

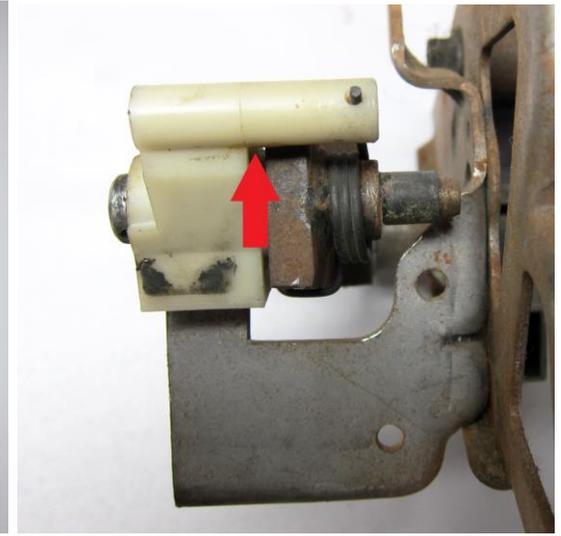
- 1.2 Safety Equipment – Always wear ANSI approved safety goggles/glasses when working with metal and fluids. Wear proper gloves when working with hot surfaces and corrosive fluids. Wheel Chocks & Jack Stands as applicable.
- 1.3 This Hydraulic Master Cylinder Kit does utilize the stock clutch cable hole location in the firewall replacing the existing clutch cable.
- 1.4 A ground strap from the engine to the body, and body to frame, must be used.
Failure to install a ground strap from the engine to the body and frame will result in braided line failure. The braided line cannot be used as a ground strap.

2.0 Disassembly - If your Vehicle is already disassembled, skip to the Assembly Instructions. Removal of the pedal hangar assembly from the vehicle is not necessary.

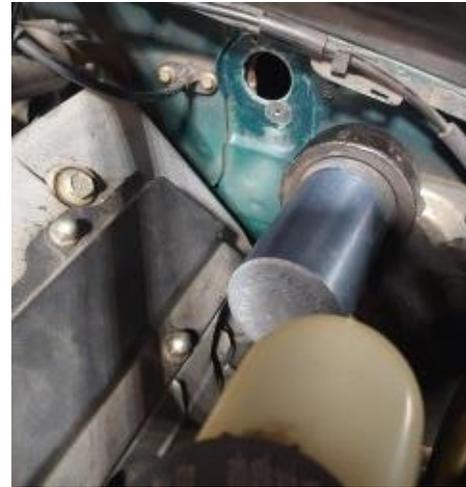
- 2.1 Disconnect the battery cable, jack up the vehicle for access, use wheel chock and jack stands as applicable.
- 2.2 Remove the clutch cable assembly - Have a second person firmly lift-up on the clutch pedal until it stops and hold in this position. First person will remove the cable cover from the bell housing and push the clutch lever towards the rear of the vehicle and using a small pair of vice grips, clamp the cable where it exits the cable housing. Pull the lever forward and release the cable end from the clutch lever. Second person will push upward on the large plastic gear attached to the pedal under the dash. First person will release vise-grips and push the cable into the cable housing. Second person will remove the cable end from the large plastic gear. Release parts and remove the retention clip & fasteners on the firewall, bell, frame, & remove cable from vehicle.
- 2.3 *** Be careful not to damage the neutral start switch *** Disconnect the cruise control switch. Remove (2) hair-pin clips, gears and springs from the clutch pedal arm, these parts will not be re-used. Remove the big gear first, see pictures below. The small gear will be cut with a hack saw blade from the engine compartment. Wrap the held end of the hack saw blade with duct tape to protect yourself and cut next to the spring. Remove small gear and spring.



Use pliers or hook tool to remove clip. Push a screwdriver up between pedal arm and spring; it will spring loose and come off easily.



Use long skinny screwdriver to pry spring from arm. Cut plastic gear at red arrow.



Cable installed, Cable removed, pedal linkage remains installed with all necessary parts removed.

- 2.4 Un-mount the Neutral Start Switch using 9mm wrench. Remove the switch from the mounting bracket using a 5.5mm socket and remove the one-way loom clip from the pedal hangar. The mounting bracket will not be re-used and the harness will be re-routed. Retain the two nuts, slide retainer, and small screw. Clean the clutch pedal arm pins - remove all caked on grease and rust.



