable induced field inspection equipment is generally referred to as either a probe or a yoke. These terms are synonymous and differ due to manufacturer's nomenclature. They are small, portable, easy to use, and can be used on or off the helicopter. They induce a strong magnetic field into that portion of a part that lies between the poles or legs. This limits the magnetization to longitudinal; however, by turning the probe 90° on the part for the second position, cracks, either perpendicular or parallel to the axis of the part, can be detected. Some yokes and probes have both AC and DC capabilities while others have AC only. All procedures in this manual use AC. AC provides a very desirable and useful field. The vibratory action of AC adds significantly to the magnetic particle mobility enhancing the formation and build-up of larger and sharper indications at discontinuities. An AC magnetic field is also used when it is necessary to reveal only surface cracks, common to in-service parts due to fatigue and stress cracking. Yokes and probes utilizing AC for magnetization also have the additional advantage that they can be used for demagnetization.

1.4.8.1.2 Hand-held Coil. For longitudinal magnetization of bolts, shafts, spindles, axles, and similar small parts, the hand-held coil offers a simple, convenient method of inspecting for transverse cracks. It allows for equipment maintenance inspections wherever a coil can be applied around the part. Parts are magnetized and demagnetized with the same coil.

1.4.8.2 Safety Precautions During Magnetic Particle Inspections. Follow safety precautions and instructions contained in this manual and the Nondestructive Inspection Methods manual listed in Table 1-1.

WARNING

- Black lights generate considerable heat during use. Extreme care must be exercised to prevent contacting the housing with any part of the body.
- To prevent injury to eyes, do not look directly into black light.
- Prolonged direct exposure of hands to the filtered black light's main beam may be harmful. Suitable gloves shall be worn when exposing hands to the main beam.

a. Follow manufacturer's instructions when using black lights and filter.

b. Do not wear sunglasses or glasses with light-sensitive lenses during fluorescent magnetic particle inspections. They can contribute to improper interpretation of defects.

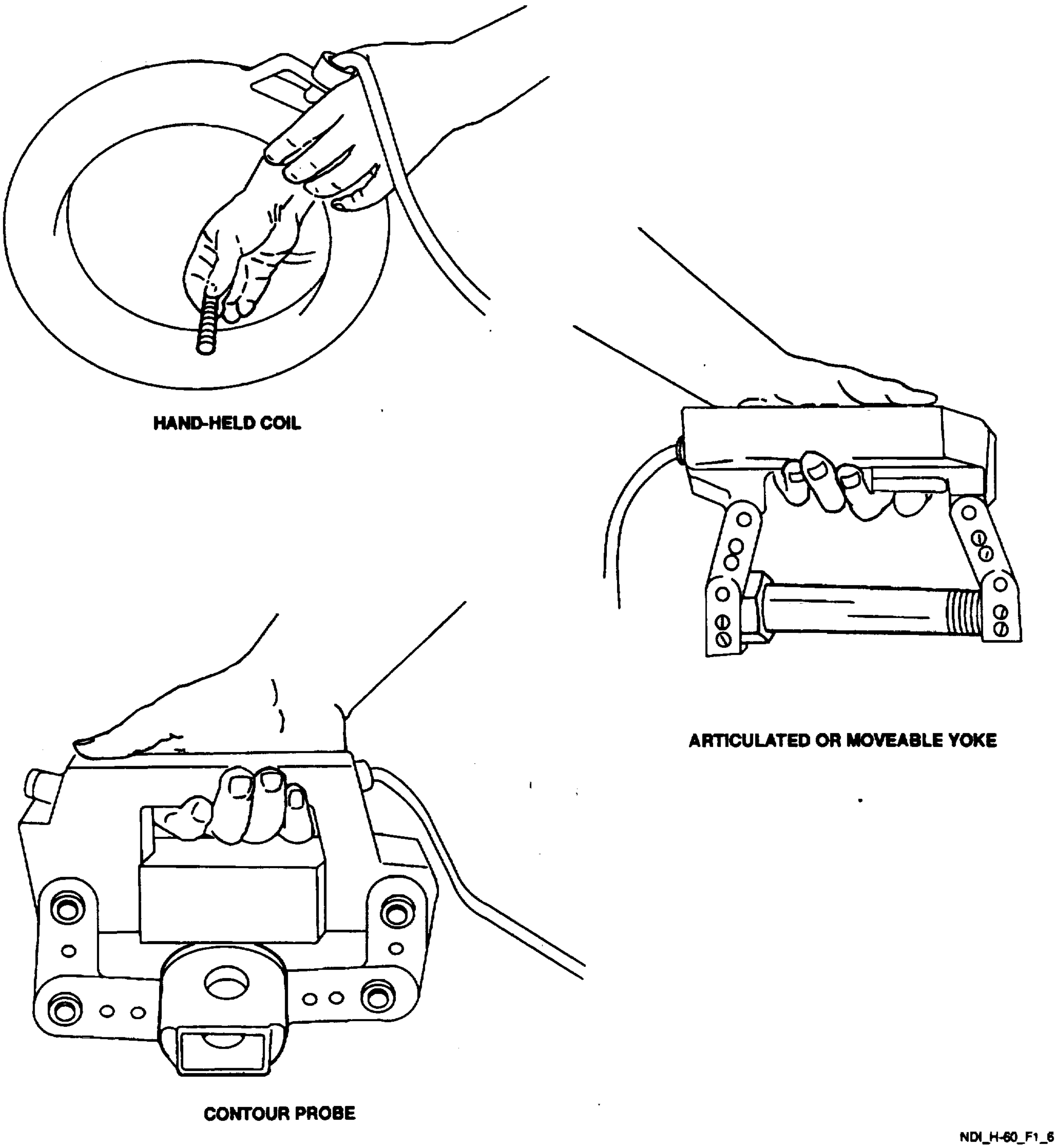


Figure 1-6. Portable Magnetic Particle Inspection Equipment

CAUTION

Do not operate magnetic particle equipment within 36 inches of aircraft instruments.

1.4.9 Demagnetization of Inspection Parts. Following magnetic particle inspection of a part, the residual magnetic field in the part shall be reduced to the lowest possible level. This must be done prior to returning the part to service or rejecting it as a defective part. Unless this is done properly, the residual magnetism may cause adverse influence on instruments, unnecessary wear on parts, or attract ferrous metal chips and dust into bearing surfaces. After demagnetization, a magnetic field strength meter shall be used to measure residual fields. Readings in excess of three units are not acceptable.

1.4.9.1 Demagnetization Using AC. If AC demagnetization is selected, hold the part about 12 inches in front of the coil. Move it slowly and steadily through the coil to at least 36 inches beyond the end of the coil while current is still flowing. Repeat process as necessary. Rotate and tumble parts of complex configuration while passing through the coil field. All parts can be demagnetized using a contour probe in the AC mode. Place the probe against the magnetized part with the switch in AC position. Turn probe on and withdraw it from the part, or the part from the probe/yoke, about 24 inches before turning the probe off.

1.4.9.2 Demagnetization Using DC. If DC demagnetization is selected, the initial demagnetizing field shall be higher than, and in nearly the same direction as, the field reached during inspection. The field shall then be reversed and decreased in magnitude, and the process repeated (cycled) until an acceptable low value of residual field is reached. Whenever possible, parts that have been circularly magnetized shall be magnetized in the longitudinal direction before being demagnetized. This procedure is limited to stationary equipment.

1.4.10 Radiographic (RT) Method.

NOTE

Radiographic inspection shall be performed in accordance with the general application and techniques in TM 1-1500-335-23 (Nondestructive Inspection Methods manual) and the specific requirements of this technical manual.

Radiographic inspection is used to detect internal and external structural details of all types of parts and materials. This method is used for the inspection of airframe structure for damage, detection of moisture entrapment, structure alignment, and foreign object intrusion. It can sometimes be used in areas otherwise inaccessible to other nondestructive inspections and to verify indications observed by other methods.

Radiographic inspections are accomplished by passing the X-ray beam through the part or assembly to expose a radiographic film emulsion or other sensitized medium. The processed film shows the structural details of the part by variations in film density. Requirements for film density, image quality indicator, identification, and other factors are specified in MIL-STD-453.

Film processing is a series of operations such as developing, fixing, and washing, associated with the conversion of the latent image into a stable visible image and will be provided by manual or automatic film processing.

1.4.10.1 Safety precautions During Radiographic Inspections. Follow safety precautions and instructions contained in this manual and the Nondestructive Inspection Methods manual listed in Table 1-1.

WARNING

Radiation Hazard

Assure compliance with all applicable precautions set forth in TM 1-1500-335-23 (Nondestructive Inspection Methods manual) listed in Table 1-1. A hazard associated with exposure to ionizing radiation is that serious injury can be inflicted without pain, burning, or other sense of discomfort during the exposure period. Radiation protection shall be utilized in accordance with AR40-14/DLAR 1000.28.

1.4.10.2 Mixing of Radiographic Film Processing Chemicals. Exercise extreme care when working with film processing chemicals. Fixer solution is highly acidic and developer is highly caustic. Avoid contact with the skin. Flush any skin contact with water.

1.4.11 Eddy Current (ET) Method**.**

NOTE

Eddy current inspections shall be performed in accordance with the general application and techniques in TM 1-1500-335-23 (Nondestructive Inspection Methods manual) and the specific requirements of this technical manual.

The eddy current method is used for discontinuities in electrically conductive materials. The method is effective when inspecting for discontinuities originating: (1) at the radii of mounting lugs, flanges, or crevices; (2) at pressed-in (interference fit) grease fittings, guide pins, etc.; and (3) from fastener holes and bushing/bearing bores. Eddy current method will locate surface cracking on any conductive material, but probes and techniques for inspection of magnetic materials may differ considerably from those used on nonferromagnetic materials.

Eddy current has great value for inspecting areas where paint stripping is not desirable and/or impossible. The method also has wide application in confirming surface indications found by other methods.

The capability and versatility of the eddy current method has been greatly enhanced by the use of modern phase analysis (impedance plane display) instruments used in conjunction with shielded probes. These instruments display a representation of the impedance plane which illustrates both the magnitude and direction of impedance changes. Impedance variables (conductivity, probe lift-off, permeability variations, etc.) can be separated by their characteristic video response and are readily recognized by the trained operator. The interaction of the probe coils and the part is represented by a “flying spot” (or dot) in the video display.

Equipment is standardized on a test block (reference block) which is constructed of a known material that contains known good areas, and either simulated or actual defects of known size. The response of the equipment (eddy current machine and probe) to the good material is set as the starting point by nulling the equipment on the sound area of the block. By this action, all subsequent readings represent deviations from the null point and have both magnitude and direction. Careful manipulation of the controls allows the operator to separate the response (deviation from the null point) for lift-off and flaw (geometric) effects.

Shielded probes have a cylinder of material which encircles the coil of the probe. This serves to constrict the probes field and, therefore, reduces the spread of eddy currents beyond the probe's diameter. This concentrated electrical field is most useful for scanning around fasteners, near edges, and into specific small areas. Other types of probes are used for wide area scans, alloy sorting, conductivity comparisons, coating thickness comparisons, skin thickness comparisons, etc.

1.4.11.1 Safety Precautions During Eddy Current Inspection. Follow safety precautions and instructions contained in this manual and the Nondestructive Inspection Methods manual listed in Table 1-1.

WARNING

Electrical equipment shall not be operated in areas where combustible gases or vapors may be present, unless the equipment is explosion-proof.

1.4.11.2 Eddy Current Scanning Techniques. Eddy current inspection is performed by moving the probe over and as close as possible to the surface of the area of interest. If the coil(s) pass over a defect like a crack, the impedance of the coil will change and be represented as a movement of the "flying spot." Before beginning the inspection, the operator will have separated the response from lift-off and from a flaw by using the test block and manipulating the controls. Therefore, the crack response will be essentially similar to the response from the known defect and different from the response from lift-off. Microprocessor controlled instruments have the ability to store responses in memory. Such stored responses are an invaluable teaching aid.

1.4.11.2.1 Scanning Around Fasteners, Inserts, and Edges of Parts. Shielded probes are recommended any time that the pattern the eddy current field is likely to extend out such that it comes in contact with a feature which would mask the response from a defect. Such features may include edges, fasteners, dissimilar materials attached to the test piece, etc. An unshielded probe can be used around such features, but the effect of those features must be made constant by keeping the distance between the probe and the feature constant. Non-conductive mechanical guides (straight edges, plugs, spacers, etc.) can be used to maintain a constant distance. In fact, the use of non-conductive mechanical guides is useful for shielded and unshielded probes alike. As operators gain experience, they become quite innovative in making guides that maintain constant lift-off, angles, and distance from features which may mask flaw indication. Common materials for mechanical guides are plastic (polyethylene, acrylic, and polycarbonate), wood, phenolic impregnated material, and resins for casting into shapes (epoxy, polyester, or hot glue). Careful selection of probes and construction of suitable mechanical guides will make possible inspection of problem areas such as sharp edges, tight radii, small openings, and areas near potentially masking features.

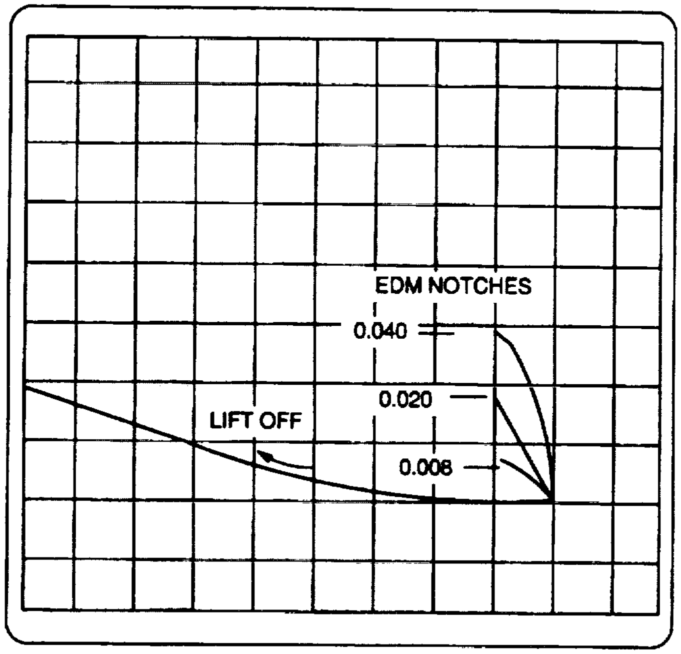
1.4.11.2.2 Bolthole Inspection. Manual bolthole inspection probes usually consist of a split 90 degree probe with the exposed shaft inserted in an adjustable collar. The shaft is marked in increments and the collar secured at the desired increment by means of a set screw through the collar. The probe is then rotated 360 degrees around the hole at each setting until the entire surface of the bore has been inspected. These probes are available in federal or commercial catalogs.

1.4.11.2.3 Scanning Fillets and Radii. Using appropriate radius probe, scan fillets and radii several times in each direction.

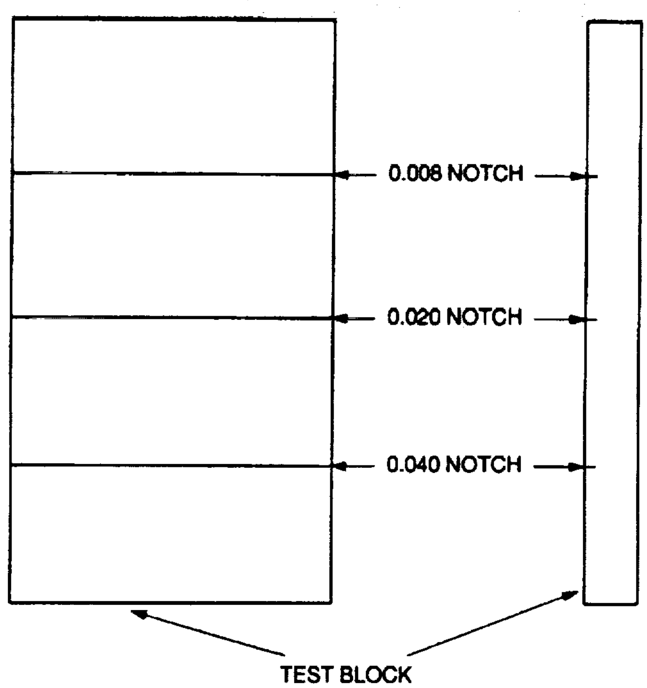
1.4.11.3 Eddy Current Instrument Standardization. Eddy current inspection equipment and standards required by the procedures in this manual are listed in Table 1-7. Reference blocks, instrument settings, and standardization instructions for the eddy current instrument, are included in each eddy current procedure. Instrument settings, as they are given in this manual, should be considered typical and present a test block display shown in Figure 1-7. Additional nulling will be required to reestablish the position of the "flying spot" with the probe on the part/area to be inspected. (Use Teflon tape listed in Table 1-8 on the probe to reduce wear. Instrument settings shall be made with Teflon tape on the probe, if used.)

1.4.11.4 Sorting Metal Using Eddy Current. In addition to the more common usage for crack detection, eddy current equipment may be used for metal sorting. Electrical conductivity and magnetic permeability are the material characteristics evaluated during this type of inspection. The sorting technique cannot directly identify alloy or even the type of metal. But when there are limited possibilities, conductivity and/or permeability information may permit proper classification (see Figure 1-8). Typically the need for alloy sorting occurs when changes to parts are made to improve performance.

For example, a magnesium part that is experiencing severe corrosion is replaced by one made from aluminum. Another example is the replacement of one aluminum part with another, also of aluminum, but made from an alloy having improved strength or corrosion resistance. In both these examples, there may be a need to verify that replacement has been made, and the electrical conductivity of the alloys involved may be sufficiently different to permit verification by a sorting inspection. Another situation is the requirement to NDI a part to confirm a visual indication where the material is not known and cannot be easily determined. Eddy current sorting will quickly determine if the part is ferromagnetic and should be inspected using the magnetic particle method. Also, if the part is nonferromagnetic, which test block (standard) most closely matches the conductivity of the part and, therefore, should be used to adjust the eddy current equipment for crack inspection/ verification.



IMPEDANCE PLANE (VIDEO) DISPLAY



TEST BLOCK
(NOT DRAWN TO SCALE)

Figure 1-7. Signatures of EDM Notches in Test Block

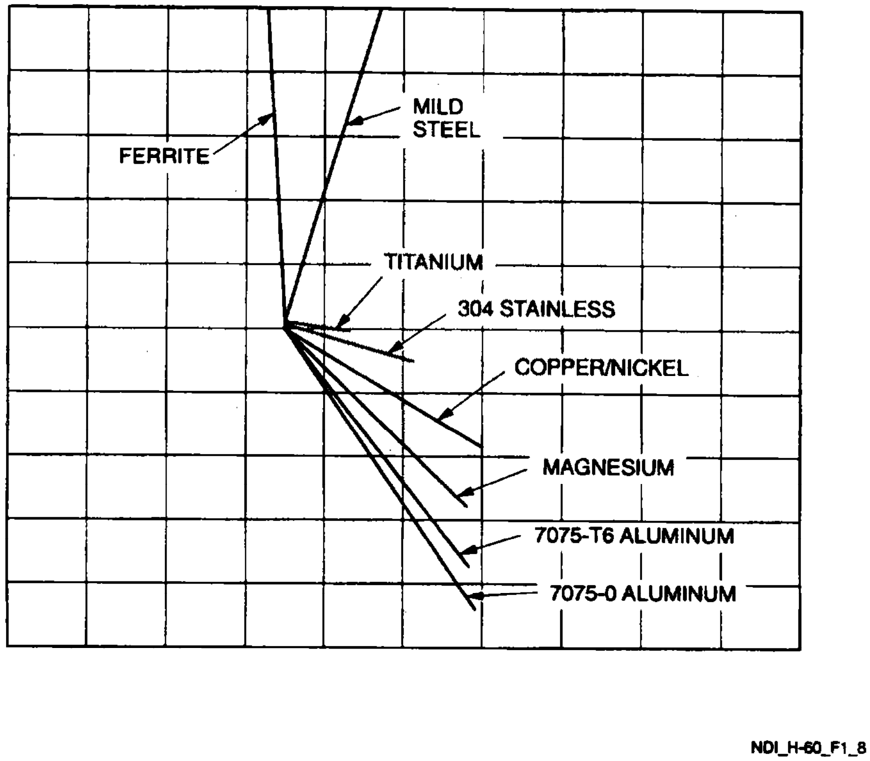


Figure 1-8. Typical Metal Sorting Display

1.4.12 Ultrasonic (UT) Method.

NOTE

Ultrasonic inspection shall be performed in accordance with the general application and techniques in TM 1-1500-335-23 (Nondestructive Inspection Methods manual) and the specific requirements of this manual.

Ultrasonic inspection uses high frequency sound waves as a probing medium to provide information as to the state of various materials. this method is effective for the inspection of most metals for surface and subsurface damage. The method requires that at least one surface of the part be accessible for transducer contact in the vicinity of the area to be examined. The inspection is accomplished by inducing the ultrasound into the part by coupling the transducer to the part and picking up reflections of this sound from within the part. Any marked changes in acoustic properties, defect, interface, or back surface will reflect sound back to the transducer. The detected ultrasonic reflections are electronically displayed on a Cathode Ray Tube (CRT) and interpreted for indications of defects. Accessory wedges can be used to provide adequate transducer mating to curved surfaces or to change the angle of the sound beam and wave of mode propagation.

1.4.12.1 Safety Precautions During Ultrasonic Inspection. Follow safety precautions and instructions contained in this manual and the Nondestructive Inspection Methods manual listed in Table 1-1.

WARNING

Electrical equipment shall not be operated in areas where combustible gases or vapors may be present, unless the equipment is explosion-proof.

a. If instrument is operated using AC power, use a grounded power cord.

b. Turn power OFF before connecting or disconnecting transducer cable or power cable.

1.4.12.2 Ultrasonic Instrument Standardization. The ultrasonic instrument used in ultrasonic inspection procedures described throughout this manual is listed in Table 1-7. Reference blocks, instrument settings, and standardization instructions for the ultrasonic instrument are included in the individual ultrasonic inspection procedures. Because of varied circumstances under which the inspections may be performed, instrument settings, as they are given in this manual, should be considered typical. Slight adjustment to the settings may be necessary to achieve the desired CRT presentation. Illustrations representing typical CRT presentation will, in most cases, include reference signals representing initial pulse, transducer, and/or wedge echoes that have been moved off the scope to make room for relevant indications. An effective ultrasonic inspection will depend largely upon the proper handling of the transducer; therefore, the following steps are recommended:

a. Clean ultrasonic transducer with a low-lint cloth, MIL-C-85043 or equivalent. Clean all contact surfaces when using a wedge or delay block. Apply couplant to these contact surfaces and carefully tighten the assembly prior to test.

NOTE

Scratches or similar surface blemishes remaining on the transducer or wedge may give false indications.

b. Use prescribed or equivalent couplant and in sufficient quantity to achieve proper coupling. The use of lubricants containing graphite, silicones, and glycerines is prohibited.

c. Apply adequate pressure to keep transducer in contact with part.

d. Use moderate speed for transducer search pattern. If transducer movement is too fast, a flaw could be passed over without a proper indication.

1.4.13 Acceptance/Rejection Criteria.

CAUTION

Misinterpretation of indications can result in rejectable parts being accepted and acceptable parts being rejected. Only NDI personnel trained and qualified in accordance with applicable military standards and technical manuals shall perform and interpret nondestructive inspections.

Nondestructive inspection procedures in this manual have been selected to enhance the safety of the aircraft and personnel. Inspection procedures (including primary and backup) have been outlined to enable NDI personnel to perform a reliable inspection of parts with respect to their design, composition, and accessibility. In the event that a final interpretation of an indication cannot be made, assistance from the next higher maintenance level shall be requested.

1.4.14 Equipment Used for NDI. Refer to Table 1-7 for a summary of equipment used for NDI in this manual. Equivalent equipment may be used unless specified otherwise in the inspection procedures.

1.4.15 Materials Used for NDI. Refer to Table 1-8 for a summary of materials used for NDI in this manual. Common commercial grade materials (cheesecloth, paper, etc.) are not listed. Equivalent materials may be used unless specified otherwise in inspection procedures.

1.4.16 Post Cleaning and Restoration of Part or Area After NDI. Upon completion of the NDI test and prior to restoration of protective finishes, it is necessary to clean off residual inspection materials from the part. This cleaning will vary based upon test method, contaminant, and subsequent processing of the part. In many instances, methods used for precleaning are acceptable for post cleaning. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

WARNING

Prolonged breathing of vapor from organic solvents, degreasers, or paint thinners is dangerous. Use respirators in confined areas per Occupational and Environmental Health Respiratory Protection Program (TB MED 502 (DLAM 1000.2)). Have adequate ventilation. Avoid prolonged skin contact. Wear rubber gloves and goggles.

a. Following all magnetic particle inspections, clean part by dipping or spraying with dry-cleaning solvent, P-D-680, Type II. Wipe dry with a clean, low-lint cloth, MIL-C-85043, or equivalent.

b. After post cleaning has been performed, the original protective finish or approved alternate must be restored to the part or area by appropriate personnel. Refer to applicable technical manuals listed in Table 1-1.

Table 1-7. Equipment Used for NDI

Fluorescent Penetrant Method	Fluorescent Penetrant Inspection Kit Black Light UV Kit Black Light Meter Black Light Bulbs Filter UV
Magnetic Particle Method	Yoke and Coil Kit Black Light Magnetic Particle Inspection Probe Magnetometer
Eddy Current Method	Eddy Current Inspection Unit Cable Assembly, Coaxial 6-feet long (1 required) Reference Block Aluminum (0.008, 0.020, and 0.040 EDM notches) Reference Block Titanium (0.008, 0.020, and 0.040 EDM notches) Reference Block Magnesium (0.008, 0.020, and 0.040 EDM notches) Reference Block - Block of Six Conductivity Samples Probe, straight, shielded surface 100 KHz-500 KHz Probe, right angle, shielded surface 100 KHz-500 KHz, 90° 1/2 inch drop
Ultrasonic Method	Ultrasonic Inspection Unit Cable Assembly, BNC to microdot Transducer 5 MHz 45°S Shear 1/4 x 1/4
Bond Testing Method	Bond Test Inspection Unit Cable Assembly Probe, Mechanical Impedance Analysis Probe Holder, spring loaded Test Block, Composite Defect Standard #1 Test Block, Composite Defect Standard #3 Test Block, Aluminum Honeycomb with 0.020 inch thick aluminum /honeycomb skin (refer to Appendix C) Test Block, Aluminum Honeycomb with 0.040 inch thick aluminum skin (refer to Appendix C) Test Block, Aluminum Honeycomb with 0.063 inch thick aluminum skin (refer to Appendix C)
Radiographic Method	Tripod X-Ray Tubehead Stand Signal Appliance Lamp Assembly X-Ray Unit (LPX-160 Water Cooled Digital) Film Processor

NOTE: Refer to Appendix B for equipment part number, national stock number, and manufacturer.

Table 1-8. Materials Used for NDI

Nomenclature	P/N or Specification	Manufacturer	National Stock Number
Fluorescent Penetrant Method			
Type I, Method C	AMS 2644 Level 3 or higher	General Services Administration (GSA)	6850-01-703-7406
Magnetic Particle Method			
Fluorescent Magnetic Inspection Compound	14AM	Magnaflux Div. of Illinois Tool Works Inc. 1301 W. Ainsle St. Chicago,IL 60656	6850-00-841-1347
Eddy Current Method			
Teflon Tape	MIL-I-23594	General Service Administration (GSA)	5970-00-812-7387
Ultrasonic Method			
Couplant, Ultrasonic	Ultragel II	Sonotech, Inc. 1413 Frasier St. Suite 2, Bldg. H P.O. Box 2189 Bellingham, WA 98226	6850-01-157-4348
Bond Test Method			
Teflon Tape	MIL-I-23594	General Service Administration (GSA)	5970-00-812-7387
Radiographic Method			
M-2 Film, Ready Pack, 14 inch x 17 inch	145 8926	Eastman Kodak Co. 343 State St. Rochester, NY 14650	6635-00-838-9116
AA-2 Film, Ready Pack 14 inch x 17 inch	145 9205	Eastman Kodak Co. 343 State St. Rochester, NY 14650	6635-00-850-3321

Table 1-8. Materials Used for NDI - Continued

Nomenclature	P/N or Specification	Manufacturer	National Stock Number
Miscellaneous Materials			
Gloves, Protective	ZZ-G-381	General Services Administration (GSA)	8415-00-823-7456
Gloves, Surgeon	E-008	Defense Services Administration (DSA)	1615-01-149-8843
Apron, General Purpose	A-A-55063	General Services Administration (GSA)	8415-00-082-6108
Face Shield	A-A-1770	General Services Administration (GSA)	4240-00-542-2048
Cloth, Low-Lint Cleaning	MIL-C-85043	General Services Administration (GSA)	7920-00-044-9281
Dry-Cleaning Solvent	P-D-680, Type II	General Services Administration (GSA)	6850-00-274-5421
Cleaning Solvent	MIL-C-38736	General Services Administration (GSA)	6850-00-538-0929
Scotch-Brite, Type A	L-P-0050	General Services Administration (GSA)	7920-00-659-9175
Acetone	O-A-51	American Society for Testing and Materials 100 Barr Harbor Drive Conshohonken, PA. 19428-2951	6810-00-223-2739
Isopropyl Alchohol	TT-I-735	General Services Administration (GSA)	6810-00-286-5435
Cleaning Solvent, General Purpose	DS-108	Dynamold Inc 2905 Shamrock Avenue Ft. Worth, TX. 76107	7930-01-367-0996
Electron Dielectric Solvent	0296-06	Sentry Chemical Co Inc 1481 Rock Mountain Blvd PO Box 748 Stone Mountain, GA 30083–1505	6850-01-375-5553

Table 1-8. Materials Used for NDI - Continued

Nomenclature	P/N or Specification	Manufacturer	National Stock Number
Positron Dielectric Solvent	060-6	ECOLINK Inc 1481 Rock Mountain Blvd Stone Mountain, GA 30083–1505	6850-01-412-0026
n–Propyl Bromide	0338-06	ECOLINK Inc 1481 Rock Mountain Blvd Stone Mountain, GA 30083–1505	6850-01-450-6162
Temporary Marking Materials			
Aircraft Marking Pencils (China Marker)	MIL-P-83953 Yellow	General Services Administration (GSA)	7510-00-537-6930

SECTION II

ROTOR SYSTEM

2. GENERAL.

2.1 CONTENTS. The rotor system inspection items covered in this section are those critical items of the H-60 helicopter series rotor blades, rotor head, and components listed in the Rotor System Inspection Index (Table 2-1). Corresponding inspection figures and applicable text paragraphs are listed opposite each inspection item. The index number for each item may be used to locate it in Figure 2-1.

Table 2-1. Rotor System Inspection Index

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
2	Split Cones	PT	2.2	2-2
*3	Ferrous Rotor System Bolts and Pins	MT	2.3	2-3
*4	Nonferrous Rotor System Bolts and Pins	PT	2.4	2-4
*5	Main Rotor Shaft Nut	MT	2.5	2-5
*6	Main Rotor Hub	ET	2.6	2-6
*7	Spindle	ET	2.7	2-7
8	Antiflap Bracket	ET	2.8	2-8
9	Droop Stop Support Ring Nut	ET	2.9	2-9
10	Balance Weight Bracket	MT	2.10	2-10
*11	Spindle Horn	ET	2.11	2-11
12	Droop Stop Cam	ET	2.12	2-12
13	Damper Assembly	ET	2.13	2-13
*14	Pitch Control Rods	ET	2.14	2-14
*15	Rotating Swashplate	ET	2.15	2-15
*16	Lower Link	ET	2.16	2-16
17	Bifilar Vibration Absorber	ET	2.17	2-17
18	Bifilar Weight	UT	2.18	2-18
18A	Bifilar Weight Bushings	PT	2.18A	2-18
18B	Bifilar Weight Tapered Washers	PT	2.18B	2-18
*19	Main Rotor Blade Tip Cap Fairing	ET	2.19	2-19
*20	Main Rotor Blade (Voids)	BT	2.20	2-20
*21	Main Rotor Blade Cuff Assembly	ET	2.21	2-21
*22	Tail Rotor Blade (Voids)	BT	2.22	2-22

Table 2-1. Rotor System Inspection Index - Continued

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
*23	Tail Rotor Blade (Fluid)	RT	2.23	2-23
*24	Tail Rotor Blade Tip Cap	ET	2.24	2-24
25	Tail Rotor Pitch Horn	ET	2.25	2-25
*26	Tail Rotor Pitch Control Rod Ends	MT	2.26	2-26
27	Pitch Beam Washer	MT	2.27	2-27
28	Pitch Beam Retaining Nut	MT	2.28	2-28
29	Pitch Beam	ET	2.29	2-29
*30	Tail Rotor Inboard/Outboard Retention Plates	ET	2.30	2-30

NOTE: *Indicates Flight Safety Part.

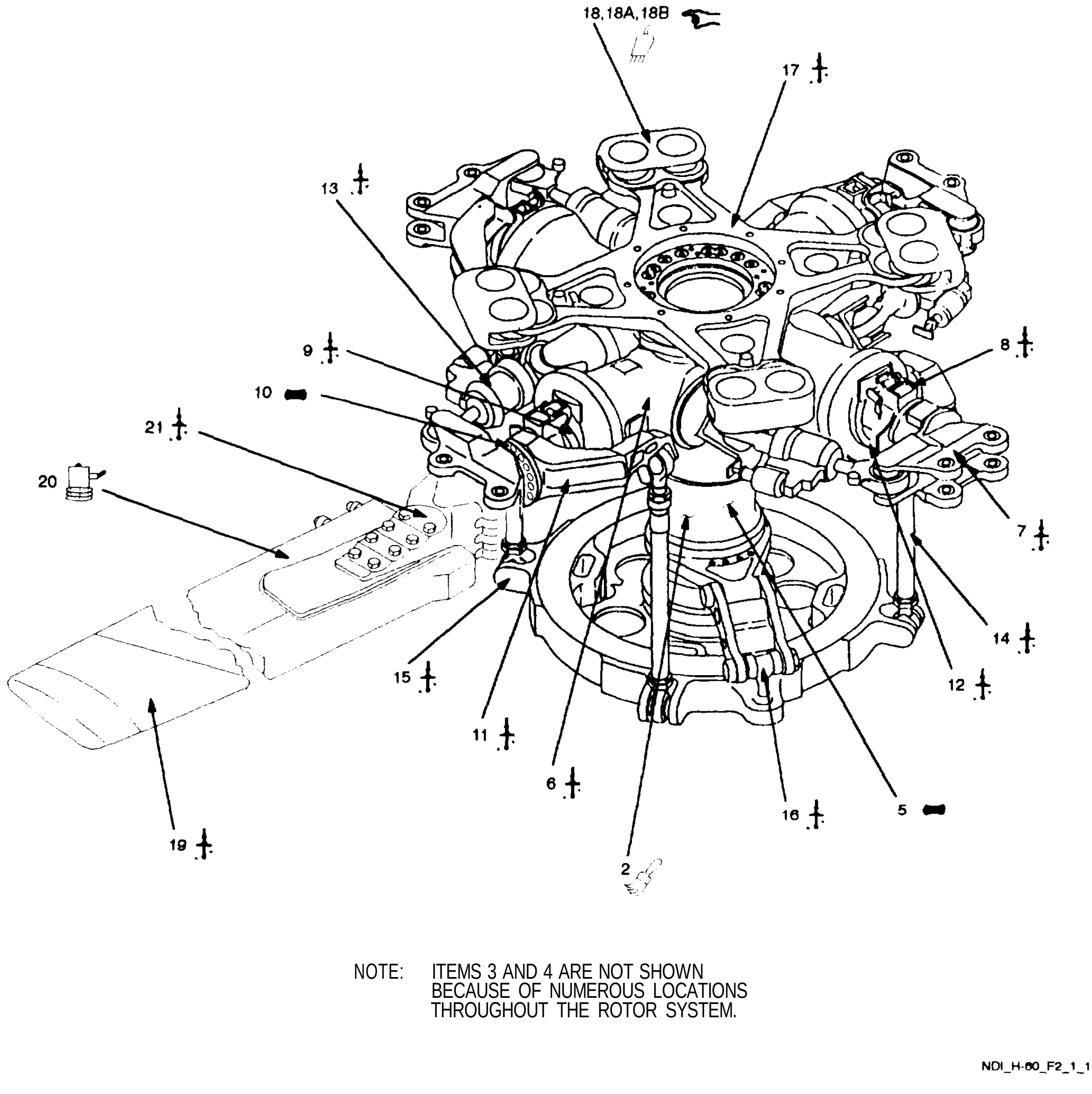


Figure 2-1. Rotor System (Sheet 1 of 2)

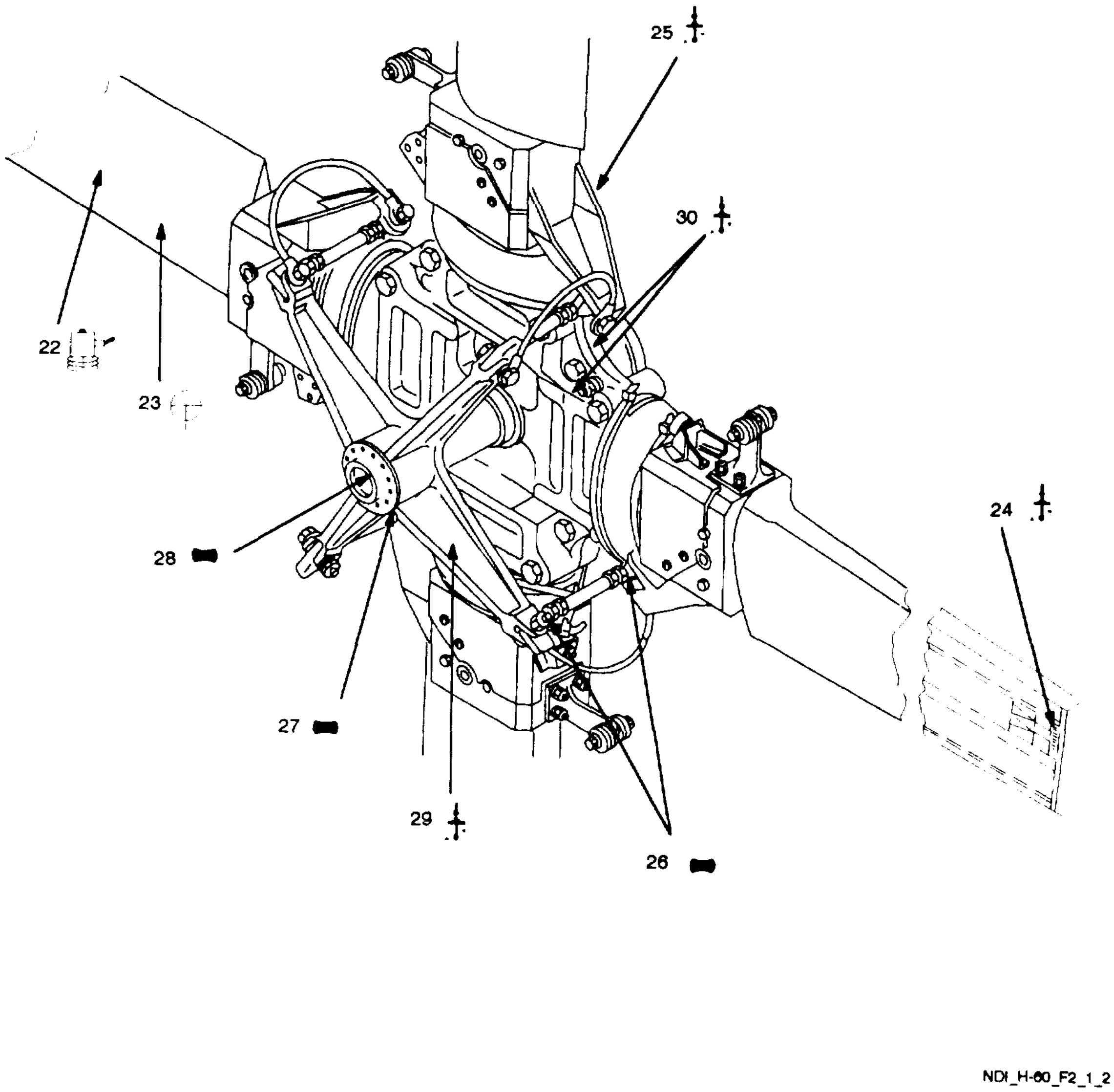


Figure 2-1. Rotor System (Sheet 2 of 2)

2.2 SPLIT CONES (PT).

2.2.1 Description (Figure 2-1, Index No. 2). The split cones and lower pressure plate, in conjunction with the main shaft nut, secure the shaft extension to the main shaft.

2.2.2 Defects. Defects may occur anywhere on the surface of the split cones. No cracks are allowed.

2.2.3 Primary method. Fluorescent Penetrant.

2.2.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

2.2.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the split cones removed in accordance with the applicable technical manuals listed in Table 1-1.

2.2.3.3 Access. Not applicable.

2.2.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.2.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 2-2.

2.2.3.6 Making and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.2.4 Backup Method. None required.

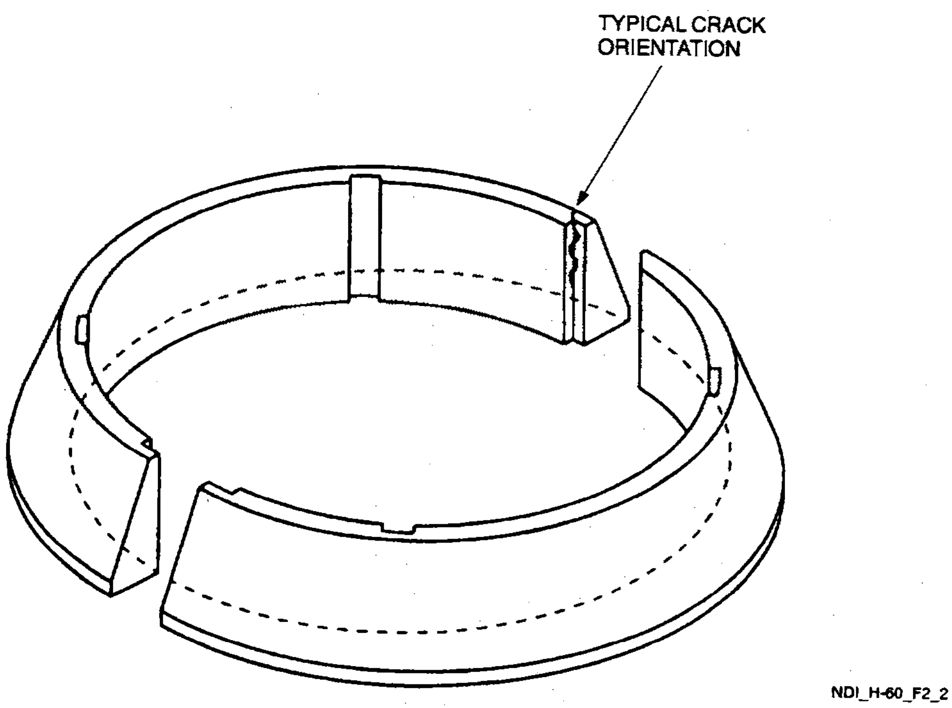


Figure 2-2. Split Cones

2.2.5 System Securing. Clean the split cones to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The split cones require installation in accordance with the applicable technical manuals listed in Table 1-1.

2.3 FERROUS ROTOR SYSTEM BOLTS AND PINS (MT).

2.3.1 Description (Figure 2-1. Index No. 3). This inspection is peculiar to all ferrous bolts and pins contained within the rotor system.

2.3.2 Defects. Defects may occur anywhere on the surface of the bolt. No cracks are allowed.

2.3.3 Primary Method. Magnetic Particle.

2.3.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

d. Fluorescent Magnetic Particles, refer to Table 1-8

e. Consumable Materials, refer to Table 1-8

f. Aircraft Marking Pencil, refer to Table 1-8

NOTE

Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

2.3.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the bolts or pins removed in accordance with the applicable technical manuals listed in Table 1-1.

2.3.3.3 Access. Not applicable.

2.3.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.3.3.5 NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

2.3.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. The position required for this inspection is illustrated in Figure 2-3.

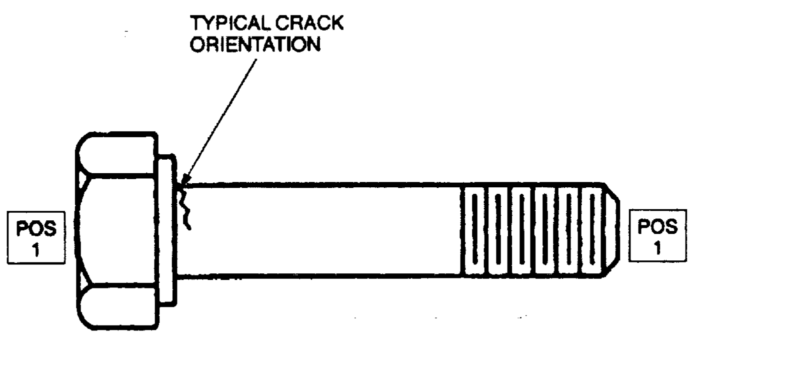


Figure 2-3. Ferrous Rotor System Bolts and Pins

a. Select AC on the AC/DC switch.
b. Place probe/yoke on part in position 1 as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.

2.3.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.3.3.8 Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

2.3.4 Backup Method**.** None required.

2.3.5 System Securing**.** Clean the bolts or pins thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and restoration of Part or Area After NDI, paragraph 1.4.16. The bolts or pins require installation in accordance with the applicable technical manuals listed in Table 1-1.

2.4 NONFERROUS ROTOR SYSTEM BOLTS AND PINS.

2.4.1 Description (Figure 2-1, Index No. 4)**.** This inspection is peculiar to all nonferrous bolts and pins contained within the rotor system.

2.4.2 Defects**.** Defects may occur anywhere on the surface of the bolt or pins. No cracks are allowed.

2.4.3. Primary Method**.** Fluorescent Penetrant.

2.4.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts..

2.4.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the bolts or pins removed in accordance with the applicable technical manuals listed in Table 1-1.

2.4.3.3 Access. Not applicable.

2.4.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.4.3.5Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 2-4.

2.4.3.6Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.4.4 Backup Method**.** None required.

2.4.5 System Securing**.** Clean the bolt or pins to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The bolts and pins require installation in accordance with the applicable technical manual listed in Table 1-1.

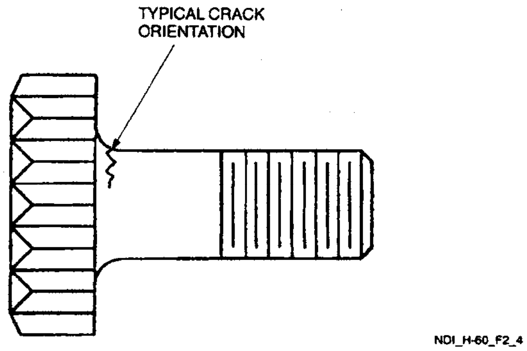


Figure 2-4. Nonferrous Rotor System Bolts and Pins

2.5 MAIN ROTOR SHAFT NUT (MT).

2.5.1 Description (Figure 2-1, Index No. 5). The main rotor shaft nut threads onto the top of the main rotor shaft and holds the shaft extension in place on the main rotor shaft.

2.5.2 Defects. Defects may occur anywhere on the surface of the main rotor shaft nut, especially the inside diameter thread roots. No cracks are allowed.

2.5.3 Primary Method. Magnetic Particle.

2.5.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking pencil, refer to Table 1-8

2.5.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the main rotor shaft nut removed in accordance with the applicable technical manuals listed in Table 1-1.

2.5.3.3 Access. Not applicable.

2.5.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.5.3.5 NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

2.5.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 2-5.

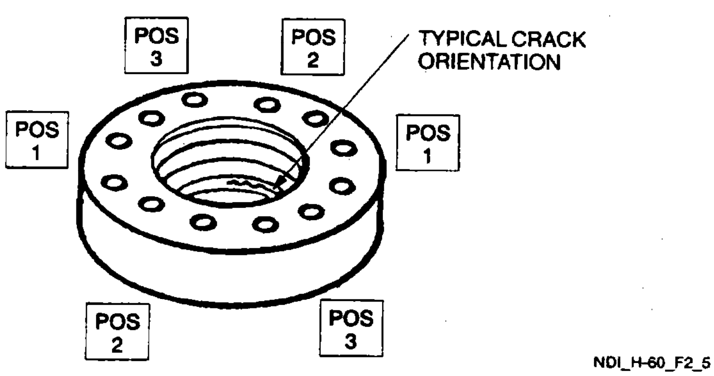


Figure 2-5. Main Rotor Shaft Nut

a. Select AC on the AC/DC power switch.

b. Place probe/yoke on part in position 1 as shown.

c. Press the test switch and apply a light coat of magnetic particle media at thesame time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.

d. Inspect for cracks using the black light.

e. Demagnetize before moving to the next position. Refer to paragraph 2.5.3.8.

f. Repeat steps a. through e. for positions 2 and 3.

2.5.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.5.3.8 Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

2.5.4 Backup Method. None required.

2.5.5 System Securing. Clean the main rotor shaft nut thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The main rotor shaft nut requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.6 MAIN ROTOR HUB (ET).

2.6.1 Description (Figure 2-1. Index No. 6). The main rotor hub is part of the main rotor head which transmits movements of the main transmission to the four main rotor blades.

2.6.2 Defects. Defects may occur anywhere on the surface of the main rotor hub. No cracks are allowed.

2.6.3 Primary Method. Eddy Current.

2.6.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched titanium (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8

2.6.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the main rotor hub shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.6.3.3 Access. Access to the main rotor hub is from the UR engine cowl (Figure 1-4, Items 3T-7 and 4T-8).

2.6.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.6.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19eII.

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 30°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

2.6.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-6.

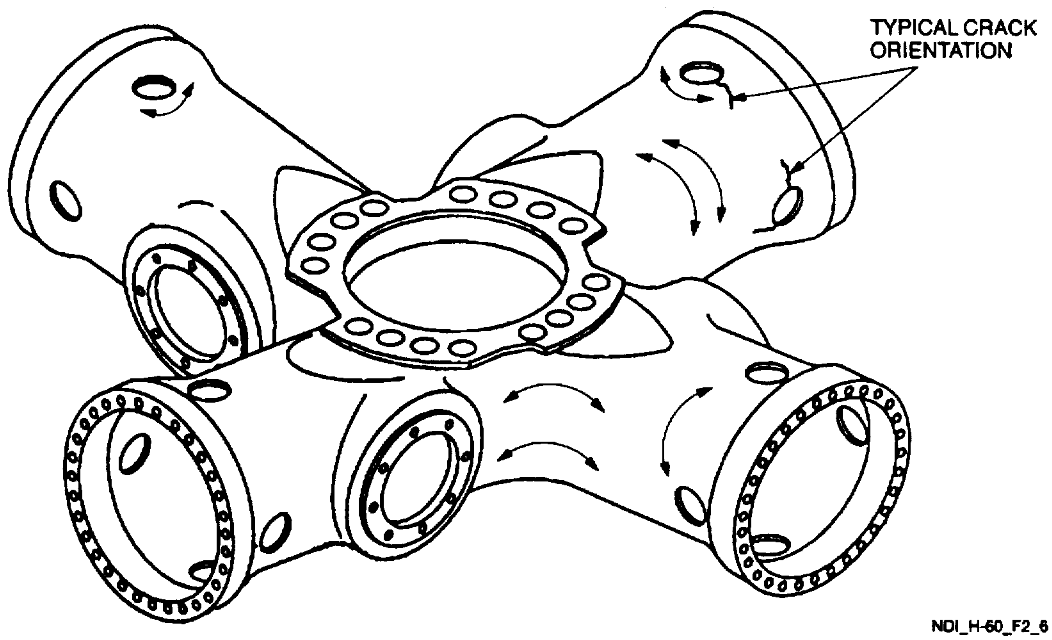
a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 2.6.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.6.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.



ARROWS INDICATE SCAN PATHS

Figure 2-6. Main Rotor Hub

2.6.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.6.4 Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7

2.6.5 System Securing. The main rotor hub, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.7 SPINDLE (ET).

2.7.1 Description (Figure 2-7. Index No. 7). The spindle couples the blade to the main rotor head. The main rotor head contains four spindle assemblies.

2.7.2 Defects. This inspection is used to verify crack indications found visually on the spindle. No cracks are allowed.

2.7.3 Primary Method. Eddy Current.

2.7.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

c. Probe, right angle, shielded surface, 100 KHz-500 KHz; 90° 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched titanium (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8

2.7.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the spindle shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.7.3.3 Access. Access to the spindle is from the UR engine cowl (Figure 1-4, Items 3T-7 and 4T-8).

2.7.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.7.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e‖.

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 30°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	-80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

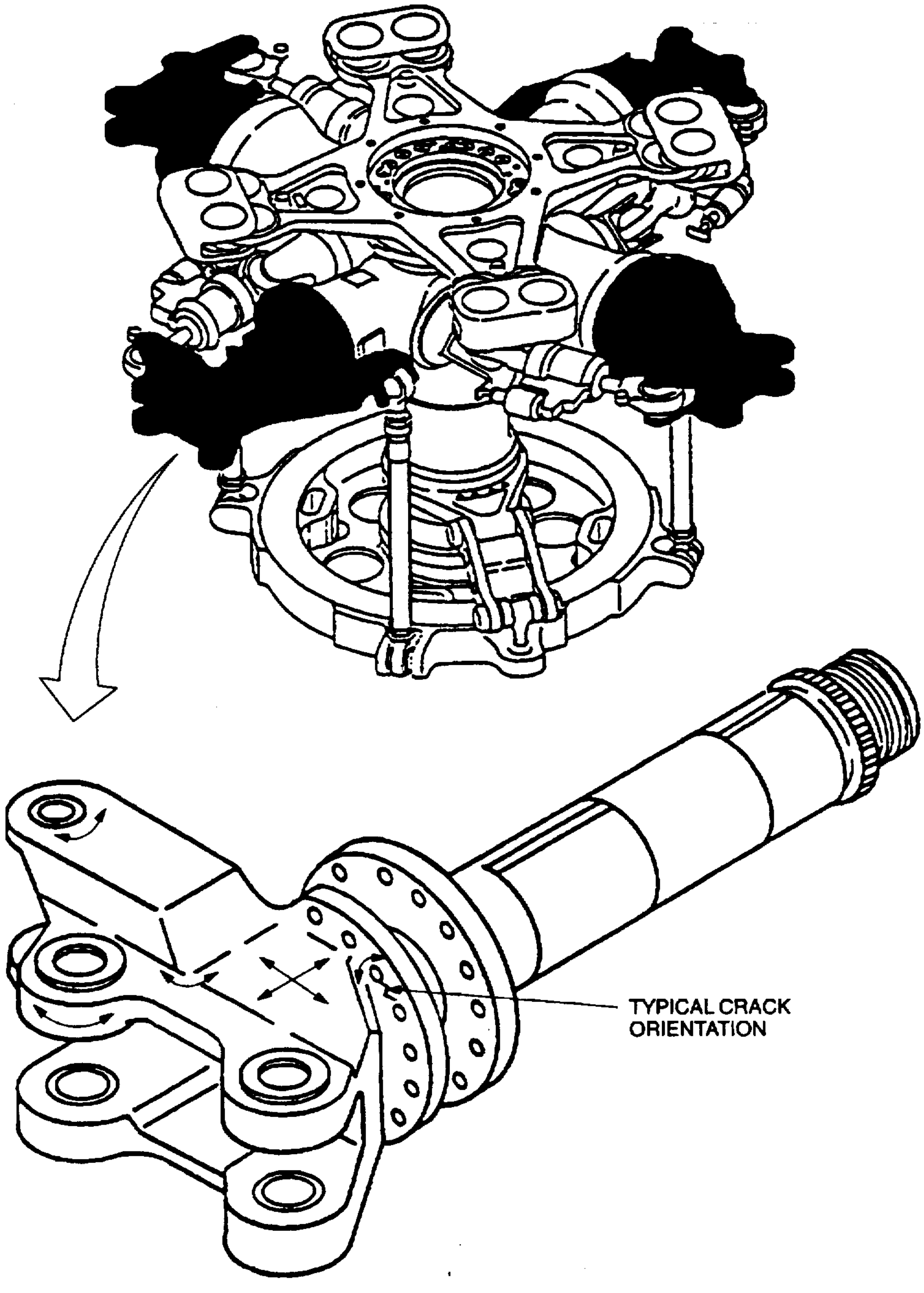
(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

2.7.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-7.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.



ARROWS INDICATE SCAN PATHS

Figure 2-7. Spindle

NOTE

Either probe identified in paragraph 2.7.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.7.3.5 b.(1), (2), and (3) shall be repeated each time a change is made.

2.7.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.7.4 Backup Method. None required.

2.7.5 System Securing. The spindle, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.8 ANTIFLAP BRACKET (ET).

2.8.1 Description (Figure 2-1. Index No. 8). The antiflap brackets are installed on each of the four main rotor spindle modules next to the hub. The antiflapping assemblies prevent the blades from flapping when the main rotor head is slowing down or stopped.

2.8.2 Defects. This inspection is used to verify crack indications found visually on the antiflap bracket. No cracks are allowed.

2.8.3 Primary Method. Eddy Current.

2.8.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched **titanium** (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

2.8.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the antiflap bracket shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.8.3.3 Access. Access to the antiflap bracket is from the UR engine cowl (Figure 1-4, Items 3T-7 and 4T-8).

2.8.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.8.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 30°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

2.8.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-8.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 2.8.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.8.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

2.8.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.8.4 Backup Method. None required.

2.8.5 System Securing. The antiflap bracket, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.9 DROOP STOP SUPPORT RING NUT (ET).

2.9.1 Description (Figure 2-1. Index No. 9). The droop stop support ring nut holds the droop stop support ring and outer sleeve assembly in place on the spindle.

2.9.2 Defects. This inspection is used to verify crack indications found visually on the droop stop support ring nut. No cracks are allowed.

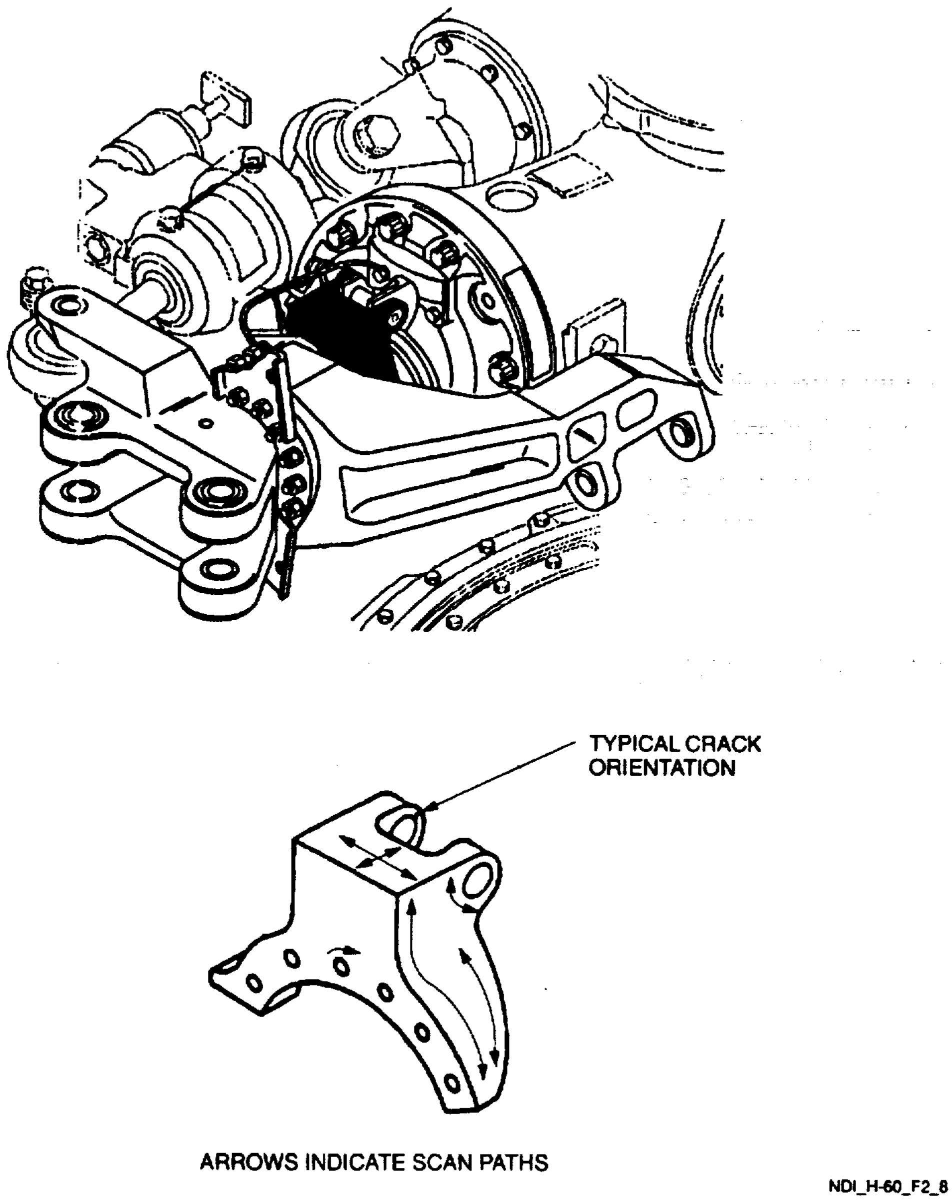


Figure 2-8. Antiflap Bracket

2.9.3 Primary Method. Eddy Current.

2.9.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

c. Probe, right angle, shielded surface, 100KHz-500 KHz, 90° 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8

2.9.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the droop stop support ring nut shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.9.3.3 Access. Access to the droop stop support ring nut is from the UR engine cowl (Figure 1-4, Items 3T-7 and 4T-8).

2.9.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.9.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-1 9e.

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

2.9.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-9.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

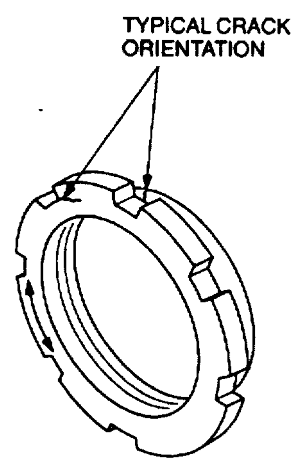
NOTE

Either probe identified in paragraph 2.9.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.9.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

2.9.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.9.4 Backup Method. None required.

2.9.5 System Securing. The droop stop support ring nut, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.



ARROWS INDICATE SCAN PATHS

Figure 2-9. Droop Stop Support Ring Nut

2.10 BALANCE WEIGHT BRACKET (MT).

2.10.1 **Description (Figure 2-1. Index NO. 10).** There are two balance weight brackets attached to each of the four spindles. The brackets provide the means of attaching the balance weights for balancing the rotor head assembly.

2.10.2 **Defects**. Defects may occur anywhere on the surface of the balance weight bracket. No cracks are allowed.

2.10.3 **Primary Method**. Magnetic Particle.

2.10.3.1 **NDI Equipment and Materials**. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

d. Fluorescent Magnetic Particles, refer to Table 1-8

e. Consumable Materials, refer to Table 1-8

f. Aircraft Marking Pencil, refer to Table 1-8

NOTE

Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

2.10.3.2 **Preparation of Helicopter**. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the balance weight bracket shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.10.3.3 **Access**. Access to the balance weight bracket is from the UR engine cowl (Figure 1-4, Items 3T-7 and 4T-8).

2.10.3.4 **Preparation of Part.** The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.10.3.5 **NDI Equipment Settings**. Refer to Magnetic Particle Method, paragraph 1.4.8.

2.10.3.6 **Inspection Procedure**. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 2-10.

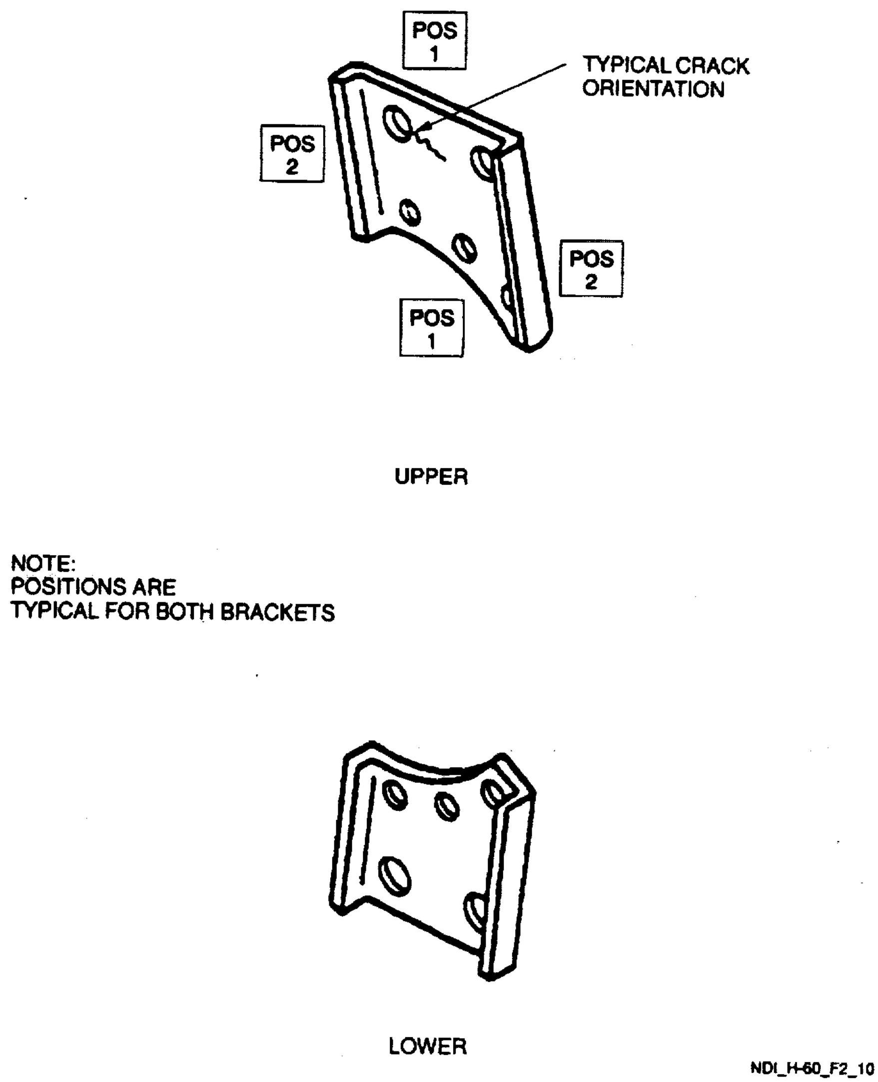


Figure 2-10. Balance Weight Bracket

a. Select AC on the AC/DC power switch.

b. Place probe/yoke on part in position 1 as shown.

c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.

d. Inspect for cracks using the black light.

e. Demagnetize before moving to the next position. Refer to paragraph 2.10.3.8.

f. Repeat steps a. through e. for position 2.

2.10.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.10.3.8 Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

2.10.4 Backup Method. None required.

2.10.5 System Securing. Clean the balance weight bracket thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The balance weight bracket, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.11 SPINDLE HORN (ET).

2.11.1 Description (Figure 2-1. Index No. 11). The spindle horn is attached to the main rotor spindle and transmits pitch movement from the rotary swashplate, through the pitch control rod to rotate the spindle, and changes the blade angle.

2.11.2 Defects. Defects may occur anywhere on the surface of the spindle horn. All areas where rework has been performed shall be inspected for cracks. No cracks are allowed.

2.11.3 Primary Method. Eddy Current.

2.11.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8

2.11.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the spindle horn shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.11.3.3 Access. Access to the spindle horn is from the UR engine cowl (Figure 1-4, Items 3T-7 and 4T-8).

2.11.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.11.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e[II].

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

2.11.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-11.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 2.11.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.11.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

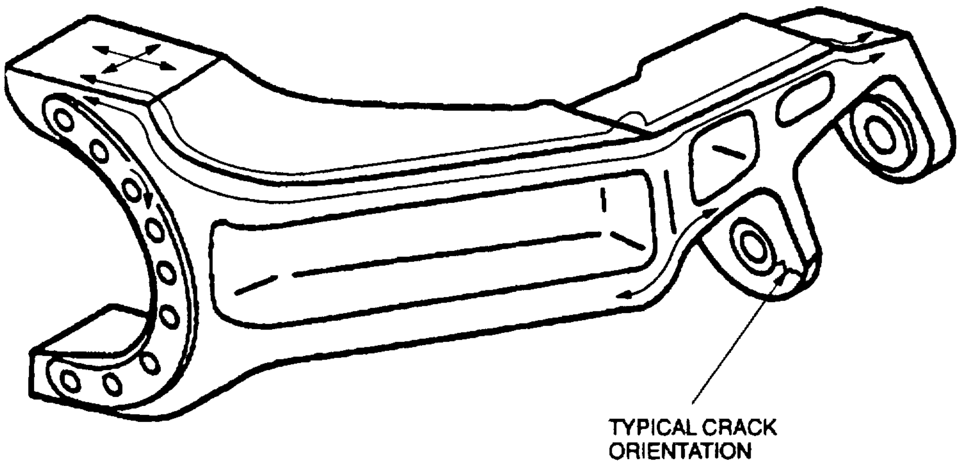


Figure 2-11. Spindle Horn

2.11.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.11.4 Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

2.11.5 System Securing. The spindle horn, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.12 DROOP STOP CAM (ET).

2.12.1 Description (Figure 2-1. Index No. 1). The droop stop cam is the contact point between the main rotor spindle and main rotor hubs which limit the droop of the blades when the rotor head is slowing or stopped.

