Leonardo S.p.A.
Via Giovanni Agusta, 520
21017 Cascina Costa di Samarate (VA) Italy
Tel.: +39 0331 229111 - Fax: +39 0331 229605/222595

AgustaWestland Products

SERVICE BULLETIN

N° 109EP-184

ALERT

DATE: August 9, 2024

REV. : /

TITLE

ATA 64 – TAIL ROTOR ROTATING CONTROLS HALF-SCISSORS INSTALLATION CHECK

REVISION LOG

First Issue

An appropriate entry should be made in the aircraft log book upon accomplishment.
If ownership of aircraft has changed, please, forward to new owner.

1. PLANNING INFORMATION

A. EFFECTIVITY

All A109E helicopters that have performed maintenance activities requiring the remove and install procedure of the tail rotor AFT half-scissor P/N 109-0130-92-105 and the tail rotor FWD half-scissor P/N 109-0130-93-105 after the helicopter delivery and before August 5, 2024.

B. COMPLIANCE

Within and not later than 25 (twenty-five) flight hours or 3 (three) months whichever occurs first after the issue of this Service Bulletin.

C. CONCURRENT REQUIREMENTS

N.A.

D. REASON

This Service Bulletin is issued in order to prescribe a one-off inspection to check the correct installation position of the tail rotor AFT half-scissor P/N 109-0130-92-105 and the tail rotor FWD half-scissor P/N 109-0130-93-105.

E. DESCRIPTION

There has been reported one case of incorrect installation of the tail rotor AFT half-scissor P/N 109-0130-92-105 and the tail rotor FWD half-scissor P/N 109-0130-93-105, due to improper maintenance during the installation of the tail rotor controls.

In order to minimize the likelihood of occurrence of potential human error during maintenance, Leonardo Helicopters updated the maintenance instructions (Ref. to TMI109-544 issued on August 5, 2024) in order to provide additional guidelines for rotating controls install/remove procedures.

As such, this Service Bulletin requires to perform a one-off inspection to check the correct installation position of the tail rotor AFT half-scissor P/N 109-0130-92-105 and the tail rotor FWD half-scissor P/N 109-0130-93-105, and in case incorrect installation is found, prescribes their replacement with new components following the updated instructions.

F. APPROVAL

The technical content of this Service Bulletin is approved under the authority of DOA nr. EASA.21.J.005. For helicopters registered under other Aviation Authorities, before

applying the Service Bulletin, applicable Aviation Authority approval must be checked within Local Aviation Authority

EASA states mandatory compliance with inspections, modifications or technical directives and related time of compliance by means of relevant Airworthiness Directives.

If an aircraft listed in the effectivity embodies a modification or repair not Leonardo Helicopters certified and affecting the content of this Service Bulletin, it is responsibility of the Owner/Operator to obtain a formal approval by Aviation Authority having jurisdiction on the aircraft, for any adaptation necessary before incorporation of the present Service Bulletin.

G. MANPOWER

To comply with this Service Bulletin approximately a half (0.5) MMH are deemed necessary (only for the inspection).

MMH are based on hands-on time and can change with helicopter configuration, personnel and facilities available. MMH are not comprehensive of the overall hours necessary to get access to work areas and to remove all the equipment that interferes with the application of the prescribed instructions.

H. WEIGHT AND BALANCE

N.A.

I. REFERENCES

I.1 PUBLICATIONS

Following Data Modules refer to AMP:

DATA MODULE		DESCRIPTION	PART
DM01	00-20-1	Helicopter safety	-

I.2 ACRONYMS & ABBREVIATIONS

AMDI	Aircraft Material Data Information
AR	As Required
DM	Data Module
DOA	Design Organization Approval
EASA	European Union Aviation Safety Agency
FWD	Forward
IPC	Illustrated Parts Catalog
MM	Maintenance Manual

MMH	Maintenance Man Hours
N.A.	Not Applicable
P/N	Part Number
PTUM	Pictorial Tools Usage Manual
SB	Service Bulletin
S/N	Serial Number
TR	Tail Rotor

I.3 ANNEX

Annex A	A109E - 64-31-6. REMOVAL/INSTALLATION (SLEEVE ASSY P/N 109-0130-94)
Annex B	A109E - 64-31-6C. REMOVAL/INSTALLATION (SLEEVE ASSY P/N 109G6430A03)

J. PUBLICATIONS AFFECTED

A109E Maintenance Manual (MM)

K. SOFTWARE ACCOMPLISHMENT SUMMARY

N.A.

2. MATERIAL INFORMATION

A. REQUIRED MATERIALS

A.1 PARTS

#	P/N	ALTERNATIVE P/N	DESCRIPTION	Q.TY	LVL	NOTE	LOG P/N
1	109-0130-92-105		TR AFT half-scissor	AR	.	(1)	-
2	109-0130-93-105		TR FWD half-scissor	AR	.	(1)	-

Refer also to IPC for the spares materials required to comply with the MM DMs referenced in the accomplishment instructions.

Refer also to Annexes A and B for the spares materials required to comply with this Service Bulletin.

A.2 CONSUMABLES

Refer also to AMDI for the consumable materials required to comply with the MM DMs referenced in the accomplishment instructions.

Refer also to Annexes A and B for the consumable materials required to comply with this Service Bulletin.

A.3 LOGISTIC MATRIX

N.A.

NOTES

(1) This item has to be ordered in q.ty (maximum q.ty 2 per helicopter) only if the installed one(s) has(have) to be replaced in accordance with the Paragraph 3 Accomplishment Instructions of this Service Bulletin.

B. SPECIAL TOOLS

Refer also to PTUM for the special tools required to comply with the MM DMs referenced in the accomplishment instructions.

Refer also to Annexes A and B for the special tools required to comply with this Service Bulletin.

SPECIAL TOOLS NOTES

N.A.

C. INDUSTRY SUPPORT INFORMATION

N.A.

3. ACCOMPLISHMENT INSTRUCTIONS

GENERAL NOTES

a) Place an identification tag on all components that are re-usable, including the attaching hardware that has been removed to gain access to the modification area and adequately protect them until their later re-use.

b) Refer to Annex A for A109E helicopters equipped with the sleeve assy P/N 109-0130-94 and refer to Annex B for A109E helicopters equipped with the sleeve assy P/N 109G6430A03.

1. In accordance with MM DM 00-20-1, prepare the helicopter on ground for a safe maintenance. Disconnect the battery, all electrical power sources and/or the external power supply.
2. With reference to Figure 64-29 (sheet 3 of 5) of Annex A or Figure 64-35 (sheet 3 of 5) of Annex B, as applicable, perform a visual inspection of the two TR scissors group installations to check for correct positioning of the tail rotor AFT half-scissor P/N 109-0130-92-105 and the tail rotor FWD half-scissor P/N 109-0130-93-105 (typical in two places).
3. If both the TR scissors group installation are correct, proceed with step 5, otherwise proceed with the following step 4.
4. Compile and send the Inspection Report Form in Figure 1 and perform the TR scissors group installation correction, as applicable, as described in the following procedure:
   - 4.1 In accordance with the applicable steps of Annex A or Annex B, as applicable, remove and disassemble the TR scissors group.
   - 4.2 Discard both the tail rotor AFT half-scissor and the tail rotor FWD half-scissor and replace them with the new tail rotor AFT half-scissor P/N 109-0130-92-105 and the new tail rotor FWD half-scissor P/N 109-0130-93-105.
   - 4.3 In accordance with the applicable steps of Annex A or Annex B, as applicable, assemble and install the new tail rotor AFT half-scissor P/N 109-0130-92-105 and the new tail rotor FWD half-scissor P/N 109-0130-93-105.
5. Return the helicopter to flight configuration and record for compliance with this Service Bulletin on the helicopter logbook.

6. Gain access to My Communications section on Leonardo Customer Portal and compile the “Service - Technical Bulletin Application”.
   As an alternative, send the attached compliance form to the following mail box:
   engineering.support.lhd@leonardo.com
   and (for North, Central and South America) also to:
   AWPC.Engineering.Support@leonardocompany.us

SB 109EP-184 Rev. / – INSPECTION REPORT FORM	
DATE	
HELICOPTER	**S/N**
CUSTOMER	
NOTES:	

Figure 1

ANNEX A

A109E - 64-31-6. REMOVAL/INSTALLATION (SLEEVE ASSY P/N 109-0130-94)

Annex 9

64-31-6. Removal/installation (Sleeve assy P/N 109-0130-94)
(Fig 64-29)

A. Input Conditions

(1) Required conditions:

- Helicopter safe for maintenance (Chap 00)
- Access panels P5 and P12 removed
- Tail rotor hub and blade assembly removed (Sect 64-00).

(2) Support equipment:

- Tool, T/R pitch change slider ring nut removal/installation (LSE NO 49)
- Tool, T/R pitch change housing ring nut removal/installation (LSE NO 130)
- Tool, T/R pitch change housing duplex bearing removal (LSE NO 131)
- Tool, T/R pitch change housing duplex bearing installation (LSE NO 132)
- Tool, T/R pitch change slider installation (LSE NO 133)
- Tool, T/R pitch change slider removal (LSE NO 101)
- Syringe (Local supply)
- Heating gun (Local supply)
- Feeler gage (Local supply)
- Depth micrometer gage (Local supply)
- Refrigerator (Local supply)

(3) Consumable materials:

WARNING: THE CONSUMABLE MATERIALS THE NOMENCLATURE OF WHICH IS PREFIXED BY "(D)" ARE DANGEROUS MATERIALS.BEFORE USE, MAKE SURE TO KNOW THE SAFETY PRECAUTIONS AND FIRST AID INSTRUCTIONS PRINTED ON:
- THE LABEL ON THE CONTAINER THE MATERIAL WAS SUPPLIED IN
- THE MATERIAL SAFETY DATA SHEET
- THE LOCAL SAFETY REGULATIONS.
ALSO MAKE SURE THAT THE APPLICABLE FIRST AID MATERIALS ARE AVAILABLE.

- (D) Sealing compound (C029)
- Safety wire (C014)
- (D) Primer (C446)
- Safety wire (C013)
- (D) Grease (C594)
- Cloth, soft lint-free (C011)
- (D) Solvent, cleaning (C023)
- (D) Oil (C139)
- (D) Primer (C237)
- (D) Corrosion preventive compound (C509)
- (D) Corrosion inhibiting compound (C505)
- (D) Corrosion preventive compound (C587)

(4) Other recommendations: None.

WARNING: THIS INSTALLATION INCLUDES VITAL POINTS (**VP**). DURING THE PROCEDURE, YOU MUST OBEY THE LOCAL REGULATIONS APPLICABLE TO THE VITAL POINTS.

CAUTION: MAKE SURE THAT YOU DO NOT MIX GREASES OF DIFFERENT BRANDS ALTHOUGH THE SPECIFICATIONS ARE THE SAME. REFER TO THE HELICOPTER LOG BOOK TO PREVENT MIXTURE OF UNWANTED GREASES.

CAUTION: THIS COMPONENT INCLUDES CRITICAL PARTS. EXAMINE THE COMPONENT FOR SIGNS OF STRUCTURAL DAMAGE, BEFORE YOU INSTALL IT ON THE HELICOPTER. REFER TO SECT 20-40.

B. Removal Procedure.

(1) Disconnect tail rotor pitch control tube (59) from torque shaft control lever (49) by removing attaching hardware. Discard cotter pin.

(2) Disconnect FWD half scissor (30) from sleeve (25) and AFT half scissor (35) from slider (23) by removing attaching parts. Discard cotter pins.

(3) Detach AFT half scissor (35) from FWD half scissor (30) by removing attaching parts. Discard cotter pin.

(4) Cut lockwire from forward boot (26) and withdraw sleeve (25) from gearbox shaft. Remove forward boot (26) from sleeve (25).
Valid for sleeve assy P/N 109-0130-90-121: if loose remove bushing (27). Ref. to Para 64-31-6B.
Valid for sleeve assy P/N 109-0130-90-129: if loose bushing (27) contact TC holder or an Authorized repair center.

NOTE: Mark position of pitch control links (20) to reconnect in same position during reassembly of slider.

CAUTION: REMOVE THE PITCH CONTROL LINK (20) IN THE SEQUENCE AS FOLLOWS FOR NOT DAMAGE THE LINK.

(5) Remove pitch control link (20) from slider arm (23), by removing parts; the bolt (21), the washer (22), damper washer (60), the other washer (22), the nut (38) and discard the cotter pin (38A) remove pitch control link (20).

(6) Remove and discard cotter pin (70), remove the nut (66), the flat surface cup washer (67), the spacer (68) (if installed), the washer (69) and disconnect the pitch control link (20) from the blade (71).

(7) Remove links (10) by removing attaching parts. Discard cotter pins.

(8) Cut lockwire from aft boot (39).

(9) Withdraw housing (15), together with assembled parts, from gearbox shaft.

(10) Disassemble housing (15) and slider assembly (23) as follows:

NOTE: Items 10, 11 and 12 (Fig 64-30) are part of tool (LSE NO 49).

(a) Lock the support (10) on an applicable bench vice.

(b) Put the duplex bearing housing (3) and the pitch change slider assembly (9) on the support (10).

NOTE: In order to avoid damage to the bushings (7) of the pitch change slider (9) during the removal of the ring nut (2), put the pitch change slider (9) on the support (10) with the two pitch change slider arm (6) that touch the two cylindrical fittings (11) as shown in Detail A of 64-30.

(c) Open the two clawed tabs on the lock ring (1), then remove it from the ring nut (2).

(d) Remove the ring nut (2) from the pitch change slider (9) with the wrench (12).

(e) Put the pitch change slider (3, Fig 64-31) and the duplex bearing housing (2) on the support (4) part of the tool (LSE NO 101).

CAUTION: MAKE SURE THAT THE TOOL IS PERFECTLY ALIGNED WITH THE DUPLEX BEARING WHEN YOU PRESS IT OUT IN ORDER TO PREVENT DUPLEX BEARING DAMAGE.

(f) Put the adapter (1) part of the tool (LSE NO 101) on the pitch change slider (3) then, with an applicable press, remove the pitch change slider from the duplex bearing housing (2).

(g) Lock the support (4, Fig 64-32) part of the tool (LSE NO 130) on an applicable bench vice.

(h) Put the duplex bearing housing (1) on the support (4), part of the tool (LSE NO 130), then lock with the two bolts (3 and 5) part of the tool (LSE NO 130).

NOTE: The ring nut (5, Fig 64-30) is installed with retaining compound. To remove it a high torque will be necessary. Use an applicable lever to remove it.

(i) Cut the lock wire, in two places, then, with the wrench (2, Fig 64-32) part of the tool (LSE NO 130), remove the ring nut (5, Fig 64-30).

NOTE: Items 1, 3 and 4 of Fig 64-33 are part of the tool (LSE NO 131).

(j) Put the duplex bearing housing (2) on the support (1).

NOTE: To help remove the duplex bearing (4, Fig 64-30) from the duplex bearing housing (3) a light heating of the external part of the duplex bearing housing with a heating gun is permitted. The temperature must not be more than 90° C. To prevent damage to the duplex bearing do not apply hot air directly on the duplex bearing boots.

(k) Put the two adapters (3 and 4, Fig 64-33) on the duplex bearing housing (2) then with an applicable press remove the duplex bearing (4, Fig 64-30) from the duplex bearing housing (3).

(11) Remove boot (39, Fig 64-29).

(12) Remove attaching parts of levers (5 and 49), then remove levers and shims (8) and extract pivot (9) from lugs on gearbox.

(13) Disconnect pitch control lever (40) from link (46) by removing attaching parts. Remove lever (40). Discard cotter pin.

(14) Disconnect link (46) from lugs on gearbox by removing attaching parts. Remove link (46). Discard cotter pin.

C. Installation Procedure.

CAUTION: INSTALL THE FWD HALF-SCISSOR (30, FIG 64-29) AND AFT HALF-SCISSOR (35, FIG 64-29) IN THE CORRECT LOCATION AND ORIENTATION AS SHOWN IN DETAIL C1 OF FIG 64-29.

NOTE: During the installation of the self-locking bolts or the self-locking nuts, when the locking is engaged, with the torque wrench (Local supply), make sure that the locking torque necessary to move the bolts or nuts, before contact with the washer, is between the minimum breakaway torque and the maximum locking torque. If you do not get his value, discard the bolts and/or nuts.

(1) Position torque shaft (9, Fig 64-29) in 90-degree gearbox lugs.

(2) Install laminated shims (8) and levers (5 and 49) on torque shaft (9). Do not torque attaching parts.

NOTE: If any of the following items: 90-degree gearbox case, torque shaft (9) levers (5 and 49) laminated shims (8) have been replaced, proceed as follows:

(a) Position torque shaft (9) in 90-degree gearbox lugs.

(b) Position levers (5 and 49) on torque shaft (9) without shims and secure temporarily in position.

(c) Measure the total gap between one lever and the adjacent lug with a feeler gauge. Half of the gap is dimension of each laminated shim (8).

(d) Remove levers (5 and 49) from torque shaft (9).

(e) Fit laminated shims (8) on torque shaft (9) then reinstall levers (5 and 49) and secure. Do not torque nuts (3 and 51) at this time.

(f) Check for free rotation of pivot. If shim thickness is unsatisfactory, modify the shims the same amount on either side to obtain an axial play between 0,03 and 0,08 mm between 90° gearbox lugs bearings and levers (5 and 49) when installed.

