FACET FILTER KIT NO. 1741050-01

INSTALLATION AND SERVICE MANUAL SCAVENGE LUBE OIL FILTER SYSTEM FOR MCDONNELL DOUGLAS 500 SERIES MODELS: 369HS, 369HM, 369HE, 369D AND 369E HELICOPTERS

CONTENTS:

PUROLATOR FACET, INC.
8439 TRIAD DRIVE, GREENSBORO, NC 27409-9621
PHONE: (336) 668-4444
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GENERAL INFORMATION

The purpose of the Facet Scavenge Lube Oil Filter is to clean the oil to a much finer degree than factory equipped strainers. The filter has a 10 micron nominal element. Located in the line from the engine to the oil cooler, the filter prevents particles from contaminating the oil cooler and supply tank and recirculating through the engine.

The filter is designed to keep the oil clean enough to fly 200 hours between oil changes (DDA CSL-1093). In addition, several inspection and cleaning operations associated with the oil system need maintenance only every 200 hours instead of every 100 hours (DDA CSL-1098).

These benefits alone can amount to a substantial savings in oil, reduced labor cost, downtime, and engine overhauls.

The filter has a red indicator which provides impending bypass warning when the differential pressure on the element is above 7 plus or minus 1 PSID. The indicator is inoperative below 100 degrees plus or minus 15 degrees F. The bypass opens at 10 plus or minus 1 PSID.

FACET KIT NO. 1741050-01
FOR MCDONNELL DOUGLAS HELICOPTER 500 SERIES
MODEL: 369HS, 369HM, 369HE,
369D AND 369E

Reg. No. _____

Ser. No. _____

Flight Hours _____

Installation Date _____

It is recommended that this manual be included in the permanent records of the modified helicopter to comply with the FAA requirement that the STC be retained and to have for service reference.

At the time of installation, please fill our the warranty card and mail.

Weight Change: +3.7 Moment Arm: 124.0 in.

Preflight Inspection Procedure Change:

1. Check red bypass indicator on external scavenge oil filter.

   A. Inspect red button on bottom of bowl for indication of filter bypass.

   B. If red button is not showing, proceed with preflight.

   C. If red button is showing, reset button once and run engine until oil reaches normal operating temperature.

   D. If red button reappears, discontinue operations and investigate reason for filter bypass indication.

2. Red impending bypass indicator reset

   Press the red indicator bypass button in and turn 90^{o}.

Scheduled Maintenance:

1. Scavenge oil filter element change

   A. Replace element (038088-08) whenever the engine oil is changed. This is a maximum of 200 hours or 6 months, whichever comes first.

