REASON FOR CHANGE: Updated material listings. See revision bars.

SUBJECT: CURRENT LISTING OF SEALANTS, LUBRICANTS, & ADHESIVES AUTHORIZED BY TCM.

PURPOSE: Provide current application of sealants, lubricants & adhesives.

COMPLIANCE: During maintenance, overhaul or component repair or replacement.

MODELS AFFECTED: All Continental Engine Models.

Lubricating oils qualified for use in Teledyne Continental Motors engines are required to meet SAE (Society of Automotive Engineers) specifications.

SAE specification J 1899 (formerly MIL-L-22851) is the approval for aircraft piston engine ashless-dispersant oil.

SAE specification J 1966 (formerly MIL-L-6082E) is the approval for aircraft piston engine non-dispersant mineral oil.


Teledyne Continental Motors listing of accepted SAE J 1899 oils by manufacturer and brand name is for the convenience of our customers. Always refer to the label on the oil to ensure that the oil meets the appropriate SAE specification.

QPL-J 1899: Qualified Products List is available from:

SAE Headquarters
400 Commonwealth Drive
Warrendale, PA  15096-001


Naval Air Systems Command
Air 4.4.5
Jefferson Davis Highway
Arlington, VA.  22243-5120
Recommended Oil Grade:

Above 40°F ambient air, sea level        SAE 50 or Multi Viscosity
Below 40°F ambient air, sea level        SAE 30 or Multi Viscosity

NOTE...
See TCM Engine Preservation for Active and Stored Aircraft Service Information Letter SIL99-1 for preservation information.

In listing the product names, TCM makes no claim of verification of the marketer’s statements or claims. Listing is made alphabetically and is provided only for convenience of the users. If the aviation oil you use or wish to use is not listed, contact the Naval Air Systems Command

QUALIFIED LUBRICATING OIL-ASHLESS DISPERSANT
(SAE J 1899)

<table>
<thead>
<tr>
<th>SUPPLIER</th>
<th>BRAND</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP Oil Corporation</td>
<td>BP Aero Oil</td>
</tr>
<tr>
<td>Castrol</td>
<td>Castrol Aero AD Oil</td>
</tr>
<tr>
<td>Castrol Limited (Australia)</td>
<td>Castrol Aero AD Oil</td>
</tr>
<tr>
<td>Chevron USA</td>
<td>Chevron Aero Oil</td>
</tr>
<tr>
<td>Continental Oil</td>
<td>Conoco Aero S</td>
</tr>
<tr>
<td>Delta Petroleum Company</td>
<td>Delta Avoil Oil</td>
</tr>
<tr>
<td>Exxon Company, USA</td>
<td>Exxon Elite</td>
</tr>
<tr>
<td>Exxon Company, USA</td>
<td>Exxon Aviation Oil EE</td>
</tr>
<tr>
<td>Gulf Oil Company</td>
<td>Gulfpride Aviation AD</td>
</tr>
<tr>
<td>Mobil Oil Company</td>
<td>Mobile Aero Oil</td>
</tr>
<tr>
<td>NYCO SA</td>
<td>Turbonycoil 3570</td>
</tr>
<tr>
<td>Pennzoil Company</td>
<td>Pennzoil Aircraft Engine Oil</td>
</tr>
<tr>
<td>Phillips Petroleum Company</td>
<td>Phillips 66 Aviation Oil, Type A 100 AD, 120 AD</td>
</tr>
<tr>
<td>Phillips Petroleum Company</td>
<td>X/C Aviation Multiviscosity Oil SAE 20W-50, SAE 25W-60</td>
</tr>
<tr>
<td>Quaker State Oil &amp; Refining Co.</td>
<td>Quaker State AD Aviation Oil</td>
</tr>
<tr>
<td>Red Ram Limited (Canada)</td>
<td>Red Ram X/C Aviation Oil 20W-50</td>
</tr>
<tr>
<td>Shell - Australia</td>
<td>Aeroshell (R) W</td>
</tr>
<tr>
<td>Shell Canada Limited</td>
<td>Aeroshell Oil W, 15W – 50 Anti-wear Formulation</td>
</tr>
<tr>
<td>Shell USA</td>
<td>Aeroshell Oil W, 15W – 50 Anti-wear Formulation</td>
</tr>
<tr>
<td>Shell USA</td>
<td>Aeroshell Oil W100 Plus, W80 Plus</td>
</tr>
<tr>
<td>Sinclair Oil Company</td>
<td>Sinclair Avoil</td>
</tr>
<tr>
<td>Texaco Inc.</td>
<td>Texaco Aircraft Engine Oil-Premium AD</td>
</tr>
<tr>
<td>Total France</td>
<td>Total Aero DM 15W - 50</td>
</tr>
<tr>
<td>Union Oil Company of California</td>
<td>Union Aircraft Engine Oil HD</td>
</tr>
</tbody>
</table>
Break-in Oil

SAE J 1966- Aviation (replaces MIL-L-6082) non-dispersant mineral lubricating oil for piston aircraft engines.

MIL-C-6529 Type II Corrosion preventive mineral oil (fly-away-oil)

NOTE . . . Mineral oil conforming with MIL-C-6529 Type II contains a corrosion preventive additive and must not be used for more than 25 hours or six months, whichever occurs first. If oil consumption has not stabilized in this time, drain and replenish the oil and replace the oil filter.