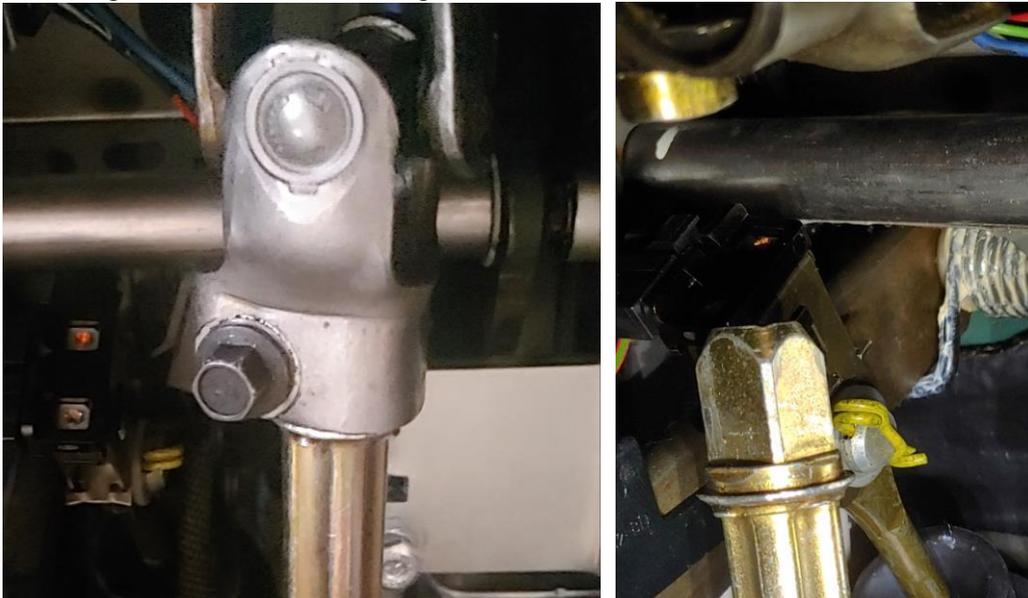
Shown is the Neutral Start Switch removed and the mounting bracket from under the dash.

- 2.5 Trim away the plastic insulation liner where the main bracket and ramp assembly will be and remove excess sealant from under the dash at the cowling joint. This will allow clearance for the upper master cylinder clamp to sit flush. Be sure to remove enough sealant so the upper clamp will sit as shown, with inside edges above the hole opening.



Shown are the insulation liner and excess sealant removed.

- 2.6 Remove the bolt retaining the collapsible inner shaft of the steering column using a 10mm socket. Rotate steering wheel to access. Pull the inner steering column shaft out of the knuckle joint and allow to collapse and hang free. Temporarily re-install the removed bolt to the steering knuckle so it does not get lost.



3.0 Assembly

- 3.1 The hole in the firewall for mounting the m/c may need to be sanded. Fit-check the m/c. It must sit flush so the upper and lower clamps can be installed. Use a round or radius file to remove high spots as required. Remove any factory spot-welds that are high-spots.



Shown is the m/c positioned flat and file as required.