NOTE: Before installing the boot in the housing and slider group deform the boot metallic rim to an oval shape with a maximum diameter of 43 thru 44 mm (1.693 thru 1.732 in) as shown in DETAIL D of figure 64-29. This is to help a tighter fit in the seat. Put the inboard boot in its position in the housing and slider group.

(3) Position aft boot (39) on gearbox shaft.
(4) Reassemble housing (15) and slider assembly (23) as follows:

CAUTION: BEFORE YOU ASSEMBLE THE HOUSING AND SLIDER GROUP (1, FIG. 64-34), PUT THE COMPONENT THAT FOLLOW AND THE RELATED ATTACHING PARTS ON AN APPLICABLE WORK TABLE.
CAREFULLY EXAMINE THE COMPONENT AND THE RELATED ATTACHING PARTS FOR CORROSION, NICKS AND DAMAGE, WEAR AND FRETTING. IF YOU FIND THAT THE COMPONENT IS DAMAGED, REPLACE IT.
- THE DUPLEX BEARING (4)
- THE HOUSING (5).

(a) Divide the two parts of the duplex bearing (4).

NOTE: Do Step C.(4)(b) thru Step C.(4)(d) only for removed bearings. New bearings are supplied already lubricated and must not be filled with grease.

(b) Fill the Syringe (Local supply) with the Grease (C594).
(c) Before you install the bearing (8), fill it with 3.5 cc (0.21 in3) of grease with the syringe from the side opposite to the boot. Refer to Detail A of Fig. 64-34.
(d) Do Step C.(4)(c) again on the bearing (9).
(e) Put the bearing (8) against the bearing (9) with the boot sides externally and the internal and external V-marks aligned to show an arrow. See Detail A, Fig. 64-34.
(f) Install the duplex bearing (4) into the housing (5) in the way that follows:
1. Apply a thin layer of Primer (C446) on the mating surfaces between the duplex bearing (4) and housing (5).
2. Put the housing (5) on the Base (10), part of the tool (LSE NO 132).

WARNING: BE CAREFUL WHEN YOU USE HEAT. HOT PARTS CAN CAUSE INJURY TO THE PERSONS. ALWAYS USE APPLICABLE PROTECTIVE CLOTHING.

3. Heat the housing (5) to a temperature between 60 and 70 °C with the Heating gun (Local supply). This will help you to install the duplex bearing (4) into the housing. Make sure that the temperature is not more than 90 °C (heating gun set to a temperature of 90 °C).

NOTE: As an alternative to heating the housing (5); you can cool down the duplex bearing (4) with the Refrigerator (Local supply) to a temperature between -18 and -40 °C for 30 minutes. Do not touch the cold slider with bare hands to prevent injury.

4. Push the duplex bearing (4) into the housing (5). To do this, use the Pin (11), part of the tool (LSE NO 132) and an applicable arbor press.
5. Make sure there is no clearance between the two bearings (8 and 9) and between the outer ring of duplex bearing (4) and the shoulder of the housing (5). To do this, use the applicable Feeler gage (Local supply).
6. Remove the housing-bearing assembly (12) from the base (10).

NOTE: Before you continue, make sure that all the components are at ambient temperature.

(g) Install the ring nut (3) into the housing-bearing assembly (12). Obey the instructions that follow:
1. Clean the threads of the ring nut (3) and the housing (5) with the Cloth, soft lint-free (C011) and the Solvent, cleaning (C023). (**VP**)
2. Dry the threads of the ring nut (3) and the housing (5) with a clean Cloth, soft lint-free (C011). (**VP**)
3. Apply a layer of Primer (C237) on the threads of the ring nut (3).
4. Apply a layer of Primer (C237) on the threads of the housing (5).

5. Apply four drops of Sealing compound (C029) on the threads of the ring nut (3). Put them in four equally spaced positions (90 degrees apart). (**VP**)
6. Lock the Base (14), part of the tool (LSE NO 130) in an applicable vice.
7. Put the housing-bearing assembly (12) on the base (14), then lock it with the two Bolts (13), part of the tool (LSE NO 130).
8. Install the ring nut (3) in the housing-bearing assembly (12) with the Wrench (15), part of the tool (LSE NO 130).
9. Torque the ring nut (3) to 117,7 thru 127,5 Nm (86,8 thru 94 lbf ft). (**VP**)
10. Make sure that the duplex bearing (4) turns freely. (**VP**)
11. Refer to Detail B of Fig. 64-34.
    (a) Measure and record the dimension L.
    (b) Make sure that the dimension you find is between 23.75 to 24.0 mm (0.935 to 0.945 in).
    (c) If you find that the dimension is not in the given limits, remove the duplex bearing (4). Then, do Step C.(4)(f) and Step C.(4)(g) again.
12. Refer to Detail C of Fig. 64-34.
    (a) Measure and record the dimension M.
    (b) Calculate and record the dimension N with this formula: N = M - L.
13. Remove the housing group (16) from the base (14).

NOTE: The safety wire must be installed with the double-twist method and put in tension. Example of an acceptable safety wire installation is shown in Detail B1 of Fig. 64-34. As a general approach, an “a” angle between 60° and 120° is adviseable.

14. Safety the ring nut (3) to the housing (5) with the new Safety wire (C014) in two places as shown in Detail B1 of Fig. 64-34. Refer also to Section 20-10. (**VP**)

(h) Apply a thin layer of Oil (C139) on the internal surface of the duplex bearing (4).
(i) Put the Bushing (18), part of the tool (LSE NO 133) in its position on the Pin (19), part of the tool (LSE NO 133).
(j) Put the housing group (16) on the pin (19) above the bushing (18).
(k) Put the slider (2) on the pin (19).

NOTE: To help you install the slider (2), heat the housing group (16) in an oven preheated to a temperature of 50 °C for 15 to 30 minutes.
As an alternative to heating the housing group (16); you can cool down the slider (2) with the Refrigerator (Local supply) to a temperature between -18 and -40 °C for 30 minutes. Do not touch the cold slider with bare hands to prevent injury.

(l) Push the slider (2) into the housing group (16). To do this, use the Barrel (17), part of the tool (LSE NO 133) and an applicable arbor.
(m) Remove the housing-slider assembly (20) from the pin (19).

NOTE: Before you continue, make sure that all the components are at ambient temperature.

(n) Make sure there is no clearance between the inner rings of the two bearings (8 and 9) and the shoulder of the slider (2). To do this, use the applicable Feeler gage (Local supply).
(o) Refer to Detail D of Fig. 64-34:
    1. Measure and record the dimension N. To do this, use an applicable Depth micrometer gage (Local supply).
    2. Make sure that the dimension N measured agrees with the dimension calculated at Step C.(4)(g)12.b.
    3. If you find that the dimension N does not agree, remove the duplex bearing (4). Then, do Step C.(4)(f) and Step C.(4)(o) again.
(p) Lock the Base (22), part of the tool (LSE NO 49) in an applicable vice.
(q) Put the housing-slider assembly (20) on the base (22).

(r) Move the braces (23) of the slider against the pins (24) of the base (22). Refer to Detail E of Fig. 64-34.
(s) Clean the threads of the ring nut (6) and the slider (2) with the Cloth, soft lint-free (C011) and the Solvent, cleaning (C023). (**VP**)
(t) Dry the threads of the ring nut (6) with a clean Cloth, soft lint-free (C011). (**VP**)
(u) Apply a layer of Primer (C237) on the threads of the ring nut (6).
(v) Apply a layer of Primer (C237) on the threads of the slider (2).
(w) Apply four drops of Sealing compound (C029) on the threads of the ring nut (6). Put them in four equally spaced positions (90 degrees apart). (**VP**)
(x) Install the ring nut (6) with the Wrench (21), part of the tool (LSE NO 49).
(y) Torque the ring nut (6) to 49,04 thru 58,84 Nm (36,1 thru 43,4 lbf ft). (**VP**)
(z) Remove the housing and slider group (1) from the base (22).
(aa) Install the new Lock ring (7).
(bb) Bend the clawed tabs of the lock ring (7) on the ring nut (6). Make sure that the two clawed tabs of the lock ring (7) are correctly engaged.

(5) Connect pitch control lever (40) and links (10) to housing (15).
(6) Torque the bolt (14) to the Final torque (Locking torque + Seating torque). Refer to the torque values that follow and to Annex 1 for the torque instructions. (**VP**):
- Locking torque: 3.39 N m (30 lbf in) maximum
- Breakaway torque: 0.39 N m (3.45 lbf in) minimum
- Seating torque: 3.40 thru 4.52 N m (30 thru 40 lbf in)

(7) Install the cotter pin.
(8) Apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587) to the shank and under head of the bolt (14).

NOTE 1: It is possible to install the bumper washers (40A) between housing (15) and links (10) between lever (40) and housing (15). Before you torque nuts (11), make sure that the spherical bearings of the control lever (40) and link (10) touch the lug of the housing (15) and not the bumper washers (40A).

NOTE 2: Install the two larger washers (13 and 15A) against spherical bearing of pitch control lever (40) and link (10). Install the two small washers (12) between the larger one (15A) and the nut (11). To obtain proper torque, replacement of one smaller washer AN960C416 with an AN960C416L washer is permitted.

NOTE 3: During the installation, if the total clearance between the pitch control lever (40) and the housing (15) is more than 0,3 mm, install one washer (65) P/N AN960PD416L (superseded by P/N NAS1149D0416K) on one attachment point bolt (14).

(9) Apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587) on the shank of the bolt (21).
(10) Connect pitch control links (20) to slider (23) following markings made at removal. Install between links and slider damper washers (60) with bolt (21), washers (22) and nut (38).
(11) Torque the bolt (21) to the Final torque (Locking torque + Seating torque). Refer to the torque values that follow and to Annex 1 for the torque instructions. (**VP**):
- Locking torque: 3.39 N m (30 lbf in) maximum
- Breakaway torque: 0.39 N m (3.45 lbf in) minimum
- Seating torque: 3.40 thru 4.52 N m (30 thru 40 lbf in)

(12) Install the cotter pin.
(13) Apply the Corrosion preventive compound (C509) to the nut (38), protruding thread of bolt (21) and cotter pin (38A).
(14) Apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587) on the shank of the blade pin.
(15) Put the connecting link (46) in position on the lever (40) and the fitting (61).
(16) Put the four washers (46A) and the two shims (46B) in their position between the connecting link (46), the lever (40) and the fitting (61).

(17) Apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587) to the shank and under head of the bolt (58). Secure the connecting link to fitting (61) using the bolt (58), washers (57, 56) and nut t (55)
(18) Measure clearance between the link (46) and the fitting (61); if the clearance is more than 0.05 mm (0.002 in), adjust thickness of shim (46B).

NOTE: Shims (46B) can be installed on the top side or either on the bottom side of link (46).

(19) Torque the bolt (58) to the Final torque (Locking torque + Seating torque). Refer to the torque values that follow and to Annex 1 for the torque instructions. (**VP**):
- Locking torque: 3.39 N m (30 lbf in) maximum
- Breakaway torque: 0.39 N m (3.45 lbf in) minimum
- Seating torque: 3.40 thru 4.52 N m (30 thru 40 lbf in)

(20) Install the cotter pin.
(21) Apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587) to the shank and under head of the bolt (44), then secure the connecting link to lever (40) using the bolt (44), washers (42, 43) and nut (41);
(22) Measure clearance between the link (46) and the lever (40); if the clearance is more than 0.05 mm (0.002 in), adjust thickness of shim (46B).
(23) Torque the bolt (44) to the Final torque (Locking torque + Seating torque). Refer to the torque values that follow and to Annex 1 for the torque instructions. (**VP**):
- Locking torque: 3.39 N m (30 lbf in) maximum
- Breakaway torque: 0.39 N m (3.45 lbf in) minimum
- Seating torque: 3.40 thru 4.52 N m (30 thru 40 lbf in)

(24) Install the cotter pin.
(25) Install the assembly on 90-degree gearbox output shaft. Lockwire boot aft (39) with safety wire (C013).
(26) Connect links (10) to levers (5 and 49). Verify that bolts can turn and slide freely in seats, otherwise reposition lever (49) and/or lever (5) until this requirement is satisfied.
(27) Torque the bolts (45) to the Final torque (Locking torque + Seating torque). Refer to the torque values that follow and to Annex 1 for the torque instructions. (**VP**):
- Locking torque: 3.39 N m (30 lbf in) maximum
- Breakaway torque: 0.39 N m (3.45 lbf in) minimum
- Seating torque: 3.40 thru 4.52 N m (30 thru 40 lbf in)

(28) Install the cotter pin.

NOTE: Install larger washer under bolt head and small washer under nut.

(29) Torque the bolt (7 and 47) to the Final torque (Locking torque + Seating torque). Refer to the torque values that follow and to Annex 1 for the torque instructions. (**VP**):
- Locking torque: 3.39 N m (30 lbf in) maximum
- Breakaway torque: 0.39 N m (3.45 lbf in) minimum
- Seating torque: 5.65 thru 7.91 N m (50 thru 70 lbf in)

(30) Install the cotter pin.
(31) Apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587) to the shank and under head of the bolt (45).

CAUTION: CHECK THAT LEVERS (5 AND 49) ARE ALIGNED TO EACH OTHER, AND THAT BEARING (18) IS NOT PRELOADED.

(32) Connect the free arm of torque shaft control lever (49) to tail rotor control tube (59) with the bolt (52), the washer (53) and the nut (54).
(33) Torque the bolt (52) to the Final torque (Locking torque + Seating torque). Refer to the torque values that follow and to Annex 1 for the torque instructions. (**VP**):

- Locking torque: 3.39 N m (30 lbf in) maximum
- Breakaway torque: 0.39 N m (3.45 lbf in) minimum
- Seating torque: 3.40 thru 4.52 N m (30 thru 40 lbf in)

(34) Install the cotter pin.
(35) Apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587) to the shank and under head of the bolts (52).
(36) Valid only for sleeve (25) P/N 109-0130-90-121: if removed, install bushing (27) into sleeve (25). Ref. to Para 64-31-6B.
Valid only for sleeve (25) P/N 109-0130-90-129: if it is necessary to install bushing (27) into sleeve (25), contact TC holder or an Authorized repair center.
(37) Install forward boot (26) on sleeve (25).
(38) Install sleeve (25) on gearbox shaft. Lockwire forward boot (26) as required using safety wire (C014).
(39) Apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587) to the shank of the bolts (32).

NOTE: Make sure that the head of the bolt (32) points in the direction of the rotation of the tail rotor.

(40) Connect the FWD half-scissor (30) to the sleeve (26) with the bolt (32), washers (29 and 31) and nut (28). Fully tighten all components. Do not torque nut.
(41) Manually determine the axial play between FWD half-scissor (30) and sleeve (26) along bolt axis in the way that follows:
(a) Turn the FWD half-scissor (30) back and forth, from “a” to “b” as Shown in Fig 64-29B Detail A, until you get the position of minimum play. Stop the FWD half-scissor (30) in this position. (**VP**)
(b) Torque the nut (28) until you get to the cotter pin hole on the bolt (32) with no axial play between components. FWD half-scissor must move freely with no binding. Slight friction is permitted. (**VP**)
(c) If you find too much binding / friction, replace the nut (32) with a new one and do again Step C.(36)(a) and Step C.(36)(b). (**VP**)
(d) If with the new nut (28) you still get too much binding / friction, add a washer (31A) P/N NAS1149F0416P under nut and do again Step C.(36)(a) and Step C.(36)(b). (**VP**)
(e) If you still get too much binding / friction, contact the TC holder.
(42) Connect the AFT half-scissor (35) to the FWD half-scissor (30) with the bolt (72), washers (73 and 74) and nut (75). Fully tighten all components. Do not torque nut. (**VP**)
(a) Before install the bolt (72) that connect the FWD half-scissor and AFT half-scissor apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587).
(43) Manually determine the axial play between AFT half-scissors (35) and FWD half-scissors (30) along bolt axis in the way that follows:
(a) Turn the AFT half-scissors (35) back and forth, from “a” to “b” as Shown in Fig 64-29B Detail B, until you get the position of minimum play. Stop the AFT half-scissors (35) in this position. (**VP**)
(b) Torque the nut (75) until you get to the cotter pin hole on the bolt (72) with no axial play between components. AFT half-scissor must move freely with no binding. Slight friction is permitted. (**VP**)
(c) If you find too much binding / friction, replace the nut (75) with a new one and do again Step C.(38)(a) and Step C.(38)(b). (**VP**)
(d) If with the new nut (75) you still get too much binding / friction, add a washer (74A) P/N NAS1149F0416P under nut and do again Step C.(38)(a) and Step C.(38)(b). (**VP**)
(e) If you still get too much binding / friction, contact the TC holder.
(44) Apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587) to the shank of the bolts (72).

NOTE: Make sure that the head of the bolt (37) points in the direction of the rotation of the tail rotor.

(45) Connect the AFT half-scissor (35) to the slider (23) with the bolt (37), washers (36 and 34) and nut (33). Fully tighten all components. Do not torque nut.
(46) Manually determine the axial play between AFT half-scissor (35) and the slider (23) along bolt axis in the way that follows:
  (a) Move the slider (23) back and forth until you get the position of minimum play. Stop the sleeve in this position. (**VP**)
  (b) Torque the nut (33) until you get to the cotter pin hole on the bolt (37) with no axial play between components. (**VP**)
  (c) If you find too much binding / friction, replace the nut (33) with a new one and do again Step C.(41)(a) and Step C.(41)(b). (**VP**)
  (d) If with the new nut (33) you still get too much binding / friction, add a washer (34A) P/N NAS1149F0416P under nut and do again Step C.(41)(a) and Step C.(41)(b). (**VP**)
  (e) If you still get too much binding / friction, contact the TC holder.
(47) Install the new Cotter pins on nuts (28, 33 and 75).
(48) Apply the Corrosion preventive compound (C509) to the parts that follow:
  (a) The heads of the bolts (32 and 37).
  (b) The washers (31) and (34), the nuts (28) and (33) and the cotter pins.
(49) Apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587) to the shank and under head of the bolts (32) and (37).

