DRY SUMP OIL SYSTEMS FOR
GM LS1-LS6-SERIES ENGINES

Applicable to C5 and C6 Corvette and Gen IV F-body Camaro/Firebird, or other vehicles in which GM LS1 through LS7 engines are installed, such as street rods, muscle cars, spec race cars, etc.
Today’s Aviaid Series 1 pump has evolved through over 40 years of refinement and embodies a number of design, material and manufacturing enhancements. That said, many Aviaid pumps that were sold ten, twenty or even thirty years ago are still in service—a testament to their performance and reliability.

The Series 1 pump features a compact housing design and a 9-tooth gearset. They are available with one through seven sections—although 1 through 4 are the most popular. The sections are made of aluminum with optional cast iron pressure sections. Sections are offered in seven widths (0.600", 0.840", 1.000", 1.250", 1.500" 1.750" and 2.000"). Lead alloy gears are standard. It can be configured to use as either an external wet sump or dry sump pump.

Mounting blades are incorporated as section spacers for many applications. This provides for more rigid mounting than those competitor’s systems with mounts that bolt to the spacers. There are six additional mounting options, including cam drive, gear drive, direct-to-block, universal side-mount, alternator mount or generic front flange with or without registers.

Drive and idler shafts are precision ground chrome moly steel, with the drive shaft available with a 3/16” belt drive keyway, 3/8", 7/16" or 1/2" hex, or 1/4" tang drives. The drive shaft runs on precision roller bearings; the idler shaft is fixed in the pump. Most Aviaid pumps have built-in pressure regulators, with remote-mounted regulators an option.

Aviaid’s modular design is the key to flexibility and allows pumps to be configured to for most any application from a small displacement 4-cylinder pushrod engine to a huge twin-turbocharged V-8 (or larger) powerplant.

Due to the myriad modifications that can be employed on sophisticated all-out racing engines, it's more advantageous to go with a custom (bespoke) pump configuration. It’s a delicate balance of how much volume and oil pressure an engine requires in concert with scavenging and evacuation. And the experts at Aviaid know to work with engine builders to configure the optimum pump and lubrication system.

**Components used in typical Aviaid Series 1 pump assembly**

- Blade spacer and bolt
- Outlet plug
- Assembly thru-bolts
- Bearing retainer plate
- Rear drive shaft bearing
- Pressure regulator/ rear plate
- Oil pressure regulator assembly
- Chrome moly steel idler shaft
- Section O-ring seals
- Note: Smaller O-rings, fasteners, washers and shaft keys used in the pump assembly are not shown.
Aviaid's Series 2 pumps were developed to provide racers with a compact, highly efficient pump that is ideally suited for use in tight confines; the inlet and outlet ports are angled 28° to provide excellent hose/fitting clearance. The outlet ports are directed away from the cylinder heads and steering, while the inlet ports are aimed away from the pan to facilitate efficient hose routing.

The Series 2 pump comes with either an enlarged 7-tooth gearset (made from dead soft steel alloy) or a twin-lobe Rootes-type setup. They are available with one through six sections; the sections being made of aluminum with optional cast iron pressure sections. Sections are offered in five widths: 1.000', 1.250', 1.500', 1.750' and 2.000'. Mounting blades are incorporated as section spacers for many applications. This provides for more rigid mounting than those competitor's systems with mounts that bolt to the spacers.

In addition to the adjustable blade mounts, Aviaid Series 2 pumps can be obtained with a cam drive mount or direct-to-block mount (LS applications).

Drive and idler shafts are precision ground chrome moly steel, with the drive shaft available with a 3/16" belt drive keyway, 3/8", 7/16" or 1/2" hex, or 1/4" tang drives. The drive shaft runs on precision roller bearings; the idler shaft is fixed in the pump.

Aviaid's modular design is the key to flexibility and allows pumps to be configured to for most any configuration from a small displacement 4-cylinder pushrod engine to a huge twin-turbocharged V-8 (or larger) applications. Pressure regulation is available internal or remote for any rotation or pump orientation, with the integral filter mounts also offered.