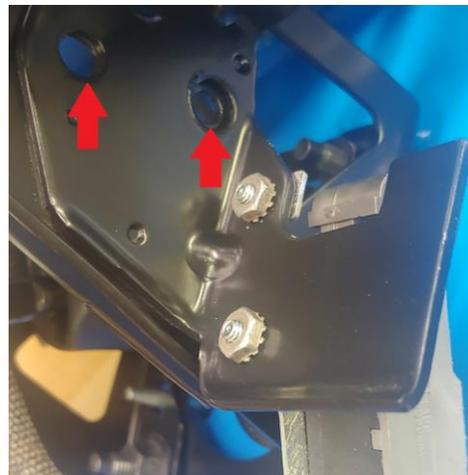
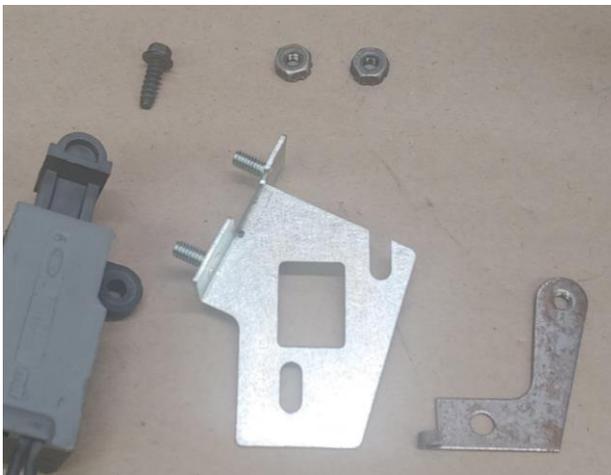
- 3.2 After fitting of the master cylinder in the firewall opening, cut the gasket with scissors to match the angle. Position the gasket with a small amount of silicone on the master cylinder. You may opt not to use the gasket and just apply silicone to the edge once the installation is complete. Position the upper clamp half under the dash as previously shown. With a second person pressing the master cylinder thru the firewall opening with firm pressure... slide the upper clamp half down into place. Position the lower clamp half also with pressure applied. Install Allen head socket screws using a ball-end Allen wrench. Fasteners will bottom out, leaving a slight gap on each side. Snug up fasteners. *Note: It is helpful when pressing on the master cylinder in the opening to be sure it is centered and apply more pressure at the top when positioning the upper clamp half, then more pressure at the bottom once the upper half is slid into position.*



- 3.3 On the engine compartment side make the master cylinder vertical. Snug-up the Allen head set screws using a ball-end Allen wrench. Snug each fastener a little at a time so the master cylinder remains level. Optionally apply silicone sealant to the edges of the master cylinder.



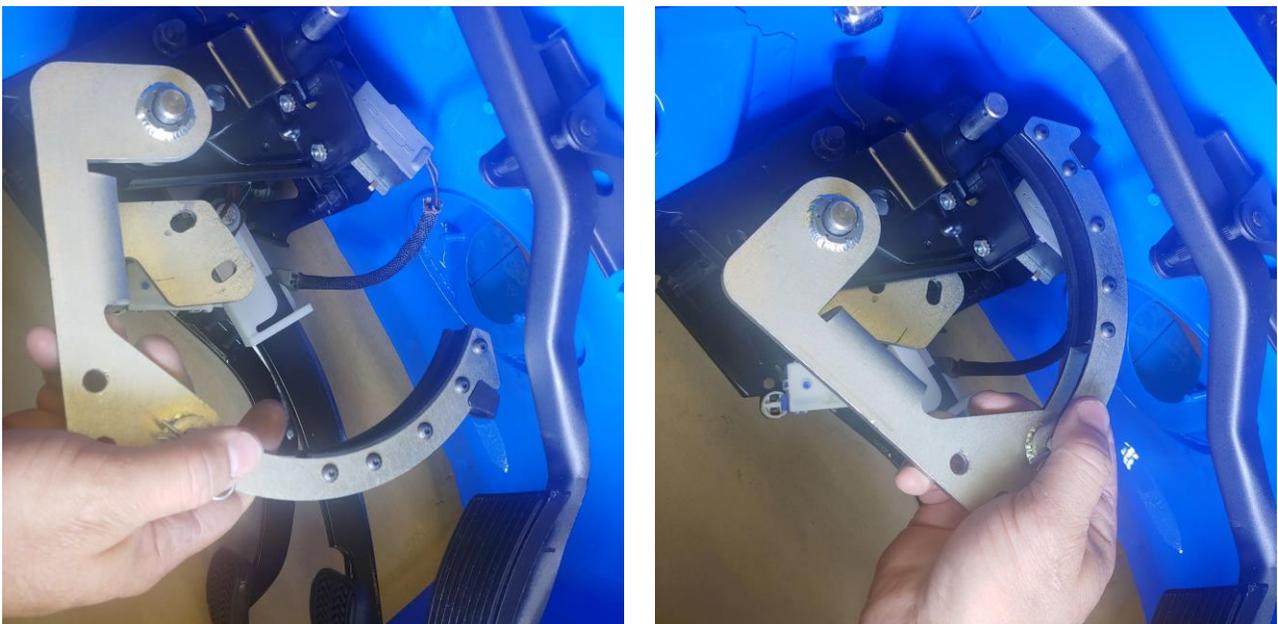
- 3.4 Transfer the removed cruise control switch parts to the new plate assembly and install. Carefully snug-up 5.5mm & 9mm fastener heads. The RED arrows will be where the magnetic nut plate gets positioned.