NOTE: Ensure that bolt (32 and 37) heads are facing tail rotor sense of rotation.

(50) On the blade side, install the washer (69) with the countersunk side against the base of the blade pin as shown in detail F of Fig. 64-29.

NOTE: If before removed install spacer (68) as shown in figure.

(51) Put the outboard end of the pitch change control link (20) on the blade pin.
(52) Install the flat surface of cup washer (67) against the pitch change control link (20).
(53) Torque the nut (66) to the Final torque (Locking torque + Seating torque). Refer to the torque values that follow and to Annex 1 for the torque instructions. (**VP**):
  - Locking torque: 9.04 N m (80 lbf in) maximum
  - Breakaway torque: 1.07 N m (9.47 lbf in) minimum
  - Seating torque: 7.91 thru 10.17 N m (70 thru 90 lbf in)
(54) Install the new cotter pin (70).
(55) Apply the Corrosion preventive compound (C509) to the nut (66), protruding thread of the blade pin and cotter pin (70).

D. Follow-On Maintenance Required:
- Install tail rotor hub and blade assembly (Sect 64-00)
- Install access panels P5 and P12.

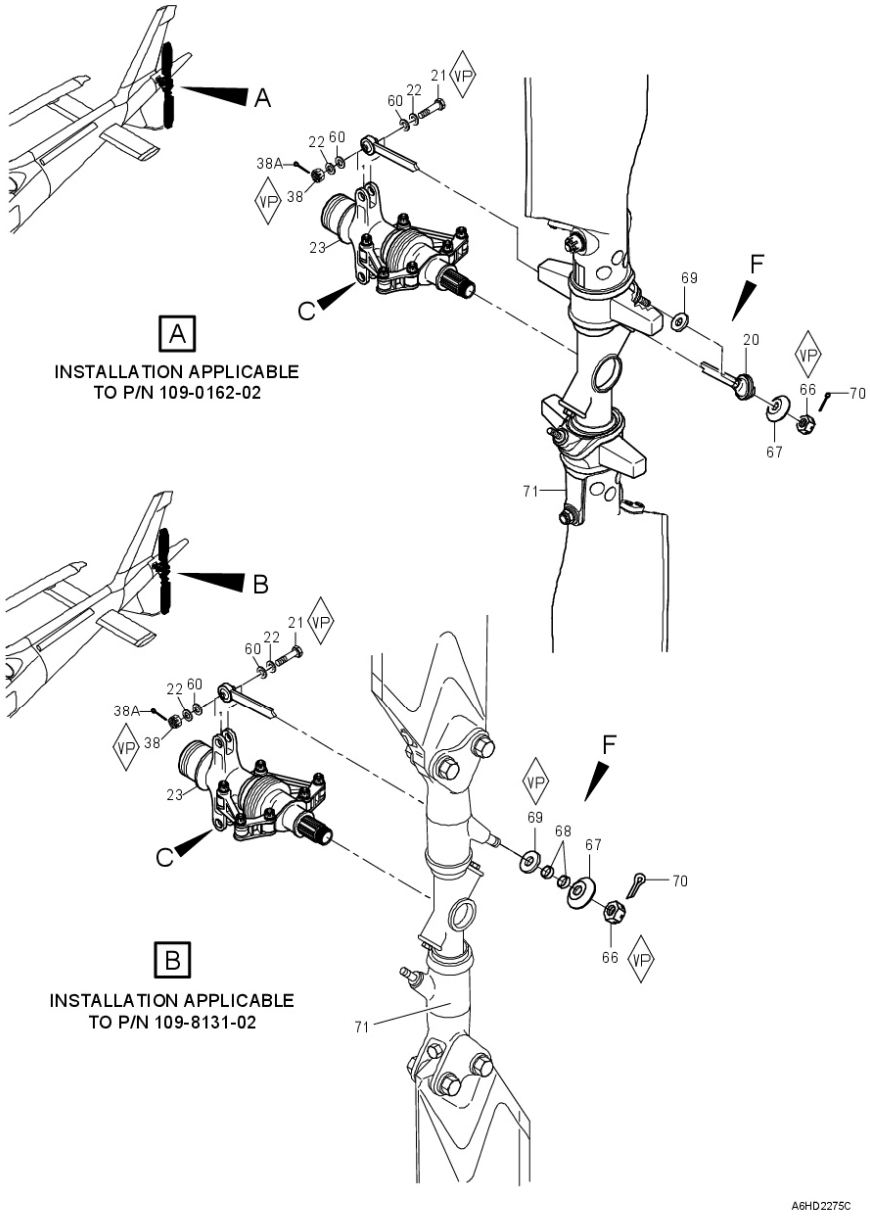


Figure 64-29 (sheet 1 of 5). Pitch change mechanism (Sleeve assy P/N 109-0130-94)

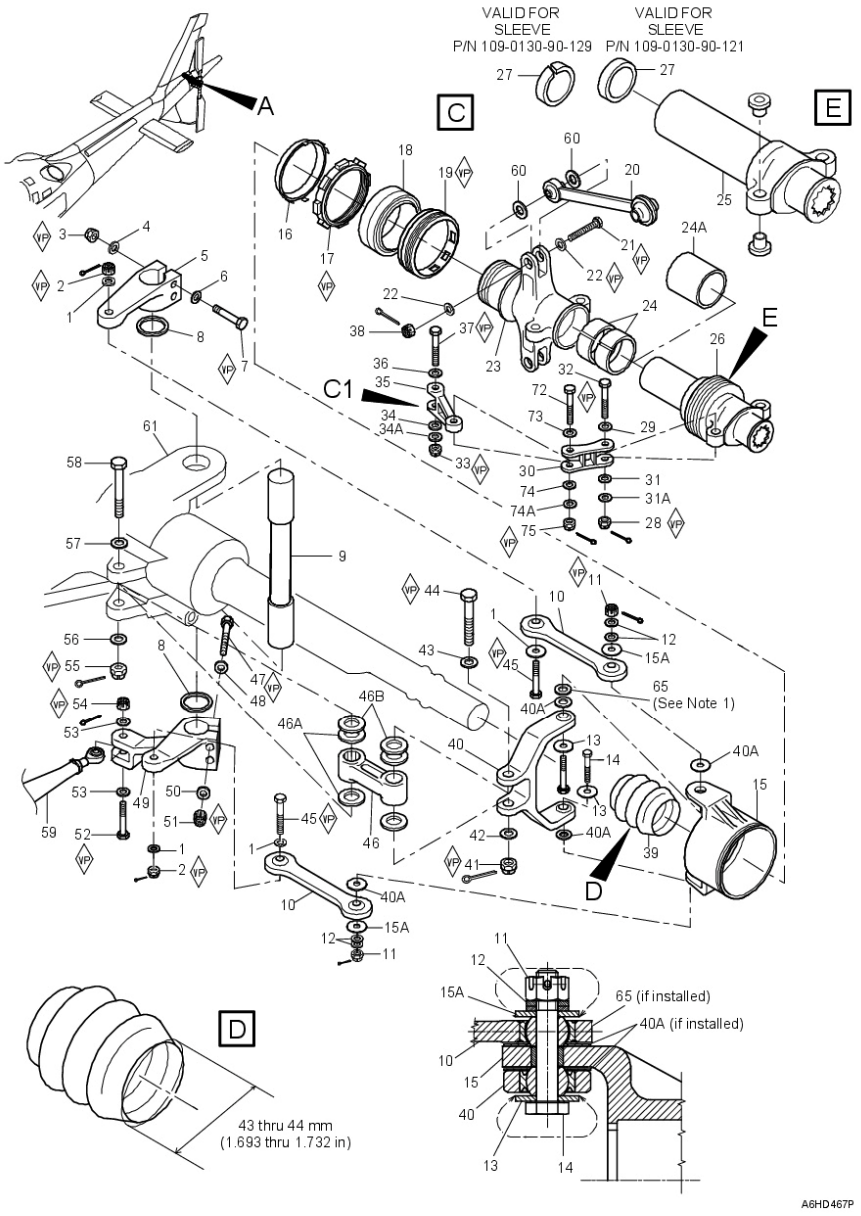


Figure 64-29 (sheet 2 of 5). Pitch change mechanism (Sleeve assy P/N 109-0130-94)

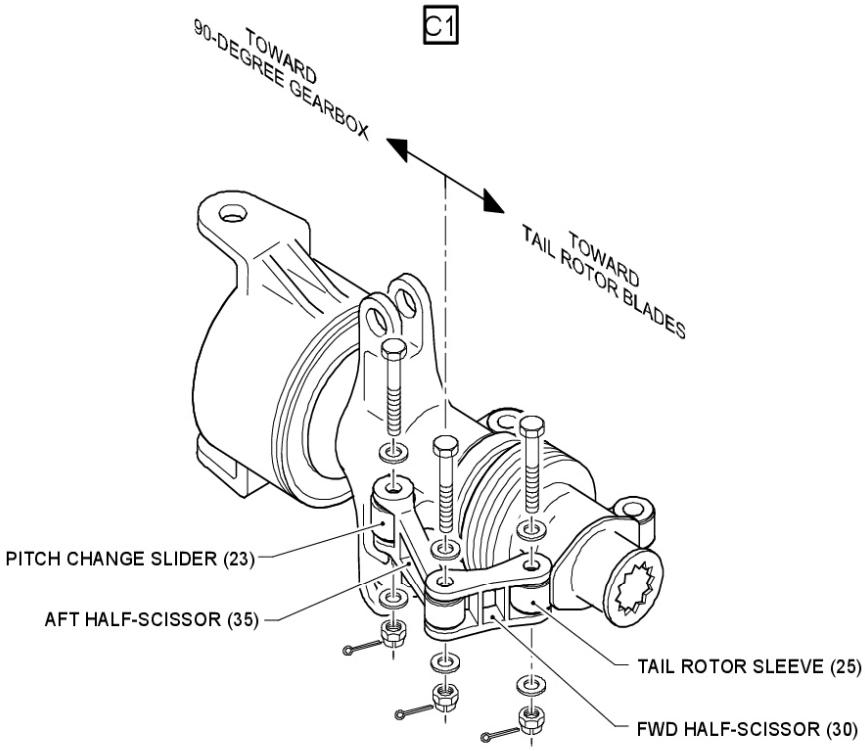


Figure 64-29 (sheet 3 of 5). Pitch change mechanism (Sleeve assy P/N 109-0130-94)

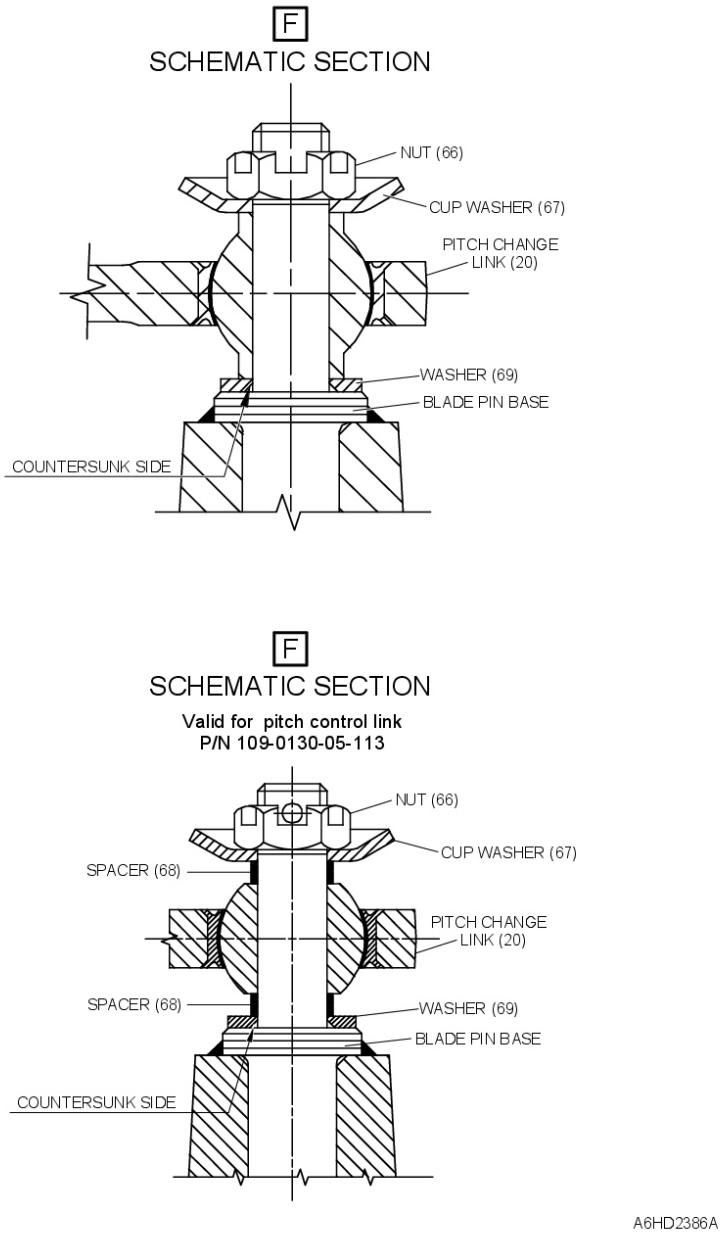


Figure 64-29 (sheet 4 of 5). Pitch change mechanism (Sleeve assy P/N 109-0130-94)

1. Washer
2. Nut
3. Nut
4. Washer
5. Lever
6. Washer
7. Bolt
8. Shim
9. Torque shaft
10. Link
11. Nut
12. Washer
13. Spacer
14. Bolt
15. Housing
15A. Shim
16. Lock ring
17. Ring nut
18. Duplex bearing
19. Ring nut
20. Pitch control link
21. Bolt
22. Washer
23. Slider
24. Bushing (*)
24A. Bushing
25. Sleeve
26. Forward boot
27. Bushing
28. Nut
29. Washer
30. FWD half scissor
31. Washer
31A. Washer (select on fit)
32. Bolt (*)
33. Nut
34. Washer
34A. Washer (select on fit)
35. AFT half scissor
36. Washer
37. Bolt (*)
38. Nut
38A. Cotter pin
39. AFT boot
40. Lever
40A. Bumper washer
41. Nut
42. Washer
43. Washer
44. Bolt
45. Bolt
46. Link
46A. Washer
46B. Washer
47. Bolt
48. Washer
49. Torque shaft control lever
50. Washer
51. Nut
52. Bolt
53. Washer
54. Nut
55. Nut
56. Washer
57. Washer
58. Bolt
59. Tail rotor pitch control tube (ref)
60. Washer, damper
61. T/R gearbox fitting
62. Shim
63. Bushing (**)
64. Shim
65. Washer
66. Nut
67. Flat surface cup washer
68. Spacer (if installed)
69. Washer
70. Cotter pin
71. Hub and blade assy
72. Bolt
73. Washer
74. Washer
74A. Washer (select on fit)
75. Nut

(*) Used with slider P/N 109-0130-91-105.
(**) Used with slider P/N 109-0130-91-117/-119.

NOTE 1:
Washer (65) is shown in this location but, if necessary, can be installed on opposite bolt (14).

