*TM 1-1520-254-23

TECHNICAL MANUAL

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

NONDESTRUCTIVE INSPECTION PROCEDURES

FOR

OH-58A/C HELICOPTER

*This publication together with TM 1-1520-266-23, dated 30 May 1997, supersedes TM 1-1520-254-23 dated 30 November 1996.

HEADQUARTERS, DEPARTMENT OF THE ARMY

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

WARNING

Cleaning solvents P-D-680, Type II and MIL-C-38736 are flammable. Avoid eye and skin contact or breathing 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 lights 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.

CHANGE

NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., 29 August 2005

AVIATION UNIT MAINTENANCE (AVUM) AND AVIATION INTERMEDIATE MAINTENANCE (AVIM) MANUAL NONDESTUCTIVE INSPECTION PROCEDURES FOR OH-58A/C HELICOPTER

DISTRIBUTION STATEMENT A**:** Approved for public release; distribution is unlimited.

TM 55-1520-254-23, dated 30 May 1997, is changed as follows:

1. Remove and insert pages as indicated below. New or changed text material is indicated by a vertical bar in the margin. An illustration change is indicated by a miniature pointing hand.

Remove Pages	Insert Pages
A /(B blank)	A/(B blank)
1-1 and 1-2	1-1 and 1-2
2-65 and 2-66	2-65/(2-66 blank)
2-67 and 2-68	2-67 and 2-68
3-27 through 3-30	3-27 through 3-30
4-43/(4-44 blank)	4-43 and 4-44
----------	4-45/(4-46 blank)
B-1 and B-2	B-1 and B-2

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

By Order of the Secretary of the Army:

PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

Official:

Sandra R. Riley

SANDRA R. RILEY
Administrative Assistant to the Secretary of the Army
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NOTE: On a changed page, the portion of the text affected by the latest change is indicated by a vertical line, or other change symbol, in the outer margin of the page. Changes to illustrations are indicated by miniature pointing hands. Changes to wiring diagrams are indicated by shaded areas.

Dates of issue for original and changed pages are:

Original ..... 30 May 1997 Change 1..... 29 August 2005

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 270. CONSISTNG OF THE FOLLOWING:

Page No.	*Change No.
Cover	0
a through f	0
A	1
B blank	0
i through ix	0
x blank	0
1-1	0
1-2	1
1-3 through 1-38	0
2-1 through 2-64	0
2-65	1
2-66 blank	1
2-67	1
2-68 through 2-71	0
2-72 blank	0
3-1 through 3-27	0
3-28 through 3-30	1
3-31 through 3-46	0
4-1 through 4-42	0
4-43 through 4-45	1
4-46 blank	1
5-1 through 5-6	0
6-1 through 6-16	0
A-1 through A-4	0
B-1	1
B-2 and B-3	0
C-1 and C-2	0
Index 1 through Index 13	0
Index 14 blank	0

*Zero in this column indicates an original page.

TECHNICAL MANUAL

No. 1-1520-254-23

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C. 30 May 1997

Aviation Unit Maintenance (AVUM) and Aviation Intermediate Maintenance (AVIM) Manual Nondestructive Inspection Procedures for OH-58A/C Helicopter

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 OH-58A/C helicopter 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 OH-58A/C 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 or 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 (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: US Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP Redstone Arsenal, AL 35898-5000.

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

i. Use the word "SHALL" whenever a manual expresses a provision that is binding. Use "SHOULD" and "MAY" whenever it is necessary to express non-mandatory provisions. "WILL" may be used to express a declaration purpose. It may necessary to use "WILL" in cases where simple futurity is required (e.g. "Power for the meter WILL be supply by the ship.").

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 OH-58A/C helicopters. The selection of components in this manual are based on a review of applicable Technical manuals listed in Table 1-1. All existing NDI call outs were updated. New NDI procedures were developed for those parts that required check, inspect or any other NDI related actions. Section 1 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 1 also contains general information on the OH-58A/C helicopters, 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 instructions for each main aircraft group are 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 for 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 1-1500-344-23	Aircraft Weapons Systems Cleaning and Corrosion Control
TM 55-1500-335-23	Nondestructive Inspection Methods
TM 55-1520-228-23 (Series)	Aviation Unit and Intermediate Maintenance Manual Army Model OH-58A and OH-58C Helicopters
Chapter 1	Aircraft General
Chapter 2	Airframe
Chapter 3	Alighting Gear
Chapter 4	Power Plant
Chapter 5	Rotors
Chapter 6	Drivetrain System
Chapter 11	Flight Controls
TM 55-2840-241-23 (series)	Aviation Unit and Aviation Intermediate Maintenance Manual, Engine, Aircraft, Gas Turbine Model T63-A-720 P/N 6887191 NSN 2840-01-013-1339

1.1.1 Special Terms, Abbreviations, and Acronyms.

AC	Alternating Current
ATAS	Air-to-Air Stinger
AVIM	Aviation Intermediate Maintenance
AVUM	Aviation Unit Maintenance
BL	Butt Line
BS	Boom Station
BT	Bond Testing Method
CCW	Counterclockwise
CL	Center Line
CPO	Copilot/Observer
CRT	Cathode Ray Tube
CW	Clockwise
DC	Direct Current
EDM	Electrically Discharged Machined
ET	Eddy Current Method
FS	Fuselage Station
FSH	Full Screen Height
FWD	Forward
HdB	Horizontal Decibels (Gain)
H Pos	Horizontal Position
HPF	High Pass Filter
ID	Inside Diameter
IFR	Instrument Flight Rules
IR	Infrared
INBD	Inboard
KHz	Kilohertz
LCD	Liquid Crystal Display
LE	Leading Edge
LH	Left-hand (left side of aircraft aft looking forward)
LPF	Low Pass Filter
MAX	Maximum
MHz	Megahertz
MIA	Mechanical Impedance Analysis
MIN	Minimum
MMS	Mast Mounted Sight
MT	Magnetic Particle Method
NDI	Nondestructive Inspection

OUTBD	Outboard
P/N	Part Number
PSI	Pounds Per Square Inch
PSIG	Pounds Per Square Inch Gauged
PT	Fluorescent Penetrant Method
RH	Right-hand (right side of aircraft aft looking forward)
ROT	Rotation
RT	Radiographic Method
SCAS	Stability and Control Augmentation System
STA	Station
TM	Technical Manual
UT	Ultrasonic Method
VdB	Vertical Decibels (Gain)
V Pos	Vertical Position
VR	Vulnerability Reduction
UWP	Universal Weapons Pylon
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 OH-58A/C helicopters 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, the model OH-58A/C 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. In the text, the inspection item is identified as follows:

a. The first digit refers to the section of the manual in which the item appears. Example: Paragraph 2.5 is found in Section II and reference item 5.

b. The second digit refers to the item number or order that the part procedure occurs in the manual section. Example: Paragraph 2.5 refers to item number five (5) and procedure number five in Section II of the manual.

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 OH-58A/C helicopters. The technician shall be responsible for using the applicable referenced TM for the helicopter being inspected.

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

1.1.7 Description. The OH-58A/C helicopter, powered by a single T63-A-720 Gas Turbine engine, is a light observation helicopter which features a low silhouette and low vulnerability to meet combat requirements. The fuselage consists of two main sections: the forward section and the aft, or boom section. The helicopter is capable of operating from prepared or unprepared landing areas by day or night. Minimum instrumentation has been provided in event of inadvertent IFR flight. Maximum visibility is provided by extensive use of transparent plastic panels at the top, front, bottom and sides of the cabin. The OH-58A/C can be armed with the ATAS missile system for self-defense.

1.1.8 Configuration. The general configuration of the OH-58A/C helicopters 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. OH-58A/C helicopter length is divided into stations (STA) 1 inch apart along the longitudinal plane of the helicopter. They begin with station 1.0 at the most forward part of the nose section, and ending at station 374.936 at the upper aft end of the vertical fin.

b. Helicopter height is divided into water lines (WL) 1 inch apart along the vertical plane of the helicopter. Water lines begin at WL 4.25 on the landing gear and end at WL 129.124 on the forward top end of the vertical fin.

c. Helicopter butt lines (BL) are 1 inch apart starting at the helicopter centerline (CL) and extending outward, left and right, to the extreme ends of the horizontal stabilizers.

METHOD OF INSPECTION

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

	PENETRANT
	MAGNETIC PARTICLE
	EDDY CURRENT

	ULTRASONIC
	RADIOGRAPHIC
	BOND TEST

SUPPLEMENTAL SYMBOLS

	RADIOGRAPHIC FILM PLACEMENT
	RADIOGRAPHIC FILM IDENTIFICATION MARKER
	RADIOGRAPHIC AIMING POINT
	RADIOGRAPHIC TUBEHEAD LOCATION
	BOND TEST STANDARD PROBE
	BOND TEST NONMETALLIC PROBE
	BOND TEST MINI-PROBE

	MAGNETIC CONTOUR PROBE
	MAGNETIC STATIONARY UNIT
	MAGNETIC PARTICLE COIL
	DIRECTION OF EDDY CURRENT SCAN

	ULTRASONIC SHEAR OR SURFACE WAVE TRANSDUCER TOP MOUNTED
	ULTRASONIC SHEAR OR SURFACE WAVE TRANSDUCER END MOUNTED
	ULTRASONIC LONGITUDINAL WAVE TRANSDUCER
	EDDY CURRENT BOLT HOLE PROBE
	EDDY CURRENT GENERAL PURPOSE PROBE
	EDDY CURRENT RADIUS PROBE

NDI_OH-58_F1_1

Figure 1-1. Nondestructive Inspection Symbols

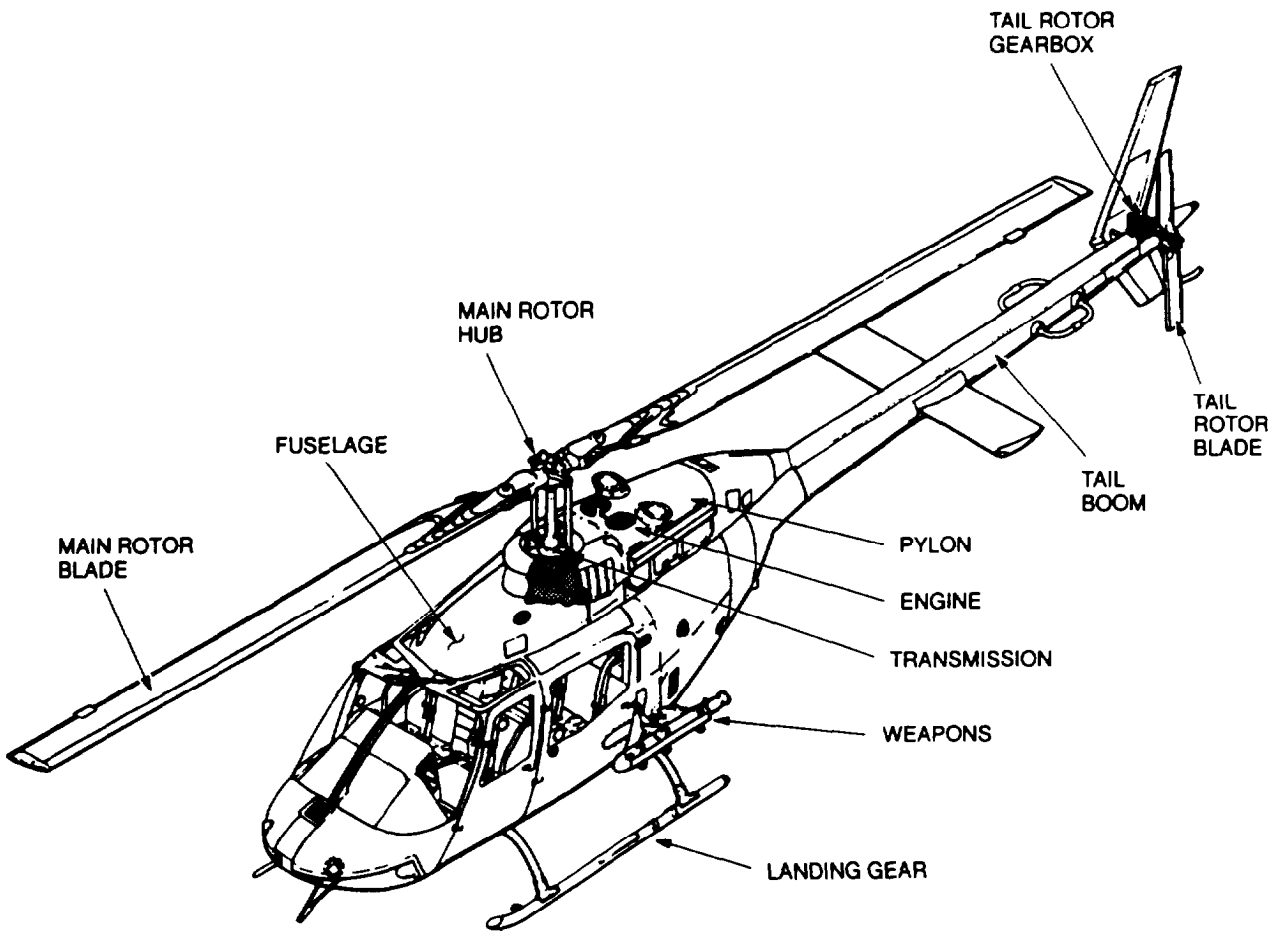


Figure 1-2. General Configuration of OH-58A/C

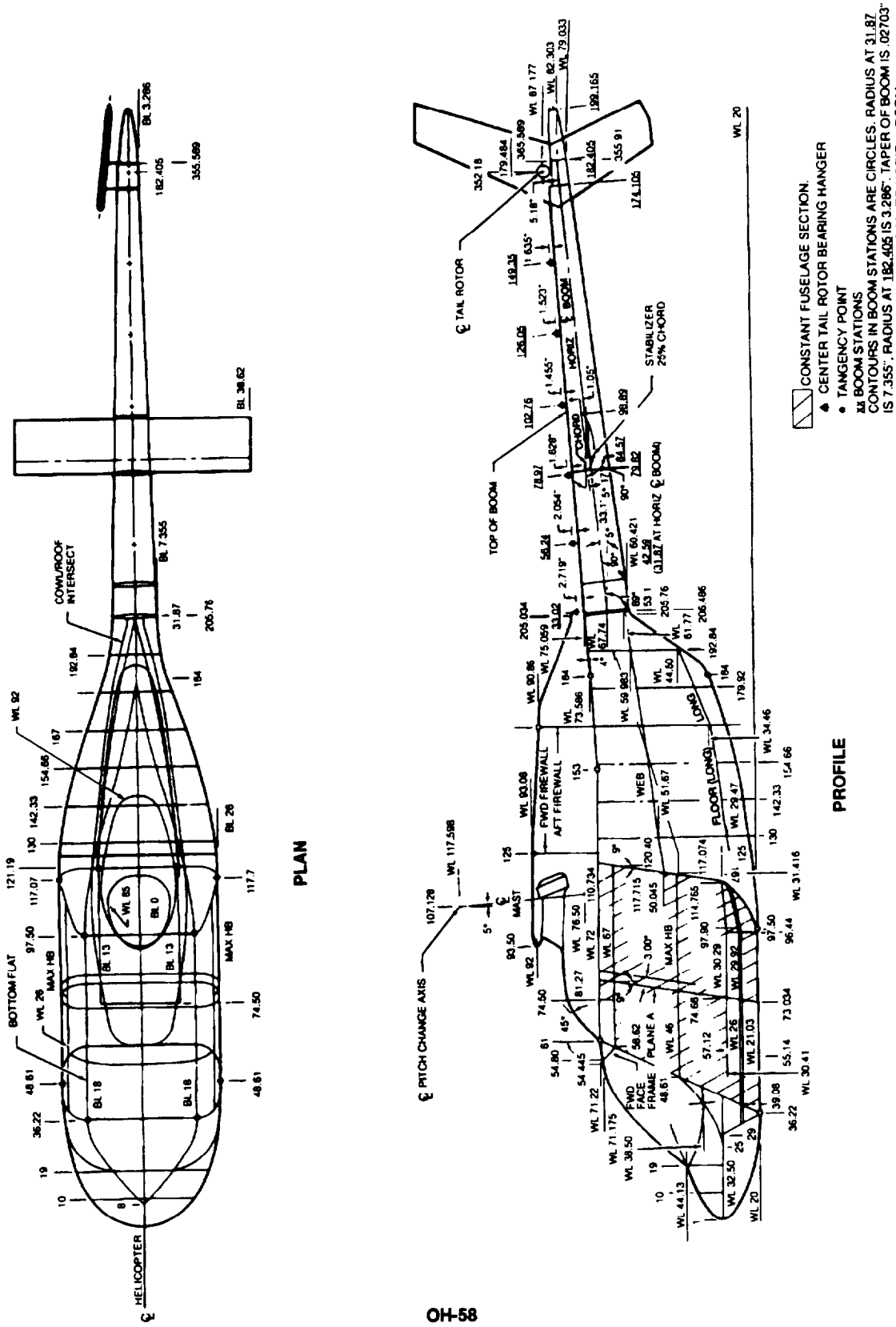


Figure 1-3. Stations, Water Lines, Butt Lines

1.2 TYPE OF CONSTRUCTION.

NOTE

The following paragraphs describe the type of construction and materials used in the manufacture of the major OH-58A/C helicopter components.

1.2.1 Rotor Group. The rotor systems utilized are the main rotor and controls system and the tail rotor and controls system. The OH-58A/C main rotor assembly is a two bladed, semirigid, seesaw type rotor with underslung mounting. The rotor blades are all metal, five piece assemblies consisting of an extended aluminum alloy nose block, aluminum alloy trailing edge, and an aluminum honeycomb filler.

The tail rotor system consists of an aluminum alloy forged yoke and stainless steel blades. The blades are mounted to the yoke by means of spherical bearings which are mounted in the grip plates on the pitch change axis.

1.2.2 Transmission/Drivetrain Group. The OH-58A/C system includes transmission, freewheeling drive unit, freewheeling to transmission driveshaft, tail rotor driveshafts, bearing hangers, and tail rotor gearbox. The freewheeling unit is mounted on the engine gearbox and the shaft is splined directly to the power take-off gear shaft. During auto rotation the main rotor drives the tail rotor through the inner shaft while the sprag clutch provides a disconnect to the outer race and hence the engine.

The OH-58A may have a three planetary transmission installed. The OH-58C will have a four planetary transmission installed. Both transmissions provide a two-stage reduction of 17.44 to 1.0 (6180 to 354). The transmission is mounted on the cabin roof deck forward of the power plant. Transmission is flexibly supported on the airframe by a system composed of two pylon support links, one on each side, and a drag link secured to bottom of the transmission and connected by bolt to the rubber isolation support mount on the airframe.

A main driveshaft is installed between the freewheeling coupling on the engine and the adapter flange on the transmission input quill. The tail rotor driveshaft consists of the forward short shaft, the oil cooler fan shaft, the aft short shaft and the long shaft. Flexible laminated steel disc couplings are used to connect the shaft sections, freewheeling assembly and the tail rotor gearbox.

The tail rotor gearbox contains 90 degree spiral bevel gears providing a speed reduction of 2.350 to 1.000. The housing is a magnesium casting attached to the fuselage structure with four studs.

1.2.3 Airframes and Landing Gear Group. The OH-58A/C airframe consists of three main sections; the forward section, which extends from the cabin nose to the bulkhead aft of the passenger compartment, the aft section, which extends from the bulkhead aft of the passenger compartment to the tailboom, and tailboom section. The forward section utilizes aluminum honeycomb and sheet metal structures for the major load carrying elements. The forward section provides for pilot and passenger seating, fuel cell enclosure, and pylon support. The aft section utilizes an aluminum and honeycomb semimonocoque construction and provides a deck for engine installation, a compartment under the engine deck for electrical equipment and hard points for Air-To-Air Stinger (ATAS) missile system.

The landing gear consists of two tubular main skid tubes and two curved cross tube assemblies. The landing gear is attached to the fuselage with four strap assemblies. Ground handling wheels can be attached and tow rings are provided. Each skid tube is provided with replaceable skid shoes.

1.2.4 Engine Group The OH-58A/C helicopter is equipped with a T63-A-720 gas turbine engine. The engine is designed for low fuel consumption, light weight, minimum size, maximum reliability and ease of maintenance. The engine is installed aft of the mast and passenger compartment. A two-stage helical and spur gear set is used to reduce rotational speed from 36,000 RPM at the power turbine to 6180 RPM at the output drive spline.

1.2.5 Flight Control Group The OH-58A/C flight control system is a positive mechanical type. Complete dual controls are provided for both pilot and copilot/observer (CPO). The group consists of collective pitch control, cyclic control, tail rotor control and vulnerability reduction flight control systems. Controls are all from dual control sticks and pedals through push-pull tubes, bellcranks and linkages with hydraulic support. Hydraulic servoactuators have an irreversible valve to reduce feedback forces and to provide for use of controls in event of hydraulic boost failure.

1.2.6 Access Panels. Doors. and Fairings. Access panels, doors, 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.

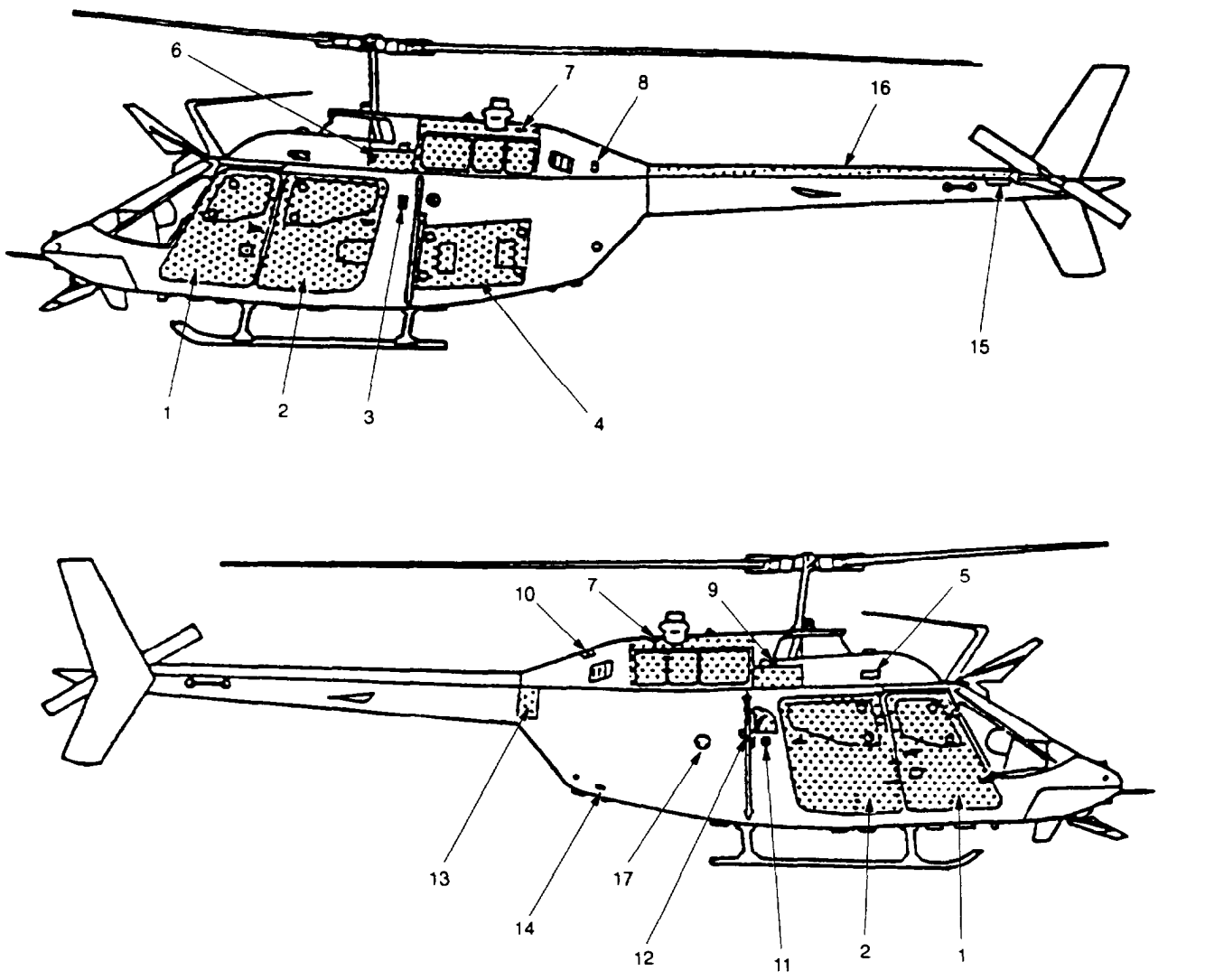


Figure 1-4. Access Panels, Doors, and Fairings

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

Item No.	Item
1	Crew Door
2	Passenger Door
3	Step Cover
4	Avionics Compartment Door
5	Forward Transmission Fairing Inspection Door
6	Transmission Induction Fairing Access Door
7	Engine Cowl Side Panel
8	Oil Tank Drain Access Door
9	Transmission Oil Level Access Door
10	Engine Oil Filler Cap Access Door
11	Fuel Tank Filler Cap
12	Access Panel Structural
13	Tailboom Inspection Panel Structural
14	External Power Connector Access Door
15	Tailboom V/R Flight Controls Access Cover
16	Tail Rotor Driveshaft Cover
17	Connector Receptacle (Ground)

WARNING

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

1.2.7 Steps, Handholds, and Walkways. Steps, handholds, and walkways aid in doing maintenance, inspections, and servicing on 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 remain on surfaces after removal.

WARNING

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

CAUTION

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

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

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

1.4 NONDESTRUCTIVE INSPECTION METHODS.

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

This manual summarizes the steps necessary to perform satisfactory inspections. It includes the preparation of the helicopter, the inspection area for NDI, safety rules to be observed, highlights of each inspection method, and specific safety precautions for each of these methods. For a detailed description of each method and its application, refer to the Technical Manual, Nondestructive Inspection Methods, TM 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 of inspection (primary) reveals an indication of a crack, another method (backup) should be used to verify if a crack is actually present. Quite often backup procedures are limited to disassembly and a good visual inspection. Certain cases may arise when another NDI method could be used to prevent needless or complicated disassembly. For example, a crack in a spar cap may not appear clearly on radiographic film due to cloudiness caused by sealant or substructure clutter. A backup eddy current or ultrasonic method could be used for verification and if no indications were observed, disassembly would not be necessary. Whenever a backup method is used, it shall be specified in every case where the initial damage indication may not be positive proof that a reject condition exists.

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

1.4.4 Preparation of Part or Area for NDI.

WARNING

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

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

1.4.5 NDI General Safety Precautions.

WARNING

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

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

1.4.6 Bond Testing (BT) Method.

NOTE

Inspection of bonded structures shall be performed in accordance with the general applications and techniques in TM 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 (MIA). Measures the effect of generated sound waves and the effect of loading as drive frequency is swept in the range of 2.5 KHz to 10 KHz. This method can be used on unbonds, crushed core, and defects on the inside of composites. Requires no couplant. See Figure 1-5, Bond Testing Reference Block Displays.

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.

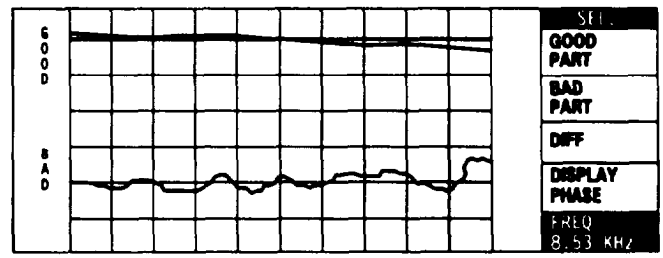
b. Turn power OFF before connecting or disconnecting probe cable or power cable.

1.4.7 Fluorescent Penetrant (PT) Method.

NOTE

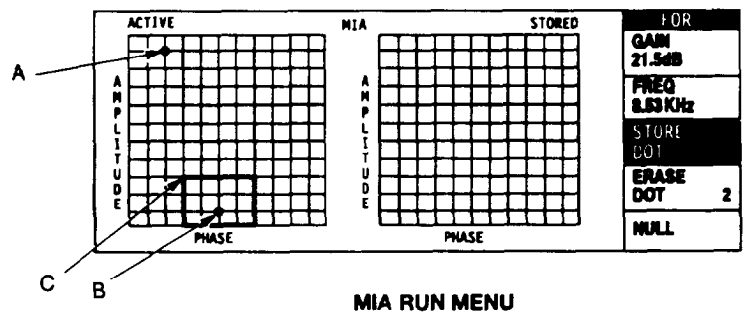
Fluorescent penetrant inspections shall be performed in accordance with the general applications and techniques in TM 55-1500-335-23 (Nondestructive Inspection Methods manual) and the specific requirements of this technical manual.

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



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

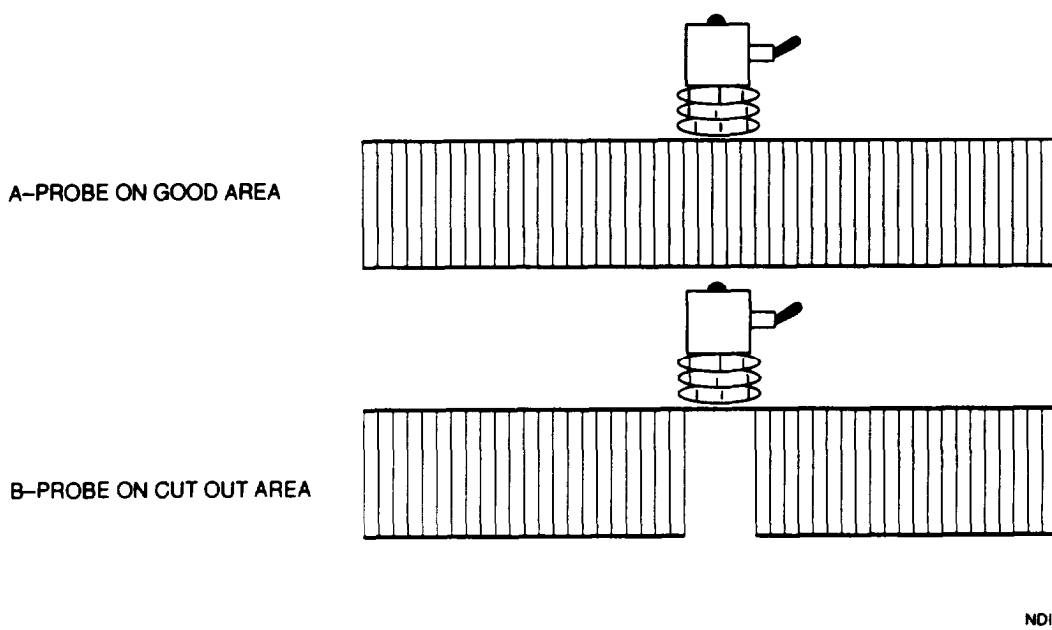


Figure 1-5. Bond Testing Reference Block Displays

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-I-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.

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

WARNING

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

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

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

WARNING

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

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

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

Task	Description
a. Preparation of Part:	Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.
b. Precleaning Procedure:	Refer to TM 1-1500-344-23.
c. Penetrant Application:	The penetrant may be applied by brushing, spraying, or dipping.
d. Penetrant Dwell:	Allow a minimum of 30 minutes dwell time to a maximum of 240 minutes. Extended dwell time may require rewetting of parts.
e. Penetrant Removal/Rinse:	Rinse the part by waterwash using a low-pressure spray (pressure not to exceed 20 PSI) and a temperature of 16°C to 38°C (60°F to 100°F). DO NOT OVERRINSE.
f. Drying Operation:	The parts should be dried in a circulating air dryer with a temperature range from 38°C to 60°C (100°F 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°C to 38°C (60°F to 100°F).
g. Drying/Developer Operation:	If a dry nonaqueous developer is to be used, first dry the part in a drying oven at a temperature not to exceed 60°C (140°F) until dry. Then apply the developer. If an aqueous developer is to be used, then submerge the part in the developer solution immediately after washing. Follow by drying the part in a drying oven as mentioned above. In either case, parts shall be removed from the drying oven as soon as they are dry.
h. Inspect:	Perform inspection under black light.
i. Materials:	Type I, Method B, Level 3 or 4 (post emulsifiable-lypophilic) Penetrant (Refer to Table 1-8).

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

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

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

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

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 the part. This shall include removing the penetrant from cracks as much as possible before disposition of the part. This can be easily accomplished by performing cleaning operations under a black light.

1.4.8 Magnetic Particle (MT) Method.

NOTE

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

NOTE

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

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

1.4.8.1 Magnetic Particle Inspection Equipment. Considerations involved in the selection of magnetic particle inspection equipment include the type of magnetizing current and the location and nature of the inspection. The purpose of this manual is to support the accomplishment of NDI at the AVUM and AVIM levels. This dictates equipment that can be used on or off the helicopter at remote sites. Therefore, magnetic particle procedures in this manual use the electromagnetic yokes or probes and hand-held coils as shown in Figure 1-6. This equipment is common and readily available to AVUM and AVIM levels. Stationary magnetic particle equipment can be used if facilities, required shop equipment, and qualified NDI technicians are available. Refer to TM 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 90o 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.

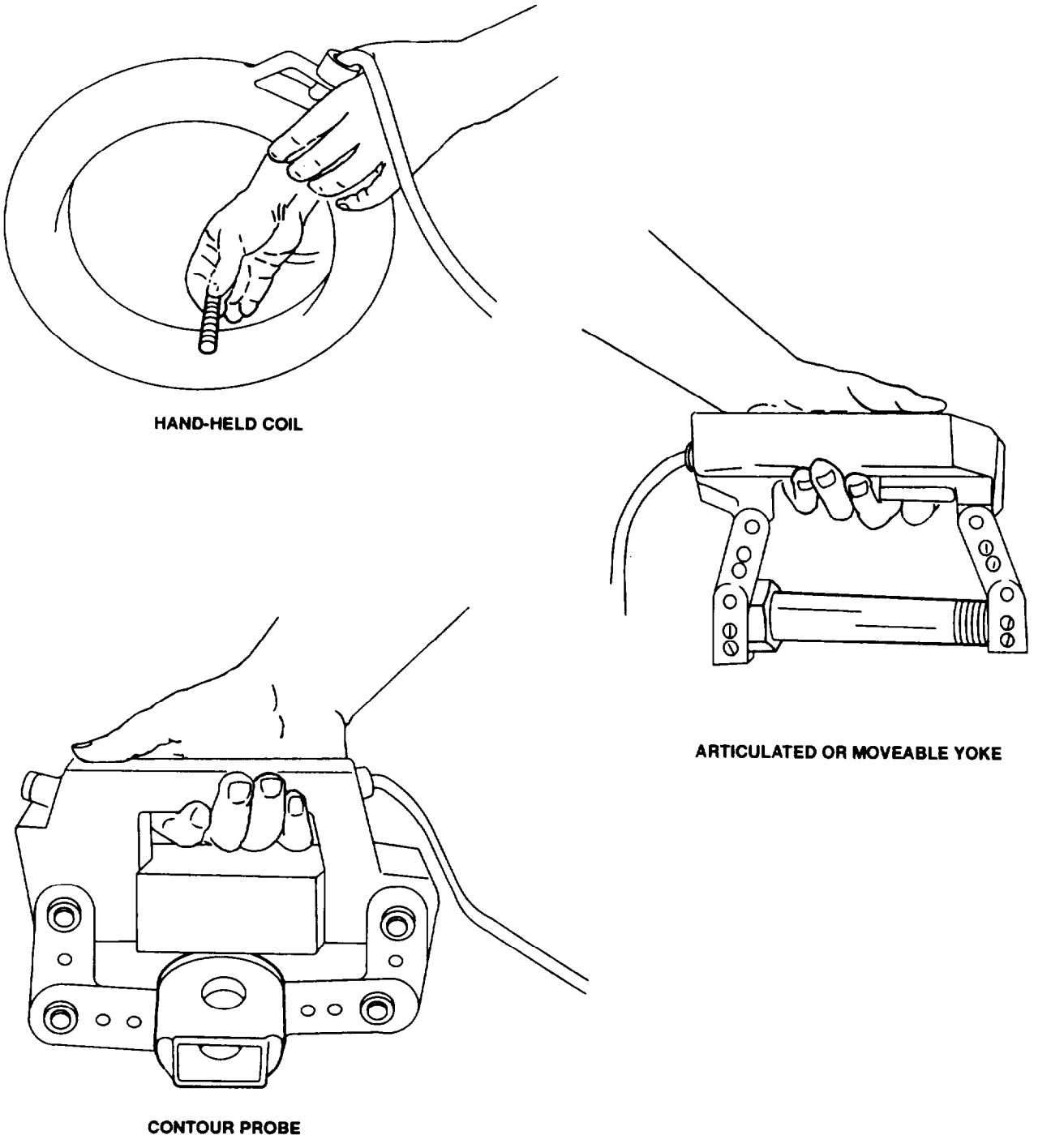


Figure 1-6. Portable Magnetic Particle Inspection Equipment

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 should 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.

CAUTION

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

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

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

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

1.4.10 Radiographic (RT) Method.

NOTE

Radiographic inspection shall be performed in accordance with the general application and techniques in TM 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 materials. This method is used for the inspection of airframe structure for damage, detection of moisture entrapment, structure alignment, and foreign object intrusion. It can sometimes be used in areas otherwise inaccessible to other nondestructive inspections and to verify indications observed by other methods.

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

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

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

WARNING

Radiation Hazard

Assure compliance with all applicable precautions set forth in TM 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.

1.4.11 Eddy Current (ET) Method.

NOTE

Eddy current 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.

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 method will locate surface cracking on any conductive material, but probes and techniques for inspection of magnetic materials may differ considerably from those used on nonferromagnetic materials.

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

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

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

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

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

WARNING

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

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

1.4.11.2.1 Scanning Around Fasteners, Inserts, and Edges of Parts. Shielded probes are recommended any time that the pattern the eddy current field is likely to extend out such that it comes in contact with a feature which would mask the response from a defect. Such features may include edges, fasteners, dissimilar materials attached to the test piece, etc. An unshielded probe can be used around such features, but the effect of those features must be made constant by keeping the distance between the probe and the feature constant. Nonconductive mechanical guides (straight edges, plugs, spacers, etc.) can be used to maintain a constant distance. In fact, the use of non-conductive mechanical guides is useful for shielded and unshielded probes alike. As operators gain experience, they become quite innovative in making guides that maintain constant lift-off, angles,

and distance from features which may mask flaw indication. Common materials for mechanical guides are plastic (polyethylene, acrylic, and polycarbonate), wood, phenolic impregnated material, and resins for casting into shapes (epoxy, polyester, or hot glue). Careful selection of probes and construction of suitable mechanical guides will make possible inspection of problem areas such as sharp edges, tight radii, small openings, and areas near potentially masking features.

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

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

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

1.4.11.4 Sorting Metal Using Eddy Current. In addition to the more common usage for crack detection, eddy current equipment may be used for metal sorting. Electrical conductivity and magnetic permeability are the material characteristics evaluated during this type of inspection. The sorting technique cannot directly identify alloy or even the type of metal. But when there are limited possibilities, conductivity and/or permeability information may permit proper classification (see Figure 1-8). Typically the need for alloy sorting occurs when changes to parts are made to improve performance. For example, a magnesium part that is experiencing severe corrosion is replaced by one made from aluminum. Another example is the replacement of one aluminum part with another, also of aluminum, but made from an alloy having improved strength or corrosion resistance. In both these examples, there may be a need to verify that replacement has been made, and the electrical conductivity of the alloys involved may be sufficiently different to permit verification by a sorting inspection. Another situation is the requirement to NDI a part to confirm a visual indication where the material is not known and cannot be easily determined. Eddy current sorting will quickly determine if the part is ferromagnetic and should be inspected using the magnetic particle method. Also, if the part is nonferromagnetic, which test block (standard) most closely matches the conductivity of the part and, therefore, should be used to adjust the eddy current equipment for crack inspection/verification.

1.4.12 Ultrasonic (UT) Method.

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.

