Manual: CSP–HMI–2, MAINTENANCE MANUAL
Models: 369D/E/FF – 500/600N Helicopters
Issued: Issued: 31 October 1990
Revision No. 41: 03 March 2008
11 March 2009

FILING INSTRUCTIONS:

1. Before you put this temporary revision in the manual, make sure the manual contains all the revisions from before. Look at the last revision List of Effective Pages.

CAUTION Do not put this temporary revision in the manual, if the manual does not contain all the revisions from before.

2. To include this temporary revision in the manual, remove old pages and put in new pages as shown below.

Temporary Revision Number/Date	Section	Page	Page Revision
TR 08–001/14 March 2008	04–00–00	1 thru 16	TR 08–001
	64–25–30	403 and 404	TR 08–001
TR08–002/07 November 2008	04–00–00	1 thru 16	TR08–002
TR09–001/11 March 2009	05–50–00	1	TR09–001
		2	Revision 24
	76–10–00	215	Revision 35
		216 and 217	TR09–001
		218	Revision 35

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CONTINUED AIRWORTHINESS

CONDITIONAL INSPECTIONS

1. Conditional Inspections

This table is a schedule of inspections that are contingent upon incidents that occur, such as hard landings, overspeed, blade strike, etc. These inspections are required only when, and because the specific conditions or incidents occur, to ensure continued airworthiness of the helicopter.

NOTE:

- Refer to the applicable Allison Engine Operation and Maintenance Manual (Ref. Table 203, 01-00-00) for detailed requirements on inspection of the engine for specific or unique conditions comparable to those listed.
- Inspections outlined in this table should be performed, at the times and for the conditions indicated, to ensure continued airworthiness of the helicopter.
- Inspections in this table are for MDHI 369D/E/FF and 500/600N helicopters only. The first column of this table denotes which models of helicopters the inspections are applicable to.
- The Chap/Sect column of the following table is for reference unless a specific inspection requirement is called out. If there is only two numbers in the column, it refers to the Chapter. If there is three numbers, it refers to the Section the inspection is found.

WARNING

- **Any component, assembly or detailed part that is removed for overhaul must be identified as to the reason for removal.**
- **Components that require replacement must be scrapped.**

Table 1. Conditional Inspections

Model	Requirement	Chap/Sect
	AFTER HARD LANDING	
	WARNING: Any component, assembly or detailed part that is removed for overhaul must be identified as to the reason for removal. Components that require replacement must be scrapped.	
ALL	Main rotor blades for bending, cracks or wrinkles.	62
ALL	Main rotor blade droop stops for damage.	62
ALL	Main rotor hub assembly and strap pack assembly for evidence of damage.	62
ALL	Accessible areas of main rotor mast assembly and transmission attachment area for damage.	63
ALL	Perform Landing Gear Inspection. Forward and aft rub plates for condition.	32-10-00
ALL	Perform Tailboom Inspection; retorque mount bolts.	53-40-00 53-40-30
ALL	Inspect tailboom attachment area for damage.	53
500/600N	Inspect stationary thruster attachment flange for damage; retorque mount bolts.	53
369D/E/FF	Tail rotor drive shaft and damper, tail rotor transmission and tail rotor for distortion, loose mounting or attaching parts, buckling, breaks or other damage. Tail rotor drive shaft for contact with bulkheads.	63 64

Table 1. Conditional Inspections (Cont.)

