TECHNICAL MANUAL

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

NONDESTRUCTIVE INSPECTION PROCEDURES

FOR

AH-1 HELICOPTER SERIES

DISTRIBUTION STATEMENT A Approved for Public Release; Distribution Unlimited

HEADQUARTERS, DEPARTMENT OF THE ARMY
30 NOVEMBER 1996

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 55-1500-335-23.

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 performed.

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 all 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 helicopter 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 of 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

Temperatures 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 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 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.

CAUTION

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

CAUTION

Penetrant-Emulsifier/Remover Combinations (lipophilic/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.

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DEPARTMENT OF THE ARMY
Washington, D.C. 30 November 1996

Aviation Unit Maintenance (AVUM) and Aviation Intermediate Maintenance (AVIM) Manual
Nondestructive Inspection Procedures
for
AH-1 Helicopter Series

REPORTING OF ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual direct to: Commander, U.S. Army Aviation and Troop Command, ATTN: AMSAT-I-MP, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. A reply will be furnished to you.

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SECTION I

INTRODUCTION

1. INTRODUCTION.

a. This manual contains instructions for accomplishing Nondestructive Inspection (NDI) of the AH-1 helicopter series 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 AH-1 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, or 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 appropriate maintenance manuals and are therefore not contained in this manual. Decision regarding the serviceability of components properly belongs 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 it (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 Blvd., St. Louis, MO 63120-1798.

h. These NDI procedures are directive in nature and deviation without prior approval is limited to compensation for 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 setup 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 the AH-1 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 the manual, use of NDI symbols, and a list of publications. Section I also contains general information on the AH-1 helicopter series, 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 55-1500-335-23. Detailed inspection instruction for each main aircraft group is given in Sections II through VI of this manual.

Table 1-1. Supporting Technical Documentation

Document	Description
AR40-14/DLAR 1000.28	Medical Services, Control and Recording Procedures or Exposure to Ionizing Radiation and Radioactive Materials
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
MIL-STD-6866	Inspection, Liquid Penetrant
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

Table 1-1. Supporting Technical Documentation - Continued

Document	Description
TM 55-1520-236-23 (Series)	Aviation Unit and Intermediate Maintenance Manual for Helicopter, AH-1
Volume I	
Chapter 1	Aircraft General
Volume II	
Chapter 2	Airframe
Volume III	
Chapter 3	Alighting Gear
Chapter 4	Power Plant
Volume IV	
Chapter 5	Rotor System
Volume V	
Chapter 6	Drive System
Volume VI	
Chapter 7	Hydraulic Systems
Volume IX	
Chapter 11	Flight Control System
	Engine Manuals
TM 55-2840-229-23 (Series)	Aviation Unit and Aviation Intermediate Maintenance Manual Engine Assembly, Model T53-L-703

1.1.1. Special Terms, Abbreviations, and Acronyms.

AC	Alternating Current
ADF	Automatic Direction Finder
APU	Auxiliary Power Unit
AVIM	Aviation Intermediate Maintenance
AVUM	Aviation Unit Maintenance
BL	Butt Line
BS	Boom Station
BT	Bond Testing Method
C	Celsius
CCW	Counterclockwise
CL	Center Line
CRT	Cathode Ray Tube
CW	Clockwise

DAC	Distance Amplitude Correction
DC	Direct Current
EDM	Electrically Discharged Machined Notches
ET	Eddy Current Method
F	Fahrenheit
FS	Fuselage Station
FSH	Full Screen Height
FWD	Forward
HdB	Horizontal Decibels (Gain)
H-Pos	Horizontal Position
HPF	High Pass Filter
ID	Inside Diameter
ILCA	Integrated Lower Control Actuator
KHz	Kilohertz
LPF	Low Pass Filter
MHz	Megahertz
MIA	Mechanical Impedance Analysis
MT	Magnetic Particle Method
NDI	Nondestructive Inspection
PE	Pulse Echo
P/N	Part Number
PSI	Pounds per Square Inch
PSIG	Pounds per Square Inch Gauged
PT	Fluorescent Penetrant Method
ROT	Rotation
RT	Radiographic Method
STA	Station
SYNC	Synchronization
TM	Technical Manual
TTU	Through Transmission Ultrasonics
UT	Ultrasonic Method
VdB	Vertical Decibel (Gain)
VEL	Velocity
VPos	Vertical Position
WL	Water Line

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

I	Introduction
II	Rotor Group
III	Transmission/Drivetrain Group
IV	Airframe and Landing Gear Group
V	Engine Group
VI	Flight Control Group

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

When the group and part name are known:

a. Turn to the appropriate section of the manual covering that group. Refer to the group 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.

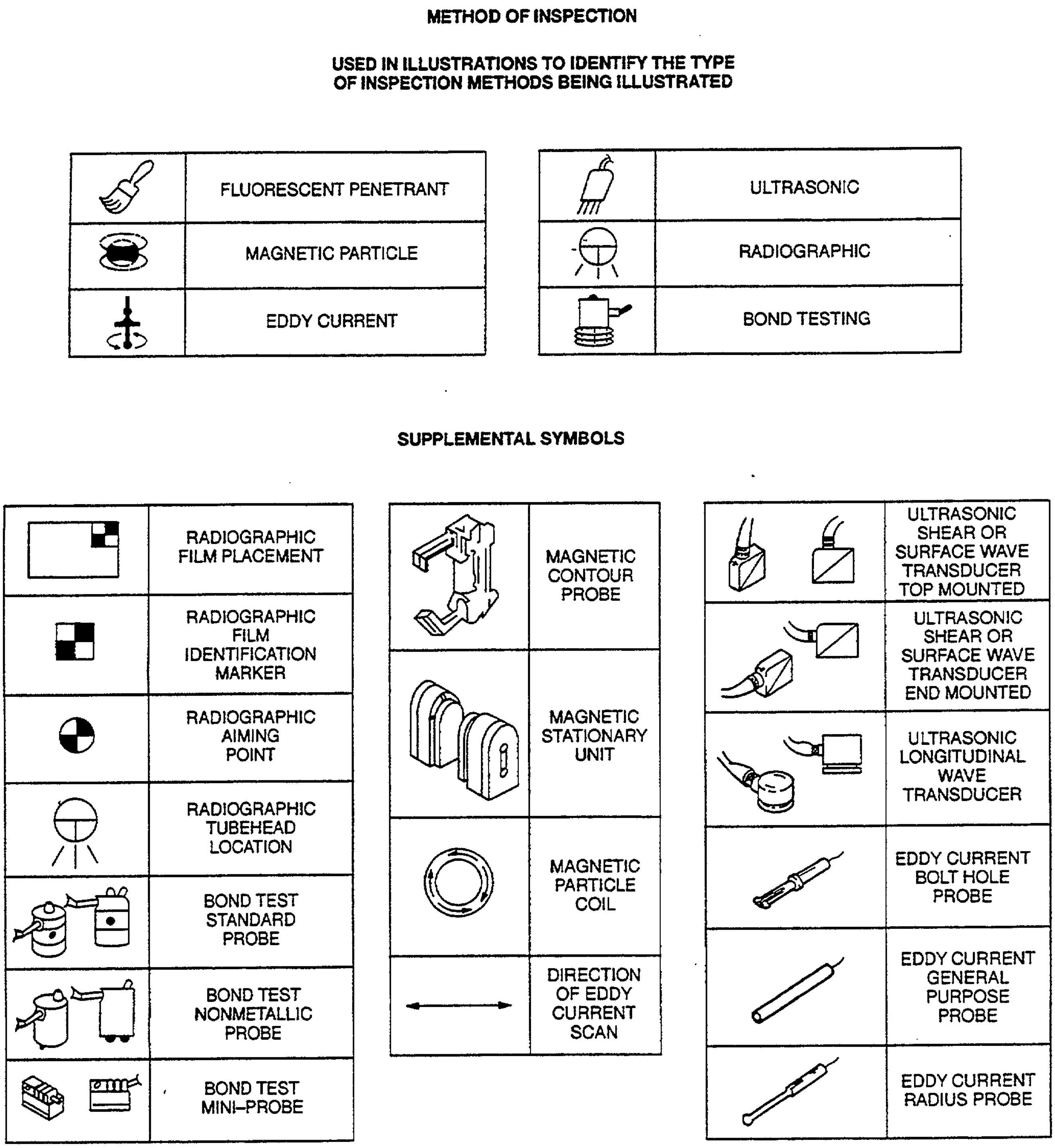
a. The first digit refers to the section of the manual in which the item appears. Example: Paragraph 2.2 is found in Section II and reference item 2.

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 or procedure number five.

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 AH-1 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.



NDI_AH-1_F1_1

Figure 1-1. Non-destructive Inspection Symbols.

1.1.7. Description. The AH-1 helicopter is a two place, assault-type helicopter. It is constructed primarily of aluminum alloy and has a narrow (3 feet wide) fuselage, single main and tail rotors, skid-type landing gear, and a single Textron Lycoming T53-L-703 turboshaft powerplant. The large acrylic canopy and tandem seating arrangement of the cockpit provide a substantial field of view for the crew of two. Short wings on the sides of its fuselage provide additional lift for the aircraft at high speeds and allows it to be equipped with a wide variety of armaments.

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

1.1.9. Stations. Water Lines. and Butt Lines (Figure 1-3). Stations, water lines, and butt lines provide an accurate method of locating or installing parts and/or equipment in the airframe.

a. AH1 helicopter length is divided into stations (STA) 1 inch apart along the longitudinal plane of the helicopter. They begin with station 24.39 at the most forward part of the nose section, and ending at station 559.38 at the aft end of the tail pylon. Station numbers are marked at four places on the aft side of the cabin frames.

b. Helicopter height is divided into water lines (WL) 1 inch apart along the vertical plane of the helicopter.

c. Helicopter butt lines (BL) are 1 inch apart starting at the helicopter center line (CL) and extending outward, left and right, to the extreme ends of the fuel tank.

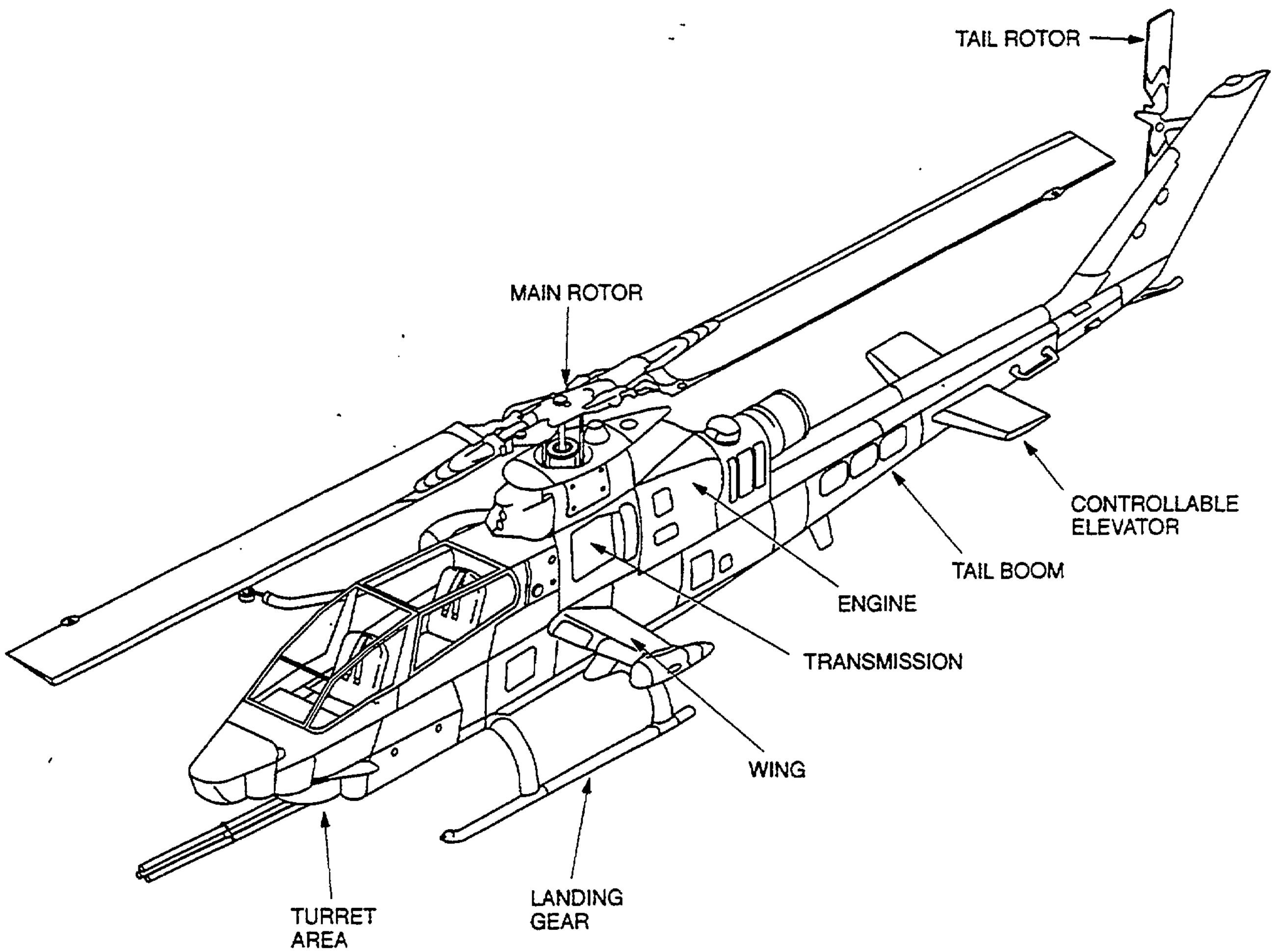
1.2. TYPE OF CONSTRUCTION.

NOTE

The following paragraphs describe the type of construction and materials used in the manufacture of the major AH-1 series components.

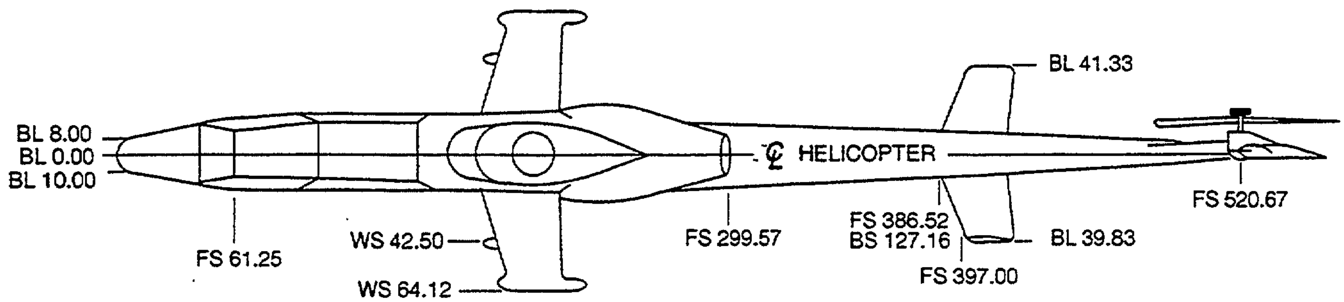
1.2.1. Rotor Group. The main rotor hub assembly includes the trunnion, yoke extensions, blade grips, pitch horns, sand deflectors, drag braces, and attaching parts. The yoke is a flat steel plate with two integral mounting bores for trunnion bearings and a center hole to accommodate the mast. Extensions are bolted on the ends of the yoke and each has a spanwise cylindrical member with two journals on which a blade grip is mounted through Teflon bearings. A wire wrapped retention strap secures each blade's grip and transfers centrifugal loads to the extensions and the yoke. The trunnion is splined for mounting on the mast and installed chordwise between two elastomeric bearings. The bearings are made with alternating layers of elastomer and metal in a steel casing. The trunnion is secured to two integral points on the hub of the yoke. This assembly forms the flapping axis, and the rotor can move on this axis through the flexing of the trunnion bearing elastomer material.

1.2.2. Cockpit Section. The cockpit section contains the pilot and copilot seats and controls. The pilot's seat is a one-piece, bucket-type seat mounted on two vertical tubes that anchor it to the airframe and make it vertically adjustable. The seat is made of steel for armor protection and has additional fittings for lateral armor panels. The gunner's seat is a two-piece, bucket-type seat made out of ceramic plate armor and has additional fittings for lateral armor protection. The canopy is made up of acrylic plastic windows set in an aluminum alloy framework. Two doors are incorporated into the canopy assembly for pilot and gunner access with a hinge at the top edge and a handle and latch mechanism at the base of the alloy frame.

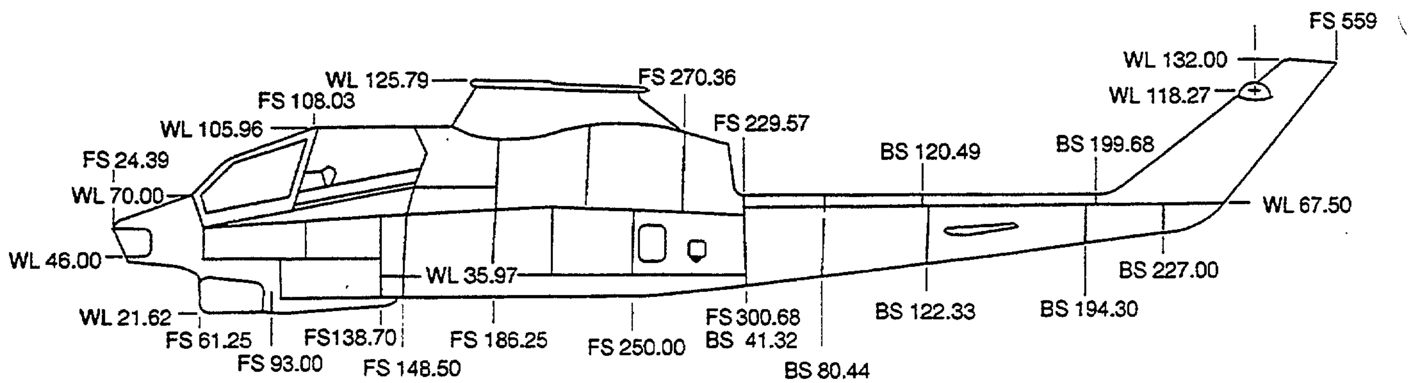


NDI_AH-1_F1_2

Figure 1-2. General Configuration of AH-1



BL BUTT LINE
BS BOOM STATION
FS FUSELAGE STATION
WL WATER LINE
WS WING STATION



NDI_AH-1_F1_3

Figure 1-3. Stations, Water Lines, and Butt Lines.

1.2.3. Forward Fuselage. The forward fuselage contains the cockpit, powerplant, and fuel tanks. It * supports the wings, turret, tail boom assembly, and landing gear. It is composed of aluminum and fiberglass used in the honeycomb deck panels and main beams. These two components form a basic box structure that is then covered with an aluminum alloy skin and additional honeycomb sandwich panels. The wings provide additional lift and support for external loads and are composed of ribs with an aluminum skin and two primary spars.

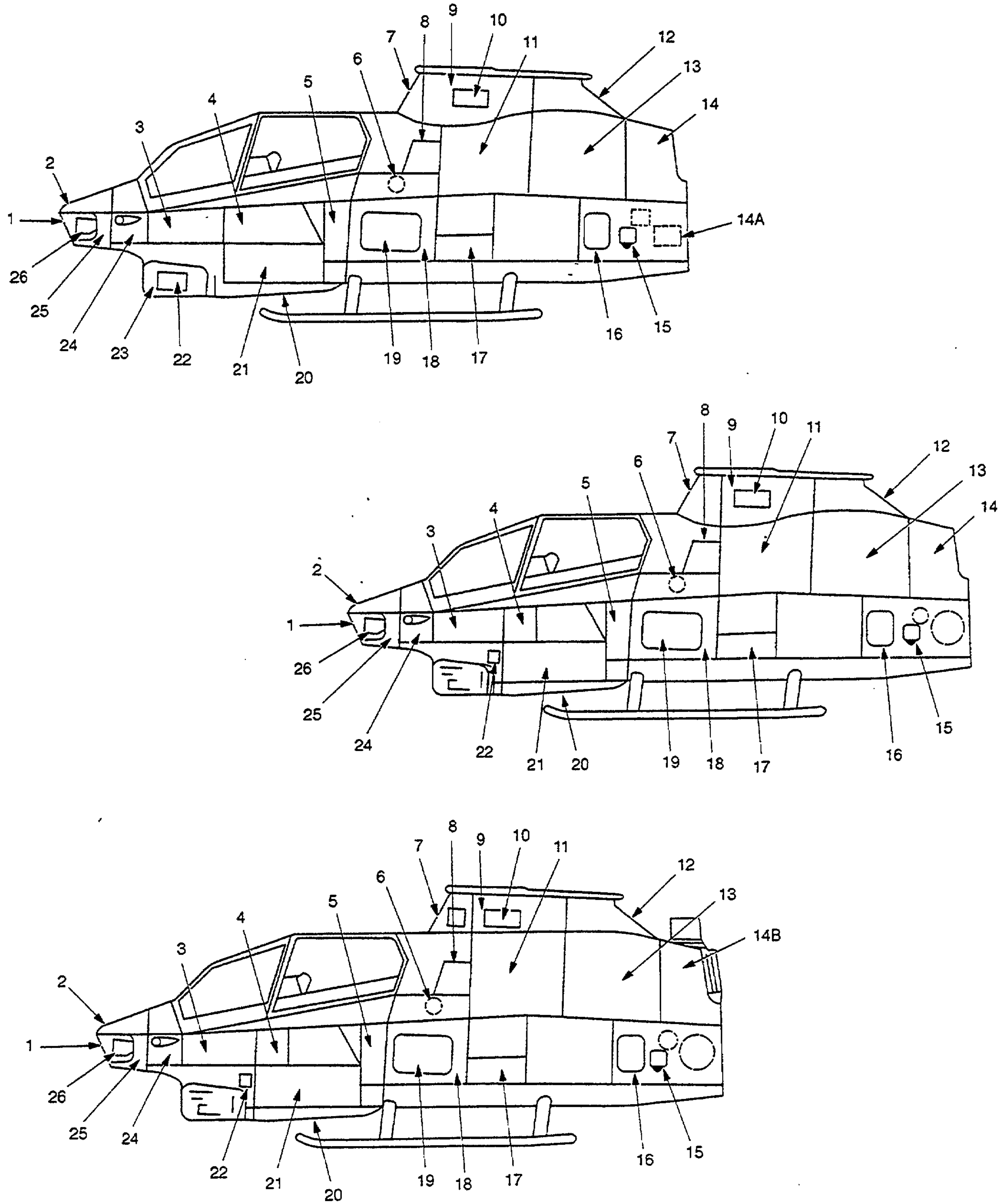
1.2.4. Tailboom Assembly. The aft fuselage is made up of a tail boom that contains the tail rotor drive system. The aft fuselage gives support to the rotor. It is a semimonocoque construction with bulkheads, longerons, stringers, with aluminum skin, and has been designed to transfer loads forward to the fuselage. The synchronized elevator is attached to the tail boom and is used to stabilize the helicopter in relation to adjustments in pitch angle produced by fore and aft movement of the cyclic control. The adjustments allow greater stability when the helicopter pitch is not neutral, a vital characteristic of a gunship-type helicopter. The tail rotor has two blades and is attached to the upper tip of the tail fin, receiving power through the tail rotor gearbox from the main power plant.

1.2.5. Landing Skids. The aluminum alloy skid-type landing gear is composed of two skid tubes and two arched cross tubes. This assembly is bolted to the forward fuselage at four different points. Exposed portions of the cross tubes are covered by a fairing to help reduce drag. A tail skid has been included to protect the tail boom from impact during tail-low landings. Wheels can be fitted to the skids. This allows for easier manipulation of the aircraft on the ground.

1.2.6. Transmission Group. The drive train of the AH-1 transmits torque from the engine to the main and tail rotor through a series of gearboxes. A main drive shaft is connected to the main transmission. The main transmission has two power take-offs. One power take-off leads to the mast and then to the main rotor hub. The other leads to the tail rotor drive shaft. The drive train and the series of gearboxes drive the various pumps and accessories. The tail rotor drive shaft is connected to the 42-degree intermediate gearbox. Torque is transmitted through the intermediate gearbox that alters the direction of the drive shaft. The final gearbox in the tail rotor is known as the 90-degree gearbox. The 90-degree gearbox angles the torque 90 degrees and connects directly to the tail rotor.

1.2.7. Engine. The T53-L-703 turboshaft powerplant group is mounted longitudinally on the helicopter. The powerplant is supported by a horizontal titanium deck on the upper aft area of the forward fuselage section. This group, including the engine and related accessories, is enclosed by hinged fiberglass and aluminum cowling. Hinged pylon fairing doors on each side of the aircraft provide access to the air induction and drive shaft area. These fairing doors have engine air inlet shields. The engine compartment is sealed fore and aft by firewalls and has hinged side doors equipped with cooling air inlets. These fairing doors are armored to provide protection to the fuel control and compressor section. The exhaust area is located behind the rear firewall and has removable fairings.

1.2.8. Access Panels, Doors, and Fairings. Access panels and fairings consist of the access doors, covers, screens, platforms, and openings. Inspection of the helicopter and its components can be done through principal access panels. Principal access and inspection openings are shown in Figure 1-4 and listed in Table 1-2.



NDI_AH-1_F1_4

Figure 1-4. Nonstructural Access Panels, Doors, and Fairings (Sheet 1 of 2).

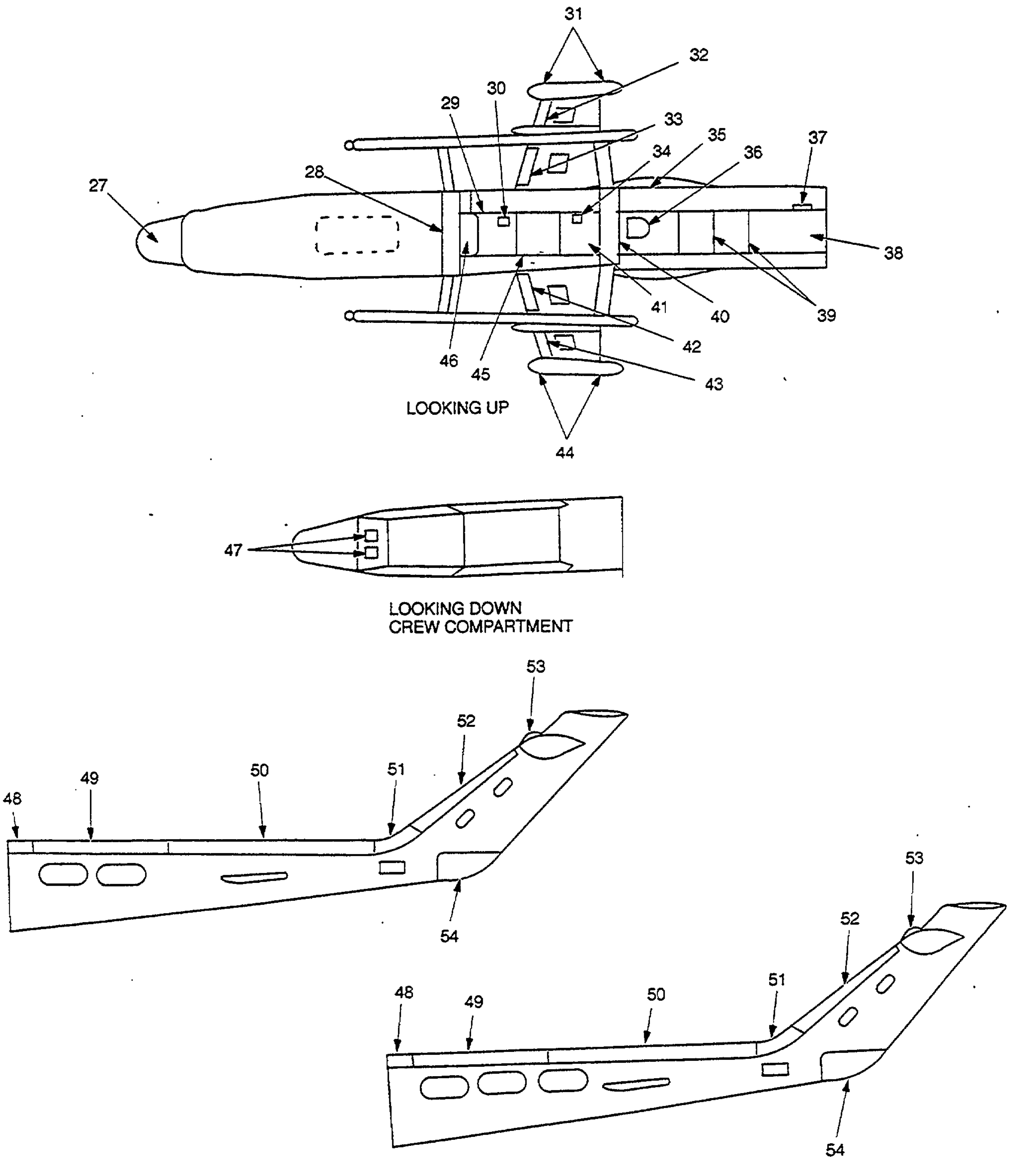


Figure 1-4. Nonstructural Access Panels, Doors, and Fairings (Sheet 2 of 2)

Table 1-2. Nonstructural Access Panels, Doors, and Fairings

Item No.	Item	Access To
1	Forward fairing	Telescopic sight unit
2	Upper fairing	Telescopic sight unit
3	Outer panel (left and right)	Flight controls
4	Outer panel (left and right)	Flight controls
5	Outer panel (left and right)	Flight controls
6	Fuel filler cap (right side only)	
7	Forward pylon fairing	Airborne laser tracker, cabin air intake
8	Access door (left and right)	Hydraulic reservoirs and modules, air distribution duct, and ECU
9	Center pylon fairing (left and right)	Rotating controls, anticollision light
10	Access door (left and right)	Rotating controls
11	Transmission cowl assembly (left and right)	Transmission, driveshaft, engine air induction
12	Aft pylon fairing	Engine oil tank
13	Engine cowl assembly (left and right)	Engine compartment
14	PE tailpipe fairing	Exhaust tailpipe, tail rotor driveshaft
14A	Access panel (may be removed for ground run only)	Aft electrical compartment, tail rotor actuator
14B	IR suppressor cowling	AN/ALQ-144 connections
15	External power door (left side only)	External power receptacle
16	Oil cooler duct panel (left side only)	Oil coolers, turbine fan, and fresh air vent
17	Access panel assembly (left and right)	Lower transmission, lift beam, hydraulic units, control linkage
18	Outer panel (left and right)	Fuel cell panel
19	Access panel (left side)	M197 turret logic control unit
20	Access panel (bottom)	Telescopic sight unit wiring
21	Ammunition compartment door (left and right)	Ammunition stowage, leveling points
22	Turret access door (left and right)	Armament
23	P-Turret fairing (left and right)	Turret exterior
24	Access panel	Controls - gunner and antennas
25	Outer fairing (left and right)	Telescopic sight unit

Table 1-2. Nonstructural Access Panels, Doors, and Fairings - Continued

Item No.	Item	Access To
26	Coverplate (left and right)	Nose antenna location
27	Access panel	APR-39 Receiver
28	Cross tube fairing	Forward cross tube and supports
29	Lower skin panel	Forward fuel cell sump
30	Drain cover	Forward fuel drain
31	Pylon access panels	Pylon hydraulic and electrical units, ground intercom panel
32	Left cover (LE, outboard)	Electrical wiring
33	Left cover (LE, inboard)	Electrical wiring
34	Drain cover	Aft fuel cell
35	Lower skin panel	Control linkages
36	Drain cover	Fuel sump drain door
37	Jack point opening (left side only)	Jack and mooring point
38	ADF sense antenna	Antenna and SCAS control tube
39	Lower skin panel	Electrical cables
40	Aft cross tube fairing	Aft cross tube and supports
41	Lower skin panel	Aft fuel cell sump
42	Right cover (LE, inboard)	Electrical wiring
43	Right cover (LE, outboard)	Electrical wiring
44	Pylon access panel	Pylon hydraulic and electrical units, ground intercom panel
45	Lower skin panel	Control linkages
46	Access panel	Avionics wiring
47	Gunner floor access panel	Armament turret
48	Driveshaft forward cover	Tail rotor driveshaft
49	Driveshaft center cover	Tail rotor driveshaft
50	Driveshaft aft cover	Tail rotor driveshaft
51	Gearbox cover	Intermediate gearbox
52	Driveshaft cover	Tail rotor driveshaft
53	Gearbox fairing and cover	Tail rotor drive gearbox
54	Aft tail fairing	Tail structure

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.

1.2.9. Steps. Handholds. and Walkways. Steps, handholds, and walkways aid in doing maintenance, inspections, and servicing on helicopters.

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 V 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 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 they 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 55-1500-335-23. 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 or 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 NDI 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 in the case of engine parts. A suitable nonabrasive material 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 workstands, 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 55-1500-335-23 (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 material 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. 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.

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.

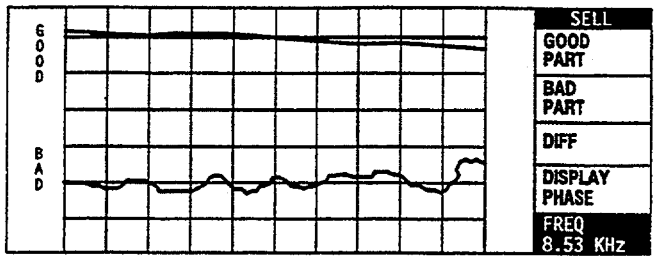
a. If instrument is operated using AC power, use a grounded power cord.

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

1.4.7. Fluorescent Penetrant (PT) Method.

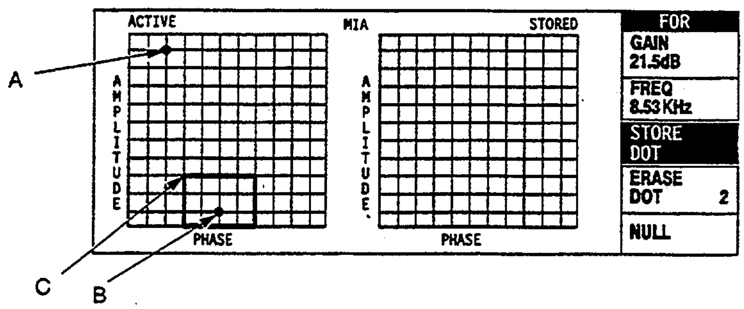
NOTE

Fluorescent penetrant inspections shall be performed in accordance with the general applications and techniques in TM 55-1500-335-23 (Nondestructive Inspection Methods manual) and the specific requirements of this technical manual.



MIA SET MENU

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

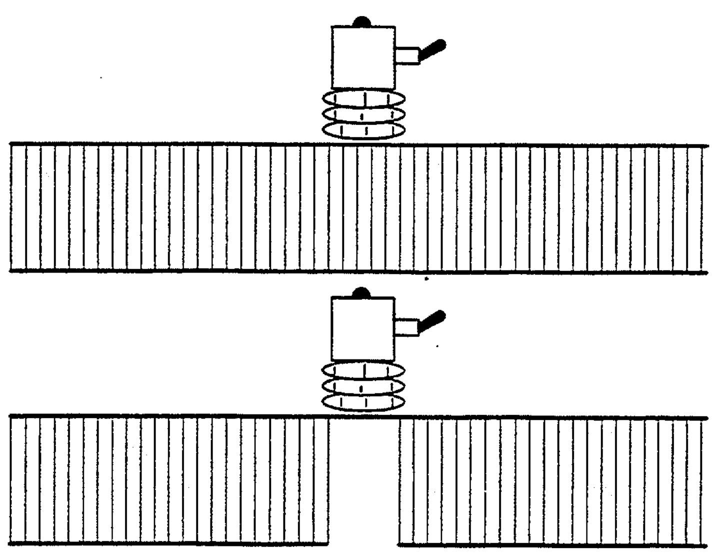


MIA RUN MENU

(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_AH-1_F1_5

Figure 1-5. Bond Testing Reference Block Displays

The basic purpose of fluorescent penetrant inspection is to increase the visible contrast between a discontinuity and its background. This method is done 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, MIL-1-25135, 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° to 38°C (60° 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° to 60°C (100° to 140°F). The time in the dryer should not exceed the time necessary to completely dry the surface of the parts.
g. 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° to 38°C (60° to 100°F).
g. Drying/Developer Operation:	If a dry nonaqueous developer is to be used, then 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 the same 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 (see 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-moistened cloth. Check area to be inspected with black light to be sure oil 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° to 38°C (60° 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 should 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° to 38°C (60° 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 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 inrto 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 flames.

WARNING

Volatile fumes may occur, creating both a fire and 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 part. This is to include removing penetrant from cracks as much as possible before disposition of the part. This can easily be accomplished by performing cleaning operations under a black light.

1.4.8. Magnetic Particle (MT) Method.

NOTE

Magnetic particle inspections shall be performed in accordance with the general application and techniques in TM 55-1500-335-23 (Nondestructive Inspection Methods manual) and the specific requirements of this technical manual.

NOTE

During magnetic particle inspection 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 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 55-1500-335-23 (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 degrees 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.

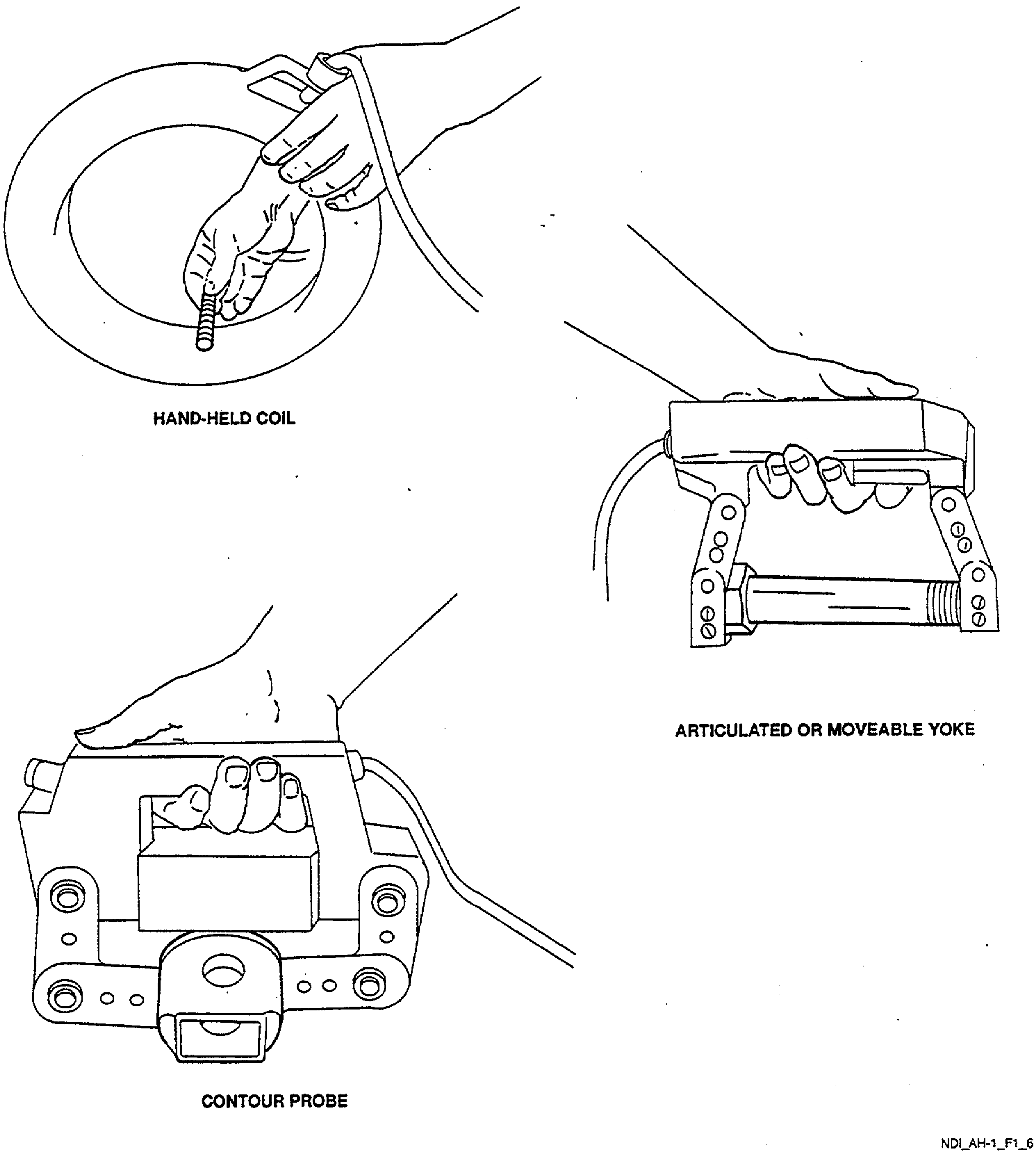


Figure 1-6. Portable Magnetic Particle Inspection Equipment

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 3 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 end of 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, 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 55-1500-335-23 (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 material. 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 55-1500-335-23 (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.

NOTE

Eddy current inspection shall be performed in accordance with the general application and techniques in TM 55-1500-335-23 (Nondestructive Inspection Methods manual) and the specific requirements of this technical manual.

1.4.11. Eddy Current (ET) Method. The eddy current method is used for the detection of 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 will locate surface cracking on any conductive material, but probes and techniques for inspection of magnetic materials may differ considerably from those used on nonmagnetic 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 reliability 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 is 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 standard) which is constructed of a known ' material which 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 probe's field and therefore limit the spread of eddy currents from much 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. Nonconductive mechanical guides (straight edges, plugs, spacers, etc.) can be used to maintain a constant distance. In fact, the use of nonconductive 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 indications. Common materials for mechanical guides are plastic (polyethylene, acrylic, and polycarbonate), wood, phenolic impregnated materials, 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 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 Table 1-8) on the probe to save wear. Instrument settings shall be made with Teflon tape on, 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 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.

1.4.12. <u>Ultrasonic (UT) Method</u>.

NOTE

Ultrasonic inspection shall be performed in accordance with the general application and techniques in TM 55-1500-335-23 (Nondestructive Inspection Methods manual) and the specific requirements of this technical 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 is 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.

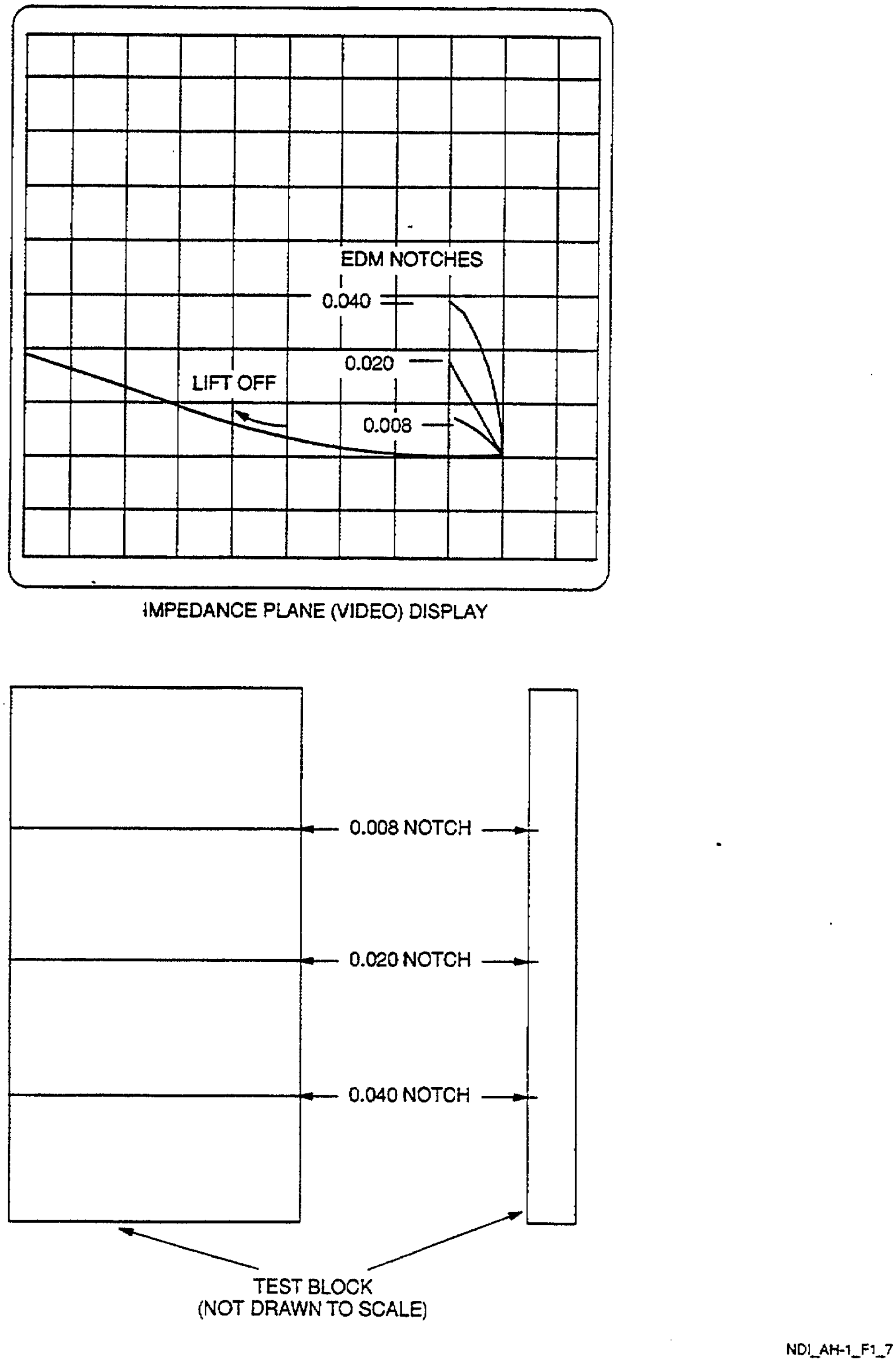


Figure 1-7. Signatures of EDM Notches in Test Block

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 glycerin’s, 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, 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 required 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 required 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

<u>Fluorescent Penetrant Method</u>	Fluorescent Penetrant Inspection Kit Black Light UV Kit Black Light Meter Black Light Bulbs Filter UV
<u>Magnetic Particle Method</u>	Yoke and Coil Kit Black Light Magnetic Particle Inspection Probe Magnetometer
<u>Eddy Current Method</u>	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, right angle, shielded surface, 100 KHz-500 KHz, 900 ½ inch drop Probe, straight, shielded surface, 100 KHz-500 KHz
<u>-Ultrasonic Method</u>	Ultrasonic Inspection Unit Cable, assembly, BNC to microdot Transducer, 5.0 MHz 600 shear wave, 1/4 x 1/4 inch element
<u>Bond Testing Method</u>	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/fiberglass 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 Administration (GSA)	MIL-I-25135	General Service	6850-00-703-7406
Magnetic Particle Method			
Fluorescent Magnetic Inspection Compound	14AM	Magnaflux Div. of Illinois Tool Works, Inc. 1301 W. Ainsle St. Harwood Heights, 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 8 inch x 10 inch	145 7837	Eastman Kodak Co. 343 State Street Rochester, NY 14650	6635-00-412-2071
M-2 Film, Ready Pack 14 inch x 17 inch	145 8926	Eastman Kodak Co. 343 State Street Rochester, NY 14650	6635-00-838-9116
AA-2 Film, Ready Pack 8 inch x 10 inch	827 8137	Eastman Kodak Co. 343 State Street Rochester, NY 14650	6635-00-850-3326
AA-2 Film, Ready Pack 14 inch x 17 inch	145 9205	Eastman Kodak Co. 343 State Street 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 Service Administration (GSA)	8415-00-823-7456
Gloves, Surgeon	E-008	Defense Service Administration (DSA)	1615-01-149-8843
Apron, General Purpose	A-A-55063	General Service Administration (GSA)	8415-00-082-6108
Face Shield	A-A-1770	General Service Administration (GSA)	4240-00-542-2048
Cloth, Low-Lint Cleaning	MIL-C-85043	General Service Administration (GSA)	7920-00-044-9281
Dry-Cleaning Solvent	P-D-680, Type II	General Service Administration (GSA)	6850-00-274-5421
Cleaning Solvent	MIL-C-38736	General Service Administration (GSA)	6850-00-538-0929
Scotch-Brite, Type A	L-P-0050	General Service Administration (GSA)	7920-00-659-9175
Temporary Marking Materials			
Aircraft Marking Pencils (China Marker)	MIL-P-83953 Yellow	General Service Administration (GSA)	7510-00-537-6930

SECTION II
ROTOR GROUP

2. GENERAL.

2.1. CONTENTS. The rotor group inspection items covered in this section are those critical items of the rotor blades, rotor head, and components listed in Table 2-1, Rotor Group Inspection Index. 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 Group Inspection Index

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
*2	Main Rotor Blade, K747 Root Fitting	MT	2.2	2-2
*3	Main Rotor Blade, K747 Drag Strut	ET	2.3	2-3
*4	Main Rotor Blade, K747 (Voids)	BT	2.4	2-4
*5	Main Rotor Hub Yoke	MT	2.5	2-5
*6	Main Rotor Hub Grip	MT	2.6	2-6
*7	Main Rotor Hub Pitch Horn	ET	2.7	2-7
*8	Main Rotor Hub Yoke Extension	MT	2.8	2-8
*9	Retention Strap Fitting	MT	2.9	2-9
*10	Drag Brace Assembly	MT	2.10	2-10
*11	Hub Moment Spring Plate	MT	2.11	2-11
*12	Hub Moment Spring Strap	MT	2.12	2-12
13	Elastomeric Bearing Housing	MT	2.13	2-13
14	Pitch Link Assembly	ET	2.14	2-14
*15	Main Rotor Control Spline Plate	PT	2.15	2-15
*16	Collet Clamp Assembly	MT	2.16	2-16
*17	Collective Lever	MT	2.17	2-17
18	Collective Lever Idler Link	MT	2.18	2-18
*19	Swashplate Antidrive Link	ET	2.19	2-19
*20	Swashplate Antidrive Assembly Bellcrank	ET	2.20	2-20
*21	Swashplate Antidrive Assembly Support	ET	2.21	2-21
22	Hub Moment Spring Support Set	MT	2.22	2-22
*23	Hub Moment Spring	MT	2.23	2-23

Table 2-1. Rotor Group Inspection Index - Continued

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
24	Friction Collet Set	MT	2.24	2-24
25	Hub Assembly (Scissors and Sleeve Assembly)	MT	2.25	2-25
26	Collective Sleeve (Scissors and Sleeve Assembly)	MT	2.26	2-26
*27	Scissors Assembly (Scissors and Sleeve Assembly)	ET	2.27	2-27
*28	Main Rotor Control Drive Link Assembly	ET	2.28	2-28
*29	Tail Rotor Hub Yoke Assembly	MT	2.29	2-29
*30	Tail Rotor Hub Trunnion Set	MT	2.30	2-30
*31	Tail Rotor Control Crosshead	MT	2.31	2-31
*32	Tail Rotor Control Counterweight Bellcrank	MT	2.32	2-32
*33	Tail Rotor Control Pitch Link Rod End	MT	2.33	2-33
*34	Tail Rotor Control Counterweight Link	ET	2.34	2-34
35	Tail Rotor Active Counterweight Support	MT	2.35	2-35
*36	Tail Rotor Control Tube Assembly	MT	2.36	2-36
*37	Tail Rotor Control Link Assembly	MT	2.37	2-37
*38	Tail Rotor Control Idler Assembly	ET	2.38	2-38
*39	Tail Rotor Control Lever Assembly	ET	2.39	2-39
*40	Tail Rotor Retention Nut	MT	2.40	2-40
*41	Tail Rotor Blade (Voids)	BT	2.41	2-41
*42	Tail Rotor Blade (Skin Cracks)	ET	2.42	2-42
*43	Tail Rotor Blades (Water)	RT	2.43	2-43
*44	Tail Rotor Blade Pitch Horn	ET	2.44	2-44

NOTE: * Indicates Flight Safety Part.

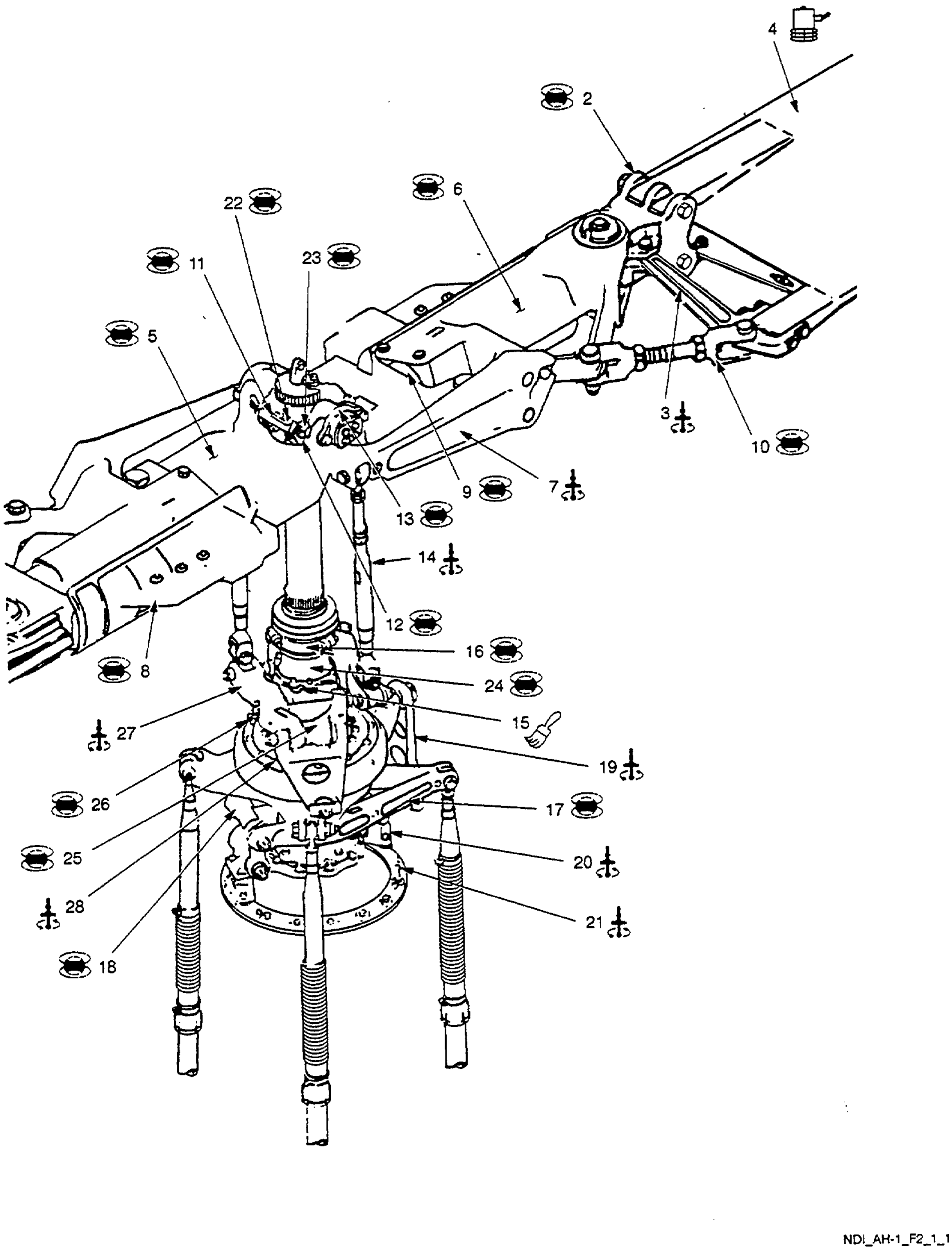


Figure 2-1. Rotor Group (Sheet 1 of 2)

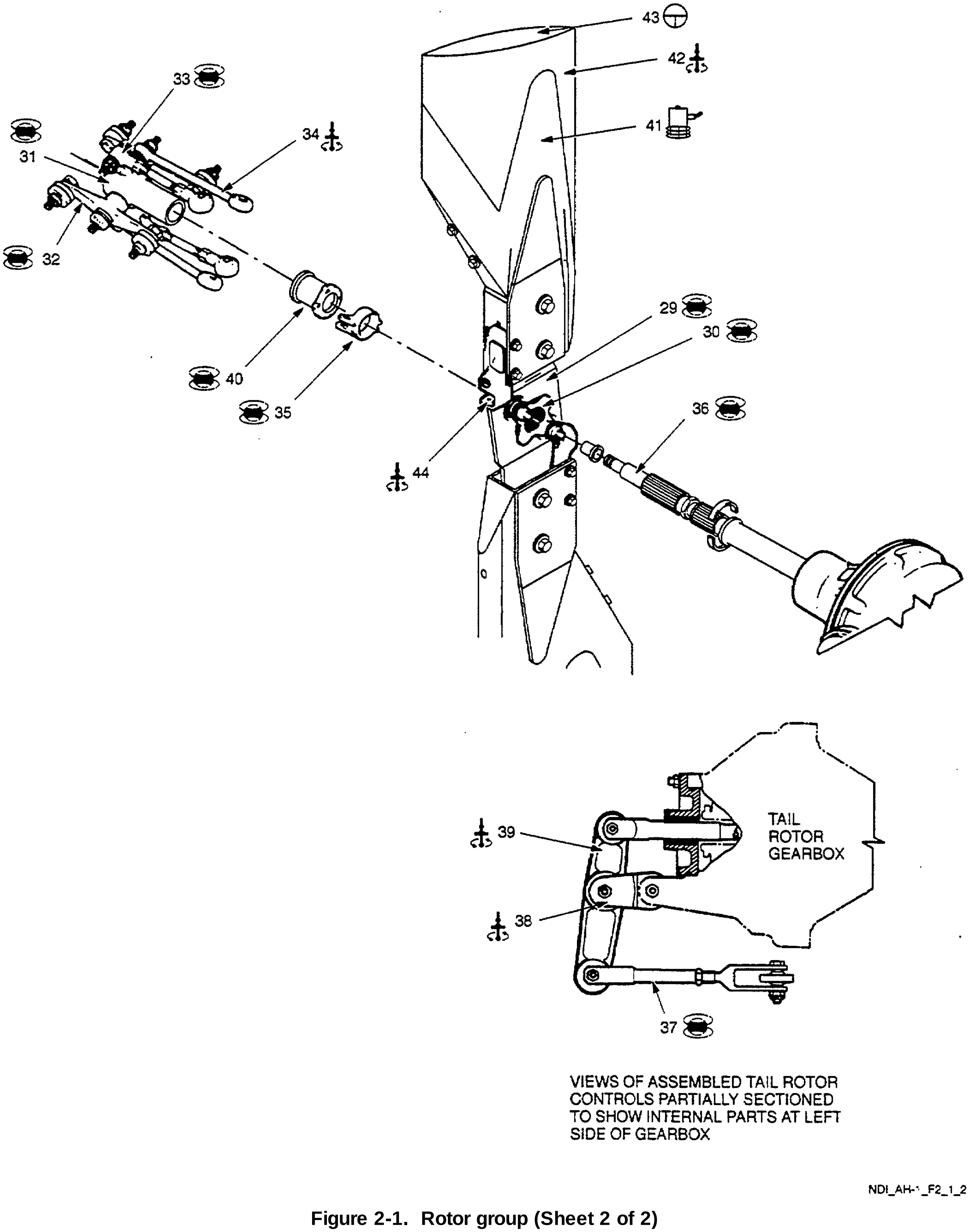


Figure 2-1. Rotor group (Sheet 2 of 2)

2.2. MAIN ROTOR BLADE, K747 ROOT FITTING (MT).

2.2.1. Description (Figure 2-1, Index No. 2). The K747 blade is an advanced composite blade offering improved performance and reduced maintenance over the early blades of aluminum honeycomb construction. The root fitting functions as an adapter between the main rotor hub and the blade. The root fitting is machined from a steel forging.

2.2.2. Defects. Defects may occur anywhere on the surface of the root fitting. No cracks are allowed.

2.2.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

d. Consumable Materials, refer to Table 1-8

e. 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.

2.2.3.2. 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 applicable positions of this procedure. If required, the blade shall be removed and the root fitting removed from the blade in accordance with the applicable technical manuals listed in Table 1-1.

2.2.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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

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

2.2.3.6. 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 2-2.

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 2.2.3.8.

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

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

2.2.3.8. 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.

2.2.4. Backup Method. None required.

2.2.5. System Securing. Clean the foot fitting 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 root fitting, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.3. MAIN ROTOR BLADE, K747 DRAG STRUT (ET).

2.3.1. Description (Figure 2-1. Index No. 3). The blade drag strut along with the blade root fitting permits the advanced composite blade to be used on the AH-1 helicopter. The main rotor blade retention bolt secures the root fitting to the rotor hub blade grip and the blade drag strut is the attachment point for the rotor hub drag brace. Much of the pitch control loading on the blade is transferred through the drag brace and drag strut. The drag strut is machined from an aluminum forging.

2.3.2. Defects. The primary concern is fatigue cracking in the radii of the two blade attachment lugs. However, because of the dissimilar metal contact and interference fit, cracking may occur at any of the bushings. No cracks are allowed.

2.3.3. Primary Method. Eddy Current.

2.3.3.1. 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

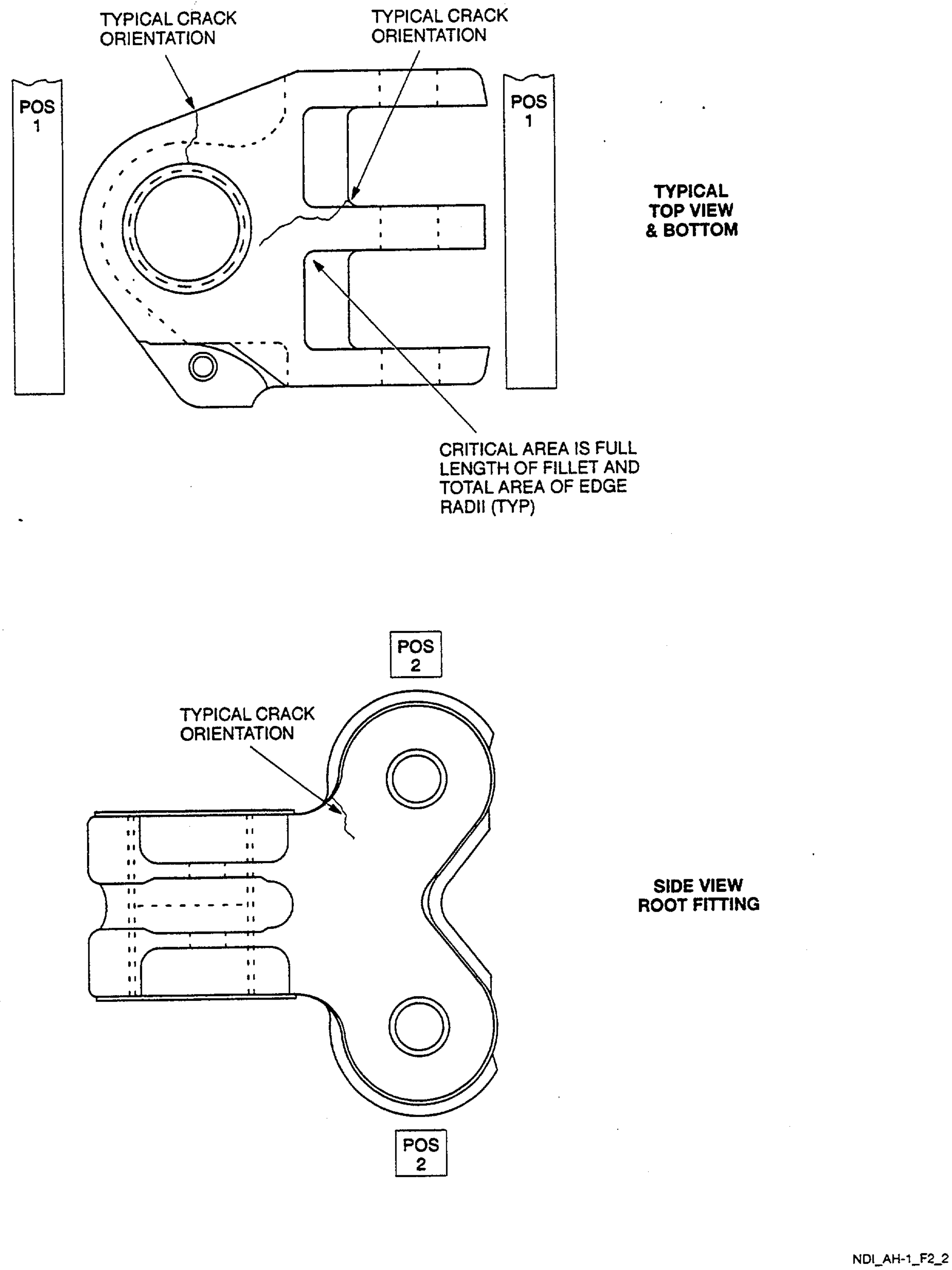


Figure 2-2. K747 Main Rotor Blade Fitting

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

f. Teflon Tape, refer to Table 1-8

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

2.3.3.2. 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 applicable positions of this procedure. If required, the blade shall be removed and the drag strut removed from the blade in accordance with the applicable technical manuals listed in Table 1-1.
2.3.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental fall.

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

2.3.3.5. NDI Equipment Setting.

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

2.3.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-3.

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 is cause for rejection.

NOTE

Either probe identified in paragraph 2.3.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.3.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

2.3.4. Backup Method. None required.

2.3.5. System Securing. The root fitting, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

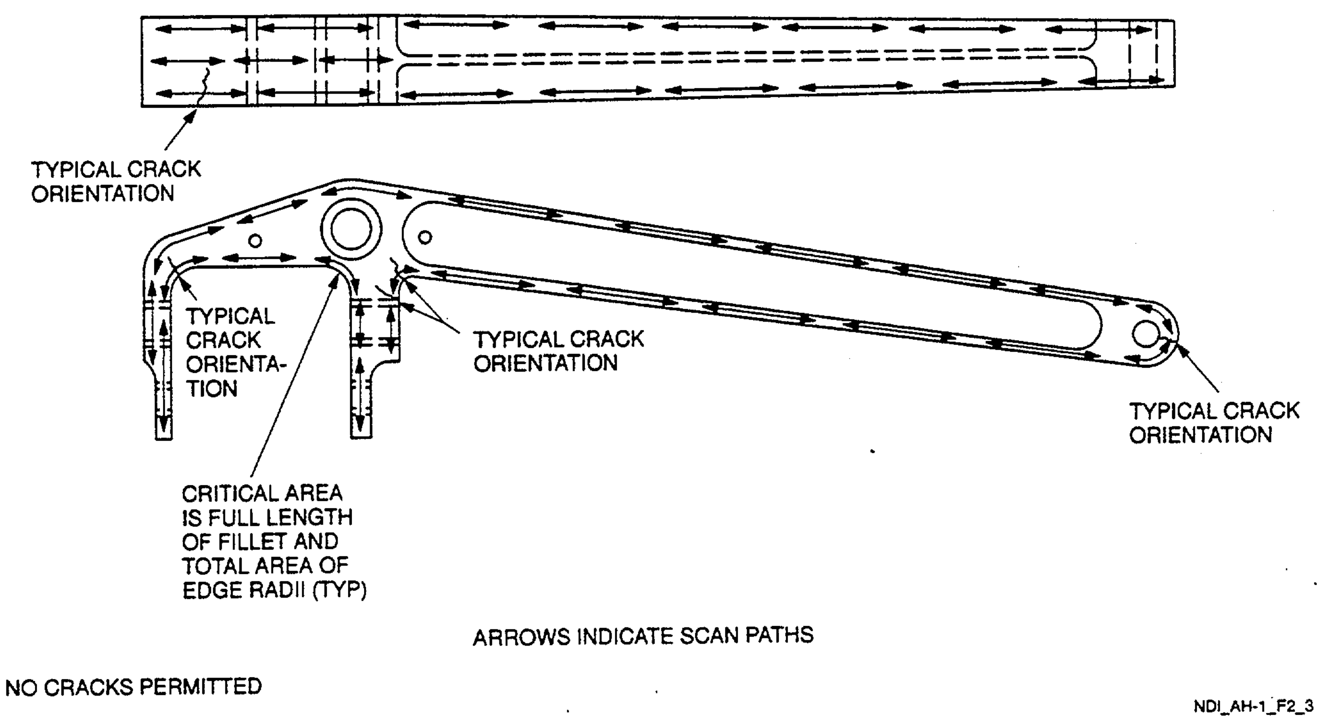


Figure 2-3. K747 Main Rotor Blade Drag Strut

2.4. MAIN ROTOR BLADE, K747 (VOIDS) (BT).

2.4.1. Description (Figure 2-1. Index No. 4). The K747 main rotor blade is an advanced technology composite structure which offers improved performance, reliability, maintainability, and reduced radar cross section. It is a glass fiber epoxy resin bonded assembly with an elastomeric erosion guard. The blade is attached in the hub with a retaining bolt assembly (root fitting) and is held in alignment by a drag strut.

2.4.2. Defects. Void damage may occur anywhere on both sides of the blade shown in Figure 2-4.

NOTE

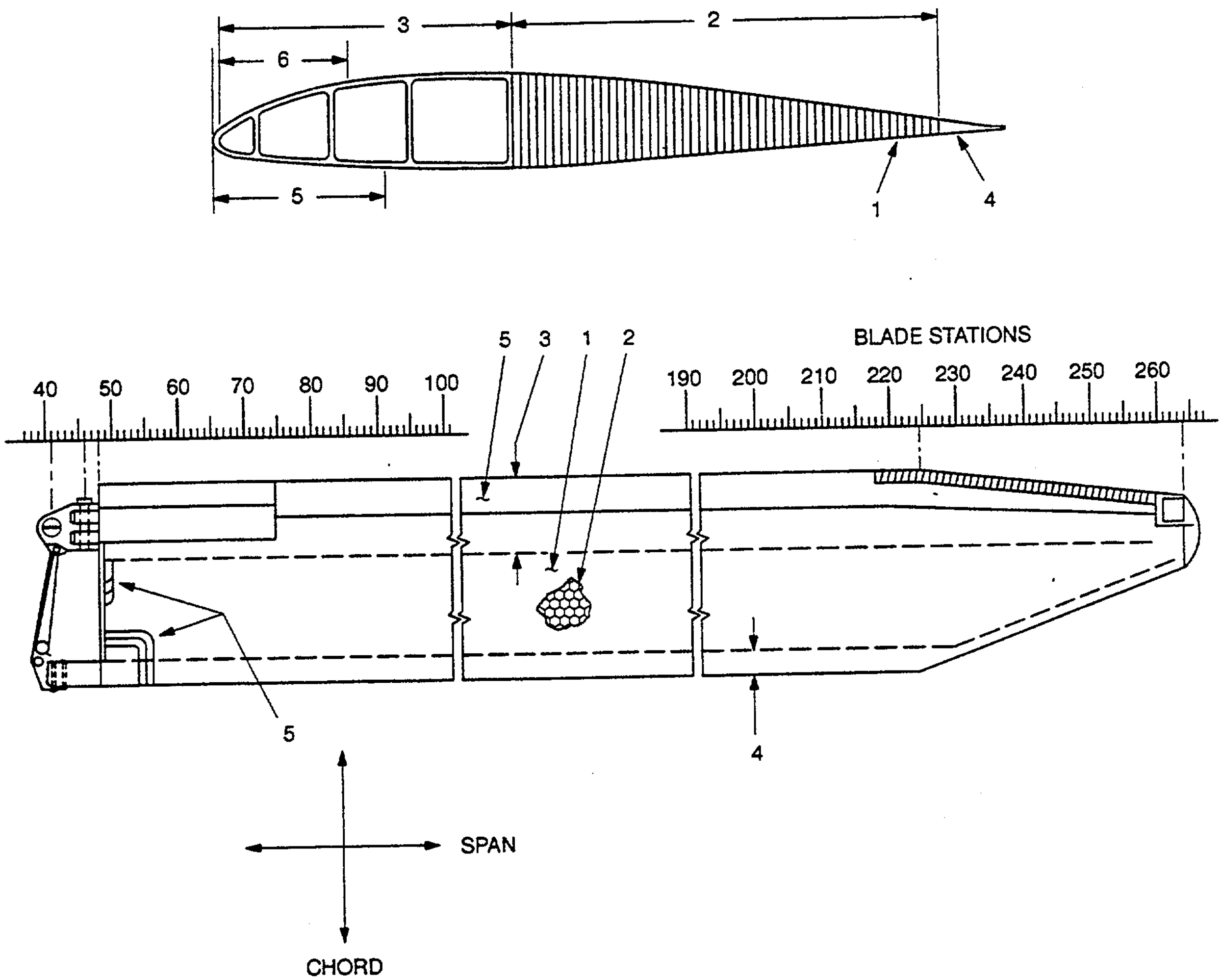
A void is defined as an unbonded area that is supposed to be bonded. Many subdefinitions of voids are given such as lack of adhesive, gas pocket, misfit, etc. However, this manual makes no distinction among these, instead grouping them all under one general term ("void").