   B. When filter is serviced after bypass indication, a new filter element should be installed.

2. Bypass indicator test

   A. The bypass indicator should be tested every 800 hours, as part of the oil change procedure.

   B. Remove safety wire from filter bowl, unscrew bowl, remove and discard installed filter element.

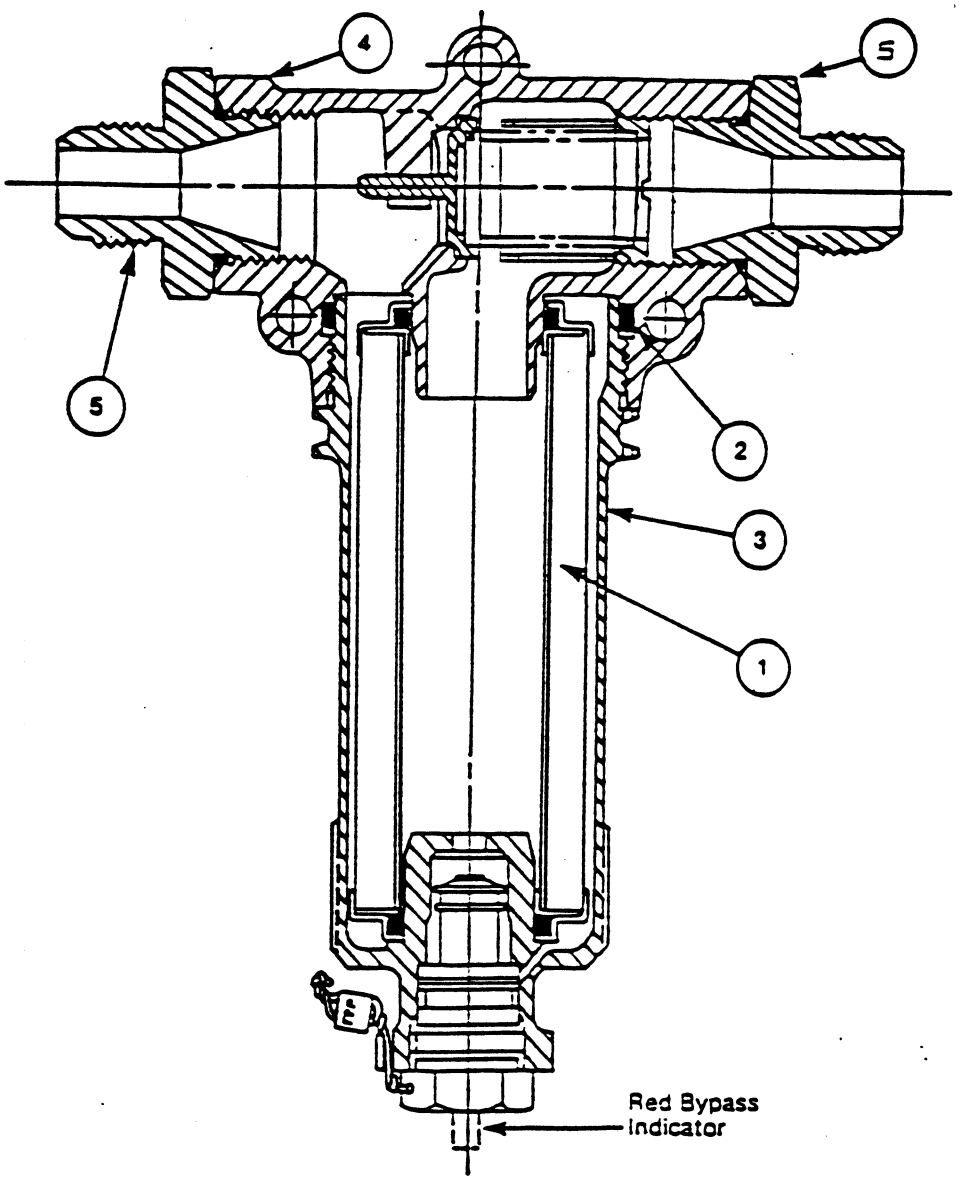
C. Install test tool (No. 1741145), reinstall bowl (do not safety wire at this time), leave cowling locked open or removed for visual access to filter assembly.

D. Start engine, operate at ground idle until normal operating temperature is reached and filter bypass indicator extends (approximately 10 minutes). Bypass indicator must reach 100 degrees plus or minus 15 degrees Fahrenheit to operate.

E. If bypass indicator fails to extend or will not reset, contact Purolator Products Company, Facet Filter Products Division, or your authorized Facet distributor. Do not attempt to adjust or replace indicator.

F. If the bypass indicator extends, it is functioning properly. Secure the engine and remove the filter bowl and test tool. Install a new seal kit (1741125) and filter element (038088-08). Reinstall and safety wire the filter bowl. Reset the bypass indicator by pressing it in and turning it 90°. Drain and reservice the engine oil system.

