

**FALCONER V12
GEN2 HVSS
OILING SYSTEM**

**THUNDER MUSTANG APPLICATION
DESIGNED AND MANUFACTURED BY
RYAN FALCONER INDUSTRIES**

FALCONER V12 GEN2 HVSS OILING SYSTEM

WHO DESIGNED THE GEN2 HVSS OILING SYSTEM?

Ryan Falconer worked in conjunction with longtime friend and colleague, Bill Dailey to design this new system for optimum oil control and performance. Known as the premiere designer and manufacturer of racing oil pumps, Dailey's products have become the performance standard in auto racing from IRL to NASCAR. Bill's extensive knowledge of oil control contributed greatly to the design of the GEN2 HVSS oiling system.

WHAT IS THE GEN2 HVSS OILING SYSTEM?

The new oiling system is comprised of a radical new pan design, dedicated oil pressure and oil scavenge pumps, external pressure regulator, all lines, fittings, oil pressure pump drive hub and accessory drive coupler. The Dailey Engineering oil pressure pump is a two-gear design, the scavenge pump is a 7-stage Roots-style pump capable of creating excellent oil scavenging and high vacuum. Oil control is optimized by using one scavenge section per oil pan section. A seventh section is included for scavenging the prop drive.

WHEN WILL THE GEN2 HVSS SYSTEM BE AVAILABLE?

Complete kits are available now and will become standard equipment on all new Falconer V12 variants.

WHERE CAN THE GEN2 HVSS OILING SYSTEM BE PURCHASED?

Directly from Ryan Falconer Industries shippable on receipt of payment. Price is \$8,500 complete and does not include installation. Detailed installation instructions are included in each kit.

WHY SHOULD THE GEN2 HVSS OILING SYSTEM BE USED?

As an upgrade to the current oiling system used on the Falconer V12 Thunder Mustang applicaiton, windage trays were manufactured to offer better oil control. Over time it has been noticed that these windage trays are suffering cracks in the metal itself (and not in the welded areas) which could lead to metal breaking free of the tray and causing damage to the engine.

It is the recommendation of Ryan Falconer Industries that all Falconer V12 Thunder Mustang applicaiton owners upgrade to the GEN2 HVSS system not only for performance reasons but for safety reasons as well. As stated above. it has been noticed that the windage trays are all experiencing cracks which will lead to their failure.

Further, oil control, both inside the engine and in maintaining proper oil level in the tank is greatly improved with the GEN2 HVSS oiling system. Extensive testing has shown the superiority of oil control using this system over the original design.

FALCONER V12 GEN2 HVSS OILING SYSTEM

GEN2 HVSS OILING SYSTEM

PRICE: \$8,500USD

Contact Ryan Falconer Industries: 928.636.1785 - info@falconerengines.com

KIT CONTENTS

- 1 Oil pan, billet aluminum construction
- 1 Dailey Engineering custom-designed oil pressure pump
- 1 Dailey Engineering custom-designed oil scavenge pump
- 6 AN -10 braided stainless steel high-pressure oil scavenge lines with pan fittings
- 1 Spacer for oil scavenge pump rear support
- 2 Drive hubs for oil pressure pump, billet steel construction
- 1 Drive coupler for vacuum pump or secondary alternator, billet aluminum construction

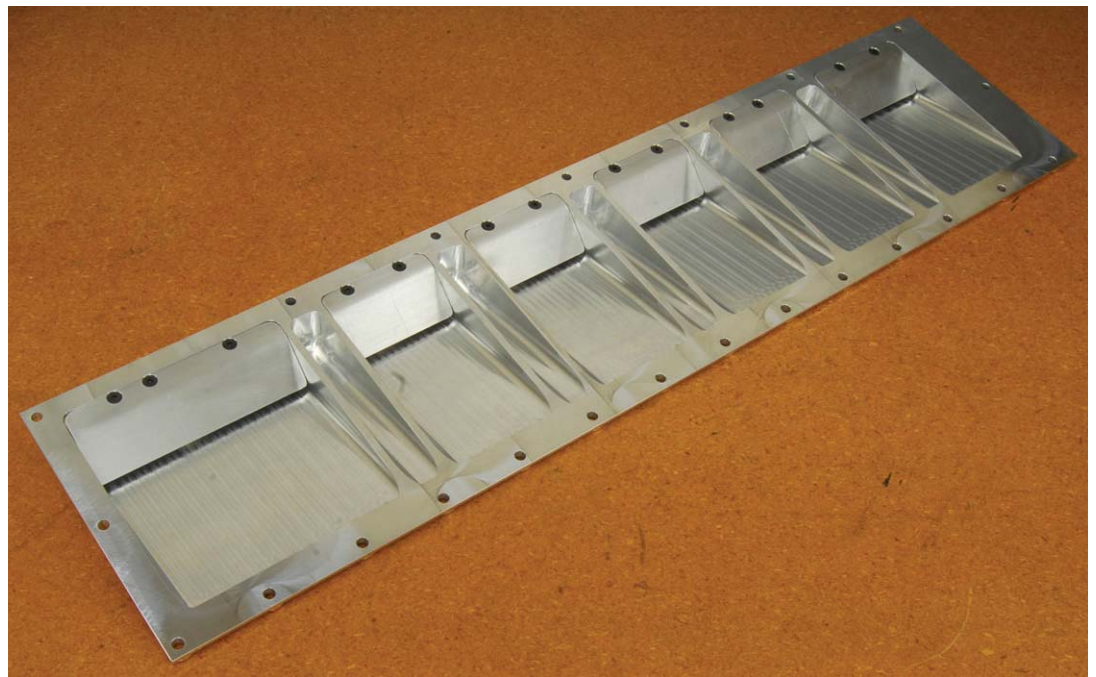
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INSTALLATION OPTIONS