2.4.3. Primary Method. Bond Inspection.

2.4.3.1. 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. Consumable Materials, refer to Table 1-8
j. Aircraft Marking Pencil, refer to Table 1-8

2.4.3.2. 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 applicable positions of this procedure. If required, the K747 main rotor blades shall be removed in accordance with the applicable technical manuals listed in Table 1-1.



1. SKIN (TOP AND BOTTOM)
2. CORE
3. SPAR ASSEMBLY
4. TRAILING EDGE ASSEMBLY
5. DOUBLERS (TOP AND BOTTOM)
6. LEADING EDGE EROSION GUARD

NDI_AH-1_F2_4

Figure 2-4. Main Rotor Blade, K747 (Voids)

2.4.3.3. Access. Inspection areas are accessible with the main rotor blades on helicopter.

WARNING

Maintenance Platforms/Workstands

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

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

2.4.3.5. 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	-0
DRIVE	-MID

c. Press SET and select DISPLAY-PHASE.

d. Place probe on the good area of test block #1 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 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. (See Figure 1-5.) 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 d. and e. Continue to try phase settings 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 setup. 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.

2.4.3.6. Inspection Procedure. Refer to Bond Testing Method, paragraph 1.4.6.

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 with phase shift similar to the standard is indicative of a void. This setup is very sensitive to thin skin-to-core bonding. 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.

NOTE

The basic setup provided above can also provide a satisfactory inspection for bonding of skin-to-spar, skin-to-trailing edge, abrasion strip-to-spar, etc. For the inspection of bonding voids to the spar, setup on test block #3 may provide some advantage.

b. Use the NULL and GAIN adjustments to reset the ACTIVE screen for other areas (do not go back to SET mode). Use the Bondmaster to compare similar areas. For example, to check for spar-to-skin voids, check front and back of blade in the same area, and/or scan the length of the blade in the area of skin-to-spar bonding. A localized phase and amplitude shift similar to the test block indicates a void. Note that when sliding the probe from the spar to trailing edge, the spar-to-honeycomb and the honeycomb-to-trailing edge filler block transitions are easily detected through the skin. Adjusting the NULL and GAIN and moving the probe carefully along the bond lines will permit inspection of these transitions.

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

NOTE

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

2.4.4. <u>Backup Method</u>. None required.

2.4.5. <u>System Securing</u>. Reinstall acceptable rotor blades in accordance with the applicable technical manual listed in Table 1-1.

2.5. MAIN ROTOR HUB YOKE (MT).

2.5.1. <u>Description (Figure 2-1, Index No. 5)</u>. The steel main rotor hub yoke has two integral mounting bosses for elastomeric bearings which permit movement of the hub and blades on the flapping axis. Each corner has a bolt clevis for mounting the two yoke extensions.

2.5.2. <u>Defects</u>. Defects can occur anywhere on the main rotor hub yoke. 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
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.

2.5.3.2. 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 main rotor hub yoke shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.5.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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.

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.

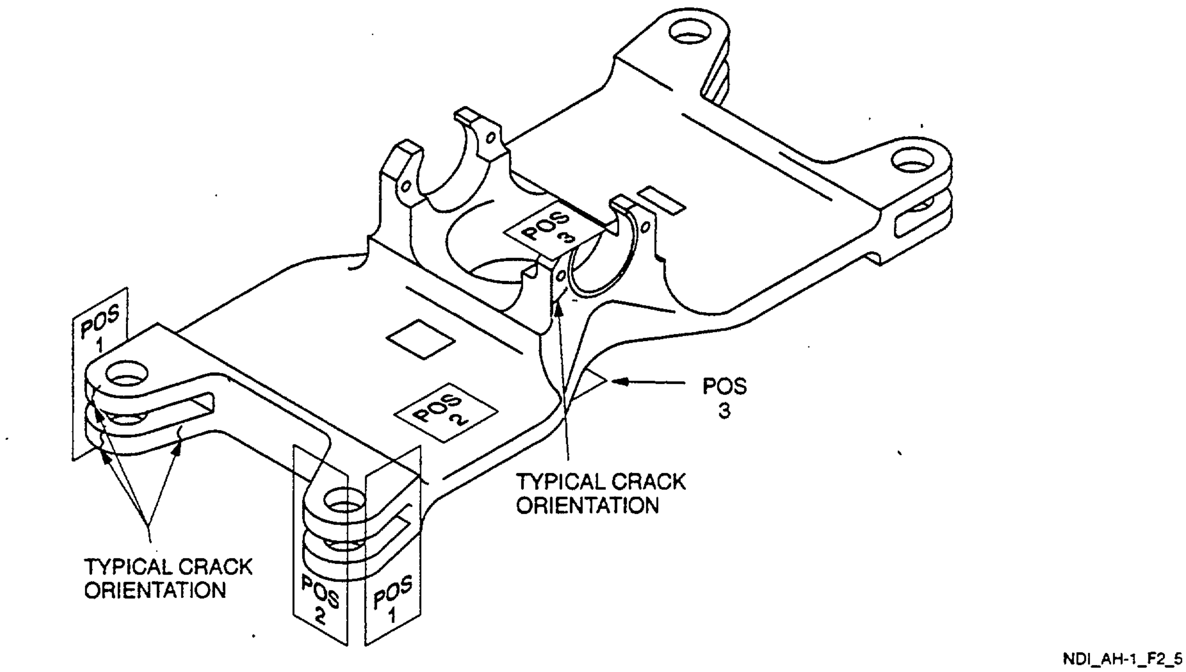


Figure 2-5. Main Rotor Hub Yoke

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. Then repeat positions 1, 2, and 3 for the rest of the yoke.

2.5.3.7. Marking and Recording of Inspection Results. Mark and record the 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. <u>Backup Method</u>. None required.

2.5.5. <u>System Securing</u>. Clean the hub yoke 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 hub yoke, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.6. MAIN ROTOR HUB GRIP (MT).

2.6.1. Description (Figure 2-1. Index No. 6). The steel main rotor hub grip is a component of the main rotor blade retention system that transmits the flight control motion to the rotor blades.

2.6.2. Defects. Defects can occur anywhere on the main rotor hub grip. No cracks are allowed.

2.6.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

d. Fluorescent Magnetic Particles

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.

2.6.3.2. 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 applicable positions of this procedure. If required, the main rotor hub grip shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.6.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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. Refer to Magnetic Particle Method, paragraph 1.4.8.

2.6.3.6. 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 2-6.

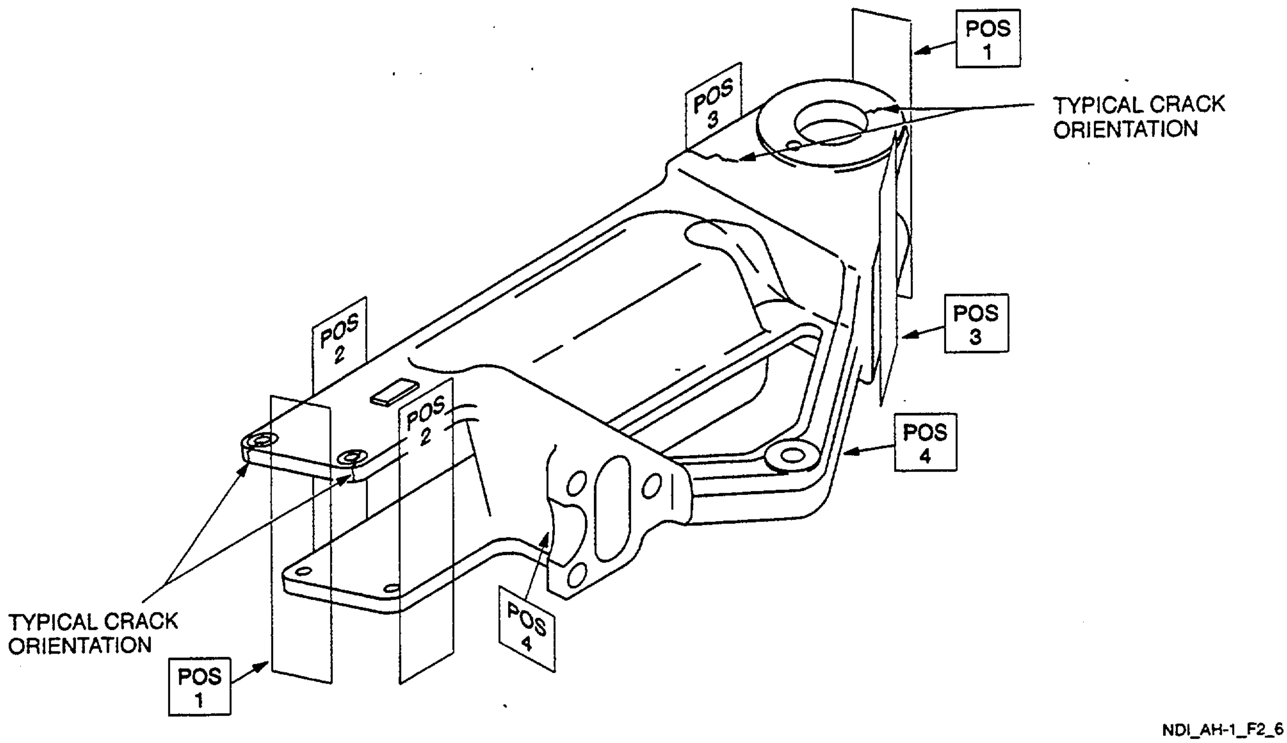


Figure 2-6. Main Rotor Hub Grip

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 2.6.3.8.

f. Repeat steps a. through e. for positions 2, 3, and 4.

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

2.6.3.8. 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 to a distance of two feet before releasing the switch.

2.6.4. Backup Method. None required.

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

2.7. MAIN ROTOR HUB PITCH HORN (ET).

2.7.1. Description (Figure 2-1. Index No. 7). The main rotor hub pitch horn is machined from an aluminum alloy forging. Forward and aft cyclic input and lateral cyclic inputs are received through pitch horns mounted between the yoke and the trailing edge of the grips. The grips in turn are permitted to rotate about the yoke extension resulting in the desired blade path.

2.7.2. Defects. In-service cracking can occur from high stresses, dissimilar metal contact and interference fit, etc. 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 aluminum (0.008, 0.020, and 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 applicable positions of this procedure. If required, the main rotor hub pitch horn shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.7.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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. Refer to Eddy Current Method, paragraph 1.4.11.

b. 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	-56°		
Probe drive	-mid		
LPF	-100		
HPF	-0		
H Pos	-80%		
L Pos	-20%		

c. Setup on reference block as follows:

(1) Null the probe on the block.

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

(3) Move probe over all three notches on the block. Adjust gain to obtain a three block vertical signal when probe is passed over the 0.040-inch notch in the 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 those obtained from the notches in the test block is cause for rejection.

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 the inspection results as required by paragraph 1.3.

2.7.4. Backup Method. None required.

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

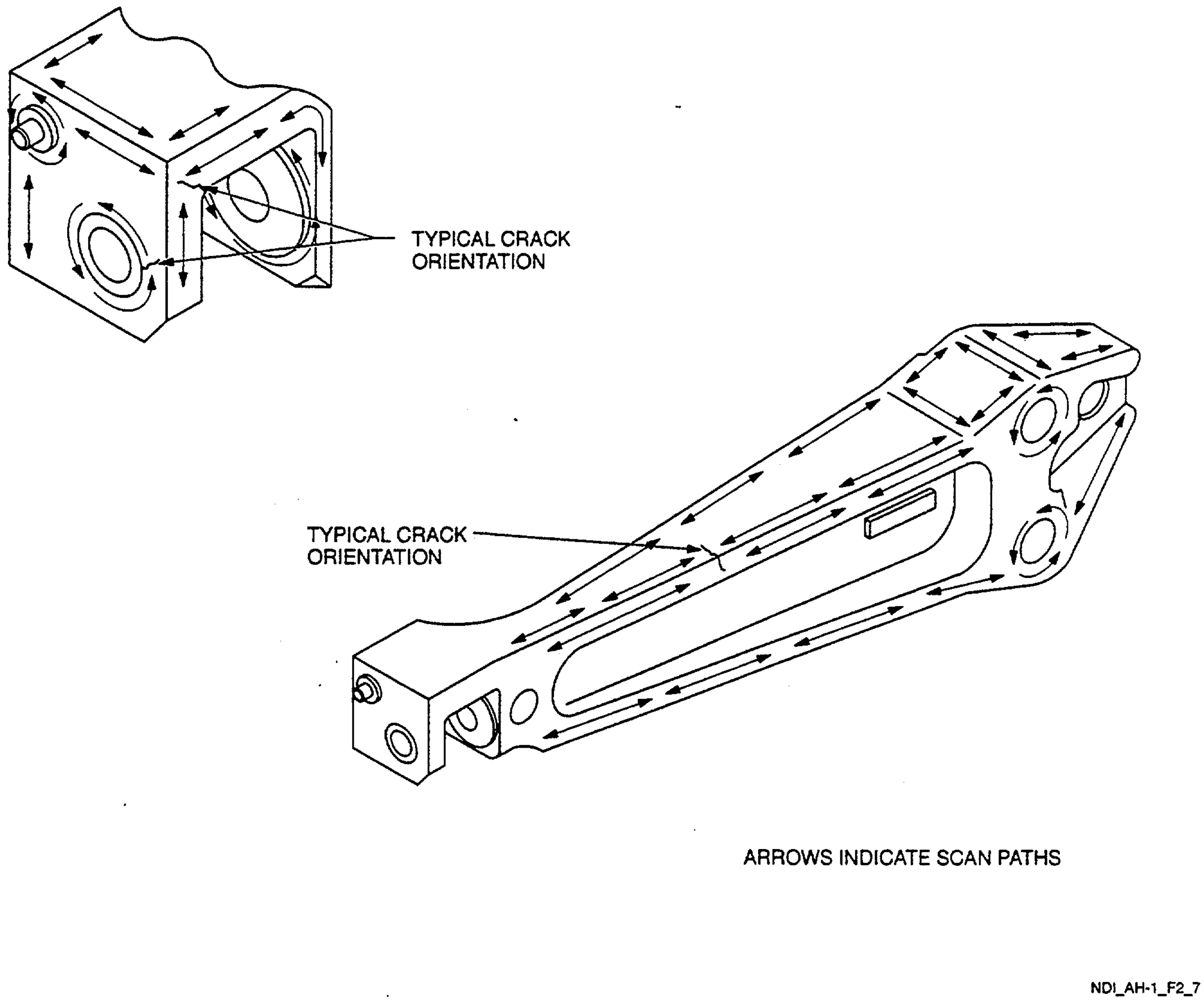


Figure 2-7. Main Rotor Pitch Horn

2.8. MAIN ROTOR HUB YOKE EXTENSION (MT).

2.8.1. Description (Figure 2-1, Index No. 8). The steel yoke extension is a component of the main rotor hub assembly. The grips rotate around the yoke extension friction bearings resulting in the desired blade pitch.

2.8.2. Defects. Defects can occur anywhere on the main rotor hub yoke extension. No cracks are allowed.

2.8.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

d. Fluorescent Magnetic Particles

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.

2.8.3.2. 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 main rotor hub yoke extension shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.8.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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. Refer to Magnetic Particle Method, paragraph 1.4.8.

2.8.3.6 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 2-8.

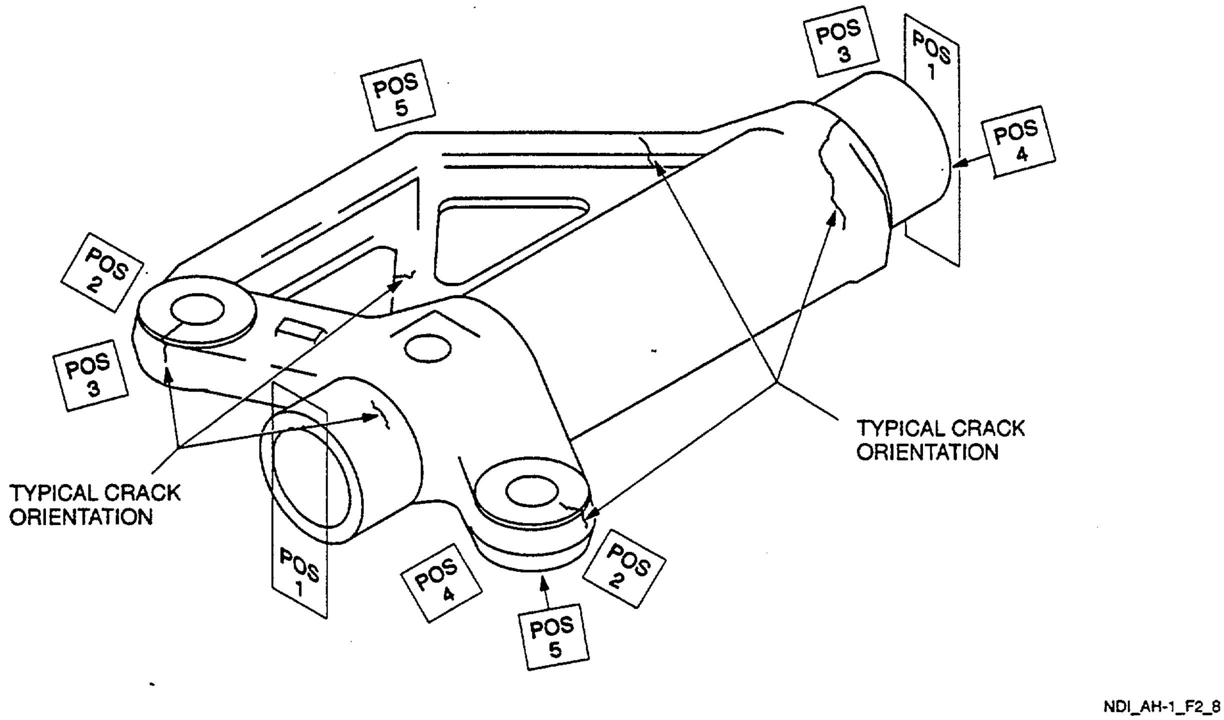


Figure 2-8. Main Rotor Hub Yoke Extension

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 the 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 2.8.3.8.

f. Repeat steps a. through e. for positions 2 through 5.

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

2.8.3.8. 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.

2.8.4. Backup Method. None required.

2.8.5. System Securing. Clean the main rotor hub yoke extension 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 hub yoke extension, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.9. RETENTION STRAP FITTING (MT).

2.9.1. Description (Figure 2-1. Index No. 9). The retention strap fitting is a machined cylindrical steel part located in the outboard end of the grip assembly and positions the pin which attaches the retention strap.

2.9.2. Defects. Defects can occur anywhere on the retention strap fitting. No cracks are allowed.

2.9.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

2.9.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the retention strap fitting removed in accordance with the applicable technical manuals listed in Table 1-1.

2.9.3.3. Access. Not applicable.

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

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

2.9.3.6. 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 2-9.

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 2.9.3.8.
f. Repeat steps a. through e. for positions 2 and 3.

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

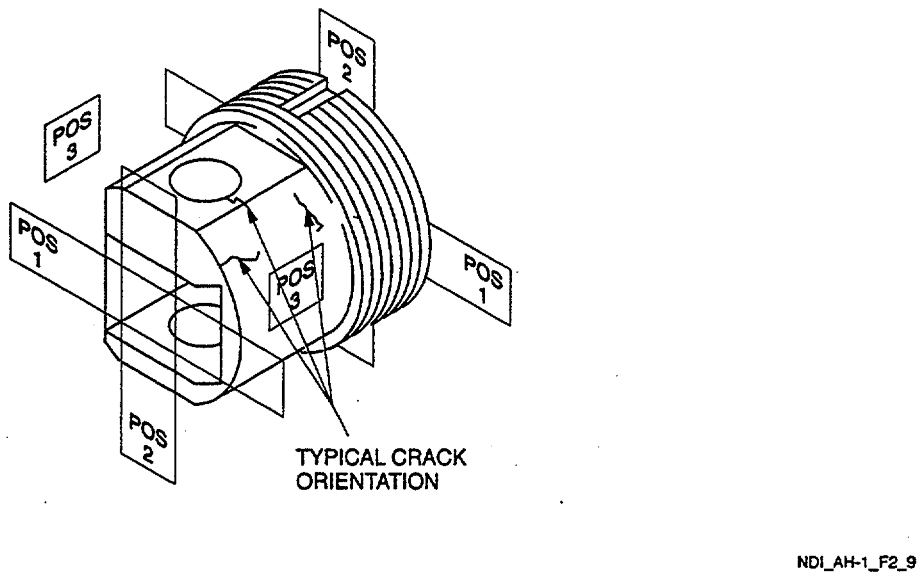


Figure 2-9. Retention Strap Fitting

2.9.3.8. 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.

2.9.4. Backup Method. None required.

2.9.5. System Securing. Clean the retention strap fitting 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 retention strap fitting requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.10. DRAG BRACE ASSEMBLY (MT).

2.10.1. Description (Figure 2-1. Index No. 10). The drag brace assembly is a steel rod with a threaded steel clevis at each end. The assembly links the rotor blade drag plate to the main rotor grip.

2.10.2. Defects. Defects can occur anywhere on the drag brace assembly. 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

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 drag brace assembly shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.10.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

2.10.3.4. Preparation of Part. The drag brace assembly 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.

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 positions 2 and 3.

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

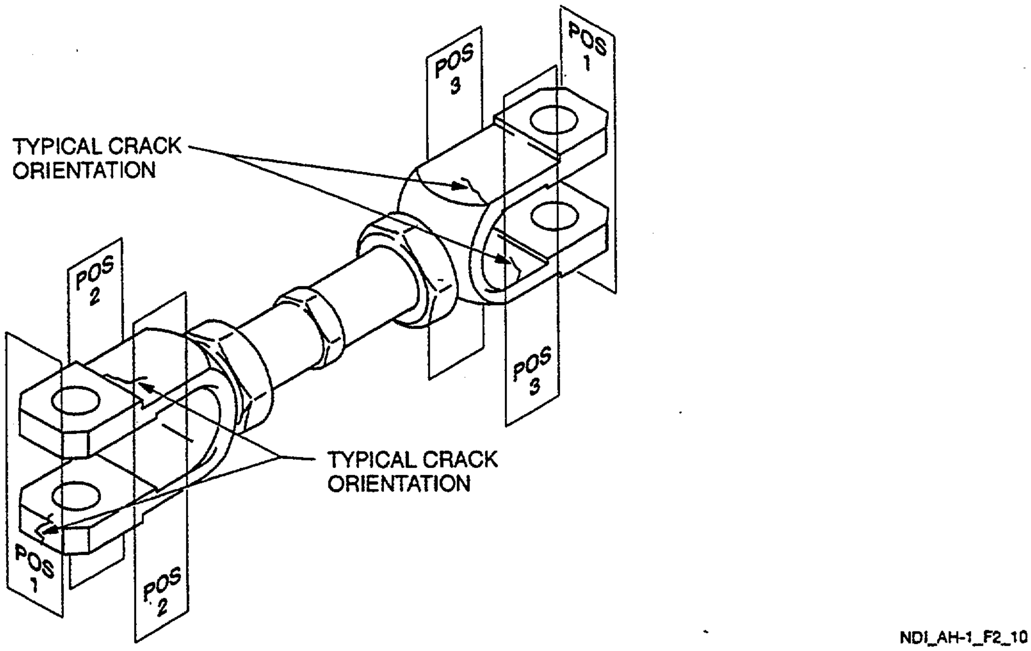


Figure 2-10. Drag Brace Assembly

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 drag brace assembly 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 brace assembly, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.11. HUB MOMENT SPRING PLATE (MT).

2.11.1. Description (Figure 2.1. Index No. 11). The steel hub moment spring plate is bolted to the main rotor hub trunnion and serves as an attachment point for the hub moment spring strap which in turn secures the hub moment spring in place.

2.11.2. Defects. Defects can occur anywhere on the hub moment spring plate. No cracks are allowed.

2.11.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

2.11.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the hub moment spring plate removed in accordance with the applicable technical manuals listed in Table 1-1.

2.11.3.3. Access. Not applicable.

2.11.3.4. Preparation of Part. The hub moment spring plate shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

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

2.11.3.6 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 2-11.

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 the 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 2.11.3.8.
f. Repeat steps a. through e. for positions 2 and 3.

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

2.11.3.8. 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.

2.11.4. Backup Method. None required.

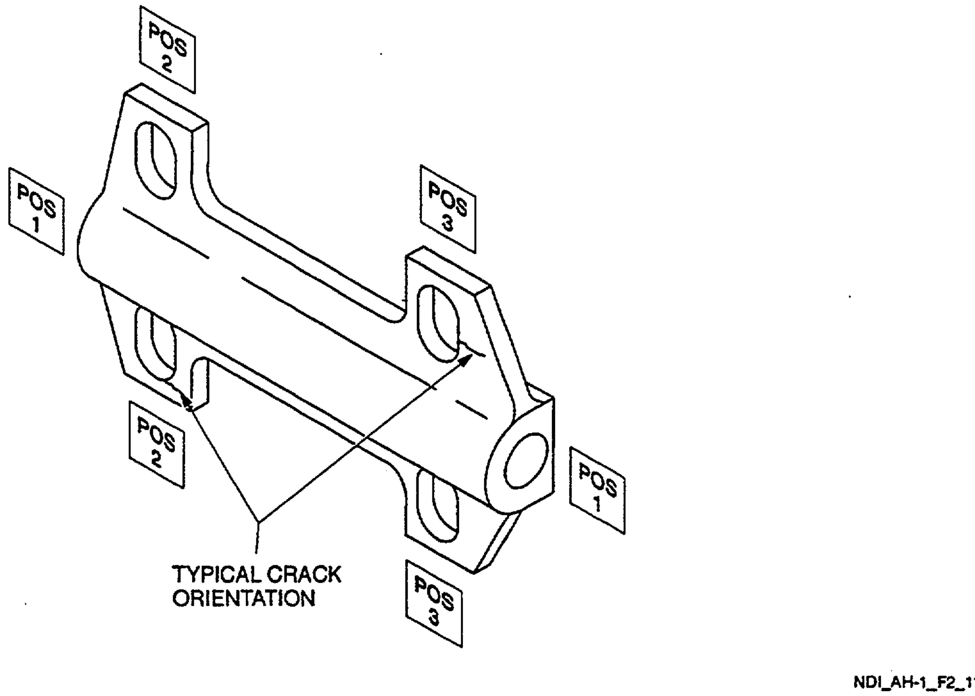


Figure 2-11. Hub Moment Spring Plate

2.11.5. System Securing. Clean the hub moment spring plate to remove residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The hub moment spring plate requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.12. HUB MOMENT SPRING STRAP (MT).

2.12.1. Description (Figure 2-1, Index No.12). The steel hub moment spring strap is Y-shaped and is anchored to the main rotor hub yoke trunnion by the hub moment spring plate. It prevents the hub moment spring support set from shifting up or down on the mast, altering response to flapping.

2.12.2. Defects. Defects can occur anywhere on the hub moment spring strap. No cracks are allowed.

2.12.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

d. Fluorescent Magnetic Particles

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.

2.12.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the hub moment spring strap removed in accordance with the applicable technical manuals listed in Table 1-1.

2.12.3.3. Access. Not applicable.

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. Refer to Magnetic Particle Method, paragraph 1.4.8.

2.12.3.6. 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 2-12.

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 2.12.3.8.

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

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

2.12.3.8. 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.

2.12.4. Backup Method. None required.

2.12.5. System Securing. Clean the hub moment spring strap 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 hub moment spring strap requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.13. ELASTOMERIC BEARING HOUSING (MT).

2.13.1. Description (Figure 2-1. Index No.13). The steel elastomeric bearing housing serves as the mounting system for the main rotor trunnion in the yoke assembly.

2.13.2. Defects. Defects can occur anywhere on the elastomeric bearing housing. No cracks are allowed.

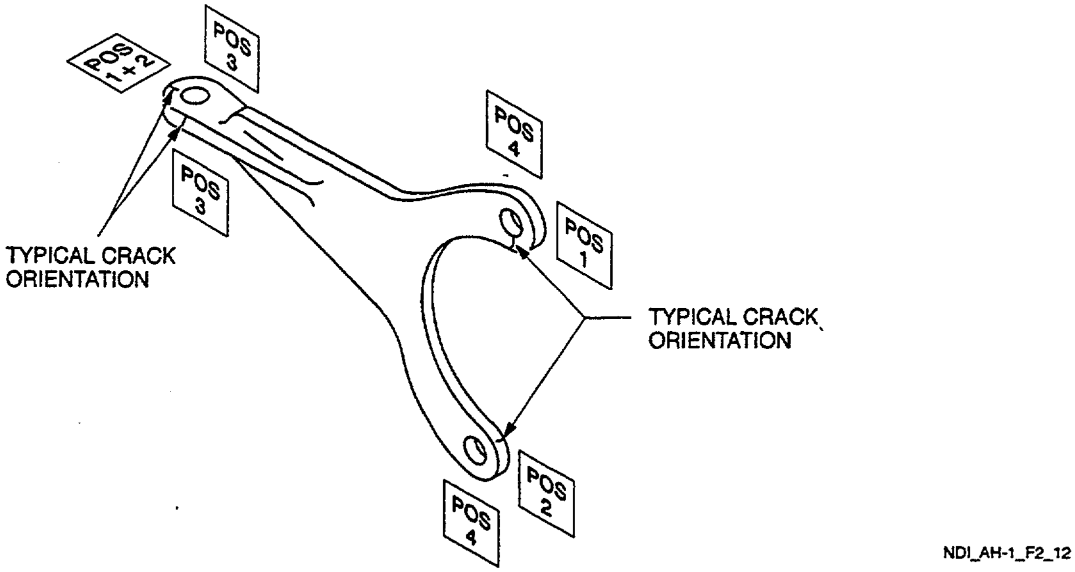


Figure 2-12. Hub Moment Spring Strap

2.13.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

2.13.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the elastomeric bearing housing shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.13.3.3. Access. Not applicable.

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. Refer to Magnetic Particle Method, paragraph 1.4.8.

2.13.3.6. 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 2-13.

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 2.13.3.8.

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

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

2.13.3.8. 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 to a distance of two feet before releasing the switch.

2.13.4. <u>Backup Method</u>. None required.

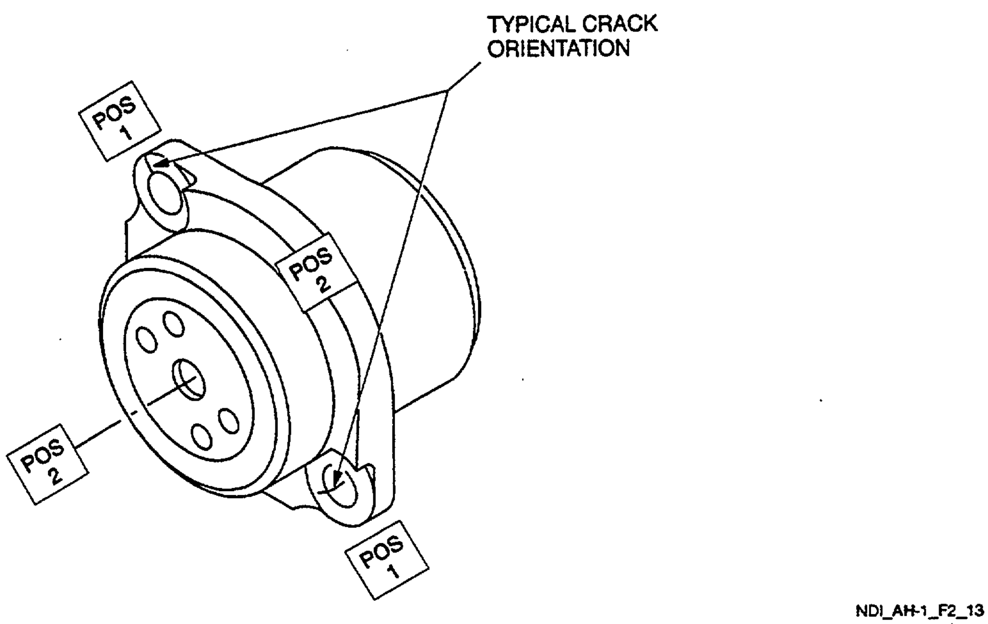


Figure 2-13. Elastomeric Bearing Housing

2.13.5. System Securing. Clean the elastomeric bearing housing to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. As The elastomeric bearing housing requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.14. PITCH LINK ASSEMBLY (ET).

2.14.1. Description (Figure 2-1. Index No. 14). The upper rod end of the pitch link is attached to the pitch horn. The vertical motion of the swashplate is transferred through the pitch link and pitch horn into rotational motion in the blade grip. This rotation is about the feathering axis of the attached rotor blade, which is blade pitch. This inspection is for pitch link assemblies used prior to the incorporation of MWO 55-1520-244-50-9. The pitch link tube is manufactured from aluminum alloy.

2.14.2. Defects. The primary concern is fatigue cracking at either end where the large diameter is reduced by swaging. 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 aluminum (0.008, 0.020, and 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 and the pitch link assembly removed in accordance with applicable technical manuals listed in Table 1-1.

2.14.3.3. Access. Not applicable.

2.14.3.4. Preparation of Part. The pitch link assembly 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-19e[11]:

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. Setup 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 is 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.

2.14.3.7. Marking and Recording of Inspection Results. Mark and record 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 link assembly requires installation in accordance with the applicable technical manual listed in Table 1-1.

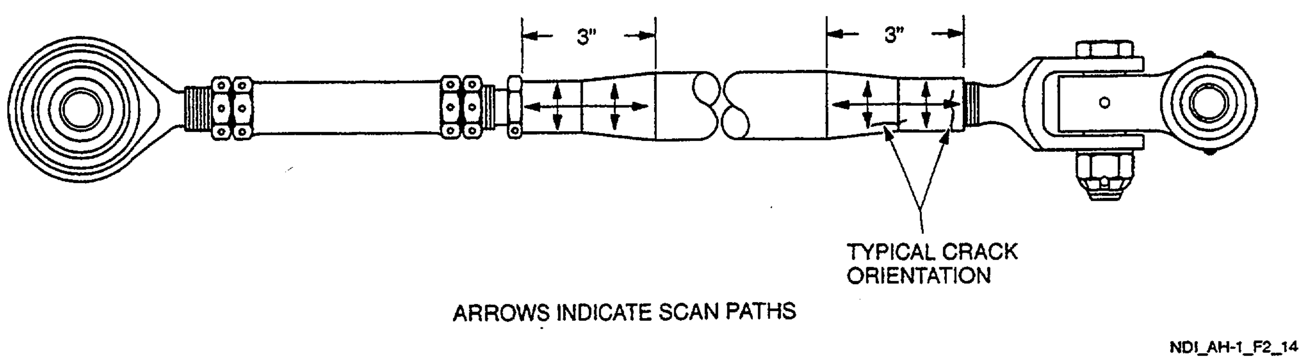


Figure 2-14. Pitch Link Assembly

2.15. MAIN ROTOR CONTROL SPLINE PLATE (PT).

2.15.1. Description (Figure 2-1. Index No. 15). The stainless steel spine plate, bolted to the top of the hub, contacts splines on the main rotor mast. An extension on top of the spline plate carries a friction collet which bears on a sleeve bonded on the mast. The spline plate can move vertically on the main rotor mast to permit vertical movement of the scissors and sleeve assembly. The spline plate rotates with the main rotor mast and causes the scissors hub, scissors, and swashplate outer ring to rotate with the mast.

2.15.2. Defects. Cracks may occur on all surfaces. Particular attention shall be given to bolthole areas shown in Figure 2-15. No cracks are allowed.

2.15.3. Primary Method. Fluorescent Penetrant.

2.15.3.1. NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. MIL-I-25135 level 3 penetrant materials shall be selected from the approved list in 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 applicable positions of this procedure. If required, the spline plate shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.15.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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. Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect the area of concern. See Figure 2-15.

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

2.15.4. Backup Method. None required.

2.15.5. System Securing. Clean the main rotor control spline plate to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The main rotor control spline plate, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.16. COLLET CLAMP ASSEMBLY (MT).

2.16.1. Description (Figure 2-1. Index No. 16). The steel clamp assembly is used to control the friction collet grip on the mast by tightening around the fingers of the collet forcing them inward against the mast. The clamps are vital to proper functioning of the main rotor controls.

2.16.2. Defects. Defects can occur anywhere on the collet clamp assembly. No cracks are allowed.

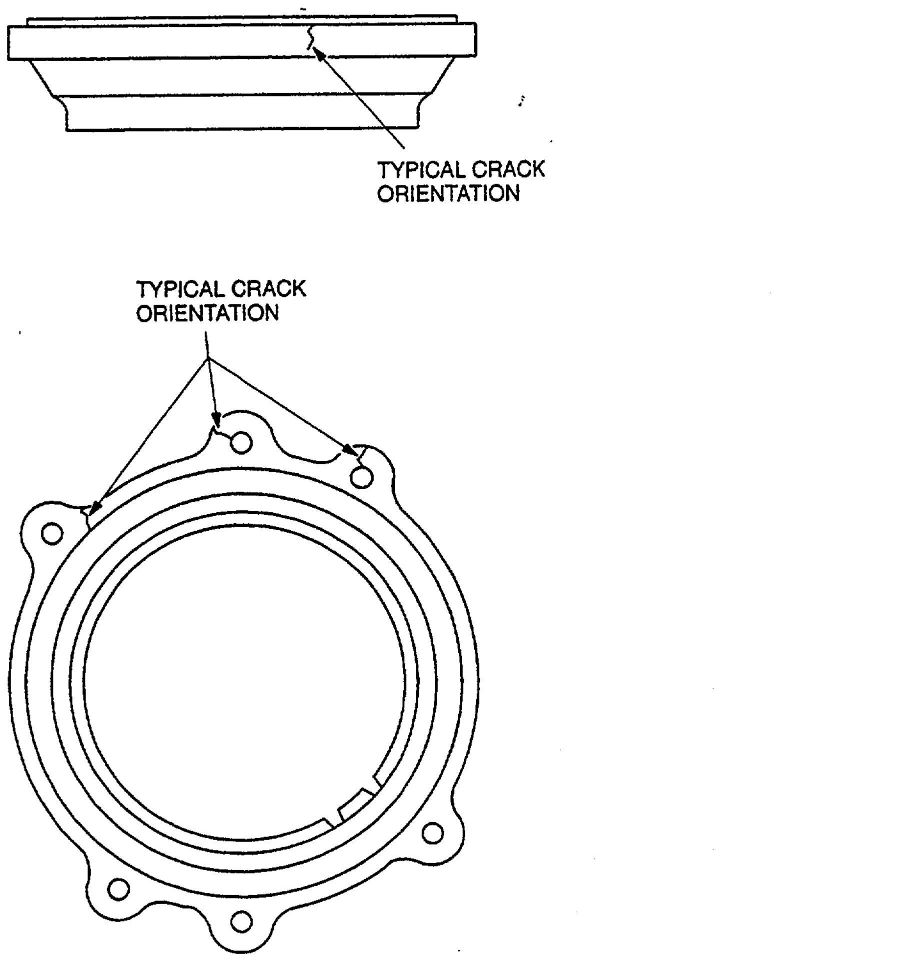


Figure 2-15. Main Rotor Control Spline Plate

2.16.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

2.16.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the collet clamp assembly removed in accordance with the applicable technical manuals listed in Table 1-1.

2.16.3.3. Access. Not applicable.

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

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

2.16.3.6. 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 2-16.

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 2.16.3.8.
f. Repeat steps a. through e. for positions 2 and 3.

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

2.16.3.8. 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.

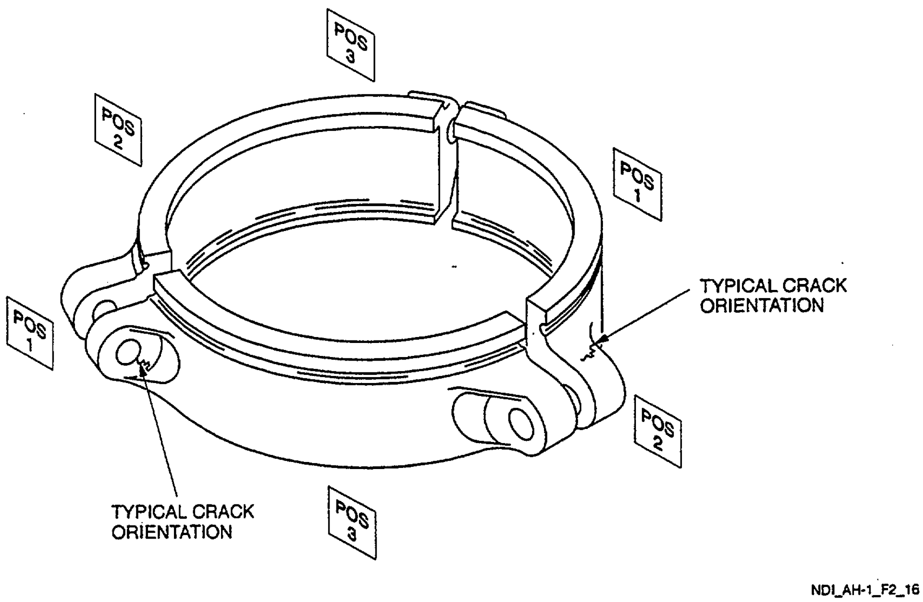


Figure 2-16. Collet Clamp Assembly

2.16.4. Backup Method. None required.

2.16.5. System Securing. Clean the collet clamp assembly 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 collet clamp assembly requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.17. COLLECTIVE LEVER (MT).

2.17.1. Description (Figure 2-1, Index No. 17). The collective lever is a forged steel arm with an attachment hole at both ends and a pivot pin near the center. There are two of these arms in each assembly. The arms transmit the collective control action to the swashplate assembly.

2.17.2. Defects. Defects can occur anywhere on the collective lever. No cracks are allowed.

2.17.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

d. Fluorescent Magnetic Particles

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.

2.17.3.2. 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 collective levers shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.17.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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. Refer to Magnetic Particle Method, paragraph 1.4.8.

2.17.3.6. 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 2-17.

a. Select AC on the AC/DC power switch.
b. Place probe 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 2.17.3.8.
f. Repeat steps a. through e. for positions 2 through 4.

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

2.17.3.8. 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.

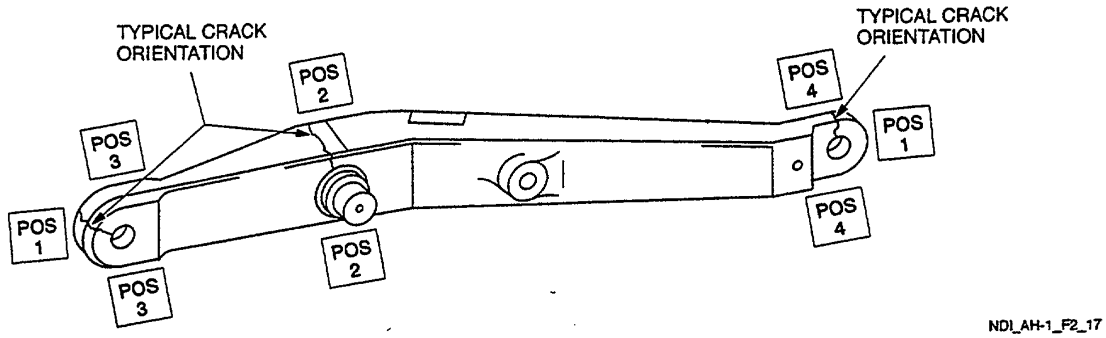


Figure 2-17. Collective Lever

2.17.4. Backup Method. None required.

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

2.18. COLLECTIVE LEVER IDLER LINK (MT).

2.18.1. Description (Figure 2-1. Index No. 18). The steel collective lever idler link attaches the forward end of the collective lever to the transmission case.

2.18.2. Defects. Defects can occur anywhere on the collective lever idler link. No cracks are allowed.

2.18.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

2.18.3.2. 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 collective lever idler link shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.18.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

2.18.3.4. Preparation of Part. The collective lever idler link shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

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

2.18.3.6. 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 2-18.

a. Select AC on the AC/DC power switch.
b. Place probe 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 2.18.3.8.
f. Repeat steps a. through e. for positions 2, 3, and 4.

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

2.18.3.8. 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.

2.18.4. <u>Backup Method</u>. None required.

2.18.5. <u>System Securing.</u> Clean the collective lever idler link to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The lever link assembly, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

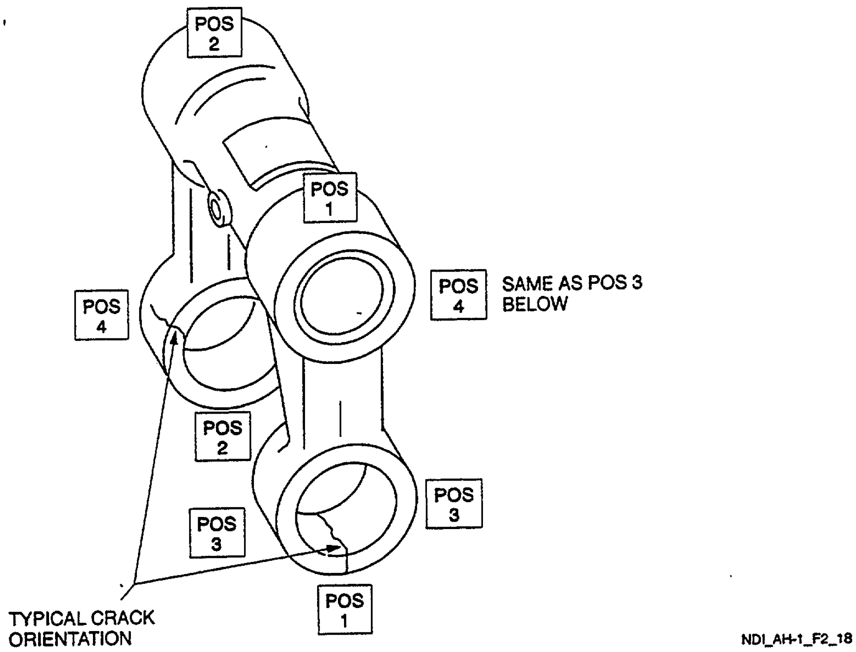


Figure 2-18. Collective Lever Idler Link

2.19. SWASHPLATE ANTIDRIVE LINK (ET).

2.19.1. <u>Description (Figure 2-1. Index No. 19).</u> The swashplate inner ring rides on the spherical portion of the swashplate support and is able to tilt in any direction in response to input from the cyclic control rods. The outer ring tilts with the inner ring but rotates with the scissors and mast. The anti-drive link attaches to the transmission (through a bellcrank and support) and the inner ring and prevents the inner ring from rotating. The anti-drive link is aluminum alloy, roughly triangular in shape, and contains a roll-staked spherical ball bearing and a pair of bushed lugs for attachment to the bellcrank.

2.19.2. <u>Defects</u>. The primary concern is cracking from corrosion or fatigue at the bushings or bearings. No cracks are allowed.

2.19.3. <u>Primary Method</u>. 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, 90° 1/2 inch drop
d. Cable Assembly

e. Reference Block, three-notched aluminum, (0.008, 0.020, and 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 i; 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 antidrive link shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.19.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

2.19.3.4. Preparation of Part. The antidrive link 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-19ell:

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. Setup 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 is 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 as required by paragraph 1.3.

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

2.19.5. System Securing. The antidrive link, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

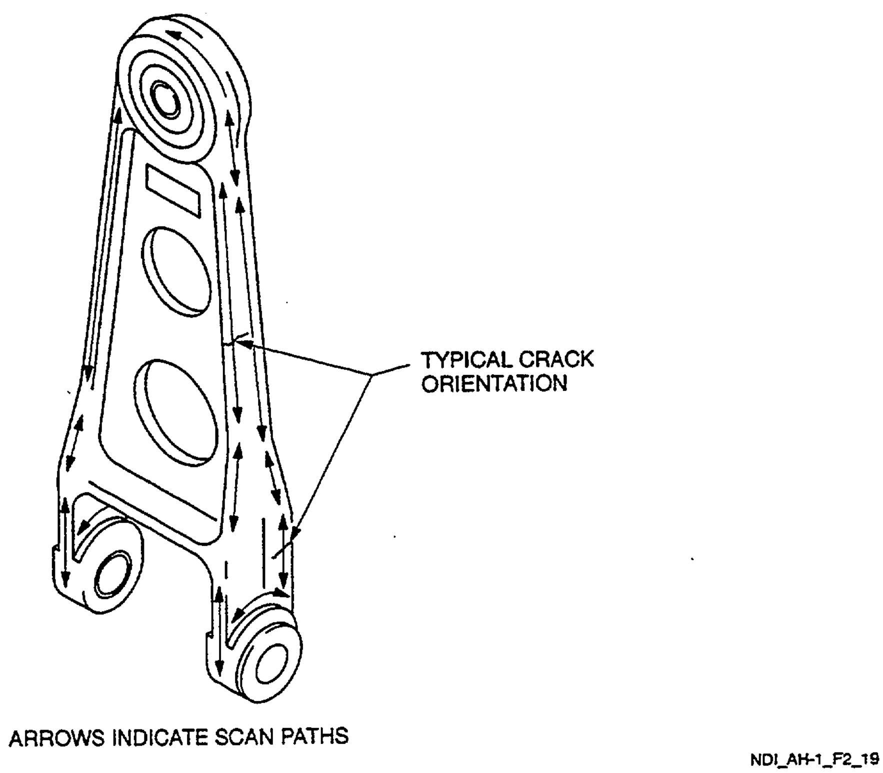


Figure 2-19. Swashplate Antidrive Link

2.20. SWASHPLATE ANTIDRIVE ASSEMBLY BELLCRANK (ET).

2.20.1. Description (Figure 2-1. Index No. 20). The aluminum alloy bellcrank fits between the swashplate antidrive link and the bellcrank support fitting attached to the transmission. The antidrive assembly prevents rotation of the swashplate inner ring while permitting the vertical motion associated with tilting control. The bushings are steel with a Teflon lining and are bonded to the bellcrank.

2.20.2. Defects. The primary concern is cracking at the link attachment end. However, because of the dissimilar metal contact, cracking may also occur at the bushings in the support end. No cracks are allowed.

2.20.3. Primary Method. Eddy Current.

2.20.3.1. 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 Bloc, three-notched aluminum (0.008, 0.020, and 0.040 EDM notches)
f. Teflon Tap, refer to Table.1-8
g. 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 applicable positions of this procedure. If required, the bellcrank shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.20.3.3. Access. Not applicable.

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

2.20.3.5. 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 Po	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Setup 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.)

2.20.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-20.

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

NOTE

Either probe identified in paragraph 2.20.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.20.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

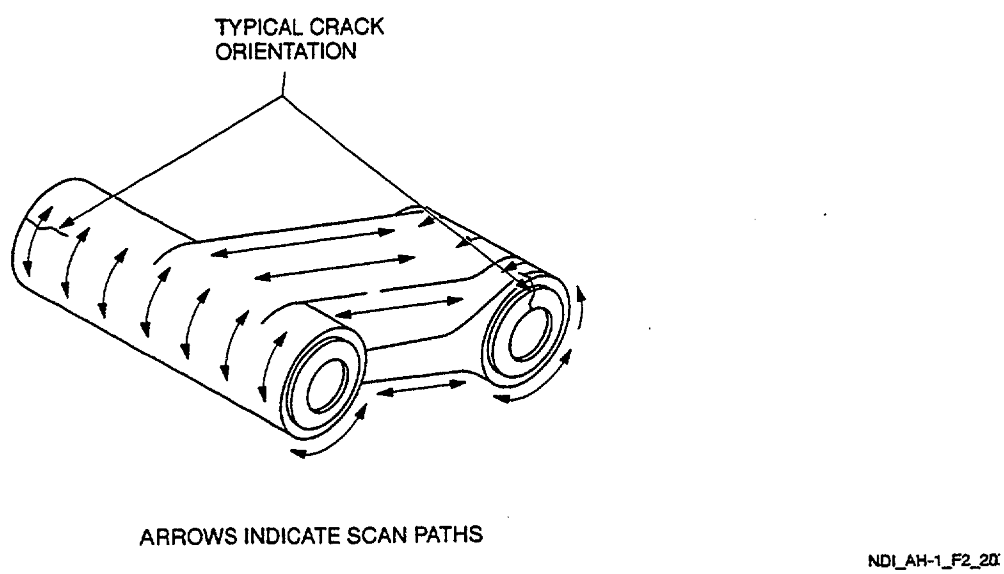


Figure 2-20. Swashplate Antidrive Assembly Bellcrank

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

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

2.20.5. System Securing. The bellcrank, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

2.21. SWASHPLATE ANTIDRIVE ASSEMBLY SUPPORT (ET).

2.21.1. Description (Figure 2-1. Index No. 21). The aluminum swashplate antidrive assembly support is a bracket that attaches to the transmission and is the mounting point for the antidrive bellcrank.

2.21.2. Defects. The primary concern is cracking at both the transmission and bellcrank mounting points. 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, 900 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, and 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 applicable positions of this procedure. If required, the support shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.21.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

2.21.3.4. Preparation of Part. The support 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	- 560		
Probe drive	- mid		
LPF	- 100		
HPF	-0		
H Pos	- 80%		
V Pos	- 20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Setup 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 is 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 as required by paragraph 1.3.

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

2.21.5. System Securing. The support, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

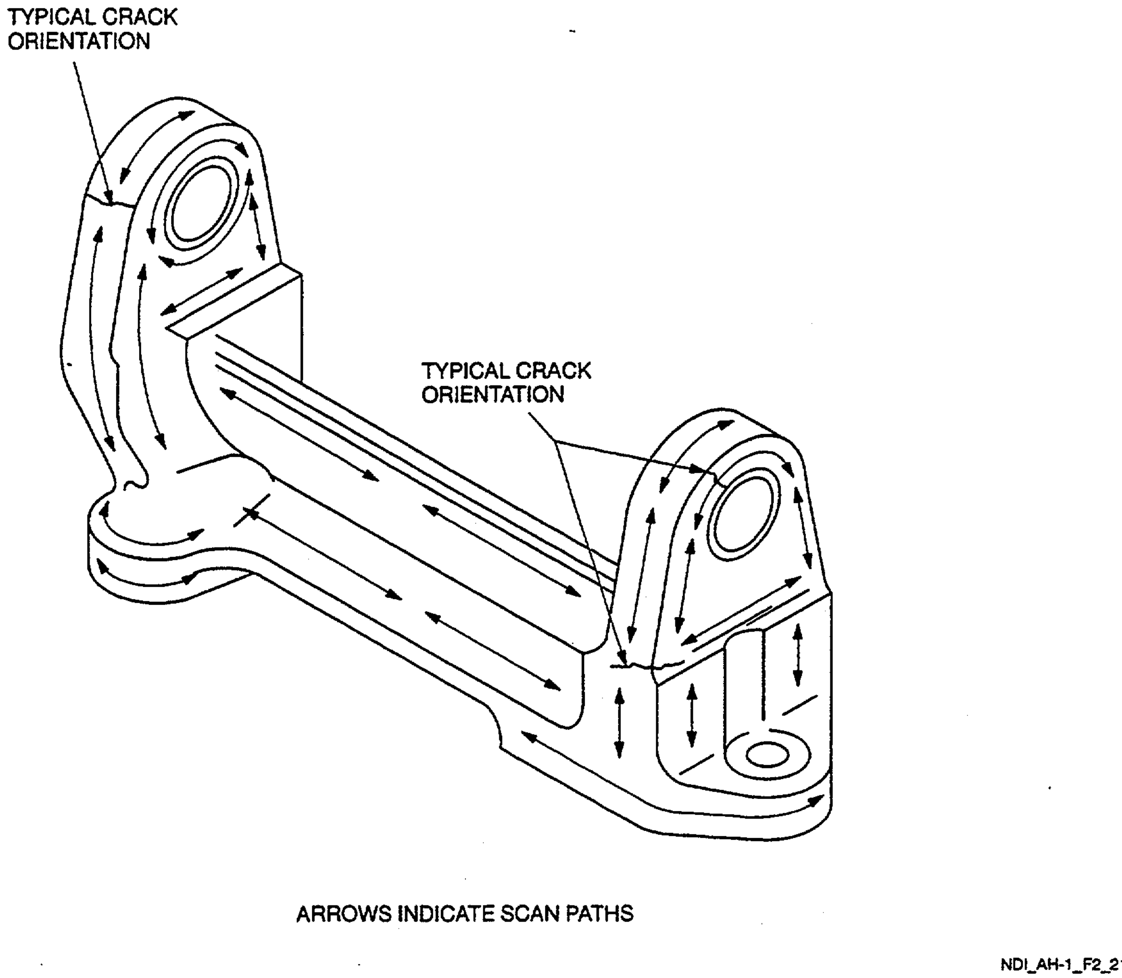


Figure 2-21. Swashplate Antidrive Assembly Support

2.22. HUB MOMENT SPRING SUPPORT SET (MT).

2.22.1 Description (Figure 2-1 Index No. 22). The hub moment spring supports are made of steel and bolted to each other around the mast and to the steel pilot boss of the moment springs. They support the hub moment springs that induce force on the fuselage to move away from the rotor plane during high flapping maneuvers.

2.22.2. Defects. Defects can occur anywhere on the surface of the hub moment spring support set. No cracks are allowed.

2.22.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

2.22.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the hub moment spring support set removed in accordance with the applicable technical manuals listed in Table 1-1.

2.22.3.3. Access. Not applicable.

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

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

2.22.3.6. 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 2-22.

a. Select AC on the AC/DC power switch.
b. Place probe 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.

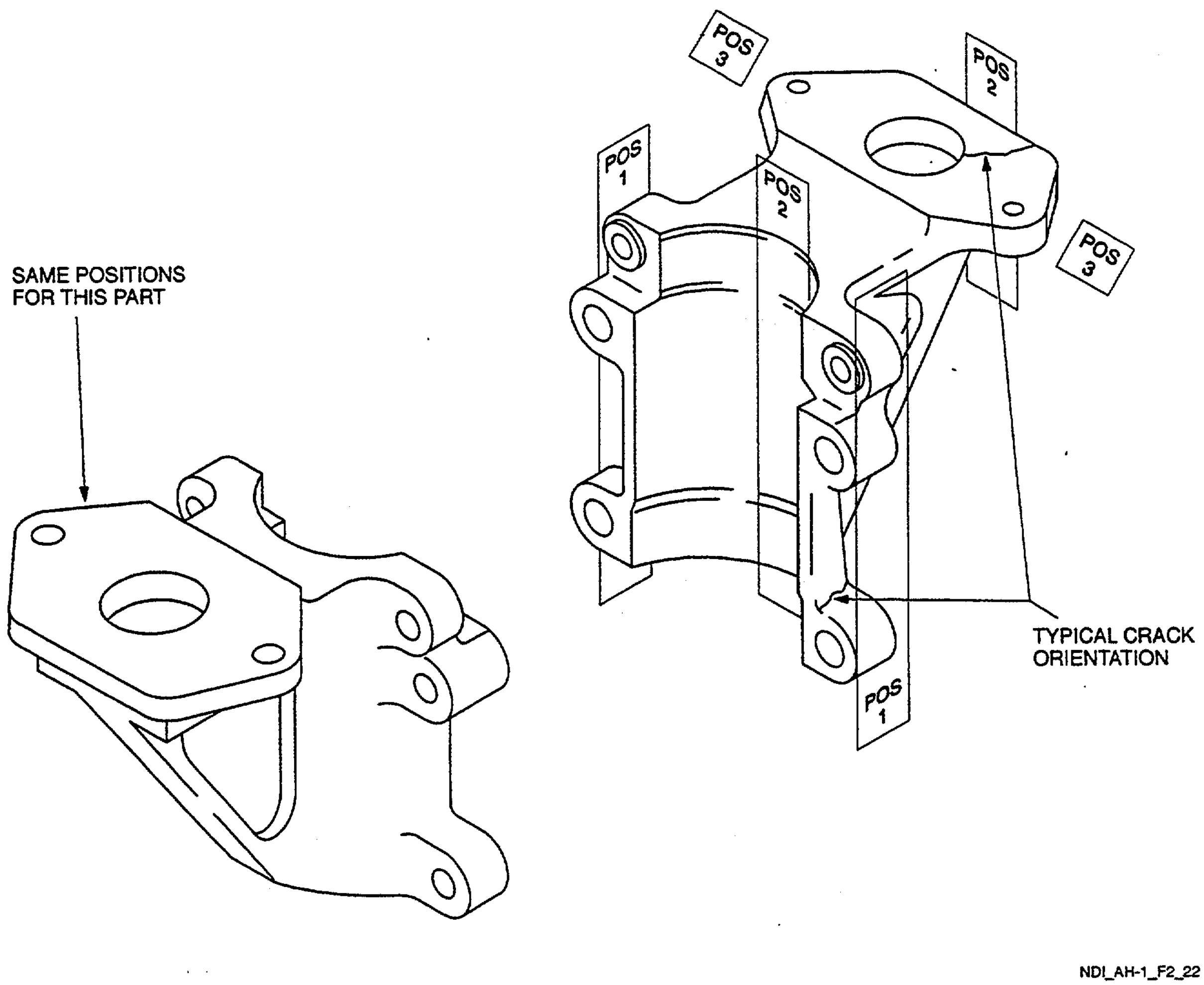


Figure 2-22. Hub Moment Spring Support Set

d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 2.22.3.8.
f. Repeat steps a. through e. for positions 2 and 3.

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

2.22.3.8. 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.

2.22.4. Backup Method. None required.

2.22.5. System Securing. Clean the hub moment spring support set to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The hub moment spring support set requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.23. HUB MOMENT SPRING (MT).

2.23.1. Description (Figure 2-1. Index No. 23). The main rotor hub moment spring consists of elastomeric elements that attach to mast mounted supports by a steel plate. These springs prevent the rotor hub from contacting the mast during high flapping maneuvers by inducing the fuselage to move away from the tilting rotor plane.

2.23.2. Defects. Defects can occur anywhere on the surface of the hub moment spring. No cracks are allowed.

2.23.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

2.23.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the hub moment spring removed in accordance with the applicable technical manuals listed in Table 1-1.

2.23.3.3. Access. Not applicable.

2.23.3.4. Preparation of Part. The hub moment spring shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

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

2.23.3.6. 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 2-23.

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 2.23.3.8.
f. Repeat steps a. through e. for position 2.

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

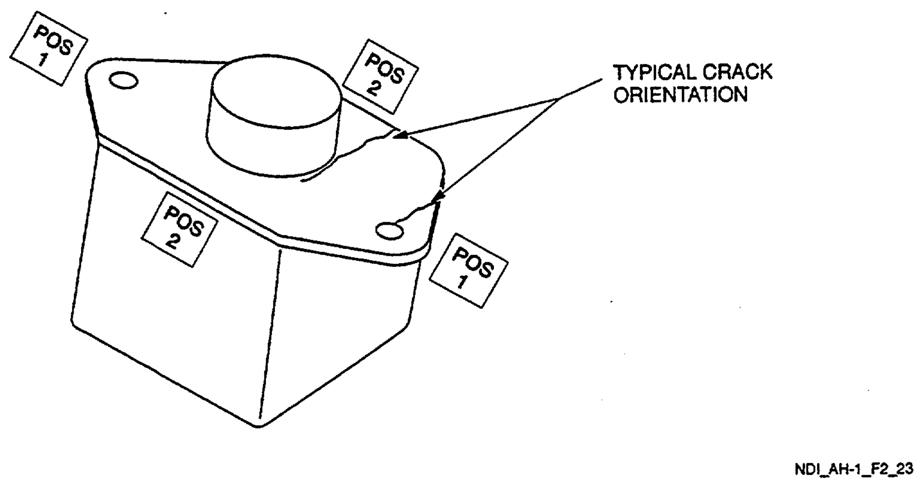


Figure 2-23. Hub Moment Spring

2.23.3.8. 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.

2.23.4. Backup Method. None required.

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

2.24. FRICTION COLLET SET (MT).

2.24.1. Description (Figure 2-1. Index No. 24). The friction collet set has several steel fingers that produce a variable grip on the mast when used with the clamp assembly. The friction setting is vital to the proper functioning of the main rotor controls.

2.24.2. Defects. Defects can occur anywhere on the surface of the friction collet set. No cracks are allowed.

2.24.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

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

2.24.3.3. Access. Not applicable.

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. Refer to Magnetic Particle Method, paragraph 1.4.8.

2.24.3.6. 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 2-24.

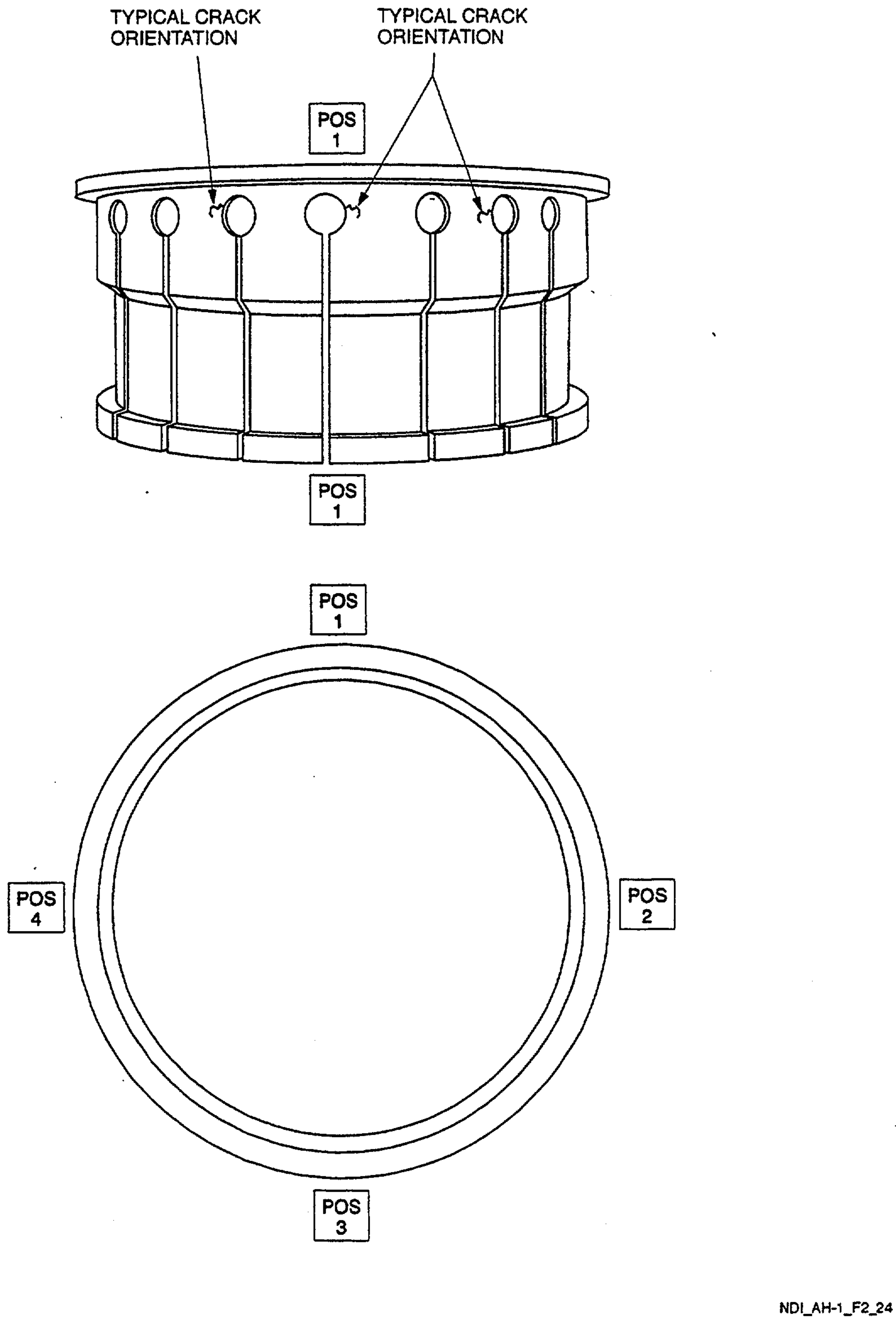


Figure 2-24. Friction Collet Set

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 2.24.3.8 f. Repeat steps a. through e. for positions 2,-3, and 4.

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

2.24.3.8. 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.

2.24.4. Backup Method. None required.

2.24.5. System Securing. Clean the friction collet set to remove residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The friction collet set requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.25. HUB ASSEMBLY (SCISSORS AND SLEEVE ASSEMBLY) (MT).

2.25.1. Description (Figure 2-1. Index No. 25). The steel hub assembly is mounted on top of the collective sleeve and the collective scissors assembly is in turn attached to the hub assembly.

2.25.2. Defects. Defects can occur anywhere on the hub assembly. No cracks are allowed.

2.25.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

2.25.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the scissors and sleeve assembly disassembled in accordance with the applicable technical manuals listed in Table 1-1.

2.25.3.3. Access. Not applicable.

2.25.3.4. Preparation of Part. The scissors and sleeve hub assembly shall be cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

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

2.25.3.6. 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 2-25.

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 the 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 2.25.3.8
f. Repeat steps a. through e. for positions 2, 3, and 4.

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

2.25.3.8. 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.

2.25.4. Backup Method. None required.

2.25.5. System Securing. Clean the hub assembly to remove residual magnetic particle media.

Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The hub assembly requires installation in accordance with the applicable technical manuals in Table 1-1.