FACET FILTER ASSEMBLY
PART NO. 1740001-03



REPLACEMENT PARTS FOR FACET FILTER ASSEMBLY P/N 1740001-03

Item	Part No.	Description
1	038088-08	Element
2	1741125	Seal Kit
3	1740839-04	Bowl & Indicator Assembly
4	1742161-03	Head Assembly
5	1740235	Fitting Reducer
	040373	O-ring, FLBN-912

Filter Element Change Instruction:

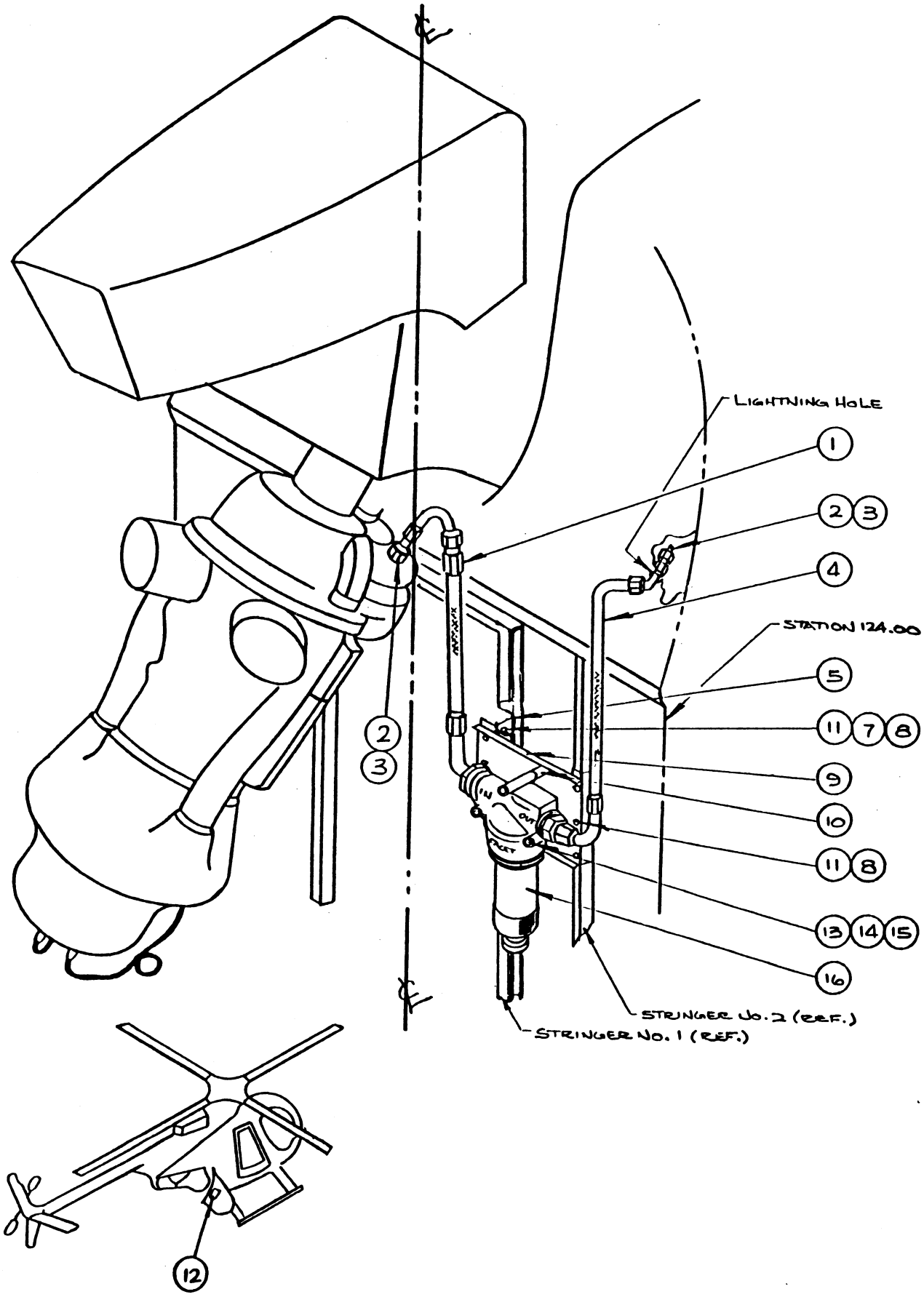
A. Remove head to bowl lockwire and unscrew bowl.

