

McDonnell Douglas
Helicopter Company
SERVICE INFORMATION NOTICE

NOTICE NO. HN-57

DATE 1 May 1973

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SUBJECT: ENGINE ANTI-ICING AND CABIN HEATING SYSTEM INSTALLATION-
CONVERSION FROM ELECTRICAL TO MANUAL OPERATION

MODELS AFFECTED: Model 369HS Helicopter Serial No. 0101S thru 0390S
Model 369HM Helicopter Serial No. 0101M thru 0221M
Model 369HE Helicopter Serial No. 0101E thru 0215E

ME OF COMPLIANCE: At owners and operators discretion

PREFACE: The information given in this Service Information Notice lists a procedure for converting from electrical to manual control the engine anti-icing system, and the cabin heating system if installed, on the above affected helicopters. Current configuration helicopters now incorporate manual control for these systems to provide simplified operation and maintenance.

All parts required for field conversion of the engine anti-icing system and the optionally installed cabin heating system are provided on page 2 of this Notice. The instructions given in this Notice are to be used in conjunction with procedures in the applicable handbooks referenced below.

Reference

500 Series - Basic HMI, Issued 1 October 1972; Revision No. 1, 1 April 1973
500 Series - HMI Appendix A, Issued 1 October 1972

Product Support Department

McDonnell Douglas
Helicopter Company

PARTS LIST

<u>Nomenclature</u>	<u>Part No.</u>	<u>Qty</u>	<u>Mfr</u>
Manual Controls - Basic Components			
Decal	369H6615-147	1	Hughes
Duct Assembly	369H92475-83	1	Hughes
Screw	SFSW6C6DLO1BK	6	Commercial
Manual Controls - Engine Anti-Ice Components			
Angle	369H3010-107	1	Hughes
Control Assembly	369H4535-5	1	Hughes
Bezel, Blank	369H6519-15	1	Hughes
Lever Assembly	369H8058	1	Hughes
Washer	AN960C10L	1	Commercial
Washer	AN960PD10L	2	Commercial
Strap	MS17821-1-9	6	Commercial
Strap	MS17821-2-9	1	Commercial
Rivet	MS20615-4M4	2	Commercial
Pin	MS20392-2C11	1	Commercial
Nut	MS21042L3	1	Commercial
Nut	MS21043-3	1	Commercial
Clamp	MS21919-G3	1	Commercial
Pin	MS24665-86	1	Commercial
Screw	MS51958-61	1	Commercial
Grommet	NAS557-8A	1	Commercial
Screw	NAS603-8	1	Commercial
Screw	SFSW4C5DL01BK	2	Commercial
Manual Control - Cabin Heat Components			
Lever	369A8068-2	1	Hughes
Control Assembly	369H4535-3	1	Hughes
Bezel, Blank	369H6519-15	1	Hughes
Screw	AN500A6-5	2	Commercial
Screw	AN500A6-9	1	Commercial
Washer	AN960PD10L	2	Commercial
Strap	MS17821-1-9	4	Commercial
Pin	MS20392-2C11	1	Commercial
Nut	MS21042L3	1	Commercial
Clamp	MS21919-G5	1	Commercial
Pin	MS24665-86	1	Commercial
Spacer	NAS43DD3-20	1	Commercial
Grommet	NAS557-8A	1	Commercial
Screw	NAS603-12	1	Commercial
Screw	SFSW4C5DL01BK	2	Commercial

MATERIALS

Sealant/Adhesive	RTV732*	Dow Corning
Primer, Zinc Chromate	MIL-P-8585	Commercial
Lockwire	MS20995N32	Commercial

*Primary Selection - any equivalent material may be used as an alternate selection

TOOLS & EQUIPMENT

Gun, Rivet
Drill Motor, Portable
Drill Bit - 0.500 inch diameter
Drill Bit - 0.4219 inch diameter
Drill Bit - 0.202/0.208 inch diameter
Drill Bit - 0.128/0.134 inch diameter

PROCEDURE

NOTE

Instructions are provided for conversion to manual control for both the engine anti-icing system and the cabin heating system. Disregard applicable instructions if one of the systems is not to be converted.

- a. Check that all electrical power is OFF; ensure that BATT-OFF-EXT switch is in OFF position.
- b. Disconnect battery.
- c. Remove engine air inlet forward fairing; open engine access doors.
- d. Remove Vne card cover assembly.
- e. Remove heat duct/trim assembly from upper canopy center frame; if installed, disconnect map case light wiring, and remove map case/trim panel assembly.
- f. For engine anti-ice system, perform the following (See fig. 1; also referenced Basic HMI).