2.26. COLLECTIVE SLEEVE (SCISSORS AND SLEEVE ASSEMBLY) (MT).

2.26.1. Description (Figure 2-1. Index No.26). The collective sleeve is a steel shaft to which the hub assembly is attached and through which the other collective control assemblies are attached allowing collective pitch control of the main rotor.

2.26.2. Defects. Defects can occur anywhere on the collective sleeve. 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
e. Consumable Materials, refer to Table 1-8

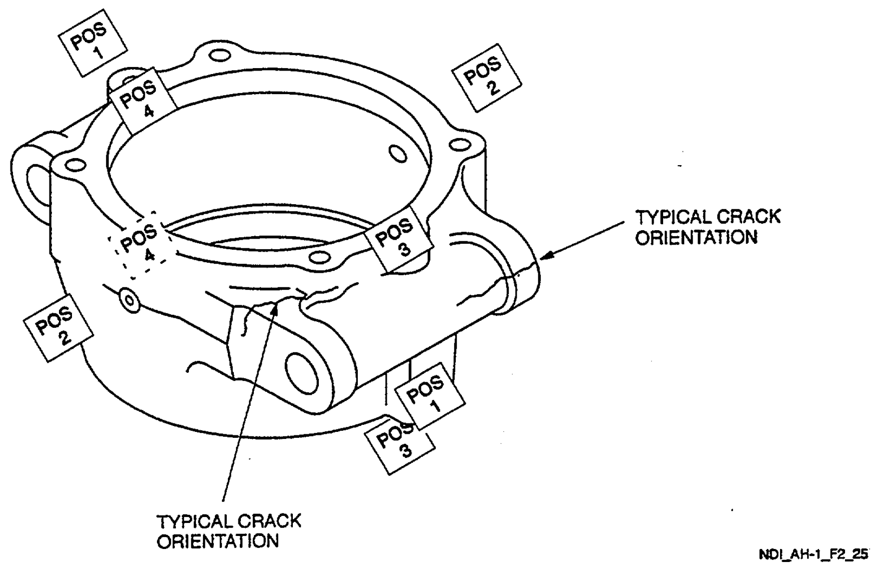


Figure 2-25. Hub Assembly (Scissors and Sleeve Assembly)

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

2.26.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the scissors and sleeve assembly disassembled in accordance with the applicable technical manuals listed in Table 1-1.

2.26.3.3. Access. Not applicable.

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. Positions required for this inspection are illustrated in Figure 2-26.

a. Select AC on the AC/DC power switch.
b. Place probe 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 2.26.3.8.
f. Repeat steps a. through e. for positions 2 and 3.

2.26.3.7. Marking and Recording of Inspection Results. Mark and record the 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 collective sleeve 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 sleeve requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.27. SCISSORS ASSEMBLY (SCISSORS AND SLEEVE ASSEMBLY) (ET).

2.27.1. Description (Figure 2-1. Index No. 27). The scissors are machined aluminum alloy forgings and are part of the main rotor control system. The scissors are attached to the swashplate by the drive links for cyclic pitch control, and to the hub, collective sleeve and lever assemblies for collective pitch control. The combined pitch control action is then transferred through the pitch links to the main rotor , pitch horns and main rotor blades.

2.27.2. Defects. The primary concern is stress corrosion cracking. The stress corrosion cracking is likely to occur at the bushings and grease fittings because of the dissimilar metal contact and interference fit. No cracks are allowed.

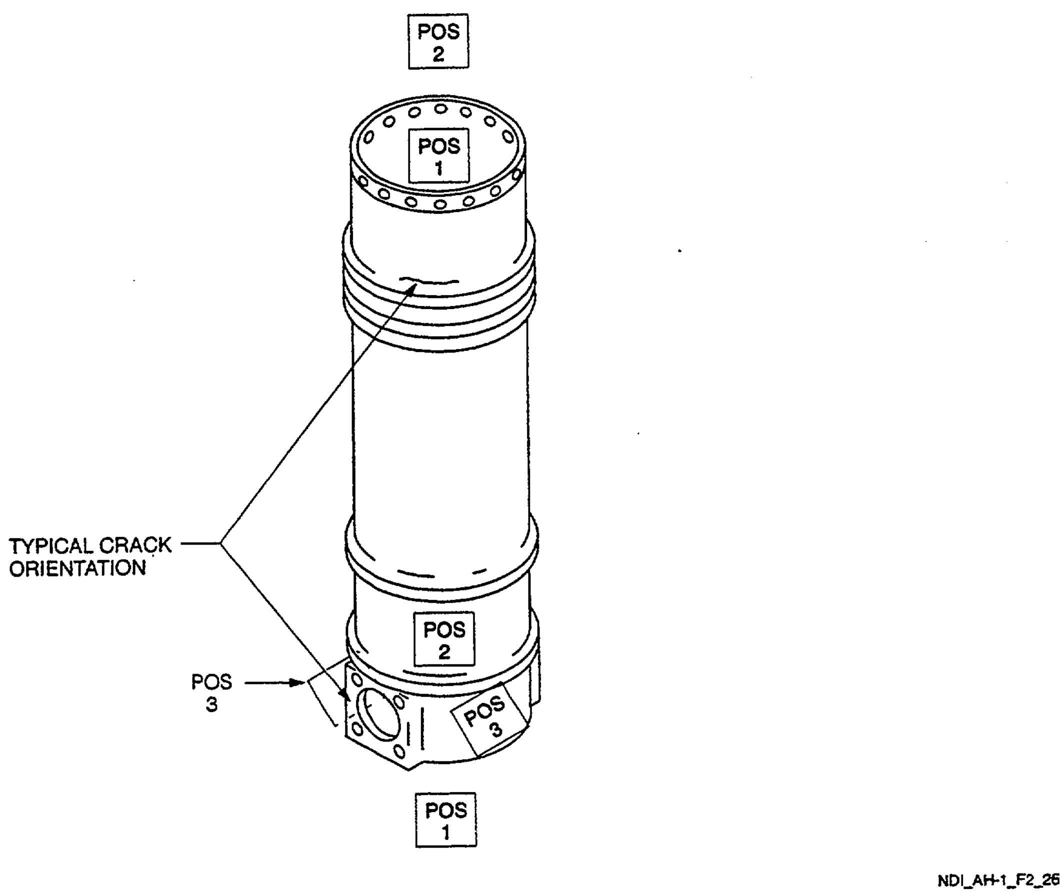


Figure 2-26. Collective Sleeve (Scissors and Sleeve Assembly)

2.27.3. Primary Method. Eddy Current.

2.27.3.1. 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, and 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

2.27.3.2. 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 scissors shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.27.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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

2.27.3.5. 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. Setup 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.)

2.27.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-27.

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 is cause for rejection.

NOTE

Either probe identified in paragraph 2.27.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.27.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

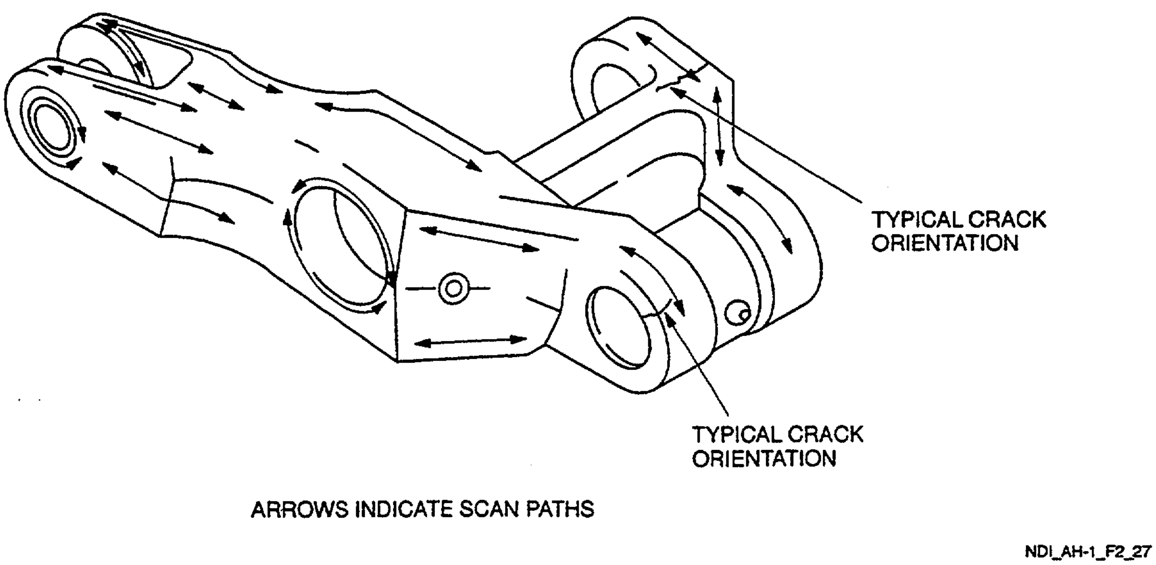


Figure 2-27. Scissors Assembly (Scissors and Sleeve Assembly)

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

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

2.27.5. System Securing. The scissors, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

2.28. MAIN ROTOR CONTROL DRIVE LINK ASSEMBLY (ET).

2.28.1. Description (Figure 2-1. Index No. 28). The aluminum alloy drive links are part of the main rotor control system. The scissors are attached to the swashplate by the drive links for cyclic pitch control.

2.28.2. Defects. The primary concern is cracking resulting from corrosion or fatigue at the bushings or spherical bearing. No cracks are allowed.

2.28.3. Primary Method. Eddy Current.

2.28.3.1. 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, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, and 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. 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 drive link assembly 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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

2.28.3.5. NDI Equipment Settings

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

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. Setup 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.)

2.28.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-28.

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 is cause for rejection.

NOTE

Either probe identified in paragraph 2.28.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.28.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

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

2.28.5. System Securing. The drive link assembly, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

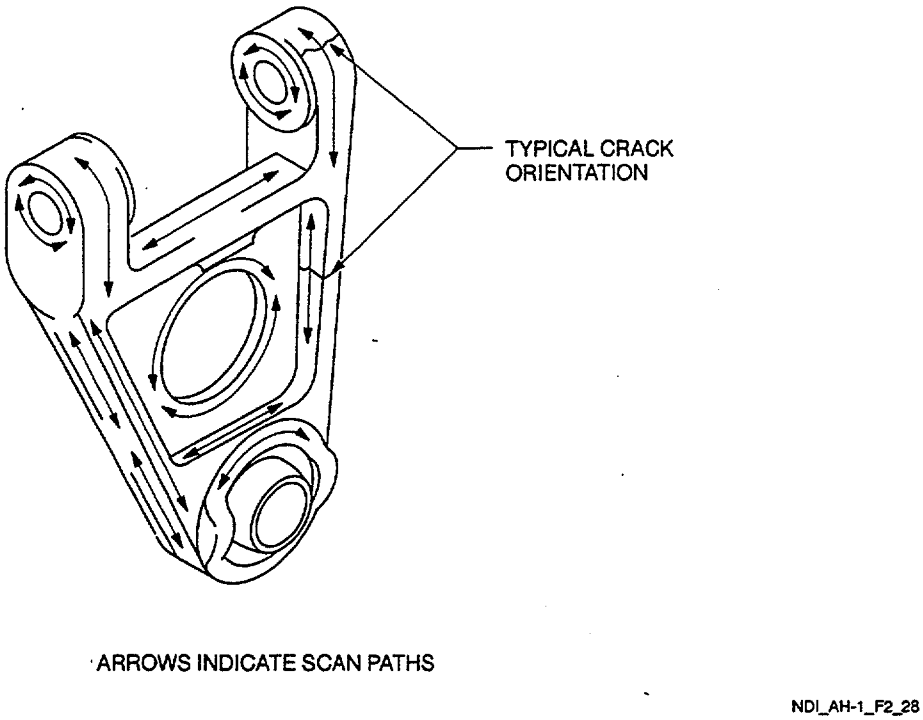


Figure 2-28. Main Rotor Control Drive Link Assembly

2.29. TAIL ROTOR HUB YOKE ASSEMBLY (MT).

2.29.1. Description (Figure 2-1. Index No. 29). The steel yoke is the flex-beamed type, connected to the tail rotor blades and a two-piece trunnion, splined to the tail rotor gearbox output shaft.

2.29.2. Defects. Defects can occur anywhere on the tail rotor hub yoke assembly. No cracks are allowed.

2.29.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

2.29.3.2. 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 applicable positions of this procedure. If required, the tail rotor hub yoke assembly shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.29.3.3. Access. Not applicable.

2.29.3.4. Preparation of Part. The part shall be thoroughly cleaned. Using masking tape, seal all bearings to protect them from the magnetic particles. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

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

2.29.3.6. Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Cracks detectable and positions required for this inspection are illustrated in Figure 2-29.

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 on both sides of the part. Remove the media momentarily before removing the current. Current should be applied for no more than five seconds.
d. Inspect both sides of the part for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 2.29.3.8.
f. Repeat steps a. through e. for positions 2, 3, 4, and 5.

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

2.29.3.8. 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 to a distance of two feet before releasing the switch.

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

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

2.30. TAIL ROTOR HUB TRUNNION SET (MT).

2.30.1. Description (Figure 2-1, Index No. 30). The two-piece steel trunnion, splined to the tail rotor gearbox output shaft, drives the tail rotor hub and blade, and serves as a flapping stop for the tail rotor.

2.30.2. Defects. Defects can occur anywhere on the tail rotor hub trunnion set. No cracks are allowed.

2.30.3. Primary Method. Magnetic Particle.

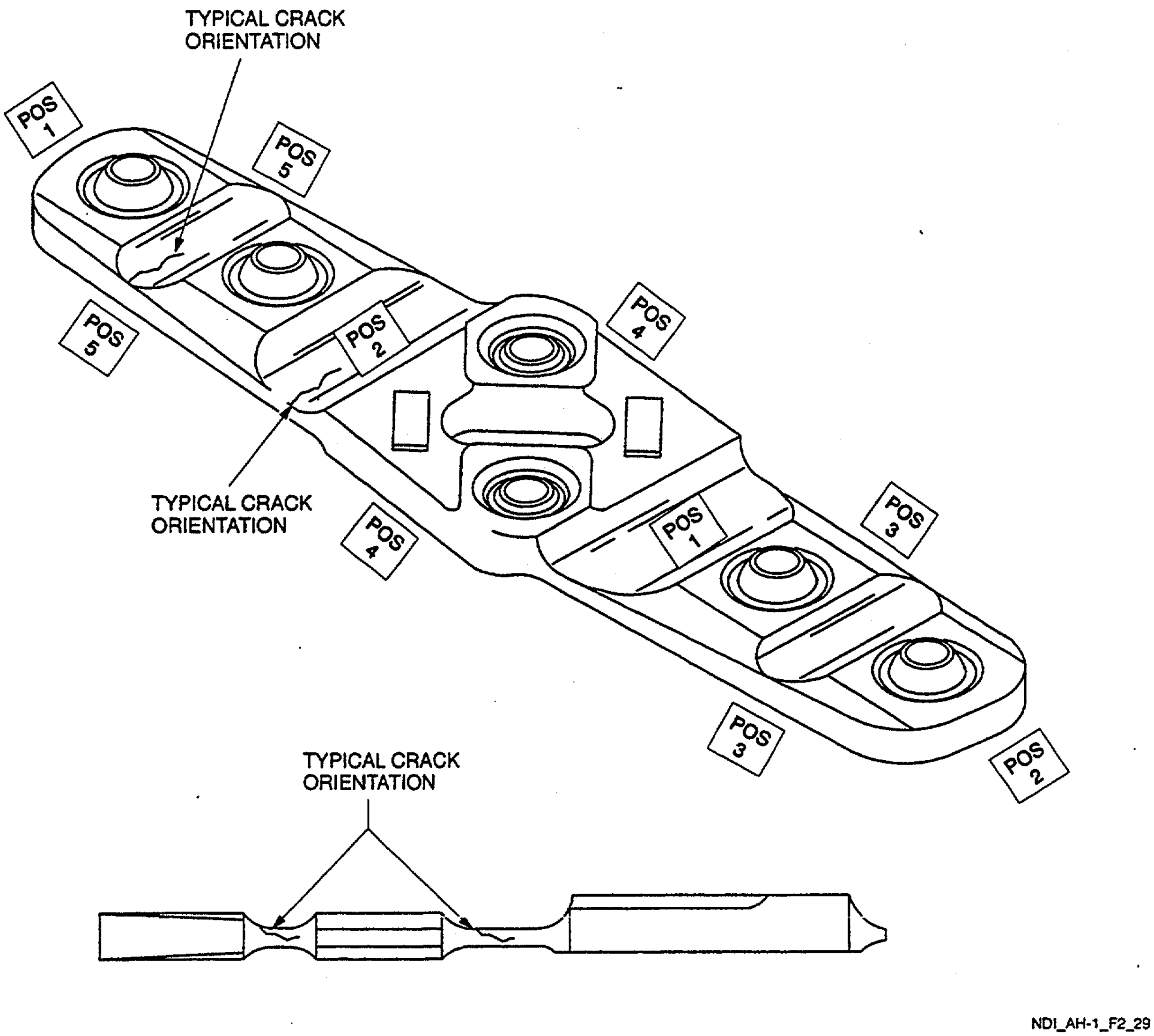


Figure 2-29. Tail Rotor Hub Yoke Assembly

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

2.30.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the tail rotor hub disassembled in accordance with the applicable technical manuals listed in Table 1-1.

2.30.3.3. Access. Not applicable.

2.30.3.4. Preparation of Part. The part shall be thoroughly cleaned. Using masking tape protect the bearings from the magnetic particle inspection media. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

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

2.30.3.6. 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 2-30.

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 2.30.3.8.
f. Repeat steps a. through e. for position 2.

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

2.30.3.8. 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.

2.30.4. <u>Backup Method</u>. Fluorescent Penetrant, refer to paragraph 1.4.7.

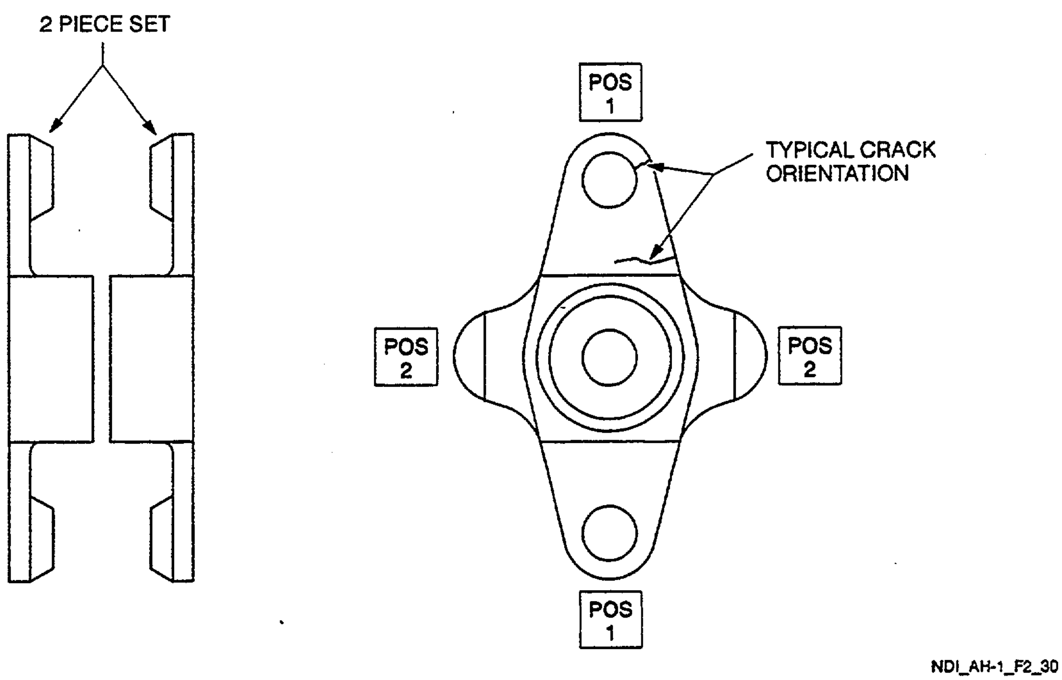


Figure 2-30. Tail Rotor Hub Trunnion Set

2.30.5. System Securing. Clean the trunnion parts to remove residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The trunnion set requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.31. TAIL ROTOR CONTROL CROSSHEAD (MT).

2.31.1. Description (Figure 2-1 Index No. 31). The steel crosshead is the primary link between the counterweight bellcranks and the blades. It is through the counterweight bellcrank, attached to the crosshead, that pitch control action is transmitted to the blades.

2.31.2. Defects. Defects can occur any. where on the tail rotor control crosshead. No cracks are allowed.

2.31.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

2.31.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the tail rotor hub disassembled in accordance with the applicable technical manuals listed in Table 1-1.

2.31.3.3. Access. Not applicable.

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

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

2.31.3.6. 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 2-31.

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.

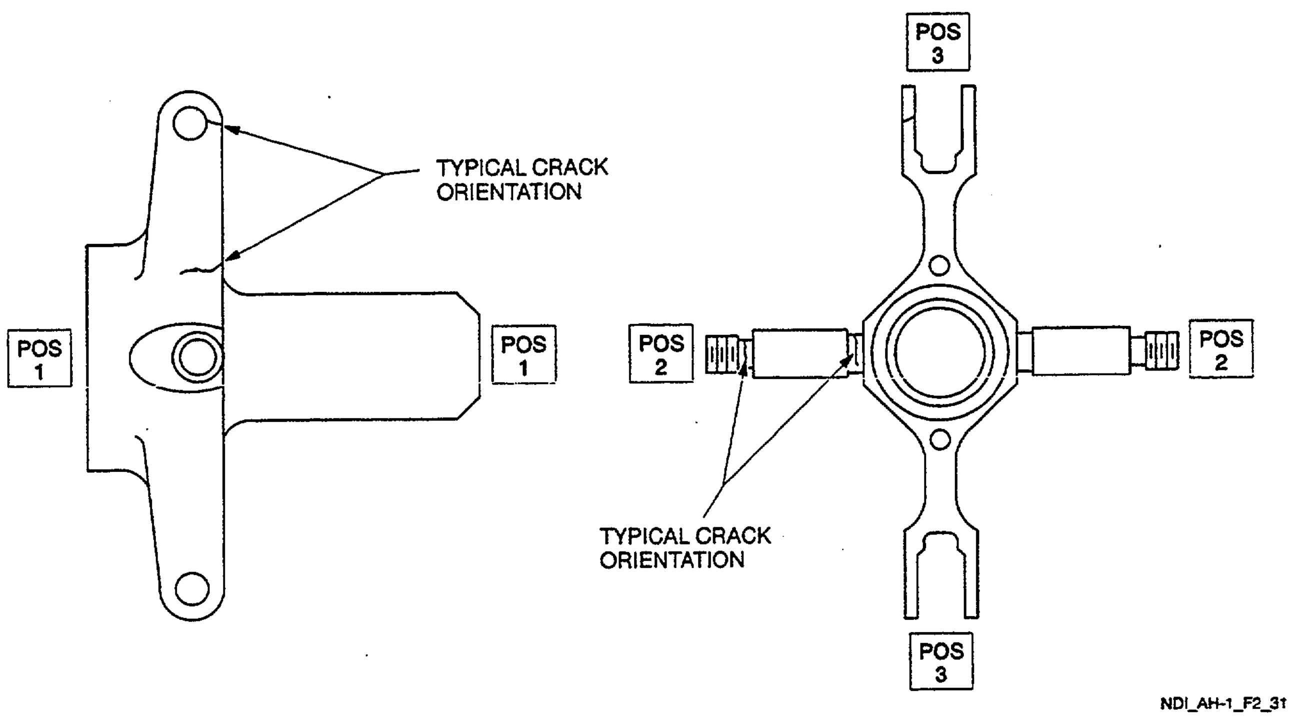


Figure 2-31. Tail Rotor Control Crosshead

d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 2.31.3.8.
f. Repeat steps a. through e. for positions 2 and 3.

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

2.31.3.8. 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.

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

2.31.5. System Securing. Clean the crosshead 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 control crosshead requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.32. TAIL ROTOR CONTROL COUNTERWEIGHT BELLCRANK (MT).

2.32.1. Description (Figure 2-1. Index No. 32). The steel tail rotor control counterweight bellcrank transmits the balanced control forces and pitch control to the tail rotor blades then the crosshead assembly.

2.32.2. Defects. Defects can occur anywhere on the tail rotor control counterweight bellcrank. No cracks are allowed.

2.32.3. Primary Method. Magnetic Particle.

2.32.3.1 NDI Equipment and Materials. (Refer to Appendix B.)
a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

2.32.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the tail rotor control counterweight bellcrank removed in accordance with the applicable technical manuals listed in Table 1-1.

2.32.3.3. Access. Not applicable.

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

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

2.32.3.6. 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 2-32.

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 2.32.3.8.
f. Repeat steps a. through e. for position 2.

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

2.32.3.8. 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.

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

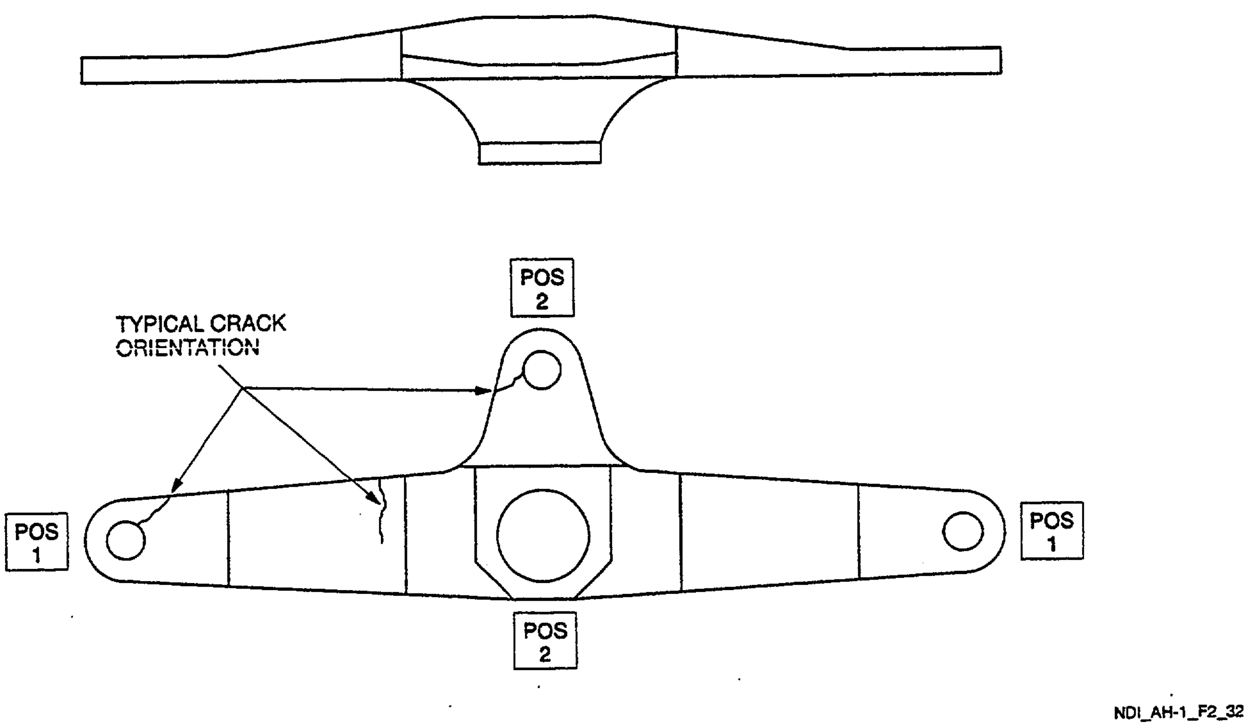


Figure 2-32. Tail Rotor Control Counterweight Bellcrank

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

2.33. TAIL ROTOR CONTROL PITCH LINK ROD END (MT).

2.33.1. Description (Figure 2-1. Index No. 33). The steel tail rotor control pitch link rod ends are attached to the crosshead and the blade pitch horn and transmit selected pitch control.

2.33.2. Defects. Defects can occur anywhere on the tail rotor control pitch link rod end. No cracks are allowed.

2.33.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles,
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.

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

2.33.3.3. Access. Not applicable.

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

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

2.33.3.6. 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 2-33.

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 2.33.3.8
f. Repeat steps a. through e. for position 2.

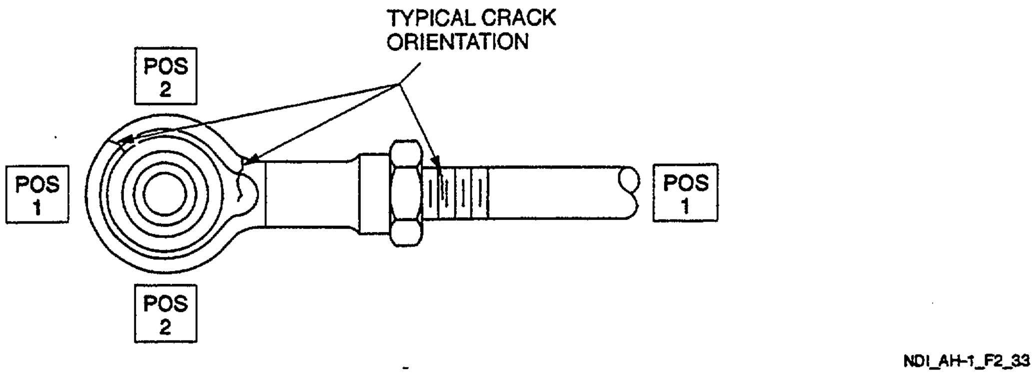


Figure 2-33. Tail Rotor Control Pitch Link Rod End

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

2.33.3.8. 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.

2.33.4. Backup Method. None required.

2.33.5. System Securing. Clean the pitch link rod end to remove residual magnetic particle media.

Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.1 6. The pitch link rod requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.34. TAIL ROTOR CONTROL COUNTERWEIGHT LINK (ET).

2.34.1. Description (Figure 2-1, Index No. 34). The counterweight system is attached to the tail rotor pitch control system and functions to balance control forces and assist in pitch control. The counterweight links are one piece, machined from aluminum alloy with nonreplaceable spherical bearings roll-staked into each end. The two counterweight links are attached to the counterweight support (fixed ends) and the two counterweight bellcranks (attached to the crosshead). It is through these links that the motion of the counterweight system is translated into pitch control action.

2.34.2. Defects. The primary concern is cracking at the rod ends, especially where mechanical damage may be present. No cracks are allowed.

2.34.3. Primary Method. Eddy Current.

2.34.3.1. 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-500 KHz, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, and 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

2.34.3.2. 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 link shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.34.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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

2.34.3.5. 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. Setup 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.)

2.34.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-34.

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 is cause for rejection.

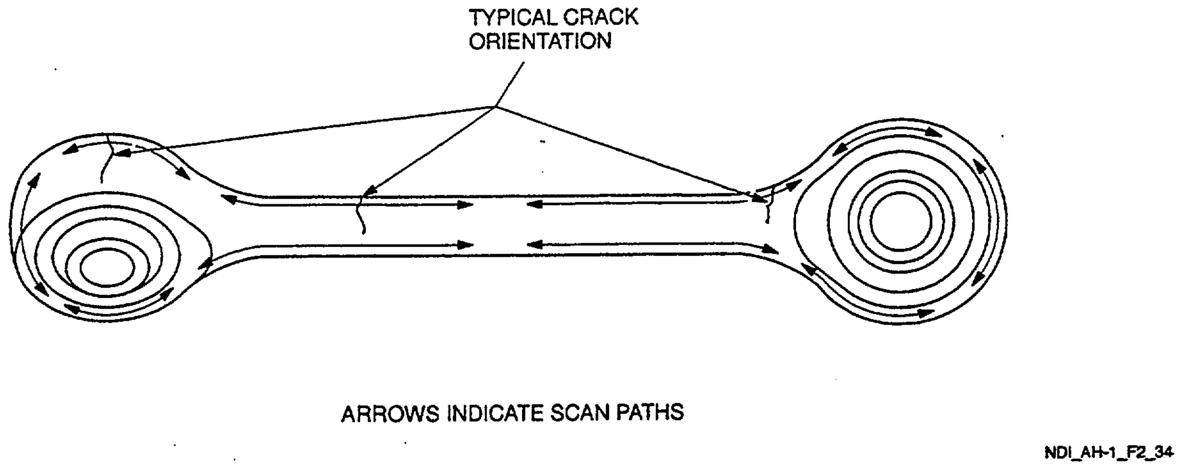


Figure 2-34. Tail Rotor Control Counterweight Link

NOTE

Either probe identified in paragraph 2.34.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.34.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

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

2.34.5. System Securing. The counterweight link, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

2.35. TAIL ROTOR ACTIVE COUNTERWEIGHT SUPPORT (MT).

2.35.1. Description (Figure 2-1 Index No. 35). The steel counterweight support is installed on the gearbox output shaft and seats against the hub and is held there by the retaining nut and shield. The counterweight link is attached to the crosshead and the counterweight support which in turn transmits selected pitch from the control tube to the pitch horn by means of the pitch link.

2.35.2. Defects. Defects can occur anywhere on the tail rotor active counterweight support. No cracks are allowed.

2.35.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

2.35.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the tail rotor controls disassembled in accordance with the applicable technical manuals listed in Table 1-1.

2.35.3.3. Access. Not applicable for off-helicopter inspection.

2.35.3.4. Preparation of Part. The counterweight support shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

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

2.35.3.6. 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 2-35.

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 2.35.3.8.
f. Repeat steps a. through e. for positions 2 and 3.

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

2.35.3.8. 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.

2.35.4. <u>Backup Method</u>. Fluorescent Penetrant, refer to paragraph 1.4.7.

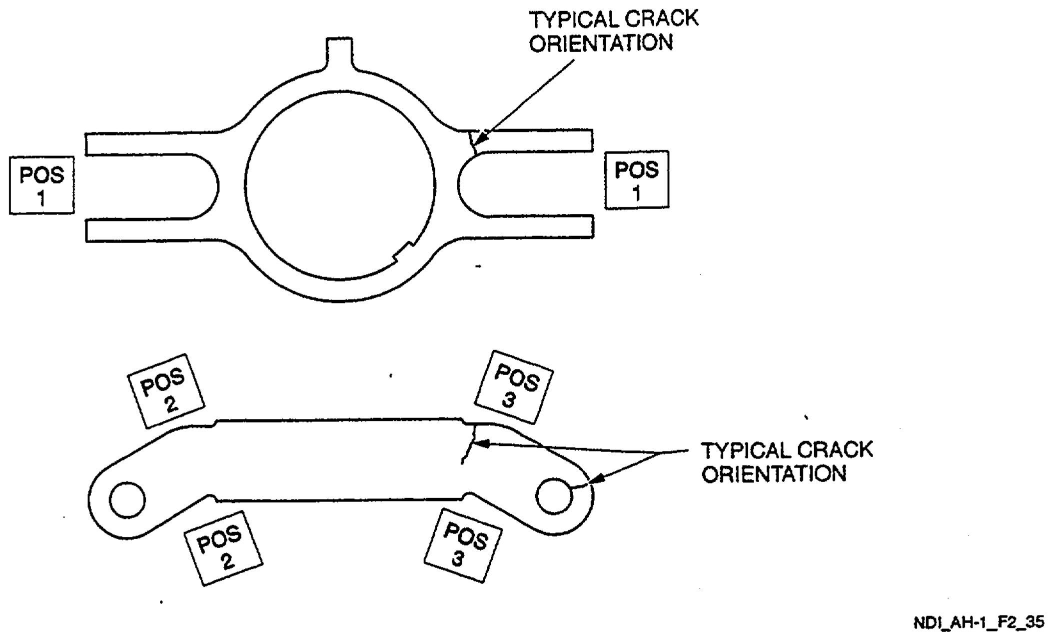


Figure 2-35. Tail Rotor Active Counterweight Support

2.35.5. System Securing. Clean the counterweight 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 tail rotor control system requires reassembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

2.36. TAIL ROTOR CONTROL TUBE ASSEMBLY (MT).

2.36.1. Description (Figure 2-1, Index No.36). The steel tail rotor control tube transmits the desired pitch to the tail rotor blades through the crosshead assembly.

2.36.2. Defects. Defects can occur anywhere on the tail rotor control tube assembly. No cracks are allowed.

2.36.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

2.36.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the tail rotor controls disassembled in accordance with the applicable technical manuals listed in Table 1-1.

2.36.3.3. Access. Not applicable for off-helicopter inspection.

2.36.3.4. Preparation of Part. The tail rotor control tube shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

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

2.36.3.6. 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 2-36.

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.

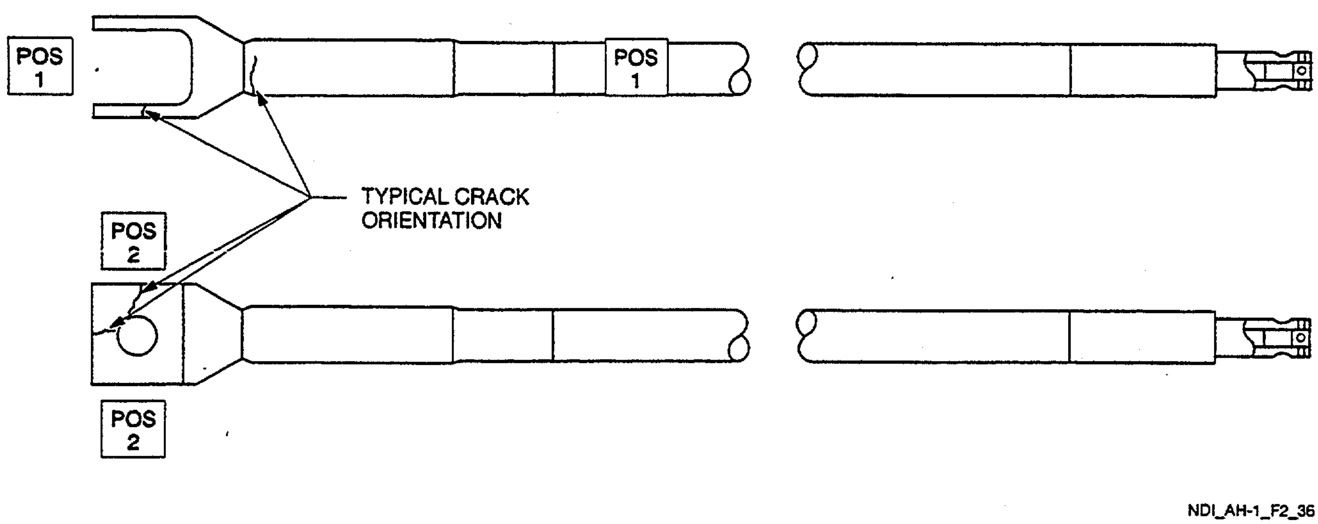


Figure 2-36. Tail Rotor Control Tube

d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 2.36.3.8.
f. Repeat steps a. through e. for position 2.

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

2.36.3.8. 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.

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

2.36.5. System Securing. Clean the tail rotor control tube assembly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16.

The tube assembly requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.37. TAIL ROTOR CONTROL LINK ASSEMBLY (MT).

2.37.1. Description (Figure 2-1: Index No. 37). The steel tail rotor control link assembly attaches to the opposite end of the idler than the control tube and transmits the selected control action to the tail rotor as necessary.

2.37.2. Defects. Defects can occur anywhere on the part. Particular attention shall be given to the enhanced areas as shown in Figure 2-37. No cracks are allowed.

2.37.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

2.37.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the tail rotor control assembly disassembled in accordance with the applicable technical manuals listed in Table 1-1.

2.37.3.3. Access. Not applicable.

2.37.3.4. Preparation of Part. The tail rotor control link assembly shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

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

2.37.3.6. 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 2-37.

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 the 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 2.37.3.8
f. Repeat steps a. through e. for positions 2 and 3.

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

2.37.3.8. 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.

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

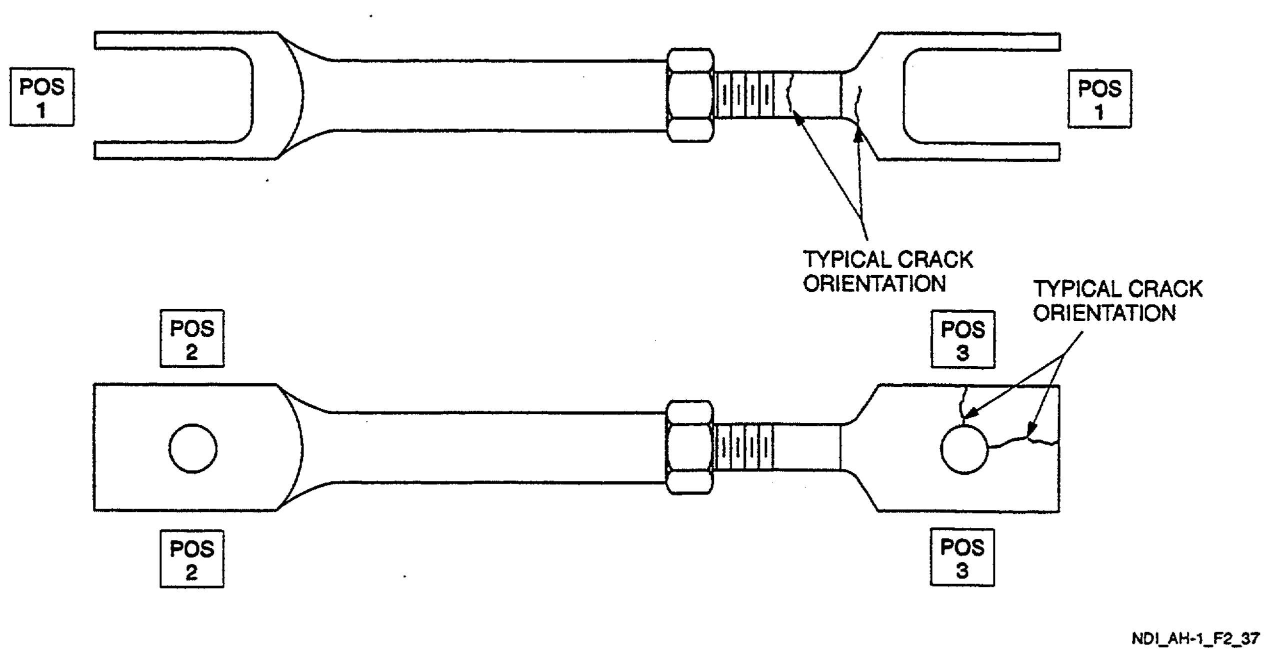


Figure 2-37. Tail Rotor Control Link Assembly

2.37.5. System Securing. Clean the tail rotor control link 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 control link assembly requires installation in accordance with the applicable technical manuals in Table 1-1.

2.38. TAIL ROTOR CONTROL IDLER ASSEMBLY (ET).

2.38.1. Description (Figure 2-1. Index No. 38). The idler assembly is part of the tail rotor controls. The idler assembly is machined from aluminum and is fitted with a bearing on the lug that attaches to the gearbox and flanged bushings at the pivot for the lever. The idler assembly is located on the left side of the tail rotor gear box. The idler attaches the lever assembly to the gear box and serves as a pivot for the lever assembly.

2.38.2. Defects. The primary concern is cracking at the bushing where the idler attaches to the gearbox case and bushings where the link assembly attaches to the idler. No cracks are allowed.

2.38.3. Primary Method. Eddy Current.

2.38.3.1. 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, and 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

2.38.3.2. 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 idler assembly shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.38.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

2.38.3.4. Preparation of Part. The idler assembly shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.38.3.5. NDI Equipment Setup.

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°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	-80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Setup 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.)

2.38.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-38.

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 is cause for rejection.

NOTE

Either probe identified in paragraph 2.38.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.38.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

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

2.38.5. System Securing. The idler assembly, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

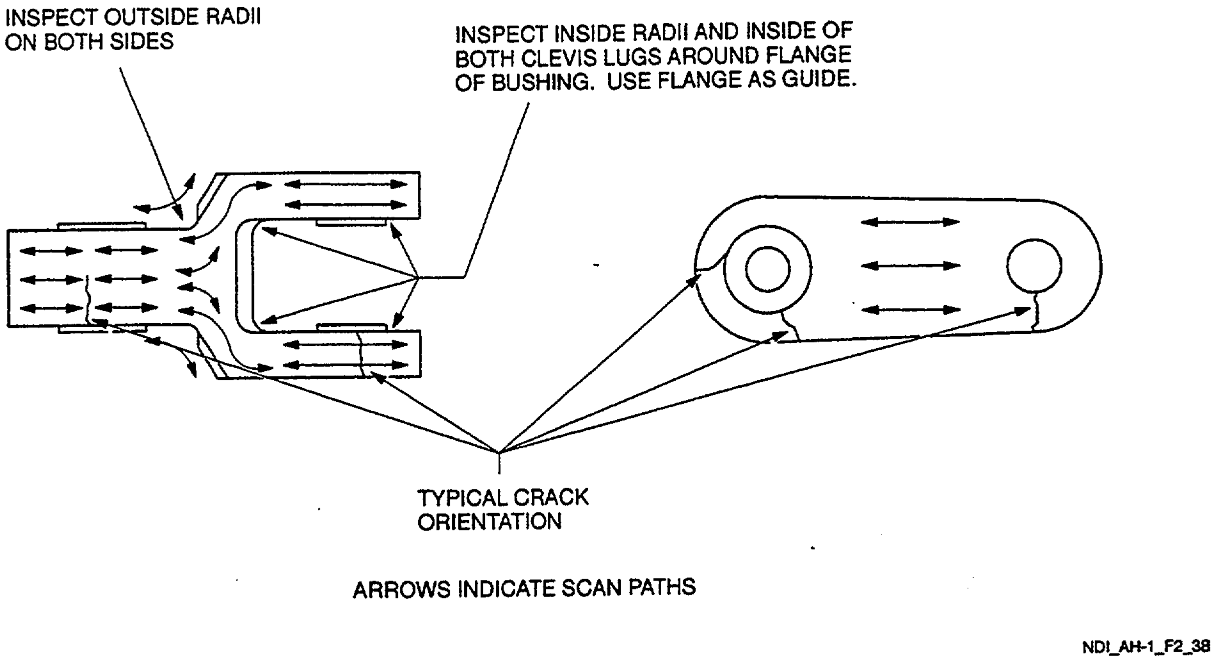


Figure 2-38. Tail Rotor Control Idler

2.39. TAIL ROTOR CONTROL LEVER ASSEMBLY (ET).

2.39.1. Description (Figure 2-1. Index No. 39). The lever assembly is part of the tail rotor controls. The lever assembly is machined from aluminum and is fitted with bearings at the pivot and both ends. The lever assembly is located on the left side of the tail rotor gear box. The idler attaches the lever to the gear box and serves as a pivot for the lever. Pilot/gunner pedal movement is transmitted through linkage to the lever. Movement from the lever is transmitted through the control tube to the crosshead located on the right side of the gear box.

2.39.2. Defects. The primary concern is cracking at the location of the bearings. No cracks are allowed.

2.39.3. Primary Method. Eddy Current.

2.39.3.1. 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, and 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

2.39.3.2. 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 beg performed on all exposed surfaces of the installed part using applicable positions of this procedure. If required, the lever assembly shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.39.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

2.39.3.4. Preparation of Part. The lever assembly shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.39.3.5. NDI Equipment Setup.

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. Setup 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.)

2.39.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-39.

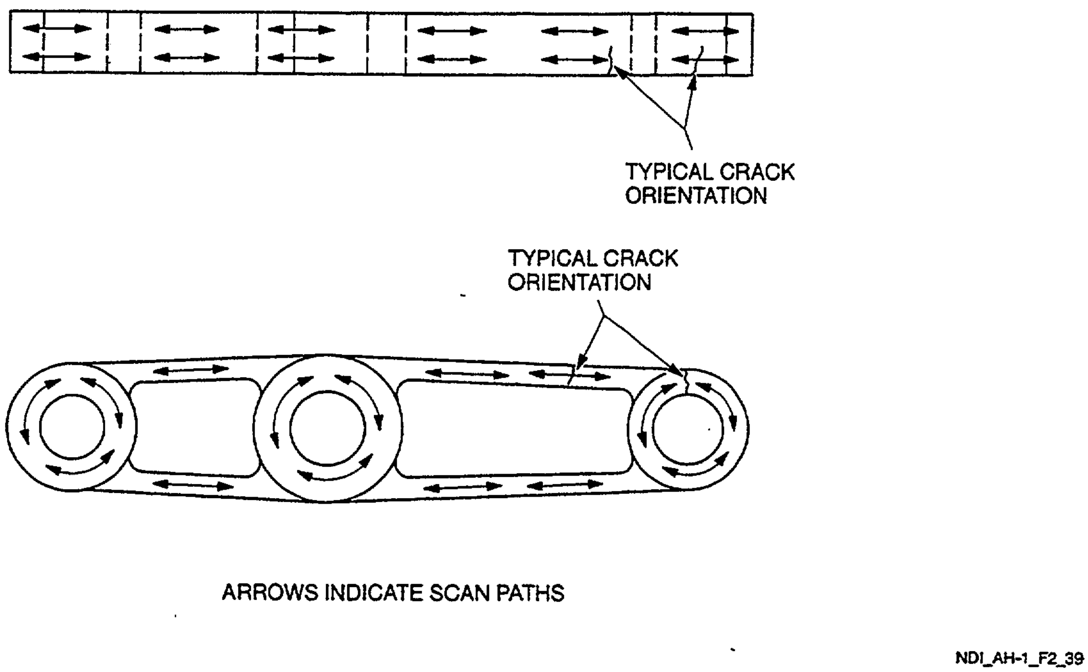


Figure 2-39. Tail Rotor Control Lever Assembly

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 is cause for rejection.

NOTE

Either probe identified in paragraph 2.39.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.39.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

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

2.39.5. System Securing. The lever assembly, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

2.40. TAIL ROTOR RETENTION NUT (MT).

2.40.1. Description (Figure 2-1. Index No. 40). The steel tail rotor retention nut holds the counterweight support and the split cone set securely on the tail gear box output shaft. These in turn secure the hub and blade assembly on the splined output shaft.

2.40.2. Defects. Defects can occur anywhere on the tail rotor retention nut. No cracks are allowed.

2.40.3. .Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

2.40.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the tail rotor control assembly disassembled in accordance with the applicable technical manuals listed in Table 1-1.

2.40.3.3. Access. Not applicable.

2.40.3.4. Preparation of Part. The tail rotor retention nut shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

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

2.40.3.6. 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 2-40.

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 2.40.3.8.
f. Repeat steps a. through e. for position 2.

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

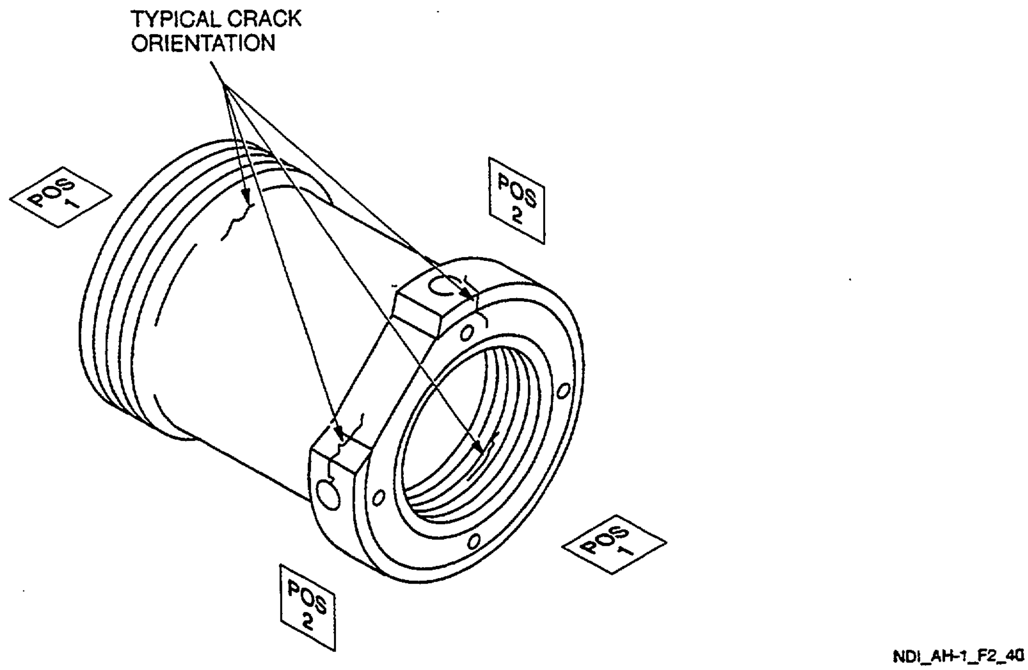


Figure 2-40. Tail Rotor Retention Nut

2.40.3.8. 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.

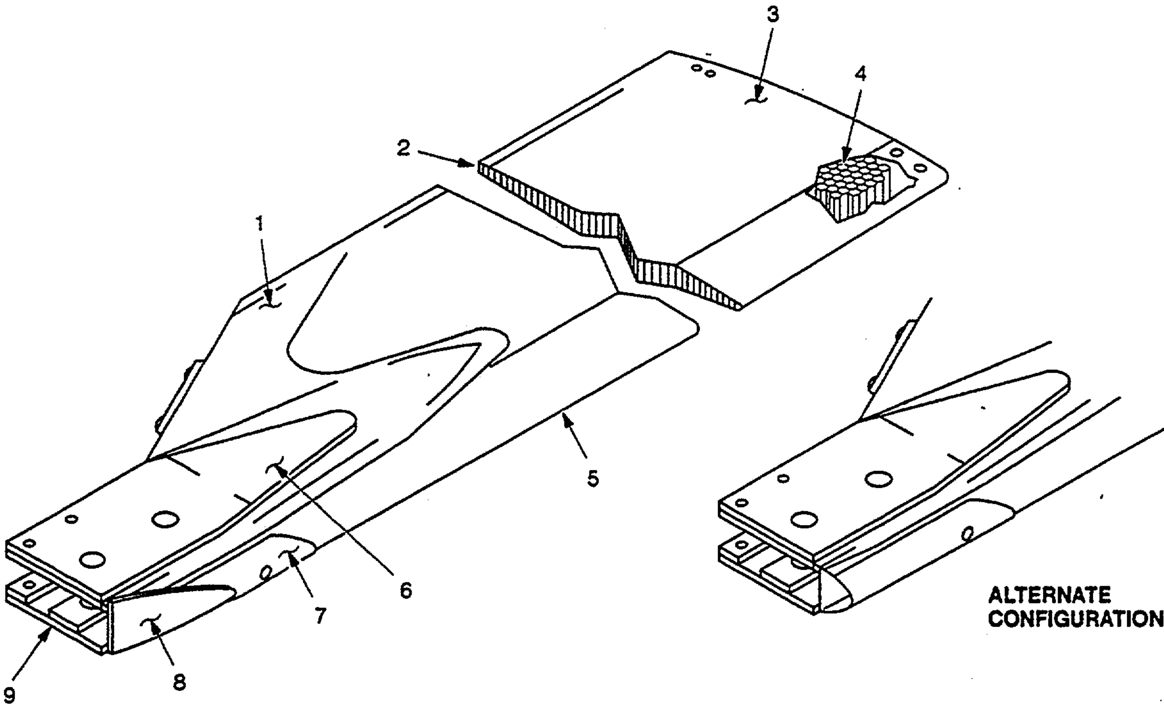
2.40.4. Backup Method. Fluorescent Penetrant, refer to paragraph 1.4.7.

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

2.41. TAIL ROTOR BLADE (VOIDS) (BT).

2.41.1. Description (Figure 2-1. Index No. 41). The all metal tail rotor blade is of bonded construction. Upper and lower aluminum alloy skins are bonded to an aluminum honeycomb core. Externally attached balance weights and balance screws inside the blade tip facilitate blade balancing.

2.41.2. Defects. Void damage may occur anywhere on both sides of the blade shown in Figure 2-41.



1. DOUBLER
2. TRAILING EDGE
3. SKIN
4. HONEYCOMB CORE
5. SPAR
6. GRIP PLATE
7. DRAIN HOLE DOUBLER
8. BUTT BLOCK
9. INNER GRIP PLATE

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Figure 2-41. Tail Rotor Blade Assembly

NOTE

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

2.41.3. Primary Method. Bond Inspection.

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

a. Bondmaster
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. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

2.41.3.2. 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 blades shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.41.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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

2.41.3.5. 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	- 0
DRIVE	- MID

c. Press SET and select DISPLAY PHASE.
d. Place probe on the 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 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.

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 d. and e. Continue to try phase settings 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 setup. Turn off or reset alarm/gate 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.

2.41.3.6. Inspection Procedure. Refer to Bond Testing Method, paragraph 1.4.6 and inspection; areas as shown in Figure 2-41.

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 with phase shift similar to the standard is indicative of a void. This setup is very sensitive to thin skin-to-core bonding. 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.

NOTE

The basic setup 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 other areas (do not go back to SET mode). Use the Bondmaster to compare similar areas. For example, to check for spar-to-skin voids, check front and back of blade in the same area, and/or scan the length of the blade in the area of skin-to-spar bonding. A localized phase and amplitude shift similar to the test block indicates a void. Note that when sliding the probe from the spar-to-trailing edge, the spar-to-honeycomb and the honeycomb-to-trailing edge filler block transitions are easily detected through the skin. Adjusting the NULL and GAIN and moving the probe carefully along the bond lines will permit inspection of these transitions.

2.41.3.7. Marking and Recording of Inspection Results. Mark and record the inspection results 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.

2.41.4. Backup Method. None required.

2.41.5. System Securing. Tail rotor blades, if removed, require installation in accordance to the applicable technical manual listed in Table 1-1.

2.42. TAIL ROTOR BLADE (SKIN CRACKS) (ET).

2.42.1. Description (Figure 2-1. Index No. 42). The all metal tail rotor blade is of bonded construction. Upper and lower aluminum alloy skins are bonded to an aluminum honeycomb core. Externally attached balance weights and balance screws inside the blade tip facilitate blade balancing.

2.42.2. Defects. The primary concern is cracks in skin associated with mechanical damage and to verify skin crack indications found visually. No cracks are allowed.

2.42.3. Primary Method. Eddy Current.

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

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

2.42.3.2. 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 blade shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.42.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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

2.42.3.5. NDI Equipment Settings. Refer to Eddy Current Method, paragraph 1.4.11.

a. Make the following initial settings on the Eddy Current Inspection Unit, NORTEC-19eI1:

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

b. Refer to Eddy Current Method, paragraph 1.4.11. Setup on reference block as follows:

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

2.42.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11. Figure 2-42 shows typical cracks and scan direction.

a. Place probe on good metal adjacent to mechanical damage or suspected cracking 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 is cause for rejection.

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

2.42.4. Backup Method. None required.

2.42.5. System Securing. The tail rotor blades, if removed, require installation in accordance with the applicable technical manual listed in Table 1-1.

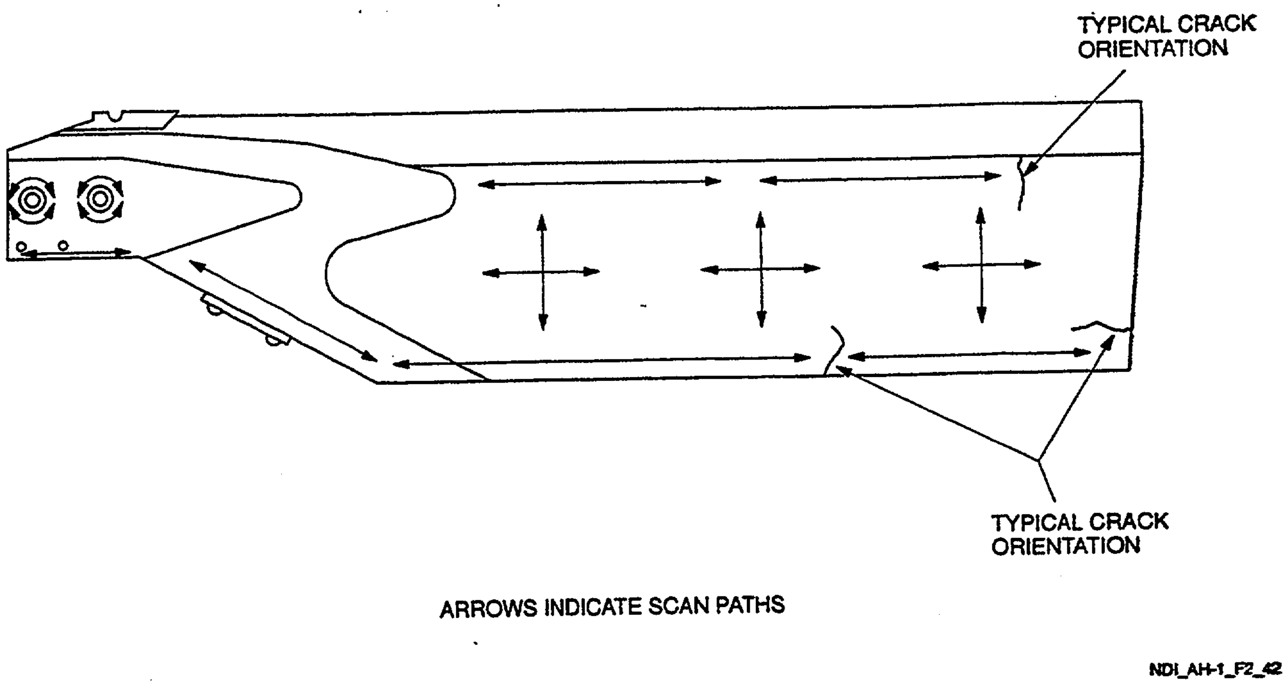


Figure 2-42. Tail Rotor Blade (Skin Cracks)

2.43. TAIL ROTOR BLADES (WATER) (RT).

2.43.1. Description (Figure 2-1, Index No. 43). The all metal tail rotor blade is of bonded construction. Upper and lower aluminum alloy skins are bonded to an aluminum honeycomb core. Externally attached balance weights and balance screws inside the blade tip facilitate blade balancing.

2.43.2. Defects. Water in the honeycomb core.

2.43.3. 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 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.

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

a. X-ray unit
b. Tripod, X-ray tubehead stand

c. Film Processor
d. M-2 Film Ready Pack 8 inch x 10 inch
e. Marking Material, refer to Table 1-8

2.43.3.2. 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 blades shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.43.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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

2.43.3.5. NDI Equipment Settings.

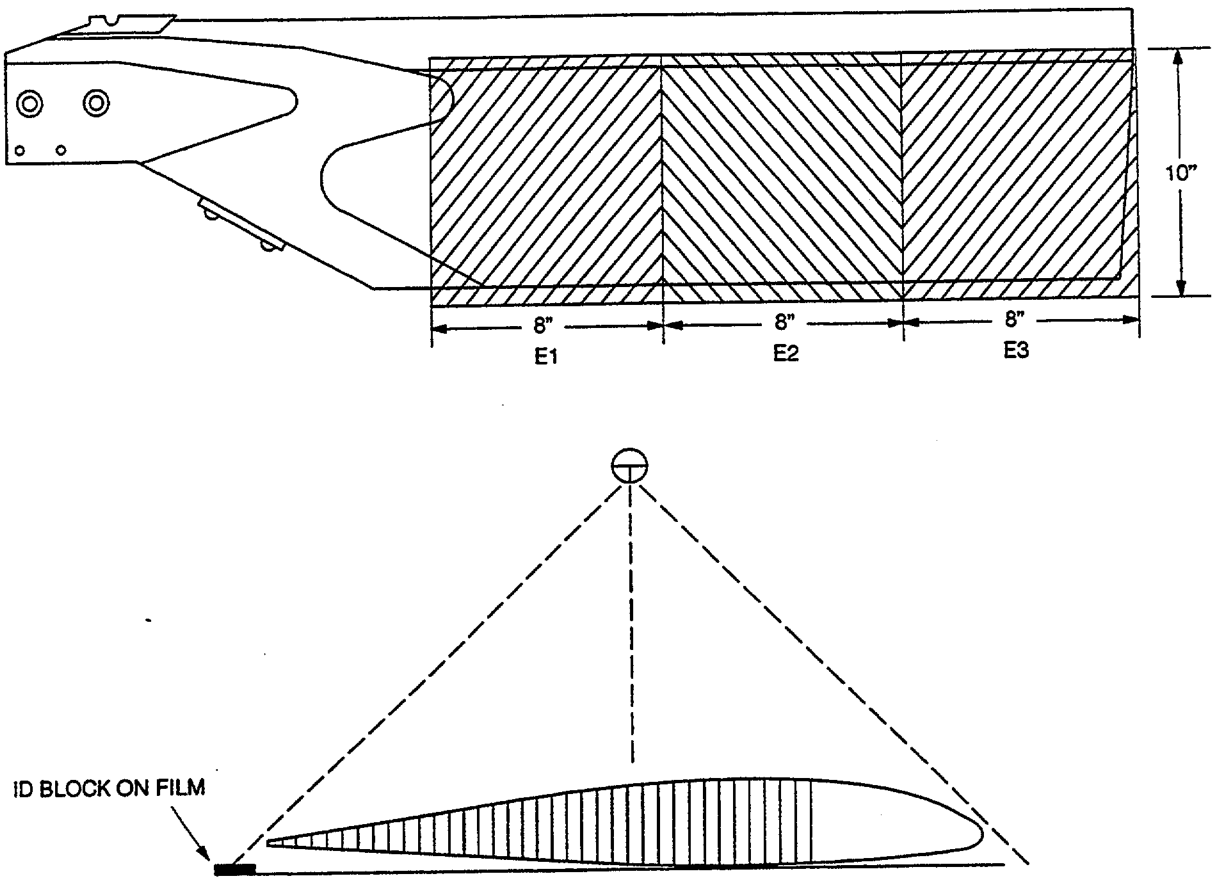
a. Refer to Radiographic X-ray Method, paragraph 1.4.10.
b. Typical equipment settings, inspection, and exposure data are given in Figure 2-43.

2.43.3.6. Inspection Procedure. Inspect designated areas. Refer to Figure 2-43 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 2.43.2, and as shown in Figure 2-43.

2.43.4. Backup Method. None required.

2.43.5. 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 off the helicopter, requires reinstallation in accordance with the applicable technical manual listed in Table 1-1.



RADIOGRAPHIC INSPECTION DATA						
EXPOSURE NUMBER	KV	MA	FFD (INCHES)	TIME (SEC)	FILM	
					TYPE	SIZE
E1	50	3.5	60	46	M-2	8 x 10
E2	50	3.5	60	46	M-2	8 x 10
E3	50	3.5	60	46	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&D UNITS IN AREAS OF INTEREST.
3. INSPECTION DATA SHALL BE ADJUSTED AS REQUIRED.

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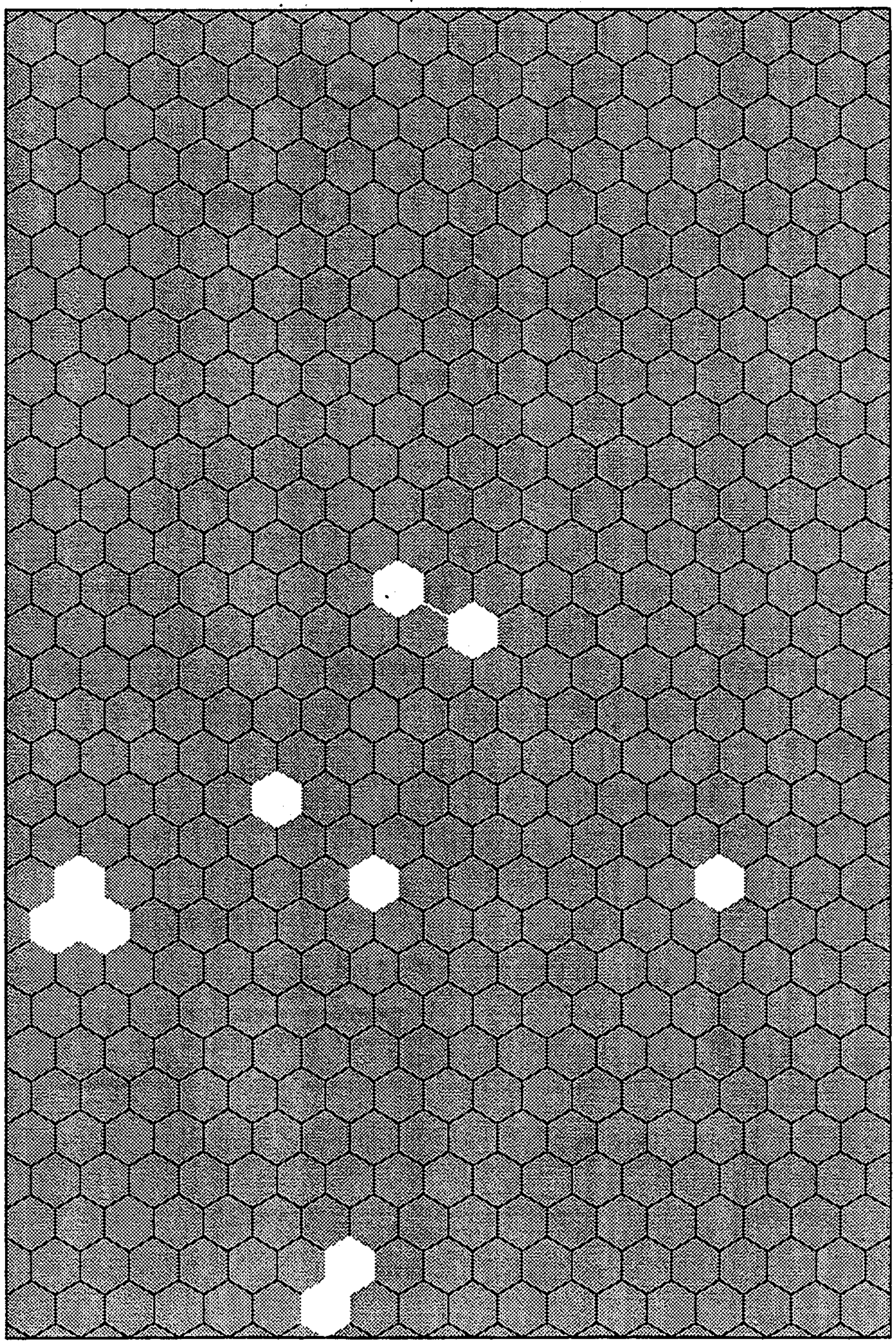
Figure 2-43. Tail Rotor Blade (Water) (Sheet 1 of 2)



LIGHT AREAS – WATER IN HONEYCOMB.

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Figure 2-43. Tail Rotor Blade (Water) (Sheet 2 of 2)

2.44. TAIL ROTOR BLADE PITCH HORN (ET).

2.44.1. Description (Figure 2-1. Index No. 44). The aluminum: alloy tail rotor blade pitch horn is attached to the inboard end of the tail rotor blade and is part of the tail rotor controls. Tail rotor control is through a complex hydraulically assisted mechanical linkage from pilot/gunner control pedals. This system translates pedal motion (through this linkage) to movement of the tail rotor crosshead. Pitch links connecting the crosshead and the pitch horn, change blade pitch.