Figure 64-29 (sheet 5 of 5). Pitch change mechanism (Sleeve assy P/N 109-0130-94)

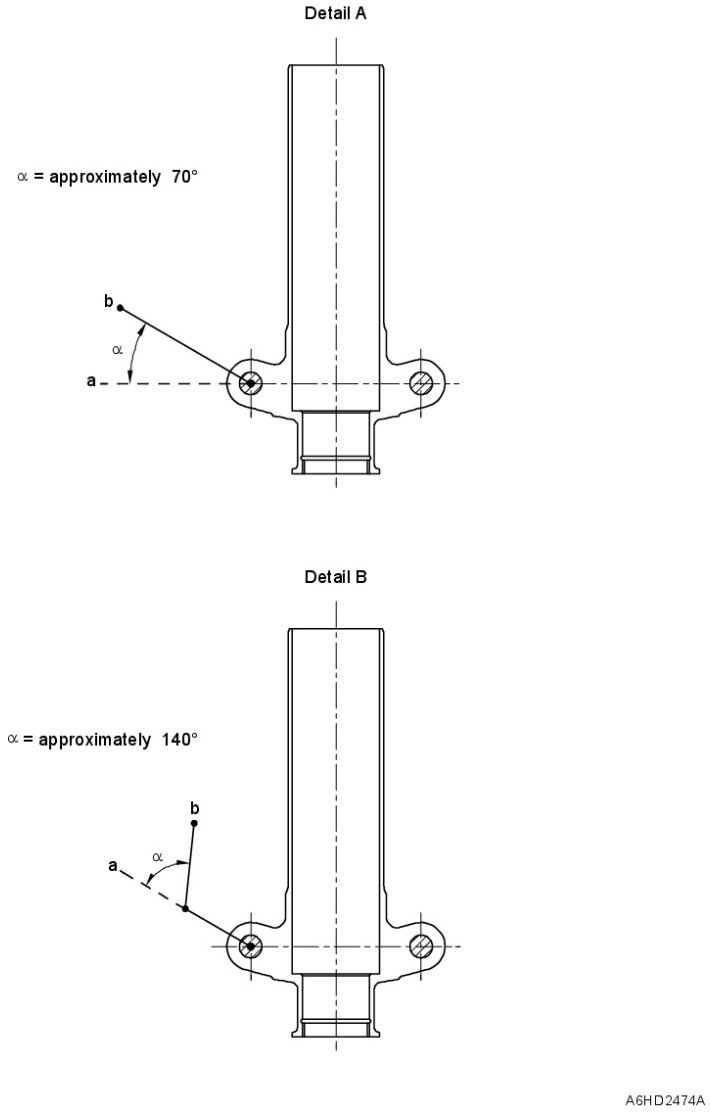
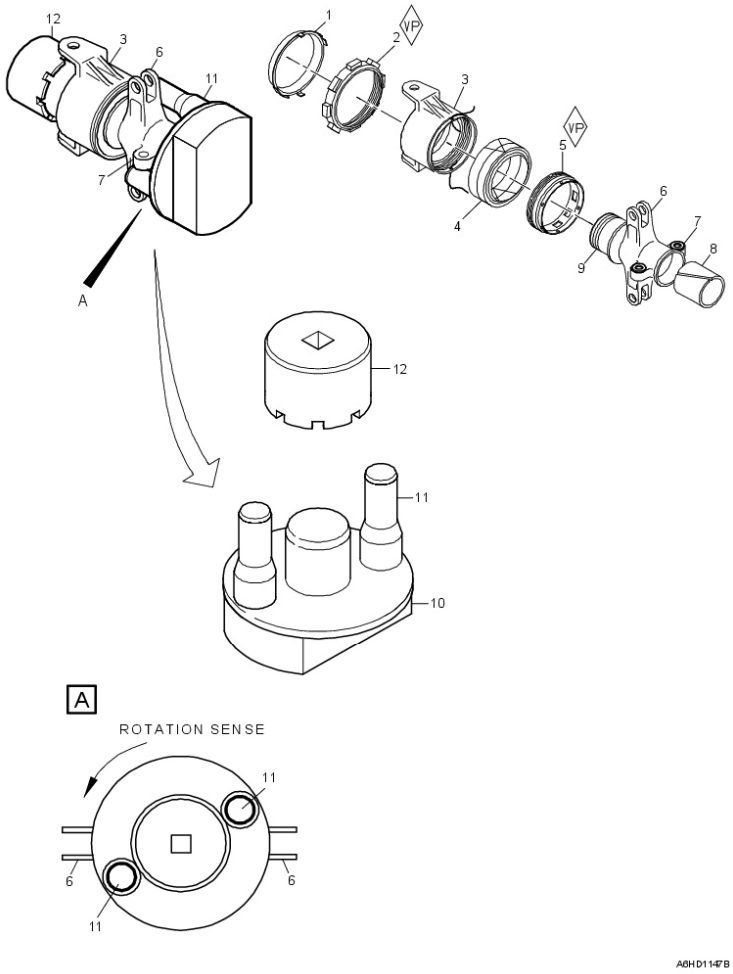
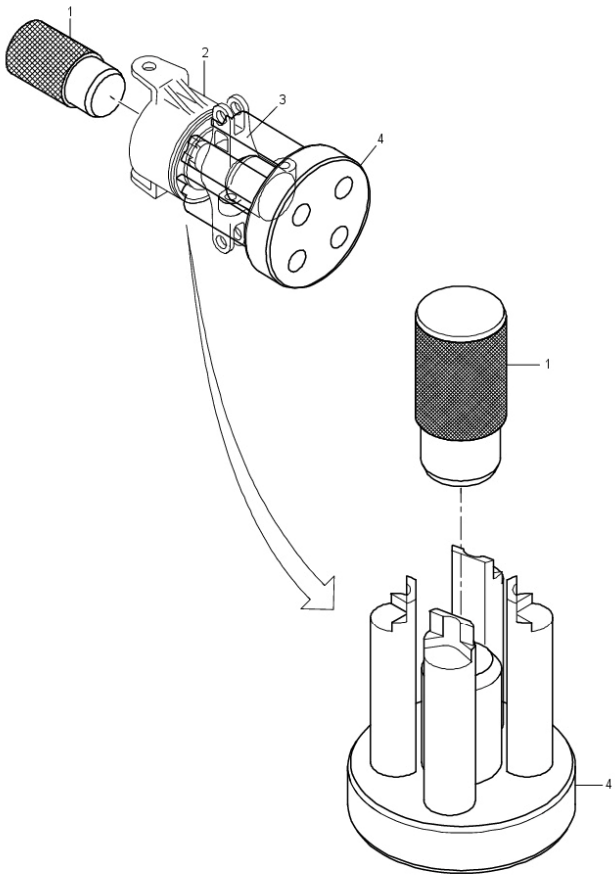


Figure 64-29B. Half scissors play check



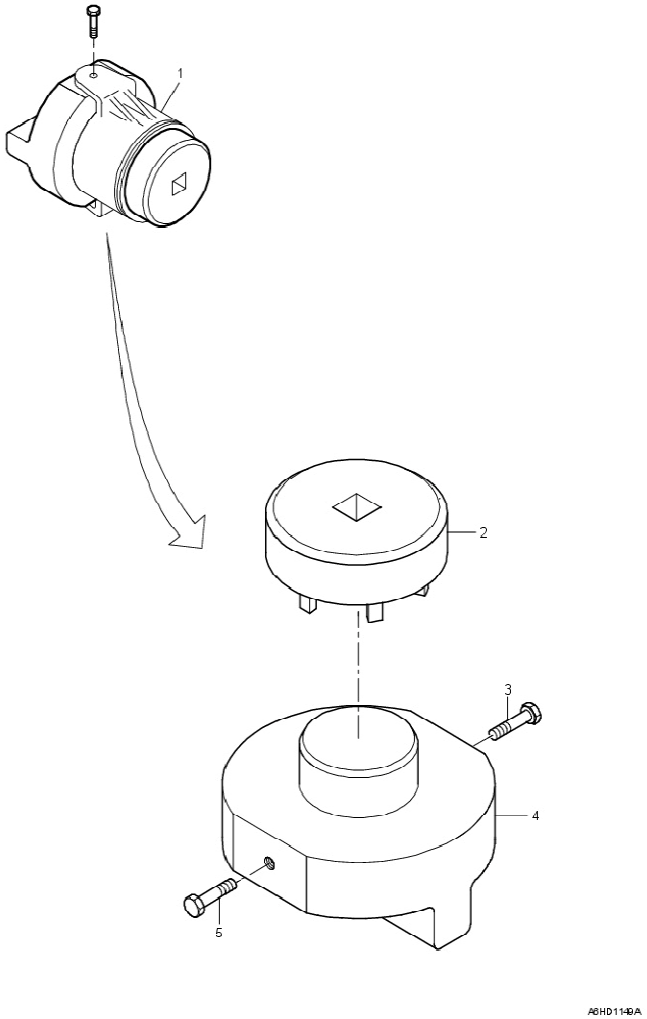
1. Lock ring
2. Ring nut
3. Duplex bearing housing
4. Duplex bearing
5. Ring nut
6. Pitch change slider arm
7. Bushing
8. Bushing
9. Pitch change slider assembly
10. Support
11. Cylindrical fitting
12. Wrench

Figure 64-30. Pitch change slider ring nut removal (Sleeve assy P/N 109-0130-94)



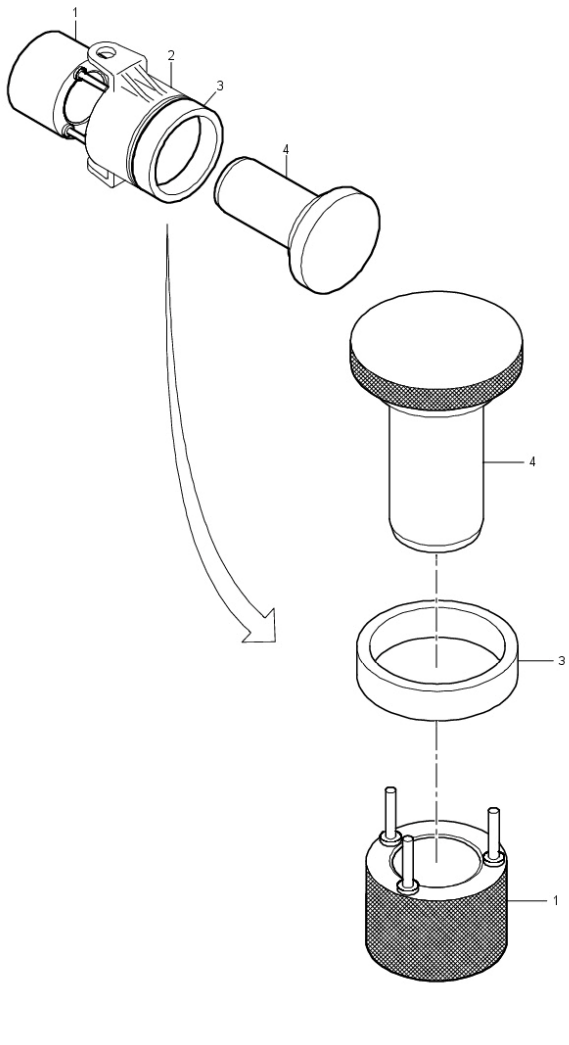
1. Adapter
2. Duplex bearing housing
3. Pitch change slider
4. Support

Figure 64-31. T/R Pitch change slider removal (Sleeve assy P/N 109-0130-94)



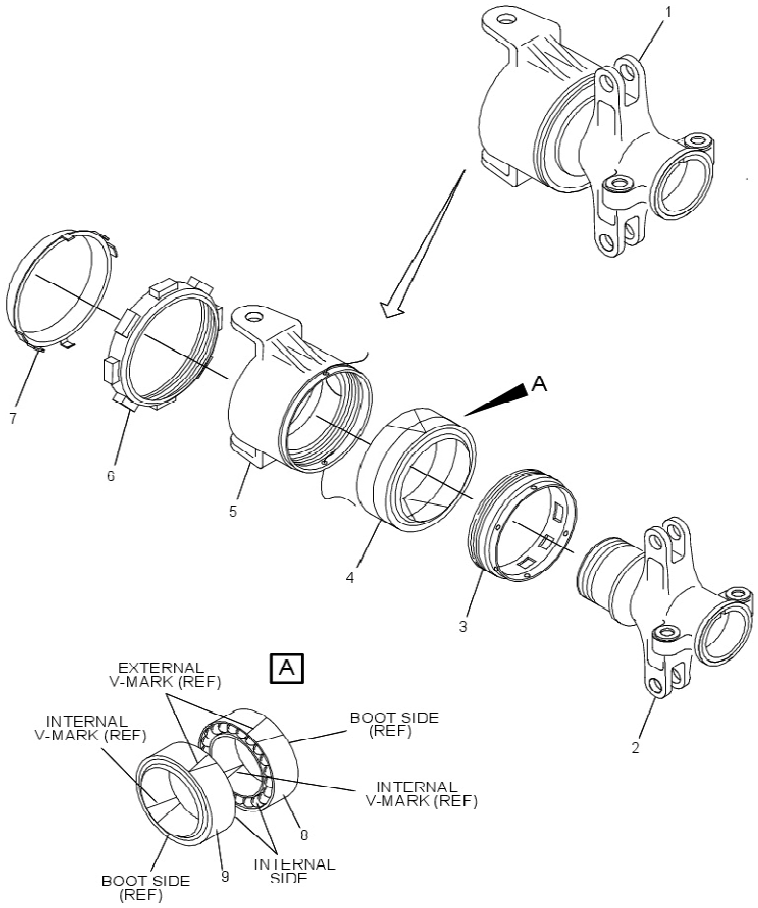
1. Duplex bearing housing
2. Wrench
3. Bolt
4. Support
5. Bolt

Figure 64-32. T/R Pitch change housing ring nut removal (Sleeve assy P/N 109-0130-94)



1. Support
2. Duplex bearing housing
3. Adapter
4. Adapter

Figure 64-33. T/R Pitch change housing duplex bearing removal (Sleeve assy P/N 109-0130-94)



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1. Housing and slider group	9. Bearing	17. Barrel (Part of the LSE NO 133)
2. Slider	10. Base (Part of LSE NO 132)	18. Bushing (Part of LSE NO 133)
3. Ring nut	11. Pin (Part of LSE NO 132)	19. Pin (Part of LSE NO 133)
4. Douplex bearing	12. Housing-bearing assembly	20. Housing-slider assembly
5. Housing	13. Bolt (Part of LSE NO 130)	21. Wrench (Part of LSE NO 49)
6. Nut	14. Base (Part of LSE NO 130)	22. Base (Part of LSE NO 49)
7. Lock ring	15. Wrench (Part of LSE NO 130)	23. Brace
8. Bearing	16. Housing group	24. Pin

Figure 64-34 (sheet 1 of 5). Housing and slider group (Sleeve assy P/N 109-0130-94)

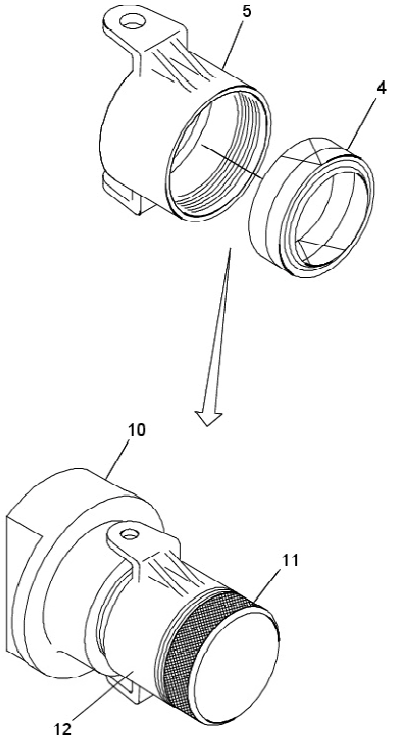

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Figure 64-34 (sheet 2 of 5). Housing and slider group (Sleeve assy P/N 109-0130-94)

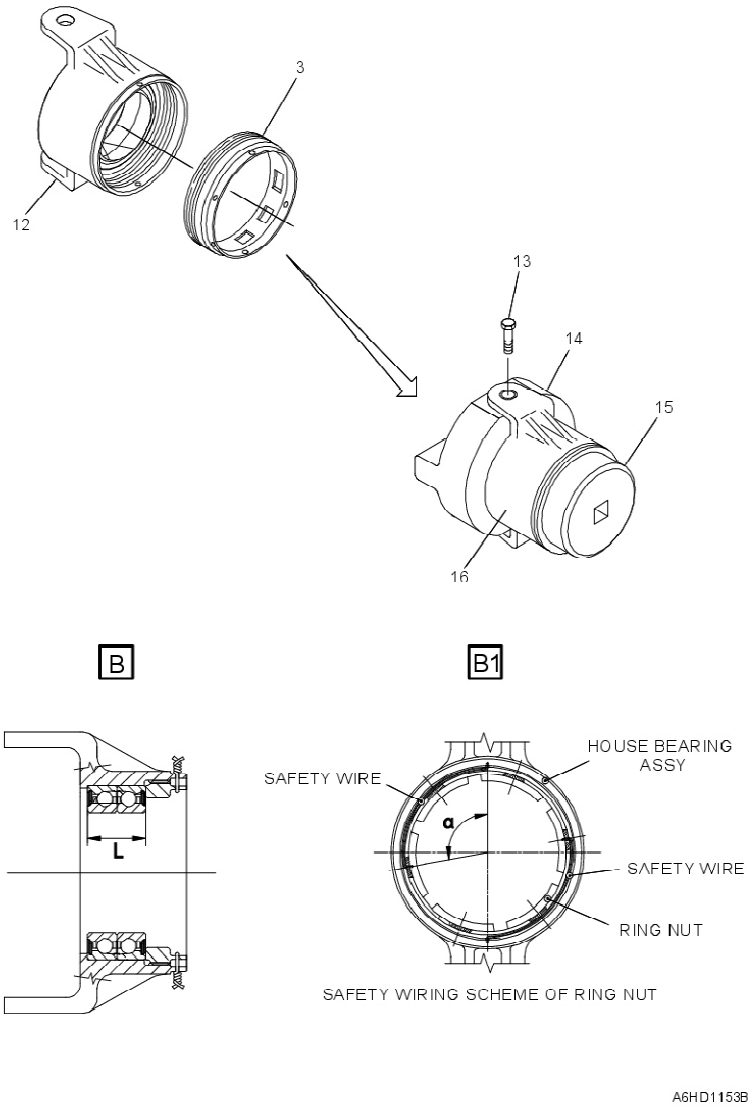


Figure 64-34 (sheet 3 of 5). Housing and slider group (Sleeve assy P/N 109-0130-94)