B. Remove dirty element.

C. Install new element.

D. Hand tighten until tight against head and lockwire.

NOTE: Only Facet authorized FAA/PMA approved replacement parts may be used to maintain warranty. Differential pressure indicator and bowl are matched assemblies and factory set. Do not attempt to repair or replace indicator.


LIGHTNING HOLE
1
2 3
4
STATION 124.00
5
11 7 8
9
10
11 8
13 14 15
16
2
3
STRINGER NO. 2 (REF.)
STRINGER NO. 1 (REF.)
12

MATERIAL LIST FOR FACET KIT NO. 1741050-01
FOR MCDONNELL DOUGLAS SERIES 500 HELICOPTER
MODEL: 369HS, 369HM, 369HE,
369D AND 369E

ITEM NUMBER	PART NUMBER	DESCRIPTION	QUANTITY REQUIRED
1	1741110-14	Hose Assembly	1
2	1741056	Reducer	2
3	033708	O-Ring, FLBN-908	2
4	1741110-13	Hose Assembly	1
5	1741055	Frame Mounting Bracket	2
6	1743866	Tag - Warning	1
7	MS21042-L3	Nut,Self-Locking 10-32	6
8	AN960-10L	Washer	18
9	1741051-01	Filter Mounting Bracket	1
10	1741111-01	Spacer	3
11	AN3-3A	Bolt 10-32 X .46	12
12	1741120	Label, Indicator Reset	1
13	AN4-31A	Bolt, 1/4 - 28	3
14	AN960-416	Washer	6
15	MS21042-L4	Nut, Self-Locking 1/4-28	3
16	1740001-03	Filter Assembly	1
17	E-947	Installation & Document Package	1
18	1741145	Bypass Indicator Test Tool	1

INSTALLATION INSTRUCTIONS FOR
FACET KIT NO. 1741050-01

GENERAL:

This installation will be made easier if done during an inspection when engine oil is completely drained from engine oil cooler and oil tank.

The filter assembly (Item 16, 1740001-03) was factory tested and shipped wet with MIL-L-7808, aircraft turbine engine lubricating oil.

It is recommended that the installer read through the instructions completely before starting to insure that there will be no problem with completing this installation.

PREPARATION:

1. Disconnect battery.

2. Open engine compartment doors and secure open, drain oil cooler.

3. Locate center line of helicopter in engine compartment.

4. Locate vertical Stringer 8.5 in. to right of center line of helicopter Stringer No. 1 (Ref.).

5. Locate vertical Stringer 15.250 to right of center line of helicopter Stringer No. 2 (Ref.).

6. Locate shelf in forward right-hand corner of engine compartment on which the cut out reverse current relay is mounted.

7. Locate horizontal flange that lays between center line of helicopter and vertical Stringer No. 1 (Ref.) found in Step No. 4. This flange is approximately at water line Station No. 24.750.

   NOTE: These are reference points that will help the installation.

INSTALLATION:

A. Removal of Components

1. Remove electrical plug from chip detector in forward engine gear case and remove chip detector. Retain chip detector for installation later.

2. Remove scavenge oil line from "OUT" port on forward gear case and remove union from port, discard union.

3. Remove scavenge oil line from cooler "IN" port, remove union from check valve at oil cooler, discard hose and union.

4. Loosen Adel clamp securing wire bundle to Stringer No. 2 (Ref.) and retain clamp for installation later.

5. Remove insulation (P/N 369H2008-51) from the aft side of 124 bulkhead, between Stringer No. 1 (Ref.) and Stringer No. 2 (Ref.) beginning at a point level with the bottom of shelf holding cut out reverse relay and going down to the flange between the stringers, an area of approximately 8". Retain insulation for installation later.