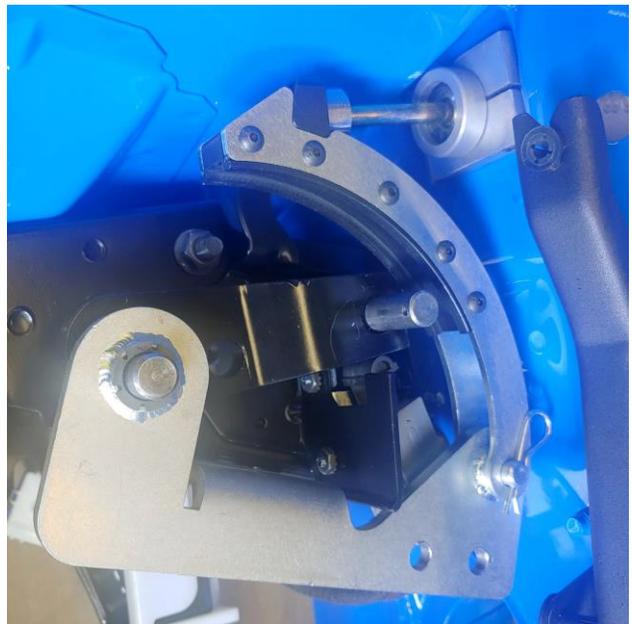
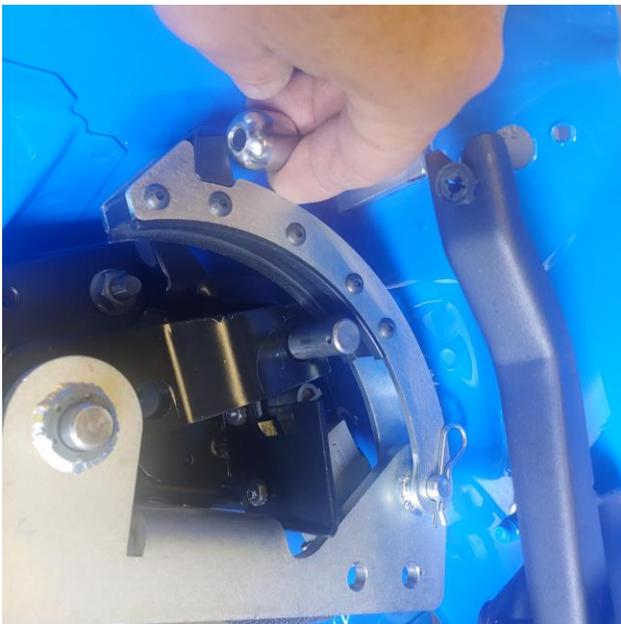
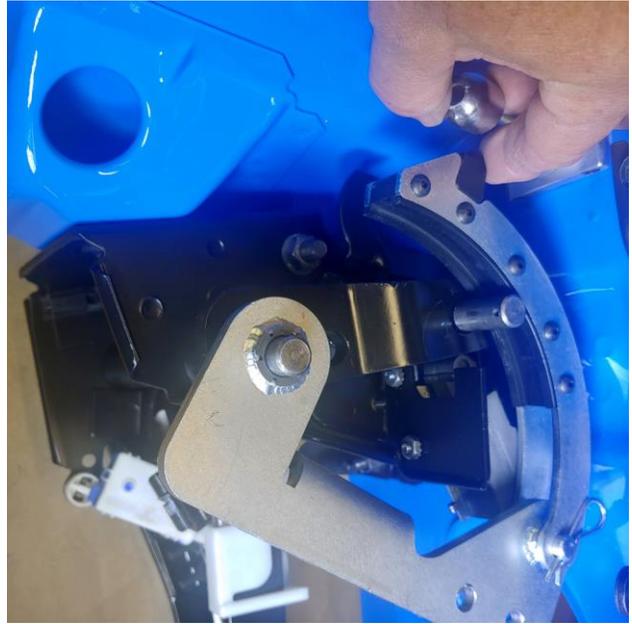
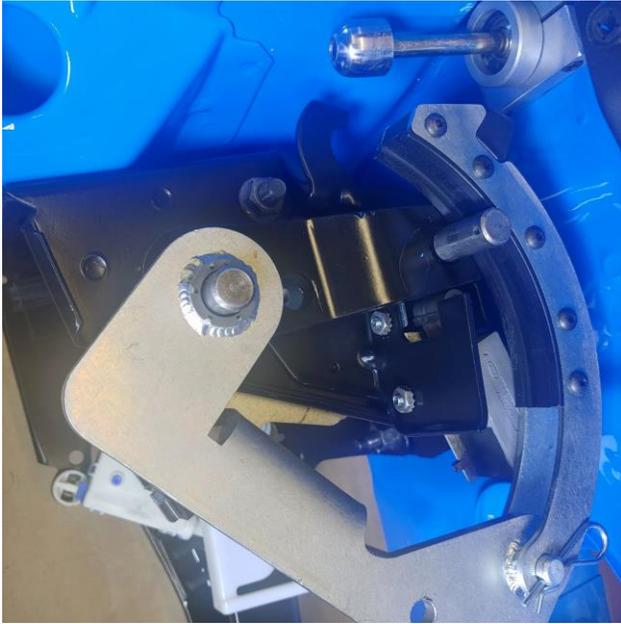