- (1) Disconnect anti-ice rod from anti-ice valve lever.
- (2) Disconnect anti-ice electrical actuator.
- (3) Remove engine lift fitting from engine; remove actuator, bracket, linkage and related components from helicopter.
- (4) Reinstall engine lift fitting with existing hardware.
- (5) Install new 369H8058 lever and hat assembly on anti-ice valve lever.

g. For cabin heat system, perform the following (See fig. 1; also referenced HMI Appx A).

- (1) Remove interior trim and left aft bulkhead cover.
- (2) Disconnect cabin heat electrical actuator.
- (3) Remove actuator, pulley and timing belt.
- (4) Replace existing outer pulley and spacer on heater valve housing with new 369H8068-2 manual control lever; install lever with one AN500A6-9 and two AN500A6-5 screws; lockwire screws.

h. Remove electrical switches from Vne card cover assembly; install new bezel blanks.

i. Remove existing wiring for electrically controlled engine anti-ice and/or cabin heat systems.

j. Install decal on new 369H92475-83 duct assembly; install duct assembly (without outer box) on upper canopy center frame, using existing mounting screw and washer.

k. For engine anti-ice system, perform the following.

- (1) Install 369H4535-5 engine anti-ice control assembly to cable support blocks on right side of duct assembly, using clamps three places.

NOTE

Forward block and clamp mating surfaces faced with tape. Handle shaft slides against these surfaces.

Increase size of existing hole in right side of canted frame section forward of mast support structure to 0.500 inch diameter, to accommodate new grommet and control cable assembly. Apply zinc chromate primer.

- (2) Position grommet on control cable assembly; route cable aft through hole in right side of canted frame section; install grommet in hole.

CAUTION

Use extreme care to prevent foreign objects from entering engine air inlet when work is done in plenum area.

- (3) Open plenum access door and remove tail rotor drive access cover, to facilitate rework and routing of cable.
 - (4) Drill 0.422 inch diameter hole and two 0.128/0.134 inch diameter holes in plenum chamber pan at locations shown; apply zinc chromate primer. Install 369H3010-107 angle to pan with MS20615-4M4 rivets.
 - (5) Route control cable aft and secure to mast support structure, aft section strut, and tail rotor shaft fairing with tie straps; then down through hole in plenum pan and into engine compartment. Seal hole around control cable on engine side of pan.
 - (6) Install clamp on cable and secure to angle on plenum pan.
 - (7) Connect cable clevis to new anti-ice valve lever.
 - (8) Rig and perform operational check of manually controlled anti-ice system per referenced HMI.
1. For cabin heat system, perform the following.

- (1) Install 369H4535-3 cabin heat control assembly to cable support blocks on left side of duct assembly, using clamps 3 places.

NOTE

Forward block and clamp mating surfaces faced with tape. Handle shaft slides along these surfaces.

Remove existing plug button from hole in left side of canted frame section forward of mast support structure. Increase hole size to 0.500 inch diameter, to accommodate new grommet and control cable assembly. Apply zinc chromate primer.

- (2) Position grommet on control cable assembly; route cable aft through hole in left side of canted frame section; install grommet in hole.

NOTE

Increase size of existing hole in boom fairing and lower longeron to 0.500 inch diameter, to accommodate control cable assembly. Apply zinc chromate primer.

- (3) Route cable aft and secure to left side of mast support structure with tie straps, then downward through hole in boom fairing and lower longeron, and to heat control valve on firewall. Seal hole around cable at fairing.
- (4) Drill 0.202/0.208 inch diameter hole in aft section frame at dimensions shown; apply zinc chromate primer.
- (5) Install clamp with spacer to frame and secure cable to clamp.
- (6) Install cable clevis to manual control lever on heater valve assembly.
- (7) Rig and perform operational check of manually controlled cabin heat system, per referenced HMI Appendix A.

m. Install outer box on new duct assembly, using screws, 6 places.

n. Install Vne card holder assembly.

NOTE

If optional map case assembly was previously installed, cut and rework collar at top of map case to fit and receive new 369H92475-83 duct assembly. If desired, a new 369H6524-871 map case and pocket assembly may be procured from Hughes Helicopters.

o. As applicable, reconnect map case utility light wiring and install map case and pocket assembly.

p. Reconnect battery.

q. Close access doors; reinstall interior trim panels and access covers, as applicable; reinstall engine inlet forward fairing.

r. For engine anti-ice system, record modification per this Service Information Notice in Component Record of helicopter Log Book to reflect 369A8002-505 engine built-up unit configuration with anti-ice manual control. Also record update of helicopter engine installation to 369A8001-503 configuration.

s. For cabin heating system, revise existing entry in Component Record of helicopter Log Book to new 369H90020-515 manually controlled configuration.

