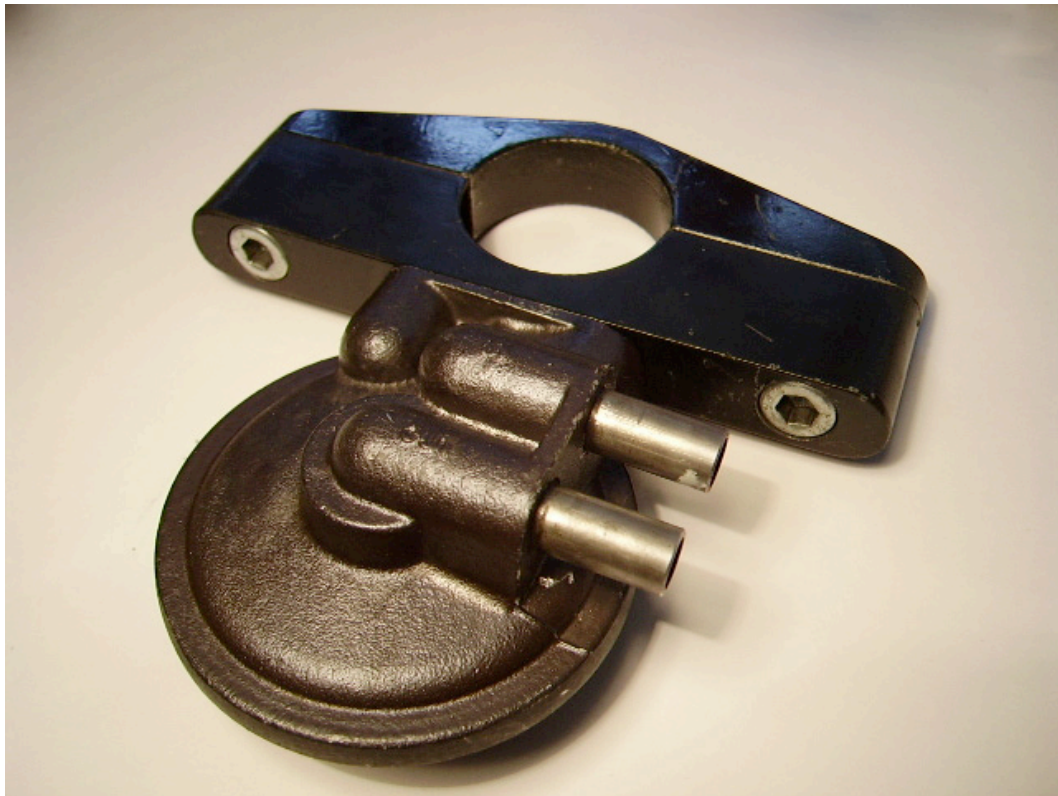


Triumph Oil Filter Mount

A Design By Glenn “Phrog” Davidson

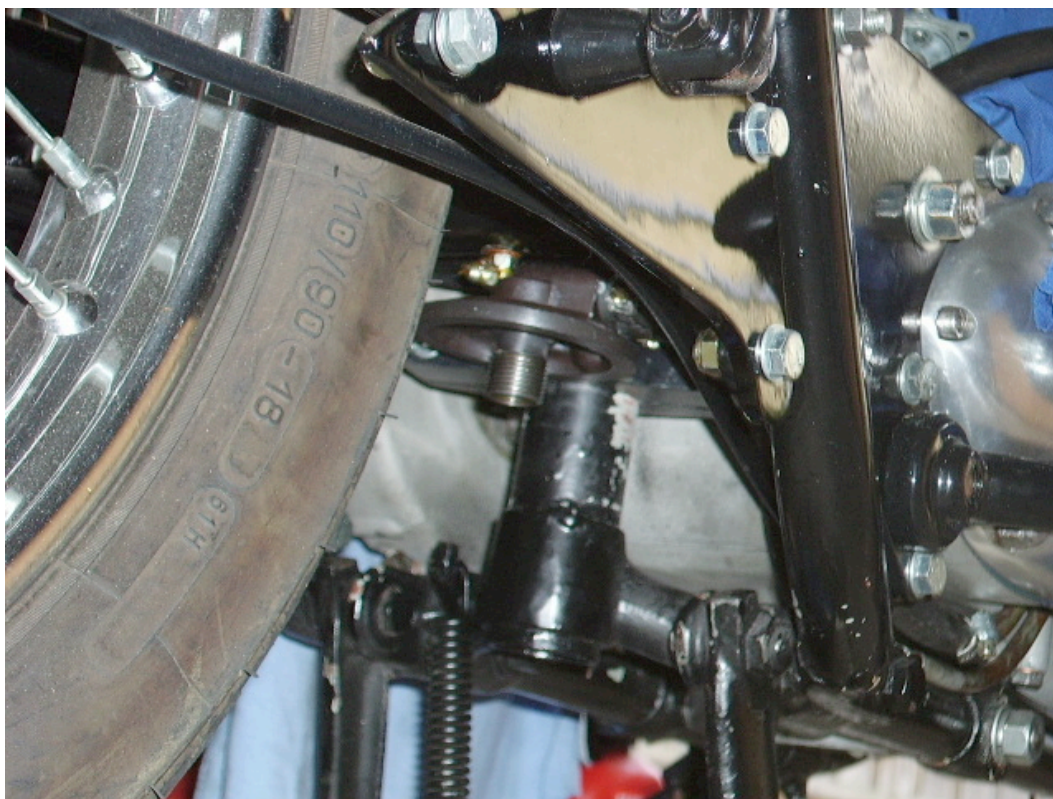
After a long and expensive rebuild, I wanted to offer my 1966 Triumph the maximum engine protection possible so I started investigating ways to fit an oil filtration system, easily, cleanly and unobtrusively to my classic. Unbeknownst to me, halfway around the world, great Aussie minds were working on the same thing. Working independently, we both stumbled on the same discoveries and ended up with the same oil filter mounted in the same location. However, I must admit that Glenn’s finished installation topped mine.