2.12.2 Defects. This inspection is used to verify crack indications found visually on the droop stop cam. No cracks are allowed.

2.12.3 Primary Method. Eddy Current.

2.12.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8

2.12.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the droop stop cam shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.12.3.3 Access. Access to the droop stop cam is from the UR engine cowl (Figure 1-4, Items 3T-7 and 4T-8).

2.12.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.12.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency Fl	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 560		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	-80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

2.12.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-12.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

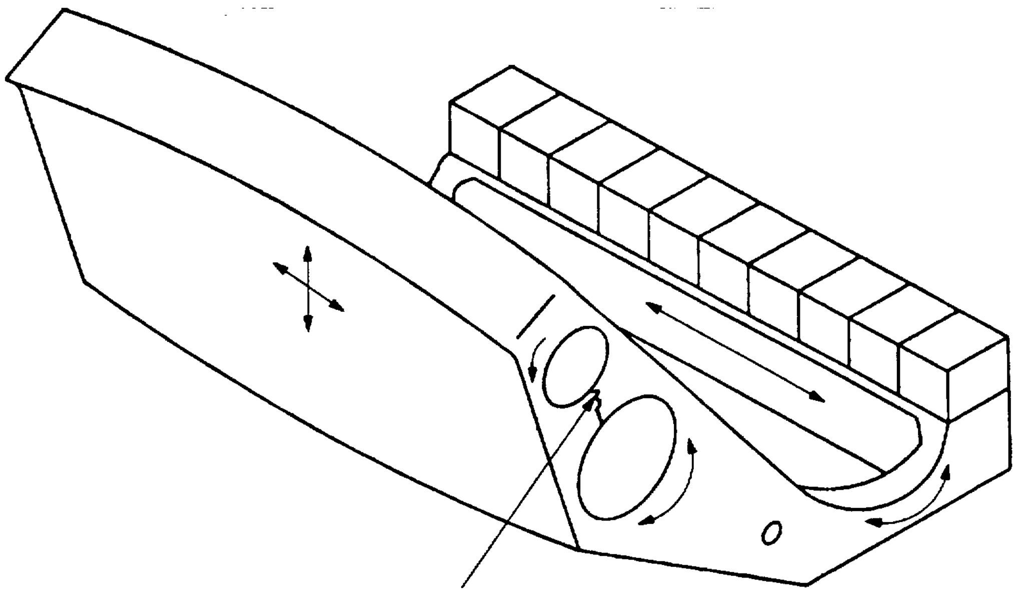


Figure 2-12. Droop Stop Cam

NOTE

Either probe identified in paragraph 2.12.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.12.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

2.12.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.12.4 Backup Method. None required.

2.12.5 System Securing. The droop stop cam, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.13 DAMPER ASSEMBLY (ET).

2.13.1 Description (Figure2-1. Index No.13). Dampers are installed between each of the main rotor hub and spindle modules to restrain lead and lag motion of the blades during rotation and to absorb rotor head engagement loads.

2.13.2 Defects. This inspection is used to verify crack indications found visually on the damper assembly. No cracks are allowed.

2.13.3 Primary Method. Eddy Current.

2.13.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)

f. Reference Block, three-notched **titanium** (0.008, 0.020, 0.040 EDM notches)

g. Teflon Tape, refer to Table 1-8

h. Aircraft Marking Pencil, refer to Table 1-8

2.13.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the damper assembly shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.13.3.3 Access. Access to the damper assembly is from the UR engine cowl (Figure 1-4, Items 3T-7 and 4T-8).

2.13.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.13.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-1 9e1.

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- (56° aluminum) (300 titanium)		
Probe drive	- mid		
LPF	- 100		
HPF	-0		
H Pos	- 80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

2.13.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-13.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 2.13.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.13.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

2.13.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.13.4 Backup Method. None required.

2.13.5 System Securing. The damper assembly, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.14 PITCH CONTROL RODS (ET).

2.14.1 Description (Figure 2-1. Index No. 14). The pitch control rods extend from the rotating swashplate to the blade pitch horn on the spindle. The pitch control rods transmit all movement of the flight controls from the swashplate to the main rotor blades.

2.14.2 Defects. Defects may occur anywhere on the surface of the pitch control rods. All areas where rework has been performed shall be inspected for cracks. No cracks are allowed.

2.14.3 Primary Method. Eddy Current.

2.14.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched titanium (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

2.14.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the pitch control rods shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

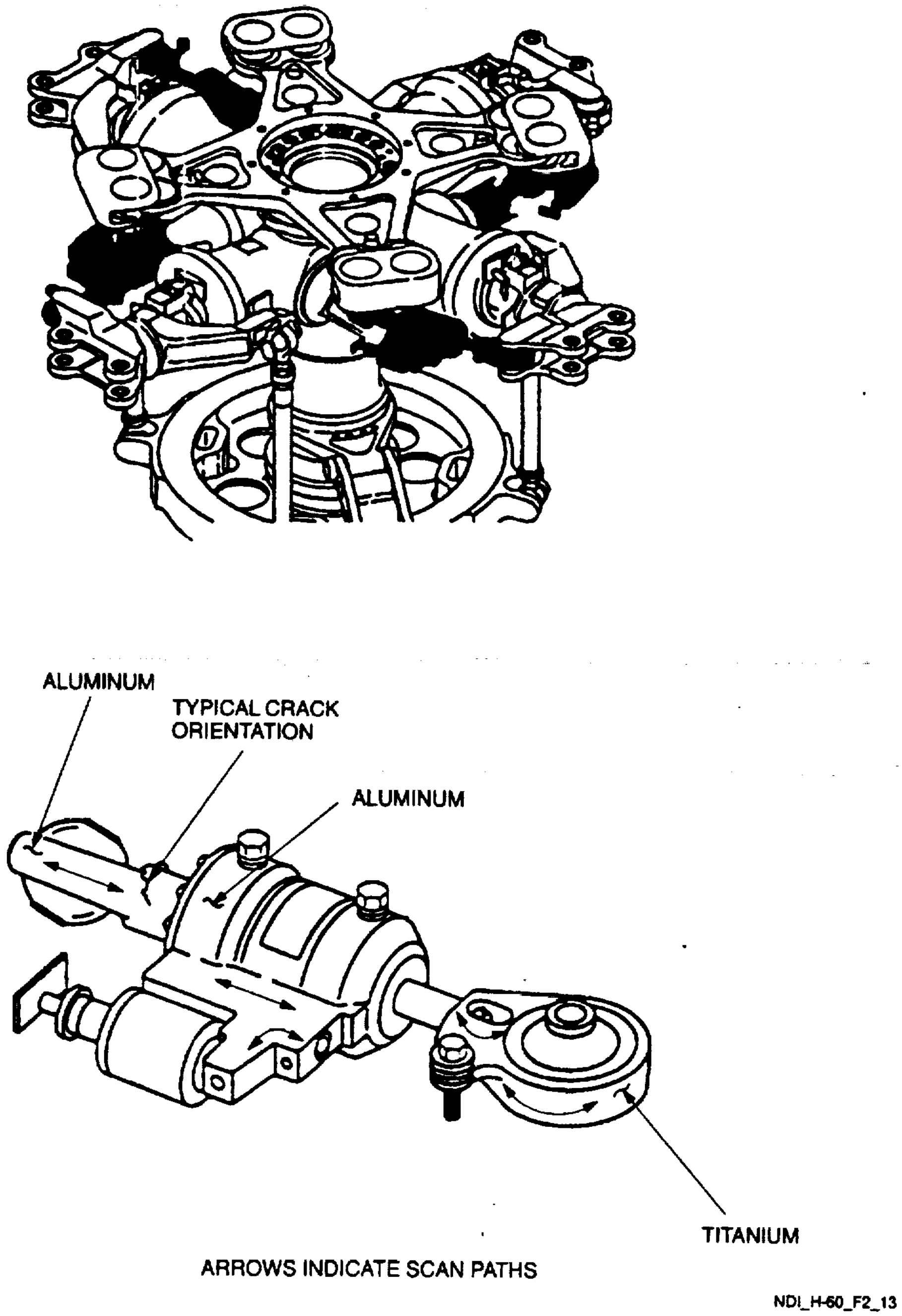


Figure 2-13. Damper Assembly

2.14.3.3 Access. Access to the pitch control rods is from the LR engine cowl (Figure 1-4, Items 3T-7 and 4T-8).

2.14.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.14.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19eII.

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 30°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

2.14.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-14.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 2.14.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.14.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

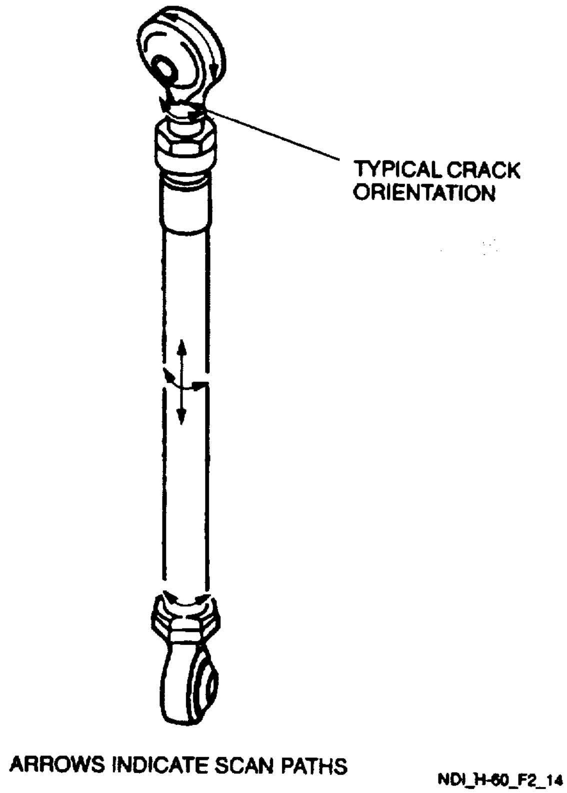


Figure 2-14. Pitch Control Rods

2.14.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.14.4 Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

2.14.5 System Securing. The pitch control rods, if removed, require installation in accordance with the applicable technical manuals listed in Table 1-1.

2.15 ROTATING SWASHPLATE (ET).

2.15.1 Description (Figure 2-1. Index No. 15). The swashplate has stationary and rotating discs joined by a bearing. It transmits flight control movement to the main rotor head through the four pitch control rods. The swashplate is permitted to slide on the main rotor shaft and tilt in any direction following the motion of the flight controls.

2.15.2 Defects. Defects may occur anywhere on the surface of the swashplate. No cracks are allowed.

2.15.3 Primary Method. Eddy Current.

2.15.3.1 NDI Equipment and Materials. (Refer to Appendix B.) a. Eddy Current Inspection Unit b. Probe, straight, shielded surface, 100 KHz-500 KHz c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8

2.15.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the swashplate shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.15.3.3 Access. Access to the swashplate is from the LR engine cowl (Figure 1-4, Items 3T-7 and 4T-8).

2.15.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.15.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	-80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

2.15.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-15.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

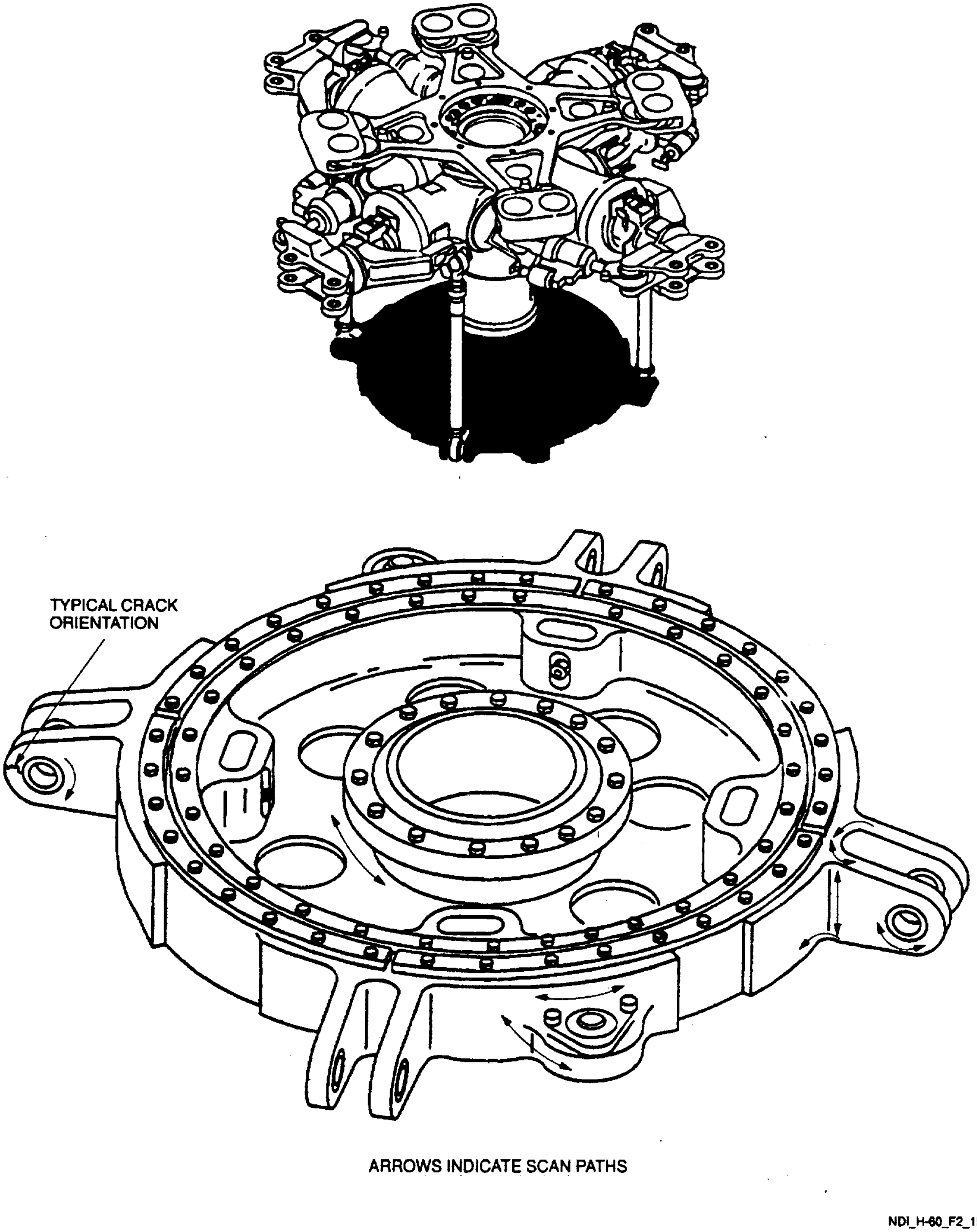


Figure 2-15. Rotating Swashplate

NOTE

Either probe identified in paragraph 2.15.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.15.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

2.15.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.15.4 Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

2.15.5 System Securing. The swashplate, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.16 LOWER LINK (ET).

2.16.1 Description (Figure 2-1. Index No. 16). The lower link provides the attaching point for the rotating scissors and rotating swashplate.

2.16.2 Defects. Defects may occur anywhere on the surface of the lower link. No cracks are allowed.

2.16.3 Primary Method. Eddy Current.

2.16.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched titanium (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8

2.16.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the lower link shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.16.3.3 Access. Access to the lower link is from the UR engine cowl (Figure 1-4, Items 3T-7 and 4T-8).

2.16.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.16.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency Fl	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 30°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

2.16.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-16.

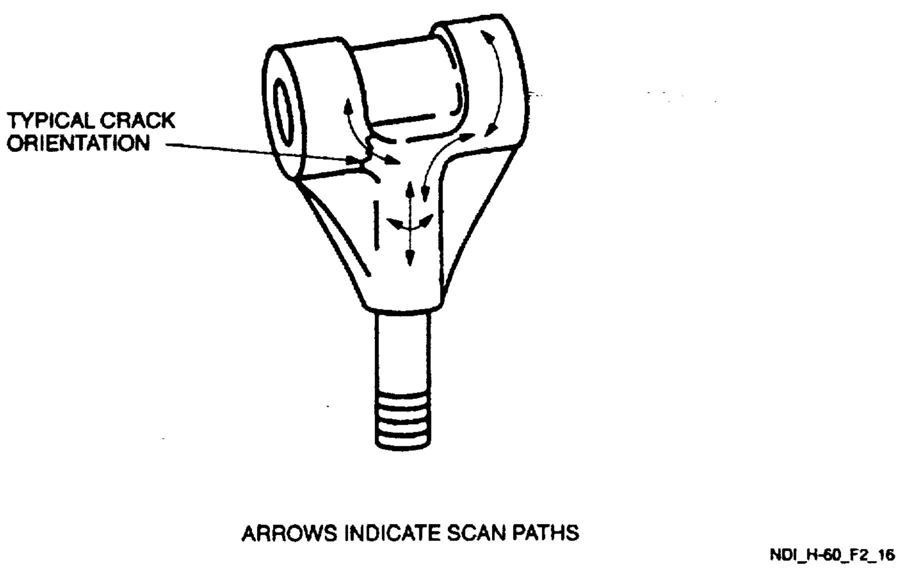


Figure 2-16. Lower Link

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 2.16.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.16.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

2.16.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.16.4 Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

2.16.5 System Securing. The lower link, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.17 BIFILAR VIBRATION ABSORBER (ET).

2.17.1 Description (Figure P-1. Index No.17). The bifilar vibration absorber absorbs vibrations and stresses. It not only contributes to longer life of all components, but to a smoother ride for the crew and passengers.

2.17.2 Defects. This inspection is used to verify crack indications found visually on the bifilar vibration absorber. No cracks are allowed.

2.17.3 Primary Method. Eddy Current.

2.17.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8

2.17.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the bifilar vibration absorber shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.17.3.3 Access. Access to the bifilar vibration absorber is from the UR engine cowl (Figure 1-4, Items 3T-7 and 4T-8).
2.17.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.
2.17.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e[11].

Frequency Fl	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

2.17.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-17.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 2.17.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.17.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

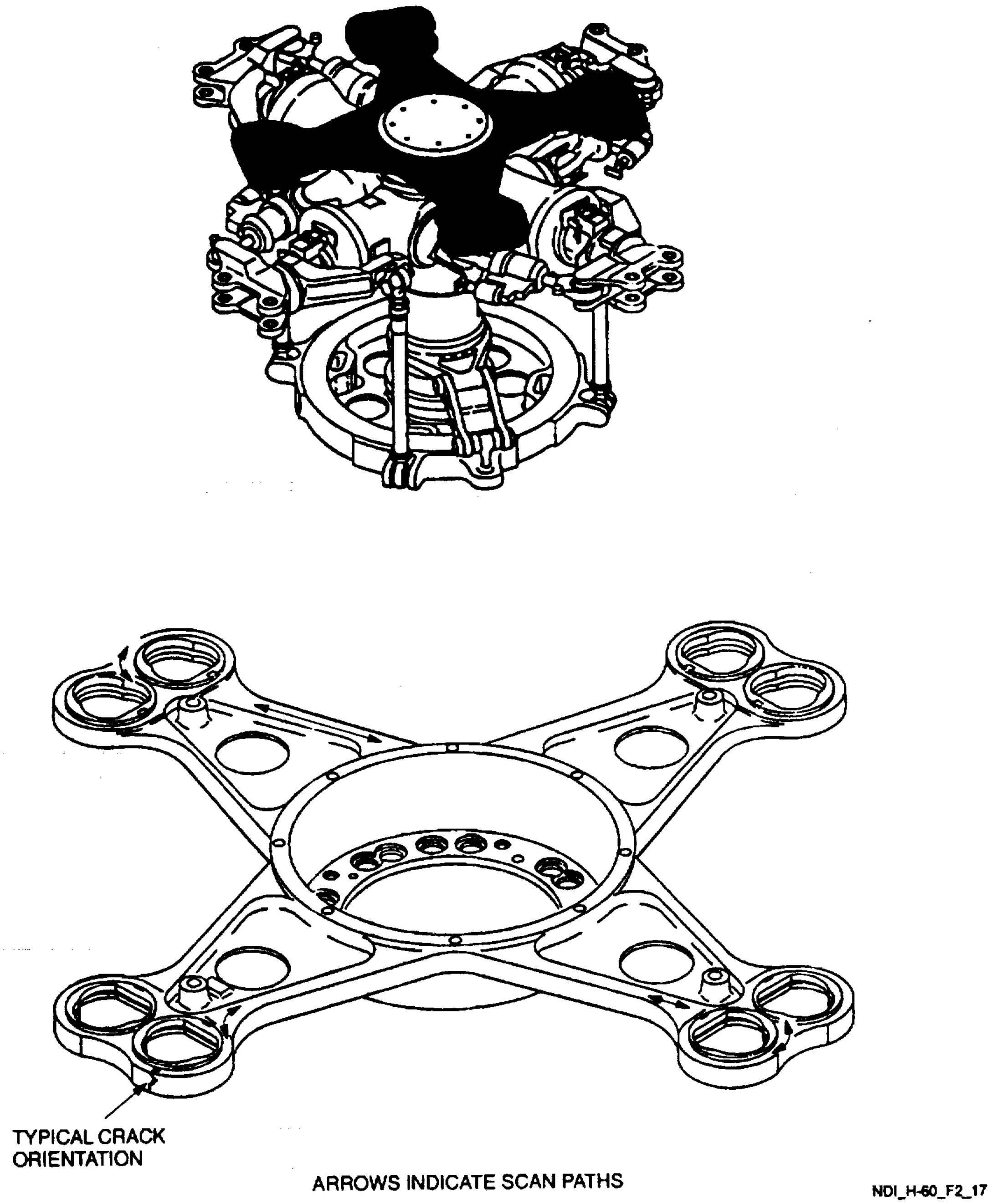


Figure 2-17. Bifilar Vibration Absorber

2.17.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.17.4 Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

2.17.5 System Securing. The bifilar vibration absorber, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.18 BIFILAR WEIGHT (UT).

2.18.1 Description (Figure 2-1. Index No.18). The bifilar weight is part of an assembly that pivots on two points at the end of each bifilar absorber support arm.

2.18.2 Defects. This inspection is to detect manufacturing defects in the bond line between the two legs and the body of the weight.

2.18.3 Primary Method. Ultrasonic 2.18.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Ultrasonic Inspection Unit

b. Transducer, 5.0 MHz,45s shear wave, 1/4 x 1/4 inch element

c. Cable Assembly, BNC to Microdot

d. Consumable Materials, refer to Table 1-8

e. Aircraft Marking Pencil, refer to Table 1-8

2.18.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance.

Partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the bifilar weight shall be removed from the helicopter in accordance with applicable technical manuals listed in Table 1-1.

2.18.3.3 Access. Access to the bifilar weights is from the UR engine cowl (Figure 1-4, Items 3T-7 and 4T-8).

2.18.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.18.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Ultrasonic Inspection Unit, USD-15S:

(SETUP - DEFAULT SETTINGS)

DIALOG ENGLISH

(SETUP - DEFAULT SETTINGS)

DIALOG	ENGLISH
UNIT	INCH
(BASICS)	
GAIN	45db
RANGE	2.5 in
MTL VEL	113.0 in/ms
D-DELAY	0.00 in
P-DELAY	0.00 ms
(PULSER)	
DAMPING	100 ohm
A SCAN	NORMAL
PRF-MOD	AUTOLOW
PRF-VAL	See Note 1
(RECEIVER)	
FREQ	5 MHz
REJECT	0%
RECTIF	FULL-W
DUAL	OFF
(AMPLITUDE)	
FINE db	0.00db
LO-NOIS	OFF
PUL-AMP	150V
PUL-WID	30NS
(GATES)	See Note 2
(MEAS)	See Note 3
(KEYS)	See Note 3
(ANGLE)	See Note 3
(DAC)	
DAC-MOD	OFF
DAC-REC	OFF
A-START	See Note 3
DAC-ECH	0

(1) WHEN PULSE REP FREQUENCY IS IN AN AUTOMATIC MODE THE VALUE IS ELECTRONICALLY DETERMINED.

(2) NOT USED - DISABLE BY SELECTING LOGIC - OFF

(3) NOT USED - LEAVE AT DEFAULT VALUES

b. Refer to Ultrasonic Method, paragraph 1.4.12. Set up on free edge of weight as follows:

(1) SET-UP - Attach the transducer and cable to the ultrasonic unit. Couple the transducer to the upper surface of the bifilar weight leg with the sound beam directed towards the free edge. The transducer' s forward edge will be over the edge of the bifilar weight, slide the transducer back and forth in this position to produce a signal from the lower free edge of the weight. This signal is generated by the first leg of the sound beam path (1/2 skip distance). Verify the signal by " damping" the lower edge with a finger moistened with couplant. See Fig. 2-18, view A. Maximize this signal and adjust the gain to obtain 100% Full Screen Height (FSH). Mark the location of this signal along the time base line of the CRT with an aircraft marking pencil and write down the gain setting as " Gain #1_____ bD" . Slide the transducer away from the free edge, the lower edge signal will decrease in amplitude and be replaced with another signal approximately twice the distance from the IP. This signal is from the upper free edge generated from the second leg of the sound path (full skip distance). See Fig. 2-18, view B. Verify this signal by " damping" the upper edge and adjust the amplitude of this signal to 100% FSH. Mark the location of this signal along the time base line and write down the gain setting as " Gain #2_____ dB" .

(2) INSPECTION

(a) Couple the transducer to the upper inboard surface of the bifilar weight leg so that the sound beam is directed towards the sintered bond line. Inspect the entire length of both the upper and lower bond lines. See Fig. 2-18, view C.

(b) Ultrasonic inspection of the full thickness is required for Zones A and C.

(c) Inspection of the full thickness may not be possible in Zone B.

(3) ACCEPTANCE/REJECTION CRITERIA - A signal detected at or between the locations marked along the time base line is considered an unbond. Indications detected near the location of the signal from the upper free edge will be evaluated at the " Gain #2_____ dB" setting. A signal of 20% FSH or greater is rejectable. A signal that appears near the location of the signal from the lower free edge will be evaluated at the " Gain #l_____ dB" setting. A signal of 20% or greater is rejectable.

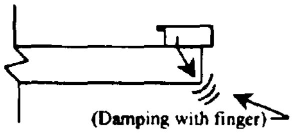
2.18.3.6 Inspection Procedure. Couple the transducer to the upper surface of the bifilar weight. Direct the sound beam towards the sintered bond line. Slide the transducer back and forth to interrogate the sintered bond line with both legs of the sound beam. Any signals appearing on the CRT at or between the markings along the time base line greater than 20% FSH will be evaluated at their appropriate gain settings in accordance with the established acceptance/rejection criteria. Repeat the inspection procedure for both the upper and lower bond lines on all the bifilar weights.

2.18.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

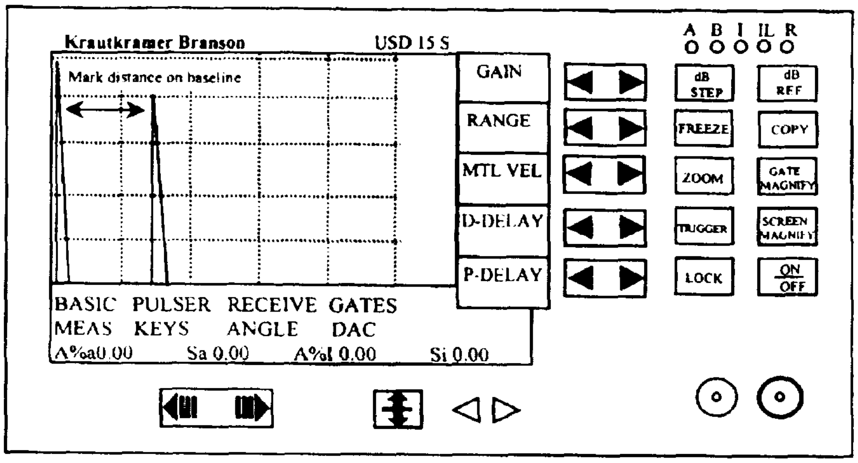
2.18.4 Backup Method. None required.

2.18.5 System Securing. The bifilar weight requires cleaning to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16.

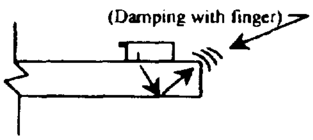
VIEW A



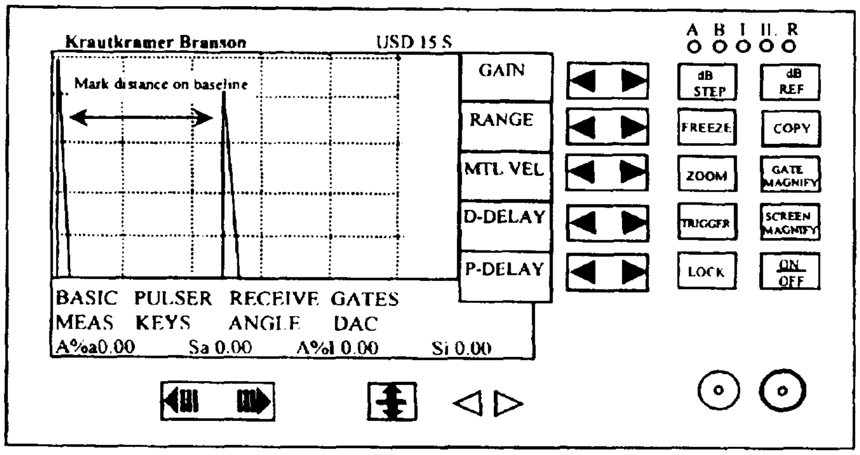
Calibration on the free edge of the bifilar weight with the first leg of the sound beam.



VIEW B

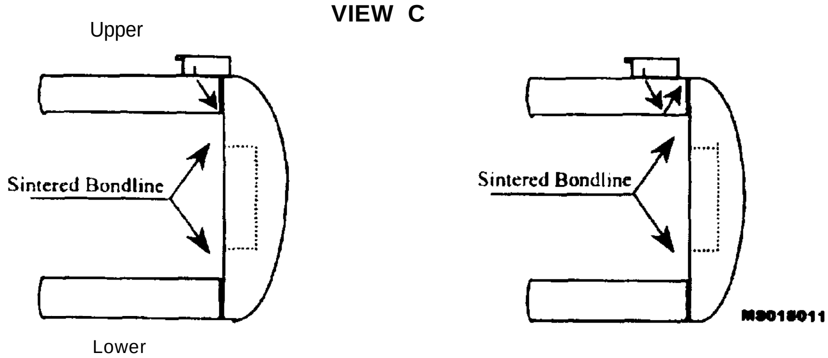


Calibration on the free edge of the bifilar weight with the second leg of the sound beam



VIEW C

Inboard Side



Inspection with the first and second legs of the sound beam

Figure 2-18. Bifilar Weight (Sheet 1 of 3)

2.18A Bifilar Weight Bushings (PT)

2.18A.1 Description (Figure 2-1, Index No. 18A). The bifilar weight bushings are installed within the body of the bifilar weight.

2.18A.2 Defects. Inspect the inside diameter of the bushings for stress cracks along its edges. No cracks are allowed.

2.18A.3 Primary Method. Fluorescent Penetrant.

2.18A.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection Equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

2.18A.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. The bifilar weight shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.18A.3.3 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.18A.3.4 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Apply penetrant with a brush to prevent overspray. Inspect area of concern.

2.18A.3.5 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.18A.3.6 Backup Method. None required.

2.18A.3.7 System Securing. Clean the bushings to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The bifilar weight requires installation in accordance with the applicable technical manuals listed in Table 1-1.

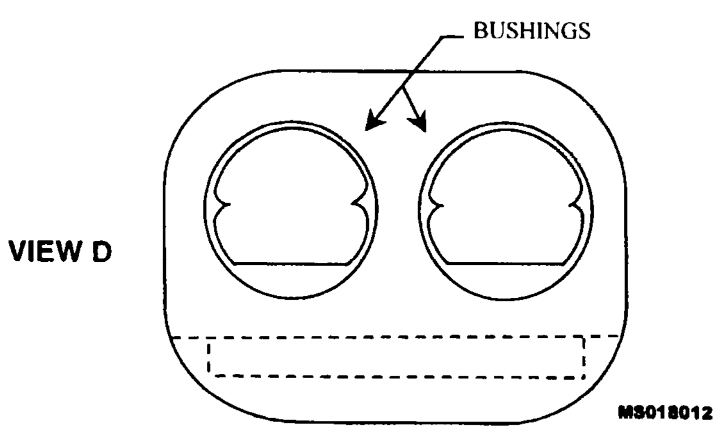


Figure 2-18. Bifilar Weight (Sheet 2 of 3)

2.18B BIFILAR WEIGHT TAPERED WASHERS (PT).

2.18B.1 Description (Figure 2-1, Index No. 18B). The bifilar weight washers are installed within the body of the bifilar weight.

2.18B.2 Defects. Inspect the washers for stress cracks. No cracks are allowed.

2.18B.3 Primary Method. Fluorescent Penetrant.

2.18B.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection Equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

2.18B.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. The washers shall be removed from the bifilar weight in accordance with the applicable technical manuals listed in Table 1-1.

2.18B.3.3 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.18B.3.4 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern.

2.18B.3.5 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.18B.3.6 Backup Method. None required.

2.18B.3.7 System Securing. Clean the washers to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The washers require installation in accordance with the applicable technical manuals listed in Table 1-1.

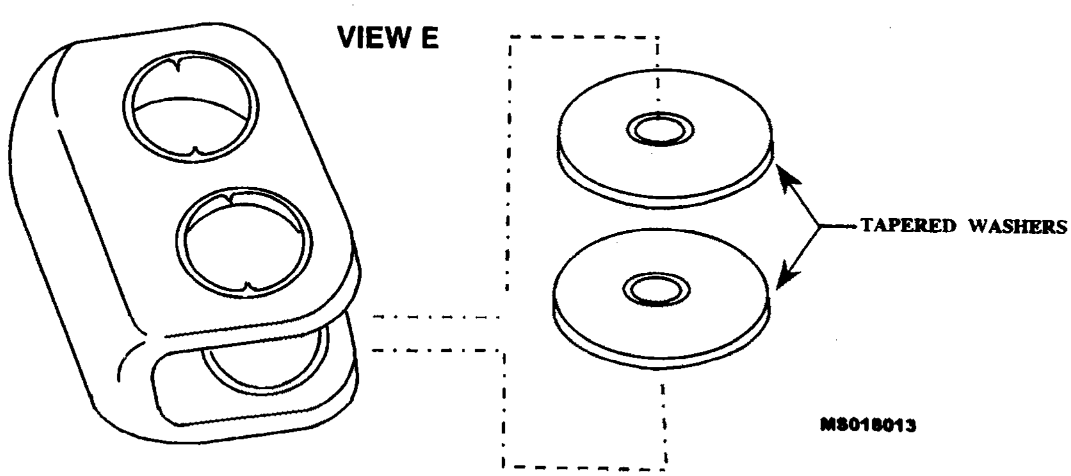


Figure 2-18. Bifilar Weight (Sheet 3 of 3)

2.19 MAIN ROTOR BLADE TIP CAP FAIRING (ET).

2.19.1 Description (Figure 2-1. Index No.19). The main rotor blade tip cap fairing is located at the tip end of the main rotor blade where it forms the tip end contour of the blade airfoil.
2.19.2 Defects. This inspection is used to verify crack indications found visually on the main rotor blade tip cap fairing. No cracks are allowed.
2.19.3 Primary Method. Eddy Current.
2.19.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 900 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8

2.19.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the main rotor blade tip cap fairing shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.19.3.3 Access. Not applicable.

2.19.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.19.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-1 9e1.

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56"		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.) 2.19.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-19.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 2.19.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.19.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

2.19.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.19.4 Backup Method. None required.

2.19.5 System Securing. The main rotor blade tip cap fairing, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

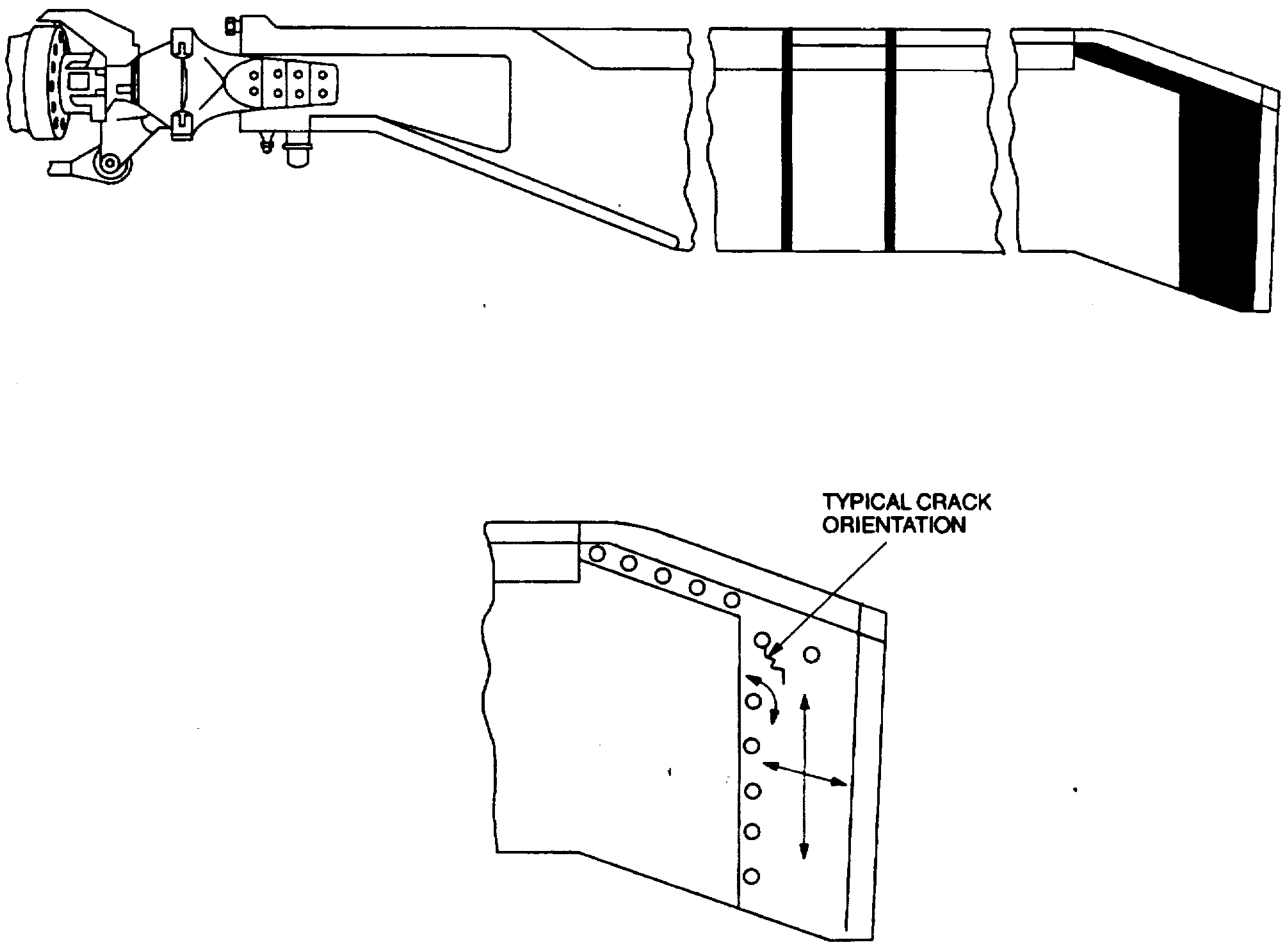
2.20 MAIN ROTOR BLADE (VOIDS) (BT).

2.20.1 Description (Figure 2-1. Index No. 90). The four main rotor blades have a pressurized titanium spar, Nomex honeycomb core, fiberglass skin, nickel and titanium abrasion strips, a removable swept-back tip fairing, and a resistive heating mat used when the blade de-ice system is activated.

2.20.2 Defects. Void damage can occur anywhere on both sides of the blade shown in Figure 2-20.

NOTE

A void is defined as an unbonded area that is supposed to be bonded. Many sub-definitions of voids are given, such as lack of adhesive, gas pocket, misfit, etc. However, this manual makes no distinction among these, instead grouping them all under one general term ("void").



ARROWS INDICATE SCAN PATHS

NDI_H-60_F2_19

Figure 2-19. Main Rotor Blade Tip Cap Fairing

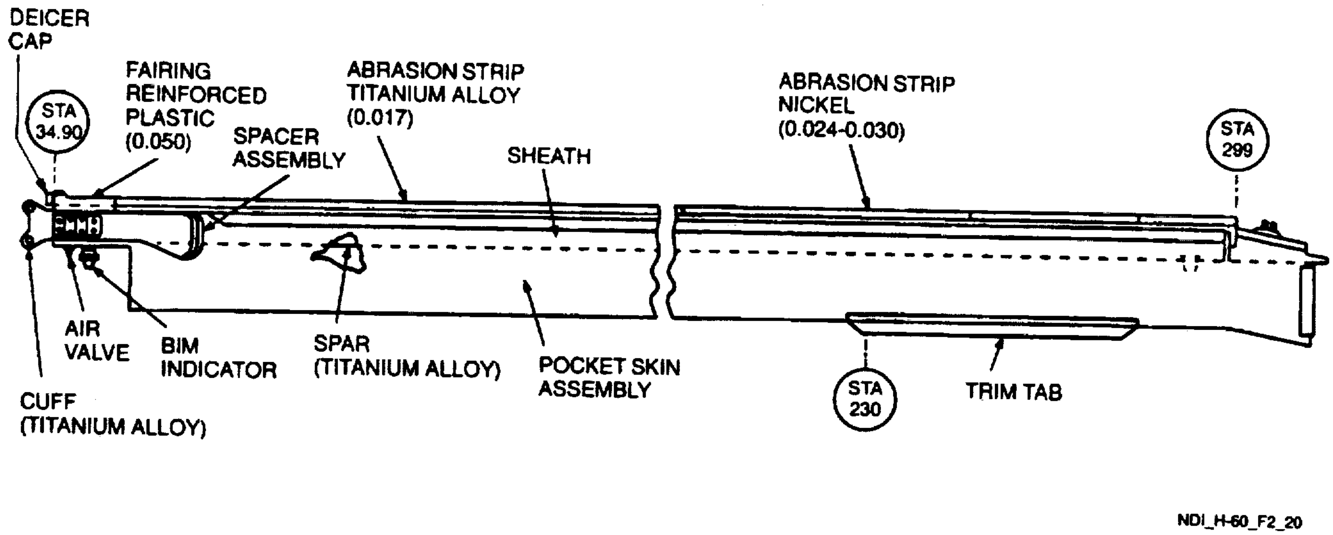


Figure 2-20. Main Rotor Blade (Voids)

2.20.3 Primary Method. Bond Testing.
2.20.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Bond Test Unit

b. Probe, Mechanical Impedance Analysis

c. Probe Holder

d. Cable Assembly

e. Test Block, metal honeycomb with skin thickness closest to that of the panel to be inspected.

f. Test Block, Composite Defect Standard #1

g. Teflon Tape, refer to Table 1-8

h. Aircraft Marking Pencil, refer to Table 1-8

2.20.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the main rotor blade shall be installed in accordance with applicable technical manuals listed in Table 1-1.

2.20.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands

Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

2.20.3.4 Preparation of Part. The main rotor blades shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.20.3.5 NDI Equipment Settings. Refer to Bond Test Equipment, paragraph 1.4.6.1.

a. Attach cable and probe to Bondmaster. Protect probe with Teflon tape and install in probe holder.

b. Turn on Bondmaster, press SPCL, and make the following adjustments:

H Pos	- 40%
V Pos	- 80%
PHASE REF	- O
DRIVE	- MID

c. Press SET and select DISPLAY PHASE.

d. Place probe on the good area of test blocks and press GOOD PART. Do this several times while moving the probe to different spots in the good area of the standard. Note the video signature for each. Select and enter a representative good area by pressing GOOD PART one last time.

e. Place probe on void area of test block and press BAD PART. Do this several times while moving the probe slightly to different positions within the void area. Select and enter a position that gives a strong difference between good and void areas. Use DIFF soft key to observe difference between good and bad areas of test block.

NOTE

If, during setup, the flying spot deflects upward or to the side when the probe passes over the bad part instead of the desired down deflection toward the alarm box, press SPCL and toggle to a different phase setting (90, 180, or 270), and repeat steps d. and e. Continue to try phase setting until the flying spot moves in the desired down direction.

f. Place probe on good area of test block and press RUN. Flying spot should be near the top-center of the ACTIVE screen. If not, press NULL. Slide probe from good to void area and note response from flying spot. This response should provide both amplitude (vertical) and phase (horizontal) movement. The default gate/alarm setting may be incorrect for this set-up. Turn off or reset gate/alarm as desired.

g. The Bondmaster is programmed to automatically set test parameters to a start-up or initial bond test. By following the steps outlined above, adjustments to the FREQ, GAIN, and ALARM can help to refine the selectivity in locating defects among differing bonded metallic and composite materials.

2.20.3.6 Inspection Procedure. Refer to Bond Testing Method, paragraph 1.4.6 and inspection areas shown in Figure 2-20.

a. Skin-to-Honeycomb Voids. Place probe on main rotor blade in location where test for skin-to-honeycomb bond separation is desired and press NULL. Move probe from good to suspect area and note response. A strong amplitude change and phase shift similar to the standard is indicative of a void. This set-up is very sensitive to thin skin-to-core bonding. Move probe slowly over the skin and note the slight amplitude change (bounce) as the probe senses alternately the honeycomb cell nodes and cell walls.

NOTE

The basic set-up provided above also selects a frequency that provide a satisfactory inspection for voids associated with skin-to-spar, skin-to-trailing edge, doubler-to-doubler and doubler-to-skin, and trim tab bonding.

b. Use the NULL and GAIN adjustments to reset the ACTIVE screen for the areas to be inspected (do not go back to SET mode). Also, compare similar areas. For example, to check for spar to skin voids, check front and back of blade in the same area, or check another blade in the same area. Observe that, when moving the probe chordwise from the spar to the trailing edge, the transitions at the spar-to-honeycomb and the honeycomb-to-trailing edge strip are easily detected. When inspecting these areas, adjust the NULL and GAIN and move the probe carefully along the transition using a straight edge or other guide. A localized phase and amplitude shift similar to the test block indicates a void.

2.20.3.7 Marking and Recording of Inspection Results. Mark and record as required by paragraph 1.3.

NOTE

Attention shall be directed to accurately mark the boundaries of all voids. These markings will be needed to determine acceptance or rejection criteria in accordance with applicable technical manuals.

2.20.4 Backup Method. None required.

2.20.5 System Securing. None required.

2.21 MAIN ROTOR BLADE CUFF ASSEMBLY (ET).

2.21.1 Description (Figure 2-1. Index No. P1). The main rotor blade cuff assembly is bolted and bonded to the inboard end of the main rotor blade. It provides a bolted attachment for the main rotor blade to the main rotor head spindle.

2.21.2 Defects. This inspection is used to verify crack indications found visually on the main rotor blade cuff assembly. No cracks are allowed.

2.21.3 Primary Method. Eddy Current.

2.21.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched titanium (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8

2.21.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the main rotor blade shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.21.3.3 Access. Access to the main rotor blade cuff assembly is from the UR engine cowl (Figure 1-4, Items 3T-7 and 4T-8).

2.21.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.21.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 300		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

2.21.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-21.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 2.21.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.21.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

2.21.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.21.4 Backup Method. None required.

2.21.5 System Securing. The main rotor blade, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

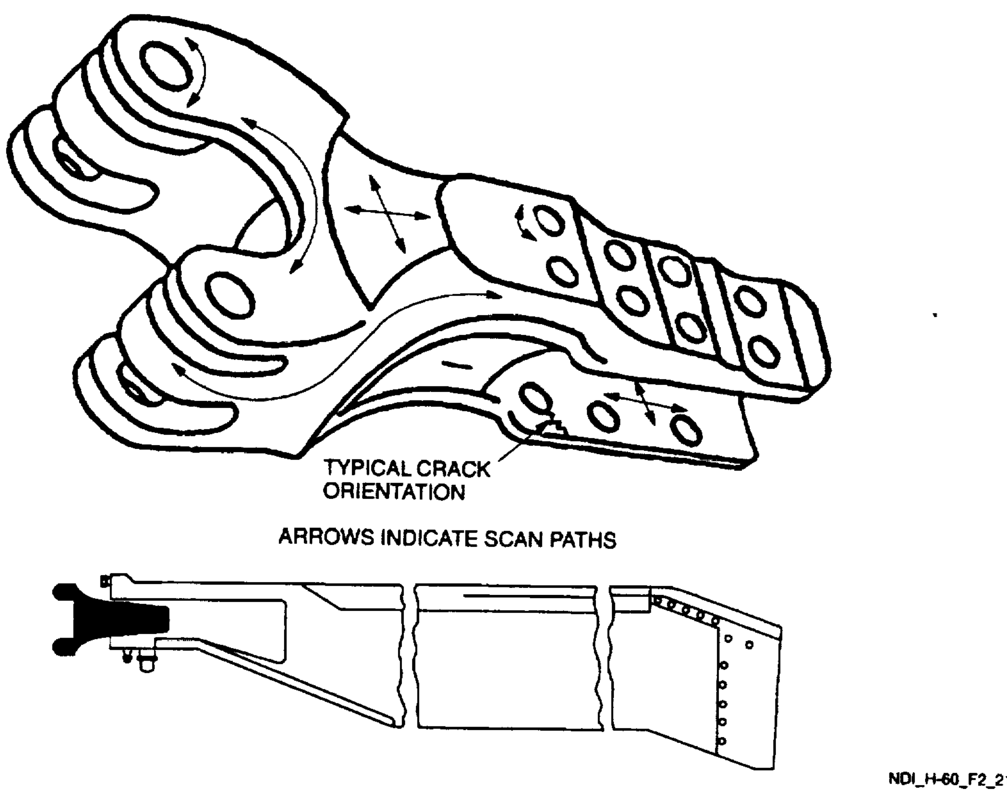


Figure 2-21. Main Rotor Blade Cuff Assembly

2.22 TAIL ROTOR BLADE (VOIDS) (BT).

2.22.1 Description (Figure 2-1. Index No. 92). The tail rotor blade is built around two graphite composite spars running from tip-to-tip and crossing each other at the center to form the four blades. The blade spars are covered with cross ply fiberglass to form the airfoil shape.

2.22.2 Defects. Void damage may occur anywhere on both sides of the blade.

NOTE

A void is defined as an unbonded area that is supposed to be bonded. Many sub-definitions of voids are given, such as lack of adhesive, gas pocket, misfit, etc. However, this manual makes no distinction among these, instead grouping them all under one general term ("void").

2.22.3 Primary Method. Bond Testing.

2.22.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Bond Test Unit

b. Probe, Mechanical Impedance Analysis

c. Probe Holder

d. Cable Assembly

e. Test Block, metal honeycomb with skin thickness closest to that of the panel to be inspected.

f. Test Block, Composite Defect Standard #1
g. Test Block, Composite Defect Standard #3
h. Teflon Tape, refer to Table 1-8
i. Aircraft Marking Pencil, refer to Table 1-8

2.22.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. Partial inspection for cause (visual indications, sites' of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, remove the tail rotor blade in accordance with applicable technical manuals listed in Table 1-1.

2.22.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

2.22.3.4 Preparation of Part. The components shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.22.3.5 NDI Equipment Settings. Refer to Bond Test Equipment, paragraph 1.4.6.1.

a. Attach cable and probe to Bondmaster. Protect probe with Teflon tape and install in probe holder.

b. Turn on Bondmaster, press SPCL, and make the following adjustments:

H Pos	- 40%
V Pos	- 80%
PHASE REF	- O
DRIVE	- MID

c. Press SET and select DISPLAY PHASE.

d. Place probe on the good area of test blocks and press GOOD PART. Do this several times while moving the probe to different spots in the good area of the standard. Note the video signature for each. Select and enter a representative good area by pressing GOOD PART one last time.

e. Place probe on void area of test block and press BAD PART. Do this several times while moving the probe slightly to different positions within the void area. Select and enter a position that gives a strong difference between good and void areas. Use DIFF soft key to observe difference between good and bad areas of test block.

NOTE

If, during setup, the flying spot deflects upward or to the side when the probe passes over the bad part instead of the desired down deflection toward the alarm box, press SPCL and toggle to a different phase setting (90, 180, or 270), and repeat steps d. and e. Continue to try phase setting until the flying spot moves in the desired down direction.

f. Place probe on good area of test block and press RUN. Flying spot should be near the top-center of the ACTIVE screen. If not, press NULL. Slide probe from good to void area and note response from flying spot. This response should provide both amplitude (vertical) and phase (horizontal) movement. The default gate/alarm setting may be incorrect for this set-up. Turn off or reset gate/alarm as desired.

g. The Bondmaster is programmed to automatically set test parameters to a start-up or initial bond test. By following the steps outlined above, adjustments to the FREQ, GAIN, and ALARM can help to refine the selectivity in locating defects among differing composite materials.

2.22.3.6 Inspection Procedure. Refer to Bond Testing Method, paragraph 1.4.6 and inspection areas are shown in Figure 2-22.

a. Skin-to-Honeycomb Voids. Place probe on tail rotor blade in location where test for skin-to-honeycomb bond separation is desired and press NULL. Move probe from good to suspect area and note response. A strong amplitude change and phase shift similar to the standard is indicative of a void. This set-up is very sensitive to thin skin-to-core bonding. Move probe slowly over the skin and note the slight amplitude change (bounce) as the probe senses alternately the honeycomb cell nodes and cell walls.

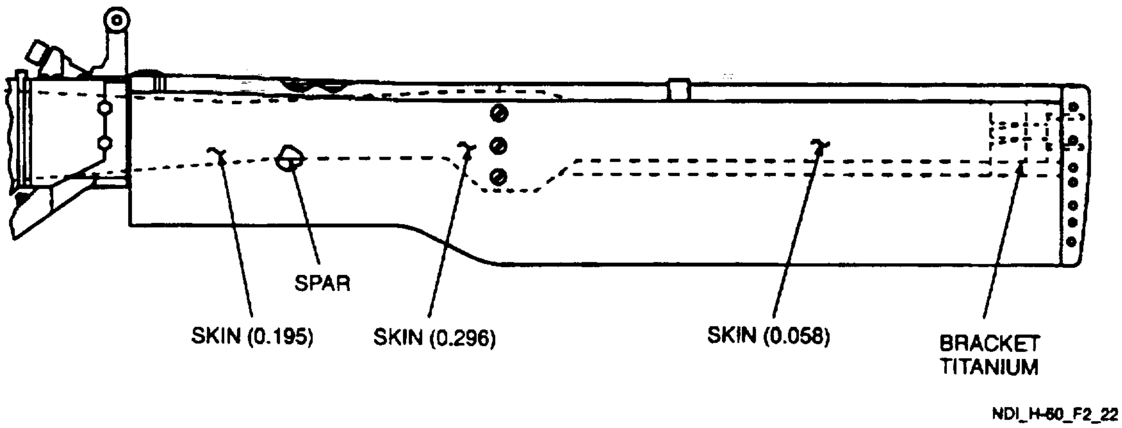


Figure 2-22. Tail Rotor Blade (Voids)

NOTE

The basic set-up provided above also selects a frequency that provides a satisfactory inspection for voids associated with skin-to-spar, skin-to-trailing edge, doubler-to-doubler and doubler-to-skin, and trim tab bonding.

b. Use the NULL and GAIN adjustments to reset the ACTIVE screen for the areas to be inspected (do not go back to SET mode). Also, compare similar areas. For example, to check for spar to skin voids, check front and back of blade in the same area, or check another blade in the same area. Observe that, when moving the probe chordwise from the spar to the trailing edge, the transitions at the spar-to-honeycomb and the honeycomb-to-trailing edge strip are easily detected. When inspecting these areas, adjust the NULL and GAIN and move the probe carefully along the transition using a straight edge or other guide. A localized phase and amplitude shift similar to the test block indicates a void.

2.22.3.7 Marking and Recording of Inspection Results. Mark and record as required by paragraph 1.3.

NOTE

Attention shall be directed to accurately mark the boundaries of all voids. These markings will be needed to determine acceptance or rejection criteria in accordance with applicable technical manuals.

2.22.4 Backup Method. None required.

2.22.5 System Securing. The tail rotor blade, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

2.23 TAIL ROTOR BLADE (FLUID) (RT).

2.23.1 Description (Figure 2-1, Index No. 23). The tail rotor blade is built around two graphite composite spars running from tip-to-tip and crossing each other at the center to form the four blades. The blade spars are covered with cross ply fiberglass to form the airfoil shape.

2.23.2 Defects. Fluid in the honeycomb core.

2.23.3 Primary Method. Radiography.

WARNING

Radiation Hazard

Assure compliance with all applicable safety precautions set forth in TM 1-1500-335-23 (Nondestructive Inspection Methods manual) listed in Table 1-1. A hazard associated with exposure to ionizing radiation is that serious damage can be inflicted without pain, burning, or other sense of discomfort during the exposure period. Radiation protection shall be utilized in accordance with AR40-14/DLAR 1000.28.

2.23.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. X-ray Unit
b. Tripod, X-ray tubehead stand
c. Film Processor
d. Film, Ready Pack 14 inch x 17 inch
e. Marking Material, refer to Table 1-8.

2.23.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. Partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the tail rotor blade shall be removed in accordance with applicable technical manuals listed in Table 1-1.

2.23.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands

Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

2.23.3.4 Preparation of Part. The rotor blade shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.23.3.5 NDI Equipment Settings.

a. Refer to Radiographic (X-ray) method, paragraph 1.4.10.

b. Typical equipment settings, inspection, and exposure data are given in Figure 2-23.

2.23.3.6 Inspection Procedure. Inspect designated areas, refer to Figure 2-23 for typical fluid entrapment and source/film placement.

a. Position film and desired nameplate data for exposure number 1.

b. Position X-ray tubehead for exposure number 1.

c. Set X-ray unit to the values given in the Radiographic Inspection Data chart for exposure number 1.

d. Make exposure number 1.

e. Remove exposed film.

f. Repeat inspection procedure (steps a. through e. above) for each exposure.

g. Process and interpret film for defects as noted in paragraph 2.23.2 and as shown in Figure 2-23.

2.23.4 Backup Method. None required.

2.23.5 System Securing. The tail rotor blade shall be cleaned as necessary. Refer to Post Cleaning and Restoration of Part or Area after NDI, paragraph 1.4.16. The tail rotor blade, if removed, requires reinstallation in accordance with the applicable technical manual listed in Table 1-1.

2.24 TAIL ROTOR BLADE TIP CAP (ET).

2.24.1 Description (Figure 9-1. Index No.24). The tail rotor blade tip cap is riveted to the end of the tail rotor blade. The tip cap is the access area to the blade counter weight.

2.24.2 Defects. This inspection is used to verify crack indications found visually on the tail rotor blade tip cap. No cracks are allowed.

2.24.3 Primary Method. Eddy Current.

2.24.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

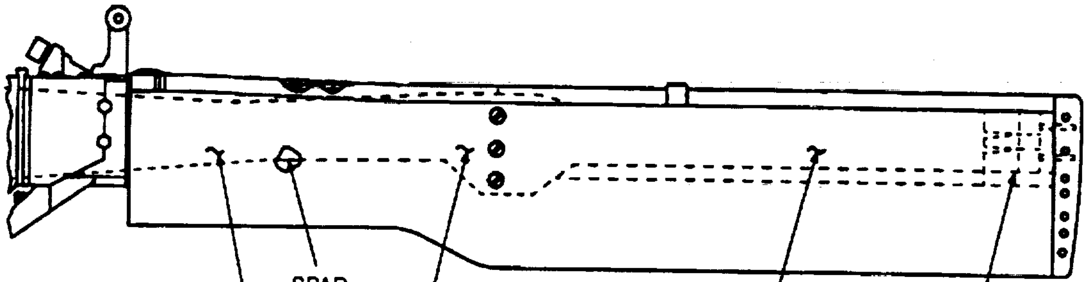
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 900 1/2 inch drop

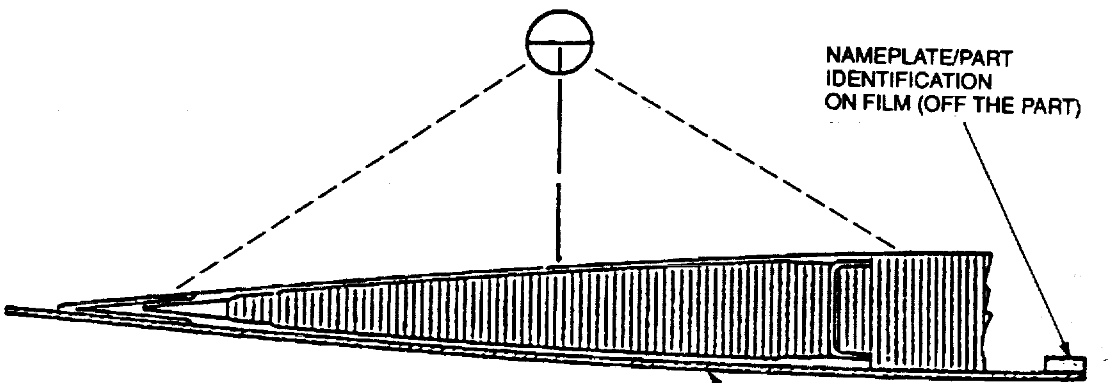
d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8





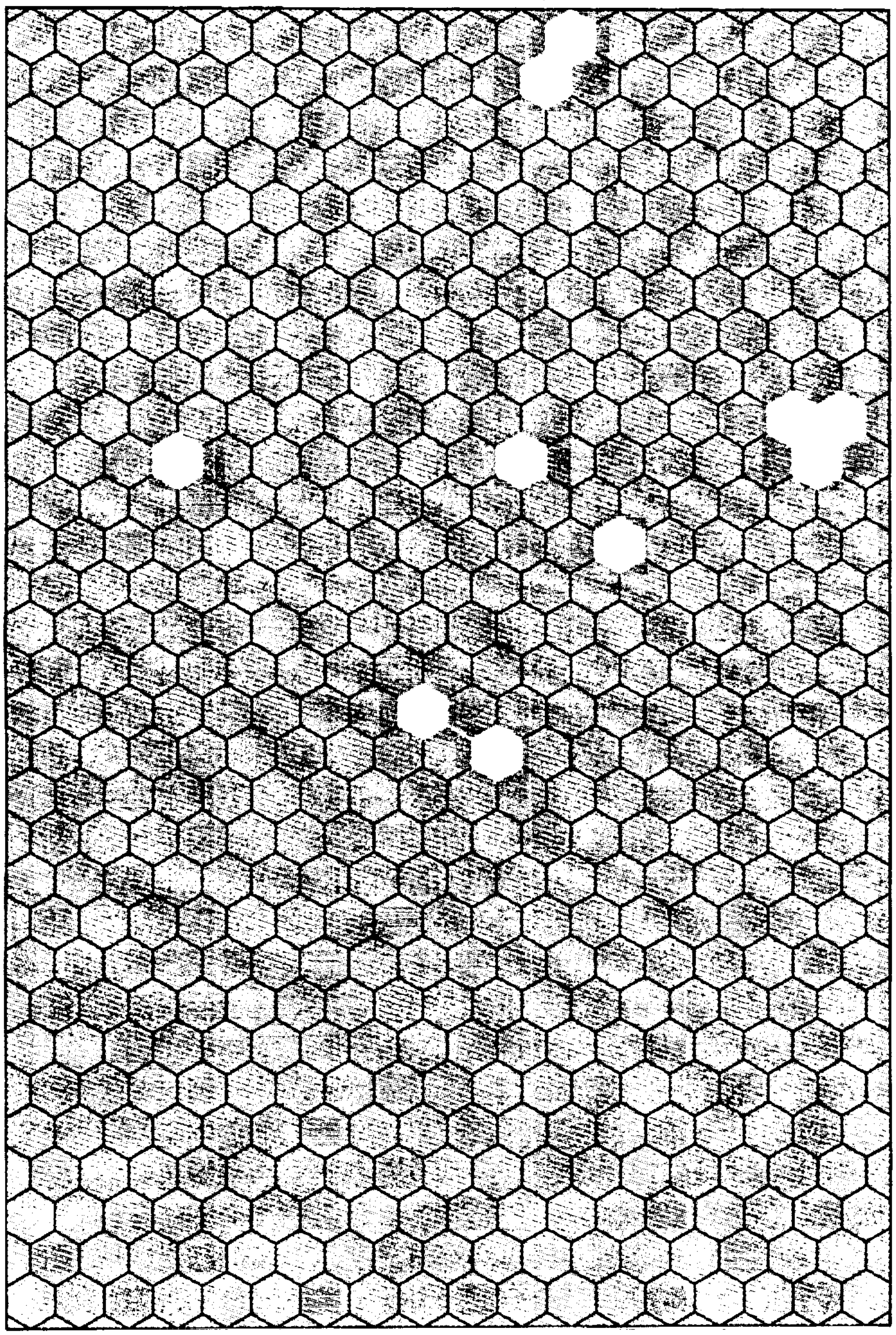
RADIOGRAPHIC INSPECTION DATA						
EXPOSURE NUMBER	KV	MA	FFD (INCHES)	TIME (SEC)	FILM	
					TYPE	SIZE
E1 E2	70 70	3.5 3.5	60 60	46 46	M-2 M-2	14 x 17 14 x 17

REMARKS

1. FILM NUMBER SAME AS EXPOSURE NUMBER.
2. FILM DENSITY FOR EACH EXPOSURE SHALL BE 1.8 TO 2.5 H&D UNITS IN AREAS OF INTEREST.
3. INSPECTION DATA SHALL BE ADJUSTED AS REQUIRED.
4. EXPOSE OUTBOARD TO INBOARD UNTIL WATER DISAPPEARS.

NDI_H-60_F2_23_1

Figure 2-23. Tail Rotor Blade (Fluid) (Sheet 1 of 2)



LIGHT AREAS– FLUID IN HONEYCOMB

NDI_H-60_F2_23_2

Figure 2-23. Tail Rotor Blade (Fluid) (Sheet 2 of 2)

2.24.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance in accordance with the applicable technical manuals listed in Table 1-1.

2.24.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands

Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

2.24.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.24.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

2.24.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-24.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

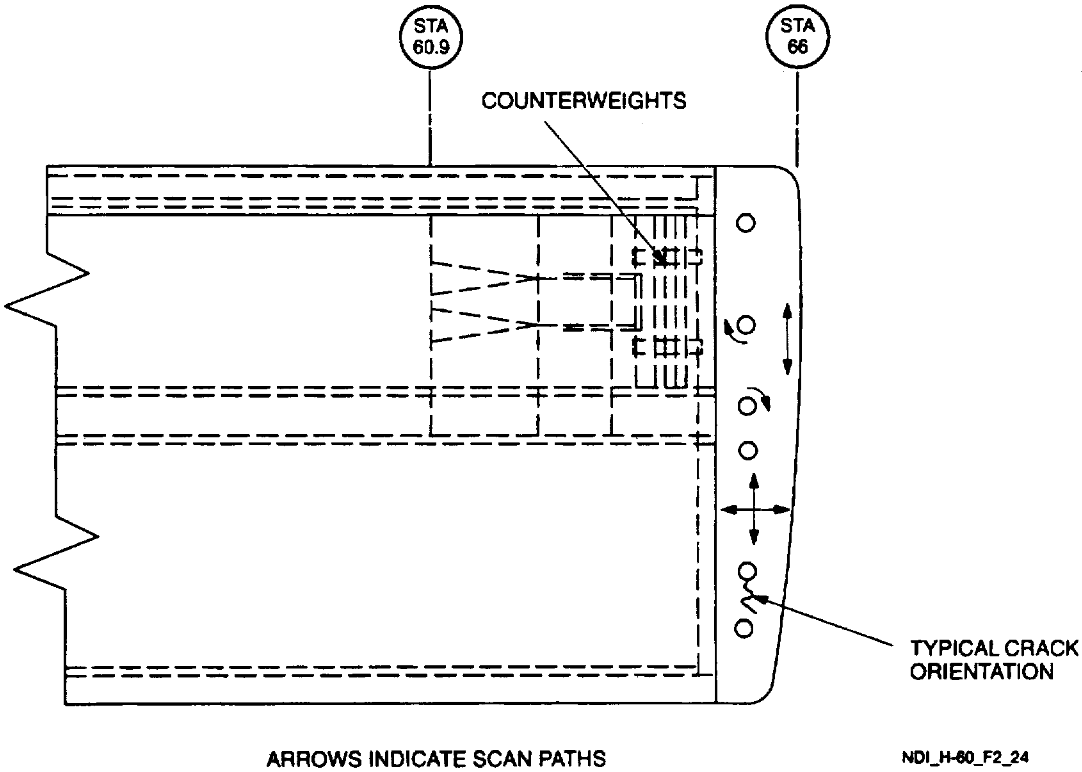


Figure 2-24. Tail Rotor Blade Tip Cap

NOTE

Either probe identified in paragraph 2.24.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.24.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

2.24.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.24.4 Backup Method. None required.

2.24.5 System Securing. None required.

2.25 TAIL ROTOR PITCH HORN (ET).

2.25.1 Description (Figure 2-1. Index No.25). The tail rotor pitch horn transmits input from the pitch control rod to change pitch of the tail rotor blades.

2.25.2 Defects. This inspection is used to verify crack indications found visually on the tail rotor pitch horn. No cracks are allowed.

2.25.3 Primary Method. Eddy Current.

2.25.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8

2.25.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the tail rotor pitch horn shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.25.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands

Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

2.25.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.25.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19eII.

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

2.25.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-25.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

NOTE
Either probe identified in paragraph 2.25.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.25.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

2.25.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.25.4 Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

2.25.5 System Securing. The tail rotor pitch horn, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.26 TAIL ROTOR PITCH CONTROL ROD ENDS (MT).