There are a number of standard application-specific pump configurations available, ranging from NASCAR Cup and Truck setups to many other forms of competition. The majority of Series 2 pumps are custom-configured for the needs of the builder.
## OVERVIEW OF AVIAID SYSTEMS FOR THE LS

<table>
<thead>
<tr>
<th>SYSTEM</th>
<th>MOUNT</th>
<th>DRIVE TYPE</th>
<th>USE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LS-A</strong></td>
<td>Cylinder Head (right side)</td>
<td>Gilmer belt</td>
<td>Street &amp; Mild Competition</td>
<td>2-stage scavenge pump, use OEM pump for pressure</td>
</tr>
<tr>
<td><strong>LS-B</strong></td>
<td>Engine block A/C bosses</td>
<td>Serpentine belt</td>
<td>Street &amp; Competition</td>
<td>2 or 3-stage scavenge pump, use OEM pump for pressure</td>
</tr>
<tr>
<td><strong>LS-C</strong></td>
<td>Engine block (right side)</td>
<td>HTD belt</td>
<td>Street &amp; Competition</td>
<td>3-stage system with 2 scavenge and 1 pressure section</td>
</tr>
<tr>
<td><strong>LS-D</strong></td>
<td>Engine block (right side)</td>
<td>HTD belt</td>
<td>Competition only</td>
<td>4 or 5-stage pump (scavenge and pressure sections)</td>
</tr>
<tr>
<td><strong>LS-E</strong></td>
<td>Engine block (right side)</td>
<td>HTD belt</td>
<td>Street &amp; mild competition</td>
<td>Single stage wet sump for “F” or “Y” front drive</td>
</tr>
<tr>
<td><strong>LS-F</strong></td>
<td>Engine block (left side)</td>
<td>HTD belt</td>
<td>Street &amp; competition</td>
<td>3-stage pump (scavenge and pressure sections)</td>
</tr>
<tr>
<td><strong>LS-G</strong></td>
<td>Engine block (left side)</td>
<td>HTD belt</td>
<td>Street &amp; competition</td>
<td>3-stage pump. (drive in front of damper, retains use of factory air conditioning)</td>
</tr>
</tbody>
</table>

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**COMPLETE PACKAGES AVAILABLE**

In addition to the pumps and brackets shown in the various Aviaid systems for the LS, complete packages that include the oil pan, tank, filter adapter, regulator and plumbing are available for individual applications.
SYSTEM “LS-A”

Notes: Designed for street use and mild competition. Uses OEM pump for pressure. Retains use of factory air conditioning and other accessories.

Includes:
- Aviaid 2-section dry sump scavenge pump with Gilmer drive gear
- Bracket mounting pump to cylinder head
- Oil pan
  - Fixed idler assembly
  - Cast aluminum pan
- Sump tanks (choice of 3)
  - OEM Corvette Z06 (optional internal baffle)
  - 6” diameter round (8 or 10-quart system capacity)
  - 9” diameter round (12 quart system capacity)
- Sump tank vent, heater and sight tube (optional)
- Serpentine/Gilmer drive pulley (replaces OEM serpentine idler pulley)
- Line and fitting kit available

Features/Benefits:
- Retains factory air conditioning
- Eliminates oil starvation in hard cornering and high RPM operation
- Cooler operating temperatures
- Larger lubrication system capacity
- Eliminates parasitic horsepower loss through excessive windage
- Provides more usable power

Single stage auxiliary scavenge pump or 2-stage scavenge-only dry sump system. The 1-stage system augments an LS7 OEM dry dump system scavenge pump to increased scavenge capacity and vacuum. The 2-stage scavenge-only pump allows for conversion of stock LS-1 through LS-6 wet sump systems to dry sump using the stock LS pump for pressure and pressure regulation. Both systems allow retention of OEM air conditioning systems and are driven by the stock serpentine system using a dual drive idler pulley mounted on a fixed position tensioner. Systems can retain the stock camper or utilize any alternative damper that provides for a stock serpentine drive line. Requires pan allowing direct porting of oil tank supply line into stock internal pump.
SYSTEM “LS-B”

Notes: Engineered for serious club racers. Used on C5R Corvettes at LeMans. Streetable. Mounts to factory air conditioning bracket. Uses OEM pump for pressure.

These are 2, 3 or 4-stage scavenge-only dry sump pump systems. The pump mounts directly to the block in place of the air conditioning compressor. The scavenge-only setup allows for conversions of stock LS-1 through LS-6 wet sump systems to dry sump using the stock LS pump for pressure and pressure regulation. Drive is by an HTD timing belt driven off an ATI damper. This direct bolt-on, no adjustment required pump can be more broadly configured than the LS-A system, which is limited in overall pump size. Requires use of a pan allowing direct porting of the oil tank supply line into the OEM internal pump.