2.44.2. Defects. The primary concern is cracking resulting from corrosion or fatigue. Particular attention shall be given to the pitch link bushing area. No cracks are allowed.

2.44.3. Primary Method. Eddy Current.

2.44.3.1. 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, and.0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

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

2.44.3.2. 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 hub and blade assembly shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.44.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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

2.44.3.5. 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. Setup 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.)

2.44.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-44.

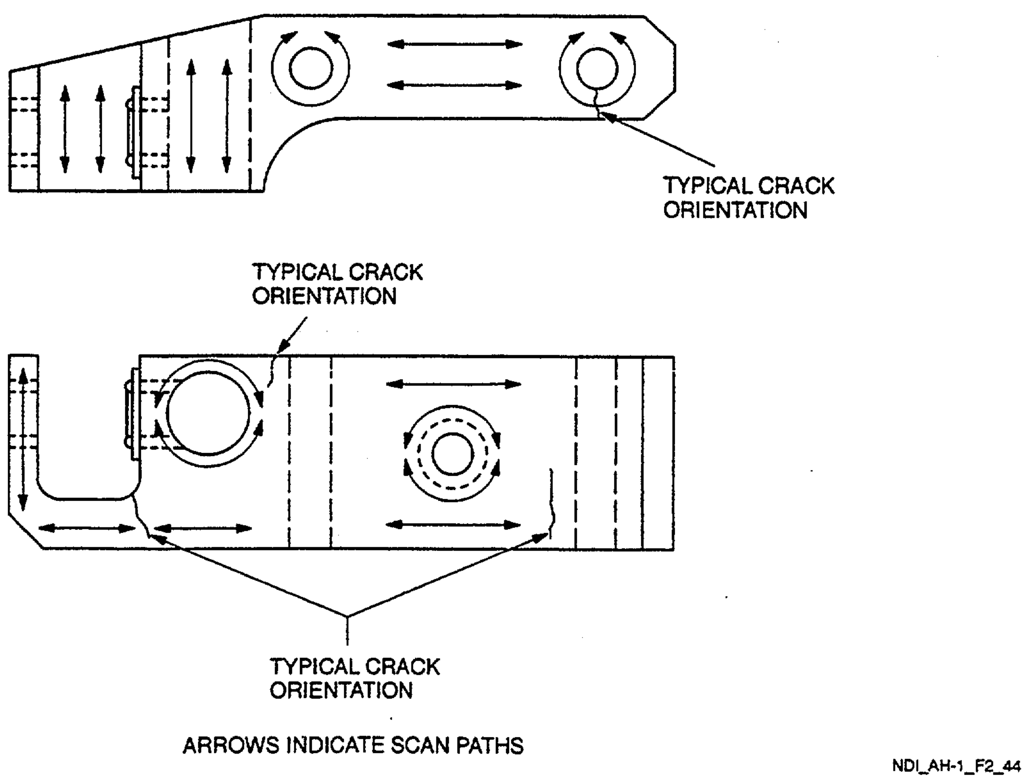


Figure 2-44. Tail Rotor Blade Pitch Horn

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 is cause for rejection.

NOTE

Either probe identified in paragraph 2.44.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 2.44.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

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

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

SECTION III

TRANSMISSION/DRIVETRAIN GROUP

3. GENERAL.

3.1. CONTENTS. The transmission/drivetrain group inspection items covered in this section are those items of the transmission, gearboxes, drive shafts, and components listed in Table 3-1, Transmission/Drivetrain Group Inspection Index. 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 3-1.

Table 3-1. Transmission/Drivetrain Group Inspection Index

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
2	Main Driveshaft Adapter	MT	3.2	3-2
*3	Main Transmission Cases	ET	3.3	3-3
*4	Main Transmission Ring Gear Case	MT	3.4	3-4
5	Pylon Lift Link	MT	3.5	3-5
6	Transmission Lift Link Attaching Point	ET	3.6	3-6
*7	Free Wheeling Clutch Assembly Adapter	MT	3.7	3-7
*8	Drive Quill Assemblies	MT	3.8	3-8
*9	Main Rotor Mast	MT	3.9	3-9
*10	Main Rotor Mast Bearing Retaining Plate	ET	3.10	3-10
*11	Tail Rotor Driveshaft	ET	3.11	3-11
*12	Intermediate Gearbox Case	ET	3.12	3-12
*13	Tail Rotor Drive Gearbox Case	ET	3.13	3-13

NOTE: * Indicates Flight Safety Part.

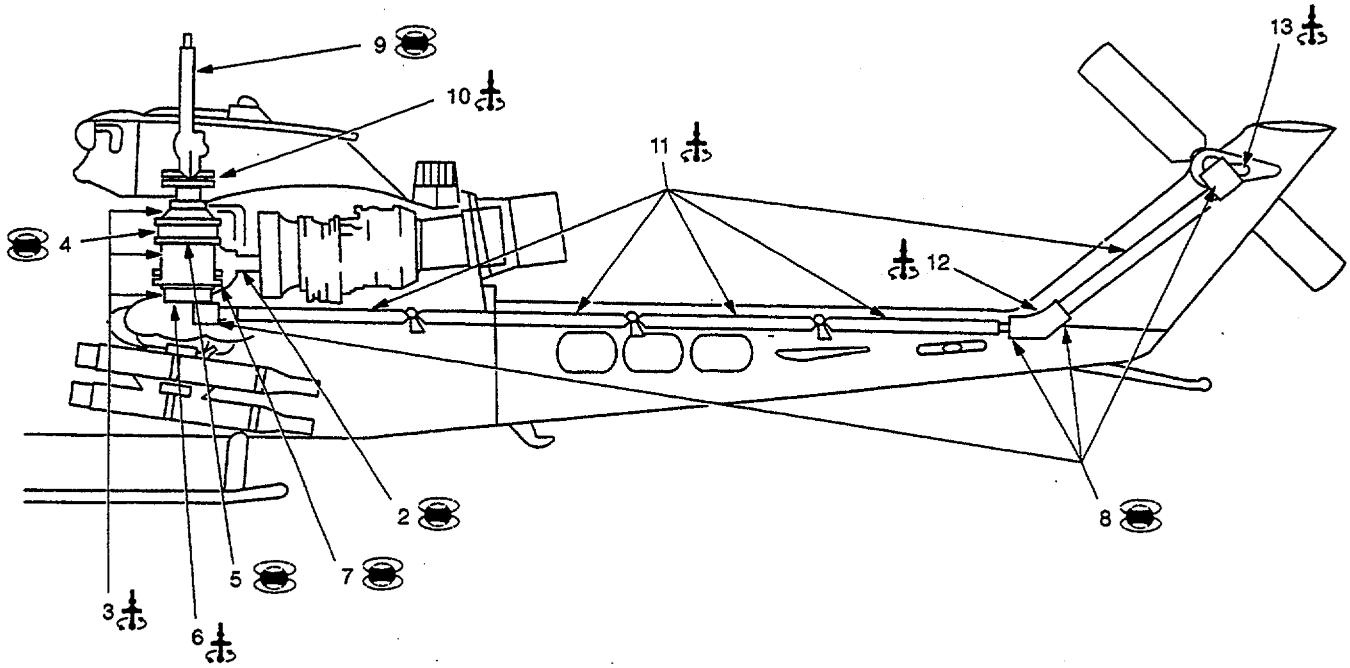


Figure 3-1. Transmission/Drivetrain Group

3.2. MAIN DRIVESHAFT ADAPTER (MT).

3.2.1. Description (Figure 3-1. Index No. 2). The main driveshaft adapter is installed between the engine output shaft and the main driveshaft. The adapter attaches to the outer coupling of the main driveshaft with a clamp set.

3.2.2. Defects. Defects can occur anywhere on the main driveshaft adapter. No cracks are allowed.

3.2.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

d. Fluorescent Magnetic Particles

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.

3.2.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the main driveshaft adapter 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. Refer to Magnetic Particle Method, paragraph 1.4.8.

3.2.3.6. 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 3-2.

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 3.2.3.8.

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

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

3.2.3.8. 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.

3.2.4. Backup Method. None required.

3.2.5. System Securing. Clean the adapter 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 driveshaft adapter requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.3. MAIN TRANSMISSION CASES (ET).

3.3.1. Description (Figure 3-1. Index No.3). The main transmission is located directly forward of the engine which furnishes power through the main driveshaft. The main transmission is comprised of five separate cases: top case, ring gear case, main case, support case, and accessory drive and sump case. All but the ring gear case are cast magnesium (the ring gear case is steel).

3.3.2. Defects. The primary concern is cracking associated with mechanical damage to the magnesium cases and to verify crack indications found visually. No cracks are allowed.

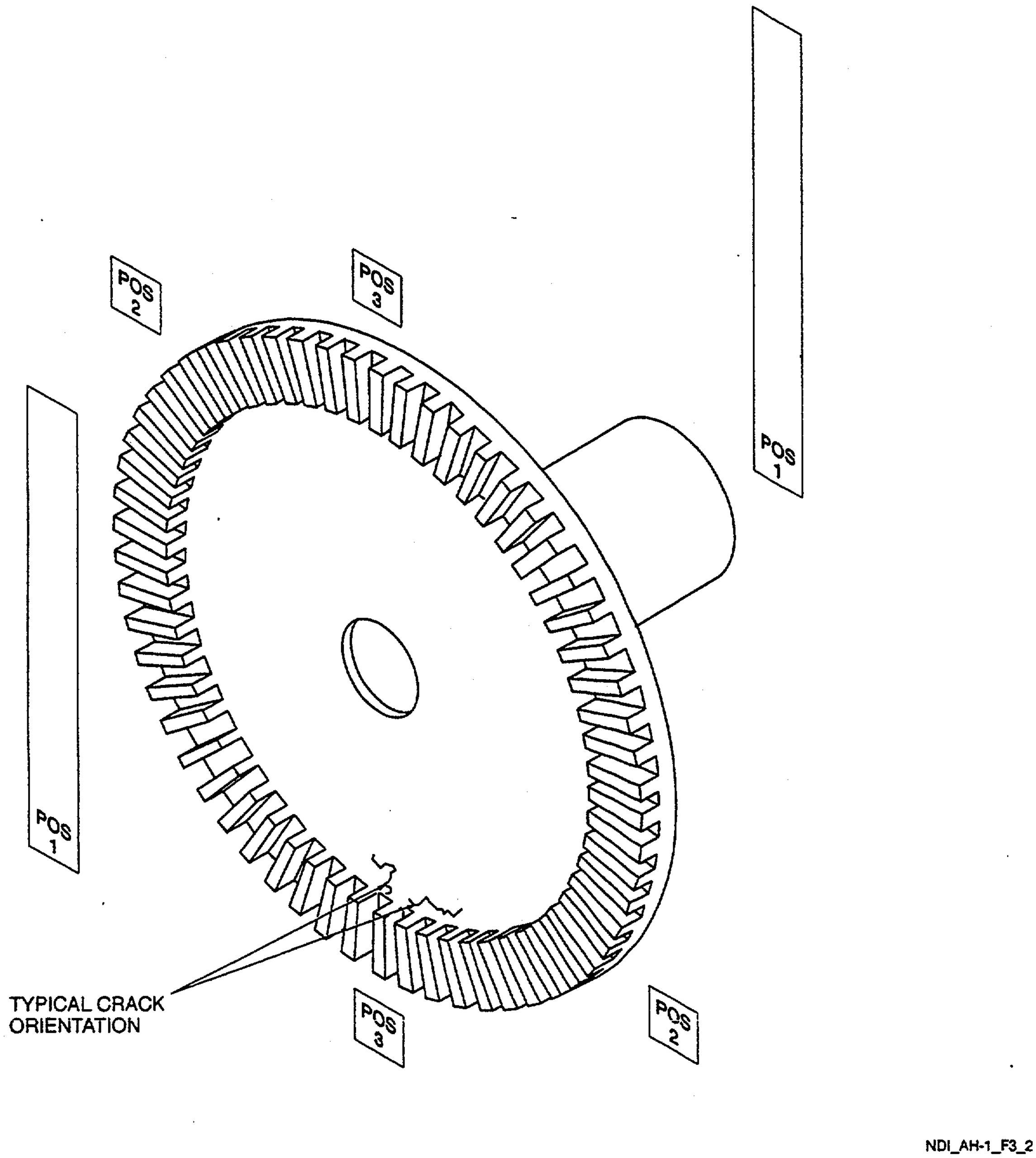


Figure 3-2. Main Driveshaft Adapter

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, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched magnesium (0.008, 0.020, and 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

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

3.3.3.3. Access. The main transmission is accessible from the stub wings through the transmission cowl assembly (Figure 1-4, Item No. 11).

3.3.3.4. Preparation of Part. The areas of mechanical damage or suspected cracking in the magnesium components 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-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. Setup on magnesium 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 on the 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.)

NOTE

If magnesium reference block is not available, use aluminum reference block. The use of the aluminum reference block requires a much larger phase adjustment after nulling on the magnesium part but this results in no significant change in sensitivity.

3.3.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 3-3.

a. Place probe on good metal adjacent to mechanical damage or suspected cracking and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part. If the mechanical damage prevents effective inspection, the area shall be blended in accordance with applicable technical manuals listed in Table 1-1. Reinspect, after blending is completed, to assure that no cracks may have been masked by the blending operation.

c. Any signal similar to the notches in the test block is 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.

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

3.3.4. Backup Method. None required.

3.3.5. System Securing. Close and latch the transmission cowl doors.

3.4. MAIN TRANSMISSION RING GEAR CASE (MT).

3.4.1. Description (Figure 3-1. Index No. 4). The main transmission is located directly forward of the engine which furnishes power through the main driveshaft. The main transmission is comprised of five separate cases: top case, ring gear case, main case, support case, and accessory drive and sump case. The ring gear case is the only one made of steel. The others are magnesium.

3.4.2. Defects. Defects can occur anywhere on the main transmission ring gear case. No cracks are allowed. Particular attention shall be directed to bolthole and radii areas.

3.4.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

d. Fluorescent Magnetic Particles

e. Consumable Materials, refer to Table 1-8

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

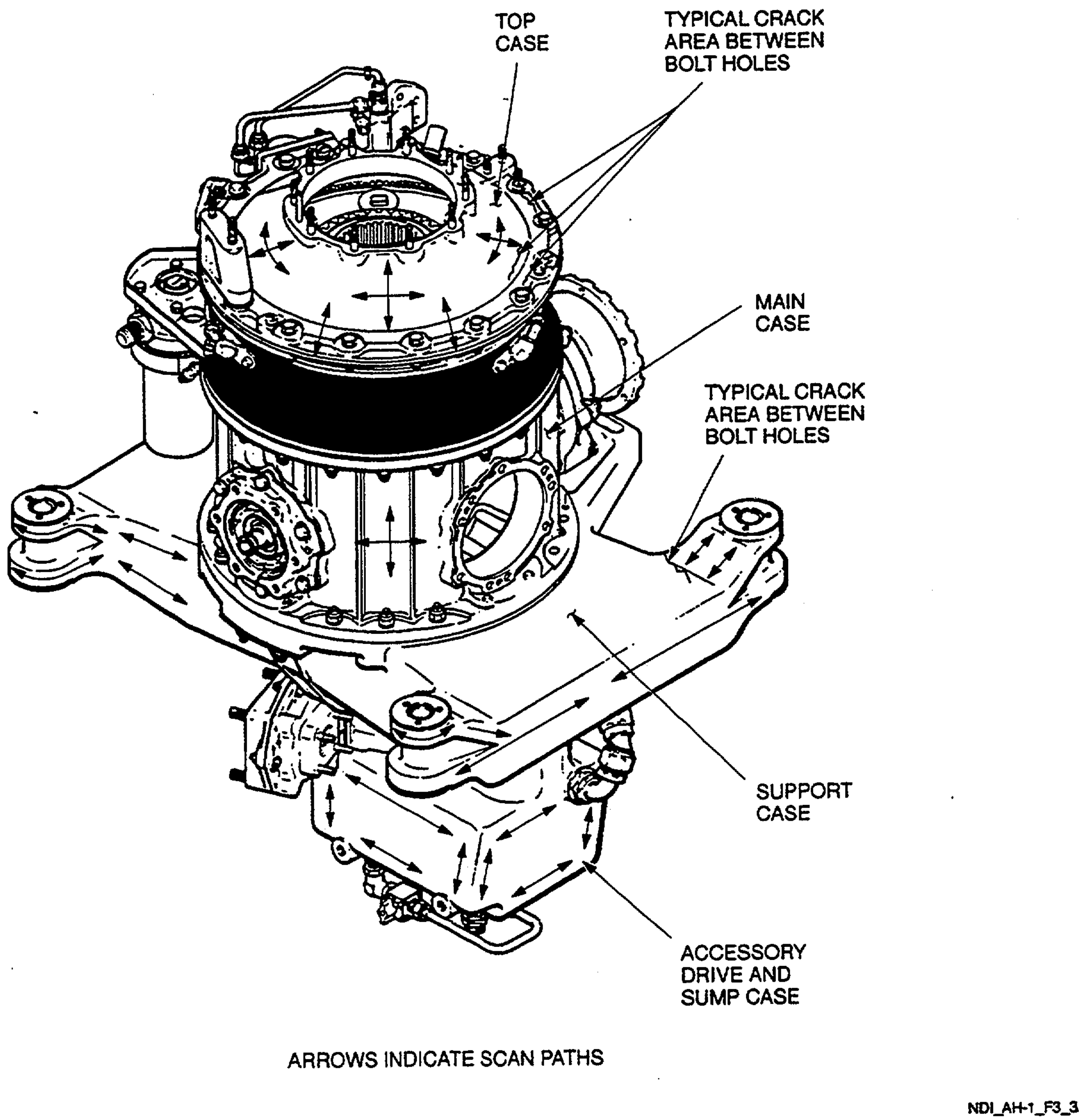


Figure 3-3. Main Transmission Cases

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

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

3.4.3.3. Access. The main transmission is accessible from the stub wings through the transmission cowl assembly (Figure 1-4, Item No. 11).

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. Refer to Magnetic Particle Method, paragraph 1.4.8.

3.4.3.6. Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Cracks detectable and positions required for this inspection are illustrated in Figure 3-4.

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 3.4.3.8.

f. Repeat steps a. through e. for positions 2 through 8.

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

3.4.3.8. 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.

3.4.4. <u>Backup Method</u>. None required.

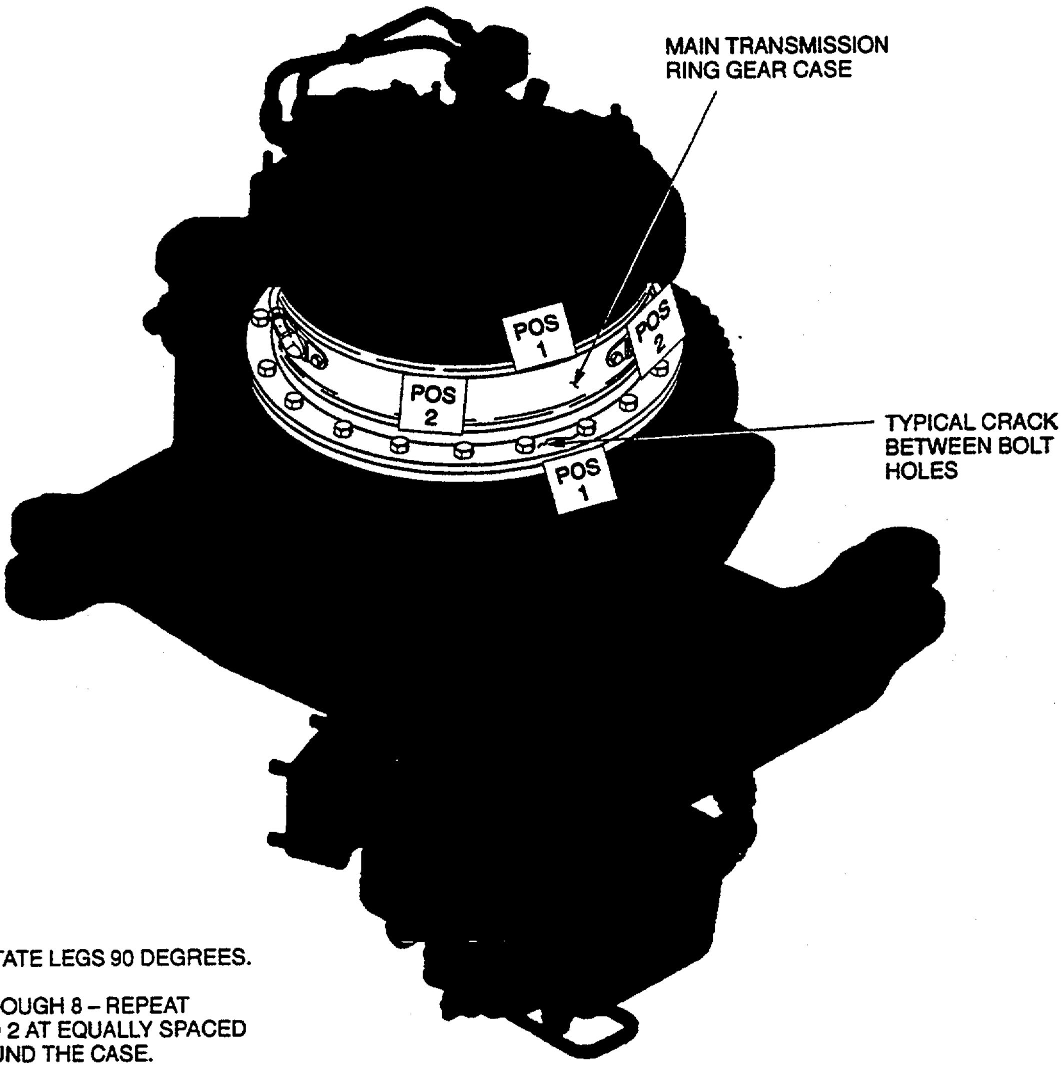
3.4.5. <u>System Securing</u>. Clean the ring gear case thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. Secure the transmission cowl assembly as required.

3.5. PYLON LIFT LINK (MT).

3.5.1. <u>Description (Figure 3-1. Index No. 5).</u> The pylon lift link transmits rotor lift to the fuselage. It connects the transmission to the lift link support beam.

3.5.2. <u>Defects</u>. Defects can occur anywhere on the surface of the pylon lift link. No cracks are allowed.

3.5.3. <u>Primary Method</u>. Magnetic Particle.



- POSITION 2 – ROTATE LEGS 90 DEGREES.
- POSITIONS 3 THROUGH 8 – REPEAT POSITIONS 1 AND 2 AT EQUALLY SPACED DISTANCES AROUND THE CASE.

Figure 3-4. Main Transmission Ring Gear Case

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

d. Fluorescent Magnetic Particles

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.

3.5.3.2. 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 pylon lift link shall be removed in accordance with the applicable technical manual listed in Table 1-1.

3.5.3.3. Access. Not applicable.

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. Mask bearings to protect them from intrusion of inspection medium.

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

3.5.3.6. 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 3-5.

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 3.5.3.8.

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

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

3.5.3.8. 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.

3.5.4. <u>Backup Method.</u> None required.

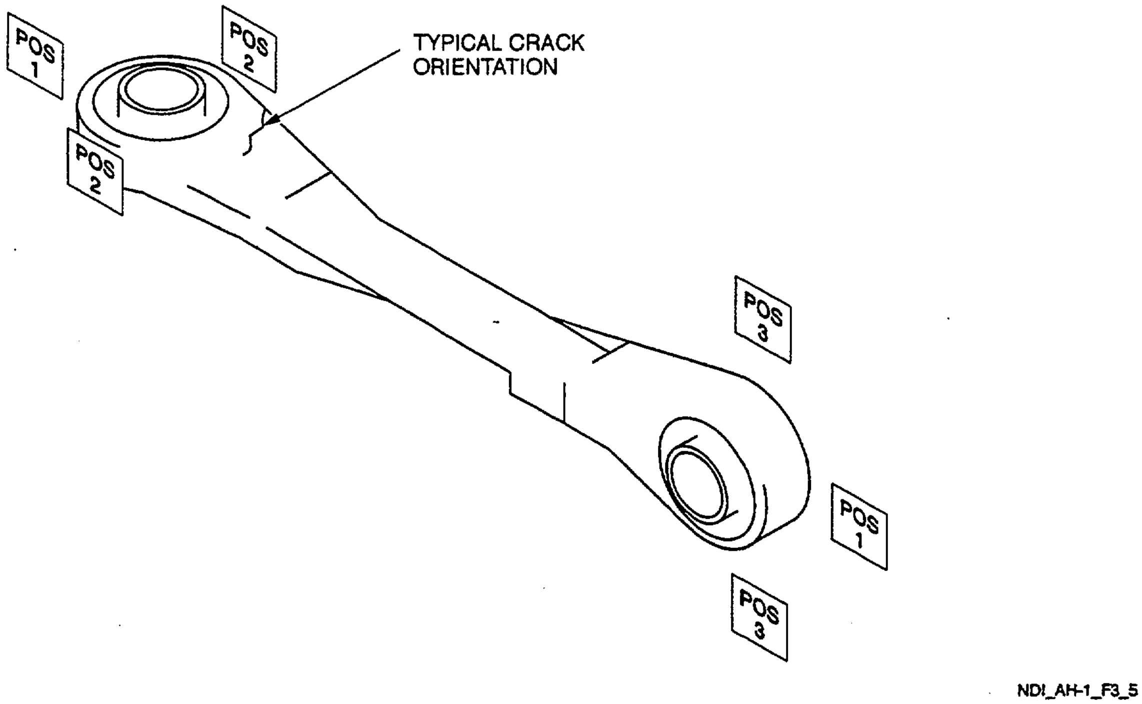


Figure 3-5. Pylon Lift Link

3.5.5. System Securing. Clean the pylon lift link thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.1 6. The pylon lift link, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.6. TRANSMISSION LIFT LINK ATTACHING POINT (ET).

3.6.1. Description (Figure 3-1. Index No. 6). The lift link attach point is an integral part of the aluminum lift link beam and provides a means of attaching the transmission to the fuselage by the lift link. The lift link attaching point has integral lugs fitted with flanged steel bushings.

3.6.2. Defects. Cracks can occur anywhere on the transmission lift link. Particular attention shall be given to the area around the bushings. No cracks are allowed.

3.6.3. Primary Method. Eddy Current.

3.6.3.1. 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, and 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

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

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 applicable positions of this procedure. If required, the transmission lift link attach point shall be removed in accordance with the applicable technical manual listed in Table 1-1.

3.6.3.3. Access. The lift link attaching point is accessible from the port stub wing through the transmission cowl assembly (Figure 1-4, Item No. 11).

3.6.3.4. Preparation of Part. The lift link attaching lugs shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

3.6.3.5. 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. Setup 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.)

3.6.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 3-6.

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

b. Inspect the part. Pay particular attention around the bushings and the edges of the lugs.

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

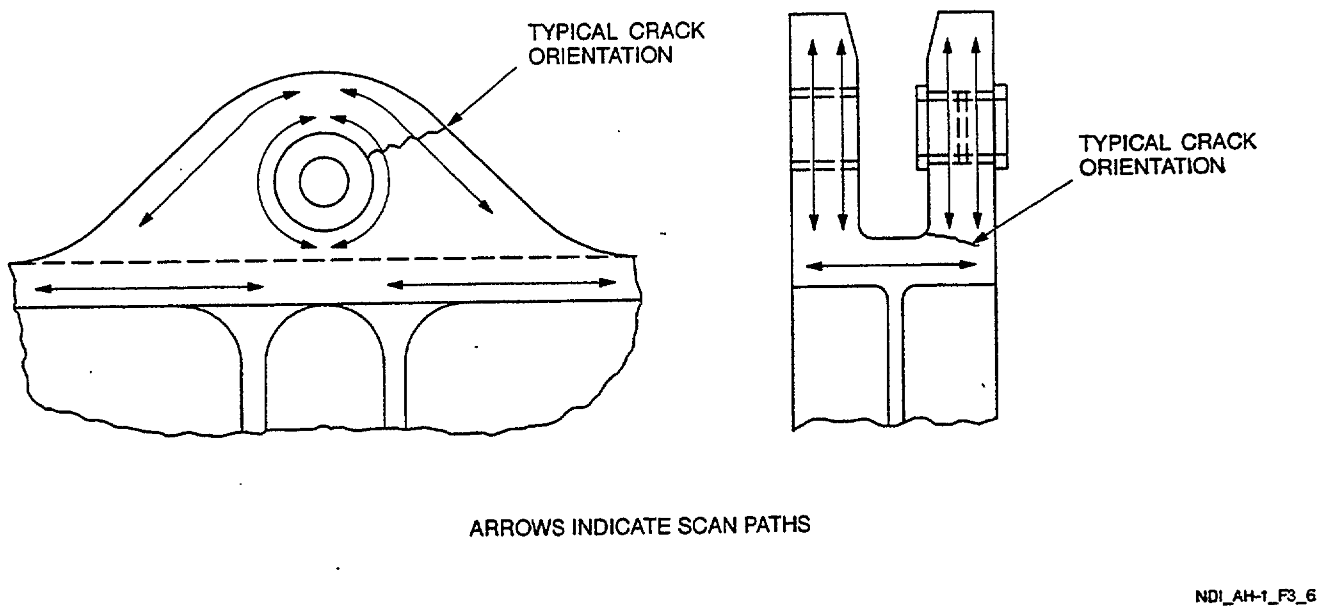


Figure 3-6. Transmission Lift Link Attaching Point

NOTE

Either probe identified in paragraph 3.6.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 3.6.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

3.6.4. Backup Method. None required.

3.6.5. System Securing. The lift link, if removed, requires reinstallation in accordance with the applicable technical manual listed in Table 1-1.

3.7. FREE WHEELING CLUTCH ASSEMBLY ADAPTER (MT).

3.7.1. Description (Figure 3-1. Index No. 7). The main input quill is located on the aft side of the transmission. The engine transmits power to the transmission through the main driveshaft and the main input quill. A free wheel (one way) clutch located in the main input quill operates automatically, engaging to allow engine to drive rotor or disengaging the idling engine during autorotational descent.

3.7.2. Defects. Cracks can occur anywhere on the surface of the free wheeling clutch assembly adapter. Particular attention shall be directed to the clutch assembly surfaces that contact the main driveshaft. No cracks are allowed.

3.7.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

3.7.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the clutch assembly adapter removed in accordance with the applicable technical manuals listed in Table 1-1.

3.7.3.3. Access. Not applicable.

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. Refer to Magnetic Particle Method, paragraph 1.4.8.

3.7.3.6. 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 3-7.

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 3.7.3.8.
f. Repeat steps a. through e. for positions 2 through 4.

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

3.7.3.8. 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.

3.7.4. Backup Method. None required.

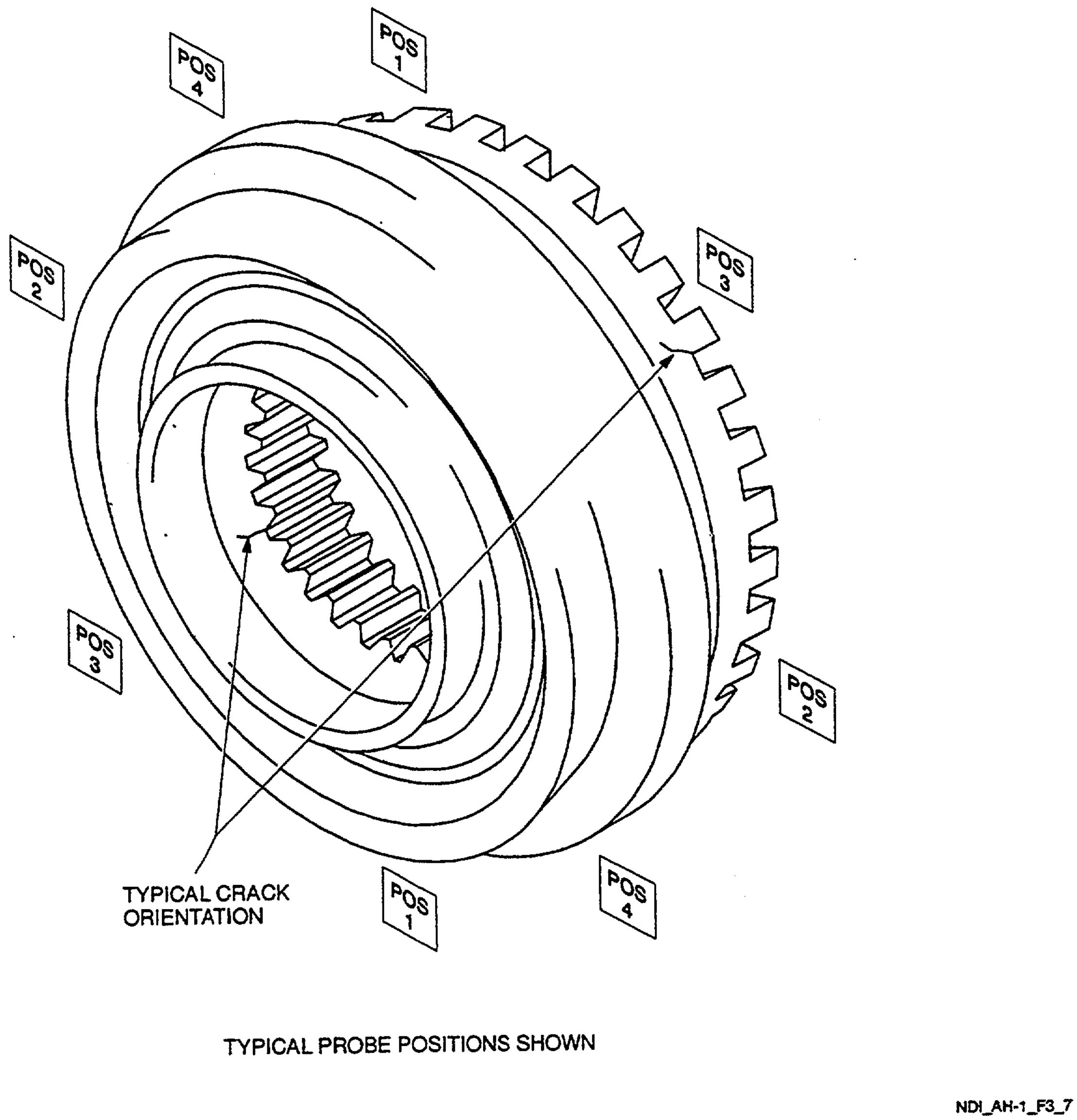


Figure 3-7. Free Wheeling Clutch Assembly Adapter

3.7.5. System Securing. Clean the adapter 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 free , wheeling clutch assembly adapter requires installation in accordance with the applicable technical manual listed in Table 1-1.

3.8. DRIVE QUILL ASSEMBLIES (MT).

3.8.1 Description (Figure 3-1. Index No. 8). This inspection is applicable to the tail rotor drive quill, hydraulic pump/tachometer drive quill, fan drive quill, alternator drive quill, intermediate and tail rotor drive gearbox quill assemblies, and related outer/inner couplings.

3.8.2. Defects. Perform the NDI method contained herein on the components listed above for the purpose of verification of crack indications identified by visual inspection during routine maintenance. Particular attention shall be directed to gear teeth. 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

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 and the drive quill assemblies shall be removed and disassembled 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.

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.

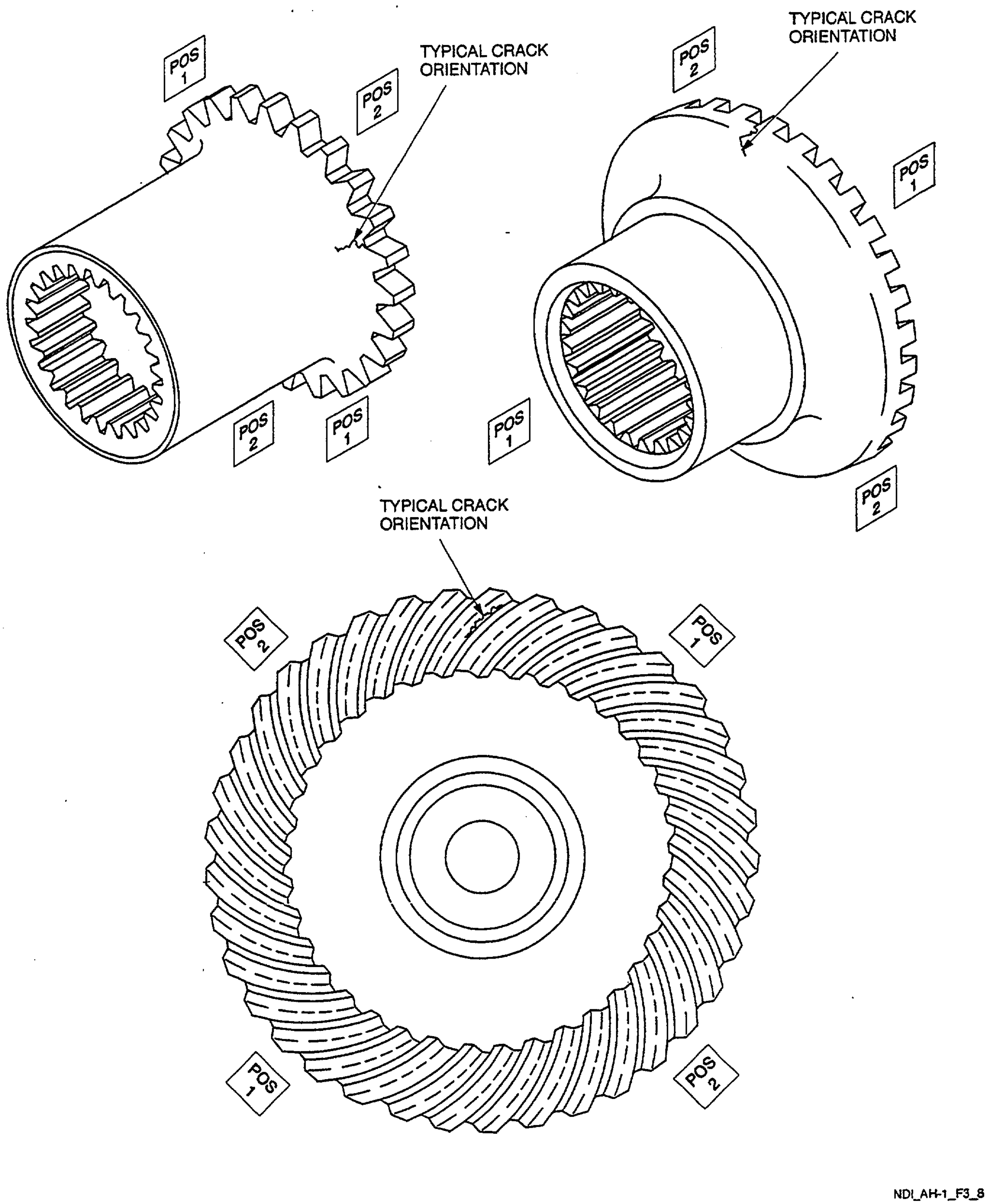


Figure 3-8. Drive Quill Assemblies

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 on each part.

3.8.3.7. Marking and Recording of Inspection Results. Mark and record the 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 drive quill assemblies 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 drive quill assemblies require reassembly and installation in -accordance with the applicable technical manuals listed in Table i-1.

3.9. MAIN ROTOR MAST (MT).

3.9.1. Description (Figure 3-1. Index No. 9). The mast is a hollow 4340 steel tube with three external splines. The mast provides a means of mounting and driving the main rotor by connecting the main rotor to the transmission.

3.9.2. Defects. Defects can occur anywhere on the surface of the main rotor mast. No cracks are allowed. Pay particular attention to threads, radii, splines, and lower end gear.

3.9.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

d. Fluorescent Magnetic Particles

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.

3.9.3.2. 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 main rotor mast shall be removed in accordance with the applicable technical manual listed in Table 1-1.

3.9.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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. Refer to Magnetic Particle Method, paragraph 1.4.8.

3.9.3.6. 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 3-9.

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.

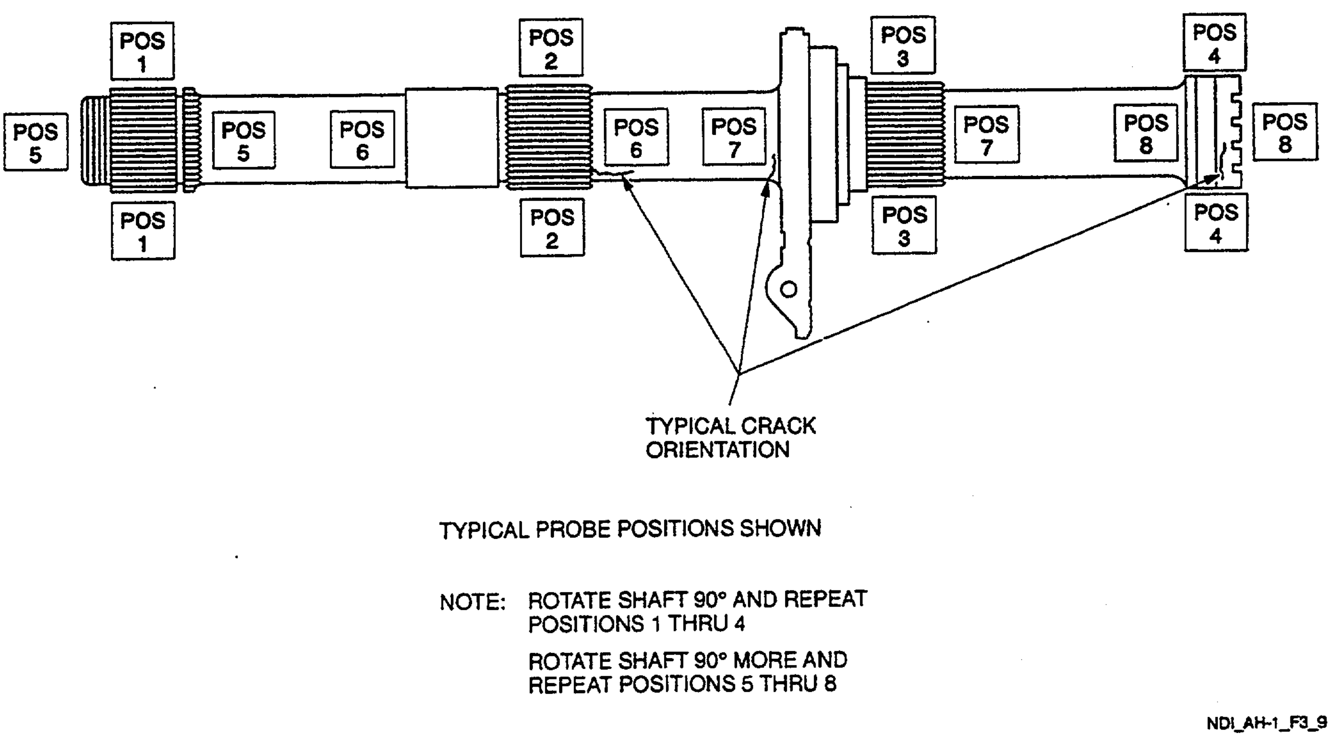


Figure 3-9. Main Rotor Mast

d. Inspect for cracks using the black light.

e. Demagnetize before moving to the next position. Refer to paragraph 3.9.3.8.

f. Repeat steps a. through e. for positions 2 through 8.

g. Rotate the shaft 90° and repeat steps a. through e. for positions 1 through 4.

h. Rotate shaft 90° and repeat steps a. through e. for positions 5 through 8.

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

3.9.3.8. 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.

3.9.4. Backup Method. None required.

3.9.5. System Securing. Clean the rotor mast 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 mast, if removed, requires reassembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

3.10. MAIN ROTOR MAST BEARING RETAINING PLATE (ET).

3.10.1. Description (Figure 3-1. Index No. 10). This component secures the upper main rotor mast bearing into the transmission top case and functions as a mounting plate for the upper shaft seal. In addition, this plate has an integral boss which is the attachment point for the collective idler assembly, \para component in the rotor group. The plate is machined from an aluminum forging.

3.10.2. Defects. Cracking may occur anywhere on the part but particularly at the idler boss. 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, 90° 1/2 inch drop

d. Cable Assembly

e. Reference Block, three-notched aluminum (0.008, 0.020, and 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 applicable positions of this procedure. If required, the main rotor mast bearing retaining plate shall be removed in accordance with the, applicable technical manual listed in Table 1-1.

3.10.3.3. Access. Not applicable.

3.10.3.4. Preparation of Part. The bearing retaining plate 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. Setup 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 for the designated inspection areas.

a. Place probe on the main mast bearing retaining plate 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 is 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 as required by paragraph 1.3.

3.10.4. Backup Method. None required.

3.10.5. System Securing. The main mast bearing retaining plate, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

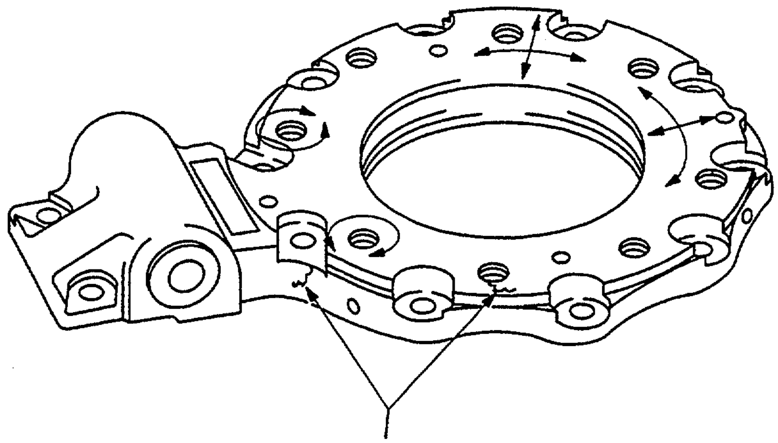


Figure 3-10. Main Rotor Mast Bearing Retaining Plate

3.11. TAIL ROTOR DRIVESHAFT (ET).

3.11.1. Description (Figure 3-1. Index No. 11). Five tail rotor driveshaft sections transmit power from the transmission to the tail rotor through two gear boxes. The shaft sections are identical and are supported by three hanger assemblies mounted on the tail boom and engine deck.

3.11.2. Defects. The primary concern is cracks associated with mechanical damage and to verify crack indications found visually. 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, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, and 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 and the forward driveshaft removed in accordance with applicable technical manuals listed in Table 1-1.

3.11.3.3. Access. Four of the five driveshaft segments are completely accessible by opening the four driveshaft covers (Figure 1-4, Items No. 48, 49, 50, and 52) and removing the gear box fairing and cover (Figure 1-4, Item No. 53). The forward driveshaft is located beneath the engine and requires removal for inspection.

3.11.3.4. Preparation of Part. The driveshafts 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. Setup 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 the 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 for the designated inspection areas.

a. Place probe on good material adjacent to the mechanical damage or suspected crack 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 is 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.

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

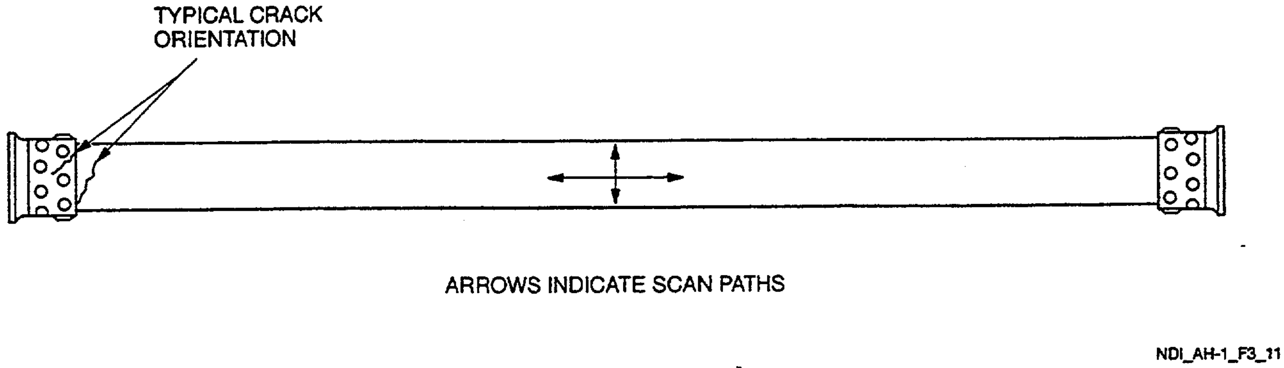


Figure 3-11. Tail Rotor Driveshaft

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

3.11.5. System Securing. The tail rotor driveshaft requires installation in accordance with the applicable technical manuals listed in Table 1-1. Secure all fairings and covers as required.

3.12. INTERMEDIATE GEARBOX CASE (ET).

3.12.1. Description (Figure 3-1. Index No. 12). The intermediate gearbox is a cast magnesium case located on the tail boom at the base of the vertical fin and provides a change in direction of the tail rotor driveshaft by means of a quill gear in each end. (Inspection of the quill sleeves housing and the quill gears is included in this procedure.)

3.12.2. Defects. The primary concern is cracking associated with mechanical damage to the gearbox case, including the quill sleeves, and to verify crack indications found visually. No cracks are allowed.

3.12.3. Primary Method. Eddy Current.

3.12.3.1. 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 magnesium (0.008, 0.020, and 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

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

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

3.12.3.3. Access. Access is by removal of the intermediate gearbox cover (Figure 1-4, Item No. 51).

3.12.3.4. Preparation of Part. The areas of mechanical damage or suspected cracking in the magnesium case and quill sleeves shall be thoroughly cleaned. Refer to Preparation of Part or Area. for NDI, paragraph 1.4.4.

3.12.3.5. 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. Setup on test block as follows:

(1) Null probe test block.

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

(3) Move probe over all three notches on the 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.)

NOTE

If magnesium reference block is not available, use aluminum reference block. The use of the aluminum reference block requires a much larger phase adjustment after nulling on the magnesium part but this results in no significant change in sensitivity.

3.12.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 3-12.

a. Place probe on good metal adjacent to mechanical damage or suspected cracking 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 is cause for rejection.

NOTE

Either probe identified in paragraph 3.12.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 3.12.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

3.12.4. <u>Backup Method</u>. None required.

3.12.5. <u>System Securing</u>. The intermediate gearbox cover, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

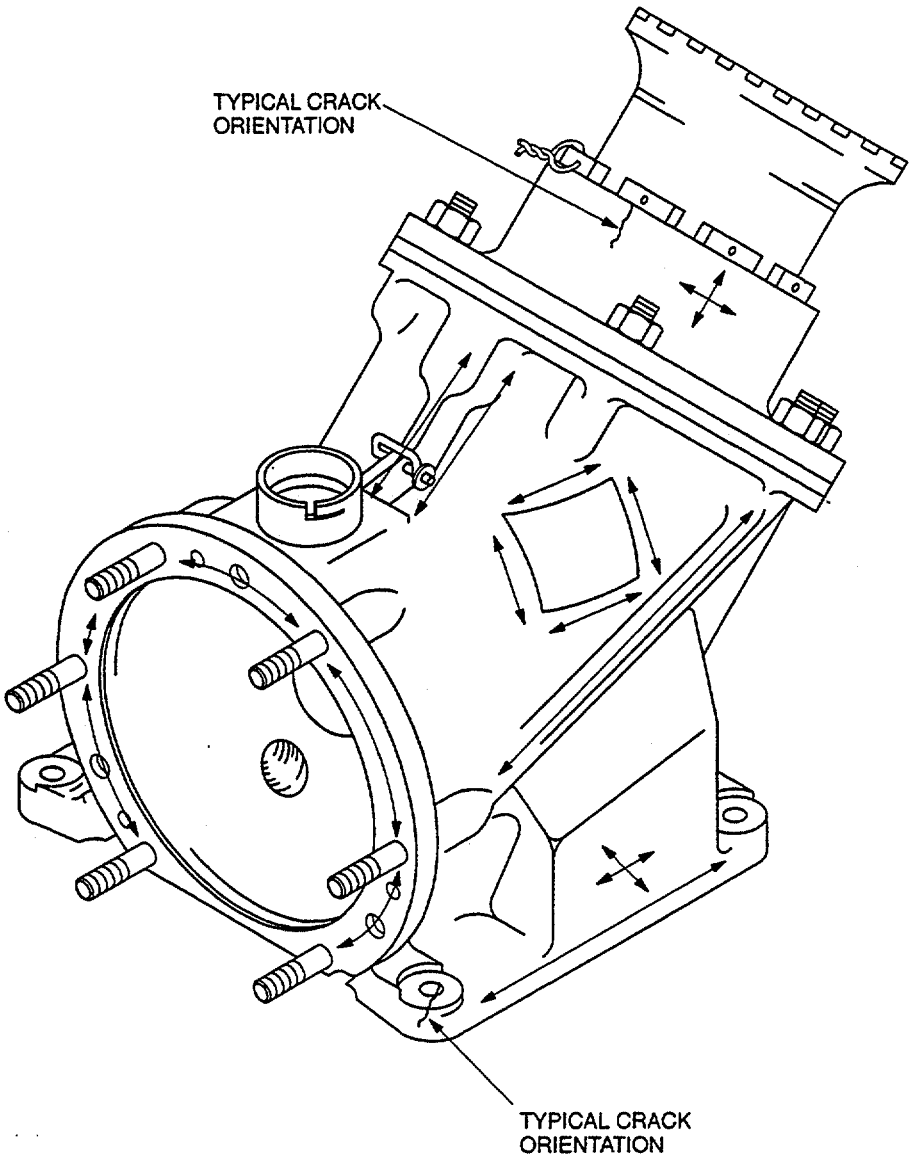


Figure 3-12. Intermediate Gearbox Case

3.13. TAIL ROTOR DRIVE GEARBOX CASE (ET).

3.13.1. Description (Figure 3-1. Index No. 13). The tail rotor drive gearbox is located at the top of the vertical fin. This gearbox provides a change in direction and gear reduction between the input drive shaft and the tail rotor shaft to which the tail rotor is mounted. It consists of a cast magnesium case with mating input and output quill gear assemblies. The output is housed in a magnesium sleeve. (Inspection of this sleeve is included in this procedure.)

3.13.2. Defects. The primary concern is cracking associated with mechanical damage to the gearbox case including the output quill sleeves and to verify crack indications found visually. No cracks are allowed.

3.13.3. Primary Method. Eddy Current.

3.13.3.1. 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 magnesium (0.008, 0.020, and 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

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

3.13.3.3. Access. Access is by removal of the gear box fairing and cover (Figure 1-4, Item 53). The use of a platform or workstand will be required.

WARNING
Maintenance Stands/Workstands

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

3.13.3.4. Preparation of Part. The areas of mechanical damage or suspected cracking in the magnesium case shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

3.13.3.5. NDI Equipment Settings.

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

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. Setup on test block as follows:

(1) Null probe on magnesium 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.)

NOTE

If magnesium reference block is not available, use aluminum reference block. The use of the aluminum reference block requires a much larger phase adjustment after nulling on the magnesium part but this results in no significant change in sensitivity.

3.13.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 3-13.

a. Place probe on good metal adjacent to mechanical damage or suspected cracking and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part. If the mechanical damage prevents effective inspection, the area shall be blended in accordance with applicable technical manuals in Table 1-1. Reinspect, after blending is completed, to assure no cracks have been masked by the blending operation.

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

NOTE

Either probe identified in paragraph 3.13.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 3.13.3.5 b (1), (2), and (3) shall be repeated each time a change is made.

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

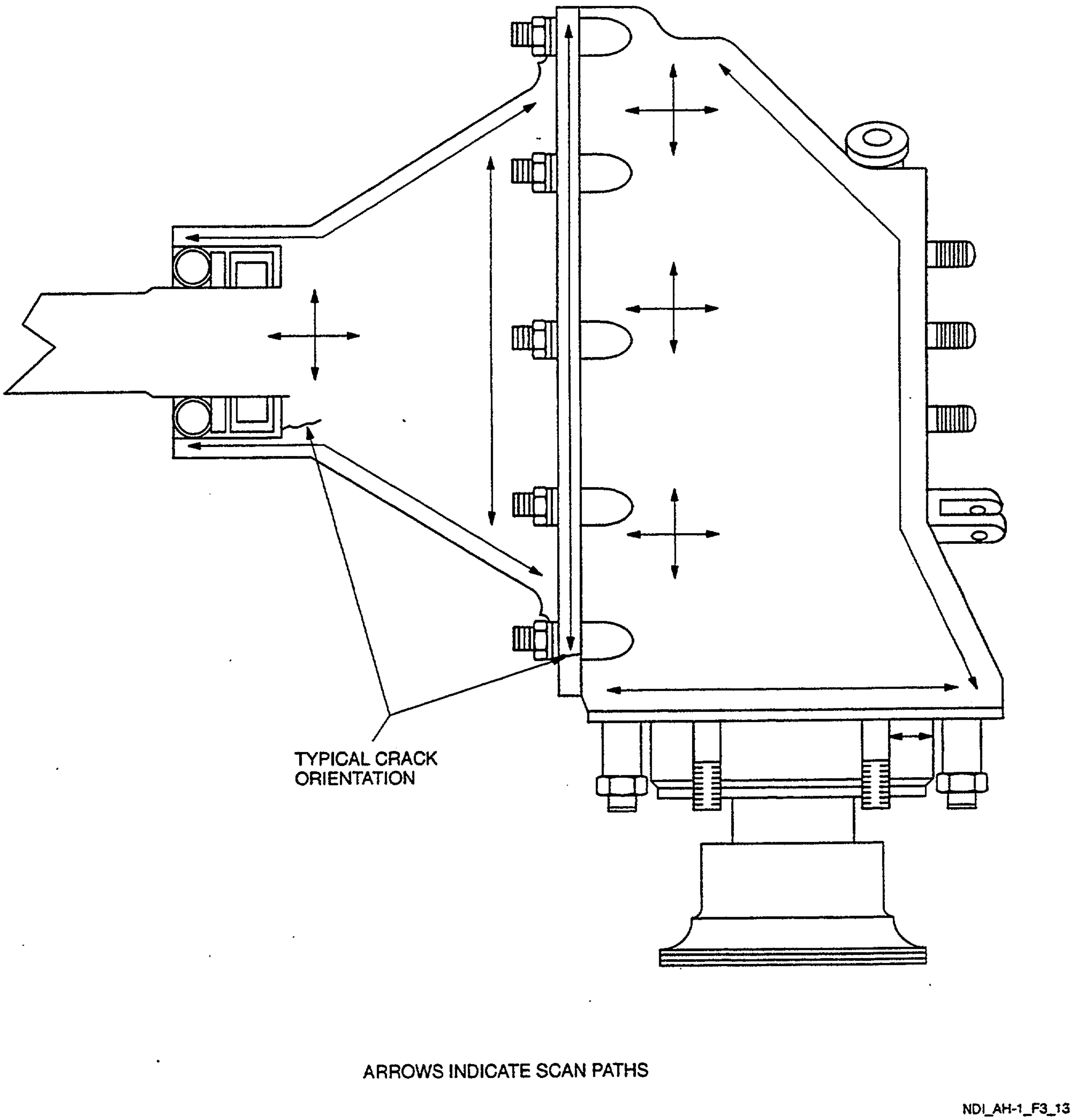


Figure 3-13. Tail Rotor Drive Gearbox Case

3.13.4. Backup Method. None required.

3.13.5. System Securing. Replace tail rotor gearbox cover in accordance with the applicable technical manual listed in Table 1-1.

SECTION IV
AIRFRAME AND LANDING GEAR GROUP

4. GENERAL.

4.1. CONTENTS. The airframe and landing gear group inspection items covered in this section are those critical items listed in Table 4-1, Airframe and Skid/Landing Gear Group Inspection Index. 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 4-1.

Table 4-1. Airframe and Skid/Landing Gear Group Inspection Index

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
2	Forward Fuselage Assembly	ET	4.2	4-2
3	Honeycomb Cores and Panels (Voids)	BT	4.3	4-3
4	Fluid in Honeycomb Core Fuselage Panels, Vertical Fin, etc.	RT	4.4	4-4
5	Suppressor Cowling Mount Rod End	MT	4.5	4-5
6	Suppressor Cowling Mount Rod End Clevis Pin	MT	4.6	4-6
7	Tailboom Assembly	ET	4.7	4-7
8	Tailboom Stringers	ET	4.8	4-8
9	Pilot Seat Upper Guide Fitting	ET	4.9	4-9
10	Pilot Seat Lower Guide Fitting	ET	4.10	4-10
11	Pilot Seat Handle Assembly	MT	4.11	4-11
12	Pilot Seat Support Tubes	MT	4.12	4-12
13	Pilot Seat Latch Spring	MT	4.13	4-13
14	Pilot Seat Return Spring	MT	4.14	4-14
15	Pilot Seat Latch Pin	MT	4.15	4-15
*16	Engine Mount Assemblies	MT	4.16	4-16
*17	Engine Mount Fittings	MT	4.17	4-17
18	Pillow Block	MT	4.18	4-18
19	Jack Fittings	MT	4.19	4-19
20	Tow Rings	MT	4.20	4-20
21	Bolts, Rod Ends, Turnbuckles, Rods, and Pins	MT	4.21	4-21
*22	Fore and Aft Cross Tube Assemblies	UT	4.22	4-22
23	Skid Saddles	ET	4.23	4-23

NOTE: * Indicates Flight Safety Part.

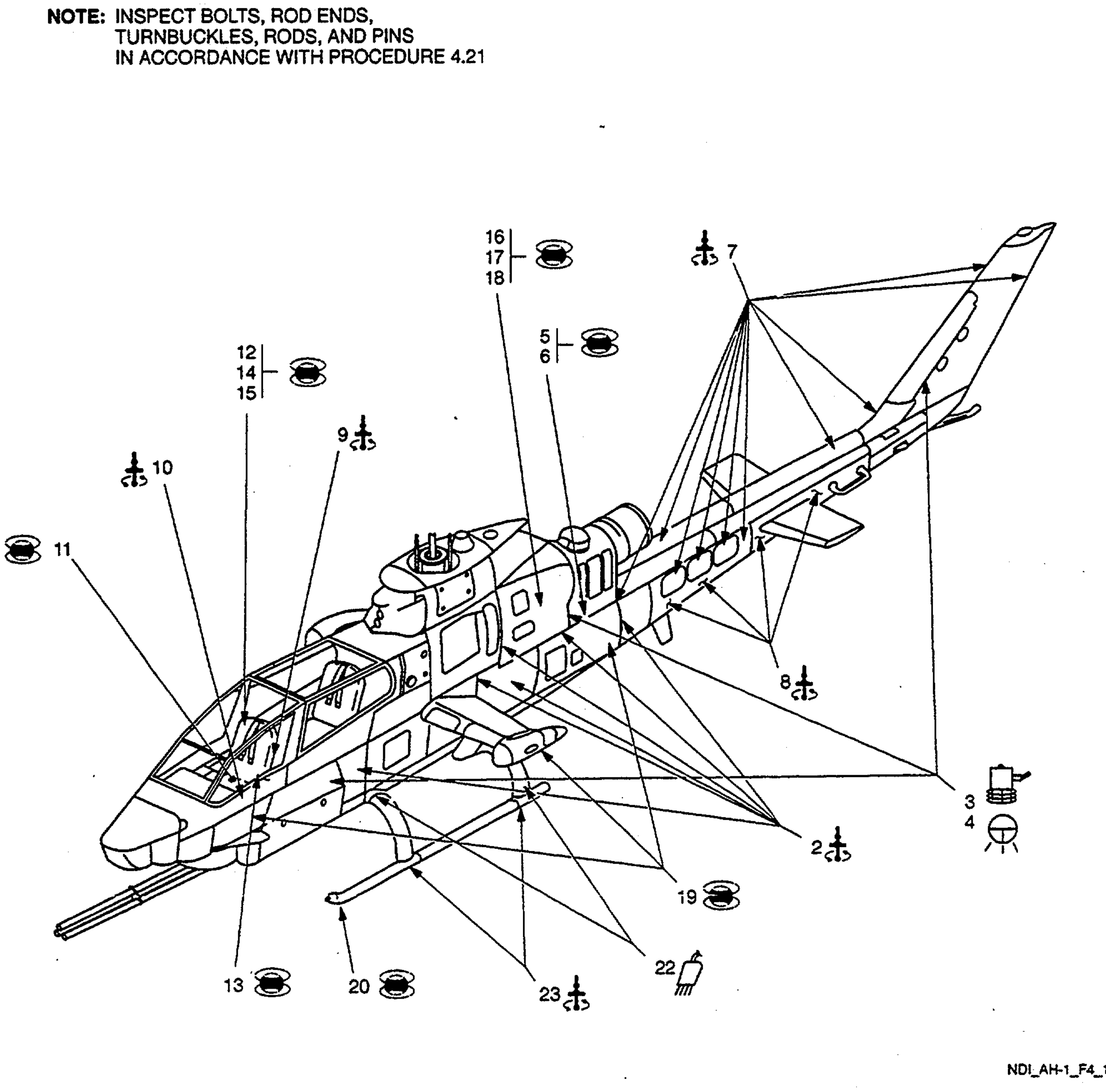


Figure 4-1. Airframe and Landing Gear Group

4.2. FORWARD FUSELAGE ASSEMBLY (ET).

4.2.1. Description (Figure 4-1. Index No. 2). This inspection is applicable to parts or components of structures made from aluminum, magnesium, titanium, and nonferromagnetic stainless steel alloys. The forward fuselage components identified for inspection consist of: exterior skins, honeycomb panels (including bulkheads, beam panels, engine, and transmission deck), air induction system components, fire walls and fire shields, fuselage tail boom attach fittings, wing fittings, fuselage beam caps, and IR suppression system components.

4.2.2. Defects. Perform the NDI method contained herein on the forward fuselage components listed above for the purpose of: (1) confirmation of crack indications identified by visual inspection; (2) verification that dents, scratches, or gouges do not conceal cracks; and (3) locating the ends of confirmed cracks so that stop drilling may be performed.

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, and 0.040 EDM notches)

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

g. Reference Block, three-notched magnesium (0.008, 0.020, and 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 in accordance with the applicable technical manuals listed in Table 1-1.

4.2.3.3. Access. Refer to Figure !-4 and Table 1-2 to locate applicable access panels and fairings.

WARNING

Maintenance Platforms/Workstands

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

4.2.3.4. Preparation of Part. The part or area 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-19eII:

Frequency F1	- 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. Setup on test block as follows:

(1) Null probe on the appropriate test block: the aluminum test block for aluminum alloys, the magnesium test block for magnesium alloys, or the titanium test block for titanium and nonferromagnetic stainless steel.

(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 necessary to obtain horizontal lift-off.

b. Inspect the part.

c. Any signal similar to the notches in the test block is 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 as required by paragraph 1.3.

4.2.4. Backup Method. None required.

4.2.5. System Securing. Secure access panels and fairings as required.

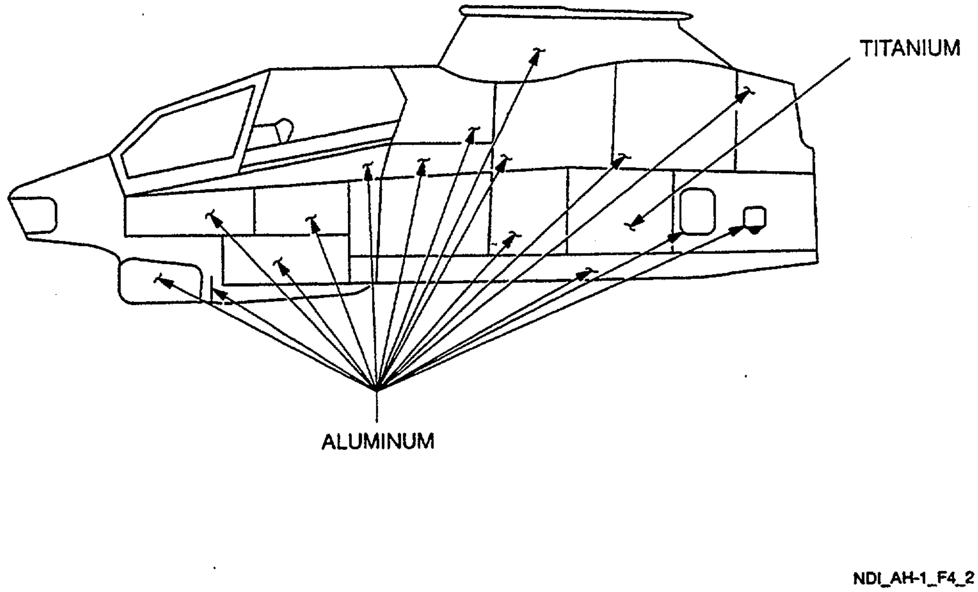


Figure 4-2. Forward Fuselage Assembly

4.3. HONEYCOMB CORES AND PANELS (VOIDS) (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: forward fuselage honeycomb panels, decking honeycomb panels, and vertical fin honeycomb panels.

4.3.2. Defects. Perform the NDI method contained herein on the assembly components listed above for the purpose of verification of void indications identified by visual inspection. No cracks are allowed.

NOTE

A void is defined as an unbonded area that is supposed to be bonded. Many subdefinitions 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").

4.3.3. Primary Method. Bond Inspection.

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

a. Bondmaster

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

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. Refer to Figure 1-4 and Table 1-2 to locate applicable access panels and fairings.

4.3.3.4. Preparation of Part. The inspection area 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 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	- 0
DRIVE	- MID

c. Press SET and select DISPLAY - PHASE.

d. Place probe on the 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 the 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 d. and e. Continue to try phase settings 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 topcenter 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 setup. Turn off or reset alarm/gate as desired. See Figure 1-5 for typical display of defect similar to that appearing in Figure 4-3.

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.

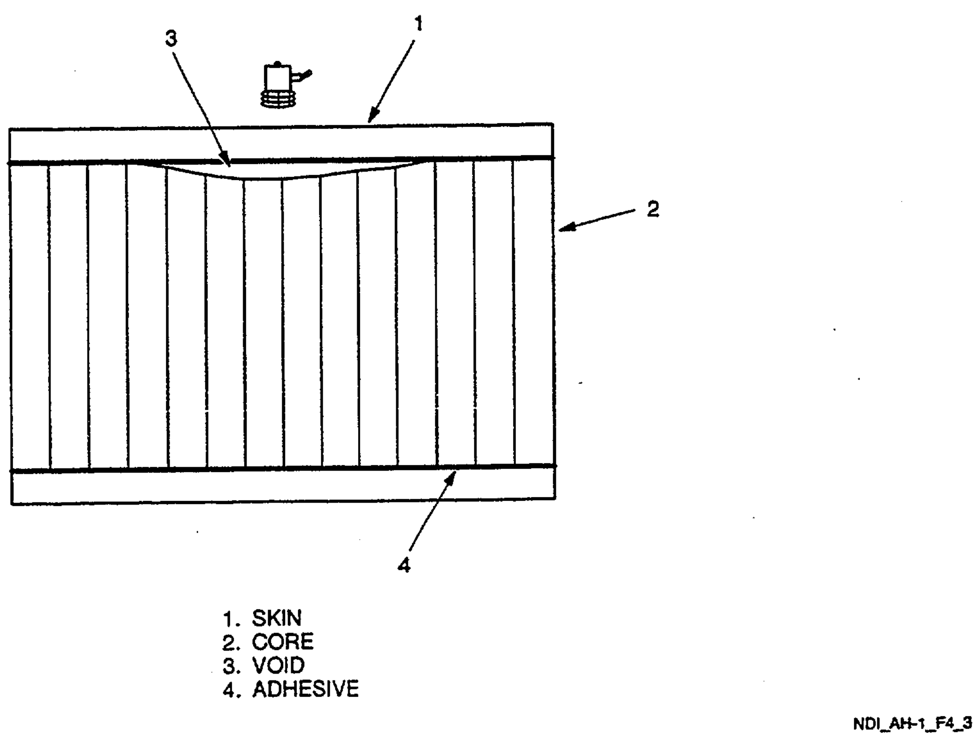


Figure 4-3. Honeycomb Cores and Panels (Voids)

4.3.3.6. Inspection Procedure. Refer to Bond Testing Method, paragraph 1.4.6 and inspection areas shown in Figure 4-3. Skin-to-Honeycomb Voids. Place probe on panel 1 in location where test for skinto-honeycomb bond separation is desired and press NULL. Move probe from good to suspect area and note response. A strong amplitude change with phase shift similar to the standard is indicative of a void. 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 for hidden structure do not normally contain honeycomb. These areas will respond similarly to voids with the Bondmaster panels having rigidized skins (like the engine deck) and would be more easily scanned using wide Teflon tape on the probe holder.