Preservative Oil

<table>
<thead>
<tr>
<th>TYPE</th>
<th>EQUIVALENT</th>
<th>APPLICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIL-P-46002</td>
<td>Grade 1 oil, (NOX RUST VCI-105)</td>
<td>For Temporary and Indefinite storage</td>
</tr>
<tr>
<td>MIL-P-46002</td>
<td>Motorstor Engine Protetcant</td>
<td>For Temporary and Indefinite storage</td>
</tr>
</tbody>
</table>

OIL CHANGE INTERVALS

Refer to the engine operator/maintenance manual and/or the aircraft manufacturer’s or Supplemental Type Certificate (STC) holders POH/AFM for fuel specifications, specified oil change intervals and inspection procedures.

The oil change intervals published in the Operators Manuals are minimum requirements. Teledyne Continental Motors feels that more frequent oil and filter changes enhance engine service life. As such TCM recommends that engine oil be drained and replenished every 25 hours of operation or 4 months for engines that incorporate an oil screen. Engines with full flow oil filters, either large or small, should have the oil changed every 50 hours or 4 months.                                                                                     

NOTE… When using the small (4.80 inch high oil filter) do not exceed 50 hours and/or 6 months between oil and filter changes. When using the larger (5.80 inch high oil filter) do not exceed 100 hours and/or 6 months between oil and filter changes. Oil screens and oil filter elements must be inspected for contaminates at each oil change. Oil analysis may be used in addition to the oil screen or filter element inspection, but not as a replacement for it.

ADDITIVES

There are many fuel and oil additives and/or concentrates on the market today which were formulated primarily for automotive and industrial engine applications. From time to time, we receive inquiries as to the use of these products in our aircraft engines. Most of these additives and concentrates, while they may be highly beneficial to automotive and industrial operation, are not compatible with air-cooled, light aircraft engines in their operating environments. With the exception of the use of isopropyl alcohol and ethylene glycol monomethyl ether compound as described in the following paragraph, we do not recommend the use of additives or concentrates in any of our aircraft engines. In fact, the use of such can be cause for voiding the warranty. Use only fuels and lubricants as recommended herein and in current engine operating manuals.

Under certain ambient conditions of temperature/humidity, water can be supported in the fuel in sufficient quantities to create restrictive ice formation along various segments of fuel system. To alleviate the possibility of this occurring, it is permissible to add Isopropyl Alcohol to the fuel supply in quantities not to exceed 3 percent of the total. Also, Diethylene Glycol Monomethyl Ether (DEGMMME) conforming to military specification MIL-DTL-85470B, if approved for use in the aircraft fuel system by the aircraft manufacturer, may be added for this purpose. The DEGMMME compound must be carefully mixed with the fuel in concentrations not to exceed 0.15 percent by volume.
**WARNING**

Mixing of the DEGMME compound with the fuel is extremely important because concentration in excess of that recommended (0.15 percent volume maximum) could have a harmful effect on engine components. Use only blending equipment and procedures that are recommended by the manufacturer to obtain proper proportioning.

### Lubricants

<table>
<thead>
<tr>
<th>TYPE</th>
<th>APPLICATION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molyshield Grease</td>
<td>Starter Worm Gear Drive Teeth &amp; Bevel Gear Teeth</td>
<td>All Models</td>
</tr>
<tr>
<td>P/N 656817-1 6 Gallon Can</td>
<td>Needle bearings and ball bearings</td>
<td>At engine Assembly</td>
</tr>
<tr>
<td>P/N 656817-2 14OZ Cartridge</td>
<td>Valve stems</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adapter-Tach Reduction</td>
<td>(TSIO &amp; L/TSIO 360)</td>
</tr>
<tr>
<td></td>
<td>All Accessory drive splines and couplings</td>
<td>All models as applicable</td>
</tr>
<tr>
<td></td>
<td>Idler gear and pin</td>
<td>GTSIO/IO/TSIO-520, IO/O/TSIO-470 all 550</td>
</tr>
<tr>
<td></td>
<td>Oil Seal Lips only</td>
<td>All Models</td>
</tr>
<tr>
<td></td>
<td>Fuel injection controls, o-rings, springs, shafts and bushings</td>
<td>Except models: TSIO-520-D, all 360, &amp; GTSIO-520-K which use grade 50 W Motor oil</td>
</tr>
<tr>
<td></td>
<td>Magneto rubber drive bushings</td>
<td>All Models</td>
</tr>
<tr>
<td></td>
<td>Oil Pumps (Pressure &amp; Scavenge)</td>
<td>All Models / Coat gear cavity at assembly of pump</td>
</tr>
</tbody>
</table>
## Lubricants (continued)