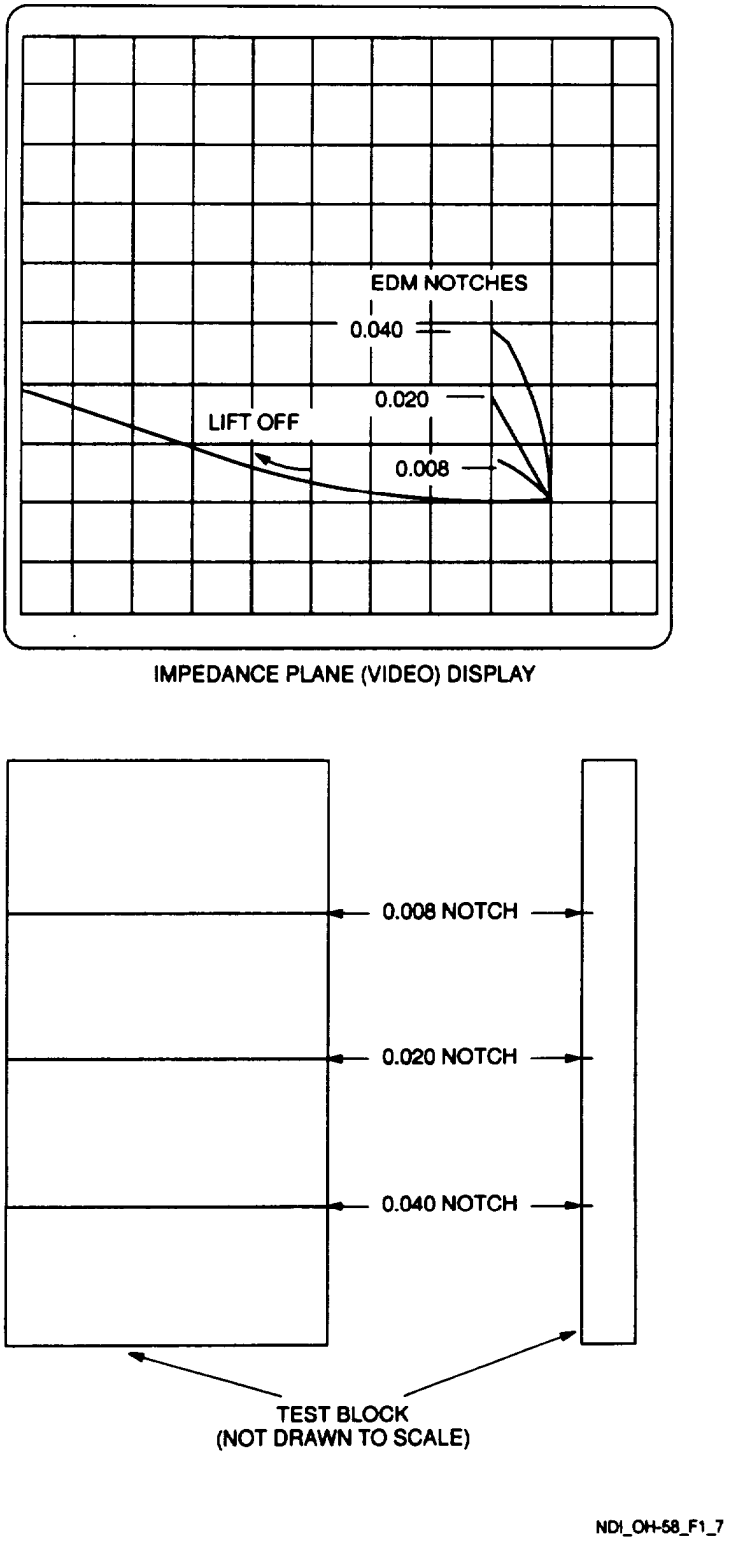
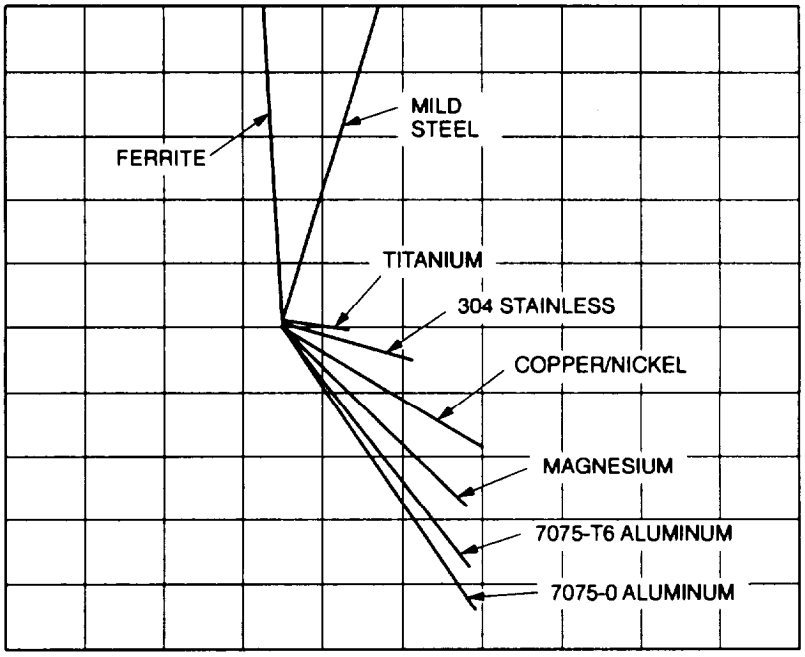


Figure 1-7. Signatures of EDM Notches in Test Block



NDI_OH-58_F1_8

Figure 1-8. Typical Metal Sorting Display

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

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

WARNING

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

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

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

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

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

NOTE

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

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

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

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

1.4.13 Acceptance/Rejection Criteria.

CAUTION

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

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

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

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

1.4.16 Post Cleaning and Restoration of Part or Area 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.

Table 1-7. Equipment Used for NDI

Fluorescent Penetrant Method	Fluorescent Penetrant Inspection Kit Black Light UV Kit Black Light Meter Black Light Bulbs Filter UV
Magnetic Particle Method	Yoke and Coil Kit Black Light Magnetic Particle Inspection Probe Magnetometer
Eddy Current Method	Eddy Current Inspection Unit Cable Assembly, Coaxial 6-feet long (1 required) Reference Block Aluminum (0.008, 0.020, and 0.040 EDM notches) Reference Block Titanium (0.008, 0.020, and 0.040 EDM notches) Reference Block Magnesium (0.008, 0.020, and 0.040 EDM notches) Reference Block - Block of Six Conductivity Samples Probe, straight, shielded surface 100 KHz-500 KHz Probe, right angle, shielded surface 100 KHz-500 KHz, 90o 1/2 inch drop
Ultrasonic Method	Ultrasonic Inspection Unit Cable Assembly, BNC to microdot Transducer 5 MHz 600 Shear 1/4 x 1/4 inch element
Bond Testing Method	Bond Test Inspection Unit Cable Assembly Probe, Mechanical Impedance Analysis Probe Holder, spring loaded Test Block, Composite Defect Standard #1 Test Block, Composite Defect Standard #3 Test Block, Aluminum Honeycomb with 0.020 inch thick aluminum/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	MIL-I-25135	General Services Administration (GSA)	6850-01-703-7406
Magnetic Particle Method			
Fluorescent Magnetic Inspection Compound	14AM	Magnaflux Div. of Illinois Tool Works Inc. 1301 W. Ainsle St. Chicago, IL 60656	6850-00-841-1347
Eddy Current Method			
Teflon Tape	MIL-1-23594	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 St. Rochester, NY 14650	6635-00-412-2071
M-2 Film, Ready Pack 14 inch x 17 inch	145 8926	Eastman Kodak Co. 343 State St. Rochester, NY 14650	6635-00-838-9116
AA-2 Film, Ready Pack 14 inch x 17 inch	145 9205	Eastman Kodak Co. 343 State St. Rochester, NY 14650	6635-00-850-3321

Table 1-8. Materials Used for NDI - Continued

Nomenclature	P/N or Specification	Manufacturer	National Stock Number
Radiographic Method - continued			
AA-2 Film, Ready Pack 8 inch x 10 inch	827 8137	Eastman Kodak Co. 343 State St. Rochester, NY 14650	6635-00-850-3326
Miscellaneous Materials			
Gloves, Protective	ZZ-G-381	General Services Administration (GSA)	8415-00-823-7456
Gloves, Surgeon	E-008	Defense Services Administration (DSA)	1615-01-149-8843
Apron, General Purpose	A-A-55063	General Services Administration (GSA)	8415-00-082-6108
Face Shield	A-A-1770	General Services Administration (GSA)	4240-00-542-2048
Cloth, Low-Lint Cleaning	MIL-C-85043	General Services Administration (GSA)	7920-00-044-9281
Dry-Cleaning Solvent	P-D-680, Type II	General Services Administration (GSA)	6850-00-274-5421
Cleaning Solvent	MIL-C-38736	General Services Administration (GSA)	6850-00-538-0929
Scotch-Brite, Type A	L-P-0050	General Services Administration (GSA)	7920-00-659-9175
Temporary Marking Materials			
Aircraft Marking Pencils (China Marker)	MIL-P-83953 Yellow	General Services Administration (GSA)	7510-00-537-6930

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.

SECTION II

ROTOR GROUP

2. GENERAL.

2.1 CONTENTS. The rotor group inspection items covered in this section are those critical items of the OH-58A/C helicopter rotor blades, rotor head, and components listed in the Rotor Group Inspection Index (Table 2-1). Corresponding inspection figures and applicable text paragraphs are listed opposite each inspection item. The index number for each item may be used to locate it in Figure 2-1.

Table 2-1. Rotor Group Inspection Index

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
*2	Main Rotor Hub Grips	ET	2.2	2-2
*3	Main Rotor Pitch Horn	ET	2.3	2-3
*4	Main Rotor Hub Pin	MT	2.4	2-4
*5	Main Rotor Hub Fitting	MT	2.5	2-5
*6	Main Rotor Trunnion	MT	2.6	2-6
*7	Main Rotor Hub Yoke	MT	2.7	2-7
*8	Main Rotor Blade Latch Retainer Bolt	MT	2.8	2-8
9	Main Rotor Hub Static Stop	ET	2.9	2-9
10	Main Rotor Yoke Pillow Block	ET	2.10	2-10
*11	Main Rotor Blade Bolt	MT	2.11	2-11
*12	Main Rotor Blade	ET	2.12	2-12
*13	Main Rotor Blade	BT	2.13	2-13
*14	Swashplate and Support Assembly Pivot Sleeve	ET	2.14	2-14
15	Swashplate and Support Assembly Stud	MT	2.15	2-15
*16	Swashplate and Support Assembly Inner Ring	ET	2.16	2-16
*17	Swashplate Support	ET	2.17	2-17
*18	Collective Lever Link (Idler)	ET	2.18	2-18
*19	Swashplate and Support Assembly Pin	MT	2.19	2-19
*20	Collective Lever	ET	2.20	2-20
*21	Outer Ring	ET	2.21	2-21

Table 2-1. Rotor Group Inspection Index - Continued

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
22	Inner Cap	ET	2.22	2-22
23	Outer Cap	ET	2.23	2-23
*24	Lever (Idler)	ET	2.24	2-24
*25	Pitch Link Tube Assembly	ET	2.25	2-25
*26	Pylon Idler Link	ET	2.26	2-26
*27	Pylon Swashplate Collar Set	ET	2.27	2-27
*28	Tail Rotor Hub Yoke	ET	2.28	2-28
*29	Tail Rotor Hub Trunnion	MT	2.29	2-29
*30	Tail Rotor Hub Housing	ET	2.30	2-30
*31	Tail Rotor Blades	PT	2.31	2-31
*32	Tail Rotor Blades	BT	2.32	2-32

* Indicates Flight Safety Parts

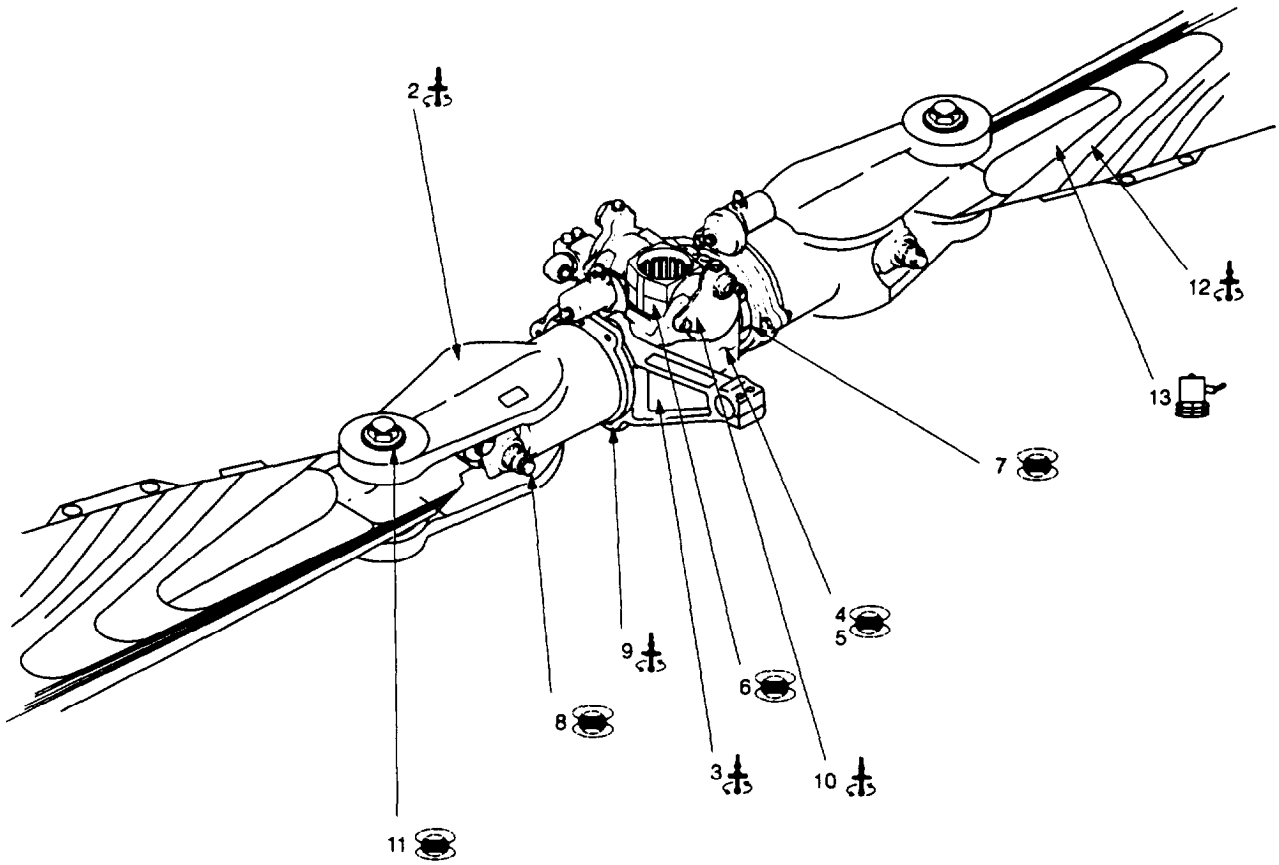


Figure 2-1. Rotor Group (Sheet 1 of 3)

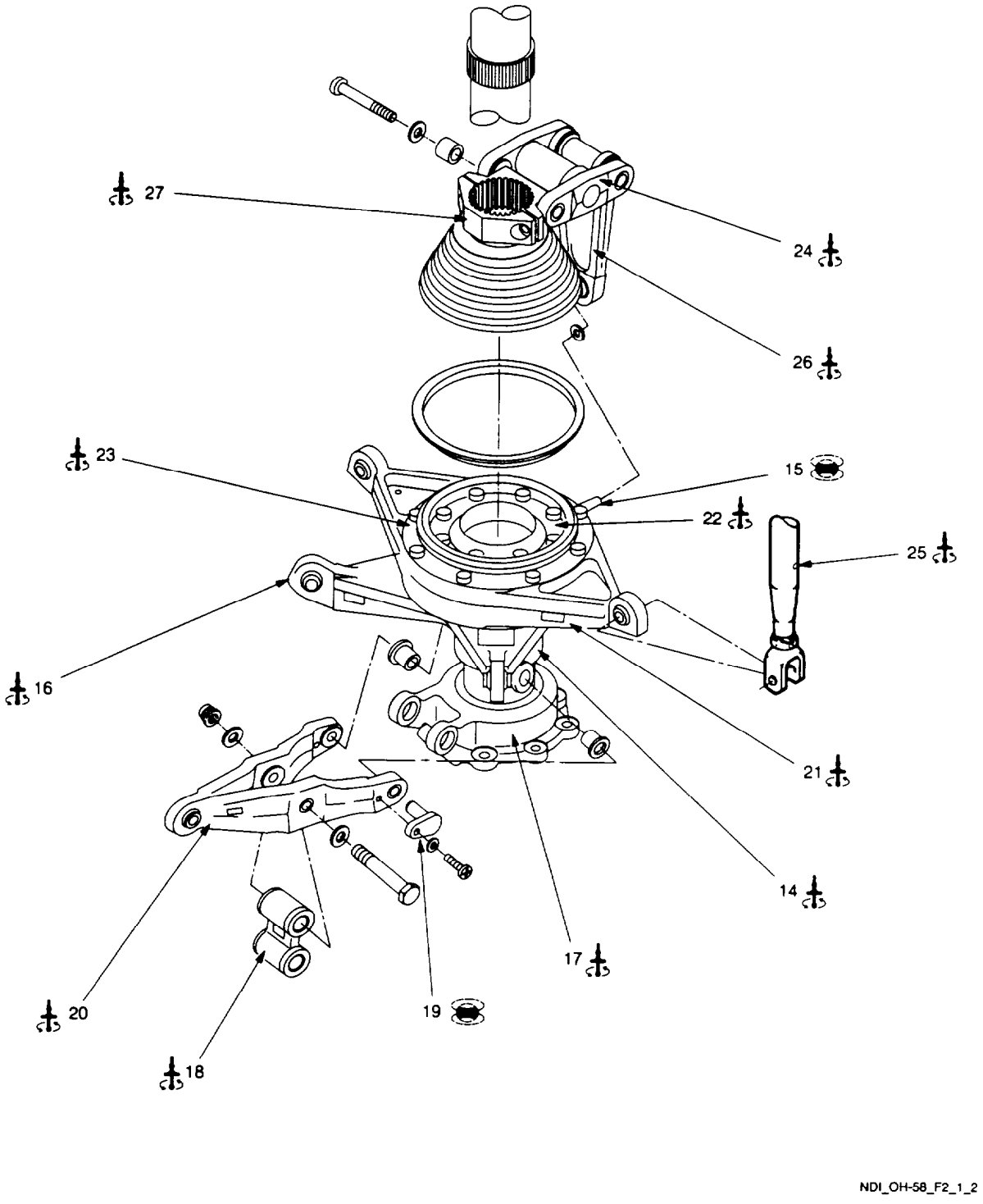


Figure 2-1. Rotor Group (Sheet 2 of 3)

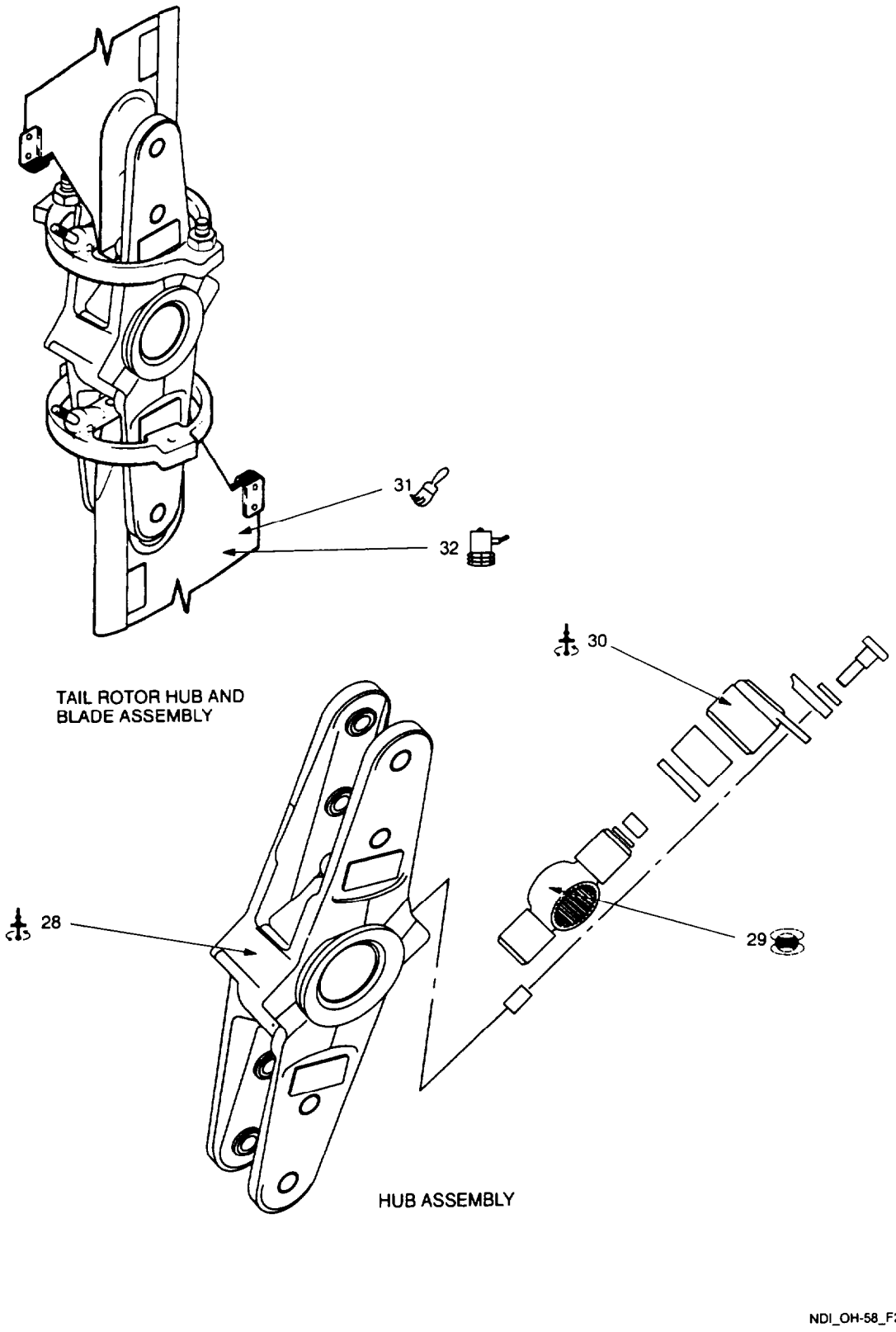


Figure 2-1. Rotor Group (Sheet 3 of 3)

2.2 MAIN ROTOR HUB GRIPS (ET).

2.2.1 Description (Figure 2-1, Index No. 2). The main rotor hub grips provide for attachment of the rotor blades to the main rotor hub. The blade grips are retained on the hub yoke by tension/torsion strap assemblies.

2.2.2 Defects. Defects may occur anywhere on the part. Particular attention shall be given to the inner and outer surfaces of the grip tangs for cracks at the outboard side of the blade bolt holes at the interface of the inside hold diameter and adjacent radius. No cracks are allowed.

2.2.3 Primary Method. Eddy Current.

2.2.3.1 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^{o} 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

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

2.2.3.3 Access. Not applicable.

WARNING

Maintenance Platfoms/Workstands

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

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

2.2.3.5 NDI Equipment Settings.

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

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

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

(1) Null probe on test block.

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

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

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

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

b. Inspect the part.

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

NOTE

Either probe identified in paragraph 2.2.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed steps 2.2.3.5. b. (1), (2), and (3) shall be repeated each time a change is made.

2.2.3.7 Marking and Recording of Indications. Mark and record as required by paragraph 1.3.

2.2.4 Backup Method. None required.

2.2.5 System Securing. The main rotor hub grips, if removed, require installation in accordance with the applicable technical manual listed in Table 1-1.

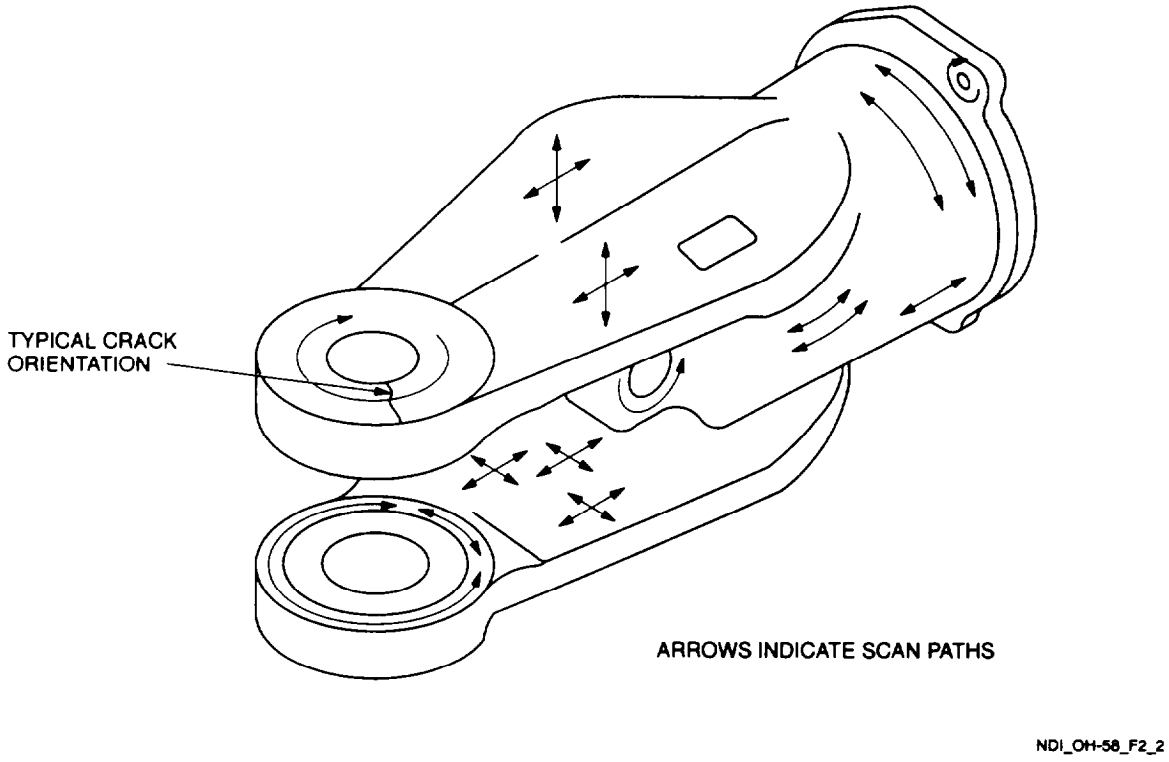


Figure 2-2. Main Rotor Hub Grips

2.3 MAIN ROTOR PITCH HORN (ET).

2.3.1 Description (Figure 2-1, Index No. 3). The pitch horn is a component of the main rotor hub and is used to transmit control inputs to the blade grip.

2.3.2 Defects. Defects may occur anywhere on the surface of the pitch horn. 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^{o} 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

2.3.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. Partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the main rotor pitch horn shall be removed in accordance with the applicable technical manuals listed in Table 1-1.2

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

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

2.3.3.5 NDI Equipment Settings.

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

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

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

(1) Null probe on test block.

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

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040 inch notch in test block. (Refer to standard 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 are cause for rejection.

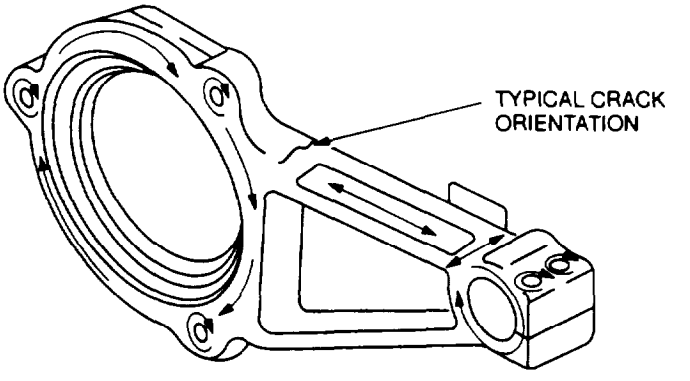


Figure 2-3. Main Rotor Pitch Horn

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 Indications. Mark and record as required by paragraph 1.3.

2.3.4 Backup Method. None required.

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

2.4 MAIN ROTOR HUB PIN (MT).

2.4.1 Description (Figure 2-1, Index No. 4). The main rotor hub pin is a component of the main rotor hub that provides for attachment of the main rotor hub assembly to the blade assembly.

2.4.2 Defects. Defects may occur anywhere on the pin. No cracks are allowed.

2.4.3 Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

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

e. Consumable Materials, refer to Table 1-8

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

NOTE

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

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

2.4.3.3 Access. Not applicable.

2.4.3.4 Preparation of Part. The part 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 Magnetic Particle Method, paragraph 1.4.8.

2.4.3.6 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 2-4.

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

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

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

d. Inspect for cracks using the black light.

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

2.4.3.8 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.

2.4.4 Backup Method. None required.

2.4.5 System Securing. Clean the main rotor hub 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 main rotor hub pin requires installation in accordance with the applicable technical manuals listed in Table 1-1.

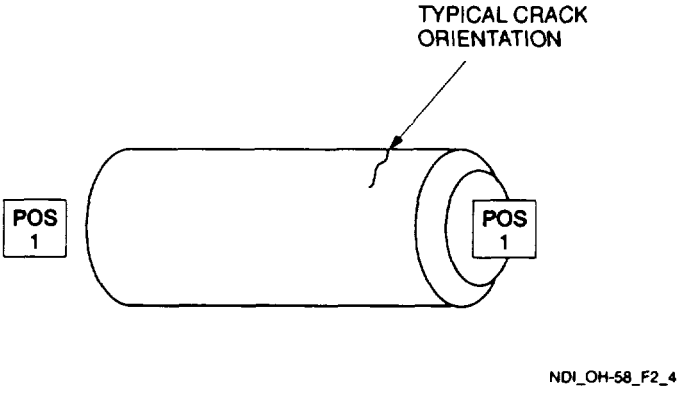


Figure 2-4. Main Rotor Hub Pin

2.5 MAIN ROTOR HUB FITTING (MT).

2.5.1 Description (Figure 2-1, Index No. 5) The main rotor hub fitting is a component of the main rotor hub that provides for attachment of the-main rotor hub assembly to the blade assembly.

2.5.2 Defects. Defects may occur anywhere on the fitting. No cracks are allowed.

2.5.3 Primary Method. Magnetic Particle.

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

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

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

2.5.3.3 Access. Not applicable.

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

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

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

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 2.5.3.8.

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

2.5.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

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

2.5.4 Backup Method. None required.

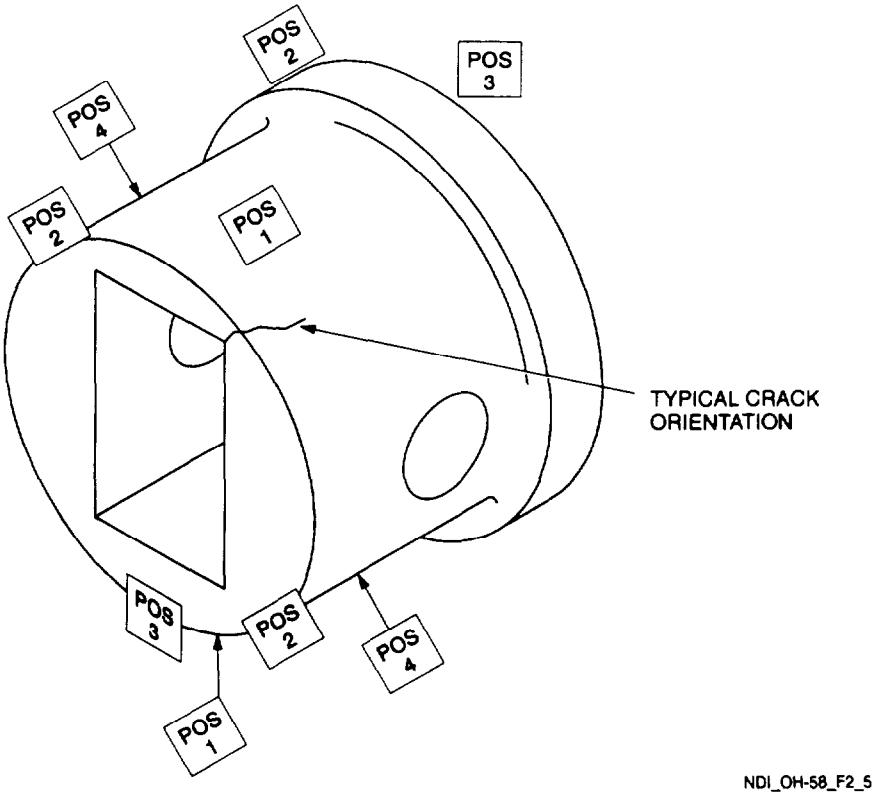


Figure 2-5. Main Rotor Hub Fitting

2.5.5 System Securing. Clean the main rotor hub 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 main rotor hub fitting requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.6 MAIN ROTOR TRUNNION (MT).

2.6.1 Description (Figure 2-1. Index No. 6). The trunnion is the center of the pitch axis and is housed by pillow blocks. The pillow blocks are attached to the main rotor hub yoke, which couples the main rotor blades.

2.6.2 Defects. Defects may occur anywhere on the trunnion. 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, refer to Table 1-8

e. Consumable Materials, refer to Table 1-8

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

NOTE

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

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

2.6.3.3 Access. Not applicable.

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.

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 Position 2.

2.6.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per 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 for 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 trunnion 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 trunnion requires installation in accordance with the applicable technical manuals listed in Table 1-1.

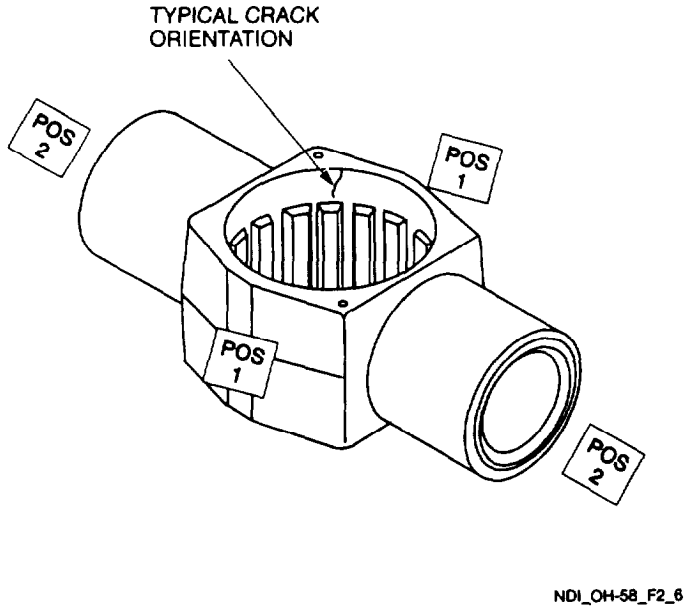


Figure 2-6. Main Rotor Trunnion

2.7 MAIN ROTOR HUB YOKE (MT).

2.7.1 Description (Figure 2-1, Index No. 7). The yoke contains assemblies which retain the blades inside the yoke and provides for changes in pitch angle.

2.7.2 Defects. Defects may occur anywhere on the yoke. No cracks are allowed.

2.7.3 Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

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

e. Consumable Materials, refer to Table 1-8

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

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

2.7.3.3 Access. Not applicable.

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. Refer to Magnetic Particle Method, paragraph 1.4.8.

2.7.3.6 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 2-7.

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 2.7.3.8.

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

2.7.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

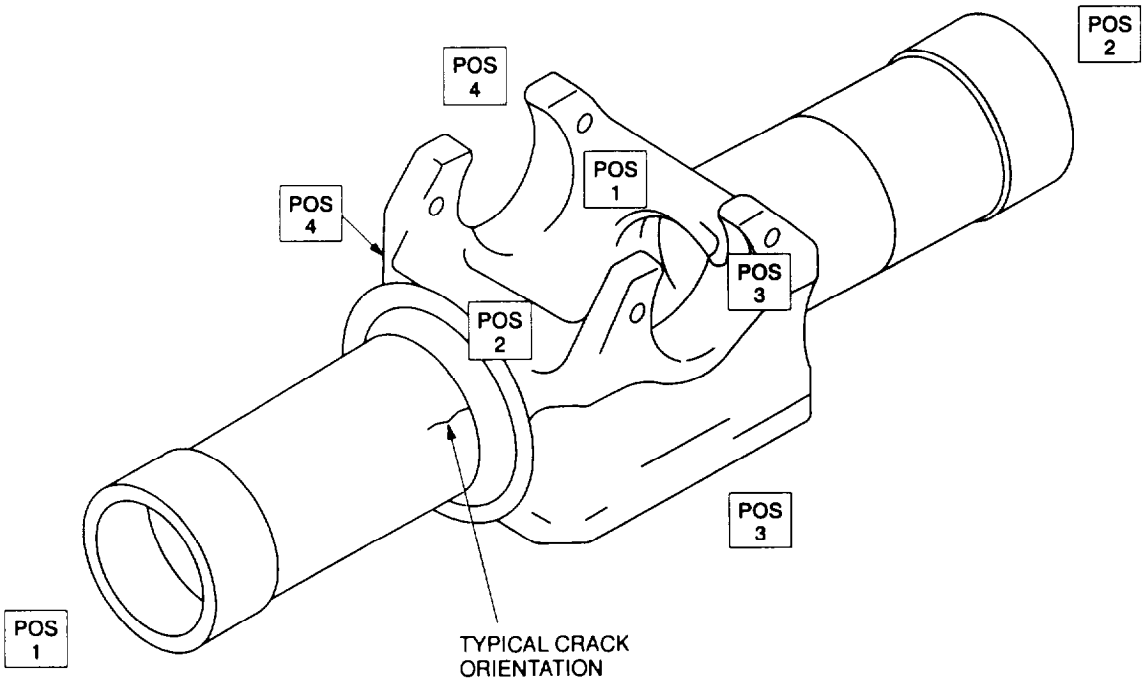


Figure 2-7. Main Rotor Hub Yoke

2.7.3.8 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.

2.7.4 Backup Method. None required.

2.7.5 System Securing. Clean the main rotor 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 requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.8 MAIN ROTOR BLADE LATCH RETAINER BOLT (MT).

2.8.1 Description (Figure 3-1. Index No. 8). The bolt and blade latch retainer provides the means of adjusting the blade latches for blade alignment.

2.8.2 Defects. Defects may occur anywhere on the bolt. Particular attention shall be given to thread transition area and radius areas. 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, refer to Table 1-8

e. Consumable Materials, refer to Table 1-8

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

NOTE

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

2.8.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the bolt and blade latch retainer removed in accordance with the applicable technical manuals listed in Table 1-1.

2.8.3.3 Access. Not applicable.

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. Position required for this inspection is illustrated in Figure 2-8.

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

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

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

d. Inspect for cracks using the black light.

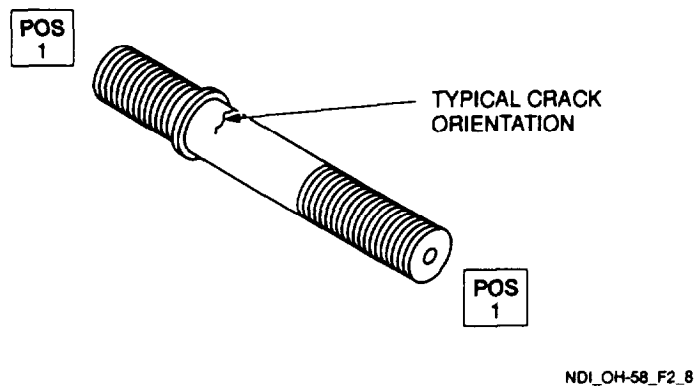


Figure 2-8. Main Rotor Blade Latch Retainer Bolt

2.8.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per 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 bolt 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 blade latch retainer bolt requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.9 MAIN ROTOR HUB STATIC STOP (ET).

2.9.1 Description (Figure 2-1, Index No. 9) The static stop is a component of the main rotor hub which limits movement of strap fittings and provides a contoured surface between mast and hub assemblies.

2.9.2 Defects. Defects may occur anywhere on the surface of the stop. No cracks are allowed.

2.9.3 Primary Method. Eddy Current.

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

a. Eddy Current Inspection Unit

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

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90^{o} 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

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

2.9.3.3 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 helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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

2.9.3.5 NDI Equipment Settings.

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

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

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

(1) Null probe on test block.

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

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

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

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

b. Inspect the part.

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

NOTE

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

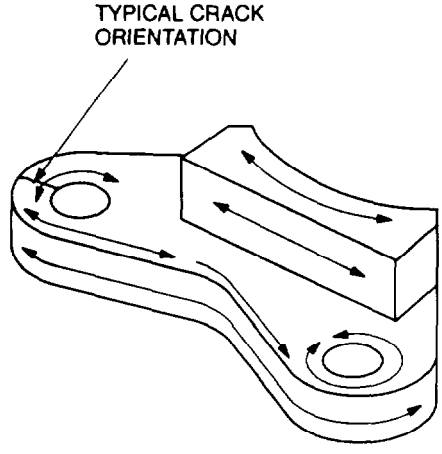


Figure 2-9. Main Rotor Hub Static Stop

2.9.3.7 Marking and Recording of Inspection Results. Mark and record as required per paragraph 1.3.

2.9.4 Backup Method. None required.

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

2.10 MAIN ROTOR YOKE PILLOW BLOCK (ET).

2.10.1 Description (Figure 2-1. Index No. 10). Oil lubricated hubs have pillow blocks with a sight glass which provide for observing oil level in the pillow block reservoir. A filler plug is provided for filling the reservoir with oil. Grease lubricated hubs have a grease fitting which provides for servicing of the hub. The pillow block includes two bearings that are utilized with the flapping axis trunnion.

2.10.2 Defects. Defects may occur anywhere on the block. No cracks are allowed.

2.10.3 Primary Method. Eddy Current.

2.10.3.1 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^{o} 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

2.10.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. Partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the pillow block 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 helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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

2.10.3.5 NDI Equipment Settings.

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

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

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

(1) Null probe on test block.

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

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

2.10.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-10.

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 are cause for rejection.

NOTE

Either probe identified in paragraph 2.10.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed steps 2.10.3.5b. (1), (2), and (3) shall be repeated each time a change is made.

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

2.10.4 Backup Method. None required.

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

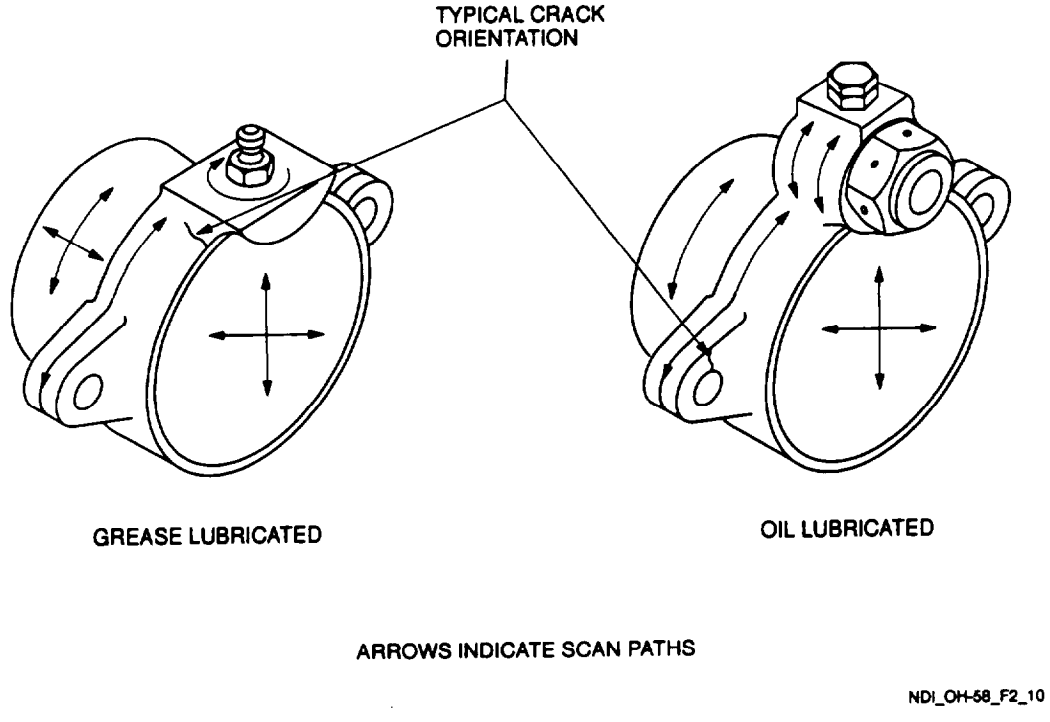


Figure 2-10. Main Rotor Yoke Pillow Block

2.11 MAIN ROTOR BLADE BOLT (MT).

2.11.1 Description (Figure 2-1, Index No. 11). The main rotor blade bolt secures the main rotor blade to the grip assembly.

2.11.2 Defects. Particular attention shall be given to threaded area and bolt head radius area. Nc 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, refer to Table 1-8
e. Consumable Materials, refer to Table 1-8
f. Aircraft Marking Pencil, refer to Table 1-8

NOTE

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

2.11.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the main rotor blade belt 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 part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.11.3.5 NDI Equipment Settings. 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 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.

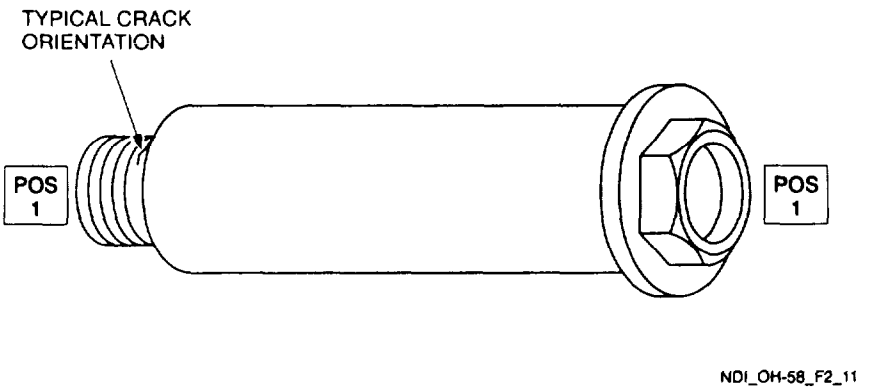


Figure 2-11. Main Rotor Blade Bolt

2.11.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per 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.

2.11.5 System Securing. Clean the blade bolt 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 blade bolt requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.12 MAIN ROTOR BLADE (ET).

2.12.1 Description (Figure 2-1, Index No. 12). Main rotor blades are of all metal construction with an aluminum alloy honeycomb core, aluminum skins and nose block. All structural components are joined by metal to metal bonding. The blades are set in hub grips at a preconing angle and secured by a single retaining bolt in each grip. A trim tab is provided on the trailing edge for tracking adjustments.

2.12.2 Defects. Inspect for cracks around screw heads in area of inertia weights and in the tip cap area and cracks associated with mechanical damage, (i.e. sharp dents, scratches, etc.). No cracks are allowed.

2.12.3 Primary Method. Eddy Current.

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

a. Eddy Current Inspection Unit

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

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90^{o} 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

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

2.12.3.3 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 helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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

2.12.3.5 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	- 56o		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

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

(1) Null probe on test block.