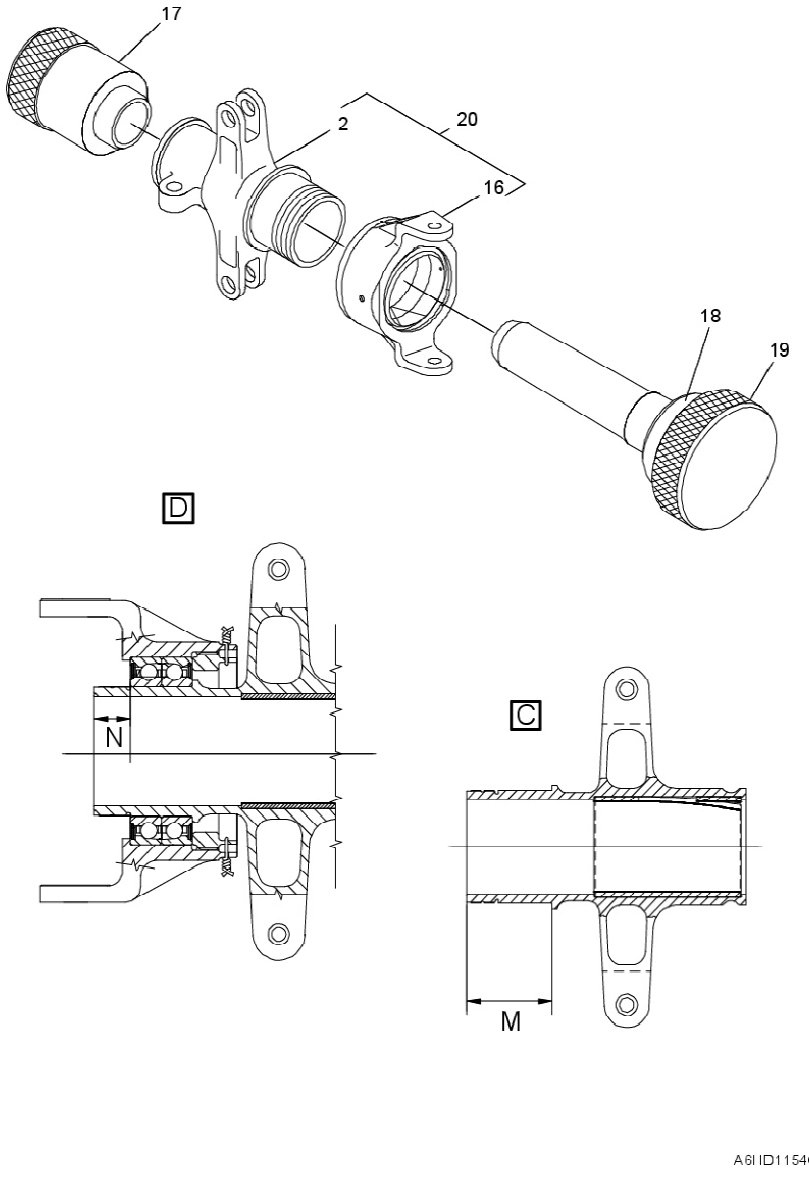


Figure 64-34 (sheet 4 of 5). Housing and slider group (Sleeve assy P/N 109-0130-94)

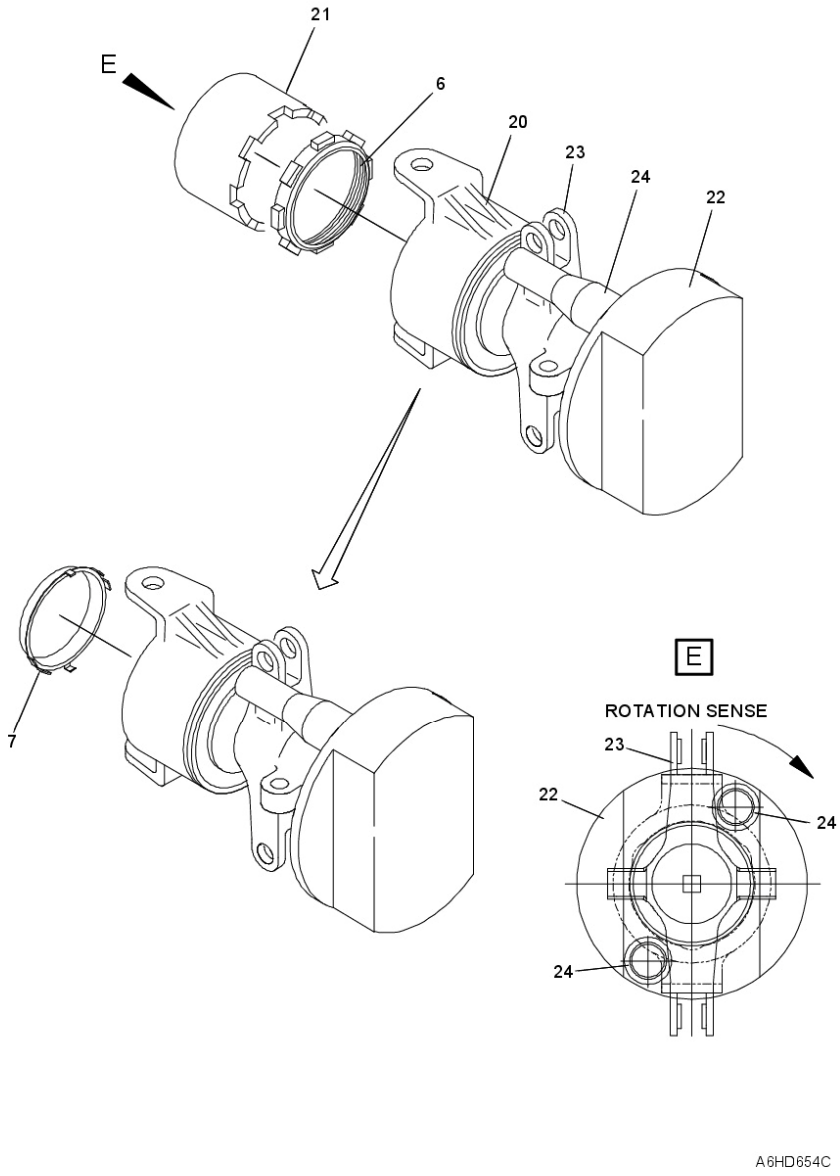


Figure 64-34 (sheet 5 of 5). Housing and slider group (Sleeve assy P/N 109-0130-94)

ANNEX B

A109E - 64-31-6C. REMOVAL/INSTALLATION (SLEEVE ASSY P/N 109G6430A03)

Annex 10

64-31-6C. Removal/installation (Sleeve assy P/N 109G6430A03)
(Fig 64-35)

A. Input Conditions
(1) Required conditions:
- Helicopter safe for maintenance (Chap 00)
- Access panels P5 and P12 removed
- Tail rotor hub and blade assembly removed (Sect 64-00).

(2) Support equipment:
- Tool, T/R pitch change slider ring nut removal/installation (LSE NO 49)
- Tool, T/R pitch change housing ring nut removal/installation (LSE NO 130)
- Tool, T/R pitch change housing duplex bearing removal (LSE NO 131)
- Tool, T/R pitch change housing duplex bearing installation (LSE NO 132)
- Tool, T/R pitch change slider installation (LSE NO 133)
- Tool, T/R pitch change slider removal (LSE NO 101)
- Syringe (Local supply)
- Heating gun (Local supply)
- Feeler gage (Local supply)
- Depth micrometer gage (Local supply)
- Refrigerator (Local supply)
- Plastic scraper (Local supply)

(3) Consumable materials:

WARNING: THE CONSUMABLE MATERIALS THE NOMENCLATURE OF WHICH IS PREFIXED BY "(D)" ARE DANGEROUS MATERIALS.
BEFORE USE, MAKE SURE TO KNOW THE SAFETY PRECAUTIONS AND FIRST AID INSTRUCTIONS PRINTED ON:
- THE LABEL ON THE CONTAINER THE MATERIAL WAS SUPPLIED IN
- THE MATERIAL SAFETY DATA SHEET
- THE LOCAL SAFETY REGULATIONS.
ALSO MAKE SURE THAT THE APPLICABLE FIRST AID MATERIALS ARE AVAILABLE.

- Abrasive paper (C055)
- (D) Sealing compound (C029)
- Safety wire (C014)
- (D) Primer (C446)
- Safety wire (C013)
- (D) Grease (C594)
- Cloth, soft lint-free (C011)
- (D) Solvent, cleaning (C023)
- (D) Oil (C139)
- (D) Primer (C237)
- Sealant (C501)
- (D) Corrosion preventive compound (C509)
- (D) Corrosion inhibiting compound (C505)
- (D) Corrosion preventive compound (C587)
- (D) Cleaning solvent (C287)
- (D) Corrosion inhibitor (C288)

(4) Other recommendations:

WARNING: THIS INSTALLATION INCLUDES VITAL POINTS (VP). DURING THE PROCEDURE, YOU MUST OBEY THE LOCAL REGULATIONS APPLICABLE TO THE VITAL POINTS.

CAUTION: MAKE SURE THAT YOU DO NOT MIX GREASES OF DIFFERENT BRANDS ALTHOUGH THE SPECIFICATIONS ARE THE SAME. REFER TO THE HELICOPTER LOG BOOK TO PREVENT MIXTURE OF UNWANTED GREASES.

CAUTION: THIS COMPONENT INCLUDES CRITICAL PARTS. EXAMINE THE COMPONENT FOR SIGNS OF STRUCTURAL DAMAGE, BEFORE YOU INSTALL IT ON THE HELICOPTER. REFER TO SECT 20-40.

B. Removal Procedure.

(1) Disconnect tail rotor pitch control tube (59) from torque shaft control lever (49) by removing attaching hardware. Discard cotter pin.
(2) Disconnect FWD half scissor (30) from sleeve (25) and AFT half scissor (35) from slider (23) by removing attaching parts. Discard cotter pins.
(3) Detach AFT half scissor (35) from FWD half scissor (30) by removing attaching parts. Discard cotter pin.
(4) Cut lockwire from forward boot (26) and withdraw sleeve (25) from gearbox shaft. Remove forward boot (26) from sleeve (25).

NOTE: Mark position of pitch control links (20) to reconnect in same position during reassembly of slider.

CAUTION: REMOVE THE PITCH CONTROL LINK (20) IN THE SEQUENCE AS FOLLOWS FOR NOT DAMAGE THE LINK.

(5) Remove pitch control link (20) from slider arm (23), by removing parts; the bolt (21), the washer (22), damper washer (60), the other washer (22), the nut (38) and discard the cotter pin (38A) remove pitch control link (20).
(6) Remove and discard cotter pin (70), remove the nut (66), the flat surface cup washer (67), the spacer (68) (if installed), the washer (69) and disconnect the pitch control link (20) from the blade (71).
(7) Remove links (10) by removing attaching parts. Discard cotter pins.
(8) Cut lockwire from aft boot (39).
(9) Withdraw housing (15), together with assembled parts, from gearbox shaft.
(10) Disassemble housing (15) and slider assembly (23) as follows:
  (a) Put the housing and slider group (1, Figure 64-36) on an applicable work table.
  (b) Lock the Base (Part of LSE NO 49) (2) in an applicable vice.
  (c) Put the housing and slider group (1) on the base (2).
  (d) Move the braces (3) of the slider against the pins (4) of the base (2).
  (e) Open the two clawed tabs on the lock ring (5). Then remove it from the housing and slider group (1).
  (f) Remove the ring nut (7) with the Wrench (Part of LSE NO 49) (6).
  (g) Remove the housing-slider assembly (8) from the base (2).
  (h) Put the housing-slider assembly (8) on the Support (Part of LSE 101) (9).

CAUTION: WHEN YOU DO THE STEP B.(10)(I) THAT FOLLOWS, MAKE SURE THAT THE PIN (12) AND THE DUPLEX BEARING (22) ARE CORRECTLY ALIGNED. THIS IS TO PREVENT DUPLEX BEARING DAMAGE.

  (i) Push the slider group (10) out of the housing group (11). To do this, use the Pin (Part of LSE NO 101) (12) and an applicable arbor press.
  (j) Remove the slider group (10) from the support (9).
  (k) Remove the sealant from the housing group (11), between the housing-bearing assembly (18) and the flange (14) with the Plastic scraper (Local supply) (See Detail A).

(l) Cut the safety wire from the six bolts (15).
(m) Remove these parts that attach the flange (14) with the peeling shim (13) to the housing-bearing assembly (18):
- The six bolts (15)
- The six countersunk washers (16)
- The six washers (17).
(n) Remove the flange (14) with the peeling shim (13) from the housing-bearing assembly (18).
(o) Put the Bushing (Part of LSE NO 131) (20) in its position on the Pin (Part of LSE NO 131) (21).
(p) Put the housing-bearing assembly (18) on the pin (21) above the bushing (20).

WARNING: BE CAREFUL WHEN YOU USE HEAT. HOT PARTS CAN CAUSE INJURY TO THE PERSONS. ALWAYS USE APPLICABLE PROTECTIVE CLOTHING.

(q) Lightly increase the temperature of the external surface of the housing-bearing assembly (18) with the Heating gun (Local supply). This will help you to remove the duplex bearing (22) from the bearing support sleeve (23). Make sure that the temperature must not be more than 90 °C.
(r) Push the duplex bearing (22) out of the bearing support sleeve (23). To do this, use the Barrel (Part of LSE NO 131) (19) and an applicable arbor press.

(11) Remove boot (39, Fig 64-35).
(12) Remove attaching parts of levers (5 and 49), then remove levers and shims (8) and extract pivot (9) from lugs on gearbox.
(13) Disconnect pitch control lever (40) from link (46) by removing attaching parts. Remove lever (40). Discard cotter pin.
(14) Disconnect link (46) from lugs on gearbox by removing attaching parts. Remove link (46). Discard cotter pin.

C. Installation Procedure.

CAUTION: INSTALL THE FWD HALF-SCISSOR (30, FIG 64-35) AND AFT HALF-SCISSOR (35, FIG 64-35) IN THE CORRECT LOCATION AND ORIENTATION AS SHOWN IN DETAIL C1 OF FIG 64-35.

NOTE: During the installation of the self-locking bolts or the self-locking nuts, when the locking is engaged, with the torque wrench (Local supply), make sure that the locking torque necessary to move the bolts or nuts, before contact with the washer, is between the minimum breakaway torque and the maximum locking torque. If you do not get his value, discard the bolts and/or nuts.

(1) Position torque shaft (9, Fig 64-35) in 90-degree gearbox lugs.
(2) Install laminated shims (8) and levers (5 and 49) on torque shaft (9). Do not torque attaching parts.

NOTE: If any of the following items: 90-degree gearbox case, torque shaft (9) levers (5 and 49) laminated shims (8) have been replaced, proceed as follows:

(a) Position torque shaft (9) in 90-degree gearbox lugs.
(b) Position levers (5 and 49) on torque shaft (9) without shims and secure temporarily in position.
(c) Measure the total gap between one lever and the adjacent lug with a feeler gauge. Half of the gap is dimension of each laminated shim (8).
(d) Remove levers (5 and 49) from torque shaft (9).
(e) Fit laminated shims (8) on torque shaft (9) then reinstall levers (5 and 49) and secure. Do not torque nuts (3 and 51) at this time.
(f) Check for free rotation of pivot. If shim thickness is unsatisfactory, modify the shims the same amount on either side to obtain an axial play between 0,03 and 0,08 mm between 90° gearbox lugs bearings and levers (5 and 49) when installed.

NOTE: Before installing the boot in the housing and slider group deform the boot metallic rim to an oval shape with a maximum diameter of 43 thru 44 mm (1.693 thru 1.732 in) as shown in DETAIL D of figure 64-35. This is to help a tighter fit in the seat. Put the inboard boot in its position in the housing and slider group.

(3) Position aft boot (39) on gearbox shaft.
(4) Reassemble housing (15) and slider assembly (23) as follows:

CAUTION: BEFORE YOU ASSEMBLE THE HOUSING AND SLIDER GROUP (1, FIG. 64-37) PUT THE COMPONENT THAT FOLLOW AND THE RELATED ATTACHING PARTS ON AN APPLICABLE WORK TABLE.
CAREFULLY EXAMINE THE COMPONENT AND THE RELATED ATTACHING PARTS FOR CORROSION, NICKS AND DAMAGE, WEAR AND FRETTING. IF YOU FIND THAT THE COMPONENT IS DAMAGED, REPLACE IT:
- THE DUPLEX BEARING (11)
- THE BEARING SUPPORT SLEEVE (8).

(a) Divide the two parts of the duplex bearing (11).

NOTE: Do step C.(4)(b) thru step C.(4)(d) only for removed bearings. New bearings are supplied already lubricated and must not be filled with grease.

(b) Fill the Syringe (Local supply) with the Grease (C594).
(c) Before you install the bearing (12), fill it with 3.5 cc (0.21 in3) of grease with the syringe from the side opposite to the boot. Refer to Detail A of Fig. 64-37.
(d) Do step C.(4)(c) again on the bearing (13).
(e) Put the bearing (12) against the bearing (13) with the boot sides externally and the internal and external V-marks aligned to show an arrow. See Detail A, Fig. 64-37.
(f) Install the duplex bearing (11) into the bearing support sleeve (8) in the way that follows:
1. Apply a thin layer of Primer (C446) on the mating surfaces between the duplex bearing (11) and bearing support sleeve (8).
2. Put the bearing support sleeve (8) on the Base (Part of LSE NO 132) (14).

WARNING: BE CAREFUL WHEN YOU USE HEAT. HOT PARTS CAN CAUSE INJURY TO THE PERSONS. ALWAYS USE APPLICABLE PROTECTIVE CLOTHING.

3. Heat the bearing support sleeve (8) to a temperature between 60 and 70 °C with the Heating gun (Local supply) . This will help you to install the duplex bearing (11) into the bearing support sleeve. Make sure that the temperature is not more than 90 °C (heating gun set to a temperature of 90 °C).

NOTE: As an alternative to heating the bearing support sleeve (8); you can cool down the duplex bearing (11) with the Refrigerator (Local supply) to a temperature between -18 and -40 °C for 30 minutes. Do not touch the cold duplex bearing with bare hands to prevent injury.