<table>
<thead>
<tr>
<th>Product</th>
<th>Application</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dow Corning® G-N Paste</td>
<td>Camshaft lobes and tappet faces</td>
<td>At engine assembly</td>
</tr>
<tr>
<td>Shell Alvania # 2 P/N 654561</td>
<td>Apply a light coat at point of contact between nut seat and ferrule on ignition lead</td>
<td>All Models</td>
</tr>
<tr>
<td>Shell #5 MIL-G-3545-C Grease P/N 654468-1 1 Gallon Can</td>
<td>All Fuel injection linkages O-Rings on Fuel Pumps Fuel pressure regulator spring seat Mixture Shaft Bushings</td>
<td>All Models / At assembly</td>
</tr>
<tr>
<td>P/N 646943 - Anti Seize Lubricant or Loctite 76732 Anti-Seize Lubricant</td>
<td>Exhaust studs</td>
<td>All Models (nut end before torquing)</td>
</tr>
<tr>
<td></td>
<td>All mechanical tach drive housing threads not through to an oil source Plug Vernatherm All .3125 and larger studs unless otherwise noted</td>
<td>At engine assembly</td>
</tr>
<tr>
<td></td>
<td>Oil sump return fitting</td>
<td>IO-360-ES3B &amp; IO-360-HB9B</td>
</tr>
<tr>
<td></td>
<td>Air Reference Fittings on all Throttle bodies</td>
<td>Engine Models as applicable</td>
</tr>
<tr>
<td>50 Weight Non-compounded or Ashless Dispersant Aviation Oil SAE J 1966</td>
<td>Cylinder studs and through bolts, crankcase studs, connecting rod bolts and nuts and engine accessory studs unless otherwise specified</td>
<td>All Models / Lube thread and nut seat before tightening nuts</td>
</tr>
<tr>
<td>CHAMPION® - Spark Plug Thread Lubricant No. 2612</td>
<td>Spark plugs</td>
<td>All Models</td>
</tr>
<tr>
<td>Chesterton #995 Release agent or WD-40</td>
<td>Induction system hose and flex duct connections, Fuel Pump Aneroid Seal</td>
<td>All Models</td>
</tr>
<tr>
<td>Dow Corning® No. 4</td>
<td>Apply to rubber oil seal of spin-on oil filter Gaskets - Governor pad (both sides) Gaskets-Mag adapter (both sides)</td>
<td>Engine Models as applicable</td>
</tr>
<tr>
<td>Lubriplate 930 AA</td>
<td>O.D. of Valve Guides</td>
<td>All models at installation of guide</td>
</tr>
<tr>
<td>CRC 3-36 Rust Preventative Compound</td>
<td>Spray exhaust end of turbocharger</td>
<td>For engine preservation</td>
</tr>
</tbody>
</table>
## Sealants

<table>
<thead>
<tr>
<th>TYPE</th>
<th>APPLICATION</th>
<th>REMARKS</th>
</tr>
</thead>
</table>
| Permatex Aviation Grade 3D  
And P/N 641543 Silk Thread | Crankcase parting face | All Models / Apply in accordance with Figures 1 through 7 as applicable |
| | Starter adapter to accessory case | Apply in accordance with Figure 19 |
| | Accessory Drive Adapter | Apply in accordance with Figure 20 |
| | Pressure oil pump covers,  
Pressure scavenge pump covers | Apply in accordance with Figures 10 through 18 |
| P/N 653692 - Primer  
P/N 653692-1 1.75 Oz Bottle  
or Loctite LocQuic Primer 7649 | Crankcase crankshaft nose oil seal area | All models |
| P/N 646942 - Gasket Maker  
or Loctite 515Gasket Eliminator Sealant | Sump to crankcase | TSIO-520-UB, TSIOL-550-B |
| | Crankcase parting face | All Models / Apply in accordance with Figures 1 through 7 as applicable |
| | Engine nose seal, scavenge oil pump covers, between crankcase and sump  
gasket, oil pump covers | All Models |
| | Between starter adapter gasket & crankcase | Permold model engines |
| | Between Oil sump and Sump Gasket  
642910 OIL SEAL, O.D. of all  
uncoated oil seals, except fuel pump  
adapter seal | All models (Non beaded gaskets only) |
| P/N 642188 - Gasket Sealant  
(K & W Copper Coat 1504-12) | All gaskets both sides, except  
magneto gasket & gaskets between  
intake manifold & cylinder heads | TIARA 6-285, 6-230 |
| | Gasket - Accessory case to crankcase  
(Crankcase side only) | C-90, O-200, O-300, 360 & IO-240 |
| | Gasket - Cam bore cover (except beaded gaskets) | 470, 520, 550, GTSIO-520 Models and IO-240 |
| | Gasket - Idler Pin | 470, 520, GTSIO-520, all 550 |
| | Gasket - Intake Manifold | All models |
| | Oil drain back tubes | C-90, O-200, O-300 |
| | Gasket & Oil filler neck holes | 470, 520, 550 (Sandcast) and GTSIO-520 |
| | Gasket - Oil cooler both sides | All 360 models |
| | Oil seal at alternator drive (O.D. only) | TIARA 6-285, 6-230 |
| | All press type plugs (Hubbard etc) | All Models |
| | In parting line area of 3-way joints | Sump to crankcase or sump to crankcase to accessory case |
### Sealants (Continued)