- Ryan Falconer Industries can perform the upgrade to your engine at our facility for out-of-plane conversions
- American Air Racing is also offering installation services at their location for in-plane conversions
- Your qualified mechanic

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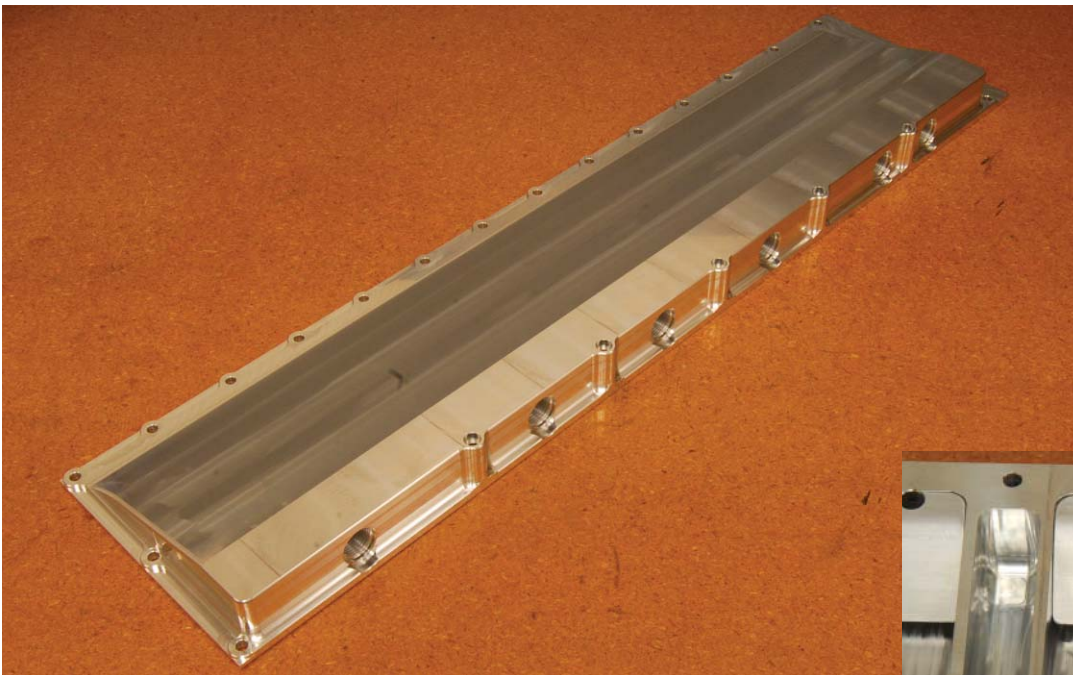
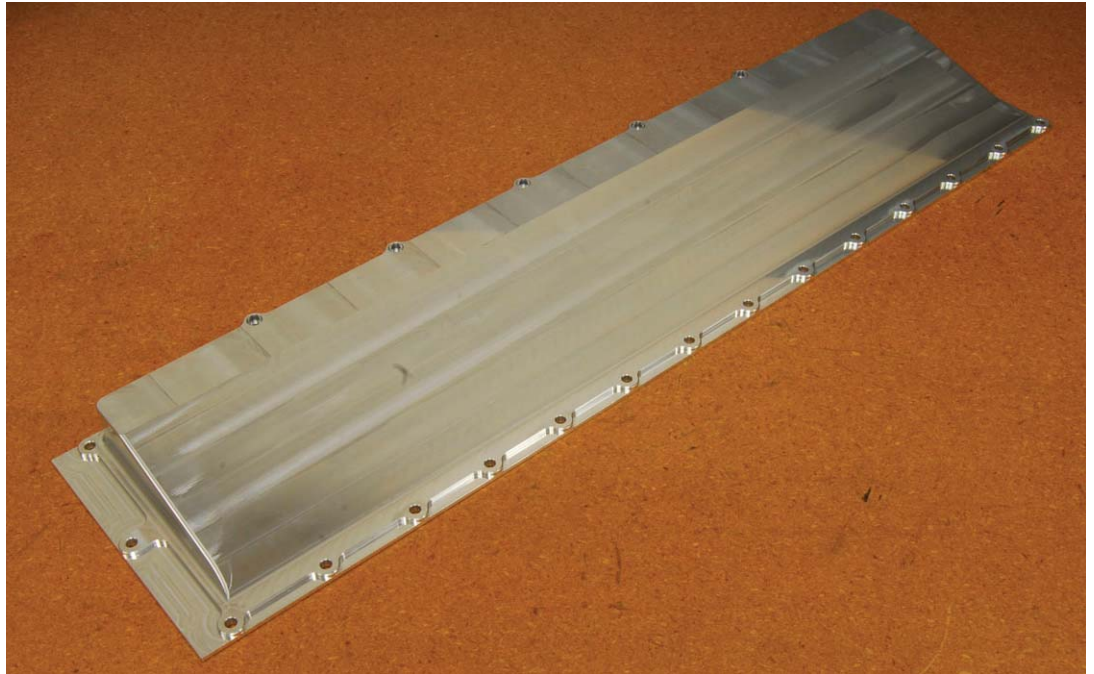
FALCONER V12 GEN2 HVSS OILING SYSTEM



The foundation of the GEN2 HVSS (High-Velocity Separate Scavenge) oiling system is a completely new pan design. Based on earlier configurations that have been extensively tested on marine and automotive variants of the Falconer V12, the new pan completely isolates each pair of cylinders, providing superior oil control and eliminating the need for a windage tray.