4. Push the duplex bearing (11) into the bearing support sleeve (8). To do this, use the Pin (Part of LSE NO 132) (15) and an applicable arbor press.
5. Make sure there is no clearance between the two bearings (12 and 13) and between the outer ring of duplex bearing (11) and the shoulder of the bearing support sleeve (8). To do this, use the applicable Feeler gage (Local supply).
6. Remove the housing-bearing assembly (16) from the base (14).

NOTE: Before you continue, make sure that all the components are at ambient temperature.

(g) Install the flange (6) with the peeling shim (7) into the housing-bearing assembly (16). Obey the instructions that follow:

1. Clean the flange (6), the mating surfaces of the housing-bearing assembly (16) and the six bolts (3) with the Cloth, soft lint-free (C011) and the Solvent, cleaning (C023).
2. Dry the parts that you cleaned with a clean Cloth, soft lint-free (C011).
3. Temporarily put the flange (6) in its correct position on the housing-bearing assembly (16) against the duplex bearing (11). Do not apply pressure on the bearing.
4. Measure the gap between the flange (6) and the housing-bearing assembly (16) in the six tabs. Refer to Detail B of Fig. 64-37. Calculate the average value (dimension S) and then record it. (**VP**)
5. Adjust the thickness "S7" of the peeling shim (7) with this formula: (**VP**) S7 = S - 0,17 thu 0,22 mm (0.007 thru 0.009 in).
6. Install the peeling shim (7) and the flange (6) in the housing-bearing assembly (16).

CAUTION: MAKE SURE THAT THERE ARE NO BURRS DURING PEELING SHIMS INSTALLATION (7) ADJUSTMENT. IF YOU FIND BURRS REMOVE WITH ABRASIVE PAPER (C055).

NOTE: Make sure that the six countersunk washers are correctly installed as shown in Detail B of Fig. 64-37. **(VP)**

7. Install these parts that attach the flange (6) with the peeling shim (7) to the bearing support sleeve (8): (**VP**)
   - The six washers (5)
   - The six countersunk washers (4)
   - The six bolts (3).

NOTE 1: During the installation of the six bolts (3) in the insert of the bearing support sleeve (8), when the locking is engaged, with the torque wrench (Local supply), make sure that the locking torque necessary to move the bolts, before contact with the washers (4) and (5), is between 0.22 Nm (1.95 lbf in) and 2.03 Nm (17.97 lbf in). if you do not get this value, discard the bolts and / or inserts. (**VP**)

NOTE 2: In case you have to replace the inserts, contact the TC holder.

8. Torque the bolts (3) to the Final torque (Locking torque + Seating torque). Refer to the torque values that follow and to Annex 1 for the torque instructions. (**VP**):
   - Locking torque: 2.03 N m (17.97 lbf in) maximum
   - Breakaway torque: 0.22 N m (1.95 lbf in) minimum
   - Seating torque: 4.30 thru 4.52 N m (38.05 thru 40 lbf in)
9. Remove the housing-bearing assembly (16) from the base (14).
10. Make sure that the duplex bearing (11) turns freely. (**VP**)
11. Refer to Detail B of Fig. 64-37:
    (a) Measure and record the dimension L.
    (b) Make sure that the dimension you find is between 23.75 to 24.0 mm (0.935 to 0.945 in).
    (c) If you find that the dimension is not in the given limits, remove the duplex bearing (11). Then, do step C.(4)(f) and step C.(4)(g) again.
12. Refer to Detail C of Fig. 64-37:
    (a) Measure and record the dimension M.
    (b) Calculate and record the dimension N with this formula: N = M - L.
13. Safety the six bolts (3) with the new Wire, safety (C014) . Refer also to CSPP-A-20-40-00-03A-712AD. (**VP**)

(h) Apply a thin layer of Oil (C139) on the internal surface of the duplex bearing (11).
(i) Put the Bushing (Part of LSE NO 133) (18) in its position on the Pin (Part of LSE NO 133) (19).
(j) Put the housing group (16) on the pin (19) above the bushing (18).
(k) Put the slider (2) on the pin (19).

NOTE 1: To help you install the slider (2), heat the housing group (16) in an oven preheated to a temperature of 50 °C for 15 to 30 minutes.

NOTE 2: As an alternative to heating the housing group (16); you can cool down the slider (2) with the Refrigerator (Local supply) to a temperature between -18 and -40 °C for 30 minutes. Do not touch the cold slider with bare hands to prevent injury.

(l) Push the slider (2) into the housing group (16). To do this, use the Barrel (Part of LSE NO 133) (17) and an applicable arbor.
(m) Remove the housing-slider assembly (20) from the pin (19).

NOTE: Before you continue, make sure that all the components are at ambient temperature.

(n) Make sure there is no clearance between the inner rings of the two bearings (12 and 13) and the shoulder of the slider (2). To do this, use the applicable Feeler gage (Local supply).
(o) Refer to Detail D of Fig. 64-37:
1. Measure and record the dimension N. To do this, use an applicable Depth micrometer gage (Local supply).
2. Make sure that the dimension N measured agrees with the dimension calculated at step C.(4)(g)(11)b.
3. If you find that the dimension N does not agree, remove the duplex bearing (11). Then, do step C.(4)(f) thru step C.(4)(o) again.
(p) Lock the Base (Part of LSE NO 49) (22) in an applicable vice.
(q) Put the housing-slider assembly (20) on the base (22).
(r) Move the braces (23) of the slider against the pins (24) of the base (22). Refer to Detail E of Fig. 64-37.
(s) Clean the threads of the ring nut (9) and the slider (2) with the Cloth, soft lint-free (C011) and the Solvent, cleaning (C023) . (**VP**)
(t) Dry the threads of the ring nut (9) and slider (2) with a clean Cloth, soft lint-free (C011) . (**VP**)
(u) Apply a layer of Primer (C237) on the threads of the ring nut (9).
(v) Apply a layer of Primer (C237) on the threads of the slider (2).
(w) Apply four drops of Adhesive (C029) on the threads of the ring nut (9). Put them in four equally spaced positions (90 degrees apart). (**VP**)
(x) Install the ring nut (9) with the Wrench (Part of LSE NO 49) (21).
(y) Torque the ring nut (9) to 49 thru 59 N m (36 thru 43 lbf ft). (**VP**)
(z) Remove the housing and slider group (1) from the base (22).
(aa) Install the new Lock ring (10).
(bb) Bend the clawed tabs of the lock ring (10) on the ring nut (9). Make sure that the two clawed tabs of the lock ring (10) are correctly engaged.
(cc) Seal the gap between the flange (6) and the housing-bearing assembly (16) with Sealant (C501) as shown in Detail B of Fig. 64-37.
(dd) Let the sealing compound cure. For sealing compound cure cycle, refer to 09-A-00-50-00-85A-074C-D.
(ee) Clean the head of the six bolts (3) with a soft Lint-free cloth (C011) and the Cleaning solvent (C287).
(ff) Apply the Corrosion inhibitor (C288) to the head of the six bolts (3).
(gg) Paint a slippage mark between the head of the six bolts (3) and flange (6), refer to CSPP-A-20-40-00-05A-691A-D.

(5) Connect pitch control lever (40, Fig. 64-35) and links (10) to housing (15).
(6) Torque the bolts (14) to the Final torque (Locking torque + Seating torque). Refer to the torque values that follow and to Annex 1 for the torque instructions. (**VP**):
- Locking torque: 3.39 N m (30 lbf in) maximum
- Breakaway torque: 0.39 N m (3.45 lbf in) minimum
- Seating torque: 3.40 thru 4.52 N m (30 thru 40 lbf in)

(7) Install cotter pins and apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587) to the shank and under head of the bolt (14).

NOTE 1: It is possible to install the bumper washers (40A) between housing (15) and links (10) between lever (40) and housing (15). Before you torque nuts (11), make sure that the spherical bearings of the control lever (40) and link (10) touch the lug of the housing (15) and not the bumper washers (40A). (**VP**)

NOTE 2: Install the two spacers (13 and 15A) against spherical bearing of pitch control lever (40) and link (10). Install the two small washers (12) between the larger one (15A) and the nut (11). To obtain proper torque, replacement of one smaller washer AN960C416 with an AN960C416L washer is permitted. (**VP**)

NOTE 3: During the installation, if the total clearance between the pitch control lever (40) and the housing (15) is more than 0,3 mm, install one washer (65) P/N AN960PD416L (superseded by P/N NAS1149D0416K) on one attachment point bolt (14).

(8) Deleted.
(9) Deleted.
(10) Deleted.
(11) Deleted.
(12) Deleted.

NOTE: Deleted.

(13) Deleted.
(14) Deleted.
(15) Deleted.
(16) Deleted.
(17) Deleted.
(18) Put the connecting link (46) in position on the lever (40) and the fitting (61).
(19) Put the four washers (46A) and the two shims (46B) in their position between the connecting link (46), the lever (40) and the fitting (61).
(20) Apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587) to the shank and under head of the bolt (58). Secure the connecting link to fitting (61) using the bolt (58), washers (57, 56) and nut (55).
(21) Measure clearance between the link (46) and the fitting (61); if the clearance is more than 0.05 mm (0.002 in), adjust thickness of shim (46B).

NOTE: Shims (46B) can be installed on the top side or either on the bottom side of link (46).

(22) Torque the bolt (58) to the Final torque (Locking torque + Seating torque). Refer to the torque values that follow and to Annex 1 for the torque instructions. (**VP**):
- Locking torque: 3.39 N m (30 lbf in) maximum
- Breakaway torque: 0.39 N m (3.45 lbf in) minimum
- Seating torque: 3.40 thru 4.52 N m (30 thru 40 lbf in)

(23) Install the cotter pin.
(24) Apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587) to the shank and under head of the bolt (44), then secure the connecting link to lever (40) using the bolt (44), washers (42, 43) and nut (41).
(25) Measure clearance between the link (46) and the lever (40); if the clearance is more than 0.05 mm (0.002 in), adjust thickness of shim (46B).
(26) Torque the bolt (44) to the Final torque (Locking torque + Seating torque). Refer to the torque values that follow and to Annex 1 for the torque instructions. (**VP**):
- Locking torque: 3.39 N m (30 lbf in) maximum
- Breakaway torque: 0.39 N m (3.45 lbf in) minimum

- Seating torque: 3.40 thru 4.52 N m (30 thru 40 lbf in)

(27) Install the cotter pin.

(28) Install the assembly on 90-degree gearbox output shaft. Lockwire boot aft (39) with safety wire (C013).

(29) Connect links (10) to levers (5 and 49). Verify that bolts can turn and slide freely in seats, otherwise reposition lever (49) and/or lever (5) until this requirement is satisfied.

(30) Torque the bolt (45) to the Final torque (Locking torque + Seating torque). Refer to the torque values that follow and to Annex 1 for the torque instructions. (**VP**):

- Locking torque: 3.39 N m (30 lbf in) maximum
- Breakaway torque: 0.39 N m (3.45 lbf in) minimum
- Seating torque: 3.40 thru 4.52 N m (30 thru 40 lbf in)

(31) Install the cotter pin.

NOTE: Install larger washer under bolt head and small washer under nut.

(32) Torque the bolts (7 and 47) to the Final torque (Locking torque + Seating torque). Refer to the torque values that follow and to Annex 1 for the torque instructions. (**VP**):

- Locking torque: 3.39 N m (30 lbf in) maximum
- Breakaway torque: 0.39 N m (3.45 lbf in) minimum
- Seating torque: 5.65 thru 7.91 N m (50 thru 70 lbf in)

(33) Install the cotter pin.

(34) Apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587) to the shank and under head of the bolt (45).

CAUTION: CHECK THAT LEVERS (5 AND 49) ARE ALIGNED TO EACH OTHER, AND THAT BEARING (18) IS NOT PRELOADED.

(35) Connect the free arm of torque shaft control lever (49) to tail rotor control tube (59) with the bolt (52), the washer (53) and the nut (54).

(36) Torque the bolt (52) to the Final torque (Locking torque + Seating torque). Refer to the torque values that follow and to Annex 1 for the torque instructions. (**VP**):

- Locking torque: 3.39 N m (30 lbf in) maximum
- Breakaway torque: 0.39 N m (3.45 lbf in) minimum
- Seating torque: 3.40 thru 4.52 N m (30 thru 40 lbf in)

(37) Install the cotter pin.

(38) Apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587) to the shank and under head of the bolts (52).

(39) Connect pitch control links (20) to slider (23) following markings made at removal. Install between links and slider damper washers (60) with bolt (21), washers (22) and nut (38).

(40) Torque the bolt (21) to the Final torque (Locking torque + Seating torque). Refer to the torque values that follow and to Annex 1 for the torque instructions. (**VP**):

- Locking torque: 3.39 N m (30 lbf in) maximum
- Breakaway torque: 0.39 N m (3.45 lbf in) minimum
- Seating torque: 3.40 thru 4.52 N m (30 thru 40 lbf in)

(41) Install the cotter pin.

(42) Install forward boot (26) on sleeve (25).

(43) Install sleeve (25) on gearbox shaft. Lockwire forward boot (26) as required using Safety wire (C014).

(44) Apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587) to the shank of the bolts (32).

NOTE: Make sure that the head of the bolt (32) points in the direction of the rotation of the tail rotor.

(45) Connect the FWD half-scissor (30) to the sleeve (26) with the bolt (32), washers (29 and 31) and nut (28). Fully tighten all components. Do not torque nut.
(46) Manually determine the axial play between FWD half-scissor (30) and sleeve (26) along bolt axis in the way that follows:
  (a) Turn the FWD half-scissor (30) back and forth, from “a” to “b” as Shown in Fig 64-29B Detail A, until you get the position of minimum play. Stop the FWD half-scissor (30, Fig. 64-35) in this position. (**VP**):
  (b) Torque the nut (28) until you get to the cotter pin hole on the bolt (32) with no axial play between components. FWD half-scissor must move freely with no binding. Slight friction is permitted. (**VP**):
  (c) If you find too much binding / friction, replace the nut (32) with a new one and do again Step C.(36)(a) and Step C.(36)(b). (**VP**):
  (d) If with the new nut (32) you still get too much binding / friction, add a washer (31A) P/N NAS1149F0416P under nut and do again Step C.(36)(a) and Step C.(36)(b). (**VP**):
  (e) If you still get too much binding / friction, contact the TC holder.
(47) Connect the AFT half-scissor (35) to the FWD half-scissor (30) with the bolt (76), washers (77 and 78) and nut (79). Fully tighten all components. Do not torque nut. (**VP**):
  (a) Before install the bolt (76) that connect the FWD half-scissor and AFT half-scissor apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587).
(48) Manually determine the axial play between AFT half-scissors (35) and FWD half-scissors (30) along bolt axis in the way that follows:
  (a) Turn the AFT half-scissors (35) back and forth, from “a” to “b” as Shown in Fig 64-29B Detail B, until you get the position of minimum play. Stop the AFT half-scissors (35) in this position. (**VP**):
  (b) Torque the nut (79) until you get to the cotter pin hole on the bolt (76) with no axial play between components. AFT half-scissor must move freely with no binding. Slight friction is permitted. (**VP**):
  (c) If you find too much binding / friction, replace the nut (79) with a new one and do again Step C.(38)(a) and Step C.(38)(b). (**VP**):
  (d) If with the new nut (79) you still get too much binding / friction, add a washer (78A) P/N NAS1149F0416P under nut and do again Step C.(38)(a) and Step C.(38)(b). (**VP**):
  (e) If you still get too much binding / friction, contact the TC holder.
(49) Apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587) to the shank of the bolts (76).

NOTE: Make sure that the head of the bolt (37) points in the direction of the rotation of the tail rotor.

(50) Connect the AFT half-scissor (35) to the slider (23) with the bolt (37), washers (36 and 34) and nut (33). Fully tighten all components. Do not torque nut.
(51) Manually determine the axial play between AFT half-scissor (35) and the slider (23) along bolt axis in the way that follows:
  (a) Move the slider (23) back and forth until you get the position of minimum play. Stop the sleeve in this position. (**VP**):
  (b) Torque the nut (33) until you get to the cotter pin hole on the bolt (37) with no axial play between components. (**VP**):
  (c) If you find too much binding / friction, replace the nut (33) with a new one and do again Step 41(a) and Step 41(b). (**VP**):
  (d) If with the new nut (33) you still get too much binding / friction, add a washer (34A) P/N NAS1149F0416P under nut and do again Step C.(41)(a) and Step C.(41)(b). (**VP**):
  (e) If you still get too much binding / friction, contact the TC holder.
(52) Install the new Cotter pins on nuts (28, 33 and 79).
(53) Apply the Corrosion preventive compound (C509) to the parts that follow:
  (a) The heads of the bolts (32 and 37)

(b) The washers (31) and (34), the nuts (28) and (33) and the cotter pins.

(54) Apply the Corrosion inhibiting compound (C505) or Corrosion inhibiting compound (C587) to the shank and under head of the bolts (32) and (37).

(55) Connect the pitch control link (20) to the blade (71) with the washer (69), the spacer (68) (if installed), the flat surface cup washer (67) and the nut (66).

(56) Torque the nut (66) to the Final torque (Locking torque + Seating torque). Refer to the torque values that follow and to Annex 1 for the torque instructions. (**VP**):

- Locking torque: 9.04 N m (80 lbf in) maximum
- Breakaway torque: 1.07 N m (9.47 lbf in) minimum
- Seating torque: 7.91 thru 10.17 N m (70 thru 90 lbf in)

(57) Install the cotter pin.