<table>
<thead>
<tr>
<th>Sealant Description</th>
<th>Application Details</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>P/N 642188 - Gasket Sealant (K &amp; W Copper Coat 1504-12)</td>
<td>Oil seal accessory drive (O.D. only)</td>
<td>TSIO-360, A, AB, C, CB, D, DB and IO-360-C, CB, G, GB</td>
</tr>
<tr>
<td>Loctite 592 Teflon PS/T Pipe Sealant</td>
<td>Use on all pipe threads except as noted. All pressure relief valve housing threads. Permold 2 studs engine mount 1-3-5 side bottom. All threaded fasteners installed in a through hole to an oil source.</td>
<td>All 470, 520, 550 models as applicable</td>
</tr>
<tr>
<td>P/N 646940 - F/I Sealant, Loctite 569 Hydraulic Sealant</td>
<td>All pipe thread fittings in fuel injection system.</td>
<td>Apply in accordance with Figure 9</td>
</tr>
<tr>
<td>P/N 649246 Loctite 290 Sealant</td>
<td>Data plate screw installation on throttle bodies</td>
<td>All models where applicable</td>
</tr>
<tr>
<td>Miller-Stephenson MS 122DF</td>
<td>Ignition harness terminals at magneto block end</td>
<td>All Models</td>
</tr>
</tbody>
</table>

### Adhesives

<table>
<thead>
<tr>
<th>Type</th>
<th>Application Details</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loctite 271 High Strength Adhesive Sealant (used with P/N 653693 Primer or Loctite 7471)</td>
<td>Rocker cover stud, rocker arm pivot studs, push rod retainer stud.</td>
<td>TIARA 6-285, 6-230 only</td>
</tr>
<tr>
<td></td>
<td>Cylinder deck studs</td>
<td>All models breakaway torque 100 in-lbs. after 2 hrs</td>
</tr>
<tr>
<td></td>
<td>Crankcase breather tubes</td>
<td>470 &amp; 520 (Sandcast) &amp; GTSIO-520</td>
</tr>
<tr>
<td></td>
<td>Bolts for nose seal retainer to crankcase</td>
<td>All Models</td>
</tr>
<tr>
<td></td>
<td>Squirt nozzle</td>
<td>All Models</td>
</tr>
<tr>
<td></td>
<td>Mechanical Tach Drive Studs to an oil source</td>
<td>Engine models as applicable</td>
</tr>
<tr>
<td></td>
<td>Oil pump gear mounting pin in accessory cover</td>
<td>360 models</td>
</tr>
<tr>
<td></td>
<td>All press fit breather and oil filler necks</td>
<td>360 &amp; IO-240 models</td>
</tr>
<tr>
<td></td>
<td>Intake manifold mount studs</td>
<td>C-75, C-85, C-90 &amp; O-200</td>
</tr>
<tr>
<td></td>
<td>V.T.C. unit bushing retaining screw</td>
<td>TIARA 6-285, 6-230</td>
</tr>
<tr>
<td></td>
<td>V.T.C. unit housing to crankshaft</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Top accessory drive gear (breather slinger) bolts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Studs on coolant manifold</td>
<td>All liquid cooled models</td>
</tr>
<tr>
<td></td>
<td>Fuel manifold valve diaphragm &amp; plunger assembly</td>
<td>IO-240 All 360, 470, 520, 550 models</td>
</tr>
</tbody>
</table>
### Adhesives (Continued)

<table>
<thead>
<tr>
<th>Application</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timing indicator pin</td>
<td>All GTSIO-520</td>
</tr>
<tr>
<td>Through stud holes on accessory end of crankcase</td>
<td>All 470, 520, 550 models (apply when installing studs)</td>
</tr>
<tr>
<td>Solenoid valve assembly (Bracket to valve)</td>
<td>TSIO-360-MB &amp; SB &amp; IO-360-ES2B</td>
</tr>
<tr>
<td>Manifold valve to bracket screws</td>
<td>All Models</td>
</tr>
<tr>
<td>Coolant pump impeller ring screws</td>
<td>All liquid cooled models</td>
</tr>
<tr>
<td>Studs .25 diameter and smaller</td>
<td>All Models</td>
</tr>
<tr>
<td>Data plate screws on manifold valve assembly</td>
<td>All Models</td>
</tr>
<tr>
<td>Bearing O.D. installed on starter clutch assembly</td>
<td>O-200-A, B, IO-240-A, B, O-300-A</td>
</tr>
<tr>
<td>Fuel pump adapter seal</td>
<td>All Models</td>
</tr>
<tr>
<td>Fuel pump shaft seal</td>
<td>All liquid cooled models</td>
</tr>
<tr>
<td>Epoxy field coil leads to starter housing</td>
<td>24 Volt Starters</td>
</tr>
<tr>
<td>Air throttle &amp; fuel metering assembly Magneto flanges Cylinder deck stud nuts &amp; all through bolts All fuel pump, manifold valve, throttle and control fittings</td>
<td>All Models</td>
</tr>
<tr>
<td>Use for sealing aneroid air reference path between basic fuel pump housing and vapor separator body (Setup only)</td>
<td>Fuel Pumps 646766, 646767 &amp; 646824</td>
</tr>
<tr>
<td>Fitting Magneto Housing (Pressurization)</td>
<td>Engine models as applicable</td>
</tr>
</tbody>
</table>

### Miscellaneous

<table>
<thead>
<tr>
<th>Type</th>
<th>Application</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCM P/N 626531-1</td>
<td>Enamel - Gold (1qt)</td>
<td>High temp. paint for cosmetic and corrosion protection</td>
</tr>
<tr>
<td>TCM P/N 626531-2</td>
<td>Enamel - Gold (1 gal)</td>
<td>Where applicable for lockwiring</td>
</tr>
<tr>
<td>TCM P/N 535011</td>
<td>Lockwire -.032 in dia. Steel, Corrosion Resistant</td>
<td>Corrosion protection interior and exterior aluminum parts</td>
</tr>
<tr>
<td>“ACCELAGOLD” Turco® Products</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Product Locator