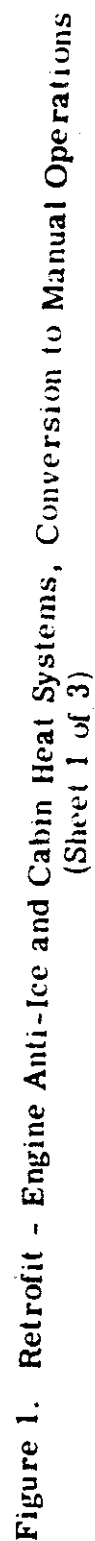


Figure 1. Retrofit - Engine Anti-Ice and Cabin Heat Systems, Conversion to Manual Operations
(Sheet 1 of 3)

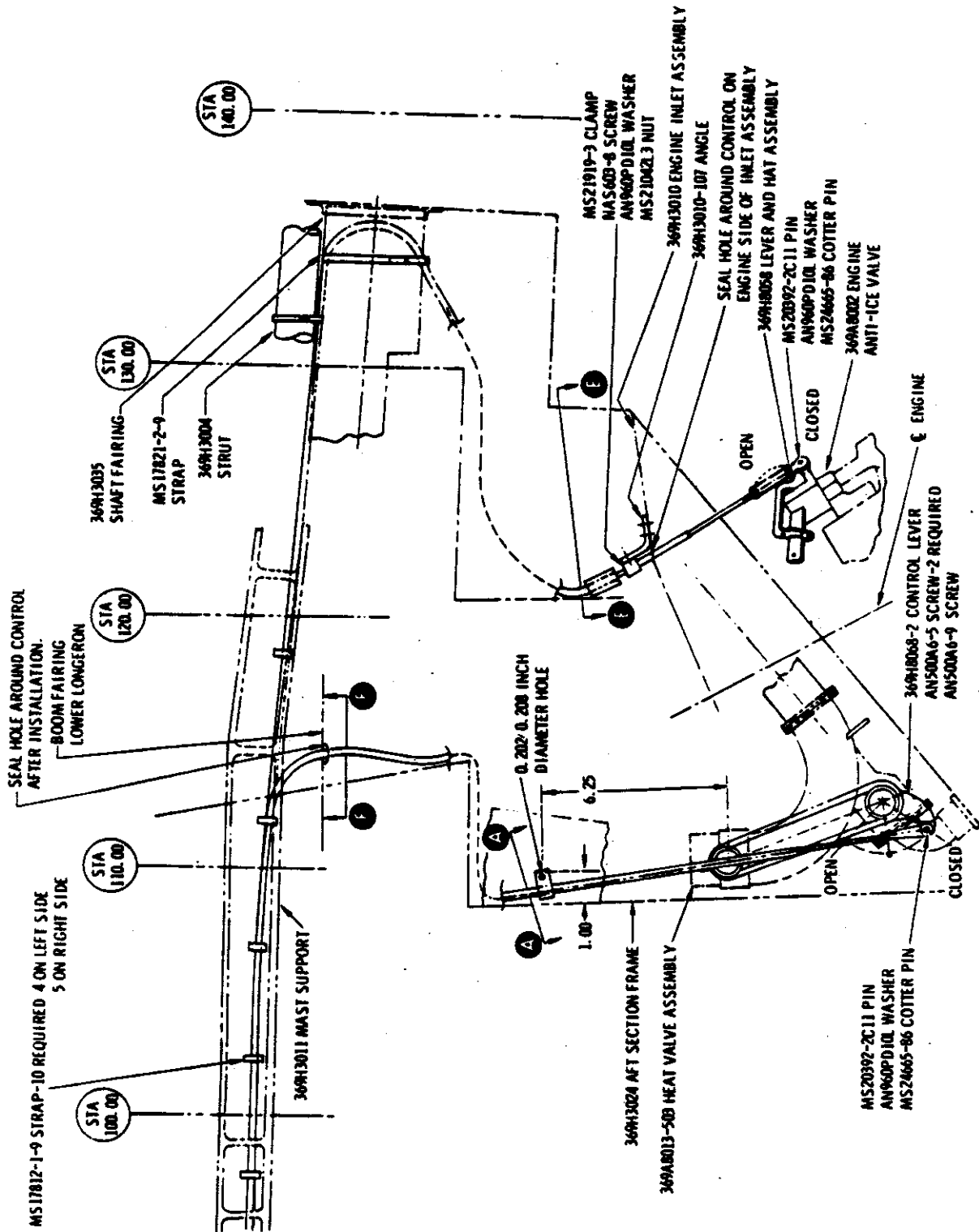


Figure 1. Retrofit - Engine Anti-Ice and Cabin Heat Systems. Conversion to Manual Operations
 (Sheet 2 of 3)