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

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

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

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

b. Inspect the part.

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

NOTE

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

2.12.3.7 Marking and Recording of Indications. Mark and record as required by paragraph 1.3.

2.12.4 Backup Method. Refer to paragraph 1.4.7.

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

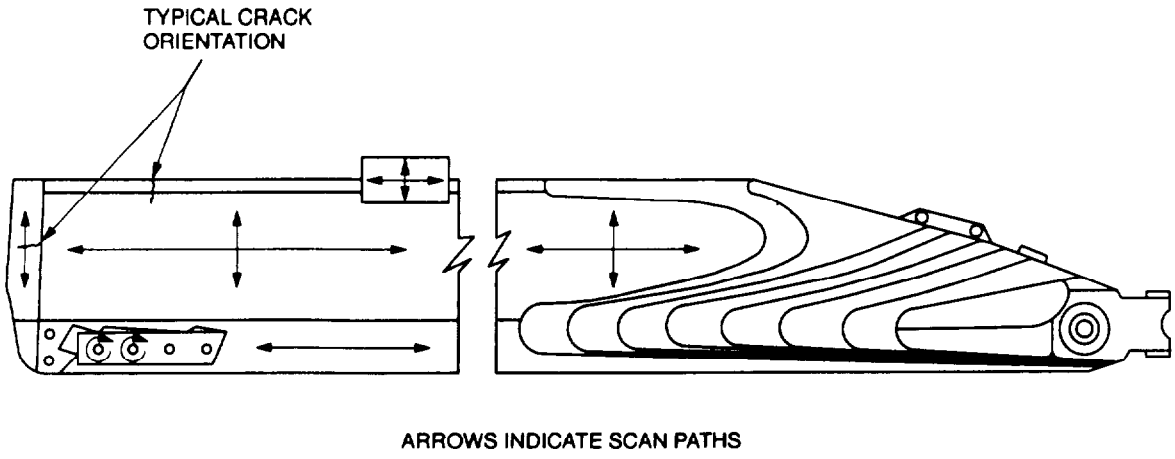


Figure 2-12. Main Rotor Blade

2.13 MAIN ROTOR BLADE (BT).

2.13.1 Description (Figure 3-1, Index No. 13). Main rotor blades are of all metal construction with aluminum skins, spar, doublers and closure blocks. All structural components are joined by metal to metal bonding. A trim tab is provided on the trailing edge for tracking adjustment.

2.13.2 Defects. Void damage may occur anywhere on either side of the blade.

NOTE

A void is defined as an unbonded area that is suppose to be bonded. Many subdefinitions are given such as bond separation, delamination, lack of adhesive, gas pocket, misfit, etc. This procedure makes no distinction among these instead grouping under the general term "void."

2.13.3 Primary Method. Bond Testing.

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

a. Bond Test Unit

b. Probe, Mechanical Impedance Analysis

c. Probe Holder

d. Cable Assembly

e. Test block, metal honeycomb with skin thickness closest to that of the panel to be inspected (refer to Appendix C)

f. Teflon Tape, refer to Table 1-8

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

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

2.13.3.3 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 helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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

2.13.3.5 NDI Equipment Settings. Refer to Bond Testing Equipment, paragraph 1.4.6.1.

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

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

H	- Pos 40%
V	- Pos 80%
PHASE REF	- 0
DRIVE	- MID

c. Press SET and select DISPLAY - PHASE.

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

e. Place probe on void area of 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

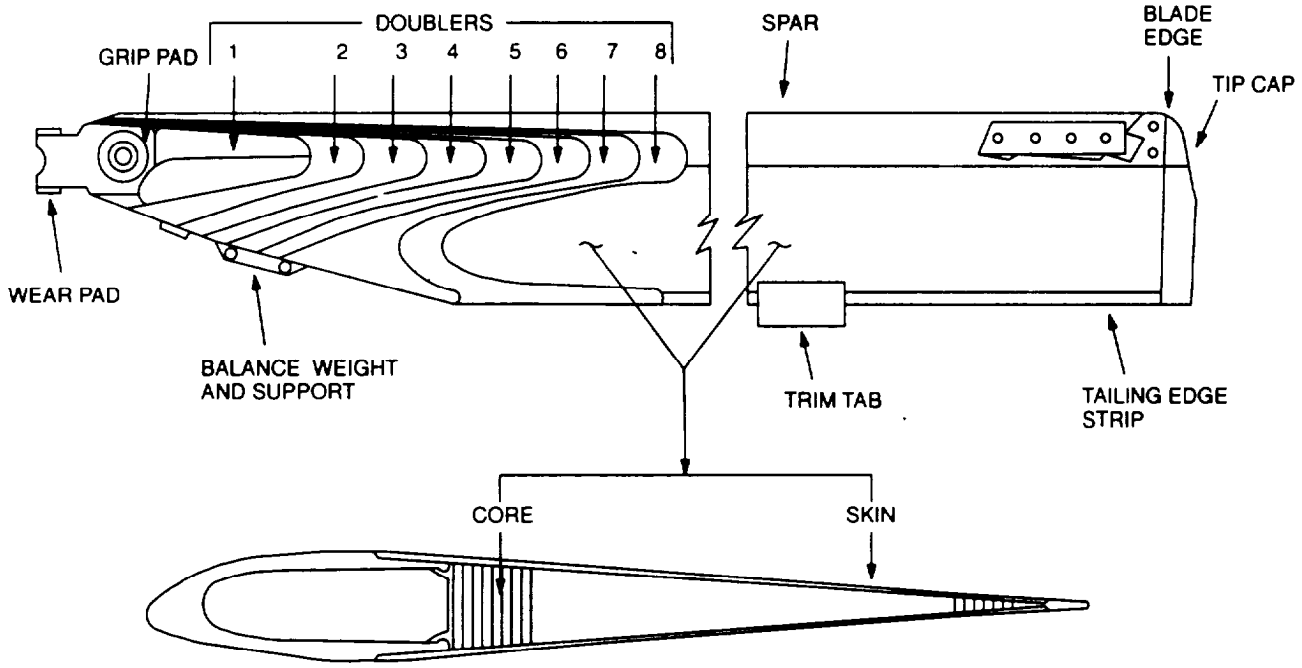
If during setup the flying spot deflects upward, or to the side, when the probe passes over the bad part, instead of the desired down deflection toward the alarm box, Press SPCL and toggle to a different phase setting (90, 180, or 270) and repeat (d) and (e). Continue to try phase setting until the flying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

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

2.13.3.6 Inspection Procedure. Refer to Bond Test Method, paragraph 1.4.6 and inspection areas are shown in Figure 2-13.

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



- INSPECT FOR VOIDS UNDER:
  - BALANCE WEIGHT AND SUPPORT
  - GRIP PADS
  - WEAR PADS
- INSPECT FOR VOIDS BETWEEN:
  - SKIN AND CORE
  - SKIN AND TRAILING EDGE STRIP
  - SKIN AND SPAR
- INSPECT EACH DOUBLER FOR SEPARATION / DELAMINATION ESPECIALLY DOUBLERS NO. 7 AND 8.
- INSPECT BLADE WITHIN 0.250 INCH FROM EDGE AT THE TIP CAP FOR VOIDS.

NDI_OH-58_F2_13

Figure 2-13. Main Rotor Blade

NOTE

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

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

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

NOTE

Attention shall be directed to accurately marking the boundaries of all voids on both sides of the blade. These marking will be need to determine acceptance/rejection criteria in accordance with the applicable technical manuals listed in Table 1-1.

2.13.4 Backup Method. None required

2.13.5 System Securing. None required.

2.14 SWASHPLATE AND SUPPORT ASSEMBLY PIVOT SLEEVE (ET).

2.14.1 Description (Figure 2-1, Index No. 14). The swashplate is mounted to a pivot sleeve which permits it to be tilted in any direction.

2.14.2 Defects. Defects may occur anywhere on the part. 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^{o} 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 swashplate and support assembly pivot sleeve removed in accordance with the applicable technical manuals listed in Table 1-1.

2.14.3.3 Access. Not applicable.

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

2.14.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit NORTEC-19e^{II}.

Frequency F1	- 200 KHz	F2	- off
Hdb	- 57.0		
Vdb	- 69.0		
Rot	- 56^{o}		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
v Pos	- 20%		

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

(1) Null probe on test block.

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

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

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

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

b. Inspect the part.

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

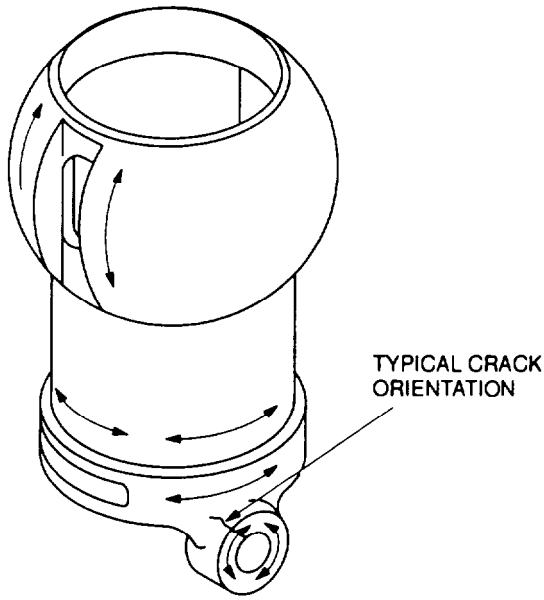


Figure 2-14. Swashplate and Support Assembly Pivot Sleeve

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 2.14.3.5b. (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. Refer to paragraph 1.4.7.

2.14.5 System Securing. The pivot sleeve requires installation in accordance with the applicable technical manual listed in Table 1-1.

2.15 SWASHPLATE AND SUPPORT ASSEMBLY STUD (MT).

2.15.1 Description (Figure 2-1, Index No. 15). The stud is pressed into the outer ring which is part of the swashplate support assembly.

2.15.2 Defects. Inspect for cracks in the visible portion of the stud. No cracks are allowed.

2.15.3 Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

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

e. Consumable Materials, refer to Table 1-8

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

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

2.15.3.3 Access. Not applicable.

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

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

2.15.3.6 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 2-15.

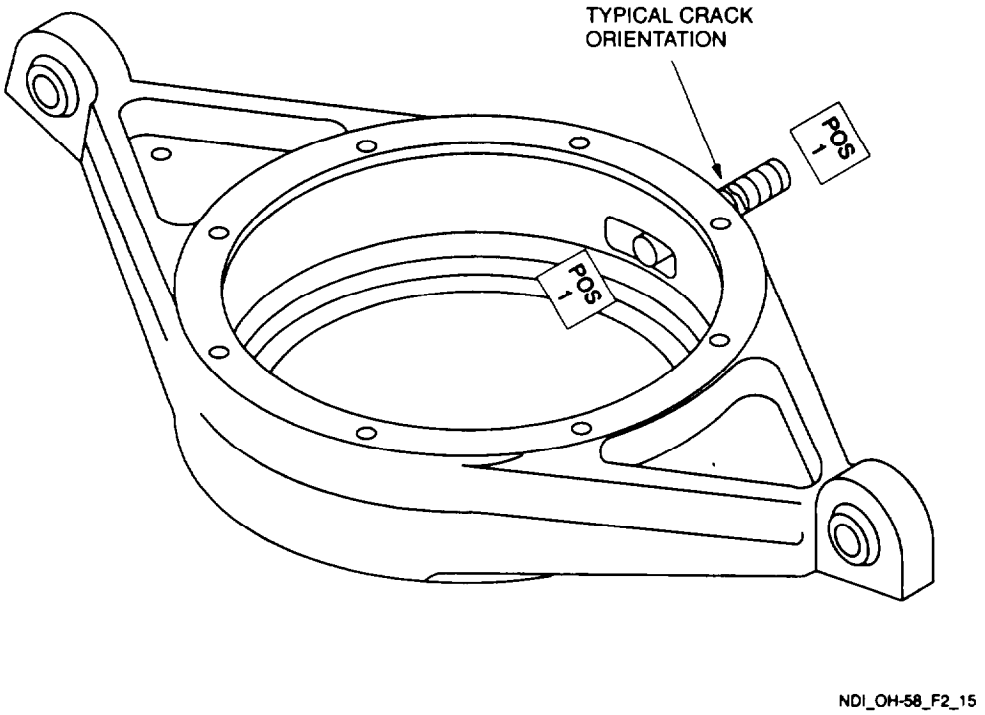


Figure 2-15. Swashplate and Support Assembly Stud

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

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

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

d. Inspect for cracks using the black light.

2.15.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

2.15.3.8 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.

2.15.4 Backup Method. Refer to paragraph 1.4.7.

2.15.5 System Securing. Clean the stud 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 outer ring requires installation in accordance with the applicable technical manuals listed in Table 1-1.

2.16 SWASHPLATE AND SUPPORT ASSEMBLY INNER RING (ET).

2.16.1 Description (Figure 2-1. Index No. 16). The inner ring is a stationary component of the swashplate assembly, and through linkage transmits cyclic inputs to the main rotor.

2.16.2 Defects. Cracks may occur anywhere on the inner ring. No cracks are allowed.

2.16.3 Primary Method. Eddy Current.

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

a. Eddy Current Inspection Unit

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

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90^{o} 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

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

2.16.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands

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

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

2.16.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit NORTEC-19e^{II}.

Frequency F1	- 200 KHz	F2	- off
Hdb	- 57.0		
Vdb	- 69.0		
Rot	- 56^{o}		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

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

(1) Null probe on test block.

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

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

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

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

b. Inspect the part.

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

NOTE

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

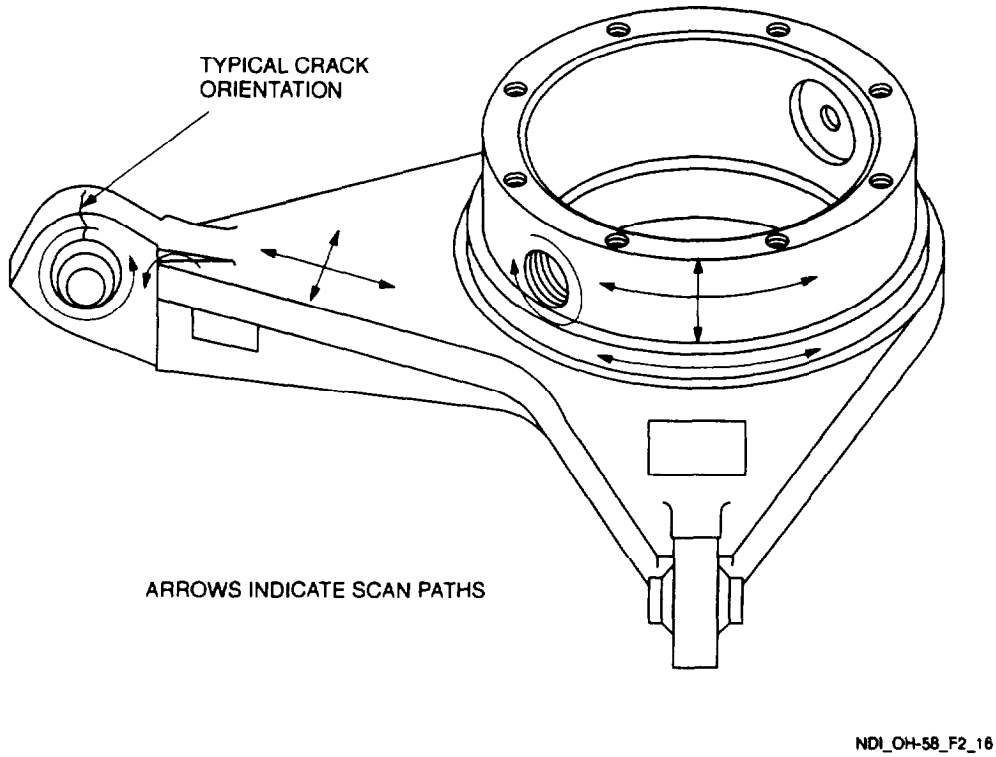


Figure 2-16. Swashplate and Support Assembly Inner Ring

2.16.3.7 Marking and Recording of Indications. Mark and record as required by paragraph 1.3.

2.16.4 Backup Method. Refer to paragraph 1.4.7.

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

2.17 SWASHPLATE SUPPORT (ET).

2.17.1 Description (Figure 2-1, Index No. 17). The swashplate support supports the swashplate assembly.

2.17.2 Defects. Cracks may occur anywhere on the support. No cracks are allowed.

2.17.3 Primary Method. Eddy Current.

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

a. Eddy Current Inspection Unit

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

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90^{o} 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

2.17.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. Partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the swashplate support 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 helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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

2.17.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit NORTEC-19e^{II}.

Frequency F1	- 200 KHz	F2	- off
Hdb	- 57.0		
Vdb	- 69.0		
Rot	- 56^{o}		
Probe drive	- mid		
LPF	-100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

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

(1) Null probe on test block.

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

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

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

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

b. Inspect the part.

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

NOTE

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

2.17.3.7 Marking and Recording of Indications. Mark and record as required by paragraph 1.3.

2.17.4 Backup Method. Refer to paragraph 1.4.7.

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

2.18 COLLECTIVE LEVER LINK (IDLER) (ET).

2.18.1 Description (Figure 2-1, Index No. 18). The collective lever link attaches to the support pylon and the collective lever to control pitch inputs to the rotor blades.

2.18.2 Defects. Cracks may occur anywhere on the link. No cracks are allowed.

2.18.3 Primary Method. Eddy Current.

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

a. Eddy Current Inspection Unit

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

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90^{o} 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

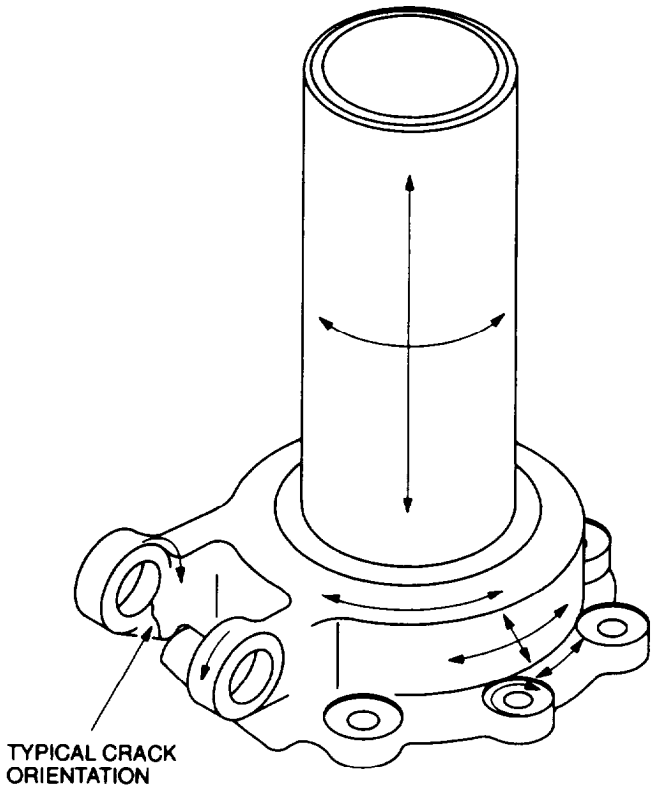
g. Consumable Materials, refer to Table 1-8

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

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

2.18.3.3 Access. Not applicable.

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



ARROWS INDICATE SCAN PATHS

NDI_OH-58_F2_17

Figure 2-17. Swashplate Support

2.18.3.5 NDI Equipment Settings.

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

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

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

(1) Null probe on test block.

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

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

2.18.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-18.

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

b. Inspect the part.

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

NOTE

Either probe identified in paragraph 2.18.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed steps 2.18.3.5.b. (1), (2), and (3) shall be repeated each time a change is made.

2.18.3.7 Marking and Recording of Indications. Mark and record as required by paragraph 1.3.

2.18.4 Backup Method. Refer to paragraph 1.4.7.

2.18.5 System Securing. The collective lever link requires installation in accordance with the applicable technical manual listed in Table 1-1.

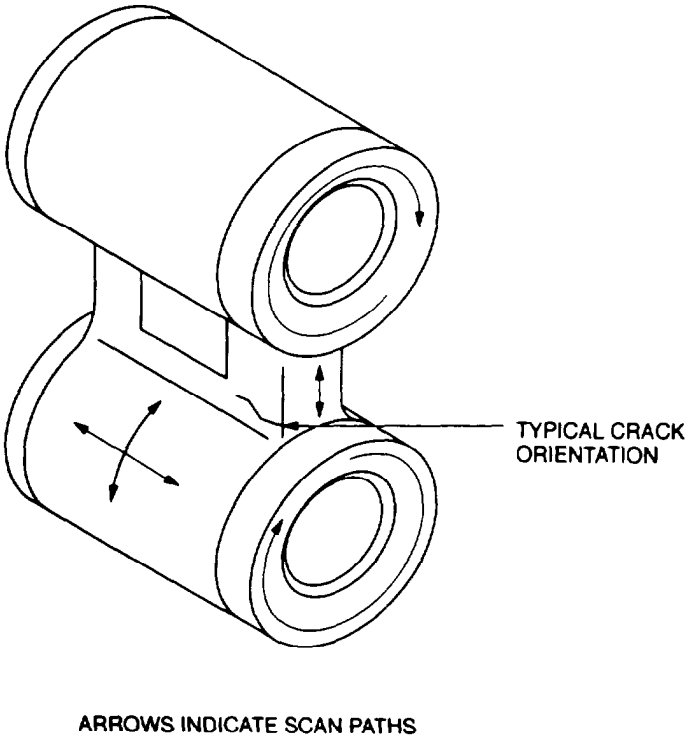


Figure 2-18. Collective Lever Link (Idler)

2.19 SWASHPLATE AND SUPPORT ASSEMBLY PIN (MT).

2.19.1 Description (Figure 2-1, Index No, 19). The pin connects the collective lever to the pivot sleeve.

2.19.2 Defects. Defects may occur anywhere on the pin. No cracks are allowed.

2.19.3 Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

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

e. Consumable Materials, refer to Table 1-8

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

NOTE

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

2.19.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the swashplate and support assembly pin removed in accordance with the applicable technical manuals listed in Table 1-1.

2.19.3.3 Access. Not applicable.

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

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

2.19.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Position required for this inspection are illustrated in Figure 2-19.

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

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

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

d. Inspect for cracks using the black light.

2.19.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

2.19.3.8 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.

2.19.4 Backup Method. Refer to paragraph 1.4.7.

2.19.5 System Securing. Clean the 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 pin requires installation in accordance with the applicable technical manuals listed in Table 1-1.

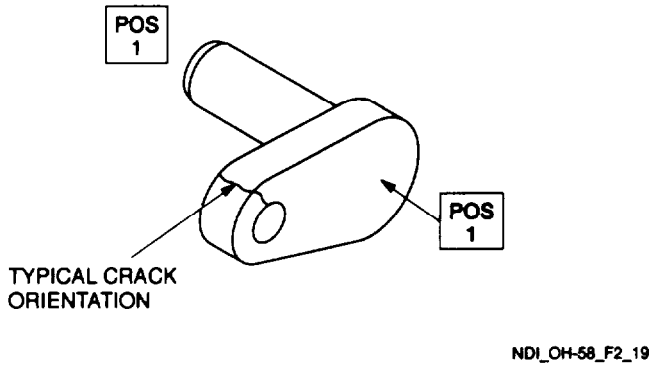


Figure 2-19. Swashplate and Support Assembly Pin

2.20 COLLECTIVE LEVER (ET).

2.20.1 Description (Figure 2-1. Index No. 20). The collective lever is used in conjunction with the cyclic control to control pitch inputs to the rotor blades.

2.20.2 Defects. Defects may occur anywhere on the part. 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 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

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

2.20.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands

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

2.20.3.4 Preparation of Part. The collective lever 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-19e".

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

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

(1) Null probe on test block.

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

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040 inch notch in test block. (Refer to 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.

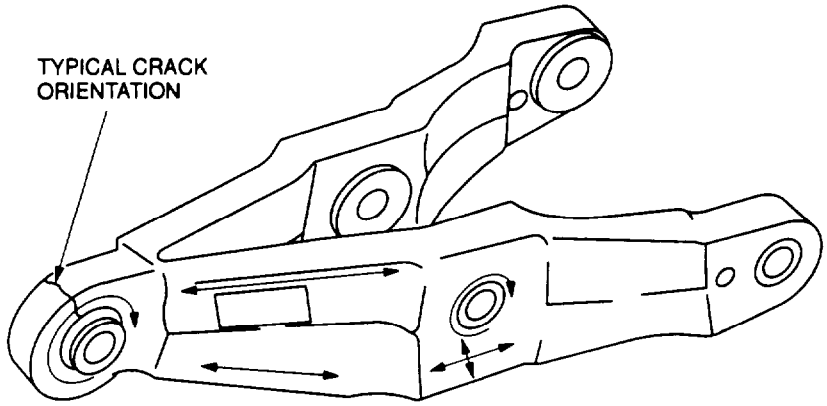


Figure 2-20. Collective Lever

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

b. Inspect the part.

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

NOTE

Either probe identified in paragraph 2.20.3.1 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.

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

2.20.4 Backup Method. Refer to paragraph 1.4.7.

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

2.21 OUTER RING (ET).

2.21.1 Description (Figure 2-1. Index No. 21). The outer ring is a rotating component part of the swashplate assembly and through linkage transmits pitch control to the main rotor blades.

2.21.2 Defects. Defects may occur anywhere on the part. No cracks are allowed.

2.21.3 Primary Method. Eddy Current.

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

a. Eddy Current Inspection Unit

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

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

d. Cable Assembly

e. Reference Block, three-notched 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. Partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the outer ring 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 helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

2.21.3.4 Preparation of Part. The outer ring 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	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
V Pos	- 20%		

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

(1) Null probe on test block.

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

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

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

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

b. Inspect the part.

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

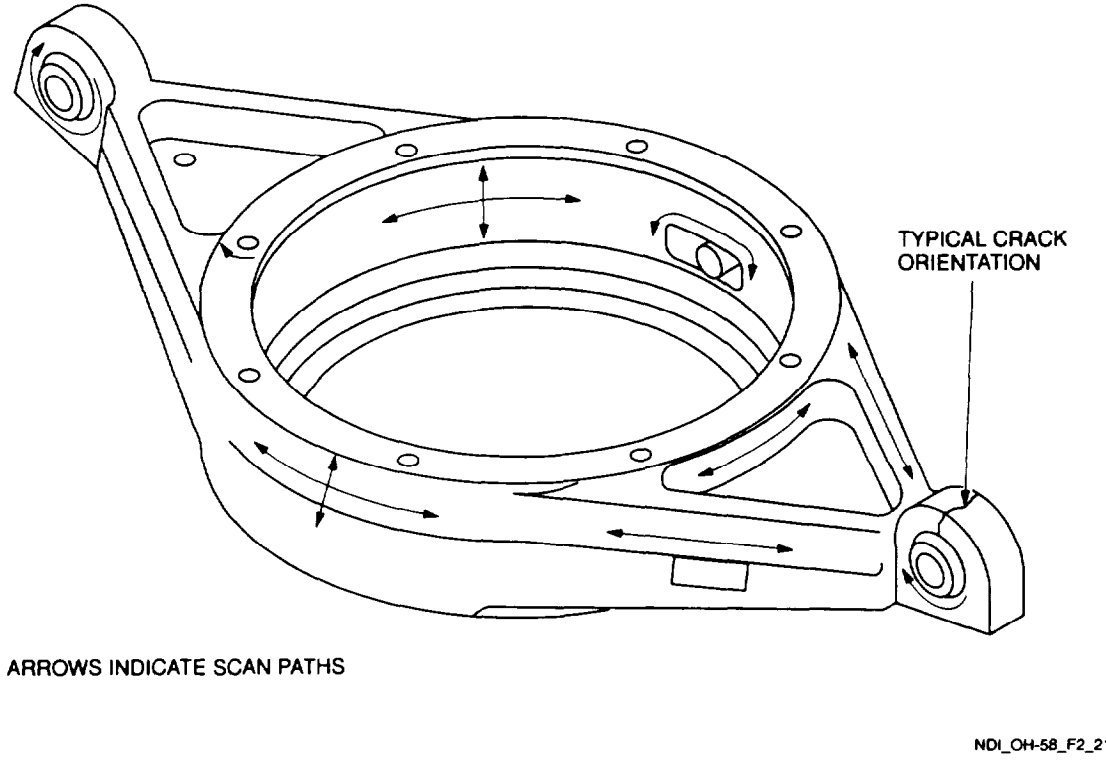


Figure 2-21. Outer Ring

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 Indications. Mark and record as required by paragraph 1.3.

2.21.4 Backup Method. Refer to paragraph 1.4.7.

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

2.22 INNER CAP (ET).

2.22.1 Description (Figure 2-1. Index No. 22). The inner cap retains the top half of the bearing set within the outer ring.

2.22.2 Defects. Defects may occur anywhere on the part. No cracks are allowed.

2.22.3 Primary Method. Eddy Current.

2.22.3.1 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

2.22.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the inner cap 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.

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

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

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

(1) Null probe on test block.

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

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

2.22.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-22.

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 are cause for rejection.

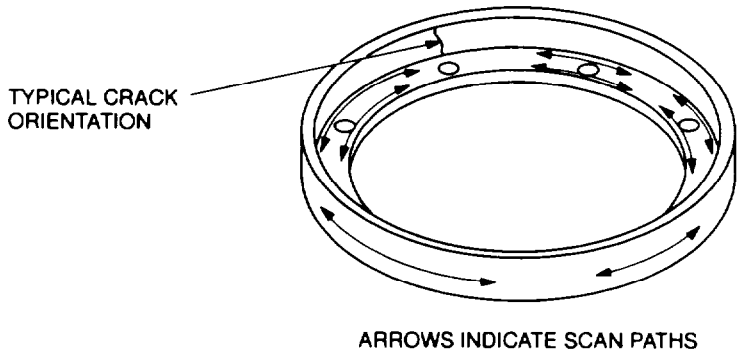


Figure 2-22. Inner Cap

NOTE

Either probe identified in paragraph 2.22.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed steps 2.22.3.5b. (1), (2), and (3) shall be repeated each time a change is made.

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

2.22.4 Backup Method. Refer to paragraph 1.4.7.

2.22.5 System Securing. The inner cap requires installation in accordance with the applicable technical manual listed in Table 1-1.

2.23 OUTER CAP (ET).

2.23.1 Description (Figure 2-1. Index No. 23). The outer cap retains the duplex bearings within the outer ring.

2.23.2 Defects. Defects may occur anywhere on the part. No cracks are allowed.

2.23.3 Primary Method. Eddy Current.

2.23.3.1 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

2.23.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the outer cap 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 part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

2.23.3.5 NDI Equipment Settings.

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

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

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

(1) Null probe on test block.

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

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

2.23.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-23.

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 are cause for rejection.

NOTE

Either probe identified in paragraph 2.23.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed steps 2.23.3.5b. (1), (2), and (3) shall be repeated each time a change is made.

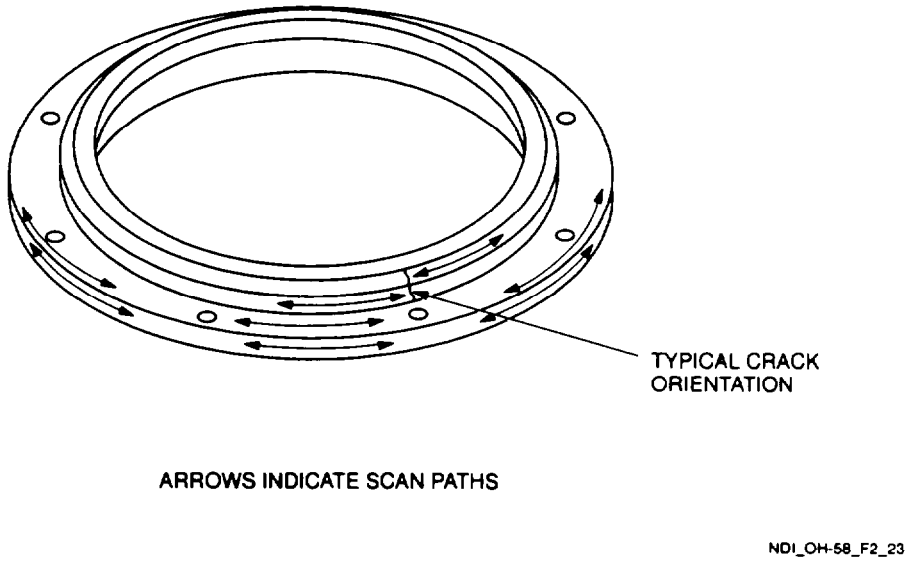


Figure 2-23. Outer Cap

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

2.23.4 Backup Method. Refer to paragraph 1.4.7.

2.23.5 System Securing. The outer cap requires installation in accordance with the applicable technical manual listed in Table 1-1.

2.24 LEVER (IDLER) (ET).

2.24.1 Description (Figure 7-1. Index No. 74). The lever transfers idler link movements to the collar set resulting from inner ring position changes.

2.24.2 Defects. Defects may occur anywhere on the part. No cracks are allowed.

2.24.3 Primary Method. Eddy Current.

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

a. Eddy Current Inspection Unit

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

c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 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

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

2.24.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands

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

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

2.24.3.5 NDI Equipment Settings.

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

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

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

(1) Null probe on test block.

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

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

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

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

b. Inspect the part.

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

NOTE

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

2.24.3.7 Marking and Recording of Indications. Mark and record as required by paragraph 1.3.

2.24.4 Backup Method. None required.

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

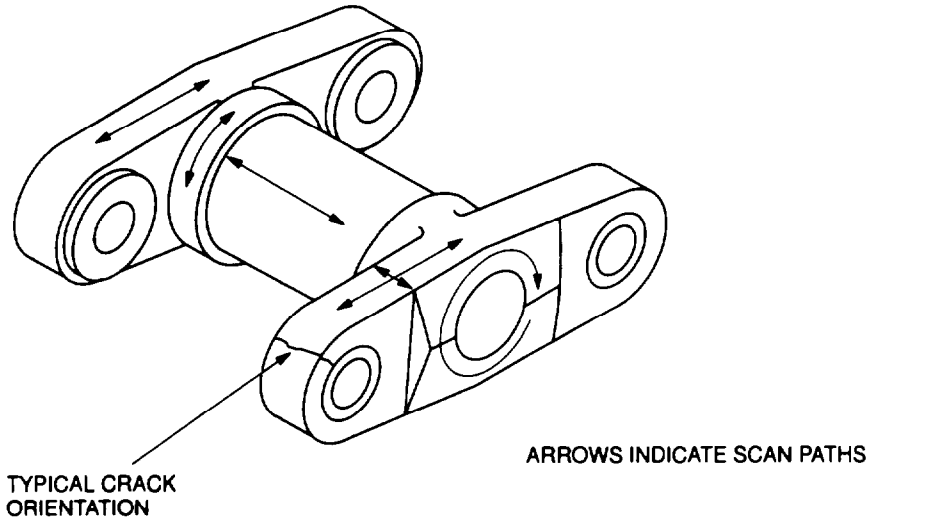


Figure 2-24. Lever (Idler)

2.25 PITCH LINK TUBE ASSEMBLY (ET).

2.25.1 Description (Figure 2-1. Index No. 25). The pitch link assemblies are used to transmit changes of pitch from the swashplate assembly to each individual blade.

2.25.2 Defects. Defects may occur anywhere on the part. No cracks are allowed.

2.25.3 Primary Method. Eddy Current.

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

a. Eddy Current Inspection Unit

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

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

d. Cable Assembly

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

f. Teflon Tape, refer to Table 1-8

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

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

2.25.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands

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

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

2.25.3.5 NDI Equipment Settings.

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

Frequency F1	- 200 KHz	F2	- off
Hdb	- 57.0		
Vdb	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		

HPF - 0
H Pos - 80%
v Pos - 20%

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

(1) Null probe on test block.

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

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

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

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

b. Inspect the part.

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

NOTE

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

2.25.3.7 Marking and Recording of Indications. Mark and record as required by paragraph 1.3.

2.25.4 Backup Method. None required.

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

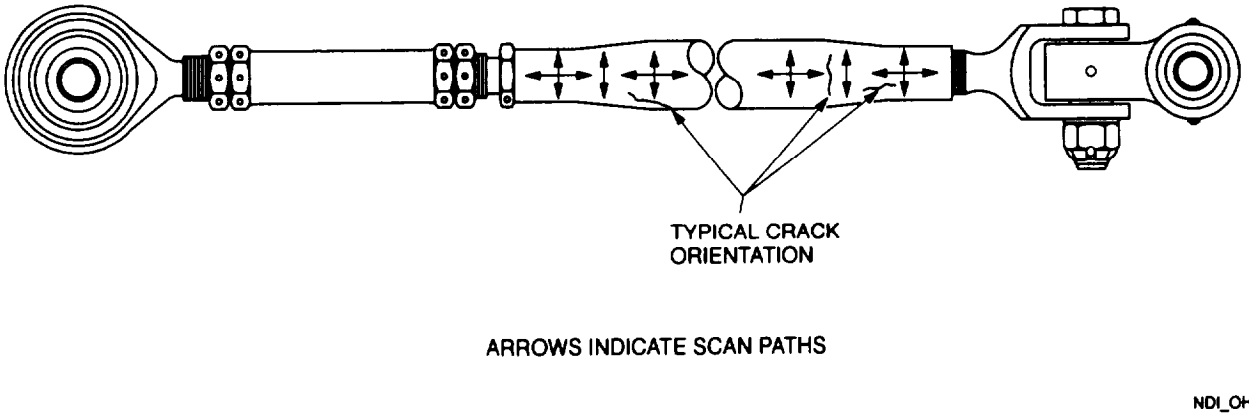


Figure 2-25. Pitch Link Tube Assembly

2.26 PYLON IDLER LINK (ET).

2.26.1 Description (Figure 2-1. Index No. 26). The pylon idler link attaches to the swashplate outer ring.

2.26.2 Defects. Defects may occur anywhere on the part. No cracks are allowed.

2.26.3 Primary Method. Eddy Current.

2.26.3.1 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

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

2.26.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands

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

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

2.26.3.5 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. Set up on test block as follows:

(1) Null probe on test block.

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

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

2.26.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-26.

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

b. Inspect the part.

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

NOTE

Either probe identified in paragraph 2.26.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed steps 2.26.3.5.b. (1), (2), and (3) shall be repeated each time a change is made.

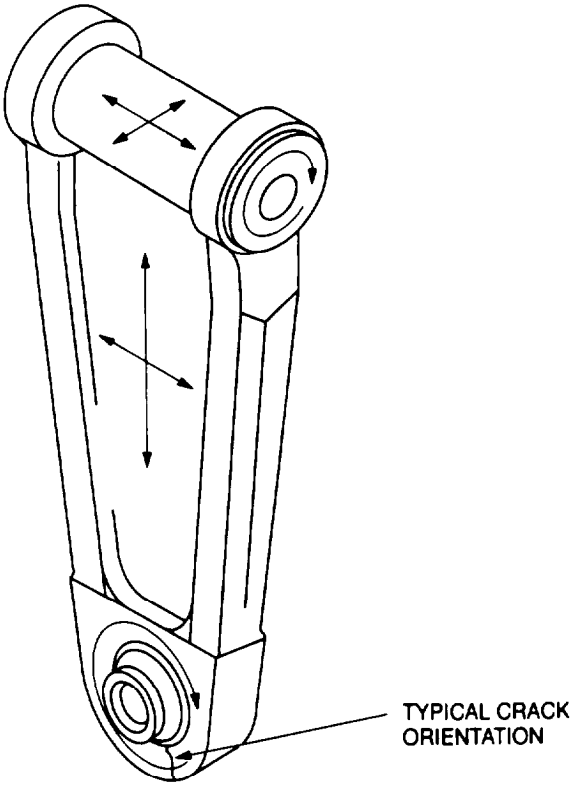


Figure 2-26. Pylon Idler Link

2.26.3.7 Marking and Recording of Indications. Mark and record as required by paragraph 1.3.

2.26.4 Backup Method. None required.

2.26.5 System Securing. The idler link, if removed, requires installation as necessary in accordance with the applicable technical manual listed in Table 1-1.

2.27 PYLON SWASHPLATE COLLAR SET (ET).

2.27.1 Description (Figure 2-1. Index No. 27). The idler link and collar set transfers mast movement to the swashplate outer ring.

2.27.2 Defects. Defects may occur anywhere on the part. No cracks are allowed.

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, 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

2.27.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. Partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the collar set 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 helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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

2.27.3.5 NDI Equipment Settings.

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

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

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

(1) Null probe on test block.

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

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040 inch notch in test block. (Refer to 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.

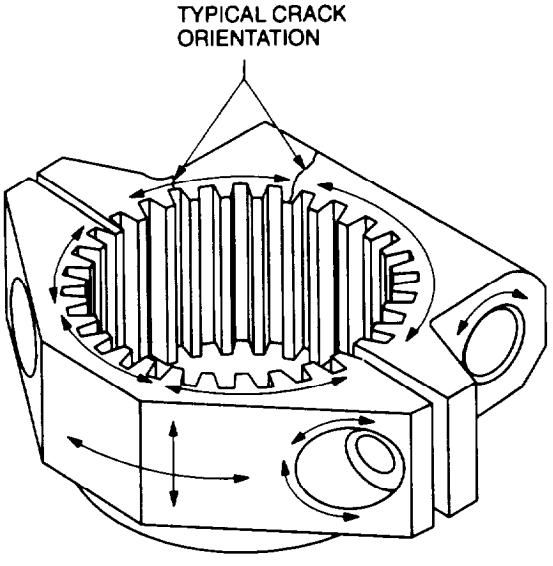


Figure 2-27. Pylon Swashplate Collar Set

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

b. Inspect the part.

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

NOTE

Either probe identified in paragraph 2.27.3.1 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.

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

227.4 Backup Method. None required.

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

2.28 TAIL ROTOR HUB YOKE (ET).

2.28.1 Description (Figure 2-1. Index No. 28). The tail rotor blades are attached to the tail rotor hub yoke which is connected to the gearbox output shaft by the trunnion assembly.

2.28.2 Defects. Defects can occur anywhere on the part. 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. Partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the tail rotor hub yoke shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

2.28.3.3 Access. Not applicable.

2.28.3.4 Preparation of Part. The tail rotor hub yoke 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-19e".

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

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

(1) Null probe on test block.

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

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040 inch notch in test block. (Refer to 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 are 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 Indications. Mark and record as required by paragraph 1.3.

2.28.4 Backup Method. Refer to paragraph 1.4.7.

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

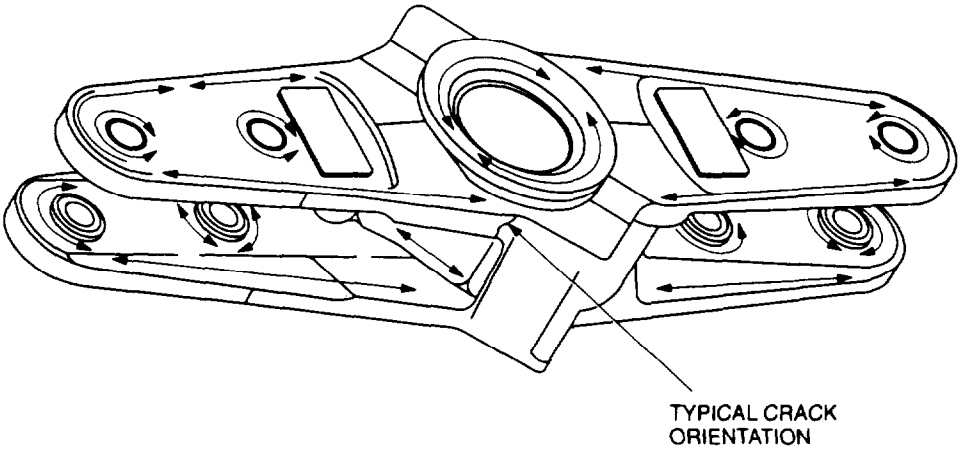


Figure 2-28. Tail Rotor Hub Yoke NDI_OH-58_F2_28

2.29 TAIL ROTOR HUB TRUNNION (MT).

2.29.1 Description (Figure 2-1. Index No.29). The trunnion, splined to the tail rotor gearbox shaft, drives the tail rotor hub and blades.