- 3.5 Position the magnetic nut-plate to the pedal hangar as shown. Nut-plate should sit flat where the red arrows are in previous picture. Install supplied fasteners in both red arrow holes in below picture to align. Verify threads go into both holes at the same time. Carefully remove fasteners not to disturb nut-plate position.



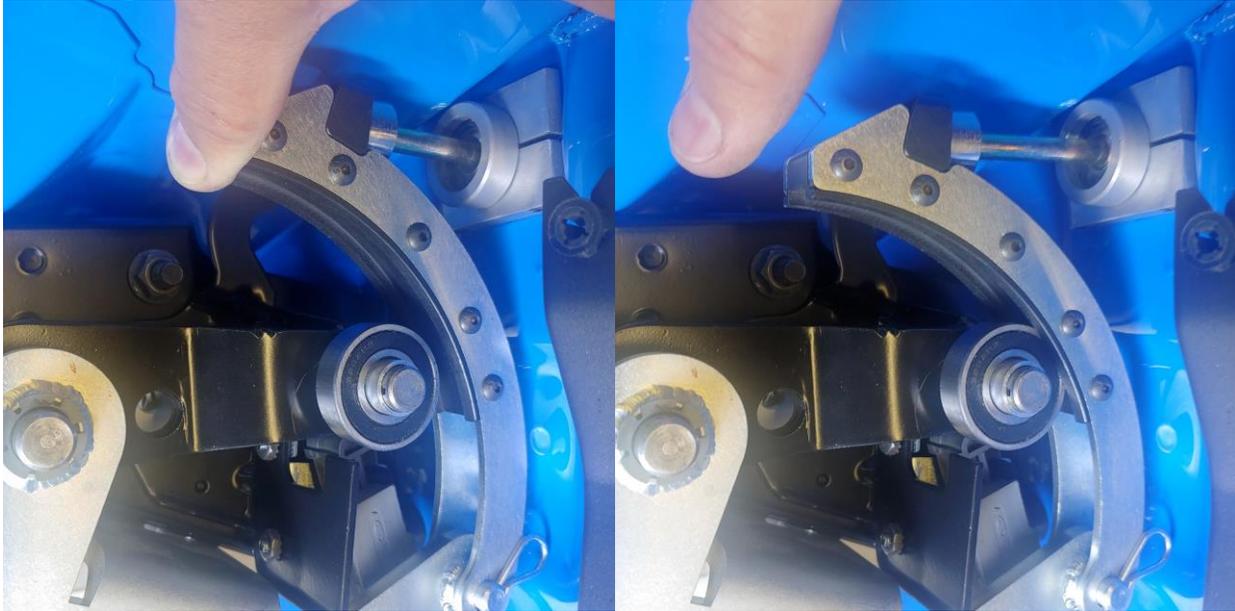
- 3.6 For this operation the clutch pedal pad will have to be held in the up position. Install 2 black nylatron bushings in the main bracket. Install the main bracket and ramp as an assembly into the vehicle and secure with hairpin clip. Swing the main bracket into position per the below picture series. Swing the ball-end on the m/c up and inboard to clear the ramp then allow the ball-end to settle into the ramp cup. Allow assembly to hang.