Utilizing solid-modeling for the design, the pans are carved from 6061-T6 aluminum billet using a Hermle 5-axis machining center. This new pan is actually lighter than the current steel version that it was designed to replace. A constant wall thickness of .250" throughout ensures rigidity and optimum function.

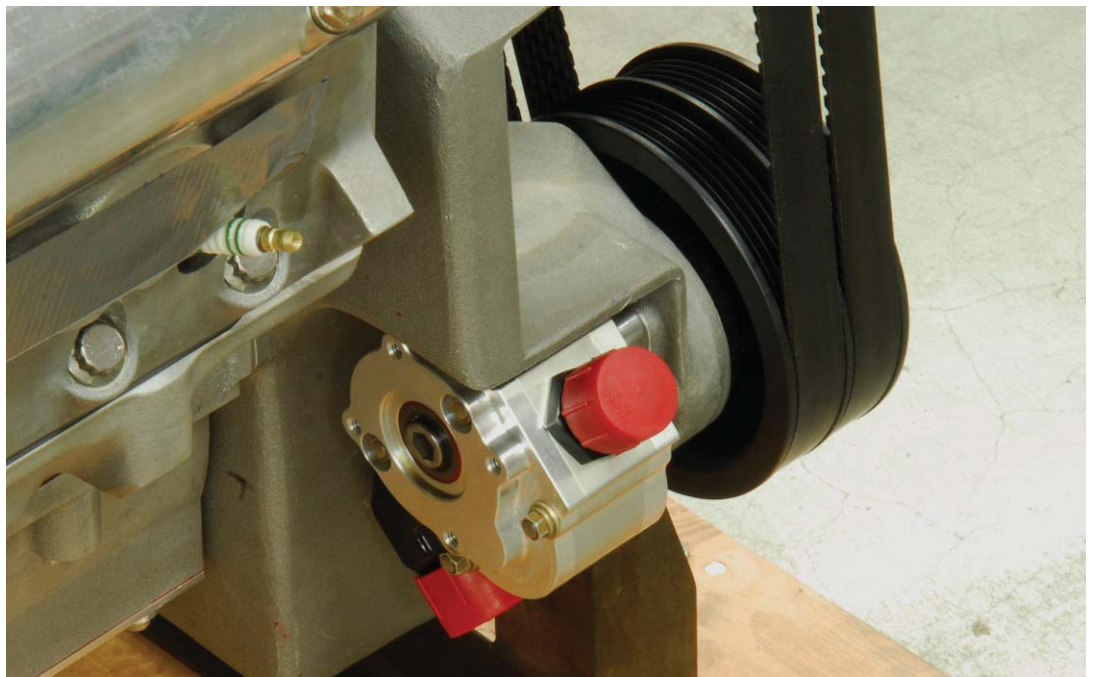
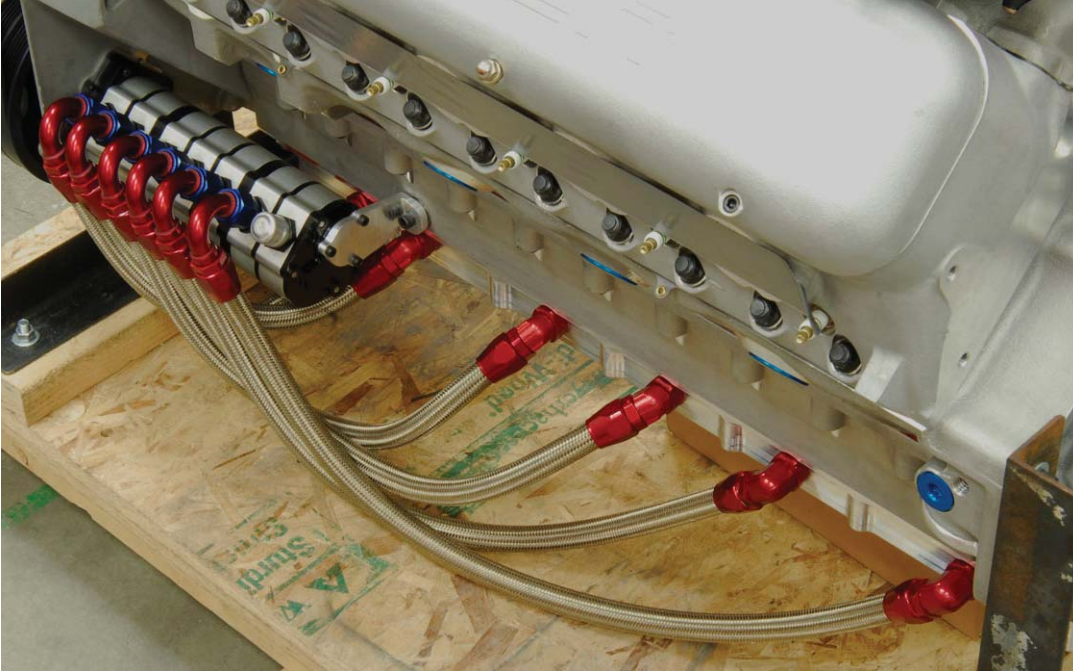
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The wedge shape of the pan works in conjunction with the crankshaft's rotation by providing a positive direction for the flinging oil to go where it is immediately captured by the HVSS system. Because the Falconer V12 is available in standard and reverse rotation, oil pans have been manufactured specifically for each.

