TEXTRON Lycoming

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SERVICE LETTER

Service Letter No. L162B
(Supersedes Service Letter No. L162A)
January 29, 1982

TO: All Owners, Operators and Service Facilities

SUBJECT: ® Heli-Coil Service Repair Kit

Gentlemen:

The repair of threaded holes is a problem often encountered in aircraft engine maintenance. Corrosion, tight fits between dissimilar metals and the effects of repeated heating and cooling, are the usual contributing causes for damaged threads, or loose fits between threaded parts. Conventional methods of repair to threaded parts include retapping and use of oversize threaded parts; installation of bushings; and redrilling and tapping to accommodate step-threaded parts. Except for the use of oversized threaded parts supplied by Avco Lycoming, none of these methods of repair are generally acceptable because of structural weakness introduced by enlarging the tapped hole.

The Heli-Coil thread insert is an ideal method for repair of many types of thread damage. It requires very little enlargement of the tapped hole, and being made of stainless steel provides a better thread than the original. Consequently, Heli-Coil inserts are not only recommended for repair of thread damage but are used extensively in new Avco Lycoming aircraft engines at locations where threaded parts are subject to frequent removal and where corrosion may be a factor.

In order to promote the use of Heli-Coil thread inserts as a means of thread repair in Avco Lycoming engines, as well as to provide maintenance facilities with an efficient, time-saving tool. Avco Lycoming has designed a kit, containing inserts and tools for repair of the most common sizes of threaded holes in Avco Lycoming engine parts. These tools and inserts are specially designed for use in aluminum parts.

The kit is made up of eight repair packs, each pack containing thread inserts, tap and installing tool for a particular size thread. Heli-Coil thread inserts are installed in the following manner:

CAUTION

Do not install Heli-Coil inserts in any through-hole on an assembled engine because of the possibility of metal particles entering the engine.

1. Drill hole to adequate depth using the drill size as shown in the following chart.

THREAD INSERT	DRILL SIZE	DRILLED HOLE DIAMETER
1/4-20 NC	H	.2640-.2710
5/16-18 NC	Q	.3300-.3370
3/8-16 NC	X	.3950-.4020
1/2-13 NC	33/64	.5136-.5206
1/8-27 NPT	U	.3660-.3730
10-24 NC	13/64	.2011-.2071
10-32 NF	7	.1990-.2050
1/16-27 NPT	9/32	.2790-.2860

®- Heli-Coil Products, Div. of Mite Corp., Danbury, Connecticut.

2. Tap the drilled hole using the Heli-Coil tap supplied with the pack. Check thread size on shank to make certain correct size is used. Do not attempt to use any other tap. On pipe threads, tap the depth indicated by the copper wire wrapped around the tap. For shallow holes it may be necessary to grind-off and re-chamfer the end of the pipe tap.

3. For coarse thread series Heli-Coil thread inserts, screw the thread insert on the mandrel of the installation tool; be sure tang of the insert is fully engaged in slot of mandrel. For pipe thread inserts and fine thread series, thread insert should be placed in well of the prewinder, tang end forward. Rotate mandrel through insert until driving tang is fully engaged in slot of mandrel. Continue to rotate until insert is engaged on 1 or 2 threads in prewinder body.

4. Screw the insert into the tapped hole until the top of the insert is 1/4 to 1/2 turn below the top surface of the hole.

5. Remove the tang from the insert by breaking it off with a rod having a diameter that fits into the assembled insert. Strike the rod sharply with a hammer, the tang is notched to insure that it will break off easily. Tangs on pipe thread and large diameter inserts can be removed with long-nosed pliers.

CAUTION

Heli-Coil insert installing tangs can become airborne when broken off with a hammer and rod. Care must be exercised to prevent injury to anyone in the vicinity.

NOTE

Any time that a cylinder hold-down stud hole thread is repaired by installation of a Heli-Coil insert, the limits for stud driving torque must be maintained. See Table of Limits, SSP1776.

In the event it is ever necessary to remove a Heli-Coil insert, it can be accomplished as follows:

With a small triangular file, cut a notch in the top coil of the insert about 1/4 turn from the end of the wire. Be careful not to damage the threads in the tapped hole. Then place one edge of a 3-edge scraper in the notch; while maintaining a steady downward pressure, turn the scraper counter-clockwise until the entire insert is backed out. Scrap the insert and retap the hole to insure it is clean, then install a new insert.

Any of the packets, or individual inserts contained in the kit may be replaced by reordering through any Avco Lycoming distributor. Be sure to state part number as shown below for each item required.

Part No. ST-184 Heli-Coil Thread Repair Kit Consists of:

Qty.	Part No.	Description	Part No.	Individual Inserts	Minimum Quantity Package
1	4028-4	Repair Pkg. (30 pc. 1/4-20 NC)	STD-1173	Insert, 1/4-20 NC	15
1	4028-5	Repair Pkg. (24 pc. 5/16-18 NC)	STD-1164	Insert, 5/16-18 NC	12
1	4028-6	Repair Pkg. (18 pc. 3/8-16 NC)	STD-1171	Insert, 3/8-16 NC	9
1	4028-8	Repair Pkg. (12 pc. 1/2-13 NC)	STD-1642	Insert, 1/2-13 NC	6
1	4029-2	Repair Pkg. (10 pc. 1/8-27 NPT)	STD-1872	Insert, 1/8-27 NPT	5
1	4028-3	Repair Pkg. (30 pc. 10-24 NC)	STD-1353	Insert, 10-24 NC	15
1	4024-3	Repair Pkg. (30 pc. 10-32 NF)	STD-2183	Insert, 10-32 NF	15
1	4029-1	Repair Pkg. (10 pc. 1/16-27 NPT)	STD-2212	Insert, 1/16-27 NPT	5

NOTE

Any of the above repair packages may be purchased separately. In addition to containing inserts, each package contains a special Heli-Coil tap and installing mandrel. Individual replacement inserts are packaged and sold as listed.

NOTE: Revision "B" adds repair packages to kit; changes text; eliminates illustration and changes drilled hole diameters.

21491 - This number for Avco Lycoming reference only.