NOTE: Ensure that bolt (32 and 37) heads are facing tail rotor sense of rotation.

D. Follow-On Maintenance Required:

- Install tail rotor hub and blade assembly (Sect 64-00)
- Install access panels P5 and P12.

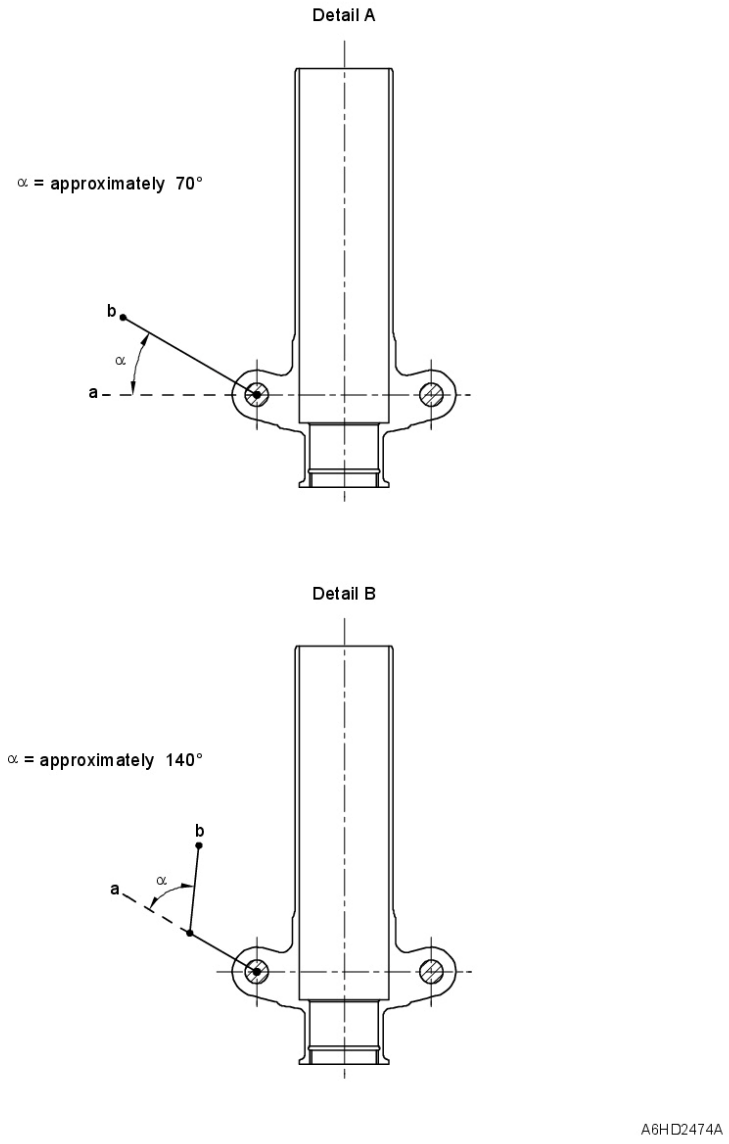


Figure 64-29B. Half scissors play check

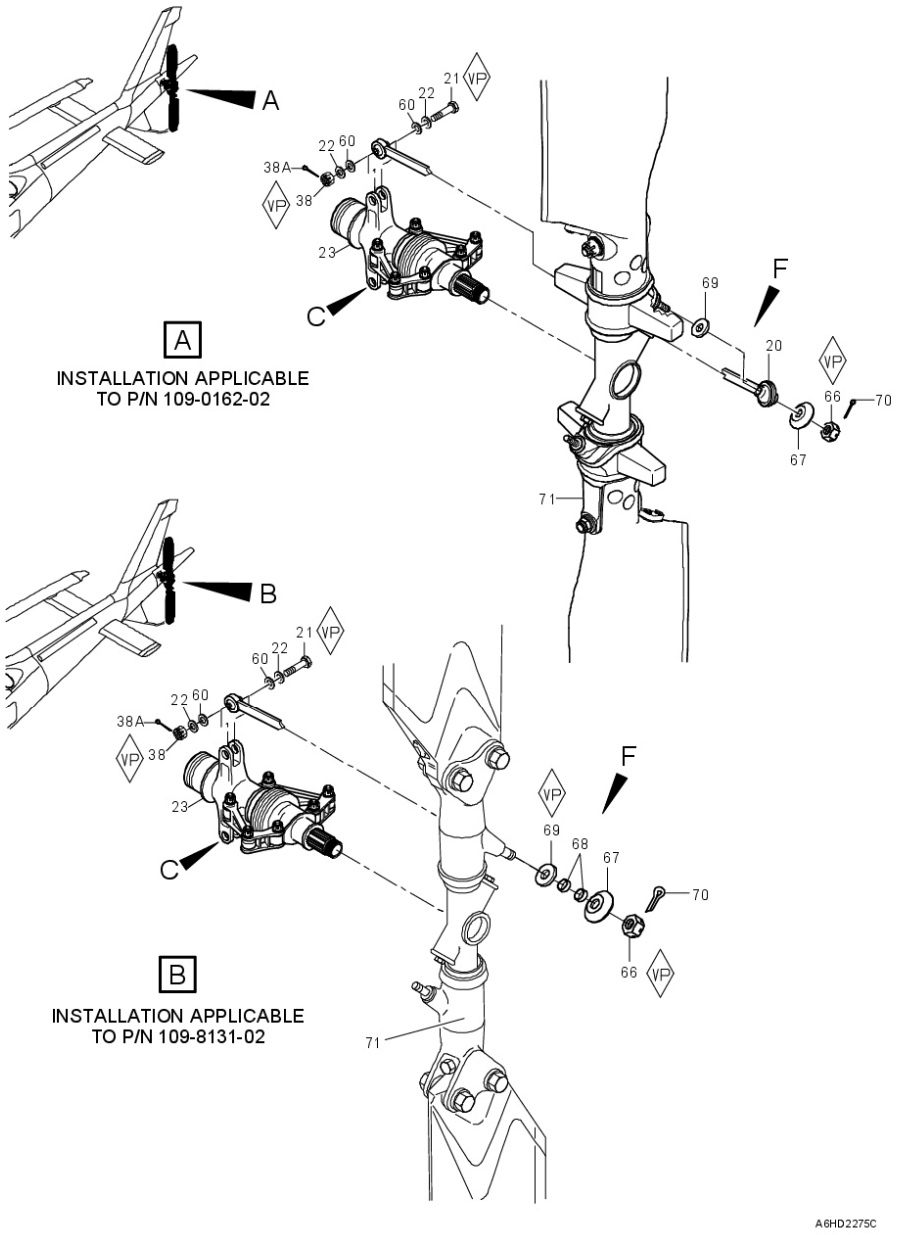


Figure 64-35 (sheet 1 of 5). Pitch change mechanism (Sleeve assy P/N 109G6430A03)

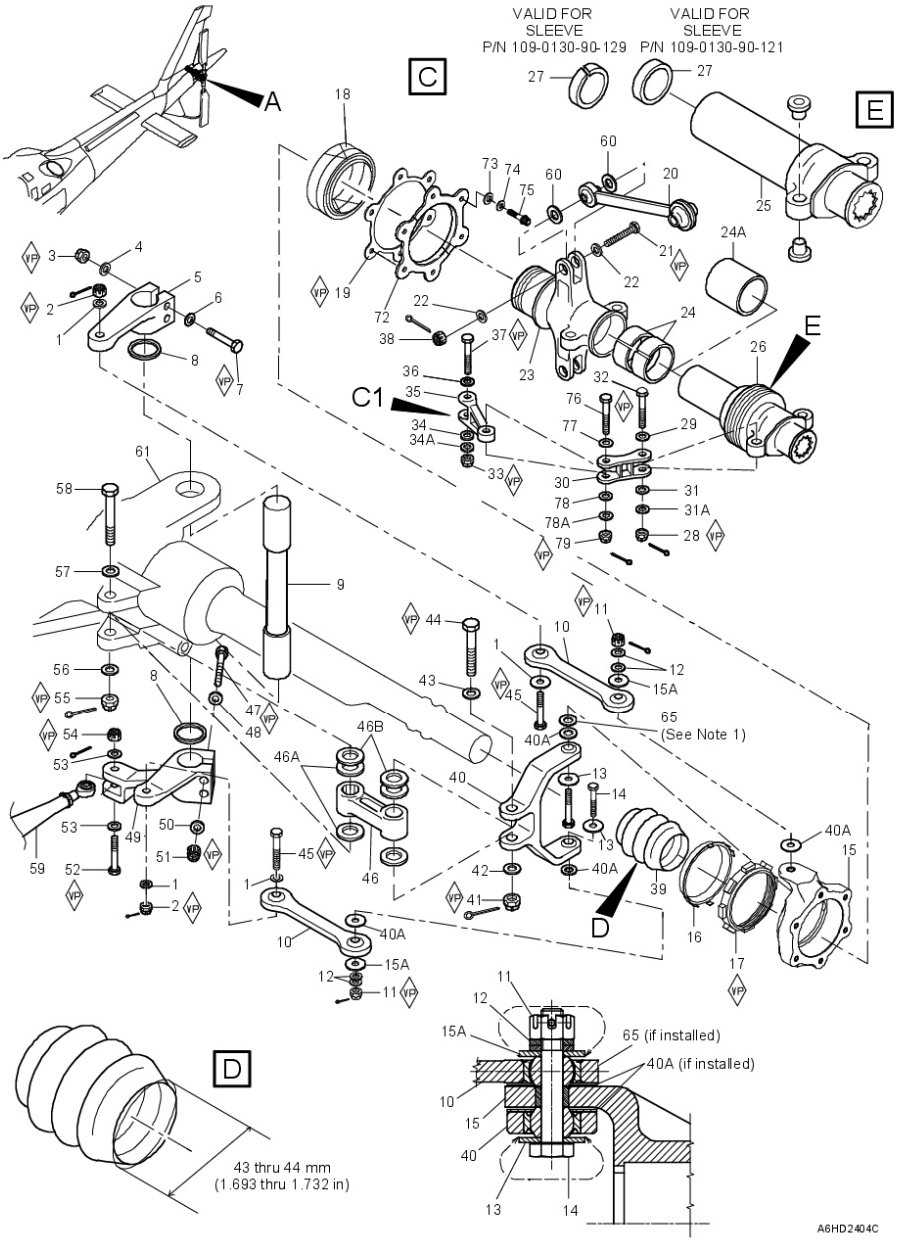


Figure 64-35 (sheet 2 of 5). Pitch change mechanism (Sleeve assy P/N 109G6430A03)

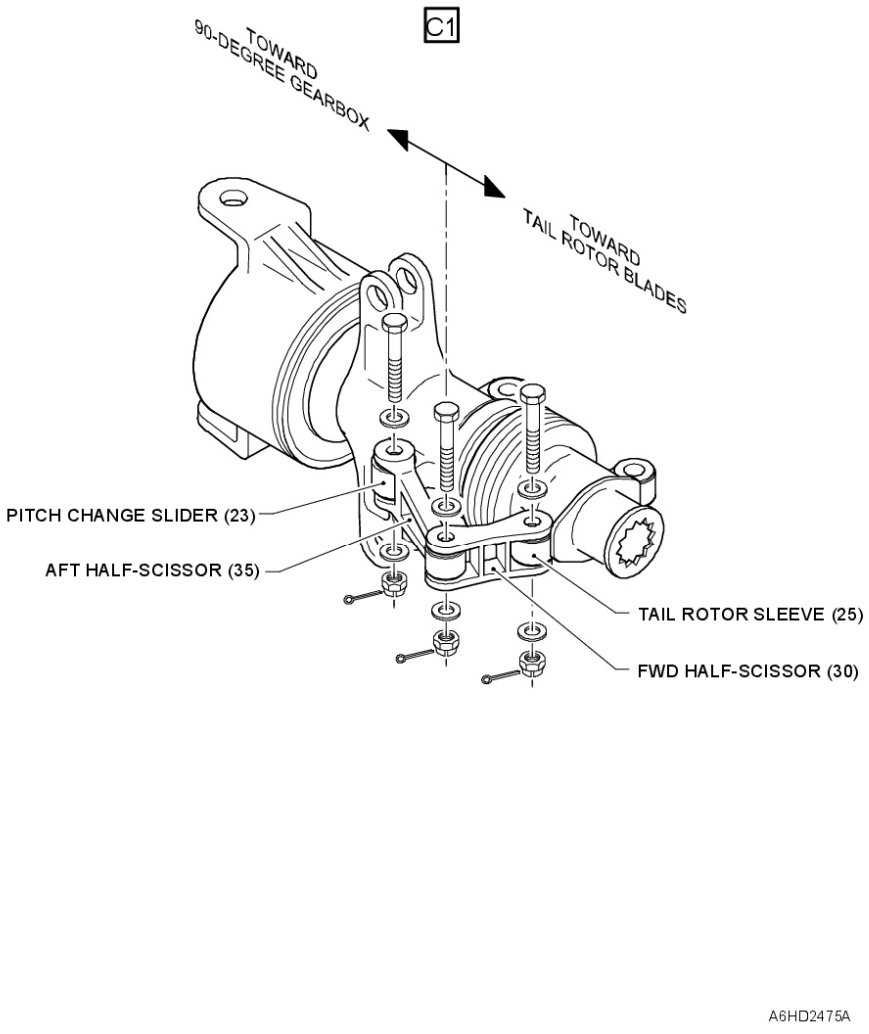


Figure 64-35 (sheet 3 of 5). Pitch change mechanism (Sleeve assy P/N 109G6430A03)

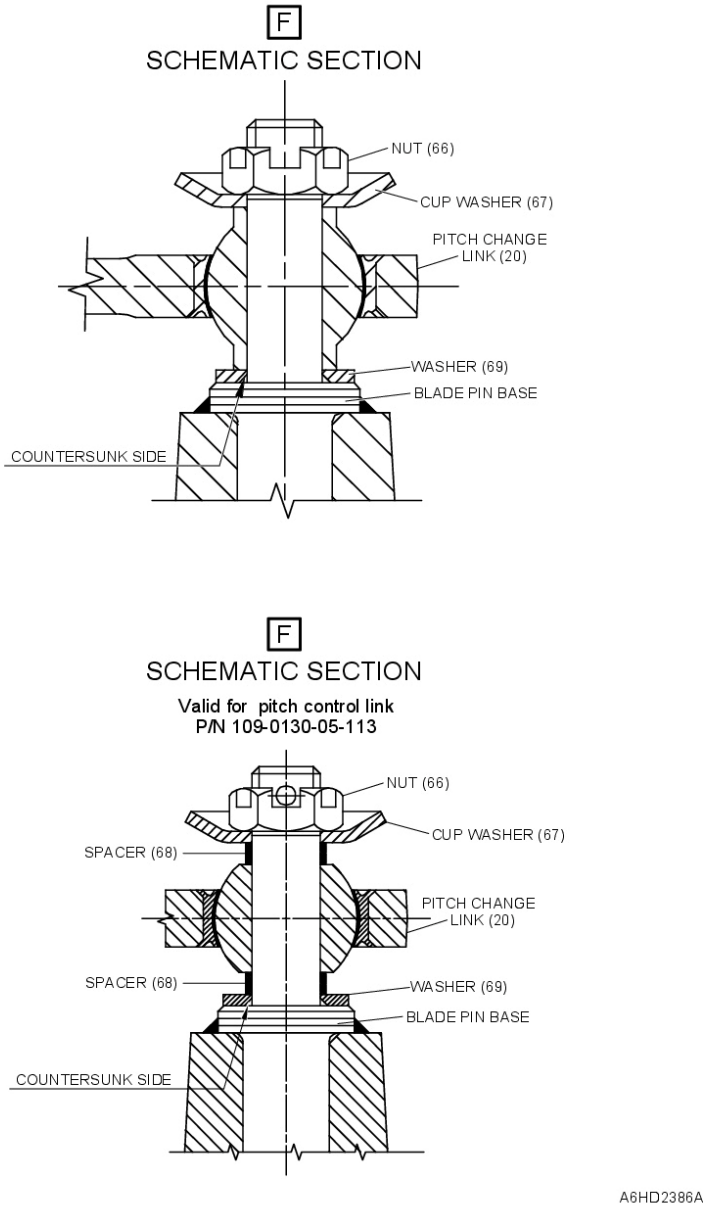


Figure 64-35 (sheet 4 of 5). Pitch change mechanism (Sleeve assy P/N 109G6430A03)

1. Washer
2. Nut
3. Nut
4. Washer
5. Lever
6. Washer
7. Bolt
8. Shim
9. Torque shaft
10. Link
11. Nut
12. Washer
13. Spacer
14. Bolt
15. Housing
15A. Spacer
16. Lock ring
17. Ring nut
18. Duplex bearing
19. Ring nut
20. Pitch control link
21. Bolt
22. Washer
23. Slider
24. Bushing (*)
24A. Bushing (**)
25. Sleeve
26. Forward boot
27. Bushing
28. Nut
29. Washer
30. FWD half scissor
31. Washer
31A. Washer (select on fit)
32. Bolt (*)
33. Nut
34. Washer
34A. Washer (select on fit)
35. AFT half scissor
36. Washer
37. Bolt (*)
38. Nut
38A. Cotter pin
39. AFT boot
40. Lever
40A. Bumper washer
41. Nut
42. Washer
43. Washer
44. Bolt
45. Bolt
46. Link
46A. Washer
46B. Shim
47. Bolt
48. Washer
49. Torque shaft control lever
50. Washer
51. Nut
52. Bolt
53. Washer
54. Nut
55. Nut
56. Washer
57. Washer
58. Bolt
59. Tail rotor pitch control tube (ref)
60. Washer, damper
61. T/R gearbox fitting
62. Shim
63. Bushing (**)
64. Shim
65. Washer
66. Nut
67. Flat surface cup washer
68. Spacer (if installed)
69. Washer
70. Cotter pin
71. Hub and blade assy
72. Flange
73. Washer
74. Washer
75. Bolt
76. Bolt
77. Washer
78. Washer
78A. Washer (select on fit)
79. Nut

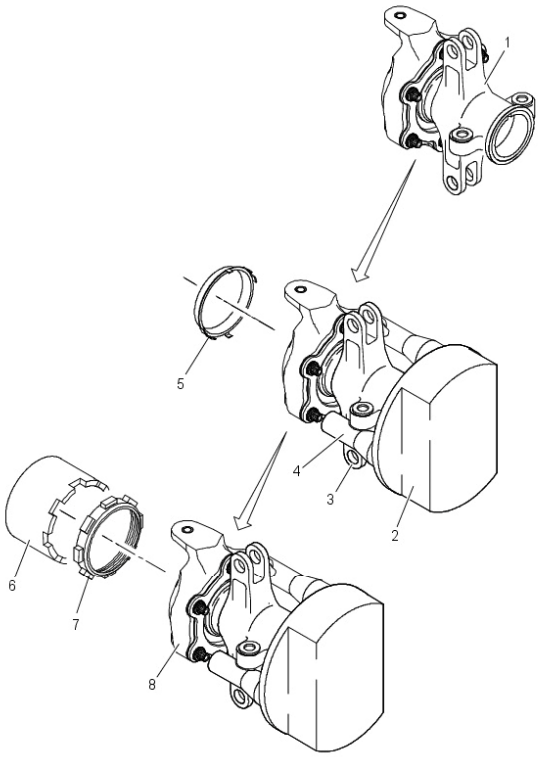
(*) Used with slider P/N 109-0130-91-105.