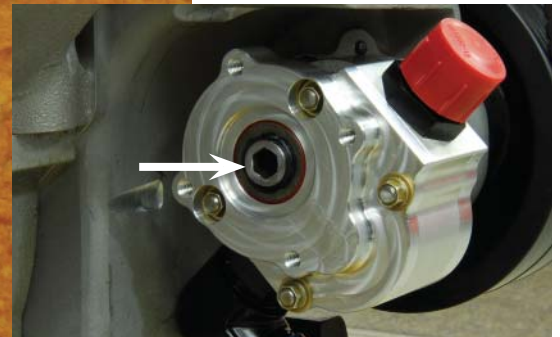
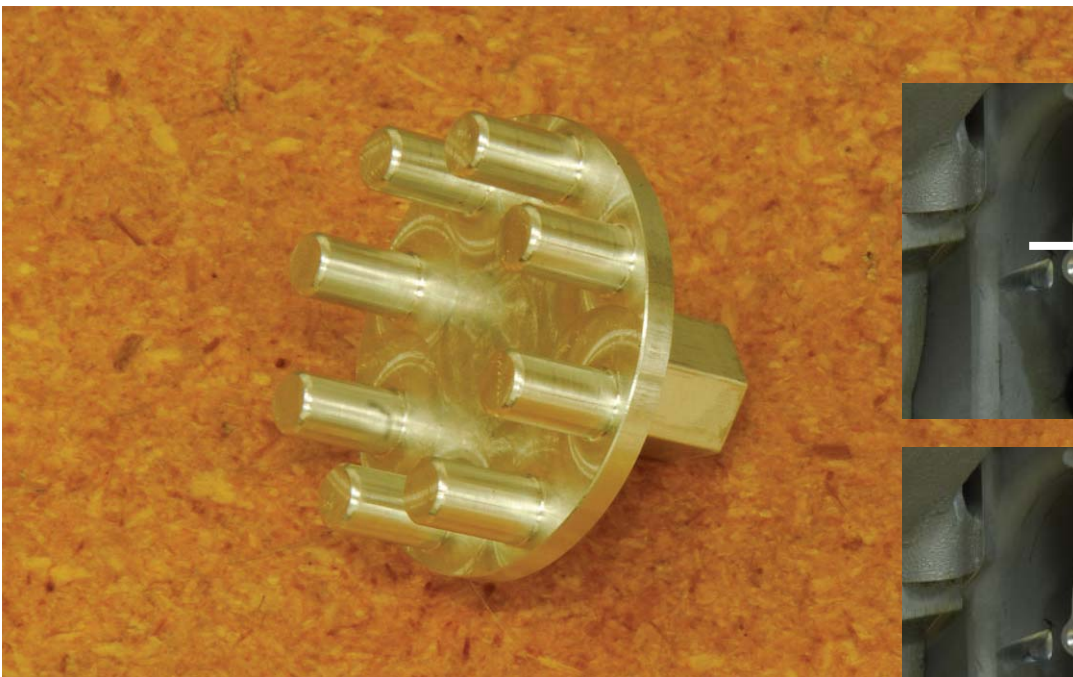
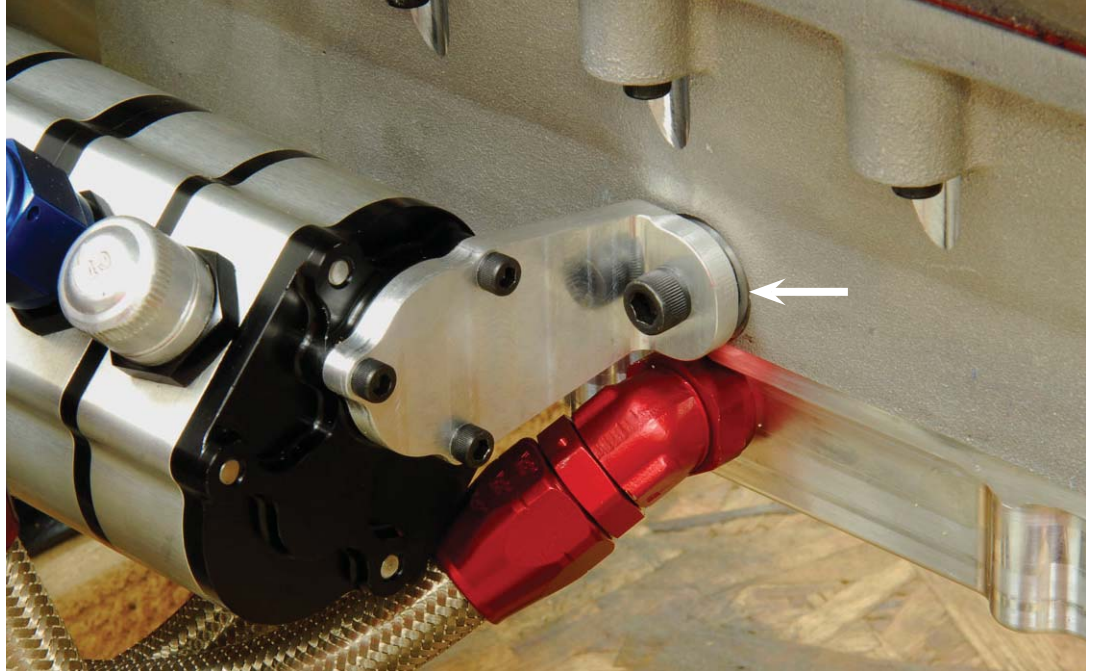
A close-up view of the HVSS scraper arrangement is shown in the inset photo. Formed from .125" aluminum sheet, the scrapers sit just .200" from the bottom of the pan, creating a high-velocity suction.