Dow Corning® G-N Paste is a registered trademark of Dow Corning Corporation

Dow Corning® No. 4
For Distributor information call - 1-800-248-2481, have state & city information available

Permatex
Permatex Aviation Grade 3D
For Distributor information call: Permatex Customer Service @ Phone: 1-877-376-2839

Loctite
Loctite Gasket Eliminator
Loctite LocQuic Primer 7649
Loctite Teflon PS/T Pipe Sealant
Loctite Hydraulic Sealant 569
Loctite 271
Loctite LocQuic Primer 7471
Loctite Adhesive Sealant 222
May be purchased through your local TCM Distributor
or For Distributor information: Henkel Loctite Customer Service @ Phone: 1-800-243-4874

Alvania (Shell #2)
MIL-S-3545C Grease (Shell #5)
For Distributor information: Shell Product Information Center, Phone: 1-800-231-6950

CHAMPION® is a registered trademark of Cooper Industries
For Champion Products Distributor information: Phone: 864-843-5400

K&W Copper Coat
For Distributor information call: CRC Industries Customer Service Phone: 1-800-423-9446

Miller-Stephenson MS 122/C02 Spray
For Distributor information: Miller-Stephenson Customer Service, Phone: 1-800-992-2424

Super Molyshield Grease
May be purchased through:
American Lubricants
1227 Deeds
Dayton, Ohio 45401
Phone: (937) 222-2851

3M Brand EC1252 White Spot Putty
3M Scotchcast 10 (XR5241) Epoxy For Distributor Information: 1-888-364-3577

“ACCELAGOLD” by Turco ®
Henkel Surface Technologies
North American Headquarters
32100 Stephenson Hwy.
Madison Heights, MI 48071
(248) 583 - 9300 Phone
(248) 583 - 2976 Fax

MIL-P-46002
Grade 1 oil, (NOX RUST VCI-105)
May be purchased through:
Daubert Chemical
4700 South Central Ave
Chicago, IL 60638
708-563-8325

Motorstor ® (11oz Spray Can)
May be purchased through:
Highland Aerospace
P.O. Box 3214
Peachtree City, GA 30269
404-403-5602
www.highaero.com

Chesterton Technical Product Information
Phone: 1-781-438-7000
CRANKCASE SEALANT AND THREADING PROCEDURE

1. Use full strength non-thinned Permatex aviation grade 3D. Shake or mix well before using.

WARNING
Apply thread and Permatex only as illustrated.

2. Apply Permatex Number 3D to the 2-4 case half. Apply Permatex only in areas where thread is shown. When applying, use short light brush strokes until an even thin coat is obtained. The Permatex should be viscous enough that most of the brush marks disappear; if not, use a new can of Aviation Permatex. Allow the Permatex to air dry to a tacky condition before threading.

NOTE...
Do not apply Permatex to crankshaft nose seal area.

3. Apply a thin translucent coat of TCM Gasket Maker P/N 646942 not to exceed .010 inch thick to 1-3 case half. Apply Gasket Maker in all areas that will mate with areas where Permatex was applied on 2-4 case half except the through bolt bosses.

4. Apply and position grade D silk thread P/N 641543 on case halves as specified in Figure 1. Be sure free ends of thread are covered by gaskets except at the nose oil seal.

5. Clean crankcase crankshaft front oil seal land with Locquic Primer “N” and apply an even coat of gasket maker.

6. Assemble crankcase halves, install and torque all crankcase hardware in proper sequence in accordance with the applicable overhaul manual as soon as possible.

NOTE...
Take care to prevent displacement or damage to the crankshaft oil seal and silk thread. Insure thrust washer halves and bearing halves remain in place.
CRANKCASE SEALANT AND THREADING PROCEDURE

1. Use full strength non-thinned Permatex aviation grade 3D. Shake or mix well before using.

WARNING

Apply thread and permatex only as illustrated.

2. Apply Permatex Number 3D to the 2-4-6 case half. Apply Permatex only in areas where thread is shown. When applying, use short light brush strokes until an even thin coat is obtained. The Permatex should be viscous enough that most of the brush marks disappear; if not, use a new can of Aviation Permatex. Allow the Permatex to air dry to a tacky condition before threading.

NOTE...

Do not apply Permatex to crankshaft nose seal area.

3. Apply a thin translucent coat of TCM Gasket Maker P/N 646942 not to exceed .010 inch thick to 1-3-5 case half. Apply Gasket Maker in all areas that will mate with areas where Permatex was applied on 2-4-6 case half.

4. Apply and position grade D silk thread P/N 641543 on 2-4-6 case half as specified in Figure 2. Be sure free ends of thread are covered by gaskets except at the nose oil seal.

5. Clean crankcase crankshaft front oil seal land with Locquic Primer “N” and apply an even coat of gasket maker.

6. Assemble crankcase halves, install and torque all crankcase hardware in proper sequence in accordance with the applicable overhaul manual as soon as possible.

NOTE...