2.26.1 Description (Figure P-1. Index No. 96). The pitch control links are installed on the tail rotor I head assembly. Each link connects an arm of the pitch beam to a pitch control horn on the blade.

2.26.2 Defects. This inspection is used to verify crack indications found visually on the tail rotor pitch control rod ends. No cracks are allowed.

2.26.3 Primary Method. Magnetic Particle.

2.26.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

d. Fluorescent Magnetic Particles, refer to Table 1-8

e. Consumable Materials, refer to Table 1-8

f. Aircraft Marking Pencil, refer to Table 1-8

NOTE
Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

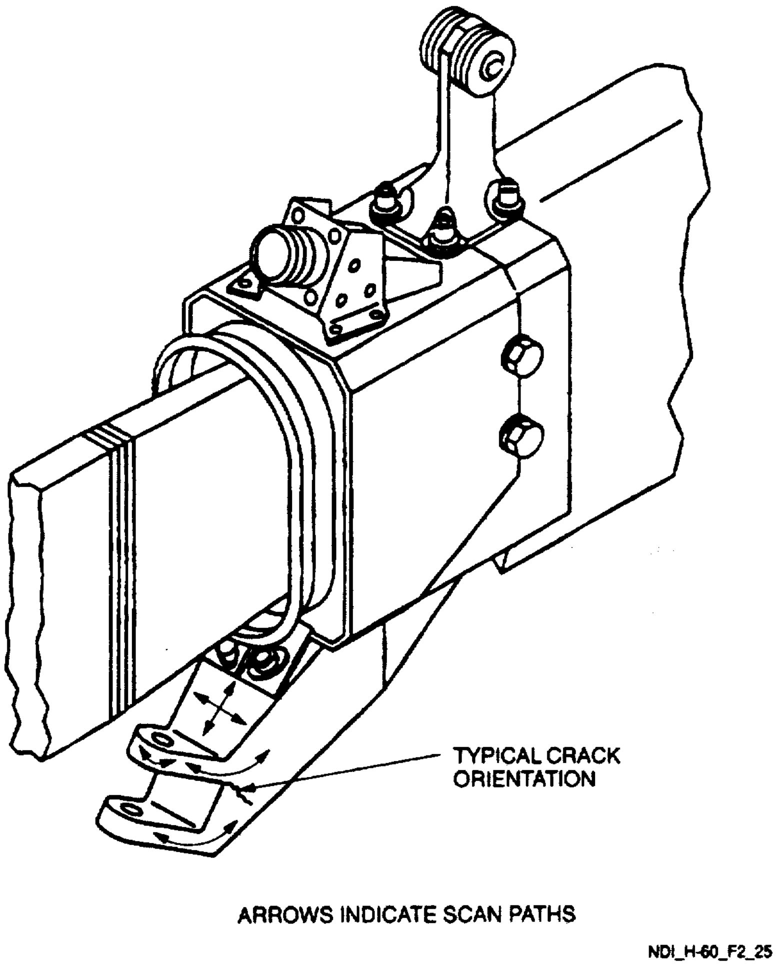


Figure 2-25. Tail Rotor Pitch Horn

2.26.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the tail rotor pitch control rods shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.26.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

2.26.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.26.3.5 NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

2.26.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. The position required for this inspection is illustrated in Figure 2-26.

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position 1 as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.

2.26.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.26.3.8 Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

2.26.4 Backup Method. None required.

2.26.5 System Securing. Clean the tail rotor pitch control rod ends thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The tail rotor pitch control rod ends, if removed, require installation in accordance with the applicable technical manuals listed in Table 1-1.

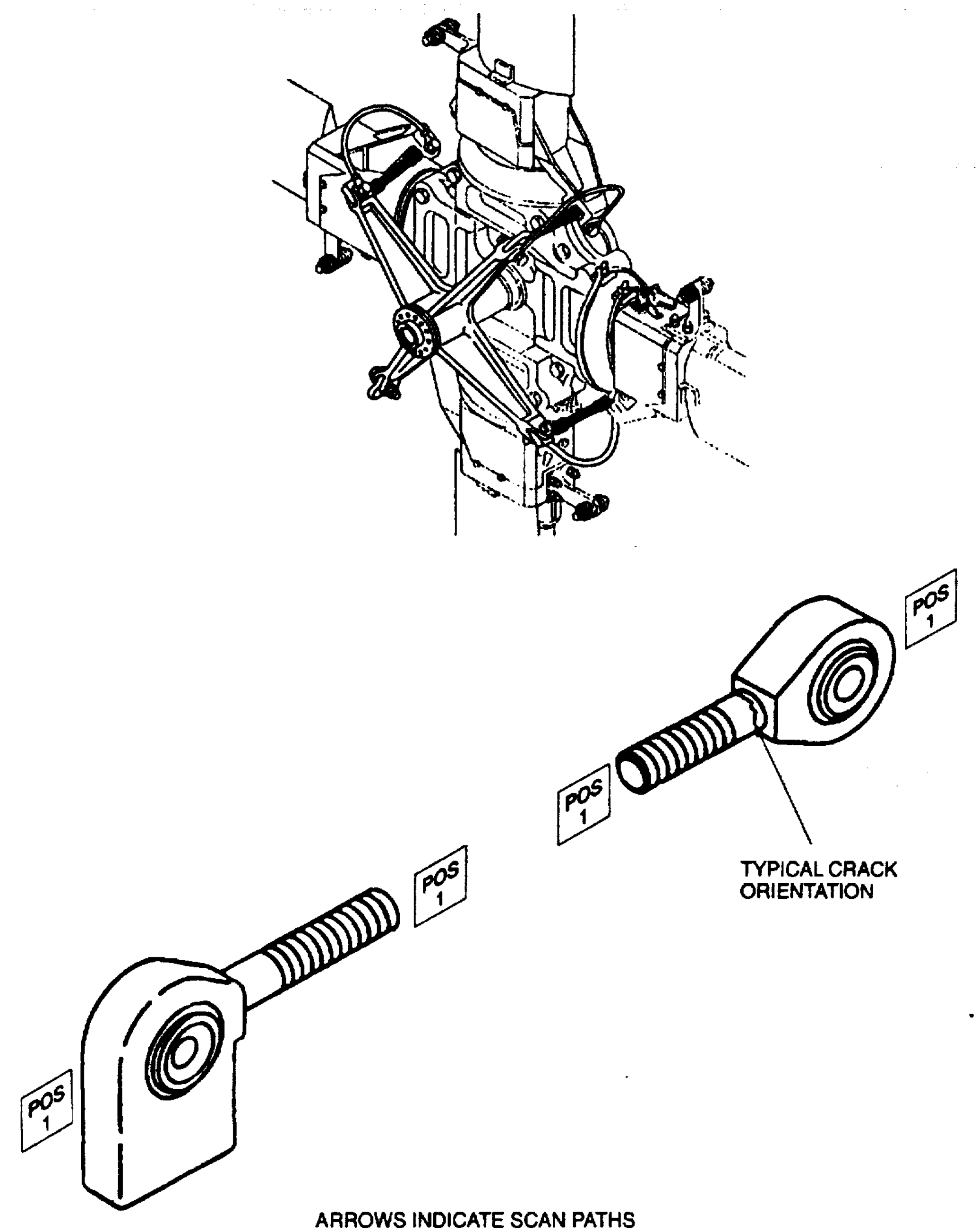


Figure 2-26. Tail Rotor Pitch Control Rod Ends

2.27 PITCH BEAM WASHER (MT).

2.27.1 Description (Figure 2-1. Index No.27). The pitch beam washer is installed between the pitch beam retaining nut and pitch beam.

2.27.2 Defects. This inspection is used to verify crack indications found visually on the pitch beam washer. No cracks are allowed.

2.27.3 Primary Method. Magnetic Particle.

2.27.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE

Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

2.27.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the pitch beam washer removed in accordance with the applicable technical manuals listed in Table 1-1.

2.27.3.3 Access. Not applicable.

2.27.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.27.3.5 NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

2.27.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 2-27.

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position 1 as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 2.27.3.8.
f. Repeat steps a. through e. for position 2.

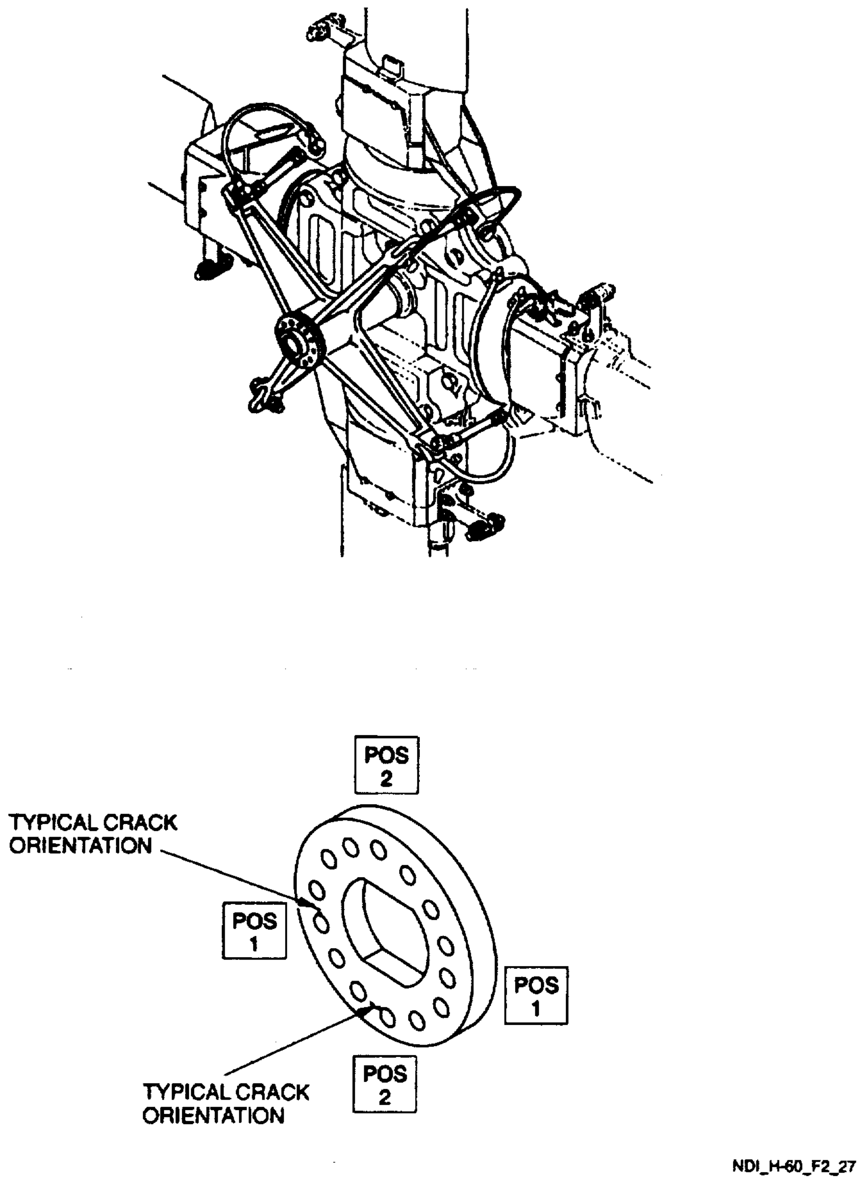


Figure 2-27. Pitch Beam Washer

2.27.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.27.3.8 Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

2.27.4 Backup Method. None required.

2.27.5 System Securing. Clean the pitch beam washer thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The pitch beam washer requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.28 PITCH BEAM RETAINING NUT (MT).

2.28.1 Description (Figure 2-1. Index No. 28). The pitch beam retaining nut retains the pitch beam to the tail rotor gearbox shaft.

2.28.2 Defects. This inspection is used to verify crack indications found visually on the pitch beam retaining nut. No cracks are allowed.

2.28.3 Primary Method. Magnetic Particle.

2.28.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

2.28.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the pitch beam retaining nut shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.28.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands

Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

2.28.3.4 Preparation of Part The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.28.3.5 NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

2.28.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 2-28.

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position 1 as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 2.28.3.8.
f. Repeat steps a. through e. for position 2.

2.28.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.28.3.8 Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

2.28.4 Backup Method. None required.

2.28.5 System Securing. Clean the pitch beam retaining nut thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The pitch beam retaining nut, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.29 PITCH BEAM (ET).

2.29.1 Description (Figure 2-1. Index No. 29). The four-armed pitch beam is bolted to the end of the pitch change shaft. The pitch beam increases or decreases the pitch of all blades simultaneously through pitch links connected to the blades.

2.29.2 Defects. This inspection is used to verify crack indications found visually on the pitch beam. No cracks are allowed.

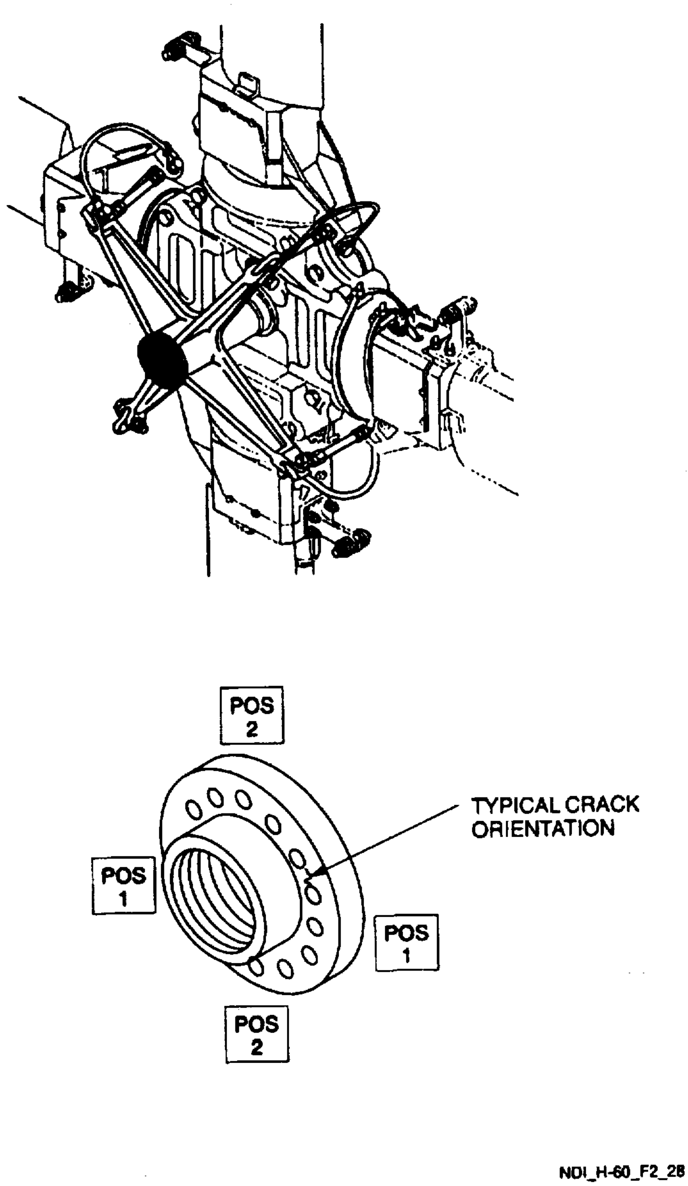


Figure 2-28. Pitch Beam Retaining Nut

2.29.3 Primary Method. Eddy Current.

2.29.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

2.29.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the pitch beam shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.29.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands

Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

2.29.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.29.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:
   (1) Null probe on test block.
   (2) Adjust phase as required to obtain horizontal lift-off.
   (3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

2.29.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-29.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 2.29.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.29.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

2.29.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.29.4 Backup Method. None required.

2.29.5 System Securing. The pitch beam, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.30 TAIL ROTOR INBOARD/OUTBOARD RETENTION PLATES (ET).

2.30.1 Description (Figure 9-1. Index No. 30). The tail rotor inboard/ outboard retention plates are the attaching points for the tail rotor blades.

2.30.2 Defects. Defects may occur anywhere on the surface of the inboard/outboard retention plates. No cracks are allowed.

2.30.3 Primary Method. Eddy Current.

2.30.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched titanium (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

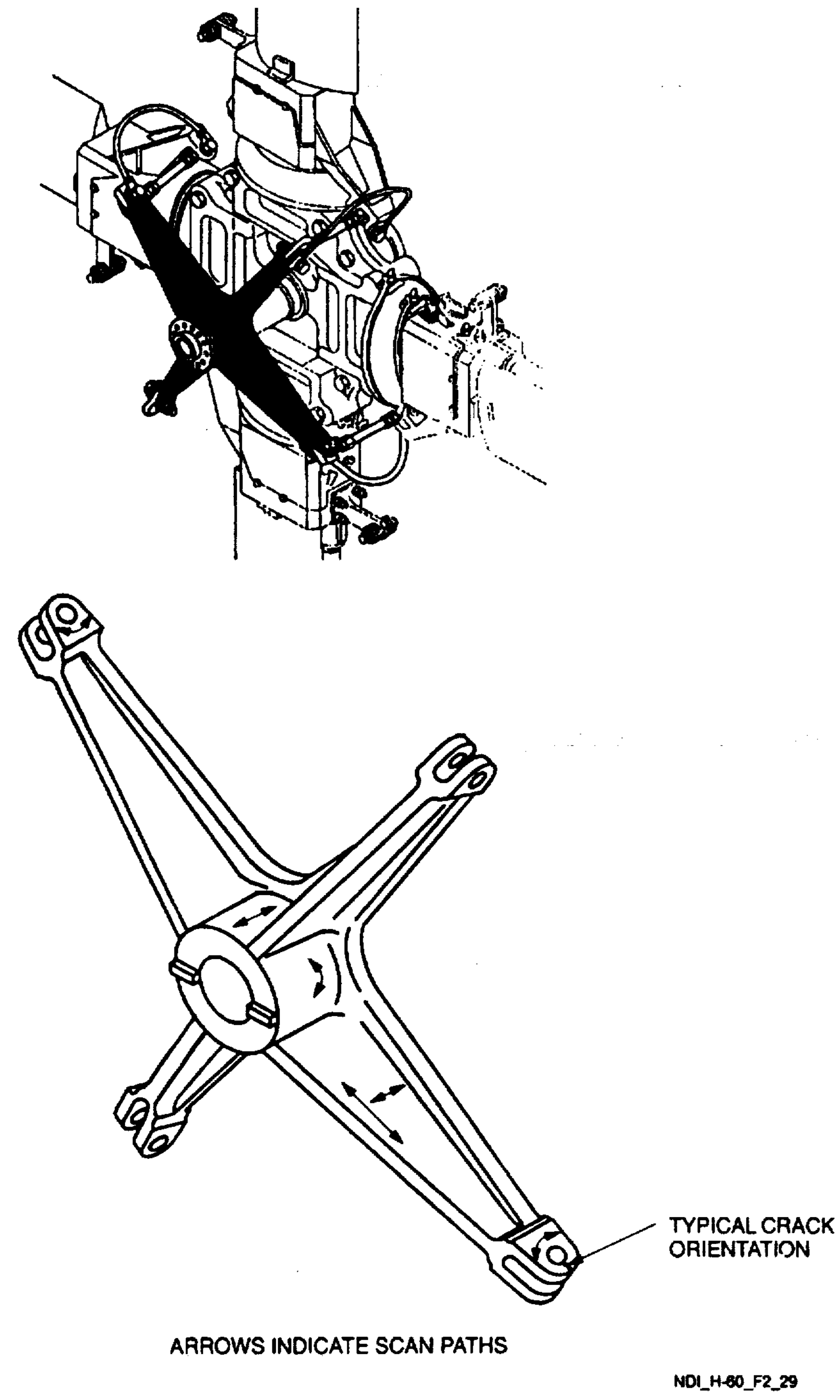


Figure 2-29. Pitch Beam

2.30.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the tail rotor inboard/outboard retention plates shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.30.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands

Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

2.30.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.30.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-1 9e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 30°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:
   (1) Null probe on test block.
   (2) Adjust phase as required to obtain horizontal lift-off.
   (3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

2.30.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-30.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

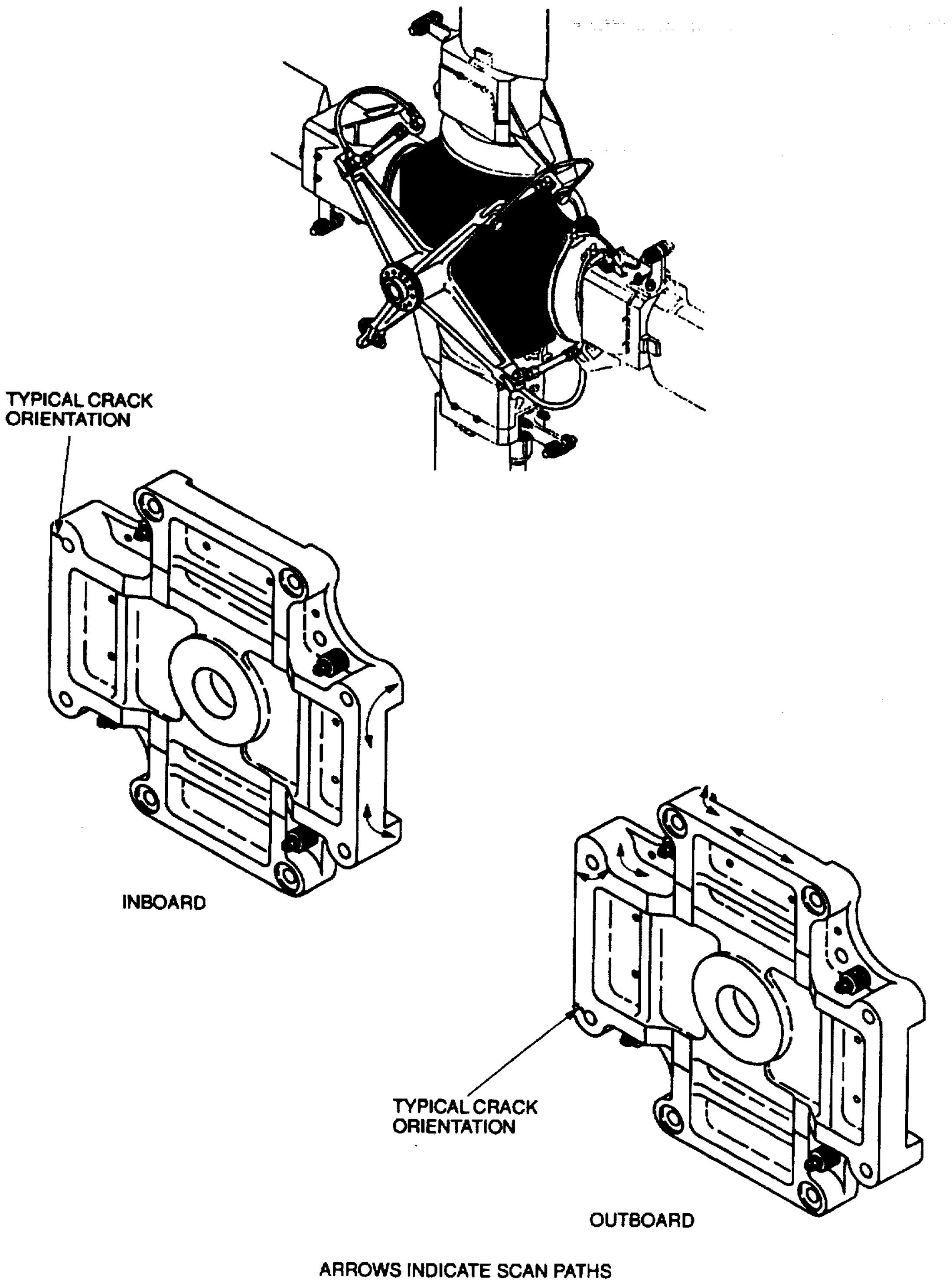


Figure 2-30. Tail Rotor Inboard/Outboard Retention Plates

NOTE

Either probe identified in paragraph 2.30.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.30.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

2.30.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

2.30.4 Backup Method. None required.

2.30.5 System Securing. The tail rotor inboard/outboard retention plates, if removed, require installation in accordance with the applicable technical manuals listed in Table 1-1.

SECTION III

DRIVE SYSTEM

3. GENERAL.

3.1 CONTENTS. The drive system inspection items covered in this section are those items of the H-60 helicopter series transmission, gearboxes, drive shafts, and components listed in the Drive System Inspection Index (Table 3-1). Corresponding inspection figures and the applicable text paragraphs are listed opposite each inspection item. The index number for each item may be used to locate it in Figure 3-1.

Table 3-1. Drive System Inspection Index

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
*2	Main Transmission	ET	3.2	3-2
*3	Intermediate Gearbox	ET	3.3	3-3
*4	Tail Rotor Drive Shaft	ET	3.4	3-4
*5	Tail Rotor Drive Shaft Supports	ET	3.5	3-5
*6	Tail Rotor Drive Shaft Coupling	PT	3.6	3-6
*7	Oil Cooler Drive Shaft	ET	3.7	3-7
*8	Oil Cooler Axial Fan Shaft	MT	3.8	3-8
*9	Oil Cooler Fan Blades	ET	3.9	3-9
*10	Tail Gearbox	ET	3.10	3-10
11	Tail Gearbox Mount Fitting	ET	3.11	3-11
12	Tail Rotor Gearbox Inner/Outer Split Cones	PT	3.12	3-12

NOTE: *Indicates Flight Safety Part.

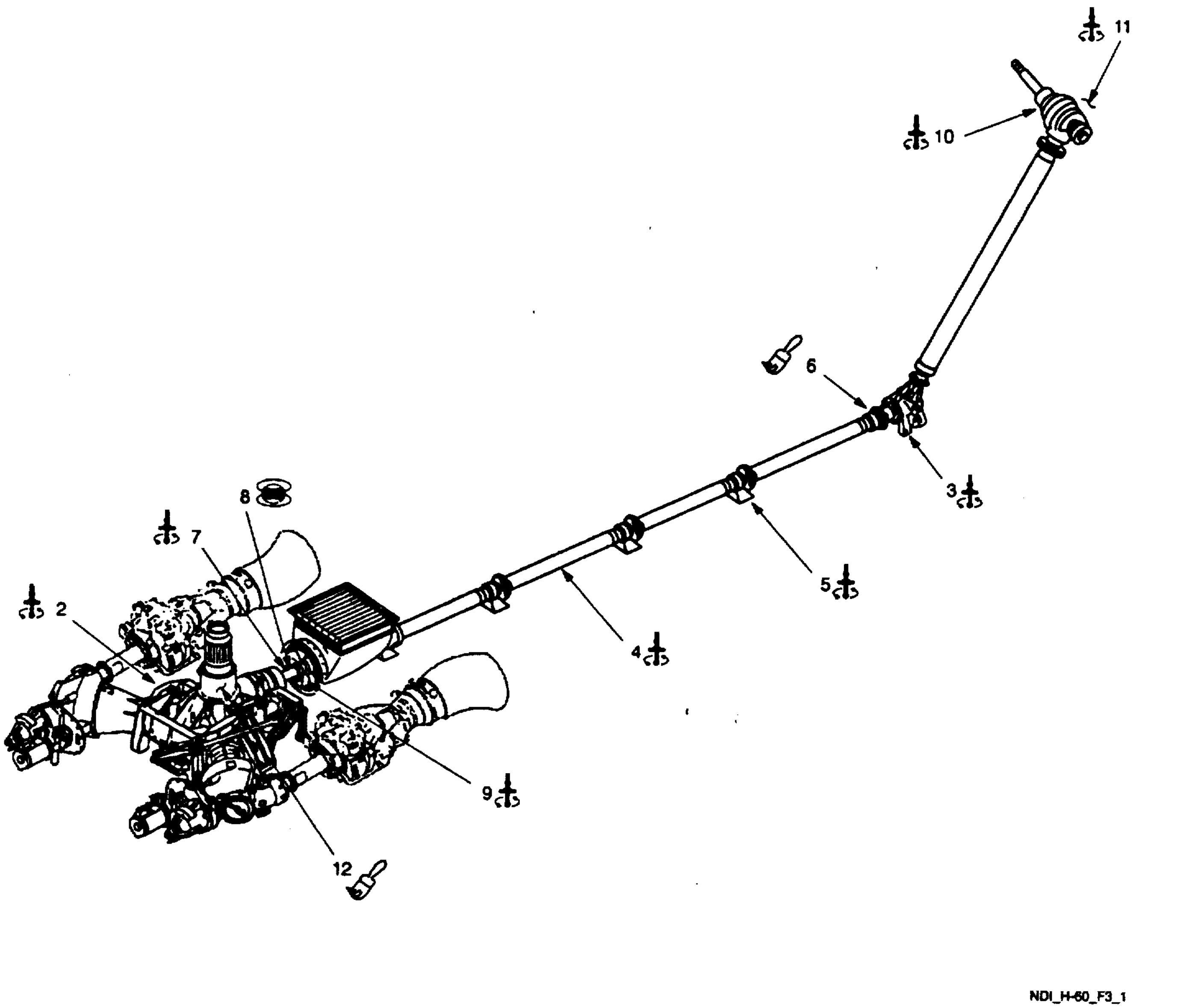


Figure 3-1. Transmission/Drive System

3.2 MAIN TRANSMISSION (ET).

3.2.1 Description (Figure 3-1. Index No. 2). The main transmission is mounted on the main fuselage. It mounts and drives the main rotor head, changes the angle of drive from the engines, reduces engine rpm, and drives the tail rotor drive shaft along with the accessory modules.

3.2.2 Defects. Defects may occur anywhere on the surface of the main transmission. All areas where rework has been performed shall be inspected for cracks. No cracks are allowed.

3.2.3 Primary Method. Eddy Current.

3.2.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100KHz-500 KHz, 900 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

3.2.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the main transmission shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

3.2.3.3 Access. Not applicable.

3.2.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

3.2.3.5 NDI Equipment Settings.
a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:
   (1) Null probe on test block.
   (2) Adjust phase as required to obtain horizontal lift-off.
   (3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

3.2.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 3-2.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 3.2.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 3.2.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

3.2.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

3.2.4 Backup Method. None required.

3.2.5 System Securing. The main transmission, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.3 INTERMEDIATE GEARBOX (ET).

3.3.1 Description (Figure 3-1. Index No.3). The intermediate gearbox is mounted at the base of the pylon. The intermediate gearbox carries main transmission torque to the tail gearbox.

3.3.2 Defects. This inspection is used to verify crack indications found visually on the intermediate gearbox. All areas where rework has been performed shall be inspected for cracks. No cracks are allowed.

3.3.3 Primary Method. Eddy Current.

3.3.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 900 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

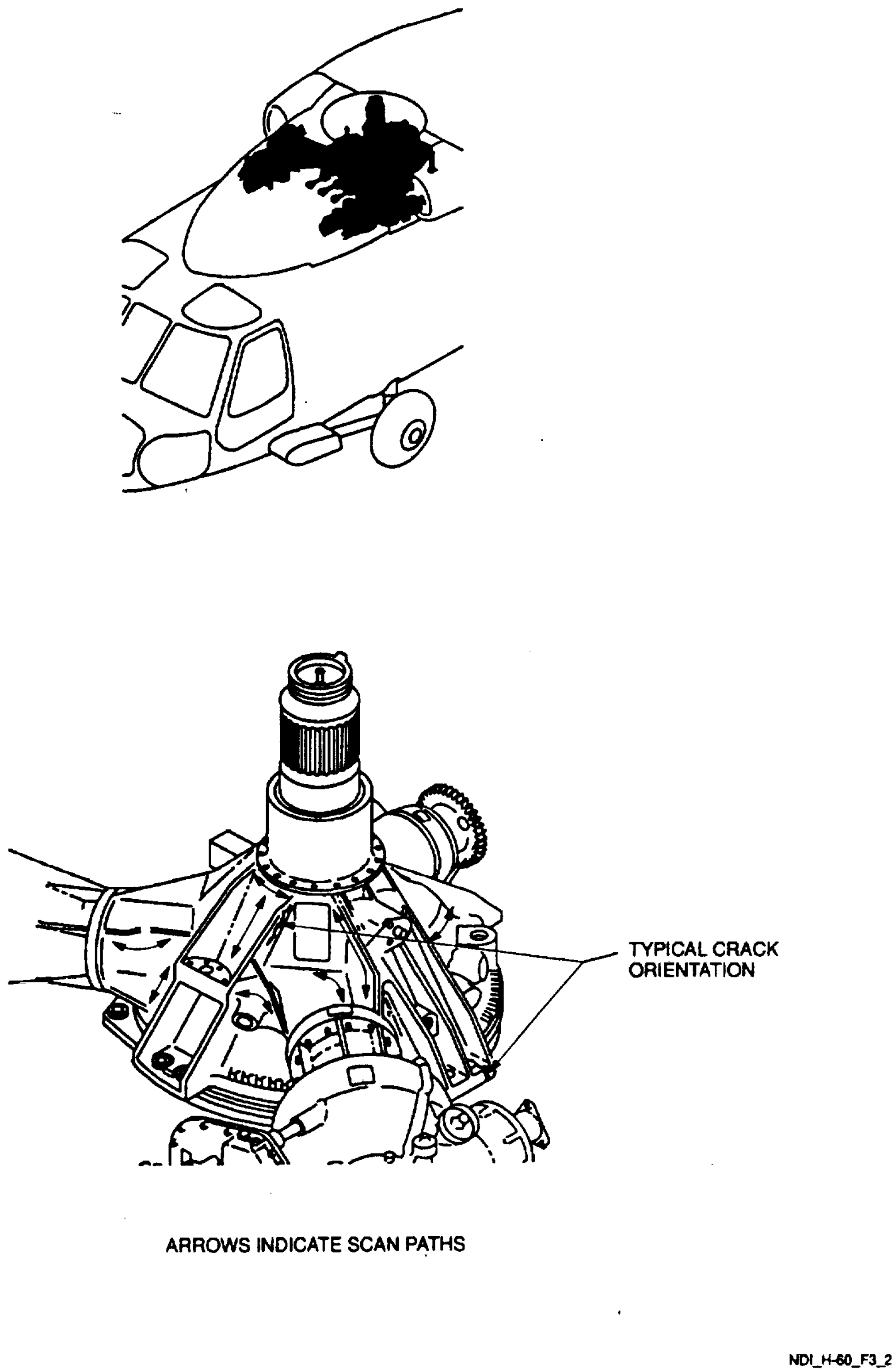


Figure 3-2. Main Transmission

3.3.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the intermediate gearbox shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

3.3.3.3 Access. Access is obtained through the intermediate gearbox cover (Figure 1-4, Item 5T-6T-1 7).

3.3.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

3.3.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.
(2) Adjust phase as required to obtain horizontal lift-off.
(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

3.3.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 3-3.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 3.3.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 3.3.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

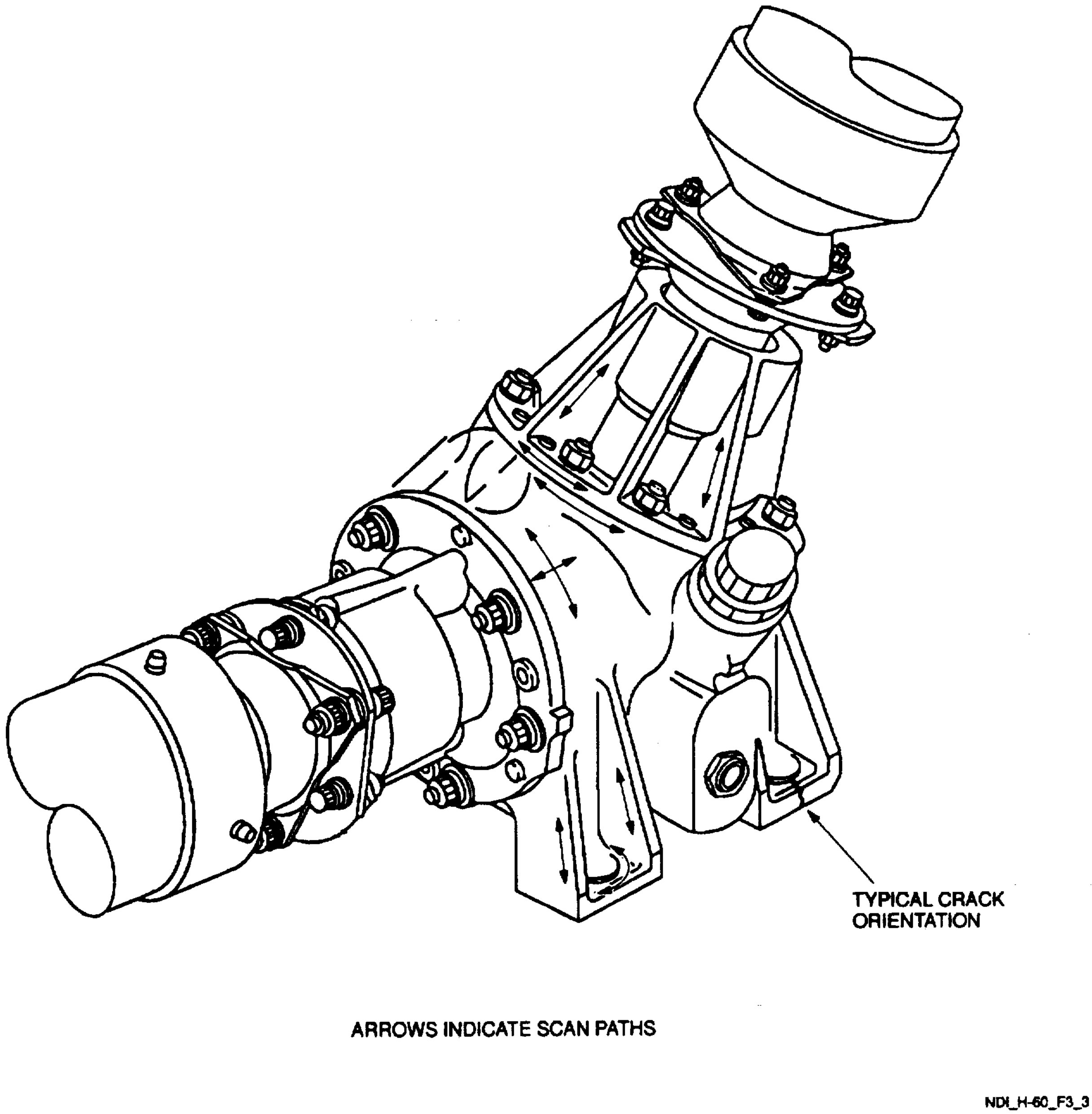


Figure 3-3. Intermediate Gearbox

3.3.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

3.3.4 Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

3.3.5 System Securing. The intermediate gearbox, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.4 TAIL ROTOR DRIVE SHAFT (ET).

3.4.1 Description (Figure 3-1. Index No. 4). The tail rotor is driven by a series of seven shafts. The shafts run from the tail take off flange on the rear of the main transmission to the intermediate gearbox. The tail rotor drive shaft then runs from the intermediate gearbox to the tail gearbox.

3.4.2 Defects. This inspection is used to verify crack indications found visually on the tail rotor drive shaft. No cracks are allowed.

3.4.3 Primary Method. Eddy Current.

3.4.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

3.4.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the tail rotor drive shaft shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

3.4.3.3 Access. Accessibility of the tail rotor drive shaft varies considerably. Refer to Figure 1-4 and Table 1-2 to locate applicable access provisions.

3.4.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

3.4.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 560		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:
   (1) Null probe on test block.
   (2) Adjust phase as required to obtain horizontal lift-off.
   (3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

3.4.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 3-4.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 3.4.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 3.4.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

3.4.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

3.4.4 Backup Method. None required.

3.4.5 System Securing. The tail rotor drive shaft, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

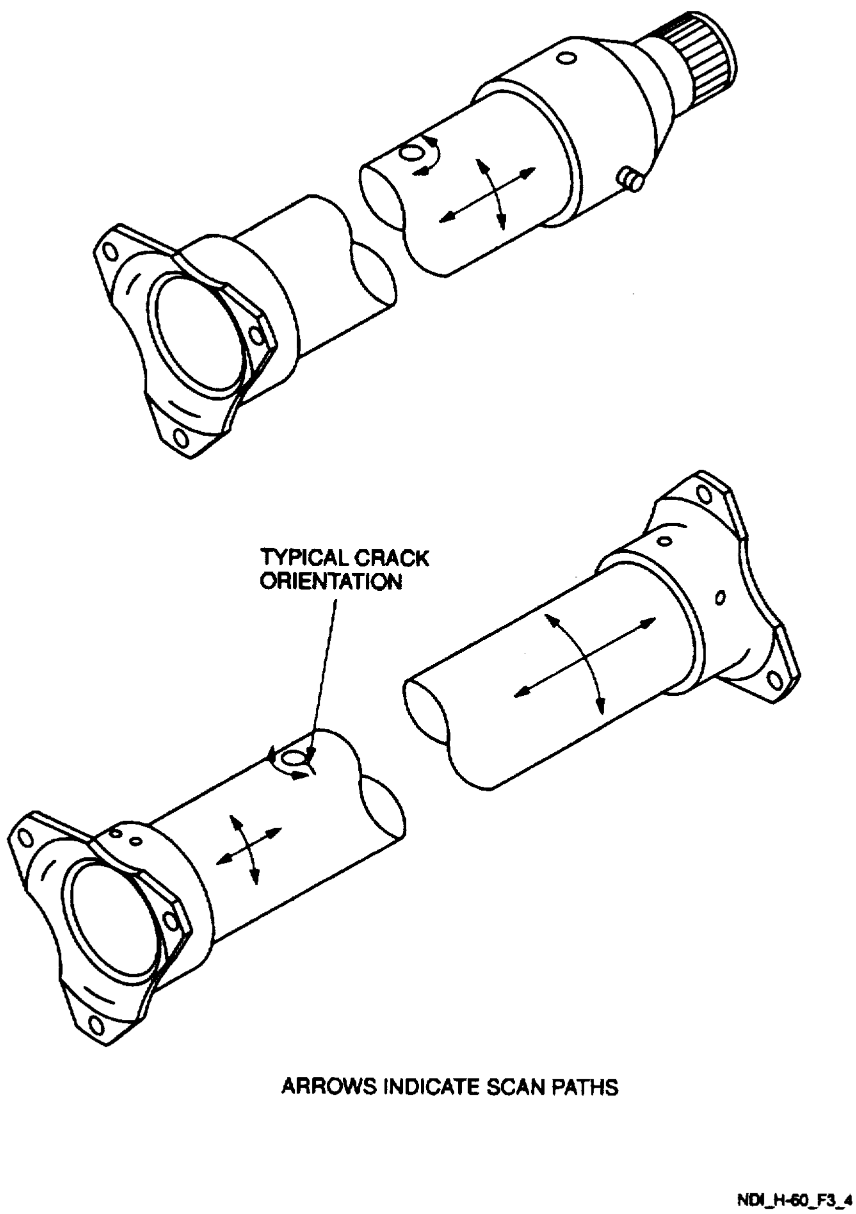


Figure 3-4. Tail Rotor Drive Shaft

3.5 TAIL ROTOR DRIVE SHAFT SUPPORTS (ET).

3.5.1 Description (Figure 3-1. Index No. 5). The tail rotor drive shaft support attaches the tail rotor drive shafts to the airframe throughout the tail cone section of the helicopter.

3.5.2 Defects. This inspection is used to verify crack indications found visually on the tail rotor drive shaft supports. No cracks are allowed.

3.5.3 Primary Method. Eddy Current.

3.5.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

3.5.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the drive shaft shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

3.5.3.3 Access. Access to the tail rotor drive shaft supports varies considerably. Refer to Figure 1-4 and Table 1-2 to locate applicable access provisions.

WARNING

Maintenance Platforms/Workstands

Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

3.5.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

3.5.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		

Rot	- 56°
Probe drive	- mid
LPF	- 100
HPF	- 0
H Pos	-80%
V Pos	-20%

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.
(2) Adjust phase as required to obtain horizontal lift-off.
(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

3.5.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 3-5.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

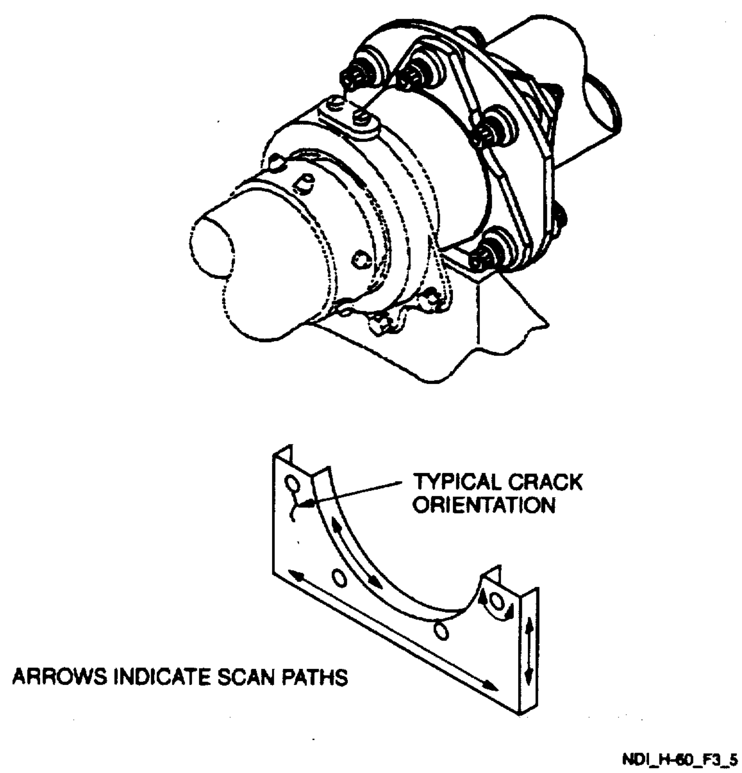


Figure 3-5. Tail Rotor Drive Shaft Supports

NOTE

Either probe identified in paragraph 3.5.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 3.5.3.5b.(1), (2), and (3) shall be repeated each time a change is made.

3.5.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

3.5.4 Backup Method**.** None required.

3.5.5 System Securing**.** The tail rotor drive shaft supports, if removed, require installation in accordance wit the applicable technical manuals listed in Table 1-1.

3.6 TAIL ROTOR DRIVE SHAFT COUPLING (PT).

3.6.1 Description (Figure 3-1, Index No. 6)**.** The tail rotor drive shaft couplings are multiple disc, flexible couplings which are used to carry torque and allow for minor misalignment of the tail drive shaft components. Also, the couplings allow the drive shaft to remain in alignment as the airframe flexes in flight.

3.6.2 Defects**.** This inspection is used to verify crack indications found visually on the tail rotor drive shaft coupling. No cracks are allowed.

3.6.3 Primary Method**.** Fluorescent Penetrant.

3.6.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

3.6.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the tail rotor drive shaft coupling shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

3.6.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands

Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

3.6.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

3.6.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 3-6.

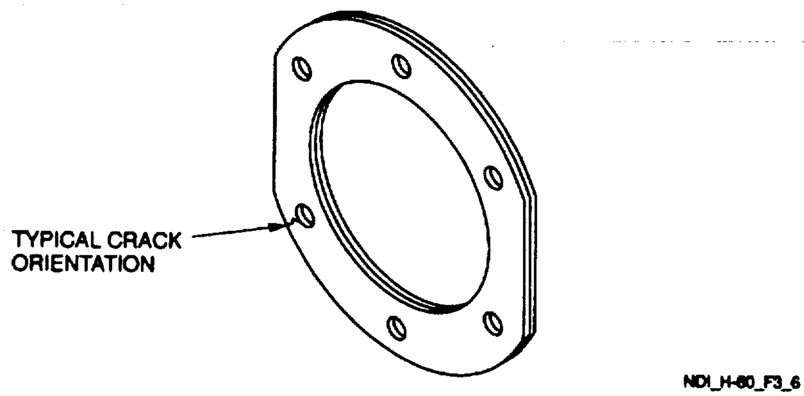


Figure 3-6. Tail Rotor Drive Shaft Coupling

3.6.3.6 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

3.6.4 Backup Method. None required.

3.6.5 System Securing. Clean the tail rotor drive shaft coupling to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The tail rotor drive shaft coupling, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.7 OIL COOLER DRIVE SHAFT (ET).

3.7.1 Description (Figure 3-1. Index No. 7). The oil cooler drive shaft is aft of, and driven by, the shouldered shaft of the fan. The fan forces air through the radiator, which cools the hot oil from the main module sump. The forward flange of the oil cooler drive shaft is steel, the aft end is titanium, and the drive shaft tube is aluminum.

3.7.2 Defects. This inspection is used to verify crack indications found visually on the aluminum and titanium portions of the oil cooler drive shaft. No cracks are allowed.

3.7.3 Primary Method. Eddy Current.

3.7.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 900 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Reference Block, three-notched titanium (0.008, 0.020, 0.040 EDM notches)
g. Teflon Tape, refer to Table 1-8
h. Aircraft Marking Pencil, refer to Table 1-8

3.7.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the oil cooler drive shaft shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

3.7.3.3 Access. Access is obtained through the oil cooler access panels (Figure 1-4, Item 3T-25).

WARNING

Maintenance Platforms/Workstands

Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

3.7.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

3.7.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- (560 aluminum) (300 titanium)		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.
(2) Adjust phase as required to obtain horizontal lift-off.
(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

3.7.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 3-7.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

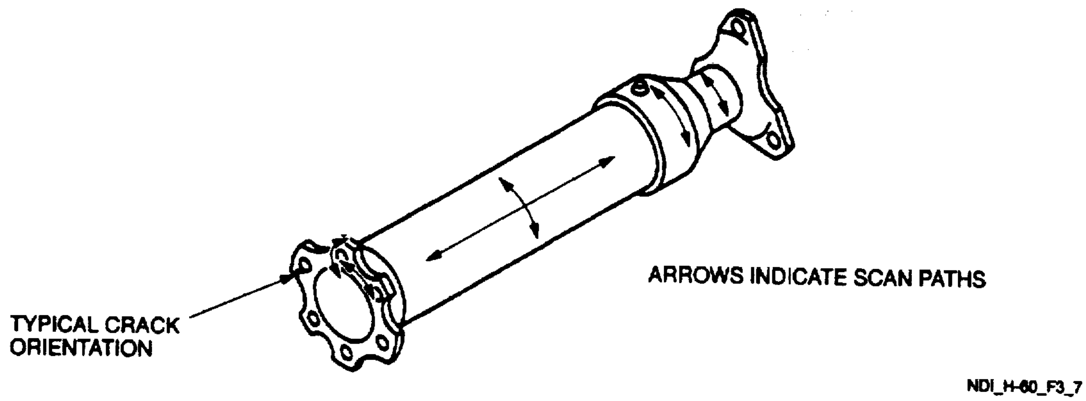


Figure 3-7. Oil Cooler Drive Shaft

NOTE

Either probe identified in paragraph 3.7.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 3.7.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

3.7.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

3.7.4 Backup Method. None required.

3.7.5 System Securing. The oil cooler drive shaft, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.8 OIL COOLER AXIAL FAN SHAFT (MT).

3.8.1 Description (Figure 3-1. Index No.8). The oil cooler axial fan shaft passes through and drives the fan rotor. There are two configurations: one with an integral flange and one with a removable/companion flange and nut. This inspection is for the removable/companion flange type.

3.8.2 Defects. Defects may occur anywhere on the surface of the oil cooler fan shaft. This inspection is to find cracks on the oil cooler axial fan shaft identified, at or around the cotter pin holes. No cracks are allowed.

3.8.3 Primary Method. Magnetic Particle.

3.8.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE

Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

3.8.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the fan shaft/blower assembly shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

3.8.3.3 Access. Not applicable.

3.8.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

3.8.3.5 NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

3.8.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 3-8.

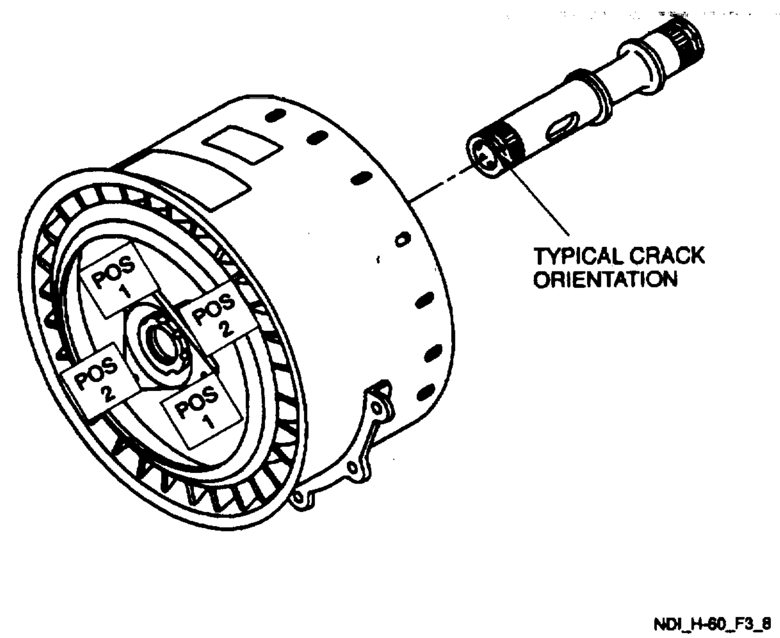


Figure 3-8. Oil Cooler Axial Fan Shaft

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position 1 as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 3.8.3.8.
f. Repeat steps a. through e. for position 2.

3.8.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

3.8.3.8 Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

3.8.4 Backup Method. None required.

3.8.5 System Securing. Clean the oil cooler fan shaft thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The oil cooler fan shaft, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.9 OIL COOLER FAN BLADES (ET).

3.9.1 Description (Figure 3-1. Index No. 9). The oil cooler fan blades are part of the transmission blower assembly. The blower forces air through the oil cooler.

3.9.2 Defects. Defects may occur anywhere on the surface of the oil cooler fan blades. Particular attention shall be given to the blade/hub area. No cracks are allowed.

3.9.3 Primary Method. Eddy Current.

3.9.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 900 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

3.9.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the oil cooler fan, if required, shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

3.9.3.3 Access. Access to the oil cooler fan blades is through the oil cooler access panel (Figure 1-4, Item 3T-25).

3.9.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

3.9.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-1 9e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.
(2) Adjust phase as required to obtain horizontal lift-off.
(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

3.9.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 3-9.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block arecause for rejection.

NOTE

Either probe identified in paragraph 3.9.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 3.9.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

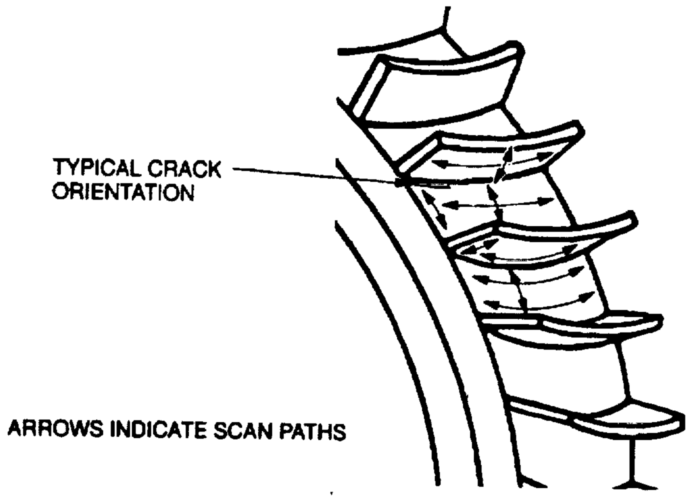


Figure 3-9. Oil Cooler Fan Blades

3.9.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

3.9.4 Backup Method. None required.

3.9.5 System Securing. The oil cooler fan, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.10 TAIL GEARBOX (ET).

3.10.1 Description (Figure 3-1. Index No. 10). The tail gearbox is mounted at the top of the pylon. It holds the tail rotor head and changes the direction of the drive.

3.10.2 Defects. Defects may occur anywhere on the surface of the tail gearbox. Particular attention should be given to the mounting point area. Also, all areas where rework has been performed shall be inspected for cracks. No cracks are allowed.

3.10.3 Primary Method. Eddy Current.

3.10.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 900 1/2 inch drop
d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

3.10.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the tail gearbox shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

3.10.3.3 Access. Access is obtained through the tail gearbox cover (Figure 1-4, Item 5T-6T-12).

WARNING

Maintenance Platforms/Workstands

Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

3.10.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

3.10.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 560		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.
(2) Adjust phase as required to obtain horizontal lift-off.
(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

3.10.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 3-10.

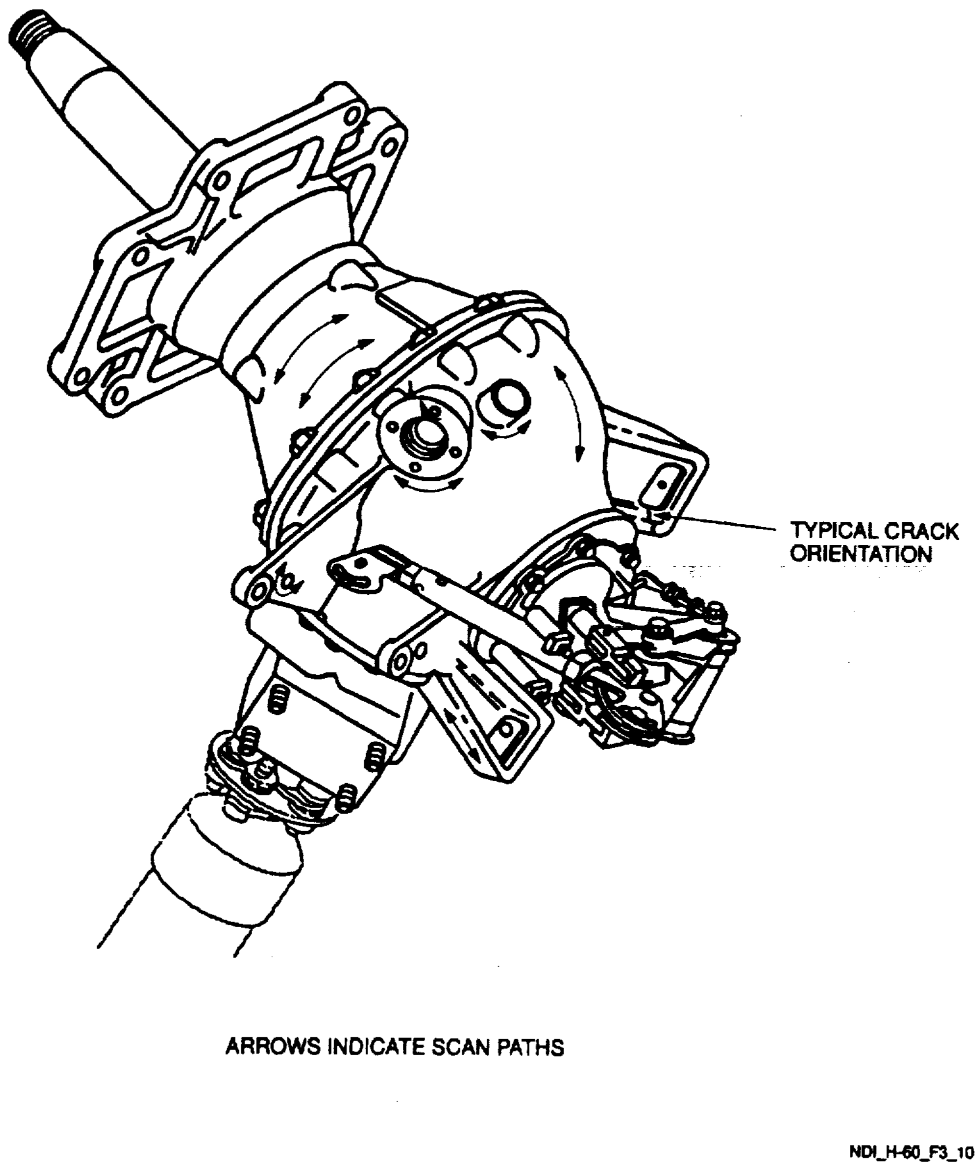


Figure 3-10. Tail Gearbox

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 3.10.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 3.10.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

3.10.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

3.10.4 Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

3.10.5 System Securing. The tail gearbox, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.11 TAIL GEARBOX MOUNT FITTING (ET).

3.11.1 Description (Figure 3-1. Index No. 11). The tail gearbox mount fitting is a structural component of the pylon. It serves as the attaching point for the tail gearbox assembly.

3.11.2 Defects. Defects may occur anywhere on the surface of the tail gearbox mount fitting. Particular attention shall be given to the joining area with the fitting to front spar caps in the area of high strength fasteners. No cracks are allowed.

3.11.3 Primary Method. Eddy Current.

3.11.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 900 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

3.11.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the tail rotor gearbox shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

3.11.3.3 Access. Access is obtained through the tail rotor gearbox cover (Figure 1-4, Item 5T-6T-12).

WARNING

Maintenance Platforms/Workstands Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

3.11.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

3.11.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	-80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.
(2) Adjust phase as required to obtain horizontal lift-off.
(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

3.11.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 3-11.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 3.11.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 3.11.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

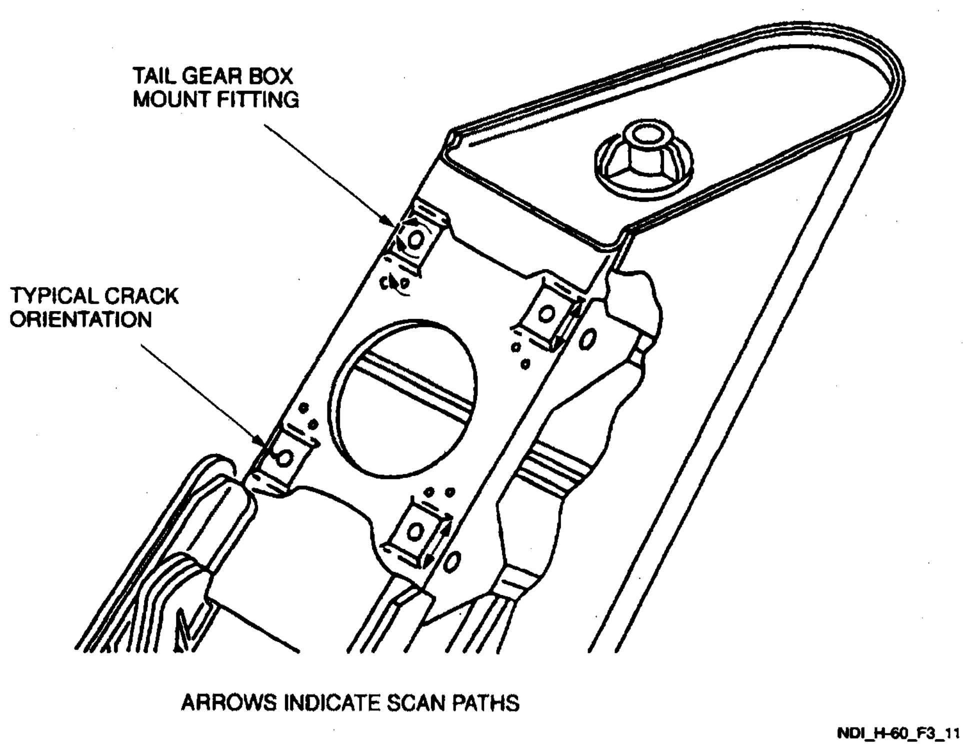


Figure 3-11. Tail Gearbox Mount Fitting

3.11.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

3.11.4 Backup Method. None required.

3.11.5 System Securing. The tail gearbox mounting fitting, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.12 TAIL ROTOR GEARBOX INNER/OUTER SPLIT CONES (PT).

3.12.1 Description (Figure 3-1, Index No. 12). The tail rotor gearbox split cones provide support to the inner retention plate attached to the output shaft of the tail rotor gearbox.

3.12.2 Defects. Defects may occur anywhere on the surface of the tail rotor gearbox inner/outer split cones. All areas where rework has been performed shall be inspected for cracks. No cracks are allowed.

3.12.3 Primary Method. Fluorescent Penetrant.

3.12.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts..

3.12.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the tail rotor gearbox inner/outer split cones removed in accordance with the applicable technical manuals listed in Table 1-1.

3.12.3.3 Access. Not applicable.

3.12.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

3.12.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 3-12.

3.12.3.6 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

3.12.4 Backup Method. None required.

3.12.5 System Securing. Clean the tail rotor gearbox inner/outer split cones to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The tail rotor gearbox inner/outer split cones require installation in accordance with the applicable technical manuals listed in Table 1-1.

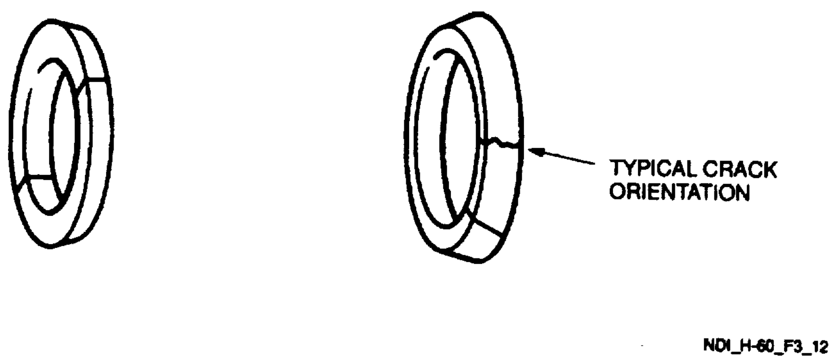


Figure 3-12. Tail Rotor Gearbox Inner/Outer Split Cones

SECTION IV
AIRFRAME AND LANDING GEAR SYSTEM

4. GENERAL.

4.1 CONTENTS. The airframe and landing gear system inspection items covered in this section are those critical items of the H-60 helicopter series listed in the Airframe and Landing Gear System Inspection Index (Table 4-1). Corresponding inspection figures and applicable text para- graphs are listed opposite each inspection item. The index number for each item may be used to locate it in Figure 4-1.

Table 4-1. Airframe and Landing Gear System Inspection Index

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
2	Airframe Skin, Panels, Doors, Covers, and Fairings - Metal	ET	4.2	4-2
3	Honeycomb and Composite Structures	BT	4.3	4-3
4	Fluid in Honeycomb Core Panels and Structures	RT	4.4	4-4
5	Vibration Absorber Springs	MT	4.5	4-5
6	Vibration Absorber Structural Fittings	ET	4.6	4-6
7	Roll Vibration Absorber	PT	4.7	4-7
8	Aluminum Structural Beams and Frames	ET	4.8	4-8
9	Pilot/Copilot Seat Midframe Support	MT	4.9	4-9
10	Troop/Cargo Door Upper Track	ET	4.10	4-10
11	Gunner's Window Lower Track	ET	4.11	4-11
12	Gunner's Window Upper Track	ET	4.12	4-12
13	Troop/Cargo Door Lower Track	ET	4.13	4-13
14	Oil Cooler Compartment Access Door	PT	4.14	4-14
15	Tail Pylon Attach Fitting	ET	4.15	4-15
16	Tail Rotor Pylon Skin, Station 200	ET	4.16	4-16
17	Tail Rotor Pylon Attaching Hardware	PT	4.17	4-17
18	Tail Pylon Lower Step	ET	4.18	4-18
*19	Stabilator Attach Fitting	ET	4.19	4-19
20	Stabilator Actuator Attach Fittings	MT	4.20	4-20
*21	Stabilator Actuator Housing	PT	4.21	4-21
*22	Drag Beam Support Fitting	ET	4.22	4-22

Table 4-1. Airframe and Landing Gear System Inspection Index - Continued

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
*23	Main Landing Gear Drag Beam	MT	4.23	4-23
24	Main Landing Gear Shock Strut Upper Cylinder	ET	4.24	4-24
25	Main Landing Gear Shock Strut Lower Stage Piston	MT	4.25	4-25
26	Main Landing Gear Wheel Assembly	ET	4.26	4-26
27	Main Landing Gear Brake	MT	4.27	4-27
28	Main Landing Gear Brake Housing	ET	4.28	4-28
29	Parking Brake Valve Components	PT	4.29	4-29
30	Slave Mixer Valve Parts	PT	4.30	4-30
31	Tail Landing Gear Yoke	ET	4.31	4-31
32	Tail Landing Gear Fork	ET	4.32	4-32
33	Tail Landing Gear Lock Actuator Assembly	MT	4.33	4-33
34	Tail Landing Gear Wheel Assembly	ET	4.34	4-34
35	Cargo Hook	MT	4.35	4-35
*36	Ferrous Bolts and Pins Contained Within the Airframe and Landing Gear System	MT	4.36	
*37	Nonferrous Bolts and Pins Contained Within the Airframe and Landing Gear System	PT	4.37	

NOTE: *Indicates Flight Safety Part.