Model	Requirement	Chap/Sect
500/600N	Main transmission–to–fan transmission drive shaft, fan transmission, fan drive shaft, fan and fan control rod for distortion, loose mounting or attaching parts, buckling, breaks or other damage. Drive shafts for contact with bulkheads. Fan control rod for freedom of movement.	63 67
ALL	Perform Engine Mounts and Fittings Inspection. Inspect mounting pads and firewall for damage and distortion. Inspect all suspected parts by magnetic particle or dye–penetrant methods, as applicable (Ref. CSP–SRM–6).	71
ALL	All flight and engine control system push–pull tubes, links, bellcranks and bearings for bends, cracks, security and free movement.	67
ALL	Tunnel area A–frame for distortion, buckling or any other damage.	53
ALL	Fuselage fittings for bends and cracks.	53
ALL	Main transmission chip detectors for metal particles.	63
	Main transmission mounting flanges for cracks.	
ALL	Perform Main Transmission Drive Shaft Inspection.	63–10–00
ALL	All engine accessories for cracked flanges, loose bolts and nuts, connections and general condition.	79
ALL	Engine accessory drive housing for cracks.	79
ALL	Engine chip detectors for metal particles.	79
ALL	Engine oil tank, supports, tubing and hoses for leaks, cracks and security.	79
ALL	Fuel cells, supports, tubing and hoses for leaks, cracks and security.	28
ALL	Armor for security of attachment, buckling and distortion.	CSP–014
ALL	Rotor brake installation for security of attachment and disc alignment.	63
AFTER MAIN ROTOR OVERSPEED		
WARNING: Any component, assembly or detailed part that is removed for overhaul must be identified as to the reason for removal. Components that require replacement must be scrapped.		
If overspeed is between 523 and 549 (369D/E) or 508 and 533 (369FF, 500N) rpm, or 106 and 112 percent (600N):		
ALL	Main rotor blades for visible damage and distortion; main rotor blade tip caps for security; all bond lines for evidence of separation; root doublers and attachment fittings for security. Replace any blade with visible bond line separation.	62
	Main rotor blade dampers for security.	
369D/E/FF	Tail rotor blades and hub for visible damage, free movement and security.	64
500/600N	NOTAR fan blades and hub for visible damage, free movement and security.	64
ALL	Main rotor hub and strap pack assembly for evidence of damage.	62
If overspeed is over 549 (369D/E) or 533 (369FF, 500N) rpm, or 112 percent (600N):		
ALL	Remove main rotor hub assembly for overhaul inspection.	MDHI
ALL	Remove and scrap main rotor blades.	62
500/600N	Inspect anti–torque fan assembly.	64
369D/E/FF	Remove tail rotor hub assembly for overhaul inspection.	64

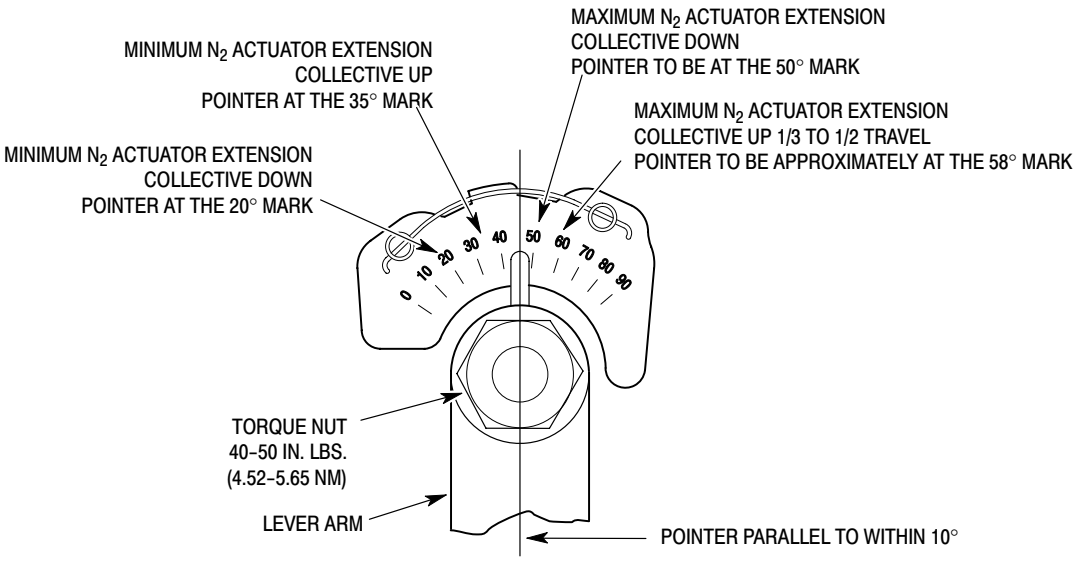

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Figure 207. Power Turbine Governor Adjustments (250-C30 Engine)

8. Governor Controls Final Check and Adjustment (250–C20B, –C20R/2)

(1). Have an assistant move collective through full range of travel while inspecting all movable linkage for clearance with adjacent parts. Check that control rod, N_2 actuator and override link bearings are not jammed when linkage is at extreme control positions.