Take care to prevent displacement or damage to the crankshaft oil seal and silk thread. Insure thrust washer halves and bearing halves remain in place.
CRANKCASE SEALANT AND THREADING PROCEDURE

1. Use full strength non-thinned Permatex aviation grade 3D. Shake or mix well before using.

   **WARNING**

   Apply thread and permatex only as illustrated.

2. Apply Permatex Number 3D to the 2-4 case half. Apply Permatex only in areas where thread is shown. When applying, use short light brush strokes until an even thin coat is obtained. The Permatex should be viscous enough that most of the brush marks disappear; if not, use a new can of Aviation Permatex. Allow the Permatex to air dry to a tacky condition before threading.

**NOTE...**

Do not apply Permatex to crankshaft nose seal area.

3. Apply a thin translucent coat of TCM Gasket Maker P/N 646942 not to exceed .010 inch thick to 1-3 case half. Apply Gasket Maker in all areas that will mate with areas where Permatex was applied on 2-4 case half except the through bolt bosses.

4. Apply and position grade D silk thread P/N 641543 on 2-4 case half as specified in Figure 3. Be sure free ends of thread are covered by gaskets except at the nose oil seal.

5. Clean crankcase crankshaft front oil seal land with Locquic Primer “N” and apply an even coat of gasket maker.

6. Assemble crankcase halves, install and torque all crankcase hardware in proper sequence in accordance with the applicable overhaul manual as soon as possible.

**NOTE...**

Take care to prevent displacement or damage to the crankshaft oil seal and silk thread. Insure thrust washer halves and bearing halves remain in place.
CRANKCASE SEALANT AND THREADING PROCEDURE

1. Use full strength non-thinned Permatex aviation grade 3D. Shake or mix well before using.

**WARNING**

Apply thread and permatex only as illustrated.

2. Apply Permatex Number 3D to the 2-4-6 case half. Apply Permatex only in areas where thread is shown. When applying, use short light brush strokes until an even thin coat is obtained. The Permatex should be viscous enough that most of the brush marks disappear; if not, use a new can of Aviation Permatex. Allow the Permatex to air dry to a tacky condition before threading.

**NOTE...**

Do not apply Permatex to crankshaft nose seal area.

3. Apply a thin translucent coat of TCM Gasket Maker P/N 646942 not to exceed .010 inch thick to 1-3-5 case half. Apply Gasket Maker in all areas that will mate with areas where Permatex was applied on 2-4-6 case half.

4. Apply and position grade D silk thread P/N 641543 on 2-4-6 case half as specified in Figure 4. Be sure free ends of thread are covered by gaskets except at the nose oil seal.

5. Clean crankcase crankshaft front oil seal land with Locquic Primer “N” and apply an even coat of gasket maker.

6. Assemble crankcase halves, install and torque all crankcase hardware in proper sequence in accordance with the applicable overhaul manual as soon as possible.

**NOTE...**

Take care to prevent displacement or damage to the crankshaft oil seal and silk thread. Insure thrust washer halves and bearing halves remain in place.
CRANKCASE SEALANT AND THREADING PROCEDURE

1. Use full strength non-thinned Permatex aviation grade 3D. Shake or mix well before using.

WARNING
Apply thread and permatex only as illustrated.

2. Apply Permatex Number 3D to the 2-4-6 case half. Apply Permatex only in areas where thread is shown. When applying, use short light brush strokes until an even thin coat is obtained. The Permatex should be viscous enough that most of the brush marks disappear; if not, use a new can of Aviation Permatex. Allow the Permatex to air dry to a tacky condition before threading.

NOTE...
Do not apply Permatex to crankshaft nose seal area.

3. Apply a thin translucent coat of TCM Gasket Maker P/N 646942 not to exceed .010 inch thick to 1-3-5 case half. Apply Gasket Maker in all areas that will mate with areas where Permatex was applied on 2-4-6 case half.

4. Apply and position grade D silk thread P/N 641543 on 2-4-6 case half as specified in Figure 5. Be sure free ends of thread are covered by gaskets except at the nose oil seal.

5. Clean crankcase crankshaft front oil seal land with Locquic Primer “N” and apply an even coat of gasket maker.

6. Assemble crankcase halves, install and torque all crankcase hardware in proper sequence in accordance with the applicable overhaul manual as soon as possible.

NOTE...
Take care to prevent displacement or damage to the crankshaft oil seal and silk thread. Insure thrust washer halves and bearing halves remain in place.
**CRANKCASE SEALANT AND THREADING PROCEDURE**

1. Use full strength non-thinned Permatex aviation grade 3D. Shake or mix well before using.

   **WARNING**

   Apply thread and permatex only as illustrated.

2. Apply Permatex Number 3D to the 2-4-6 case half. Apply Permatex only in areas where thread is shown. When applying, use short light brush strokes until an even thin coat is obtained. The Permatex should be viscous enough that most of the brush marks disappear; if not, use a new can of Aviation Permatex. Allow the Permatex to air dry to a tacky condition before threading.

   **NOTE...**

   Do not apply Permatex to crankshaft nose seal area.

3. Apply a thin translucent coat of TCM Gasket Maker P/N 646942 not to exceed .010 inch thick to 1-3-5 case half. Apply Gasket Maker in all areas that will mate with areas where Permatex was applied on 2-4-6 case half.

4. Apply and position grade D silk thread P/N 641543 on case halves as specified in Figure 6. Be sure free ends of thread are covered by gaskets except at the nose oil seal.