2.29.2 Defects. Defects may occur anywhere on the part's surface. Particular attention shall be given to the spline area. 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, refer to Table 1-8

e. Consumable Materials, refer to Table 1-8

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

NOTE

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

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

2.29.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands

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

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

2.29.3.5 NDI Equipment Settings. 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. 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 in Figure 2-29.

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 2.29.3.8.

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

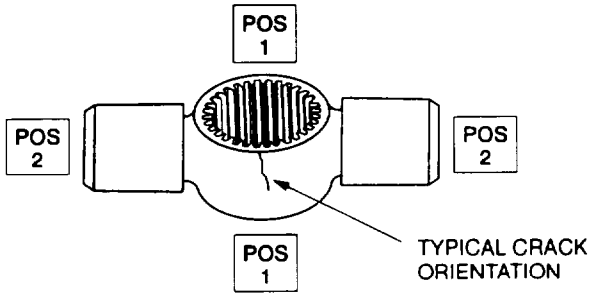


Figure 2-29. Tail Rotor Hub Trunnion

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 for a distance of two feet before releasing the switch.

2.29.4 Backup Method. None required.

2.29.5 System Securing. Clean the trunnion 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 trunnion requires installation in accordance with applicable technical manuals listed in Table 1-1.

2.30 DELETED.

2.31 TAIL ROTOR BLADES (PT).

2.31.1 Description (Figure 3-1. Index No. 31). The tail rotor blades are all metal assemblies consisting of a stainless steel shell reinforced by a honeycomb filler and a stainless steel leading edge abrasive strip. Two spherical ball bearings are installed in an aluminum alloy retention block to provide for pitch change movement of the blades in the tail rotor hub. The improved blades are 1.500 inches longer than previous aluminum blades to provide increased tail rotor thrust.

2.31.2 Defects. Defects may occur anywhere on the blade. All dents shall be inspected to ensure they do not contain cracks. No cracks are allowed.

2.31.3 Primary Method. Fluorescent Penetrant.

2.31.3.1 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.

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

2.31.3.3 Access. Inspection areas are accessible with the tail rotor blade(s) on the helicopter.

2.31.3.4 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. All paint shall be removed from areas of interest only.

2.31.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to fluorescent penetrant method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 2-31.

2.31.3.6 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

2.31.4 Backup Method. None required.

2.31.5 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. Protective coating shall be reapplied as required.

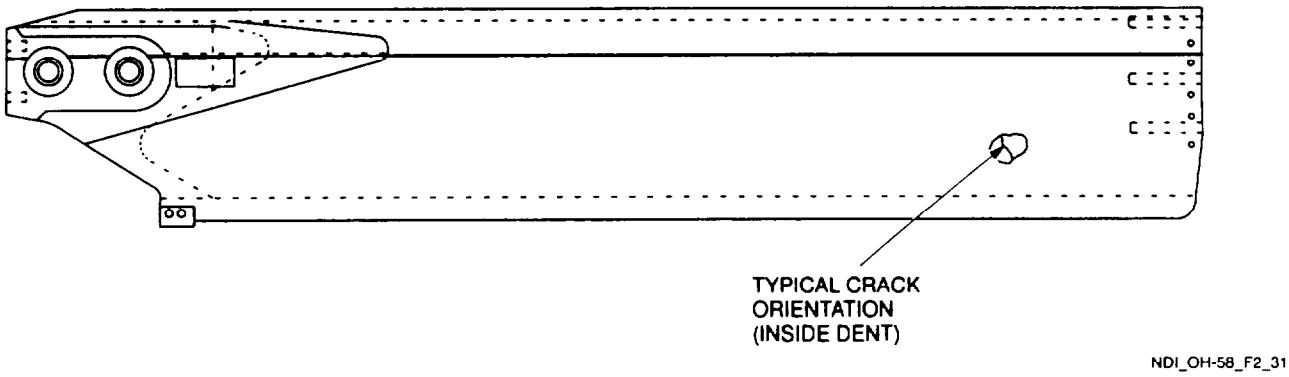


Figure 2-31. Tail Rotor Blades

2.32 TAIL ROTOR BLADES (BT).

2.32.1 Description (Figure 3-1. Index No. 32) The tail rotor blades are of all metal, bonded construction consisting of a stainless steel shell reinforced by an aluminum honeycomb core, a stainless steel leading edge abrasive strip, a root end doubler, and tip and root end retention blocks.

2.32.2 Defects. Void damage may occur anywhere on either side of the blade.

NOTE

A void is defined as an unbonded area that is suppose to be bonded. Many subdefinitions are given such as bond separation, delamination, lack of adhesive, gas pocket, misfit, etc. This procedure makes no distinction among these instead grouping under the general term "void."

2.32.3 Primary Method. Bond Testing.

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

a. Bond Test Unit

b. Probe, Mechanical Impedance Analysis

c. Probe Holder

d. Cable Assembly

e. Test block, metal honeycomb with skin thickness closest to that of the panel to be inspected (refer to Appendix C)

f. Teflon Tape, refer to Table 1-8

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

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

2.32.3.3 Access. Inspection areas are accessible with the tail 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 helicopters in a nontactical environment. Otherwise, personnel injury could result from accidental falls.

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

2.32.3.5 NDI Equipment Settings. Refer to Bond Testing Equipment, paragraph 1.4.6.1.

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

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

H	- Pos 40%
V	- Pos 80%
PHASE REF	- 0
DRIVE	- MID

c. Press SET and select DISPLAY - PHASE.

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

e. Place probe on void area of 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 setting until the flying spot moves in the desired down direction.

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

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

2.32.3.6 Inspection Procedure. Refer to Bond Test Method, paragraph 1-4.6. Inspection areas are shown in Figure 2-32.

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

NOTE

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

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

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

NOTE

Attention shall be directed to accurately marking the boundaries of all voids on both sides of the blade. These markings will be needed to determine acceptance/rejection criteria in accordance with the applicable technical manuals listed in Table 1-1.

2.32.4 Backup Method. None required

2.32.5 System Securing. None required.

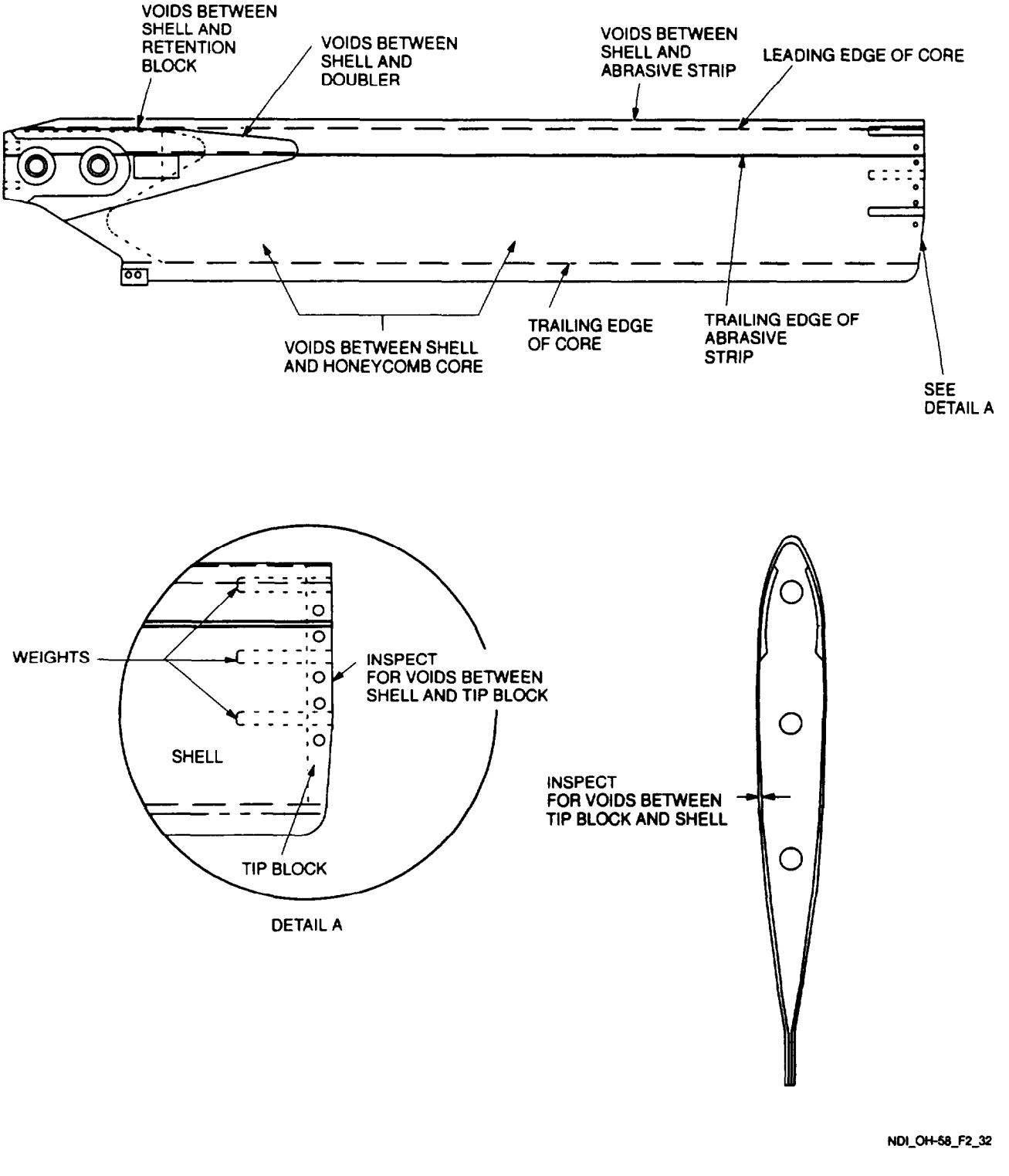


Figure 2-32. Tail Rotor Blades

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 OH-58A/C helicopter transmission, gearboxes, driveshafts, and components listed in the Transmission/Drivetrain Group Inspection Index (Table 3-1). Corresponding inspection figures and applicable text paragraphs are listed opposite each inspection item. The item 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	Grease Retainer Plate	PT	3.2	3-2
3	Shaft Centering Spring	MT	3.3	3-3
4	Outer Coupling	MT	3.4	3-4
*5	Spur Gear	MT	3.5	3-5
*6	Main Input Shaft	MT	3.6	3-6
7	Gearshaft, Inner Race	MT	3.7	3-7
8	Gearshaft, Outer Race	MT	3.8	3-8
*9	Tail Rotor Drive Gear	MT	3.9	3-9
*10	Bearing Cap	ET	3.10	3-10
*11	Bearing Housing	ET	3.11	3-11
*12	Freewheeling Shaft Assembly	MT	3.12	3-12
*13	Freewheeling Housing Assembly	ET	3.13	3-13
*14	Freewheeling Housing Assembly Bolt	MT	3.14	3-14
*15	Drag Pin	PT	3.15	3-15
*16	Mast	MT	3.16	3-16
*17	Mast Assembly Locking Plate	MT	3.17	3-17
*18	Mast Bearing Nut	MT	3.18	3-18
*19	Mast and Seal Plate	MT	3.19	3-19
*20	Bearing Liner	MT	3.20	3-20
21	Spindle (Transmission)	MT	3.21	3-21
22	Oil Cooling Blower Assembly	ET	3.22	3-22
*23	Blower Shaft Assembly	MT	3.23	3-23
*24	Splined Adapters	MT	3.24	3-24
*25	Disc Assembly	PT	3.25	3-25
*26	Tail Rotor Gearbox	ET	3.26	3-26

*Indicates Flight Safety Part

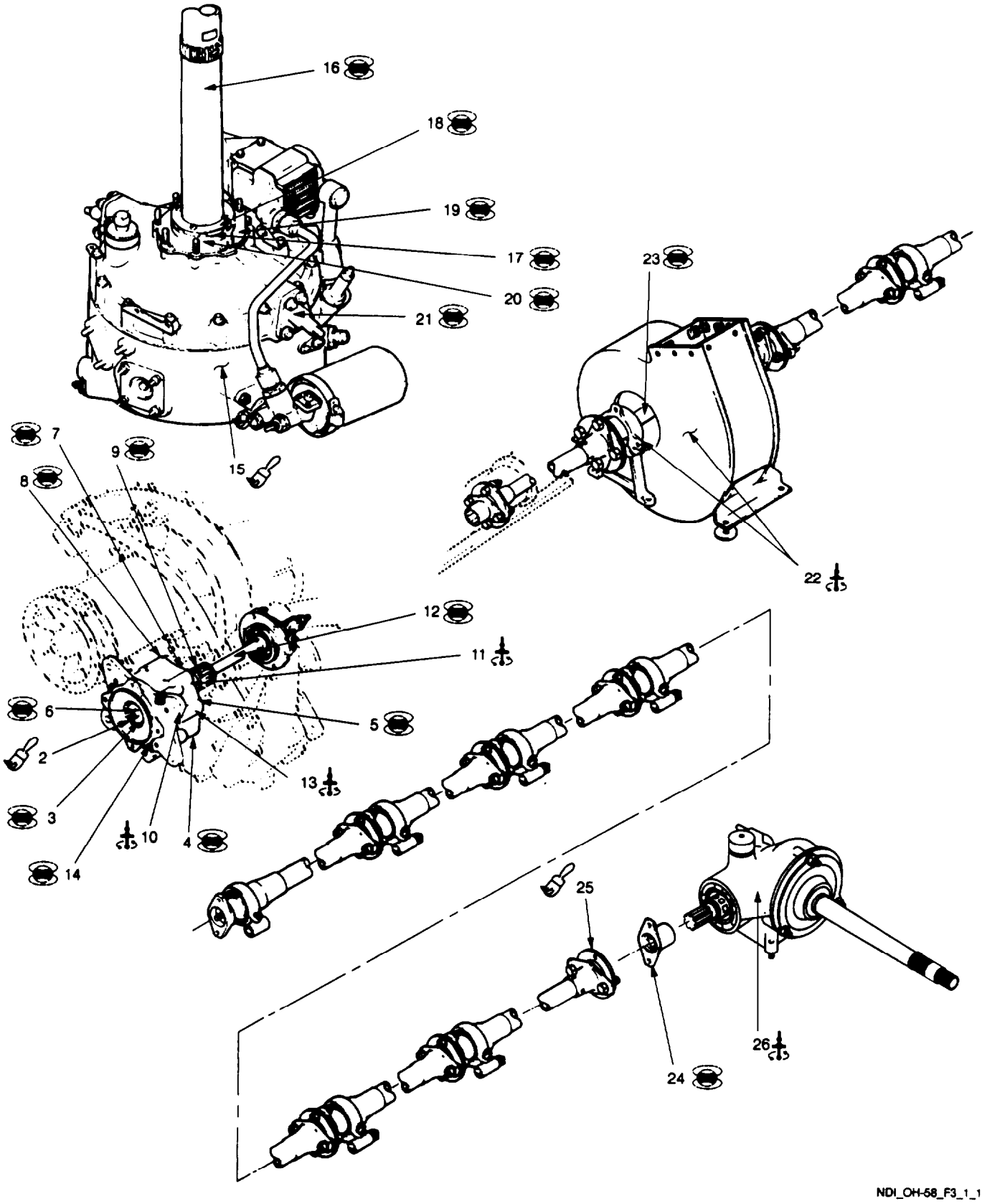


Figure 3-1. Transmission/Drivetrain Group

3.2 GREASE RETAINER PLATE (PT).

3.2.1 Description (Figure 3-1. Index No. 2). The grease retainer plate attaches to the outboard end of the coupling.

3.2.2 Defects. Defects may occur anywhere on the surface of the plate. No cracks are allowed.

3.2.3 Primary Method. Fluorescent Penetrant.

3.2.3.1 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.

3.2.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the grease retainer plate 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. Protective coating shall be removed and the part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

3.2.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to fluorescent penetrant method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 3-2.

3.2.3.6 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

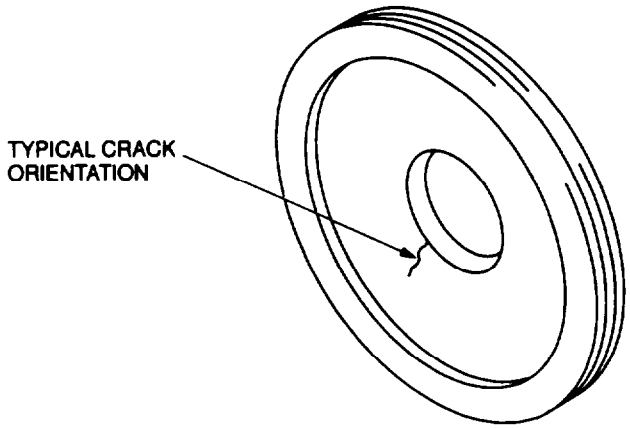


Figure 3-2. Grease Retainer Plate

3.2.4 Backup Method. None required.

3.2.5 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. Protective coating shall be reapplied as required. Reinstall or assemble parts or components in accordance with the applicable technical manuals listed in Table 1-1.

3.3 SHAFT CENTERING SPRING (MT).

3.3.1 Description (Figure 3-1. Index No. 3). The shaft centering spring is located within the coupling behind the grease retainer plate.

3.3.2 Defects. Defects may occur anywhere on the surface of the spring. No cracks are allowed.

3.3.3 Primary Method. Magnetic Particle.

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

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

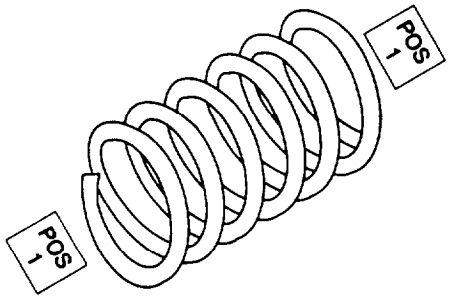
3.3.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the shaft centering spring removed in accordance with the applicable technical manuals listed in Table 1-1.

3.3.3.3 Access. Not applicable.

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

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

3.3.3.6 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 3-3.



NDI_OH-58_F3_3

Figure 3-3. Shaft Centering Spring

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.

3.3.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

3.3.3.8 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.

3.3.4 Backup Method. With circular field using 3/4 inch central conductor, magnetize at 50 amperes. Refer to paragraph 1.4.8.

3.3.5 System Securing. Clean the shaft centering 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 shaft centering spring requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.4 OUTER COUPLING (MT).

3.4.1 Description (Figure 3-1. Index No. 4). The outer coupling houses the shaft centering spring and spur gear, which is attached to the main input shaft.

3.4.2 Defects. Defects may occur anywhere on the surface of the coupling. Particular attention shall be given to the splined areas. No cracks are allowed.

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, refer to Table 1-8

e. Consumable Materials, refer to Table 1-8

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

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

3.4.3.3 Access. Not applicable.

3.4.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part of 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. 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 Position 2.

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

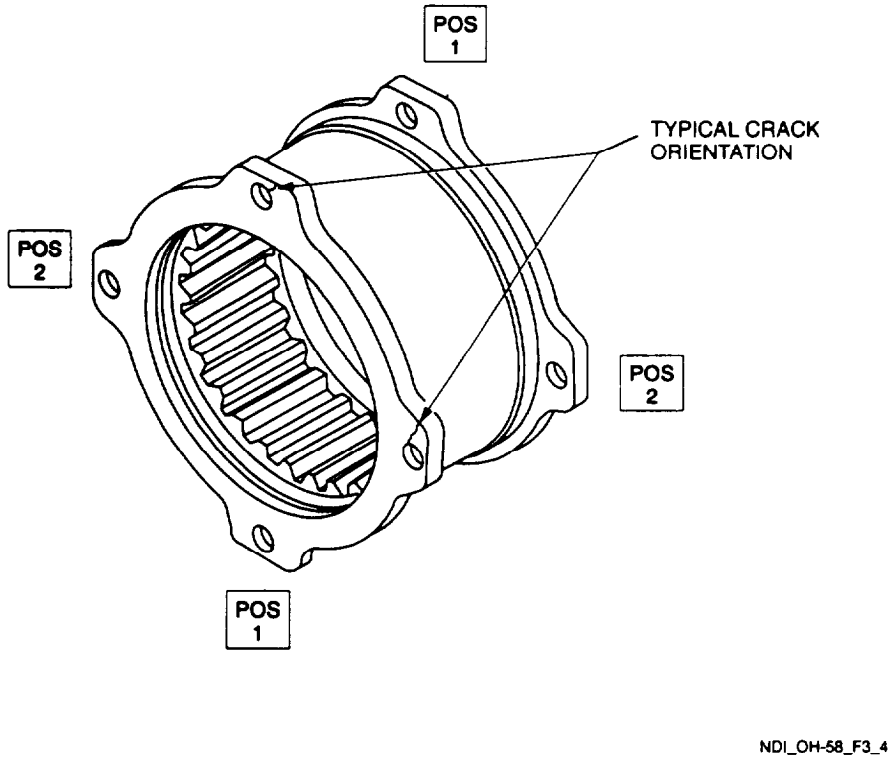


Figure 3-4. Outer Coupling

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 Backup Method. Use circular field using one inch central conductor, magnetize at 1200 amperes. Refer to paragraph 1.4.8.

3.4.5 System Securing. Clean the outer coupling 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 outer coupling requires reassembly in accordance with the applicable technical manuals listed in Table 1-1.

3.5 SPUR GEAR (MT).

3.51 Description (Figure 3-1. Index No. 5). The spur gear is attached to the main input shaft and is housed within the coupling.

3.5.2 Defects. Defects may occur anywhere on the surface of the spur gear. Particular attention shall be given to the gear teeth area. No cracks are allowed.

3.5.3 Primary Method. Magnetic Particle.

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, refer to Table 1-8

e. Consumable Materials, refer to Table 1-8

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

3.5.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the spur gear removed in accordance with the applicable technical manuals 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 of Area for NDI, paragraph 1.4.4.

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 Position 2.

3.5.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per 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 Backup Method With circular field using 3/4 inch central conductor, magnetize at 1500 amperes. Refer to paragraph 1.4.8.

3.5.5 System Securing. Clean the spur gear 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 spur gear requires installation in accordance with the applicable technical manuals listed in Table 1-1.

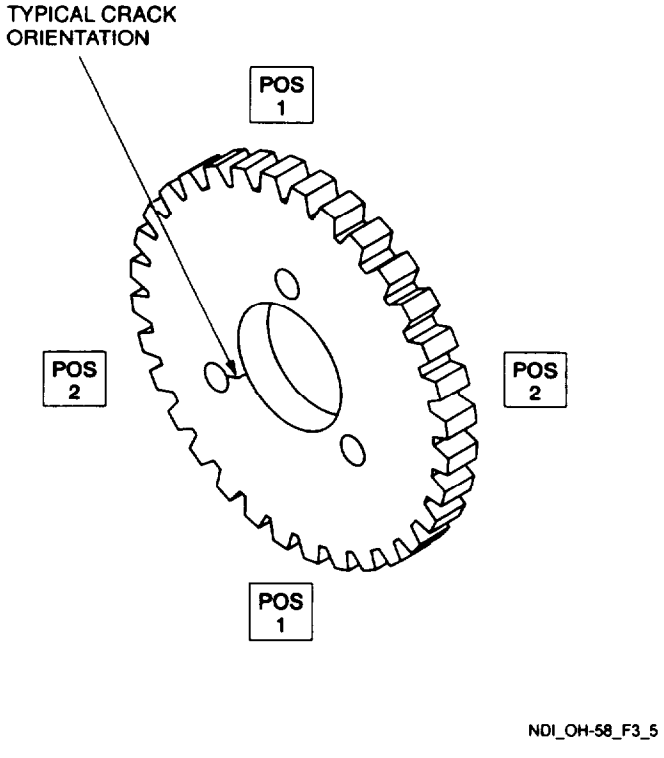


Figure 3-5. Spur Gear

3.6 MAIN INPUT SHAFT (MT).

3.6.1 Description (Figure 3-1. Index No. 6). The main input shaft is coupled to the transmission input quill and the main drive shaft.

3.6.2 Defects. Defects may occur anywhere on the surface of the main input shaft. No cracks are allowed.

3.6.3 Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

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

e. Consumable Materials, refer to Table 1-8

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

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

3.6.3.3 Access. Not applicable.

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

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

3.6.3.6 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 3-6.

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 3.6.3.8.

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

3.6.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

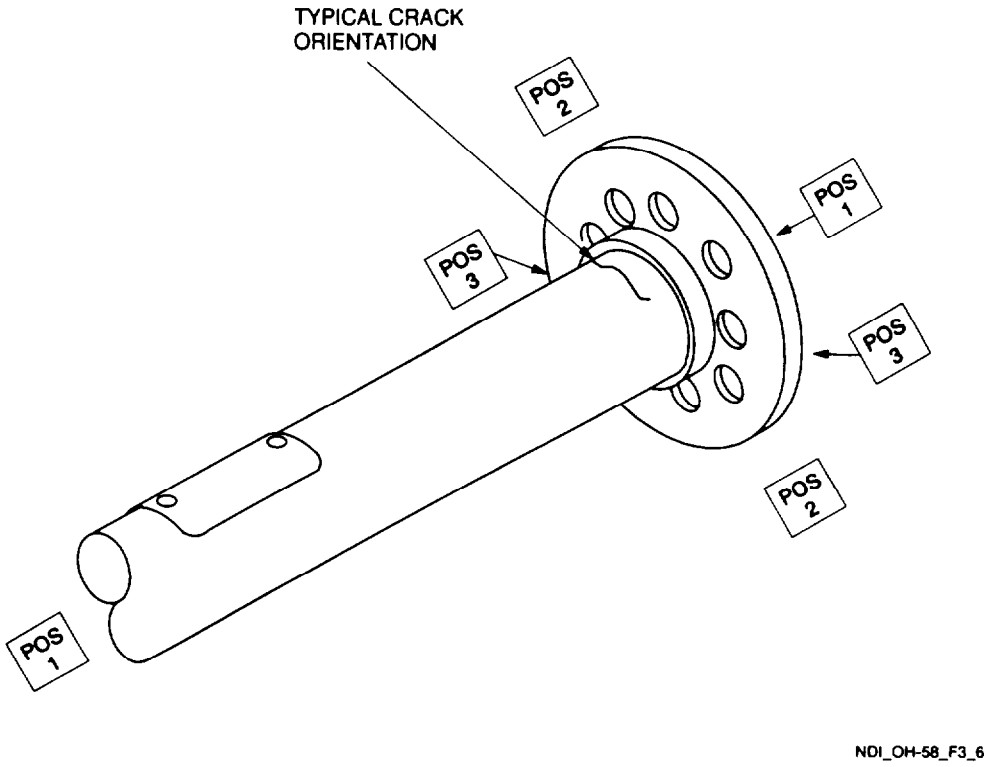


Figure 3-6. Main Input Shaft

3.6.3.8 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.

3.6.4 Backup Method. With circular field using 3/4 inch central conductor, magnetize at 1200 amperes. Inspect with longitudinal field 6000 amperes turns. Refer to paragraph 1.4.8.

3.6.5 System Securing. Clean the main input 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 main input shaft requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.7 GEARSHAFT, INNER RACE (MT).

3.7.1 Description (Figure 3-1. Index No. 7). The gearshaft, inner race adapts to the transmission driveshaft and tail rotor driveshaft to provide power to the main and tail rotors respectively.

3.7.2 Defects. Defects may occur anywhere on the surface of the gearshaft. 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, refer to Table 1-8

e. Consumable Materials, refer to Table 1-8

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

3.7.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the gearshaft, inner race 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 of 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.

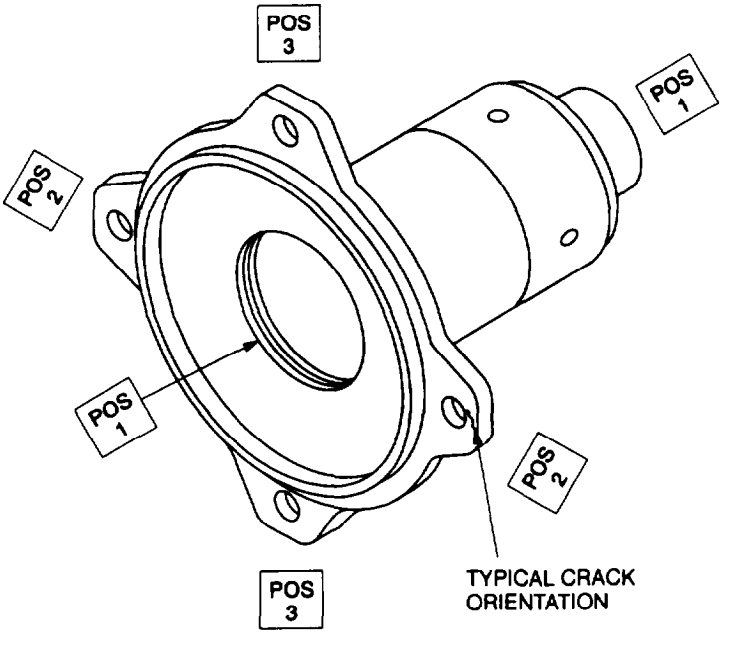


Figure 3-7. Gearshaft, Inner Race

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 Position 2 and Position 3.

3.7.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per 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. Inspect gearshaft, inner race using direct electrical contact with copper braided pads. Magnetize gear drive at 500 amperes. Shaft mount at 1200 amperes. Inspect with longitudinal field at 6000 ampere-turns. Refer to paragraph 1.4.8.

3.7.5 System Securing. Clean the gearshaft, inner race 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 gearshaft, inner race requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.8 GEARSHAFT, OUTER RACE (MT).

3.8.1 Description (Figure 3-1. Index No. 8) The gearshaft, outer race is housed within the freewheeling housing which contains bearings and the clutch assembly.

3.8.2 Defects. Defects may occur anywhere on the surface of the part. No cracks are allowed.

3.8.3 Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

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

e. Consumable Materials, refer to Table 1-8

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

3.8.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the gearshaft, outer race removed in accordance with the applicable technical manuals listed in Table 1-1.

3.8.3.3 Access. Not applicable.

3.8.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part of 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.

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 and 3.

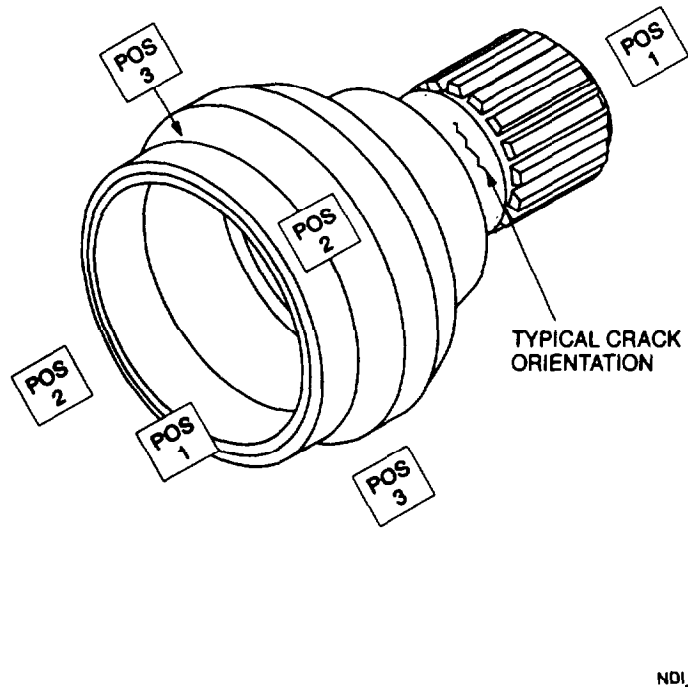


Figure 3-8. Gearshaft, Outer Race

3.8.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per 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. Inspect gearshaft, outer race with circular field using 3/4 inch central conductor. Make two equally spaced shots (180 degrees apart) at 1200 amperes. Refer to paragraph 1.4.8.

3.8.5 System Securing. Clean the gearshaft, outer race 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 gearshaft, outer race requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.9 TAIL ROTOR DRIVE GEAR (MT).

3.9.1 Description (Figure 3-1. Index No. 9). The tail rotor drive gear is attached to the freewheeling shaft assembly and is coupled to the tail rotor drive shaft.

3.9.2 Defects. Defects may occur anywhere on the surface of the tail rotor drive gear. No cracks are allowed.

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, refer to Table 1-8

e. Consumable Materials, refer to Table 1-8

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

NOTE

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

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

3.9.3.3 Access. Not applicable.

3.9.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part of 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.

d. Inspect for cracks using the black light.

3.9.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per 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. Inspect tail rotor drive gear with circular field using 1/2 inch central conductor of 600 amperes. Refer to paragraph 1.4.8.

3.9.5 System Securing. Clean the tail rotor drive gear 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 drive gear requires installation in accordance with the applicable technical manuals listed in Table 1-1.

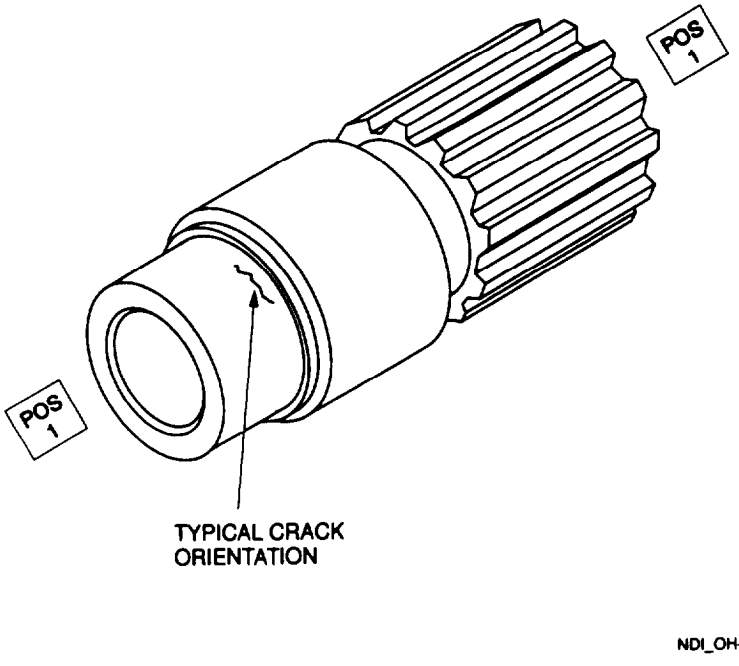


Figure 3-9. Tail Rotor Drive Gear

3.10 BEARING CAP (ET)

3.10.1 Description (Figure 3-1. Index No. 10). The bearing cap is a component of the freewheeling shaft assembly which retains the bearing and clutch assemblies.

3.10.2 Defects. Defects may occur anywhere on the surface of the bearing cap. 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 and bearing cap removed in accordance with the applicable technical manuals listed in Table 1-1.

3.10.3.3 Access. Not applicable.

3.10.3.4 Preparation of Part. The bearing cap 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 NSN 3365-01-378-4011.

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

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

(1) Null probe on test block.

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

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over .040 inch notch in test block. (Refer to 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.

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

b. Inspect the part.

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

NOTE

Either probe identified in paragraph 3.10.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed steps 3.10.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

3.10.4 Backup Method. Refer to paragraph 1.4.7.

3.10.5 System Securing. The bearing cap requires installation in accordance with the applicable technical manual listed in Table 1-1.

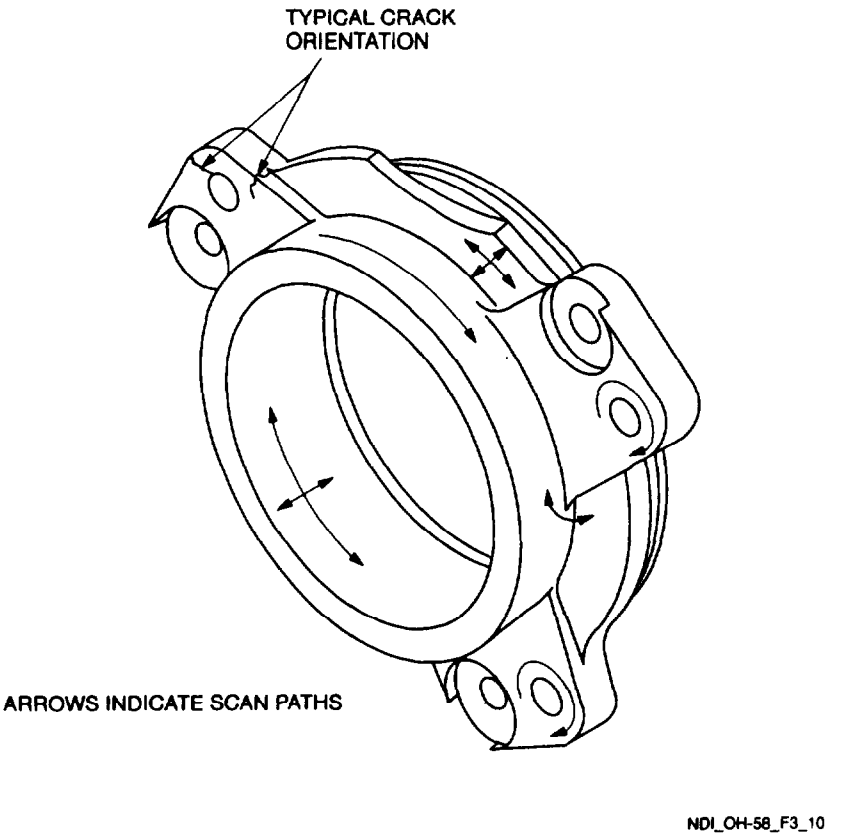


Figure 3-10. Bearing Cap

3.11 BEARING HOUSING (ET).

3.11.1 Description (Figure 3-1. Index No. 11). The bearing housing retains the bearing and outer shaft within the freewheeling housing.

3.11.2 Defects. Defects can occur anywhere on the surface of the bearing housing. 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 bearing housing removed in accordance with the applicable technical manuals listed in Table 1-1.

3.11.3.3 Access. Not applicable.

3.11.3.4 Preparation of Part. The bearing housing shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

3.11.3.5 NDI Equipment Settings.

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

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

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

(1) Null probe on test block.

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

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over .040 inch notch in test block. (Refer to standard instrument display shown in Figure 1-7.)

3.11.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 3-11.

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

b. Inspect the part.

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

NOTE

Either probe identified in paragraph 3.11.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed steps 3.11.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

3.11.4 Backup Method. Refer to paragraph 1.4.7.

3.11.5 System Securing. The bearing housing requires installation in accordance with the applicable technical manual listed in Table 1-1.

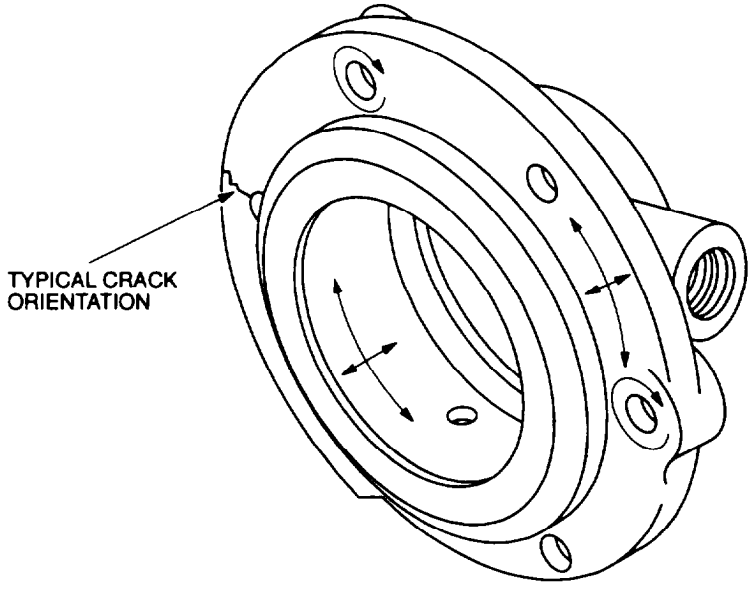


Figure 3-11. Bearing Housing

3.12 FREEWHEELING SHAFT ASSEMBLY (MT).

3.12.1 Description (Figure 3-1. Index No. 12). The freewheeling shaft assembly is comprised of freewheeling inner race shaft with plug in forward end, forward bearing and seal cap assembly and freewheeling outer race shaft with bearings and clutch assembly.

3.12.2 Defects. Defects may occur anywhere on the surface of the part. Particular attention shall be given to the splined area. No cracks are allowed.

3.12.3 Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

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

e. Consumable Materials, refer to Table 1-8

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

NOTE

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

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

3.12.3.3 Access. Not applicable.

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

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

3.12.3.6 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 3-12.

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.

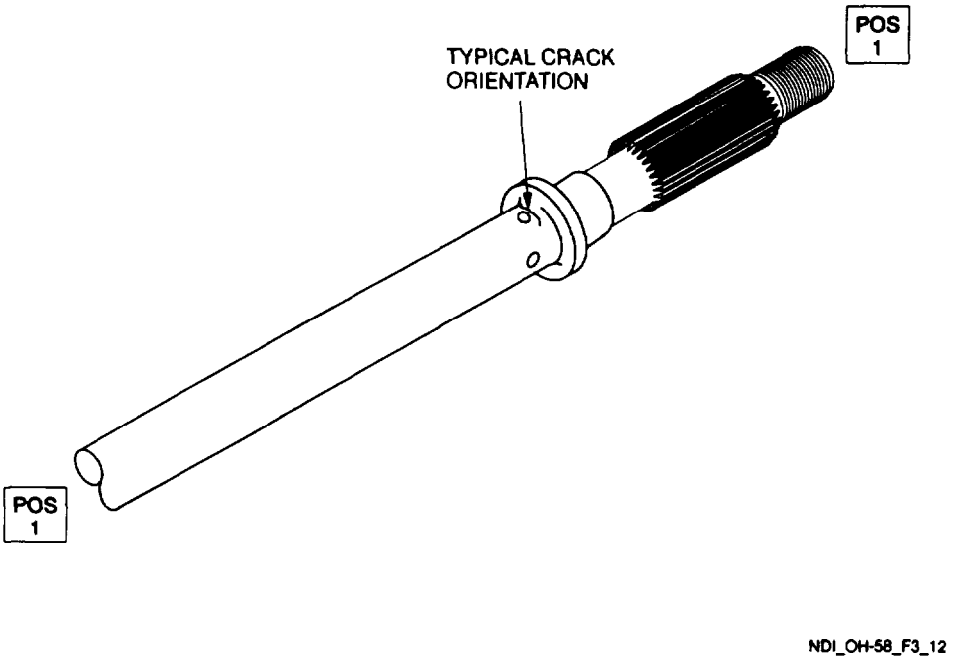


Figure 3-12. Freewheeling Shaft Assembly

3.12.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

3.12.3.8 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.

3.12.4 Backup Method. None required.

3.12.5 System Securing. Clean the freewheeling shaft 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 freewheeling shaft assembly requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.13 FREEWHEELING HOUSING ASSEMBLY (ET).

3.13.1 Description (Figure 3-1, Index No. 13). The freewheeling housing assembly is mounted on the forward end of the engine accessory gearcase and provides coupling adaptation of the transmission driveshaft to the tail rotor driveshaft.

3.13.2 Defects. Defects may occur anywhere on the freewheeling housing assembly. 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 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

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

3.13.3.3 Access. Not applicable.

3.13.3.4 Preparation of Part. The freewheeling housing assembly 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-19e[II].

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

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

(1) Null probe on test block.

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

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over .040 inch notch in test block. (Refer to standard instrument display shown in Figure 1-7).

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

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

b. Inspect the part.