(2). Start and operate engine at idle with main rotor blades in flat pitch per Pilot's Flight Manual.

(3). Decrease N_2 trim to minimum.

(4). Throttle up to maximum rpm.

(5). Observe N_2 tachometer pointer for (98% or less rpm: 369D/E) (94% or less: 500N) when rotor rpm pointer is superimposed on N_2 pointer and N_1 tachometer pointer is stabilized.

(6). Check for the following engine power out (EPO) indications:

(a). Engine–out flashing light.

(b). Audio signal in headset.

(c). Horn; sounds when N_2 pointer on dual indicator is stable.

(7). With collective stick down, increase N_2 trim to (104% to 105% rpm: 369D/E) (103% to 104% rpm: 500N). Observe N_2 tachometer pointer when rotor rpm pointer is superimposed on N_2 pointer and N_1 tachometer pointer is stabilized.

(8). Without decreasing N_2 trim, rotate pilot's throttle to ground idle.

NOTE: Perform a deceleration time check per PFM after rigging and testing power turbine controls. Refer to Allison Operation and Maintenance Manual for adjustment procedures if deceleration time is less than allowable minimum.

(9). Shut down engine per Pilot's Flight Manual.

WARNING **Make all engine compartment control rod adjustments with engine shut down.**

(10). Mark N_2 lever position on governor quadrant.

(11). Connect external electric power.

(12). With collective at bottom stop, beep N_2 trim to maximum rpm.

(13). Adjust governor lever control rod (105% N_2 maximum: 369D/E) (104% N_2 maximum: 500N).

(14). Start engine. With main rotor blades in flat pitch, beep N_2 trim to (102% rpm: 369D/E) (100% rpm: 500N). Lift off and hover.

(15). Observe N_2 tachometer pointer when pointer of N_1 tachometer is stabilized. N_2 pointer indication, that is, droop compensation, should be (1/2% to 1% rpm: 369 D/E) (1% to 2% rpm: 500N) above indication in previous step.

(16). Land and shut down engine.

(17). If droop compensation occurred as required, no further adjustments are required.

(18). If droop compensation did not occur per step (15)., check and re–rig power turbine and gas producer linkage systems as required.

(19). Where N_1 and N_2 linkage are correctly adjusted, additional adjustment may be made to droop compensation adjustment fork; as follows:

NOTE: Three to five turns of droop compensation fork may be necessary to change droop compensation approximately 0.5% rpm.

(a). Shorten droop compensation adjustment fork to increase compensation.

(b). Lengthen fork extension to decrease compensation.

(c). Align fork with override link rod–end before tightening fork jamnut.

(20). Move collective through full travel after adjustment and check for clearance

between movable linkage and adjacent parts.

(21). When full power is demanded in flight and high N_1 and TOT operating range cannot be reached, gas producer fuel control maximum throttle stop may require adjustment. Refer to Allison Operation and Maintenance Manual for adjustment procedure.

9. Governor Controls Final Check and Adjustment (250-C30)

(1). Have an assistant move collective through full range of travel while inspecting all movable linkage for clearance with adjacent parts. Check that control rod, N_2 actuator and override link bearings are not jammed when linkage is at extreme control positions.

(2). Start and operate engine at idle with main rotor blades in flat pitch per Pilot's Flight Manual.

(3). Rotate pilots throttle counterclockwise up to maximum rpm.

(4). Decrease N_2 trim to minimum.

(5). Observe N_2 tachometer pointer for 94% or less rpm and N_1 tachometer is stabilized.

(6). With collective stick down, increase N_2 trim to maximum.

(7). Observe N_2 tachometer pointer for 103% to 104% rpm and N_1 tachometer pointer is stabilized.

WARNING **Make all engine compartment control rod adjustments with engine shut down.**

(8). Stop engine. Adjust length of governor control lever rod until N_2 trim is within limits specified in steps (5). and (7). above. Adjust one rod end not more than one turn at a time.

(9). Restart engine. With main rotor blades in flat pitch, actuate N_2 trim for 100 percent, lift-off and hover.