4.3.3.7. Marking and Recording of Inspection Results. Mark and record the inspection results 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 manuals.

4.3.4. Backup Method. None required.

4.3.5. System Securing. Secure all access panels and fairings as required.

4.4. FLUID IN HONEYCOMB CORE FUSELAGE PANELS, VERTICAL FIN, ETC. (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: forward fuselage honeycomb panels, decking honeycomb panels, and vertical fin honeycomb panels.

4.4.2. Defects. Fluid in honeycomb core of fuselage panels, vertical fin, etc. No cracks are allowed.

4.4.3. Primary Method. Radiography.

WARNING

Radiation Hazard

Assure compliance with all applicable safety precautions set forth in TM 55-1500-355-23 (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.

4.4.3.1. NDI Equipment and Materials.

a. X-ray Unit

b. Tripod, X-ray tubehead stand

c. Film Processor

d. Film, Ready Pack, 8 inch x 10 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.

WARNING

Maintenance Platforms/Workstands

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

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 and Settings

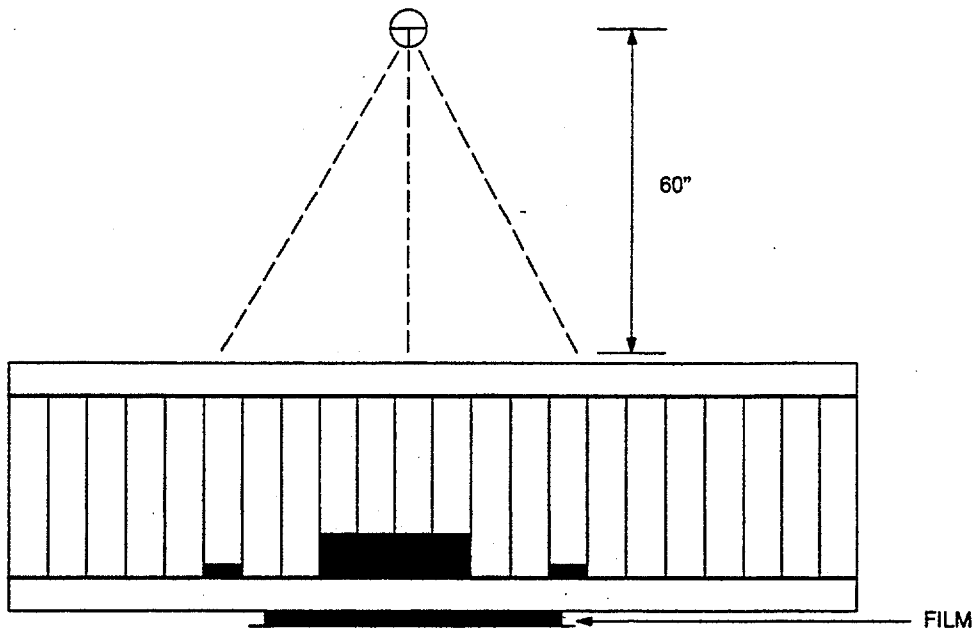
a. Refer to Radiographic (X-ray) Method, paragraph 1.4.10.

b. Equipment settings, inspection, and exposure data are given in Figure 4-4.

4.4.3.6. Inspection Procedure. Inspect identified areas, see Figure 4-4 for typical fluid entrapment and source/film placement.

a. Position film and desired nameplate 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. Typical defects are shown in Figure 4-4 (Sheet 2).

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



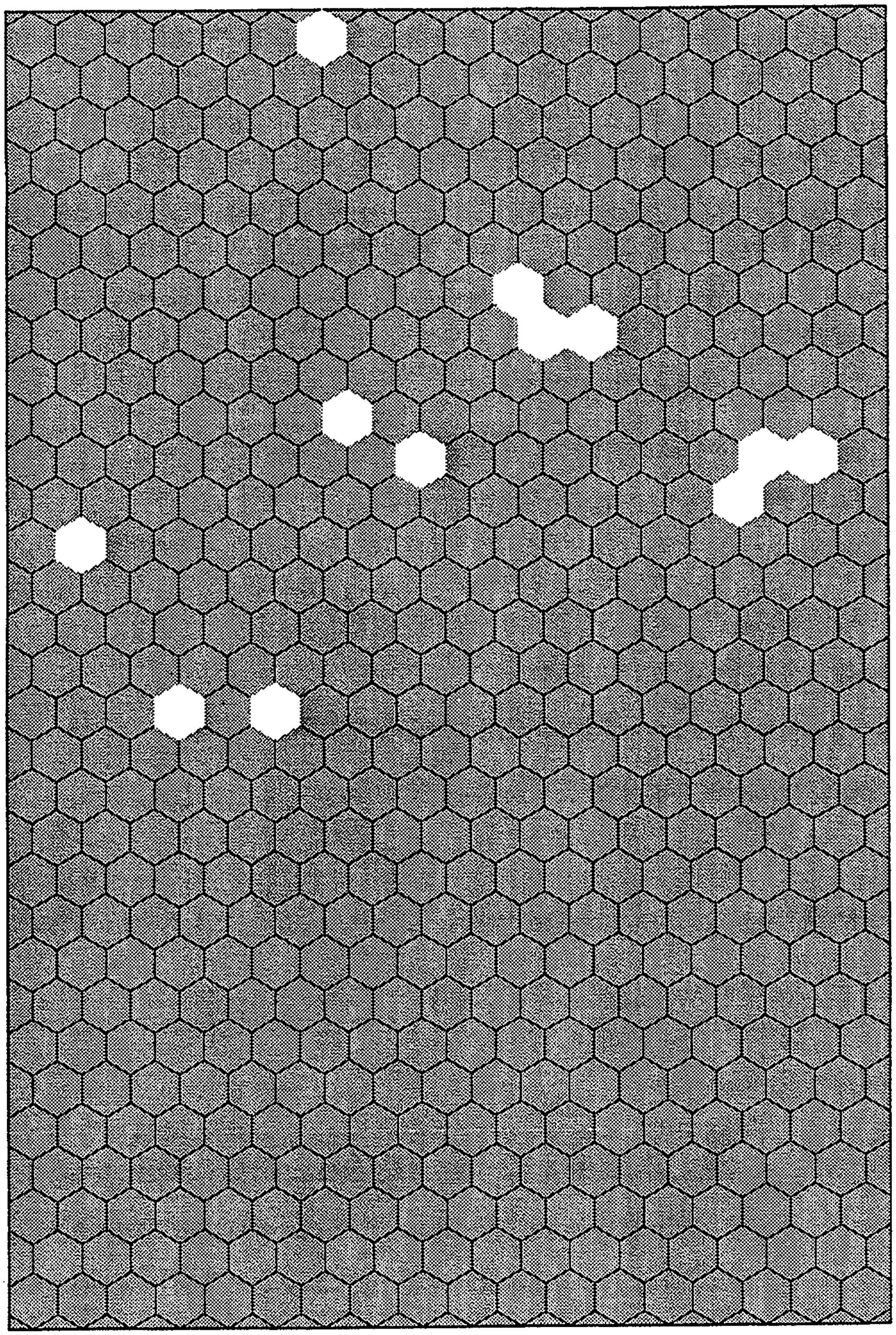
RADIOGRAPHIC INSPECTION DATA						
EXPOSURE NUMBER	KV	MA	FFD (INCHES)	TIME (SEC)	FILM	
					TYPE	SIZE
E1	50	3.5	60	40	M-2	8 x 10

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_AH-1_F4_4_1

Figure 4-4. Fluid in Honeycomb Core Fuselage Panels, Vertical Fin, Etc. (Sheet 1 of 2)



NDI_AH-1_F4_4_2

Figure 4-4. Fluid in Honeycomb Core Fuselage Panels, Vertical Fin, Etc.
(Sheet 2 of 2)

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. SUPPRESSOR COWLING MOUNT ROD END (MT).

4.5.1. Description (Figure 4-1. Index No. 5). The steel rod end secures the suppressor cowling to the airframe. It screws into the cowling mount and is attached by pins to the airframe.

4.5.2. Defects. Cracks can occur anywhere on the surface of the suppressor cowling mount rod end. 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

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

f. Consumable Materials, 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.

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

4.5.3.3. Access. Not applicable.

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. Mask the bearing to prevent intrusion of inspection media.

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

4.5.3.6. 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 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.

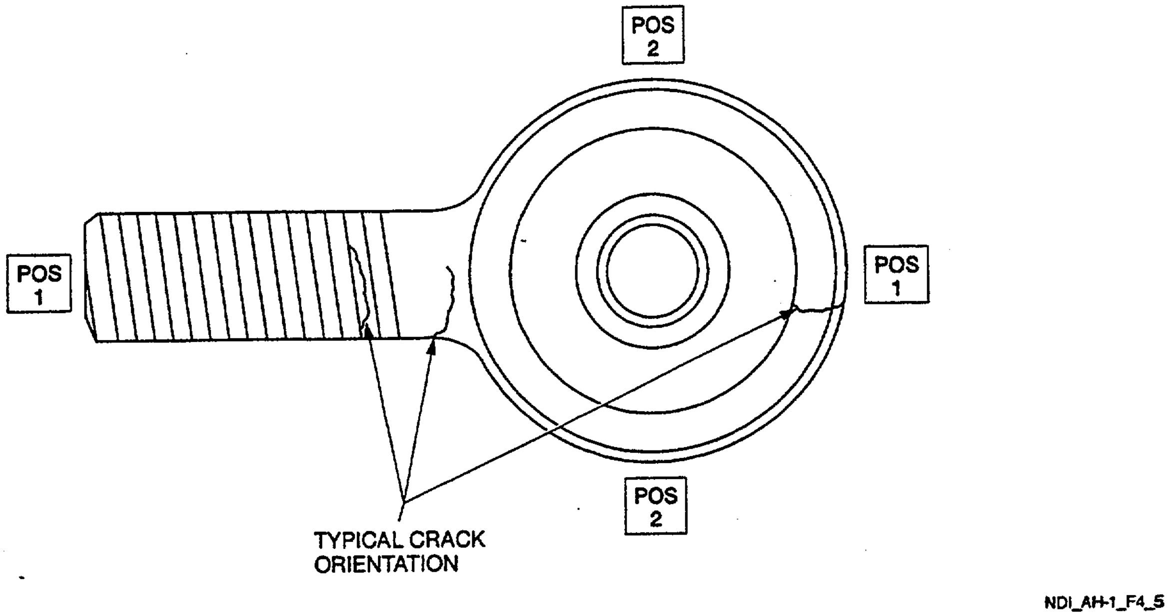


Figure 4-5. Suppressor Cowling Mount Rod End

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 position 2.

4.5.3.7. Marking and Recording of Inspection Results. Mark and record the 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 rod end 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 suppressor cowling mount rod end requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.6. SUPPRESSOR COWLING MOUNT ROD END CLEVIS PIN (MT).

4.6.1. Description (Figure 4-1. Index No. 6). The steel clevis pin secures the suppressor cowling mount rod end to the airframe mount.

4.6.2. Defects. Cracks can occur anywhere on the part. No cracks are allowed.

4.6.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

4.6.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the rod end clevis pin removed in accordance with the applicable technical manuals listed in Table 1-1.

4.6.3.3. Access. Not applicable.

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. Refer to Magnetic Particle Method, paragraph 1.4.8.

4.6.3.6. Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Cracks detectable and positions required for this inspection are illustrated in Figure 4-6.

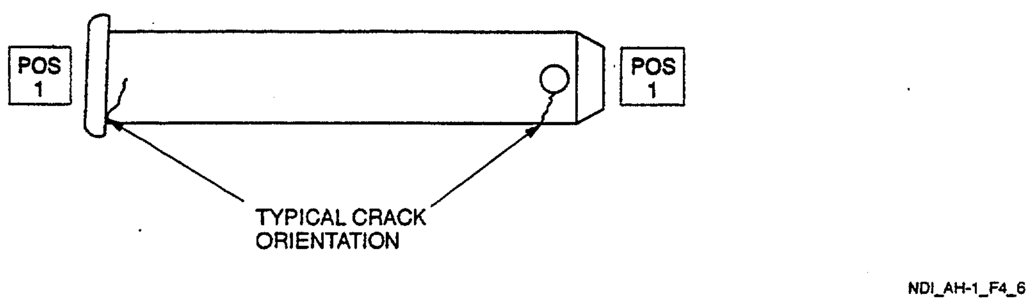


Figure 4-6. Suppressor Cowling Mount Rod End Clevis Pin

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

b. Place probe/yoke on part 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.

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

4.6.3.8. 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.

4.6.4. <u>Backup Method</u>. None required.

4.6.5. <u>System Securing</u>. Clean the rod end clevis pin 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 suppressor cowling mount rod end clevis pin, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.7. TAILBOOM ASSEMBLY (ET).

4.7.1. <u>Description (Figure 4-1. Index No. 7)</u>. This inspection is applicable to parts or components of structures made from aluminum, magnesium, titanium, and nonferromagnetic stainless steel alloys. The tailboom assembly components identified for inspection are: exterior skins, access covers and doors, stringers, stiffeners, longerons, doublers, bulkheads, drivetrain covers, hinges and support angles, vertical fin forward spar, vertical fin trailing edge and honeycomb panels, electronic equipment shelf, tailboom attach fittings, bearing hangar support fittings, and tail gearbox support fittings.

4.7.2. <u>Defects</u>. Perform the NDI method contained herein on the tailboom assembly components listed above for the purpose of: (1) confirmation of crack indications identified by visual inspection; (2) verification that dents, scratches, or gouges do not conceal cracks; and (3) locating the ends of confirmed cracks so that stop drilling may be performed. No cracks are allowed.

4.7.3. <u>Primary Method</u>. Eddy Current.

4.7.3.1. 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, and 0.040 EDM notches)

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

g. Reference Block, three-notched magnesium (0.008, 0.020, and 0.040 EDM notches)

h. Teflon Tape, refer to Table 1-8

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

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

4.7.3.3. Access. Refer to paragraph 1.2.8 to locate applicable access panels and fairings.

WARNING

Maintenance Platforms/Workstands

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

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

4.7.3.5. 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° 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. Setup on test block as follows:

(1) Null probe on the appropriate test block: the aluminum test block for aluminum alloys, the magnesium test-block for magnesium alloys, or the titanium test block for titanium and nonferromagnetic stainless steel.

(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.)

4.7.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11. and Figure 4-7.

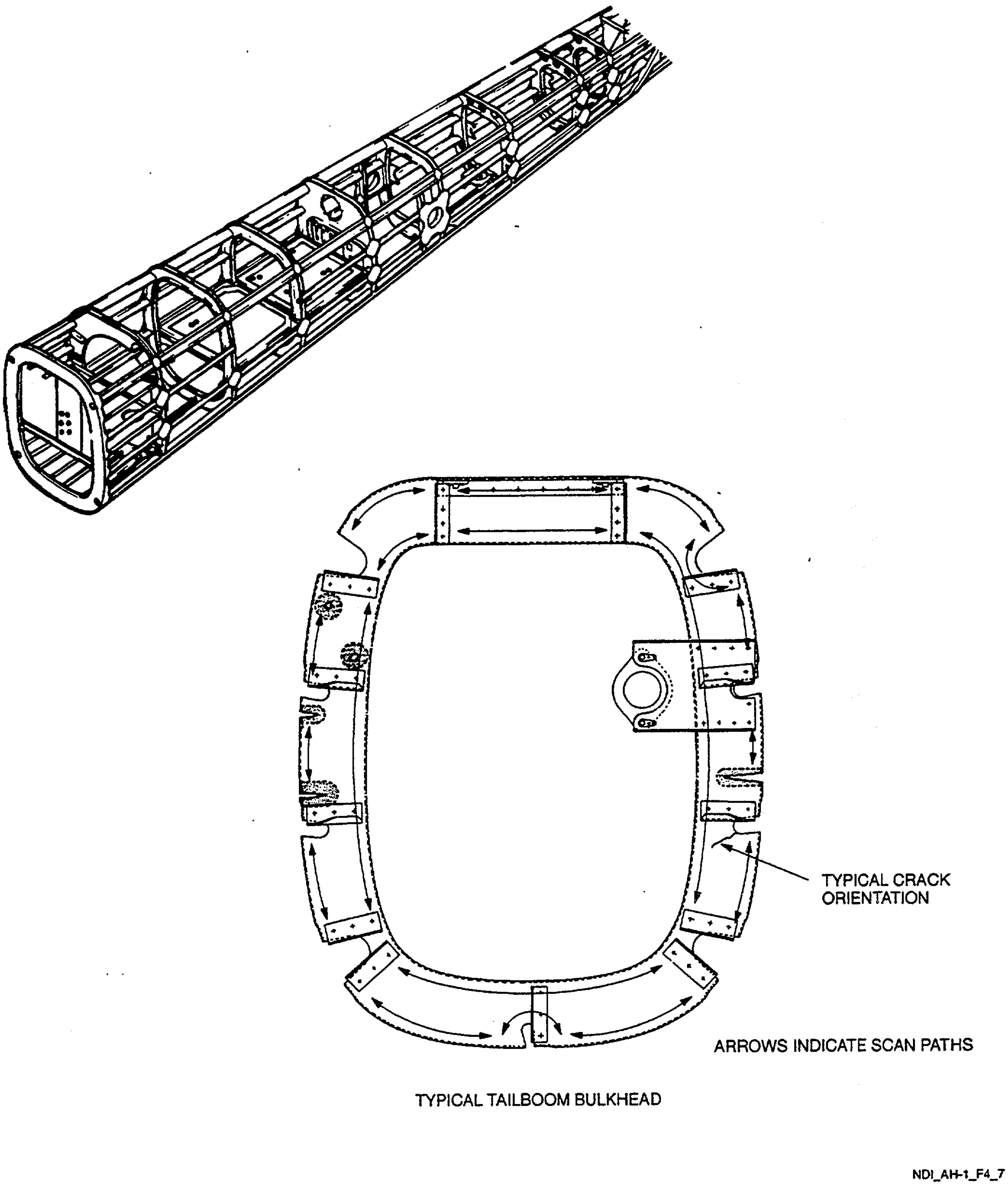


Figure 4-7. Tailboom Assembly

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 is cause for rejection.

NOTE

Either probe identified in paragraph 4.7.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.7.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

4.7.4. Backup Method. None required.

4.7.5. System Securing. The tailboom assembly, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1. Secure all applicable access panels and fairings as required.

4.8. TAILBOOM STRINGERS (ET).

4.8.1. Description (Figure 4-1. Index No. 8). Stringers are made of aluminum alloy. Outer skin is riveted to the stringers helping to reinforce the tailboom.

4.8.2. Defects. Cracks can occur in bent stringers after rework. 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, and 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. 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 tailboom stringers shall be removed in accordance with the applicable technical manual listed in Table 1-1.

4.8.3.3. Access. Not applicable.

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

4.8.3.5. 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. Setup 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 for the designated inspection areas.

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 is 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 as required by paragraph 1.3.

4.8.4. Backup Method. None required.

4.8.5. System Securing. The tailboom, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

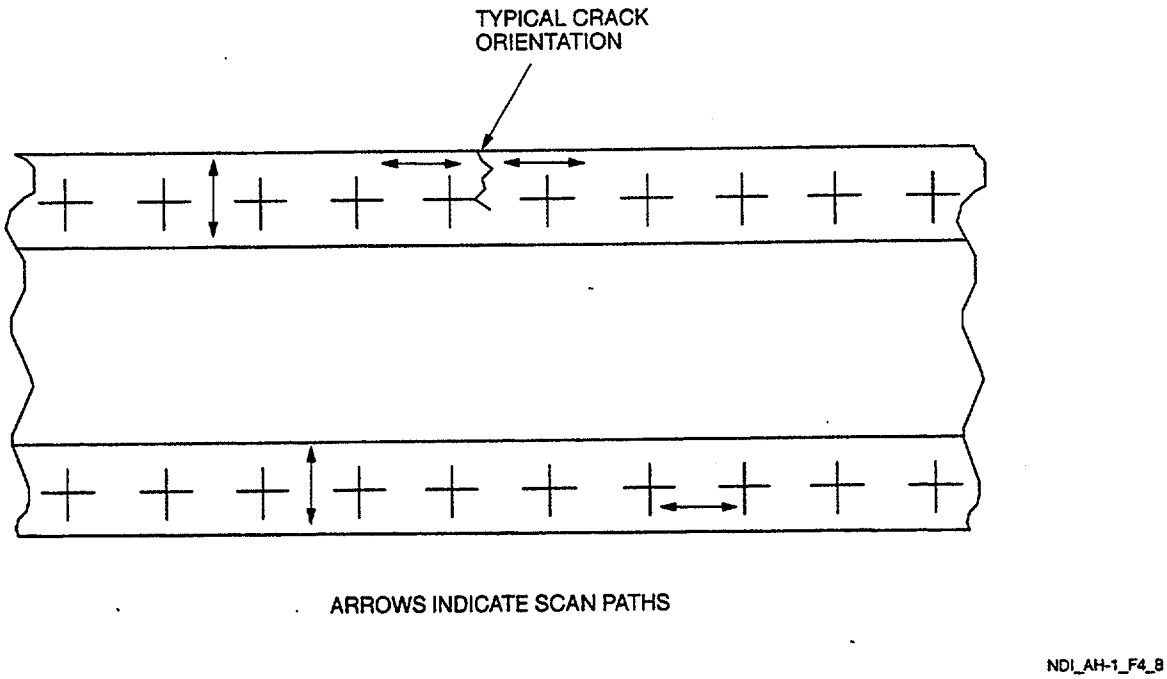


Figure 4-8. Tailboom Stringers

4.9. PILOT SEAT UPPER GUIDE FITTING (ET).

4.9.1. Description (Figure 4-1. Index No.9). The upper guide fitting is attached to the seat and guides it on the vertical support tubes.

4.9.2. Defects. Cracks can occur anywhere on the surface of the fitting. No cracks are allowed.

4.9.3.1. 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, and 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

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

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 pilot seat upper guide fitting shall be removed in accordance with the applicable technical manual listed in Table 1-1.

4.9.3.3. Access. Not applicable.

4.9.3.4. Preparation of Part. The upper guide fitting shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.9.3.5. 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°		
Probe drive	- mid		
LPF	-100		
HPF	- 0		
H Pos	-80%		
V Pos	-20%		

b. Refer to Eddy Current Method, paragraph 1.4.11. Setup 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.)

4.9.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-9.

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 is cause for rejection.

NOTE

Either probe identified in paragraph 4.9.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.9.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

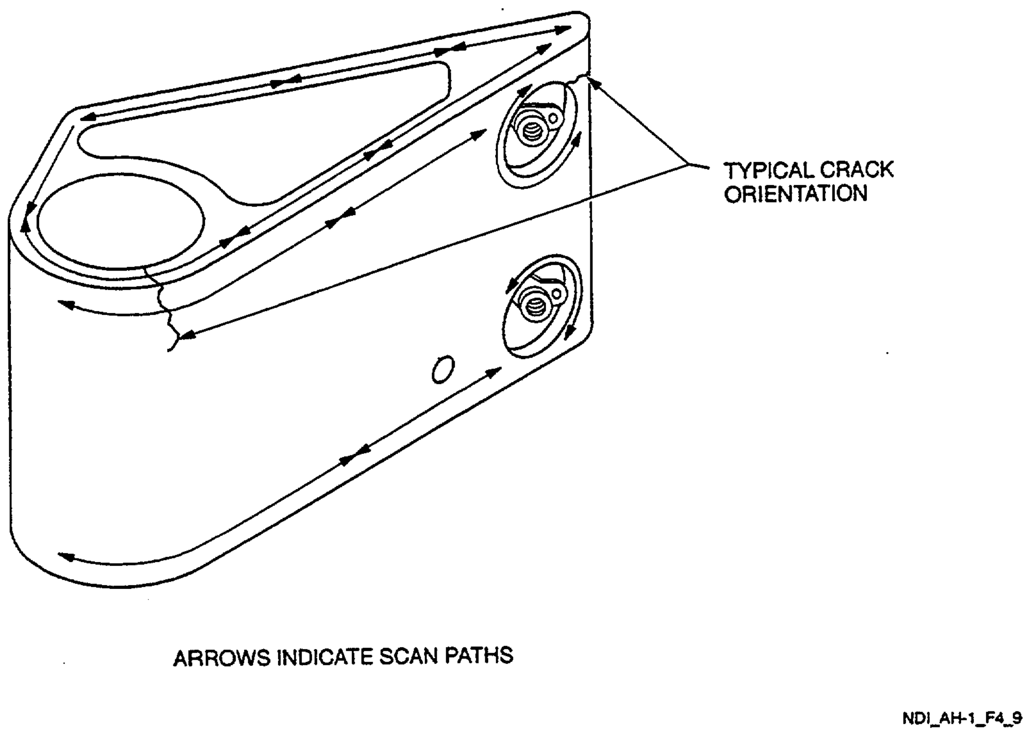


Figure 4-9. Pilot Seat Upper Guide Fitting

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

4.9.5. System Securing. The upper guide fitting, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

4.10. PILOT SEAT LOWER GUIDE FITTING (ET).

4.10.1. Description (Figure 4-1. Index No. 10). The lower guide fitting is attached to the seat and guides it on the vertical support tubes. It also supports the lock/unlock mechanism that allows vertical seat adjustment on the seat support tubes.

4.10.2. Defects. Cracks can occur anywhere on the surface of the lower guide fitting. 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, and 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 applicable positions of this procedure. If required, the lower guide fitting shall be removed in accordance with the applicable technical manual listed in Table 1-1.

4.10.3.3. Access. Not applicable.

4.10.3.4. Preparation of Part. The lower guide fitting 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-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. Setup 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 1-5.)

4.10.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-10.

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 is 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.

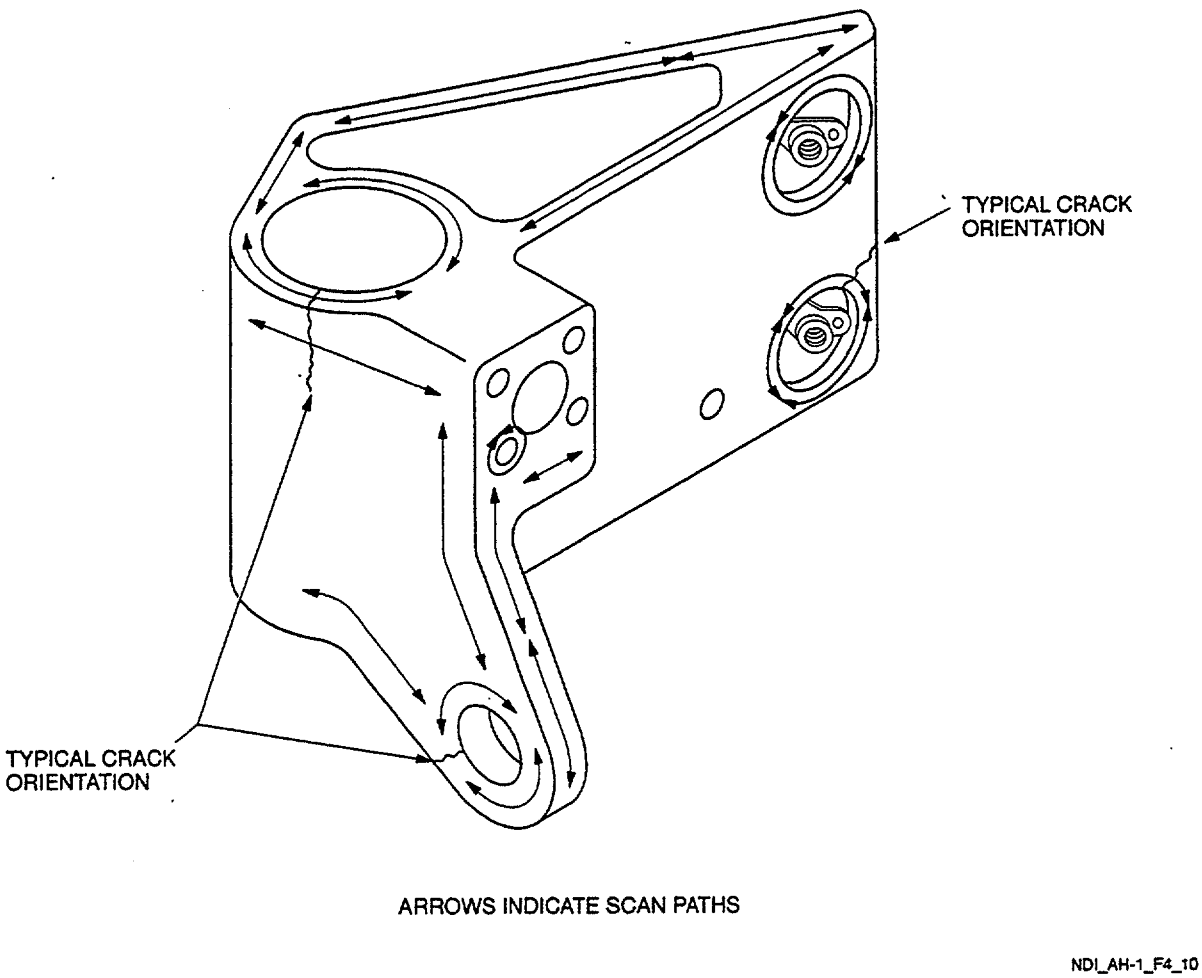


Figure 4-10. Pilot Seat Lower Guide Fitting

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

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

4.10.5. System Securing. The lower guide fitting, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

4.11. PILOT SEAT HANDLE ASSEMBLY (MT).

4.11.1. Description (Figure 4-1. Index No. 11). This steel tube-type handle is used to withdraw latch pins from support tubes to allow vertical adjustment of the seat.

4.11.2. Defects. Cracks can occur anywhere on the surface of the pilot seat handle assembly. No cracks are allowed.

4.11.3. Primary Method. Magnetic Particle.

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

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

4.11.3.2. 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 applicable positions of this procedure. If required, the handle assembly shall be removed in accordance with the applicable technical manual 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. Refer to Magnetic Particle Method, paragraph 1.4.8.

4.11.3.6. 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 4-11.

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.

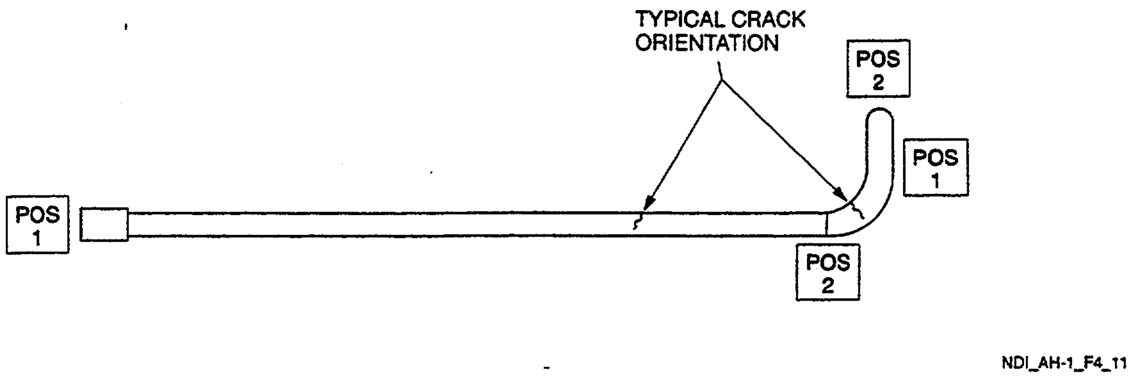


Figure 4-11. Pilot Seat Handle Assembly

d. Inspect for cracks using the black light.
e. Demagnetize before moving to the next position. Refer to paragraph 4.11.3.8.
f. Repeat steps a. through e. for position 2.

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

4.11.3.8. 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.

4.11.4. Backup Method. None required.

4.11.5. System Securing. Clean the handle assembly 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 pilot seat, if removed, requires assembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

4.12. PILOT SEAT SUPPORT TUBES (MT).

4.12.1. Description (Figure 4-1. Index No. 12). The steel pilot seat support tubes (one on each side) secures the seat to the floor and allows vertical adjustment of the seat.

4.12.2. Defects. Cracks can occur anywhere on the surface of the support tubes. No cracks are allowed.

4.12.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light

d. Fluorescent Magnetic Particles

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.

4.12.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the pilot seat removed and disassembled 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. Refer to Magnetic Particle Method, paragraph 1.4.8.

4.12.3.6. 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 4-12.

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 4.12.3.8.

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

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

4.12.3.8. 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.

4.12.4. <u>Backup Method</u>. None required.

4.12.5. <u>System Securing</u>. Clean the support tubes 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 pilot seat support tubes require installation in accordance with the applicable technical manuals listed in Table 1-1.

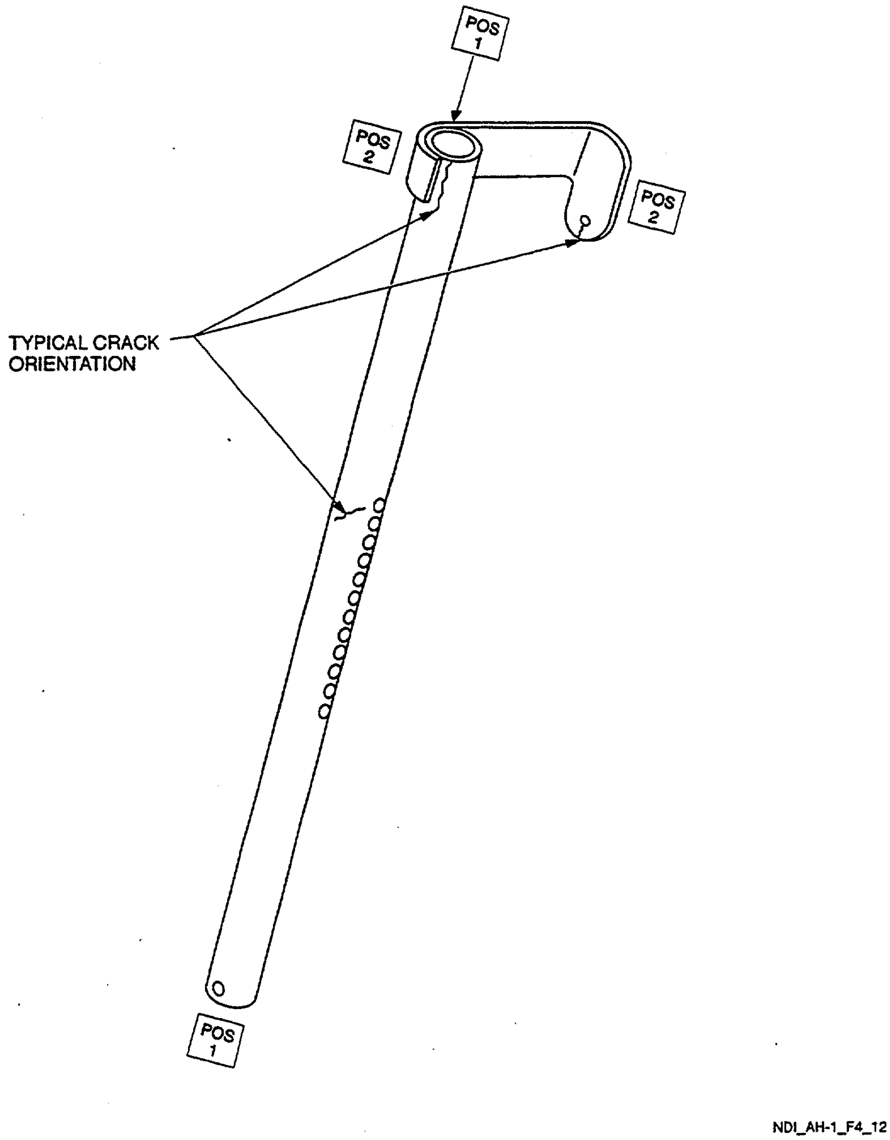


Figure 4-12. Pilot Support Tubes

4.13. PILOT SEAT LATCH SPRING (MT).

4.13.1. Description (Figure 4-1. Index No. 13). The steel latch spring pulls and releases the latch pin in the seat vertical adjustment support tube allowing the seat to be locked in a desired vertical position.

4.13.2. Defects. Defects can occur anywhere on the surface of the latch spring. No cracks are allowed.

4.13.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

4.13.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the pilot seat removed and disassembled 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. Refer to Magnetic Particle Method, paragraph 1.4.8.

4.13.3.6. 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 4-13.

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 next position. Refer to paragraph 4.13.3.8.

f. Rotate the spring 90 degrees and repeat steps a. through e.

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

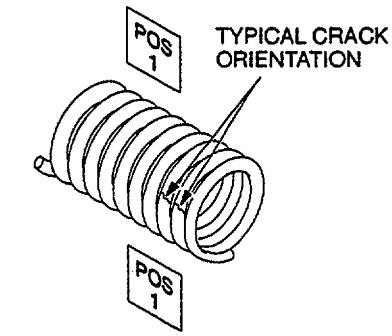


Figure 4-13. Pilot Seat Latch Spring

4.13.3.8. 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.

4.13.4. Backup Method. None required.

4.13.5. 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 pilot seat requires assembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

4.14. PILOT SEAT RETURN SPRING (MT).

4.14.1. Description (Figure 4-1. Index No. 14). The tension of this steel spring allows the seat to move easily up and down on the support tubes for seat adjustment.

4.14.2. Defects. Cracks can occur anywhere on the surface of the return spring. No cracks are allowed.

4.14.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

4.14.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the pilot seat removed and disassembled in accordance with the applicable technical manuals listed in Table 1-1.

4.14.3.3. Access. Not applicable.

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

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

4.14.3.6. 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 4-14.

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 4.14.3.8.

f. Repeat steps a. through e. for positions 2 through 4 and for 5 through 8 after rotating the spring 90 degrees.

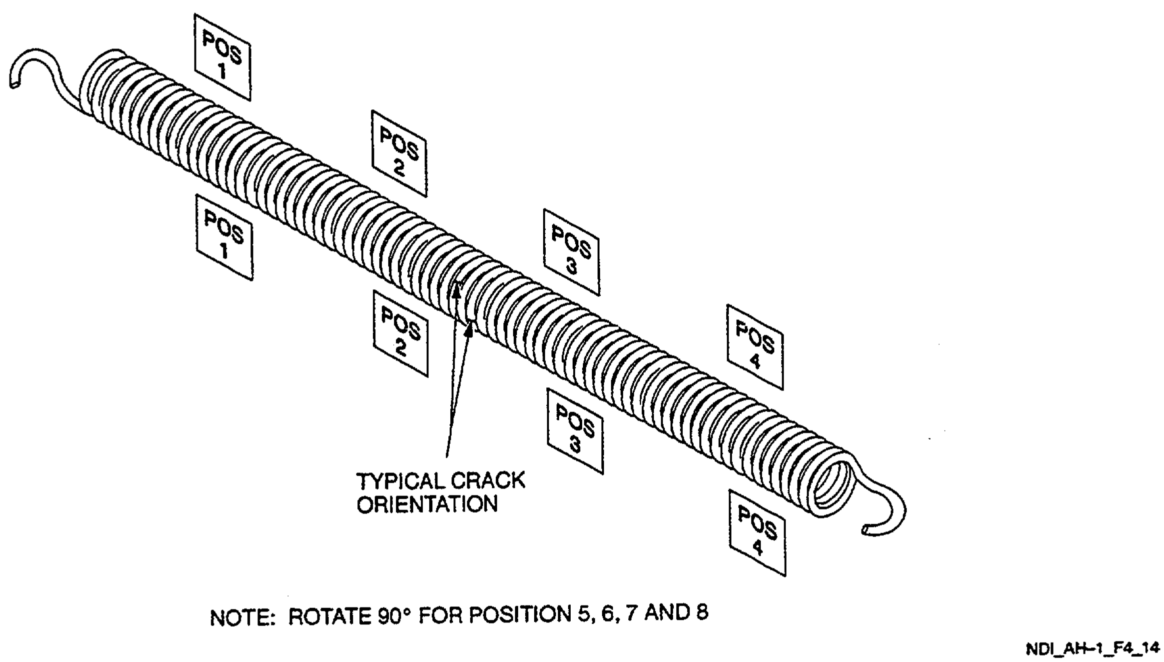


Figure 4-14. Pilot Seat Return Spring

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

4.14.3.8. 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.

4.14.4. Backup Method. None required.

4.14.5. 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 pilot seat requires assembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

4.15. PILOT SEAT LATCH PIN (MT).

4.15.1. Description (Figure 4-1. Index No. 15). The latch pin locks into the vertical support tubes keeping the seat in place after adjustment is made.

4.15.2. Defects. Cracks can occur anywhere on the surface of the latch pin. No cracks are allowed.

4.15.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

4.15.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the pilot seat removed and disassembled in accordance with the applicable technical manuals listed in Table 1-1.

4.15.3.3. Access. Not applicable.

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. Refer to Magnetic Particle Method, paragraph 1.4.8.

4.15.3.6. Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Position required for this inspection is illustrated in Figure 4-15.

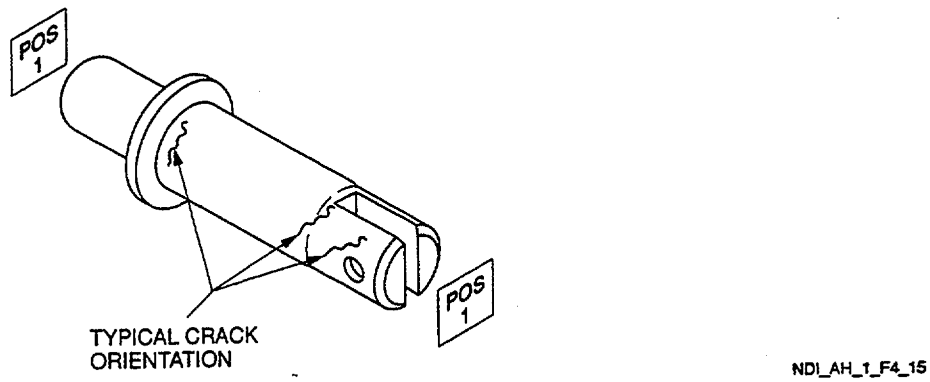


Figure 4-15. Pilot Seat Latch Pin

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.

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

4.15.3.8. 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.

4.15.4. Backup Method. None required.

4.15.5. System Securing. Clean the latch pin 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 pilot seat, if removed, requires assembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

4.16. ENGINE MOUNT ASSEMBLIES (MT).

4.16.1. Description (Figure 4-1. Index No.16). The engine is supported by two aft mounts (bipod and tripod) and the engine mount leg (forward). The legs on all three mounts are made from steel tubing. Investment casting type fittings are used at the upper end of the two aft mounts (bipod and tripod) to which hinged pillow blocks are attached. The engine mount leg (forward) supports the front of the engine. The legs have rod end bearings on the lower end that attach to fittings on the engine compartment deck.

4.16.2. Defects. Cracks can occur anywhere on the surface of the engine mount assemblies. No cracks are allowed.

4.16.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

4.16.3.2. 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. Access can be made through the left and right engine cowl assemblies. (Figure 1-4, Item No. 13).

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. Cover the bearings in the rod ends with rags or masking tape.

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

4.16.3.6. 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 4-16.

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 4.16.3.8.
f. Repeat steps a. through e. for positions 2 through 12.

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

4.16.3.8. 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.

4.16.4. <u>Backup Method</u>. None required.

4.16.5. <u>System Securing</u>. 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. Secure the left and right engine cowl assemblies.

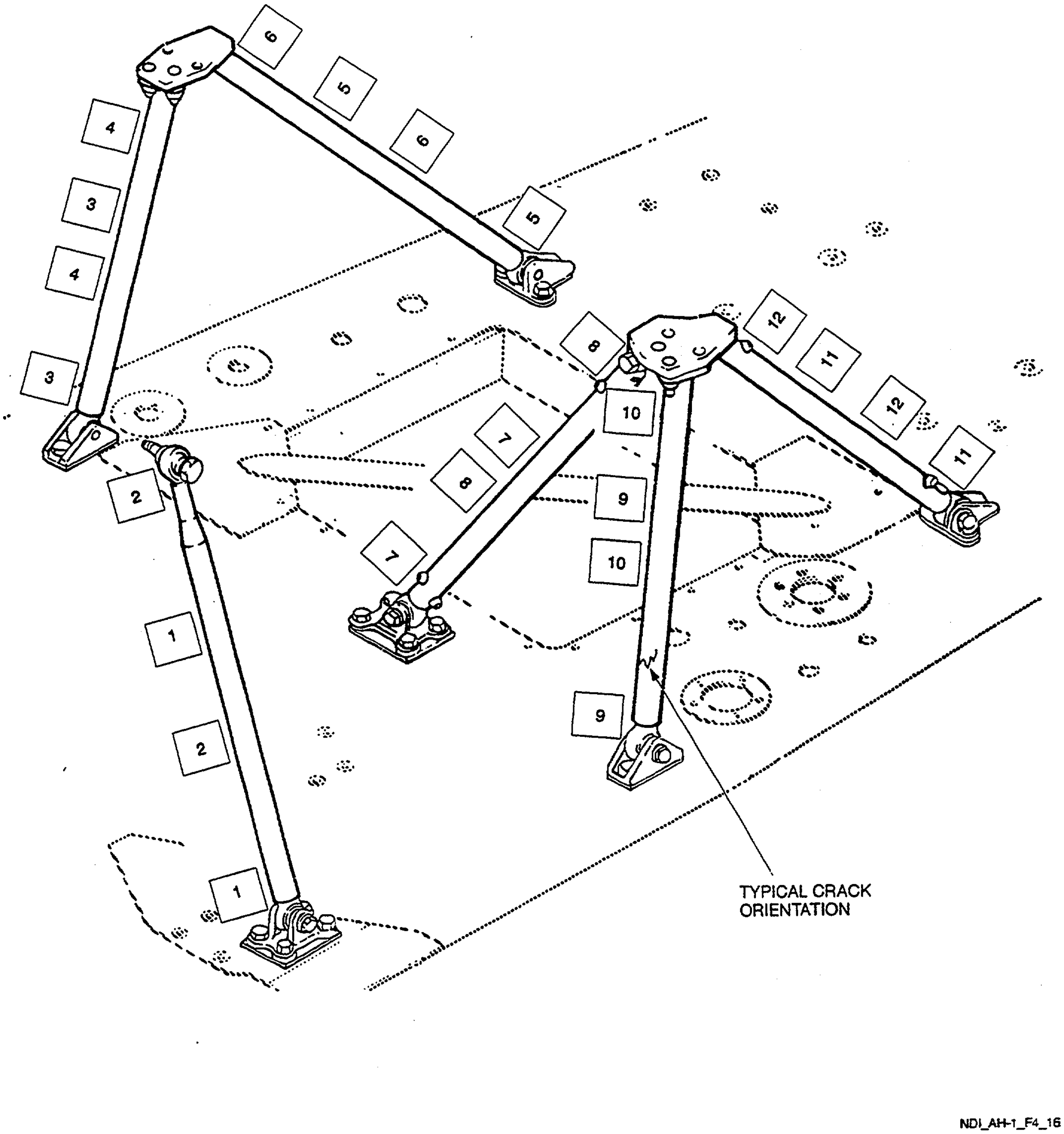


Figure 4-16. Engine Mount Assemblies.

4.17. ENGINE MOUNT FITTINGS (MT).

4.17.1. Description (Figure 4-1. Index No. 17). This inspection is applicable to steel engine mount fittings that attach to the engine deck and support the two aft mounts (bipod and tripod) and the engine mount leg (forward).

4.17.2. Defects. Defects can occur anywhere on the surface of the engine mount fittings. No cracks are allowed.

4.17.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles,
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.

4.17.3.2. 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 engine mount fittings shall be removed in accordance with the applicable technical manual listed in Table 1-1.

4.17.3.3. Access. Not applicable.

4.17.3.4. Preparation of Parts. The parts shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

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

4.17.3.6. 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 4-17.

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.

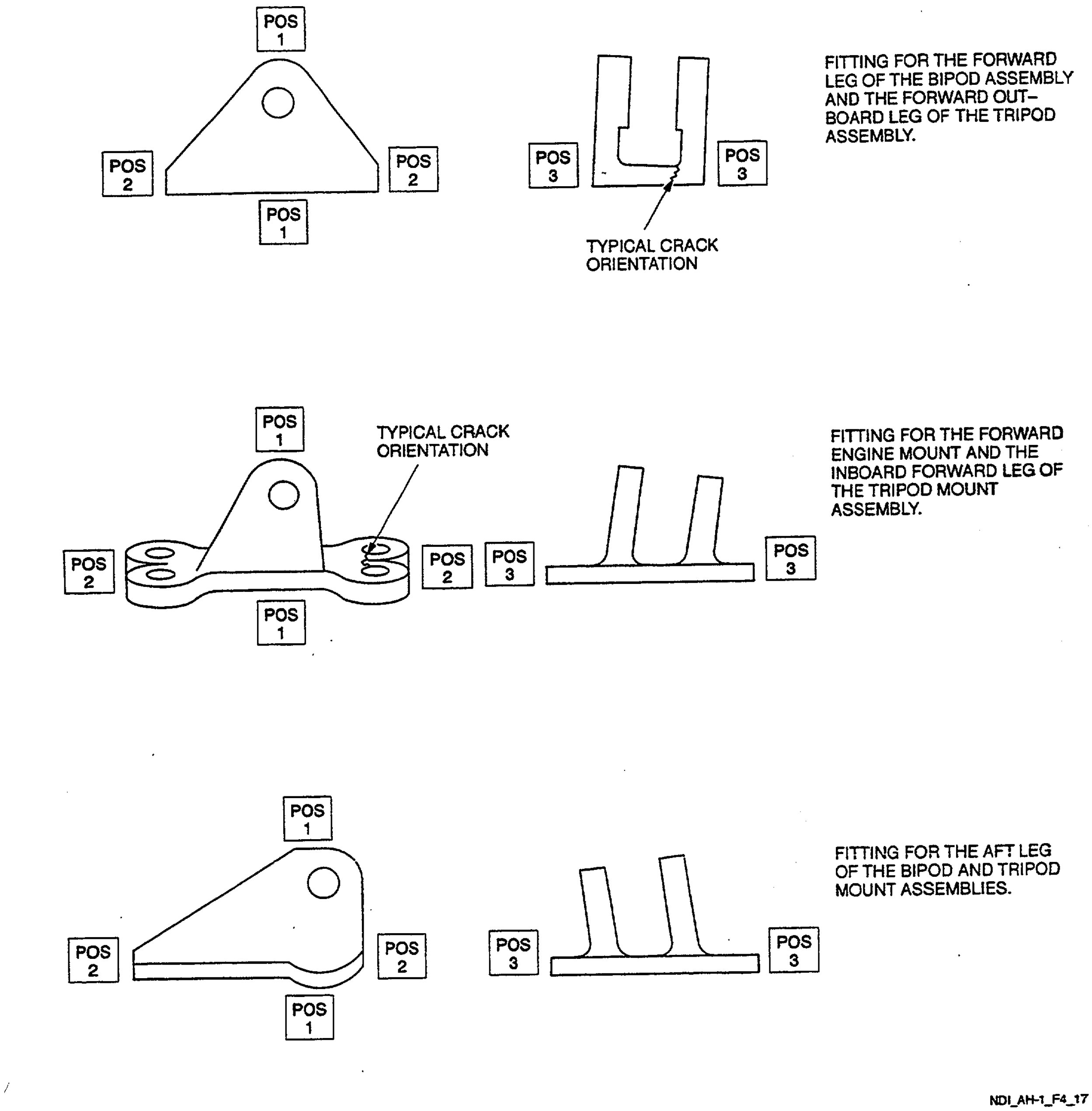


Figure 4-17. Engine Mount Fitting

d. Inspect for cracks using the black light.

e. Demagnetize before moving to the next position. Refer to paragraph 4.17.3.8.

f. Repeat steps a. through e. for all other positions, as required.

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

4.17.3.8. 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.

4.17.4. Backup Method. None required.

4.17.5. System Securing. Clean the engine mount 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 fittings, if removed, require installation in accordance with the applicable technical manuals listed in Table 1-1.

4.18. PILLOW BLOCK (MT).

4.18.1. Description (Figure 4-1. Index No. 18). The pillow block installed on top of each aft engine mount (bipod and tripod) is designed to transfer engine vibrations from aft end of engine to the engine mounts.

4.18.2. Defects. Defects can occur anywhere on the surface of the pillow block. No cracks are allowed.

4.18.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

4.18.3.2. 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 pillow block shall be removed in accordance with the applicable technical manual 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. See Preparation of Part or Area for NDI, paragraph 1.4.4.

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

4.18.3.6. 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 4-18.

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 4.18.3.8.

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

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

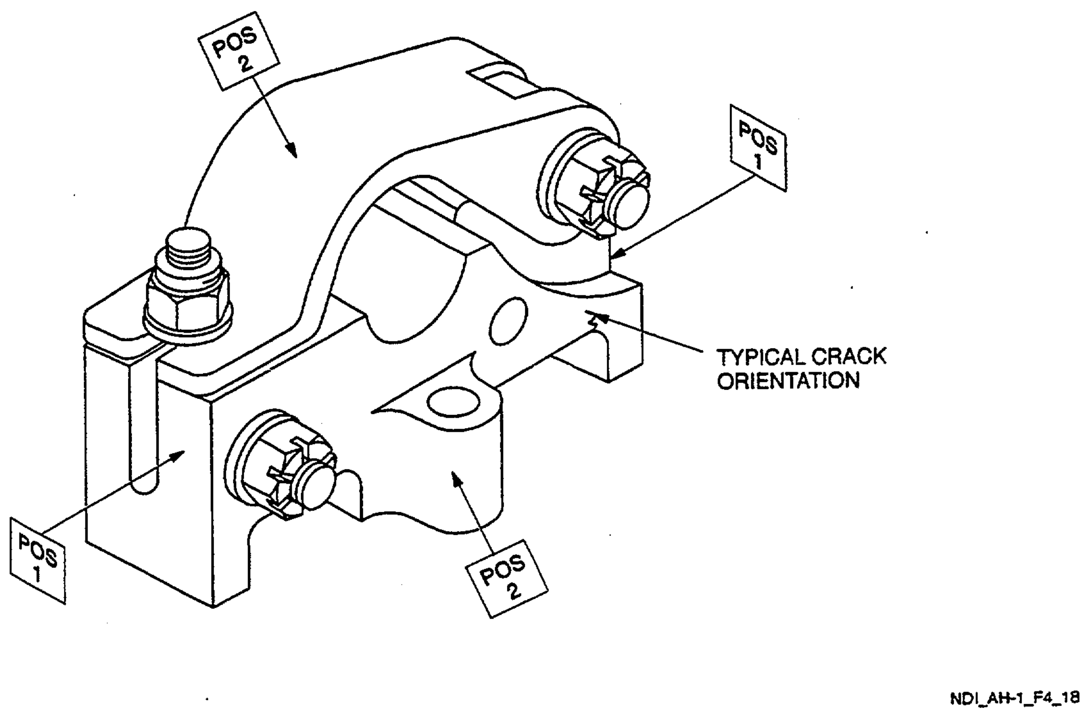


Figure 4-18. Pillow Block

4.18.3.8. 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.

4.18.4. Backup Method. None required.

4.18.5. System Securing. Clean the pillow block 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 pillow block, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.19. JACK FITTINGS (MT).

4.19.1. Description (Figure 4-1. Index No.19). Four jack fittings with mooring shackles attached are provided as loose equipment for two jack points on the fuselage and two outboard wing locations. Wing jack fittings are attached by bolts to sockets under the outboard ejector racks.

4.19.2. Defects. Defects can occur anywhere on the surface of the jack fittings. No cracks are allowed.

4.19.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

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

4.19.3.3. Access. Not applicable.

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 Refer to Magnetic Particle Method, paragraph 1.4.8.

4.19.3.6. 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 4-19.

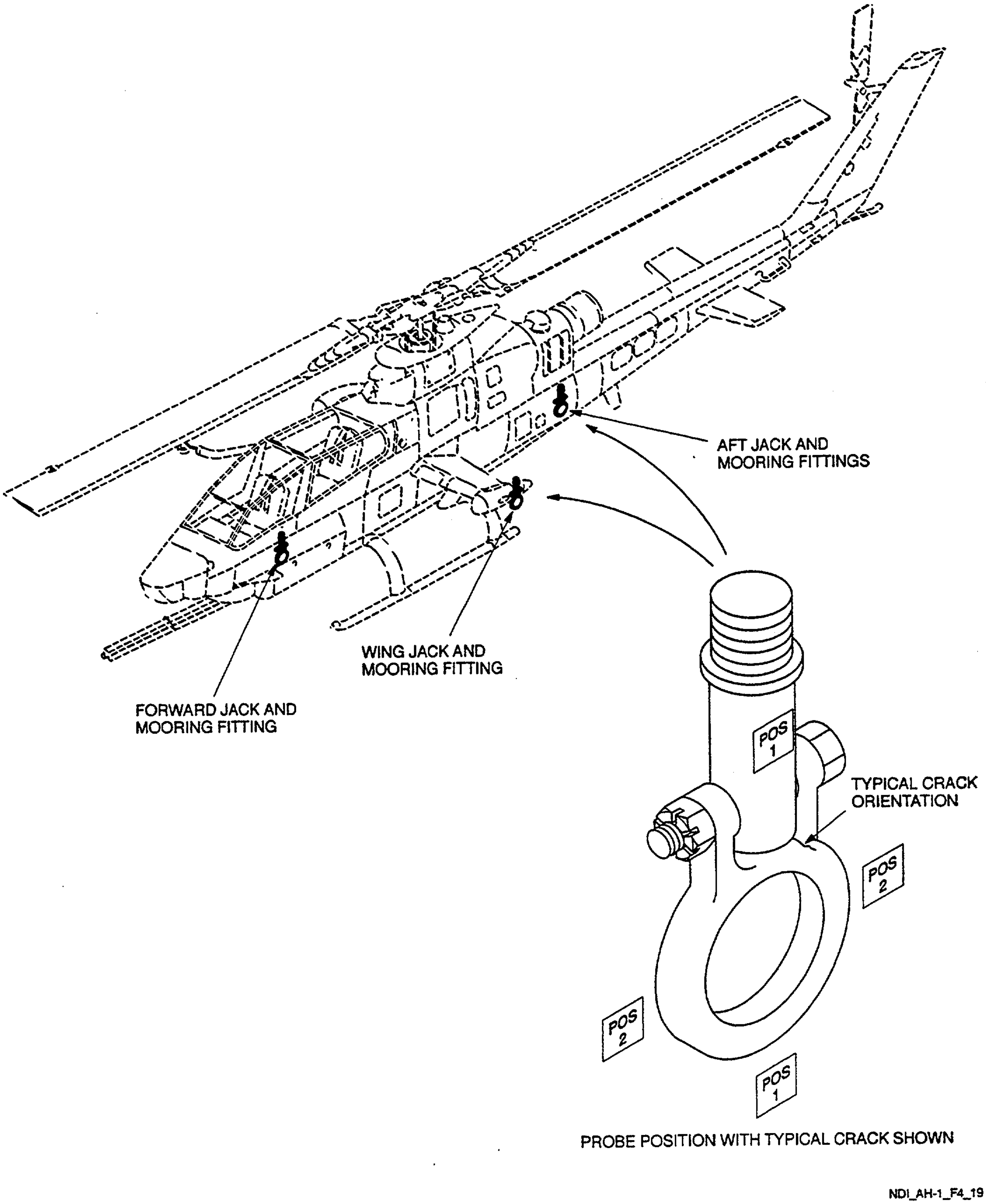


Figure 4-19. Jack Fittings

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 4.19.3.8.

f. Repeat steps a. through e. for position 2 on all-fittings.

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

4.19.3.8. 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.

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

4.19.5. System Securing. Clean the jack 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.

4.20. TOW RINGS (MT).

4.20.1. Description (Figure 4-1. Index No.20). The tow rings are a steel casting with an eyehole riveted to the front end of each skid to facilitate ground handling and towing of the helicopter.

4.20.2. Defects. Cracks can occur anywhere on the surface of the tow rings. 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

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 in accordance with the applicable technical manuals listed in Table 1-1.

4.20.3.3. Access. Unlimited access.'

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 on each ring.

4.20.3.7. Marking and Recording of Inspection Results. Mark and record the 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.

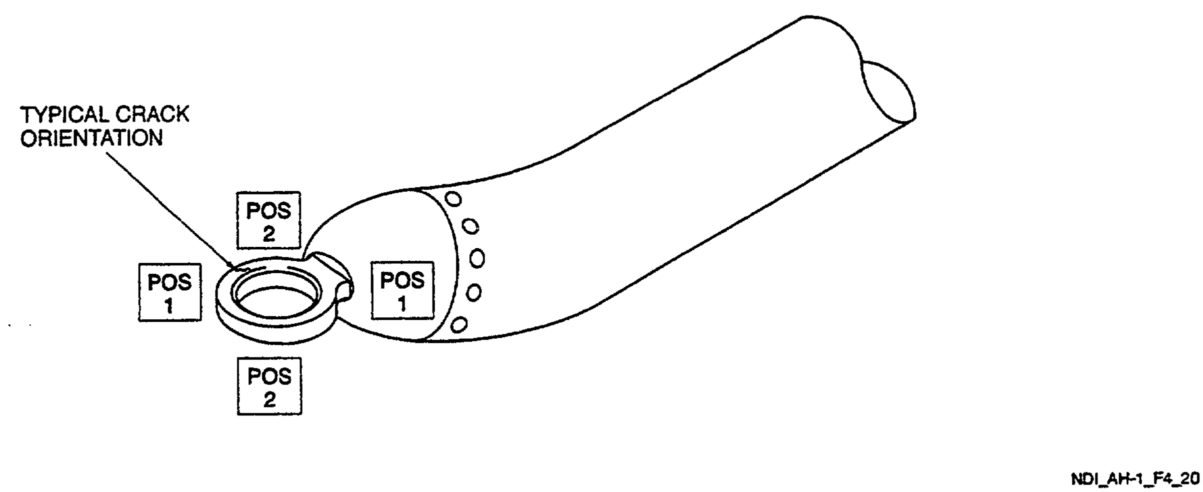


Figure 4-20. Tow Rings

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

4.20.5. System Securing. Clean the tow rings thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16.

4.21. BOLTS, ROD ENDS, TURNBUCKLES, RODS, AND PINS (MT).

4.21.1. Description (Figure 4-1. Index No. 21). This inspection is applicable to all bolts, rod ends, turnbuckles, rods, and pins made of ferromagnetic material.

4.21.2. Defects. Defects can occur anywhere on the part in the circumferential direction. Particular attention should be given to bolt head radii, threads (especially at the thread transition area), and pin holes. See Figure 4-21. No cracks are allowed.

4.21.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

4.21.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the part 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. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

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

4.21.3.6. Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks.

a. Select AC on the AC/DC power switch.
b. Place probe/yoke on part in position 1 as shown. See Figure 4-21 for applicable probe positions.

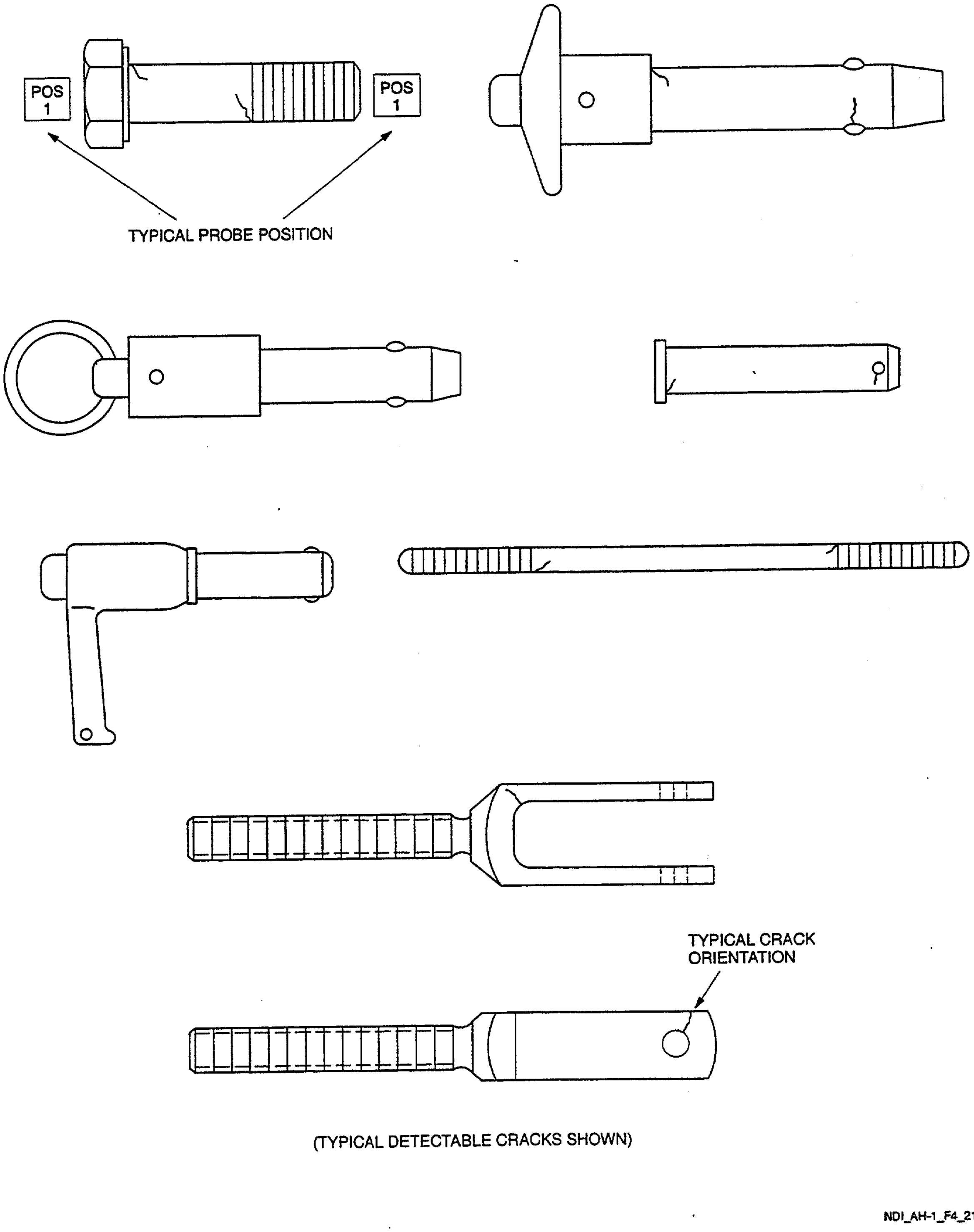


Figure 4-21. Bolts , Rod ends, Turnbuckles, Rods, and Pins

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.

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

4.21.3.8. 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.

4.21.4. Backup Method. None required.

4.21.5. System Securing. Clean the part or 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 part or parts require installation in accordance with the applicable technical manuals listed in Table 1-1.

4.22. FORE AND AFT CROSS TUBE ASSEMBLIES (UT).

4.22.1. Description (Figure 4-1. Index No.22). The forward and aft cross tube assemblies are aluminum tubes that connect the landing gear skid tubes to the helicopter fuselage. The contact points on the skid tubes for fuselage attachment are reinforced with steel pads retained with steel rivets. The thickness of the cross tubes in the inspection area is 0.25 inch.

4.22.2. Defects. Three rows containing four rivets (oriented circumferentially) retain the steel pads. Cracking may occur around the tubes, between rivets, and from end rivets in any row. However, cracking is most prevalent in the inboard and outboard rows. No cracking is permitted in the cross tubes. No cracks are allowed.

4.22.3. Primary Method. Ultrasonic.

4.22.3.1. NDI Equipment and Materials.

a. Ultrasonic Inspection Unit
b. Transducer, 5.0 MHz 600 shear wave, 1/4 x 1/4 inch element
c. Cable Assembly
d. Reference Block, three-notched aluminum (0.008, 0.020; 0.040 EDM notches)
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

4.22.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the skid assembly removed from the helicopter in accordance with applicable technical manuals listed in Table 1-1.

4.22.3.3. Access. Not applicable.

4.22.3.4. Preparation of Part. The part or area shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4. Paint removal is not necessary. However, rough and flaking paint and overspray may require smoothing with a Scotch Brite pad.

4.22.3.5 NDI Equipment Settings.

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

(SETUP - DEFAULT SETTINGS)	
DIALOG	ENGLISH
UNIT	INCH
(BASICS)	
GAIN	40 db
RANGE	5.0 in.
MTL VEL	124.0 in./ms
D-DELAY	0.00 in.
P-DELAY	0.00 ms
(PULSER)	
DAMPING	500 ohm
POWER	1000 PF
PRF-MOD	AUTOLOW
PRF-VAL	See Note 1
(RECEIVER)	
FREQUENCY	5 MHz
REJECT	0%
RECTIF	FULL-W
DUAL	OFF
(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

NOTE

(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. Setup on test block as follows:

NOTE

The ideal reference block is a section of AH-1 cross tube, rejected for cracks, having both cracked and uncracked holes. (A hole may have to be drilled in some rejected cross tubes in order to provide a good hole.) Also, setup may be made using the reference three-notched aluminum, which has the same thickness as the tube wall.

(1) Attach transducer to cable and cable to ultrasonic unit. Couple transducer to reference block as shown in Figure 4-22 with the sound path parallel to the long axis of the tube. Position transducer approximately 1-1/2 inches from a good hole and manipulate transducer to obtain a reflection. The objective is to manipulate the transducer to obtain two reflections of equal amplitude. These are trapped signals from the top and bottom of the hole. Adjust gain to obtain amplitude of approximately 50 percent FSH. With the delay control, move unwanted shoe noise off screen and use range control to position the rivet hole signals at mid screen. The CRT display should appear similar to those shown in Figure 4-22. Move the transducer circumferentially and note the amount of transducer movement (distance) from when the signal is first detected, through maximum amplitude, to where the signal is again barely detectable. This will provide a rough measuring guide for an uncracked hole. Rivet holes on the in-service components may be misdrilled or damaged and frequently will not give clean split signal shown by the reference block. Therefore, it is important to note the position and distance of the transducer from the good hole in the reference block so that the transducer may be positioned correctly on parts that do not respond appropriately. These equipment settings may be stored in memory to facilitate setup.