Glenn’s masterpiece before mounting

I had previously worked on Norton Commandos and really liked the Norton 850 oil filter set up. It was out of the way, easy to service, didn’t spill oil all over the bike while changing the filter, and had a huge filtration area. So I naturally selected the Norton oil filter for use on my Triumph. After buying the filter adapter, I took the assembled filter and tried placing the unit in various locations around the bike.

Finally after a week of fretting, the correct location was found, but it was still not clear just how to get the filter unit to stay in that position. My number one rule was that there should not be any new holes drilled into the frame. Nothing should need to be altered from stock, just in case I want to ever remove the unit.



The Norton oil filter mounted to Glenn's 650 Triumph

On Triumphs made between 1963 and 1970, the perfect area is directly behind the main frame tube, directly below the swing arm. In this position the routing of the oil lines to and from the filter adapter is easily accomplished, and the oil lines have a natural radius that keep them from kinking. When the bike is placed on the center stand, the filter canister screws off going straight down and can be easily serviced. Best of all, the view of this area from the top and side is blocked by the passenger peg mounting plates and mufflers. Most people who closely inspect my bike are not aware that an oil filter was ever installed.

The only change required to the stock bike to make this possible is to change the swing arm grease nipple from a straight to a 90° nipple, as shown in the photo below. Simply unscrew the stock nipple and add the 90° version with 1/4-28 UNF threads as shown below. These are generally available at hardware stores.



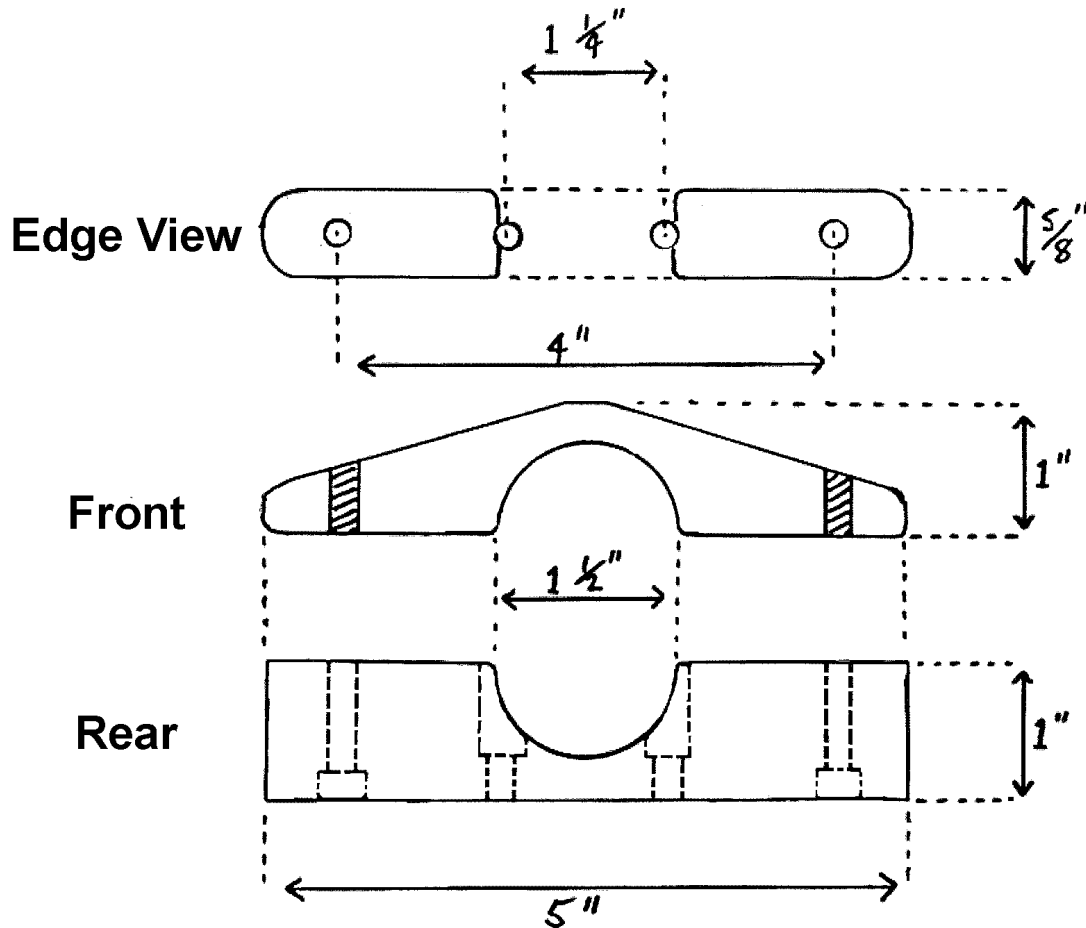
90° grease fitting on the bottom side of the swing arm