CAUTION! Care should be taken when cutting and removing insulation not to scratch or damage stringers, bulkhead, or electrical wires in the area.

B. Installation of Filter

NOTE: Flanges on both frame mounting brackets (Item 5, 1741055) are to the inboard side. Critical dimension is mounting the brackets too low on stringer so hoses cannot reach filter assembly ports. Check this before drilling holes in stringers.

1. Locate frame mounting brackets (Item 5, 1741055) on Stringer No. 1 (Ref.) just below the horizontal flange at, approximately, waterline 24.75. Place frame mounting bracket flange as close to horizontal flange as possible with the frame mounting bracket flange inboard.

2. Drill three holes through the frame mounting bracket (Item 5, 1741055) and stringer using a new or sharpened No. 12 drill (0.189 dia.), using the best drilling techniques.

3. Locate frame mounting bracket (Item 5, 1741055) on Stringer No. 2 (Ref.) at same level as the frame mount bracket on Stringer No. 1 (Ref.). Double check placement and then drill three No. 12 (0.189) holes through the frame mounting bracket and stringer, using the best drilling techniques.

4. Mount securely both frame mounting brackets (Item 5, 1741055) to stringers with flanges inboard using 6 bolts (Item 11, AN3-3A, 12 washers (Item 8, AN960-10L), and 6 Nuts (Item 7, MS21042-L3).

5. Glue insulation (removed earlier) to bulkhead.

6. Install an O-Ring (Item 3, 033708) on the small ends of both and reducers (Item 2, 1741056). Install reducers securely into the engine oil "OUT" port and at oil cooler "IN" port. Relieve lightning hole if required for adequate clearance.

7. Mount filter assembly (Item 16, 1740001-03) to filter mounting bracket (Item 9, 1741051-01) with the flanges facing the filter. Use 3 Bolts (Item 13, AN4-31A), and 3 Nuts (Item 15, MS21042-L4), 6 Washers (Item 14, AN906-416) and with 3 spacers (Item 10, 1741111-01) between the filter assembly and mounting bracket. Torque nuts to 50-55 in-lbs.

8. Mount filter mounting bracket (Item 9, 1741051-01) to frame mounting brackets (Item 5, 1741055) loosely using 6 Bolts (Item 11, AN3-3A) and 6 Washers (Item 8, AN960-10L).

   NOTE: Filter assembly bowl should point down. "IN" side of filter must connect by hose to the engine scavenge oil "OUT" port.

9. Install hose assembly (Item 1, 1741110-14), 90 degrees end, to filter assembly "IN" port and the other end to engine oil "OUT" port.

10. Install hose assembly (Item 4, 1741110-13), 90 degrees end, to filter assembly "OUT" port and the other end to the oil cooler "IN" port.

11. Route electrical wiring over frame and filter mounting brackets and with clamp, removed in Step A.1, secure under upper right-hand bolt of filter mounting bracket.

12. Tighten securely all hose fittings and bracket bolts. Check all fittings, bolts, clamps and components for security, proper fit, and clearances. Check hoses for clearance and possible chafing on engine or structure.

13. Install chip detector and electrical connector.

14. Inspect engine compartment to insure it is clear of tools, rags, etc.

15. Place label (Item 12, 1741120) for indicator reset, on right-hand engine compartment door in upper left-hand corner, in clear view of pilot during preflight inspection. Activate the adhesive with a solvent such as Methyl-Ethyl Ketone (MEK).

16. Reservice oil system and prepare helicopter for engine run-up and leak test. Connect battery. After final inspection and no leaks exist, prepare helicopter for flight.