(2) Position transducer at a cracked hole and note signal from cracks. Typically, the reflection from the cracks (especially large cracks) will be larger than the signal from the hole. Move the transducer circumferentially and note the additional amount of transducer movement (distance) obtained from the cracks. Mark the points at which the amplitude of the crack signals are just detectable (0 to 5 percent FSH). By knowing the size of the cracks in the reference block and the differences in transducer movement (distance) between the uncracked and cracked a rough estimate of crack size may be made.

If the test block is used, position transducer on back of the test block (notches down) so that the. ultrasonic signal is trapped by the end of the block. "Peak" out the first reflection from the 0.040-inch deep notch and adjust gain level to approximately 50 percent FSH. Use delay to position this peaked signal at mid-screen. This block will permit setup of gain, range, and delay only.

As experience is gained with this inspection, setup may be made using holes in the test part.

4.22.3.6. Inspection Procedure. Couple the transducer to the cross tube at the area to be inspected. Locate and peak out signal from one of the rivet holes. Adjust gain to compensate for paint and surface finish differences between reference block and the cross tube requiring inspection. Manipulate the transducer circumferentially. Note transducer travel distance and observe CRT for signals indicative of crack. Transducer movement more than 1/4-inch greater than from a good hole and indication is still present on CRT is cause for rejection. Repeat the inspection for the remaining holes.

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

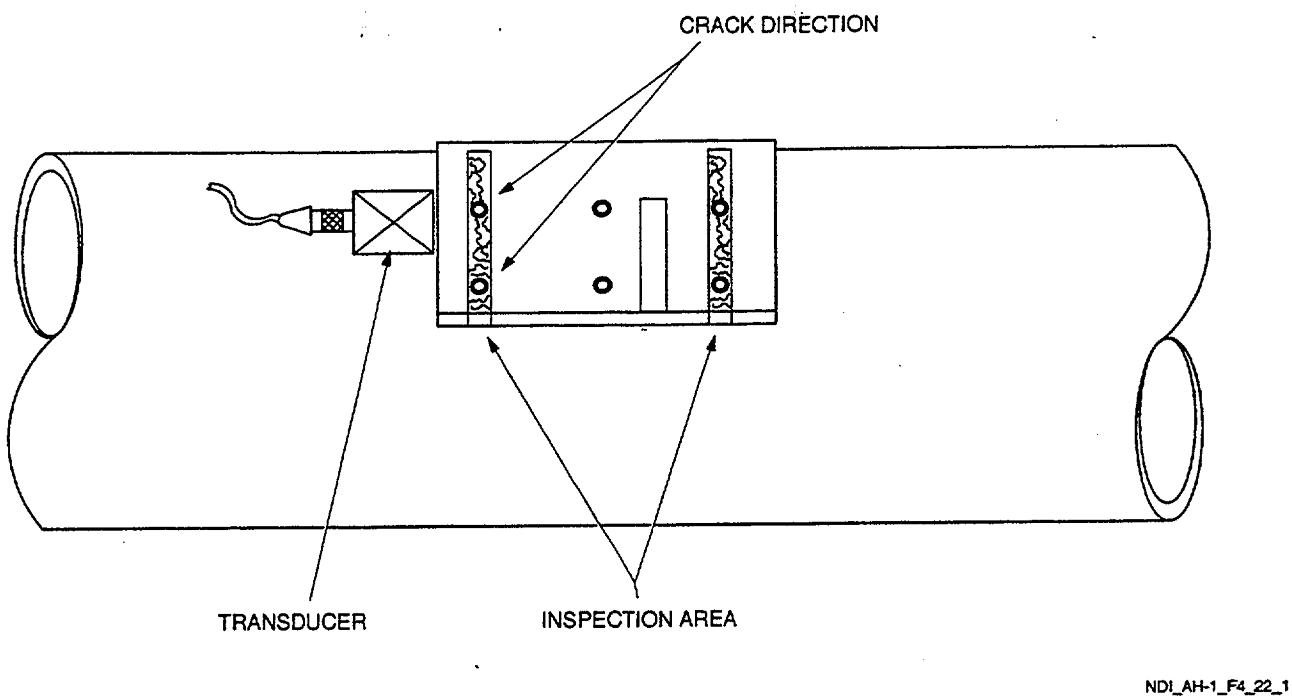


Figure 4-22. Cross Tube Assemblies (Sheet 1 of 2)

4.22.4. Backup Method. None required.

4.22.5. System Securing. The skid assembly requires installation in accordance with the applicable technical manual listed in Table 1-1.

4.23. SKID SADDLES (ET).

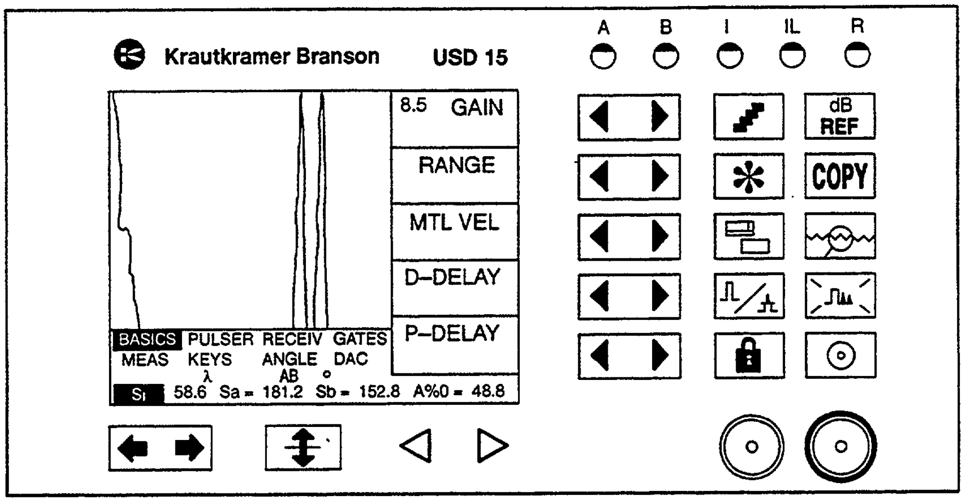
4.23.1. Description (Figure 4-1. Index No. 23). The skid saddles are used to fasten together the landing gear assembly consisting of two skid tubes and two arched cross tubes.

4.23.2. Defects. The primary concern is cracks originating from the fastener holes and at saddle and tube interface. No cracks are allowed.

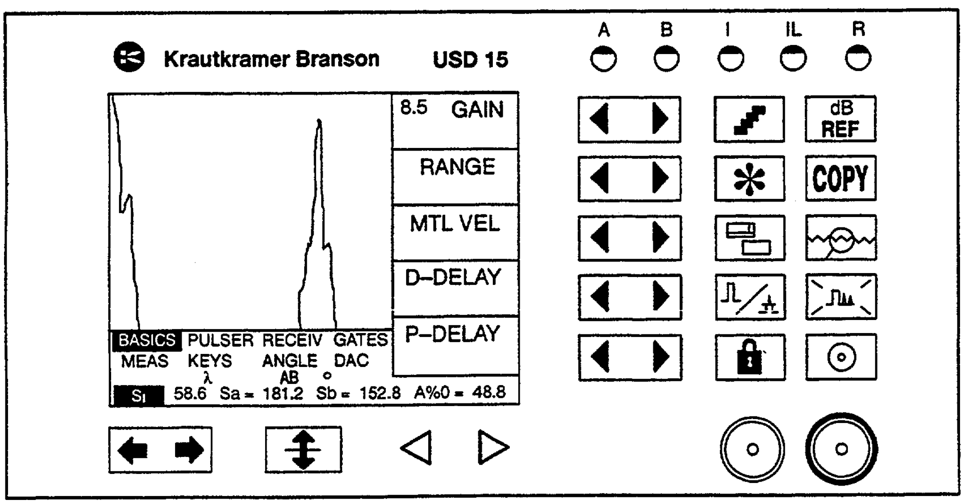
4.23.3. Primary Method. Eddy Current.

4.23.3.1. 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, and 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8



BOLT HOLE



CRACK FROM BOLT HOLE

NDI_AH-1_F4_22_2

Figure 4-22. Cross Tube Assemblies (Sheet 2 of 2)

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

4.23.3.3. Access. Unlimited.

4.23.3.4. Preparation of Part. The skid saddles shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.23.3.5. 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. Setup 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.) 4.23.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-23.

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 is cause for rejection.

NOTE

Either probe identified in paragraph 4.23.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.23.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

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

4.23.5. System Securing. The skid saddles shall be cleaned as necessary. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16.

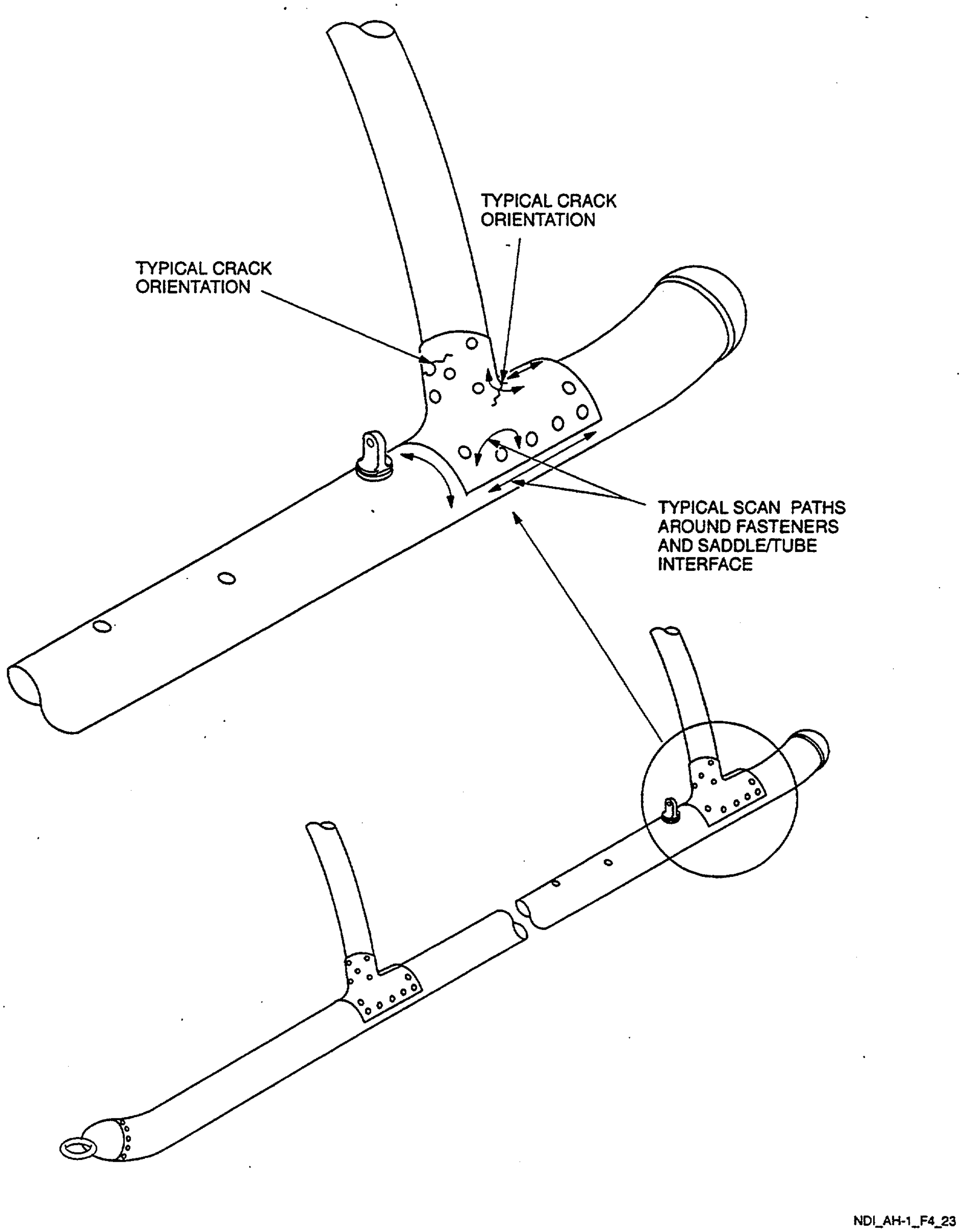


Figure 4-23. Skid Saddles

SECTION V

ENGINE GROUP

5. GENERAL.

5.1. CONTENTS. The engine group inspection items covered in this section are those items of the gas turbine engine, model T53-L-703, and components listed in Table 5-1, Engine Group 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. Engine Group Inspection Index

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
*2	Forward Engine Mount Fittings (Trunnions)	MT	5.2	5-2
*3	Aft Engine Mount Fittings (Trunnions)	MT	5.3	5-3
4	Powerplant Related Components	PT	5.4	5-4
5	Compressor Rotor Assembly First-Stage Blades	MT	5.5	5-5
6	Diffuser Housing Vane Brazements	PT	5.6	5-6
7	Air Outlet Assembly	PT	5.7	5-7
8	Interstage Bleed Band to Bushing Weld	PT	5.8	5-8
9	Combustion Chamber Deflector	PT	5.9	5-9
10	Combustion Chamber Bracket and Clamp Assembly	PT	5.10	5-10
11	Second-Stage Gas Producer Nozzle and Cylinder Assembly	PT	5.11	5-11
12	Diffuser Housing First-Stage Nozzle Assembly, Nozzle Liner	PT	5.12	5-12
13	Silver Braze (Engines)	PT	5.13	

NOTE: * Indicates Flight Safety Part.

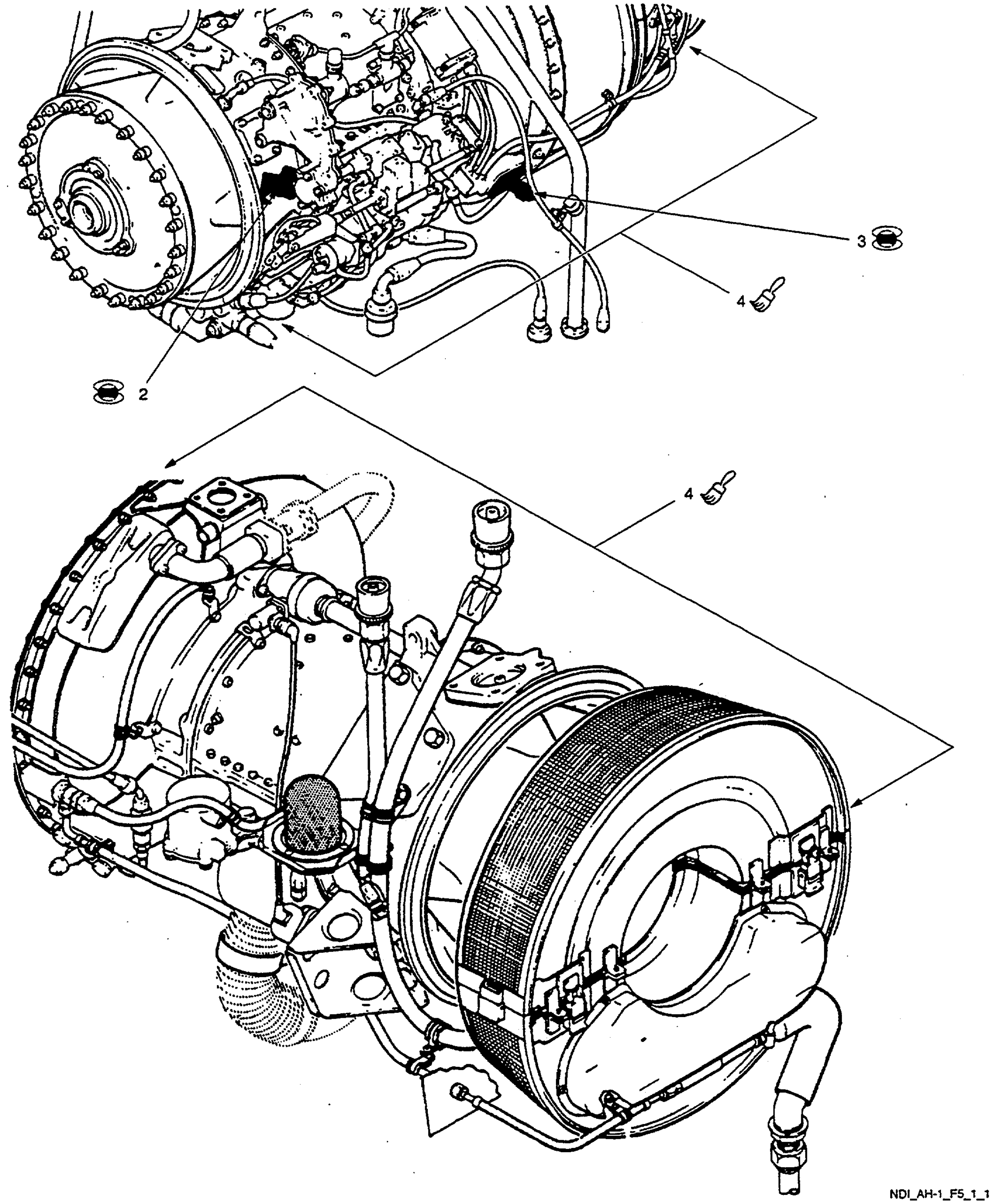


Figure 5-1. Engine Group (Sheet 1 of 2)

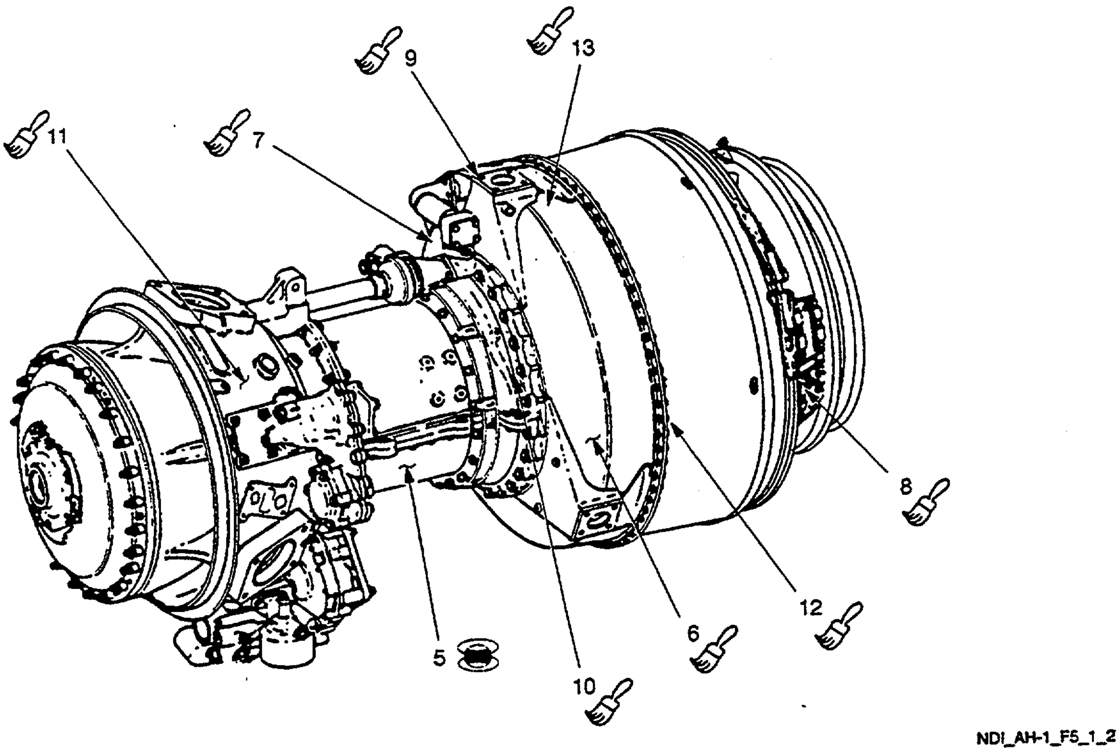


Figure 5-1. Engine Group (Sheet 2 of 2)

5.2. FORWARD ENGINE MOUNT FITTINGS (TRUNNIONS) (MT).

5.2.1. Description (Figure 5-1. Index No. 2). The forward engine mount fittings are located on the forward section of the engine which attaches the engine to the forward engine mount assembly.

5.2.2. Defects. Defects can occur anywhere on the surface of the engine mount fittings. Pay particular attention to bore and radius areas of trunnions. No cracks are allowed.

5.2.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

d. Fluorescent Magnetic Particles

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.

5.2.3.2. 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 applicable positions of this procedure. If required, the forward engine mount fittings shall be 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. The part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

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

5.2.3.6. 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 5-2.

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 5.2.3.8.

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

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

5.2.3.8. 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.

5.2.4. <u>Backup Method</u>. None required.

5.2.5. <u>System Securing</u>. Clean the forward engine mount 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 forward engine mount fittings, if removed, require installation in accordance with the applicable technical manuals listed in Table 1-1.

5.3. AFT ENGINE MOUNT FITTINGS (TRUNNIONS) (MT).

5.3.1. <u>Description (Figure 5-1. Index No. 3)</u>. The aft engine mount fitting is located on the aft section of the engine which attaches the engine to the aft engine mount assembly.

5.3.2. <u>Defects</u>. Defects can occur anywhere on the surface of the engine mount fittings. No cracks are allowed. Pay particular attention to thread and radii areas.

5.3.3. <u>Primary Method</u>. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

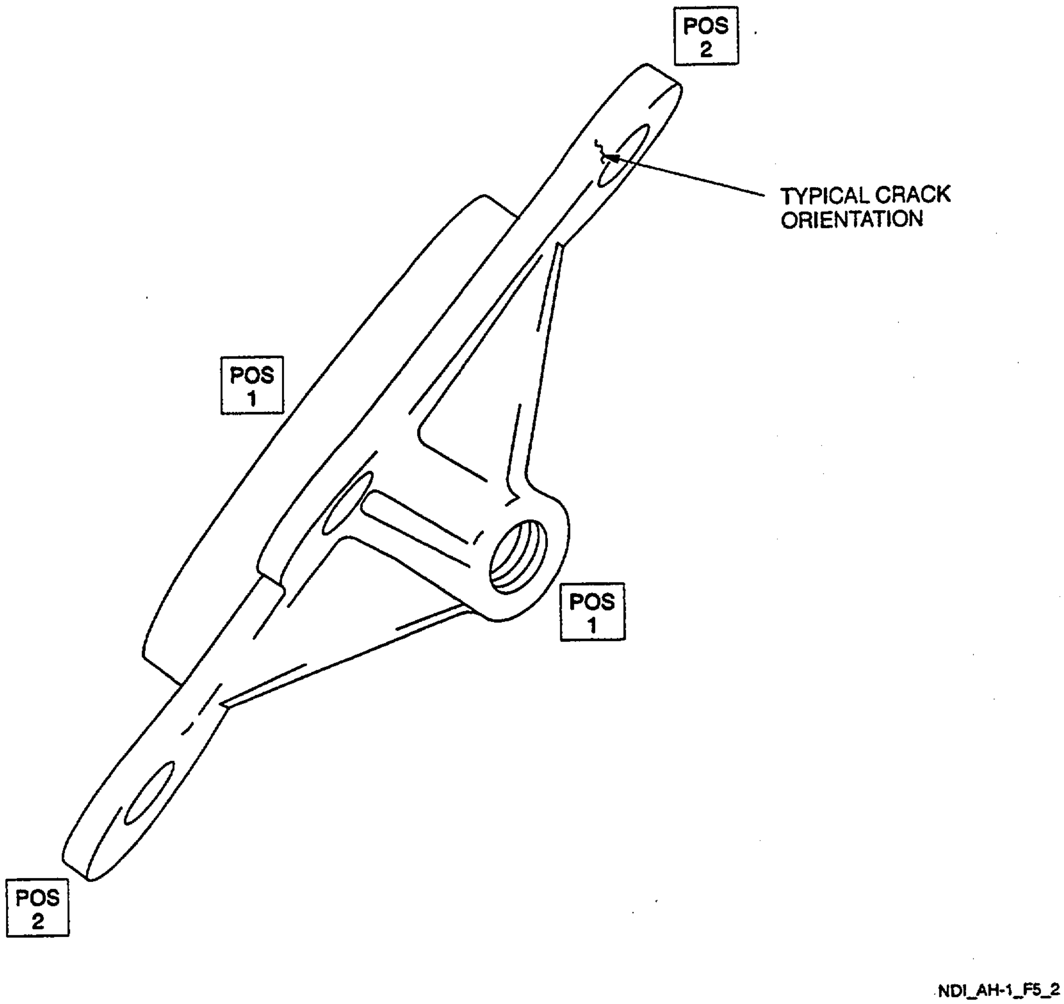


Figure 5-2. Forward Engine Mount Fittings (Trunnions)

c. Black Light

d. Fluorescent Magnetic Particles

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.

5.3.3.2. 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 applicable positions of this procedure. If required, the aft engine mount fittings shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

5.3.3.3. Access. Not applicable.

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

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

5.3.3.6. 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 5-3.

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 5.3.3.8.

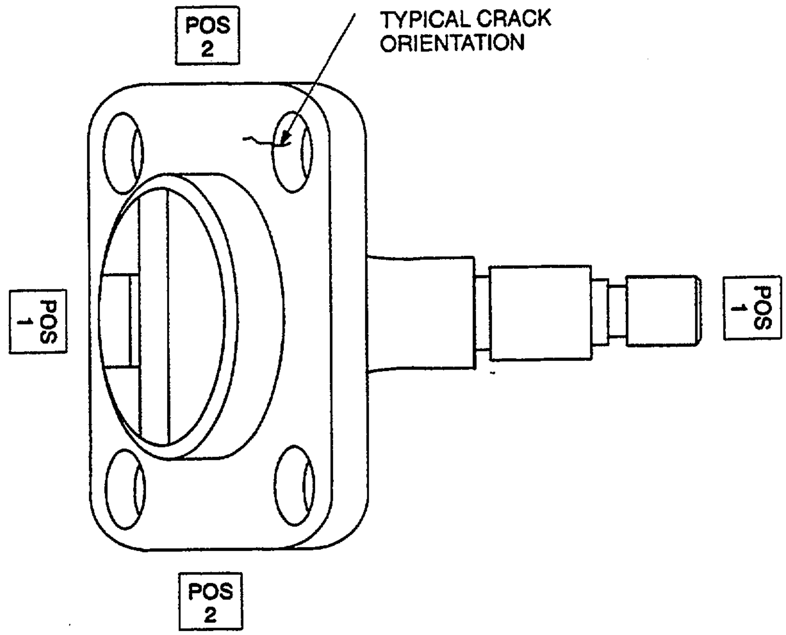
f. Repeat steps a. through e. for positions 2 and 3.

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

5.3.3.8. 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.

5.3.4. Backup Method. None required.

5.3.5. System Securing. Clean the forward engine mount fittings thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.1 6. The forward engine mount fittings, if removed, require installation in accordance with the applicable technical manuals listed in Table 1-1.



ROTATE PART 90 DEGREES FOR POSITION 3.

Figure 5-3. Aft Engine Mount Fittings (Trunnions)

5.4. POWERPLANT RELATED COMPONENTS (PT).

5.4.1. Description (Figure 5-1. Index No. 4). This inspection is applicable to all unpainted powerplant related components to verify indications found visually. Components included are particle separator, fod screen latch assemblies, IR suppression system, oil cooler, oil cooling turbine fan, and related parts. 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.

5.4.2. Defects. Perform the NDI method contained herein on the powerplant components listed above for the purpose of: (1) orientation of crack indications identified by visual inspection; (2) verification that dents, scratches, or gouges do not conceal cracks; (3) locating the ends of confirmed cracks so that stop drilling may be performed.

5.4.3. Primary Method. Fluorescent Penetrant.

5.4.3.1. NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. MIL-I-25135 level 3 penetrant materials shall be selected from the approved list in Table 1-8.

5.4.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A as 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 identified component shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

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.

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

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

5.4.4. Backup Method. None required.

5.4.5. System Securing. Clean the area that was inspected to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. Reinstall or assemble parts or components, if removed, in accordance with the applicable technical manuals listed in Table 1-1.

5.5. COMPRESSOR ROTOR ASSEMBLY FIRST-STAGE BLADES (MT).

5.5.1. Description (Figure 5-1. Index No. 5). The compressor rotor assembly encloses the power shaft but is not connected to it. The compressor rotor sleeve retains the compressor rotor disk assemblies, spacers, centrifugal compressor, and impeller assembly.

5.5.2. Defects. Defects can occur anywhere on the surface of the blades. 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,
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 in accordance with the applicable technical manuals listed in Table 1-1.

5.5.3.3. Access. Not applicable.

5.5.3.4. Preparation of Part. The part shall be thoroughly cleaned and the blades removed from the engine. 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. The position required for this inspection is illustrated in Figure 5-5.

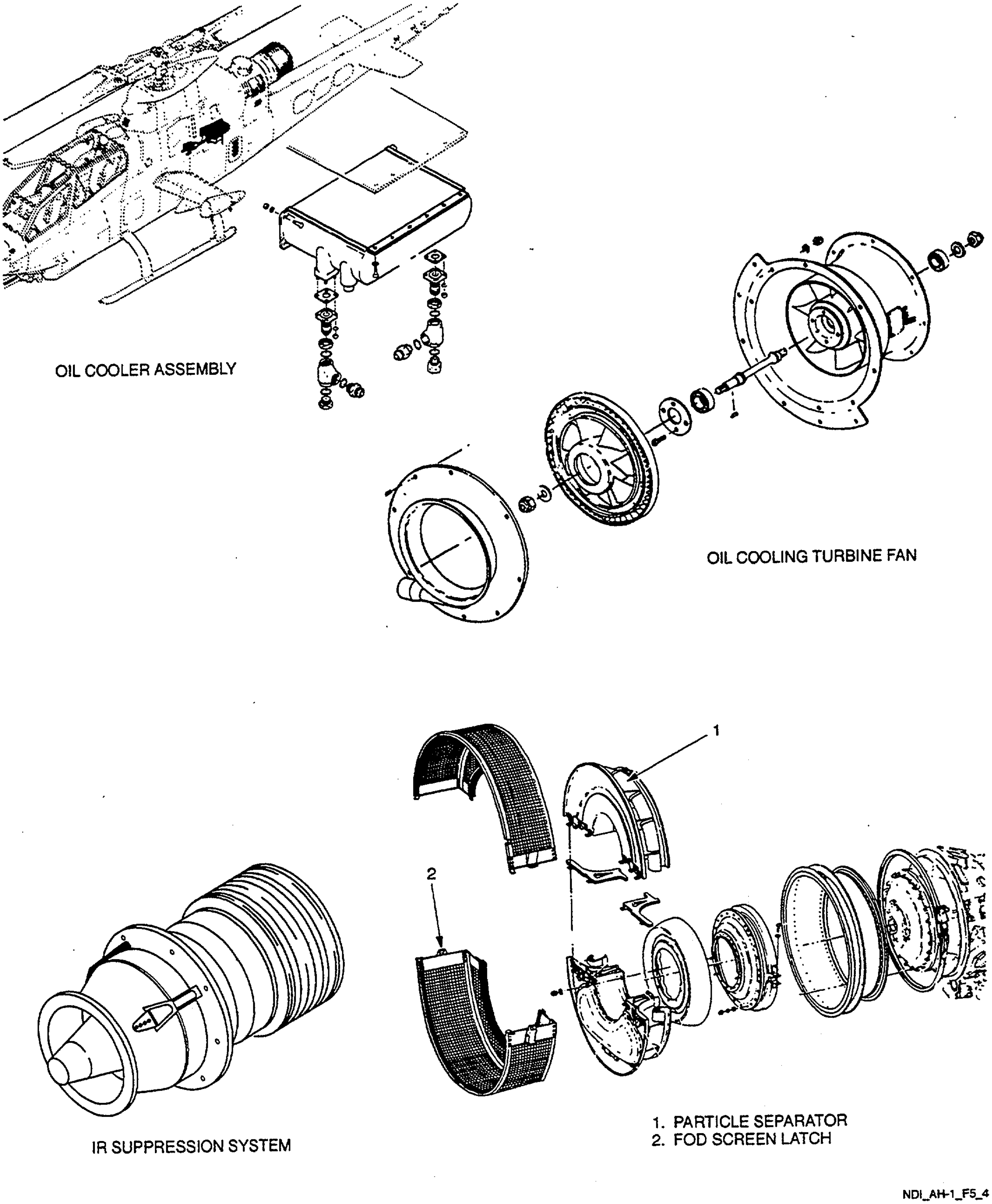


Figure 5-4. Powerplant Related Components

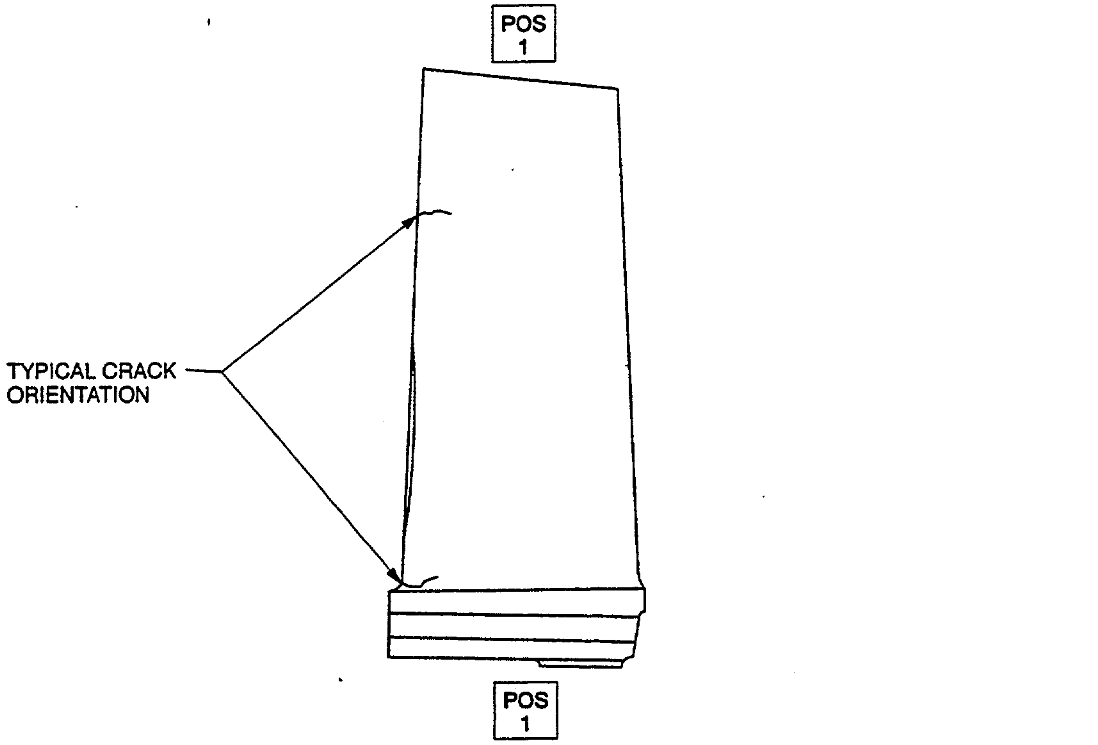


Figure 5-5. Compressor Rotor Assembly First-Stage Blades

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.

5.5.3.7. Marking and Recording of Inspection Results. Mark and record the 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. None required.

5.5.5. System Securing. Clean the first-stage blades 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 first-stage blades require installation in accordance with the applicable technical manuals listed in Table 1-1.

5.6. DIFFUSER HOUSING VANE BRAZEMENTS (PT).

5.6.1. Description (Figure 5-1. Index No. 6). The diffuser housing conducts air from the compressor to the combustion chamber. Air is bled through holes in aft face of certain diffuser vanes, through connecting manifold, to supply anti-icing and customer bleed air.

5.6.2. Defects. Defects can occur anywhere on the surface of the in external vane brazements. No cracks are allowed.

5.6.3. Primary Method. Fluorescent Penetrant.

5.6.3.1. 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.

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

5.6.3.3. Access. Not applicable.

5.6.3.4. Preparation of Part. Protective coating shall be removed and the part or area shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.6.3.5. 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 5-6.

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

5.6.4. Backup Method. None required.

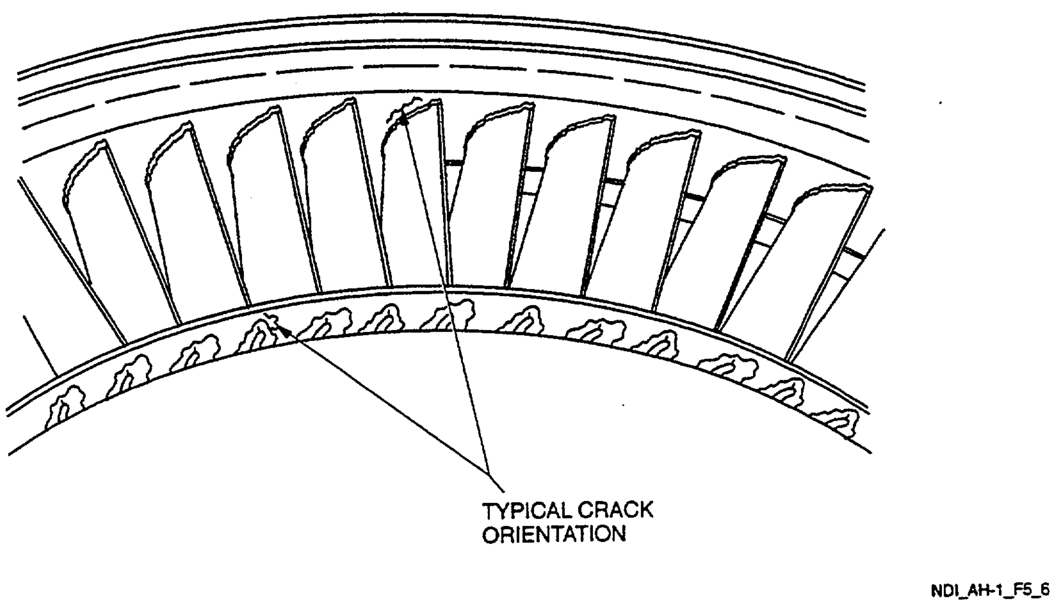


Figure 5-6. Diffuser Housing Vane Brazements

5.6.5. System Securing. Clean the part or area to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. Reinstall or assemble parts or components in accordance with the applicable technical manuals listed in Table 1-1.

5.7. AIR OUTLET ASSEMBLY (PT).

5.7.1. Description (Figure 5-1. Index No. 7). The air outlet pan assembly boss, located below the air,,, diffuser, external bleed air manifold, is the attach point for the bleed band pressure lines (P3).

5.7.2. Defects. Defects can occur anywhere on the surface of the brazed joint of the air outlet pan assembly boss.

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. MIL-1-25135 level 3 penetrant materials shall be selected from the approved list in Table 1-8.

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

5.7.3.3. Access. Not applicable.

5.7.3.4. Preparation of Part. Protective coating shall be removed and the part or area shall be thoroughly cleaned. 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.

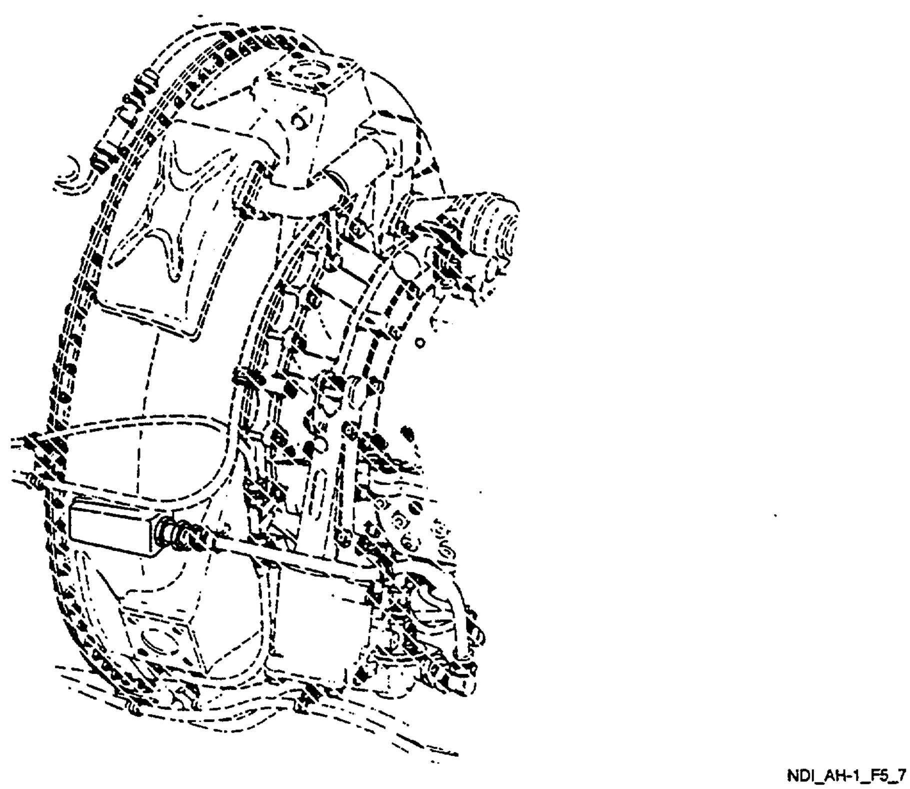


Figure 5-7. Air Outlet Assembly

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

5.7.4. Backup Method. None required.

5.7.5. System Securing. Clean the part or area to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. Assemble parts or components and install in accordance with the applicable technical manuals listed in Table 1-1.

5.8. INTERSTAGE BLEED BAND TO BUSHING WELD (PT).

5.8.1. Description (Figure 5-1. Index No. 8). The bleed band is a wide strap of stainless steel with a single bolthole in one end and a spot-welded split loop on the other. The upper and lower bands differ only in length.

5.8.2. Defects. Defects can occur anywhere on the surface of the band to bushing weld.

5.8.3. Primary Method. Fluorescent Penetrant.

5.8.3.1. NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. MIL-I-25135 level 3 penetrant materials shall be selected from the approved list in Table 1-8.

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

5.8.3.3. Access. Not applicable.

5.8.3.4. Preparation of Part. Protective coating shall be removed and the part or area shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.8.3.5. 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 5-8.

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

5.8.4. Backup Method. None required.

5.8.5. System Securing. Clean the part or area to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. Assemble parts or components and install in accordance with the applicable technical manuals listed in Table 1-1.

5.9. COMBUSTION CHAMBER DEFLECTOR (PT).

5.9.1. Description (Figure 5-1. Index No. 9). The diffuser housing supports the combustion chamber deflector.

5.9.2. Defects. Defects can occur anywhere on or around the surface of the weld repair area. No cracks are allowed.

5.9.3. Primary Method. Fluorescent Penetrant.

5.9.3.1. NDI Equipment and Materials. (Refer to, Appendix B.) Inspection equipment is listed in Table 1-7. MIL-i-25135 level 3 penetrant materials shall be selected from the approved list in Table 1-8.

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

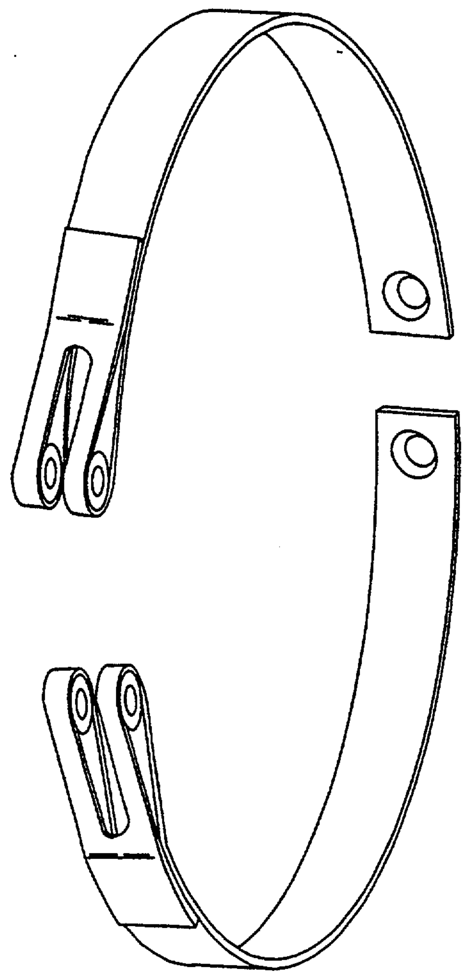


Figure 5-8. Interstage Bleed Band to Bushing Wind

5.9.3.3. Access. Not applicable.

5.9.3.4. Preparation of Part. Protective coating shall be removed and the part or area shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.9.3.5. 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 5-9.

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

5.9.4. Backup Method. None required.

5.9.5. System Securing. Clean the part or area to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. Assemble parts or components and install in accordance with the applicable technical manuals listed in Table 1-1.

5.10. COMBUSTION CHAMBER BRACKET AND CLAMP ASSEMBLY (PT).

5.10.1. Description (Figure 5-1. Index No. 10). The bracket and clamp assembly is a support with a bolt secured clamp used to hold a check valve in the engine fuel system piping.

5.10.2. Defects. Defects can occur anywhere in or adjacent to the welded joints. No cracks are allowed.

5.10.3. Primary Method. Fluorescent Penetrant.

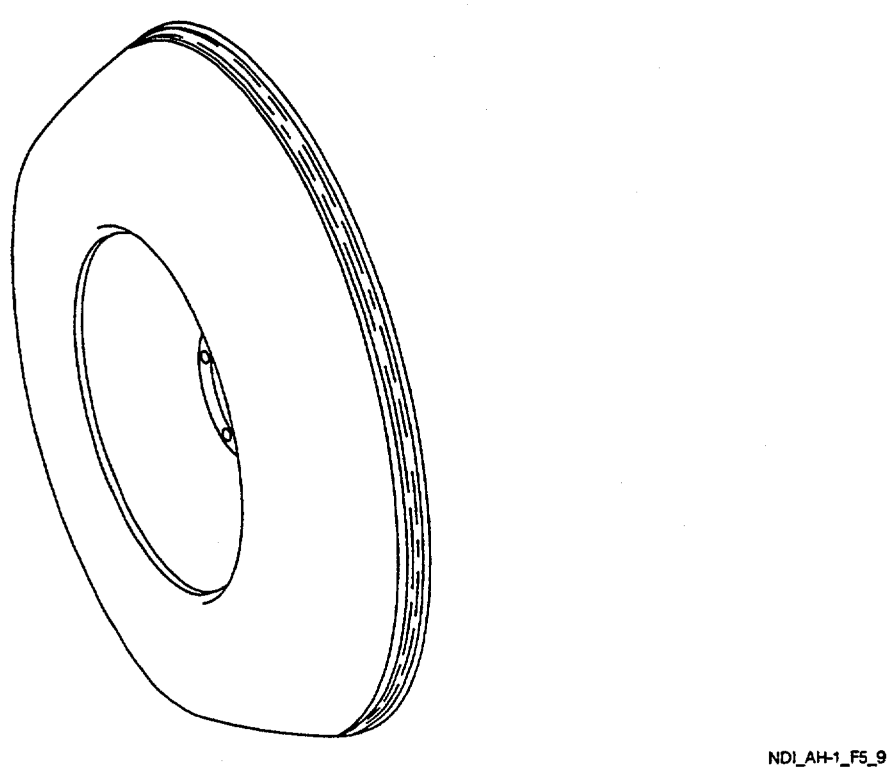


Figure 5-9. Combustion Chamber Deflector

5.10.3.1. 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.

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

5.10.3.3. Access. Not applicable.

5.10.3.4. Preparation of Part. Protective coating shall be removed and the part or area shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.10.3.5. 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 5-10.

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

5.10.4. Backup Method. None required.

5.10.5. System Securing. Clean the part or area to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. Assemble parts or components and install in accordance with the applicable technical manuals listed in Table 1-1.

5.11. SECOND-STAGE GAS PRODUCER NOZZLE AND CYLINDER ASSEMBLY (PT).

5.11.1. Description (Figure 5-1. Index No. 11). Second-stage gas producer nozzle and cylinder assembly is composed of a framework of inner and outer shrouds brazed together with multivanes.

5.11.2. Defects. Bent nozzle tangs may be cold straightened. Cracks may occur anywhere on the surface of the nozzle tang. 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. MIL-1-25135 level 3 penetrant materials shall be selected from the approved list in Table 1-8.

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

5.11.3.3. Access. Not applicable.

5.11.3.4. Preparation of Part. Protective coating shall be removed and the part or area shall be thoroughly cleaned. 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 the inspection results as required by paragraph 1.3.

5.11.4. Backup Method. None required.

5.11.5. System Securing. Clean the part or area to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. Assemble parts or components and install in accordance with the applicable technical manuals listed in Table 1-1.

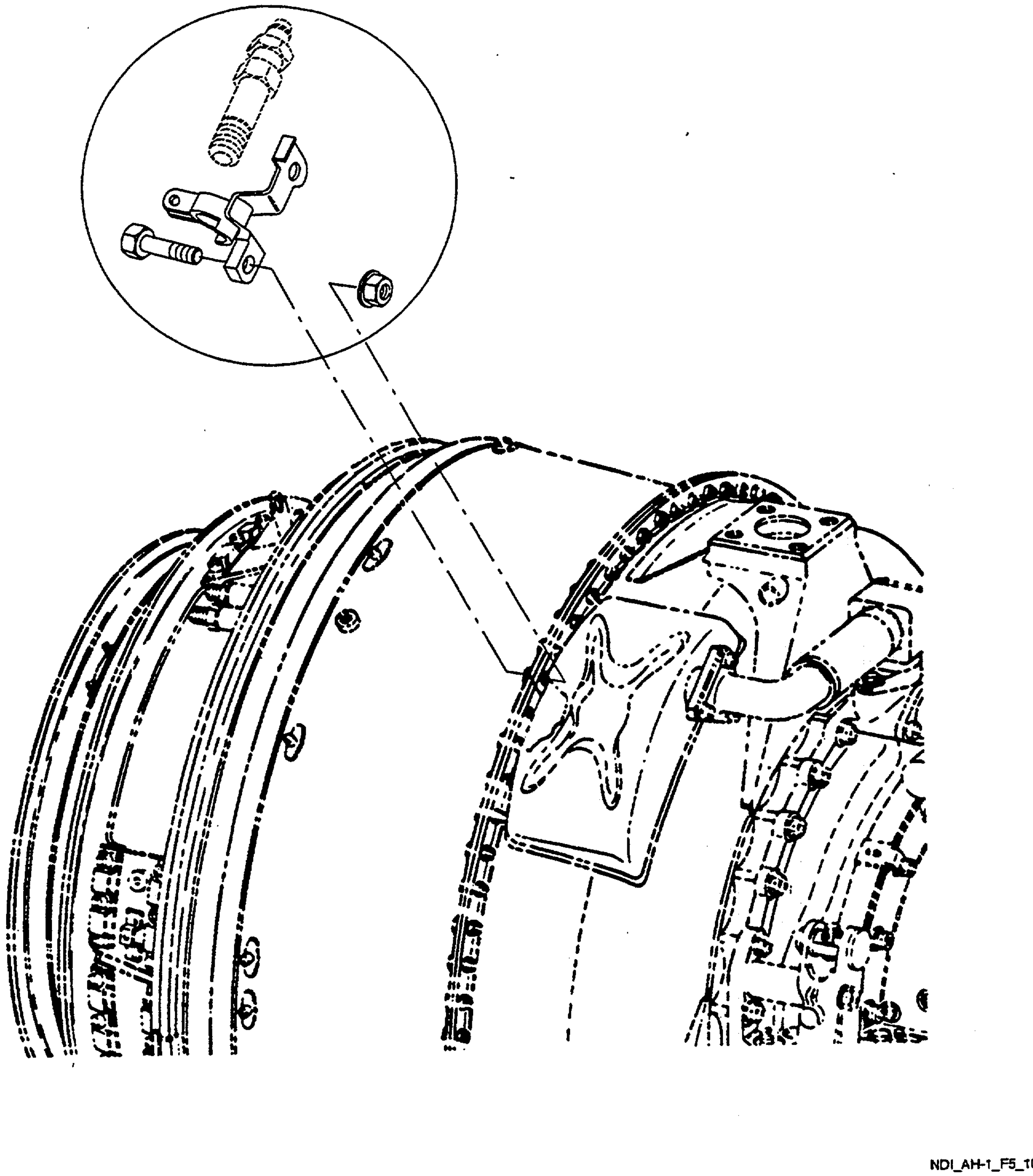


Figure 5-10. Combustion Chamber Bracket and Clamp Assembly

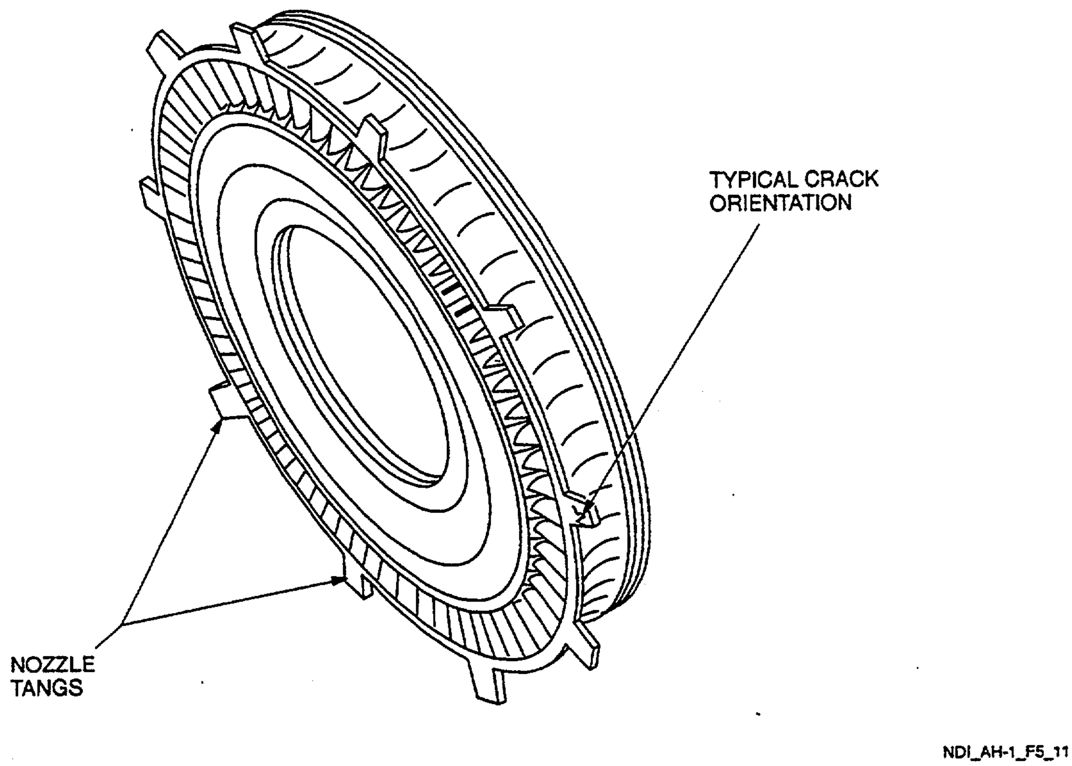


Figure 5-11. Second-Stage Gas Producer Nozzle and Cylinder Assembly

5.12. DIFFUSER HOUSING FIRST-STAGE NOZZLE ASSEMBLY, NOZZLE LINER (PT).

5.12.1. Description (Figure 5-1. Index No. 12). The first-stage turbine nozzle assembly consists of inner and outer shrouds brazed together with multivanes. The inner shroud nozzle has a permanently installed sealing ring and the outer shroud has a rear mounting flange with bolts.

5.12.2. Defects. Axial cracks may occur in the liner. No cracks are allowed.

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. MIL-I-25135 level 3 penetrant materials shall be selected from the approved list in Table 1-8.

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

5.12.3.3. Access. Not applicable.

5.12.3.4. Preparation of Part. Protective coating shall be removed and the part or area shall be thoroughly cleaned. 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 the inspection results as required by paragraph 1.3.

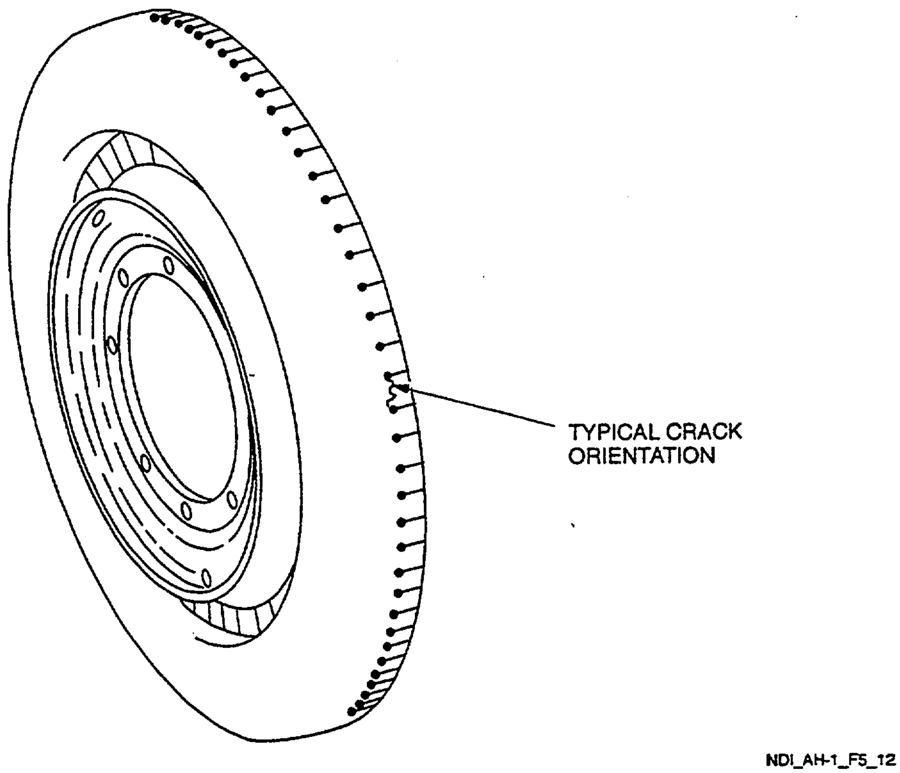


Figure 5-12. Diffuser Housing First-Stage Nozzle Assembly, Nozzle Liner

5.12.4. Backup Method. None required.

5.12.5. System Securing. Clean the part or area to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. Assemble parts or components and install in accordance with the applicable technical manuals listed in Table 1-1.

5.13. SILVER BRAZE (ENGINES) (PT).

5.13.1. Description (Figure 5-1. Index No. 13). This inspection is applicable to all areas where repair has been performed by silver brazing on the engine.

5.13.2. Defects. Defects can occur anywhere in or around the silver braze areas.

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. MIL-1-25135 level 3 penetrant materials shall be selected from the approved list in Table 1-8.

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

5.13.3.3. Access. Not applicable.

5.13.3.4. Preparation of Part. Protective coating shall be removed and the part or area shall be thoroughly cleaned. 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.

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

5.13.4. Backup Method. None required.

5.13.5. System Securing. Clean the part or area to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. Assemble parts or components and install in accordance with the applicable technical manuals listed in Table 1-1.

SECTION VI

FLIGHT CONTROL GROUP

6. GENERAL.

6.1. CONTENTS. The flight control group inspection items covered in this section are those items of the helicopter flight control and related hydraulic systems. The parts and components are listed in Table 6-1, Flight Control Group 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 6-1.

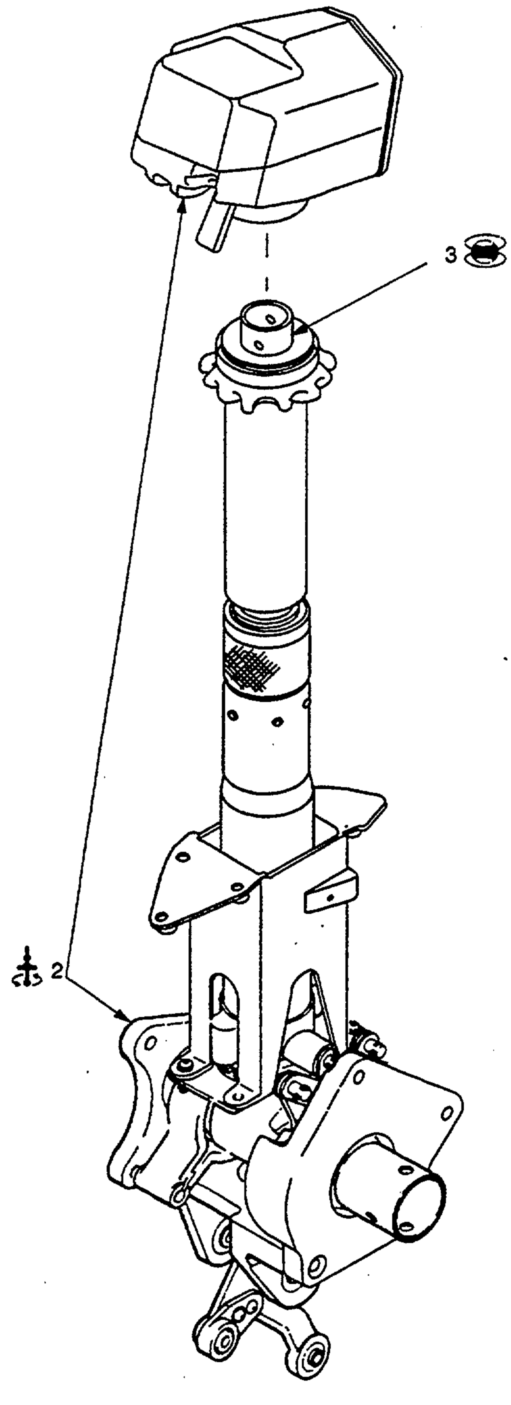
Table 6-1. Flight Control Group Inspection Index

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
2	Pilot Collective Control Stick Assembly	ET	6.2	6-2
3	Pilot Collective Control Stick Tube	MT	6.3	6-3
4	Gunner Collective Control Stick Assembly	ET	6.4	6-4
5	Gunner Collective Control Stick	MT	6.5	6-5
6	Pilot Cyclic Control Stick Lever Assembly	ET	6.6	6-6
7	Pilot Cyclic Control Stick Gimbal Bracket	ET	6.7	6-7
8	Pilot Cyclic Control Stick (Elbow, Collar)	ET	6.8	6-8
9	Pilot Cyclic Control Stick	MT	6.9	6-9
10	Gunner Cyclic Control Stick Bellcrank Assembly	ET	6.10	6-10
11	Gunner Cyclic Control Stick Support Assembly	ET	6.11	6-11
12	Gunner Cyclic Control Stick	ET	6.12	6-12
13	Jackshaft Assembly	ET	6.13	6-13
14	Jackshaft Bearing Support Assembly	ET	6.14	6-14
15	Jackshaft Support Assembly	ET	6.15	6-15
16	Force Gradient Cyclic Control Cylinder	ET	6.16	6-16

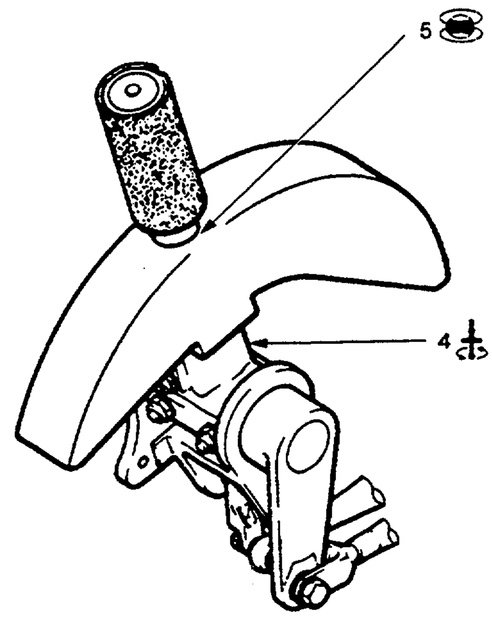
Table 6-1. Flight Control Group Inspection Index - Continued

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
17	Force Gradient Cyclic Control Shaft	MT	6.17	6-17
18	Force Gradient Cyclic Control Guides	PT	6.18	6-18
*19	Elevator Horn Assembly	ET	6.19	6-19
**20	Tail Rotor Control, Elevator and Elevator Control, Power Cylinder Supports, Lateral Cyclic, Fore and Aft Cyclic, and Collective Systems	ET	6.20	6-20
**21	Rod Ends, Clevis, and Eye Bolts, Etc.	PT	6.21	6-21
22	Hydraulic Reservoir	ET	6.22	6-22
23	Hydraulic Pump, Transmission Drive	ET	6.23	6-23
24	Hydraulic Pump (Emergency - Electric Motor Driven)	ET	6.24	6-24
25	Hydraulic Modular Units	ET	6.25	6-25
26	Hydraulic Accumulator and Lock Out Valve Assemblies	ET	6.26	6-26
27	Nuts, Fittings, Locks, Springs, Spring Base, Jam Nut, and Barrels	PT	6.27	6-27
28	Dual Hydraulic Cylinders Flange Area	ET	6.28	6-28
29	Rod Ends, Shafts, Pistons, and Sleeves	MT	6.29	6-29
30	Hydraulic Cylinder Bearing Housing	ET	6.30	6-30
31	Solenoid Valves	ET	6.31	6-31

NOTE: * Indicates Flight Safety Parts.
** Indicates may contain various Flight Safety Parts.