FALCONER V12 GEN2 HVSS OILING SYSTEM



Crucial to the function of the GEN2 HVSS system are the custom-designed oil pumps by Dailey Engineering. Because of the space restrictions created by the Thunder Mustang's airframe, individual pressure and scavenge sections were designed. The stand-alone pressure section is regulated by an external regulator to keep the design compact. Machined into the pump body is the standard 4-hole pattern which allows a vacuum pump or secondary alternator to be attached. The pump's mainshaft is broached with a .375" hex, which receives a special billet aluminum drive coupler for the desired accessory.

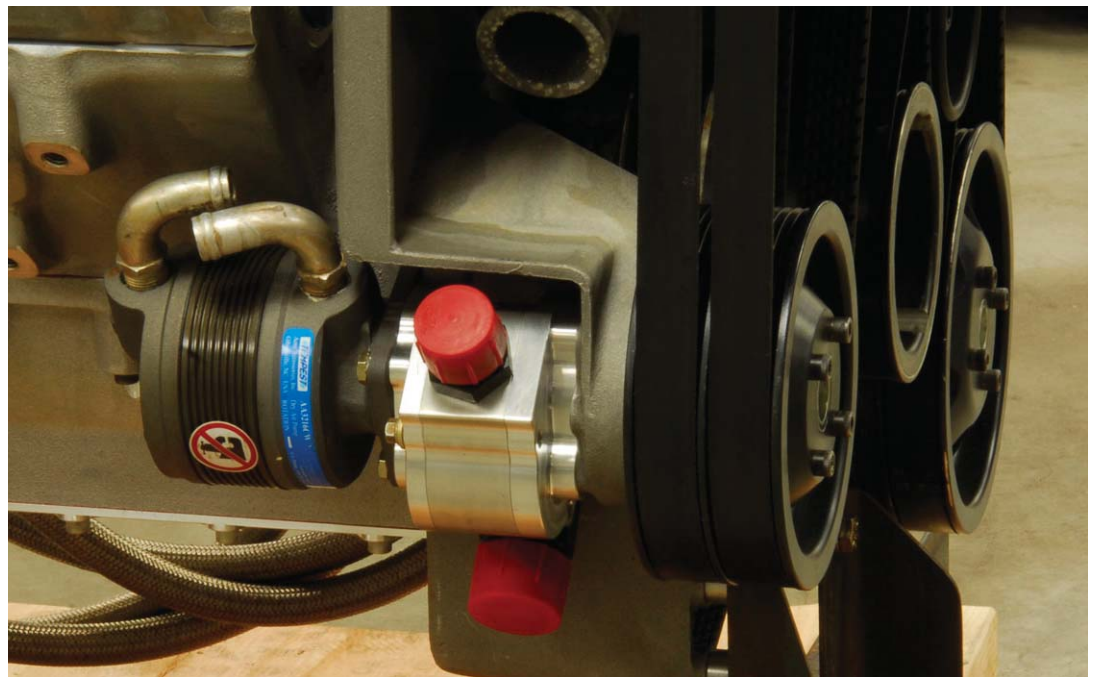
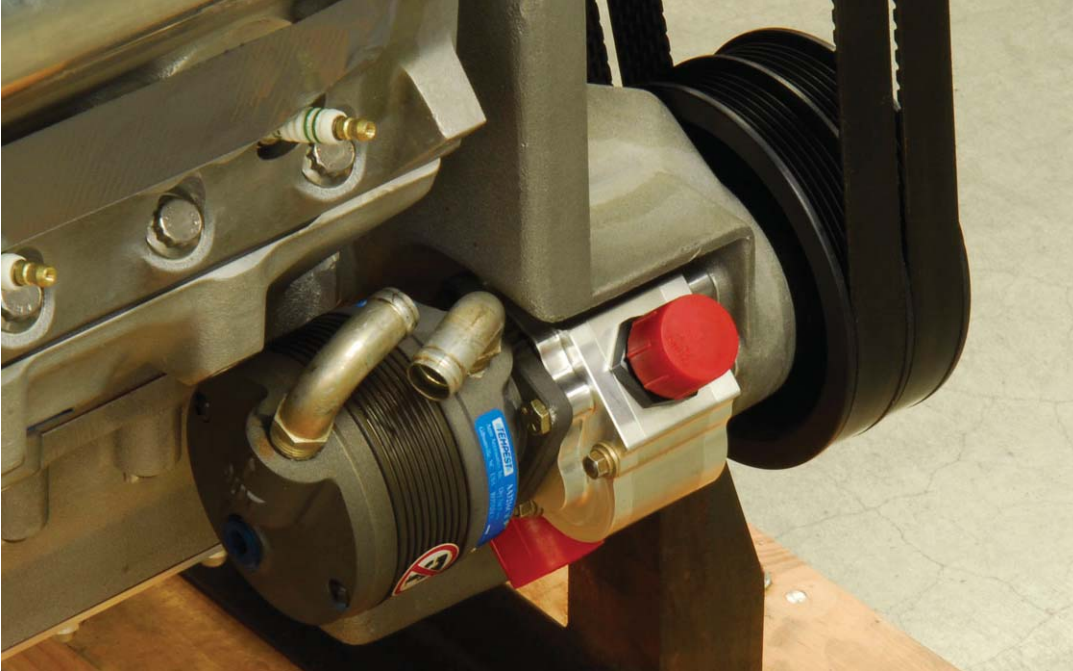
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The scavenge pump is installed in place of the existing oil pump and is supported in the rear using an integral bracket which bolts to the girdle in the same location used by the original pump. A spacer is supplied to go between the pump bracket and the engine girdle (top photo, arrow). Due to the low machining tolerance found in the accessory drive covers, additional shims may need to be used in conjunction with the spacer to ensure proper fit. Shims will have to be made and installed by the customer.