WARRANTY

Seller warrants that at the time of delivery products delivered under the Order will conform to applicable drawings and specifications and will be free from defects in material and workmanship. Any claim for defective material or workmanship must be made within a period of ninety (90) days from the date of delivery to Buyer. Upon prompt notice of any claimed nonconformity or defect, Seller's obligation under this warranty is limited, at its option, to repairing or replacing at this plant, with transportation charges prepaid by Buyer, the product or components parts thereof that is proved to be other than as herein warranted. This warranty does not extend to any of the Seller's products which have been subject to misuse, accident or improper installation, maintenance or application, nor does it extend to products which have been repaired or altered outside of Seller's plant unless authorized in writing by Seller or unless such installation, repair or alteration is performed by Seller, nor does this warranty extend to any labor charges for removal and/or replacement of the nonconforming of effective product or part thereof. THIS WARRANTY IS IN LIEU OF AN EXCLUDES ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, ARISING BY OPERATION OF LOW OR OTHER-WISE, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. In no event shall Seller be liable for special, incidental or consequential damages for any breach of warranty of this contract, including but not limited to, costs of removal and reinstallation of goods, loss of goodwill or loss of profits and loss of use. Only authorized Facet FAA/PMA approved replacement parts may be used to maintain warranty.

PUROLATOR PRODUCTS COMPANY
FACET FILTER PRODUCTS DIVISION

United States of America

Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

Number SH401GL

This certificate, issued to Facet Filter Products Division
Purolator Products Co.
8439 Triad Drive
Greensboro, NC 27409-9621

certifies that the change in the type design for the following product with the limitations and conditions thereof as specified hereon meets the airworthiness requirements of Part 6 of the Civil Air Regulations. (See Type Certification Data Sheet No. H3WE for complete Certification basis.)

Original Product—Type Certificate Number: H3WE

Make: McDonnell Douglas Helicopter Co.

Model: 369HS, 369HM, 369HE 369D, and 369E

Description of Type Design Change:

Installation of Facet Enterprises, Inc. engine lubrication system scavenge filter in accordance with FAA stamped Facet Enterprises, Inc. installation instructions Kit No. 1741050, 1741050-01, or 1741050-02 on McDonnell Douglas Models 369HS, 369HM, and 369HE with Allison 250-C18A, 250-C18C, or 250-C20 engines and 369D and 369E helicopters with Allison 250-C20B or 250-C20R engines.

Limitations and Conditions:
The approval of this change in type design applies to the basic McDonnell Douglas Models 369HS, 369HM, and 369HE which have Allison 250-C18A, 250-C18C, or 250-C20 engines installed in accordance with Note 9 of Type Certificate Data Sheet No. H3WE and Models 369D and 369E which have Allison Model 250-C20B or 250-C20R engines, which are

(See Continuation)

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: February 14, 1978

Date of issuance: April 18, 1980

Date reissued: March 23,1982; June 15,1982; Nov. 1, 1984; May 1, 1990

Date amended: Jan. 26, 1982; Nov. 16, 1982; June 21, 1983; June 10,1988; Aug. 22,1989

By direction of the Administrator

for John Tigue (Signature)
Manager, Atlanta Aircraft
Certification Office
(Title)

Any alteration of this certificate is punishable by a fine of not exceeding $1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

FAA Form 8110-2 (10-68)

United States of America
Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

(Continuation Sheet)

Number SH401GL

August 22, 1989

Limitations and Conditions (Continued):

otherwise unmodified. This approval should not be extended to other aircraft of these model that incorporate any other previously approved modification, unless it is determined that the interrelationship between this change and any other previously approved modifications will introduce no adverse effect on airworthiness of these aircraft.

The Limitations and Conditions shown on Type Certificate Data Sheet No. H3WE for the McDonnell Douglas Model 369HS, 369HM, 369HE, 369D, and 369E helicopters remain applicable, except:

Placards required: Adjacent to the filter installation (minimum 1/8 inch high letters):

"A. Inspect red button on bottom of bowl for indication of filter bypass.

