Attachment 31. Eurocopter Main Rotor Servo Installation

DCA12MA020 Maintenance Factual Report

For A/C: B2,B3

4-1 Removal / Installation - Main Rotor Servocontrols

A. Applicable Documents

1. Main information

67-10-00, 5-1	Adjustment - Main Rotor Flight Controls
67-10-01, 5-1	Adjustment - Main Rotor Flight Controls

2. Conditional information

53-51-00, 4-1	Removal / Installation - Upper Cowlings
67-32-00, 4-2	Removal / Installation - Accessories Fitted on Main Rotor Servocontrol

3. General information

Informations générales

29-00-00, 3-1	General Safety Instructions - Hydraulic Power System
60-00-00, 3-1	General Safety Instructions - Mechanical Assemblies
67-00-00, 3-1	General Safety Instructions - Flight Controls

B. Special Tools

350A94-2700.06	flight control rigging kit
Commercial	blanking caps
Commercial	spring balance (graduated from 0 to 10 N (0 to 2.248 lbf))

C. Materials

CM 116	grease
CM 150	grease
CM 688	sealing compound
CM 775	lockwire
CM 776	lockwire

D. Routine Replacement Parts

AMM		Description	Reference
Fig.	Item		
Figure 1	(6)	Cotter pin	(P/N 23310AA015015L)
Figure 1	(18)	Cotter pin	(P/N 23310CA015020)
Figure 1	(14)	Cotter pin	(P/N 23310CA015020)

E. Job Set-up

1. Identification of tools

   a. Tools included in the flight control rigging kit [350A94-2700.06]:

Swashplate immobilization assembly	2	350A94-3700-00
Flight control rigging pins	- -	350A94-2706-03

2. Comply with the general safety instructions for the mechanical assemblies (60-00-00, 3-1).
3. Comply with the general safety instructions for the flight controls (67-00-00, 3-1).
4. Comply with the general safety instructions for the hydraulic power system (29-00-00, 3-1).
5. Check that hydraulic system pressure is zero.
6. Install access means.
7. Remove MGB cowlings (53-51-00, 4-1).
8. Table of authorised configurations

Authorised configuration	Front servo-control(pitch)	RH servo-control (roll)	LH servo-control (roll)
Configuration 1	SC5082-2 or SC5084-1	SC5081-2 or SC5083-1	SC5081-2 or SC5083-1
Configuration 2	SC5082 or SC5082-1 SC5084	SC5081 or SC5081-1 or SC5083	SC5081 or SC5081-1 or SC5083
Configuration 3	AC66442 or AC67034 or AC67246	AC64182 or AC67030 or AC67244	AC64182 or AC67030 or AC67244

CAUTION

WHEN A "DUNLOP" SERVO-CONTROL IS INSTALLED LONGITUDINALLY, IT MUST BE EQUIPPED WITH LOCKING OF THE INPUT MODULE (POST MOD 070213).

NOTE:

Helicopters on which POST MOD 070213 , was originally embodied or by retrofit further to compliance with the Service Bulletin can no longer receive configuration 2.

9. The servocontrol removal-installation requires immobilization of flight controls:

- without AFCS (67-10-00, 5-1),
- with AFCS (67-10-01, 5-1).

a. Immobilize stationary swashplate with tool (2) (*Figure 1*).

b. Pin main rotor controls.

c. Pin "DUNLOP" lateral servocontrols only.

F. Procedure

Figure 1
Figure 2

1. Removal

NOTE:

- *The procedure is the same for removal/installation of servocontrols (1), (4) and (19).*
- *Servocontrol can be removed fitted with or without connection unit (67-32-00, 4-2).*

a. Disconnect hydraulic pipes from distributor and install blanking caps.

b. Disconnect electrical wiring from servocontrol solenoid valve (67-32-00, 4-2).

c. Disconnect input rod (9) at servocontrol distributor (DETAIL C):

1. remove and scrap cotter pin (6),

2. remove nut (5), washer (7) and pin (8).