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

NOTE

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

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

3.13.4 Backup Method. Refer to paragraph 1.4.7.

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

3.14 FREEWHEELING HOUSING ASSEMBLY BOLT (MT).

3.14.1 Description (Figure 3-1, Index No. 14). The freewheeling housing assembly bolt secures the lubrication fitting to the housing assembly.

3.14.2 Defects. Defects may occur anywhere on the part. No cracks are allowed.

3.14.3 Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

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

e. Consumable Materials, refer to Table 1-8

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

NOTE

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

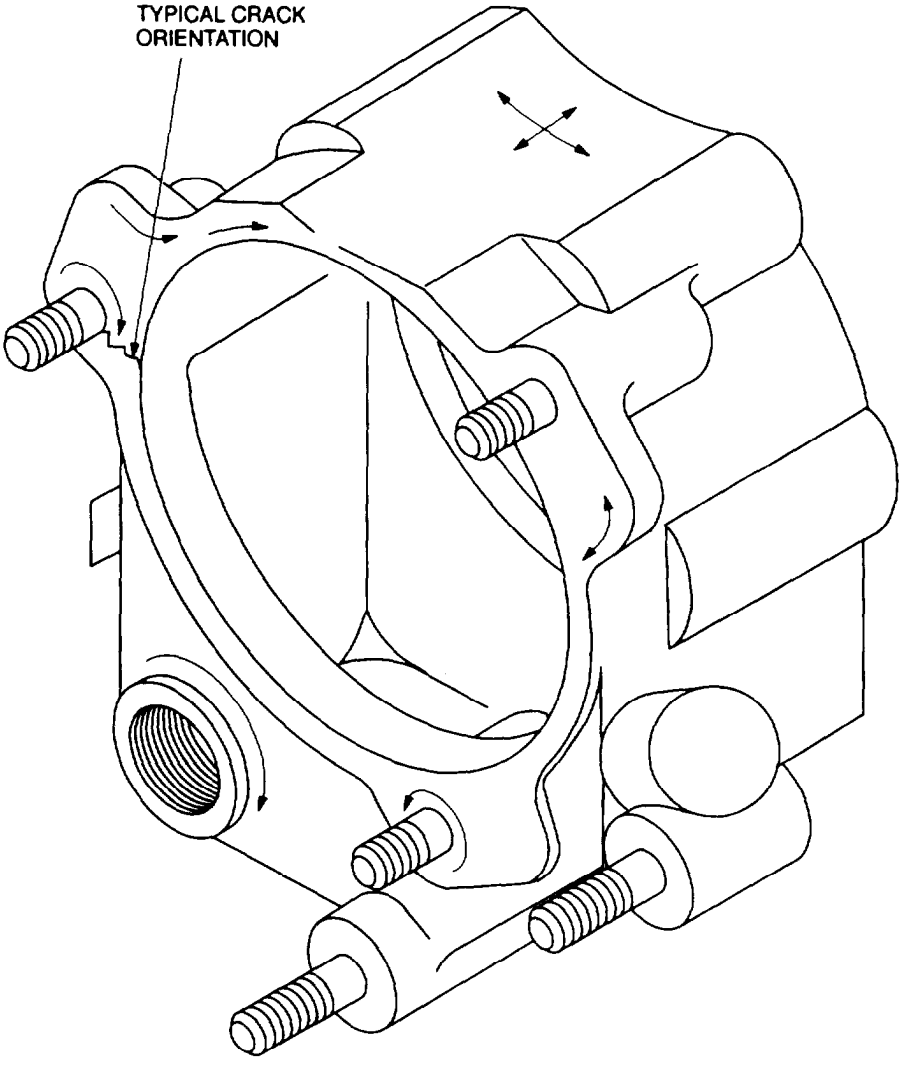


Figure 3-13. Freewheeling Housing Assembly

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

3.14.3.3 Access. Not applicable.

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

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

3.14.3.6 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 3-14.

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.

3.14.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

3.14.3.8 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.

3.14.4 Backup Method. Refer to paragraph 1.4.7.

3.14.5 System Securing. Clean the bolt 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 bolt requires installation in accordance with the applicable technical manuals listed in Table 1-1.

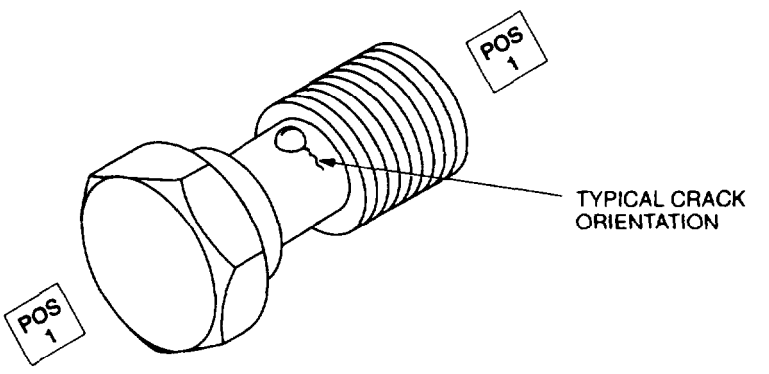


Figure 3-14. Freewheeling Housing Assembly Bolt

3.15 DRAG PIN (PT).

3.15.1 Description (Figure 3-1, Index No. 15). The drag pin holds the transmission and isolation mount in place by extending down into a plate on the deck.

3.15.2 Defects. Defects may occur anywhere on the surface of the drag pin. No cracks are allowed.

3.15.3 Primary Method. Fluorescent Penetrant.

3.15.3.1 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.

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

3.15.3.3 Access. Not applicable.

3.15.3.4 Preparation of Part. Protective coating shall be removed and the part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

3.15.3.5 Inspection Procedure. Perform Fluorescent Penetrant inspection. Refer to fluorescent penetrant method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 3-15.

3.15.3.6 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

3.15.4 Backup Method. None required.

3.15.5 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. Protective coating shall be reapplied as required. Reinstall or assemble parts or components in accordance with the applicable technical manuals listed in Table 1-1.

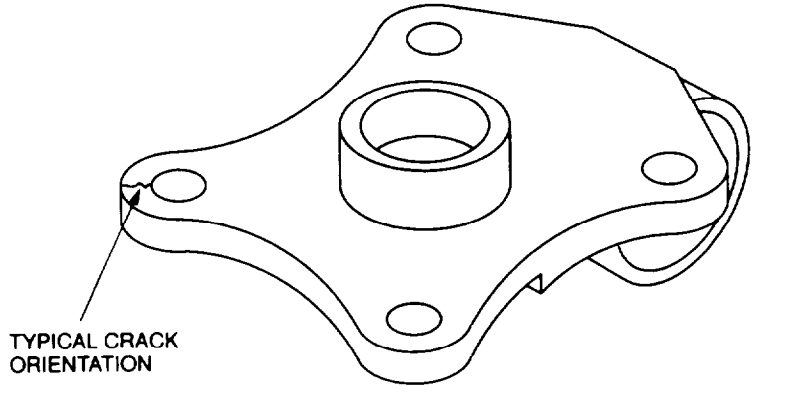


Figure 3-15. Drag Pin

3.16 MAST (MT).

3.16.1 Description (Figure 3-1, Index No. 16). The mast is secured in the top of transmission by a bearing and seal assembly. Splines on the upper portion of mast provide mounting for the main rotor.

3.16.2 Defects. Defects may occur anywhere on the part. No cracks are allowed.

3.16.3 Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

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

e. Consumable Materials, refer to Table 1-8

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

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

3.16.3.3 Access. Not applicable.

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

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

3.16.3.6 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 3-16.

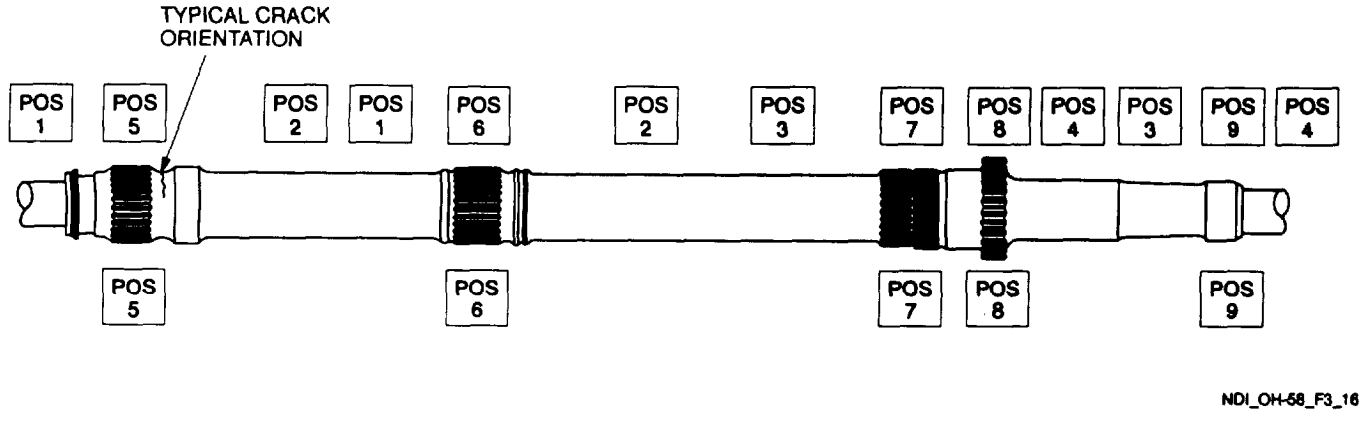


Figure 3-16. Mast

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 3.16.3.8.

f. Repeat steps a. through e. for Positions 2 through 9.

g. Rotate shaft 90 degrees and repeat steps a through f.

3.16.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

3.16.3.8 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.

3.16.4 Backup Method. Inspect mast using direct electrical contact using copper braided pads, magnetize at 1200 amperes. Inspect with longitudinal field with three (3) overlapping shots spaced 12 inches apart, magnetize at 6000 ampere-turns.

3.16.5 System Securing. Clean the 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 mast requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.17 MAST ASSEMBLY LOCKING PLATE (MT).

3.17.1 Description (Figure 3-1. Index, No. 17). The locking plate secures the bearing nut and seal inside the main plate.

3.17.2 Defects. Defects may occur anywhere on the surface of the locking plate. No cracks are allowed.

3.17.3 Primary Method. A fluorescent penetrant.

3.17.3.1 NDI Equipment and Materials. (Refer to Appendix B). Inspection Equipment is listed in Table 1-7. QPL-AMS 2644 Level 3 penetrant materials shall be selected from the approved list in Table 1-8.

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

3.17.3.3 Access. Not applicable.

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

3.17.3.5 Deleted.

3.17.3.6 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to fluorescent penetrant method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See figure 3-17.

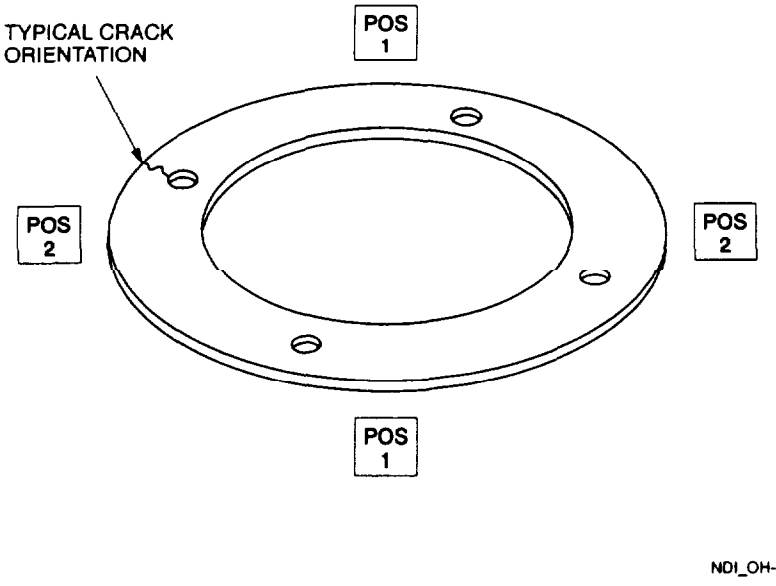


Figure 3-17. Mast Assembly Locking Plate

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

3.17.3.8 Deleted.

3.17.4 Backup Method. None required.

3.17.5 System Securing. Clean the part to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area After NDI paragraph 1.4.16. The rotor head components require installation in accordance with the applicable technical manuals listed-in Table 1-1.

3.18 MAST BEARING NUT (MT).

3.18.1 Description (Figure 3-1, Index No. 18). The mast bearing nut is secured between the locking plate and the seal.

3.18.2 Defects. Defects may occur anywhere on the surface of the bearing nut. No cracks are allowed.

3.18.3 Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

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

e. Consumable Materials, refer to Table 1-8

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

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

3.18.3.3 Access. Not applicable.

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

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

3.18.3.6 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 3-18.

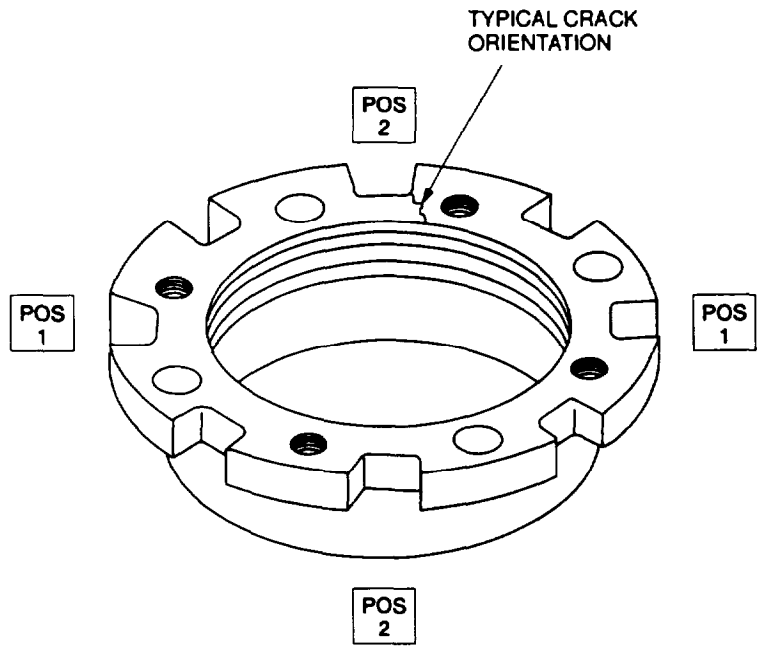


Figure 3-18. Mast Bearing Nut

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

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

c. Press the test switch and apply a light coat of magnetic particle media at 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 3.18.3.8.

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

3.18.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

3.18.3.8 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.

3.18.4 Backup Method. Inspect mast bearing nut with circular field using 1 inch central conductor, magnetize at 1200 amperes.

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

3.19 MAST AND SEAL PLATE (MT).

3.191 Description (Figure 3-1, Index No. 19). The mast and seal plate connects to the liner and retains the locking plate, bearing nut and seal.

3.19.2 Defects. Defects may occur anywhere on the surface of the plate. No cracks are allowed.

3.19.3 Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

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

e. Consumable Materials, refer to Table 1-8

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

3.19.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the mast and seal plate removed in accordance with the applicable technical manuals listed in Table 1-1.

3.19.3.3 Access. Not applicable.

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

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

3.19.36 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 3-19.

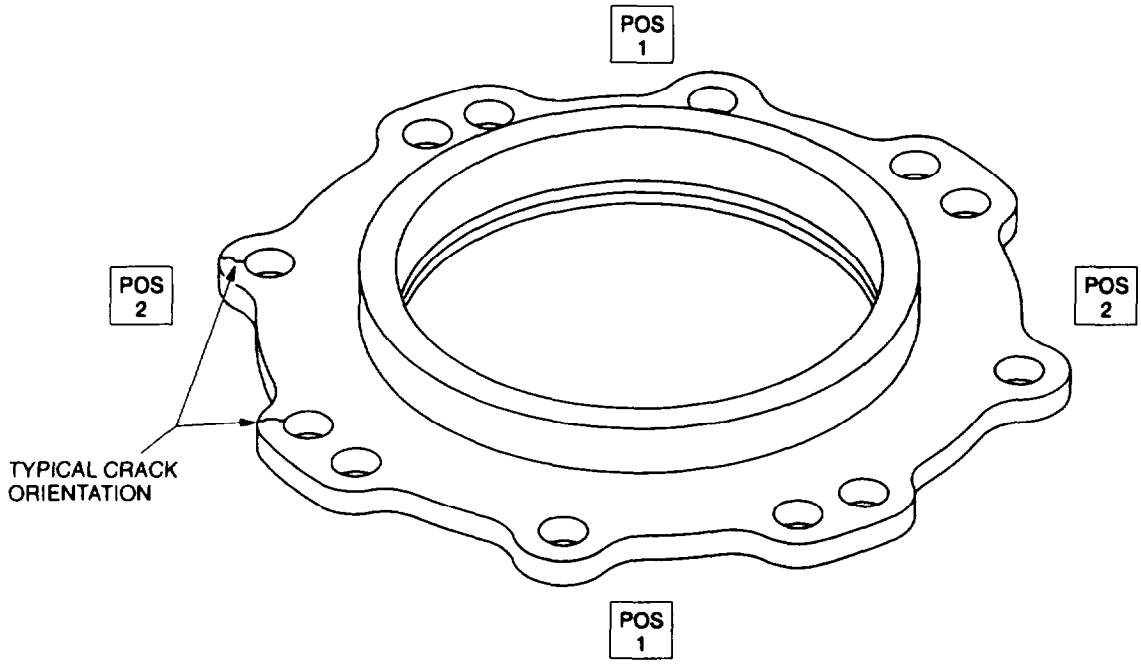


Figure 3-19. Mast and Seal Plate

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 3.19.3.8.

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

3.19.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

3.19.3.8 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.

3.19.4 Backup Method. Inspect plate mast and seal with circular field using 1 1/2 inch central conductor make three (3) equally spaced shots (120 degrees apart), magnetize at 1200 amperes.

3.19.5 System Securing Clean the plate 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 plate requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.20 BEARING LINER (MT).

3.20.1 Description (Figure 3-1, Index No. 20. The bearing liner connects to the mast and seal plate and retains the skim, bearing and packing.

3.20.2 Defects. Defects may occur anywhere on the surface of the bearing liner. No cracks are allowed.

3.20.3 Primary Method Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

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

e. Consumable Materials, refer to Table 1-8

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

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

3.20.3.3 Access. Not applicable.

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

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

3.20.3.6 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 3-20.

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 3.20.3.8.

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

3.20.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

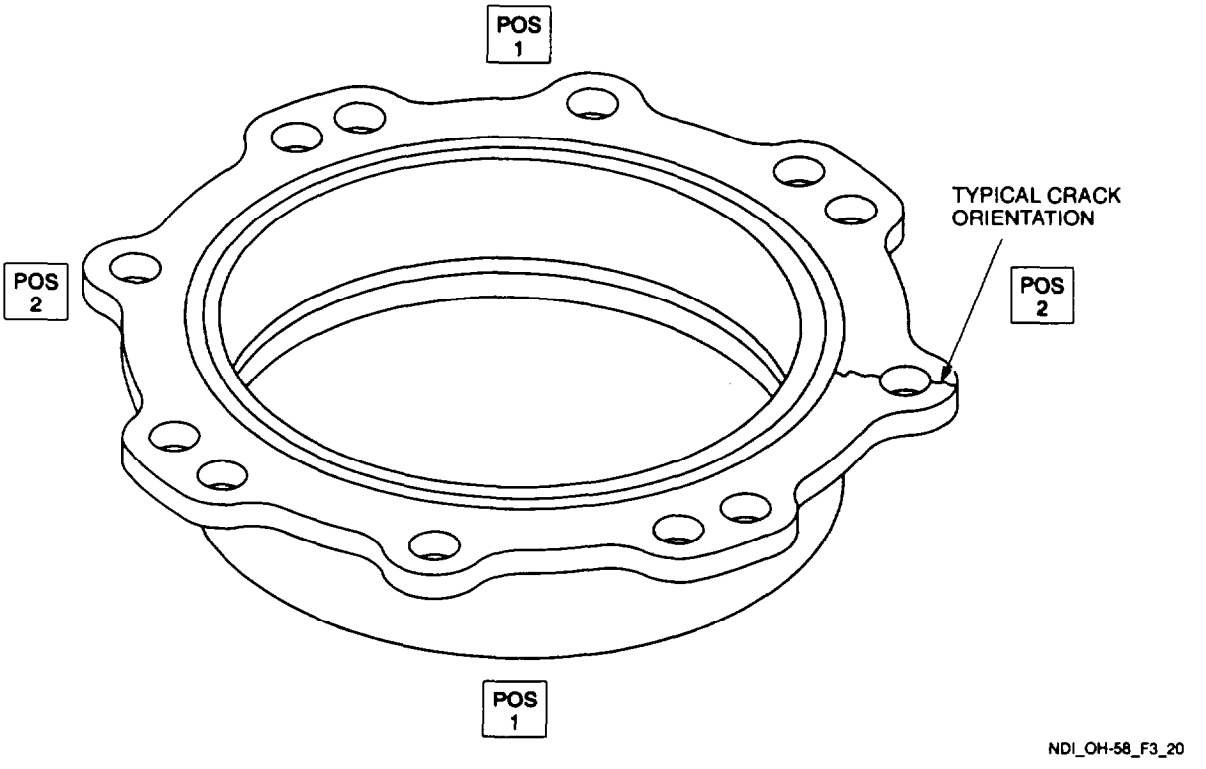


Figure 3-20. Bearing Liner

3.20.3.8 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.

3.20.4 Backup Method. Inspect bearing liner with circular field using 1 1/2 inch central conductor. Make three equally spaced shots (120 degrees apart) magnetize of 1200 amperes.

3.20.5 System Securing. Clean the bearing liner 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 bearing liner requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.21 SPINDLE (TRANSMISSION) (MT).

3.21-1 Description (Figure 3-1, Index No. 21). Spindles, on each side of the transmission case, connect the transmission to the pylon support links.

3.21.2 Defects. Defects may occur anywhere on the surface of the spindle. No cracks are allowed.

3.21.3 Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

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

e. Consumable Materials, refer to Table 1-8

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

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

3.21.3.3 Access. Not applicable.

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

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

3.21.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Positions required for this inspection are illustrated in Figure 3-21.

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

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

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

d. Inspect for cracks using the black light.

e. Demagnetize before moving to the next position. Refer to paragraph 3.21.3.8.

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

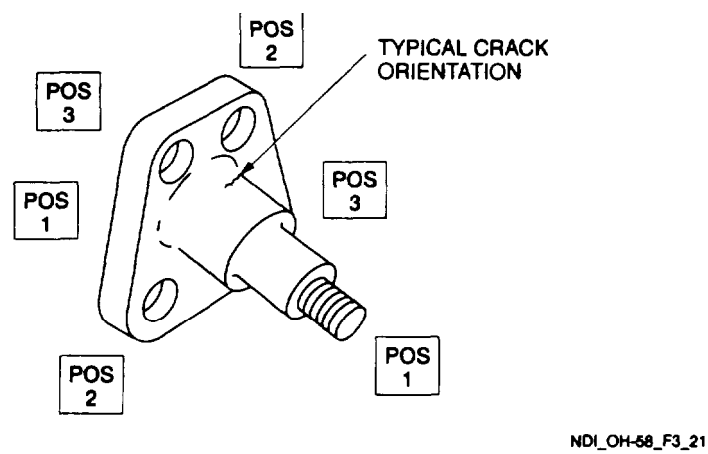


Figure 3-21. Spindle (Transmission)

3.21.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

3.21.3.8 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.

3.21.4 Backup Method. None required.

3.215 System Securing. Clean the spindle 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 spindle requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.22 OIL COOLING BLOWER ASSEMBLY (ET).

3.22.1 Description (Figure 3-1, Index No. 22). This inspection is applicable to the blower housing, rotor, and bearing hanger assembly. The oil cooling blower is mounted on the structure, aft of the aft firewall, and is driven by the tail rotor driveshaft. The squirrel cage type impeller is mounted on a flanged shaft which is mounted in bearing hangers.

3.22.2 Defects. Defects may occur anywhere on the surface of the part. No cracks are allowed.

3.22.3 Primary Method. Eddy Current.

3.22.3.1 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

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

3.22.3.3 Access. Not applicable.

3.22.3.4 Preparation of Part. The oil cooling blower assembly shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

3.22.3.5 NDI Equipment Settings.

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

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

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

(1) Null probe on test block.

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

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over .040 inch notch in test block. (Refer to standard instrument display shown in Figure 1-7.)

3.22.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 3-22.

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 are cause for rejection.

NOTE

Either probe identified in paragraph 3.22.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed steps 3.22.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

3.22.4 Backup Method. None required.

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

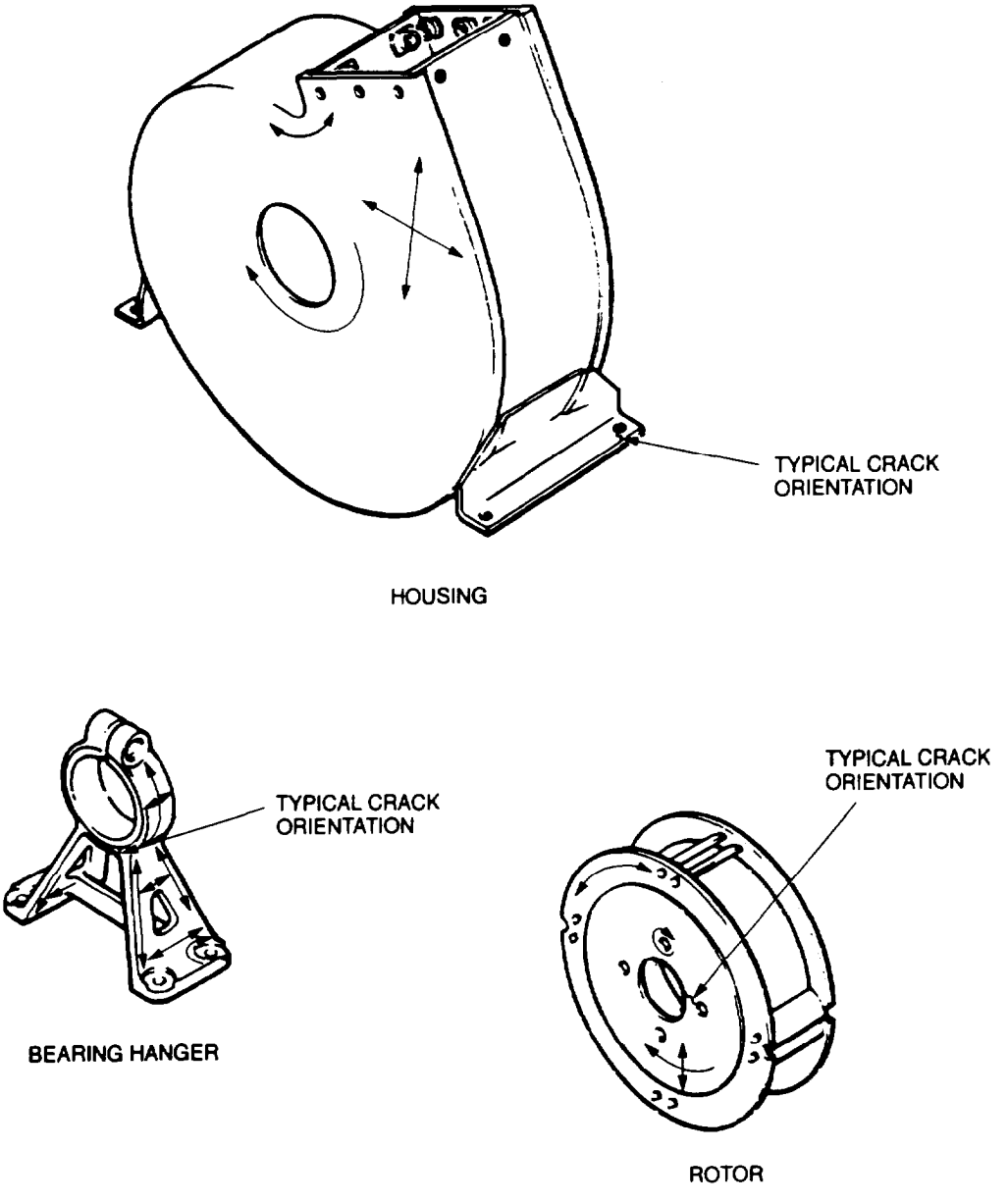


Figure 3-22. Oil Cooling Blower Assembly

3.23 BLOWER SHAFT ASSEMBLY (MT).

3.23.1 Description (Figure 3-1, Index No. 23). The blower shaft connects the foward and aft short tail rotor driveshafts and is part of the tail rotor driveshaft system.

3.23.2 Defects. Defects may occur anywhere on the surface of the fan shaft. No cracks are allowed.

3.23.3 Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

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

e. Consumable Materials, refer to Table 1-8

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

NOTE

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

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

3.23.3.3 Access. Not applicable.

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

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

3.23.3.6 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 3-23.

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 3.23.3.8.

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

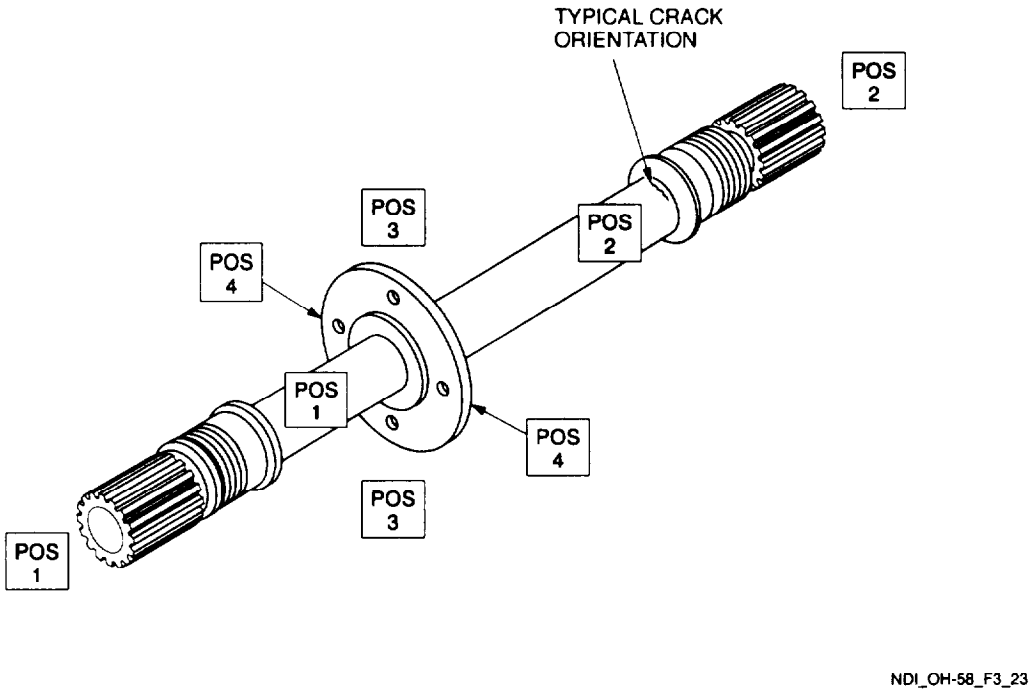


Figure 3-23. Blower Shaft Assembly

3.23.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

3.23.3.8 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.

3.23.4 Backup Method. None required.

3.23.5 System Securing. Clean the blower shaft 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 blower shaft assembly requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.24 SPLINED ADAPTERS (MT).

3.24.1 Description (Figure 3-1, Index No. 24). The splined adapters connect the driveshaft segments together at each end and connect the driveshaft to the tail rotor gearbox and main transmission.

3.24.2 Defects. Defects may occur anywhere on the surface of the splined adapter. No cracks are allowed.

3.24.3 Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

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

e. Consumable Materials, refer to Table 1-8

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

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

3.24.3.3 Access. Not Applicable.

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

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

3.24.3.6 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 3-24.

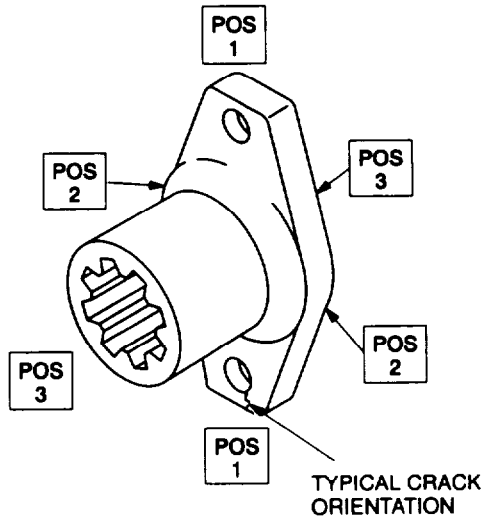


Figure 3-24. Splined Adapters

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 3.24.3.8.

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

3.24.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

3.24.3.8 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.

3.24.4 Backup Method. None required.

3.24.5 System Securing. Clean the splined adapters 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 splined adapters requires installation in accordance with the applicable technical manuals listed in Table 1-1.

3.25 DISC ASSEMBLY (PT).

3.25.1 Description (Figure 3-1, Index No. 25). Flexible laminated steel disc couplings are used to connect the shaft section, freewheeling assembly, and the tail rotor gearbox.

3.25.2 Defects. Defects may occur anywhere on the surface of the coupling discs. No cracks are allowed.

3.25.3 Primary Method. Fluorescent Penetrant.

3.25.3.1 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.

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

3.25.3.3 Access. Not applicable.

3.25.3.4 Preparation of Part. Protective coating shall be removed and the part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

3.25.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to fluorescent penetrant method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 3-25.

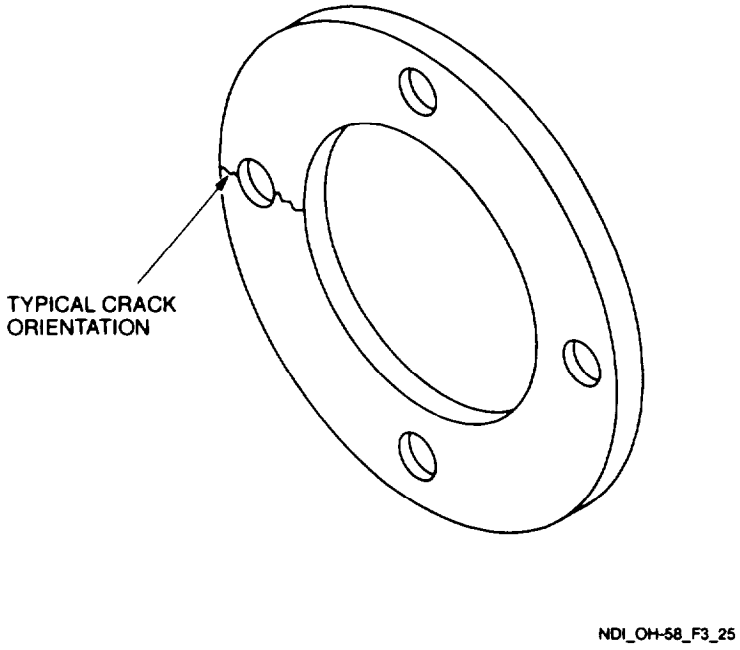


Figure 3-25. Disc Assembly

3.25.3.6 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

3.25.4 Backup Method. None required.

3.25.5 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. Protective coating shall be reapplied as required. Reinstall or assemble parts or components in accordance with the applicable technical manuals listed in Table 1-1.

3.26 TAIL ROTOR GEARBOX (ET).

3.26.1 Description (Figure 3-1, Index No. 2.6). The tail rotor gearbox contains two spiral bevel gears positioned 90 to each other. The gearbox housing is magnesium and is attached to the tailboom with four studs, nuts, washers and two dowel pins for alignment.

3.26.2 Defects. Defects may occur anywhere on the surface of the gearbox. No cracks are allowed.

3.26.3 Primary Method. Eddy Current.

3.26.3.1 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 magnesium (0.008, 0.020, an d0.040 EDM notches)

f. Teflon Tape, refer to Table 1-8

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

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

3.26.3.3 Access. Not applicable.

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

3.26.3.5 NDI Equipment Settings.

a. Make the following initial settings on the Eddy Current Inspection Unit NORTEC-19e^{II}.

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

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

(1) Null probe on test block.

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

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

3.26.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 3-26.

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

b. Inspect the part.

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

NOTE

Either probe identified in paragraph 3.26.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed steps 3.26.3.5 b. (1), (2), and (3) shall be repeated each time a change is made.

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

3.26.4 Backup Method. None required.

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

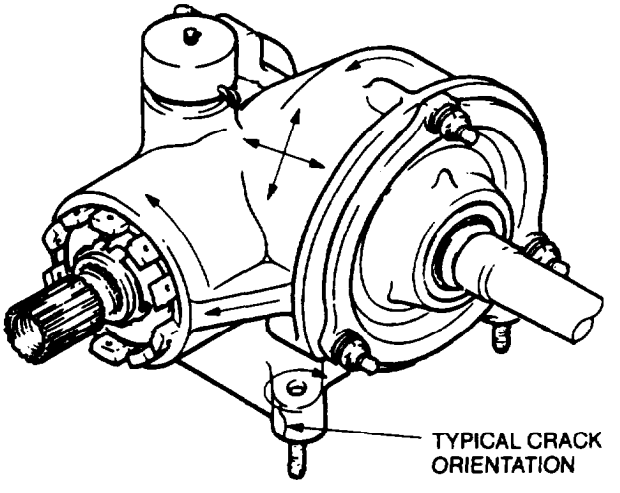


Figure 3-26. Tail Rotor Gearbox

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 of the OH-58A/C helicopter listed in the Airframe and Landing Gear Group Inspection Index (Table 4-1). Corresponding inspection figures and applicable text paragraphs are listed opposite each inspection item. The index number for each item may be used to locate it in Figure 4-1.

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

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
2	Forward and Aft Fuselage Sections	ET	4.2	4-2
3	Honeycomb and Bonded Panels	BT	4.3	4-3
4	Fore and Aft Engine Firewalls	PT	4.4	4-4
5	Tailboom Section	ET	4.5	4-5
6	Vertical Fin Assembly	BT	4.6	4-6
*7	Vertical Fin Supports	ET	4.7	4-7
*8	Vertical Fin Mount Bolts	MT	4.8	4-8
*9	Pylon Supports	MT	4.9	4-9
10	Pylon Support Link	MT	4.10	4-10
11	Molded Assembly	ET	4.11	4-11
*12	Yoke	MT	4.12	4-12
*13	Engine Mounts	MT	4.13	4-13
*14	Transmission Support Straps	ET	4.14	4-14
15	Skid Saddles	ET	4.15	4-15
16	Vertical Fin, Fluid in Honeycomb Core	RT	4.16	4-16
17	Fore and Aft Cross Tube Assemblies	UT	4.17	4-17

* Indicates Flight Safety Part

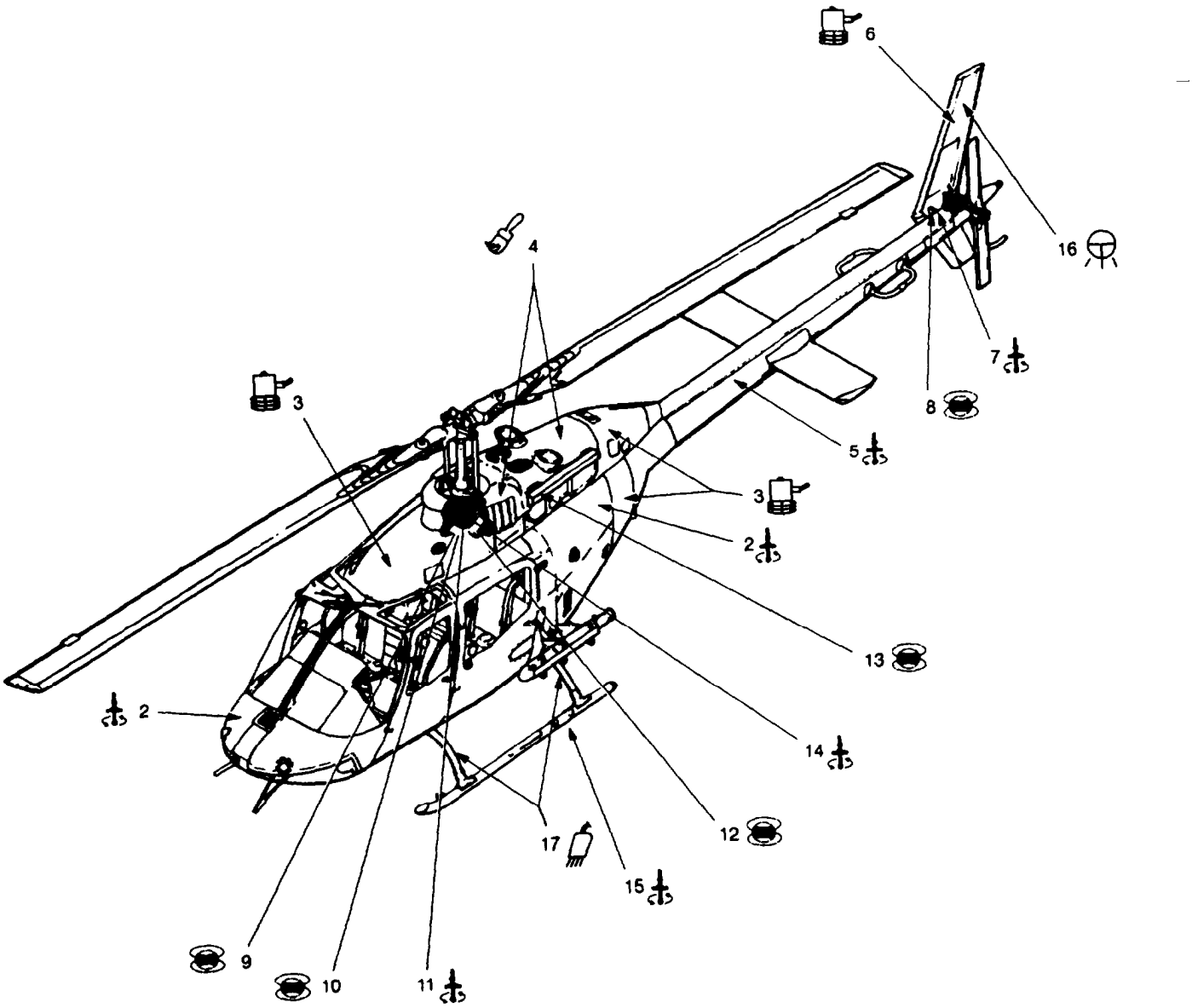


Figure 4-1. Airframe/Landing Gear Group

4.2 FORWARD AND AFT FUSELAGE SECTIONS (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 non-ferromagnetic stainless steel alloys. The forward and aft fuselage components identified are exterior skins, doors, panels, fairings, cowlings, seats, firewalls, roof and floors.

4.2.2 Defects. Perform the NDI method contained herein on the forward and aft fuselage parts and components for the purpose of: (1) Confirmation of crack indications identified by visual inspection. (2) Verification that dents, scratches, or gauges do not conceal cracks. (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, 90° 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 magnesium (0.008, 0.020, and 0.040 EDM notches)

g. Reference Block, three-notched titanium (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. Doors and panels as required. (Refer to Table 1-2 and Figure 1-4, as required).

WARNING

Maintenance Platforms/Workstands

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

4.2.3.4 Preparation of Part. The parts or areas to be inspected 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-19e[II].