(10). Observe N_2 tachometer pointer when pointer of N_1 tachometer is stabilized. N_2 pointer indication (droop compensation) should be 1 to 2 percent above N_2 setting in step (9).

(11). Land and shut down engine.

NOTE: If droop compensation occurs as required in (10). above, skip steps (12). and (13). below.

(12). If droop compensation does not occur as required in step (10). above, recheck entire power turbine governor (N_2 RPM) control linkage rigging and gas producer (N_1 fuel control) linkage adjustment.

CAUTION Any change to initial droop compensation fork length may result in interference between N_2 trim actuator case and fork threaded end. Move collective through full travel after adjustment and check for clearance between movable linkage and adjacent parts.

(13). If N_1 and N_2 linkage are correctly installed, an additional adjustment may be made at droop compensation adjustment fork. Shorten droop compensation adjustment fork to increase compensation. Lengthen fork extension to decrease compensation. Align fork with override link rod end before tightening fork jam nut. Three to five turns of droop compensation fork may be necessary to change droop compensation fork approximately 0.5 percent.

NOTE: Perform a deceleration time check per PFM after rigging and testing power turbine controls. Refer to Allison Operation and Maintenance Manual for adjustment procedures if deceleration time is less than allowable minimum.

10. Governor Controls Replacement

(Ref. Figure 208)

(1). Remove and replace control rods, bellcranks and supports as required, except as follows:

WARNING **Only high temperature all metal self-locking nuts are to be used for attaching control idler support to engine gearcase accessory pad.**

NOTE: Remove droop control override link, N_2 trim actuator, and Sta. 72.00 bellcrank from airframe as a unit.

(2). Leave Sta. 72.00 bellcrank attached to N_2 trim actuator and remove as a unit.

(3). Disconnect the bonding jumper and electrical connector from the actuator.

(4). Disconnect the actuator from Sta. 68 bellcrank.

(5). Disconnect Sta. 72 bellcrank from the fuselage-routed control rod end.

(6). Remove the pivot bolt that attaches Sta. 72 bellcrank to structure rib and controls support bracket; remove actuator and bellcrank.

(7). Disconnect the trim actuator from Sta. 72 bellcrank. Use care to keep sleeve bushings with bellcrank.

(8). Check replacement actuator for a maximum extended length of 5.44-5.50 inches (13.82-13.97 cm) measured between bolt hole centers. Test actuator for proper operation (Ref. N_2 Trim Actuator Test).

(9). Assemble original or replacement trim actuator to original or replacement Sta. 72 bellcrank with a bolt, two washers, nut and new cotter pin.

(10). Check that both sleeve bushings are in place in Sta. 68 bellcrank arm before connecting the actuator; then install assembled unit in controls support bracket and connect linkage as shown in Figure 208.

(11). The sleeve bushings in Sta. 68 bellcrank arm must rotate freely, without any binding, after the actuator is attached and the connecting hardware is tightened.

(12). Connect replacement droop control override link to collective torque tube.

(13). Push on rod end and check that the link assembly plunger head is free to slide back and forth in the link housing end fitting.

(14). Connect rod end to droop compensation fork; the rod end should align with the fork.

(15). Connect the bonding jumper and electrical connector to the actuator.

NOTE: Replacement trim actuator may have a tab or use a bonding strap/clamp for connection of the bonding jumper.

(16). Rig power turbine governor controls if any linkage components have been removed and replaced.

NOTE: Perform a deceleration time check per PFM after rigging and testing power turbine controls. Refer to Allison Operation and Maintenance Manual for adjustment procedures if deceleration time is less than allowable minimum.

11. Control Rod Inspection

(Ref. Figure 208)

(1). Inspect rod end bearings for binding and excessive wear, 0.040 inch (1.013 mm) maximum axial play).

(2). Inspect control rod for surface damage and evidence of bending.

(3). When necessary, perform straightness check on control rods that appear bent or bowed. Total length of gas producer control rods (excluding rod ends) must be straight within the following tolerances, with straightness variation limited to maximum of 0.010 inch (0.254 mm) in each foot of length.

(a). Fuselage-routed control rods: 0.050 inch (1.27 mm).