Includes:
- Aviaid 2 or 3-section dry sump pump (scavenge only) with HTD drive gear
- Adapter mounting pump to block air conditioning bosses
- Cast aluminum oil pan
- Sump tanks (choice of 3)
  - OEM Corvette Z06 (optional internal baffle)
  - 6” diameter round (8 or 10-quart system capacity)
  - 9” diameter round (12 quart system capacity)
- Sump tank vent, heater and sight tube (optional)
- Line and fitting kit available (optional)
- ATI Super Damper with special hub*
  (* hub available separately if engine already equipped w/ATI damper)

Features/Benefits:
- Enhanced scavenge capacity. Can provide 8-10 inches vacuum.
- Provides more usable power
- Eliminates oil starvation in hard cornering and high RPM operation
- Cooler operating temperatures
- Increased lubrication system capacity
- Eliminates parasitic horsepower loss through excessive windage
- Compatible with OEM front drive assembly (water pump, alternator, etc.)

Modified LS2 cast aluminum pan with windage tray
**SYSTEM “LS-C”**

**Note:** Versatile system designed for use in applications from street to heavy competition. Pump mounts directly to block. Also used to convert ASA cars to full dry sump (special hub works with existing ATI damper)

**Includes:**
- Aviaid 3-section dry sump pump (1 pressure, 2 scavenge sections) with LS-specific non-adjustable block mount and HTD belt drive
- AOS stamped steel dry sump pan with screened pickups and louvered windage tray
- ARE cast aluminum pan (optional)
- Sump tanks (choice of 3) AOS Billet Pan
  - OEM Corvette Z06 (optional internal baffle)
  - 6" dia. round, 18-20" tall (8 or 10-qt system capacity)
  - 9" dia. round, 17" tall (12 qt system capacity)
- Sump tank vent, heater and sight tube (optional)
- ATI Super Damper with Aviaid HTD drive hub
- HTD drive belt and hardware
- Pump-to-pan scavenge lines and fittings available
- Application-specific plumbing kit available

**Features/Benefits:**
- Provides ability to regulate oil pressure
- No RPM limit
- Eliminates oil starvation in hard cornering and high RPM operation
- Cooler operating temperatures
- Larger lubrication system capacity
- Eliminates parasitic horsepower loss through excessive windage
- Provides more usable power

A true 3-stage dry sump system providing 2 scavenge sections and 1 pressure section driven by an HTD belt off a special ATI damper. This eliminates any concern of cavitation by overspeeding the stock internal pump. It bolts directly to the block in place of the air conditioning compressor, and is a direct fit requiring no belt adjustment. The pump is configured to fit between the drive belt and motor mount for ease of installation. It makes for a very compact fit with a minimum of fabrication.
**SYSTEM “LS-D”**

*Note: Designed for all-out competition. Uses 4 or 5-stage pump configured to the exact requirements of the application.*

Completely configurable multi-stage dry sump pump solution for all LS requirements. Typically built in 4 or 5-stage configurations, the pump mounts outboard of the stock motor mounts and is not limited as to stages or accessory drives. Power steering and/or fuel pumps can be driven off the back of the pump through an adapter. Angled port housings allow for directing inlet and outlet ports to fit most any chassis and installation. The drive is typically from behind the ATI damper shell. Pumps can also be configured to drive from in front of the damper.

**Features/Benefits:**
- Adjustable oil pressure and significantly increased volume
- Eliminates oil starvation in hard cornering and high RPM operation
- Cooler operating temperatures
- Larger lubrication system capacity
- Eliminates parasitic horsepower loss through excessive windage
- Provides more usable power

**Includes:**
- Aviaid 4 or 5-section dry sump pump with Gilmer drive gear
- Bracket mounting pump to engine block (adjustable) w/turnbuckle adjuster
- Oil pan (choice of 3)
  - Billet 1.75" deep
  - Cast aluminum pan
  - 2 stamped steel pan w/screened pickup and AOS louvered windage tray, 1.7 or 3" deep
- Sump tanks (choice of 3)
  - OEM Corvette Z06 (optional internal baffle)
  - 6" diameter round (8 or 10-quart system capacity)
  - 9" diameter round (12 quart system capacity)
- Sump tank vent, heater and sight tube (optional)
- HTD drive belt
- All necessary lines and fittings (optional)
**SYSTEM “LS-E”**

Note: External wet sump pump eliminates need for OEM unit. Provides increased volume and pressure adjustability.