B. If red button is not showing, proceed with preflight.

C. Red button showing, reset button once and run engine.

D. If red button reappears, discontinue operations and investigate for filter bypass indication."

A copy of this STC must be included in the permanent records of each helicopter which is modified in accordance with this STC.

FAA Approved Rotorcraft Flight Manual Supplement dated November 15, 1982, or later FAA approved revision, is required with this installation.

...END...

Facet Enterprises, Inc.
8439 Triad Drive
Greensboro, NC 27409-9621

FAA APPROVED

ROTORCRAFT FLIGHT MANUAL SUPPLEMENT FOR MCDONNELL DOUGLAS HELICOPTER MODEL 369HS, 369HM, 369HE, 369D AND 369E

REG. NO._____

SER. NO. _____

This supplement must be attached to the Rotorcraft Flight Manual dated _____ or later FAA approved revisions when an engine scavenge oil line filter is installed in accordance with STC number SH401GL. The information herein supplements the information of the basic Rotorcraft Flight Manual only in those areas listed herein. For limitations, procedures and performance information not contained in this supplement, consult the basic Rotorcraft Flight Manual.

Original Signed by John Hannan for Manager,
Chicago Aircraft Certification Office,
FAA Central Region
November 15, 1982.

Reissued: FAA Approved Gerald R. Mace
Manager
Atlanta Aircraft Certification Office
Central Region, FAA

Date JUN 10 1988

Facet Enterprises, Inc.
8439 Triad Drive
Greensboro, NC 27409-9621

LOG OF REVISIONS

Rev. No.	Revised Pages	Description of Revision	Date	FAA Approval
1	All	added Model 369E. Added Log of Revisions page; renumbered all pages.	6/21/83	*
2	All	changed address. Added filter assembly P/N 1740001-03	Gerald P. Mack Manager, Atlanta ACO Central Region, FAA Date: JUN 10 1988	
3	3A	Added page 3A	Manager, Atlanta ACO Federal Aviation Admin. Atlanta, GA Date: NOV 29 1990	

NOTE: All changes are indicated by a black vertical line along right margin.
*Original signed for Manager, Chicago ACO.

Facet Enterprises, Inc.
8439 Triad Drive
Greensboro, NC 27409-9621

SECTION I - LIMITATIONS

Placard to be located adjacent to the scavenge oil filter assembly to read as follows:

Preflight Inspection of Scavenge Oil Filter:

A. Inspect red button on bottom of bowl for indication of filter bypass.
B. If red button is not showing, proceed with preflight.
C. Red button showing, reset button once and run engine.
D If red button reappears, discontinue operations and investigate reason for filter bypass indication.

SECTION II - PROCEDURES

During Preflight inspection, to reset the Red Button (Impending Bypass indicator):

A. For filter assembly P/N 037738-04:

1. Remove lockwire securing filter bowl to filter head.
2. Remove filter bowl.
3. Remove filter element.
4. Reach down through bowl and push white plunger into hole so that plunger is flush with bowl opening.
5. Push red bypass indicator in.
6. Install new filter element.
7. Install bowl and tighten to 150 in-lbs (lubricate with lube oil).
8. Install lockwire.

B. For filter assembly P/N 1740001-03:

Press and turr in.

SECTION III - PERFORMANCE

No change.

FAA APPROVED
DATE:
REVISED: June 9, 1988

Facet Filter Products Division
PUROLATOR PRODUCTS COMPANY
8439 Triad Drive
Greensboro, NC 27409
919-668-4444
Fax 919-668-4452

SECTION I - LIMITATIONS

For Facet remanufactured bowl and indicator assembly P/N 1740996.

No change from previous page.

SECTION II - PROCEDURES

Facet bowl assembly P/N 1740996

During Preflight Inspection, to reset the red impending bypass indicator button on filter assembly P/N 037738-04 with Facet remanufactured bowl and indicator assembly P/N 1740996 (indicator assembly P/N 1740352):

A. Press and turn in.

FAA APPROVED
DATE: NOV 2 9 1990