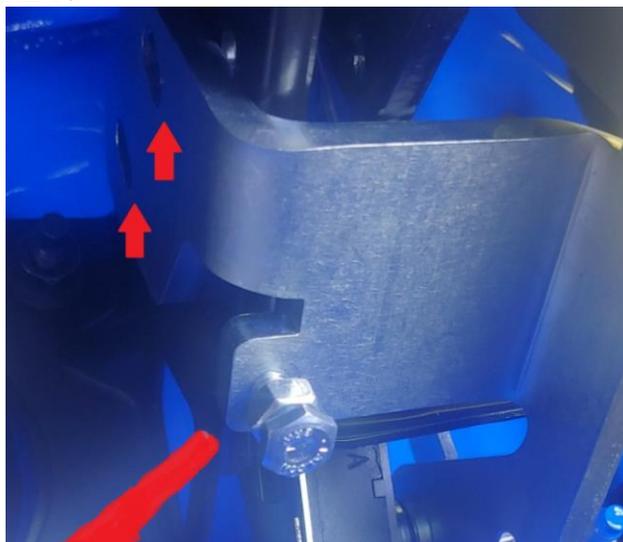
Pictures shown without hairpin clip installed on the main bracket.

- 3.7 Push the ramp forward compressing the master cylinder rod and install the roller bearing onto the pedal shaft pin with small step side of the bearing sleeve facing inboard. Install hairpin clip.

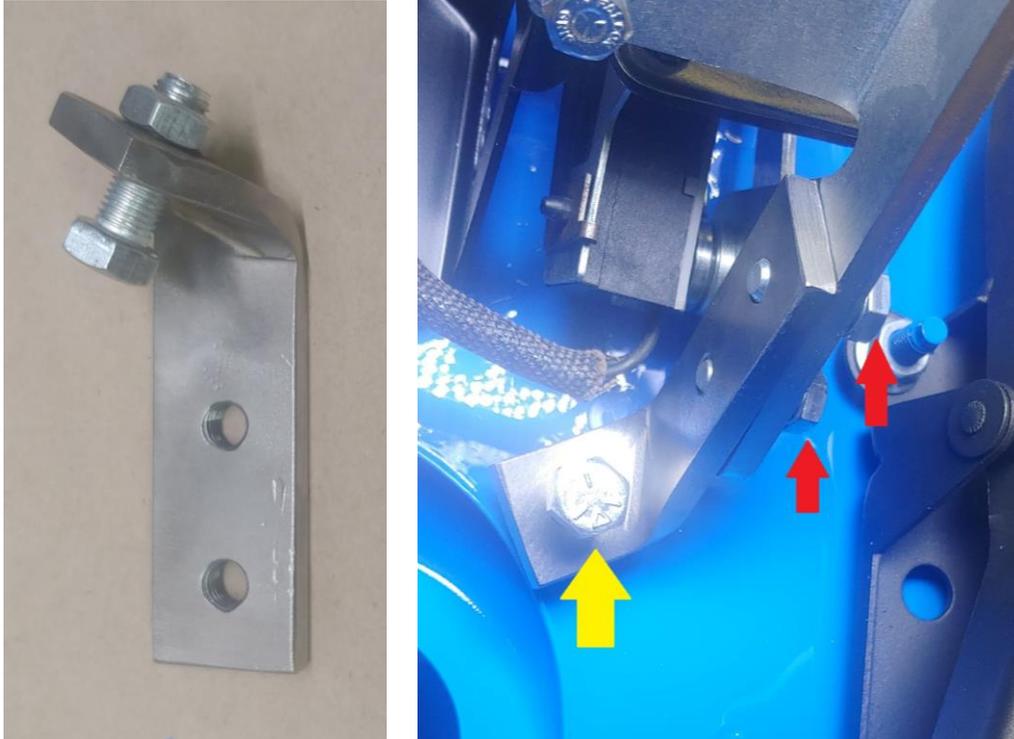


- 3.8 **CAREFULLY** install by hand (2) 1/4-20 fasteners with flat washers into the red arrow holes for the magnetic nut plate. *You do not want to press or try too hard. This will displace the nut plate.* Install by hand (1) 1/4-20 fastener with lock-nut into the bottom of the main bracket. Holding the pedal up so the ramp bearing is against the cruise control switch support structure, tighten the 1/4" RED arrow fasteners using 7/16 wrench wrist tight. There should be no free-play on the pedal or the ramp, and it should not be preloaded. Be sure the jamb nut next to the RED pointer is against the bottom of the fastener head. Turn the 1/4-20 fastener in until it contacts the bottom of the pedal hangar. Run the jamb nut up against the pedal hangar while holding the fastener head.