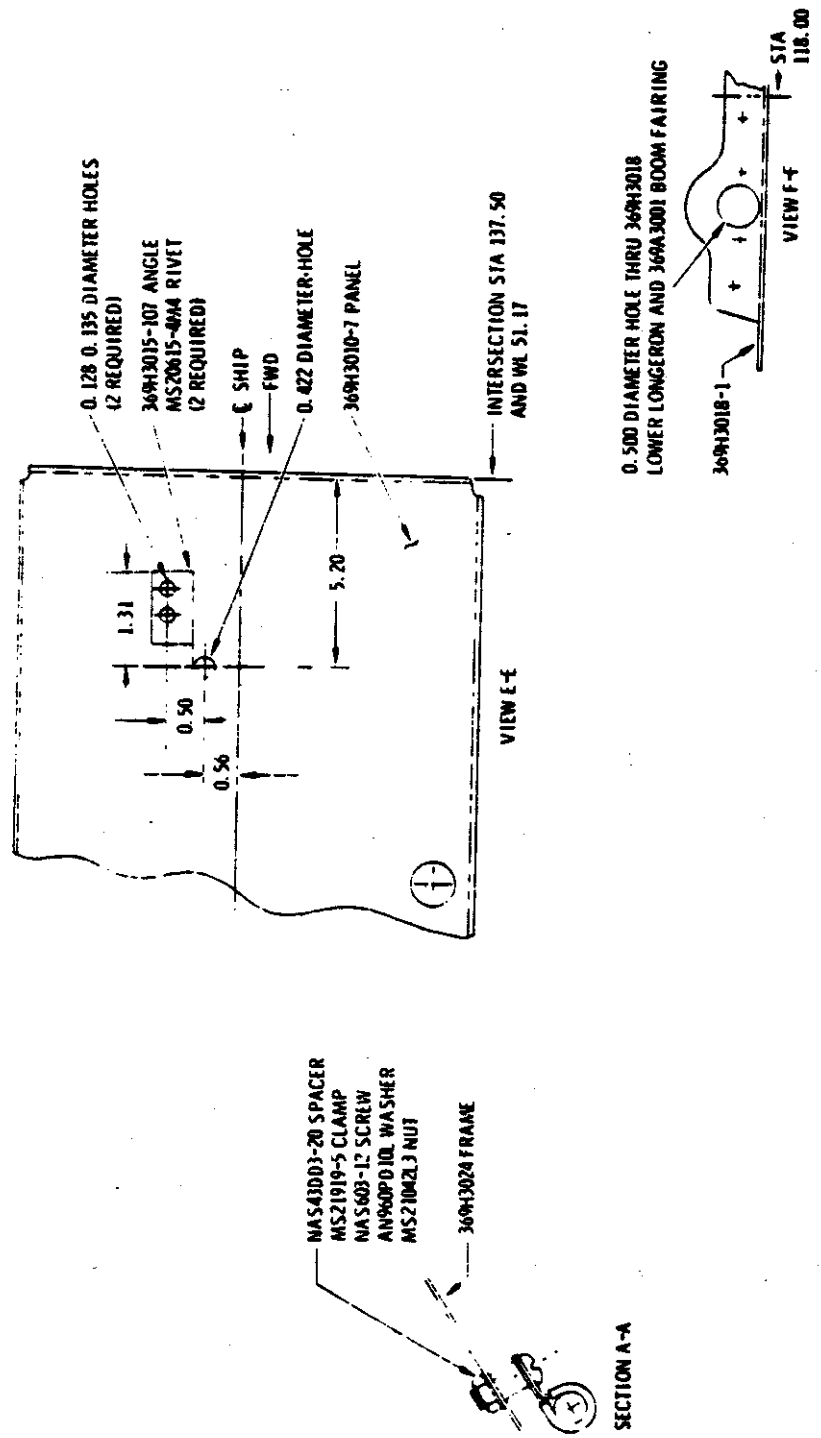


Figure 1. Retrofit - Engine Anti-Ice and Cabin Heat Systems, Conversion to Manual Operations
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