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

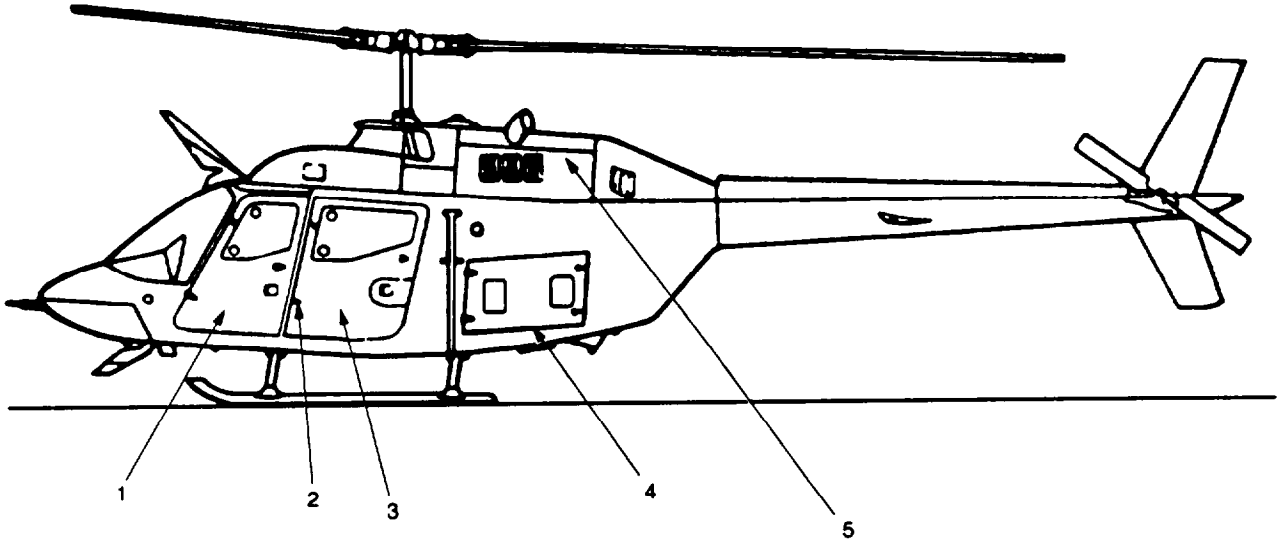
b. Refer to Eddy Current Method, paragraph 1.4.11. Set up on test block as follows:

(1) Null probe on test block.

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

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040 inch notch in test block. (Refer to 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.



1. CABIN DOOR
2. PASSENGER DOOR HINGE
3. PASSENGER DOOR
4. AVIONICS COMPARTMENT DOOR
5. ENGINE COWLING

NDI_OH-58_F4_2

Figure 4-2. Forward and Aft Fuselage Sections

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

b. Inspect the part.

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

NOTE

Either probe identified in paragraph 4.2.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed steps 4.2.3.5 b. (1), (2) and (3) shall be repeated each time a change is made.

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

4.2.4 Backup Method. None required.

4.2.5 System Securing Secure doors and panels as required in accordance with the applicable technical manual listed in Table 1-1.

4.3 HONEYCOMB AND BONDED PANELS (BT).

4.3.1 Description (Figure 4-1, Index No. 3). The honeycomb and bonded panels covered by this inspection consists of upper cabin roof, forward lower cabin shell, crew seat and bulkhead, passenger seat, passenger seatback bulkhead, aft lower cabin shell, seatbacks electrical shelf, aft fuel cell bulkhead, lower aft fuselage fairing, electrical compartment floor and oil cooler support.

4.3.2 Defects. Perform the NDI method contained herein on the components listed above for the purpose of verification of void damage identified by visual inspection. Void damage may occur anywhere on either side of bonded panels as a result of mechanical damage (dents, punctures, scratches, etc.) or fluid intrusion/corrosion.

NOTE

A void is defined as an unbonded area that is suppose to be bonded. Many subdefinitions are given such as bond separation, delamination, lack of adhesive, gas pocket, misfit, etc. This procedure makes no distinction among these instead grouping under the general term “void.”

4.3.3 Primary Method. Bond Testing.

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

a. Bond Test Unit

b. Probe Mechanical Impedance Analysis

c. Probe Holder

d. Cable Assembly

e. Test block, metal honeycomb with skin thickness closest to that of the panel to be inspected (refer to Appendix C)

f. Test block, Composite Defect Standard #l

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. Not applicable.

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

4.3.3.5 NDI Equipment Settings. Refer to Bond Testing Equipment, paragraph 1.4.6.1.

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

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

H	- Pos 40%
V	- Pos 80%
PHASE REF	- 0
DRIVE	- MID

c. Press SET and select DISPLAY - PHASE.

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

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

NOTE

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

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

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

4.3.3.6 Inspection Procedure. Refer to Bond Test Method, paragraph 1.4.6 and inspection areas are shown in Figure 4-3.

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

NOTE

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

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

4.3.3.7 4.3.3.7 Marking and Recording of Inspection Results. Mark and record as required by paragraph 1.3.

NOTE

Attention shall be directed to accurately marking the boundaries of all voids on both sides of the panel. These markings will be needed to determine acceptance/rejection criteria in accordance with the applicable technical manuals listed in Table 1-1.

4.3.4 Backup Method. None required.

4.3.5 System Securing. Reinstall acceptable panels that were removed for inspection in accordance with the applicable technical manual listed in Table 1-1.

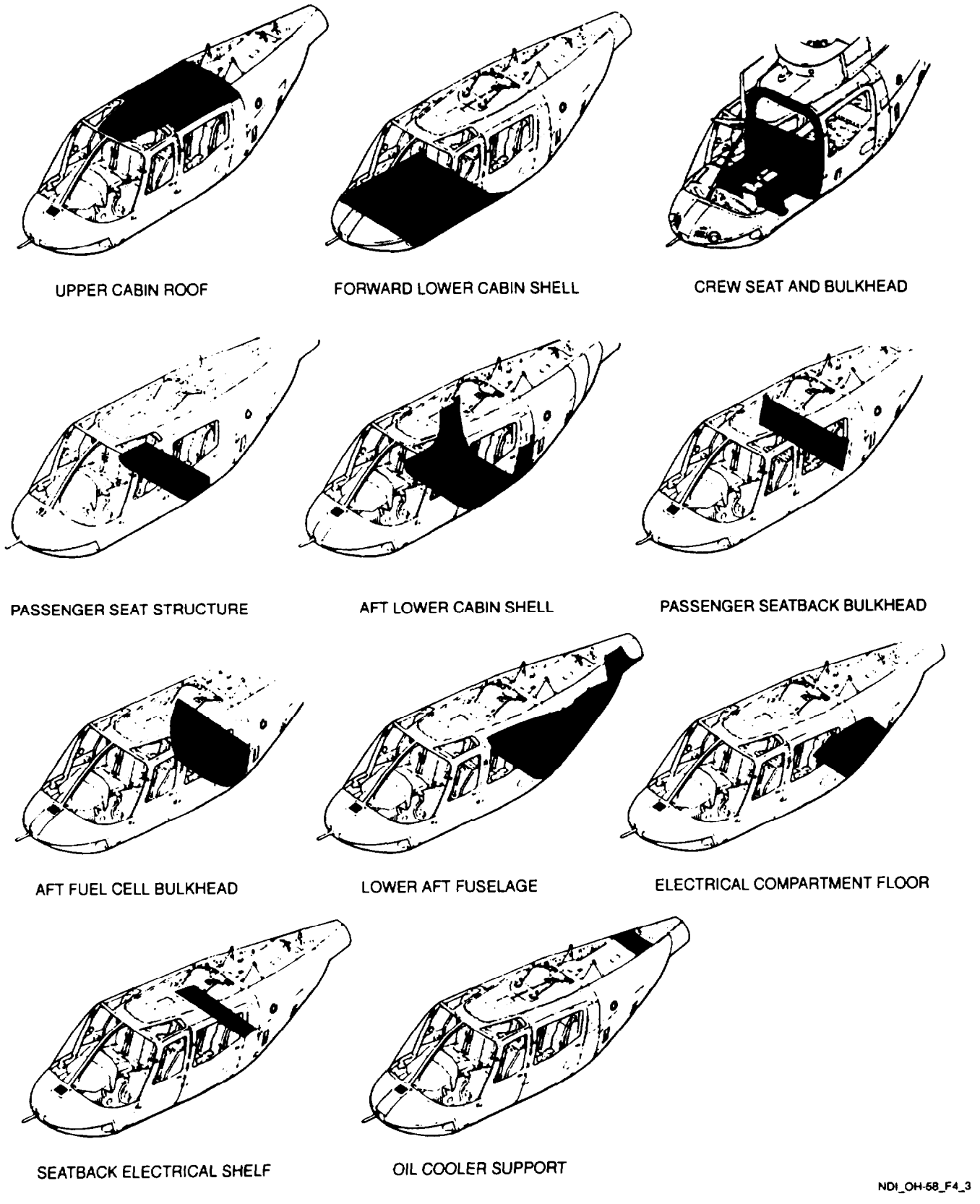


Figure 4-3. Honeycomb And Bonded Panels

4.4 FORE AND AFT ENGINE FIREWALLS (PT).

4.4.1 Description (Figure 4-1. Index No. 4). Firewalls are constructed of titanium sheet, are provided at the forward and aft ends of the engine.

4.4.2 Defects. Defects may occur anywhere on the surface of the firewall. Particular attention shall be given to any dents, nicks, and scratches to ensure they do not conceal cracks. No cracks are allowed.

4.4.3 Primary Method. Fluorescent Penetrant.

4.4.3.1 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.

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

4.4.3.3 Access. Engine access panels.

4.4.3.4 Preparation of Part. Protective coating shall be removed and the part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

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

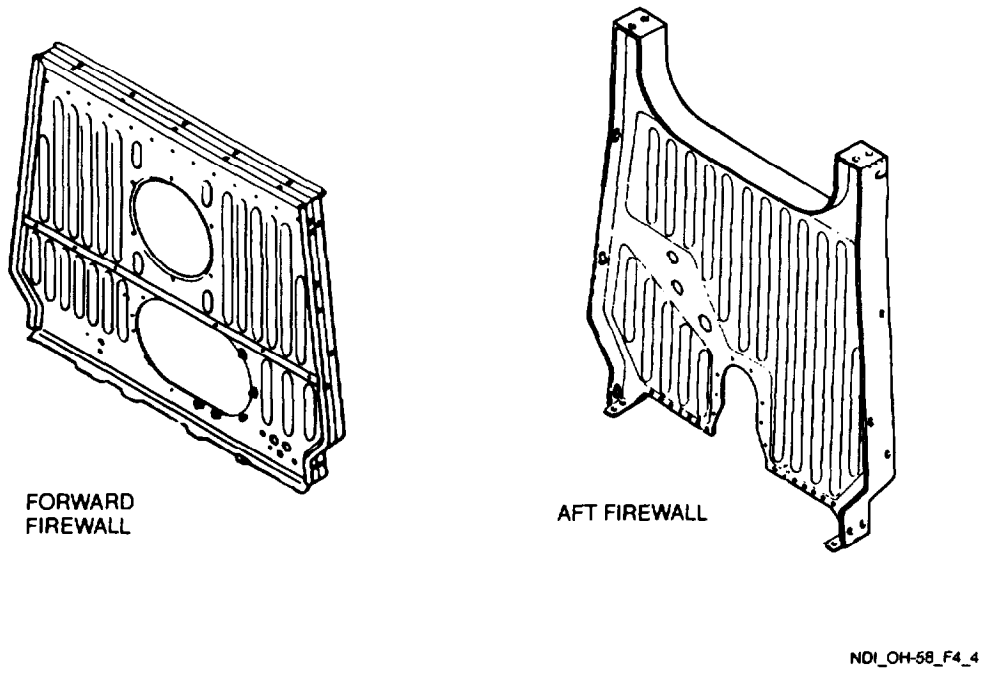


Figure 4-4. Fore And Aft Engine Firewalls

4.4.3.6 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

4.4.4 Backup Method. None required.

4.4.5 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. Protective coating shall be reapplied as required. Secure engine access panels in accordance with the applicable technical manuals listed in Table 1-1.

4.5 TAILBOOM SECTION (ET).

4.51 Description (Figure 4-1, Index No. 5). This inspection is applicable to the tailboom surface skin, driveshaft hanger bearing support brackets, driveshaft covers, attaching clips, hinge valves, supports, horizontal stabilizer and attaching structures, and tail rotor gearbox mounting pads contained within the tailboom section.

4.5.2 Defects. Perform the NDI method contained here in for the purpose of: (1) Confirmation of crack indications found visually. (2) Verification that scratches, dents, gauges, wrinkles or creases do not conceal cracks; and (3) locating the ends of cracks for stop drilling. No cracks are allowed.

4.5.3 Primary Method. Eddy Current.

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

a. Eddy Current Inspection Unit

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

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

d. Cable Assembly

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

f. Teflon Tape, refer to Table 1-8

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

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

4.5.3.3 Access. Remove panels and covers as required. (Refer to Table 1-2 and Figure 1-4).

4.5.3.4 Preparation of Part. The identified component(s) shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.5.3.5 NDI Equipment Settings.

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

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

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

(1) Null probe on test block.

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

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

4.5.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-5.

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

b. Inspect the part.

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

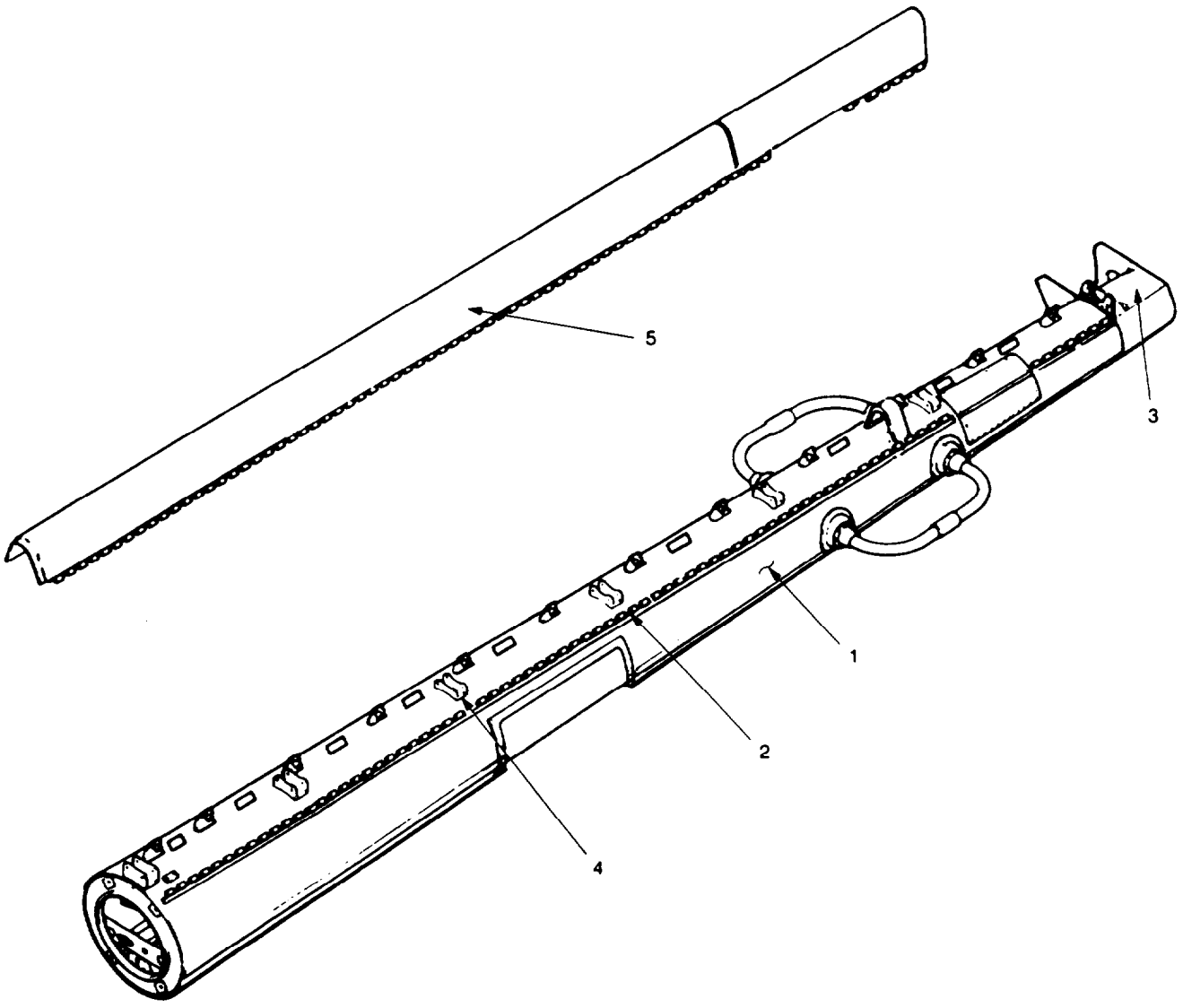
NOTE

Either probe identified in paragraph 4.5.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.5.3.5 b. (1), (2) and (3) shall be repeated each time a change is made.

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

4.5.4 Backup Method. None required.

4.5.5 System Securing. Secure all panels and covers in accordance with the applicable technical manual listed in Table 1-1.



1. TAILBOOM SKIN
2. HINGE HALVES
3. TAIL ROTOR GEARBOX MOUNTING PADS
4. DRIVESHAFT BEARING SUPPORT BRACKETS
5. DRIVESHAFT COVERS

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Figure 4-5. Tailboom Section

4.6 VERTICAL FIN ASSEMBLY (BT).

4.6.1 Description (Figure 4-1, Index No. 6) This inspection is applicable to the honeycomb (bonded) portions of the fin assembly. The vertical fin provides in-flight stability, houses the radio antennas and is the mounting structure for the tail skid. The general construction is aluminum skins over aluminum honeycomb with fiberglass panel edging.

4.6.2 Defects. Inspect for void damage that may occur anywhere on either side of the vertical fin as a result of mechanical damage (dents, punctures, scratches, etc.) or fluid intrusion/corrosion.

NOTE

A void is defined as an unbonded area that is suppose to be bonded. Many subdefinitions are given such as bond separation, delamination, lack of adhesive, gas pocket, misfit, etc. This procedure makes no distinction among these instead grouping under the general term “void.”

4.6.3 Primary Method. Bond Testing.

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

a. Bond Test Unit

b. Probe Mechanical Impedance Analysis

c. Probe Holder

d. Cable Assembly

e. Test block, metal honeycomb with skin thickness closest to that of the panel to be inspected (refer to Appendix C)

f. Teflon tape, refer to Table 1-8

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

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

4.6.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands

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

4.6.3.4 Preparation of Part. The vertical fin 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 Bond Testing Equipment, paragraph 1.4.6.1.

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

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

H	- Pos 40%
V	- Pos 80%
PHASE REF	- 0
DRIVE	- MID

c. Press SET and select DISPLAY - PHASE.

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

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

NOTE

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

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

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

4.6.3.6 Inspection Procedure. Refer to Bond Test Method, paragraph 1.4.6 and inspection areas are shown in Figure 4-6.

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

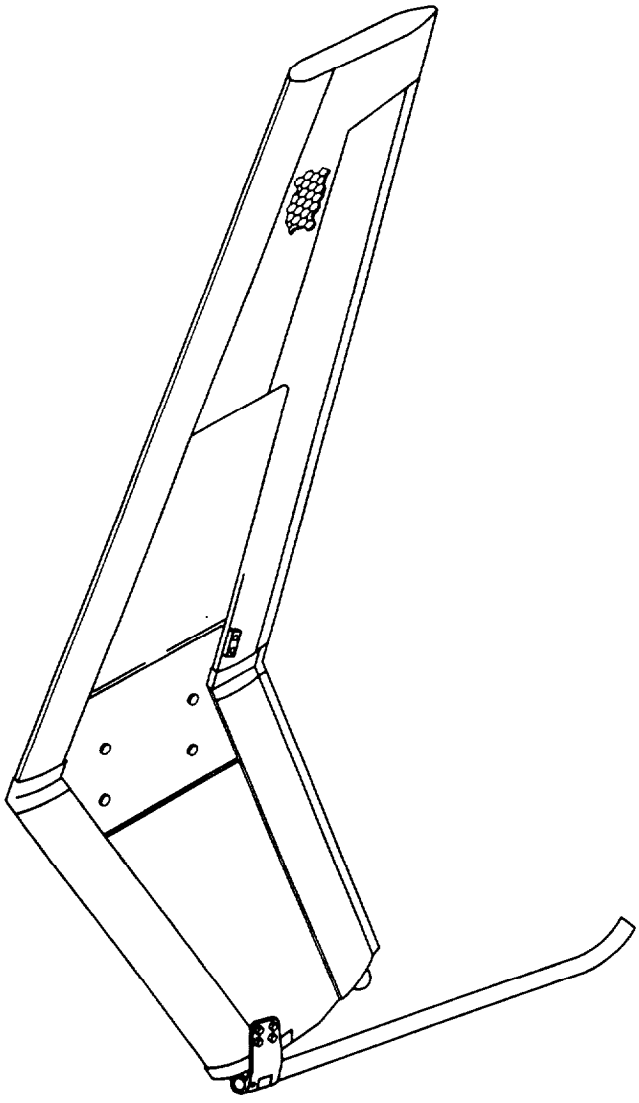

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Figure 4-6. Vertical Fin Assembly

NOTE

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

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

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

NOTE

Attention shall be directed to accurately marking the boundaries of all voids on both sides of the vertical fin. These markings will be needed to determine acceptance/rejection criteria in accordance with the applicable technical manuals listed in Table 1-1.

4.6.4 Backup Method. None required.

4.6.5 System Securing. None required.

4.7 VERTICAL FIN SUPPORTS (ET).

4.7.1 Description (Figure 4-1, Index No. 7). The vertical fin provides a mount for the tail skid and radio antennas. The vertical fin is attached to the tailboom by means of forward and aft vertical fin supports. Those supports are of aluminum construction and are classified as major structural members.

4.7.2 Defects. Inspect vertical fin supports for cracks. No cracks are allowed.

4.7.3 Primary Method. 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, 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

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

4.7.3.3 Access. Not applicable.

4.7.3.4 Preparation of Part. The vertical fin supports 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-19e[II].

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

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

(1) Null probe on test block.

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

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040 inch notch in test block. (Refer to 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.

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

b. Inspect the part.

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

NOTE

Either probe identified in paragraph 4.7.3.1 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.

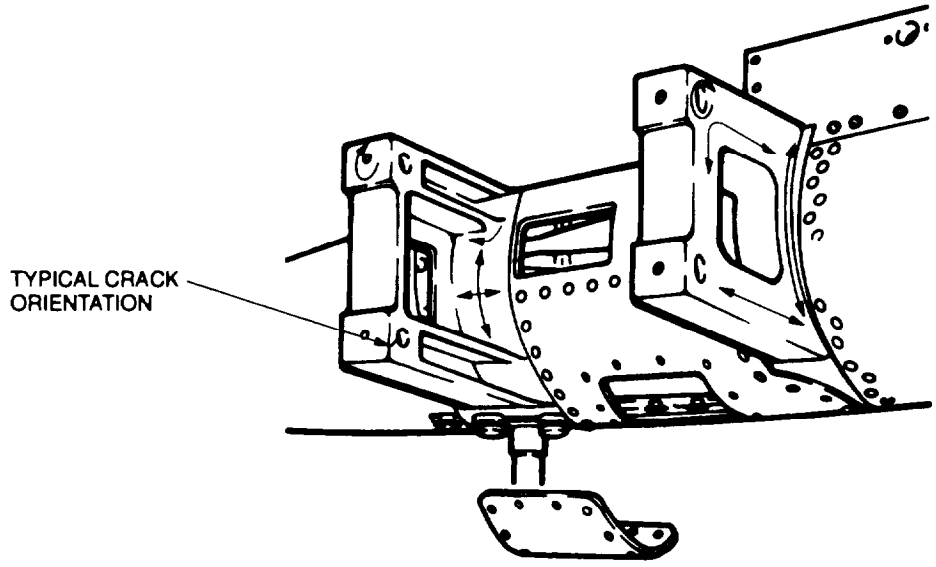


Figure 4-7. Vertical Fin Supports

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 vertical fin, if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

4.8 VERTICAL FIN MOUNT BOLTS (MT).

4.8.1 Description (Figure 4-1, Index No. 8). The vertical fin mount bolts attach the vertical fin to the vertical fin supports which are mounted to the tailboom.

4.8.2 Defects. No cracks are allowed.

4.8.3 Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe

b. Magnetometer

c. Black Light

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

e. Consumable Materials, refer to Table 1-8

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

NOTE

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

4.8.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the vertical fin mount bolts removed in accordance with the applicable technical manuals listed in Table 1-1.

4.8.3.3 Access. Not applicable.

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

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

4.8.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Position required for this inspection are illustrated in Figure 4-8.

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

b. Place probe on part in position as shown.

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

d. Inspect for cracks using the black light.

4.8.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

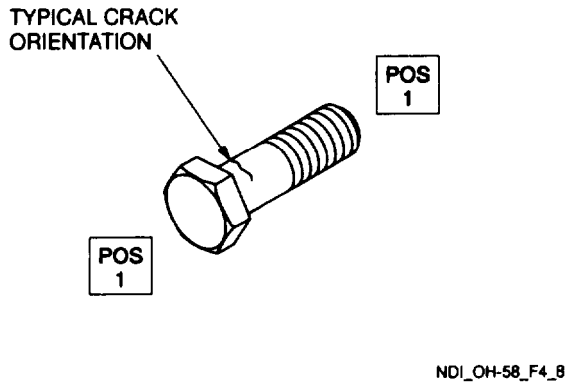


Figure 4-8. Vertical Fin Mount Bolts

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

4.8.4 Backup Method.

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

4.9 PYLON SUPPORTS (MT).

4.9.1 Description (Figure 4-1, Index No. 9). The pylon supports are attached to the cabin roof and support the pylon link assemblies.

4.9.2 Defects Defects may occur anywhere on the surface of the pylon supports. No cracks are allowed.

4.9.3 Primary Method Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

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

e. Consumable Materials, refer to Table 1-8

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

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

4.9.3.3 Access. Not applicable.

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

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

4.9.3.6 Inspection Procedure. A magnetic field shall be applied to the part perpendicular to the orientation of possible cracks. Position required for this inspection are illustrated in Figure 4-9.

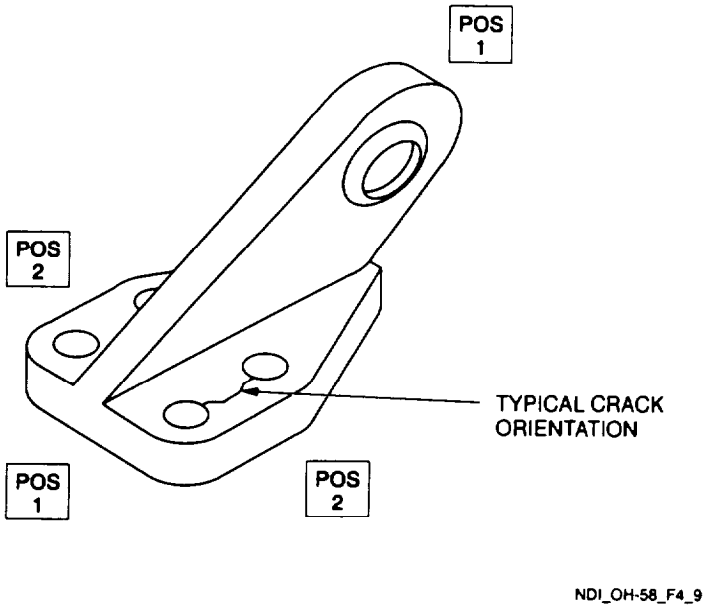


Figure 4-9. Pylon Supports

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

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

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

d. Inspect for cracks using the black light.

e. Demagnetize before moving to the next position. Refer to paragraph 4.9.3.8.

f. Repeat steps a through e for Position 2.

4.9.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results by paragraph 1.3.

4.9.3.8 4Demagnetization. With the switch remaining in the AC position, place the probe/yoke legs in the same position used for magnetizing. Press the test switch and withdraw the probe/yoke from the part for a distance of two feet before releasing the switch.

4.9.4 Backup Method None required.

4.9.5 System Securing. Clean the pylon supports 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 pylon supports requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.10 PYLON SUPPORT LINK (MT).

4.10-1 Description (Figure 4-1, Index No. 10). The pylon support link supports the main transmission from each side.

4.10.2 Defects. Defects may occur anywhere on the surface of the pylon support link. No cracks are allowed.

4.10.3 Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

c. Black Light

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

e. Consumable Materials, refer to Table 1-8

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

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

4.10.3.3 Access. Not applicable.

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

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

4.10.3.6 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 4-10.

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 4.10.3.8.

f. Repeat steps a through e for Position 2.

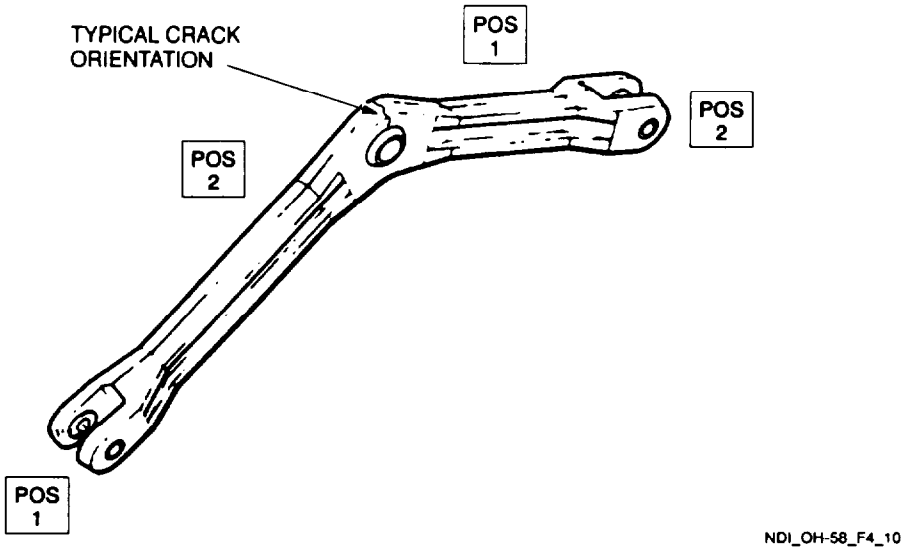


Figure 4-10. Pylon Support Link

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

4.10.3.8 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.

4.10.4 Backup Method. Inspect with circular field using central conductor through pylon support link bearing hole, magnetize at 1,800 amperes. Inspect hole inside diameter and surrounding area. Inspect with longitudinal field by placing half the link perpendicular to the coil axis and magnetize at 6,000 amperes turns (requires two inspections). Refer to paragraph 1.4.8.

4.10.5 System Securing. Clean the pylon support link 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 pylon support link requires installation in accordance with the applicable technical manuals listed in Table 1-1.

4.11 MOLDED ASSEMBLY (ET).

4.11.1 Description (Figure 4-1, Index No. 11). The molded assembly is an aluminum and elastomeric isolation/shock mount. It is attached to the lower aft section of the transmission through a steel yoke and to the airframe upper deck panel.

4.11.2 Defects. Defects may occur anywhere on the surface of the molded assembly. Particular attention shall be given to the top, bottom, and center plates, and the side brackets. No cracks are allowed.

4.11.3 Primary Method. Eddy Current.

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

a. Eddy Current Inspection Unit
b. Probe, straight, shielded surface, 100 KHz-500 KHz
c. Probe, right angle, shielded surface, 100 KHz-500 KHz, 90° 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 magnesium (0.008, 0.020, and 0.040 EDM notches)
g. Reference Block, three-notched titanium (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

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

4.11.3.3 Access. Not applicable.

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

4.11.3.5 NDI Equipment Settings.

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

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

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

(1) Null probe on test block.

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

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

4.11.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-11.

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

b. Inspect the part.

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

NOTE

Either probe identified in paragraph 4.11.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed steps 4.11.3.5 b. (1), (2) and (3) shall be repeated each time a change is made.4.11.3.7 Marking and Recording of Inspection Results. Mark and record as required by paragraph 1.3.

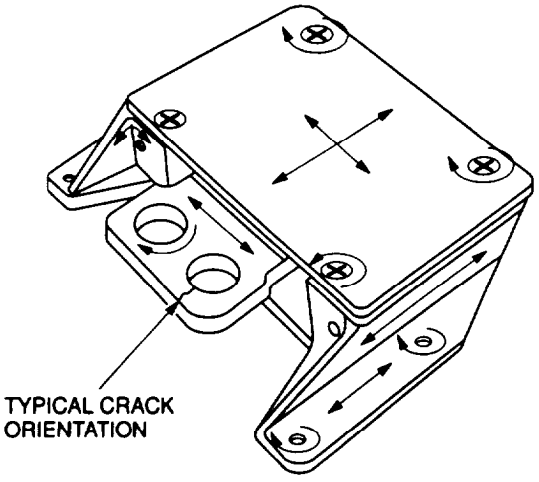


Figure 4-11. Molded Assembly

4.11.4 Backup Method. Refer to paragraph 1.4.7.

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

4.12 YOKE (MT).

4.12.1 Description (Figure 4-1, Index No. 12). The yoke attaches the lower aft section of the transmission to the molded assembly.

4.12.2 Defects. Defects may occur anywhere on the surface of the yoke. 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, refer to Table 1-8

e. Consumable Materials, refer to Table 1-8

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

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

4.12.3.3 Access. Not applicable.

4.12.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part of 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 Positions 2 and 3.

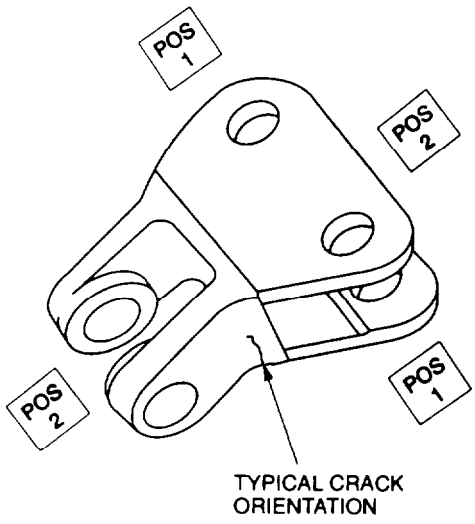


Figure 4-12. Yoke

4.12.3.7 Marking and Recording of Inspection Results. Mark and record 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 Backup Method. Using the Magnetic Particle Method, magnetize yoke with longitudinal field at 5000 ampere-turns. Rotate 90 and repeat inspection. Refer to paragraph 1.4.8.

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

4.13 ENGINE MOUNTS (MT).

4.13.1 Description (Figure 4-1, Index No. 13). The engine mounts are tubular components with end fittings attached by welding. The mounts are bolted to the top of the engine deck.

4.13.2 Defects. Defects may occur anywhere on each mount tube. Pay particular attention to welds and around mounting holes.

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, refer to Table 1-8

e. Consumable Materials, refer to Table 1-8

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

4.13.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and engine mounts removed in accordance with the applicable technical manuals listed in Table l-l.

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 of 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 the next position. Refer to paragraph 4.13.3.8.

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

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

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.

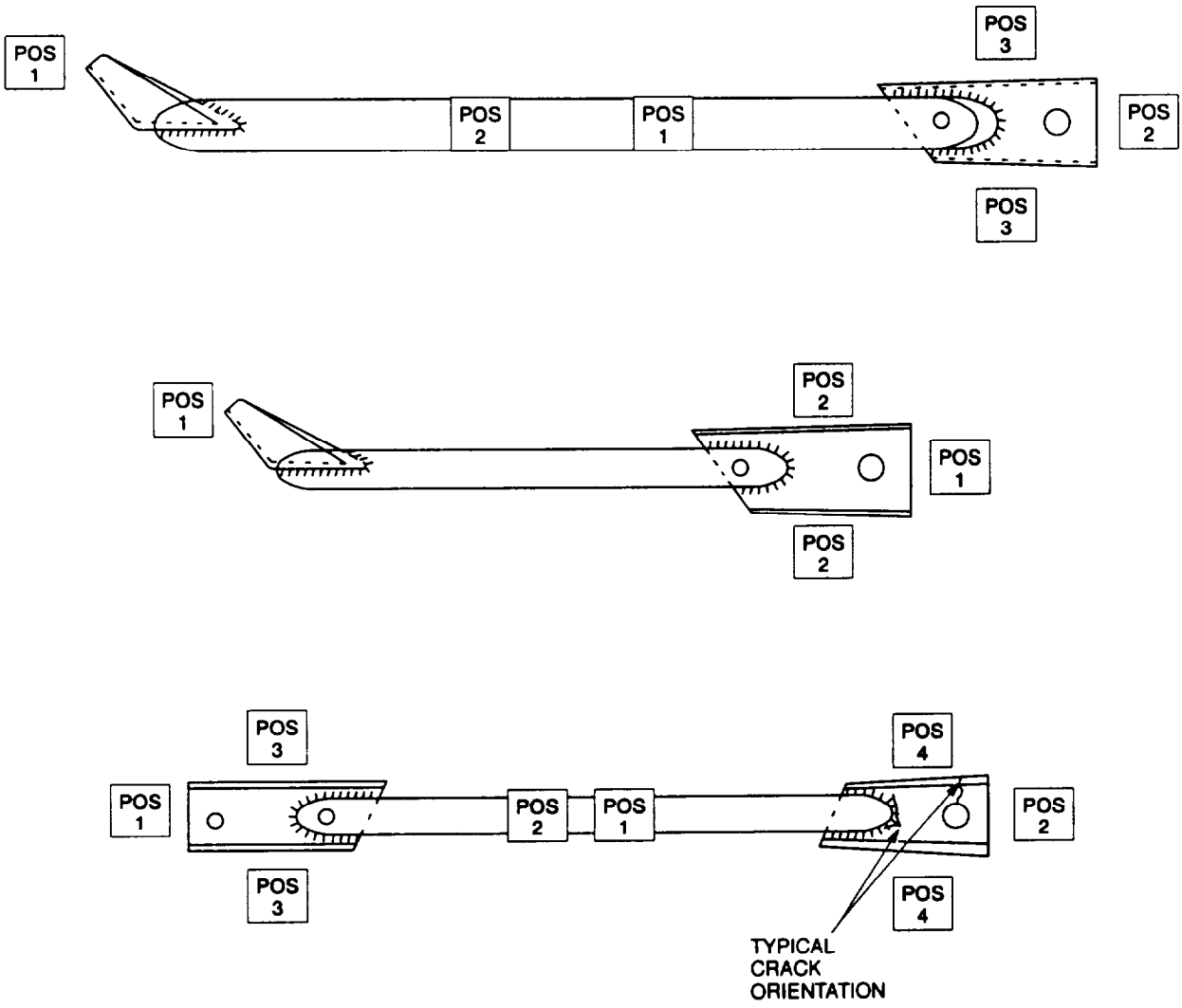


Figure 4-13. Engine Mounts

4.13.4 Backup Method. None required.

4.13.5 System Securing. Clean the engine mounts thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI paragraph 1.4.16 The engine mounts require installation in accordance with the applicable technical manuals listed in Table 1-1.

4.14 TRANSMISSION SUPPORT STRAPS (ET).

4.14.1 Description (Figure 4-1, Index No. 14). There are four transmission support straps which transmit and distribute loads from the pylon and pylon supports to the cabin roof beam and the associated support structure.

4.14.2 Defects. Cracks can occur anywhere on the strap. Pay particular attention to the outlined critical area in Figure 4-14. The most critically loaded is the left rear support strap. No cracks are allowed.

4.14.3 Primary Mehtod. Eddy Current.

4.14.3.1 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

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

4.14.3.3 Access. The two forward support straps are accessible by removing the cabin sound-proof blanket. The two aft support straps are accessible only after removal of the two access panels aft of the passenger compartment. Because the two aft support straps are not directly visible, the two forward support straps should be used to confirm/practice probe positioning.

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

4.14.3.5 NDI Equipment Settings.

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

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

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

(1) Null probe on test block.

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

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

4.14.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-14.

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

b. Inspect the part.

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

NOTE

Either probe identified in paragraph 4.14.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed, steps 4.14.3.5 b. (1), (2) and (3) shall be repeated each time a change is made.

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

4.14.4 Backup Method. None required.

4.14.5 System Securing. The access panels and sound-proof blankets require installation in accordance with the applicable technical manual listed in Table 1-1.

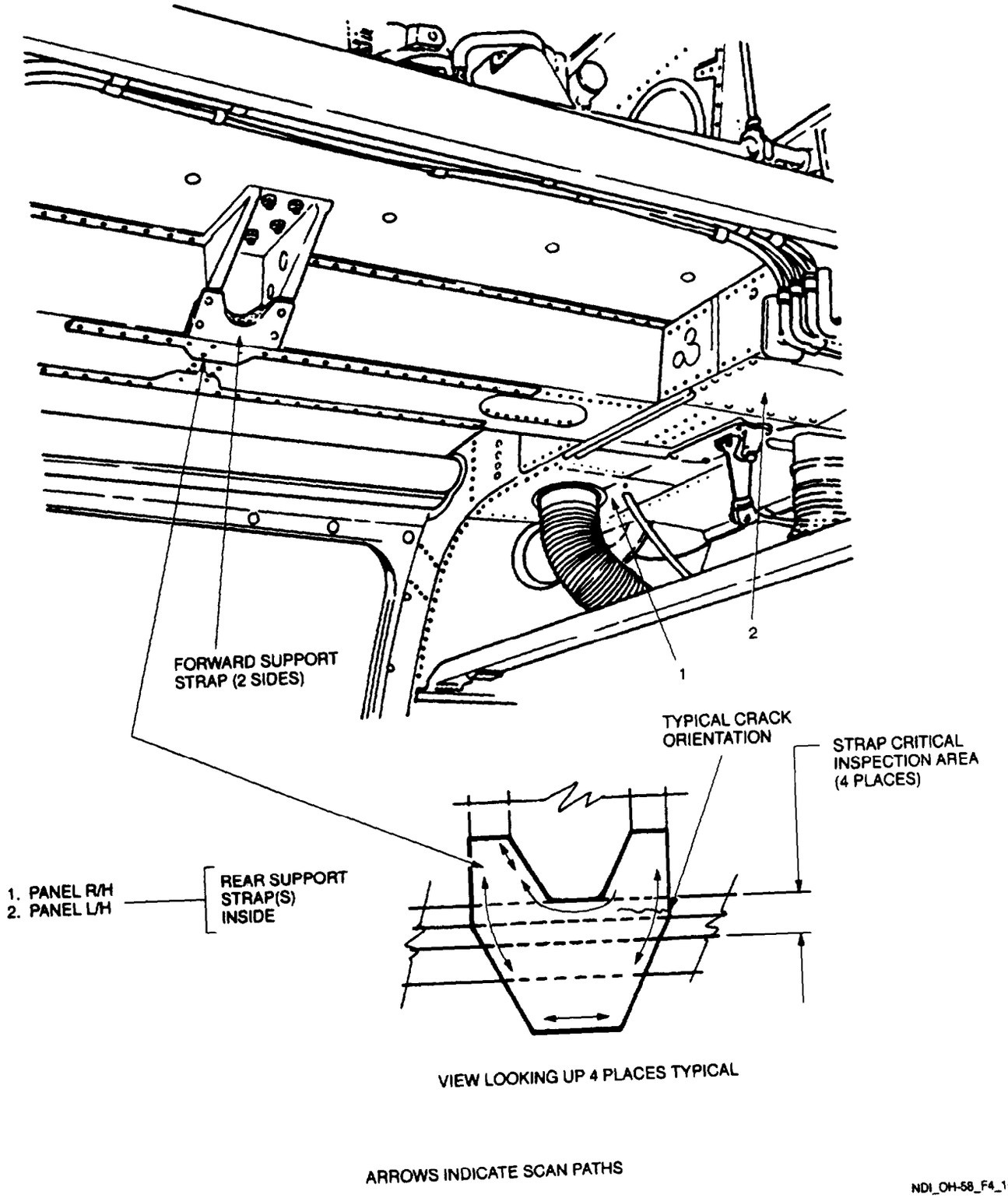


Figure 4-14. Transmission Support Straps

4.15 SKID SADDLES (ET).

4.15.1 Description (Figure 4-15, Index No. 15). The skid saddles are used to attach the landing gear cross tubes to the skid tubes. This inspection is applicable to both standard and high landing gear.

