



**SCHWEIZER
SERVICE INFORMATION
LETTER**

Letter No. L-148

Date: 1 February 1989

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TO: All owners and operators of 269 Series Helicopters.

SUBJECT: AVCO LYCOMING SERVICE INSTRUCTIONS NO. 1014K and 1409A.

MODELS AFFECTED: All 269 Series Helicopters equipped with an engine affected by the subject Avco Lycoming Service Instructions.

Your attention is directed to the subject Avco Lycoming Service Instructions No. 1014K and 1409A reprinted as part of this Service Letter.

These instruction letters provide information on the proper lubricating oil and oil additive for the engine assembly.

Schweizer Aircraft Corporation recognizes the fact that different types and grades of lubricating oils and oil additives exist on the market, and are currently in use. It is recommended that owners and operators of 269 Series Helicopters review and comply with subject Avco Lycoming Instruction Letters.

Schweizer Aircraft Corp. recommends that compliance with the subject Avco Lycoming Instruction Letters (if applicable) be accomplished as specified within the letters.

It should be noted that owners and operators of 269 Series Helicopters should maintain a complete set of Avco Lycoming Service Letters, Bulletins, and Instructions (Lycoming Publication No. BS-148) as part of the primary information file for the helicopter. (Refer to Table 2-7 of Basic HMI for other related publications and directives.)

Service Instruction



DATE: November 23, 1984 Service Instruction No. 1014L
 (Supersedes Service Instruction No. 1014J)
 Engineering Aspects are
 FAA (DER) Approved

SUBJECT: Lubricating Oil Recommendations

MODELS AFFECTED: All Avco Lycoming opposed series aircraft engines.

TIME OF COMPLIANCE: When preservation oil is removed after initial 25 hours, or when lubricating oil is changed or added.

The lubricating oil recommendations shown in the following chart are based on experience, and in our opinion, reflect the progress that has been made in recent years by the petroleum industry. However, the overall acceptance of detergents, compounded, or additive lubricating oils is not sufficient reason for recommending their use in Avco Lycoming aircraft engines. Inferior base oils are sometimes doctored with detergents to disguise their true characteristics; there are detergent oils that can cause spark plug fouling and preignition and there are those that are incompatible with other oils. But, regardless of such factors, there are some aviation additive oils that appear to be superior in performance to straight mineral oil, and their use in Avco Lycoming aircraft engines is recommended. (These additives are added at the refinery). Included in these oils are the ashless dispersant oils essentially conforming to Specification MIL-L-22851 except for correct seasonal viscosity grade suitable to Avco Lycoming series engines.

NOTE

Avco Lycoming Specification No. 301F approves for use lubricating oils which conform to both MIL-L-6082 straight mineral type and MIL-L-22851 ashless dispersant type lubricants for aircraft engines. Any brand name lubricating oil in accordance with these specifications is acceptable for use; proof of such conformity is the responsibility of the lubricating oil manufacturer.

PART I - LUBRICATING OIL RECOMMENDATIONS

Average Ambient Air Temperature (NOTE A)	MIL-L-6082 Spec. Mineral Grades (NOTE B)	MIL-L-22851 Spec. Ashless Dispersant Grades (NOTE C)
All Temperature	---	SAE 15W50 or SAE 20W50
Above 80°F.	SAE 60	SAE 60
Above 60°F.	SAE 50	SAE 40 or SAE 50
30°F. to 90°F.	SAE 40	SAE 40
0°F. to 70°F.	SAE 30	SAE 30, SAE 40 or SAE 20W40
0°F. to 90°F.	SAE 20W50	SAE 20W50 or SAE 15W50
Below 10°F.	SAE 20	SAE 30 or SAE 20W30

A. AVERAGE TEMPERATURES - The ambient ground air temperatures listed in the chart are meant only as a guide. Actually a great deal of personal judgement must be used when selecting the seasonal grade of oil to put into the engines. For example, if an aircraft is to be flown into an area which is much warmer or much colder, only personal judgement on the part of the operator can determine what grade oil to use. When oil inlet temperatures approach the maximum allowable during operation, it is a good indication that a higher viscosity oil should be considered.

B. MINERAL GRADES - Included in this classification are aviation-grade, mineral lubricating oils. The SAE straight mineral grades, 20, 30, 40, 50 and 60, shown in the chart, are equivalent to Commercial Grades 55, 65, 80, 100 and 120, and to Military Grades 1040, 1065, 1080, 1100 and 1120, respectively. This classification also includes a multiviscosity 20W50 oil.

C. ASHLESS DISPERSANT GRADES - This classification contains additives, one of which has a viscosity stabilizing effect, which removes the tendency of the oil to thin out at high oil temperatures and thicken at low oil temperatures. The additives in these oils extend operating temperature range, improve cold engine starting and lubrication of the engine during the critical warm-up period, thus permitting flight through wider ranges of climatic changes without the necessity of changing oil. The ashless dispersant grades are recommended for aircraft engines subjected to wide variations of ambient air temperature particularly the turbocharged series engines which requires oil to activate the various turbo controllers. The SAE Grades 30, 40, 50 and 60 shown on the chart are equivalent to grades of 65, 80, 100 and 120 respectively. It must not be presumed however, that these oils will alleviate all of the problems encountered in extremely cold environments (below +10°F.). At these temperatures preheating of the engine and oil supply tank will be required regardless of the type of oil used.