5. Clean crankcase crankshaft front oil seal land with Locquic Primer “N” and apply an even coat of gasket maker.

6. Assemble crankcase halves, install and torque all crankcase hardware in proper sequence in accordance with the applicable overhaul manual as soon as possible.

   **NOTE...**

   Take care to prevent displacement or damage to the crankshaft oil seal and silk thread. Insure thrust washer halves and bearing halves remain in place.

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**FIGURE 6. 0470, 10470, L/I0520, L/TSI0520, 10550 SANDCAST ENGINE CRANKCASE THREADING DIAGRAM**

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<td>DAY 29</td>
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<td>MO 10</td>
<td>DAY 17</td>
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</tbody>
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SIL99-2
CRANKCASE SEALANT AND THREADING PROCEDURE

1. Use full strength non-thinned Permatex aviation grade 3D. Shake or mix well before using.

**WARNING**
Apply thread and Permatex only as illustrated.

2. Apply Permatex Number 3D to the 2-4-6 case half. Apply Permatex only in areas where thread is shown. When applying, use short light brush strokes until an even thin coat is obtained. The Permatex should be viscous enough that most of the brush marks disappear; if not, use a new can of Aviation Permatex. Allow the Permatex to air dry to a tacky condition before threading.

**NOTE...**
Do not apply Permatex to crankshaft nose seal area.

3. Apply a thin translucent coat of TCM Gasket Maker P/N 646942 not to exceed .010 inch thick to 1-3-5 case half. Apply Gasket Maker in all areas that will mate with areas where Permatex was applied on 2-4-6 case half.

4. Apply and position grade D silk thread P/N 641543 on 2-4-6 case half as specified in Figure 7. Be sure free ends of thread are covered by gaskets except at the nose oil seal.

5. Clean crankcase crankshaft front oil seal land with Locquic Primer “N” and apply an even coat of gasket maker.

6. Assemble crankcase halves, install and torque all crankcase hardware in proper sequence in accordance with the applicable overhaul manual as soon as possible.

**NOTE...**
Take care to prevent displacement or damage to the crankshaft oil seal and silk thread. Insure thrust washer halves and bearing halves remain in place.
CAUTION...NEVER USE TEFLOM TAPE ON FLUID FITTINGS OR FUEL NOZZLES

FIGURE 8. GENERAL ANTISEIZE LUBRICANT APPLICATION

CAUTION...F/I SEALANT 646940 MUST BE APPLIED TO THE TAPERED END OF FITTINGS ONLY
CAUTION...NEVER USE TEFLOM TAPE ON FLUID FITTINGS OR FUEL NOZZLES

FIGURE 9. GENERAL FUEL INJECTION SEALANT APPLICATION
1. Use full strength, non thinned, aviation Permatex Grade 3D. Shake or mix well before using.

2. Apply Permatex to the surface to be threaded using short light brush strokes until an even, thin coat is obtained. The Permatex should be viscous enough that most of the brush marks disappear, if not, use a new can of Permatex. Allow the Permatex to dry to a tacky condition before threading.

3. Apply a thin translucent coat of TCM Gasket Maker P/N 646942 not to exceed .010 inch thick to all mating areas on non-threaded part.

4. Apply silk thread part number 641543 and position as shown by dashed lines.

5. Assemble and torque as soon as possible in accordance with the applicable overhaul manual.

FIGURE 10. THREADING DIAGRAM FOR 640741A1, 652019, 652019A1, 655713A1 SCAVENGE PUMP BODIES USED ON STARTER ADAPTERS 642087A15, A18, A23, A27, A31, A35, A41, A47, A51, A55, A59, A64 AND CORRESPONDING 0.015 OVERSIZE ADAPTERS
1. Use full strength, non thinned, aviation Permatex Grade 3D. shake or mix well before using.

2. Apply Permatex to the surface to be threaded using short light brush strokes until an even, thin coat is obtained. the Permatex should be viscous enough that most of the brush marks disappear, if not, use a new can of Permatex. Allow the Permatex to dry to a tacky condition before threading.

3. Apply a thin translucent coat of TCM Gasket Maker P/N 646942 not to exceed .010 inch thick to all mating areas on non threaded part.

4. Apply silk thread part number 641543 and position as shown by dashed lines.

5. Assemble and torque as soon as possible in accordance with the applicable overhaul manual.
1. Use full strength, non thinned, aviation Permatex Grade 3D. shake or mix well before using.

2. Apply Permatex to the surface to be threaded using short light brush strokes until an even, thin coat is obtained. the Permatex should be viscous enough that most of the brush marks disappear, if not, use a new can of Permatex. Allow the Permatex to dry to a tacky condition before threading.

3. Apply a thin translucent coat of TCM Gasket Maker P/N 646942 not to exceed .010 inch thick to all mating areas on non threaded part.

4. Apply silk thread part number 641543 and position as shown by dashed lines.

5. Assemble and torque as soon as possible in accordance with the applicable overhaul manual.

FIGURE 12. THREADING DIAGRAM USED ON OIL PUMP ASSEMBLIES 632623A16, A17, A20, A21, A22, A24, A25, A26, A27 AND A28
1. Use full strength, non thinned, aviation Permatex Grade 3D. shake or mix well before using.