4.15.2 Defects. Defects may occur anywhere on the surface of the skid saddles. No cracks are allowed.

4.15.3 Primary Method. Eddy Current.

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

a. Eddy Current Inspection Unit

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

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

d. Cable Assembly

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

f. Teflon Tape, refer to Table 1-8

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

4.15.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance 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 skid saddles shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.15.3.5 NDI Equipment Settings.

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

Frequency F1	- 200 KHz	F2	-Off
Hdb	- 57.0		
Vdb	- 69.0		
Rot	- 56°		
Probe drive	- mid		
LPF	- 100		
HPF	- 0		
H Pos	- 80%		
v Pos	- 20%		

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

(1) Null probe on test block.

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

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

4.15.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 4-15.

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

b. Inspect the part.

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

NOTE

Either probe identified in paragraph 4.15.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed steps 4.15.3.5 b. (1), (2) and (3) shall be repeated each time a change is made.

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

4.15.4 Backup Method. None required.

4.15.5 System Securing. None required.

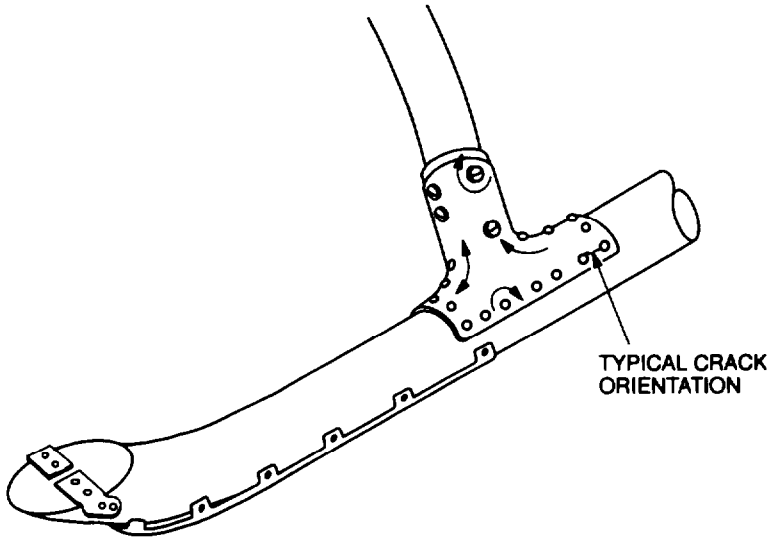


Figure 4-15. Skid Saddles

4.16 VERTICAL FIN, FLUID IN HONEYCOMB CORE (RT).

4.16.1 Description (Figure 4-1, Index No. 19). The vertical fin is of aluminum honeycomb construction and provides a mount for the tail skid and radio antennas. The vertical fin is attached to the tailboom by means of forward and aft vertical fin supports.

4.16.2 Defects. Fluid in honeycomb core.

4.16.3 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 l-l. A hazard associated with exposure to ionizing radiation is that serious damage can be inflicted without pain, burning or other sense of discomfort during the exposure period. Radiation protection shall be utilized in accordance with AR40-14/DLAR 1000.28.

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

a. X-ray unit

b. Tripod, X-ray tubehead stand

C. Film Processor

d. Film, Ready Pack 8 inch by 10 inch

e. Marking material, refer to Table 1-8

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

4.16.3.3 Access. Not applicable.

WARNING

Maintenance Platforms/Workstands

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

4.16.3.4 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.

4.16.3.5 NDI Equipment and Settings.

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

b. Typical equipment settings, inspection and exposure data are given in Figure 4-16.

4.16.3.6 Inspection Procedure. Inspect identified areas, refer to Figure 4-16 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 Typical defects are shown in Figure 4-16 (Sheet 3).

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

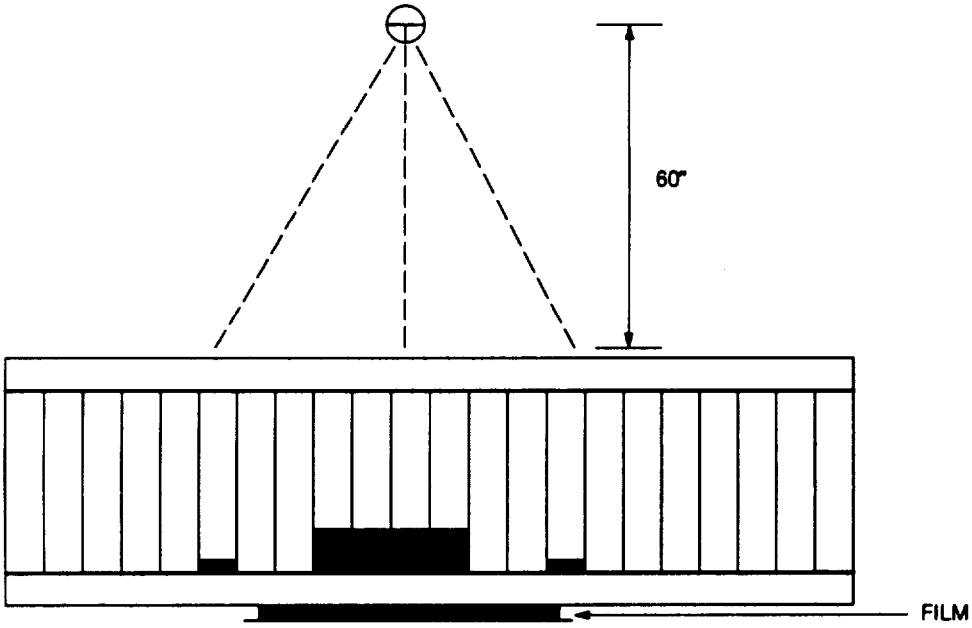
4.16.4 Backup Method. None required.

4.16.5 System Securing. The identified area shall be cleaned as necessary. Refer to Post Cleaning And Restoration Of Part Or Area after NDI paragraph 1.4.16.

4.17 FORE AND AFT CROSS TUBE ASSEMBLIES (UT).

4.17.1 Description (Figure 4-1, Index No. 20). The forward and aft cross tubes are the transverse (side-to-side) structure of the landing gear skids and attach the landing gear skid assembly to the helicopter fuselage. The ends of each cross tube have a larger outside diameter (approximately 1/4 inch) and a proportionally thicker wall than the rest of the tube. These reinforced ends are drilled for attachment of the skid tube saddles. Nut plates are fastened inside the cross tubes using blind rivets and are used to secure the saddle bolts.

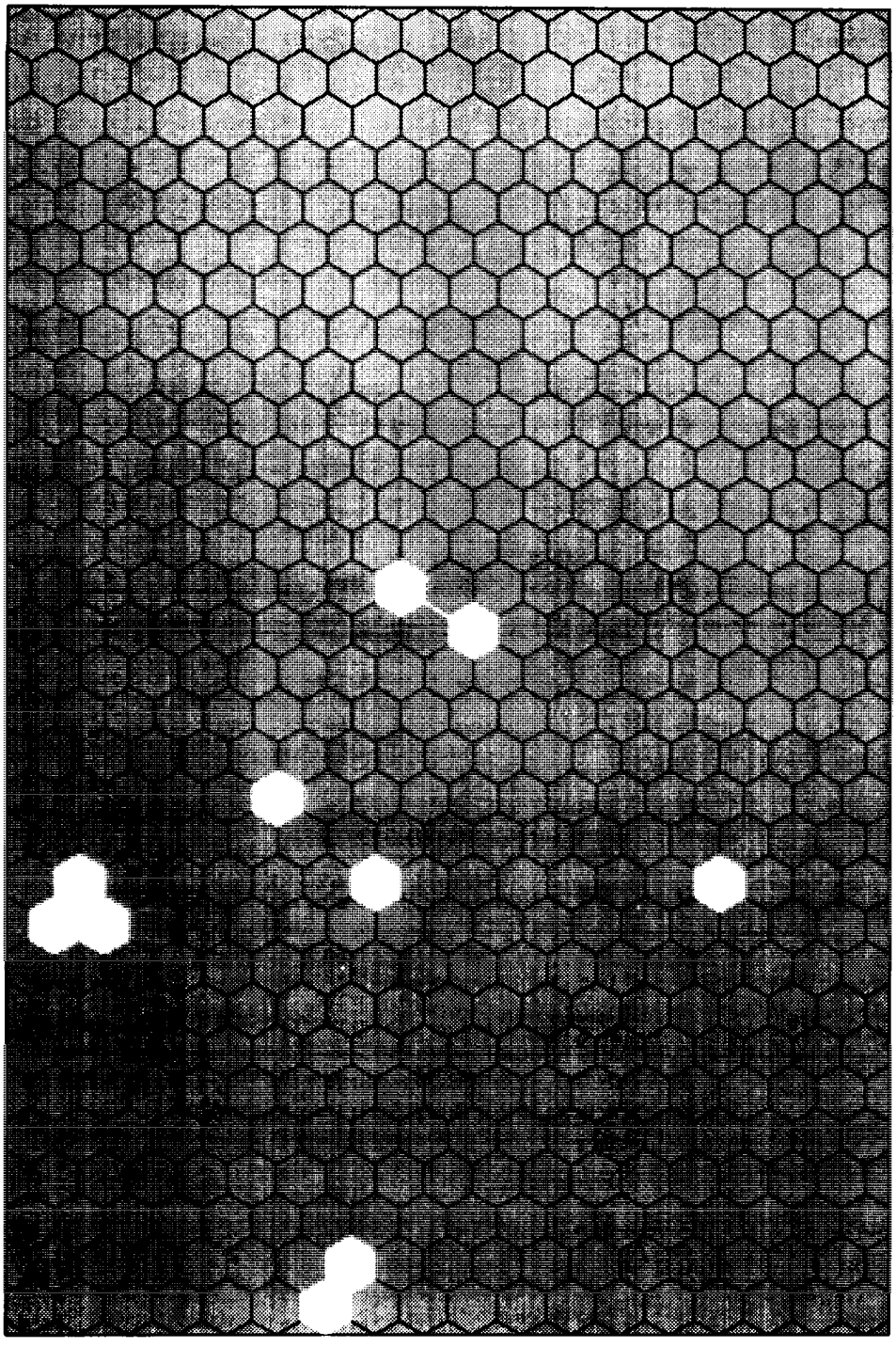
4.17.2 Defects. Four nut plates are present at the ends of each cross tube. The blind rivet at the inboard end of each nut plate is the potential site for cracking and failure of the cross tube. Cracking may occur at any of the rivets, also may occur the radius at the change of tube thickness. No cracks are allowed.



RADIOGRAPHIC INSPECTION DATA						
EXPOSURE NUMBER	KV	MA	FFD (INCHES)	TIME (SEC)	FILM	
					TYPE	SIZE
E1	50	3.5	60	60	M-2	8 x 10
REMARKS INSPECTION DATA SHALL BE ADJUSTED AS REQUIRED.						

NDI_OH-58_F4_33_1

Figure 4-16. Vertical Fin, Fluid In Honeycomb Core (Sheet 1 of 2)



NDI_OH-58_F4_33_2

Figure 4-16. Vertical Fin, Fluid In Honeycomb Core (Sheet 2 of 2)

4.17.3 Primary Method. Ultrasonic

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

a. Ultrasonic Inspection Unit

b. Transducer, 5.0 Mhz, 60 shear wave, 1/4 X 1/4 inch element

c. Cable Assembly

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

e. Consumable Materials, refer to Table 1-8.

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

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

4.17.3.3 Access. Not applicable

4.17.3.4 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.

4.17.3.5 NDI Equipment Settings.

a. Make the following initial settings on the USD-15S:

(SETUP - DEFAULT SETTINGS) DIALOG ENGLISH

UNIT	INCH
(BASICS)	
GAIN	40db
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	5MHz
REJECT	0%
RECTIF	FULL-W
DUAL	OFF

(AMPLITUDE)	
FINEdb	O.OOdb
LO-NOIS	OFF
PUL-AMP	150V
PUL-WID	30NS
(GATES)	See Note 2
(MEAS)	See Note 3
(KEYS)	See Note 3
(ANGLE)	See Note 3
(DAC)	
DAC-MOD	OFF
DAC-REC	OFF
A-START	See Note 3
DAC-ECH	0

NOTE:

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

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

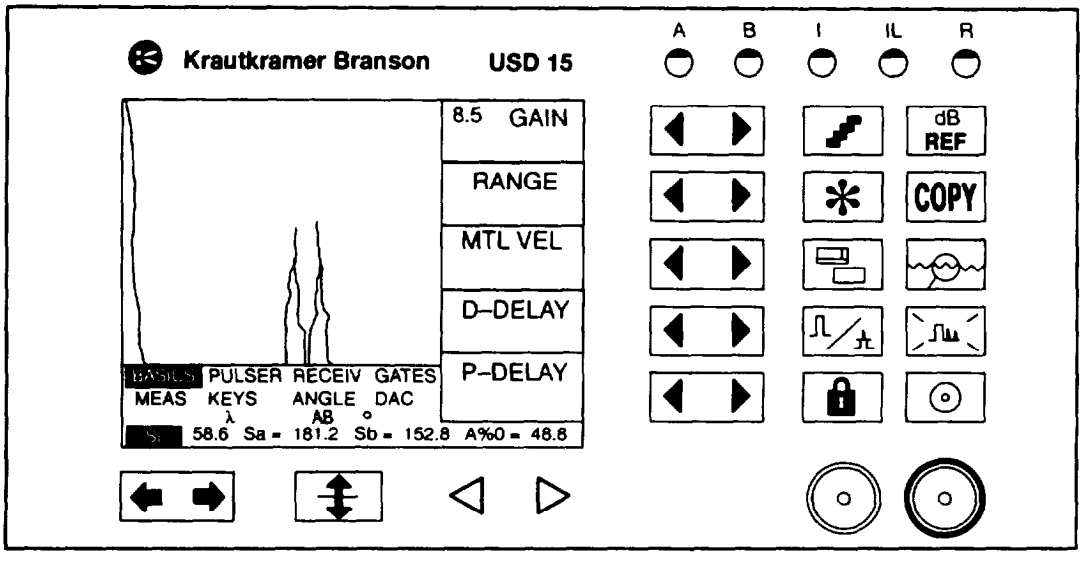
(3) NOT USED- LEAVE AT DEFAULT VALUES

b. Refer to Ultrasonic Method, paragraph 1.4.12. Set up on test block as follows:

NOTE

The ideal reference block is a section of OH-58 cross tube, rejected for cracks, having both cracked and untracked holes. (A hole may have to be drilled in some rejected cross tubes in order to provide a good hole.) Also, set up may be made using the reference block 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 4-17 with the sound path parallel to the long axis of the tube. Position transducer approximately 1 inch from a good hole and manipulate transducer to obtain a reflection. Now, 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 4-17. Now, 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 untracked 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.



STANDARD HOLE

NDI_OH-58_F4_34_1

Figure 4-17. Fore and Aft Cross Tube Assemblies (Sheet 1 of 2)

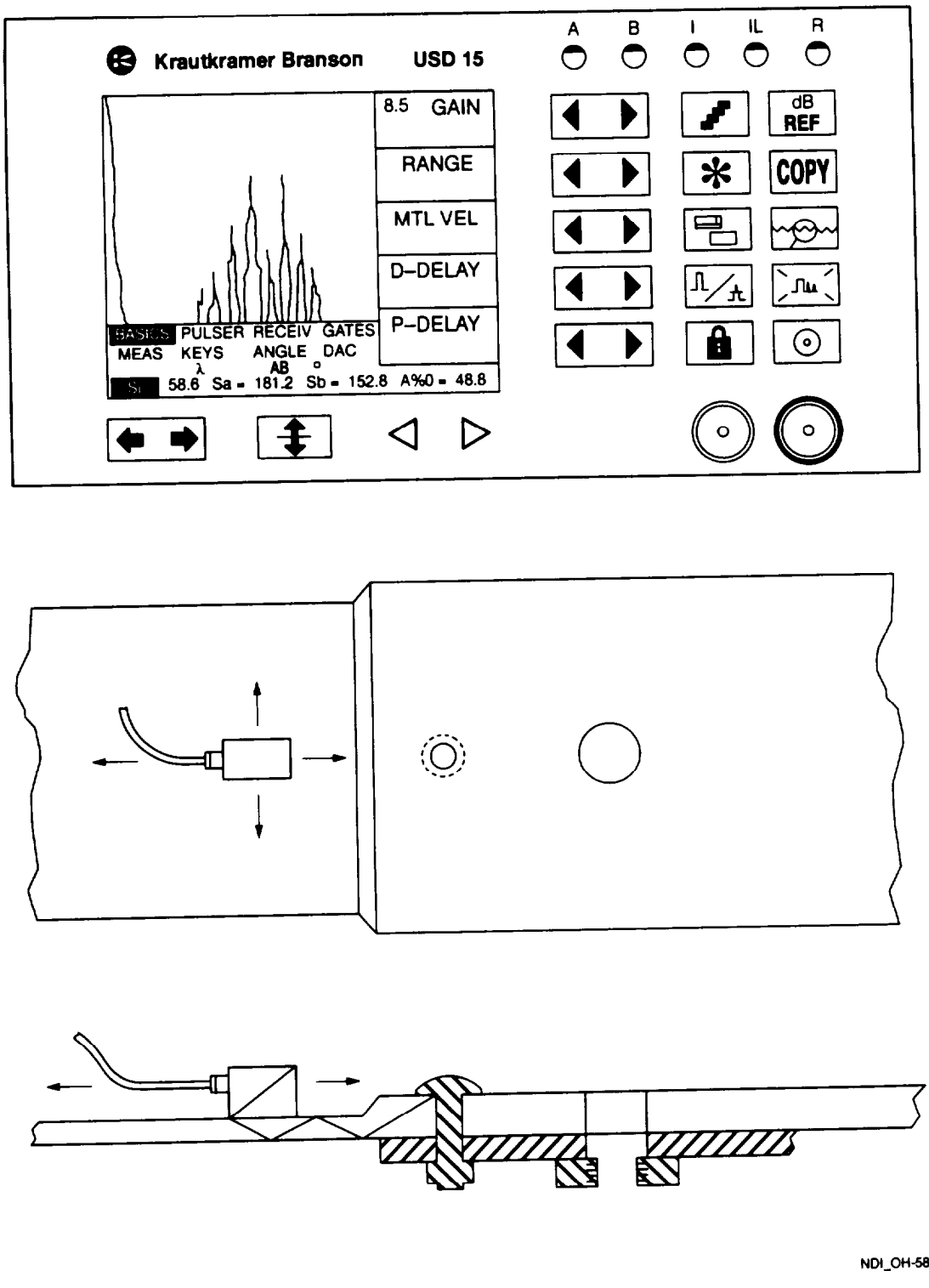


Figure 4-17. Fore and Aft Cross Tube Assemblies (Sheet 2 of 2)

(2) Position transducer at a cracked hole and note signal from cracks. Typically, the reflection from the cracks (specially 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% 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 reference block is used, position transducer on back of the test block (notches down) so that the ultrasonic signal is trapped by end of the block. “Peak” out the first reflection from the 0.040 inch deep notch and adjust gain level to approximately 50% FSH. Use D-delay to position this “Peaked” signal at mid-screen. This block will permit set up of gain, range and delay only.

As experience is gained with this inspection, set up may be made using holes in the test part.

4.17.3.6. Inspection Procedure.

a. 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 a 1/4 inch greater than from a good hole and indication is still present on CRT are cause for rejection. Repeat the inspection for the remaining holes.

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

4.17.4. Backup Method. None required.

4.17.5. System Securing. The skid assembly requires cleaning to remove inspection media. Refer to Post Cleaning and Restoration of Part or Area after NDI, paragraph 1.4.16.

4.18. VERTICAL TAIL FIN ATTACH POINTS (ET).

4.18.1. Description. This inspection is applicable to the inboard side of the vertical spar. The area of interest is the aluminum skin immediately around the four mount bolt inserts. The vertical fin provides in-flight stability. Its general construction is aluminum skin over aluminum honeycomb with fiberglass panel edging.

4.18.2. Defects. Defects may occur in the skin propagating from underneath the mount bolt inserts. No cracks allowed.

4-18.3. Primary Method. Eddy Current.

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

a. Eddy Current Inspection Unit, 19EII or equivalent.

b. Probe, 90 degree 1/2 inch drop, shielded surface, 50-500 KHz.

c. Cable Assembly.

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

e. Teflon Tape, refer to Table 1-8.

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

4.18.5. Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. A partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure.

4.18.6. Access. Remove the Tail Fin to access the inboard side.

4.18.7. Preparation of Part. The inspection area shall be cleaned of any surface contamination that may interfere with adequate probe-surface contact. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

4.18.8. NDI Equipment Setting.

a. Make the following initial setting on the Eddy Current Inspection Unit, NORTEC-19EII.

Frequency F1	200 KHz	F2 OFF
HdB	57.0	
Vdb	69.0	
Rot	56 deg.	
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 bock 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 the test block. (see the standard instrument display shown in Figure 1-7).

(4) Tape may be added to the notch standard to simulate thick paint on the fin surface. Adjust gain to meet calibration requirements.

CAUTION

There are two drilled holes that are located at the 3 and 9 or 12 and 6 o'clock position on all inserts. These will give edge effect signals similar to that of a crack. disregard these non-relevant indications.

4.18.9. Inspection Procedures. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 2-12.

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

b. Inspect entire skin area 1/2 inch around each of the four mount bolt insert flanges.

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

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

4.18.11. Backup Method. None required.

4.18.12. System Securing. None required.

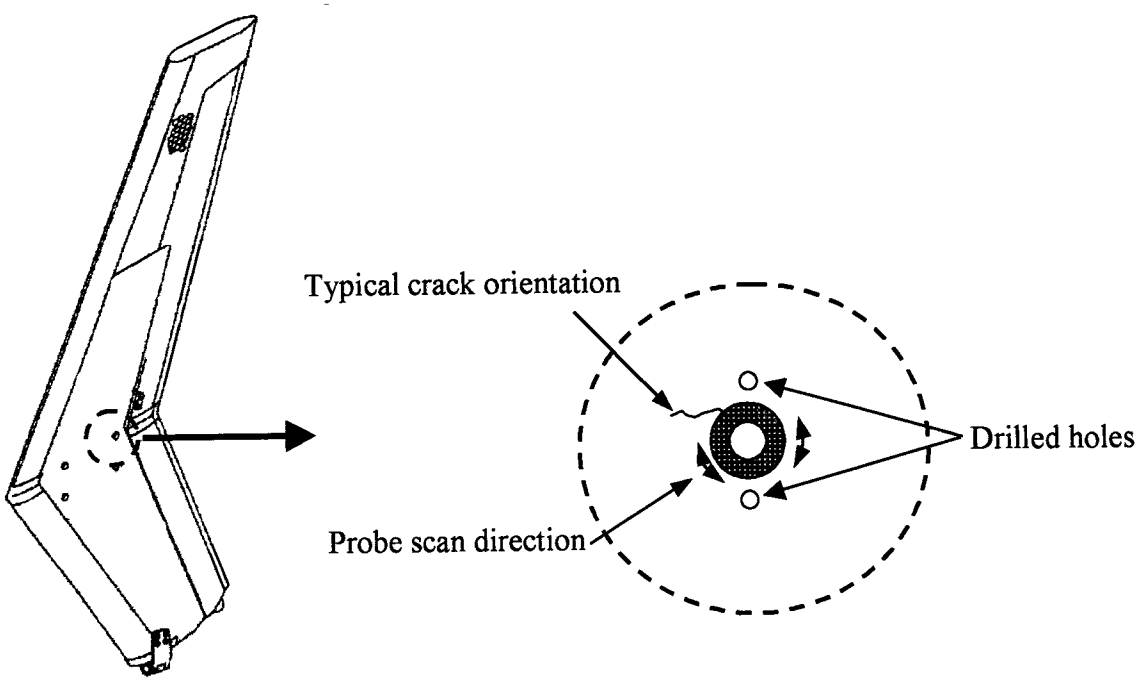


Figure 4-18. Tail Fin Attach Points.

SECTION V

ENGINE GROUP

5. GENERAL.

5.1 CONTENTS. The engine group inspection items covered in this section are those items of the OH-58A/C helicopter gas turbine engine and components listed in the Engine Group Inspection Index (Table 5-1). Corresponding inspection figures and applicable text paragraphs are listed opposite each item. The index number for each item may be used to locate it in Figure 5-1.

Table 5-1. Engine Group inspection Index

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
2	T63-A-720 Engine Accessories	PT	5.2	5-2
3	T63-A-720 Engine Systems and Components	PT	5.3	5-3

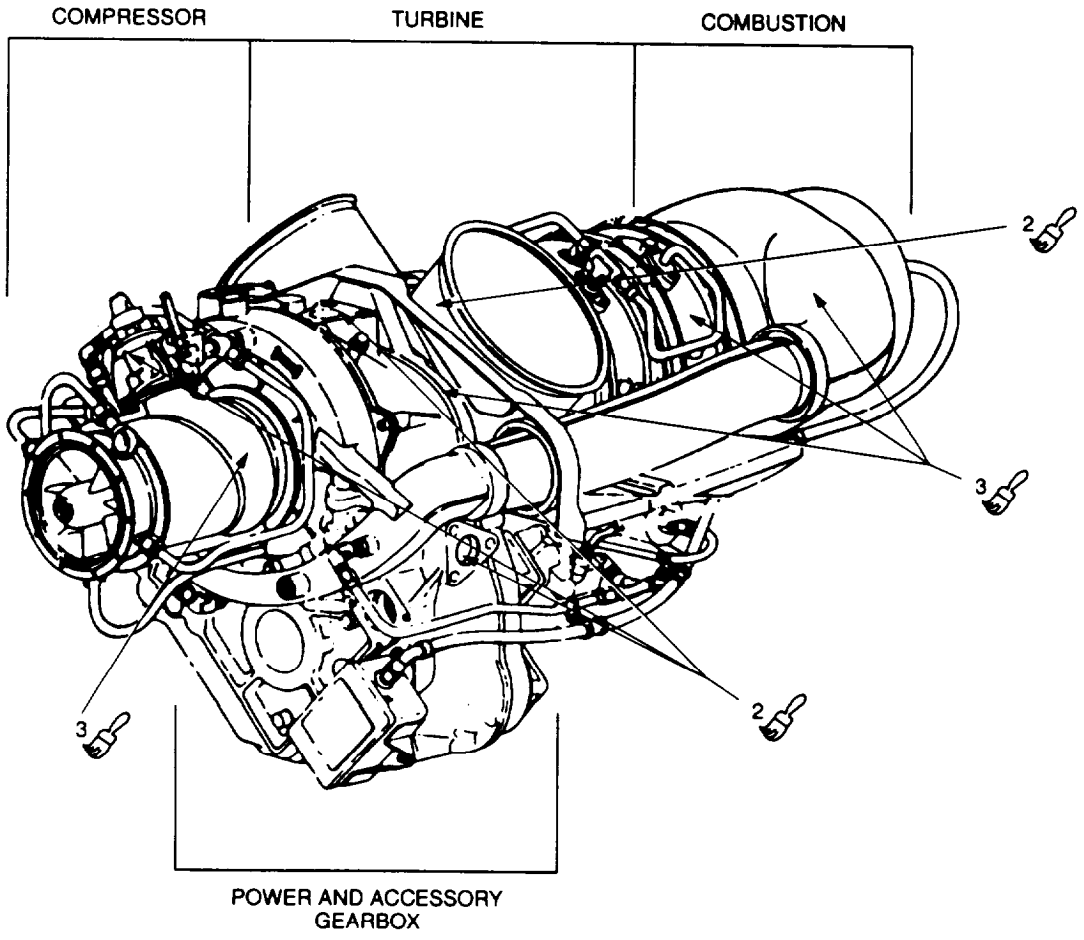


Figure 5-1. Engine Group

5.2 T63-A-720 ENGINE ACCESSORIES (PT).

5.2.1 Description (Figure 5-1, Index No. 2). This inspection is applicable to all unpainted engine related accessories to verify indications found visually. Accessories included are engine mounts, exhaust stacks, oil tank and mounts, and control tubes. This inspection can also be used to verify any indication found on painted surfaces providing the paint is removed only from the immediate point of interest.

5.2.2 Defects. To verify crack indications identified by visual inspection.

5.2.3 Primary Method. Fluorescent Penetrant.

5.2.3.1 NDI Equipment and Materials, (Refer to Appendix B). Inspection equipment is listed in Table 1-7. MIL-I-25135 level 3 penetrant materials shall be selected from the approved list in Table 1-8.

5.2.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance and the accessory removed or disassembled, if required, in accordance with the applicable technical manuals listed in Table 1-1.

5.2.3.3 Access. Access through engine cowl side panels.

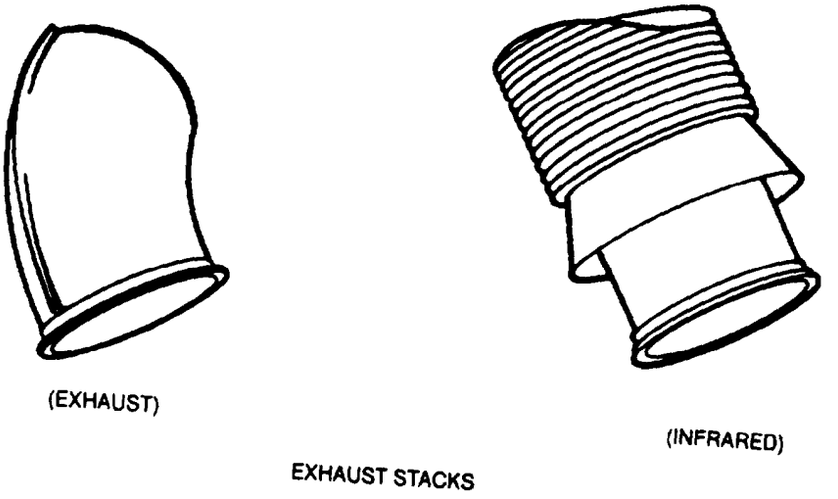
5.2.3.4 Preparation of Part. Protective coating shall be removed and the part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

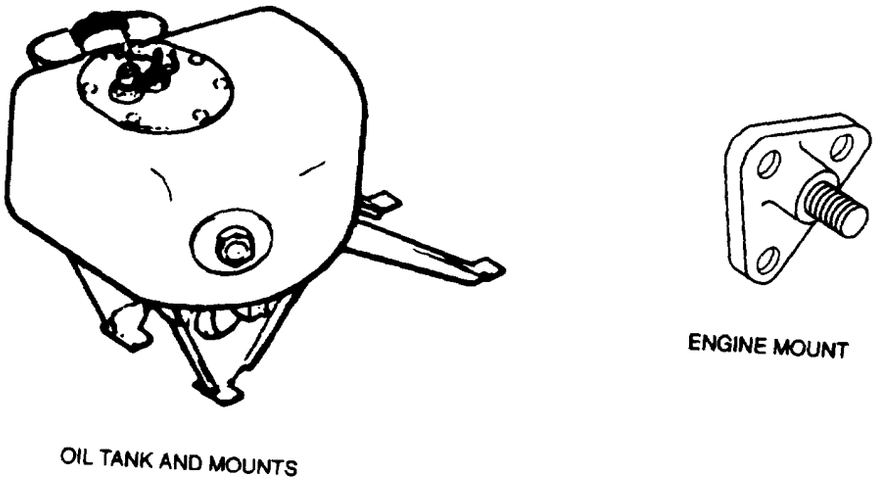
5.2.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 5-2.

5.2.3.6 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

5.2.4 Backup Method. None required.

5.2.5 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. Protective coating shall be reapplied as required. Reinstall or assemble parts or components in accordance with the applicable technical manuals listed in Table 1-1.





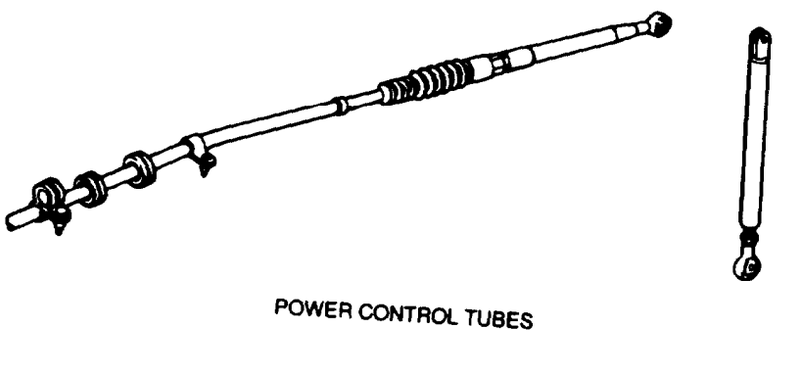


Figure 5-2. T63-A-720 Engine Accessories

5.3 T63-A-720 ENGINE SYSTEMS AND COMPONENTS (PT).

5.3.1 Description (Figure 5-1, Index No. 3). This inspection is applicable to engine systems and components to verify indications found visually during engine repair. Parts included are those relative to the compressor, diffuser, combustion systems, gearbox housing, casings and engine mounts.

5.3.2 Defects. To verify crack indications identified by visual inspection.

5.3.3 Primary Method. Fluorescent Penetrant.

5.3.3.1 NDI Equipment and Materials. (Refer to Appendix B). Inspection equipment is listed in Table 1-7. MIL-I-25135 level 3 penetrant materials shall be selected from the approved list in Table 1-8.

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

5.3.3.3 Access. Access through engine cowl side panels.

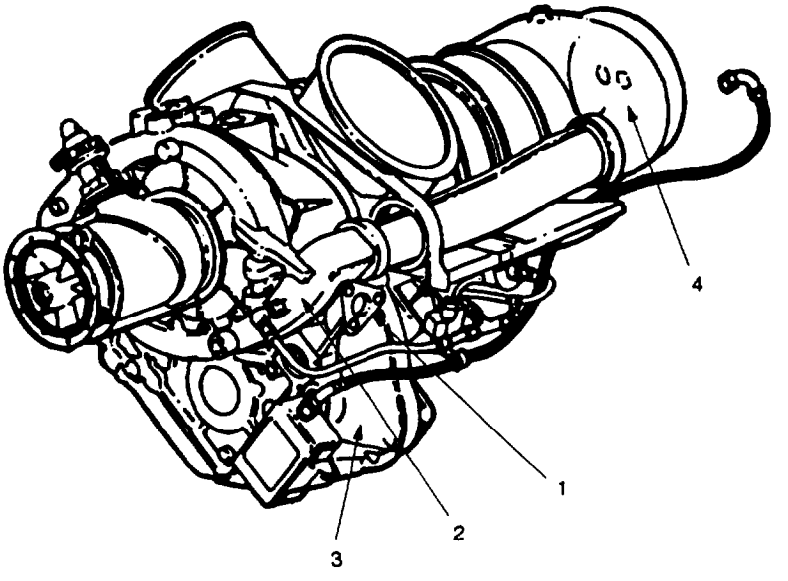
5.3.3.4 Preparation of Part. Protective coating shall be removed and the part shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

5.3.3.5 Inspection Procedure. Perform fluorescent penetrant inspection. Refer to Fluorescent Penetrant Method, paragraph 1.4.7 and Table 1-5. Inspect area of concern. See Figure 5-3.

5.3.3.6 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per paragraph 1.3.

5.3.4 Backup Method. None required.

5.3.5 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. Protective coating shall be reapplied as required. Parts or components, if removed, require installation or reassembly in accordance with the applicable technical manuals listed in Table 1-1.



1. ENGINE MOUNT
2. COMPRESSOR
3. GEARBOX
4. COMBUSTION LINER

NOI_OH-58_F5_3

Figure 5-3. T63-A-720 Engine Systems and Components

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 OH-58A/C helicopter flight control and related hydraulic systems. The parts and components are listed in the Flight Control Group Inspection Index (Table 6-1). Corresponding inspection figures and applicable text paragraphs are listed opposite each item. The index number for each item may be used to locate it in Figure 6-1.

Table 6-1. Flight Control Group Inspection Index

Index Number	Nomenclature	Inspection Method	Paragraph Number	Figure Number
2	Hydraulic Pump, Valve, Actuators and Reservoir Bodies	ET	6.2	6-2
3	External Driveshaft, Piston Rods, and Rod Ends	MT	6.3	6-3
4	Solenoid Valve Body	ET	6.4	6-4
*5	Cockpit Flight Control Assemblies	ET	6.5	6-5
*6	Bellcranks, Walking Beams, and Actuating Levers	ET	6.6	6-6

* Indicates Flight Safety Parts

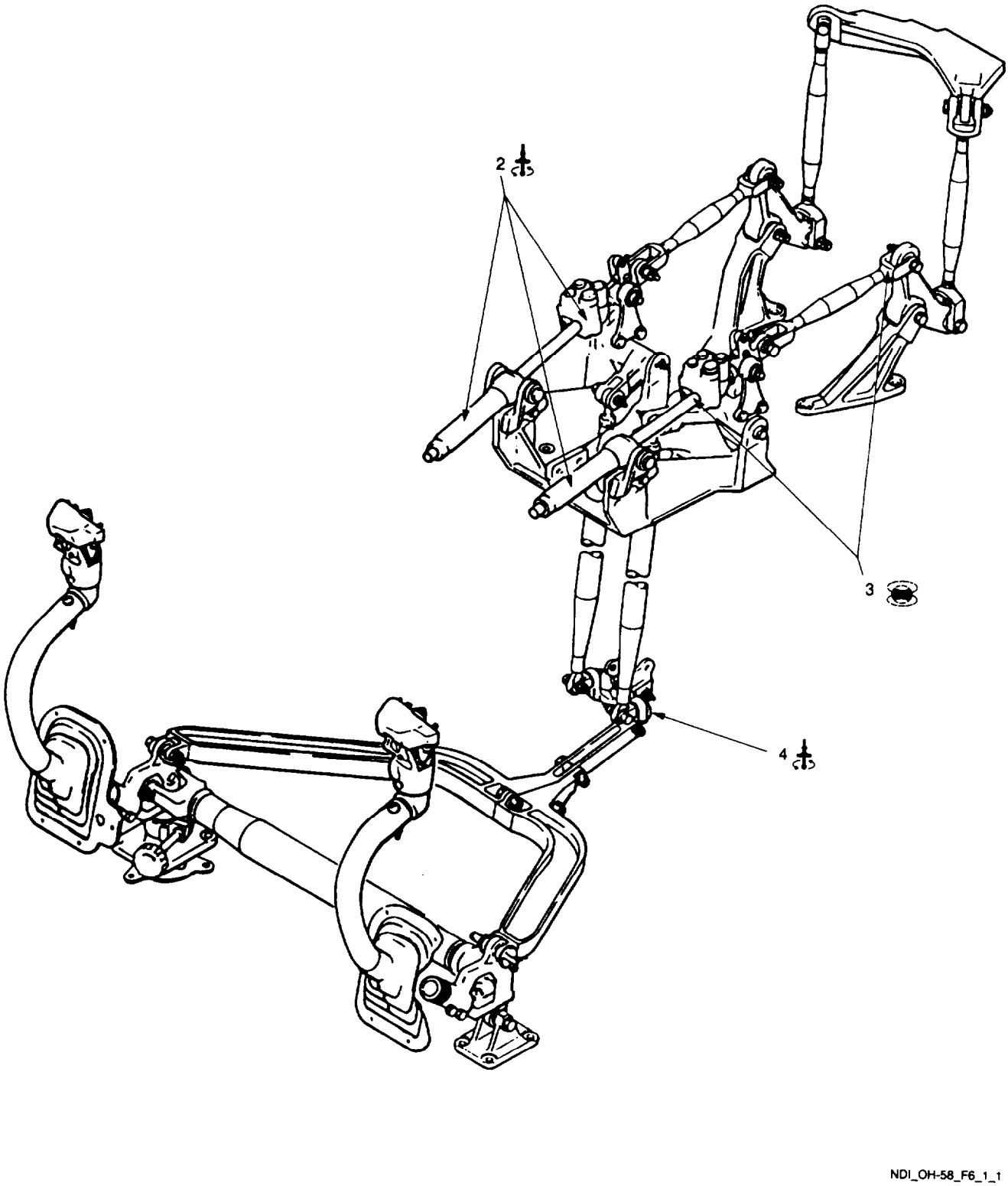


Figure 6-1. Flight Control Group (Sheet 1 of 3)

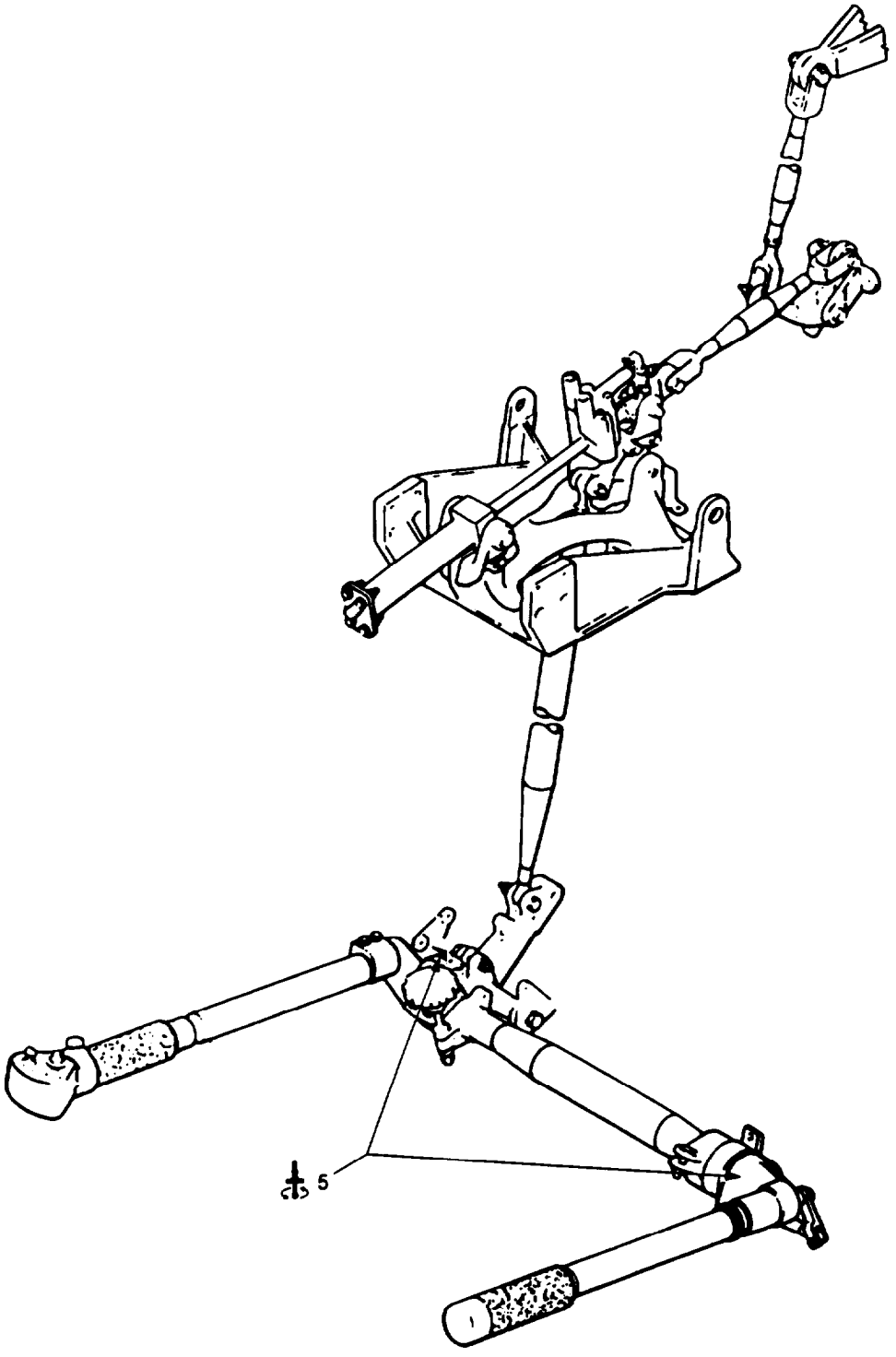


Figure 6-1. Flight Control Group (Sheet 2 of 3)

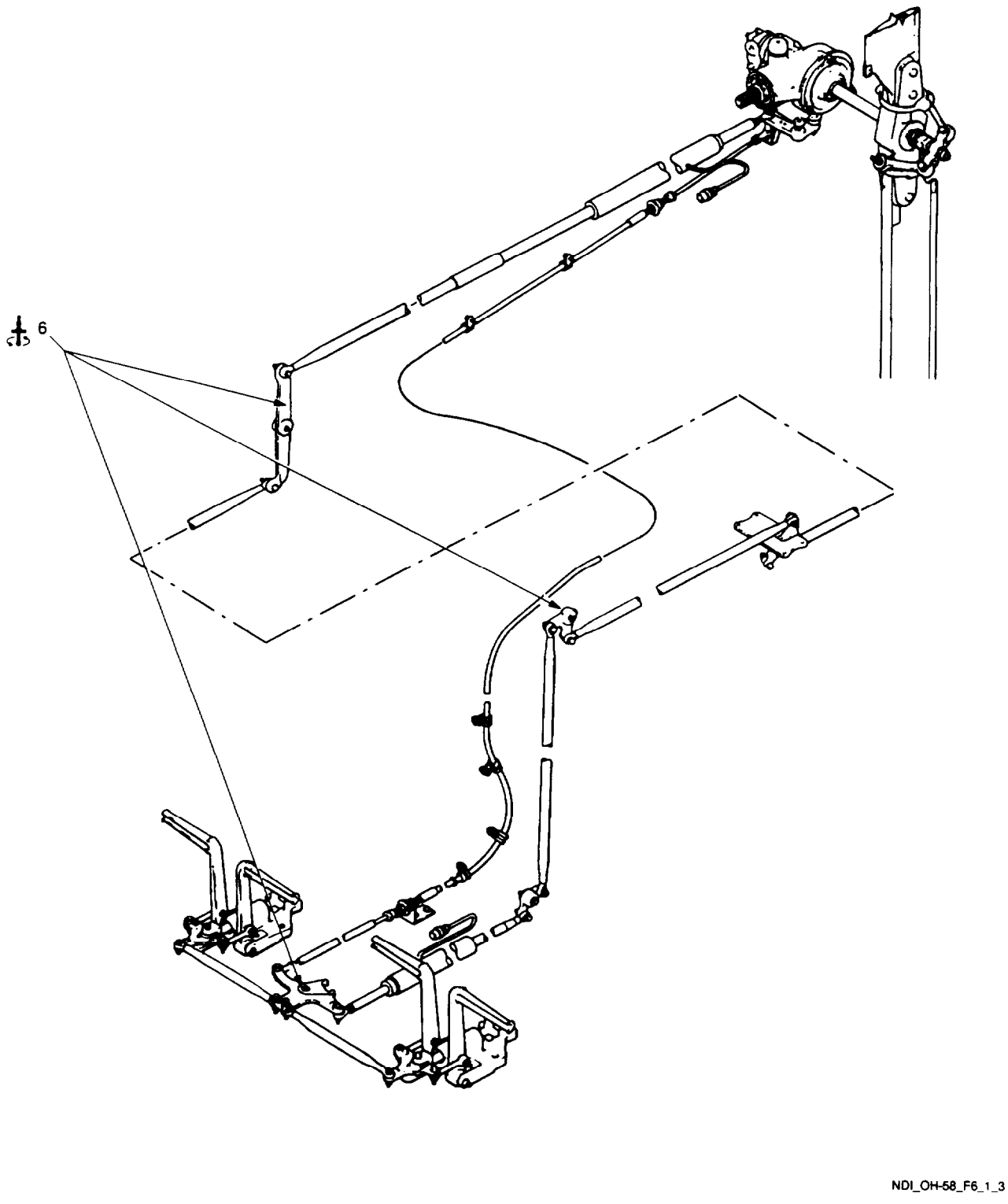


Figure 6-1. Flight Control Group (Sheet 3 of 3)

6.2 HYDRAULIC PUMP, VALVE, ACTUATORS, AND RESERVOIR BODIES (ET).

6.2.1 Description (Figure 6-2, Index No. 2). This inspection is applicable to all pumps, valves, actuators, and reservoirs contained within the hydraulic system.