IT IS EXTREMELY IMPORTANT THERE IS NO PRELOAD ON THE MASTER CYLINDER ROD. ANY PRELOAD WILL NOT ALLOW THE SYSTEM TO BLEED PROPERLY.



- 3.9 Install (1) 3/8" bolt with jamb nut into the bracket brace and attach to the main bracket using (2) 5/16" fasteners and lock washers. *Note: depending on fitment... the 3/8" jamb nut may be on the forward or aft side of the bracket brace. Place this jamb nut for best fit.* Tighten 5/16" fasteners (red arrows) with 1/2" wrench wrist tight. Thread the 3/8" bolt into the bracket brace (yellow arrow) until the bolt contacts the firewall then add an additional 1/2 turn and tighten jamb nut against the bracket brace using 9/16" wrenches wrist tight.



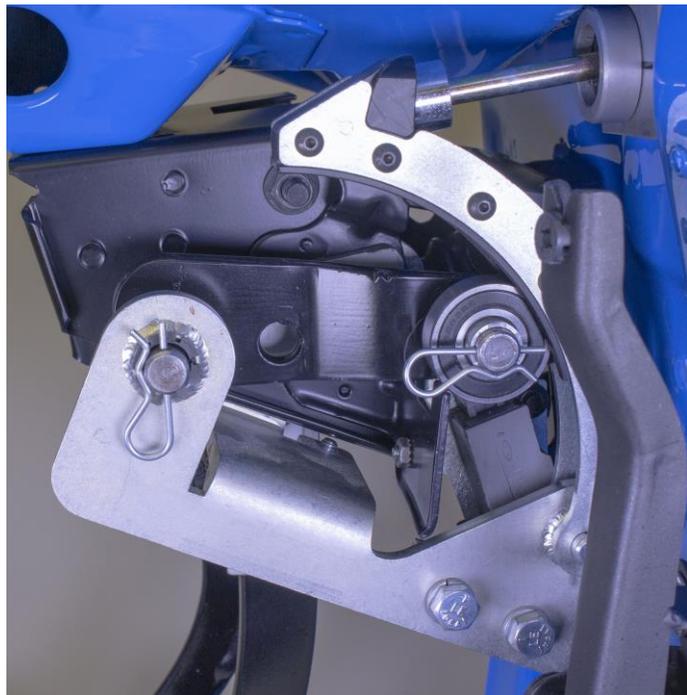
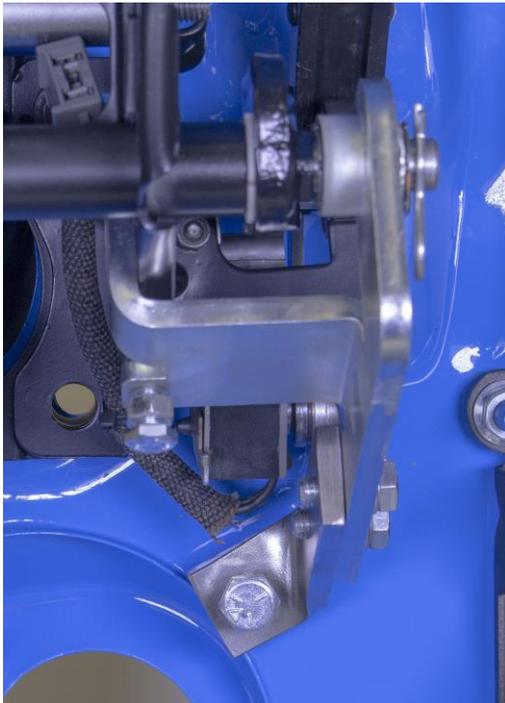
- 3.10 Using supplied zip-tie secure the cruise control cut-off switch harness inside the pedal hangar and route as shown.