3. Remove bolt (25) and cover (24), for GOODRICH servo-control only, (POST MOD 073221) (*Figure 2*

DETAIL F).

d. Disconnect lower ball end (10) from servocontrol on MGB flared housing (DETAIL B):

1. remove and scrap cotter pin (14),

2. remove nut (13), washer (12) and pin (11).

e. Disconnect upper ball end (3) from servocontrol on stationary swashplate (DETAIL A):

1. remove and scrap cotter pin (18),

2. support servocontrol,

3. remove nut (17), washers (16) and pin (15).

f. Remove servocontrol (1), (4) or (19).

g. If necessary, strip servocontrol (67-32-00, 4-2).

h. Remove lower swivel rod end (10):

1. Cut the lockwire.

2. Immobilize the servocontrol rod by holding it by the two flats and loosen locknut (22).

3. Remove swivel rod end (10).

4. Remove lockwasher (23).

2. Installation

CAUTION

IF "DUNLOP" SERVOCONTROLS ARE REPLACED WITH "SAMM/GOODRICH" SERVOCONTROLS:

- **ADJUST THE INPUT RODS OF THE CORRESPONDING SERVOCONTROLS.**

CAUTION

IF " SAMM/GOODRICH" SERVOCONTROLS ARE REPLACED WITH "DUNLOP" SERVOCONTROLS:

- **ADJUST THE INPUT RODS OF THE CORRESPONDING SERVOCONTROLS.**

CAUTION

IF SERVOCONTROLS ARE REPLACED WITH SERVOCONTROLS WITH THE SAME P/N:

- **ADJUST THE INPUT RODS OF THE CORRESPONDING SERVOCONTROLS.**

CAUTION

THE POSITION OF BALL HEADS MARKED UPON REMOVAL MUST BE COMPLIED WITH.

a. Orientation of upper ball ends (3)

1. PRE MOD 073191 (DETAIL D)

a. RH (19) and FWD (1) "SAMM/GOODRICH" or "DUNLOP" servocontrols:

- Install orientation lockwasher (20).

b. LH " SAMM/GOODRICH " or "DUNLOP" (4) (DETAIL D) servocontrol:

- Install orientation lockwasher (21) X = 15°.

2. POST MOD 073191 (DETAIL E)

a. RH (19), FWD (1) and LH (4) "SAMM/GOODRICH" or "DUNLOP" servocontrols:

- Install orientation lockwasher (21) X = 15°.

b. Install lower ball end (10):

1. Assemble swivel rod end (10) with locknut (22) and lockwasher (23).

2. Install the swivel rod end on the servocontrol.

c. Adjusting servocontrols length (DETAIL F)

1. "DUNLOP" servocontrol:

a. Ensure dimension "a" of 38 mm (1.496 in.) at upper (3) and lower (10) ball ends.

2. "SAMM/GOODRICH" servocontrol:

a. Ensure dimension "b" of 34 mm (1.338 in.) at lower ball end (10).

b. Ensure dimension "c" of 32 mm (1.26 in.) at upper ball end (3).

3. Torque the value nuts (22) (POST MOD 073343).

4. Safety nuts (22) with CM 776 lockwire.

5. Apply a bead of CM 688 sealing compound to ensure sealing on upper ball end (3).

d. Installation of servocontrol (*Figure 1*)

1. If necessary, equip servocontrol (67-32-00, 4-2).

2. Lubricate pins (11) and (15) with CM 150 grease on the smooth section only.

3. Connect upper ball end (3) of servocontrol to stationary swashplate (DETAIL A):

a. check that there are spacer bushings,

b. offer-up servocontrol, actuator downwards, install pin (15), washers (16) and nut (17),

c. torque the value nut (17),

d. safety nut (17) with cotter pin (18).

4. Connect lower ball end (10) of servocontrol to MGB flared housing (DETAIL B):

a. install pin (11), washer (12) and nut (13),

b. torque the value nut (13),

c. safety nut (13) with cotter pin (14).

5. Connect input rod (9) to servocontrol distributor (DETAIL C):

a. install pin (8), washer (7) and nut (5),

b. torque the value nut (5),

c. safety nut (5) with cotter pin (6),

NOTE:

If necessary, in order to obtain a minimum play of 2 mm (.079 in.) between LH rear servocontrol input rod and its environment, orient servocontrol by using the play of lockwasher lug in its housing located on upper end-fitting of servocontrol.

d. remove blanking caps from pipes and distributor,

e. connect hydraulic pipes to distributor,

f. connect servocontrol solenoid valve electrical wiring (67-32-00, 4-2).

NOTE:

- *The play between MGB attachment yoke and the removable parts of servocontrol during schematic tests must be less than 1 mm (.039 in.).*
- *The play between the body of front RH servocontrol and MGB suspension bar must be less than 1,5 mm (.059 in.).*

6. GOODRICH servo-controls only POST MOD 073221 (*Figure 2* , DETAIL F):
   a. Secure cover (24) with bolts (25),
   b. Safety bolts (25) with CM 775 lockwire.