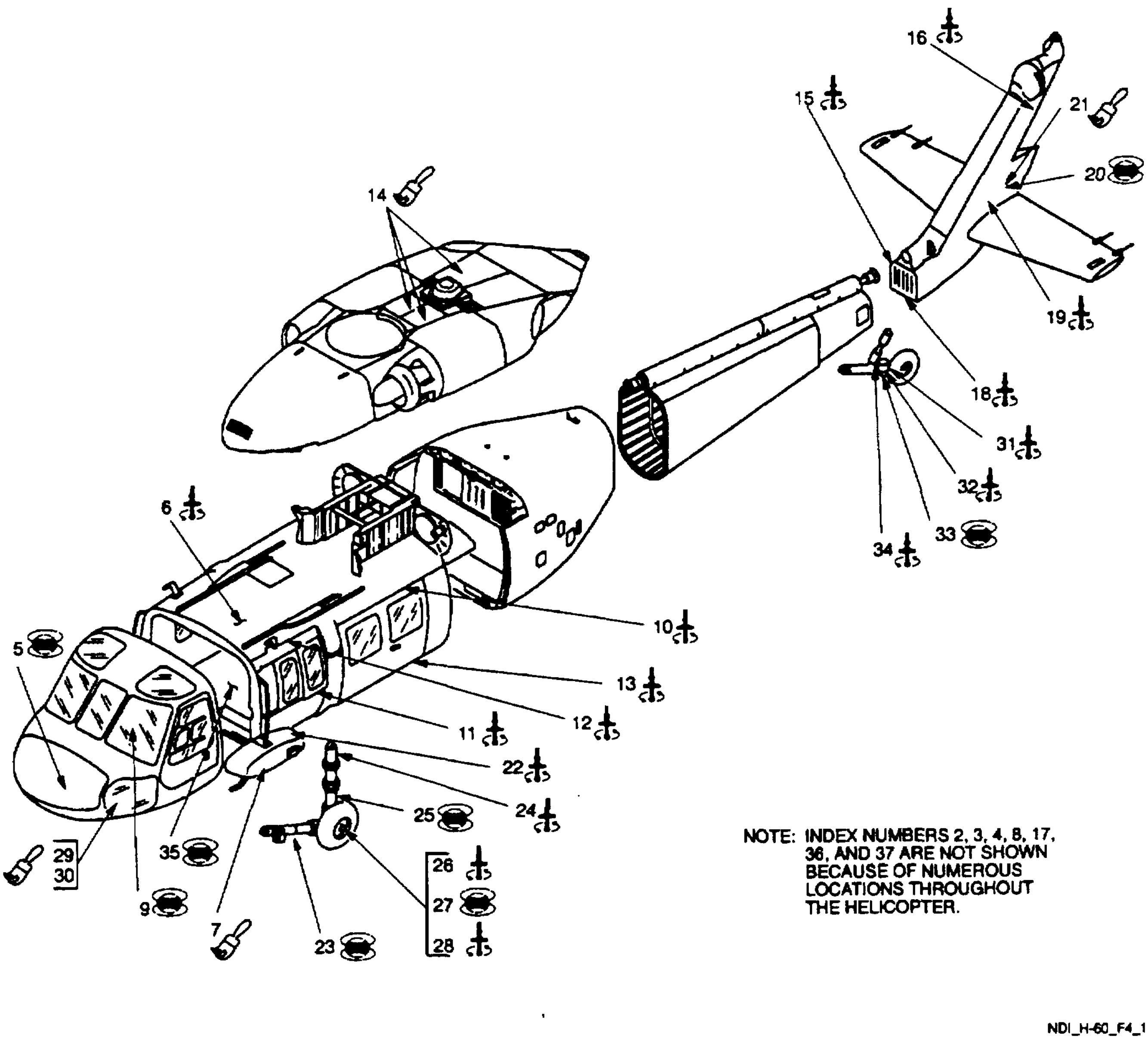


Figure 4-1. Airframe and Landing Gear System

4.2 AIRFRAME SKIN, PANELS, DOORS, COVERS, AND FAIRINGS - METAL (ET).

4.2.1 Description (Figure 4-1. Index No. 2). This inspection is applicable to all skins, panels, doors, covers, and fairings constructed of nonferrous metallic material throughout all airframe sections of this helicopter.

4.2.2 Defects. This inspection is used to verify crack indications found visually on the part being inspected. No cracks are allowed.

4.2.3 Primary Method. Eddy Current.

4.2.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 900 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)

f. Reference Block, three-notched **titanium** (0.008, 0.020, 0.040 EDM notches)

g. Reference Block, three-notched **magnesium** (0.008, 0.020, 0.040 EDM notches)

h. Teflon Tape, refer to Table 1-8

i. Aircraft Marking Pencil, refer to Table 1-8

4.2.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the part using this procedure. If required, the airframe skin, panels, doors, covers, and fairings - metal shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

4.2.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands

Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

4.2.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.2.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e1".

Frequency Fl	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- (56° aluminum and magnesium) (30° titanium)		
Probe drive - mid			
LPF	- 100		
HPF	- 0		
H Pos	-80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

4.2.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-2.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 4.2.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.2.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

4.2.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as re- quired by paragraph 1.3.

4.2.4 <u>Backup Method</u>. None required.

4.2.5 <u>System Securing</u>. The inspected part requires installation in accordance with the applicable technical manuals listed in Table 1-1.

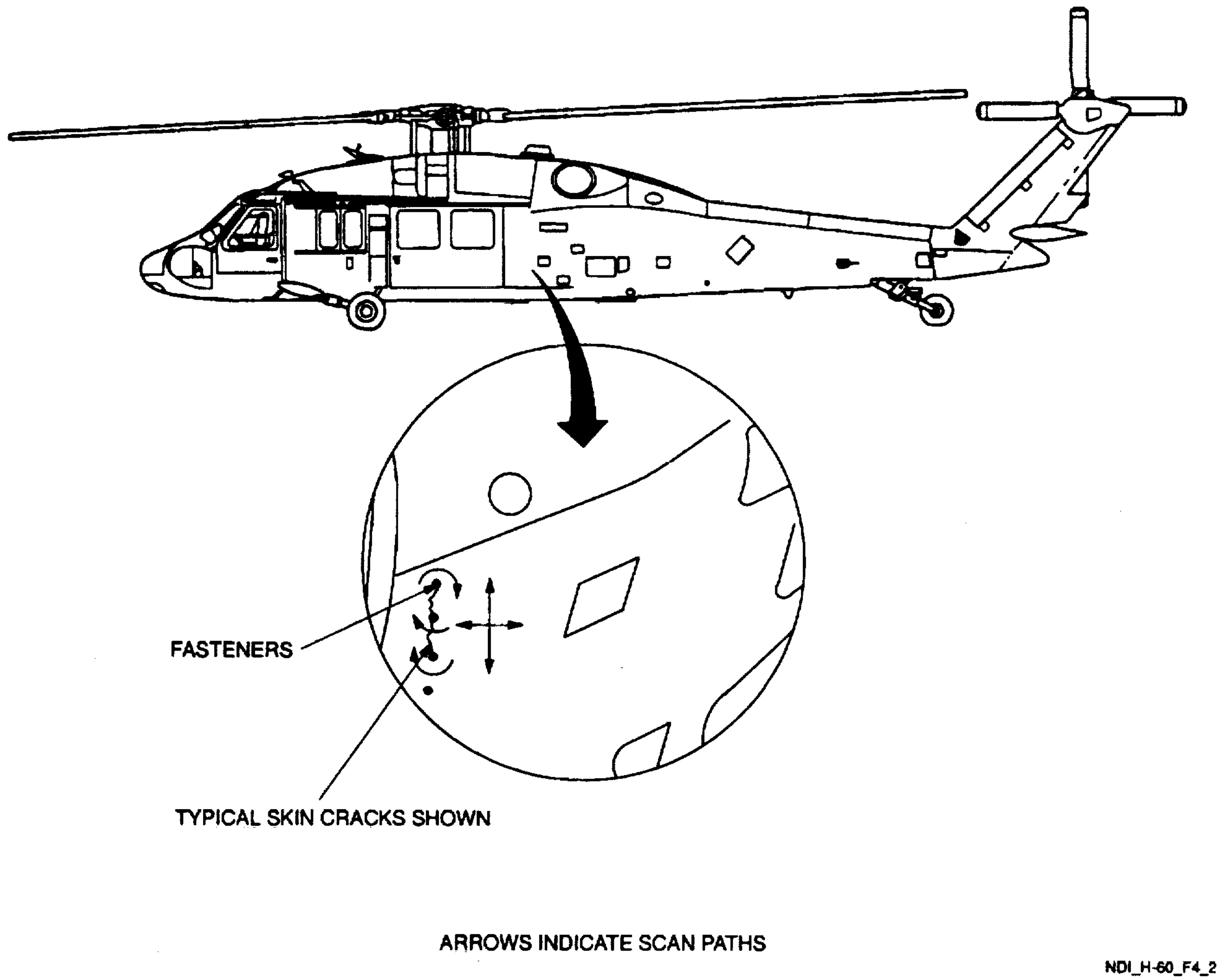


Figure 4-2. Airframe Skin, Panels, Doors, Covers, and Fairings - Metal

4.3 HONEYCOMB AND COMPOSITE STRUCTURES (BT).

4.3.1 Description (Figure 4-1. Index No. 3). This inspection is applicable to parts or components made of metallic/nonmetallic skins bonded to metallic/ nonmetallic cores and laminations of facings of metal or fiberglass panels. The structural assembly components identified for inspection are: honeycomb panels, cabin floors, drive shaft covers, access doors and covers, cowlings, and work platforms.

4.3.2 Defects. Perform the NDI method contained herein on the components listed above for the purpose of verification of void damage identified by visual inspection. Void damage may occur anywhere on either side of bonded panels as a result of mechanical damage (dents, punctures, scratches, etc.) or fluid intrusion/corrosion.

NOTE

A void is defined as an unbonded area that is suppose to be bonded. Many sub-definitions are given such as bond separation, delamination, lack of adhesive, gas pocket, misfit, etc. This procedure makes no distinction among these instead grouping under the general term "void."

4.3.3 Primary Method. Bond Testing.

4.3.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Bond Test Unit
b. Probe Mechanical Impedance Analysis
c. Probe Holder
d. Cable Assembly
e. Test Block, metal honeycomb with skin thickness closest to that of the panel to be inspected (refer to Appendix C)
f. Test Block, Composite Defect Standard #1
g. Test Block, Composite Defect Standard #3
h. Teflon Tape, consumable material, refer to Table 1-8
i. Aircraft Marking Pencil, refer to Table 1-8

4.3.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance in accordance with applicable technical manuals listed in Table 1-1.

4.3.3.3 Access. Not applicable.

4.3.3.4 Preparation of Part. The components shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.3.3.5 NDI Equipment Settings. Refer to Bond Testing Equipment, paragraph 1.4.6.1.

a. Attach cable and probe to Bondmaster. Protect probe with Teflon tape and install in probe holder.

b. Turn on Bondmaster, press SPCL, and make the following adjustments.

H Pos	-40%
V Pos	- 80%
PHASE REF	- O
DRIVE	- MID

c. Press SET and select DISPLAY - PHASE.

d. Place probe on good area of test block and press GOOD PART. Do this several times while moving the probe to different spots in the good area of the test block. Note the video signature for each. Select and enter a representative good area by pressing GOOD PART one last time.

e. Place probe on void area of the test block and press BAD PART. Do this several times while moving the probe slightly to different positions within the void area. Select and enter a position that gives a strong difference between good and void areas. Use DIFF soft key to observe difference between good and bad areas of test block.

NOTE

If during setup the flying spot deflects upward, or to the side, when the probe passes over the bad part, instead of the desired down deflection toward the alarm box, press SPCL and toggle to a different phase setting (90, 180, or 270), and repeat steps d. and e. Continue to try phase setting until the flying spot moves in the desired down direction.

f. Place probe on good area of test block and press RUN. Flying spot should be near the top-center of the ACTIVE screen. If not, press NULL. Slide probe from good to void area and note response from flying spot. This response should provide both amplitude (vertical) and phase (horizontal) movement. The default gate/alarm setting may be incorrect for this set- up. Turn off or reset gate/alarm as desired.

g. The Bondmaster is programmed to automatically set test parameters to a start-up or initial bond test. By following the steps outlined above, adjustments to the FREQ, GAIN, and ALARM can help to refine the selectivity in locating defects among differing composite materials.

4.3.3.6 Inspection Procedure. Refer to Bond Testing Method, paragraph 1.4.6 and inspection areas shown in Figure 4-3. Place probe in location where test for void is desired and press NULL. Move probe from good to suspect area and note response. A strong amplitude change and phase shift similar to the test block is indicative of a void.

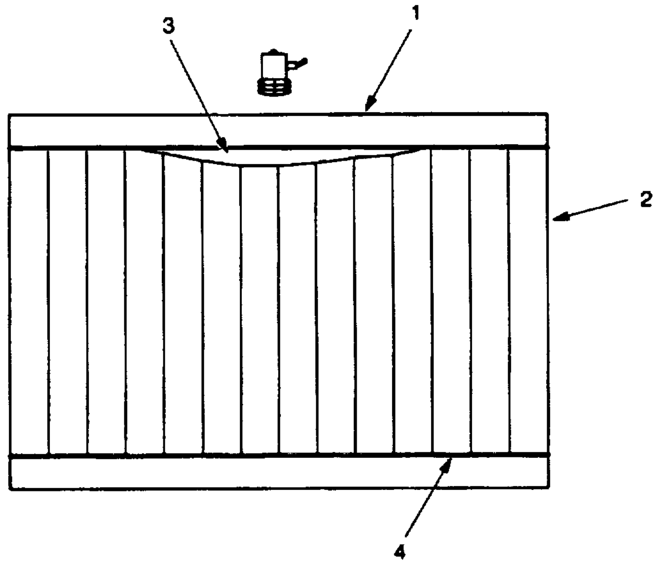


Figure 4-3. Honeycomb and Composite Structures

NOTE

This setup is very sensitive to thin skin-to-core bonding. If the panel skin is 0.020 inch thick or less, move the probe slowly over the skin and note the slight amplitude change (bounce) as the probe senses alternately the honeycomb cell nodes and cell walls. Be sure of panel configuration. Panel edges and attachment points may not be bonded structure and do not normally contain honeycomb. These areas will respond similarly to voids with the Bondmaster. Panels having rigidized skins are more easily scanned using wide Teflon tape on the probe holder.

4.3.3.7 Marking and Recording of Inspection Results. Mark and record as required by paragraph 1.3.

NOTE

Attention shall be directed to accurately marking the boundaries of all voids on both sides of the panel. These markings will be needed to determine acceptance/rejection criteria in accordance with the applicable technical manuals listed in Table 1-1.

4.3.4 Backup Method. None required.

4.3.5 System Securing. Reinstall acceptable panels that were removed for inspection in accordance with the applicable technical manual listed in Table 1-1.

4.4 FLUID IN HONEYCOMB CORE PANELS AND STRUCTURES (RT).

4.4.1 Description (Figure 4-1. Index No. 4). This inspection is applicable to parts or components made of metallic/nonmetallic skins bonded to metallic/nonmetallic cores and laminations of facings of metal or fiberglass panels. The structural assembly components identified for inspection are: honeycomb panels, cabin floors, drive shaft covers, access doors and covers, cowlings, and work platforms.

4.4.2 Defects. Fluid in honeycomb core of the components listed above.

4.4.3 Primary Method. Radiography.

WARNING

Radiation Hazard Assure compliance with all applicable safety precautions set forth in TM 55-1500-335-23 (Nondestructive Inspection Methods manual) listed in Table 1-1. A hazard associated with exposure to ionizing radiation is that serious damage can be inflicted without pain, burning, or other sense of discomfort during the exposure period. Radiation protection shall be utilized in accordance with AR40-14/DLAR 1000.28.

4.4.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. X-ray Unit

b. Tripod, X-ray tubehead stand

c. Film Processor

d. Film, Ready Pack 14 inch x 17 inch

e. Marking Material, refer to Table 1-8.

4.4.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance in accordance with applicable technical manuals listed in Table 1-1.

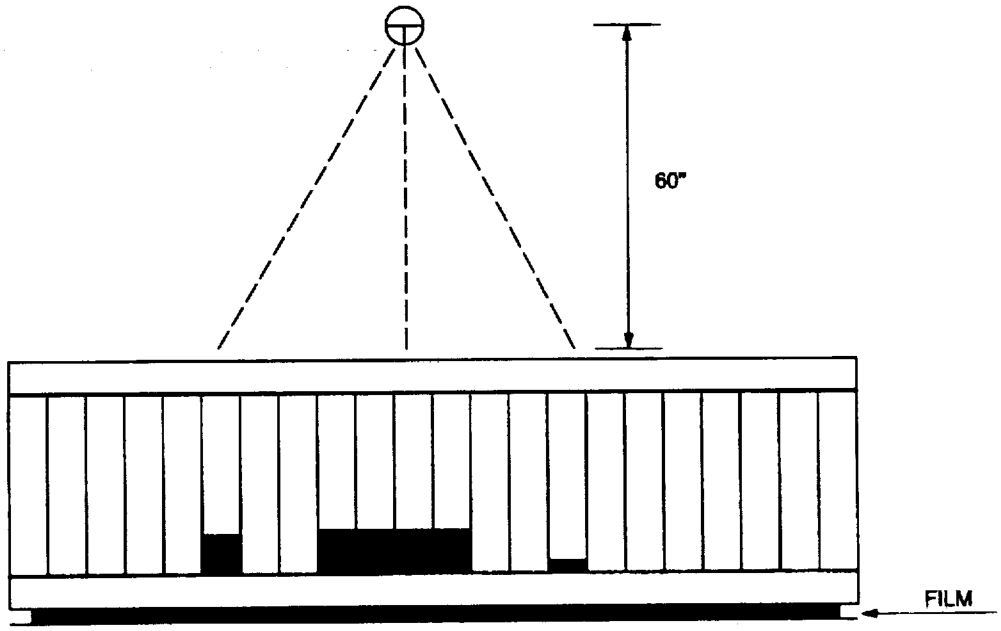
4.4.3.3 Access. Not applicable.

4.4.3.4 Preparation of Part. The identified area of interest shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.4.3.5 NDI Equipment Settings.

a. Refer to Radiographic (X-ray) method, paragraph 1.4.10.

b. Typical equipment settings, inspection and exposure data are given in Figure 4-4.



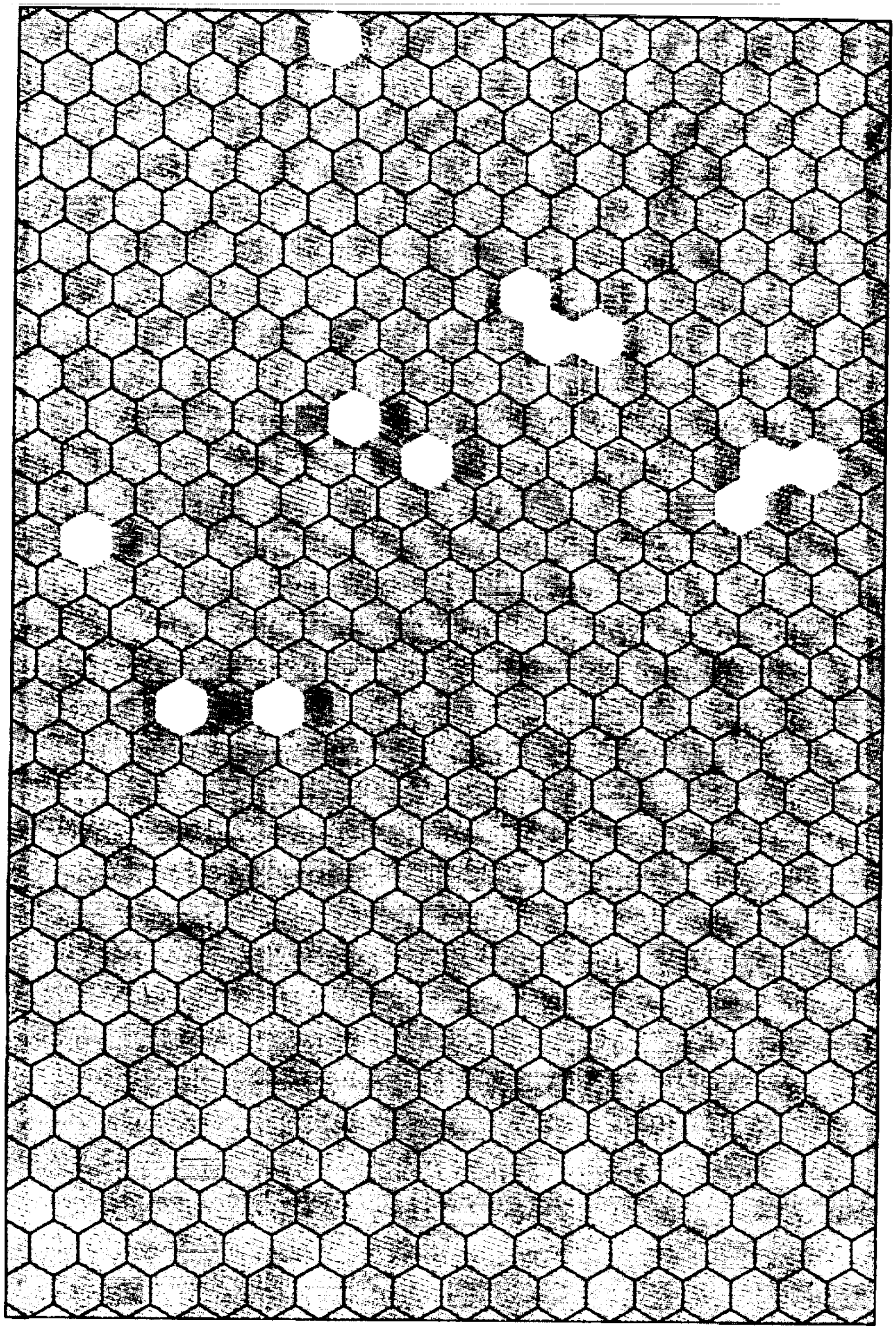
RADIOGRAPHIC INSPECTION DATA						
EXPOSURE NUMBER	KV	MA	FFD (INCHES)	TIME (SEC)	FILM	
					TYPE	SIZE
E1	50	3.5	60	40	M-2	8 x 10

REMARKS

1. FILM NUMBER SAME AS EXPOSURE NUMBER.
2. FILM DENSITY FOR EACH EXPOSURE SHALL BE 1.8 TO 2.5 H AND D UNITS IN AREAS OF INTEREST.
3. INSPECTION DATA SHALL BE ADJUSTED AS REQUIRED.

NDI_H-60_F4_4_1

Figure 4-4. Fluid in Honeycomb Core Panels and Structures (Sheet 1 of 2)



NDI_H-60_F4_4_2

Figure 4-4. Fluid in Honeycomb Core Panels and Structures (Sheet 2 of 2)

4.4.3.6 Inspection Procedure. Inspect designated areas, refer to Figure 4-4 for typical fluid entrapment and source/film placement.

a. Position film and desired nameplate data for exposure number 1.

b. Position X-ray tubehead for exposure number 1.

c. Set X-ray unit to the values given in the Radiographic Inspection Data chart for exposure number 1.

d. Make exposure number 1.

e. Remove exposed film.

f. Repeat inspection procedure (steps a. through e. above) for each exposure.

g. Process and interpret film for defects as noted in paragraph 4.4.2 and as shown in Figure 4-4.

4.4.4 Backup Method. None required.

4.4.5 System Securing. The inspected area shall be cleaned as necessary. Refer to Post Cleaning and Restoration of Part or Area after NDI, paragraph 1.4.16.

4.5 VIBRATION ABSORBER SPRINGS (MT).

4.5.1 Description (Figure 4-1. Index No. 5). Vibration absorbers are installed in the nose section, cabin overhead, and under each of the drag beam support fairings. The other vibration absorber, located at the rear of the pylon, is not included in this inspection. This inspection is applicable to the steel spring elements which are included above.

4.5.2 Defects. This inspection is used to verify crack indications found visualy on the vibration absorber springs. No cracks are allowed.

4.5.3 Primary Method. Magnetic Particle.

4.5.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

d. Fluorescent Magnetic Particles, refer to Table 1-8

e. Consumable Materials, refer to Table 1-8

f. Aircraft Marking Pencil, refer to Table 1-8

4.5.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the vibration absorber shall be removed and disassembled in accordance with the applicable technical manuals listed in Table 1-1.

4.5.3.3 Access. Location of these parts varies considerably. Refer to Figure 1-4 and Table 1-2 to locate applicable access provisions.

4.5.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.5.3.5 NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

4.5.3.6 4.5.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Typical springs and positions required for this inspection are illustrated in Figure 4-5.

a. Select AC on the AC/DC power switch.

b. Place probe/yoke on part in position 1 as shown.

c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.

d. Inspect for cracks using the black light.

e. Demagnetize before moving to the next position. Refer to paragraph 4.5.3.8.

f. Repeat steps a. through e. for positions 2 and 3.

4.5.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.5.3.8 Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

4.5.4 Backup Method. None required.

4.5.5 System Securing. Clean the spring thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The vibration absorber, if removed, requires assembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

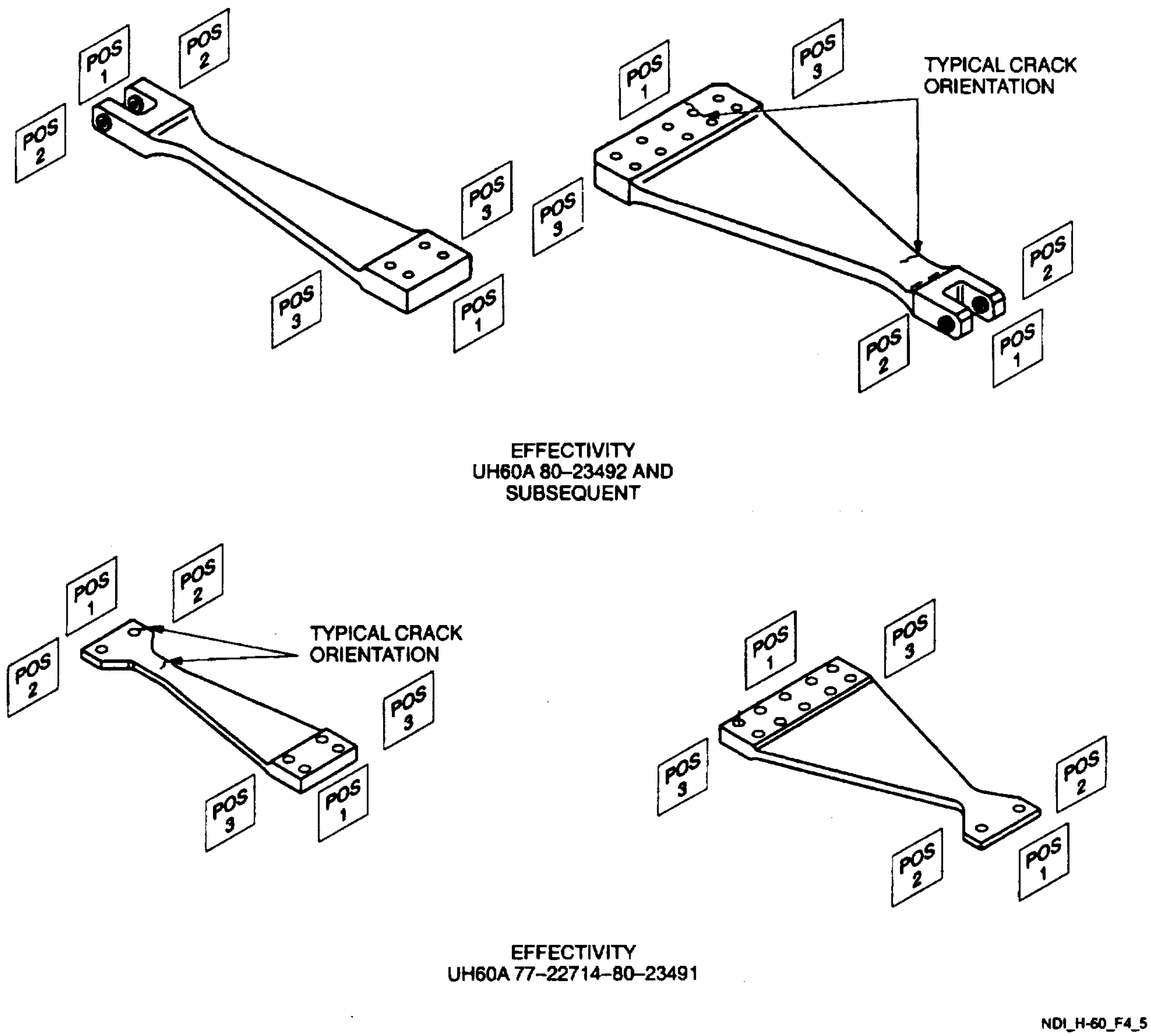


Figure 4-5. Vibration Absorber Springs

4.6 VIBRATION ABSORBER STRUCTURAL FITTINGS (ET).

4.6.1 Description (Figure 4-1. Index No. 6). The vibration absorber structural fittings attach the vibration absorbers to the helicopter structure. Due to similarity, this procedure is applicable to cabin and nose fittings.

4.6.2 Defects. This inspection is used to verify crack indications found visually on the vibration absorber fittings. No cracks are allowed.

4.6.3 Primary Method. Eddy Current.

4.6.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 900 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8

4.6.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed fittings using this procedure. If required, the fittings shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

4.6.3.3 Access. Remove cabin ceiling soundproofing for access to cabin fitting. Access nose fitting through fairing (Figure 1-4, Item 1 B-GS-A-1).

4.6.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.6.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-1 9e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

4.6.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-6.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 4.6.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.6.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

4.6.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.6.4 Backup Method. None required.

4.6.5 System Securing. The vibration absorber fittings, if removed, require installation in accordance with the applicable technical manuals listed in Table 1-1.

4.7 ROLL VIBRATION ABSORBER (PT).

4.7.1 Description (Figure 4-1. Index No. 7). A roll vibration absorber is installed under each drag beam support fairing. The absorbers are tuned to reduce roll vibrations.

4.7.2 Defects. This inspection is used to verify crack indications found visually on the roll vibration absorber. No cracks are allowed.

4.7.3 Primary Method. Fluorescent Penetrant.

4.7.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. MIL-1-25135 level 3 penetrant materials shall be selected from the approved list in Table 1-8.

4.7.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the roll vibration absorber shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

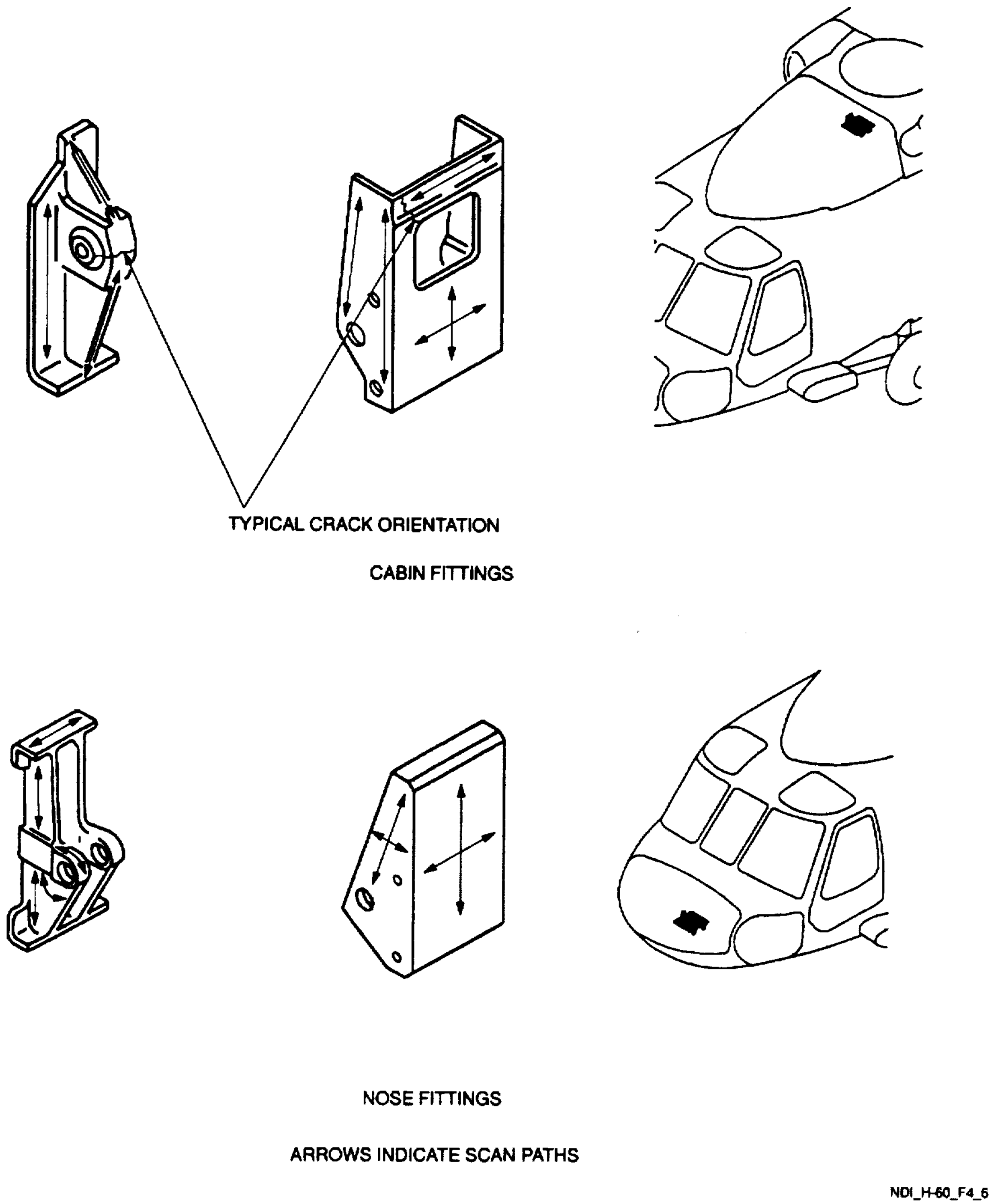


Figure 4-6. Vibration Absorber Structural Fittings

4.7.3.3 Access. Remove the drag beam support fairing.

4.7.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.7.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 4-7.

4.7.3.6 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.7.4 Backup Method. None required.

4.7.5 System Securing. Clean the roll vibration absorber to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The roll vibration absorber, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.8 ALUMINUM STRUCTURAL BEAMS AND FRAMES (ET).

4.8.1 Description (Figure 4-1, Index No. 8). The primary airframe structure is aluminum alloy. This procedure can be used on all-aluminum beams and frames as well as aluminum skin panels and doors.

4.8.2 Defects. This inspection is used to verify crack indications found visually on the aluminum structural beams and frames. No cracks are allowed.

4.8.3 Primary Method. Eddy Current.

4.8.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8

4.8.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance in accordance with the applicable technical manuals listed in Table 1-1.

4.8.3.3 Access. Generally easily accessed. If required, see Figure 1-4 and Table 1-2.

4.8.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

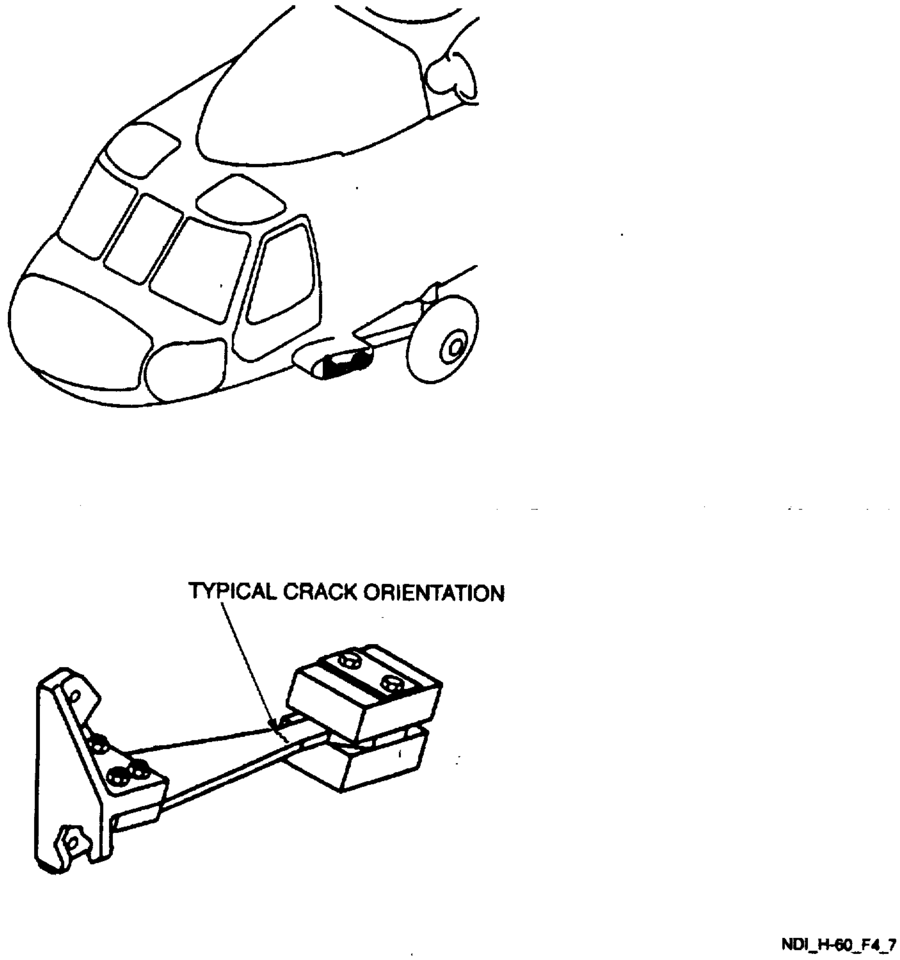


Figure 4-7. Roll Vibration Absorber

4.8.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e"t.

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56"		
Probe drive - mid			
LPF	- 100		
HPF	- 0		
H Pos	-80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

4.8.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-8.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 4.8.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.8.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

4.8.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.8.4 Backup Method. None required.

4.8.5 System Securing. Secure access and inspection provisions in accordance with the applicable technical manuals listed in Table 1-1.

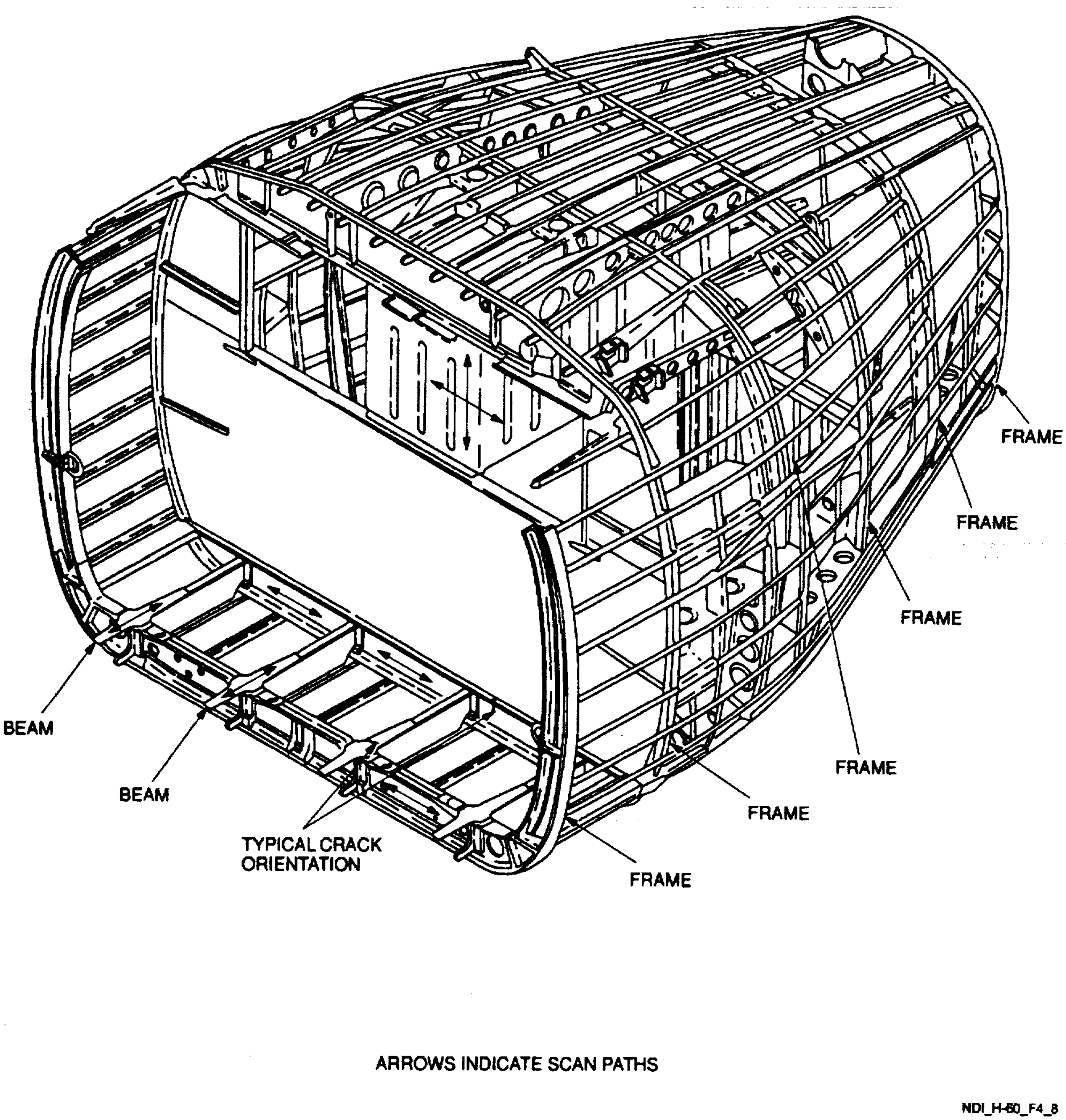


Figure 4-8. Aluminum Structural Beams and Frames

4.9 PILOT/COPILOT SEAT MIDFRAME SUPPORT (MT).

4.9.1 Description (Figure 4-1. Index No. 9). The midframe support is an integral portion of the vertical adjustment of the pilot/copilot seats.

4.9.2 Defects. This inspection is used to verify crack indications found visually on the midframe supports. No cracks are allowed.

4.9.3 Primary Method. Magnetic Particle.

4.9.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

d. Fluorescent Magnetic Particles, refer to Table 1-8

e. Consumable Materials, refer to Table 1-8

f. Aircraft Marking Pencil, refer to Table 1-8

NOTE

Hand-held magnetic coil may be used. Refer to paragraph 1.4.7.1.2 and Figure 1-6.

4.9.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the midframe support shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

4.9.3.3 Access. Not applicable.

4.9.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.9.3.5 NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

4.9.3.6 4.9.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 4-9.

a. Select AC on the AC/DC power switch.

b. Place probe/yoke on part in position 1 as shown.

c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.

d. Inspect for cracks using the black light.

e. Demagnetize before moving to the next position. Refer to paragraph 4.9.3.8.

f. Repeat steps a. through e. for positions 2 and 3.

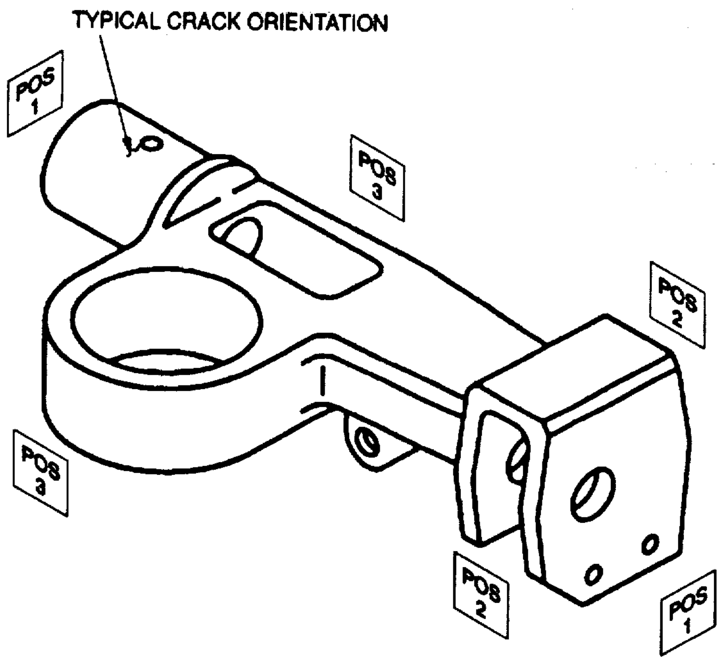


Figure 4-9. Pilot/Copilot Seat Midframe Support

4.9.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.9.3.8 Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

4.9.4 Backup Method. None required.

4.9.5 System Securing. Clean the midframe support thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The midframe support, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.10 TROOP/CARGO DOOR UPPER TRACK (ET).

4.10.1 Description (Figure 4-1. Index No.10). These rear sliding doors on either side of the helicopter cabin open to the troop/cargo compartment. This inspection applies to the upper track on which the doors slide.

4.10.2 Defects. This inspection is used to verify crack indications found visually on the cargo door upper track. No cracks are allowed.

4.10.3 Primary Method. Eddy Current.

4.10.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 900 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8

4.10.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the cargo door shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

4.10.3.3 Access. Not applicable.

4.10.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.10.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19eII.

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

4.10.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-10.

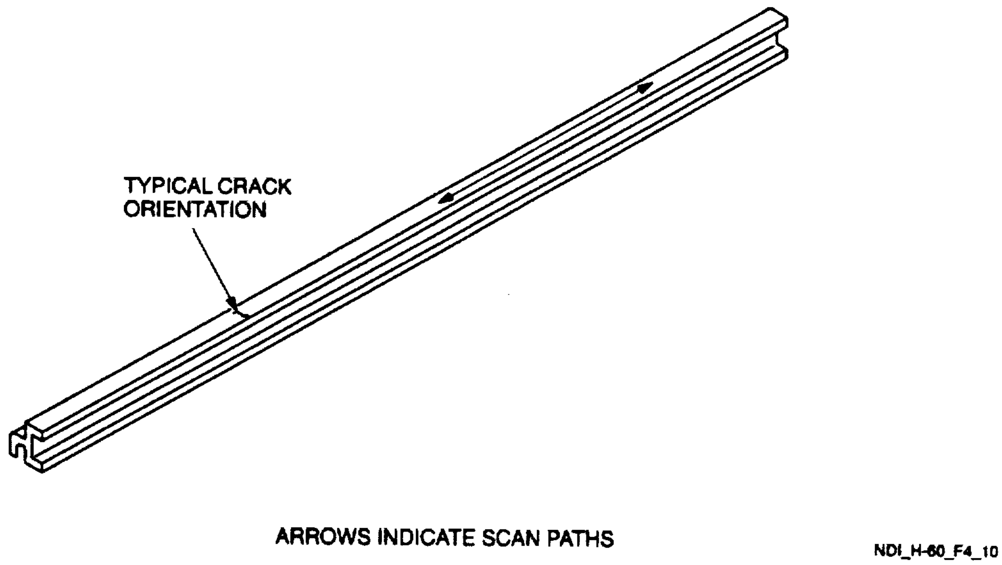


Figure 4-10. Troop/Cargo Door Upper Track

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 4.10.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.10.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

4.10.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.10.4 Backup Method. None required.

4.10.5 System Securing. The cargo door upper track, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.11 GUNNER'S WINDOW LOWER TRACK (ET).

4.11.1 Description (Figure 4-1. Index No. 11). The gunner window slider tracks are on both sides of the helicopter.

4.11.2 Defects. This inspection is used to verify crack indications found visually on the lower track. No cracks are allowed.

4.11.3 Primary Method. Eddy Current.

4.11.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 900 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8

4.11.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the gunner's window shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

4.11.3.3 Access. Not applicable.

4.11.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.11.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 560		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	-80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

4.11.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-11

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 4.11.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.11.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

4.11.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.11.4 Backup Method. None required.

4.11.5 System Securing. The gunner's window, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.12 GUNNER'S WINDOW UPPER TRACK (ET).

4.12.1 Description (Figure 4-1. Index No. 12). The gunner's window slides forward and aft and is held in place and guided by an upper track. Tracks are on both sides of the helicopter.

4.12.2 Defects. This inspection is used to verify crack indications found visually on the upper track. No cracks are allowed.

4.12.3 Primary Method. Eddy Current.

4.12.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 900 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8

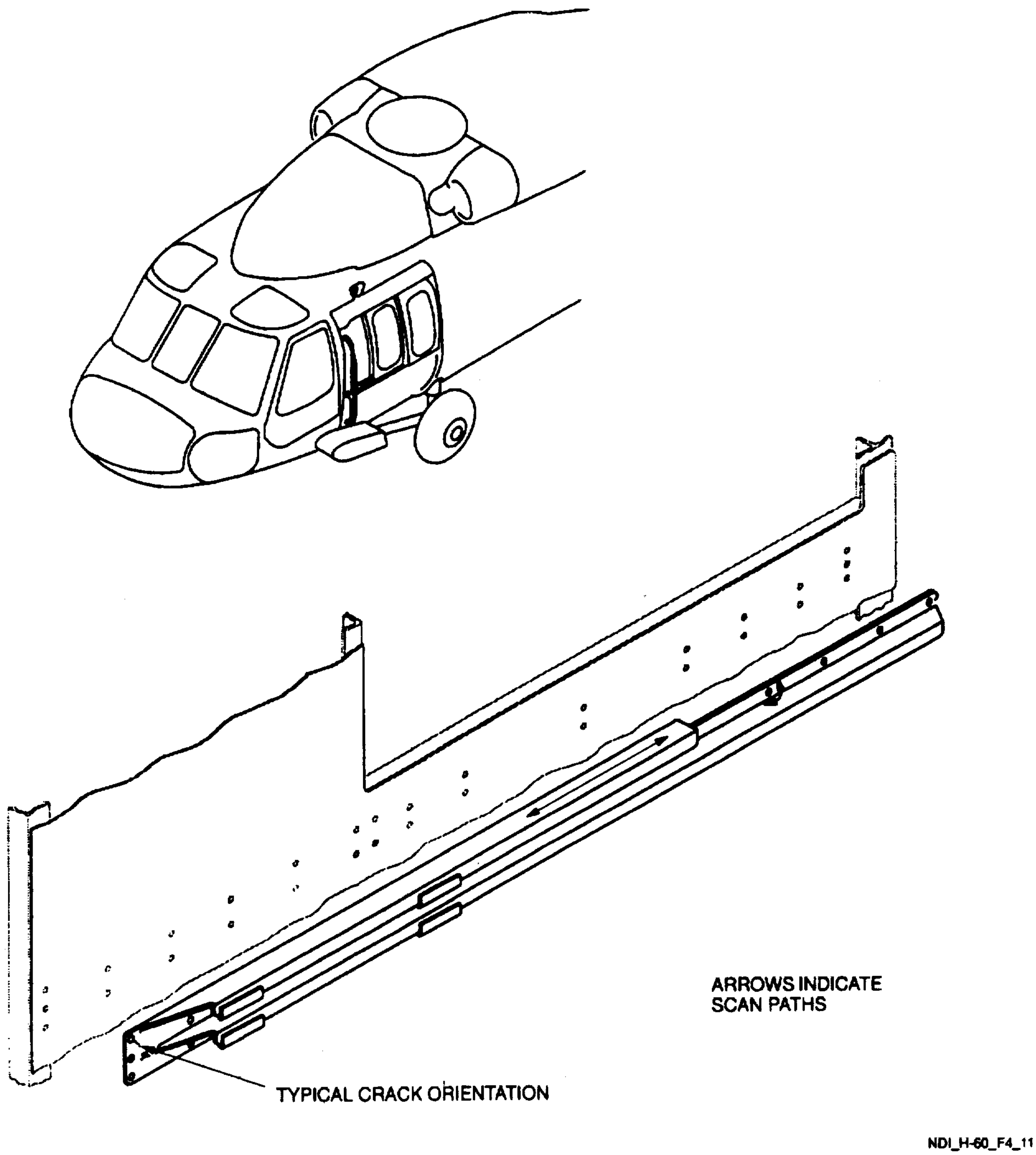


Figure 4-11. Gunner's Window Lower Track

4.12.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the gunner's window and retainer assembly shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

4.12.3.3 Access. Not applicable.

4.12.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.12.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19el.

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56" 30°		
Probe drive	- mid		
LPF	- 100		
HPF	-0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.10. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

4.12.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-12.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 4.12.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.12.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

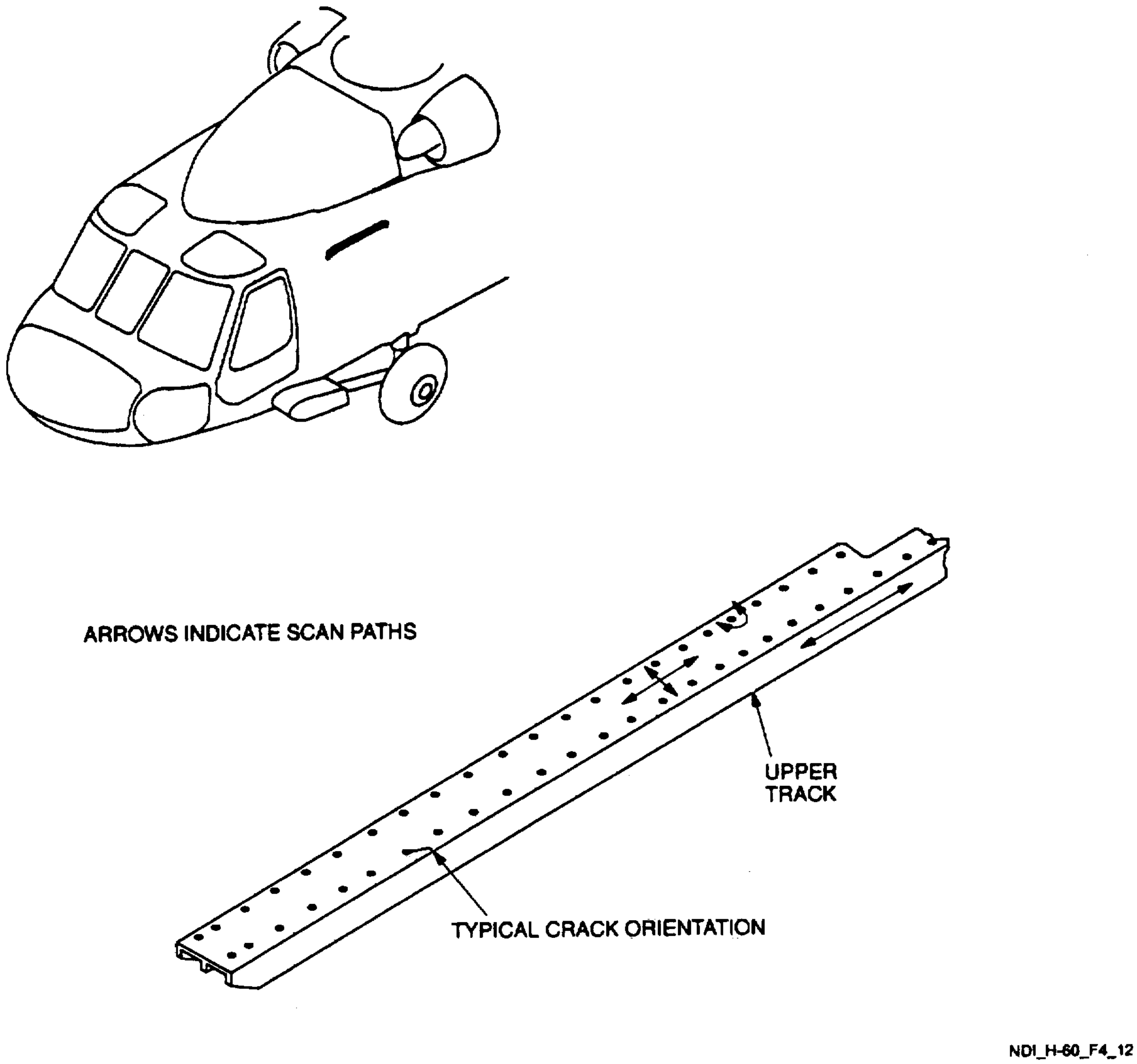


Figure 4-12. Gunner's Window Upper Track

4.12.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.12.4 Backup Method. None required.

4.12.5 System Securing. The gunner's window and retainer assembly, if removed, require installation in accordance with the applicable technical manuals listed in Table 1-1.

4.13 TROOP/CARGO DOOR LOWER TRACK (ET).

4.13.1 Description (Figure 4-1. Index No.13). These rear sliding doors on either side of the helicopter cabin open to the troop/cargo compartment. This inspection applies to the lower track on which the doors slide.

4.13.2 Defects. This inspection is used to verify crack indications found visually on the troop/cargo door lower track. No cracks are allowed.

4.13.3 Primary Method. Eddy Current.

4.13.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 900 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8

4.13.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the cargo door shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

4.13.3.3 Access. Not applicable.

4.13.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.13.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-1 9e1.

Frequency Fl	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		

Probe drive	- mid
LPF	- 100
HPF	-0
H Pos	- 80%
V Pos	- 20%

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

4.13.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-13.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 4.13.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.13.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

4.13.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.13.4 Backup Method. None required.

4.13.5 System Securing. The cargo door, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.14 OIL COOLER COMPARTMENT ACCESS DOOR (PT).

4.14.1 Description (Figure 4-1. Index No. 14). The oil cooler compartment access door (provision 3T-25) is provided to facilitate inspection and maintenance of the oil cooler.

4.14.2 Defects. This inspection is used to verify crack indications found visually on the door assembly. This inspection includes the door hinges, catches, and fittings. No cracks are allowed.

4.14.3 Primary Method. Fluorescent Penetrant.

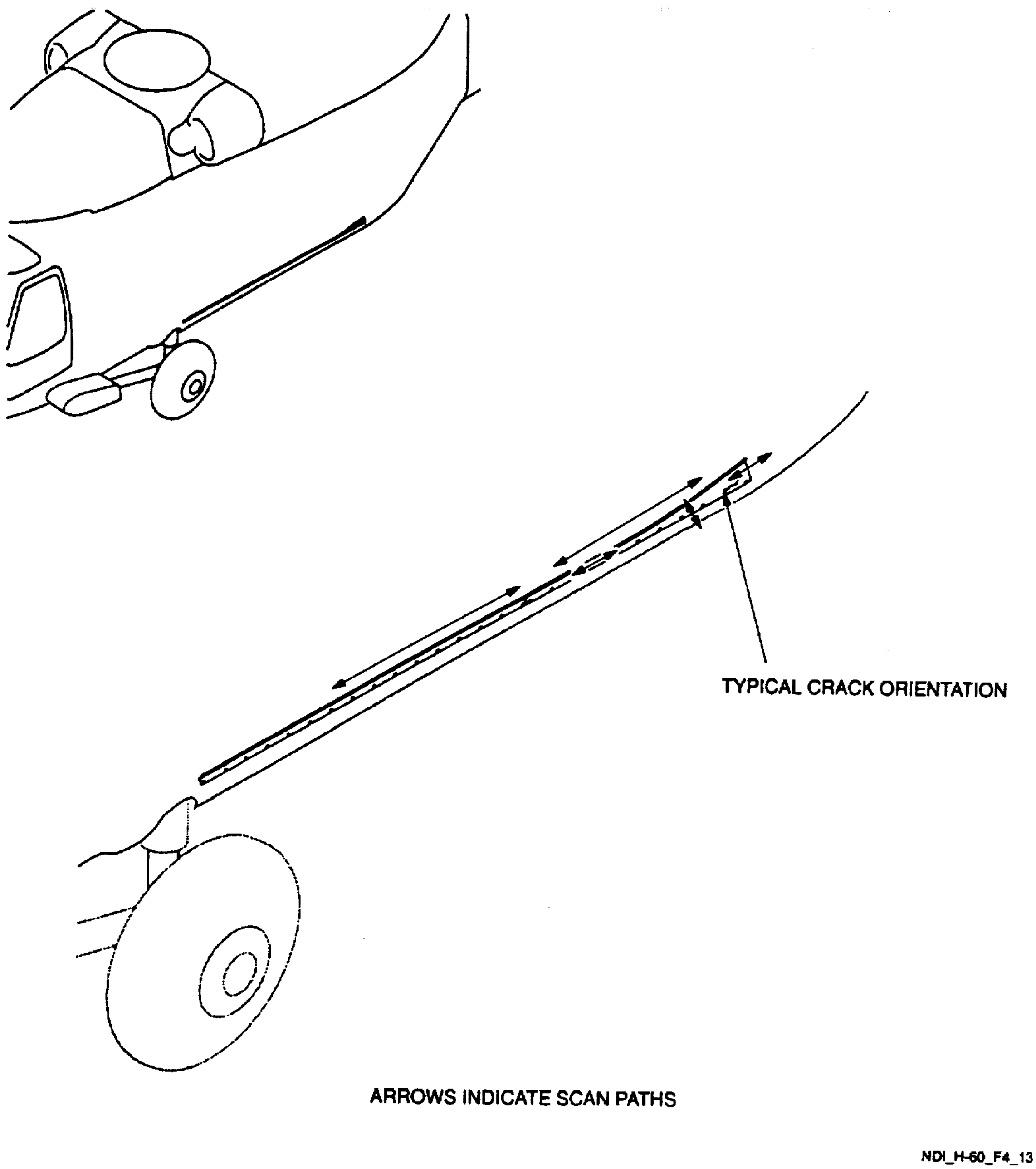


Figure 4-13. Troop/Cargo Door Lower Track

4.14.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

4.14.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the door shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

4.14.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands

Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

4.14.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.14.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 4-14.

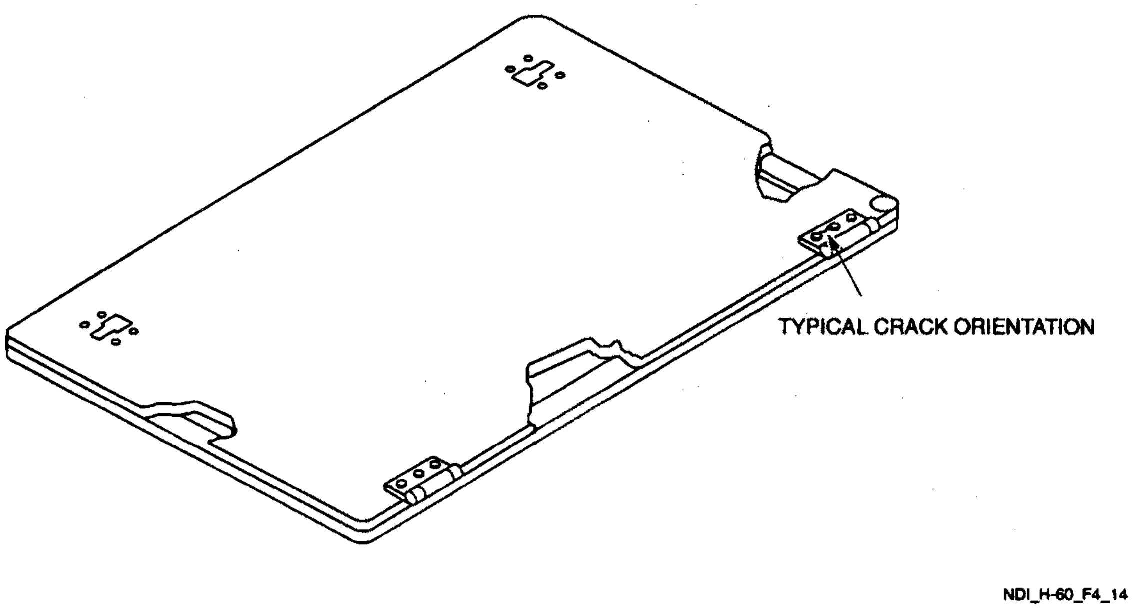


Figure 4-14. Oil Cooler Compartment Access Door

4.14.3.6 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.14.4 Backup Method. None required.

4.14.5 System Securing. Clean the door assembly to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The door assembly, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.15 TAIL PYLON ATTACH FITTING (ET).

4.15.1 Description (Figure 4-1. Index No. 15). The tail pylon is attached to the tail cone by a hinge assembly mounted on the cone. This inspection is applicable to the pylon and cone attaching structures, and in particular for cracks in the surface around the lower barrel nut holes in the tail rotor gear-box fitting.

4.15.2 Defects. This inspection is used to verify crack indications found visually on the pylon/cone attaching structures. No cracks are allowed.

4.15.3 Primary Method. Eddy Current.

4.15.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8

4.15.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe groundmaintenance in accordance with the applicable technical manuals listed in Table 1-1.

4.15.3.3 Access. Open the tail pylon.

4.15.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.15.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency F1	-200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		

Probe drive	- mid
LPF	- 100
HPF	-0
H Pos	- 80%
V Pos	- 20%

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

4.15.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-15.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 4.15.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.15.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

4.15.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.15.4 Backup Method. None required.

4.15.5 System Securing. The tail pylon requires securing in accordance with the applicable technical manuals listed in Table 1-1.

4.16 TAIL ROTOR PYLON SKIN, STATION 200 (ET).

4.16.1 Description (Figure 4-1. Index No.16). This procedure is applicable to tail rotor pylon skin at station 200. If skin cracks are noted, inspect inside surfaces of fitting where attached to front spar cap angles.

4.16.2 Defects. This inspection is used to verify crack indications found visually on the tail rotor pylon. No cracks are allowed.

4.16.3 Primary Method. Eddy Current.

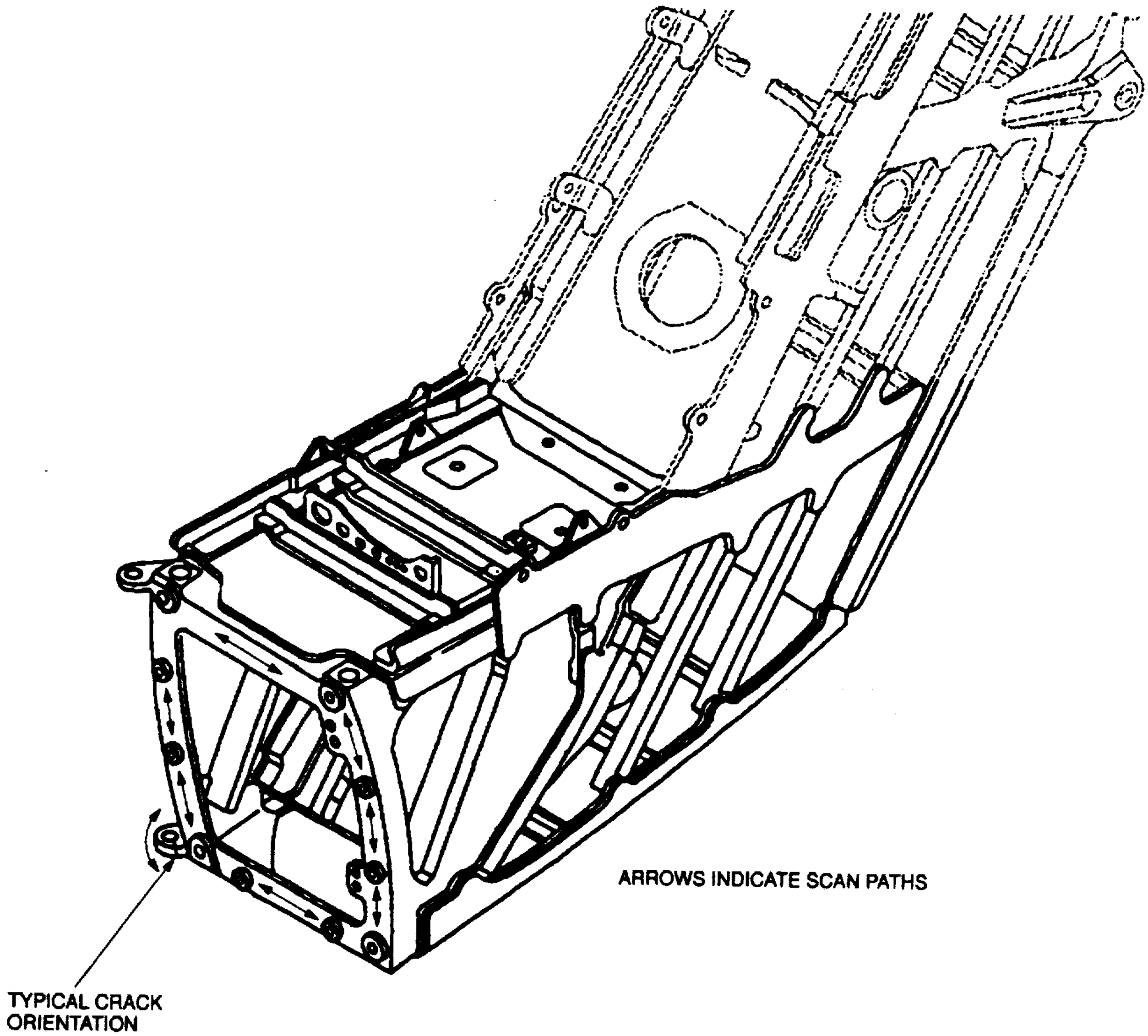


Figure 4-15. Tail Pylon Attach Fitting

4.16.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit

b. Probe, straight, shielded surface, 100 KHz-500 KHz

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 900 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. Aircraft Marking Pencil, refer to Table 1-8

4.16.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance in accordance with the applicable technical manuals listed in Table 1-1.

4.16.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands

Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

4.16.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.16.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19eII.