PART II - OIL RECOMMENDATIONS FOR ENGINE OPERATION AND BREAK-IN

1. TO-360-C, -F; TIO-360-C; TIO and TIGO-541 series engines must be broken-in and operated with ashless dispersant oil only.
2. O-320-H, O/LO-360-E, TO/LTO-360-E series engines may be operated using either straight mineral oil or ashless oil. However, if the engine is delivered with ashless dispersant oil, it must remain on ashless dispersant oil. The Avco Lycoming oil additive P/N LW-16702 must be added to the O-320-H and the O/LO-360-E engines at airframe installation, and every 50 hours thereafter or at every oil change. This lubrication recommendation supersedes the lubrication recommendations in Service Instruction No. 1392.

NOTE

If it is determined that a FAA-approved lubricating oil being used contains, in the proper amount, an oil additive equivalent to LW-16702, the provisions of this Service Instruction are being met.

3. In all IGSO-480 and IGSO-540 series engines equipped with Simmonds fuel injection systems, it is allowable to use SAE 50 or SAE 60 grade lubricant providing the engine oil pressure does not exceed the limits set forth in the Operator's Manual.
4. All other engines must be operated on straight mineral oil during the first 50 hours of operation, or until oil consumption has stabilized. If an ashless dispersant oil is used in a new engine, or a newly overhauled engine, high oil consumption might possibly be experienced. The anti-friction additive of some of these ashless dispersant oils will retard the break-in of the piston rings and cylinder walls. This condition can be avoided by the use of straight mineral oil until normal oil consumption is obtained, then change to the ashless dispersant oil. Straight mineral oil must also be used following the replacement of one or more cylinders or until the oil consumption has stabilized.

CAUTION

Generally aircraft manufacturers add approved preservative lubricating oil to protect new engines from rust and corrosion at the time the aircraft leaves the factory. This preservative oil must be removed at end of the first 25 hours of operation. When adding oil during the period preservative oil is in the engine, use only aviation grade straight mineral oil or ashless dispersant oil, as required, of the viscosity desired.

PART III - RECOMMENDATIONS FOR CHANGING OIL

In engines that have been operating on straight mineral oil for several hundred hours, a change to ashless dispersant oil should be made with a degree of caution as the cleaning action of some ashless dispersant oils will tend to loosen sludge deposits and cause plugged oil passages. When an engine has been operating on straight mineral oil, and is known to be in excessively dirty condition, the switch to ashless dispersant oil should be deferred until after the engine is overhauled.

When changing from straight mineral oil to ashless dispersant oil, the following precautionary steps should be taken:

- a. Do not add ashless dispersant oil to straight mineral oil. Drain the straight mineral oil from the engine and fill with ashless dispersant oil.
- b. Do not operate the engine longer than five hours before the first oil change.
- c. Check all oil screens for evidence of sludge or plugging. Change oil every ten hours if sludge conditions are evident. Repeat 10 hour checks until clean screen is noted, then change oil at recommended time intervals.

CAUTION

The terms "detergent, additive, compounded" and "ashless dispersant" used herein are intended to refer to a class of aviation engine lubricating oils to which certain substances have been added, at the refinery, to improve them for aircraft use. These terms do not refer to such minerals commonly known as "top cylinder lubricant", "dopes", "carbon remover" which are sometimes added to fuel or oil. These products may cause damage to the engine (pistons, ring sticking, etc.) and their presence in an engine will void the owner's warranty. Under no circumstances should automotive oil be used. The use of automotive lubricants in Avco Lycoming engines is not recommended because its use could cause engine failure.

NOTE: Revision "K" adds 20W50 mineral oil to Part I, TIO-360-C and NOTE to Part II.

AVCO LYCOMING WILLIAMSPORT DIVISION
AVCO CORPORATION
WILLIAMSPORT, PENNSYLVANIA 17701

Service Instruction



DATE:

November 23, 1984

Service Instruction No. 1409A
(Supersedes Service Instruction No. 1409)
Engineering Aspects are
FAA Approved

SUBJECT:

Avco Lycoming LW-16702 Oil Additive.

MODELS AFFECTED:

All Avco Lycoming piston aircraft engines.

TIME OF COMPLIANCE:

At initial oil fill and every oil change thereafter, or at every 50 hours, whichever occurs first.

Avco Lycoming has approved an oil additive LW-16702 that has an anti-scuffing agent. This characteristic serves to reduce wear. For engines already in service, the use of the additive may be started at the next oil change. Use oil additive, as shown in the following chart.

Use (one) 6 ounce can (LW-16702) per 6 - 8 quart sump.
Use (two) 6 ounce cans (LW-16702) per 12 - 15 quart sump.
Use (three) 6 ounce cans (LW-16702) per 17 - 19 quart sump.
Use (four) 6 ounce cans (LW-16702) per 23 quart sump.

This oil additive may be purchased from your Avco Lycoming distributor.

NOTE

"If it is determined that a FAA approved lubricating oil being used contains, in the proper amount, an oil additive equivalent to LW-16702, the provisions of this Service Instruction are being met."

NOTE: Revision "A" adds NOTE recognizing FAA-approved oils that contain an additive equivalent to Avco Lycoming oil additive, LW-16702.

21530, 21530A - This number for Avco Lycoming reference only.