SM/Merak Clutch Master Cylinder Rebuild by John Titus

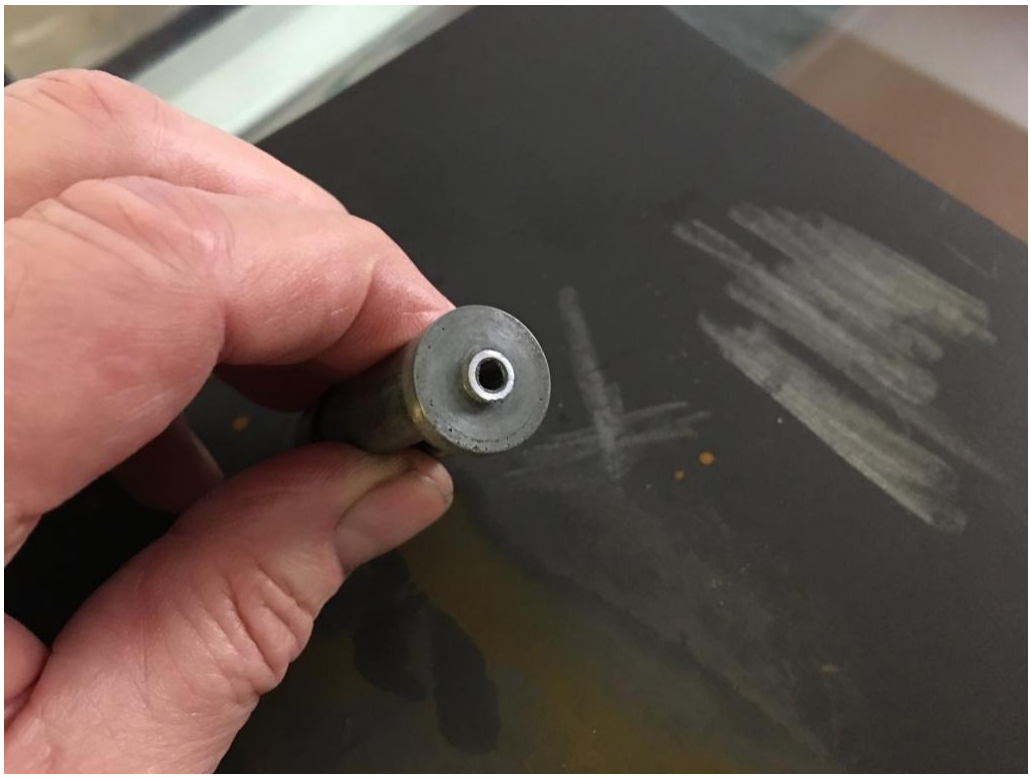
Put a fluid line clamp on the hose that goes to the banjo fitting at the top of the clutch master cylinder to prevent LHM from pouring out when you remove the master cylinder from the car.

On the workbench, remove the banjo fitting from the top of the master cylinder. Working from the cavity where the banjo fitting was attached, use a 3mm tap to tap the roll pin visible at the bottom of the cavity. You need only tap enough threads to grip the inside of the roll pin. Thread an M3 screw into the threads you cut into the roll pin, then depress the plunger slightly while holding the cylinder steady. (For example, hold the master cylinder in a vise with an M7 x 16mm bolt pressing on the plunger). For Merak it is best to remove the output adapter so you will have a flat surface at both ends to hold the cylinder and, also so you won't damage the adapter. Lever the roll pin out of the cavity using the M3 screw.

The seal kit is identical for SM and Merak. It is available from most of the usual suppliers. It is also the same as some Citroen 2CV LHM brake master cylinders. To assemble the rear seal, use a ¼ drive M10 deep socket as an expansion mandrel and work the seal onto the wide part of the socket (with the lip of the cup seal facing backwards - to avoid the lip rolling underneath). Warm the seal in hot soapy water and press it onto the *front* of the aluminum piston (held in a vice). Once the seal is on the aluminum piston you can push it past the open frame portion with your fingers, then work it into the rear groove with your fingers and a fine screwdriver. (Installing this direction avoids the possibility of putting nicks in the cup seal). Although it is a bit more difficult, you can also install the seal directly onto the back of the piston. If doing it this way, the cap from a bottle of 3M Loctite makes a pretty good installation cone.

Exploded view is shown below. When reassembling, be sure the open part of the piston frame faces up, so the roll pin can be inserted. The roll pin actually serves two purposes. It retains the piston AND it opens the fill valve by depressing the small tip of the fill valve as the piston moves back

CAUTION: I have noticed that the front cup on some aftermarket rebuild kits is thinner material than the originals. This means that the fill valve will not seal unless you dress off the centering mandrel on the piston so that it is no taller than the thickness of the rubber (note the shiny area where the centering mandrel has been dressed off). Use a piece of fine sandpaper on a glass table to dress off the centering mandrel.



Bleeding: The master cylinder requires some pressure to fully close the fill valve, so unless at least some pressure is developed, the master cylinder won't pump. For this reason, it is important to bench bleed the master cylinder to get as much air out of the chamber as possible. Once this is done, you have several options. You can wrap the slave cylinder bleed screw with Teflon tape and open ¼ turn. Attach a vacuum pump (A/C type) with a catch jar to the bleed screw and draw about 1/2 pint – until the foam stops. Once you have some pressure, you can bleed in the conventional manner (pedal down, open bleed screw, close bleed screw, pedal up, repeat). To make it easier, tie a piece of light rope to the clutch pedal to pull the pedal up, since it won't return by itself once the bleed screw has been opened. For Merak, it is important to cycle the headlights and/or brakes every few pumps of the pedal because the exhaust from the headlights and brakes are what fill the clutch master cylinder reservoir.

By far the best method I have found, however, is to use a pressure bleeder made from a cheap garden sprayer filled with LHM to pressure bleed from the master cylinder through to the slave cylinder.