G. Close-up

1. Remove immobilization tools.
2. Refer to paragraph "AFTER INSTALLATION" (29-00-00, 3-1).
3. Check flight control rigging (67-10-00, 5-1) (version without AFCS) or (67-10-01, 5-1) (version with AFCS).
4. Install MGB cowlings (53-51-00, 4-1).
5. Disengage access means.

Figure 1. Removal / Installation - Main Rotor Servocontrols

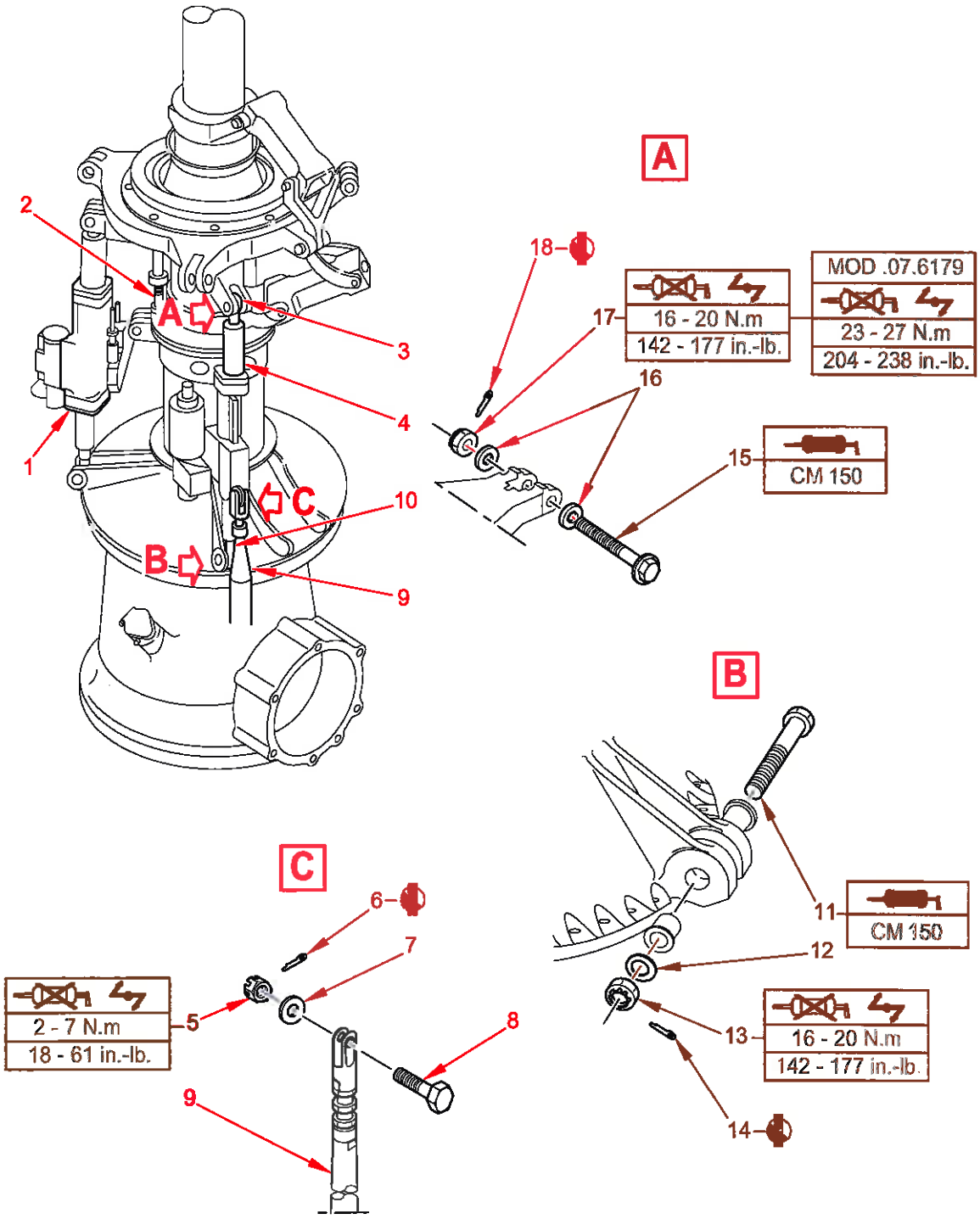

Figure 2. Removal / Installation - Main Rotor Servocontrols