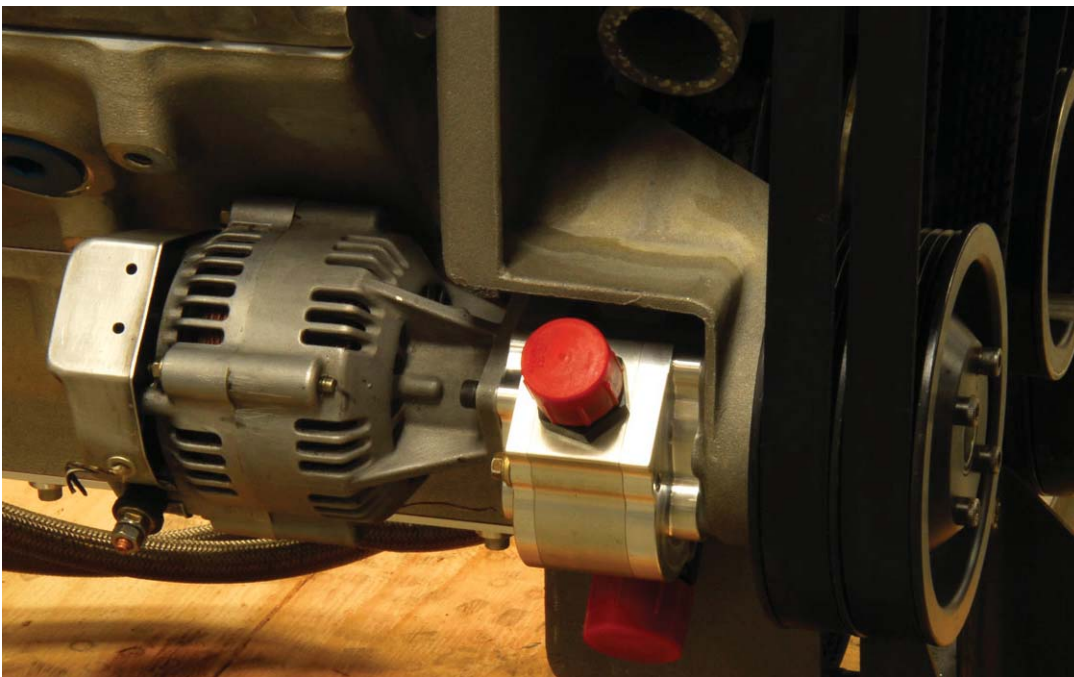
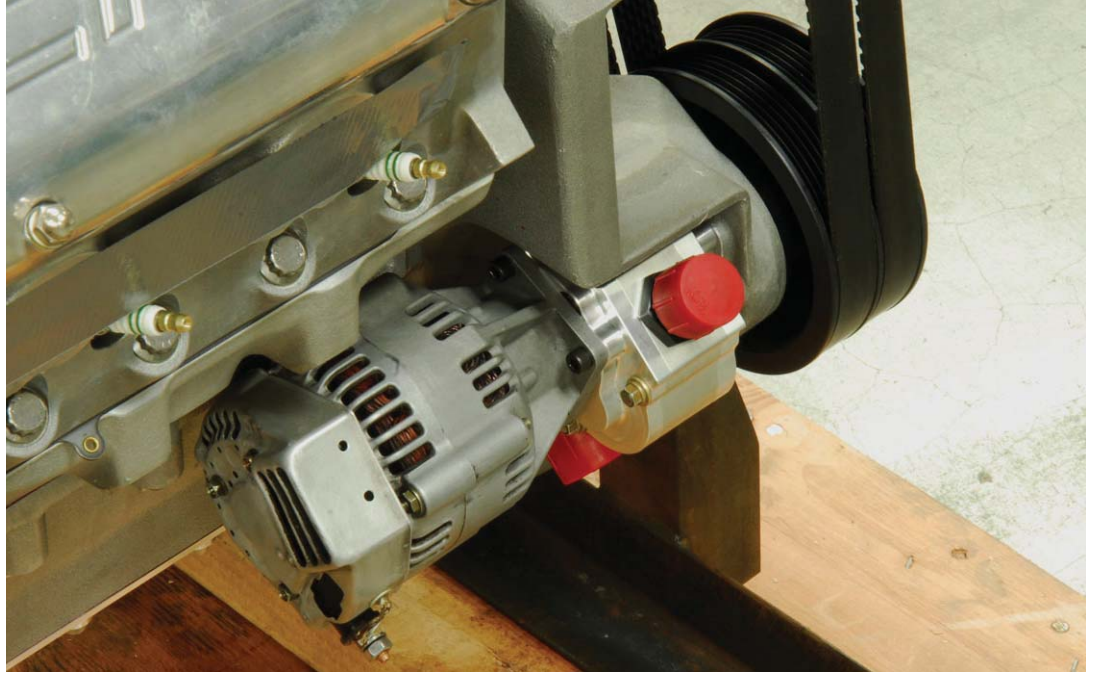
A new accessory drive coupler is also included for use with either a vacuum pump or secondary alternator. The oil pressure pump shaft is broached with an internal hex (top inset, arrow) into which the drive coupler fits. At this point either the vacuum pump or secondary alternator can be installed.