This single-stage external wet sump pump features the LS “C” block mount bracket. The direct bolt-on, non-adjustable mount utilizes a special hub that is on the back of the damper shell. Various pressure sections, ranging from 5 to 20 gpm delivery are available in aluminum or cast iron housings. Power steering and/or fuel pump drives are available off the back of the pump with an adapter.

**Includes:**
- Aviaid single stage wet sump pump with HTD drive gear
- Mounts directly to block
- Modified LS2 cast pan
- Also works with any wet sump manufacture pan with external pick-up
- HTD drive belt
- All necessary lines and fittings (optional)
- Crank hub (can accommodate balancer)
- Available for “F” or “Y” front drive

**Features/Benefits:**
- Enhanced scavenge ability
- Provides more usable power
- Eliminates oil starvation in hard cornering and high RPM operation
- Cooler operating temperatures
- Compatible with OEM front drive assembly (water pump, alternator, etc.)
- Clears factory motor mounts
**SYSTEM “LS-F”**

**Left Side Mounting**

An adjustable, belt-driven 3 or 4-stage pump mounts off the left/US driver’s side, providing a solution for right hand drive vehicles. This setup mounts accessories low on the passenger side. The 3-stage configuration fits in front of the stock motor mount. It is driven via an HTD belt hub behind the damper shell. It cannot be used in conjunction with OEM air conditioning.

This setup is most efficient when accessory placement prohibits a right side mount, or in a mid-engined chassis (no steering components to contend with).

A typical installation (as shown) consists of a 3-stage pump with left-mount bracket, drive and mandrel—which accommodates a special ATI Super Damper®—and an Avialid low profile fabricated steel oil pan. A special oil feed adapter is also employed that supplies oil directly to the main galley.

**Features/Benefits:**

- Enhanced scavenge ability
- Provides more usable power
- Eliminates oil starvation in hard cornering and high RPM operation
- Cooler operating temperatures
- Compatible with OEM front drive assembly (water pump, alternator, etc.)
SYSTEM “LS-G”

Left Side Mounting
Based on the “LS-F” left/US driver’s side mount configuration, this setup puts the pump forward as typical for a Small Block Chevy (Gen 1) dry sump system. The 3 or 4-stage pump is driven from in front of the ATI Super Damper using an Aviaid HTD belt drive adapter. This system allows for the retention of all OEM accessories, including the air conditioning compressor in the stock location. All Aviaid Series 1 components can be adapted to this configuration.

Features/Benefits:
- Enhanced scavenge ability
- Provides more usable power
- Eliminates oil starvation in hard cornering and high RPM operation
- Allows use of OEM air conditioning
- Cooler operating temperatures
- Compatible with OEM front drive assembly (water pump, alternator, etc.)
- Clears factory motor mounts

Shown is a 3-stage pump, although different configurations can be employed. Because of its ability to retain the OEM air conditioning, it is a popular setup for the serious street enthusiast.

Available with either Series 1 or Series 2 pumps
This cleverly engineered kit allows owners of LS-7 equipped vehicles to utilize the various components designed for use in LS1-LS6 applications. For example, it will facilitate using Aviaid’s billet aluminum low profile pan with an LS-7, as well as other lubrication system components on the market for LS1 through LS6 applications.

**OIL PANS FOR LS APPLICATIONS**

- 152-52501 – Stamped steel dry sump pan with 3" deep rear sump and two -10 pickups
- 152-52502 – Stamped steel dry sump pan with 3" deep rear sump and three -12 pickups
- 152-52502-10 - Stamped steel dry sump pan with 3" depth and three -10 pickups
- 152-52502-12 - Stamped steel dry sump pan with 3" depth and three -12 pickups
- 152-52503-10 - Stamped steel dry sump pan with 1-3/4" depth and three -10 pickups
- 152-52503-12 – Stamped steel dry sump pan with 1-3/4" depth and three -12 pickups
- 152-52504 – Stamped steel dry sump pan with 3" depth and three -10 pickups
- 152-52504-10001 - Modified LS3 pan with two welded-in pickups and pressure inlet. For T1 Corvette
- 152-5205 – Billet aluminum dry sump pan (1-3/4" deep) with five ports.
- 152-52504-12 - Stamped steel dry sump pan with 1-3/4" depth and -10 left side outlet
- 152-52508-12 - Stamped steel dry sump pane with 1-3/4" depth and -12 pickups. Ideal for rock crawling.
- Cast aluminum dry sump pans are also available. Check for availabilities and specs