Frequency Fl	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 560		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	-80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

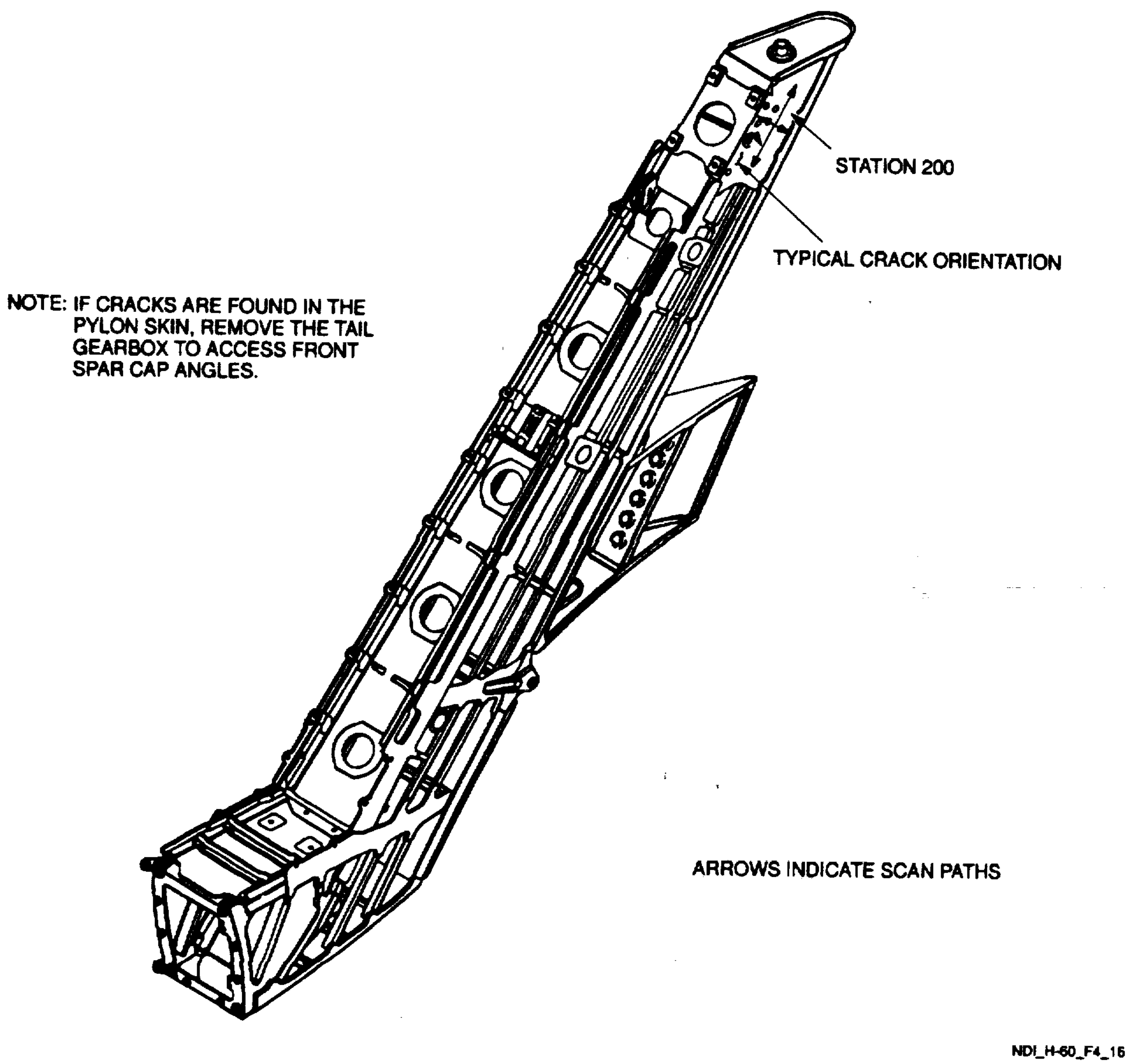


Figure 4-16. Tail Rotor Pylon Skin, Station 200

4.16.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-16.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 4.16.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.16.3.5b.(1), (2), and (3) shall be repeated each time a change is made.

4.16.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.16.4 Backup Method**.** None required.

4.16.5 System Securing**.** The tail pylon, if opened, requires securing in accordance with the applicable technical manuals listed in Table 1-1.

4.17 TAIL ROTOR PYLON ATTACHING HARDWARE (PT).

4.17.1 Description (Figure 4-1, Index No. 17)**.** This procedure is primarily for use on tapered pins, attachment bolts, barrel-nuts, washers, retainers, pylon hinge bolts, washers, and nuts used on the tail rotor pylon.

4.17.2 Defects**.** This inspection is used to detect cracks found anywhere on the parts described above. No cracks are allowed.

4.17.3 Primary Method**.** Fluorescent Penetrant.

4.17.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

4.17.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the tail pylon removed in accordance with the applicable technical manuals listed in Table 1-1.

4.17.3.3 Access. Not applicable.

4.17.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.17.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 4-17.

4.17.3.6 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.17.4 Backup Method**.** None required.

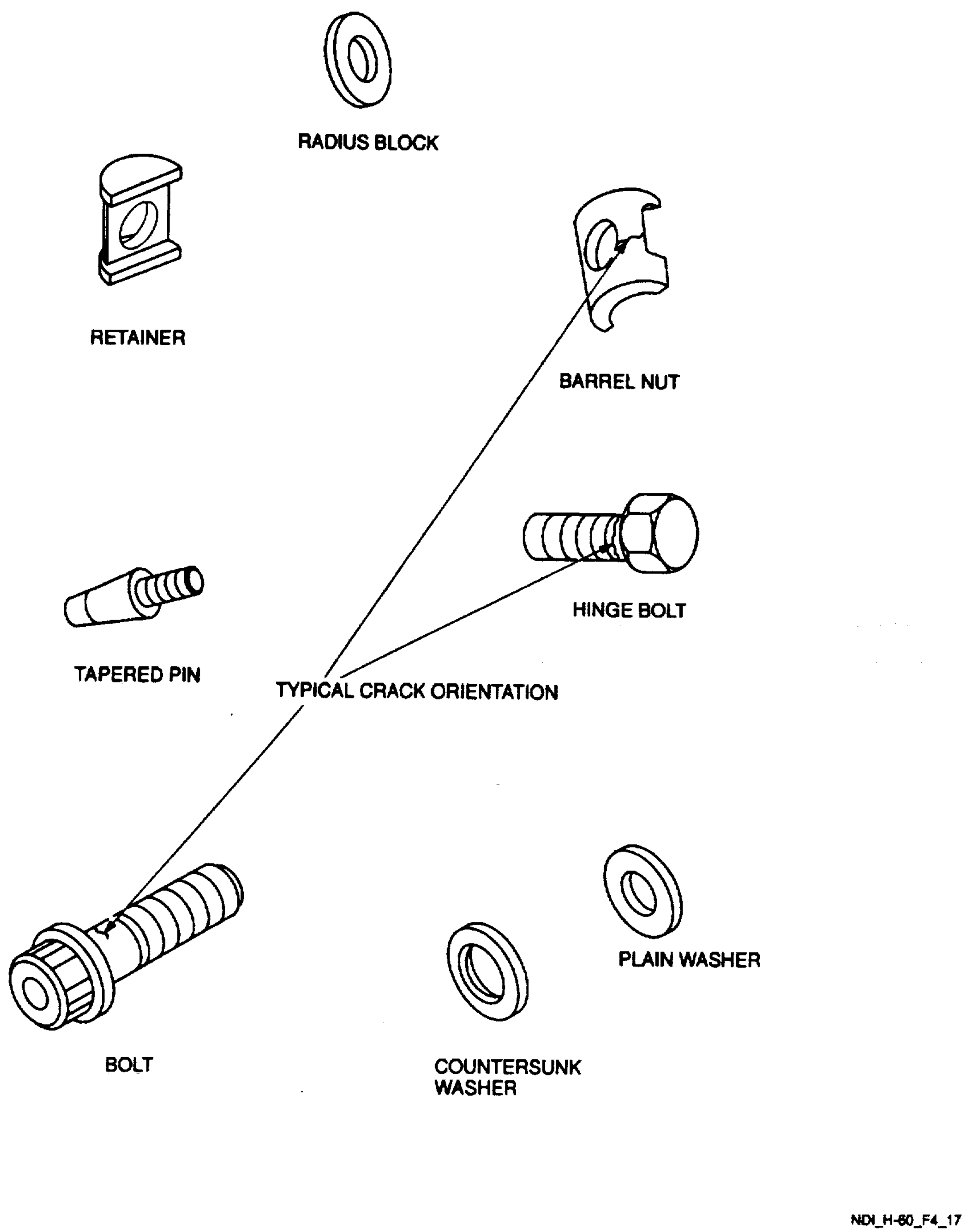


Figure 4-17. Tail Rotor Pylon Attaching Hardware

4.17.5 System Securing. Clean the inspected part to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The tail pylon requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.18 TAIL PYLON LOWER STEP (ET).

4.18.1. Description (Figure 4-1. Index No. 18). The step mounted in the tail pylon and is the first step in accessing the upper pylon/tail rotor area.

4.18.2. Defects. This inspection is used to verify crack indications found visually on the lower step and tube. No cracks are allowed.

4.18.3. Primary Method. Eddy Current.

4.18.3.1. NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

4.18.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the lower step shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

4.18.3.3. Access. Not applicable.

4.18.3.4. Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.18.3.5. NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19eII.

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	-80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:
   (1) Null probe on test block.
   (2) Adjust phase as required to obtain horizontal lift-off.
   (3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

4.18.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-18.

a. Place probe on a good area inthe inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 4.18.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.18.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

4.18.3..7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.18.4. Backup Method. None required.

4.18.5. System Securing. The tail pylon lower step, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.19. STABILATOR ATTACH FITTING (ET).

4.19.1. Description (Figure 4-1. Index No. 19). The stabilator attach fitting is integrated into the aft end of the tail pylon on both the right and left side. The horizontal stabilator is attached to these fittings.

4.19.2. Defects. This inspection is used to detect cracks in the lug area of the left and right fittings. No cracks are allowed.

4.19.3. Primary Method. Eddy Current.

4.19.3.1. NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

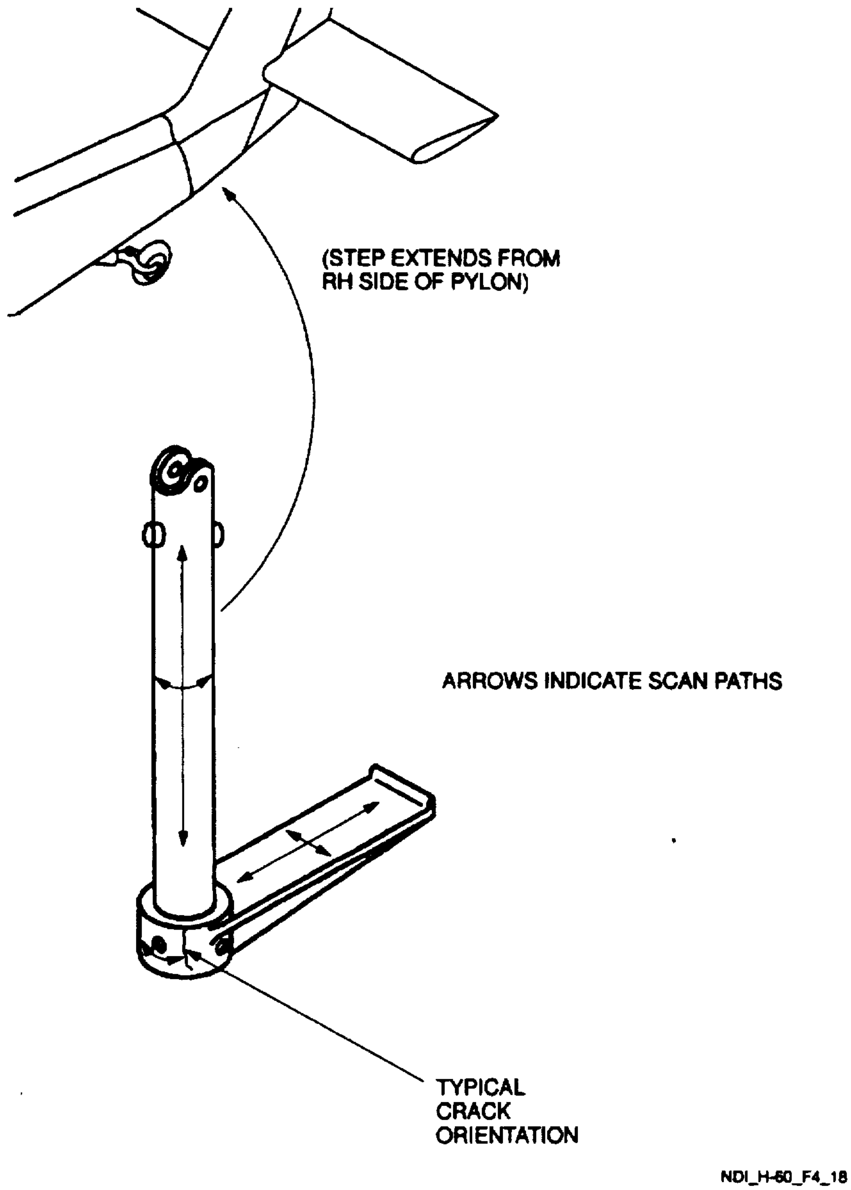


Figure 4-18. Tail Pylon Lower Step

4.19.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the horizontal stabilator shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

4.19.3.3. Access. Access is obtained by removing provisions (Figure 1-4, Items 5B-45 and 6B-46).

4.19.3.4. Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.19.3.5. NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit,NORTEC-19el1.

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	-80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:
   (1) Null probe on test block.
   (2) Adjust phase as required to obtain horizontal lift-off.
   (3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

4.19.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-19.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 4.19.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.19.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

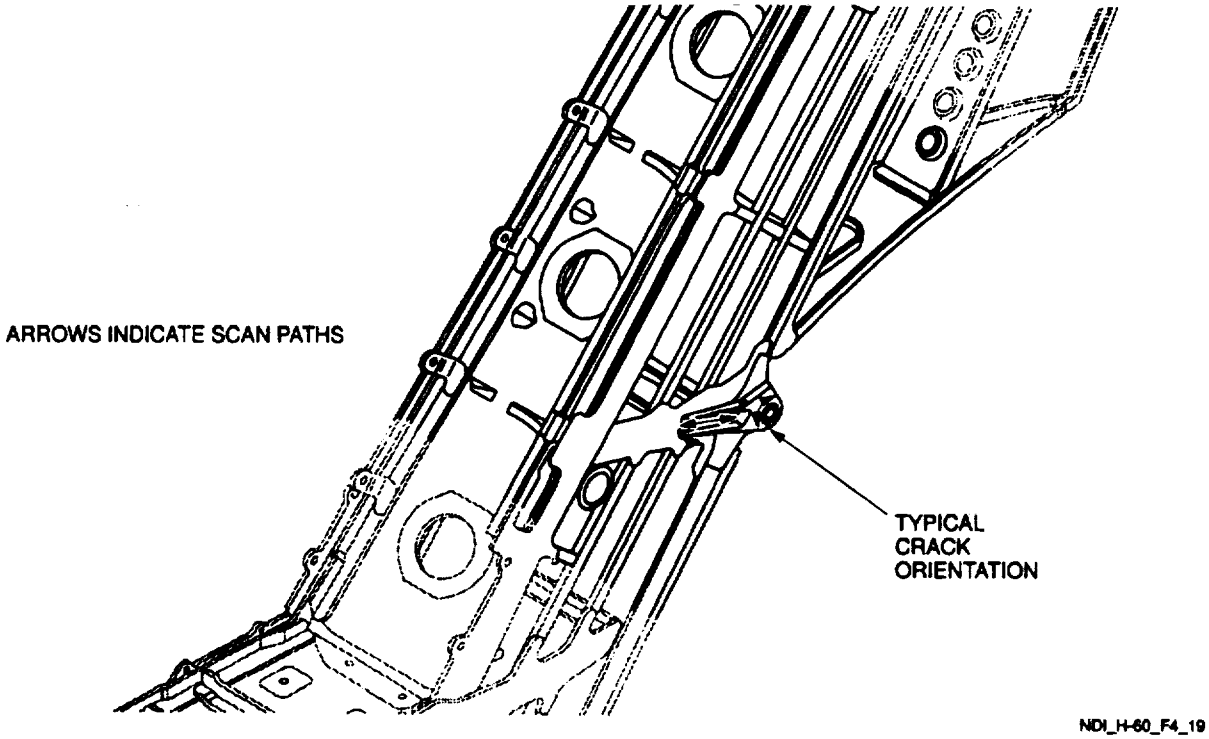


Figure 4-19. Stabilator Attach Fitting

4.19.3.7. Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.19.4. Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

4.19.5. System Securing. The horizontal stabilator, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.20. STABILATOR ACTUATOR ATTACH FITTINGS (MT).

4.20.1. Description (Figure 4-1. Index No. 20). The stabilator actuator upper end is attached to an aluminum fitting in the pylon and the lower end to an aluminum fitting on the top of the stabilator.

4.20.2. Defects. This inspection is used to verify crack indications found visually on the stabilator actuator attach fittings. No cracks are allowed.

4.20.3. Primary Method. Magnetic Particle.

4.20.3.1. NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE

Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

4.20.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the stabilator actuator shall be disconnected from either/both fittings or the fittings shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

4.20.3.3. Access. Not applicable.

4.20.3.4. Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.20.3.5. NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

4.20.3.6. Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 4-20.

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position 1 as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 4.20.3.8.
f. Repeat steps a. through e. for position 2.

4.20.3.7. Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.20.3.8. Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

4.20.4. Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

4.20.5. System Securing. Clean the stabilator actuator attach fittings thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The stabilator actuator attach fittings, if removed, require installation in accordance with the applicable technical manuals listed in Table 1-1.

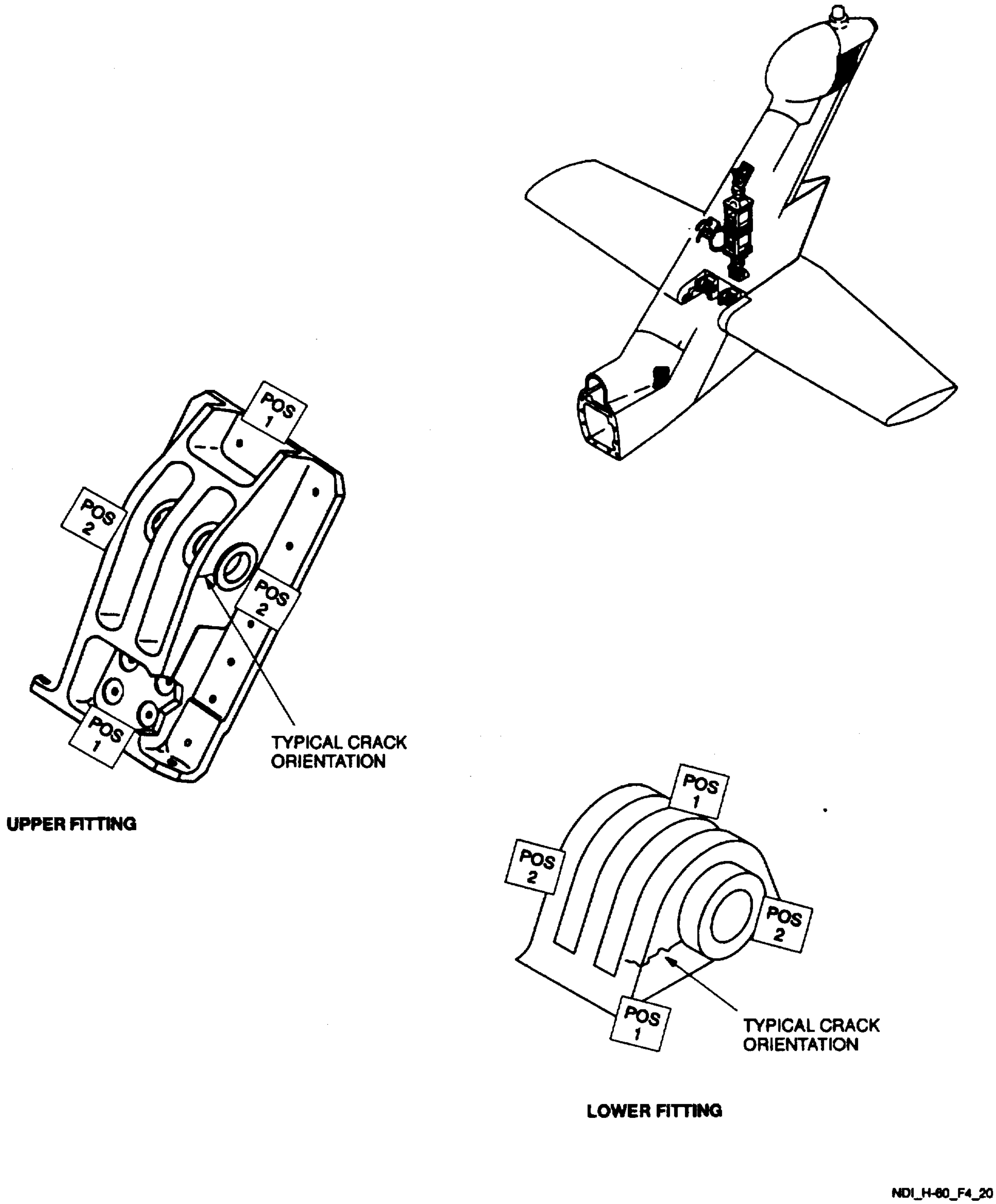


Figure 4-20. Stabilator Actuator Attach Fittings

4.21 STABILATOR ACTUATOR HOUSING (PT).

4.21.1 Description (Figure 4-1, Index No. 21). The hydraulically-operated actuator is mounted to the pylon and the horizontal stabilator. It reacts to commands from the cockpit and moves the horizontal stabilator in an up or down direction.

4.21.2 Defects. This inspection is used to verify crack indications found visually on the actuator housing. No cracks are allowed.

4.21.3 Primary Method. Fluorescent Penetrant.

4.21.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n−Propyl Bromide (vapor degreasing only)(Table 1−8), DS−108 (Table 1−8), Electron (Table 1−8), Positron (Table 1−8). DS−108, Electron, Positron must be followed by an acetone (Table 1−8) rinse or wipe: or drying until there is no visible solvent residue left on parts..

4.21.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the actuator removed in accordance with the applicable technical manuals listed in Table 1-1.

4.21.3.3 Access. Not applicable.

4.21.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.21.3.6 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 4-21.

4.21.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.21.4 Backup Method. None required.

4.21.5 System Securing. Clean the actuator to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The actuator requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.22 DRAG BEAM SUPPORT FITTING (ET).

4.22.1 Description (Figure 4-1, Index No. 22). The drag beam support fitting connects the main landing gear drag beam to each side of the fuselage midsection.

4.22.2 Defects. This inspection is used to verify crack indications found visually on the support fitting, especially at the lug areas and bearing bores. No cracks are allowed.

4.22.3 Primary Method. Eddy Current.

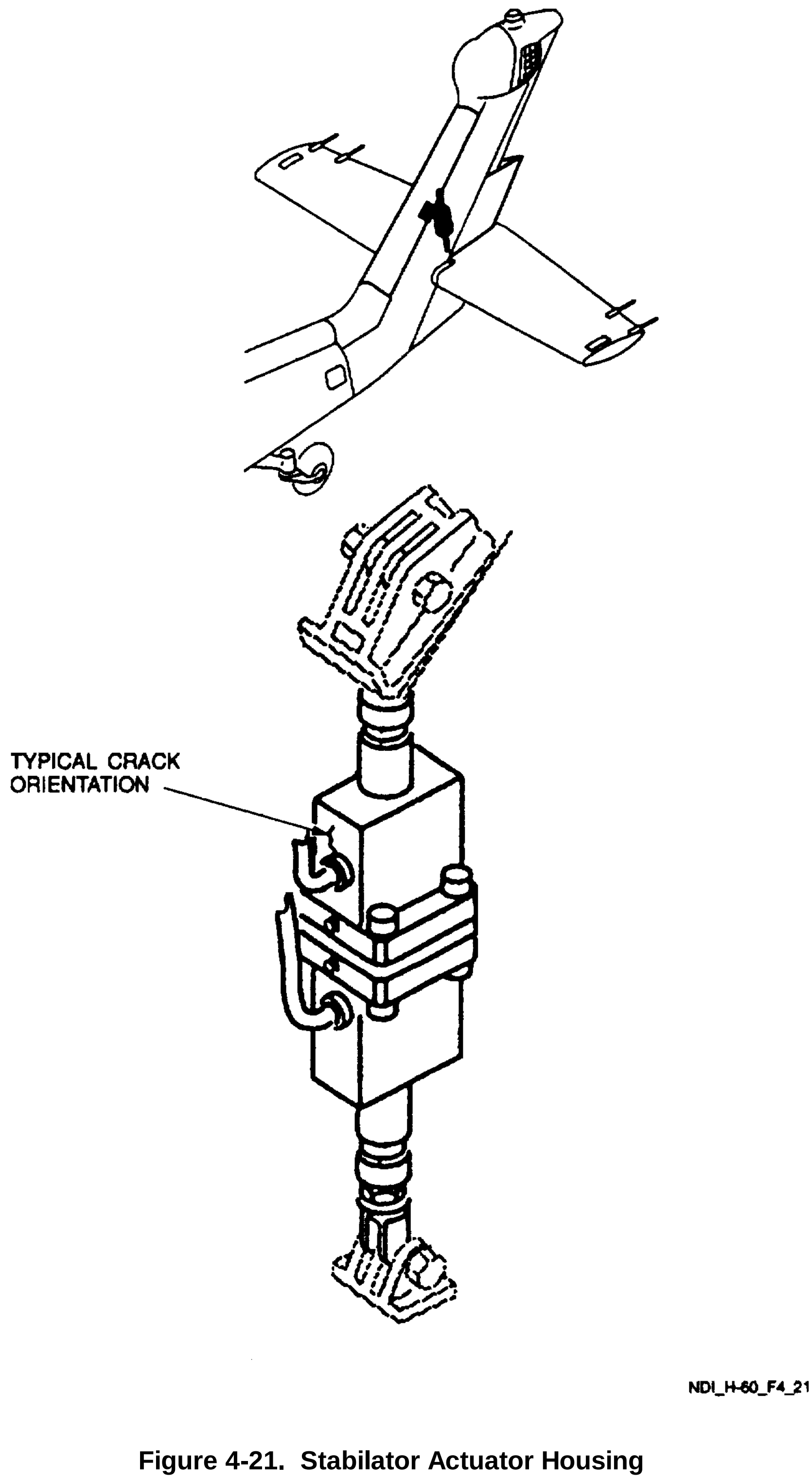


Figure 4-21. Stabilator Actuator Housing

4.22.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

4.22.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the drag beam and the bushings shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

4.22.3.3. Access. Not applicable.

4.22.3.4. Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.22.3.5. NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19eII.

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 560		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:
   (1) Null probe on test block.
   (2) Adjust phase as required to obtain horizontal lift-off.
   (3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

4.22.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-22.

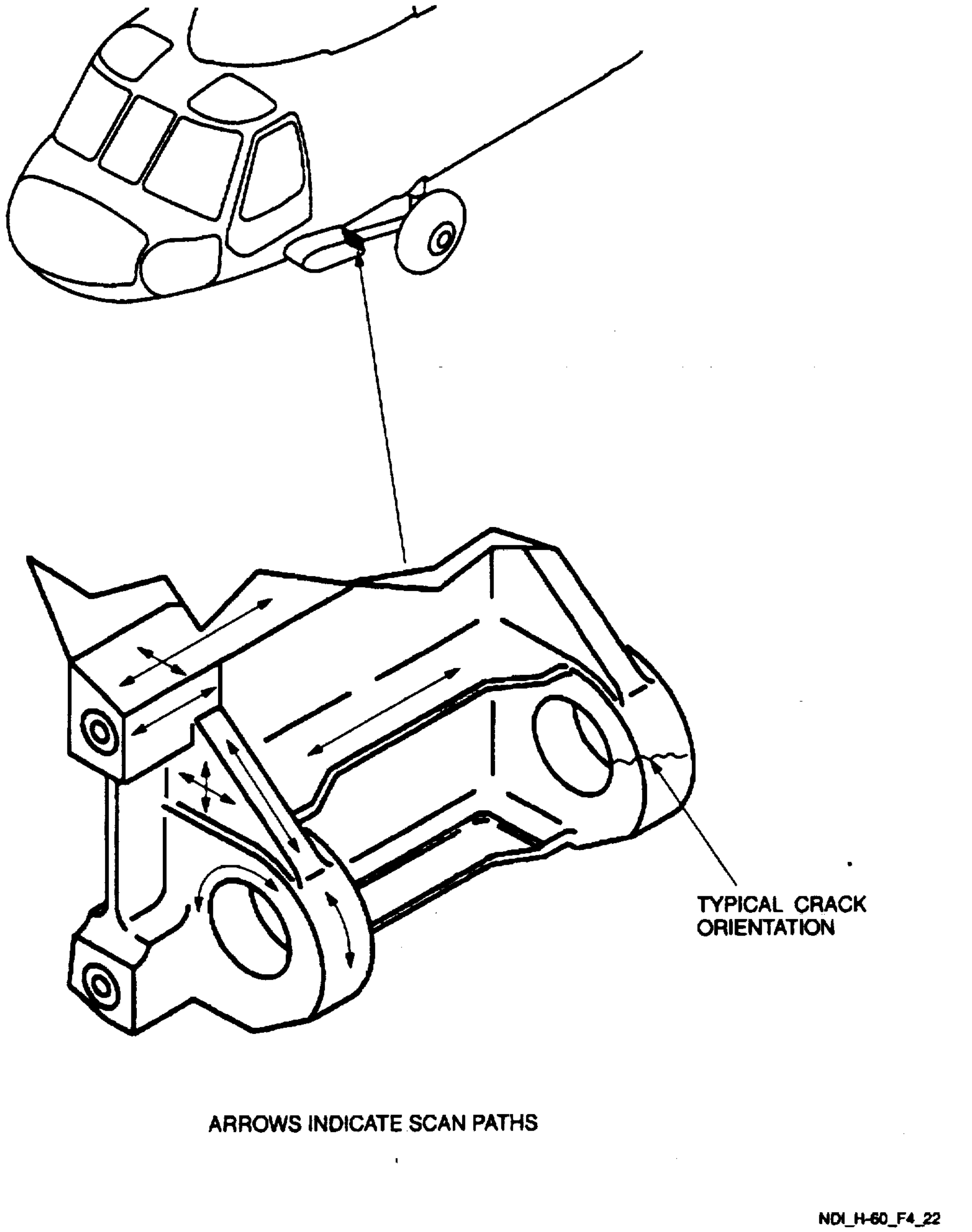


Figure 4-22. Drag Beam Support Fitting

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 4.22.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.22.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

4.22.3.7. Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.22.4. Backup Method. None required.

4.22.5. System Securing. The drag beam, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.23. MAIN LANDING GEAR DRAG BEAM (MT).

4.23.1. Description (Figure 4-1. Index No. 23). The drag beam is a cylinder attached to the airframe at one end and to the shock strut at the other, which transmits landing loads to the airframe and shock strut and to which the wheel is attached.

4.23.2. Defects. This inspection is used to verify crack indications found visually on the drag beam. Particular attention shall be given to the jackpad hole and adjacent flat surfaces. No cracks are allowed.

4.23.3. Primary Method. Magnetic Particle.

4.23.3.1. NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE

Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

4.23.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the drag beam shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

4.23.3.3. Access. Not applicable.

4.23.3.4. Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.23.3.5. NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

4.23.3.6. Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 4-23.

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position 1 as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 4.23.3.8.
f. Repeat steps a. through e. for positions 2,3, 4, and 5.

4.23.3.7. Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.23.3.8. Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

4.23.4. Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

4.23.5. System Securing. Clean the drag beam thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The drag beam, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.24. MAIN LANDING GEAR SHOCK STRUT UPPER CYLINDER (ET).

4.24.1. Description (Figure 4-1, Index No. 24). The shock strut supports the helicopter during ground operations and absorbs impact loads when landing.

4.24.2. Defects. This inspection is used to verify crack indications found visually on the main landing gear shock strut upper cylinder. No cracks are allowed.

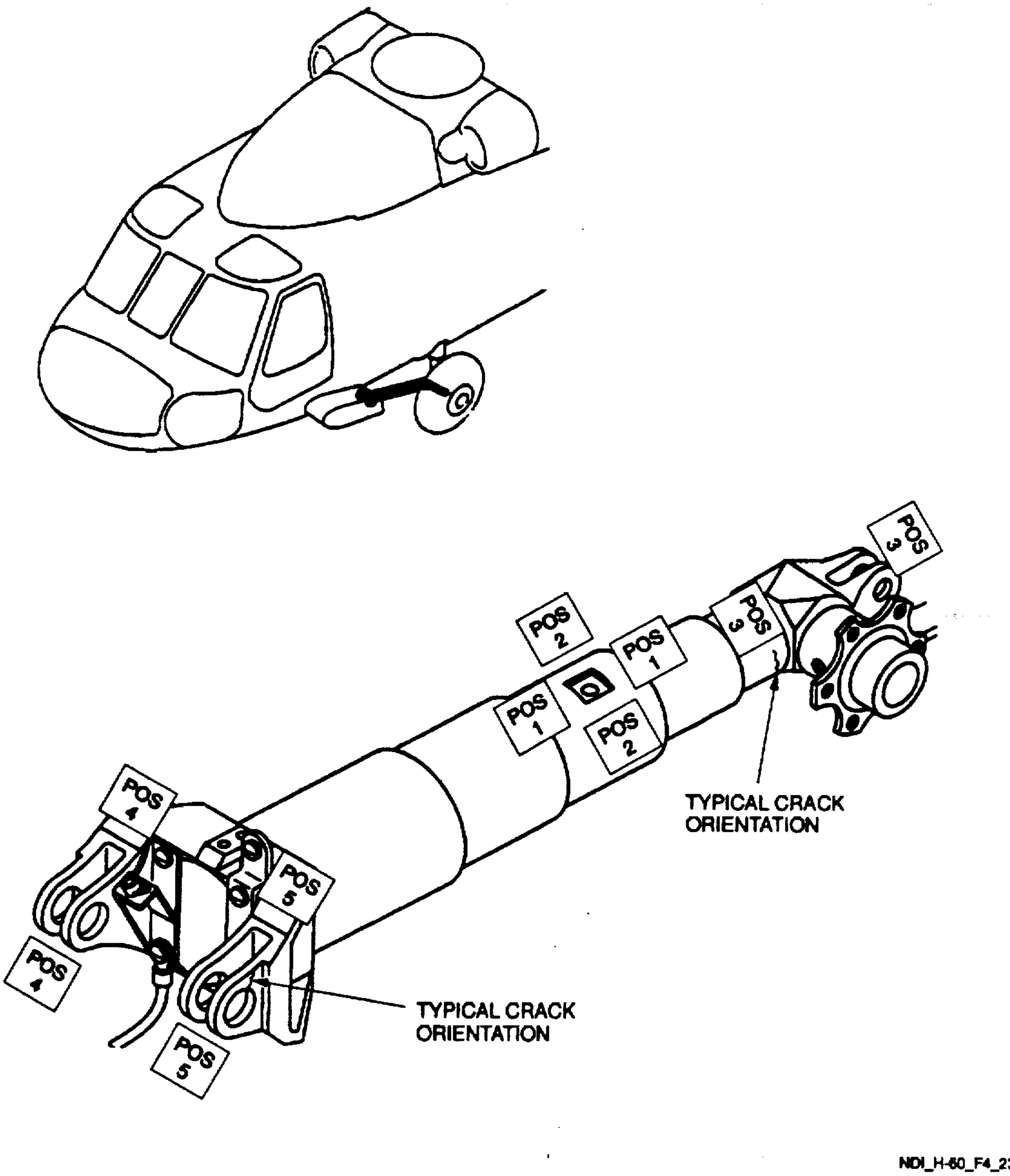


Figure 4-23. Main Landing Gear Drag Beam

4.24.3. Primary Method. Eddy Current.

4.24.3.1. NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 900 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

4.24.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the main landing gear shock strut upper cylinder shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

4.24.3.3. Access. Access to the MLG shock strut upper cylinder is through the shock strut hinged panel (Figure 1-4, Items 3T-3 and 4T-4).

4.24.3.4. Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.24.3.5. NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-1 9e'.

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 560		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	-80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:
   (1) Null probe on test block.
   (2) Adjust phase as required to obtain horizontal lift-off.
   (3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

4.24.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-24.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 4.24.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.24.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

4.24.3.7. Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.24.4. Backup Method. None required.

4.24.5. System Securing. The main landing gear shock strut upper cylinder, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.25. MAIN LANDING GEAR SHOCK STRUT LOWER STAGE PISTON (MT).

4.25.1. Description (Figure 4-1. Index No. 25). The shock strut consists of two pistons. The lower one absorbs the normal landing loads.

4.25.2. Defects. Defects may occur anywhere on the surface of the lower stage piston. Particular attention shall be directed to the bearing bore lug. No cracks are allowed.

4.25.3. Primary Method. Magnetic Particle.

4.25.3.1. NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE

Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

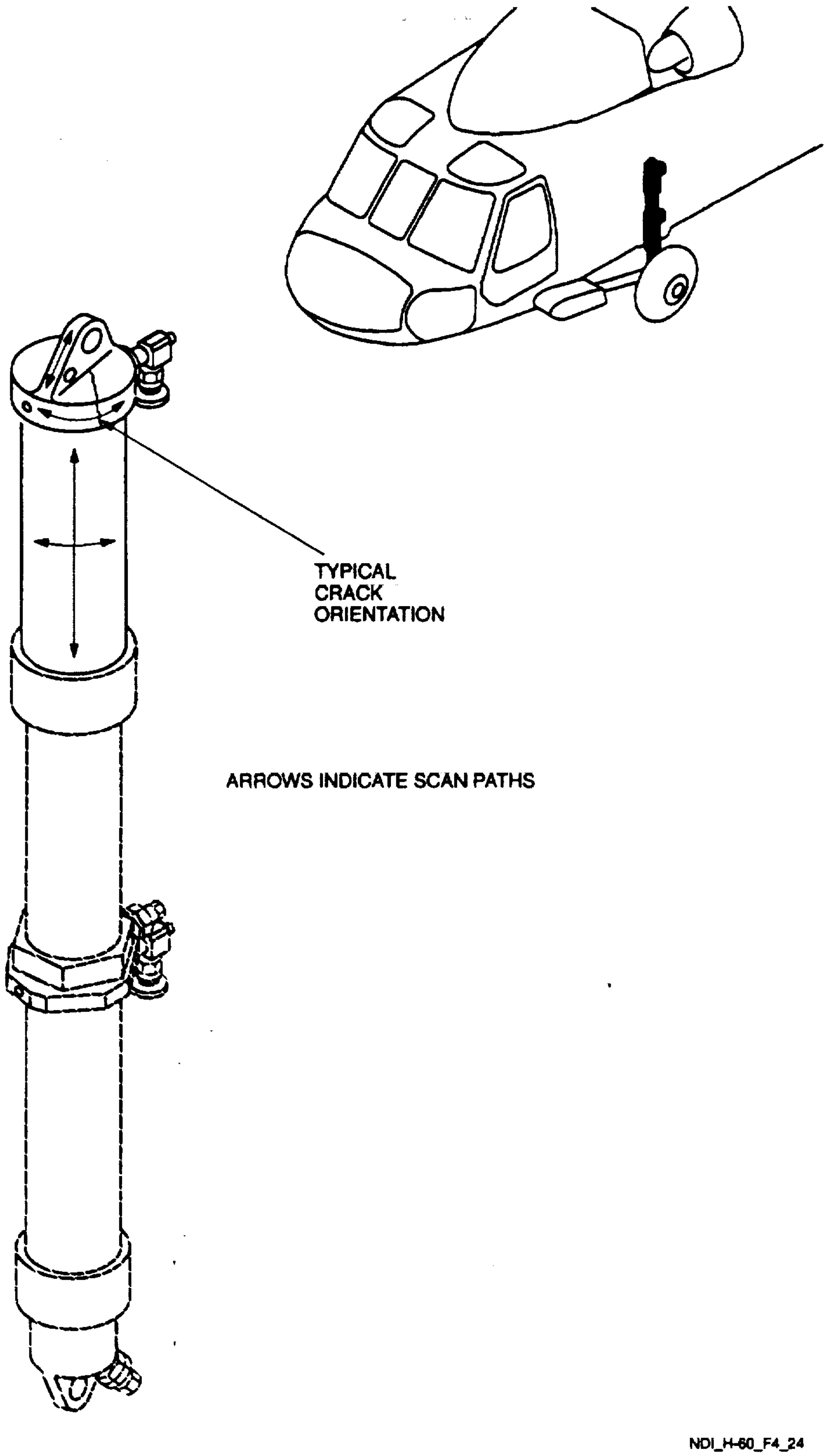


Figure 4-24. Main Landing Gear Shock Strut Upper Cylinder

4.25.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the main landing gear shock strut shall be removed and disassembled in accordance with the applicable technical manuals listed in Table 1-1.

4.25.3.3. Access. Not applicable.

4.25.3.4. Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.25.3.5. NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

4.25.3.6. Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 4-25.

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position 1 as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 4.25.3.8.
f. Repeat steps a. through e. for position 2.

4.25.3.7. Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.25.3.8. Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

4.25.4. Backup Method. None required.

4.25.5. System Securing. Clean the shock strut thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The shock strut, if removed, requires assembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

4.26. MAIN LANDING GEAR WHEEL ASSEMBLY (ET).

4.26.1. Description (Figure 4-1. Index No. 26). The main landing gear wheel assembly provides a mount for the tires and permits the helicopter to be rolled during ground handling.

4.26.2. Defects. Defects may occur anywhere on the surface of the main landing gear wheel assembly. Pay particular attention to bead seat, bolt boss mating surfaces, and valve hole areas. No cracks are allowed.

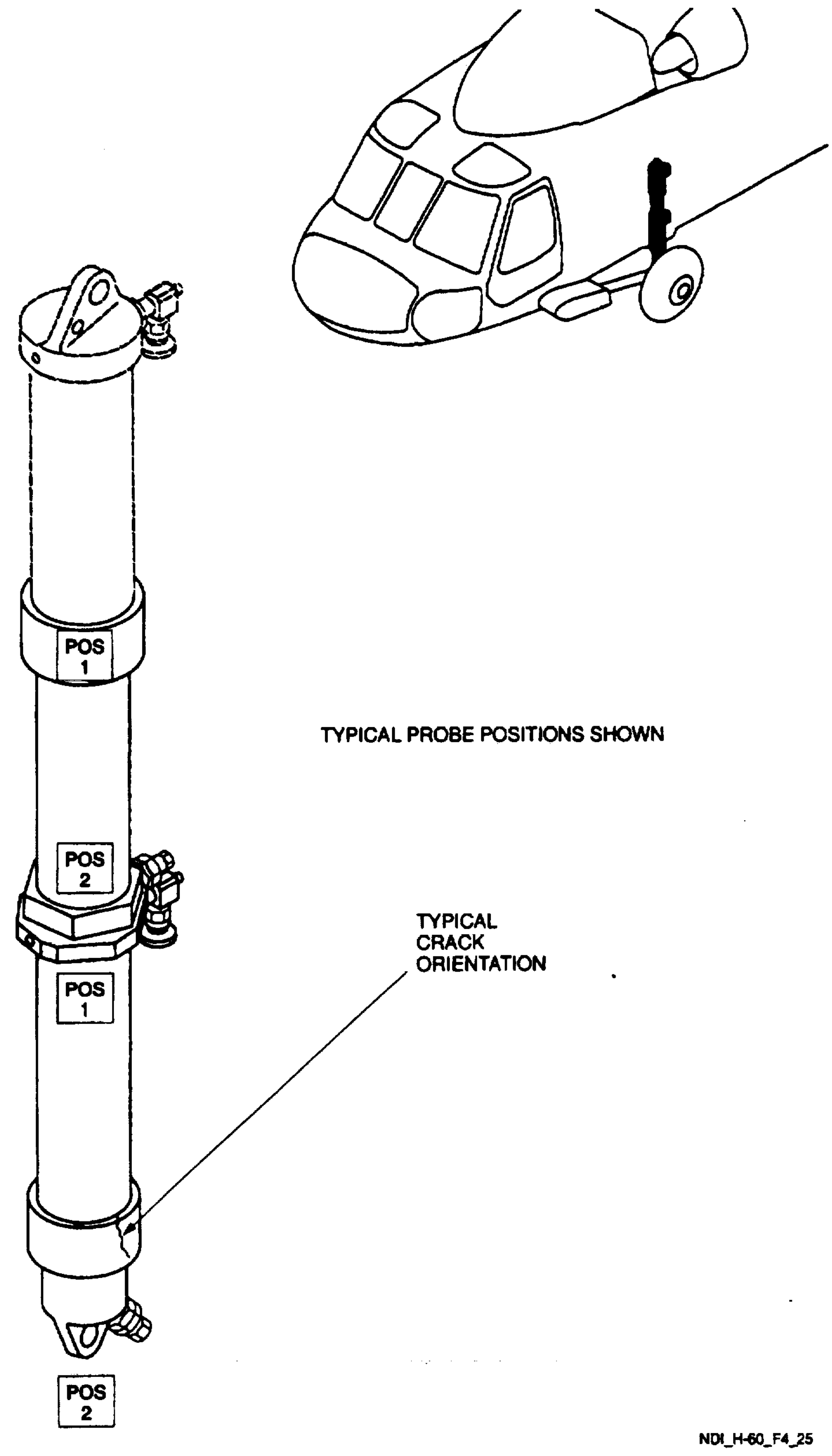


Figure 4-25. Main Landing Gear Shock Strut Lower Stage Piston

4.26.3. <u>Primary Method</u>. Eddy Current.

4.26.3.1. NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

4.26.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the wheel removed and disassembled in accordance with the applicable technical manuals listed in Table 1-1.

4.26.3.3. Access. Not applicable.

4.26.3.4. Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.26.3.5. NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19eII.

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	-0		
H Pos	-80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:
   (1) Null probe on test block.
   (2) Adjust phase as required to obtain horizontal lift-off.
   (3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0,040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

4.26.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-26.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 4.26.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.26.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

4.26.3.7. Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.26.4. Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

4.26.5. System Securing. The wheel requires assembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

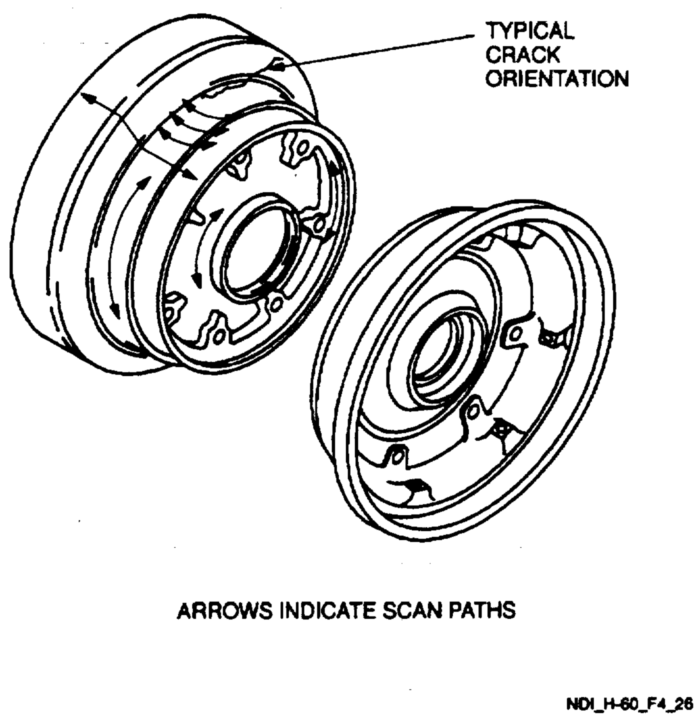


Figure 4-26. Main Landing Gear Wheel Assembly

4.27. MAIN LANDING GEAR BRAKE (MT).

4.27.1. Description (Figure 4-1. Index No. 27). The main landing gear brakes are self-adjusting, double disc, three-cavity brake assembly, which includes a visual brake lining wear indicator.

4.27.2. Defects. Cracks can occur anywhere on the surface of the stationary disc, rotating discs, backing plate, and torque tube. Pay particular attention to rotating and stationary disc slots. No cracks are allowed.

4.27.3. Primary Method. Magnetic Particle.

4.27.3.1. NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE
Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

4.27.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the brake removed and disassembled in accordance with the applicable technical manuals listed in Table 1-1.

4.27.3.3. Access. Not applicable.

4.27.3.4. Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.27.3.5. NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

4.27.3.6. Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. The position required for this inspection is illustrated in Figure 4-27.

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position as shown.
c. Press the test switch and apply a light coat of magnetic paticle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.

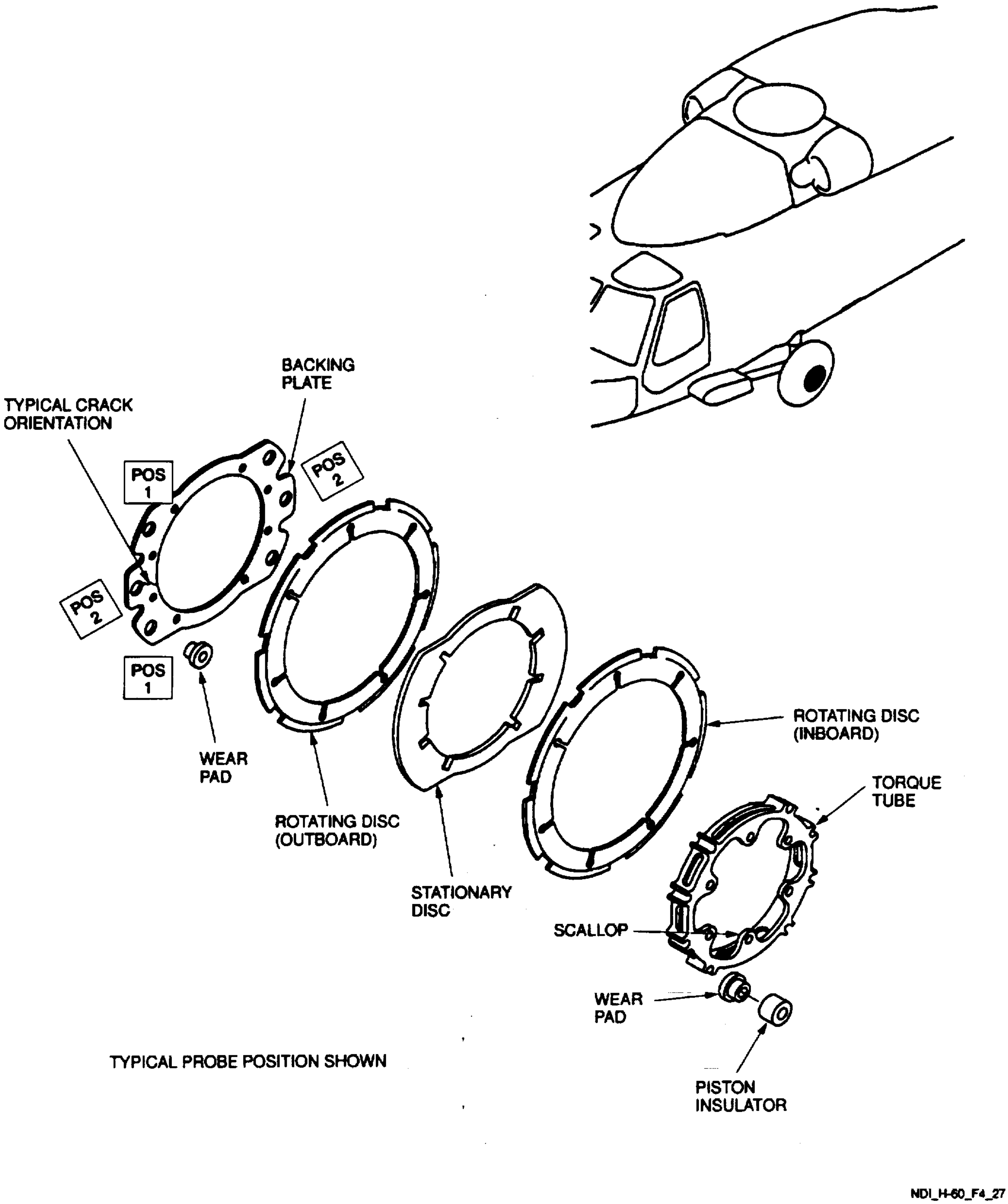


Figure 4-27. Main Landing Gear Brake

4.27.3.7. Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.27.3.8. Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

4.27.4. Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

4.27.5. System Securing. Clean the main landing gear brake thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The main landing gear brake requires assembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

4.28. MAIN LANDING GEAR BRAKE HOUSING (ET).

4.28.1. Description (Figure 4-1. Index No. 28). The main landing gear brakes are self-adjusting, double disc, three-cavity brake assembly, which includes a visual-brake lining wear indicator. The housing contains the pistons.

4.28.2. Defects. Defects may occur anywhere on the surface of the main landing gear brake housing. No cracks are allowed.

4.28.3. Primary Method. Eddy Current.

4.28.3.1. NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 900 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

4.28.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the brake assembly removed and disassembled in accordance with the applicable technical manuals listed in Table 1-1.

4.28.3.3. Access. Not applicable.

4.28.3.4. Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.28.3.5. NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19eII.

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 560		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	-80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:
   (1) Null probe on test block.
   (2) Adjust phase as required to obtain horizontal lift-off.
   (3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

4.28.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-28.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 4.28.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.28.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

4.28.3.7. Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.28.4. Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

4.28.5. System Securing. The housing requires assembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

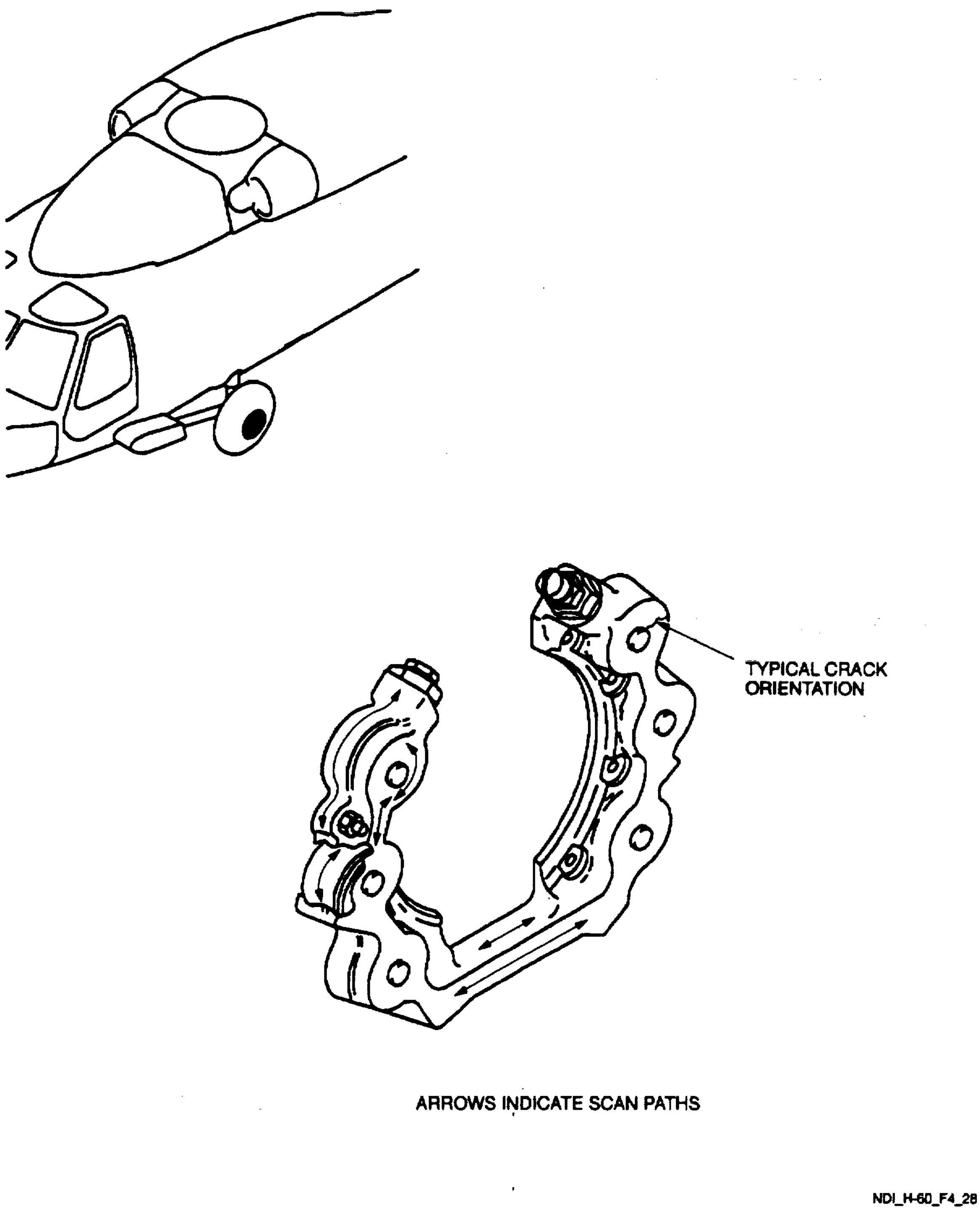


Figure 4-28. Main Landing Gear Brake Housing

4.29 PARKING BRAKE VALVE COMPONENTS (PT).

4.29.1 Description (Figure 4-1, Index No. 29). The parking brake valve traps fluid pressure to the brakes to prevent helicopter movement. This inspection pertains to the components contained within the parking valve body.

4.29.2 Defects. This inspection is used to verify crack indications found visually on the parking brake valve components. No cracks are allowed.

4.29.3 Primary Method. Fluorescent Penetrant.

4.29.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n−Propyl Bromide (vapor degreasing only)(Table 1−8), DS−108 (Table 1−8), Electron (Table 1−8), Positron (Table 1−8). DS−108, Electron, Positron must be followed by an acetone (Table 1−8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

4.29.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the parking valve removed and disassembled in accordance with the applicable technical manuals listed in Table 1-1.

4.29.3.3 Access. Not applicable.

4.29.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.29.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 4-29.

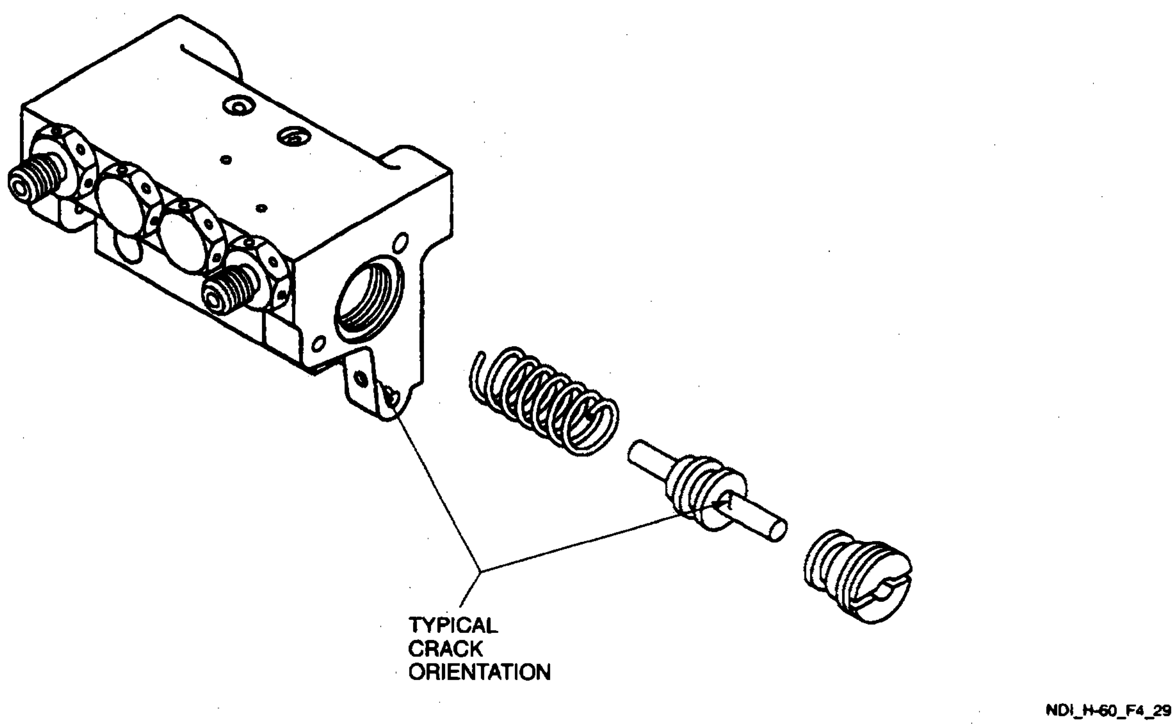


Figure 4-29. Parking Brake Valve Components

4.29.3.6 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.29.4 Backup Method. None required.

4.29.5 System Securing. Clean the parking brake valve components to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The parking valve requires assembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

4.30 SLAVE MIXER VALVE PARTS (PT).

4.30.1 Description (Figure 4-1, Index No. 30). The slave mixer valve isolates the pilot and copilot brake line circuits from each other. This inspection pertains to the components contained within the slave mixer valve body.

4.30.2 Defects. This inspection is used to verify crack indications found visually on the slave mixer valve components. No cracks are allowed.

4.30.3 Primary Method. Fluorescent Penetrant.

4.30.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

4.30.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the slave mixer removed and disassembled in accordance with the applicable technical manuals listed in Table 1-1.

4.30.3.3 Access. Not applicable.

4.30.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.30.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 4-30.

4.30.3.6 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.30.4 Backup Method. None required.

4.30.5 System Securing. Clean the components to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The slave mixer valve requires assembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

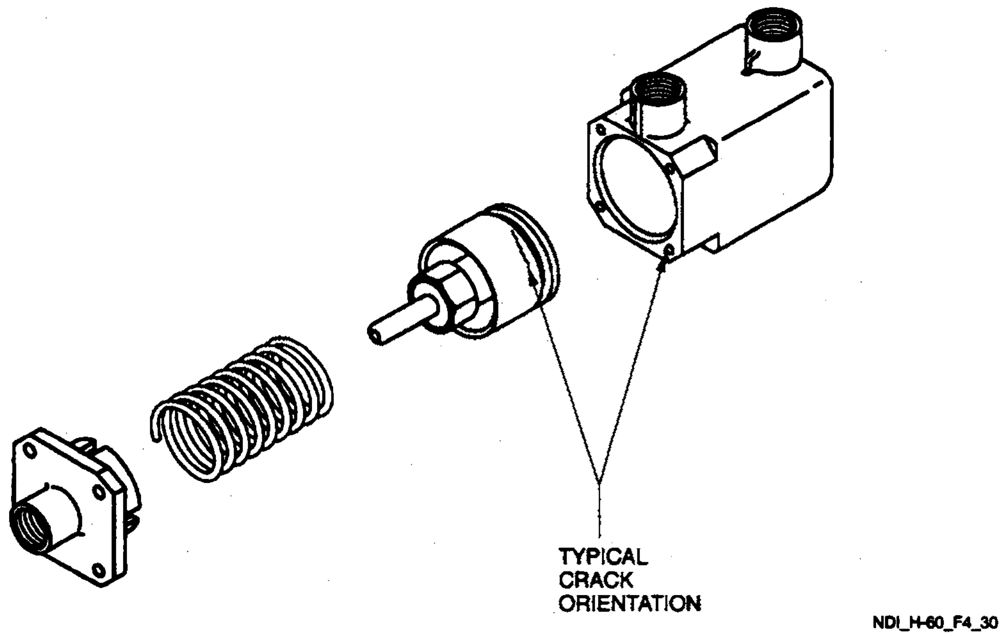


Figure 4-30. Slave Mixer Valve Parts

4.31 TAIL LANDING GEAR YOKE (ET).

4.31.1 Description (Figure 4-1, Index No. 31). The yoke assembly, attached to the tail cone structure and the shock strut, transmits landing loads to the helicopter airframe and shock strut.

4.31.2 Defects. This inspection is used to verify crack indications found visually on the tail landing gear yoke. Pay particular attention to areas where rework has been performed. No cracks are allowed.

4.31.3 Primary Method. Eddy Current.

4.31.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

4.31.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the yoke shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

4.31.3.3. Access. Access to the upper yoke structure will require the removal of the tail landing gear fairings.

4.31.3.4. Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.31.3.5. NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e[".

Frequency Fl	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	-0		
H Pos	- 80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:
   (1) Null probe on test block.
   (2) Adjust phase as required to obtain horizontal lift-off.
   (3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

4.31.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-31.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 4.31.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.31.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

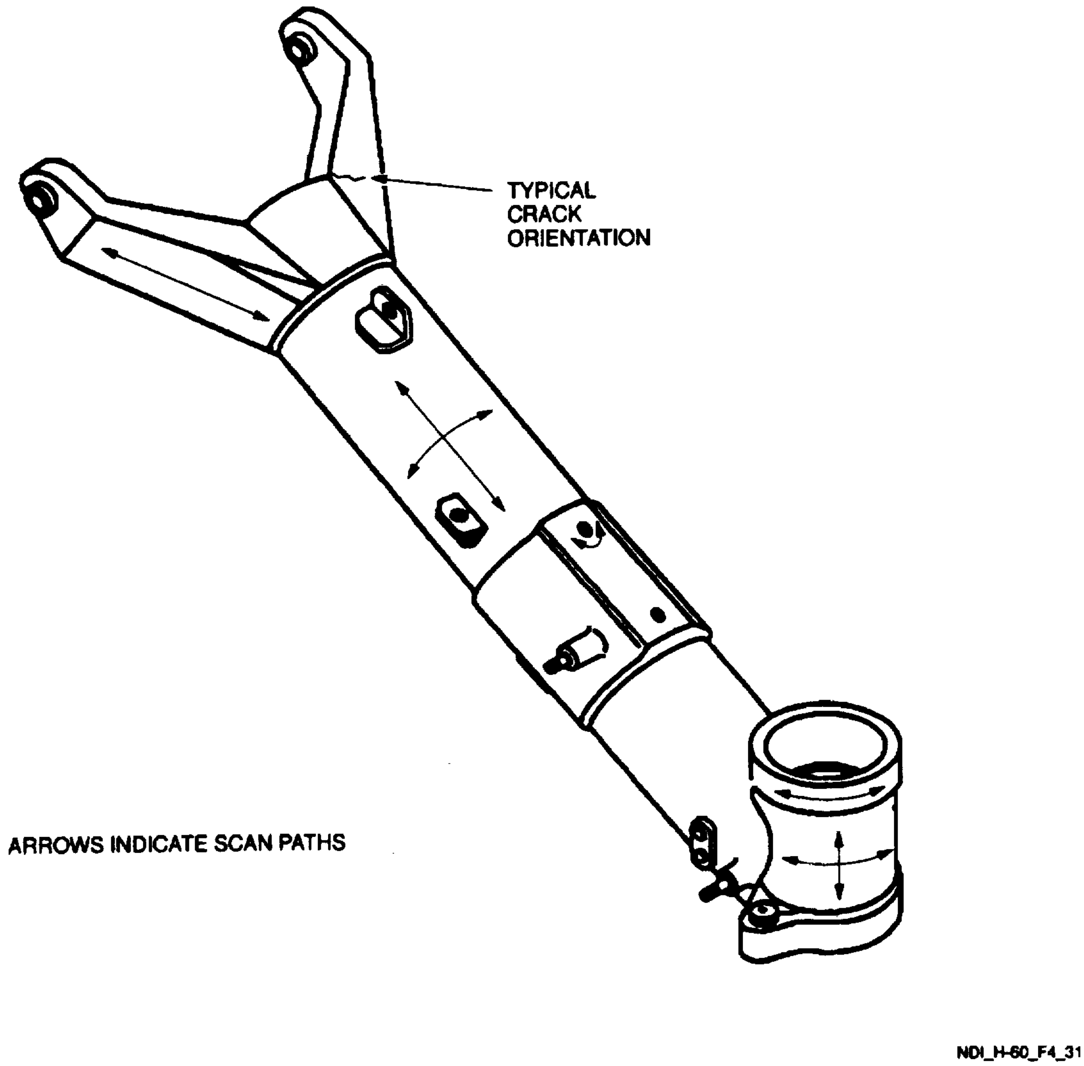


Figure 4-31. Tail Landing Gear Yoke

4.31.3.7. Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.31.4. Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

4.31.5. System Securing. The yoke, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.32. TAIL LANDING GEAR FORK (ET).

4.32.1. Description (Figure 4-1. Index No. 32). The fork assembly, secured to the yoke assembly is the attachment point for the tail wheel and allows the wheel to swivel through 360° for ground control.

4.32.2. Defects. Defects may occur anywhere on the surface of the tail landing gear fork. No cracks are allowed.

4.32.3. Primary Method. Eddy Current.

4.32.3.1. NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90" 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

4.32.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the tail landing gear fork shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

4.32.3.3. Access. Not applicable.

4.32.3.4. Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.32.3.5. NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19eII.

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 560		
Probe drive	- mid		

LPF	-100
HPF	-0
H Pos	-80%
V Pos	-20%

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

4.32.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-32.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

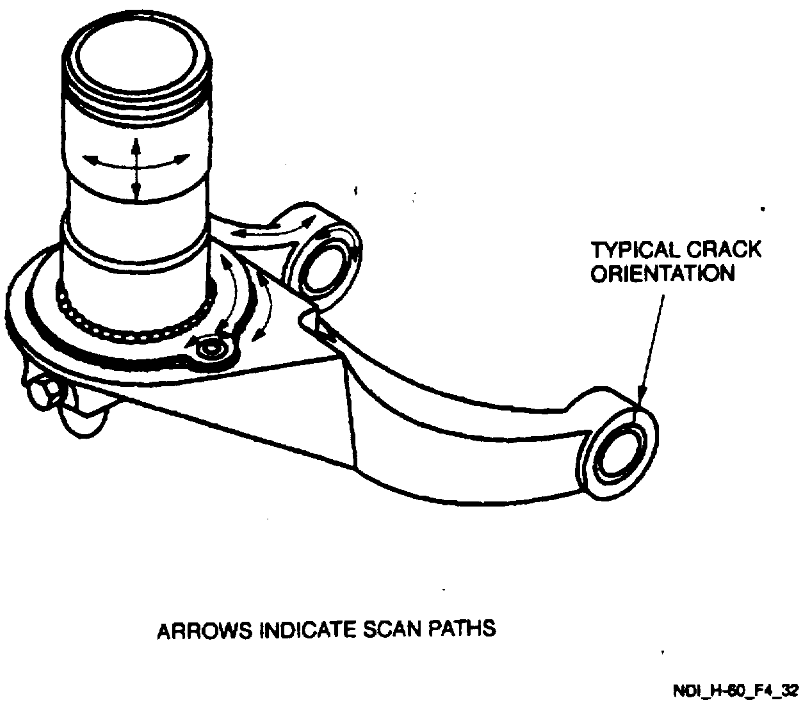


Figure 4-32. Tail Landing Gear Fork

NOTE

Either probe identified in paragraph 4.32.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.32.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

4.32.3.7. Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.32.4. Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

4.32.5. System Securing. The fork, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.33. TAIL LANDING GEAR LOCK ACTUATOR ASSEMBLY (MT).