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A look at the installation of the vacuum pump to the oil pressure pump. This arrangement fits cleanly within the Thunder Mustang's airframe without modification.

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Likewise, a secondary alternator can be driven off of the oil pressure pump. Again, this also fits cleanly within the Thunder Mustang's airframe without modification.

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New steel drive hubs have been specially-designed to drive the Dailey Engineering oil pressure pump, two are included in each GEN2 HVSS kit.

Additionally, an external oil pressure regulator is included along with a diagram for the correct plumbing of the GEN2HVSS system (see next page).

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DIAGRAM 1 - Oil pressure system plumbing

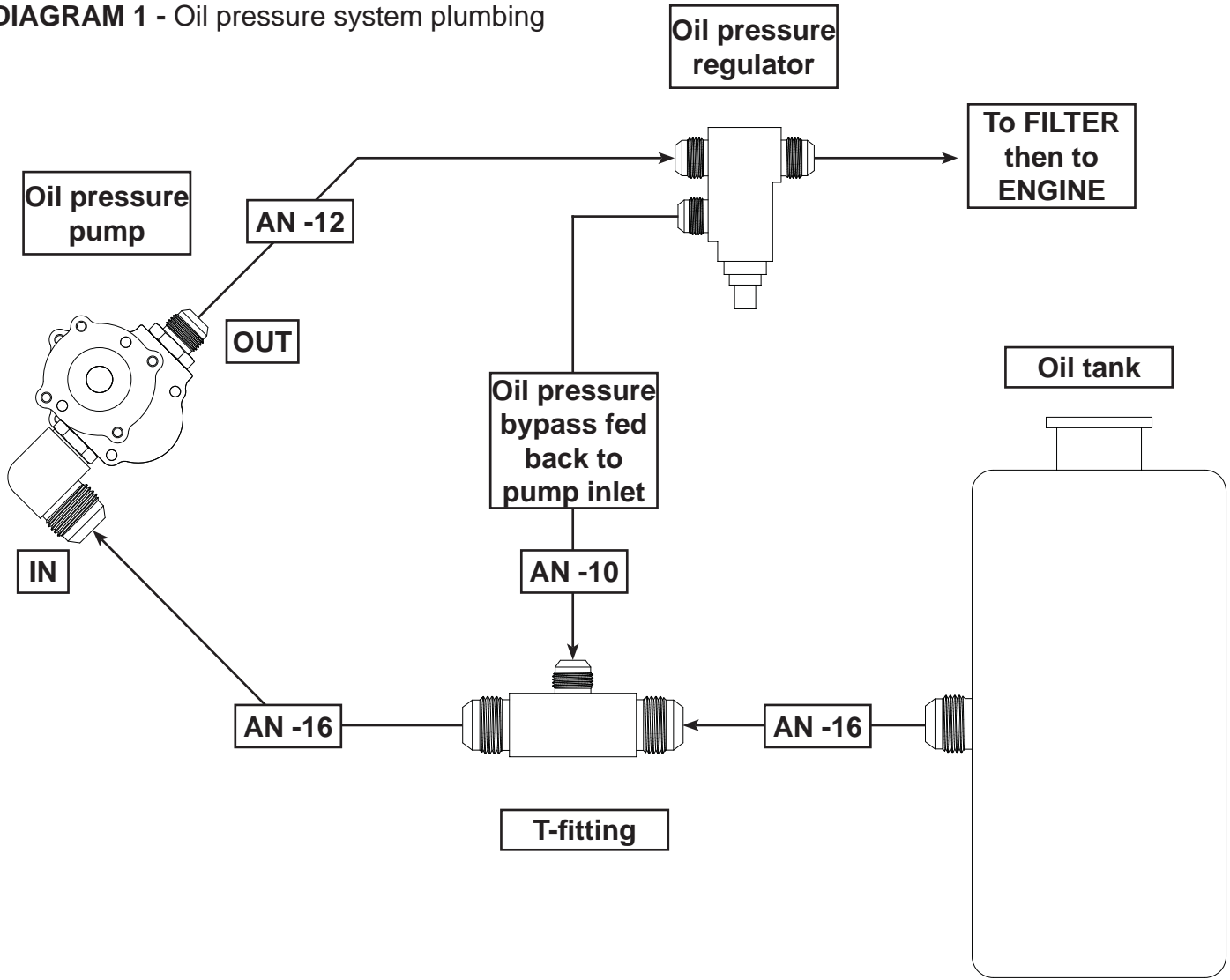
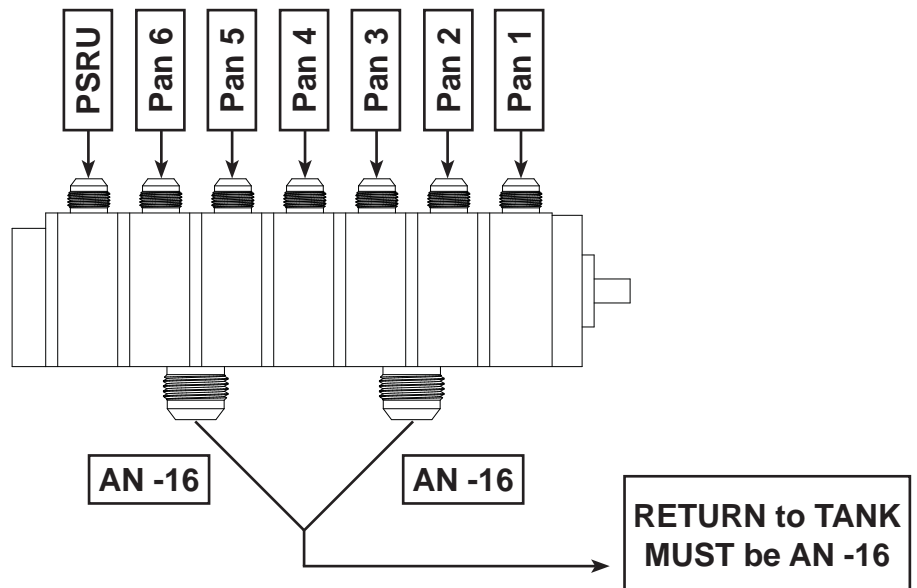
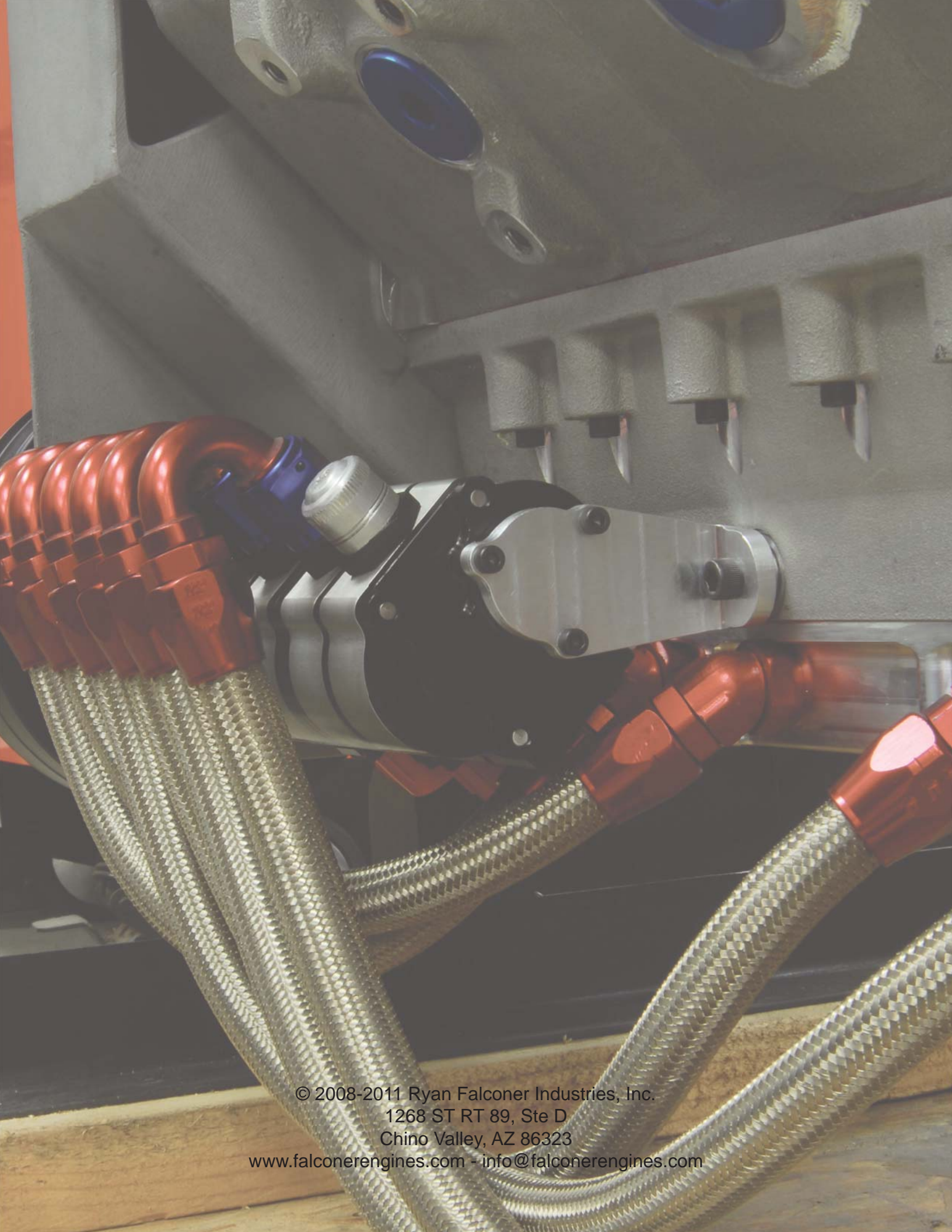


DIAGRAM 2 - Oil scavenge system plumbing





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