6.2.2 Defects. Defects may occur anywhere on the surface of the part. 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. Partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed identified part using this procedure. If required, the components shall be removed in accordance with the applicable technical manuals listed in Table 1-1.

6.2.3.3 Access. Not applicable.

6.2.3.4 Preparation of Part. The identified component(s) 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-19e".

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

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

(1) Null probe on test block.

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

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over 0.040 inch notch in test block. (Refer to 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.

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

b. Inspect the part.

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

NOTE

Either probe identified in paragraph 6.2.3.1 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 Backup Method. Refer to paragraph 1.4.7.

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

6.3 EXTERNAL DRIVESHAFT, PISTON RODS, AND ROD ENDS (MT).

6.3.1 Description (Figure 6-1, Index No. 3) This inspection is applicable to all external driveshaft, piston rods, and rod ends contained within the hydraulic system.

6.3.2 Defects. Defects may occur anywhere on the surface of the part. No cracks are allowed.

6.3.3 Primary Method. Magnetic Particle.

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

a. Magnetic Particle Inspection Probe/Yoke

b. Magnetometer

C. Black Light

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

e. Consumable Materials, refer to Table 1-8

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

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

6.3.3.3 Access. Not applicable.

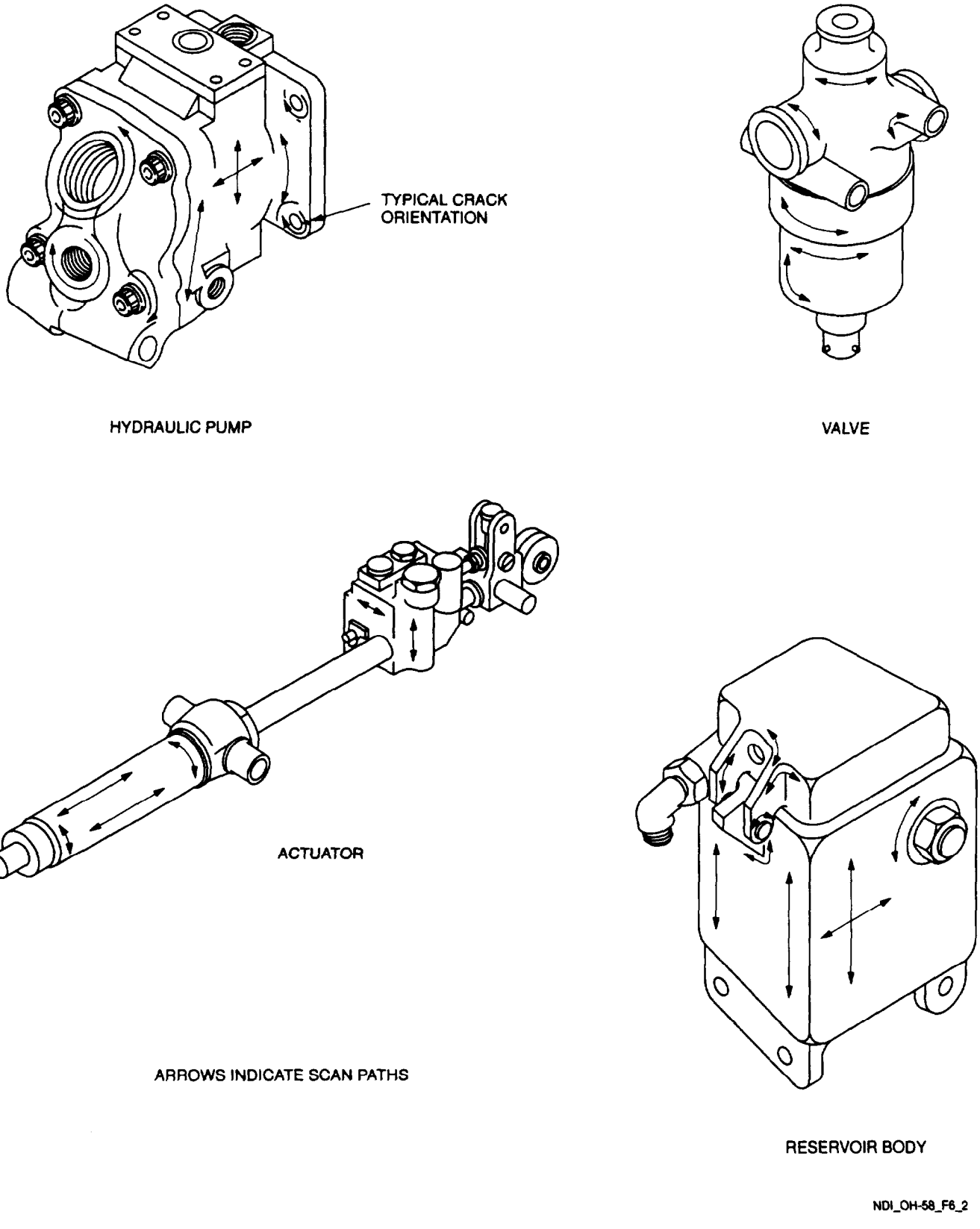


Figure 6-2. Hydraulic Pump, Valve, Actuators, and Reservoir Bodies

6.3.3.4 Preparation of Part. The part shall be thoroughly cleaned. Refer to Preparation of Part of 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 possible cracks. Positions required for this inspection 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 if necessary. Refer to paragraph 6.3.3.8.

6.3.3.7 Marking and Recording of Inspection Results. Mark and record the inspection results as necessary per 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 identified component(s) thoroughly to remove all residual magnetic particle media. Refer to Post Cleaning and Restoration of Part or Area After NDI, paragraph 1.4.16. Reassemble and reinstall as required in accordance with the applicable technical manuals listed in Table 1-1.

6.4 SOLENOID VALVE BODY (ET).

6.4.1 Description (Figure 6-1, Index No. 4). An electrical solenoid control valve is incorporated in the hydraulic system for turning the system on or off. The solenoid is installed forward of the transmission in the center work deck area.

6.4.2 Defects. Defects may occur anywhere on the solenoid valve body. 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

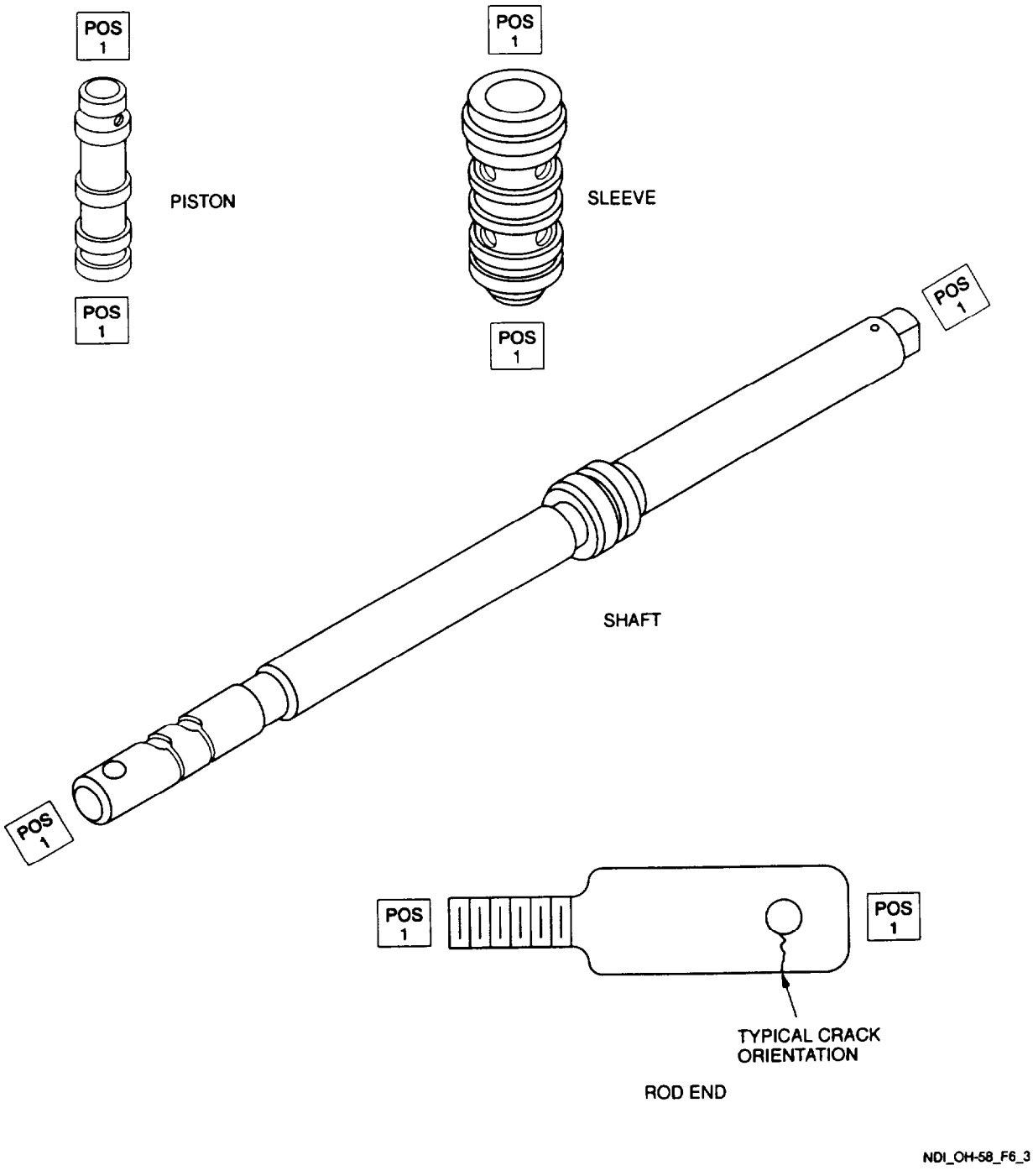


Figure 6-3. External Driveshaft, Piston Rods, and Rod Ends

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

6.4.3.3 Access. Not applicable.

6.4.3.4 Preparation of Part. The solenoid valve body 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-19err.

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

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

(1) Null probe on test block.

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

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over, 040 inch notch in test block. (Refer to 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 required inspection location and null. Adjust phase as required to obtain horizontal lift-off.

b. Inspect the part.

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

NOTE

Either probe identified in paragraph 6.4.3.1 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.

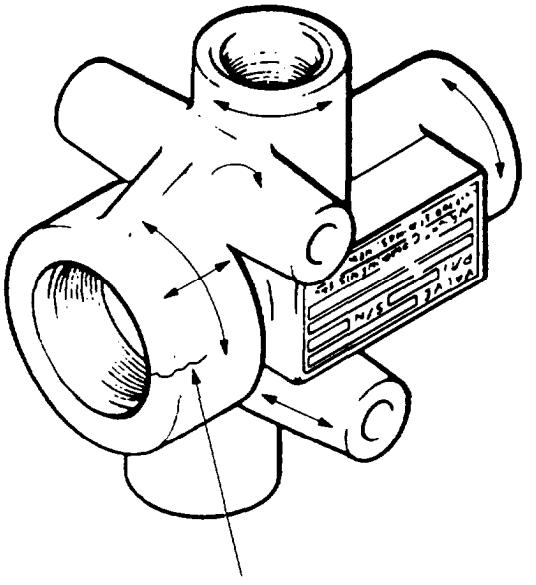


Figure 6-4. Solenoid Valve Body

6.4.4 Backup Method. Refer to paragraph 1.4.7.

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

6.5 COCKPIT FLIGHT CONTROL ASSEMBLIES (ET).

6.5.1 Description (Figure 6-1, Index No. 5). This inspection is applicable to the jackshaft tube, support, collective pitch, control linkage, force gradient assembly housing, control sticks, rods and tubes contained within the cockpit flight control assemblies to verify all indications found visually.

6.5.2 Defects. Defects may occur anywhere on the surface of the part. No cracks are allowed.

6.5.3 Primary Method. Eddy Current.

6.5.3.1 NDI Equipment and Materials. (Refer to Appendix B),

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

6.5.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. Partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the identified component(s) 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 identified component(s) shall be thoroughly cleaned. Refer to Preparation of Part or Area for NDI, paragraph 1.4.4.

6.5.3.5 NDI Equipment Settings.

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

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

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

(1) Null probe on test block.

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

(3) Move probe over all three notches in test block. Adjust gain to obtain a three block vertical signal when probe is passed over -040 inch notch in test block. (Refer to standard instrument display shown in Figure 1-7.)

6.5.3.6 Inspection Procedure. Refer to Eddy Current Method, paragraph 1.4.11 and Figure 6-5.

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

b. Inspect the part.

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

NOTE

Either probe identified in paragraph 6.5.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed steps 6.5.3.5 b. (1), (2) and (3) shall be repeated each time a change is made.

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

6.5.4 Backup Method. None required.

6.5.5 System Securing. The identified component(s), if removed, require installation in accordance with the applicable technical manual listed in Table 1-1.

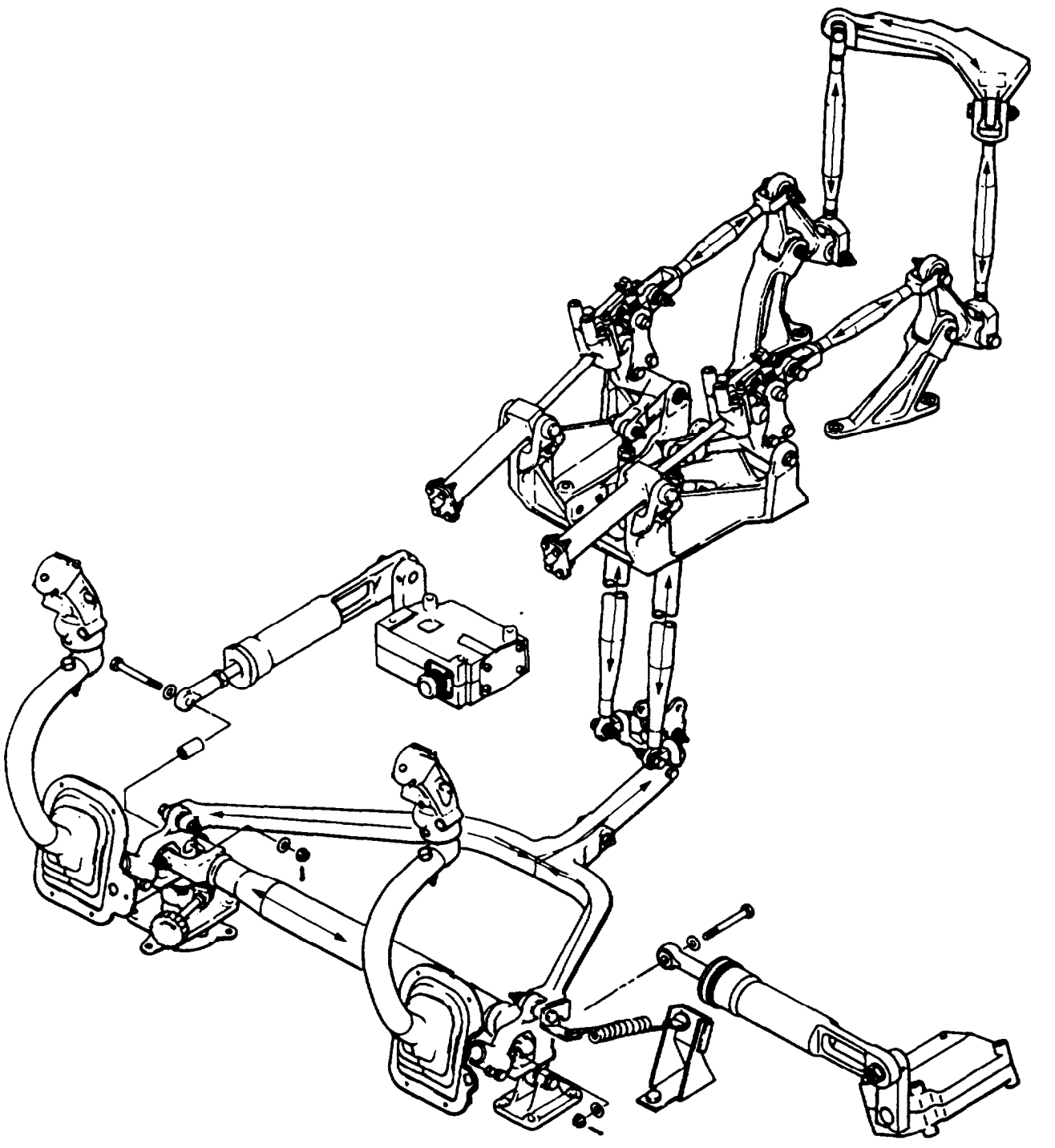


Figure 6-5. Cockpit Flight Control Assemblies

6.6 BELLCRANKS, WALKING BEAMS, AND ACTUATING LEVERS (ET).

6.6.1 Description (Figure 6-1, Index No. 6) This inspection is applicable to all nonferromagnetic bellcranks, actuating levers, and walking beams contained within the flight control system to verify indications found visually.

6.6.2 Defects. Defects may occur anywhere on the surface of the part. 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. Reference Block, three-notched magnesium (0.008, 0.020, and 0.040 EDM notches)
g. Reference Block, three-notched titanium (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

6.6.3.2 Preparation of Helicopter. The helicopter shall be prepared for safe ground maintenance. Partial inspection for cause (visual indications, sites of mechanical damage, corrosion, etc.) may be performed on all exposed surfaces of the installed part using this procedure. If required, the identified component(s) 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 identified component(s) 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".

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

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

b. Inspect the part.

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

NOTE

Either probe identified in paragraph 6.6.3.1 may be used depending primarily on the ease of accessibility and user friendliness. If the probes are changed steps 6.6.3.5 b. (1), (2) and (3) shall be repeated each time a change is made.

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

6.6.4 Backup Method. None required.

6.6.5 System Securing The identified component(s), if removed, requires installation in accordance with the applicable technical manual listed in Table 1-1.

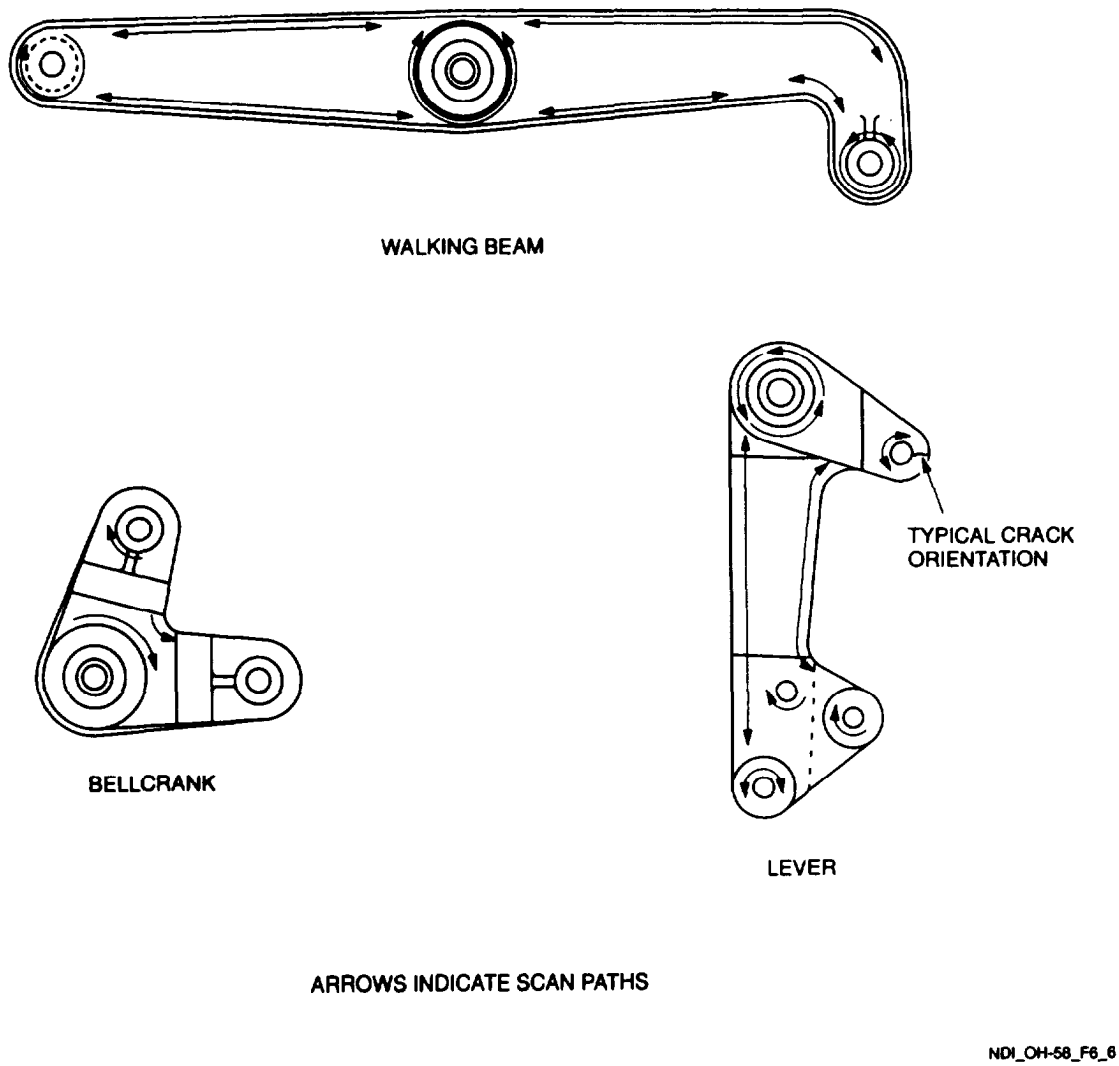


Figure 6-6. Bellcranks, Walking Beams, and Actuating Levers

APPENDIX A

MAINTENANCE ALLOCATION CHART
NONDESTRUCTIVE INSPECTION

NDI METHODS/EQUIPMENT
001 Fluorescent Penetrant Method
002 Magnetic Particle Method
003 Eddy Current Method
004 Ultrasonic Method
005 Bond Testing Method
006 Radiographic Method

NOMENCLATURE OF END ITEMS
HELICOPTER, OH-58A/C

(1) PROCEDURE NUMBER	COMPONENT/ASSEMBLY	(3) INSPECT FOR	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) INSPECTION EQUIPMENT REQUIREMENT	(6) REMARKS
2-2	Main Rotor hub Grips	Cracks		√		003	
2-3	Main Rotor Pitch Horn	Cracks		√		003	
2-4	Main Rotor Hub Pin	Cracks		√		002	
2-5	Main Hub Fitting	Cracks		√		002	
2-6	Main Rotor Trunnion	Cracks		√		002	
2-7	Main Hub Yoke	Cracks		√		002	
2-8	Main Rotor Blade Latch Retainer Bolt	Cracks		√		002	
2-9	Main Rotor Hub Static stop	Cracks		√		003	
2-10	Main Rotor Yoke Pillow Block	Cracks		√		003	
2-11	Main Rotor Blade Bolt	Cracks		√		002	
2-12	Main Rotor Blade	Cracks		√		003	Backup 001
2-13	Main Rotor Blade	Voids		√		005	
2-14	Swashplate and Support Assembly Pivot Sleeve	Cracks		√		003	Backup 001
2-15	Swashplate and Support Assembly Stud	Cracks		√		002	Backup 001
2-16	Swashplate and Support Assembly Inner Ring	Cracks		√		003	Backup 001
2-17	Swashplate Support	Cracks		√		003	Backup 001

NOMENCLATURE OF END ITEMS
HELICOPTER, OH-58A/C

(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) INSPECTION EQUIPMENT REQUIREMENTS	(6) REMARKS
2-18	Collective Lever Link (Idler)	Cracks		√		003	Backup 001
2-19	Swashplate and Support Assembly Pin	Cracks		√		002	Backup 001
2-20	Collective Lever	Cracks		√		003	Backup 001
2-21	Outer Ring	Cracks		√		003	Backup 001
2-22	Inner Cap	Cracks		√		003	Backup 001
2-23	Outer Cap	Cracks		√		003	Backup 001
2-24	Lever, Idler	Cracks		√		003	
2-25	Pitch Link Tube Assembly	Cracks		√		003	
2-26	Pylon Idler Link	Cracks		√		003	
2-27	Pylon Swashplate Collar Set	Cracks		√		003	
2-28	Tail Rotor Hub Yoke	Cracks		√		003	
2-29	Tail Rotor Hub Trunnion	Cracks		√		002	
2-30	Tail Rotor Hub Housing	Cracks		√		003	Backup 001
2-31	Tail Rotor Blades	Cracks		√		001	
2-32	Tail Rotor Blades	Voids		√		005	
3-2	Grease Retainer Plate	Cracks		√		001	
3-3	Shaft Centering Spring	Cracks		√		002	Backup 002
3-4	Outer Coupling	Cracks		√		002	Backup 002
3-5	Spur Gear	Cracks		√		002	Backup 002
3-6	Main Input Shaft	Cracks		√		002	Backup 002
3-7	Gearshaft, Inner Race	Cracks		√		002	Backup 002

NOMENCLATURE OF END ITEMS
HELICOPTER OH-58A/C

(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	(4) MAINTENANCE CATEGORY AVUM	AVIM	DEPOT	(5) INSPECTION EQUIPMENT REQUIREMENTS	(6) REMARKS
3-8	Gearshaft, Outer Race	Cracks		√		002	Backup 002
3-9	Tail Rotor Drive Gear	Cracks		√		002	Backup 002
3-10	Bearing Cap	Cracks		√		003	Backup 001
3-11	Bearing Housing	Cracks		√		003	Backup 001
3-12	Freewheeling Shaft Assembly	Cracks		√		002	
3-13	Freewheeling Housing Assembly	Cracks		√		003	Backup 001
3-14	Freewheeling Housing Assembly Bolt	Cracks		√		002	Backup 001
3-15	Drag Pin	Cracks		√		001	
3-16	Mast	Cracks		√		002	Backup 002
3-17	Mast Assembly Locking Plate	Cracks		√		002	Backup 001
3-18	Mast Bearing Nut	Cracks		√		002	Backup 002
3-19	Mast and Seal Plate	Cracks		√		002	Backup 002
3-20	Bearing Liner	Cracks		√		002	Backup 002
3-21	Spindle (Transmission)	Cracks		√		002	
3-22	Oil Cooling Blower Assembly	Cracks		√		003	
3-23	Blower Shaft Assembly	Cracks		√		002	
3-24	Splined Adapters	Cracks		√		002	
3-25	Disc Assembly	Cracks		√		001	
3-26	Tail Rotor Gearbox	Cracks		√		003	
4-2	Forward and Aft Fuselage Sections	Cracks		√		003	
4-3	Honeycomb and Bonded Panels	Voids		√		005	

NOMENCLATURE OF END ITEMS
HELICOPTER, OH-58A/C

(1) PROCEDURE NUMBER	(2) COMPONENT/ASSEMBLY	(3) INSPECT FOR	(4) MAINTENANCE CATEGORY			(5) INSPECTION EQUIPMENT REQUIREMENTS	(6) REMARKS
			AVUM	AVIM	DEPOT		
4-4	Fore and Aft Engine Firewalls	Cracks		√		001	
4-5	Tailboom Section	Cracks		√		003	
4-6	Vertical Fin Assembly	Voids		√		005	
4-7	Vertical Fin Supports	Cracks		√		003	
4-8	Vertical Fin Mount Bolts	Cracks		√		002	
4-9	Pylon Supports	Cracks		√		002	
4-10	Pylon Support Link	Cracks		√		002	Backup 002
4-11	Molded Assembly	Cracks		√		003	Backup 001
4-12	Yoke	Cracks		√		002	Backup 002
4-13	Engine Mounts	Cracks		√		002	
4-14	Transmission Support straps	Cracks		√		003	
4-15	Skid Saddles	Cracks		√		003	
4-16	Vertical Fin	Water		√		006	
4-17	Fore and Aft Cross Tube Assemblies	Cracks		√		004	
5-2	T63-A-720 Engine Accessories	Cracks		√		001	
5-3	T63-A-720 Engine Systems and Components	Cracks		√		001	
6-2	Hydraulic Pump, Valve, Actuators, and Reservoir Bodies	Cracks		√		003	Backup 001
6-3	External Driveshaft, Piston Rods, and Rod Ends	Cracks		√		002	
6-4	Solenoid Valve Body	Cracks		√		003	Backup 001
6-5	Cockpit Flight Control Assemblies	Cracks		√		003	
6-6	Bellcranks, Walking Beams, and Actuating Levers	Cracks		√		003	

APPENDIX B

EQUIPMENT LISTING

Nomenclature	Part Number/ Specification	Manufacturer	National Stock Number
Fluorescent Penetrant Method			
Fluorescent Penetrant Inspection Kit	MIL-I-25135 Type I, Method C, Level 3	General Services Administration (GSA)	6850-01-506-2714
Black Light UV Kit	FMI	Spectronics Corp. 956 Brush Hollow Rd. Westbury, NY 11590-1731	6635-00-566-5198
Black Light Meter	J-221	Ultraviolet Products Inc., DBA UVP Inc. 5100 Walnut Grove Ave. P.O. Box 1500 Upland, CA 91778	6695-00-488-5451
Black Light Bulbs	A-A-1765	General Services Administration (GSA)	6240-00-233-3680
Filter UV	3901	Magnaflux Div. of Illinois Tool Works Inc. 1301 W Ainsle St. Chicago, IL 60656	6635-00-736-5177
Magnetic Particle Method			
Yoke and Coil Kit	YL-61	Magnaflux Div. of Illinois Tool Works Inc. 1301 W. Ainsle St. Chicago, IL 60656	4920-01-145-3924
Black Light	2B26	Spectronics Corp. 956 Brush Hollow Rd. Westbury, NY 11590-1731	6635-00-611-5617
Magnetic Particle Inspection Probe	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	5635-00-391-0058

Nomenclature	Part Number/ Specification	Manufacturer	National Stock Number
Eddy Current Method			
Eddy Current Inspection Unit	NORTEC-19e[II]	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	Stavely 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.	
Reference Block-Block of Six Conductivity Sample	1902474	Staveley Instruments, Inc. 421 North Quay St. Kennewick, WA 99336	
Probe, right angle, shielded surface P/100KHz-500KHz /A/90.5/6	MT-905-60	NDT Engineering Corp. 7056 S. 220th St. Kent, WA 98032	
Probe, straight, shielded surface P/100KHz-500KHz/ A/0.0/4	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 degree shear wave 1/4 x 1/4 inch element			6635-01-057-2761

Nomenclature	Part Number/ Specification	Manufacturer	National Stock Number
Bond Testing Method			
Bondmaster	9016600-99	Staveley Instruments, inc. 421 North Quay St. Kennewick, WA 99336	6635-01-432-9954
Cable Assembly	SBM-CPM-P11 9117789	Staveley Instruments, Inc. 421 North Quay St. Kennewick, WA 99336	
Probe, Mechanical Impedance Analysis	S-MP-4 3317808	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		
Radiographic Method			
Tripod X-Ray Tubehead Stand	PDSANE480	Staveley Aerospace Systems, Inc. Chatsworth, CA 91311	6635-01-067-6315
A1X Warning Light W/Stand	153001	American Industrial X-ray Inc.	6210-01-374-4594

Nomenclature	Part Number/ Specification	Manufacturer	National Stock Number
X-Ray Unit (LPX-160 water-cooled digital)	3-000-0723	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.

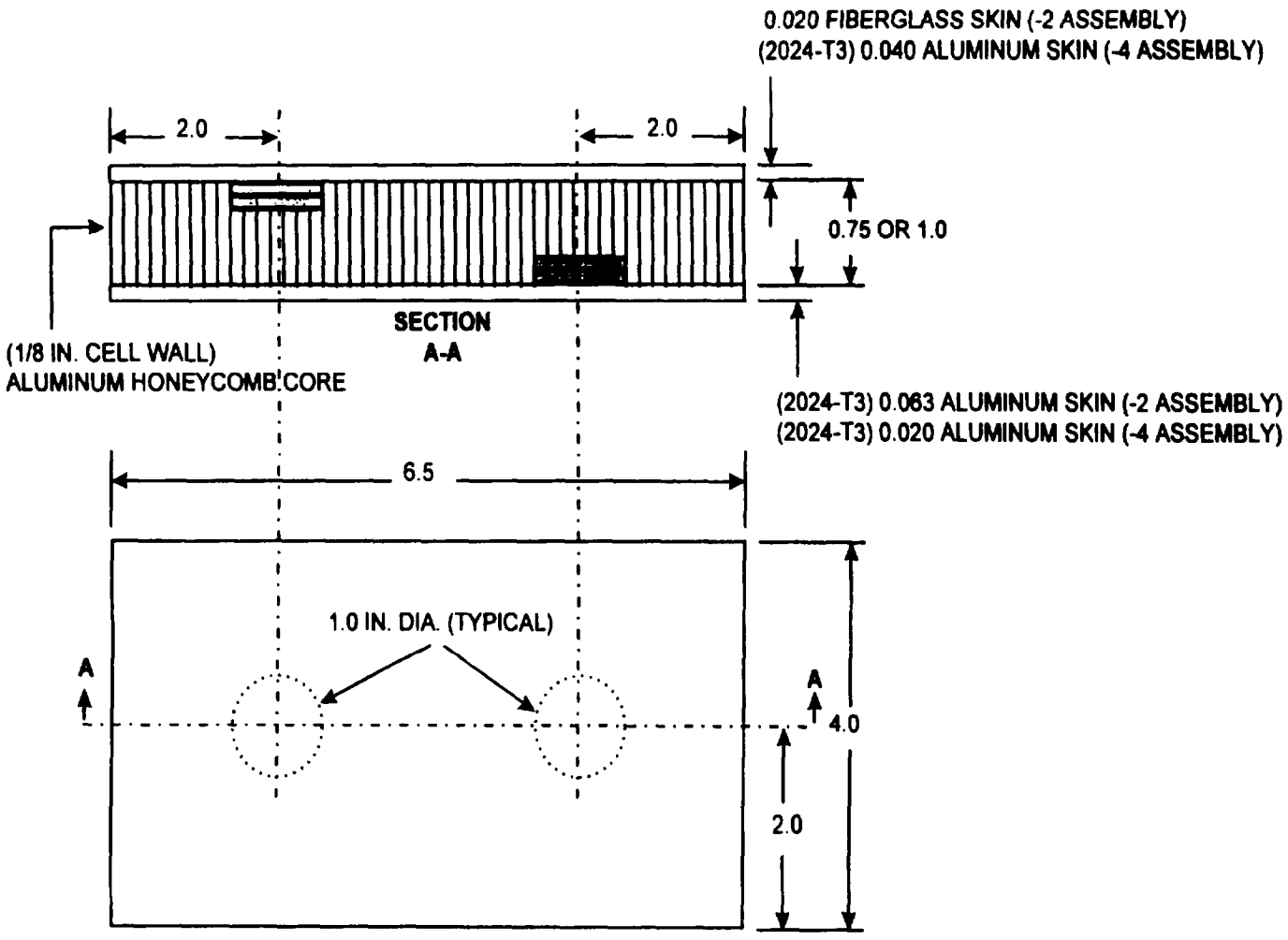
Item Number	Support Accessories
WS-2	Test block with aluminum honeycomb (0.75 or 1.0 inch) between 0.020
	fiberglass skin and a 0.063 aluminum skin
WS-4	Test block with aluminum honeycomb (0.75 or 1.0 inch) between a 0.040
	aluminum skin and a 0.020 skin

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-l-24768/27
3. Aluminum honeycomb core 0.75 or 1.0 inch thick, 1/8 cell size specification MIL-C-7438-G
4. Polyolefin disks 0.025-0.030 inch thick (High-Density Polyethylene or Polypropylene)
5. Adhesive EA934 or equivalent



WS-2 AND WS-4 ASSEMBLY

Figure C-1. Composite Test Blocks

INDEX

INDEX - Continued

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INDEX - Continued

INDEX - Continued

INDEX - Continued

INDEX - Continued

INDEX - Continued

By Order of the Secretary of the Army.

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

Official:

JOEL B. HUDSON
Administrative Assistant to the
Secretary of the Army
03711

DISTRIBUTION:

To be distributed in accordance with DA Form 12-31-E, block no. 3678, requirements for TM 1-1520-254-23.

These are the instructions for sending an electronic 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: "Whomever" <whomever@wherever.army.mil>
To: 2028@redstone.army.mil

Subject: DA Form 2028

1. ***From:*** Joe Smith
2. *Unit:* home
3. ***Address:*** 4300 Park
4. ***City:*** Hometown
5. ***St:*** MO
6. ***Zip:*** 77777
7. ***Date Sent:*** 19−OCT−93
8. ***Pub no:*** 55−2840−229−23
9. ***Pub Title:*** TM
10. ***Publication Date:*** 04−JUL−85
11. *Change Number:* 7
12. *Submitter Rank:* MSG
13. ***Submitter FName:*** Joe
14. *Submitter MName:* T
15. ***Submitter LName:*** Smith
16. ***Submitter Phone:*** 123−123−1234
17. ***Problem:*** **1**
18. *Page:* 2
19. *Paragraph:* 3
20. *Line:* 4
21. *NSN:* 5
22. *Reference:* 6
23. *Figure:* 7
24. *Table:* 8
25. *Item:* 9
26. *Total:* 123
27. ***Text:***

This is the text for the problem below line 27.

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25–30; the proponent agency is ODISC4.	Use Part II (*reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/ Supply Manuals (SC/SM)	DATE 8/30/02
TO: (*Forward to proponent of publication or form)(Include ZIP Code)* Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM–MMC–MA–NP Redstone Arsenal, AL 35898	FROM: (*Activity and location)(Include ZIP Code)* MSG, Jane Q. Doe 1234 Any Street Nowhere Town, AL 34565	

PART 1 – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE
TM 9–1005–433–24	16 Sep 2002	Organizational, Direct Support, And General Support Maintenance Manual for Machine Gun, .50 Caliber M3P and M3P Machine Gun Electrical Test Set Used On Avenger Air Defense Weapon System

ITEM NO.	PAGE NO.	PARA–GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON
1	WP0005 PG 3		2			Test or Corrective Action column should identify a different WP number.

** Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/ AUTOVON, PLUS EXTENSION	SIGNATURE
MSG, Jane Q. Doe, SFC	788–1234	

TO: (*Forward direct to addressee listed in publication)*	**FROM:** (*Activity and location) (Include ZIP Code)*	**DATE**
Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM–MMC–MA–NP Redstone Arsenal, AL 35898	MSG, Jane Q. Doe 1234 Any Street Nowhere Town, AL 34565	8/30/02

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER	DATE	TITLE

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.)*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
MSG, Jane Q. Doe, SFC	788–1234	

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25–30; the proponent agency is ODISC4.	Use Part II (*reverse)* for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/ Supply Manuals (SC/SM)	DATE
TO: (*Forward to proponent of publication or form)(Include ZIP Code)* Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM-MMC-MA-NP Redstone Arsenal, AL 35898	FROM: (*Activity and location)(Include ZIP Code)*	

PART 1 – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER	DATE	TITLE

ITEM NO.	PAGE NO.	PARA–GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON

** Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/ AUTOVON, PLUS EXTENSION	SIGNATURE

TO: (*Forward direct to addressee listed in publication)* Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM-MMC-MA-NP Redstone Arsenal, AL 35898	**FROM:** (*Activity and location) (Include ZIP Code)*	**DATE**

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 decagram = 10 grams = .35 ounce
1 hectogram = 10 decagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons

Liquid Measure

1 centiliter = 10 milliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	Newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	Newton-meters	1.356	metric tons	short tons	1.102
pound-inches	Newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

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