4.33.1. Description (Figure 4-1. Index No. 33). The wheel lock and electrically-operated actuator, secured to the yoke assembly, secures the tail wheel in the trailing position when the helicopter is parked or in flight.

4.33.2. Defects. This inspection is used to verify crack indications found visually on the tail locking gear parts. No cracks are allowed.

4.33.3. Primary Method. Magnetic Particle.

4.33.3.1. NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE

Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

4.33.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the tail landing gear lock mechanism shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

4.33.3.3. Access. Not applicable.

4.33.3.4. Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.33.3.5. NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

4.33.3.6. Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. The position required for this inspection is illustrated in Figure 4-33.

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.

4.33.3.7. Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.33.3.8. Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

4.33.4. <u>Backup Method</u>. None required.

4.33.5. <u>System Securing</u>. Clean the tail landing gear lock mechanism thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The tail landing gear lock mechanism, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.34. TAIL LANDING GEAR WHEEL ASSEMBLY (ET).

4.34.1. <u>Description (Figure 4-1. Index No. 34)</u>. The tail landing gear wheel assembly provides a mount for the tires and permits the helicopter to be rolled during ground handling.

4.34.2. <u>Defects</u>. Defects may occur anywhere on the surface of the tail landing gear wheel assembly. No cracks are allowed.

4.34.3. <u>Primary Method</u>. Eddy Current.

4.34.3.1. NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

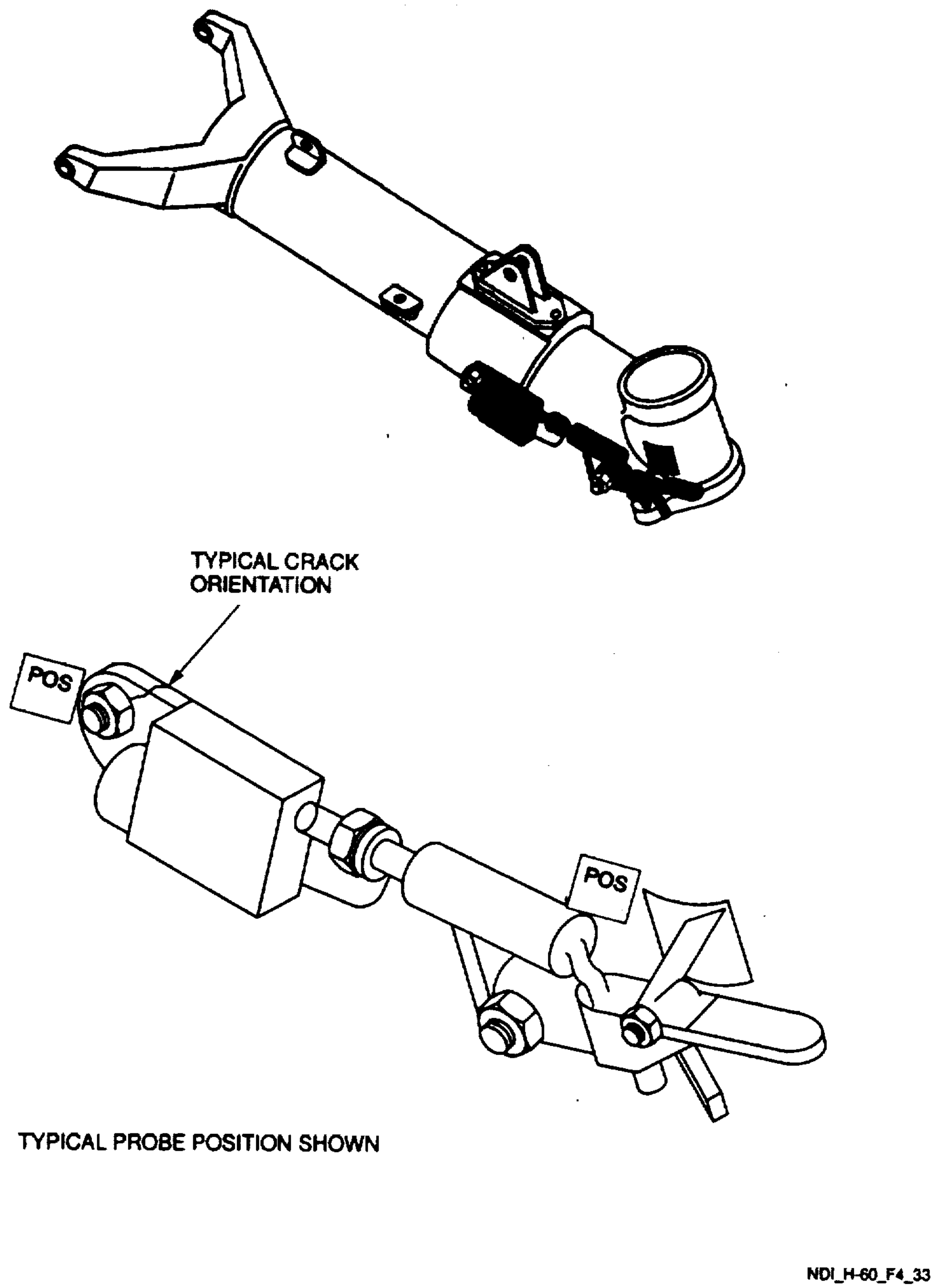


Figure 4-33. Tail Landing Gear Lock Actuator Assembly

4.34.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the wheel removed and disassembled in accordance with the applicable technical manuals listed in Table 1-1.

4.34.3.3. Access. Not applicable.

4.34.3.4. Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.34.3.5. NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-1 9e".

Frequency Fl	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 560		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:
   (1) Null probe on test block.
   (2) Adjust phase as required to obtain horizontal lift-off.
   (3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

4.34.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-34.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 4.34.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.34.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

4.34.3.7. Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.34.4. Backup Method. None required.

4.34.5. System Securing. The tail landing gear wheel requires assembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

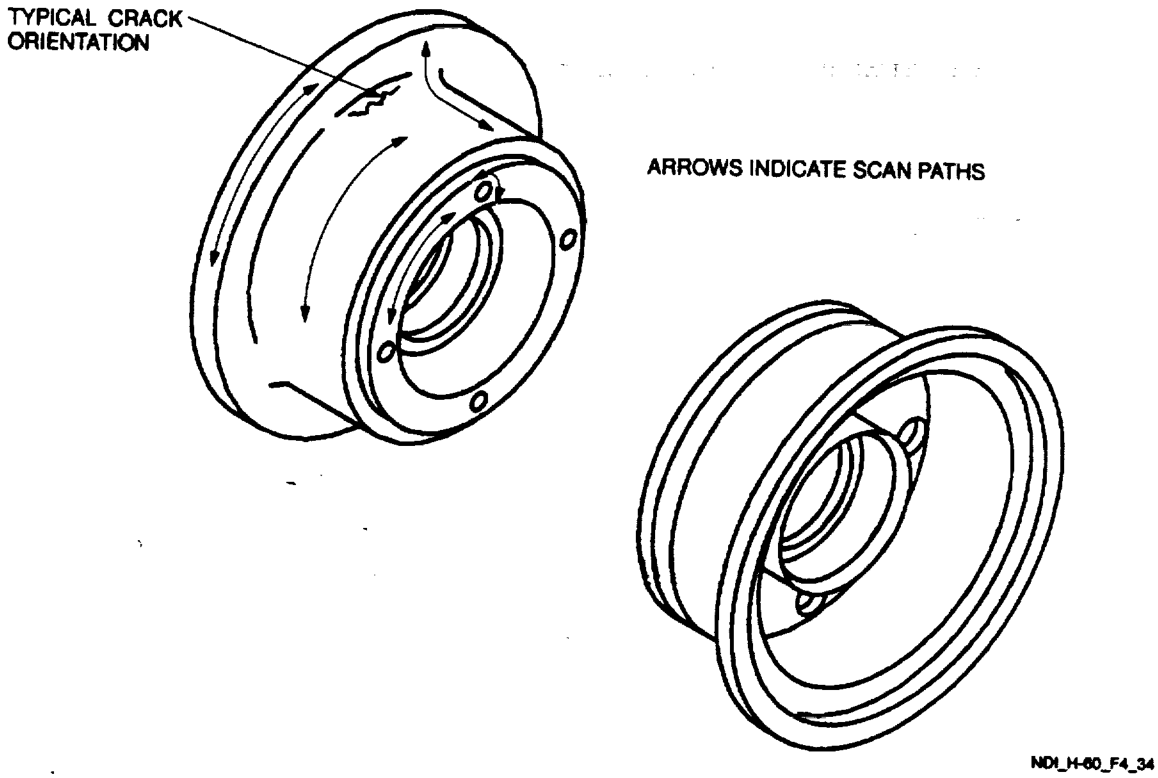


Figure 4-34. Tail Landing Gear Wheel Assembly

4.35. CARGO HOOK (MT).

4.35.1. Description (Figure 4-1. Index No. 35). The 9,000 pound capacity cargo hook is in the cargo hook well beneath the cabin floor.

4.35.2. Defects. This inspection is to check for cracks in the trunnions, trunnion retaining bolts and nuts, load beam, plate edge, and bolt hole surface areas. No cracks are allowed.

4.35.3. Primary Method. Magnetic Particle.

4.35.3.1. NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE
Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

4.35.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the cargo hook removed in accordance with the applicable technical manuals listed in Table 1-1.

4.35.3.3 Access. Not applicable.

4.35.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.35.3.5 NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

4.35.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 4-35.

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position 1 as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 4.35.3.8.
f. Repeat steps a. through e. for position 2.

4.35.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

4.35.3.8 Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

4.35.4 Backup Method. None required.

4.35.5 System Securing. Clean the cargo hook thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The cargo hook requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.36 FERROUS BOLTS AND PINS CONTAINED WITHIN THE AIRFRAME AND LANDING GEAR SYSTEM (MT).

4.36.1 Description (Figure 4-1. Index No. 36). Refer to paragraph 2.3 for inspection procedure.

4.37 NONFERROUS BOLTS AND PINS CONTAINED WITHIN THE AIRFRAME AND LANDING GEAR SYSTEM (PT).

4.37.1 Description (Figure 4-1. Index No. 37). Refer to paragraph 2.4 for inspection procedure.

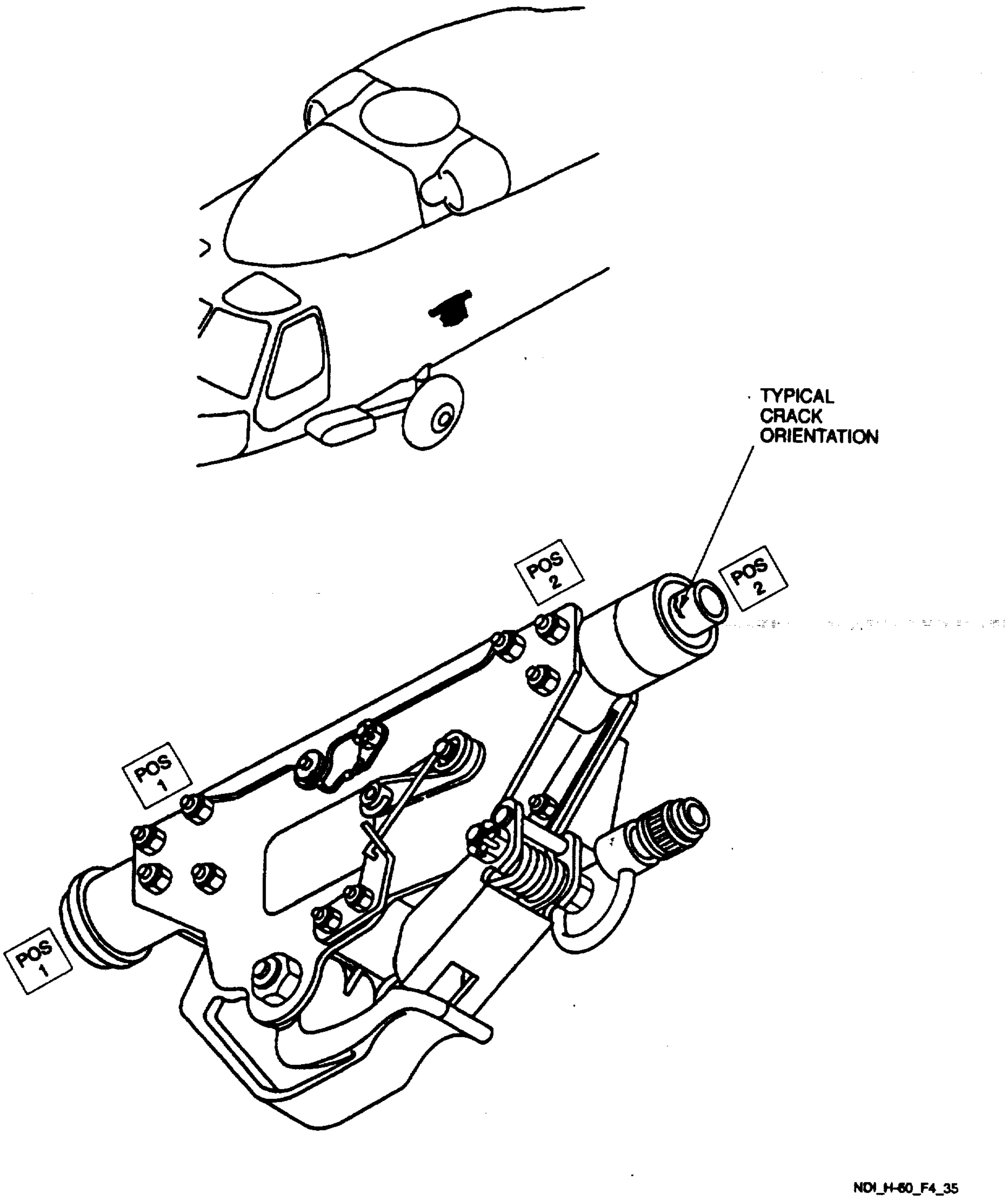


Figure 4-35. Cargo Hook

SECTION V
POWER PLANT SYSTEM

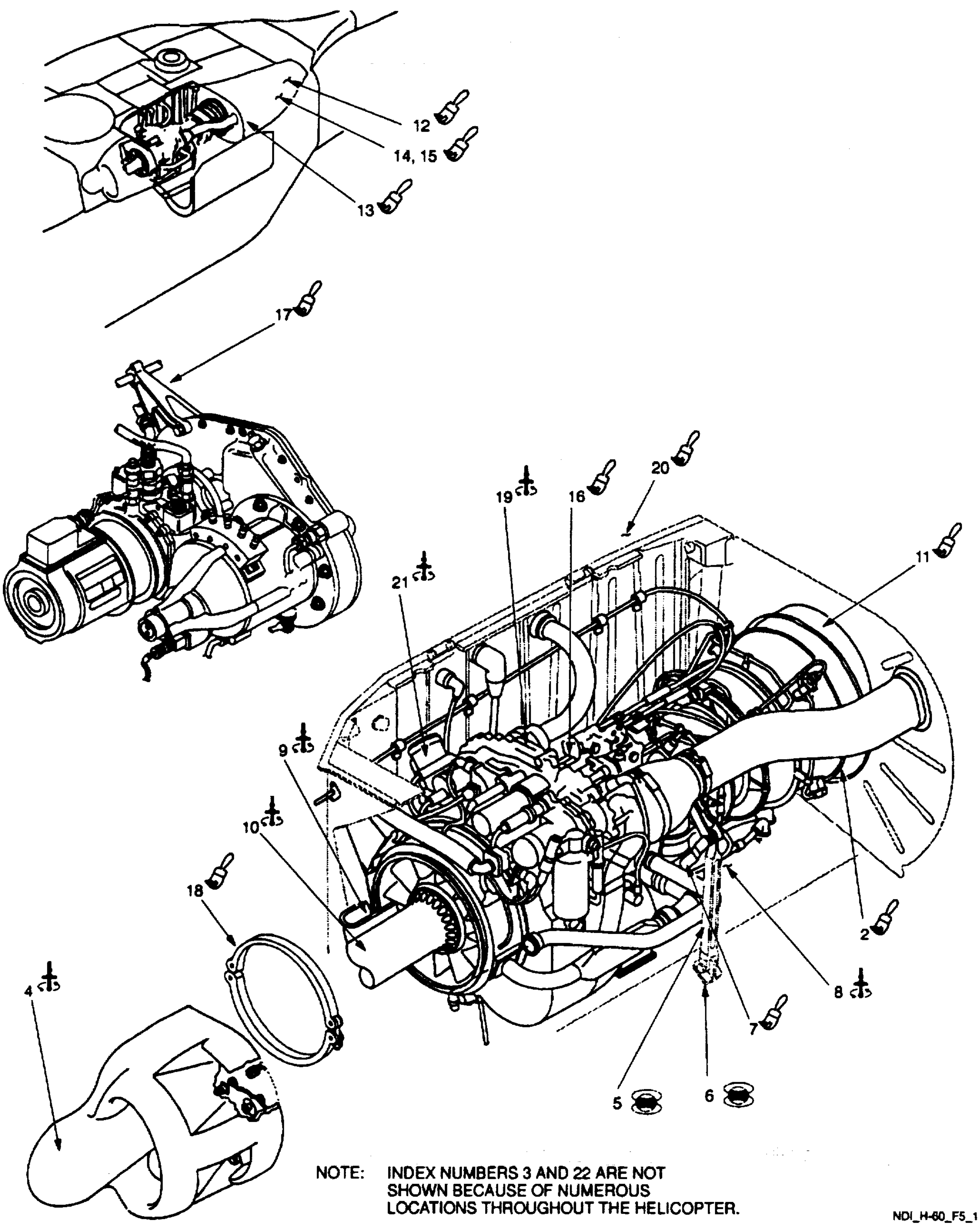
5. GENERAL.

5.1 CONTENTS. The power plant system inspection items covered in this section are those items of the H-60 helicopter series models T700-GE-700/T700-GE-701 C turboshaft engines and components listed in Table 5-1, Power Plant System Inspection Index. Corresponding inspection figures and applicable text paragraphs are listed opposite each item. The index number for each item may be used to locate it in Figure 5-1.

Table 5-1. Power Plant System Inspection Index

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
2	Deswirl Duct Vanes and Loop Clamp	PT	5.2	5-2
3	Engine Tubing, Couplings, Air Ducts, Fittings, Supports, Brackets, and Clips	PT	5.3	5-3
4	Air Inlet Assembly and Bleed-Air Exhaust Slots	ET	5.4	5-4
*5	Aft Engine Mount Struts	MT	5.5	5-5
*6	Aft Engine Mount Fittings	MT	5.6	5-6
*7	Aft Engine Mount Links	PT	5.7	5-7
*8	Aft Engine Mount Support	ET	5.8	5-8
9	Crotch Assembly and Segment Ring	ET	5.9	5-9
10	Forward Support Tube	ET	5.10	5-10
11	Exhaust Ejector and Attaching Angles	PT	5.11	5-11
12	Exhaust Fairings	PT	5.12	5-12
13	HIRSS and Nacelle Fairing Support Mounts	PT	5.13	5-13
14	Suppressor Core and Baffle	PT	5.14	5-14
15	HIRSS Exhaust Extender	PT	5.15	5-15
16	Rotary Input Assembly	PT	5.16	5-16
17	Engine Load Demand Control Cable Support	PT	5.17	5-17
18	Engine Air Inlet "V" Band Clamp	PT	5.18	5-18
19	Starter Flange	ET	5.19	5-19
20	Engine Shroud	PT	5.20	5-20
21	Engine Load Demand Spindle Bellcrank Support	ET	5.21	5-21
22	Engine Components	PT	5.22	5-22

NOTE: *Indicates Flight Safety Part.



NOTE: INDEX NUMBERS 3 AND 22 ARE NOT SHOWN BECAUSE OF NUMEROUS LOCATIONS THROUGHOUT THE HELICOPTER.

Figure 5-1. Power Plant System

5.2 DESWIRL DUCT VANES AND LOOP CLAMP (PT).

5.2.1 Description (Figure 5-1, Index No. 2). The deswirl duct, containing the deswirl duct vane is attached to the engine power turbine flange by a loop clamp.

5.2.2 Defects. This inspection is used to verify crack indications found visually on the deswirl duct vanes and the loop clamp. No cracks are allowed.

5.2.3 Primary Method. Fluorescent Penetrant.

5.2.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

5.2.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the deswirl duct and loop clamp removed in accordance with the applicable technical manuals listed in Table 1-1.

5.2.3.3 Access. Not applicable.

5.2.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.2.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 5-2.

5.2.3.6 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

5.2.4 Backup Method. None required.

5.2.5 System Securing. Clean the duct vanes and loop clamp to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The duct vanes and loop clamp require installation in accordance with the applicable technical manuals listed in Table 1-1.

5.3 ENGINE TUBING, COUPLINGS, AIR DUCTS, FITTINGS, SUPPORTS, BRACKETS, AND CLIPS (PT).

5.3.1 Description (Figure 5-1, Index No. 3). This task is for all metallic, unpainted engine tubing, couplings, air ducts, related fittings, supports, brackets, and bracket clips.

5.3.2 Defects. This inspection is used to verify crack indications found visually. No cracks are allowed.

5.3.3 Primary Method. Fluorescent Penetrant.

5.3.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7.AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

5.3.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the part(s) shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

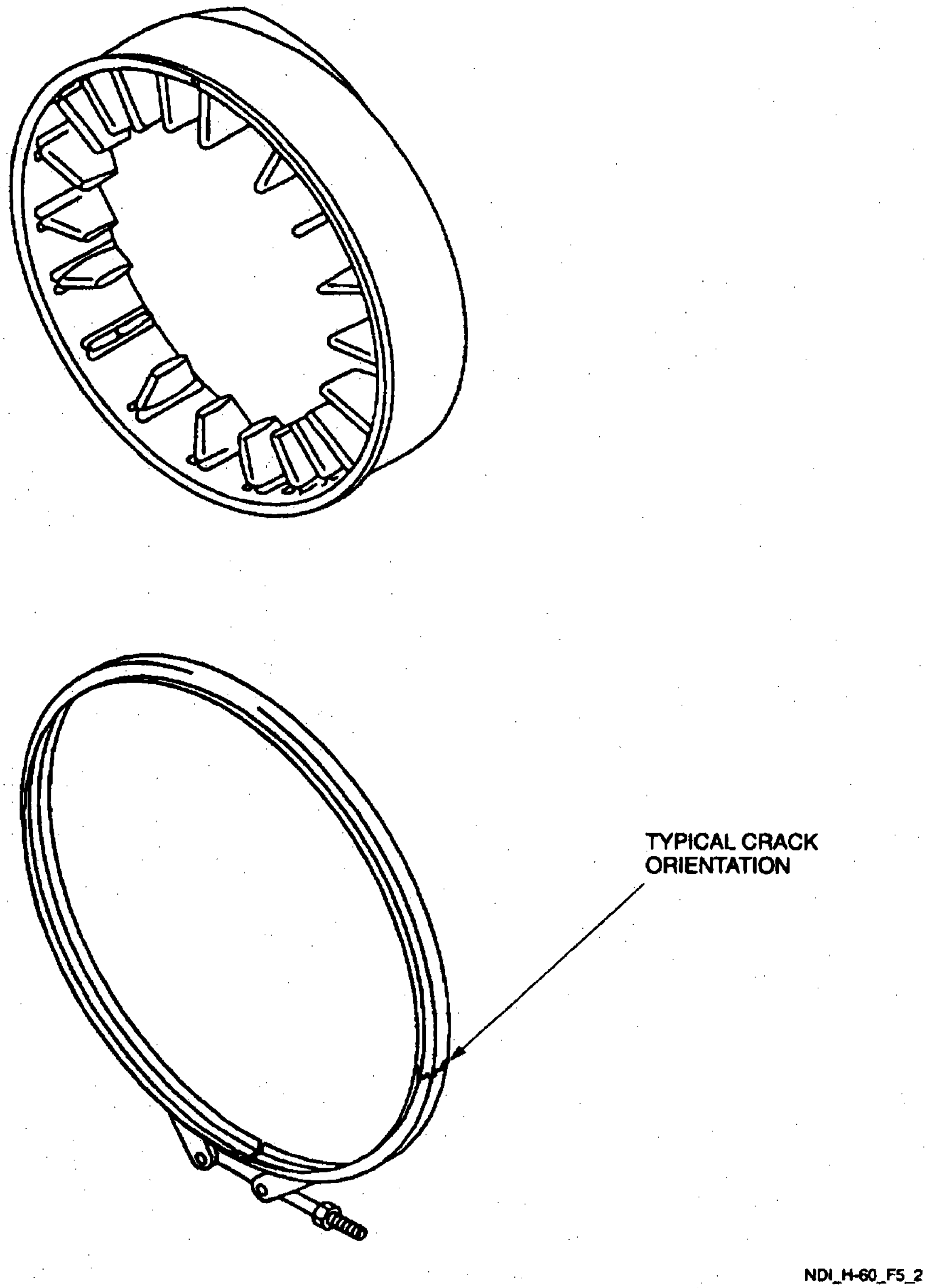


Figure 5-2. Deswirl Duct Vanes and Loop Clamp

5.3.3.3 Access. Location of these parts varies considerably. Refer to Figure 1-4 and Table 1-2 to locate applicable access provisions.

5.3.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.3.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 5-3.

5.3.3.6 Marking and Recording of Inspection Results. Mark and record the inspection results as required by paragraph 1.3.

5.3.4 Backup Method. None required.

5.3.5 System Securing. Clean the part(s) to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The part(s), if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

5.4 AIR INLET ASSEMBLY AND BLEED-AIR EXHAUST SLOTS (ET).

5.4.1 Description (Figure 5-1. Index No. 4). The aluminum air inlet assembly is at the front of the engine through which air is directed into the engine. The bleed air exhaust slots are in the forward inboard cone area.

5.4.2 Defects. This inspection is used to verify crack indications found visually on the air inlet and around the bleed air exhaust slots. No cracks are allowed.

5.4.3 Primary Method. Eddy Current.

5.4.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 900 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

5.4.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance in accordance with the applicable technical manuals listed in Table 1-1.

5.4.3.3 5.4.3.3 Access. Not applicable.

5.4.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

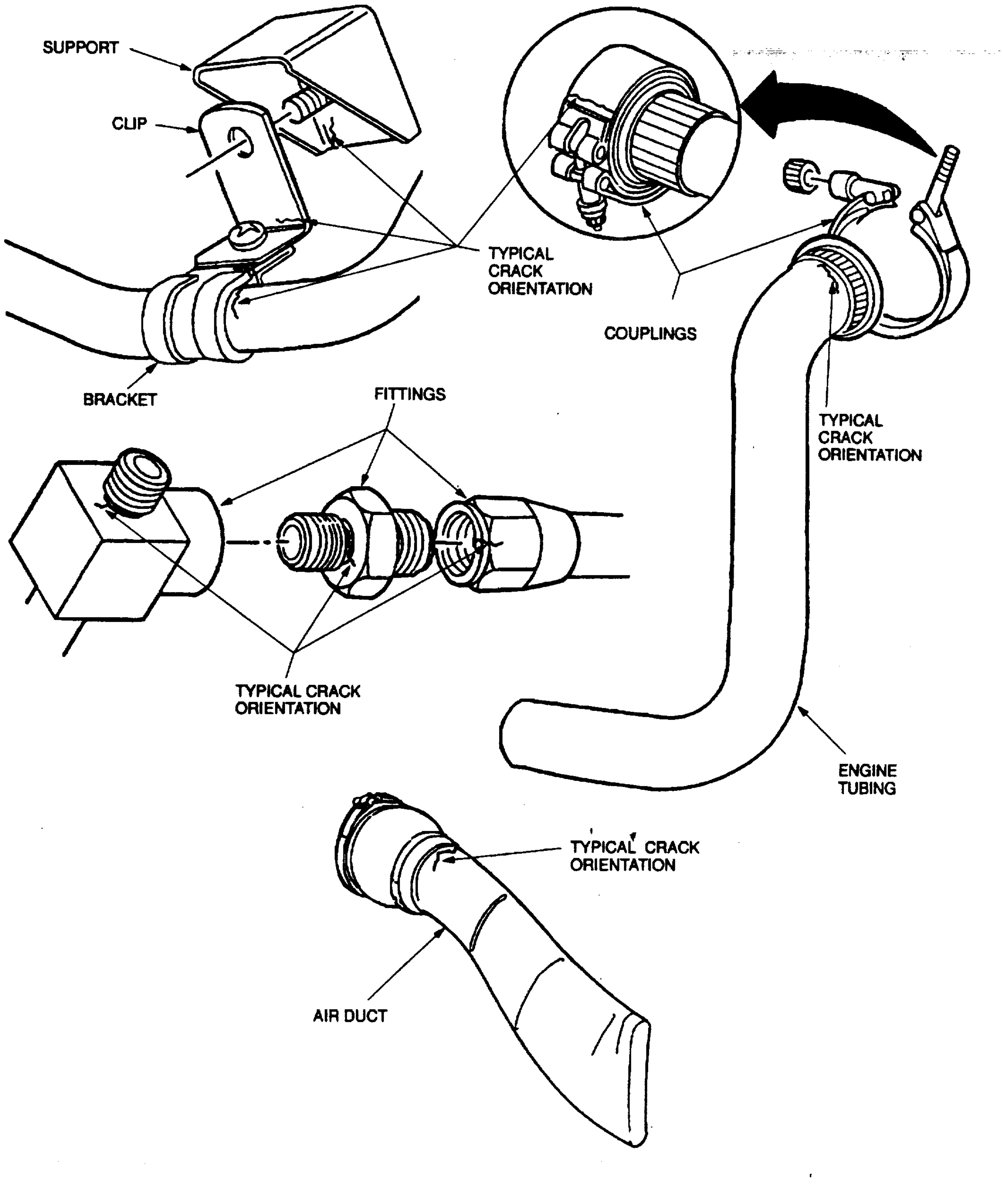


Figure 5-3. Engine Tubing, Couplings, Air Ducts, Fittings, Supports, Brackets, and Clips

5.4.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19eII

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive -	mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0,040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

5.4.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 5-4.

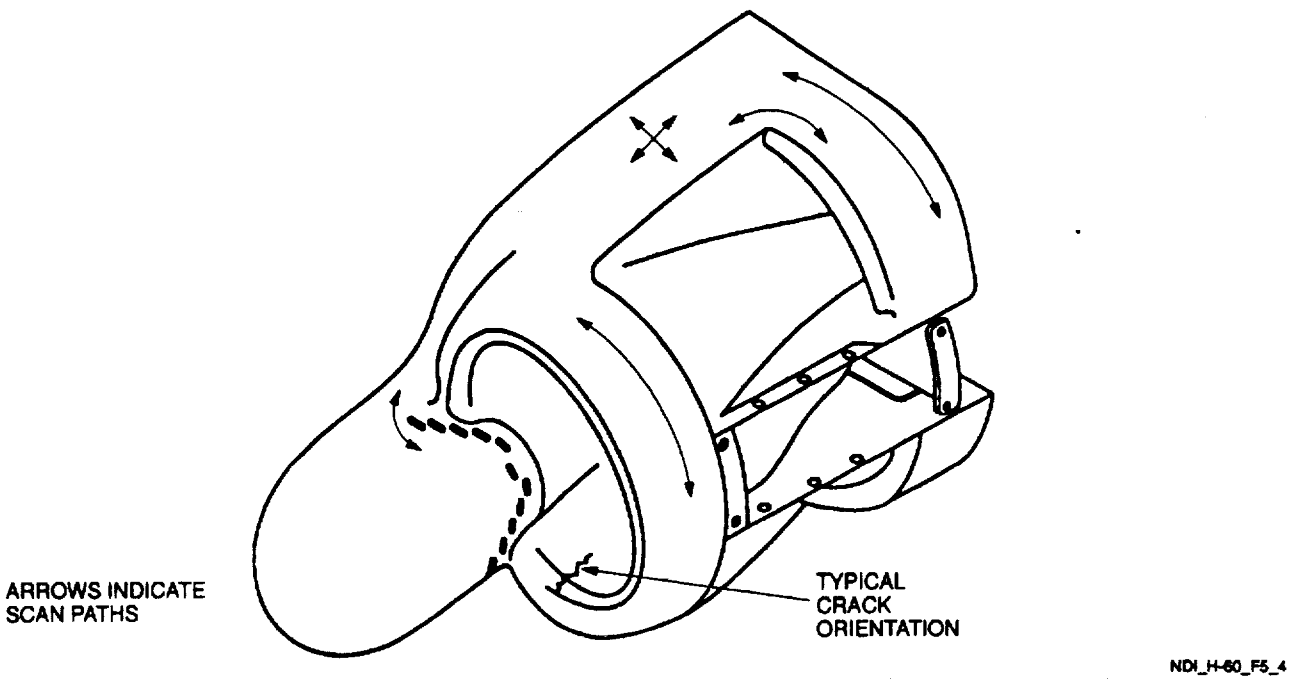


Figure 5-4. Air Inlet Assembly and Bleed-Air Exhaust Slots

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE
Either probe identified in paragraph 5.4.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 5.4.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

5.4.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

5.4.4 Backup Method. None required.

5.4.5 System Securing. Not applicable.

5.5 AFT ENGINE MOUNT STRUTS (IT).

5.5.1 Description (Figure 5-1. Index No. 5). The aft engine mount struts attach to fittings on the air frame and links attach to the engine.

5.5.2 Defects. Cracks may occur anywhere on the surface of the aft engine mount struts. No cracks are allowed.

5.5.3 Primary Method. Magnetic Particle.

5.5.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE
Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

5.5.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the struts shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

5.5.3.3 Access. Access to the aft engine mount strut is through hinged engine cowls (Figure 1-4, Items 3T-5 and 4T-8).

WARNING
Maintenance Platforms/Workstands

Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

5.5.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.
5.5.3.5 NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.
5.5.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 5-5.

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position I as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 5.5.3.8.
f. Repeat steps a. through e. for positions 2 and 3.
g. Repeat steps a. through f. for each strut.

5.5.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

5.5.3.8 Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

5.5.4 Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

5.5.5 System Securing. Clean the struts thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.f16. The engine mount struts, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

5.6 AFT ENGINE MOUNT FITTINGS (MT).

5.6.1 Description (Figure 5-1. Index No. 6). The aft engine mount struts are attached to the aft mount fittings (two inboard and one outboard) which are secured to the airframes.

5.6.2 Defects. Cracks may occur anywhere on the aft engine mount fittings. No cracks are allowed.

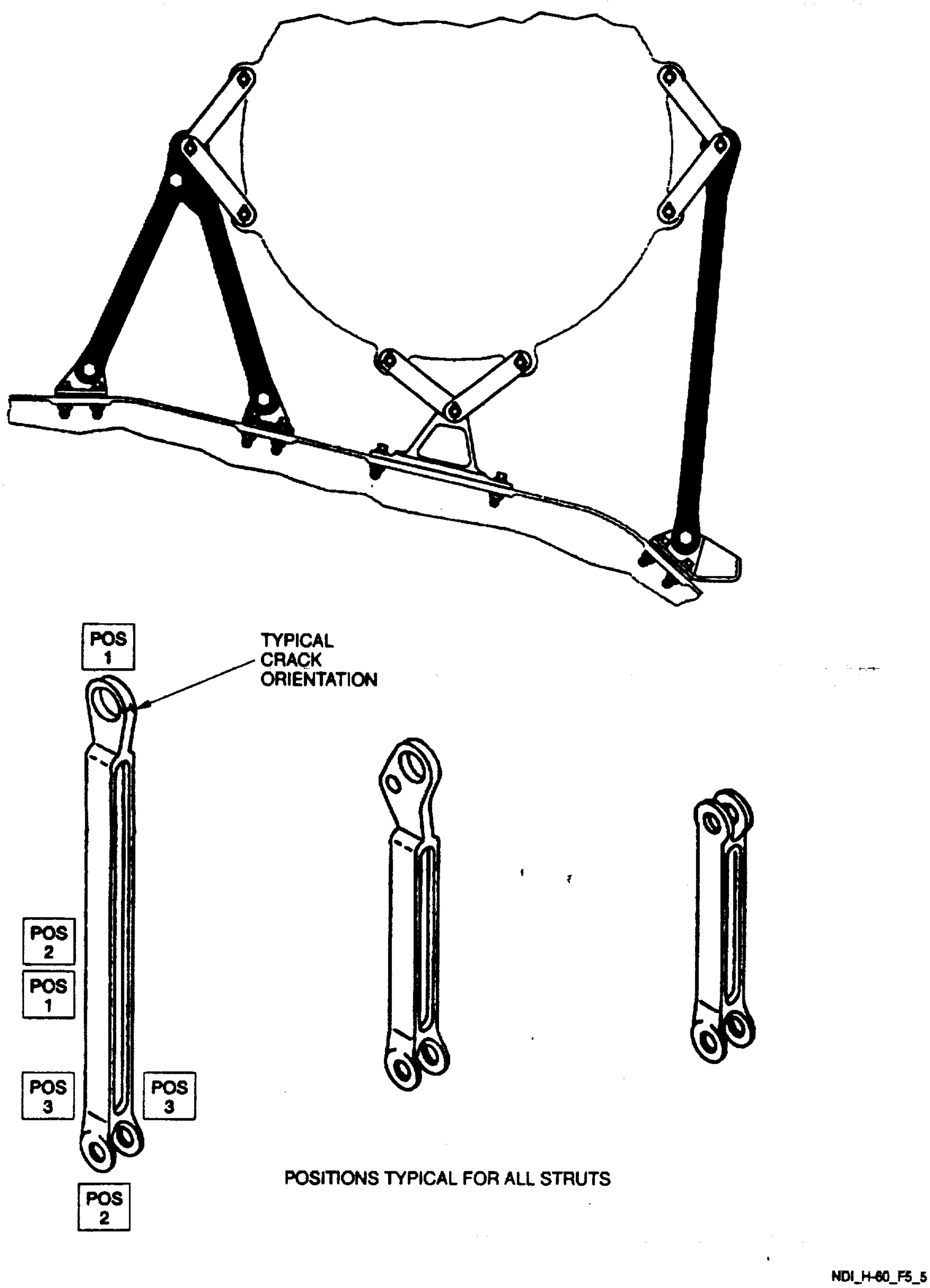


Figure 5-5. Aft Engine Mount Struts

5.6.3 Primary Method. Magnetic Particle.

5.6.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE

Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

5.6.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the engine removed in accordance with the applicable technical manuals listed in Table 1-1.

5.6.3.3 Access. Not applicable.

5.6.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.6.3.5 NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

5.6.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 5-6.

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position 1 as shown for each fitting.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 5.6.3.8.
f. Repeat steps a. through e. for position 2 on each fitting.

5.6.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

5.6.3.8 Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

5.6.4 Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

5.6.5 System Securing. Clean the fittings thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The engine requires installation in accordance with the applicable technical manuals listed in Table 1-1.

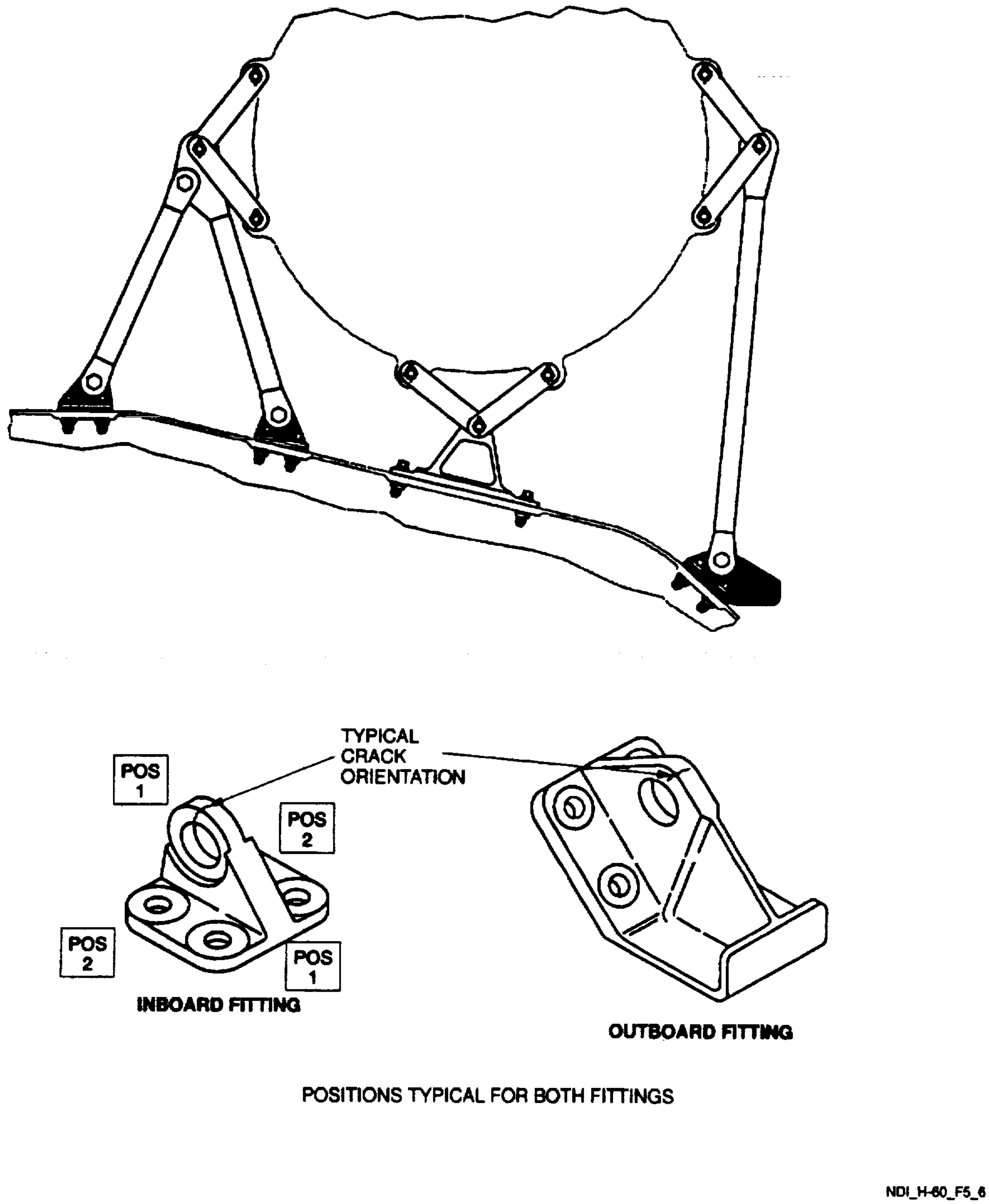


Figure 5-6. Aft Engine Mount Fittings

5.7 AFT ENGINE MOUNT LINKS (PT).

5.7.1 Description (Figure 5-1, Index No. 7). The aft engine mount links attach the mount struts and the aft mount support to the engine. Each engine has six links.

5.7.2 Defects. Cracks may occur anywhere on the mount links. No cracks are allowed.

5.7.3 Primary Method. Fluorescent Penetrant.

5.7.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n−Propyl Bromide (vapor degreasing only)(Table 1−8), DS−108 (Table 1−8), Electron (Table 1−8), Positron (Table 1−8). DS−108, Electron, Positron must be followed by an acetone (Table 1−8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

5.7.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the engine removed in accordance with the applicable technical manuals listed in Table 1-1.

5.7.3.3 Access. Not applicable.

5.7.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.7.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 5-7.

5.7.3.6 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

5.7.4 Backup Method. None required.

5.7.5 System Securing. Clean the links to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The engine requires installation in accordance with the applicable technical manuals listed in Table 1-1.

5.8 AFT ENGINE MOUNT SUPPORT (ET).

5.8.1 Description (Figure 5-1, Index No. 8). The aft engine mount is secured to the engine deck and two links attached to the engine.

5.8.2 Defects. Cracks may occur anywhere on the mount support. No cracks are allowed.

5.8.3 Primary Method. Eddy Current.

5.8.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched titanium (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

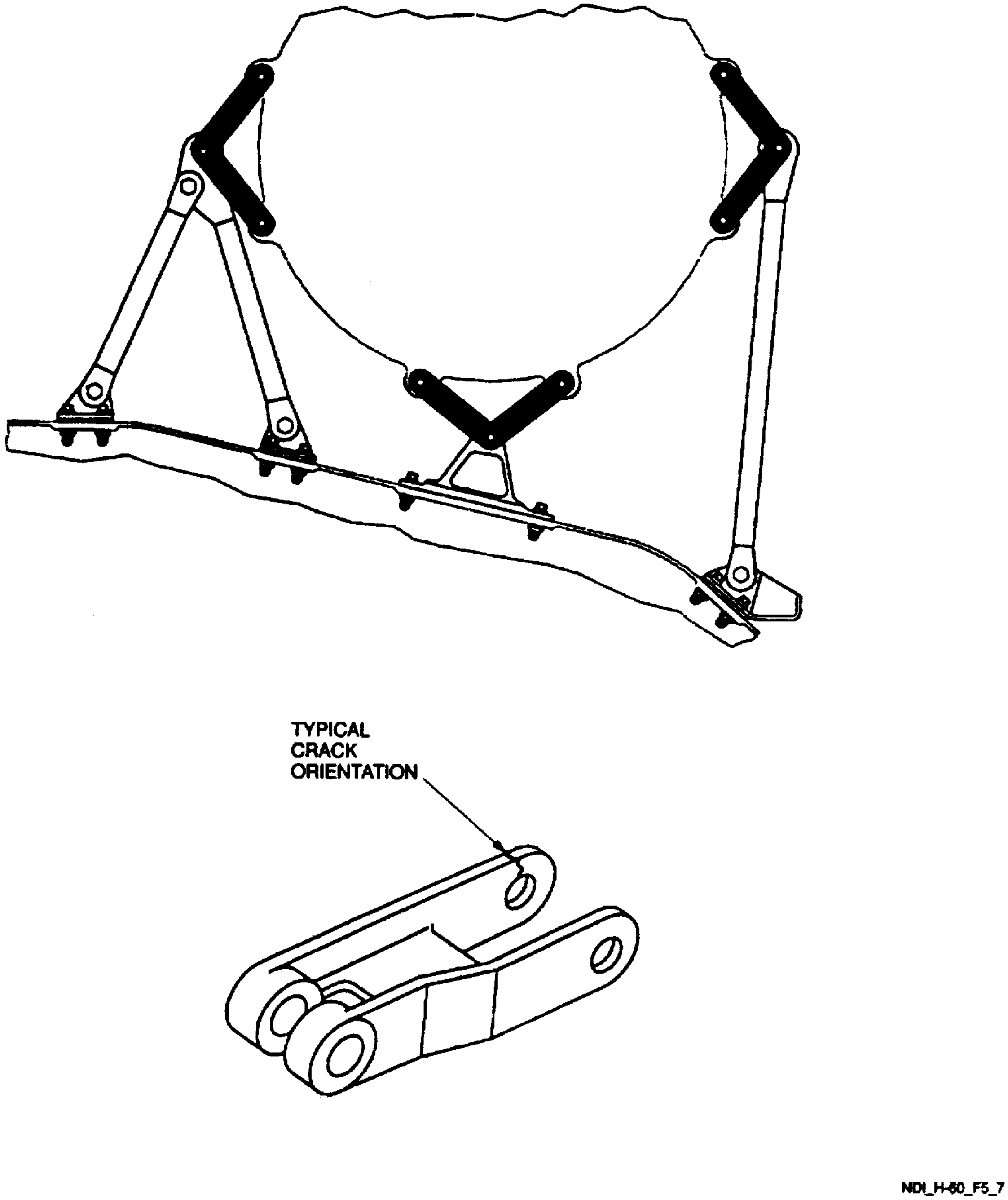


Figure 5-7. Aft Engine Mount Links

5.8.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the engine removed in accordance with the applicable technical manuals listed in Table 1-1.

5.8.3.3 Access. Not applicable.

5.8.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.8.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e[11]

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 30o		
Probe drive	- mid		
LPF	- 100		
HPF	-0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.
(2) Adjust phase as required to obtain horizontal lift-off.
(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0,040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

5.8.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 5-8.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 5.8.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 5.8.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

5.8.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

5.8.4 Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

5.8.5 System Securing. The engine requires installation in accordance with the applicable technical manuals listed in Table 1-1.

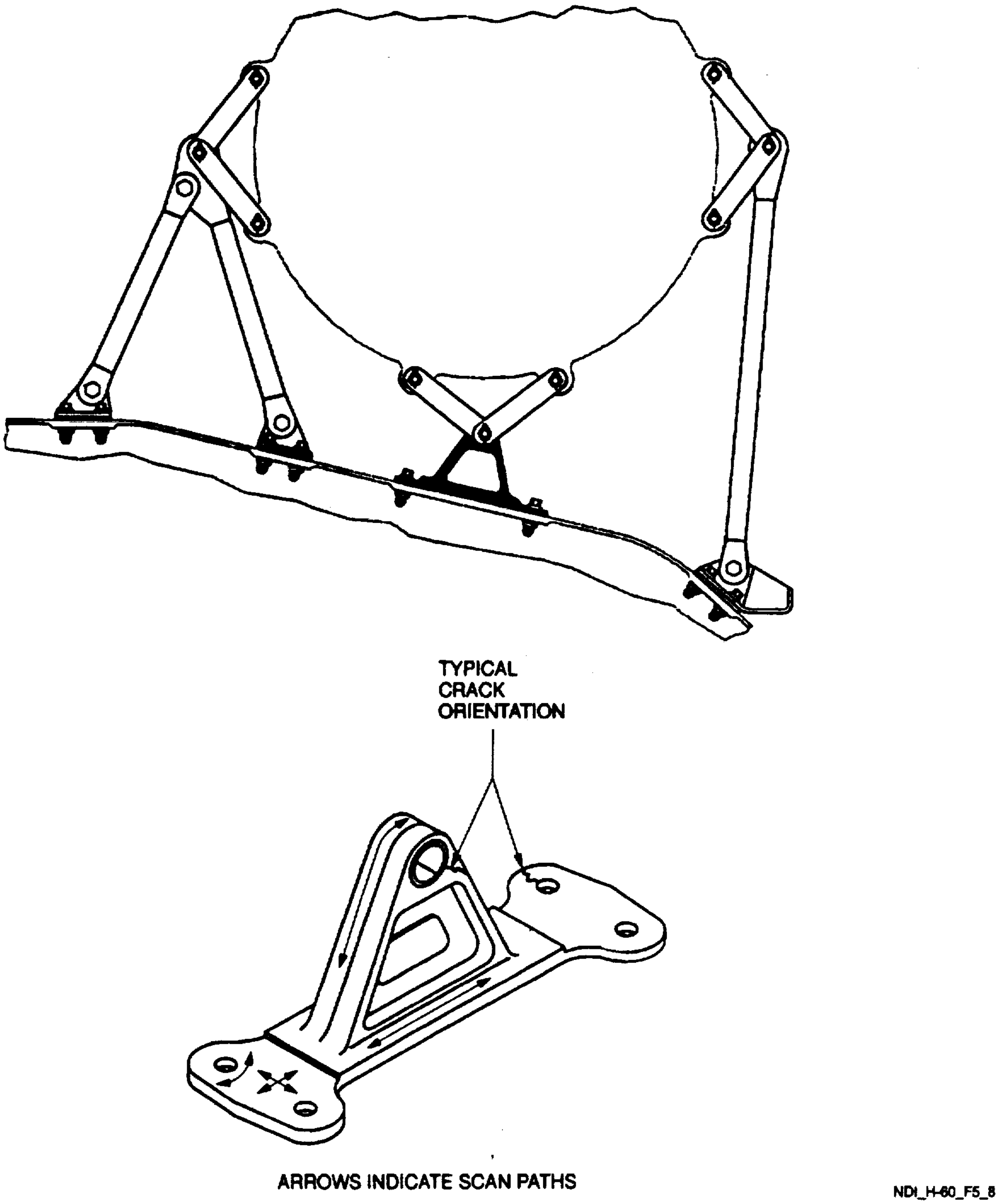


Figure 5-8. Aft Engine Mount Support

5.9 CROTCH ASSEMBLY AND SEGMENT RING (PT).

5.9.1 Description (Figure 5-1, Index No. 9). The crotch assembly is mounted around the forward support tube and is attached to the engine swirl frame with a sealed firewall plate.

5.9.2 Defects. This Inspection is to be used to confirm suspect crack indications detected visually through the casting. No cracks are allowed.

5.9.3 Primary Method. Flourescent Penetrant.

5.9.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Flourescent Penetrant Inspection Kit
b. Black Light UV Kit

5.9.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the crotch assembly removed in accordance with the applicable technical manuals listed in Table 1-1.

5.9.3.3 Access. Not applicable.

5.9.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.9.3.5Deleted.

5.9.3.6Inspection Procedure. Perform the Flourescent Penetrant Inspection. Refer to the Flourescent Penetrant Method, paragraph 1.4.7 and Table 1–5. Inspect area of concern.

5.9.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

5.9.3.8Backup Method. None required.

5.9.3.9System Securing. Clean the part area to remove the inspection media. Refer to the post cleaning and restoration of part or area after NDI paragraph 1.4.16. Protective coatings shall be applied as required. Parts or components if removed or disassembled, required installation or reassembly in accordance with the applicable technical manuals listed in Table 1–1..

5.9.4 Deleted.

5.9.5 Deleted.

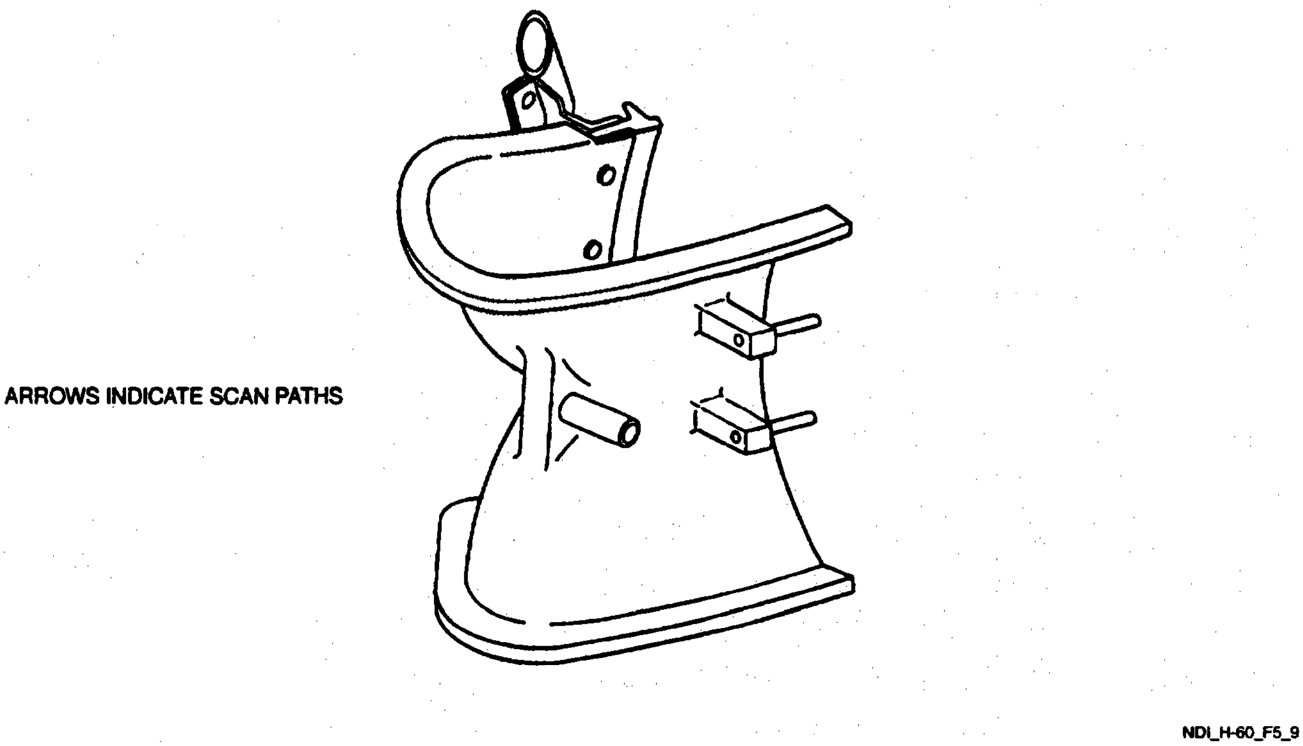


Figure 5-9. Crotch Assembly and Segment Ring

5.10 FORWARD SUPPORT TUBE (PT).

5.10.1 Description (Figure 5-1, Index No. 10). The forward support tube attaches to the engine swirl frame. The output shaft is installed through restrainer rings fastened inside the tube.

5.10.2 Defects. This inspection is used to confirm suspect crack indications detected visually through the casting. No cracks are allowed.

5.10.3 Primary Method. Flourescent Penetrant.

5.10.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Flourescent Penetrant Inspection Kit
b. Black Light UV Kit

5.10.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the engine removed in accordance with the applicable technical manuals listed in Table 1-1.

5.10.3.3 Access. Not applicable.

5.10.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.10.3.5 Deleted.

5.10.3.6 Inspection Procedure. Perform Flourescent Penetrant Inspection. Refer to the Flourescent Penetrant Method, paragraph 1.4.7 and Table 1–5. Inspect area of concern.

5.10.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

5.10.4 Backup Method. None required.

5.10.5 System Securing. Clean the part area to remove the inspection media. Refer to the post cleaning and restoration of part or area after NDI paragraph 1.4.16. Protective coatings shall be applied as required. Parts or components if removed or disassembled, required installation or reassembly in accordance with the applicable technical manuals listed in Table 1–1.

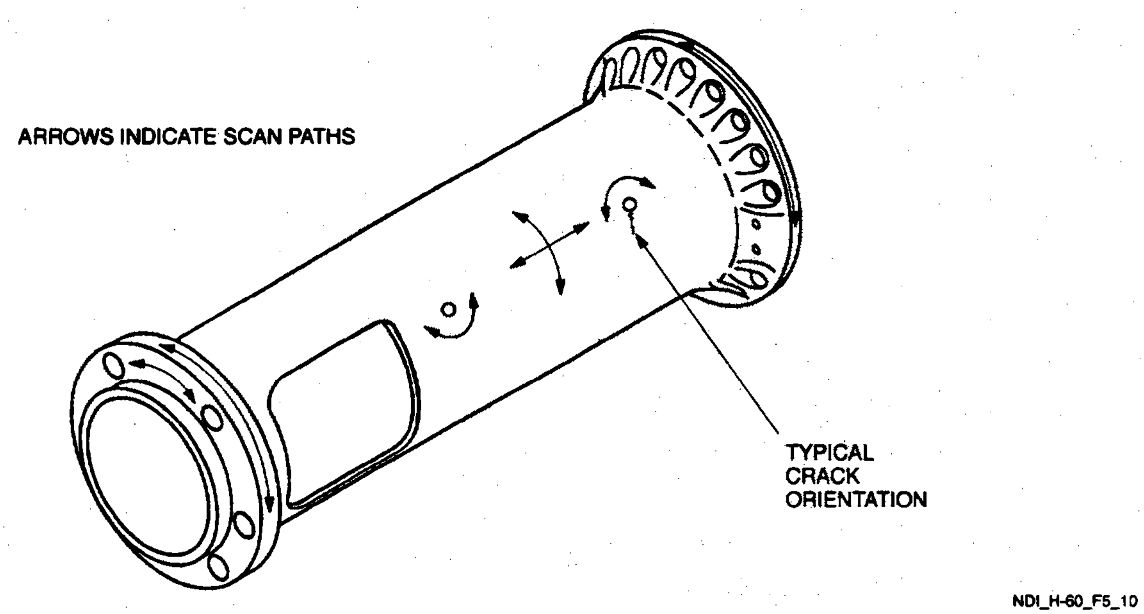


Figure 5-10. Forward Support Tube

5.11 EXHAUST EJECTOR AND ATTACHING ANGLES (PT).

5.11.1 Description (Figure 5-1, Index No. 11). The stainless steel exhaust ejector is mounted by attaching angles to the exhaust module. It directs the hot exhaust away from the helicopter.

5.11.2 Defects. Defects can occur anywhere on the surface of the ejector. Inspect the attaching angles also. No cracks are allowed.

5.11.3 Primary Method. Fluorescent Penetrant.

5.11.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n−Propyl Bromide (vapor degreasing only)(Table 1−8), DS−108 (Table 1−8), Electron (Table 1−8), Positron (Table 1−8). DS−108, Electron, Positron must be followed by an acetone (Table 1−8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

5.11.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the exhaust ejector removed in accordance with the applicable technical manuals listed in Table 1-1.

5.11.3.3 Access. Not applicable.

5.11.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.11.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 5-11.

5.11.3.6 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

5.11.4 Backup Method. None required.

5.11.5 System Securing. Clean the exhaust ejector to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The exhaust ejector requires installation in accordance with the applicable technical manuals listed in Table 1-1.

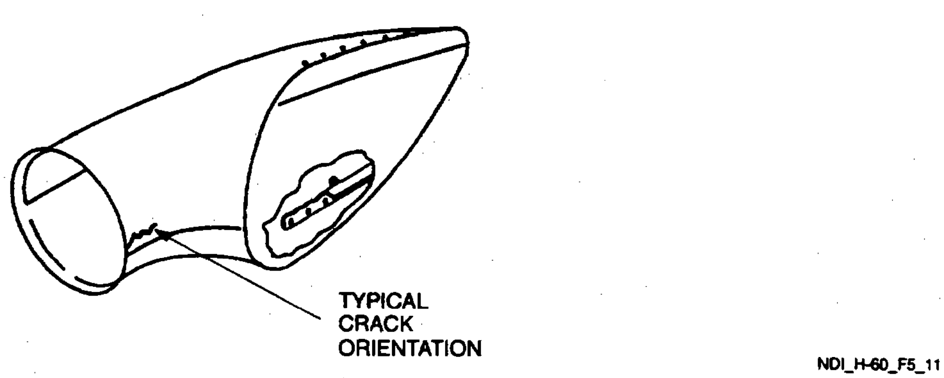


Figure 5-11. Exhaust Ejector and Attaching Angles

2.12 EXHAUST FAIRINGS (PT).

5.12.1 Description (Figure 5-1, Index No. 12). The upper and lower fairings are the portions of the exhaust module that contain the exhaust ejector.

5.12.2 Defects. Defects can occur anywhere on the surface of the exhaust fairings. No cracks are allowed. Repeat this inspection after repairs.

5.12.3 Primary Method. Fluorescent Penetrant.

5.12.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

5.12.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the exhaust module removed in accordance with the applicable technical manuals listed in Table 1-1.

5.12.3.3 Access. Not applicable.

5.12.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.12.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 5-12.

5.12.3.6 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

5.12.4 Backup Method. None required.

5.12.5 System Securing. Clean the exhaust fairing to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The exhaust module requires installation in accordance with the applicable technical manuals listed in Table 1-1.

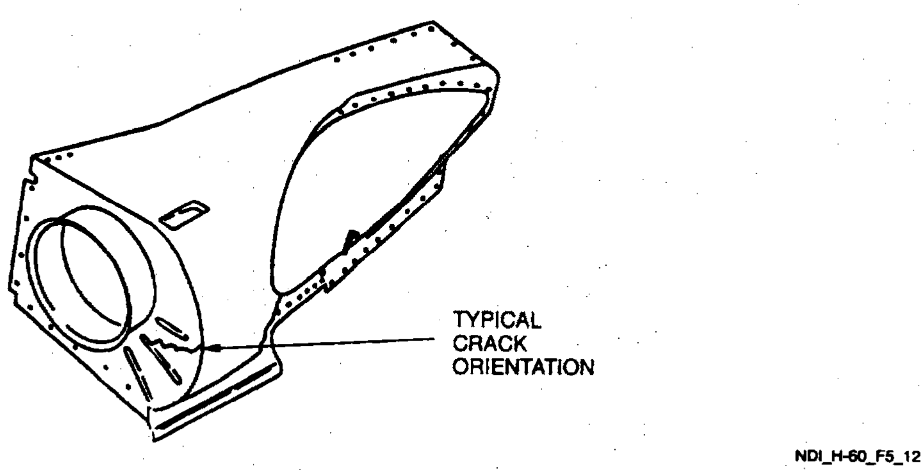


Figure 5-12. Exhaust Fairings

5.13 HIRSS AND NACELLE FAIRING SUPPORT MOUNTS (PT).

5.13.1 Description (Figure 5-1, Index No. 13). The hover infrared suppression system is contained within the HIRSS module. Parts of the support mounts are: fail-safe plate, rear suppressor support fitting and link, lower nacelle support fitting and link, and upper nacelle support fitting and link.

5.13.2 Defects. Defects can occur anywhere on the surface of the described parts. No cracks are allowed.

5.13.3 Primary Method. Fluorescent Penetrant.

5.13.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts..

5.13.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the HIRSS module removed in accordance with the applicable technical manuals listed in Table 1-1.

5.13.3.3 Access. Not applicable.

5.13.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.13.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 5-13.

5.13.3.6 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

5.13.4 Backup Method. None required.

5.13.5 System Securing. Clean the inspected parts to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The HIRSS module requires installation in accordance with the applicable technical manuals listed in Table 1-1.

5.14 SUPPRESSOR CORE AND BAFFLE (PT).

5.14.1 Description (Figure 5-1, Index No. 14). The HIRSS kit contains a three-stage core and inner baffle which reduces exhaust gas radiation and prevents line-of-sight viewing of hot engine surfaces. Areas included in this procedure are within two inches of mounts or stage-to-stage attachments, within two inches of bulkhead where it attaches to support flange on core., finger seal inlet holes, stage 1 inner duct assembly, stage 1 outer duct assembly, stage 2 duct, second/third stage wiggle strips, stage 3 duct, baffle guide slot, end plates, splitter plates and support brackets, and baffles.

5.14.2 Defects. Defects can occur anywhere in/on the suppressor core and baffle. Particular attention shall be given to the areas described above. No cracks are allowed.

5.14.3 Primary Method. Fluorescent Penetrant.

5.14.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts..

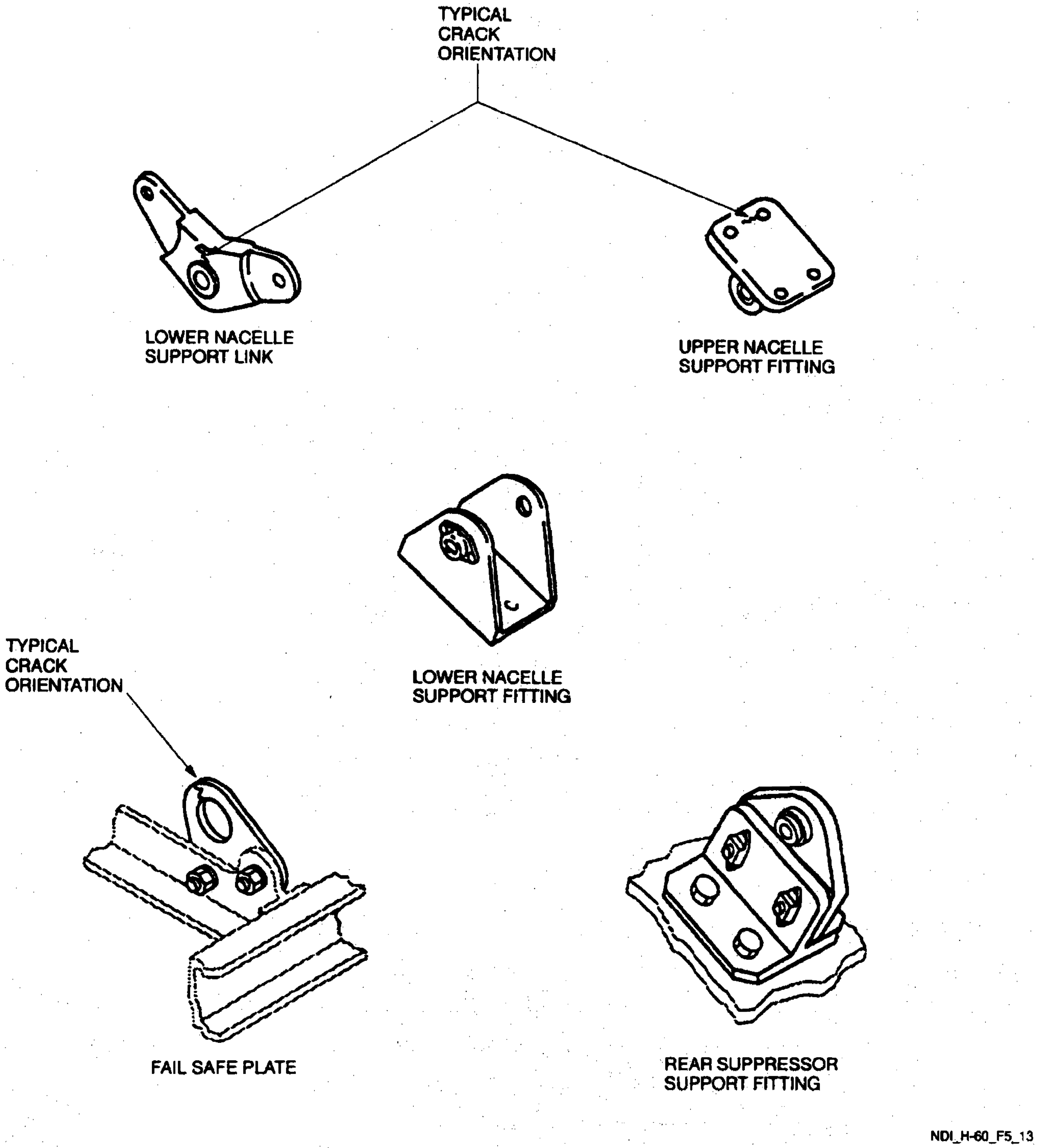


Figure 5-13. HIRSS and Nacelle Fairing Support Mounts

5.14.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the suppressor removed and disassembled in accordance with the applicable technical manuals listed in Table 1-1.