The Design

Glenn's design uses machined pieces of 5/8 thick aluminum plate to clamp around the down tube. The rear part of the clamp also acts as a spacer to keep the oil filter away from the frame the correct distance.

All fasteners are 5/16 socket head cap screws (aka "Allen bolts"). Two 5/16-18 UNC bolts are used to clamp the 2 halves together around the frame tube using the holes spaced 4 inches apart. The Norton oil filter adapter requires a pair of 5/16-24 UNF bolts spaced 1.25 inches apart to fasten it to the machined bars. The front piece is tapped 5/16-18 to accept the threaded end of the clamping bolts. The rear piece is drilled and counter bored 3/8 inch to clear the heads of all the 5/16 diameter socket head bolts.

In my opinion it is best to drill and tap all the holes first. Then using the 2 outboard holes, fasten both halves together. Use 5/16 or 3/8 inch flat washers between the 2 parts to leave a gap of about 1/16 inch between the joined parts. Then drill the 1.50 diameter hole for the frame in the joined parts. By leaving a small gap between the parts, a greater clamping force can be achieved during assembly on the bike, and the finished hole will be a lot more forgiving of small differences with the painted frame tube. After the big hole is generated, the parts can be separated and the 4 counter bores added. Be sure the 2 inside counter bores are deep enough to allow the bolt heads to clear the frame tube. The final step is to paint both of the parts black to help hide the entire assembly.



Glenn's oil filter mount design

The Norton filter adapter is then bolted to the rear piece, oil hoses are added, an oil filter is screwed into place, and the assembly is offered to the bike. With the bike supported by straps up on a lift, it will be easy to loosely mount the front clamp section in place and slide the whole assembly up the frame tube. In order to miss the center stand, the filter will need to be as high as possible without the grease nipple striking the top of the adapter. As it ends up, there is "sweet spot" where both the nipple and the stand miss the oil filter by about an 1/8 inch. Tighten the mount down when you find that place.

I found that the Norton filter adapter is best plumbed using 5/16 ID black neoprene fuel hose. The spigots on the adapter are 3/8 inch, but it is better to stretch the hose over these than to use easier fitting 3/8 ID hose and then try to shrink it onto the Triumph's smaller metal oil lines. There will simply be fewer oil leaks using the smaller hose.

Be sure that you plumb the filter into the oil line that returns engine oil back to the oil tank. The Triumph oil pump cannot be counted on to create enough vacuum to suction highly viscous motor oil through a very fine filter during cool temperatures. Trying to place the filter on the oil line feeding the engine will quickly result in massive engine damage. It is always better to have the oil pump pushing oil through the filter, and the only way to have

that is to use the return oil line. On all "unit-construction" Triumph engines, the rear-most oil port is the engine oil return.

Other Notes

- It is generally considered that adding an oil filter will at least quadruple the life of a British motorcycle engine. These motors, which were for the most part perfected in the 1950's, were designed to run on the older non-detergent oils. In the original design, the oil tank was the oil filter since all particulate debris in the oil settled to the bottom of the oil tank as sediment. All modern engine oils are high-detergent and tend to inhibit the formation of sediment. Therefore most of the fine abrasive in the engine oil continues to circulate unless a filter is added.
- On any classic motorcycle made before 1975, a lot of the previous debris in the engine oil is sitting at the bottom of the oil tank, it is therefore highly advisable to thoroughly clean the inside of the oil tank, especially before you add an oil filter. See the GABMA article "*Cranking Old Bikes*".
- This design has not been tried on a Triumph 500cc motorcycle, but I feel sure it is adaptive enough to work with very few dimensional changes.
- A kit for mounting the Norton spin-on oil filter adapter to the 1971 onward "OIF" BSA and Triumph models is available off the shelf from British Spares. You can make the mount yourself by simply drilling a standard 3-inch exhaust clamp with 2 clearance holes for the 5/16 adapter mounting bolts, painting it black, and affixing the Norton oil filter adapter.