PILOT COLLECTIVE STICK ASSEMBLY



GUNNER COLLECTIVE STICK ASSEMBLY

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Figure 6-1. Flight Control Group (Sheet 1 of 6)

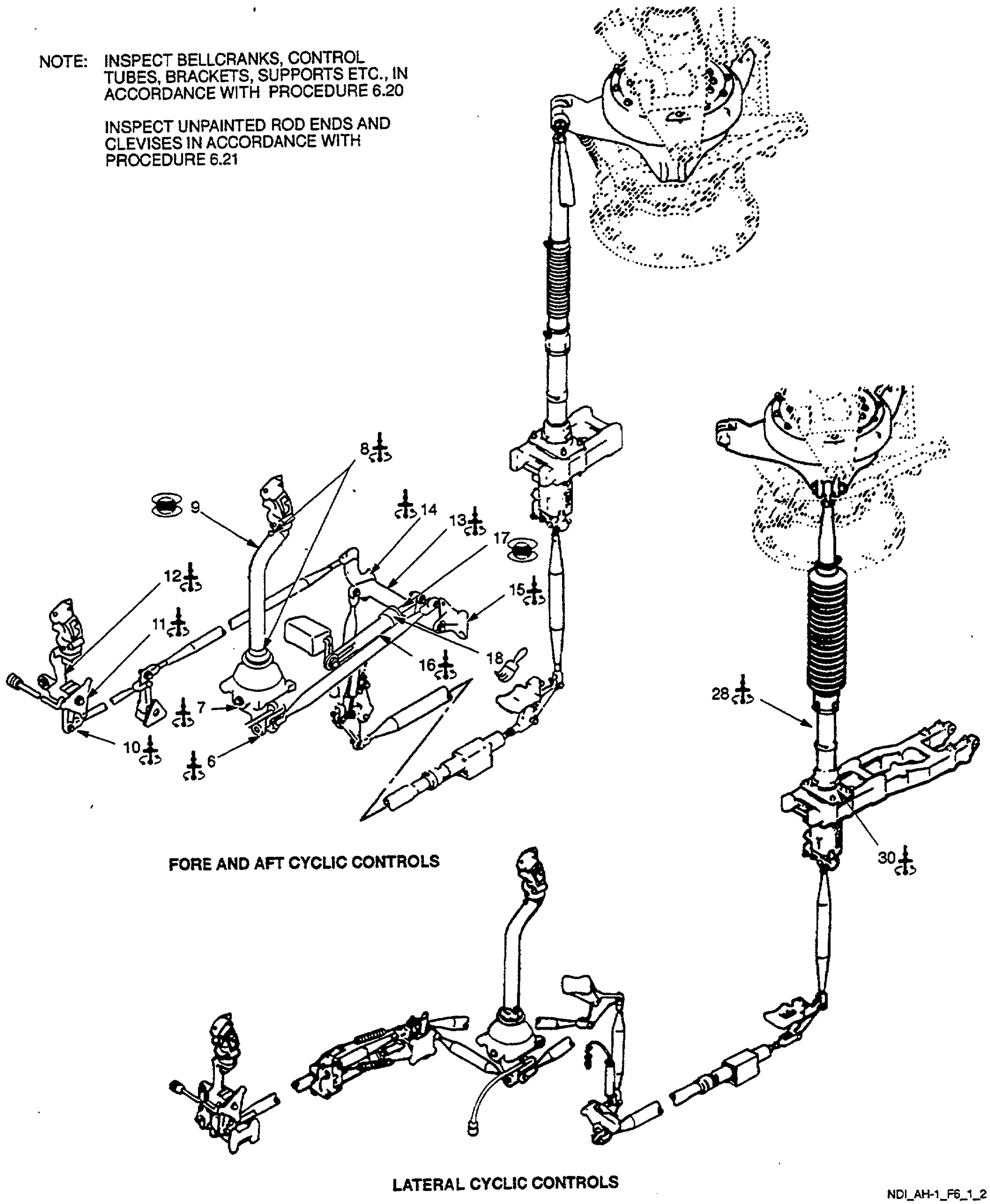


Figure 6-1. Flight Control Group (Sheet 2 of 6)

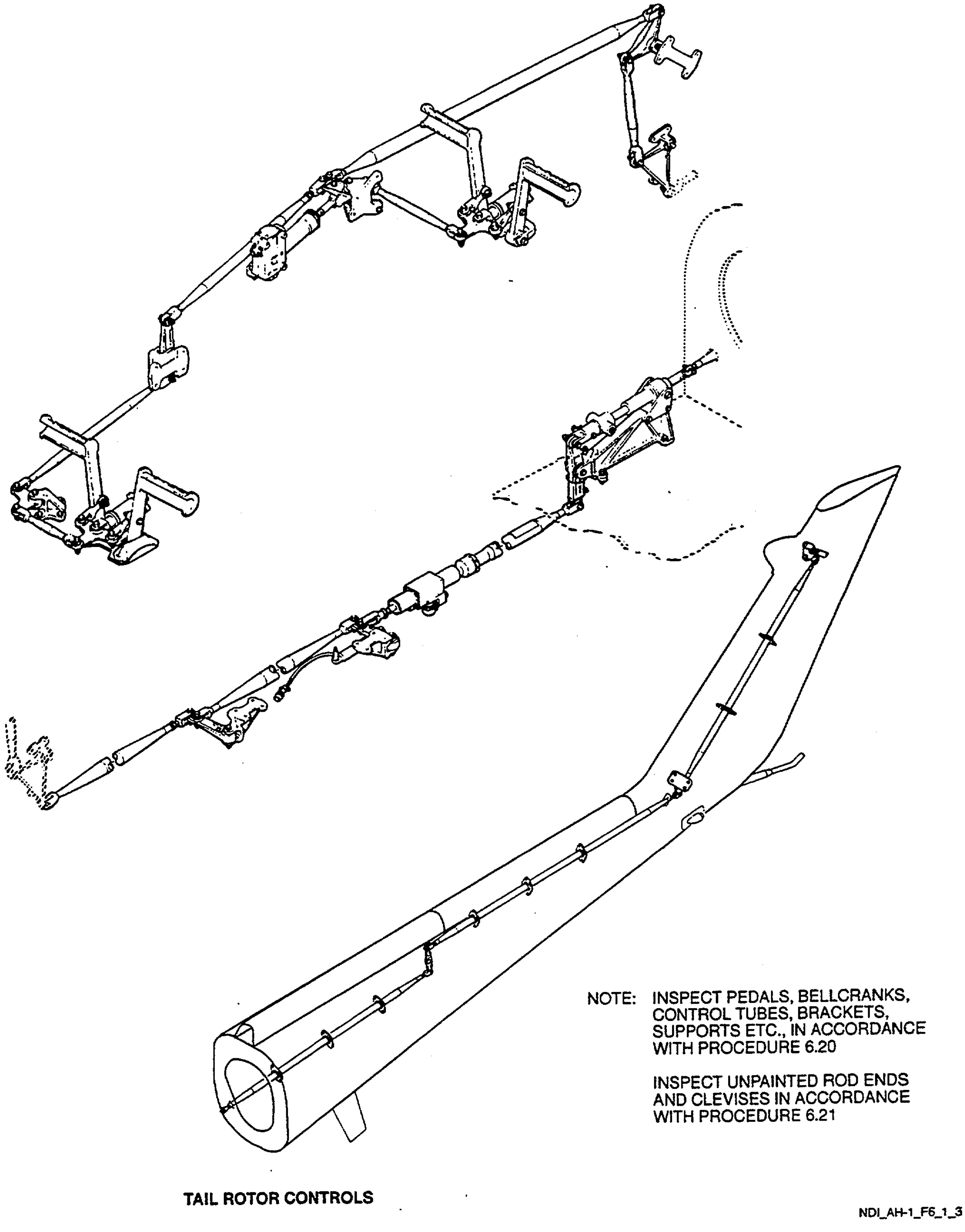
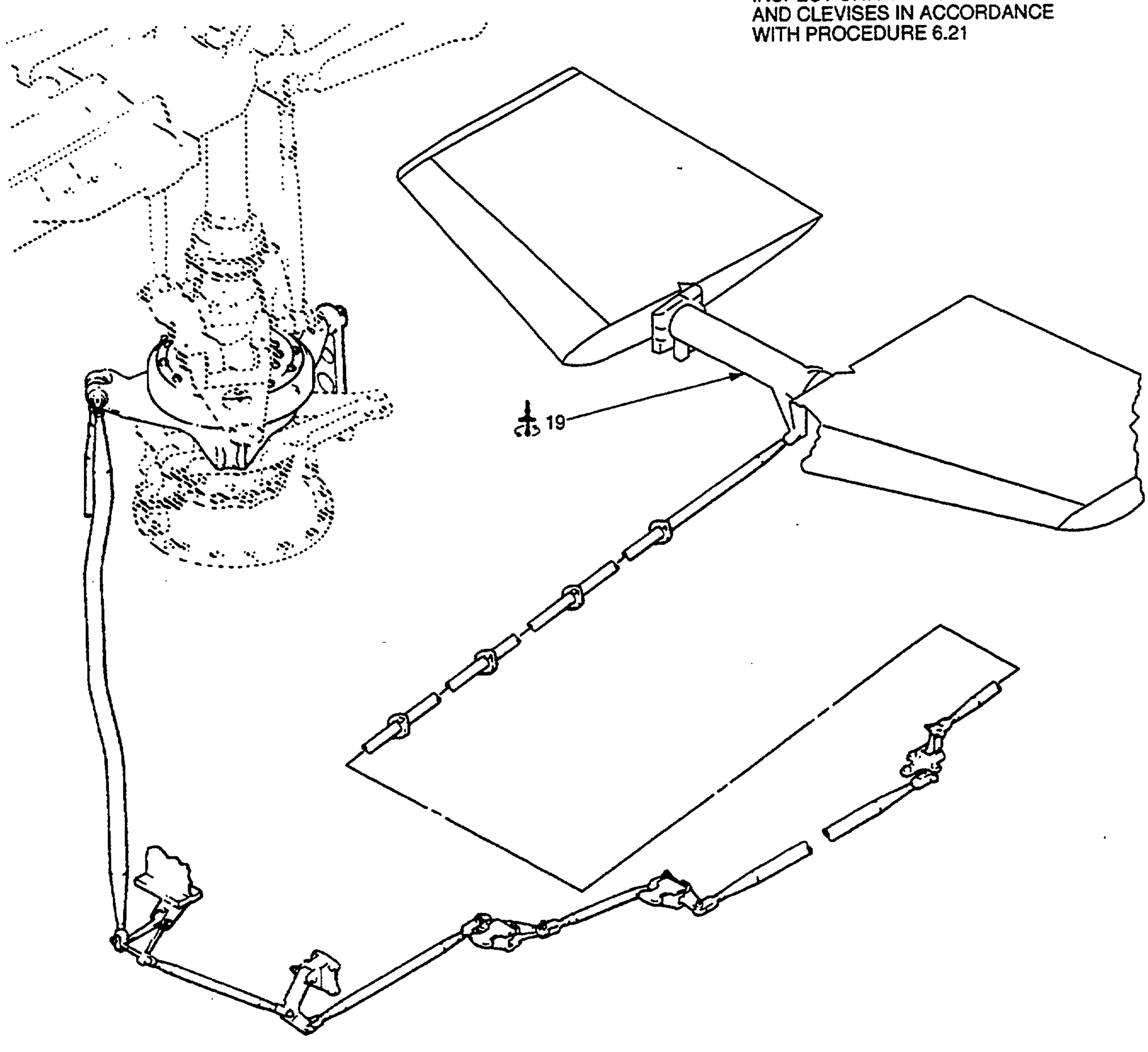


Figure 6-1. Flight Control Group (Sheet 3 of 6)

NOTE: INSPECT PEDALS, BELLCRANKS, CONTROL TUBES, BRACKETS, SUPPORTS ETC., IN ACCORDANCE WITH PROCEDURE 6.20

INSPECT UNPAINTED ROD ENDS AND CLEVISES IN ACCORDANCE WITH PROCEDURE 6.21



ELEVATOR CONTROL SYSTEM

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Figure 6-1. Flight Control Group (Sheet 4 of 6)

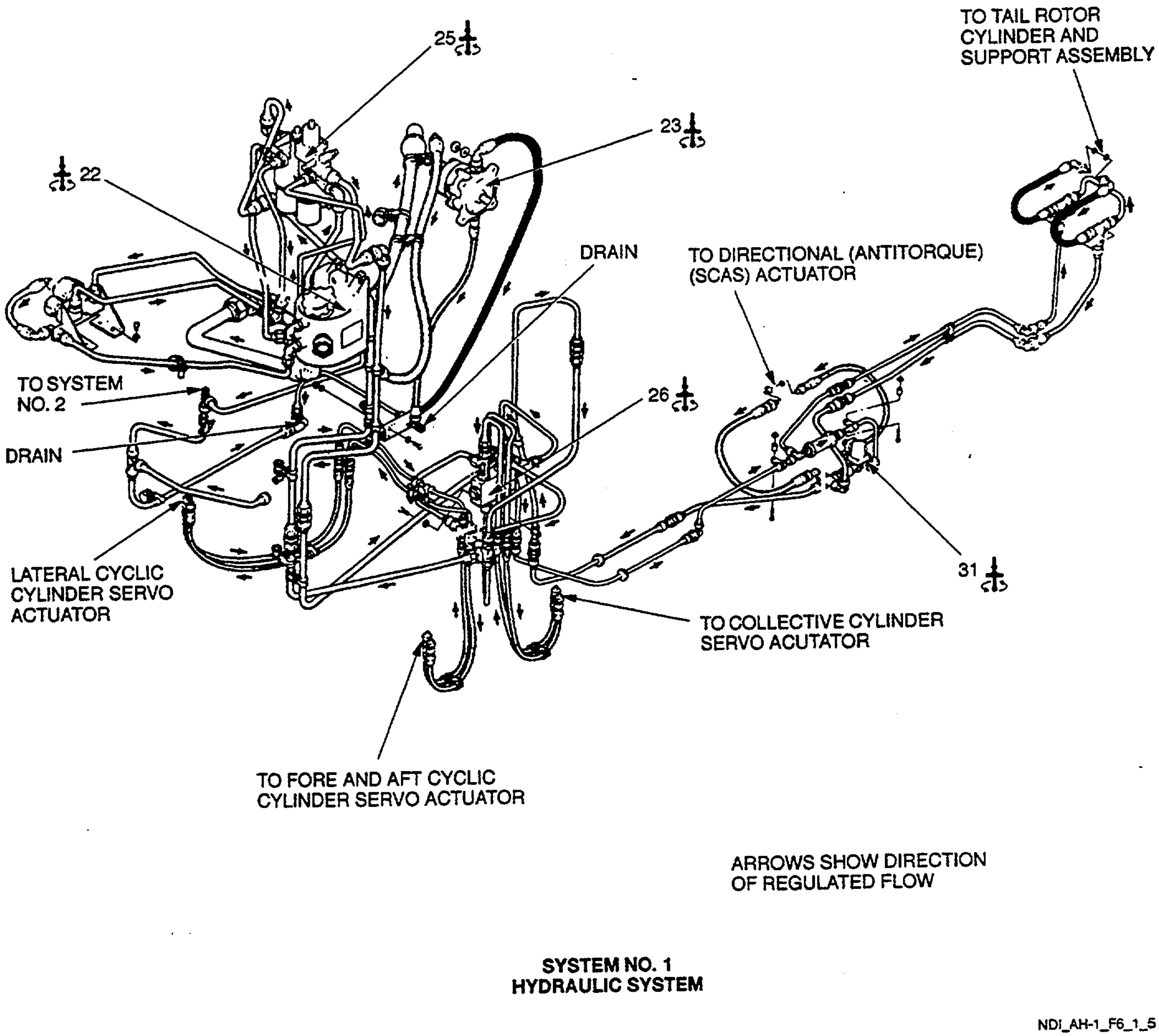

Figure 6-1. Flight Control Group (Sheet 5 of 6)

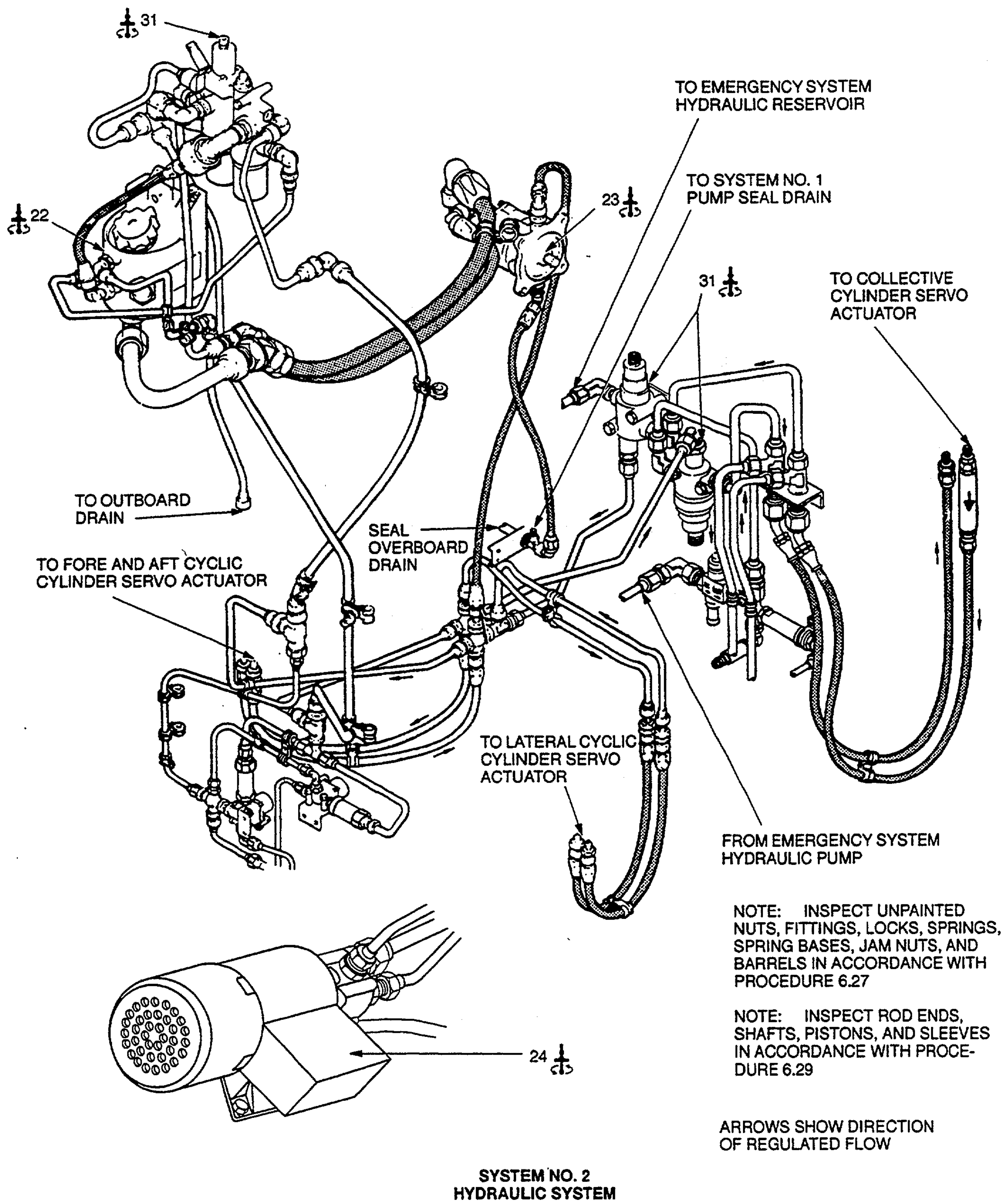

Figure 6-1. Flight Control Group (Sheet 6 of 6)

6.2. PILOT COLLECTIVE CONTROL STICK ASSEMBLY (ET).

6.2.1. Description (Figure 6-1, Index No. 2). The pilot collective control stick assembly is on the left side console. A support assembly at the base of the collective stick houses the collective friction shoes, a collective lever, and a throttle lever.

6.2.2. Defects. Perform the NDI method contained herein on the elbow, control head, and support assemblies for the purpose of verification of crack indications identified by visual inspection. No cracks are allowed.

6.2.3. Primary Method. Eddy Current.

6.2.3.1. 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, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, and 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

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

6.2.3.3. Access. Access is through the pilot collective stick cover.

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

6.2.3.5. NDI Equipment Settings.

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

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. Setup 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.)

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

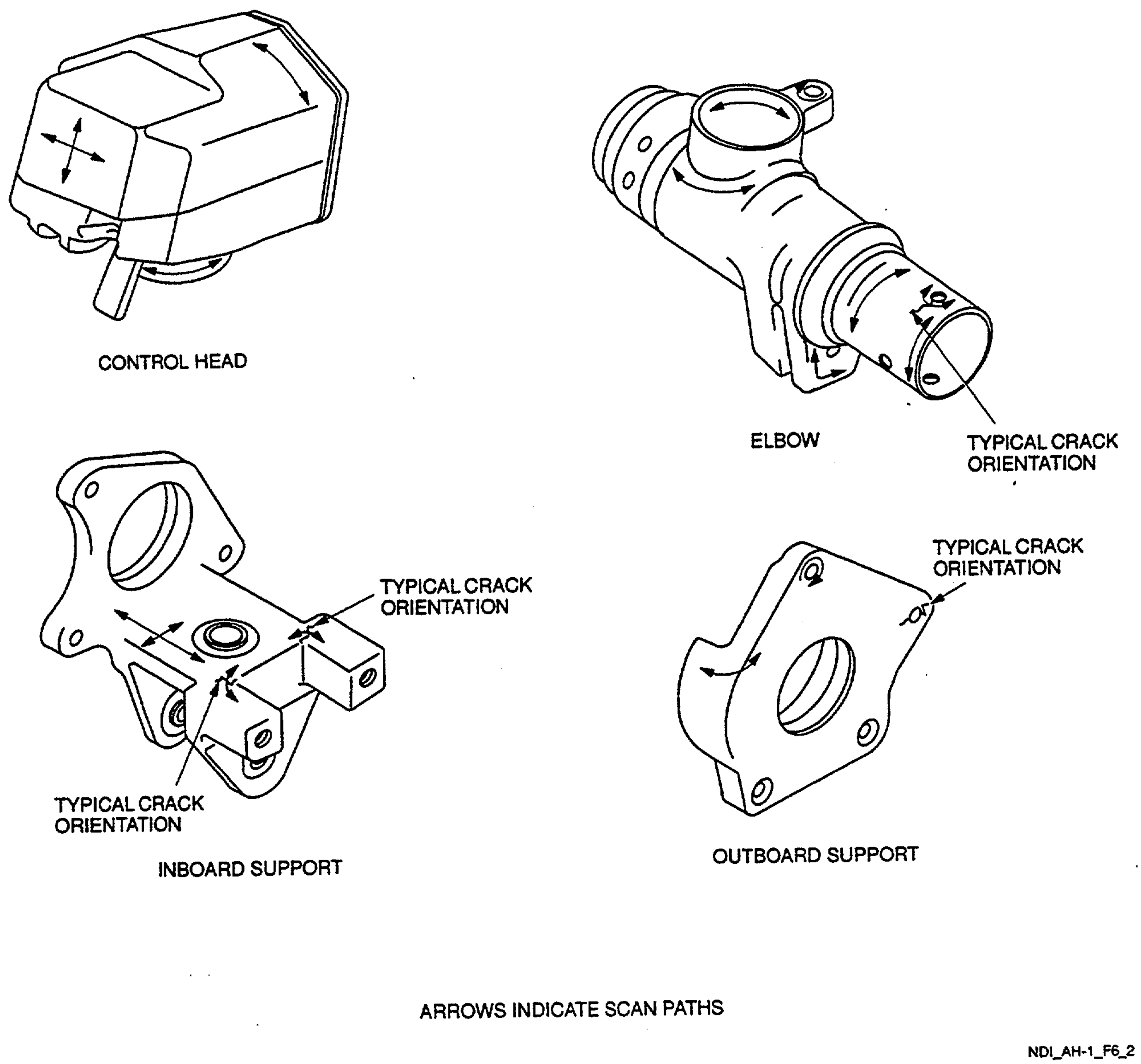

Figure 6-2. Pilot Collective Control Stick Assembly

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 is cause for rejection.

NOTE

Either probe identified in paragraph 6.2.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.2.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

6.2.4. <u>Backup Method</u>. None required.

6.2.5. <u>System Securing</u>. The pilot collective control stick components require installation in accordance with the applicable technical manual listed in Table 1-1.

6.3. PILOT COLLECTIVE CONTROL STICK TUBE (MT).

6.3.1. <u>Description (Figure 6-1. Index No. 3).</u> The pilot collective control stick tube is housed within the tube assembly which connects the elbow assembly to the control head.

6.3.2. <u>Defects</u>. Defects can occur anywhere on the part. Perform the NDI method contained herein on the control stick tube for the purpose of verification of crack indications identified by visual inspection. No cracks are allowed.

6.3.3. <u>Primary Method</u>. Magnetic Particle.

6.3.3.1. <u>NDI Equipment and Materials</u>. (Refer to Appendix B.)

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

6.3.3.2. 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 applicable positions of this procedure. If required, the collective control stick tube shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.3.3.3. Access. Not applicable.

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 Refer to Magnetic Particle Method, paragraph 1.4.8.

6.3.3.6. Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of suspect cracks. Typical cracks detectable are illustrated in Figure 6-3.

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 6.3.3.8.
f. Repeat steps a. through e. for position 2.

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

6.3.3.8. 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.

6.3.4. Backup Method. None required.

6.3.5. System Securing. Clean the control stick tube 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,, control stick tube, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

6.4. GUNNER COLLECTIVE CONTROL STICK ASSEMBLY (ET).

6.4.1. Description (Figure 6-1. Index No. 4). The gunner collective control stick is mounted in the gunner left side console and is a dual control for occasional or emergency use. It has only the essential functions of collective pitch and throttle control.

6.4.2. Defects. Perform the NDI method contained herein on the elbow, collective lever, and support assembly for the purpose of verification of crack indications identified by visual inspection. No cracks are allowed.

6.4.3. Primary Method. Eddy Current.

6.4.3.1. 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, and 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

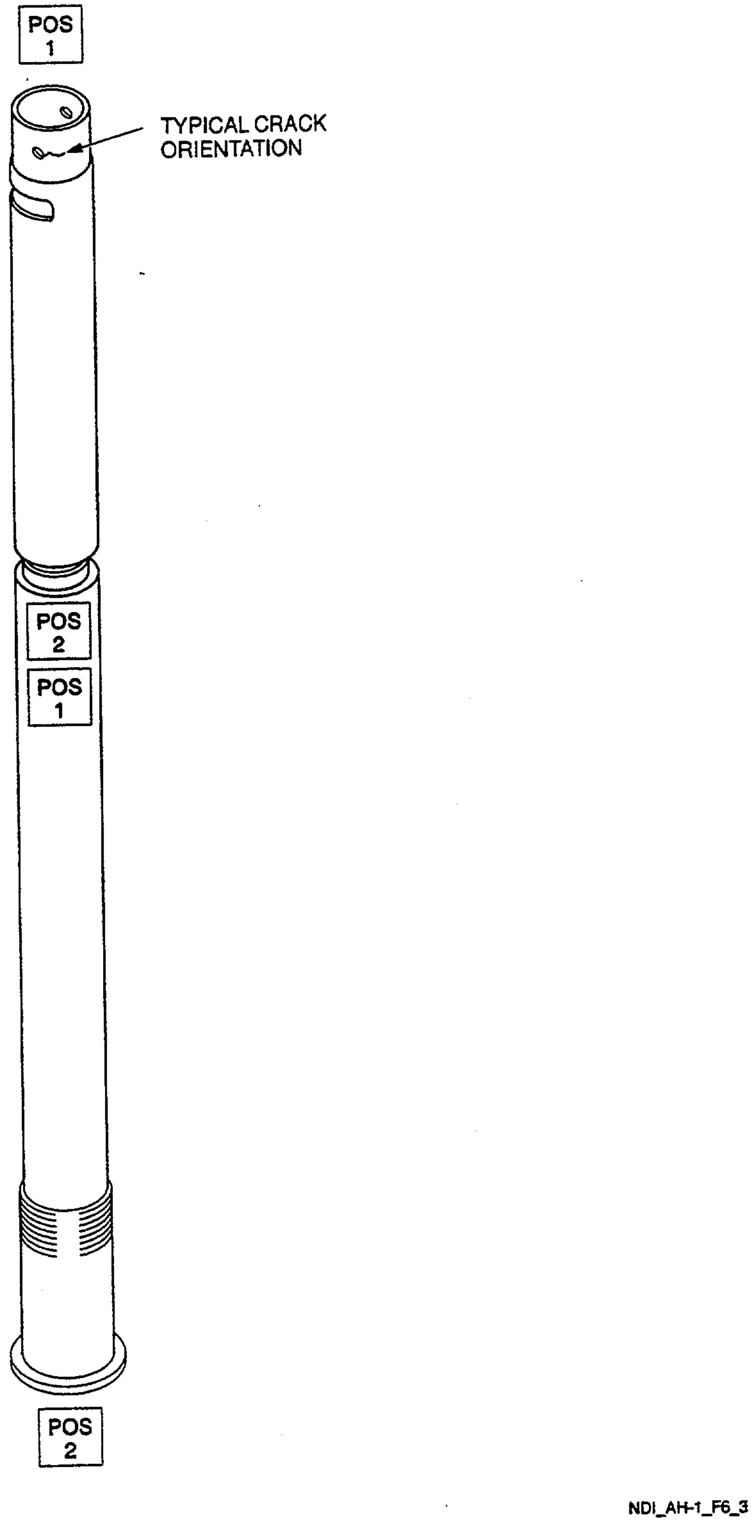

Figure 6-3. Pilot Collective Control Stick Tube

6.4.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance in accordance with the applicable technical manuals listed in Table 1-1.
6.4.3.3. Access. Access is through the left side outer panel (Figure 1-4, Item 4).
6.4.3.4. Preparation of Part. The part or area shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.
6.4.3.5. 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. Setup 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.)

6.4.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-4.

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 is cause for rejection.

NOTE

Either probe identified in paragraph 6.4.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.4.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

6.4.4. Backup Method. None required.

6.4.5. System Securing. The gunner collective control stick component requires installation in accordance with the applicable technical manual listed in Table 1-1. Secure all panels as required.

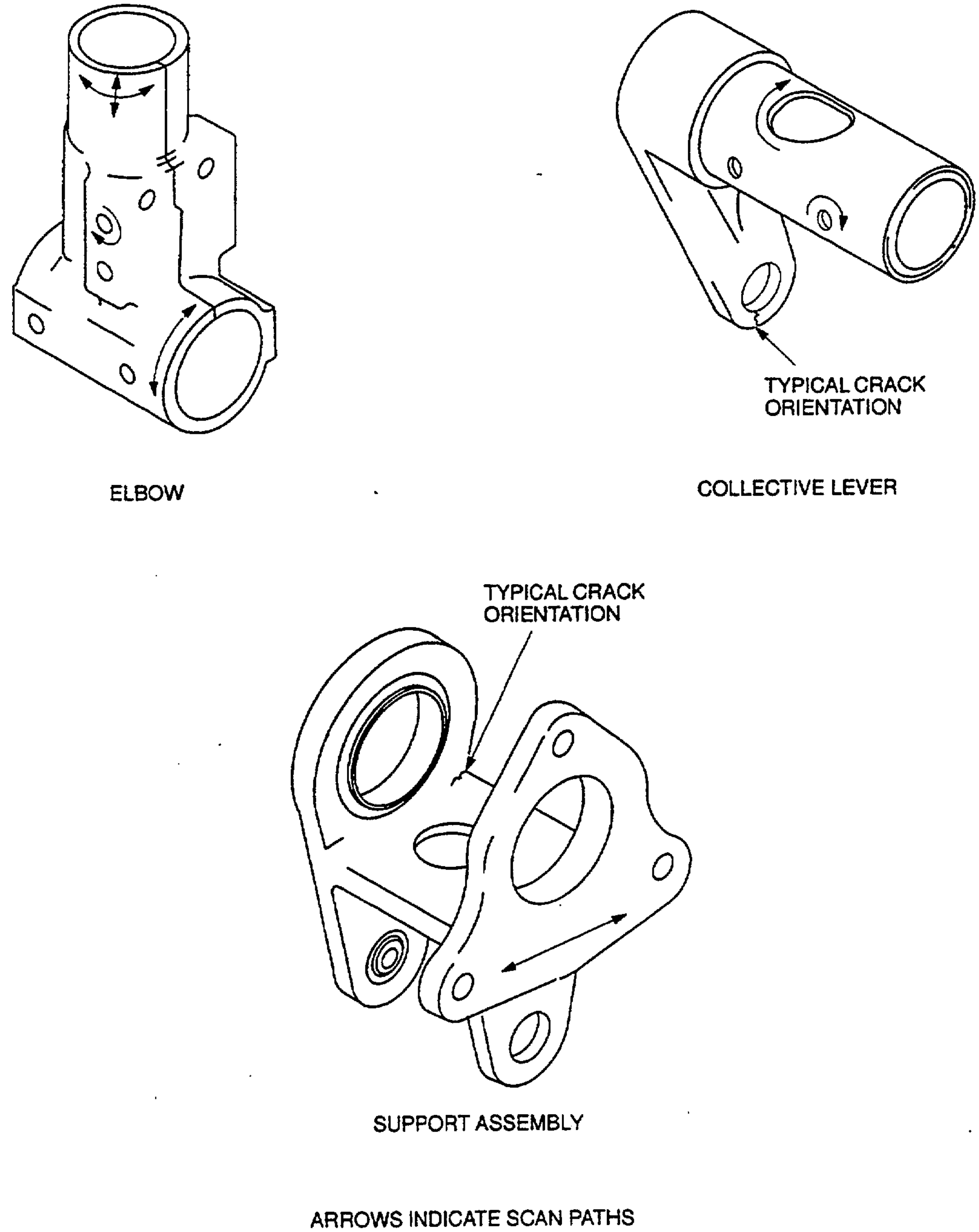

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Figure 6-4. Gunner Collective Control Stick Assembly

6.5. GUNNER COLLECTIVE CONTROL STICK (MT).

6.5.1. Description (Figure 6-1. Index No. 5). The gunner collective control stick is mounted in the gunner left side console and is a dual control for occasional or emergency use. It has only the essential functions of collective pitch and throttle control.

6.5.2. Defects. Defects can occur anywhere on the surface of the control stick. No cracks are allowed. Perform the NDI method contained herein on the control stick tube for the purpose of verification of crack indications identified by visual inspection during routine maintenance.

6.5.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

6.5.3.2. 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 control stick shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.5.3.3. Access. Not applicable.

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. Refer to Magnetic Particle Method, paragraph 1.4.8.

6.5.3.6. Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of suspect cracks. Typical cracks detectable are illustrated in Figure 6-5.

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 6.5.3.8.
f. Repeat steps a. through e. for position 2.

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

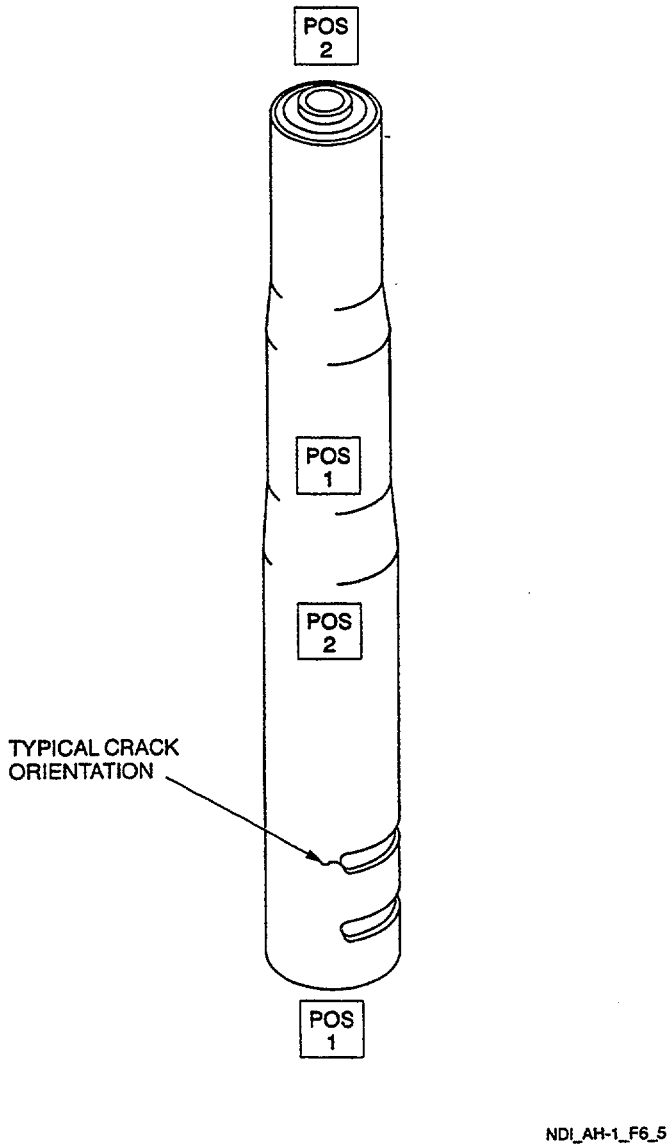

Figure 6-5. Gunner Collective Control Stick

6.5.3.8. 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.

6.5.4. Backup Method. None required.

6.5.5. System Securing. Clean the control stick tube 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 control stick tube, if removed, requires installation in accordance with the applicable technical manuals listed in Table 1-1.

6.6. PILOT CYCLIC CONTROL STICK LEVER ASSEMBLY (ET).

6.6.1. Description (Figure 6-1, Index No. 6). The cyclic lever assembly is an aluminum lower pivot of the pilot cyclic support assembly.

6.6.2. Defects. Defects can occur on all surfaces of the control stick lever assembly. 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, and 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 applicable positions of this procedure. If required, the pilot cyclic control stick lever assembly shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.6.3.3. Access. Not applicable.

6.6.3.4. Preparation of Part. The pilot cyclic control stick lever assembly 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-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. Setup 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.

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 is cause for rejection.

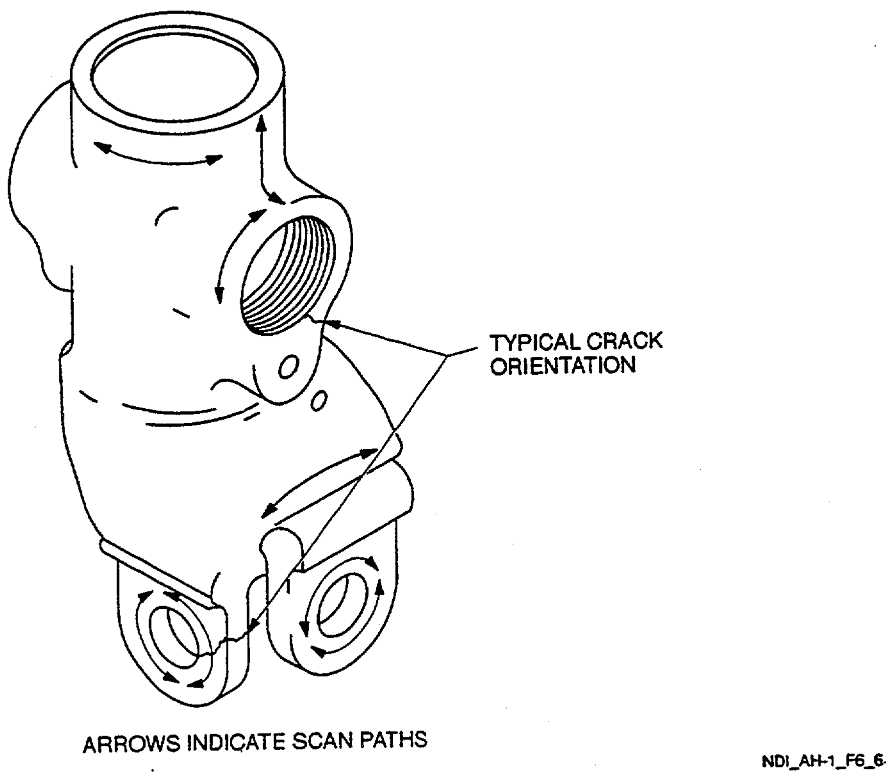

Figure 6-6. Pilot Cyclic Control Stick Lever Assembly

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 as required by paragraph 1.3.

6.6.4. Backup Method. None required.

6.6.5. System Securing. The pilot cyclic control stick lever assembly, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

6.7. PILOT CYCLIC CONTROL STICK GIMBAL BRACKET (ET).

6.7.1. Description (Figure 6-1. Index No. 7). The pilot cyclic control stick gimbal bracket is an aluminum lower attach support of the pilot cyclic control stick assembly.

6.7.2. Defects. Defects can occur on all surfaces of the control stick gimbal bracket. 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, 900 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, and 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 applicable positions of this procedure. If required, the pilot cyclic control stick gimbal bracket shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.7.3.3. Access. Not applicable.

6.7.3.4. Preparation of Part. The gimbal bracket 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. Setup 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 is cause for rejection.

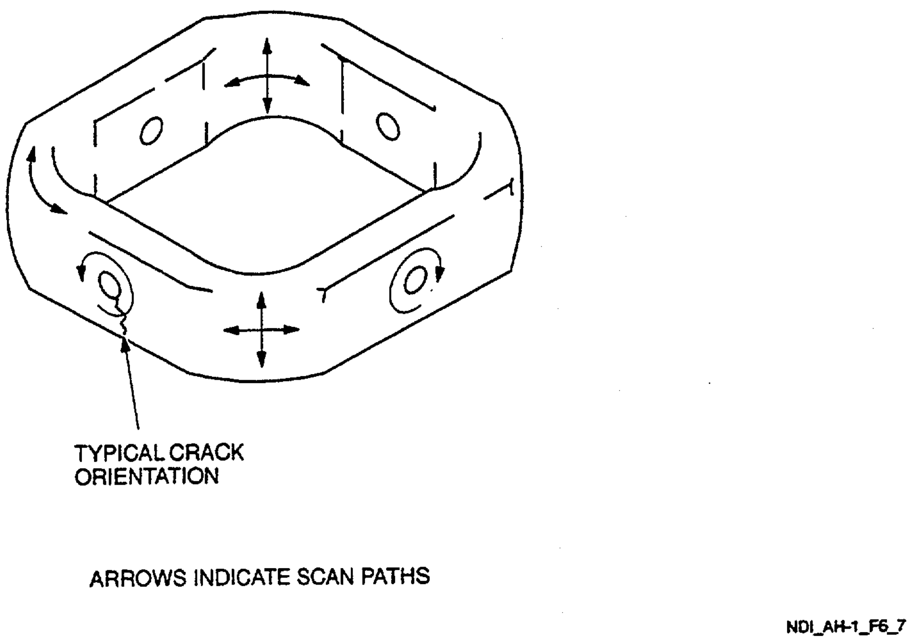

Figure 6-7. Pilot Cyclic Control Stick Gimbal Bracket

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 as required by paragraph 1.3.

6.7.4. Backup Method. None required.

6.7.5. System Securing. The gimbal bracket, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

6.8. PILOT CYCLIC CONTROL STICK (ELBOW, COLLAR) (ET).

6.8.1. Description (Figure 6-1. Index No. 8). The conventional type control stick is mounted through the floor in front of the pilot seat. It is mounted through gimbal bearings in a bell-shaped support. The pilot cyclic stick has a mechanical advantage of 2 to 1 ratio over the gunner stick.

6.8.2. Defects. Perform the NDI method contained herein on the elbow and collar found visually for the purpose of (1) confirmation of cracks; (2) verification that dents, scratches, or gouges do not conceal cracks. No cracks are allowed.

6.8.3. Primary Method. Eddy Current.

6.8.3.1. 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, and 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

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

6.8.3.3. Access. Access is through the outer panel, left or right side (Figure 1-2, Item 3).

6.8.3.4. Preparation of Part. The identified area or 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.

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. Setup 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.)

6.8.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-8.

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 is cause for rejection.

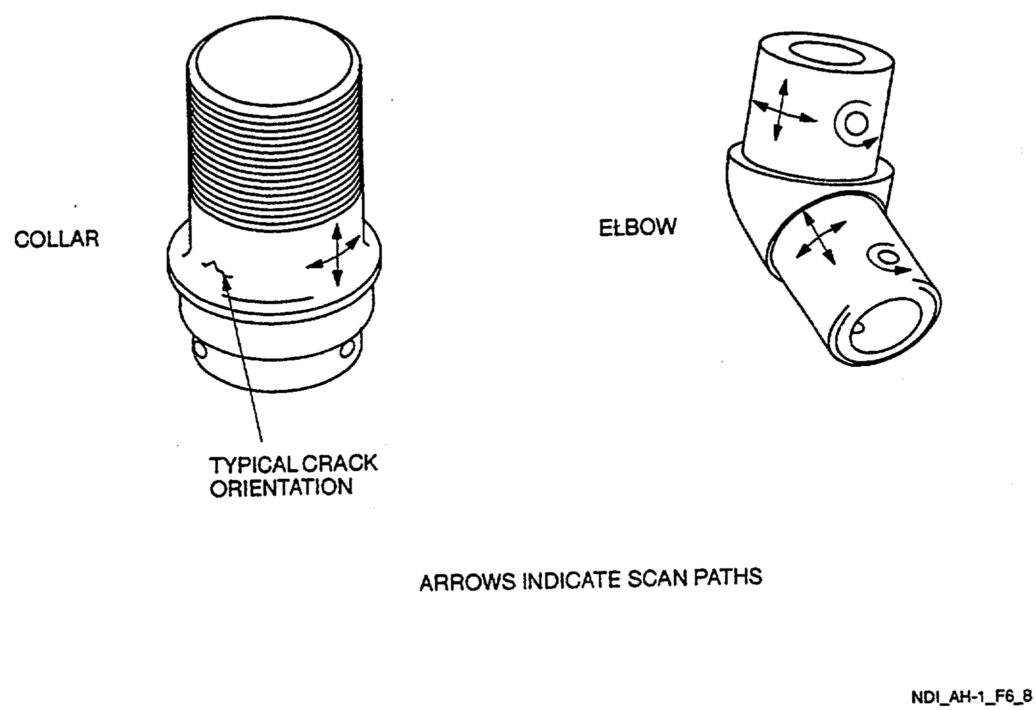

Figure 6-8. Pilot Cyclic Control Stick (Elbow, Collar)

NOTE

Either probe identified in paragraph 6.8.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.8.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

6.8.4. Backup Method. None required.

6.8.5. System Securing. The component requires installation in accordance with the applicable technical manual listed in Table 1-1.

6.9. PILOT CYCLIC CONTROL STICK (MT).

6.9.1. Description (Figure 6-1. Index No. 9). The pilot cyclic control stick links the grip assembly to the lever assembly. The cyclic control stick is connected to the lever assembly at the gimbal support bracket.

6.9.2. Defects. Defects can occur anywhere on the surface of the control stick. No cracks are allowed. Perform the NDI method contained herein on the pilot cyclic control stick to verify crack indications found visually.

6.9.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke
b. Magnetometer
c. Black Light
d. Fluorescent Magnetic Particles
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.

6.9.3.2. 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 pilot cyclic control stick shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.9.3.3. Access. Not applicable.

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. Refer to Magnetic Particle Method, paragraph 1.4.8.

6.9.3.6. Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. See Figure 6-9 for typical cracks.

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 6.9.3.8.
f. Repeat steps a. through e. for position 2.

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

6.9.3.8. 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.

6.9.4. Backup Method. None required.

6.9.5. System Securing. Clean the pilot cyclic control stick 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 pilot cyclic control stick, if removed, requires reassembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

6.10. GUNNER CYCLIC CONTROL STICK BELLCRANK ASSEMBLY (ET).

6.10.1. Description (Figure 6-10. Index No. 10). The gunner cyclic control stick bellcrank assembly is an aluminum lower control arm of the gunner cyclic control stick.

6.10.2. Defects. Defects can occur anywhere on the surface of the control stick bellcrank assembly. No cracks are allowed.

6.10.3. Primary Method. Eddy Current.

6.10.3.1. 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, 90° 1/2 inch drop
d. Cable Assembly
e. Reference Block, three-notched aluminum (0.008, 0.020, and 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

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 control stick bellcrank assembly shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

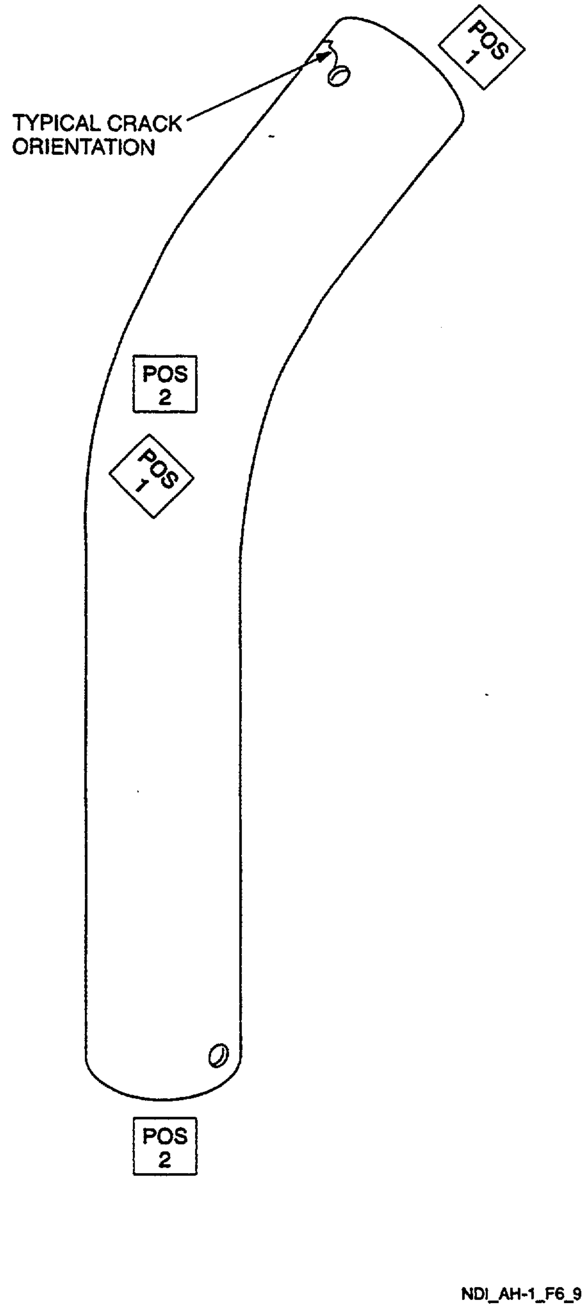

Figure 6-9. Pilot Cyclic control Stick

6.10.3.3. Access. Not applicable.

6.10.3.4. Preparation of Part. The bellcrank assembly shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.10.3.5. 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. Setup 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.)

6.10.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-10.

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 is cause for rejection.

NOTE

Either probe identified in paragraph 6.10.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.10.3.5 b (1), (2), and (3) shall be repeated each time a change is made.

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

6.10.4. Backup Method. None required.

6.10.5. System Securing. The bellcrank assembly, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

6.11. GUNNER CYCLIC CONTROL STICK SUPPORT ASSEMBLY (ET).

6.11.1. Description (Figure 6-1, Index No. 11). The cyclic control stick support assembly is an aluminum attach support plate of the gunner cyclic control stick assembly.

6.11.2. Defects. Defects can occur anywhere on the surface of the control stick support assembly. No cracks are allowed.

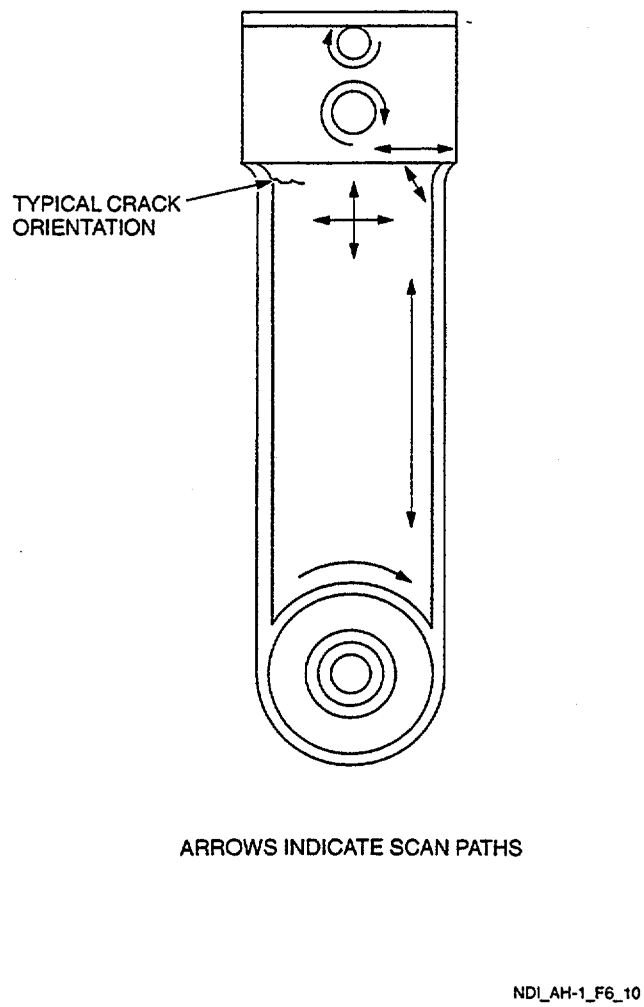

Figure 6-10. Gunner Cyclic Control Stick Bellcrank

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, and 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. 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 applicable positions of this procedure. If required, the gunner cyclic control stick support assembly 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 gunner cyclic control stick support assembly 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-1 9e1l:

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. Setup 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.

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 is 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 as required by paragraph 1.3.

6.11.4. Backup Method. None required.

6.11.5. System Securing. The gunner cyclic control stick support assembly, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

6.12. GUNNER CYCLIC CONTROL STICK (ET).

6.12.1. Description (Figure 6-1. Index No. 12). The gunner cyclic control stick is an aluminum lower pivot assembly of the gunner cyclic control stick assembly.

6.12.2. Defects. Defects can occur anywhere on the surface of the gunner cyclic control stick. No cracks are allowed.

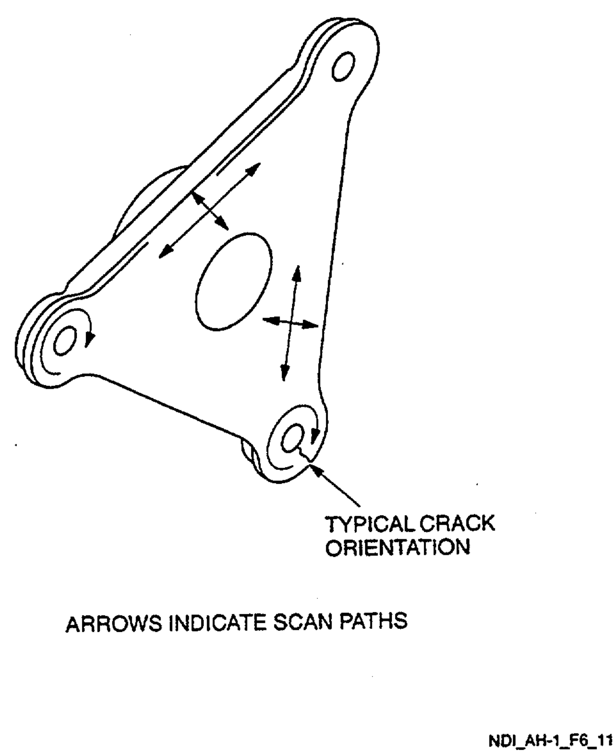

Figure 6-11. Gunner Cyclic Control Stick Support

6.12.3. <u>Primary Method</u>. 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, and 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 gunner cyclic control stick shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.12.3.3. Access. Not applicable.

6.12.3.4. Preparation of Part. The gunner cyclic control stick 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-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. Setup 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.

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 is cause for rejection.

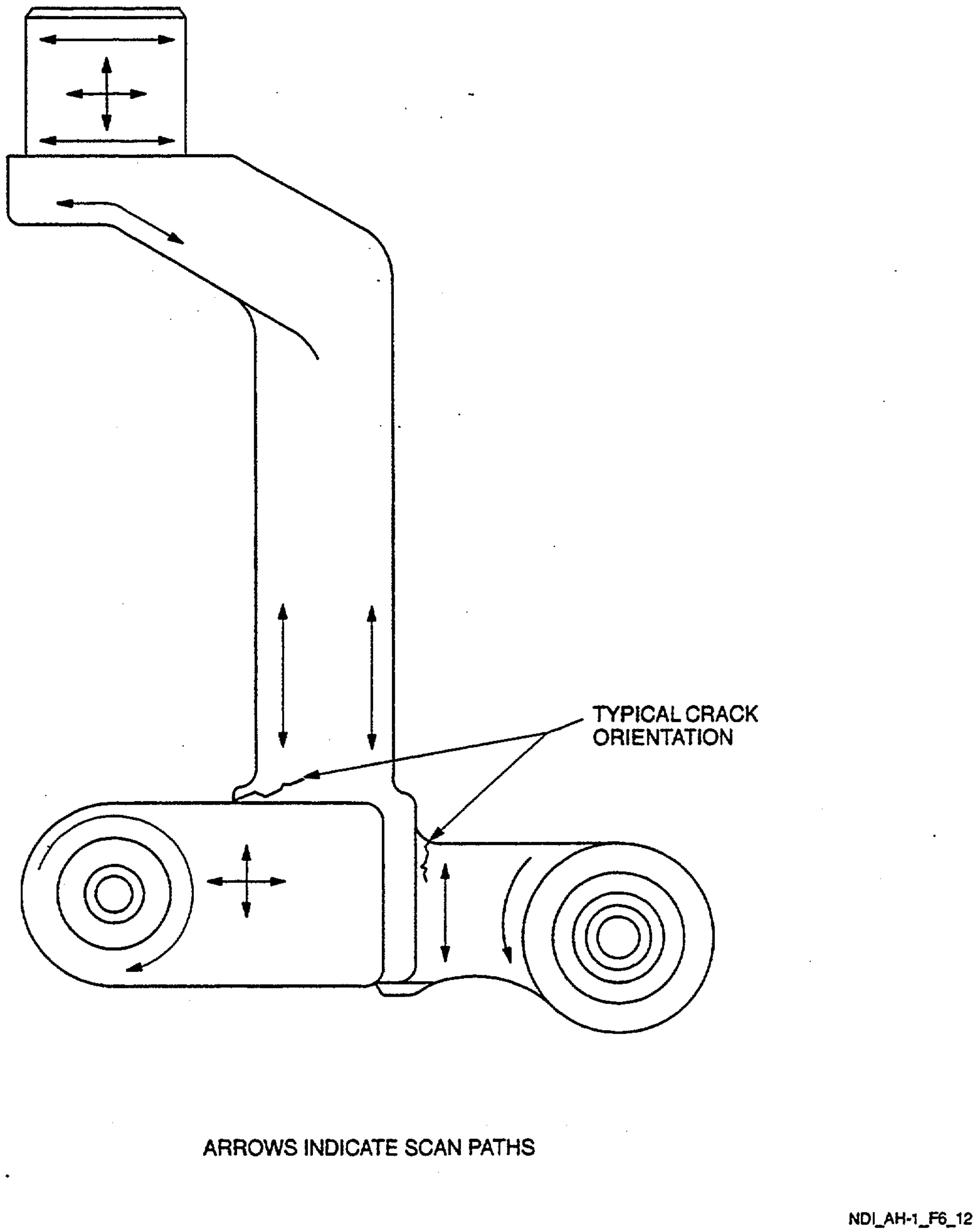

Figure 6-12. Gunner Cyclic Control Stick

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 as required by paragraph 1.3.

6.12.4. Backup Method. None required.

6.12.5. System Securing. The gunner cyclic control-stick, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

6.13. JACKSHAFT ASSEMBLY (ET).

6.13.1. Description (Figure 6-1. Index No. 13). The jackshaft assembly is an aluminum pivoting attach point of the forward and aft cyclic control.

6.13.2. Defects. Defects can occur anywhere on the surface of the jackshaft assembly. 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, and 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 in accordance with the applicable technical manuals listed in Table 1-1.

6.13.3.3. Access. Not applicable.

6.13.3.4. Preparation of Part. The jackshaft assembly 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-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. Setup 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 is 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 as required by paragraphed 1.3.

6.13.4. Backup Method. None required.

6.13.5. System Securing. The jackshaft assembly requires installation in accordance with the applicable technical manual listed in Table 1-1.

6.14. JACKSHAFT BEARING SUPPORT ASSEMBLY (ET).

6.14.1. Description (Figure 6-1. Index No. 14). The jackshaft bearing support assembly is an aluminum attach fitting support of the jackshaft assembly.

6.14.2. Defects. Defects can occur anywhere on the surface of the jackshaft bearing support assembly. No cracks are allowed.

6.14.3. Primary Method. 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, and 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

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

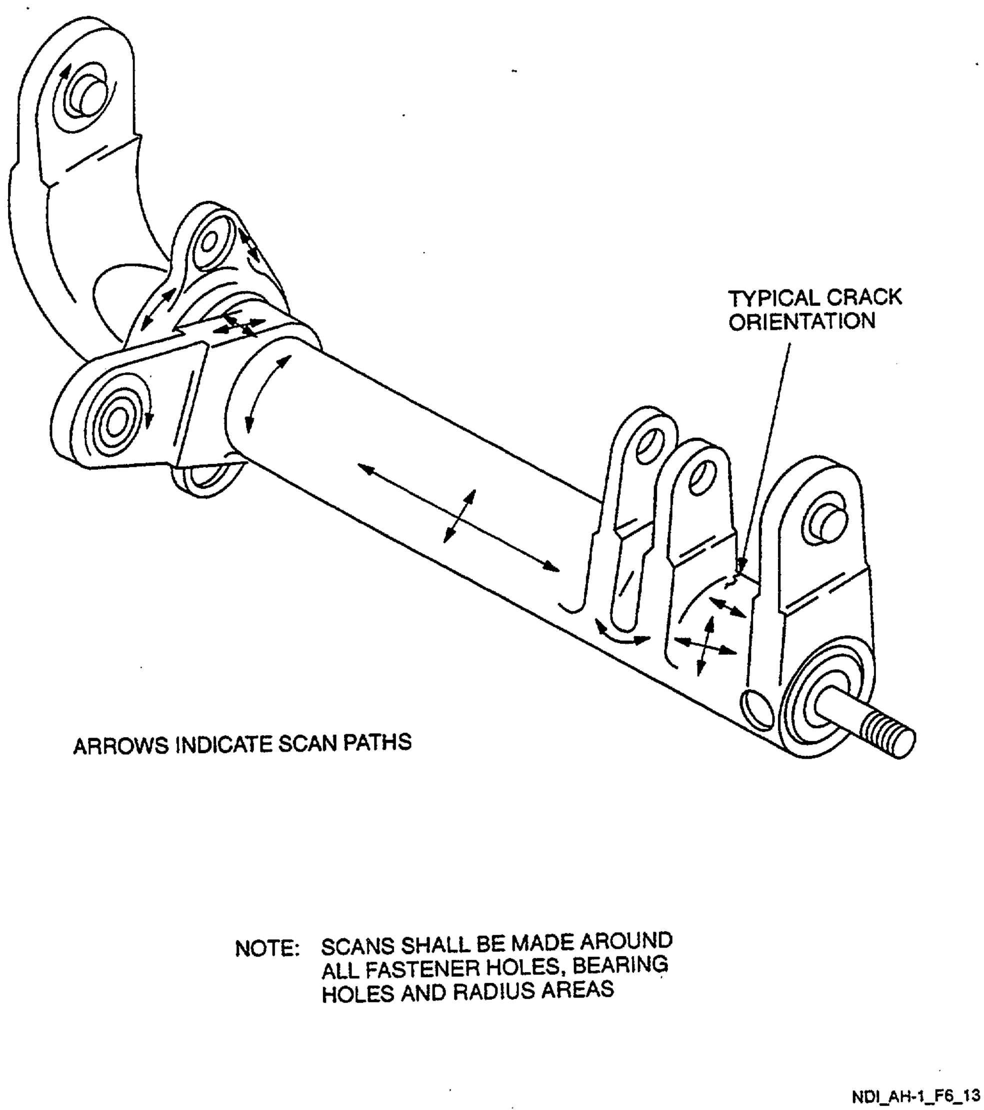

Figure 6-13. Jackshaft Assembly

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 jackshaft bearing support assembly shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.14.3.3. Access. Not applicable.

6.14.3.4. Preparation of Part. The jackshaft bearing support assembly 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-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. Setup 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 is 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 as required by paragraph 1.3.

6.14.4. Backup Method. None required.

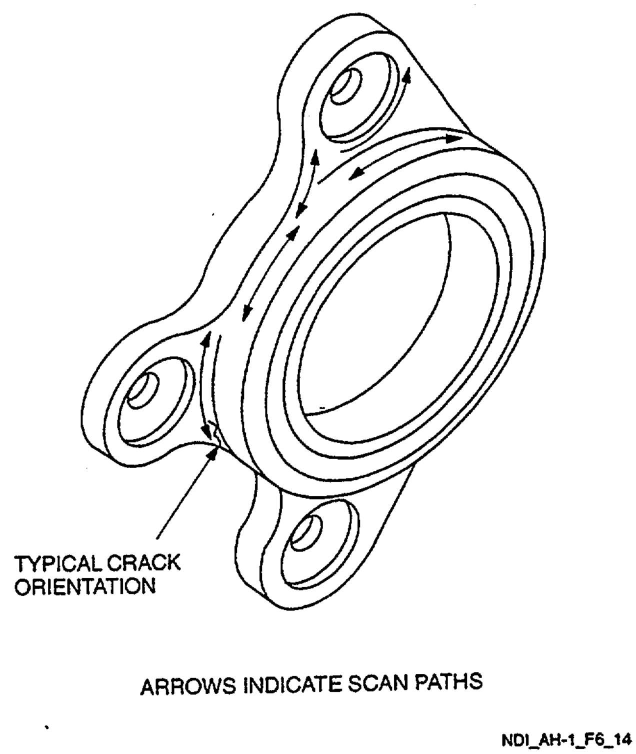

Figure 6-14. Jackshaft Bearing Support Assembly

6.14.5. System Securing. The jackshaft bearing support assembly, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

6.15. JACKSHAFT SUPPORT ASSEMBLY (ET).

6.15.1. Description (Figure 6-1. Index No. 15). The jackshaft support assembly is an aluminum support assembly which supports the jackshaft assembly to the airframe structure.

6.15.2. Defects. Defects can occur anywhere on the surface of the jackshaft support assembly. No cracks are allowed.

6.15.3. Primary Method. Eddy Current.

6.15.3.1. 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, and 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

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 jackshaft support assembly shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.15.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

6.15.3.4. Preparation of Part. The rotating eye bearing support assembly shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.15.3.5. 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. Setup 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.)

6.15.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-15

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 is cause for rejection.

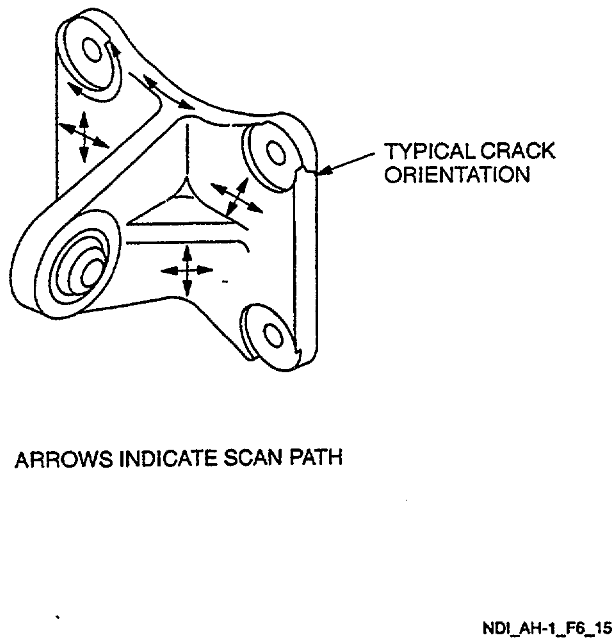

Figure 6-15. Jackshaft Support

NOTE

Either probe identified in paragraph 6.15.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.15.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

6.15.4. Backup Method. None required.

6.15.5. System Securing. The jackshaft support assembly, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

6.16. FORCE GRADIENT CYCLIC CONTROL CYLINDER (ET).

6.16.1. Description (Figure 6-1. Index No. 16). The force gradient cyclic control cylinder is a link equipped with an internal spring and connects the magnetic brake arm to a lever or bellcrank in the cyclic control system.

6.16.2. Defects. Defects can occur anywhere on the surface of the control cylinder. 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, and 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

g. 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 applicable positions of this procedure. If required, the force gradient cyclic control cylinder shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.16.3.3. Access. Not applicable.

6.16.3.4. Preparation of Part. The force gradient cyclic control cylinder 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[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. Setup 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.

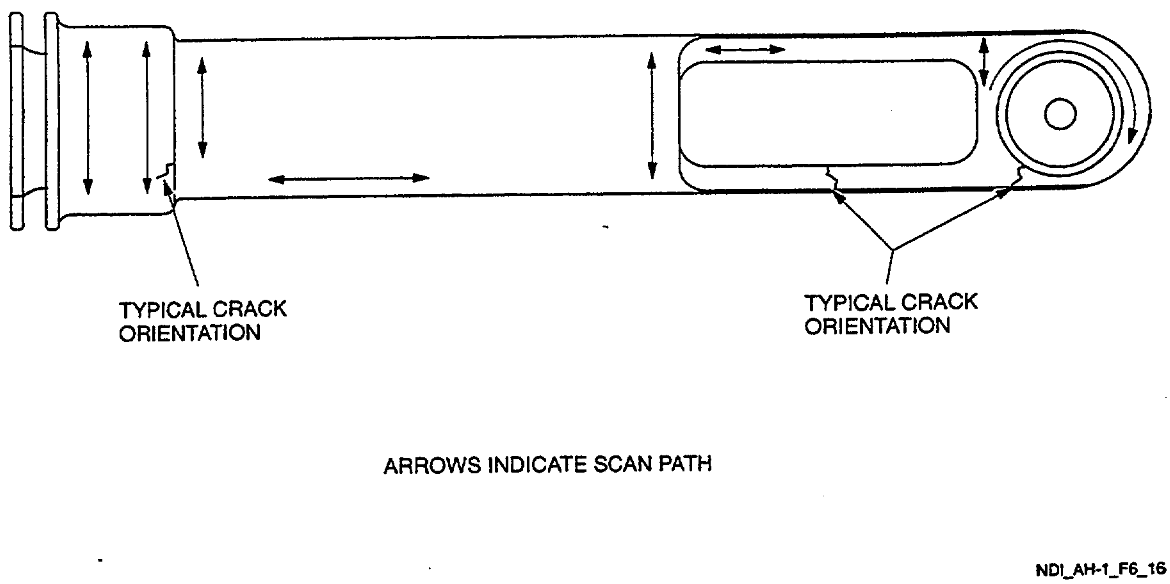

Figure 6-16. Force Gradient Cyclic Control Cylinder

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 is 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 as required by paragraph 1.3.

6.16.4. Backup Method. None required.

6.16.5. System Securing. The force gradient cyclic control cylinder, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

6.17. FORCE GRADIENT CYCLIC CONTROL SHAFT (MT).

6.17.1. Description (Figure 6-1. Index No. 17).; The force gradient cyclic control shaft is a threaded pin which has a spring and two guides attached contained within the cylinder assembly.

6.17.2. Defects. Defects can occur anywhere on the surface of the force gradient cyclic control shaft. 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
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 and the force gradient cyclic control shaft 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. Position required for this inspection is 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.

6.17.3.7. Marking and Recording of Inspection Results. Mark and record the 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.

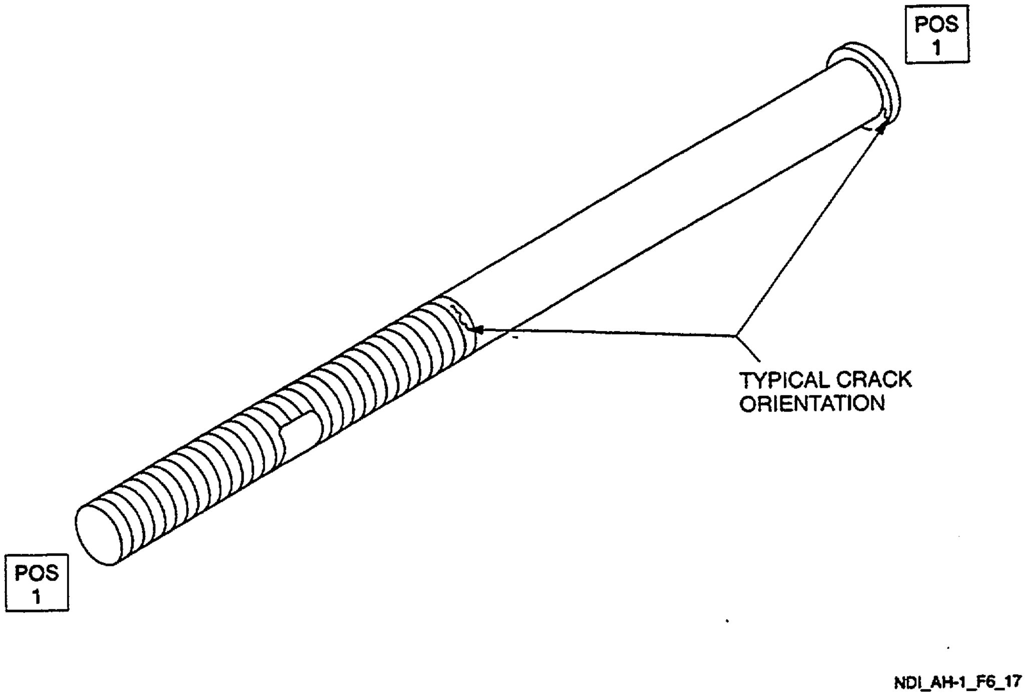

Figure 6-17. Force Gradient Cyclic Control Shaft

6.17.5. System Securing. Clean the force gradient cyclic control 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 force gradient cyclic control shaft requires installation in accordance with the applicable technical manuals listed in Table 1-1.

6.18. FORCE GRADIENT CYCLIC CONTROL GUIDES (PT).

6.18.1. Description (Figure 6-1, Index No. 18). The force gradient cyclic control guides are contained within the force gradient cyclic control cylinder. There is one guide on each side of the spring attached to the shaft enabling spring tension to be set.

6.18.2. Defects. Defects can occur anywhere on the surface of the force gradient cyclic control guides. No cracks are allowed.

6.18.3. Primary Method. Fluorescent Penetrant.

6.18.3.1. NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. MIL-I-25135 level 3 penetrant materials shall be selected from the approved list in Table 1-8.

6.18.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the force gradient cyclic control removed and disassembled in accordance with the applicable technical manuals listed in Table 1-1.

6.18.3.3. Access. Not applicable.

6.18.3.4. Preparation of Part. The guides (Figure 6-18) shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.18.3.5. Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-4. Inspect the entire guide.

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

6.18.4. Backup Method. None required.

6.18.5. System Securing. Clean the force gradient cyclic control guides to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The force gradient cyclic control guides require assembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

6.19. ELEVATOR HORN ASSEMBLY (ET).

6.19.1. Description (Figure 6-1. Index No. 19). The elevator horn assembly is the tube assembly that houses the two elevator assemblies.

6.19.2. Defects. Defects can occur anywhere on the surface of the elevator horn assembly. No cracks are allowed.

6.19.3. Primary Method. Eddy Current.

6.19.3.1. 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, and 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

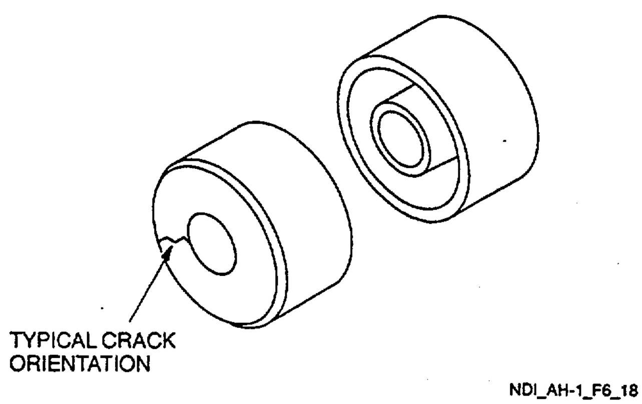

Figure 6-18. Force Gradient Cyclic Control Guides

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 elevator horn assembly 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 elevator horn assembly shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.19.3.5. 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. Setup 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.)