2. Apply Permatex to the surface to be threaded using short light brush strokes until an even, thin coat is obtained. the Permatex should be viscous enough that most of the brush marks disappear, if not, use a new can of Permatex. Allow the Permatex to dry to a tacky condition before threading.

3. Apply a thin translucent coat of TCM Gasket Maker P/N 646942 not to exceed .010 inch thick to all mating areas on non threaded part.

4. Apply silk thread part number 641543 and position as shown by dashed lines.

5. Assemble and torque as soon as possible in accordance with the applicable overhaul manual.

1. Use full strength, non thinned, aviation Permatex Grade 3D. shake or mix well before using.

2. Apply Permatex to the surface to be threaded using short light brush strokes until an even, thin coat is obtained. The Permatex should be viscous enough that most of the brush marks disappear, if not, use a new can of Permatex. Allow the Permatex to dry to a tacky condition before threading.

3. Apply a thin translucent coat of TCM Gasket Maker P/N 646942 not to exceed .010 inch thick to all mating areas on non threaded part.

4. Apply silk thread part number 641543 and position as shown by dashed lines.

5. Assemble and torque as soon as possible in accordance with the applicable overhaul manual.

FIGURE 14. THREADING DIAGRAM USED ON OIL PUMP ASSEMBLIES 646194A1, 653536A1, A2, A3, 655121A1, A2 AND A3
1. Use full strength, non thinned, aviation Permatex Grade 3D. Shake or mix well before using.

2. Apply Permatex to the surface to be threaded using short light brush strokes until an even, thin coat is obtained. The Permatex should be viscous enough that most of the brush marks disappear, if not, use a new can of Permatex. Allow the Permatex to dry to a tacky condition before threading.

3. Apply a thin translucent coat of TCM Gasket Maker P/N 646942 not to exceed .010 inch thick to all mating areas on non threaded part.

4. Apply silk thread part number 641543 and position as shown by dashed lines.

5. Assemble and torque as soon as possible in accordance with the applicable overhaul manual.
1. Use full strength, non thinned, aviation Permatex Grade 3D. shake or mix well before using.

2. Apply Permatex to the surface to be threaded using short light brush strokes until an even, thin coat is obtained. the Permatex should be viscous enough that most of the brush marks disappear, if not, use a new can of Permatex. Allow the Permatex to dry to a tacky condition before threading.

3. Apply a thin translucent coat of TCM Gasket Maker P/N 646942 not to exceed .010 inch thick to all mating areas on non threaded part.

4. Apply silk thread part number 641543 and position as shown by dashed lines.

5. Assemble and torque as soon as possible in accordance with the applicable overhaul manual.

1. Use full strength, non thinned, aviation Permatex Grade 3D. Shake or mix well before using.

2. Apply Permatex to the surface to be threaded using short light brush strokes until an even, thin coat is obtained. The Permatex should be viscous enough that most of the brush marks disappear, if not, use a new can of Permatex. Allow the Permatex to dry to a tacky condition before threading.

3. Apply a thin translucent coat of TCM Gasket Maker P/N 646942 not to exceed .010 inch thick to all mating areas on non-threaded part.

4. Apply silk thread part number 641543 and position as shown by dashed lines.

5. Assemble and torque as soon as possible in accordance with the applicable overhaul manual.
1. Use full strength, non thinned, aviation Permatex Grade 3D. shake or mix well before using.

2. Apply Permatex to the surface to be threaded using short light brush strokes until an even, thin coat is obtained. the Permatex should be viscous enough that most of the brush marks disappear, if not, use a new can of Permatex. Allow the Permatex to dry to a tacky condition before threading.

3. Apply a thin translucent coat of TCM Gasket Maker P/N 646942 not to exceed .010 inch thick to all mating areas on non threaded part.

4. Apply silk thread part number 641543 and position as shown by dashed lines.

5. Assemble and torque as soon as possible in accordance with the applicable overhaul manual.

FIGURE 18. THREADING DIAGRAM USED ON OIL PUMP ASSEMBLIES 632970, 632977A4, A5, A6, A7, A8, A9, A10, A11, 654437 AND 655680
INSTALLATION:
After permatex and thread have been applied to the starter adapter in accordance with the above illustration and prior to installation, apply a thin coat of blue loctite gasket maker to the accessory case, starter adapter mounting flange. Temporarily install the starter adapter to make an impression of the thread on the accessory case. Carefully remove the starter adapter so that the shaft gear does not pull out. Inspect the thread impression for 100% contact between the adapter and accessory case. Wipe excess gasket maker off of accessory case and install starter adapter in accordance with the applicable overhaul instructions.

FIGURE 19. THREADING DIAGRAM USED ON STARTER ADAPTER ASSEMBLIES
1. Use full strength, non thinned, aviation Permatex Grade 3D. shake or mix well before using.

2. Apply Permatex to the surface to be threaded using short light brush strokes until an even, thin coat is obtained. the Permatex should be viscous enough that most of the brush marks disappear, if not, use a new can of Permatex. Allow the Permatex to dry to a tacky condition before threading.

3. Apply a thin translucent coat of TCM Gasket Maker P/N 646942 not to exceed .010 inch thick to all mating areas on non threaded part.

4. Apply silk thread part number 641543 and position as shown by dashed lines.

5. Assemble and torque as soon as possible in accordance with the applicable overhaul manual.