5.14.3.3 Access. Not applicable.

5.14.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.14.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 5-14.

5.14.3.6 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

5.14.4 Backup Method. None required.

5.14.5 System Securing. Clean the inspected areas to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The suppressor requires assembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

5.15 HIRSS EXHAUST EXTENDER (PT).

5.15.1 Description (Figure 5-1, Index No. 15). The exhaust extender is attached to the aft end of the HIRSS and directs the exhaust away from the helicopter. This procedure is applicable to the attach angles, support beams, and struts.

5.15.2 Defects. Defects can occur anywhere on the described items. No cracks are allowed.

5.15.3 Primary Method. Fluorescent Penetrant.

5.15.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n−Propyl Bromide (vapor degreasing only)(Table 1−8), DS−108 (Table 1−8), Electron (Table 1−8), Positron (Table 1−8). DS−108, Electron, Positron must be followed by an acetone (Table 1−8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

5.15.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the exhaust extender removed in accordance with the applicable technical manuals listed in Table 1-1.

5.15.3.3 Access. Not applicable.

5.15.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.15.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 5-15.

5.15.3.6 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

5.15.4 Backup Method. None required.

5.15.5 System Securing. Clean the inspected parts to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The exhaust extender requires installation in accordance with the applicable technical manuals listed in Table 1-1.

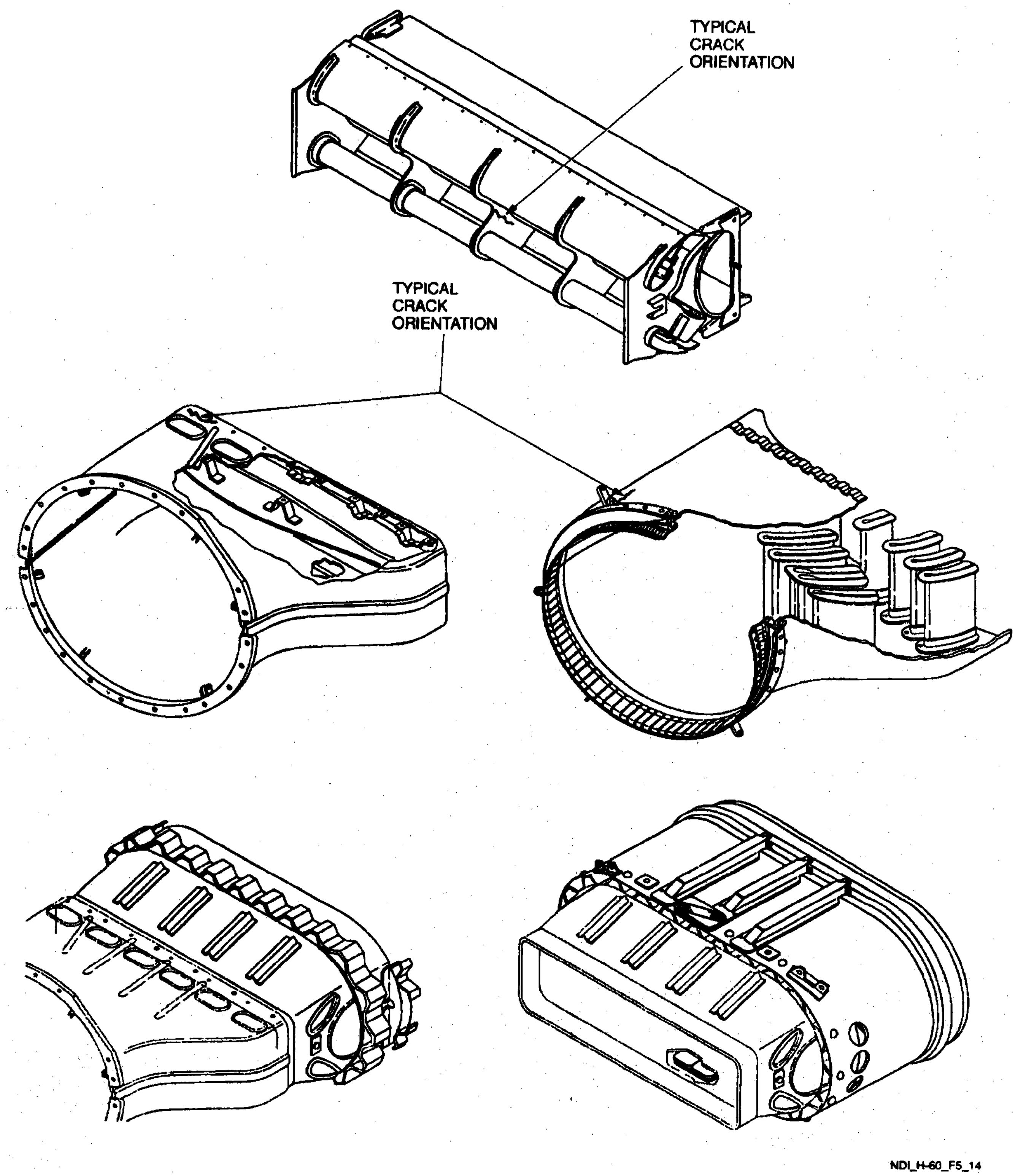


Figure 5-14. Suppressor Core and Baffle

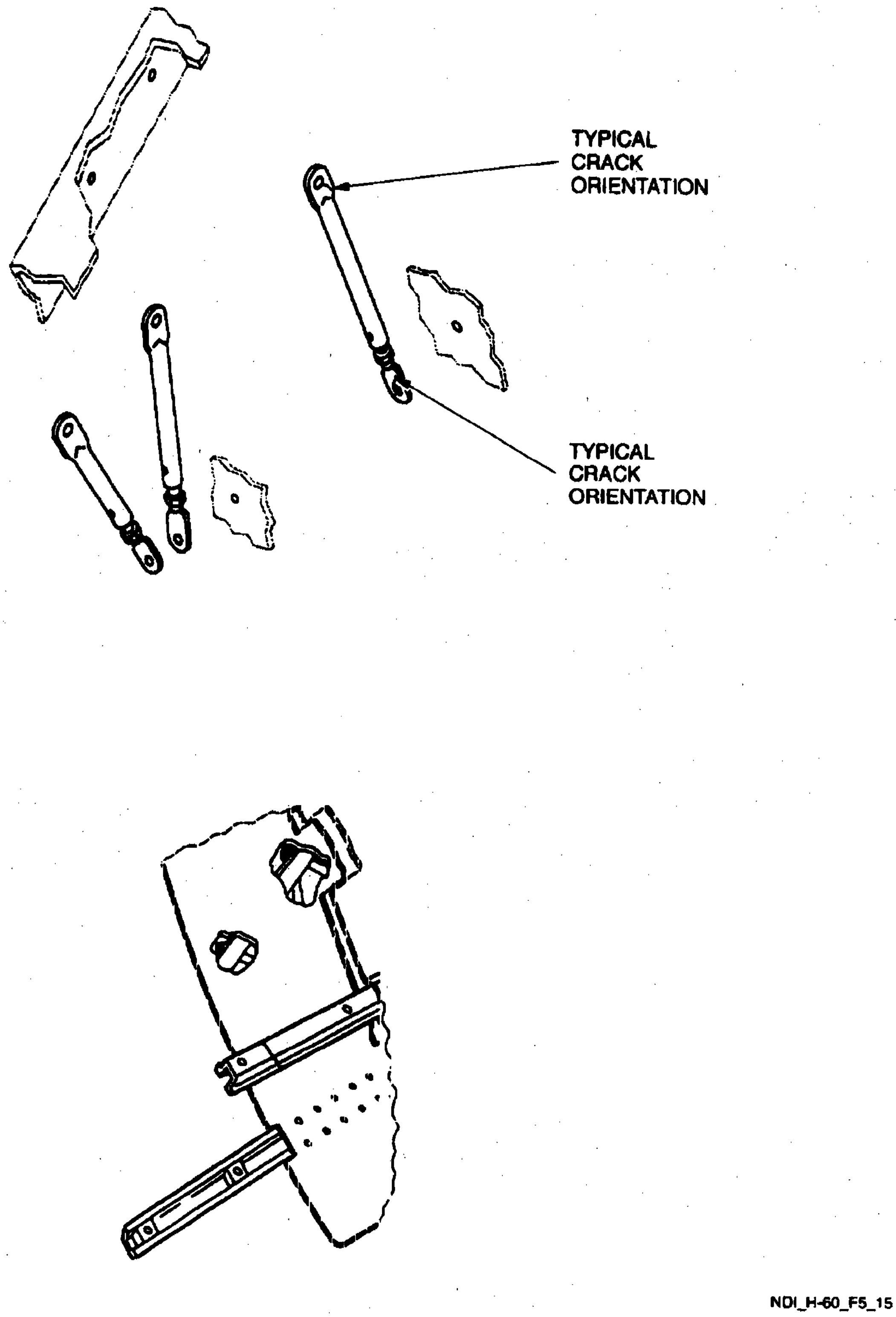


Figure 5-15. HIRSS Exhaust Extender

5.16 ROTARY INPUT ASSEMBLY (PT).

5.16.1 Description (Figure 5-1, Index No. 16). The rotary input assembly is at the end of the push-pull cable and controls engine power available to the engine hydromechanical unit. This procedure covers the inspection of the load demand rotary barrel, drive assembly, adapter, and housing.

5.16.2 Defects. Defects can occur anywhere on the items described. No cracks are allowed.

5.16.3 Primary Method. Fluorescent Penetrant.

5.16.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts..

5.16.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the load demand unit removed and disassembled in accordance with the applicable technical manuals listed in Table 1-1.

5.16.3.3 Access. Not applicable.

5.16.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.16.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 5-16.

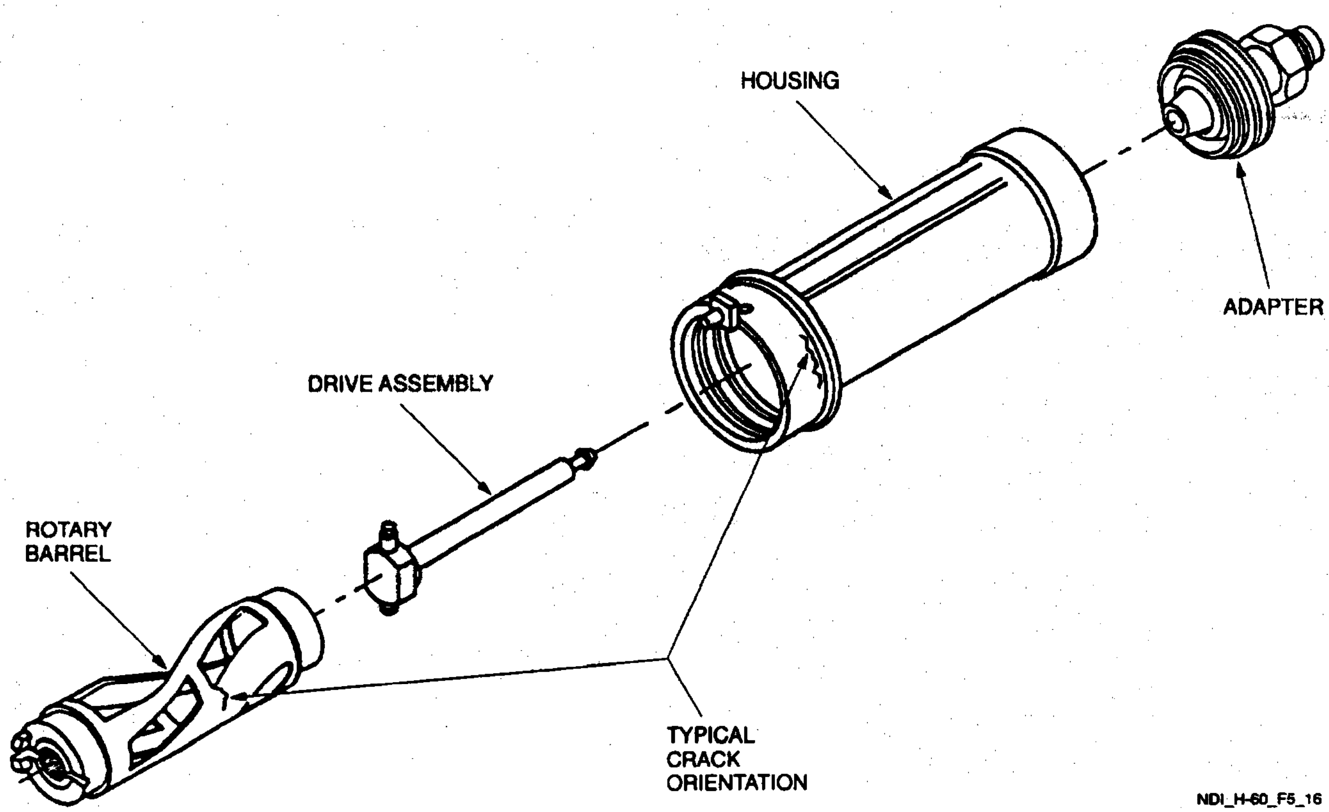


Figure 5-16. Rotary Input Assembly

5.16.3.6 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

5.16.4 Backup Method. None required.

5.16.5 System Securing. Clean the inspected parts to remove inspection media. Refer to Post Cleaning and Restoration or Part or Area After NDI, paragraph 1.4.16. The rotary input assembly requires assembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

5.17 ENGINE LOAD DEMAND CONTROL CABLE SUPPORT (PT).

5.17.1 Description (Figure 5-1, Index No. 17). The cable support is mounted on top of the transmission and secures the engine load-demand push-pull rods.

5.17.2 Defects. Defects can occur anywhere on the surface of the support. No cracks are allowed.

5.17.3 Primary Method. Fluorescent Penetrant.

5.17.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n−Propyl Bromide (vapor degreasing only)(Table 1−8), DS−108 (Table 1−8), Electron (Table 1−8), Positron (Table 1−8). DS−108, Electron, Positron must be followed by an acetone (Table 1−8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

5.17.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the cable support shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

5.17.3.3 Access. Access is obtained through the sliding cover (Figure 1-4, items 3T-4T-2).

5.17.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.17.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 5-17.

5.17.3.6 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

5.17.4 Backup Method. None required.

5.17.5 System Securing. Clean the cable support to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The cable support, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

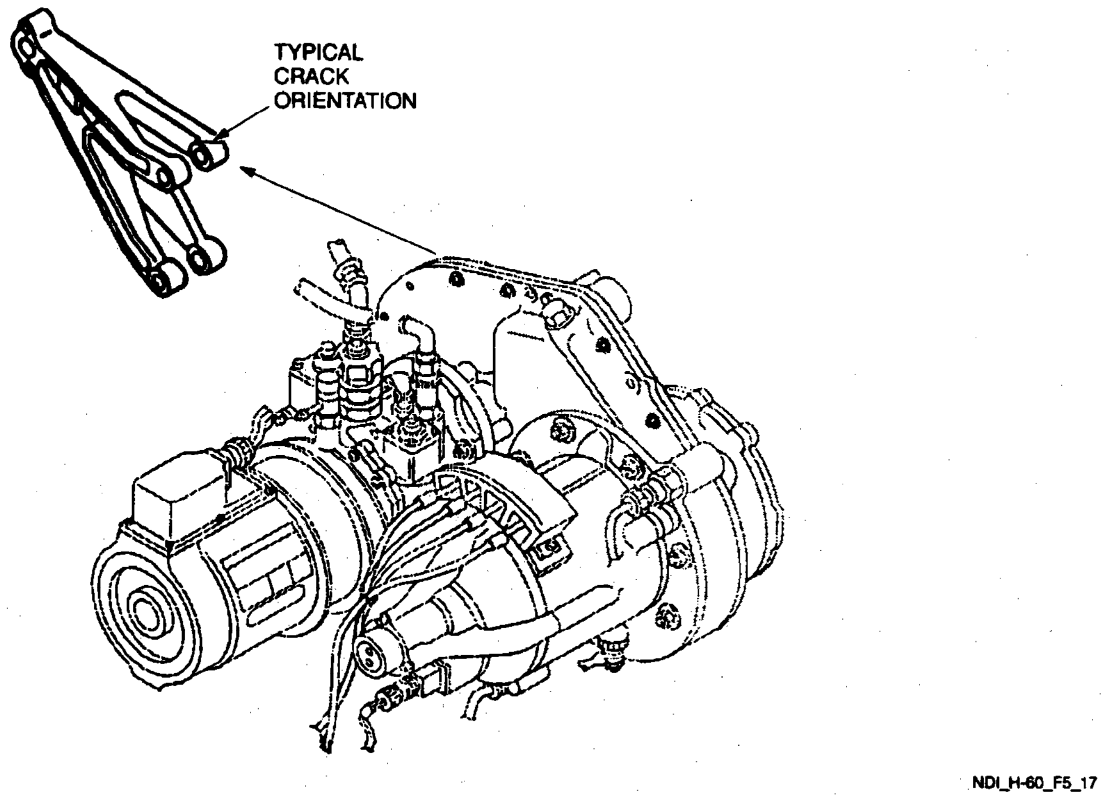


Figure 5-17. Engine Load Demand Control Cable Support

5.18 ENGINE AIR INLET “V” BAND CLAMP (PT).

5.18.1 Description (Figure 5-1, Index No. 18). The air inlet flange is integral to air inlet. The engine (compressor case) flange is integral to the compressor case. The “V” band clamp holds the air inlet to the compressor case.

5.18.2 Defects. This inspection is used to verify crack indications found visually in the “V” band clamp. No cracks are allowed.

5.18.3 Primary Method. Fluorescent Penetrant.

5.18.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

5.18.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the flanges shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

5.18.3.3 Access. Access is through engine cowl (Figure 1-4, items 3T-7 or 4T-8).

5.18.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.18.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 5-18.

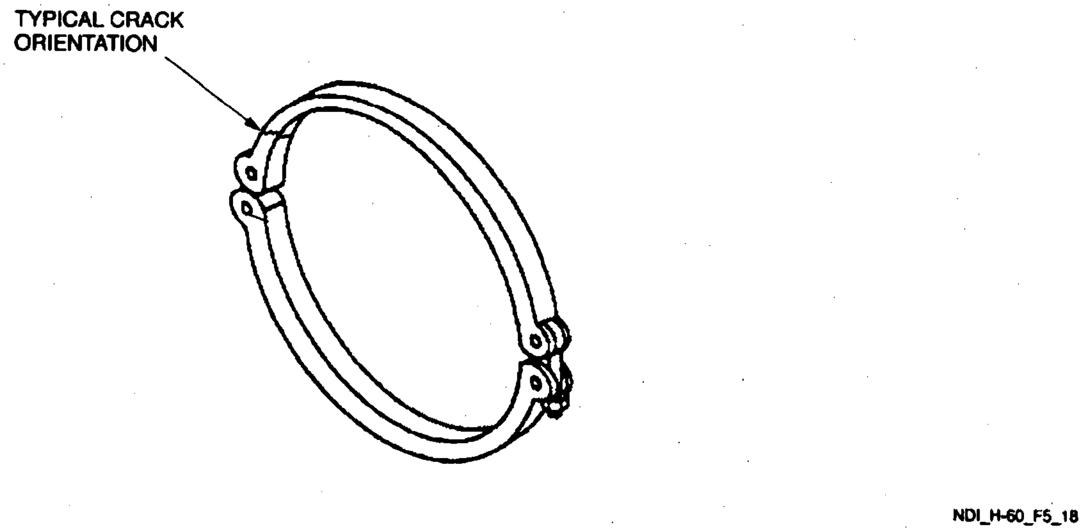


Figure 5-18. Engine Air Inlet “V” Band Clamp

5.18.3.6 Marking and Recording of Inspection Results. Mark and record the inspection results as required by paragraph 1.3.

5.18.4 Backup Method. None required.

5.18.5 System Securing. Clean the “V” band clamp to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The “V” band, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

5.19 STARTER FLANGE (ET).

5.19.1 Description (Figure 5-1, Index No. 19). The air starter is located on the right upper side of the engine and is mounted to the engine accessory drive case. It uses compressed air from the APU to turn the engine.

5.19.2 Defects. This inspection is used to verify crack indications found visually on the starter flange. No cracks are allowed.

5.19.3 Primary Method. Eddy Current.

5.19.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

5.19.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the starter shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

5.19.3.3 Access. Access is through engine access cowl (Figure 1-4, items 3T-7 or 4T-8).

5.19.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.19.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e[II].

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) .Null probe on test block

(2) .Adjust phase as required to obtain horizontal lift-off.

(3) .Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

5.19.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 5-19.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block are cause for rejection.

5.19.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

5.19.4 Backup Method**.** None required.

5.19.5 System Securing**.** The starter flange, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

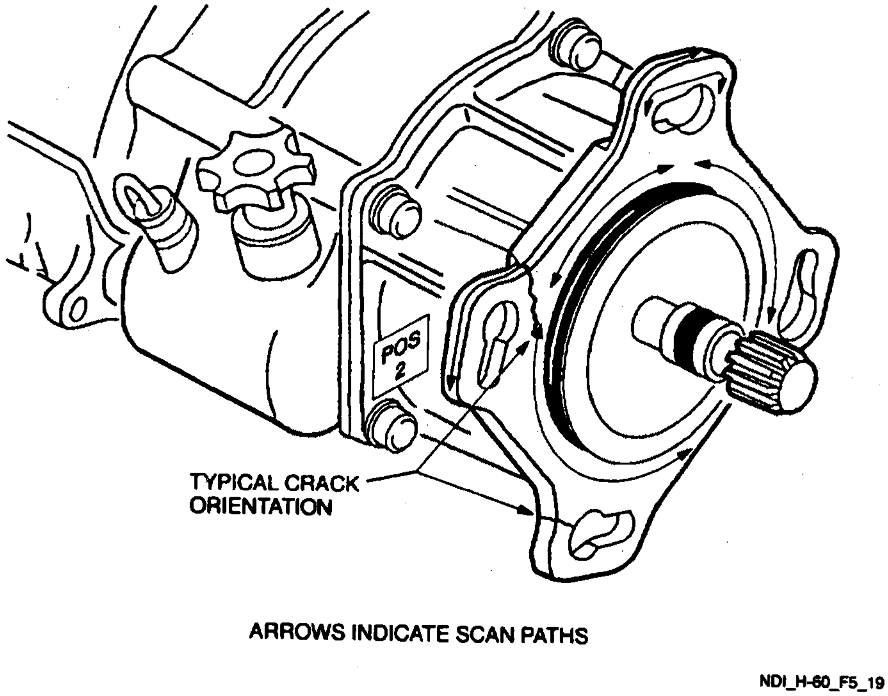


Figure 5-19. Starter Flange

NOTE

Either probe identified in paragraph 5.19.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 5.19.3.5b.(1), (2), and (3) shall be repeated each time a change is made.

5.20 ENGINE SHROUD (PT).

5.20.1 Description (Figure 5-1, Index No. 20). The engine shroud is mounted on top of the engine.

5.20.2 Defects. This inspection is used to verify crack indications found visually. No cracks are allowed.

5.20.3 Primary Method. Fluorescent Penetrant.

5.20.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

5.20.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the shroud shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

5.20.3.3 Access. Access is through engine cowl (Figure 1-4, items 3T-7 or 4T-8).

5.20.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.20.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 5-20.

5.20.3.6 Marking and Recording of Inspection Results. Mark and record the inspection results as required by paragraph 1.3.

5.20.4 Backup Method. None required.

5.20.5 System Securing. Clean the shroud to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The shroud, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

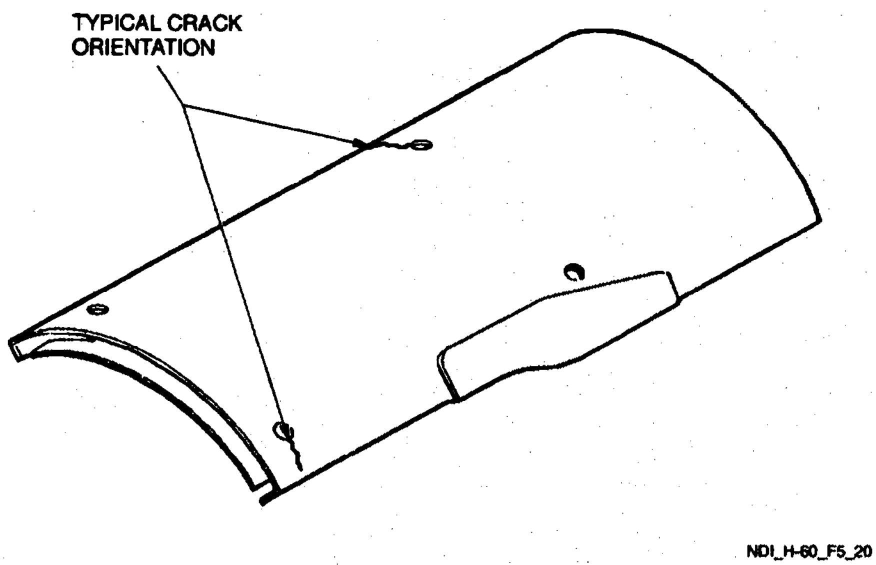


Figure 5-20. Engine Shroud

5.21 ENGINE LOAD DEMAND SPINDLE BELLCRANK SUPPORT (ET).

5.21.1 Description (Figure 5-1, Index No. 21). This support is located on the transmission bay dock, just forward of the transmission. It is the point at which three systems join. It ties the engines (torque sensing) to the flight controls (collective) and is mounted in the main part of the airframe.

5.21.2 Defects. This inspection is used to verify crack indications found visually on the support. No cracks are allowed.

5.21.3 Primary Method. Eddy Current.

5.21.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

5.21.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the support shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

5.21.3.3 Access. Access is through engine cowl (Figure 1-4, items 3T-7 and 4T-8).

5.21.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.21.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e^{II}.

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) .Null probe on test block

(2) .Adjust phase as required to obtain horizontal lift-off.

(3) .Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

5.21.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 5-21.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 5.21.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 5.21.3.5b. (1), (2), and (3) shall be repeated each time a change is made.

5.21.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

5.21.4 Backup Method. None required.

5.21.5 System Securing. The support, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

5.22 ENGINE COMPONENTS (PT).

5.22.1 Description (Figure 5-1, Index No. 22). The engine components to be inspected are the power turbine, combustion chamber and compression housing.

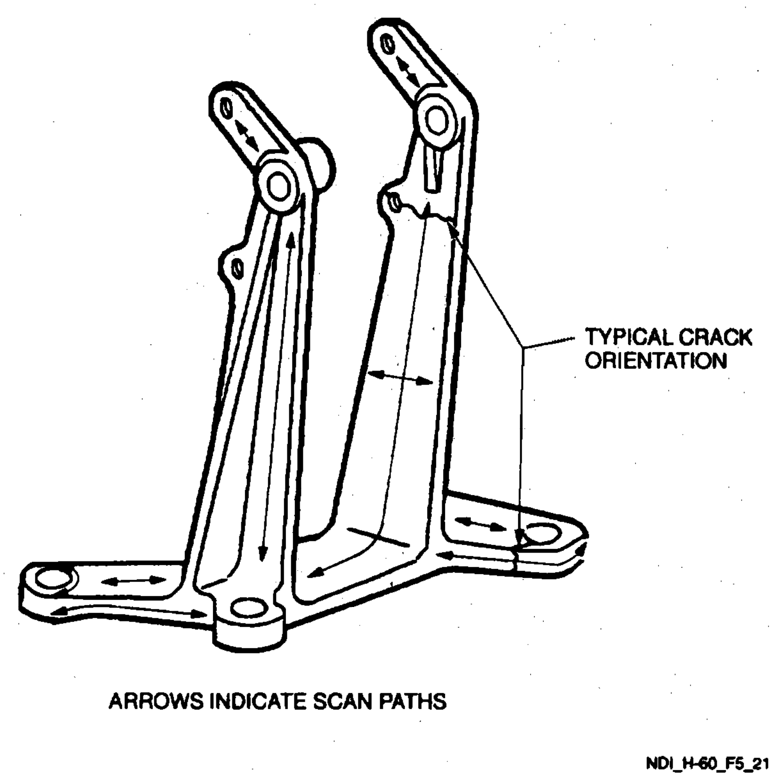


Figure 5-21. Engine Load Demand Spindle Bellcrank Support

5.22.2 Defects. This inspection is to verify cracks found by visual inspection and to ensure no cracks are present after repairs.

5.22.3 Primary Method. Fluorescent Penetrant.

5.22.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

5.22.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the engine shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

5.22.3.3 Access. Access is through engine cowl (Figure 1-4, items 3T-7 or 4T-8).

5.22.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.22.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7. and Table 1-5. Inspect area of concern. See Figure 5-22.

5.22.3.6 Marking and Recording of Inspection Results. Mark and record the inspection results as required by paragraph 1.3.

5.22.4 Backup Method. None required.

5.22.5 System Securing. Clean the inspected area to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The engine, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

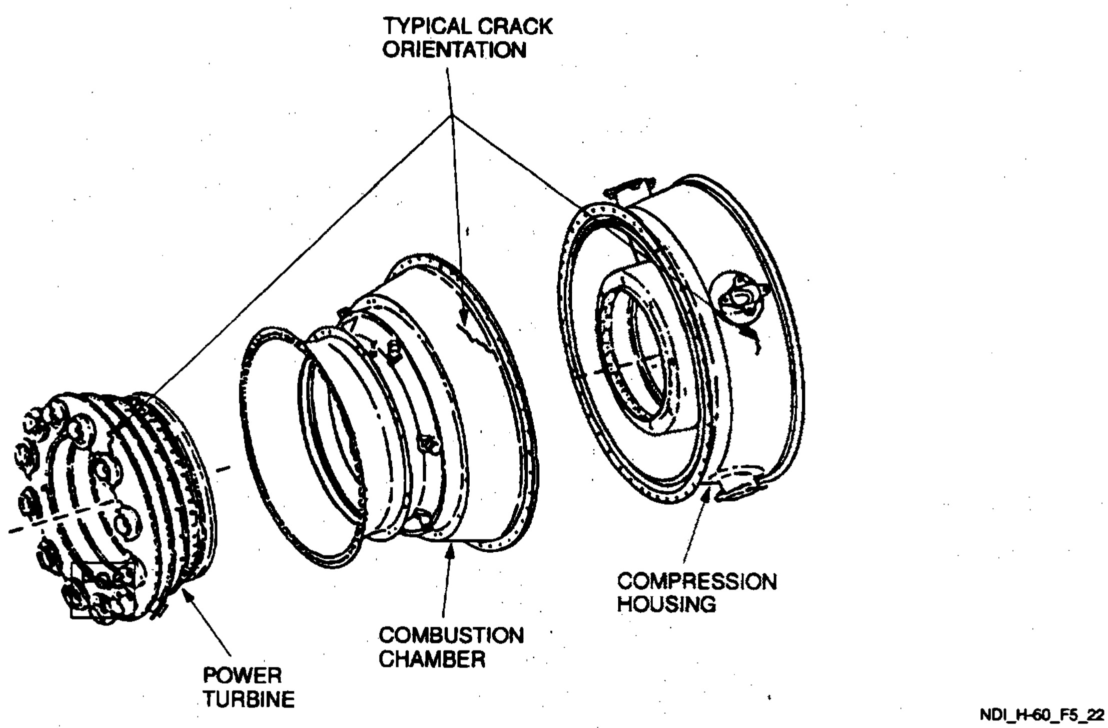


Figure 5-22. Engine Components

5.22.2 Defects. This inspection is to verify cracks found by visual inspection and to ensure no cracks are present after repairs.

5.22.3 Primary Method. Fluorescent Penetrant.

5.22.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. MIL-1-25135 level 3 penetrant materials shall be selected from the approved list in Table 1-8.

5.22.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the engine shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

5.22.3.3 Access. Access is through engine cowl (Figure 1-4, Items 3T-7 or 4T-8).

5.22.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.22.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 5-22.

5.22.3.6 Marking and Recording of Inspection Results. Mark and record the inspection results as required by paragraph 1.3.

5.22.4 Backup Method. None required.

5.22.5 System Securing. Clean the inspected area to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The engine, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

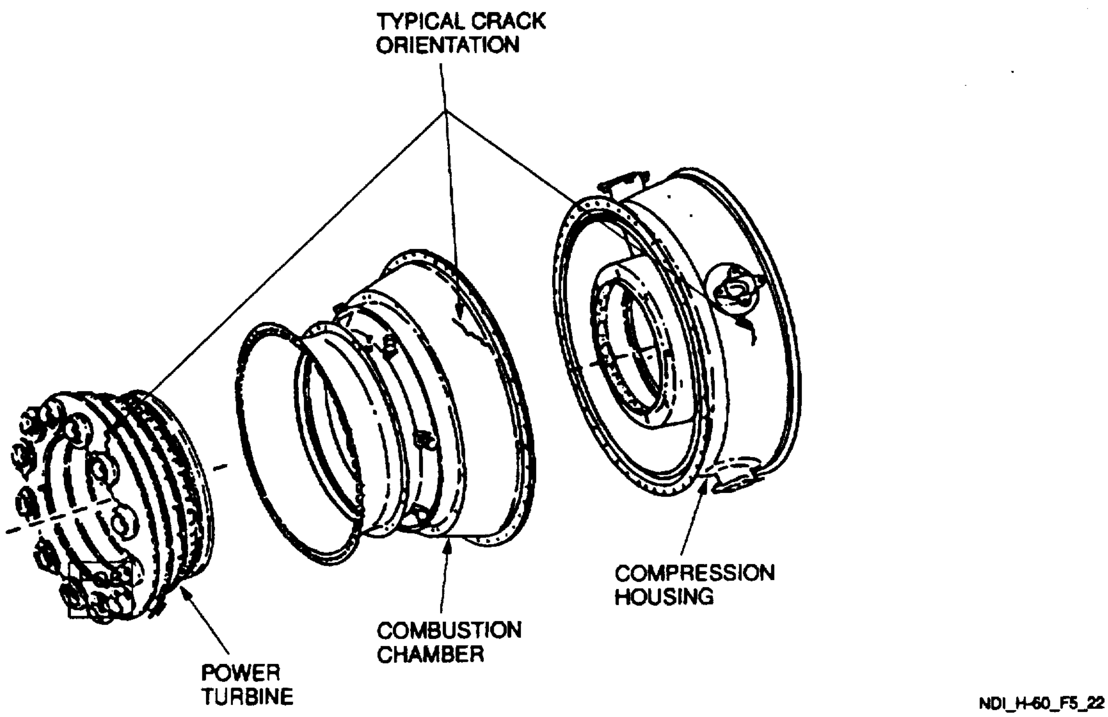


Figure 5-22. Engine Components

SECTION VI

FLIGHT CONTROL SYSTEM

6. GENERAL.

6.1 CONTENTS. The flight control system inspection items covered in this section are those items of the H-60 helicopter series flight control and related hydraulic systems. The parts and components are listed in the Flight Control System Inspection Index (Table 6-1). Corresponding inspection figures and applicable text paragraphs are listed opposite each item. The index number for each item may be used to locate it in Figure 6-1.

Table 6-1. Flight Control System Inspection Index

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
2	Toe Pedal Actuator	PT	6.2	6-2
3	Toe Pedal Assembly	ET	6.3	6-3
4	Yaw Pedal Support Shaft	MT	6.4	6-4
5	Yaw Pedal Brake Cylinder Supports	ET	6.5	6-5
*6	Pedal Adjuster Arms and Link	ET	6.6	6-6
*7	Pilot/Copilot Cyclic and Collective Stick Socket	ET	6.7	6-7
8	Collective Boost and Yaw Boost Servo Input/ Output Piston Shafts and Cylinders	MT	6.8	6-8
*9	Yaw/Pitch Coupling Link	ET	6.9	6-9
*10	Ferrous Flight Control System Push-Pull Rods	MT	6.10	6-10
*11	Nonferrous Flight Control System Push-Pull Rods	ET	6.11	6-11
*12	Pilot Collective Stick Bellcrank Support	ET	6.12	6-12
*13	Pilot/Copilot Collective Stick Support	ET	6.13	6-13
*14	Pilot Collective Stick Bellcrank	ET	6.14	6-14
*15	Ferrous Connecting Links, Rod Ends, Clevises, Levers, and Attaching Parts	MT	6.15	6-15
*16	Nonferrous Connecting Links, Rod Ends, Clevises, Levers, and Attaching Parts	ET	6.16	6-16
*17	Swashplate Links	MT	6.17	6-17
*18	Walking Beam	MT	6.18	6-18
*19	Forward Bellcrank	MT	6.19	6-19
*20	Lateral Bellcrank	MT	6.20	6-20

Table 6-1. Flight Control System Inspection Index - Continued

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
*21	Aft Bellcrank	MT	6.21	6-21
*22	Hydraulic/Pneumatic System Components	PT	6.22	6-22
*23	Ferrous Bolts Contained Within the Flight Control System	MT	6.23	6-23
*24	Nonferrous Bolts Contained Within the Flight Control System	PT	6.24	6-24

NOTE: *Indicates Flight Safety Part.

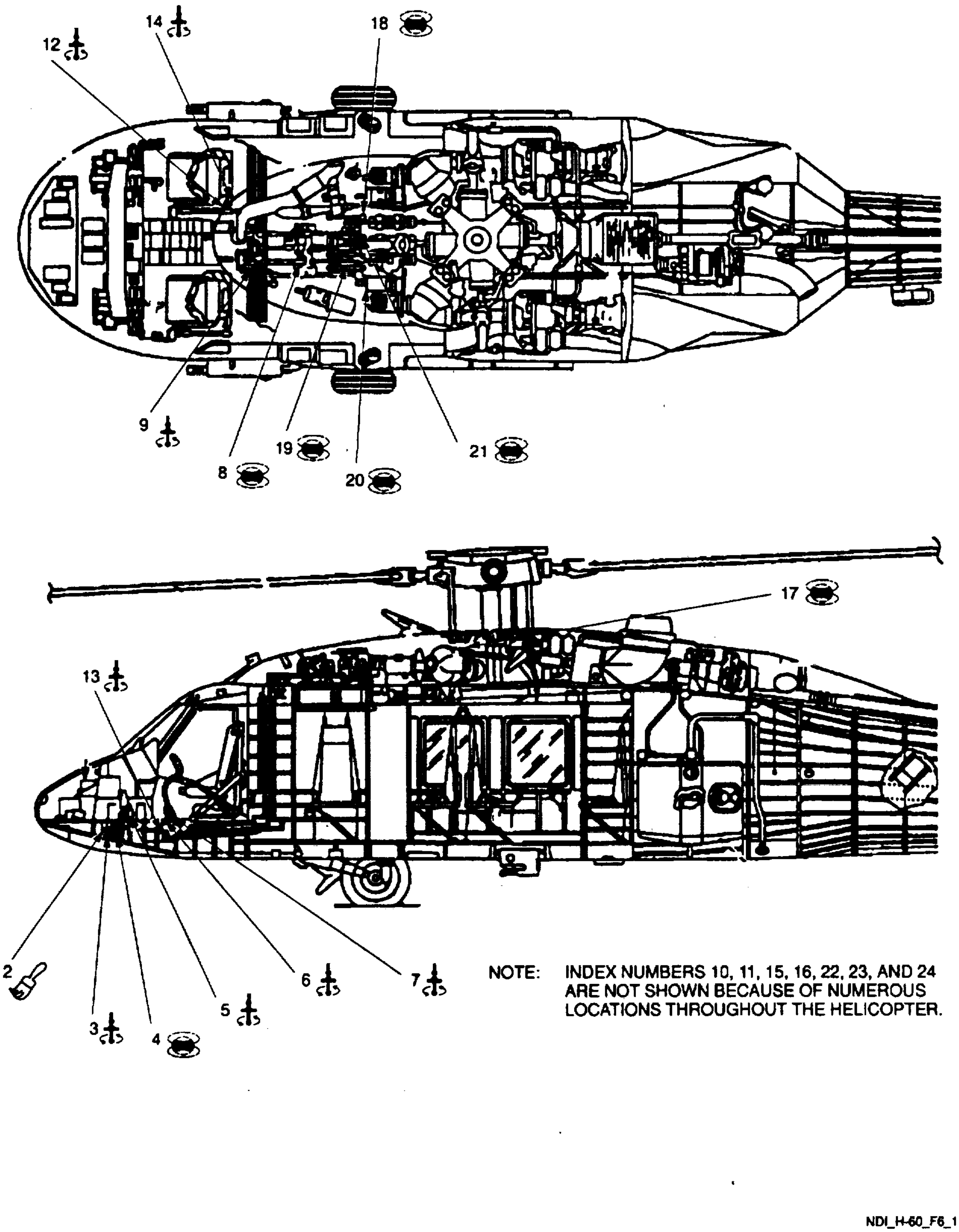


Figure 6-1. Flight Control System

6.2 TOE PEDAL ACTUATOR (PT).

6.2.1 Description (Figure 6-1, Index No. 2). The toe pedal actuator attaches to the toe pedal assembly. The toe pedal actuator senses foot contact on the pedal and activates a microswitch.

6.2.2 Defects. Defects may occur anywhere on the surface of the toe pedal actuator. No cracks are allowed.

6.2.3 Primary Method. Fluorescent Penetrant.

6.2.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

6.2.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the toe pedal actuator shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.2.3.3 Access. Access to the toe pedal actuator is from the cockpit area.

6.2.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.2.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 6-2.

6.2.3.6 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.2.4 Backup Method. None required.

6.2.5 System Securing. Clean the toe pedal actuator to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The toe pedal actuator, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

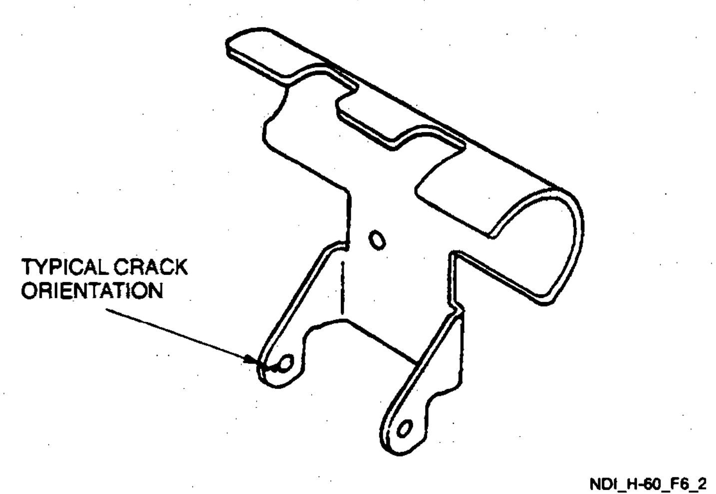


Figure 6-2. Toe Pedal Actuator

6.3 TOE PEDAL ASSEMBLY (ET).

6.3.1 Description (Figure 6-1, Index No.3). The toe pedal assembly is attached to the pedal support assembly. The tail rotor control pedals control the helicopter's directional headings.

6.3.2 Defects. Defects may occur anywhere on the surface of the toe pedal assembly. No cracks are allowed.

6.3.3 Primary Method. Eddy Current.

6.3.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

6.3.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the toe pedal assembly shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.3.3.3 Access. Access to the toe pedal assembly is from the cockpit area.

6.3.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.3.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.
(2) Adjust phase as required to obtain horizontal lift-off.
(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

6.3.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-3.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 6.3.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.3.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

6.3.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.3.4 Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

6.3.5 System Securing. The toe pedal assembly, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

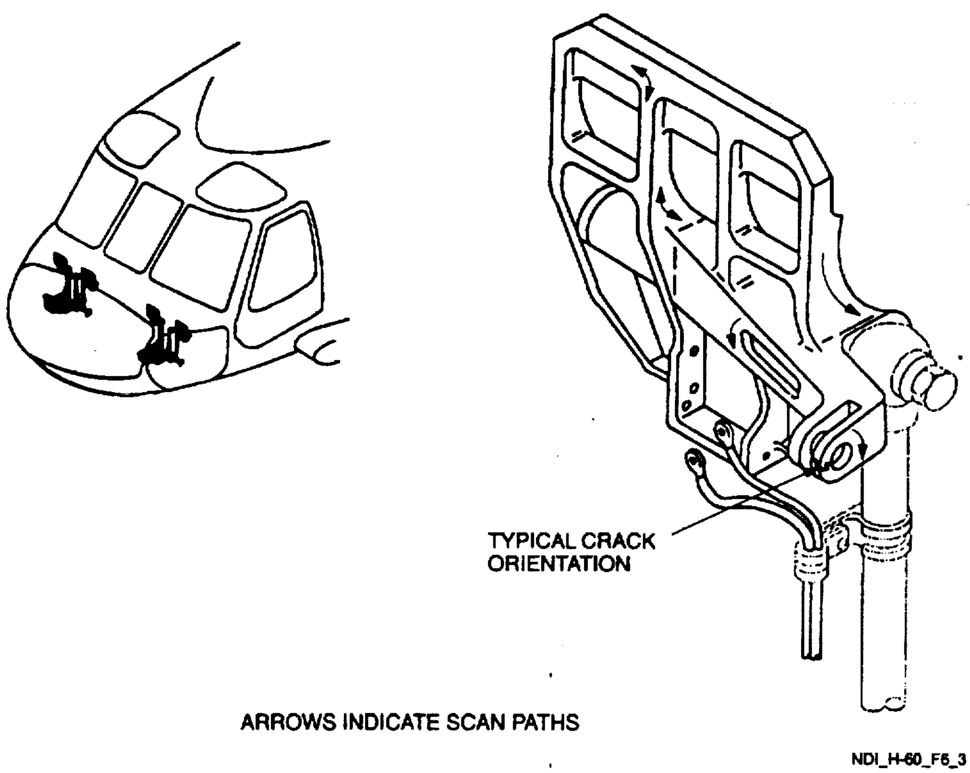


Figure 6-3. Toe Pedal Assembly

6.4 YAW PEDAL SUPPORT SHAFT (MT).

6.4.1 Description (Figure 6-1. Index No. 4). The yaw pedal support shaft supports the right and left pedal support tubes. The support shaft provides the pivot point for the pedal support tubes.

6.4.2 Defects. Defects may occur anywhere on the surface of the yaw pedal support shaft. No cracks are allowed.

6.4.3 Primary Method. Magnetic Particle.

6.4.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE
Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

6.4.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the yaw pedal support shaft removed in accordance with the applicable technical manuals listed in Table 1-1.

6.4.3.3 Access. Not applicable.

6.4.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.4.3.5 NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

6.4.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 6-4.

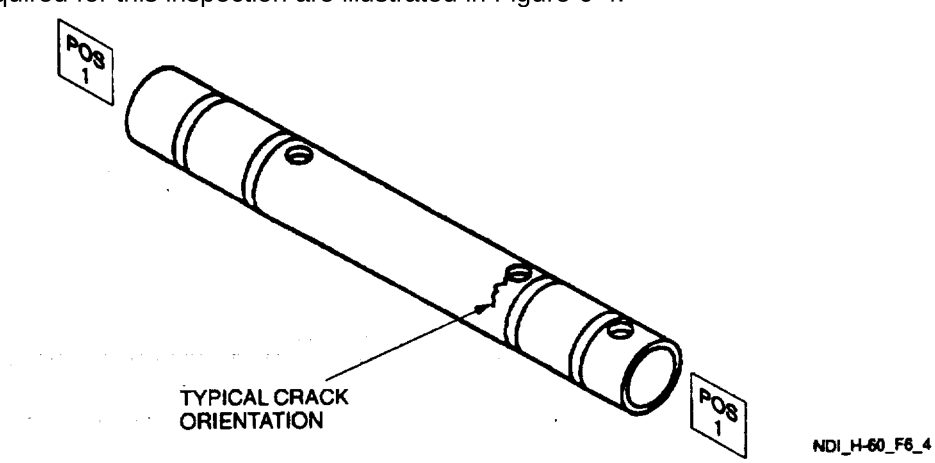


Figure 6-4. Yaw Pedal Support Shaft

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position 1 as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 6.4.3.8.
f. Repeat steps a. through e. for position 2.

6.4.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.4.3.8 Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

6.4.4 **<u>Backup Method</u>**. None required.

6.4.5 System Securing. Clean the yaw pedal support shaft thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16: The yaw pedal support shaft requires installation in accordance with the applicable technical manuals listed in Table 1-1.

6.5 YAW PEDAL BRAKE CYLINDER SUPPORTS (ET).

6.5.1 **<u>Description (Figure 6-1. Index No. 5).</u>** The yaw pedal brake cylinder support connects the brake cylinder to the independent toe-operated wheel brake controls.

6.5.2 **<u>Defects</u>.** Defects may occur anywhere on the surface of the yaw pedal brake cylinder supports. No cracks are allowed.

6.5.3 **<u>Primary Method</u>.** Eddy Current.

6.5.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

6.5.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the yaw pedal brake cylinder supports shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.5.3.3 Access. Access is through floor panel's surrounding pedals.

6.5.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.5.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e ".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.
(2) Adjust phase as required to obtain horizontal lift-off.
(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

6.5.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-5.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

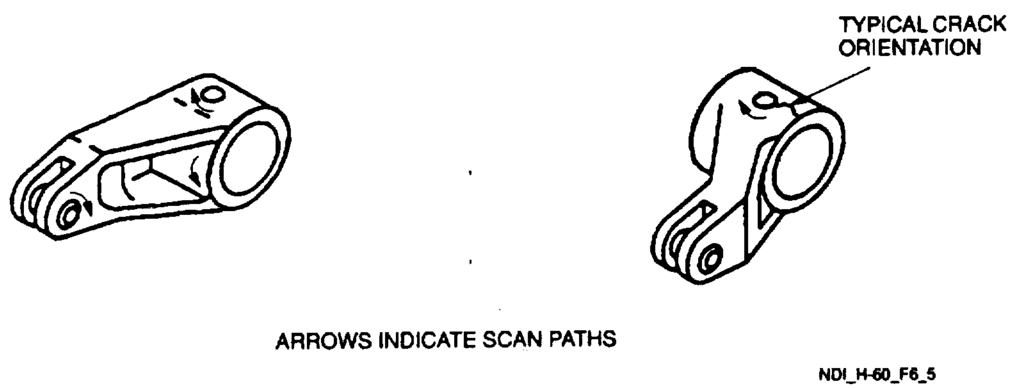


Figure 6-5. Yaw Pedal Brake Cylinder Supports

NOTE

Either probe identified in paragraph 6.5.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.5.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

6.5.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.5.4 **Backup Method.** None required.

6.5.5 **System Securing.** The yaw pedal brake cylinder supports, if removed, require installation in accordance with the applicable technical manuals listed in Table 1-1.

6.6 PEDAL ADJUSTER ARMS AND LINK (ET).

6.6.1 **Description (Figure 6-1. Index No. 6).** The pedal adjuster arms and link provide adjustment of the directional control pedals to suit the pilot's leg length.

6.6.2 **Defects**. Defects may occur anywhere on the surface of the pedal adjuster arms and link. No cracks are allowed.

6.6.3 Primary Method. Eddy Current.

6.6.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

6.6.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the pedal adjuster arms and link shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.6.3.3 Access. Access to the pedal adjuster arms and link is from the cockpit area.

6.6.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.6.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-1 9e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.
(2) Adjust phase as required to obtain horizontal lift-off.
(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

6.6.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-6.

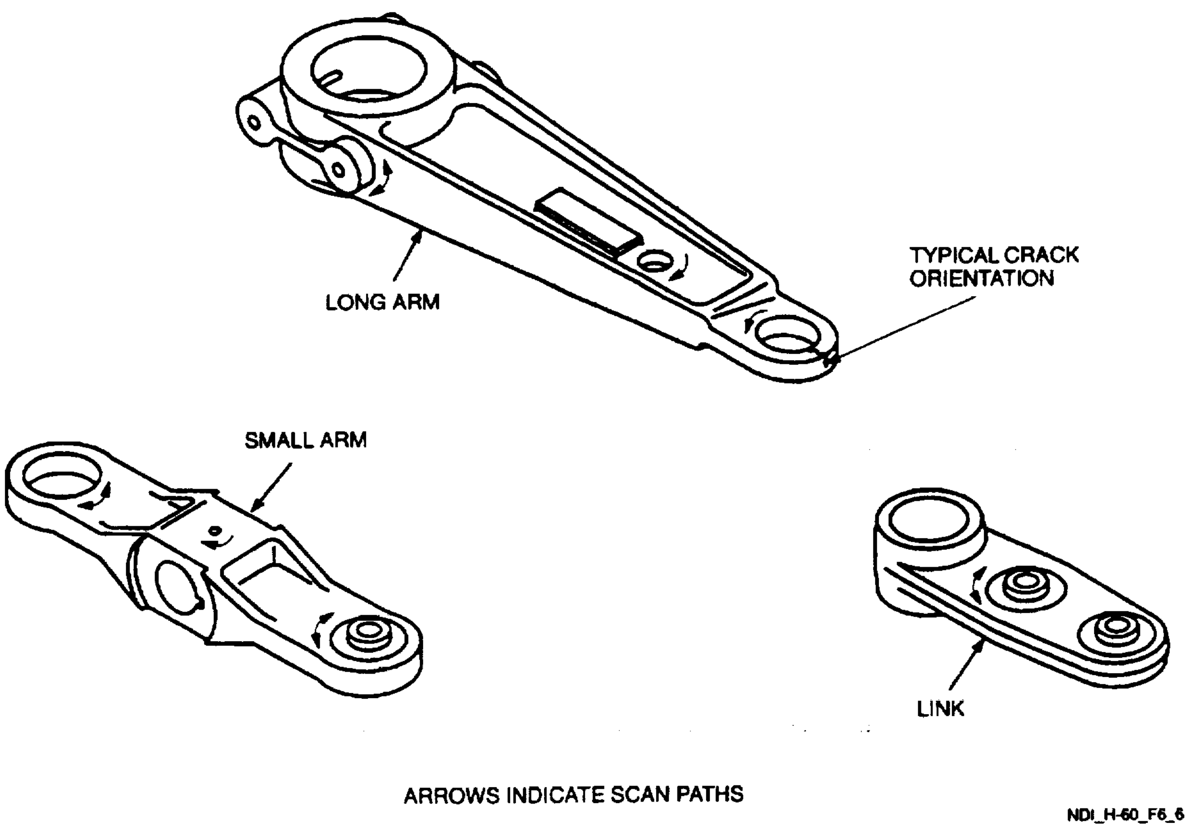


Figure 6-6. Pedal Adjuster Arms and Link

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE
Either probe identified in paragraph 6.6.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.6.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

6.6.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.6.4 Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

6.6.5 System Securing. The pedal adjuster arms and link, if removed, require installation in accordance with the applicable technical manuals listed in Table 1-1.

6.7 PILOT/COPILOT CYCLIC AND COLLECTIVE STICK SOCKET (ET).

6.7.1 Description (Figure 6-1. Index No. 7). The pilot/copilot cyclic and collective stick socket are located at the base of the cyclic and collective stick assemblies. The sockets permit the movement of the cyclic and collective stick assemblies.

6.7.2 Defects. Defects may occur anywhere on the surface of the pilot/copilot cyclic and collective stick socket. No cracks are allowed.

6.7.3 Primary Method. Eddy Current.

6.7.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

6.7.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the pilot/copilot cyclic and collective stick socket shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.7.3.3 Access. Access is gained through the cockpit area and unzipping the boot at the base of the cyclic/collective stick assemblies.

6.7.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.7.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.
(2) Adjust phase as required to obtain horizontal lift-off.
(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

6.7.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-7.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 6.7.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.7.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

6.7.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.7.4 Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

6.7.5 System Securing. The pilot/copilot cyclic and collective stick socket, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

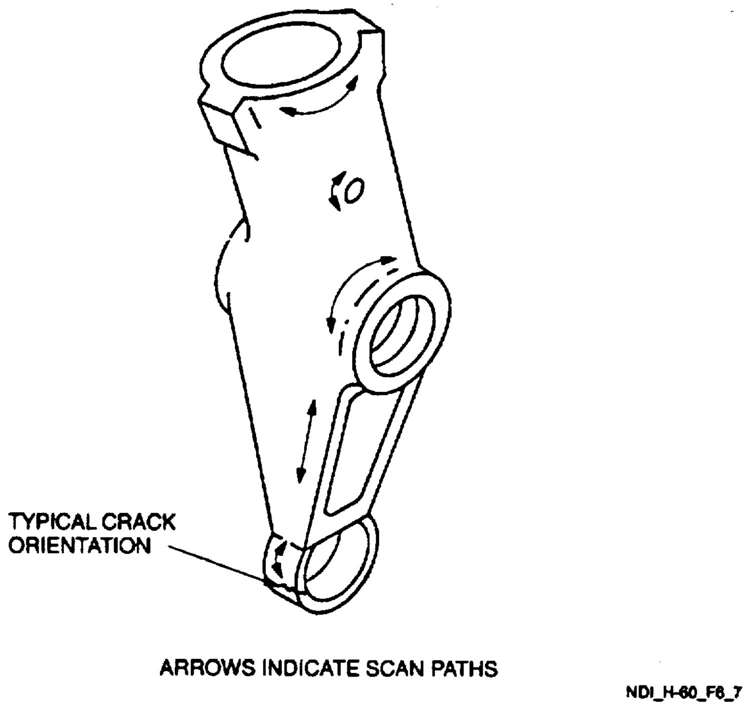


Figure 6-7. Pilot/Copilot Cyclic and Collective Stick Socket

6.8 COLLECTIVE BOOST AND YAW BOOST SERVO INPUT/OUTPUT PISTON SHAFTS AND CYLINDERS (MT).

6.8.1 Description (Figure 6-1. Index No. 8). The collective and yaw boost servos both reduce stick and flight control friction. The yaw boost servo also provides rate damping through a SAS actuator.

6.8.2 Defects. This inspection is used to verify crack indications found visually on the collective boost servo and yaw boost servo. No cracks are allowed.

6.8.3 Primary Method. Magnetic Particle.

6.8.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE

Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

6.8.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the above shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.8.3.3 Access. Access is through the controls/accessories sliding cover (Figure 1-4, Item 3T-4T-2).

WARNING

Maintenance Platforms/Workstands Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

6.8.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.8.3.5 NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

6.8.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. The position required for this inspection is illustrated in Figure 6-8.

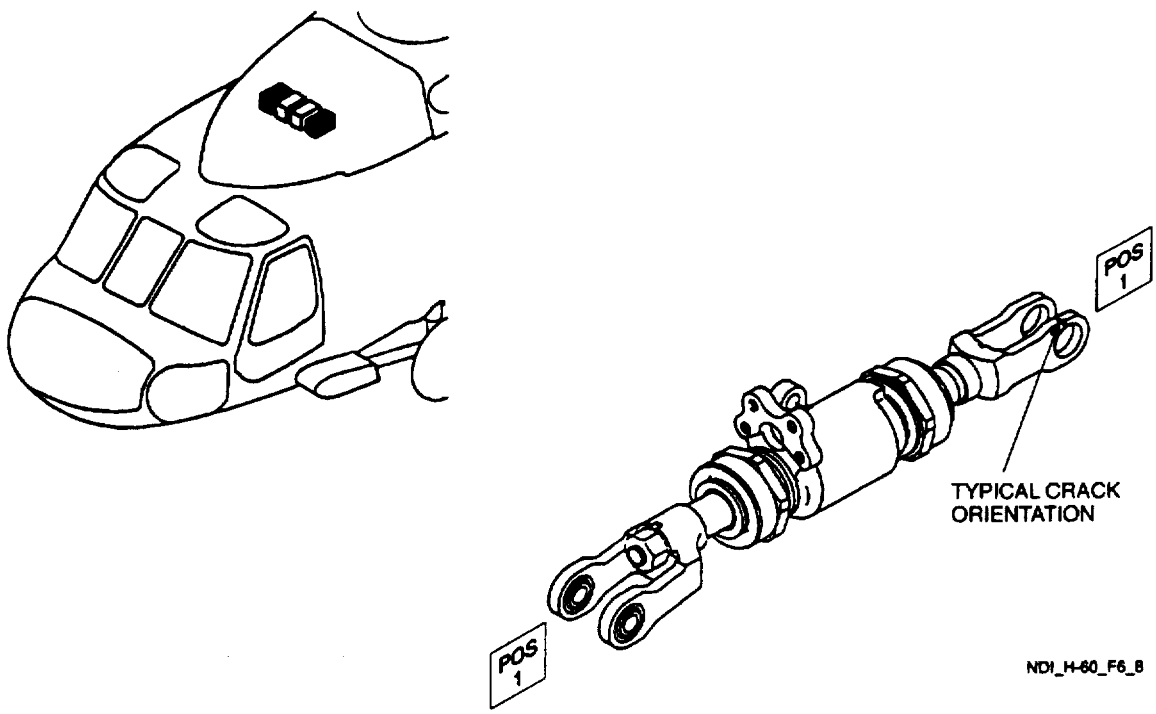


Figure 6-8. Collective Boost and Yaw Boost Servo Input/Output Piston Shafts and Cylinders

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position 1 as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.

6.8.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.8.3.8 Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

6.8.4 Backup Method. None required.

6.8.5 System Securing. Clean the collective boost and yaw boost servo thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The collective boost and yaw boost servo, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

6.9 YAW/PITCH COUPLING LINK (ET).

6.9.1 Description (Figure 6-1. Index No. 9). The yaw/pitch coupling link is a component of the mixer assembly which is part of the collective control system.

6.9.2 Defects. This inspection is used to verify crack indications found visually on the yaw/pitch coupling link. No cracks are allowed.

6.9.3 Primary Method. Eddy Current.

6.9.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

6.9.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the yaw/pitch coupling link shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.9.3.3 Access. Access is through the controls/accessories sliding cover (Figure 1-4, Item 3T-4T-2).

WARNING

Maintenance Platforms/Workstands
Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

6.9.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.9.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-1 9e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%o		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.
(2) Adjust phase as required to obtain horizontal lift-off.
(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

6.9.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-9.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE
Either probe identified in paragraph 6.9.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.9.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

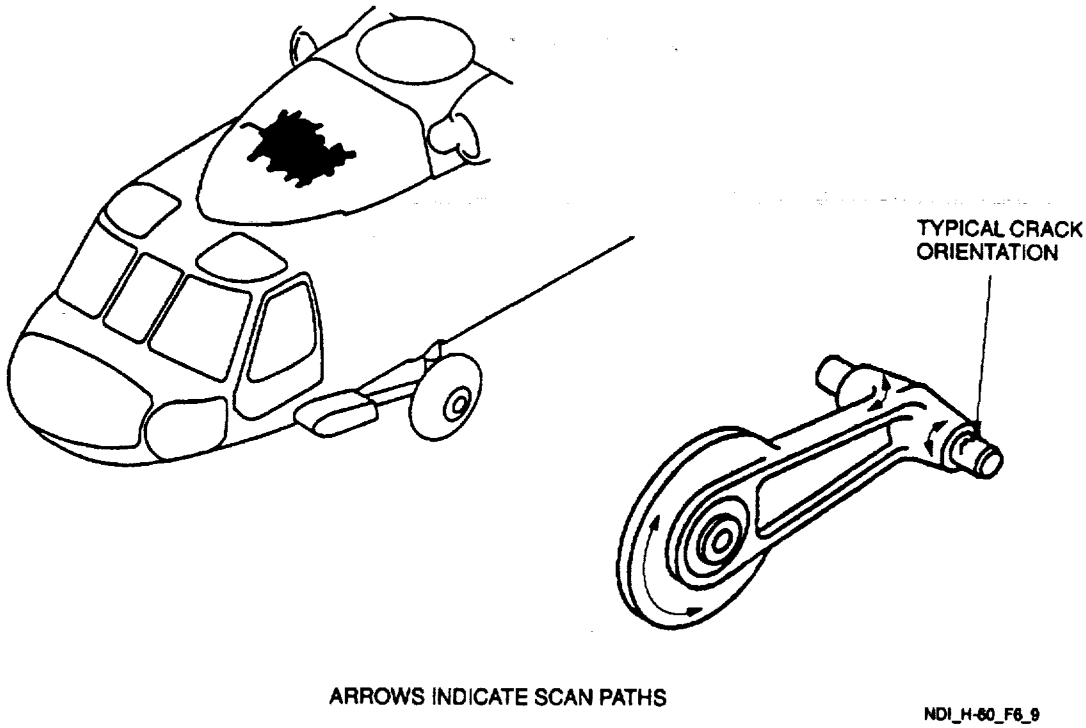


Figure 6-9. Yaw/Pitch Coupling Link

6.9.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.9.4 Backup Method. None required.

6.9.5 System Securing. The yaw/pitch coupling link, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

6.10 FERROUS FLIGHT CONTROL SYSTEM PUSH-PULL RODS (MT).

6.10.1 Description (Figure 6-1. Index No. 10). This is a generic inspection pertaining to ferrous flight control system push-pull rods throughout the helicopter.

6.10.2 Defects. This inspection is used to verify crack indications found visually on the push-pull rods. All areas where rework has been performed shall be inspected for cracks. No cracks are allowed.

6.10.3 Primary Method. Magnetic Particle.

6.10.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE
Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

6.10.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the push-pull rods shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.10.3.3 Access. Not applicable.

6.10.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.10.3.5 NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

6.10.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 6-10.

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position 1 as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time.
Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 6.10.3.8.
f. Repeat steps a. through e. for other positions, as required.

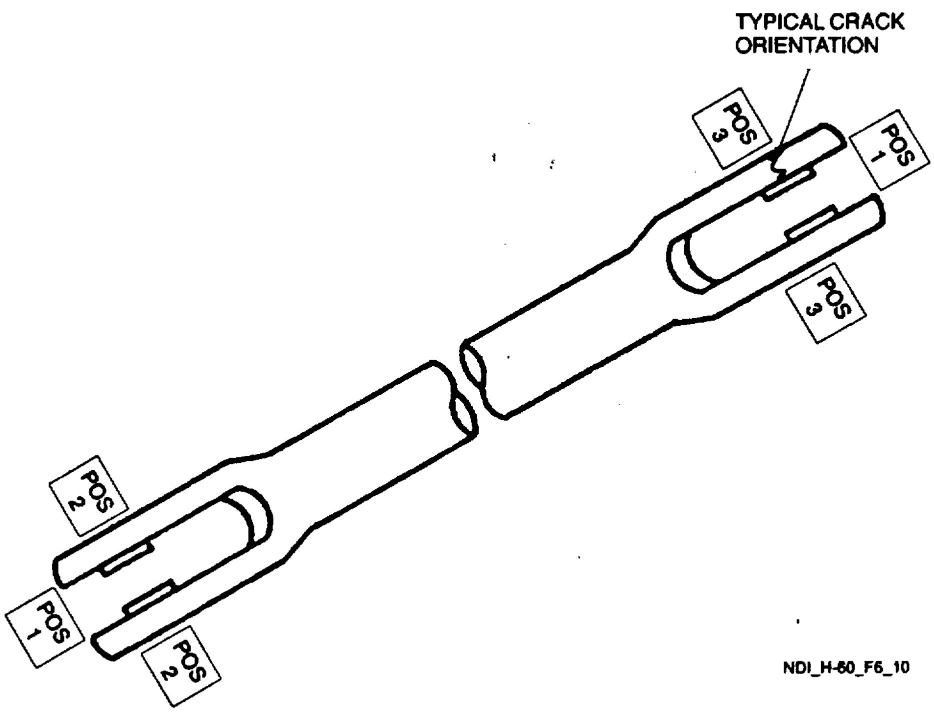


Figure 6-10. Ferrous Flight Control System Push-Pull Rods

6.10.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.10.3.8 Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

6.10.4 Backup Method. None required.

6.10.5 System Securing. Clean the push-pull rods thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The push-pull rods, if removed, require installation in accordance with the applicable technical manuals listed in Table 1-1.

6.11 NONFERROUS FLIGHT CONTROL SYSTEM PUSH-PULL RODS (ET).

6.11.1 Description (Figure 6-1. Index No. 11). This is a generic inspection pertaining to nonferrous flight control system push-pull rods throughout the helicopter.

6.11.2 Defects. This inspection is used to verify crack indications found visually on the push-pull rods. All areas where rework has been performed shall be inspected for cracks. No cracks are allowed.

6.11.3 Primary Method. Eddy Current.

6.11.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Reference Block, three-notched titanium (0.008, 0.020, 0.040 EDM notches)
g. Teflon Tape, refer to Table 1-8
h. Aircraft Marking Pencil, refer to Table 1-8

6.11.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the nonferrous flight control system push-pull rods shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.11.3.3 Access. Not applicable.

6.11.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.11.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- (56° aluminum) (30° titanium)		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.
(2) Adjust phase as required to obtain horizontal lift-off.
(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

6.11.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-11.

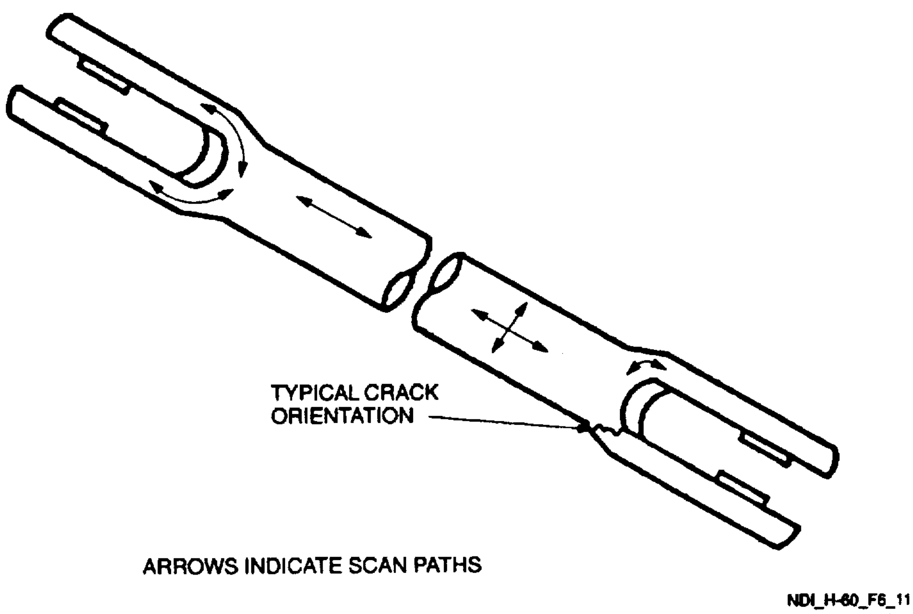


Figure 6-11. Nonferrous Flight Control System Push-Pull Rods

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 6.11.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.11.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

6.11.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.11.4 Backup Method. None required.