6.19.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-19.

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 is cause for rejection.

NOTE

Either probe identified in paragraph 6.19.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.19.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

6.19.4. Backup Method. None required.

6.19.5. System Securing. The elevator horn assembly, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

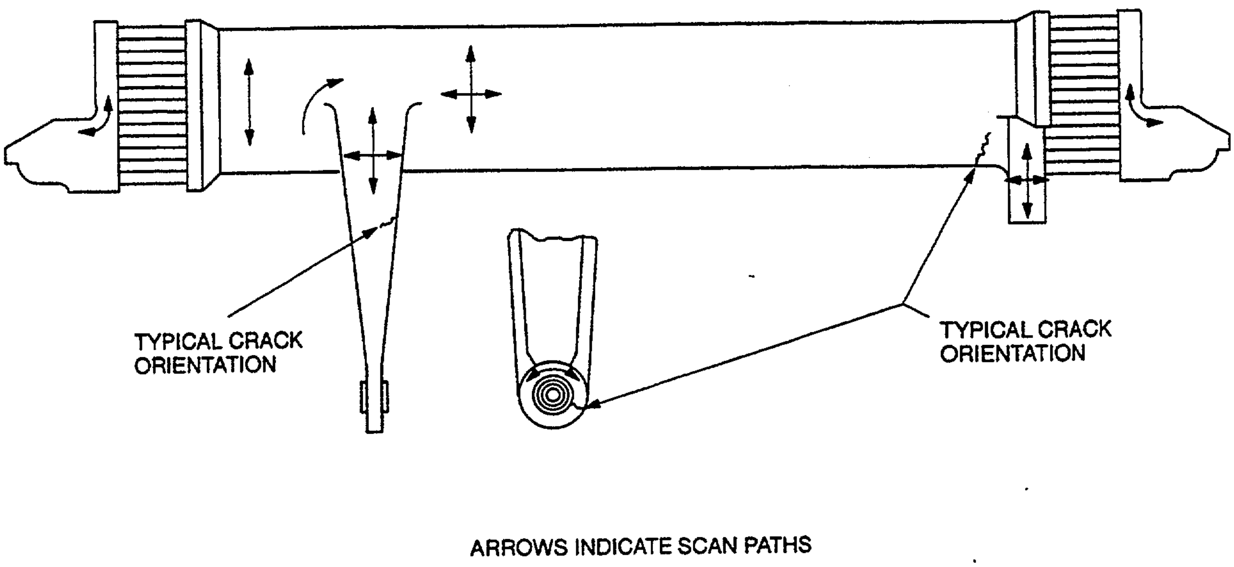

Figure 6-19. Elevator Horn Assembly

6.20. TAIL ROTOR CONTROL, ELEVATOR AND ELEVATOR CONTROL, POWER CYLINDER SUPPORTS, LATERAL CYCLIC, FORE AND AFT CYCLIC, AND COLLECTIVE SYSTEMS (ET).

6.20.1. Description (Figure 6-1. Index No. 20). This inspection is applicable to all non-ferromagnetic supports, links, levers, pedals, elbows, bellcranks, tubes, walking beams, etc. contained within the tail rotor control, elevator and elevator control, power cylinder supports, lateral cyclic, fore and aft cyclic, and collective systems. The purpose of this inspection is for verification of crack indications identified during visual inspection. See Figure 6-20 for typical cracks and scan paths.

6.20.2. Defects. Defects can occur anywhere on the surface of the parts. No cracks are allowed.

6.20.3. Primary Method. Eddy Current.

6.20.3.1. 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, and 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

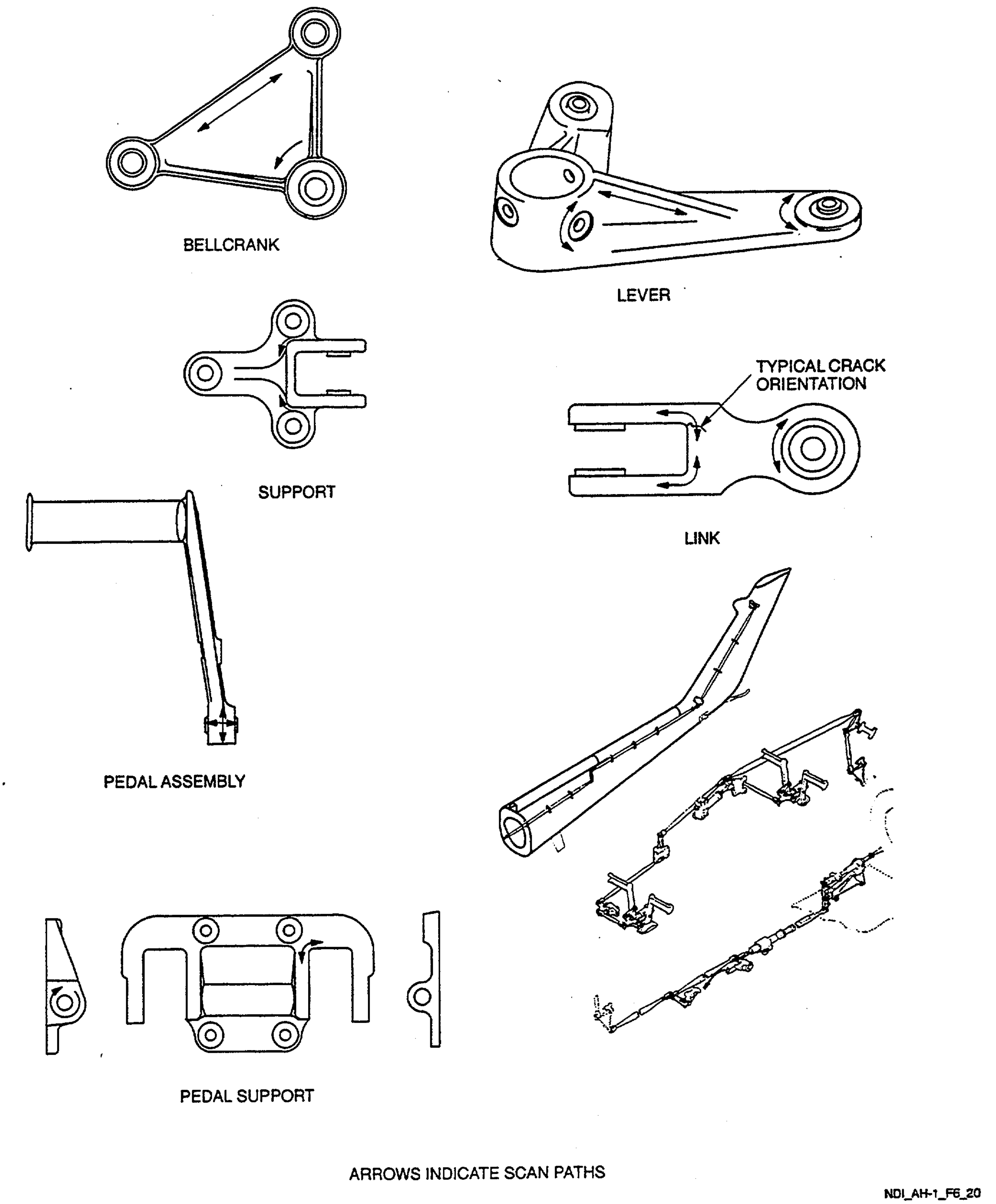

Figure 6-20. Tail Rotor Control, Elevator and Elevator Control, Power Cylinder Supports, Lateral Cyclic, Fore and Aft Cyclic, and Collective Systems

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 parts listed above 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 identified part or parts shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.20.3.5. 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. Setup 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.)

6.20.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-20.

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 is cause for rejection.

NOTE

Either probe identified in paragraph 6.20.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.20.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

6.20.4. Backup Method. None required.

6.20.5. System Securing. The part or parts, if removed, require installation in accordance with the applicable technical manual listed in Table 1-1.

6.21. ROD ENDS, CLEVIS, AND EYE BOLTS, ETC. (PT).

6.21.1. Description (Figure 6-1. Index No. 21). This inspection is applicable to all nonpainted nonferrous rod ends, clevis, and eye bolts, etc. contained within the flight control system. This inspection can also be used to verify any indications found visually on painted surfaces providing the paint be removed from the immediate area of interest only.

6.21.2. Defects. Perform the NDI method contained herein on the powerplant accessories listed above for the purpose of: (1) confirmation of crack indications identified by visual inspection and (2) verification that dents, scratches, or gouges do not conceal cracks.

6.21.3. Primary Method. Fluorescent Penetrant.

6.21.3.1. 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.

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 parts shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.21.3.3. 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 helicopter in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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. Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-4. Inspect the area of concern. See Figure 6-21.

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

6.21.4. Backup Method. None required.

6.21.5 System Securing. Clean the area that was inspected to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. The above listed parts or components, if removed, require assembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

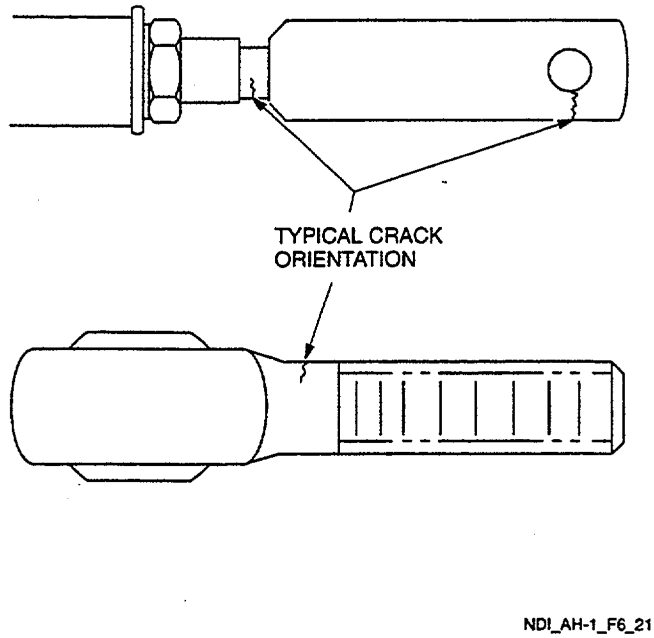

Figure 6-21. Control Rod Ends

6.22. HYDRAULIC RESERVOIR (ET).

6.22.1. Description (Figure 6-1. Index No. 22). Two separate hydraulic reservoirs are located in a compartment directly aft of the pilot's canopy. Both are mounted on Station 186.22 bulkhead, with system number 1 reservoir near left side and system number 2 reservoir near right side.

6.22.2. Defects. Defects can occur anywhere on the surface of the hydraulic reservoir. No cracks are allowed.

6.22.3. Primary Method. Eddy Current.

6.22.3.1. 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, and 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

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

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 applicable positions of this procedure. If required, the hydraulic reservoir shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.22.3.3. Access. Not applicable.

6.22.3.4. Preparation of Part. The hydraulic reservoir shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.22.3.5. 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. Setup 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.)

6.22.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-22.

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 is cause for rejection.

NOTE

Either probe identified in paragraph 6.22.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.22.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

6.22.4. <u>Backup Method</u>. None required.

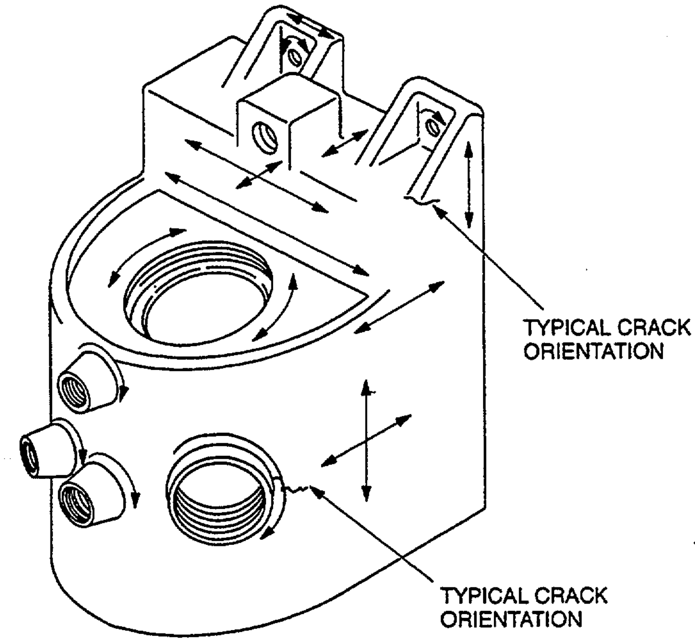

Figure 6-22. Hydraulic Reservoir

6.22.5. System Securing. The hydraulic reservoir, if removed, requires assembly and installation in accordance with the applicable technical manual listed in Table 1-1.

6.23. HYDRAULIC PUMP, TRANSMISSION DRIVE (ET).

6.23.1. Description (Figure 6-1, Index No. 23). Dual hydraulic pumps are mounted on a drive quill on the transmission lower case. System number 1 pump is on aft pad of drive quill and system number 2 pump is on forward pad.

6.23.2. Defects. Defects can occur anywhere on the surface of the hydraulic pump, transmission drive. No cracks are allowed.

6.23.3. Primary Method. Eddy Current.

6.23.3.1. 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, and 0.040 EDM notches)
f. Teflon Tape, refer to Table 1-8
g. Aircraft Marking Pencil, refer to Table 1-8

6.23.3.2. 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 hydraulic pump shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.23.3.3. Access. Not applicable.

6.23.3.4. Preparation of Part. The hydraulic pump shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.23.3.5. 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. Setup 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.)

6.23.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-23.

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 is cause for rejection.

NOTE

Either probe identified in paragraph 6.23.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.23.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

6.23.4. <u>Backup Method.</u> None required.

6.23.5. <u>System Securing</u>. The hydraulic pump, if removed, requires assembly and installation in accordance with the applicable technical manual listed in Table 1-1.

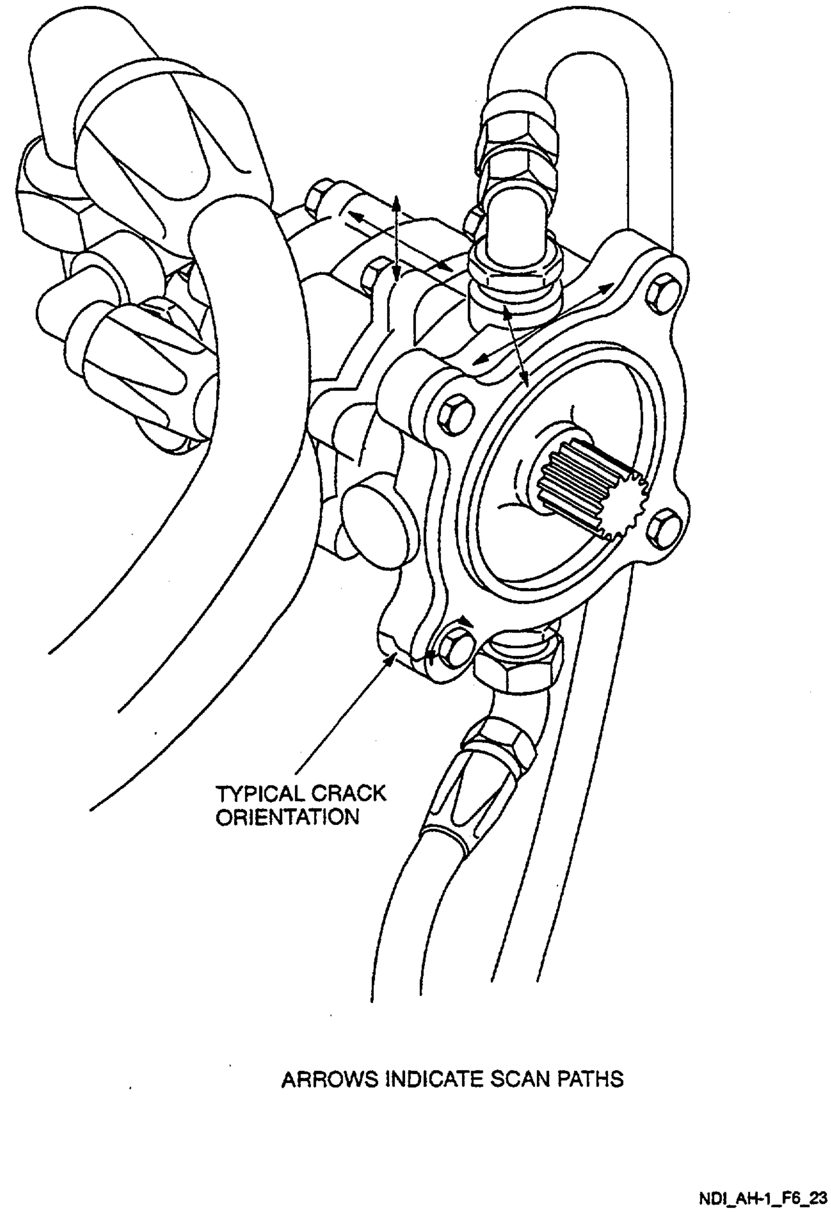

Figure 6-23. Hydraulic Pump, Transmission Drive

6.24. HYDRAULIC PUMP (EMERGENCY- ELECTRIC MOTOR DRIVEN) (ET).

6.24.1. Description (Figure 6-1. Index No. 24). The emergency hydraulic system is powered by an electric motor driven, pressure compensated, variable delivery, hydraulic pump.

6.24.2. Defects. Defects can occur anywhere on the surface of the hydraulic pump. No cracks are allowed.

6.24.3. Primary Method. Eddy Current.

6.24.3.1. 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, 90° 1/2 inch drop

d. Cable Assembly

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

f. Teflon Tape, refer to Table 1-8

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

6.24.3.2. 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 applicable positions of this procedure. If required, the hydraulic pump shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.24.3.3. Access. Not applicable.

6.24.3.4. Preparation of Part. The hydraulic pump shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.24.3.5. 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. Setup 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.)

6.24.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-24.

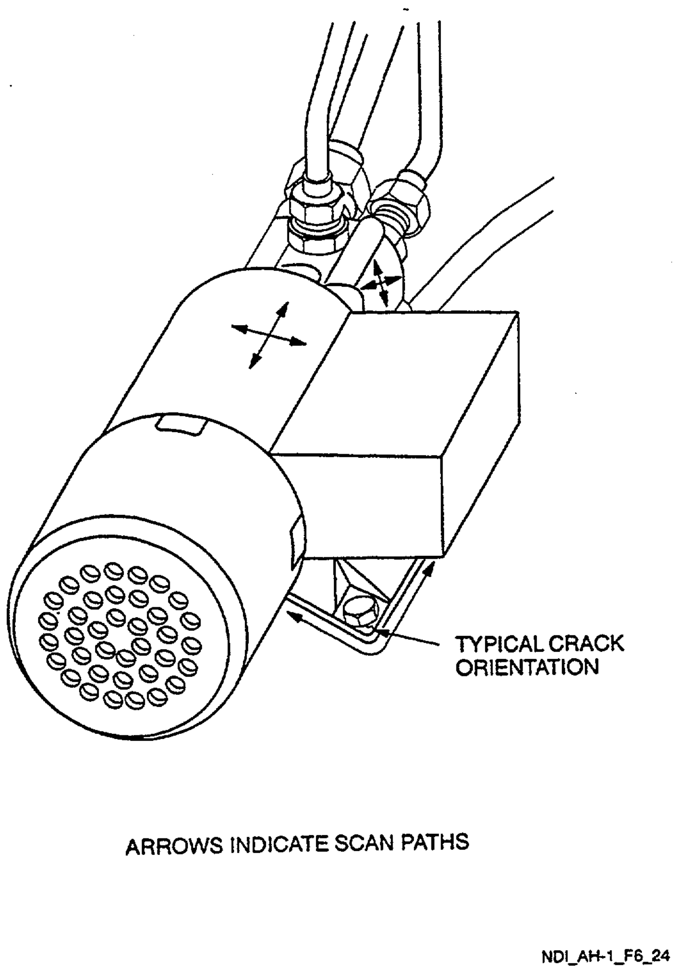

Figure 6-24. Hydraulic Pump (Emergency - Electric Motor Driven)

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 is cause for rejection.

NOTE

Either probe identified in paragraph 6.24.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.24.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

6.24.4. Backup Method. None required.

6.24.5. System Securing. The hydraulic pump, if removed, requires assembly and installation in accordance with the applicable technical manual listed in Table 1-1.

6.25. HYDRAULIC MODULAR UNITS (ET).

6.25.1. Description (Figure 6-1. Index No. 25). Two hydraulic system modular units are located in a compartment at top of the fuselage between pilot's canopy and the transmission pylon, on front of bulkhead Station 186.25. One solenoid valve is located in each hydraulic modular unit.

6.25.2. Defects. Defects can occur anywhere on the surface of the hydraulic modular unit. No cracks are allowed.

6.25.3. Primary Method. Eddy Current.

6.25.3.1. 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, and 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

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

6.25.3.2. 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 hydraulic modular units shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.25.3.3. Access. Not applicable.

6.25.3.4. Preparation of Part. The hydraulic modular units shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.25.3.5. 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. Setup 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.)

6.25.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-25.

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 is cause for rejection.

NOTE

Either probe identified in paragraph 6.25.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.25.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

6.25.4. <u>Backup Method</u>. None required.

6.25.5. <u>System Securing</u>. The hydraulic modular units, if removed, require assembly and installation in accordance with the applicable technical manual listed in Table 1-1.

6.26 HYDRAULIC ACCUMULATOR AND LOCK OUT VALVE ASSEMBLIES (ET).

6.26.1. <u>Description (Figure 6-1. Index No.26).</u> The hydraulic accumulator and lock out valve assembly in system number 1 pressure line to cyclic control hydraulic cylinders, is located on a bracket beneath the pylon lift beam. The accumulator and lock out valve are automatic in operation.

6.26.2. <u>Defects.</u> Cracks may occur anywhere-on the surface of the hydraulic accumulator and lock out valve assemblies. No cracks are allowed.

6.26.3. <u>Primary Method</u>. Eddy Current.

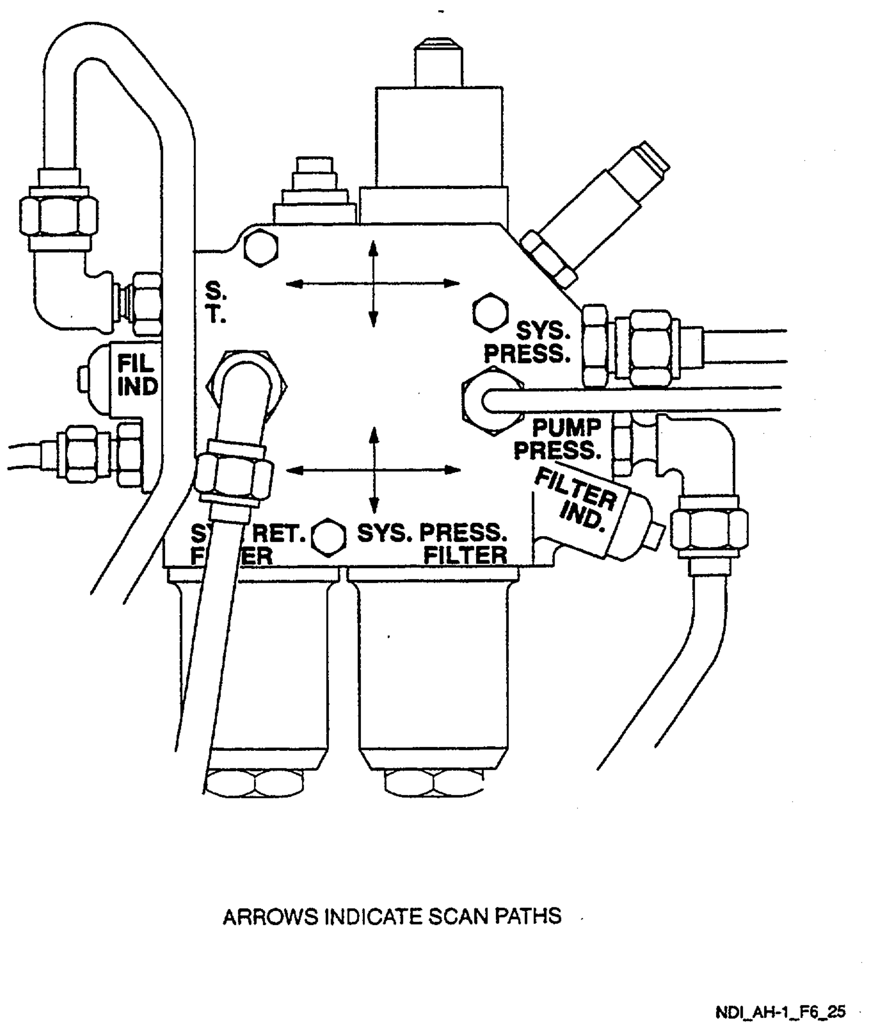

Figure 6-25. Hydraulic Modular Units

6.26.3.1. 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, and 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

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

6.26.3.2. 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 identified component shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.26.3.3. Access. Not applicable.

6.26.3.4. Preparation of Part. The hydraulic accumulator or lock out valve shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.26.3.5. 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. Setup 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.)

6.26.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-26. "

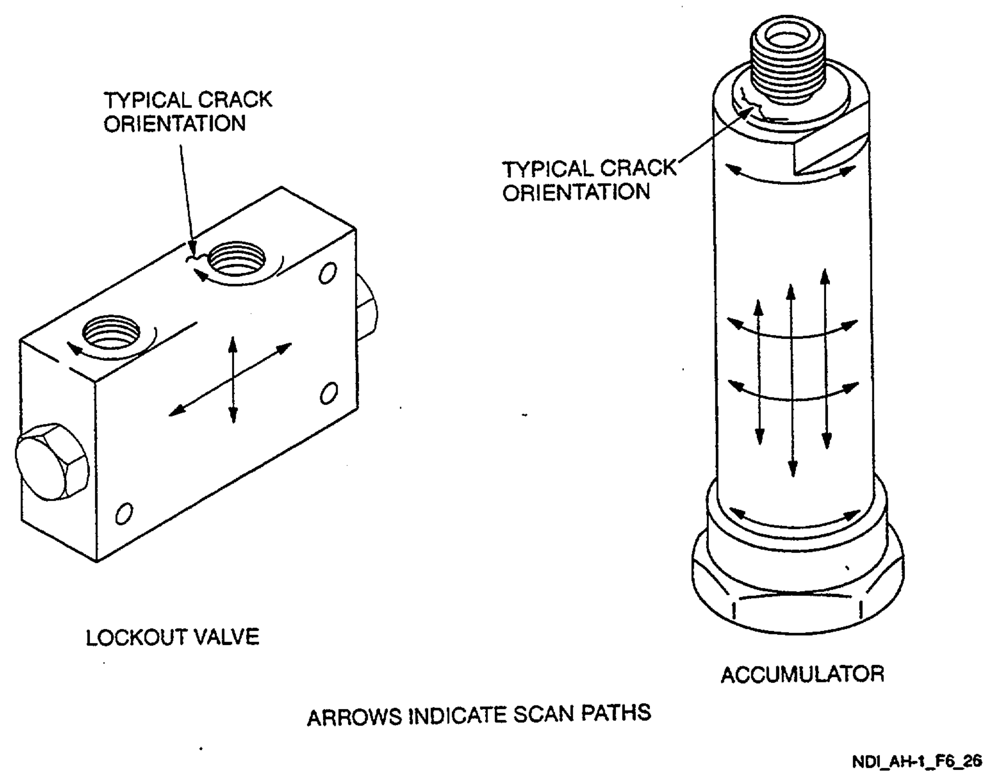

Figure 6-26. Hydraulic Accumulator and Lock Out Valve Assemblies

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 is cause for rejection.

NOTE

Either probe identified in paragraph 6.26.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.26.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

6.26.4. Backup Method. None required.

6.26.5. System Securing. The hydraulic accumulator or lock out valve, if removed, requires assembly and installation in accordance with the applicable technical manual listed in Table 1-1.

6.27. NUTS, FITTINGS, LOCKS, SPRINGS, SPRING BASE, JAM NUT, AND BARRELS (PT).

6.27.1. Description (Figure 6-1. Index No. 27). This inspection is applicable to all unpainted nuts, fittings, locks, springs, spring bases, jam nuts, and barrels contained within the hydraulic and pneumatic system to verify indications found visually. 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.

6.27.2. Defects. Defects can occur anywhere on the surfaces of the part(s). No cracks are allowed.

6.27.3. Primary Method. Fluorescent Penetrant.

6.27.3.1. NDI Equipment and Materials. (Refer to Appendix B.) Inspection equipment is listed in Table 1-7. MIL-I-25135 level 3 penetrant materials shall be selected from the approved list in Table 1-8.

6.27.3.2. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the identified parts be removed and disassembled as required in accordance with the applicable technical manuals listed in Table 1-1.

6.27.3.3. Access. Not applicable.

6.27.3.4. Preparation of Part. Protective coating shall be removed and the part or area shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.27.3.5. 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 6-27.

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

6.27.4. Backup Method. None required.

6.27.5. System Securing. Clean the part or area to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. Reinstall or assemble parts or components in accordance with the applicable technical manuals listed in Table 1-1.

6.28. DUAL HYDRAULIC CYLINDERS FLANGE AREA (ET).

6.28.1. Description (Figure 6-1. Index No. 28). Three dual hydraulic actuating cylinders are used in collective, lateral cyclic, and fore and aft cyclic controls. Each cylinder assembly consists of a dual cylinder and valve combination, a bearing and housing, and an extension tube on the cylinder piston rod.

6.28.2. Defects. Defects can occur anywhere on the surface of the flange area. No cracks are allowed.

6.28.3. Primary Method. Eddy Current.

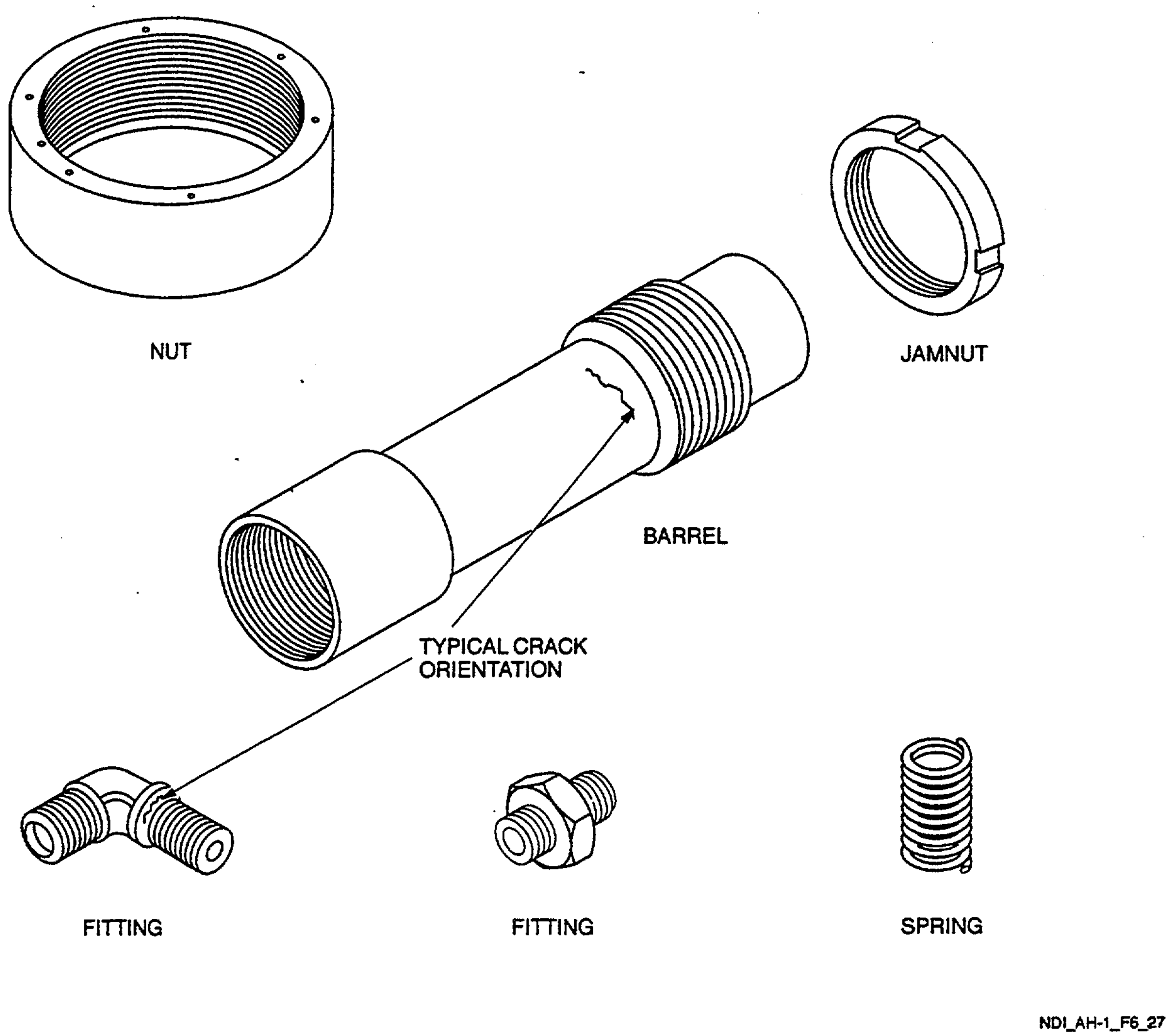

Figure 6-27. Nuts, Fittings, Locks, Springs, Spring Base, Jam Nut, and Barrels

6.28.3.1. 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, 90° 1/2 inch drop

d. Cable Assembly

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

f. Teflon Tape, refer to Table 1-8

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

6.28.3.2. 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 dual hydraulic cylinder shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.28.3.3. Access. Not applicable.

6.28.3.4. Preparation of Part. The dual hydraulic cylinder shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.28.3.5. 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. Setup 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.)

6.28.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-28.

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 is cause for rejection.

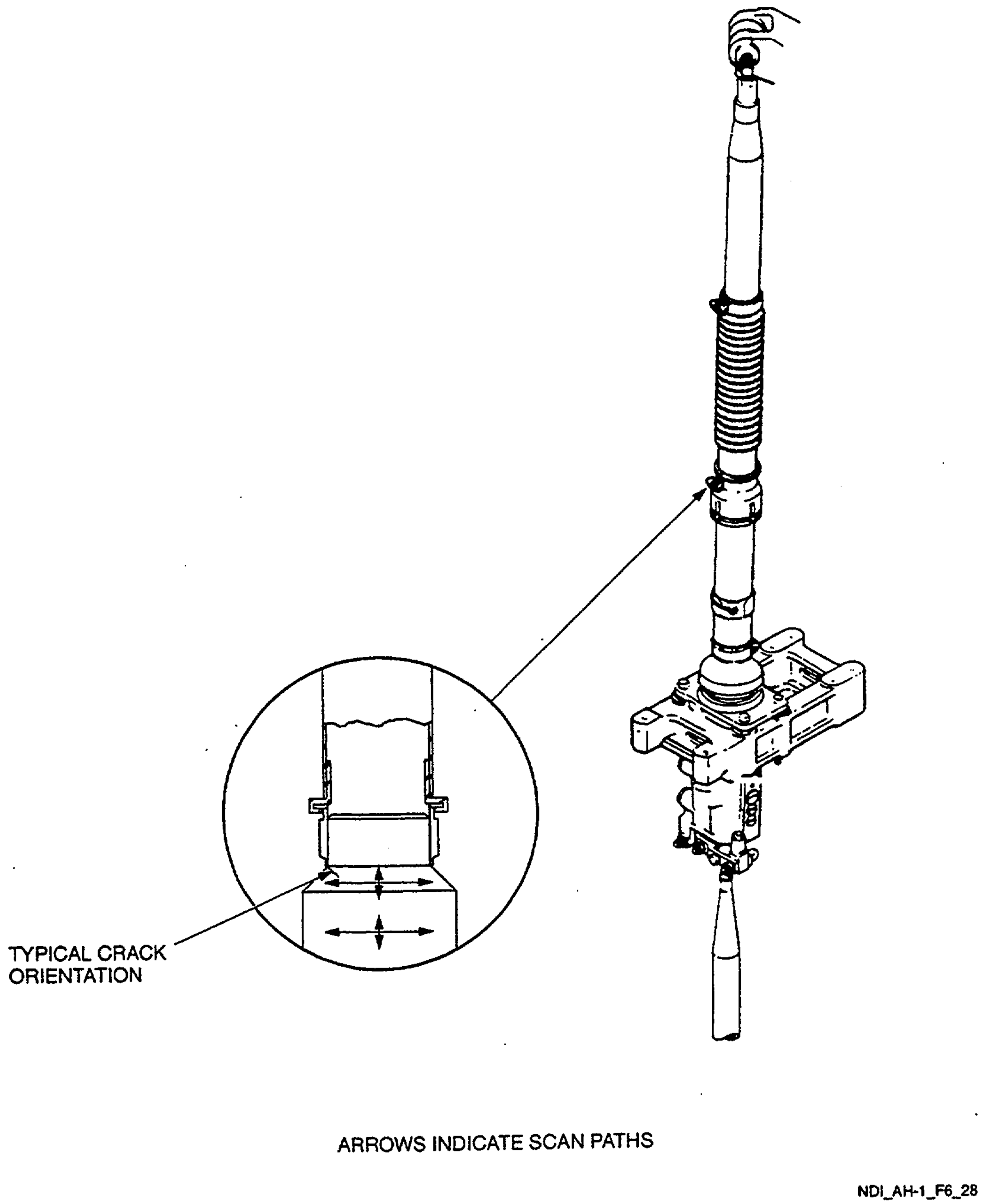

Figure 6-28. Dual Hydraulic Cylinders Flange Area

NOTE

Either probe identified in paragraph 6.28.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.28.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

6.28.4. Backup Method. None required.

6.28.5. System Securing. The dual hydraulic cylinder, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

6.29. ROD ENDS, SHAFTS, PISTONS, AND SLEEVES (MT).

6.29.1. Description (Figure 6-1, Index No. 29). This inspection is applicable to all rod ends, shafts, pistons, and sleeves contained within the hydraulic system.

6.29.2. Defects. Defects can occur anywhere on the part(s). No cracks are allowed.

6.29.3. Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

d. Fluorescent Magnetic Particles

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.

6.29.3.2. 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 applicable positions of this procedure. If required, the identified part(s) shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.29.3.3. Access. Not applicable.

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

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

6.29.3.6. 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 6-29.

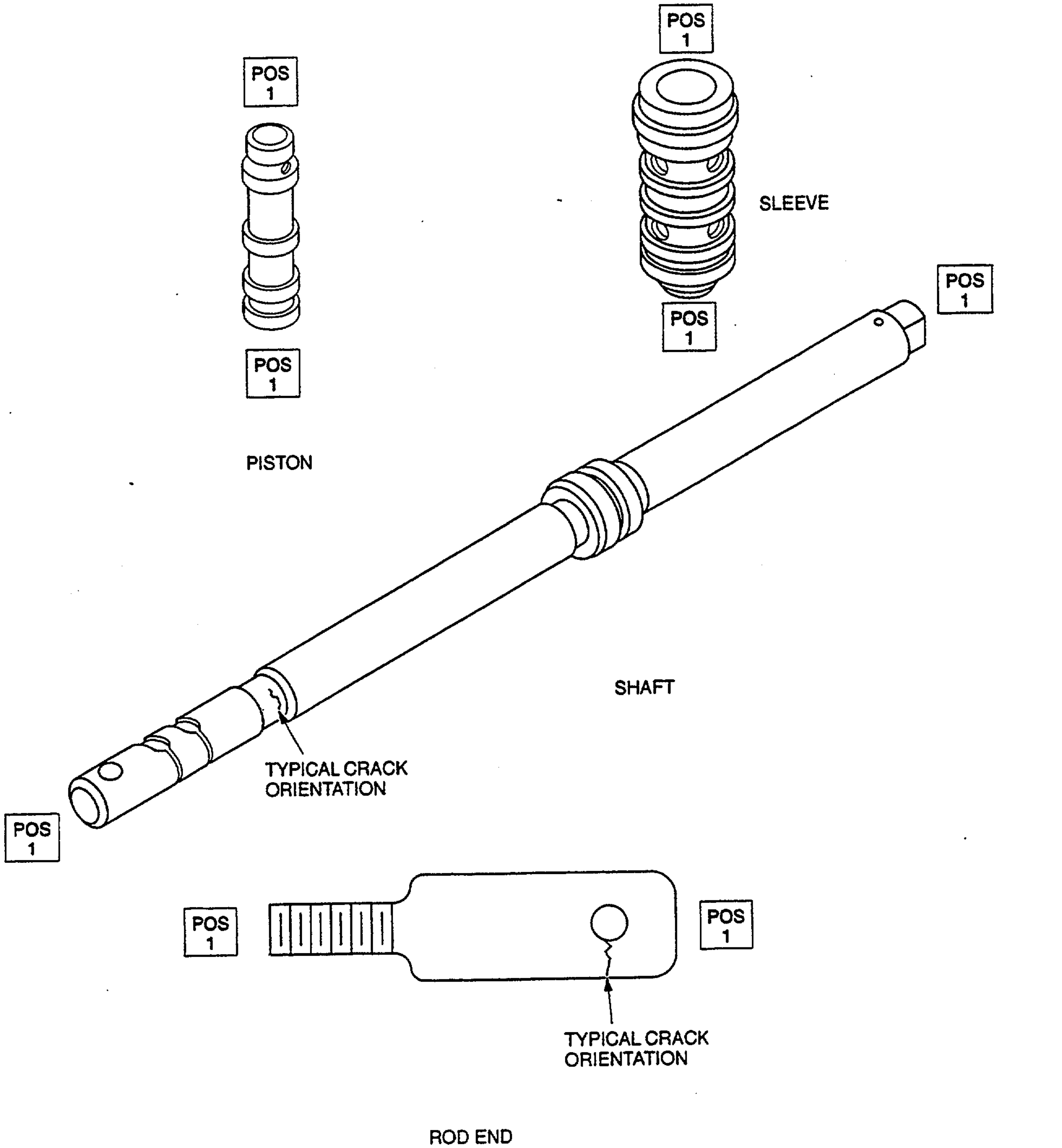

Figure 6-29. Rod Ends, Shafts, Pistons, and Sleeve

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

b. Place probe/yoke on part in applicable position(s) 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.

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

6.29.3.8. 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.

6.29.4. <u>Backup Method</u>. None required.

6.29.5. <u>System Securing</u>. Clean the identified part 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 part or parts, if removed, requires reassembly and installation in accordance with the applicable technical manuals listed in Table 1-1.

6.30 HYDRAULIC CYLINDER BEARING HOUSING (ET).

6.30.1. <u>Description (Figure 6-1. Index No. 30).</u> The hydraulic cylinder bearing housing is part of the dual hydraulic cylinders. The bearing housing houses the cylinder barrel and bearing attached to a rod end. The rod end is connected to the pitch control lever or swashplate horn.

6.30.2. <u>Defects</u>. Defects can occur anywhere on the surface of the hydraulic cylinder bearing housing. No cracks are allowed.

6.30.3. <u>Primary Method</u>. Eddy Current.

6.30.3.1 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 aluminum (0.008, 0.020, and 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

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

6.30.3.2. 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 applicable positions of this procedure. If required, the hydraulic cylinder bearing housing shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.30.3.3. Access. Not applicable.

6.30.3.4. Preparation of Part. The hydraulic cylinder bearing housing shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.30.3.5. 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. Setup 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.)

6.30.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-30.

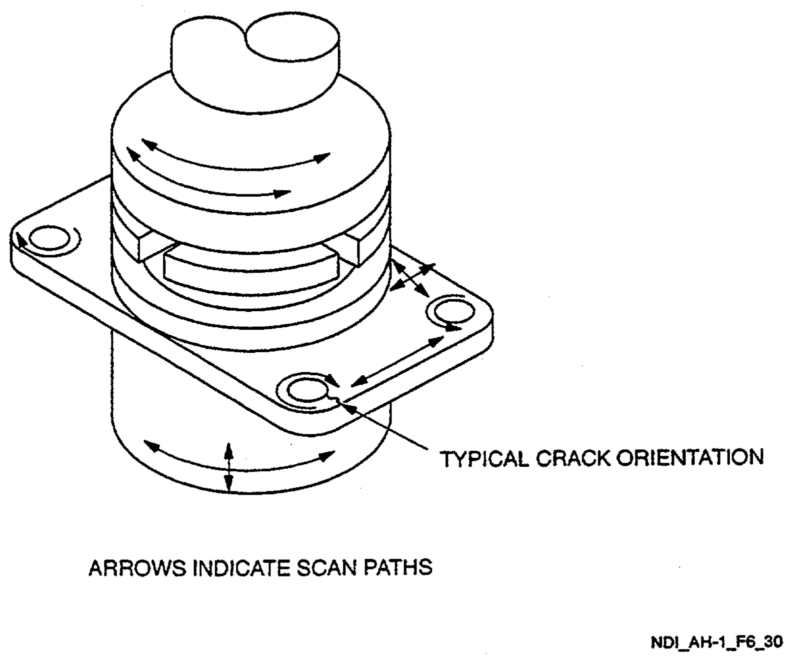

Figure 6-30. Hydraulic Cylinder Bearing Housing

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 is cause for rejection.

NOTE

Either probe identified in paragraph 6.30.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.30.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

6.30.4. Backup Method. None required.

6.30.5. System Securing. The hydraulic cylinder bearing housing, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

6.31. SOLENOID VALVES (ET).

6.31.1. Description (Figure 6-1. Index No. 31). One solenoid valve is located in each hydraulic modular unit. The solenoid valves are controlled by the HYD TEST switch in the pilot engine control panel.

6.31.2. Defects. Defects can occur anywhere on the surface of the solenoid valves. Particular attention shall be given to the solenoid body. No cracks are allowed.

6.31.3. Primary Method. Eddy Current.

6.31.3.1. 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, and 0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

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

6.31.3.2. 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 applicable positions of this procedure. If required, the solenoid valves shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.31.3.3. Access. Not applicable.

6.31.3.4. Preparation of Part. The solenoid valve shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.31.3.5. 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. Setup 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.)

6.31.3.6. Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-31.

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 is cause for rejection.

NOTE

Either probe identified in paragraph 6.31.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 6.31.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

6.31.4. Backup Method. None required.

6.31.5. System Securing. The solenoid valve, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

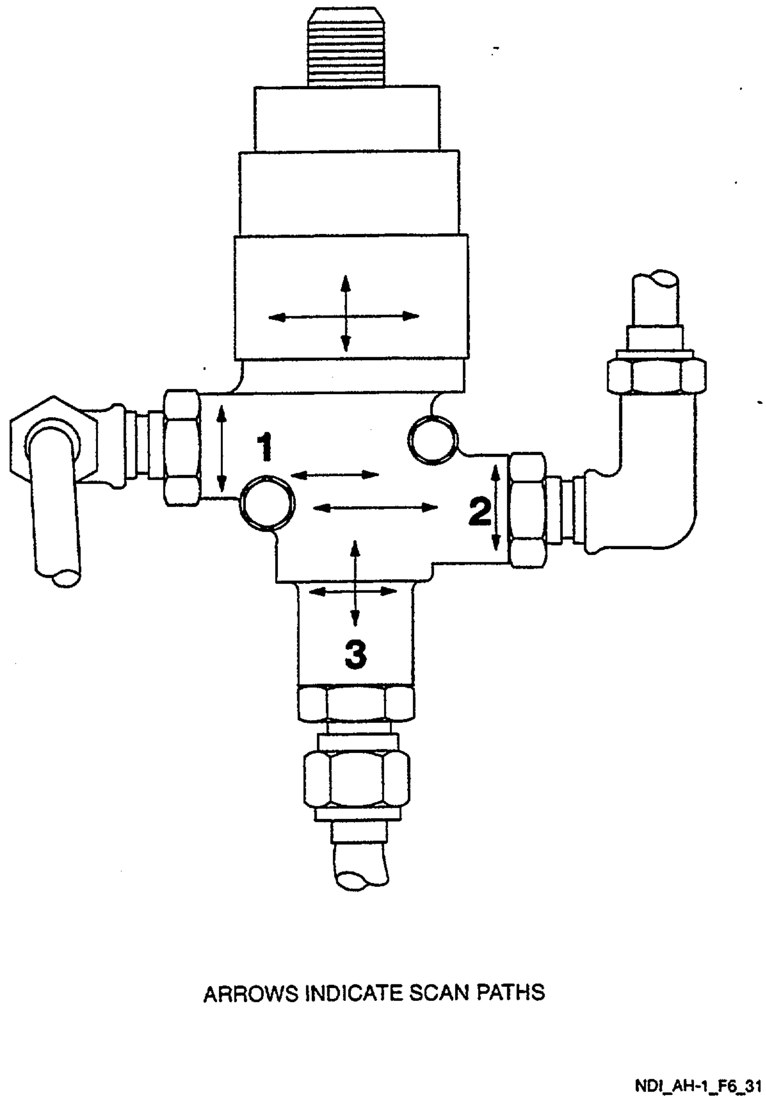

Figure 6-31. Solenoid Valves

APPENDIX A
MAINTENANCE ALLOCATION CHART

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 ITEM

HELICOPTER, ATTACK, AH-1

(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	(4) MAINTENANCE CATEGORY			(5) INSPECTION EQUIPMENT REQUIREMENTS	(6) REMARKS
			AVUM	AVIM	DEPOT		
2.2	Main Rotor Blade, K747 Root Fitting	Cracks		✔		002	
2.3	Main Rotor Blade, K747 Drag Strut	Cracks		✔		003	
2.4	Main Rotor Blade, K747	Voids		✔		005	
2.5	Main Rotor Hub Yoke	Cracks		✔		002	
2.6	Main Rotor Hub Grip	Cracks		✔		002	
2.7	Main Rotor Hub Pitch Horn	Cracks		✔		003	
2.8	Main Rotor Hub Yoke Extension	Cracks		✔		002	
2.9	Retention Strap Fitting	Cracks		✔		002	
2.10	Drag Brace Assembly	Cracks		✔		002	
2.11	Hub Moment Spring Plate	Cracks		✔		002	
2.12	Hub Moment Spring Strap	Cracks		✔		002	
2.13	Elastomeric Bearing Housing	Cracks		✔		002	
2.14	Pitch Link Assembly	Cracks		✔		003	Backup 001
2.15	Main Rotor Control Spline Plate	Cracks		✔		001	
2.16	Collet Clamp Assembly	Cracks		✔		002	
2.17	Collective Lever	Cracks		✔		002	
2.18	Collective Lever Idler Link	Cracks		✔		002	
2.19	Swashplate Antidrive Link	Cracks		✔		003	Backup 001

NOMENCLATURE OF END ITEM
HELICOPTER, ATTACK, AH-1

(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) INSPECTION EQUIPMENT REQUIREMENTS	(6) REMARKS
2.20	Swashplate Antidrive Assembly Bellcrank	Cracks		✔ ✔		003	Backup 001
2.21	Swashplate Antidrive Assembly Support	Cracks		✔		003	Backup 001
2.22	Hub Moment Spring Support Set	Cracks		✔		002	
2.23	Hub Moment Spring	Cracks		✔		002	
2.24	Friction Collet Set	Cracks		✔		002	
2.25	Hub Assembly (Scissors and Sleeve Assembly)	Cracks		✔		002	
2.26	Collective Sleeve (Scissors and Sleeve Assembly)	Cracks		✔		002	
2.27	Scissors Assembly (Scissors and Sleeve Assembly)	Cracks		✔		003	Backup 001
2.28	Main Rotor Control Drive Link Assembly	Cracks		✔		003	Backup 001
2.29	Tail Rotor Hub Yoke Assembly	Cracks		✔		002	Backup 001
2.30	Tail Rotor Hub Trunnion Set	Cracks		✔		002	Backup 001
2.31	Tail Rotor Control Crosshead	Cracks		✔		002	Backup 001
2.32	Tail Rotor Control Counterweight Bellcrank	Cracks		✔		002	Backup 001
2.33	Tail Rotor Control Pitch Link Rod End	Cracks		✔		002	
2.34	Tail Rotor Control Counterweight Link	Cracks		✔		003	Backup 001
2.35	Tail Rotor Active Counterweight Support	Cracks		✔		002	Backup 001
2.36	Tail Rotor Control Tube Assembly	Cracks		✔		002	Backup 001
2.37	Tail Rotor Control Link Assembly	Cracks		✔		002	Backup 001
2.38	Tail Rotor Control Idler Assembly	Cracks		✔		003	Backup 001

NOMENCLATURE OF END ITEM
HELICOPTER, ATTACK, AH-1

(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) INSPECTION EQUIPMENT REQUIREMENTS	(6) REMARKS
2.39	Tail Rotor Control Lever Assembly	Cracks		ü		003	Backup 001
2.40	Tail Rotor Retention Nut	Cracks		ü		002	Backup 001
2.41	Tail Rotor Blade	Voids		ü		005	
2.42	Tail Rotor Blade	Cracks		ü		003	
2.43	Tail Rotor Blade	Water		ü		006	
2.44	Tail Rotor Blade Pitch Horn	Cracks		ü		003	Backup 001
3.2	Main Driveshaft Adapter	Cracks		ü		002	
3.3	Main Transmission Cases	Cracks		ü		003	
3.4	Main Transmission Ring Gear Case	Cracks		ü		002	
3.5	Pylon Lift Link	Cracks		ü		002	
3.6	Transmission Lift Link Attaching Point	Cracks		ü		003	
3.7	Free Wheeling Clutch Assembly Adapter	Cracks		ü		002	
3.8	Drive Quill Assemblies	Cracks		ü		002	
3.9	Main Rotor Mast	Cracks		ü		002	
3.10	Main Rotor Mast Bearing Retaining Plate	Cracks		ü		003	
3.11	Tail Rotor Driveshaft	Cracks		ü		003	Backup 001
3.12	Intermediate Gearbox Case	Cracks		ü		003	
3.13	Tail Rotor Drive Gearbox Case	Cracks		ü		003	
4.2	Forward Fuselage Assembly	Cracks		ü		003	
4.3	Honeycomb Cores and Panels	Voids		ü		005	

NOMENCLATURE OF END ITEM
HELICOPTER, ATTACK, AH-1

(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) INSPECTION EQUIPMENT REQUIREMENTS	(6) REMARKS
4.4	Honeycomb Core Fuselage Panels, Vertical Fin, Etc.	Fluid		ü		006	
4.5	Suppressor Cowling Mount Rod End	Cracks		ü		002	
4.6	Suppressor Cowling Mount Rod End Clevis Pin	Cracks		ü		002	
4.7	Tailboom Assembly	Cracks		ü		003	
4.8	Tailboom Stringers	Cracks		ü		003	
4.9	Pilot Seat Upper Guide Fitting	Cracks		ü		003	Backup 001
4.10	Pilot Seat Lower Guide Fitting	Cracks		ü		003	Backup 001
4.11	Pilot Seat Handle Assembly	Cracks		ü		002	
4.12	Pilot Seat Support Tubes	Cracks		ü		002	
4.13	Pilot Seat Latch Spring	Cracks		ü		002	
4.14	Pilot Seat Return Spring	Cracks		ü		002	
4.15	Pilot Seat Latch Pin	Cracks		ü		002	
4.16	Engine Mount Assemblies	Cracks		ü		002	
4.17	Engine Mount Fittings	Cracks		ü		002	
4.18	Pillow Block	Cracks		ü		002	
4.19	Jack Fittings	Cracks		ü		002	Backup 001
4.20	Tow Rings	Cracks		ü		002	Backup 001
4.21	Bolts, Rod Ends, Turnbuckles, Rods, and Pins	Cracks		ü		002	
4.22	Fore and Aft Cross Tube Assemblies	Cracks		ü		004	
4.23	Skid Saddles	Cracks		ü		003	Backup 001
5.2	Forward Engine Mount Fittings (Trunnions)	Cracks		ü		002	

NOMENCLATURE OF END ITEM
HELICOPTER, ATTACK, AH-1

(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) INSPECTION EQUIPMENT REQUIREMENTS	(6) REMARKS
5.3	Aft Engine Mount Fittings (Trunnions)	Cracks		ü		002	
5.4	Powerplant Related Components	Cracks		ü		001	
5.5	Compressor Rotor Assembly First-Stage Blades	Cracks		ü		002	
5.6	Diffuser Housing Vane Brazements	Cracks		ü		001	
5.7	Air Outlet Assembly	Cracks		ü		001	
5.8	Interstage Bleed Band to Bushing Weld	Cracks		ü		001	
5.9	Combustion Chamber Deflector	Cracks		ü		001	
5.10	Combustion Chamber Bracket and Clamp Assembly	Cracks		ü		001	
5.11	Second-Stage Gas Producer Nozzle and Cylinder Assembly	Cracks		ü		001	
5.12	Diffuser Housing First-Stage Nozzle Assembly, Nozzle Liner	Cracks		ü		001	
5.13	Silver Braze (Engines)	Cracks		ü		001	
6.2	Pilot Collective Control Stick Assembly	Cracks		ü		003	
6.3	Pilot Collective Control Stick Tube	Cracks		ü		002	
6.4	Gunner Collective Control Stick Assembly	Cracks		ü		003	
6.5	Gunner Collective Control Stick	Cracks		ü		002	
6.6	Pilot Cyclic Control Stick Lever Assembly	Cracks		ü		003	
6.7	Pilot Cyclic Control Stick Gimbal Bracket	Cracks		ü		003	

NOMENCLATURE OF END ITEM
HELICOPTER, ATTACK, AH-1

(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) INSPECTION EQUIPMENT REQUIREMENTS	(6) REMARKS
6.8	Pilot Cyclic Control Stick (Elbow, Collar)	Cracks		ü		003	
6.9	Pilot Cyclic Control Stick	Cracks		ü		002	
6.10	Gunner Cyclic Control Stick Bellcrank Assembly	Cracks		ü		003	
6.11	Gunner Cyclic Control Stick Support Assembly	Cracks		ü		003	
6.12	Gunner Cyclic Control Stick	Cracks		ü		003	
6.13	Jackshaft Assembly	Cracks		ü		003	
6.14	Jackshaft Bearing Support Assembly	Cracks		ü		003	
6.15	Jackshaft Support Assembly	Cracks		ü		003	
6.16	Force Gradient Cyclic Control Cylinder	Cracks		ü		003	
6.17	Force Gradient Cyclic Control Shaft	Cracks		ü		002	
6.18	Force Gradient Cyclic Control Guides	Cracks		ü		001	
6.19	Elevator Horn Assembly	Cracks		ü		003	
6.20	Tail Rotor Control, Elevator and Elevator Control, Power Cylinder Supports, Lateral Cyclic, Fore and Aft Cyclic, and Collective Systems	Cracks		ü		003	
6.21	Rod Ends, Clevis, and Eye Bolts, Etc.	Cracks		ü		001	
6.22	Hydraulic Reservoir	Cracks		ü		003	
6.23	Hydraulic Pump, Transmission Drive	Cracks		ü		003	
6.24	Hydraulic Pump (Emergency-Electric Motor Driven)	Cracks		ü		003	
6.25	Hydraulic Modular Units	Cracks		ü		003	

NOMENCLATURE OF END ITEM
HELICOPTER, ATTACK, AH-1

(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) INSPECTION EQUIPMENT REQUIREMENTS	(6) REMARKS
6.26	Hydraulic Accumulator and Lock Out Valve Assemblies	Cracks		ü		003	
6.27	Nuts, Fittings, Locks, Springs, Spring Base, Jam Nut, and Barrels	Cracks		ü		001	
6.28	Dual Hydraulic Cylinders Flange Area	Cracks		ü		003	
6.29	Rod Ends, Shafts, Pistons, and Sleeves	Cracks		ü		002	
6.30	Hydraulic Cylinder Bearing Housing	Cracks		ü		003	
6.31	Solenoid Valves	Cracks		ü		003	

APPENDIX B
EQUIPMENT LISTING

Nomenclature	Part Number/ Specification	Manufacture	National Stock Number
<u>Fluorescent Penetrant Method</u>			
Fluorescent Penetrant Inspection Kit	MIL-I-25135 Type I, 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
<u>Magnetic Particle Method</u>			
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/Yoke	DA200	Parker Research Corp. 2642 Enterprise Rd. 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	Manufacture	National Stock Number
Eddy Current Method			
Eddy Current Inspection Unit	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 St. 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 100 KHz-500 KHz	MT-905-60	NDT Engineering Corp. 7056 S. 220th St. Kent, WA 98032	
Probe, Straight, Shielded Surface 100 KHz-500 KHz	MP-60	NDT Engineering Corp. 7056 S. 220th St. Kent, WA 98032	
Ultrasonic Method			
Ultrasonic Inspection Unit	USD 15S	KrautKramer Branson 50 Industrial Park Road Lewistown, PA 17044	6635-01-417-5467
Transducer, 5.0 MHz 60 degrees shear wave 1/4 x 1/4 inch element	PAB0504		6635-01-057-2761

Nomenclature	Part Number/ Specification	Manufacture	National Stock Number
<u>Bond Testing Method</u>			
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	
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/fiber- glass 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		
<u>Radiographic Method</u>			
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.	

Nomenclature	Part Number/ Specification	Manufacture	National Stock Number
X-Ray Unit (LPX-160 Water-Cooled Digital)	3-000-0723	LORAD Corp. 36 Apple Ridge Rd. P.O. Box 710 Danbury, CT 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**

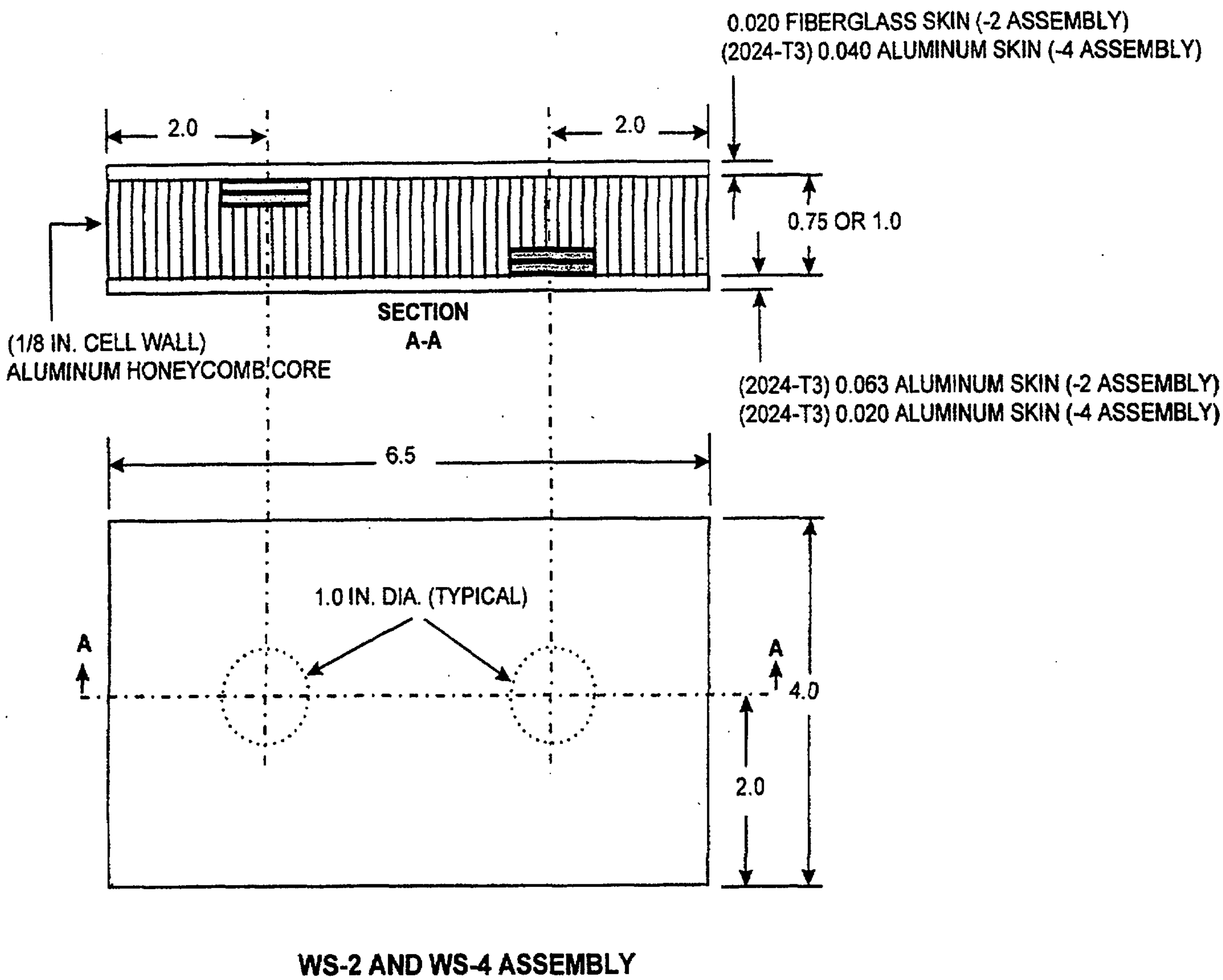

Figure C-1. Composite Test Blocks

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By Order of the Secretary of the Army:

DENNIS J. REIMER
General, United Stares Amy
Chief of Staff

Official:

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Amy
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From: "Whomever" <whomever@avma27.army.mil>
To: mpmt%avma28@st-louis-emh7.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**:

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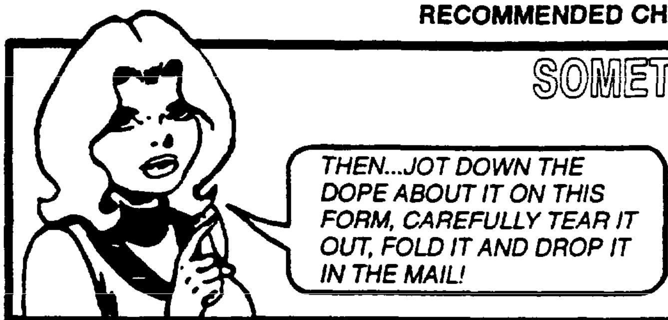

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FROM: (PRINT YOUR UNIT'S COMPLETE ADDRESS)
Commander
Stateside Army Depot
ATTN: AMSTA-US
Stateside, N.J. 07703

DATE SENT
10 July 1975

PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 11-5840-340-12	23 Jan 74	Radar Set AN/PRC-76

BE EXACT... PIN-POINT WHERE IT IS

PAGE NO	PARA-GRAPH	FIGURE NO	TABLE NO	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
2-25	2-28			Recommend that the installator antenna alignment procedure be changed throughout to specify a 2° IFF antenna lag rather than a 1°. REASON: Experience has shown that with only a 1° lag the antenna servo system is too sensitive to wind gusting in excess of 25 knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 2° without degradation of operation.
3-10	3-3		3-1	Item 5, Function column. Change "2 db" to "3db." REASON: The adjustment procedure of the TRANS POWER FAULT indicator calls for a 3 db (500 watts) adjustment to ligit the TRANS POWER FAULT indicator.
5-6	5-8			Add new step f.1 to read, "Replace cover plate removed in step e.1, above." REASON: To replace the cover plate.
		F03		Zone C 3. On J1-2, change "+24 VDC" to "+5 VDC." REASON: This is the output line of the 5 VDC power supply. +24 VDC is the input voltage.

PRINTED NAME, GRADE OR TITLE, AND TELEPHONE NUMBER
SSG I. M. DeSpiritof 999-1776

SIGN HERE: SSG I.M. DeSpiritof

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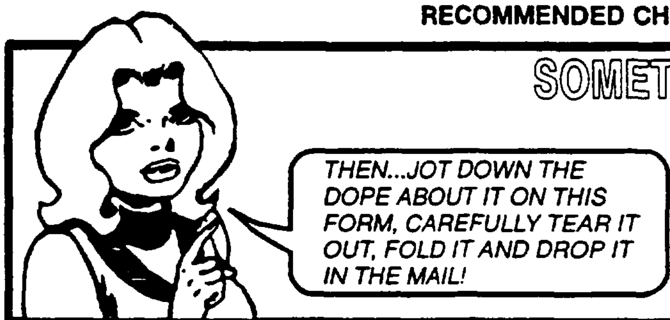

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PUBLICATION NUMBER	PUBLICATION DATE	PUBLICATION TITLE
TM 1-1520-255-23		Nondestructive Inspection Procedures for AH-1 Helicopter Series

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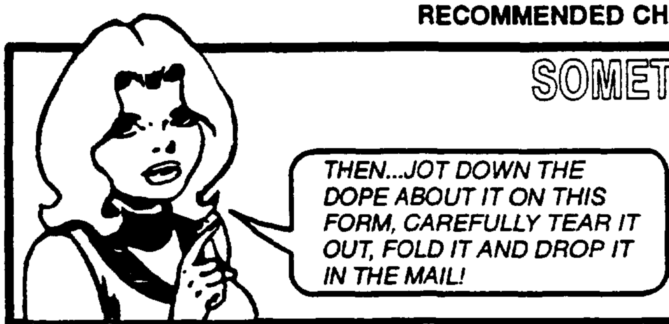

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TEAR ALONG PERFORATED LINE

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 = 3.2808.8 feet

Weights

1 *centigram = 10 milligrams = .15 grain*
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 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

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu in.
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Square measure

1 sq. centimeter = 100 sq. millimeters =.155 sq. in.
1 sq. decimeter = 100 sq. centimeters = 15.5 inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 feet
1 sq. dekameter (are) = 100 sq. meters = 1.076.4 sq. ft.
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 hectometers = .386 sq. miles

Liquid Measure

1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons
1 liter = 10 deciliters = 33.81 fl. ounces
1 centiliter = 10 milliliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3 38 fl. ounces
1 metric ton = 10 quintals = 1.1 short tons

Approximate Conversion Factors

To change	To	Multiply by
inches	centimeters	2.540
feet	meters	.305
yards	meters	.914
miles	kilometers	1.609
sq. inches	sq. centimeters	6.451
sq. feet	sq. meters	.093
sq. yards	sq. meters	.836
sq. miles	sq. kilometers	2.590
acres	sq. hectometers	.405
cubic feet	cubic meters	.028
cubic yards	cubic meters	.765
fluid ounces	milliliters	29.573
pints	liters	.472
quarts	liters	.946
gallons	liters	3.785
ounces	grams	28.349
pounds	kilograms	.454
short tons	metric tons	.907
pound inches	newton-meters	.11296

To change	To	Multiply by
ounce inches	newton-meters	.0070062
centimeters	inches	.394
meters	feet	3.280
meters	yards	1.094
kilometers	miles	.621
sq. centimeters	sq. inches	.155
sq. meters	sq. yards	10.764
sq. kilometers	sq. miles	1.196
sq. hectometers	acres	2.471
cubic meters	cubic feet	35.315
milliliters	fluid ounces	.034
liters	pints	2.113
liters	quarts	1.057
grams	ounces	.035
kilograms	pounds	2.205
metric tons	short tons	1.102
pound-feet	newton-meters	1.356

Temperature (Exact)

°F Fahrenheit temperature	5/9 (after subtracting 32)	Celsius Temperature °C

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