(**) Used with slider P/N 109-0130-91-117/-119.

NOTE 1:

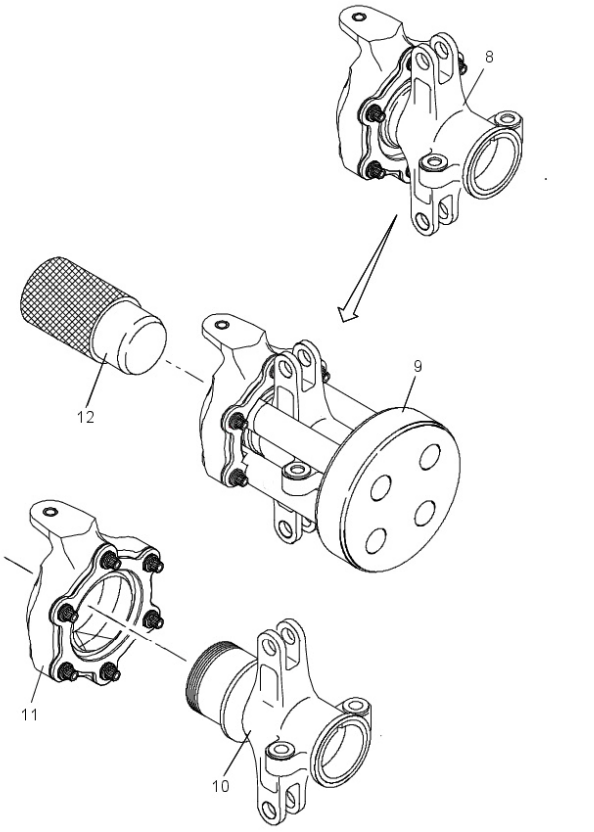
Washer (65) is shown in this location but, if necessary, can be installed on opposite bolt (14).

Figure 64-35 (sheet 5 of 5). Pitch change mechanism (Sleeve assy P/N 109G6430A03)



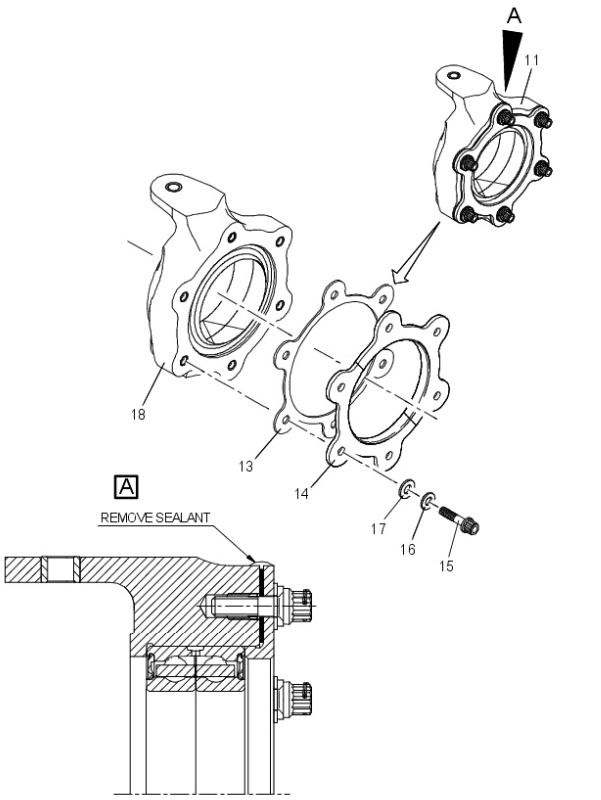
1. Slider group
2. Base
3. Brace
4. Pin
5. Lock ring
6. Wrench
7. Ring nut
8. Housing-slider assembly
9. Support

Figure 64-36 (sheet 1 of 4). Housing and slider group - Disassemble procedure (Sleeve assy P/N 109G6430A03)



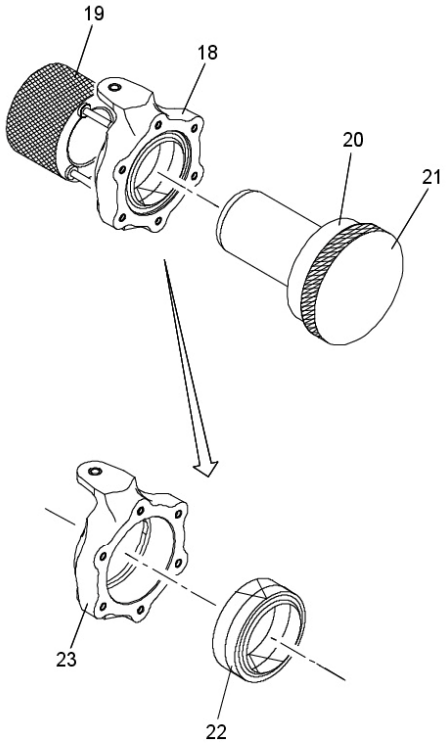
8. Housing-slider assembly
9. Support
10. Slider group
11. Housing group
12. Pin

Figure 64-36 (sheet 2 of 4). Housing and slider group - Disassemble procedure (Sleeve assy P/N 109G6430A03)



11. Housing group
12. Pin
13. Peeling shim
14. Flange
15. Bolt
16. Washer
17. Washer
18. Housing-bearing assembly

Figure 64-36 (sheet 3 of 4). Housing and slider group - Disassemble procedure (Sleeve assy P/N 109G6430A03)



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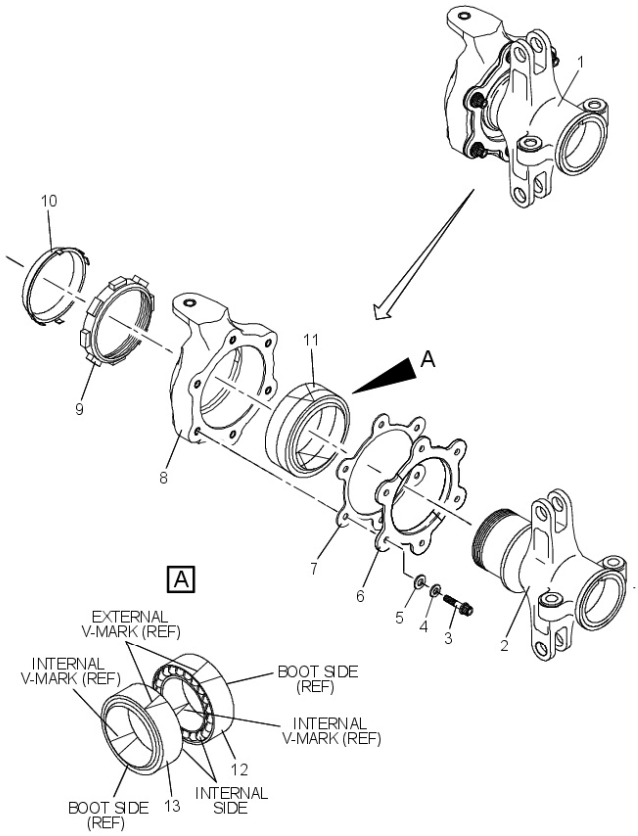
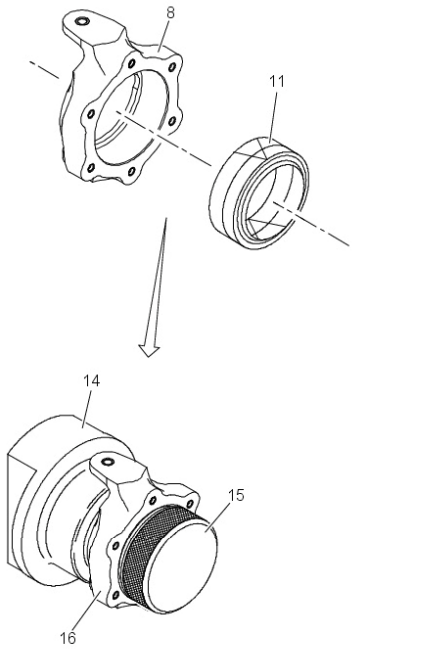
18. Housing-bearing assembly
19. Barrel
20. Bushing
21. Pin
22. Duplex bearing
23. Bearing support sleeve

Figure 64-36 (sheet 4 of 4). Housing and slider group - Disassemble procedure (Sleeve assy P/N 109G6430A03)



1. Slider group	6. Flange	11. Duplex bearing
2. Slider	7. Peeling shim	12. Bearing
3. Bolt	8. Bearing support sleeve	13. Bearing
4. Countersunk washer	9. Ring nut	
5. Washer	10. Lock ring	

Figure 64-37 (sheet 1 of 5). Housing and slider group - Assemble procedure (Sleeve assy P/N 109G6430A03)



14. Base
15. Pin
16. Housing-bearing assembly

Figure 64-37 (sheet 2 of 5). Housing and slider group - Assemble procedure (Sleeve assy P/N 109G6430A03)

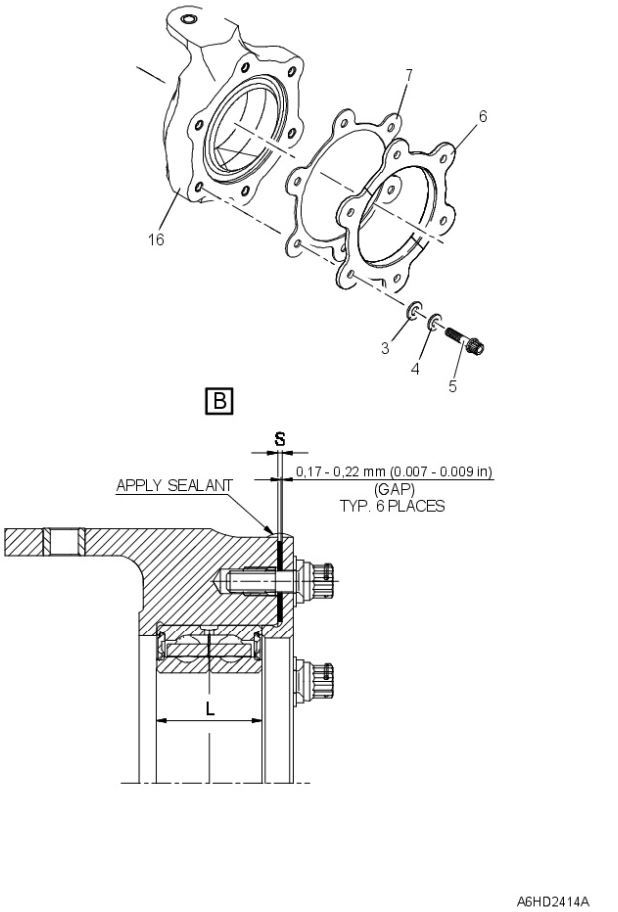
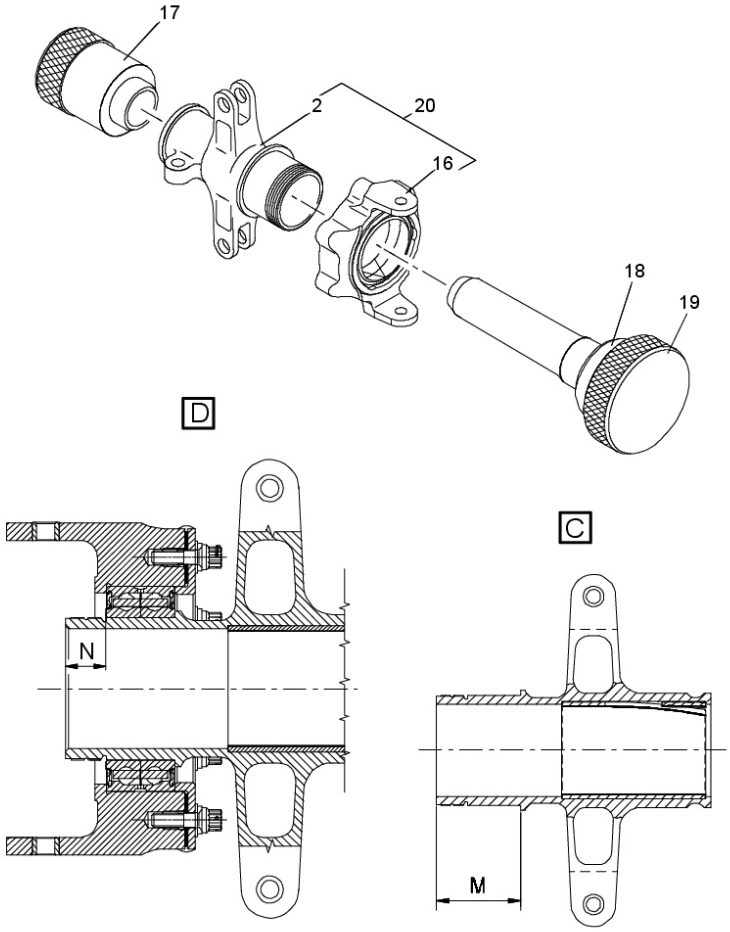
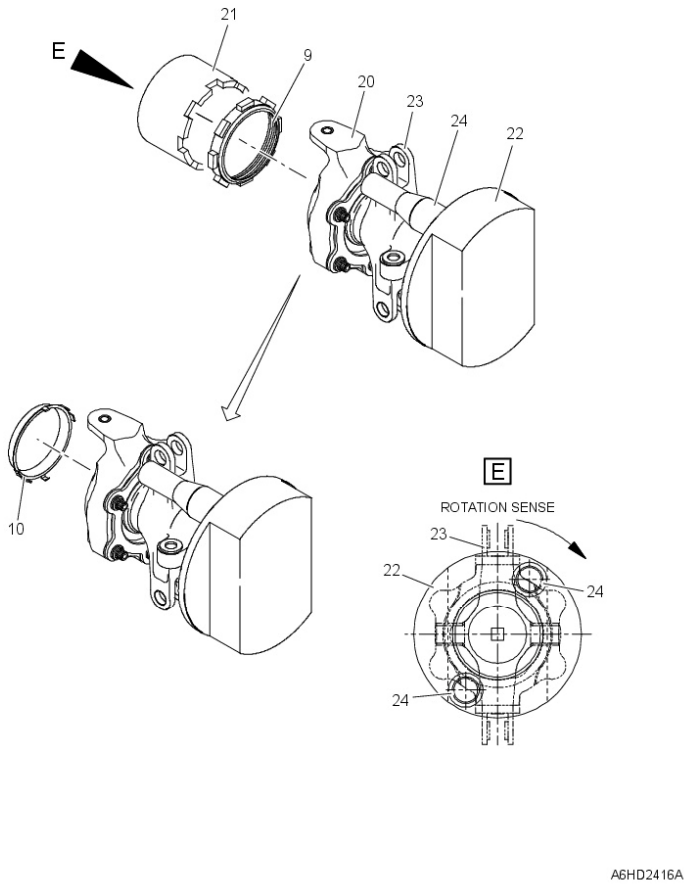


Figure 64-37 (sheet 3 of 5). Housing and slider group - Assemble procedure (Sleeve assy P/N 109G6430A03)



17. Barrel
18. Bushing
19. Pin
20. Housing-slider assembly

Figure 64-37 (sheet 4 of 5). Housing and slider group - Assemble procedure (Sleeve assy P/N 109G6430A03)



20. Housing-slider assembly
21. Wrench
22. Base
23. Brace
24. Pin

Figure 64-37 (sheet 5 of 5). Housing and slider group - Assemble procedure (Sleeve assy P/N 109G6430A03)

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