6.11.5 System Securing. The push-pull rods, if removed, require installation in accordance with the applicable technical manuals listed in Table 1-1.

6.12 PILOT COLLECTIVE STICK BELLCRANK SUPPORT (ET).

6.12.1 Description (Figure 6-1. Index No. 19). The pilot structural collective stick bellcrank support provides not only structural support, but also a pivot point for the collective stick bellcrank.

6.12.2 Defects. This inspection is used to verify crack indications found visually on the pilot collective stick bellcrank support. No cracks are allowed.

6.12.3 Primary Method. Eddy Current.

6.12.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008,; 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

6.12.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the pilot collective stick bellcrank support shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.12.3.3 Access. Access is by removal of the boot, cover and panel which is behind the pilot's seat in crew compartment.

6.12.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.12.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-1 9e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

(2) Adjust phase as required to obtain horizontal lift-off.

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

6.12.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-12.

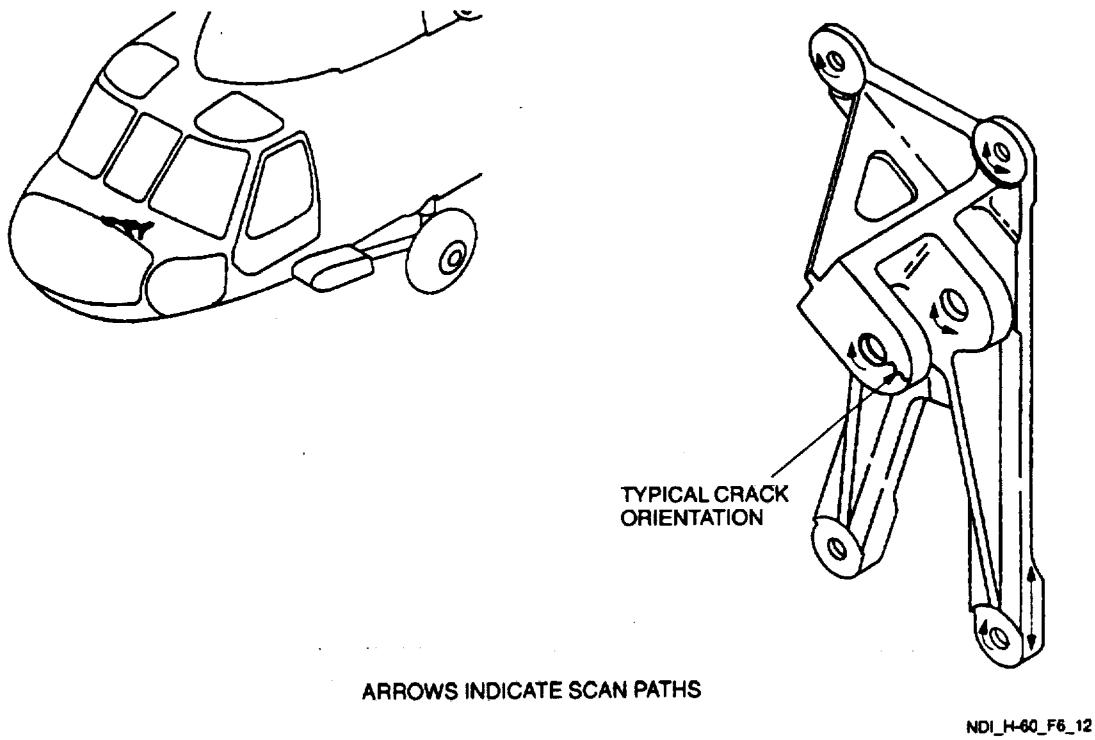


Figure 6-12. Pilot Collective Stick Bellcrank Support

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 6.12.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.12.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

6.12.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.12.4 **Backup Method.** None required.

6.12.5 **System Securing.** The pilot collective stick bellcrank support, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

6.13 PILOT/COPILOT COLLECTIVE STICK SUPPORT (ET).

6.13.1 **Description (Figure 6-1. Index No. 13).** The pilot/copilot collective stick bellcrank support provides the attaching point for the collective control stick.

6.13.2 **Defects.** This inspection is used to verify crack indications found visually on the pilot/copilot collective stick support. No cracks are allowed.

6.13.3 **Primary Method.** Eddy Current.

6.13.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

6.13.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the pilot/copilot collective stick support shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.13.3.3 Access. Access is by removal of the boot and cover.

6.13.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.13.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-1 9e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.
(2) Adjust phase as required to obtain horizontal lift-off.
(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

6.13.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-13.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 6.13.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.13.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

6.13.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.13.4 **Backup Method**. Fluorescent Penetrant, refer to paragraph 1.4.7.

6.13.5 **System Securing.** The pilot/copilot collective stick support, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

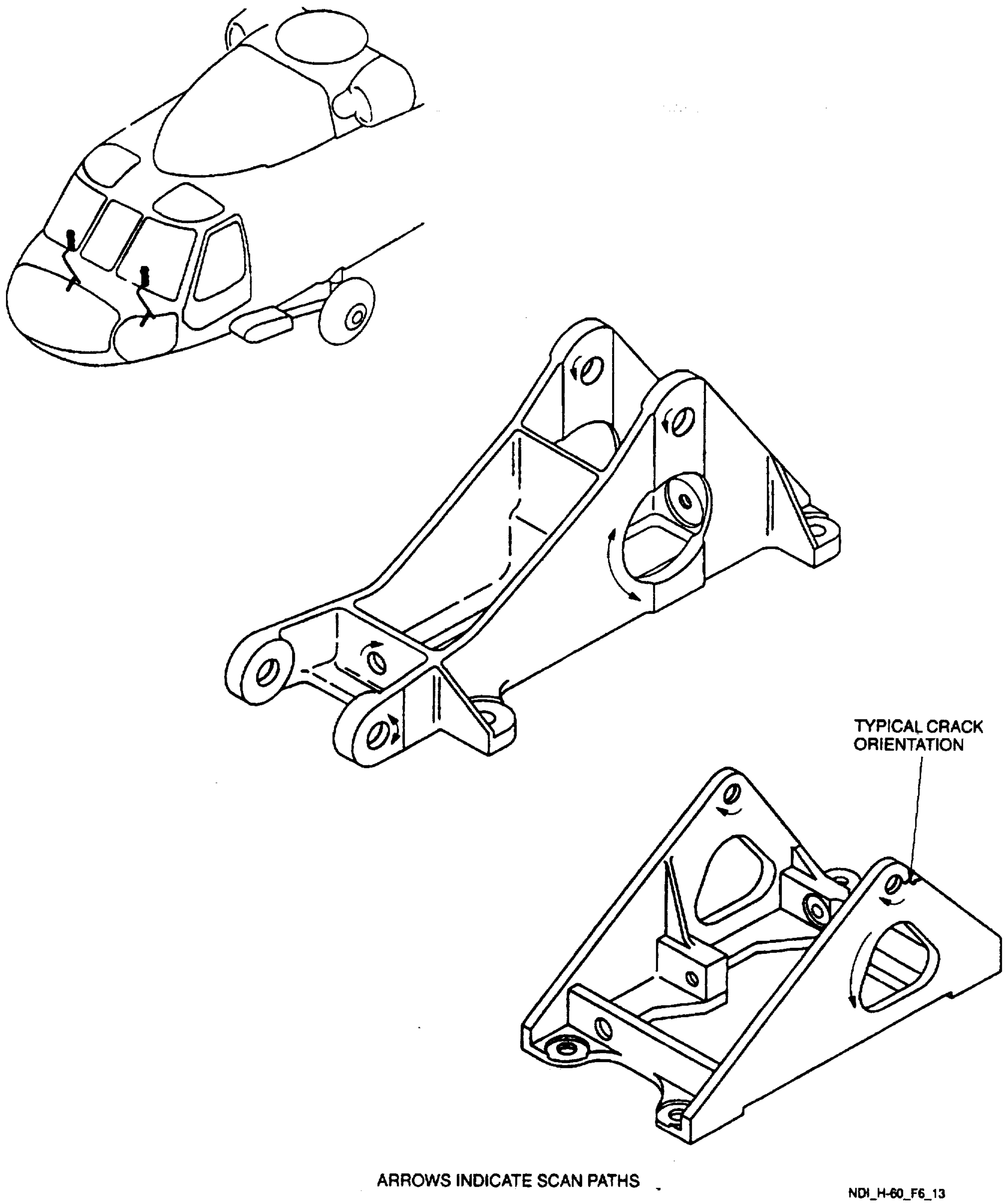


Figure 6-13. Pilot/Copilot Collective Stick Support

6.14 PILOT COLLECTIVE STICK BELLCRANK (ET).

6.14.1 <u>Description (Figure 6-1. Index No. 14).</u> The pilot collective stick bellcrank receives input from the collective control stick and transmits it to the collective control system.

6.14.2 <u>Defects</u>. This inspection is used to verify crack indications found visually on the pilot collective stick bellcrank. No cracks are allowed.

6.14.3 <u>Primary Method.</u> Eddy Current.

6.14.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

6.14.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the collective stick bellcrank shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.14.3.3 Access. Access is by removal of the access cover from inside the cargo/passenger compartment.

6.14.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.14.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-1 9e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.
(2) Adjust phase as required to obtain horizontal lift-off.
(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

6.14.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-14.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 6.14.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.14.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

6.14.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.14.4 Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

6.14.5 System Securing. The pilot/copilot collective stick bellcrank, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

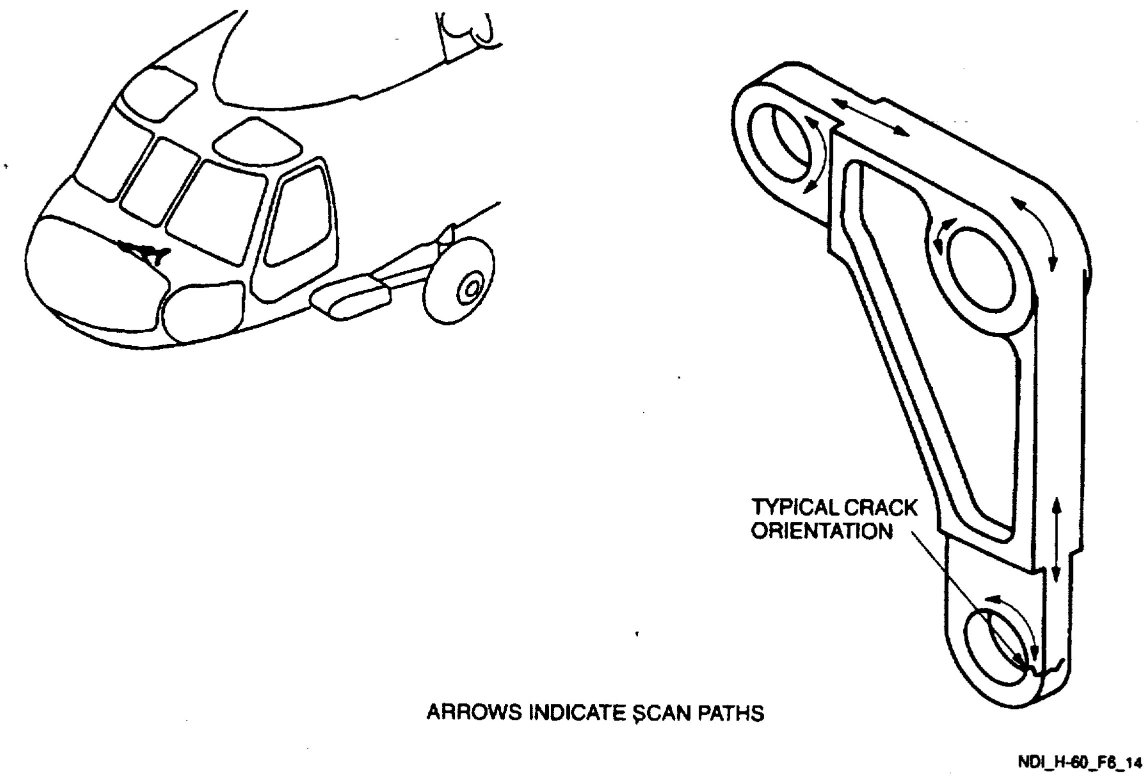


Figure 6-14. Pilot Collective Stick Bellcrank

6.15 FERROUS CONNECTING LINKS, ROD ENDS, CLEVISES, LEVERS, AND ATTACHING PARTS (MT).

6.15.1 Description (Figure6-1. Index No. 15). Ferrous connecting links, rod ends, clevises, levers, and attaching parts are found in various locations in the helicopter flight controls.

6.15.2 Defects. This inspection is used to verify crack indications found visually on the links rod ends, clevises, levers, and attaching parts. No cracks are allowed.

6.15.3 Primary Method. Magnetic Particle.

6.15.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE
Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

6.15.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the connecting links, rod ends, clevises, levers, and attaching parts shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.15.3.3 Access. This is a generic inspection. Access to these parts is gained on a generic basis in accordance with the applicable technical manuals listed in Table 1-1 and Figure 1-4.

6.15.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.15.3.5 NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

6.15.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 6-15.

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position 1 as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 6.15.3.8.
f. Repeat steps a. through e. for other positions, as required.

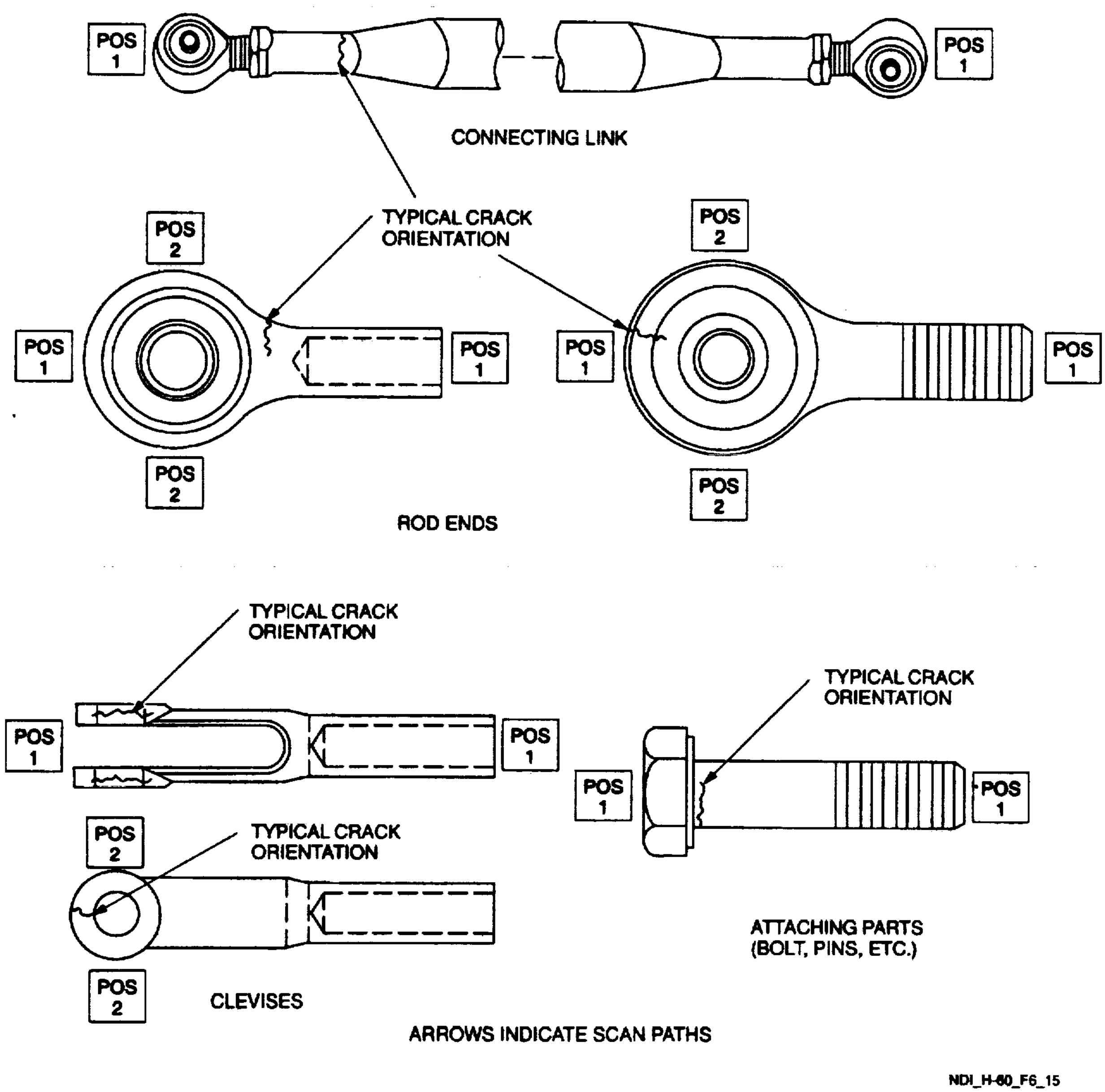


Figure 6-15. Ferrous Connecting Links, Rod Ends, Clevises, Levers, and Attaching Parts

6.15.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.15.3.8 Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

6.15.4 **Backup Method.** None required.

6.15.5 **System Securing.** Clean the parts thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The connecting links, rod ends, clevises, levers, and attaching parts, if removed, require installation in accordance with the applicable technical manuals listed in Table 1-1.

6.16 NONFERROUS CONNECTING LINKS, ROD ENDS, CLEVISES, LEVERS, AND ATTACHING PARTS (ET).

6.16.1 **Description (Figure 6-1. Index No. 16).** Nonferrous connecting links, rod ends, clevises, levers, and attaching parts are found in various locations in the helicopter flight controls.

6.16.2 **Defects.** This inspection is used to verify crack indications found visually on the links rod ends, clevises, levers, and attaching parts. No cracks are allowed.

6.16.3 **Primary Method.** Eddy Current.

6.16.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, 0.040 EDM notches)
f. Reference Block, three-notched titanium (0.008, 0.020, 0.040 EDM notches)
g. Teflon Tape, refer to Table 1-8
h. Aircraft Marking Pencil, refer to Table 1-8

6.16.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the links, rod ends, clevises, levers, and attaching parts shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.16.3.3 Access. This is a generic inspection. Access to these parts is gained on a generic basis in accordance with the applicable technical manuals listed in Table 1-1 and Figure 1-4.

6.16.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.16.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19e".

Frequency F1	- 200 KHz	F2	- off
HdB	- 57.0		
VdB	- 69.0		
Rot	- (56° aluminum) (30° titanium)		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.
(2) Adjust phase as required to obtain horizontal lift-off.
(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040-inch notch in test block. (See the standard instrument display shown in Figure 1-7.)

6.16.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-16.

a. Place probe on a good area in the inspection location and null. Adjust phase as required to obtain horizontal lift-off.
b. Inspect the part.
c. Any signal similar to the notches in the test block are cause for rejection.

NOTE

Either probe identified in paragraph 6.16.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.16.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

6.16.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.16.4 **<u>Backup Method.</u>** None required.

6.16.5 **<u>System Securing.</u>** The links, rod ends, clevises, levers, and attaching parts, if removed, require installation in accordance with the applicable technical manuals listed in Table 1-1.

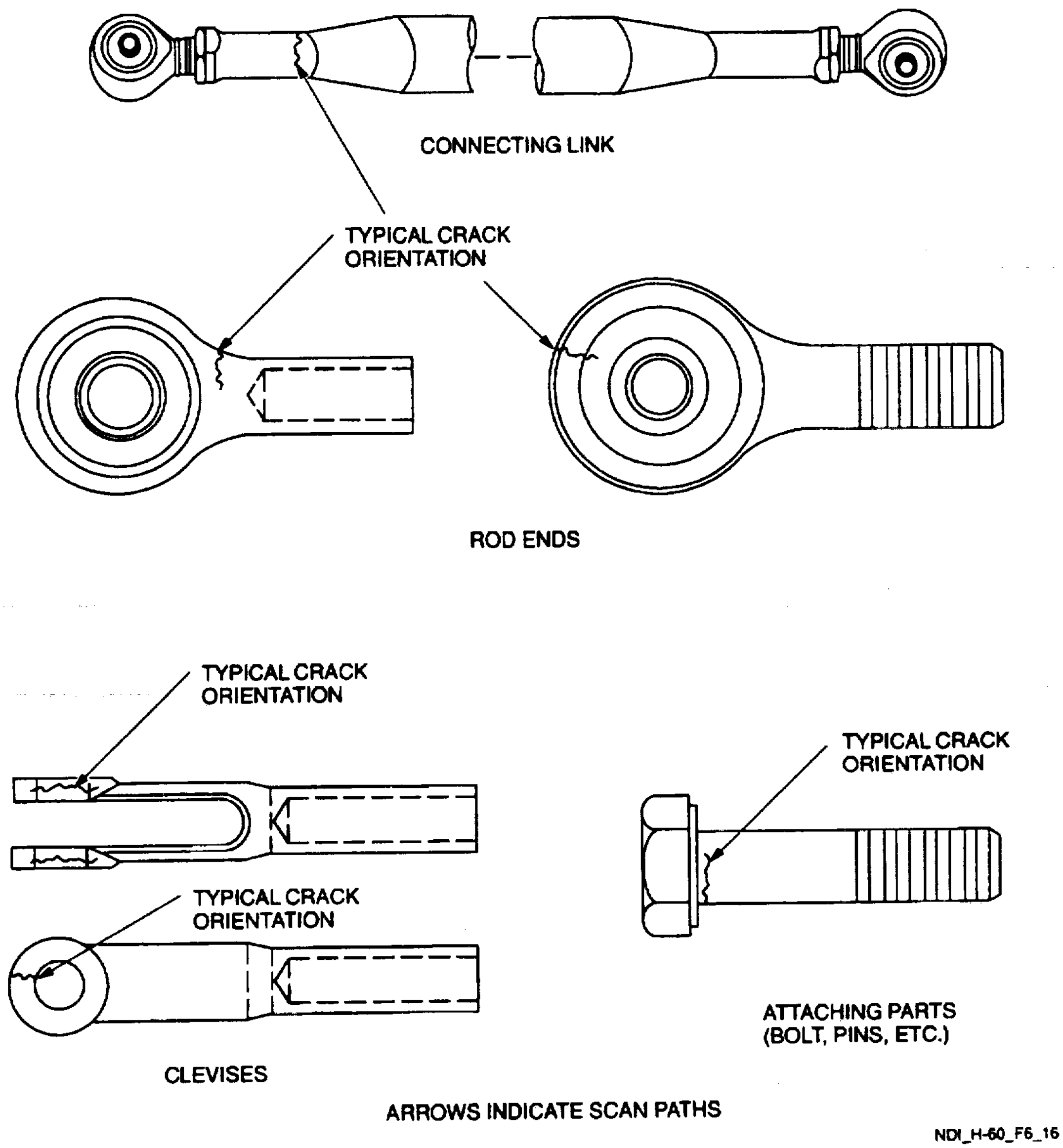


Figure 6-16. Nonferrous Connecting Links, Rod Ends, Clevises, Levers, and Attaching Parts

6.17 SWASHPLATE LINKS (MT).

6.17.1 **Description (Figure 6-1. Index No. 17).** The swashplate links are part of the swashplate linkage. They transmit flight control inputs from the servo bellcranks to the main rotor swashplate. The links are machined from a 4340 steel forging, cadmium plated, and protected by an epoxy primer and polyurethane paint. The upper ends of the links contain spherical bearings.

6.17.2 **Defects**. This inspection is used to verify crack indications found visually on the swashplate links. All areas where rework has been performed, and the spherical bearings, shall be inspected for cracks. No cracks are allowed.

6.17.3 **Primary Method.** Magnetic Particle.

6.17.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE

Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

6.17.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the swashplate links shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.17.3.3 Access. Not applicable.

6.17.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.17.3.5 NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

6.17.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 6-17.

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position 1 as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 6.17.3.8.
f. Repeat steps a. through e for positions 2 and 3 for each link.

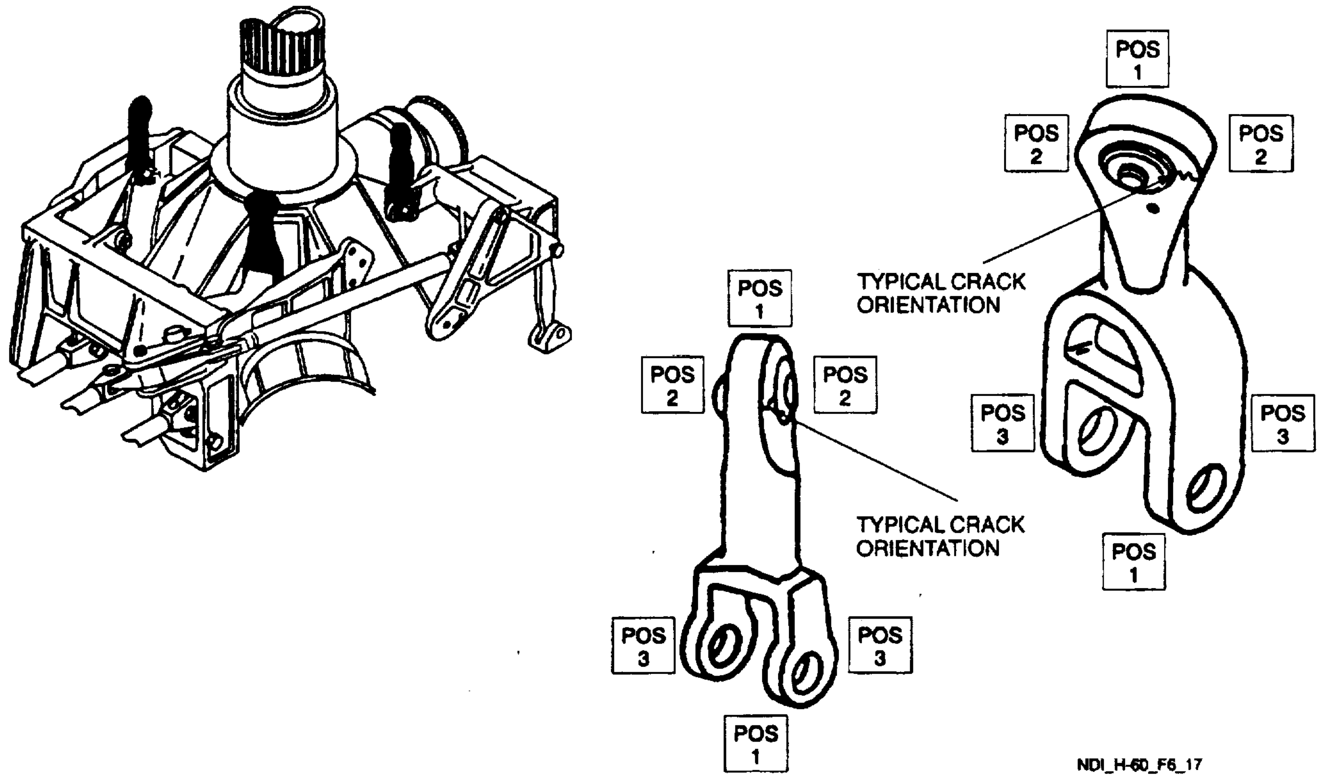


Figure 6-17. Swashplate Links

6.17.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.17.3.8 Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

6.17.4 Backup Method. None required.

6.17.5 System Securing. Clean the swashplate links thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The swashplate links, if removed, require installation in accordance with the applicable technical manuals listed in Table 1-1.

6.18 WALKING BEAM (MT).

6.18.1 Description (Figure 6-1. Index No. 18). The walking beam is a straight bellcrank mounted on the forward bridge support. It transmits flight control inputs from the aft longitudinal servo to the main rotor swashplate via a connecting linkage. It is machined from a 4340 steel forging, cadmium plated, and protected by epoxy primer and polyurethane paint.

6.18.2 Defects. This inspection is used to verify crack indications found visually on the walking beam. Inspect all reworked areas for cracks. Inspect walking beam lugs and surface areas for cracks. Visually inspect walking beam flanged pivot bushing for cracks. No cracks are allowed.

6.18.3 Primary Method. Magnetic Particle.

6.18.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE

Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

6.18.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the walking beam shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.18.3.3 Access. The walking beam is accessible on aircraft. Inspection of the pivot bushing requires removal and disassembly of the walking beam. Inspection of the walking beam lug areas requires removal of the walking beam from the aircraft.

6.18.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.18.3.5 NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

6.18.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 6-18.

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position 1 as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 6.18.3.8.
f. Repeat steps a. through e. for positions 2, 3, and 4.

6.18.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.18.3.8 Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

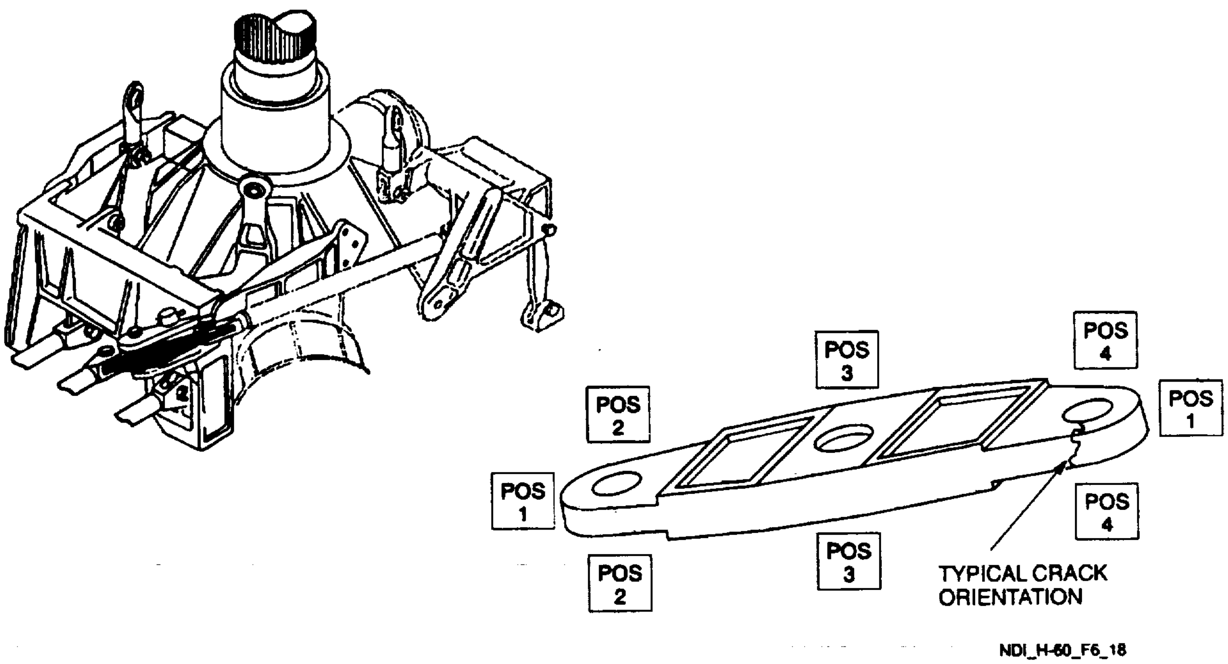


Figure 6-18. Walking Beam

6.18.4 <u>Backup Method.</u> None required.

6.18.5 <u>System Securing.</u> Clean the walking beam thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The walking beam, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

6.19 FORWARD BELLCRANK (MT).

6.19.1 <u>Description (Figure 6-1, Index No. 19).</u> The forward bellcrank, supported by the bellcrank support (bridge) in the swashplate linkage installation, transfers flight control movements through a connecting servo link to the main rotor swashplate. It is machined from a 4340 steel forging, cadmium plated, and protected by epoxy primer and polyurethane paint.

6.19.2 <u>Defects</u>. This inspection is used to verify crack indications found visually on the forward bellcrank. Inspect all reworked areas for cracks. Inspect forward bellcrank lug and rib surfaces. Visually inspect bellcrank flanged pivot bushings. No cracks are allowed.

6.19.3 <u>Primary Method</u>. Magnetic Particle.

6.19.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer

c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE
Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

6.19.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the forward bellcrank shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.19.3.3 Access. Not applicable.

6.19.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.19.3.5 NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

6.19.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 6-19.

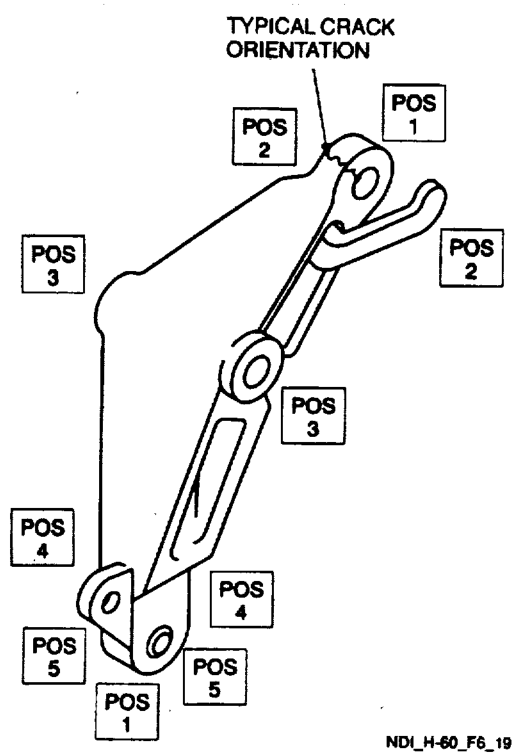


Figure 6-19. Forward Bellcrank

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position 1 as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 6.19.3.8.
f. Repeat steps a. through e. for positions 2 through 5.

6.19.3.7 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.19.3.8 Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

6.19.4 **Backup Method.** None required.

6.19.5 **System Securing.** Clean the forward bellcrank thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The forward bellcrank, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

6.20 LATERAL BELLCRANK (MT).

6.20.1 **Description (Figure 6-1. Index No. 20).** The lateral bellcrank, supported by the bellcrank support (bridge) in the swashplate linkage installation, transfers flight control movements through a connecting servo link to the main rotor swashplate. It is machined from a 4340 steel forging, cadmium plated, and protected by epoxy primer and polyurethane paint.

6.20.2 **Defects.** This inspection is used to verify crack indications found visually on the lateral bellcrank. Inspect all reworked areas for cracks. Inspect lateral bellcrank lug and rib surfaces. Visually inspect bellcrank flanged pivot bushings. No cracks are allowed.

6.20.3 **Primary Method.** Magnetic Particle.

6.20.3.1 NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE

Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

6.20.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the lateral bellcrank shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.20.3.3 Access. Not applicable.

6.20.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.20.3. 5 NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

6.20.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 6-20.

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position 1 as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 6.20.3.8.
f. Repeat steps a. through e. for positions 2 through 5.

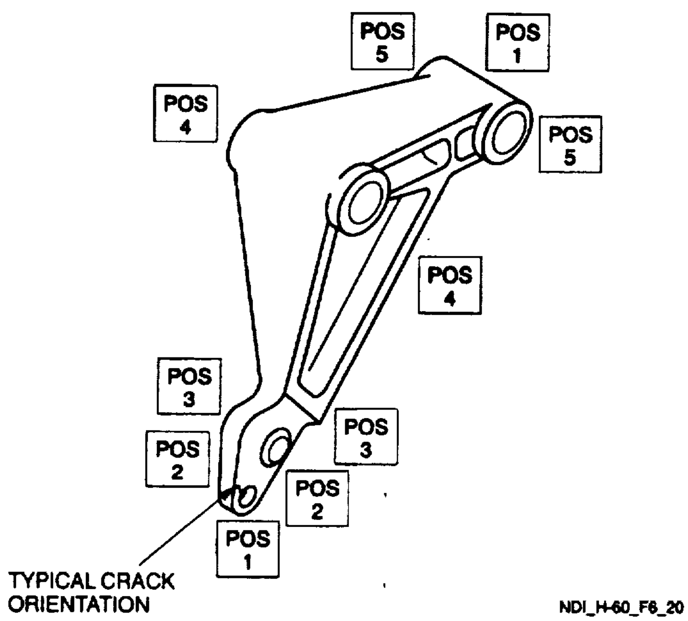


Figure 6-20. Lateral Bellcrank

6.20.3.7. Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.20.3.8. Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

6.20.4. Backup Method. None required.

6.20.5. System Securing. Clean the lateral bellcrank thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The lateral bellcrank, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

6.21. AFT BELLCRANK (MT).

6.21.1. Description (Figure 6-1. Index No. 21). The aft bellcrank, supported by the bellcrank support (bridge) in the swashplate linkage installation, transfers flight control movements through a connecting servo link to the main rotor swashplate. It is machined from a 4340 steel forging, cadmium plated, and protected by epoxy primer and polyurethane paint.

6.21.2. Defects. This inspection is used to verify crack indications found visually on the aft bellcrank. Inspect all reworked areas for cracks. Inspect aft bellcrank lug and rib surfaces. Visually inspect bellcrank flanged pivot bushings. No cracks are allowed.

6.21.3. Primary Method. Magnetic Particle.

6.21.3.1. NDI Equipment and Materials. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE

Hand-held magnetic coil may be used. Refer to paragraph 1.4.8.1.2 and Figure 1-6.

6.21.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the aft bellcrank shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.21.3.3. Access. Not applicable.

6.21.3.4. Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.21.3.5. NDI Equipment Settings. Refer to Magnetic Particle Method, paragraph 1.4.8.

6.21.3.6. Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 6-21.

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position 1 as shown.
c. Press the test switch and apply a light coat of magnetic particle media at the same time. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 6.21.3.8.
f. Repeat steps a. through e. for positions 2 through 5.

6.21.3.7. Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.21.3.8. Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

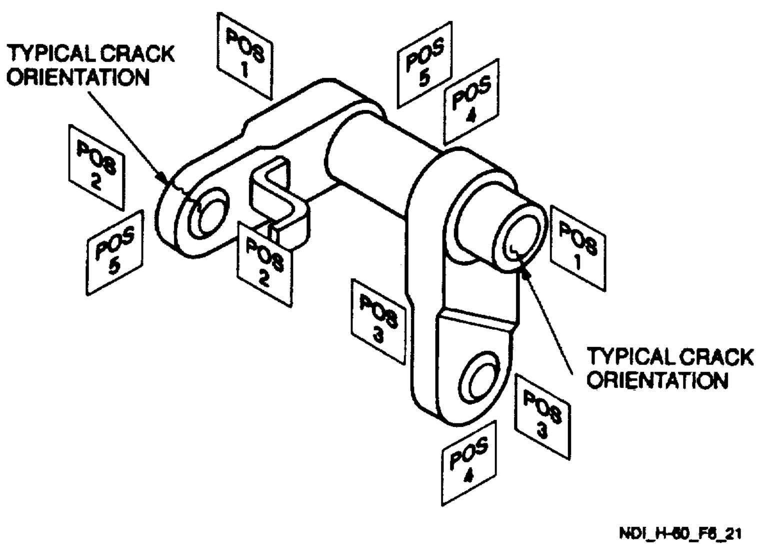


Figure 6-21. Aft Bellcrank

6.21.4 Backup Method**.** None required.

6.21.5 System Securing**.** Clean the aft bellcrank thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The aft bellcrank, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

6.22 HYDRAULIC/PNEUMATIC SYSTEM COMPONENTS (PT).

6.22.1 Description (Figure 6-1, Index No. 22)**.** This inspection is applicable to all unpainted valves, fittings, and tubes contained within the hydraulic/pneumatic system. This inspection can also be used to verify any indications found on painted surfaces, providing the paint is only removed from the immediate area of interest.

6.22.2 Defects**.** This inspection is used to verify crack indications found visually on the hydraulic/pneumatic system components. No cracks are allowed.

6.22.3 Primary Method**.** Fluorescent Penetrant.

6.22.3.1 NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. AMS 2644 level 3 penetrant materials shall be selected from the approved list in Table 1-8. Parts requiring flourescent penetrant inspection shall be cleaned prior to inspection with n–Propyl Bromide (vapor degreasing only)(Table 1–8), DS–108 (Table 1–8), Electron (Table 1–8), Positron (Table 1–8). DS–108, Electron, Positron must be followed by an acetone (Table 1–8) rinse or wipe: or drying until there is no visible solvent residue left on parts.

6.22.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the hydraulic/pneumatic system components shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.22.3.3 Access. Accessibility to the hydraulic/pneumatic system components varies considerably. Refer to Figure 1-4 and Table 1-2 to locate applicable access provisions.

WARNING

Maintenance Platforms/Workstands

Use only appropriate platforms, workstands, or other approved locally procured stands and restraint equipment when working above 10 feet on helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

6.22.3.4 Preparation of Part. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.22.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 6-22.

6.22.3.6 Marking and Recording of Inspection Results. Mark and record inspection results as required by paragraph 1.3.

6.22.4 Backup Method**.** None required.

6.22.5 System Securing**.** Clean the hydraulic/pneumatic system components to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph

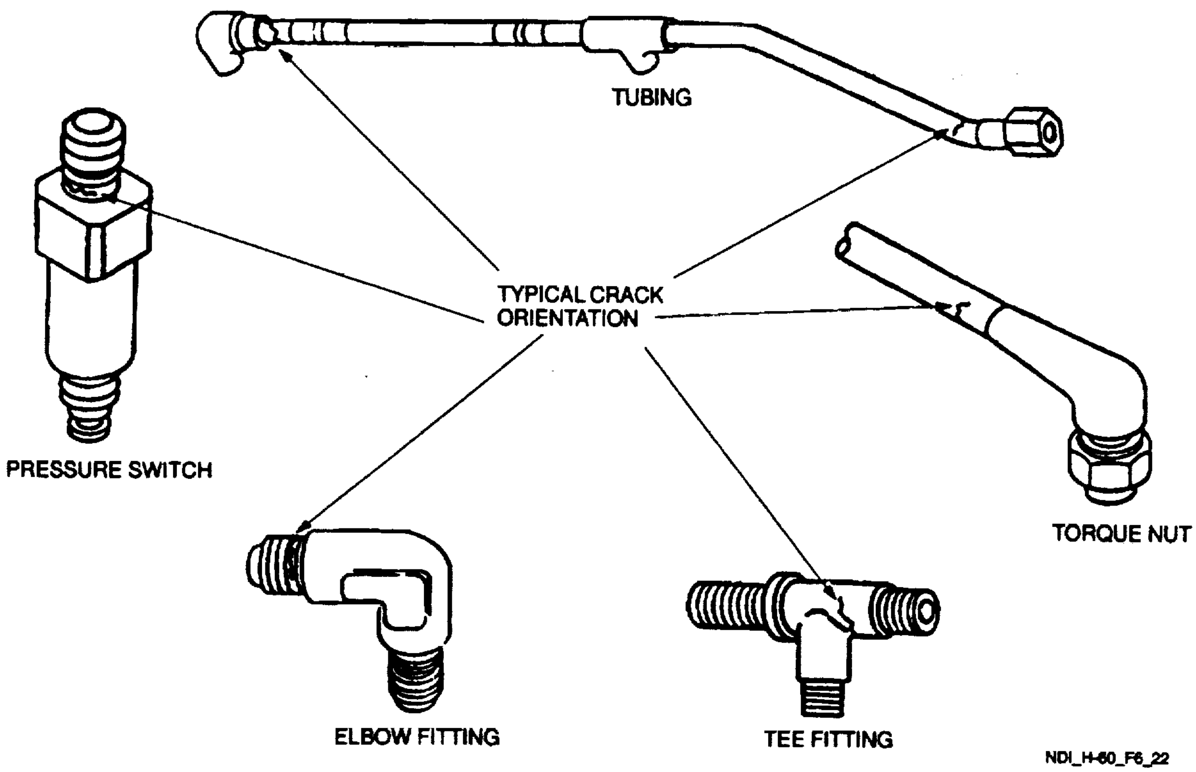


Figure 6-22. Hydraulic/Pneumatic System Components

6.23. FERROUS BOLTS CONTAINED WITHIN THE FLIGHT CONTROL SYSTEM (MT).

6.23.1. <u>Description (Figure 6-1. Index No. 93)</u>. Refer to paragraph 2.3 for inspection procedure.

6.24. NONFERROUS BOLTS CONTAINED WITHIN THE FLIGHT CONTROL SYSTEM (PT).

6.24.1. <u>Description (Figure 6-1. Index No. 24)</u>. Refer to paragraph 2.4 for inspection procedure.

APPENDIX A

MAINTENANCE ALLOCATION CHART
NONDESTRUCTIVE INSPECTION

NDI METHODS/EQUIPMENT

001 Fluorescent Penetrant Method
002 Magnetic Particle Method
003 Eddy Current Method
004 Ultrasonic Method
005 Bond Testing Method
006 Radiographic Method

NOMENCLATURE OF END ITEMS
HELICOPTER, H-60 Series

(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	(4) MAINTENANCE CATEGORY			(5) INSPECTION EQUIPMENT REQUIREMENTS	(6) REMARKS
			AVUM	AVIM	DEPOT		
2.2	Split Cones	Cracks		√		001	
2.3	Ferrous Rotor System Bolts and Pins	Cracks		√		002	
2.4	Nonferrous Rotor System Bolts and Pins	Cracks		√		001	
2.5	Main Rotor Shaft Nut	Cracks		√		002	
2.6	Main Rotor Hub	Cracks		√		003	Backup 001
2.7	Spindle	Cracks		√		003	
2.8	Antiflap Bracket	Cracks		√		003	
2.9	Droop Stop Support Ring Nut	Cracks		√		003	
2.10	Balance Weight Bracket	Cracks		√		002	
2.11	Spindle Horn	Cracks		√		003	Backup 001
2.12	Droop Stop Cam	Cracks		√		003	
2.13	Damper Assembly	Cracks		√		003	
2.14	Pitch Control Rods	Cracks		√		003	Backup 001
2.15	Rotating Swashplate	Cracks		√		003	Backup 001
2.16	Lower Link	Cracks		√		003	Backup 001
2.17	Bifilar Vibration Absorber	Cracks		√		003	Backup 001
2.18	Bifilar Weight	Cracks		√		004	

NOMENCLATURE OF END ITEMS
HELICOPTER, H-60 Series

(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) INSPECTION EQUIPMENT REQUIREMENTS	(6) REMARKS
2.19	Main Rotor Blade Tip Cap Fairing	Cracks		√		003	
2.20	Main Rotor Blade (Voids)	Voids		√		005	
2.21	Main Rotor Blade Cuff Assembly	Cracks		√		003	
2.22	Tail Rotor Blade (Voids)	Voids		√		005	
2.23	Tail Rotor Blade (Fluid)	Fluid		√		006	
2.24	Tail Rotor Blade Tip Cap	Cracks		√		003	
2.25	Tail Rotor Pitch Horn	Cracks		√		003	Backup 001
2.26	Tail Rotor Pitch Control Rod Ends	Cracks		√		002	
2.27	Pitch Beam Washer	Cracks		√		002	
2.28	Pitch Beam Retaining Nut	Cracks		√		002	
2.29	Pitch Beam	Cracks		√		003	
2.30	Tail Rotor Inboard/Out-board Retention Plates	Cracks		√		003	
3.2	Main Transmission	Cracks		√		003	
3.3	Intermediate Gearbox	Cracks		√		003	Backup 001
3.4	Tail Rotor Drive Shaft	Cracks		√		003	
3.5	Tail Rotor Drive Shaft Supports	Cracks		√		003	
3.6	Tail Rotor Drive Shaft Coupling	Cracks		√		001	
3.7	Oil Cooler Drive Shaft	Cracks		√		003	
3.8	Oil Cooler Axial Fan Shaft	Cracks		√		002	
3.9	Oil Cooler Fan (Blades)	Cracks		√		003	
3.10	Tail Gearbox	Cracks		√		003	Backup 001
3.11	Tail Gearbox Mount Fitting	Cracks		√		003	

NOMENCLATURE OF END ITEMS
HELICOPTER, H-60 Series

(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) INSPECTION EQUIPMENT REQUIREMENTS	(6) REMARKS
3.12	Tail Rotor Gearbox Inner/Outer Split Cones	Cracks		√		001	
4.2	Airframe Skin, Panels, Doors, Covers, and Fairings - Metal	Cracks		√		003	
4.3	Honeycomb and Composite Structures	Voids		√		005	
4.4	Fluid in Honeycomb Core Panels and Structures	Fluid		√		006	
4.5	Vibration Absorber Springs	Cracks		√		002	
4.6	Vibration Absorber Structural Fittings	Cracks		√		003	
4.7	Roll Vibration Absorber	Cracks		√		001	
4.8	Aluminum Structural Beams and Frames	Cracks		√		003	
4.9	Pilot/Copilot Seat Midframe Support	Cracks		√		002	
4.10	Troop/Cargo Door Upper Track	Cracks		√		003	
4.11	Gunner's Window Lower Track	Cracks		√		003	
4.12	Gunner's Window Upper Track	Cracks		√		003	
4.13	Troop/Cargo Door Lower Track	Cracks		√		003	
4.14	Oil Cooler Compartment Access Door	Cracks		√		001	
4.15	Tail Pylon Attach Fitting	Cracks		√		003	
4.16	Tail Rotor Pylon Skin, Station 200	Cracks		√		003	
4.17	Tail Rotor Pylon Attaching Hardware	Cracks		√		001	
4.18	Tail Pylon Lower Step	Cracks		√		003	

NOMENCLATURE OF END ITEMS
HELICOPTER, H-60 Series

(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) INSPECTION EQUIPMENT REQUIREMENTS	(6) REMARKS
4.19	Stabilator Attach Fitting	Cracks		√		003	Backup 001
4.20	Stabilator Actuator Attach Fittings	Cracks		√		002	Backup 001
4.21	Stabilator Actuator Housing	Cracks		√		001	
4.22	Drag Beam Support Fitting	Cracks		√		003	
4.23	Main Landing Gear Drag Beam	Cracks		√		002	Backup 001
4.24	Main Landing Gear Shock Strut Upper Cylinder	Cracks		√		003	
4.25	Main Landing Gear Shock Strut Lower Stage Piston	Cracks		√		002	
4.26	Main Landing Gear Wheel Assembly	Cracks		√		003	Backup 001
4.27	Main Landing Gear Brake	Cracks		√		002	Backup 001
4.28	Main Landing Gear Brake Housing	Cracks		√		003	Backup 001
4.29	Parking Brake Valve Components	Cracks		√		001	
4.30	Slave Mixer Valve Parts	Cracks		√		001	
4.31	Tail Landing Gear Yoke	Cracks		√		003	Backup 001
4.32	Tail Landing Gear Fork	Cracks		√		003	Backup 001
4.33	Tail Landing Gear Lock Actuator Assembly	Cracks		√		002	
4.34	Tail Landing Gear Wheel Assembly	Cracks		√		003	
4.35	Cargo Hook	Cracks		√		002	

NOMENCLATURE OF END ITEMS
HELICOPTER, H-60 Series

(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) INSPECTION EQUIPMENT REQUIREMENTS	(6) REMARKS
4.36	Ferrous Bolts and Pins Contained Within the Airframe and Landing Gear System	Cracks		√		002	
4.37	Nonferrous Bolts and Pins Contained Within the Airframe and Landing Gear System	Cracks		√		001	
5.2	Deswirl Duct Vanes and Loop Clamp	Cracks		√		001	
5.3	Engine Tubing, Couplings, Air Ducts, Fittings, Supports, Brackets, and Clips	Cracks		√		001	
5.4	Air Inlet Assembly and Bleed-Air Exhaust Slots	Cracks		√		003	
5.5	Aft Engine Mount Struts	Cracks		√		002	Backup 001
5.6	Aft Engine Mount Fittings	Cracks		√		002	Backup 001
5.7	Aft Engine Mount Links	Cracks		√		001	
5.8	Aft Engine Mount Support	Cracks		√		003	Backup 001
5.9	Crotch Assembly and Segment Ring	Cracks		√		003	Backup 001
5.10	Forward Support Tube	Cracks		√		003	Backup 001
5.11	Exhaust Ejector and Attaching Angles	Cracks		√		001	
5.12	Exhaust Fairings	Cracks		√		001	
5.13	HIRSS and Nacelle Fairing Support Mounts	Cracks		√		001	
5.14	Suppressor Core and Baffle	Cracks		√		001	
5.15	HIRSS Exhaust Extender	Cracks		√		001	
5.16	Rotary Input Assembly	Cracks		√		001	

NOMENCLATURE OF END ITEMS
HELICOPTER. H-60 Series

(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) INSPECTION EQUIPMENT REQUIREMENTS	(6) REMARKS
5.17	Engine Load Demand Control Cable Support	Cracks		√		001	
5.18	Engine Air Inlet "V" Band Clamp	Cracks		√		001	
5.19	Starter Flange	Cracks		√		003	
5.20	Engine Shroud	Cracks		√		001	
5.21	Engine Load Demand Spindle Bellcrank Support	Cracks		√		003	
5.22	Engine Components	Cracks		√		001	
6.2	Toe Pedal Actuator	Cracks		√		001	
6.3	Toe Pedal Assembly	Cracks		√		003	Backup 001
6.4	Yaw Pedal Support Shaft	Cracks		√		002	
6.5	Yaw Pedal Brake Cylinder Supports	Cracks		√		003	
6.6	Pedal Adjuster Arms and Link	Cracks		√		003	Backup 001
6.7	Pilot/Copilot Cyclic and Collective Stick Socket	Cracks		√		003	Backup 001
6.8	Collective Boost and Yaw Boost Servo Input/ Output Piston Shafts and Cylinders	Cracks		√		002	
6.9	Yaw/Pitch Coupling Link	Cracks		√		003	
6.10	Ferrous Flight Control System Push-Pull Rods	Cracks		√		002	
6.11	Nonferrous Flight Control System Push-Pull Rods	Cracks		√		003	
6.12	Pilot Collective Stick Bellcrank Support	Cracks		√		003	
6.13	Pilot/Copilot Collective Stick Support	Cracks		√		003	Backup 001

NOMENCLATURE OF END ITEMS
HELICOPTER, H-60 Series

(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) INSPECTION EQUIPMENT REQUIREMENTS	(6) REMARKS
6.14	Pilot Collective Stick Bellcrank	Cracks		√		003	Backup 001
6.15	Ferrous Connecting Links, Rod Ends, Clevises, Levers, and Attaching Parts	Cracks		√		002	
6.16	Nonferrous Connecting Links, Rod Ends, Clevises, Levers, and Attaching Parts	Cracks		√		003	
6.17	Swashplate Links	Cracks		√		002	
6.18	Walking Beam	Cracks		√		002	
6.19	Forward Bellcrank	Cracks		√		002	
6.20	Lateral Bellcrank	Cracks		√		002	
6.21	Aft Bellcrank	Cracks		√		002	
6.22	Hydraulic/Pneumatic System Components	Cracks		√		001	
6.23	Ferrous Bolts Contained Within the Flight Control System	Cracks		√		002	
6.24	Nonferrous Bolts Contained Within the Flight Control System	Cracks		√		001	

APPENDIX B

EQUIPMENT LISTING

Nomenclature	Part Number/ Specification	Manufacturer	National Stock Number
Fluorescent Penetrant Method			
Fluorescent Penetrant Inspection Kit	AMS 2644 Type 1, Method C, Level 3	General Services Administration (GSA)	6850-00-703-7406
Black Light UV KIt	FMI	Spectronics Corp. 956 Brush Hollow Rd. Westbury, NY 11590-1731	6635-00-566-5198
Black Light Meter	J-221	Ultraviolet Products, Inc., DBA UVP Inc. 5100 Walnut Grove Ave. P. O. Box 1500 Upland, CA 91778	6695-00-488-5451
Black Light Bulbs	A-A-1765	General Services Administration (GSA)	6240-00-233-3680
Filter UV	3901	Magnaflux Div. of Illinois Tool Works, Inc., 1301 W Ainsle St. Chicago, IL 60656	6635-00-736-5177
Magnetic Particle Method			
Yoke and Coil Kit	YL-61	Magnaflux Div., of Illinois Tool Works, Inc. 1301 W. Ainsle St. Chicago, IL 60656	4920-01-145-3924
Black Light	ZB26	Spectronics Corp. 956 Brush Hollow Rd. Westbury, NY 11590-1731	6635-00-611-5617
Magnetic Particle Inspection Probe	DA200	Parker Research Corp. 2642 Enterprise Road Clearwater, FL 33575-1917	6635-00-022-0372
Magnetometer	2480	Sterling Mfg. Co. 1845 E. 30th St. Cleveland, OH 44114-4438	6635-00-391-0058

Nomenclature	Part Number/ Specification	Manufacturer	National Stock Number
Eddy Current Method			
Eddy Current Inspection Unit	NORTEC-19e^{II} 901736801	Staveley Instruments, Inc. 421 North Quay St. Kennewick, WA 99336	6635-01-419-0694
Cable Assembly, Coaxial 6-feet long (1 required)	CBM-6	NDT Engineering Corp. 7056 S. 220th Street Kent, WA 98032	5995-01-278-1271
Reference Block- Three-Notched Aluminum	TBS-1 1902510	Staveley Instruments, Inc. 421 North Quay St. Kennewick, WA 99336	
Reference Block- Three-Notched Titanium	SRS-0824T	NDT Engineering Corp. 7056 S. 220th St. Kent, WA 98032	
Reference Block- Three-Notched Magnesium	SRS-0824M	NDT Engineering Corp. 7056 S. 220th St. Kent, WA 98032	
Reference Block- Block of Six Conductivity Sample	1902474	Staveley Instruments, Inc. 421 North quay St. Kennewick, WA 99336	
Probe, right angle, shielded surface P/50KHz-500KHz/A/90.5/6	MT-905-60	NDT Engineering Corp. 7056 S. 220th Street Kent, WA 98032	
Probe, straight, shielded surface P/50KHz-500KHz/A/0.0/4	MP-60	NDT Engineering Corp. 7056 S. 220th Street Kent, WA 98032	
Cable, Wheel Probe	CBR-TF-6	NDT Engineering Corp. 7056 S. 220th Street Kent, WA 98032	
Ultrasonic Method			
Ultrasonic Inspection Unit	USD 15S	KrautKramer Branson 50 Industrial Park Road Lewistown, PA 17044	6635-01-417-5467

Nomenclature	Part Number/ Specification	Manufacturer	National Stock Number
Bond Testing Method			
Bondmaster	9016600-99	Staveley Instruments, Inc. 421 North Quay St. Kennewick, WA 99336	6635-01-432-9954
Cable Assembly	SBM-CPM-P11 9117789	Staveley Instruments, Inc. 421 North Quay St. Kennewick, WA 99336	
Probe, Mechanical Impedance Analysis	S-MP-4 9317808	Staveley Instruments, Inc. 421 North Quay St. Kennewick, WA 99336	
Probe Holder, spring loaded	BMM-H 9316874	Staveley Instruments, Inc. 421 North Quay St. Kennewick, WA 99336	6635-01-407-8842
Test Block, Composite Defect Standard #1	1916451	Staveley Instruments, Inc. 421 North Quay St. Kennewick, WA 99336	
Test Block, Composite Defect Standard #3	1916453	Staveley Instruments, Inc. 421 North Quay St. Kennewick, WA 99336	
Test Block, Aluminum Honeycomb with 0.020-inch thick aluminum/honeycomb skin	Refer to Appendix C		
Test Block, Aluminum Honeycomb with 0.040-inch thick aluminum skin	Refer to Appendix C		
Test Block, Aluminum Honeycomb with 0.063-inch thick aluminum skin	Refer to Appendix C		
Radiographic Method			
Tripod X-Ray Tubehead Stand	PDSANE480	Staveley Aerospace Systems, Inc. Chatsworth, CA 91311	6635-01-067-6315
AIX Warning Light w/Stand	153001	American Industrial X-ray Inc.	6210-01-374-4594

Nomenclature	Part Number/ Specification	Manufacturer	National Stock Number
X-Ray Unit (LPX-160 Water-Cooled Digital)	3-000-0762	LORAD Corp. 36 Apple Ridge Rd. P.O. Box 710 Danbury, C 06813-0710	6635-01-417-1830

APPENDIX C
ILLUSTRATED FIELD MANUFACTURE ITEMS LIST

Introduction

A. This appendix contains complete instructions for manufacturing nondestructive inspection support accessories in the field.

B. An index order is provided for cross-referencing the number of the item to be manufactured to the figure number which covers fabrication criteria.

C. All bulk materials needed for manufacture of an item are listed by part number or specification number.

D. See Figure C-1.

Item Number	**Support Accessories**
WS-2	Test block with aluminum honeycomb (0.75 or 1.0 inch) between 0.020
	fiberglass skin and a 0.063 aluminum skin
WS-4	Test block with aluminum honeycomb (0.75 or 1.0 inch) between a 0.040
	aluminum skin and a 0.020 skin

NOTES

1. All dimensions (+/-) 1/16 inch. Break all sharp edges and corners.

2. Scuff sand the adhesive side of the fiberglass panel.

3. Scotchbrite scuff and alcohol/acetone rinse the adhesive side of the aluminum panels.

4. Milling or grinding of core cutouts is preferable over crushing techniques. A rotary file or end mill cutter should produce acceptable results.

5. Polyolefin disks (inserts) should be flush with core if not slightly recessed.

6. Mix adhesives per manufacturer's instructions; exercise caution applying around inserts.

7. Moderate weight should be applied to the panels throughout the cure cycle.

BULK MATERIALS

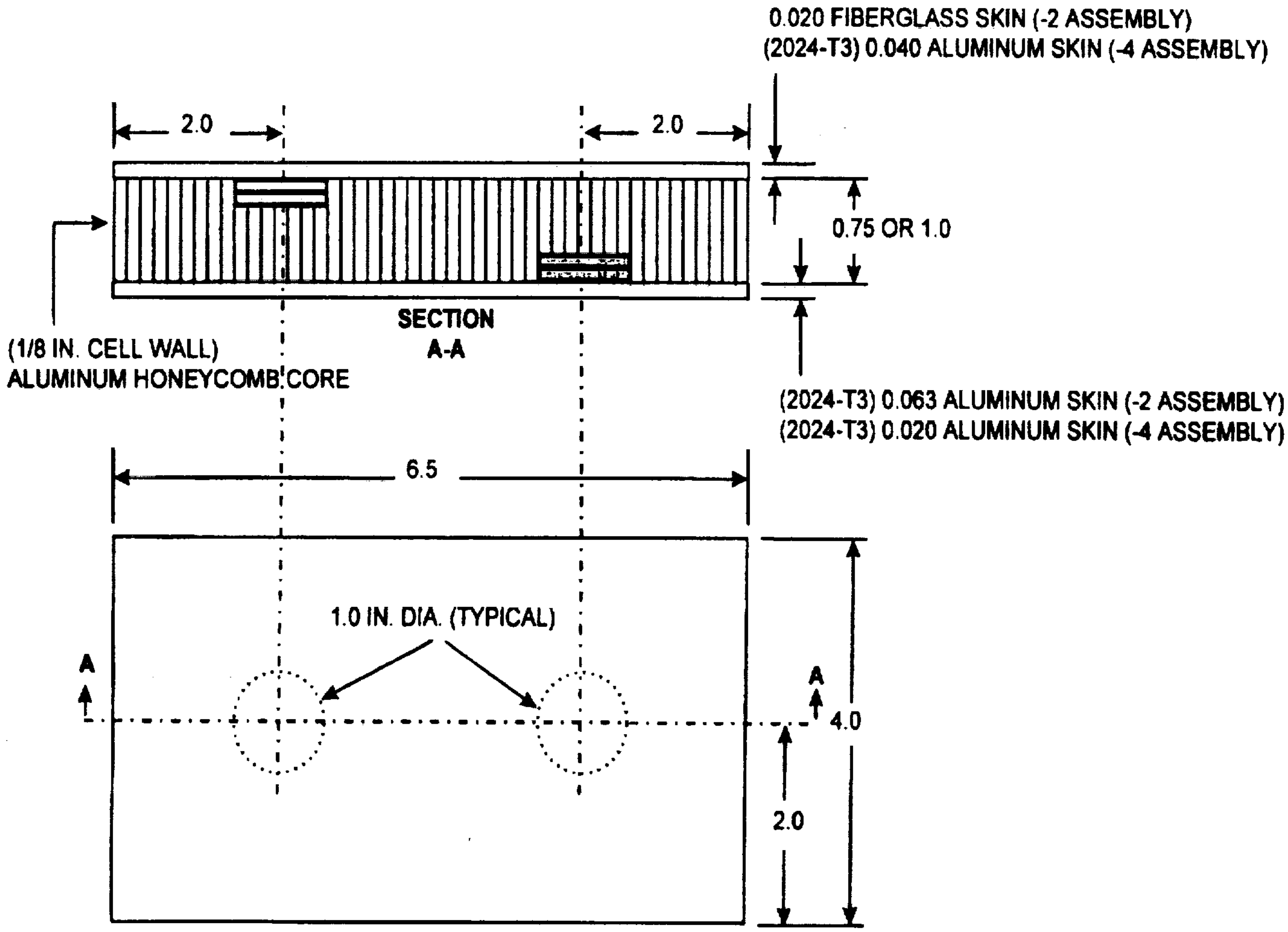
1. 2024-T3 aluminum panels (0.020, 0.040 and 0.063 inch thick) specification QQ-4-250/5

2. Fiberglass panel 0.020 inch thick, specification MIL-I-24768/27

3. Aluminum honeycomb core 0.75 or 1.0 inch thick, 1/8 cell size specification MIL-C-7438-G

4. Polyolefin disks 0.025-0.030 inch thick (High-Density Polyethylene or Polypropylene)

5. Adhesive EA934 or equivalent



WS-2 AND WS-4 ASSEMBLY

Figure C-1. Composite Test Blocks

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INDEX-Continued

INDEX-Continued

INDEX-Continued

INDEX-Continued

By Order of the Secretary of the Army:

Official:

DENNIS J. REIMER
General, United States Army
Chief of Staff

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
02908

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These are the instructions for sending an electronic 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however, only the following fields are mandatory: 1,3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: " Whomever"whomever@avma27.army.mil
To: 2028@redstone.army.mil
Subject DA Form 2028

1. ***From:*** Joe Smith
2. *Unit:* home
3. ***Address:*** 4300 Park
4. ***City:*** Hometown
5. ***St:*** MO
6. ***Zip:*** 77777
7. ***Date Sent:*** 19-OCT-93
8. ***Pub no:*** 55-2840-229-23
9. ***Pub Title:*** TM
10. ***Publication Date:*** 04-JUL-85
11. *Change Number:* 7
12. *Submitter Rank:* MSG
13. ***Submitter FName:*** Joe
14. *Submitter MName:* T
15. ***Submitter LName:*** Smith
16. ***Submitter Phone:*** 123-123-1234
17. ***Problem:* 1**
18. *Page:* 2
19. *Paragraph:* 3
20. *Line:* 4
21. *NSN:* 5
22. *Reference:* 6
23. *Figure:* 7
24. *Table:* 8
25. *Item:* 9
26. *Total:* 123
27. ***Text:***

This is the text for the problem below line 27.

RECOMMENDED CHANGES TO EQUIPMENT TECHNICAL PUBLICATIONS

SOMETHING WRONG WITH THIS PUBLICATION?

FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)
PFC John DOE
CO A 3rd Engineer Bn
Ft. Leonardwood, MO 63108

DATE SENT
10 January 1999

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 1–1520–265-23	30 December 1998	AVUM/AVIM Maintenance Manual for UH60

BE EXACT PIN–POINT WHERE IT IS | **IN THIS SPACE, TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:**

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO	
6	2-1 a			In line 6 of paragraph 2–1a the manual states the engine has 6 cylinders. The engine on my set only has 4 cylinders. Change the manual to show 4 cylinders.
81		4-3		Callout 16 on figure 4–3 is pointed at a bolt. In key to figure 4–3, item 16 is calle a shim. Please correct one or the other

EXAMPLE

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
JOHN DOE, PFC (268) 317–7111

SIGN HERE
JOHN DOE John Doe

DA FORM 1 JUL 79 2028–2

PREVIOUS EDITIONS ARE OBSOLETE.

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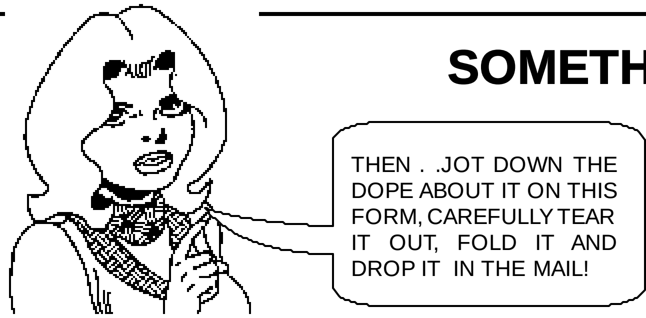

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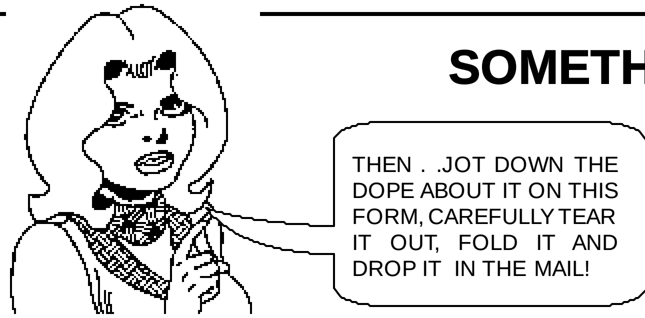

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 decagram = 10 grams = .35 ounce
1 hectogram = 10 decagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

PIN: 075218-002