- 3.11 Re-attach the steering column shaft to the knuckle joint. Remove the temporarily installed bolt from the knuckle joint using a 10mm socket. Verify and restore orientation of the steering wheel and tires if either of these has moved. Insert the inner collapsible steering shaft into the knuckle joint and re-install bolt and tighten 18-22 ft/lbs.



- 3.12 Your installation and adjustments are now complete, less the elbow fitting in the master cylinder for the steel braided flex hose and bleeding operations.



Above are summary photos of the installation.

- 3.13 Verify actuation **BY HAND** – the clutch pedal should bottom out on the carpet. If you have no carpeting or insulation under the clutch pedal, a stop block is recommended so the master cylinder will not be damaged. If the pedal bottoms out on the carpet without bottoming out the master cylinder no further adjustments are necessary. Verify no binding of push lever and clevis against lever and clutch pedal plate. Actuation should be smooth. Verify no insulation or plastic liner interference.

- 3.14 Do not over tighten fittings – this will cause damage to the seat of the hose end and fittings. Attach the steel braided line to the 90-degree elbow on the master cylinder and slave cylinder or hydraulic throw out bearing making sure line has clearance to exhaust system and will not interfere with any moving parts. Once the steel braided line is positioned for routing and clearance, tighten jam nut on the 90-degree fitting in the master cylinder 12-15 ft/lbs (wrist tight). Note: There is an o-ring under the jamb nut. **Do not adjust 90-degree elbow more than ½ turn in either direction.**
- 3.15 Tighten all braided line ends to their respective fittings. Support must be provided for all fitting connections, Failure to do so may result in damage to components. Torque to 20-25 ft/lbs.



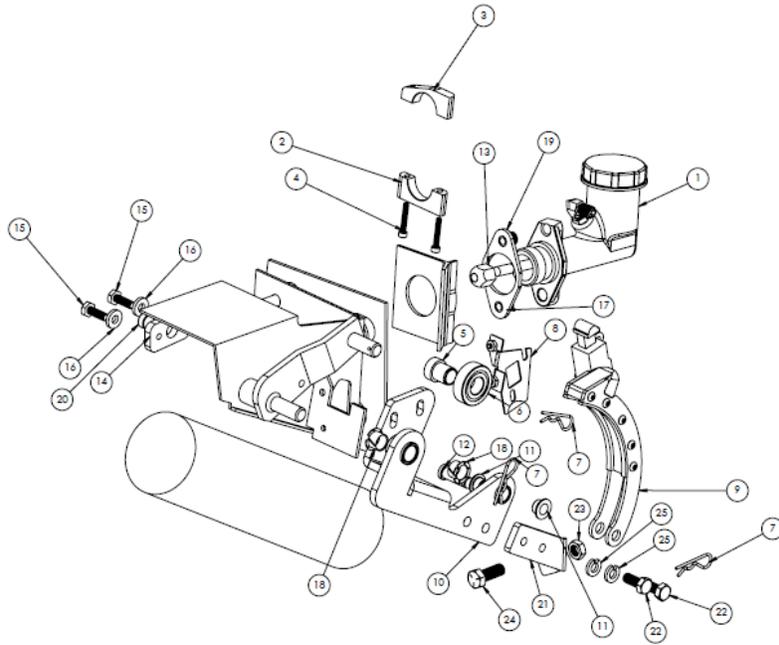
4.0 The Bleed Procedure

- 4.1 In the master cylinder kit is a Bleeder Kit. Follow the *bleeder kit* instructions. If you have lost the bleeder kit instructions, they can be found on our web site modern driveline.com.

5.0 Driveway Test and Test Drive

- 5.1 Position rear wheels on jack stands (free to rotate). With transmission in neutral, start vehicle. Push in clutch pedal and apply brake pressure. Transmission should go into 1st gear easily. Slowly release clutch pedal. Pedal should start to engage the clutch at a comfortable level of the pedal travel (about 1.0”-1.5” from floor). **It is okay if the clutch pedal releases close to the floor while on jack stands. It will release higher when the vehicle is on the ground.** A new or rebuilt transmission should have all the gears run thru (in the driveway, partially releasing clutch) before road testing the new hydraulic clutch.
- 5.2 Remove jack stands and test drive. Upon return, verify steel braided line clearance and support. The hydraulic lines must be kept away from the exhaust and rotating clutch assembly.

- 5.3 If the clutch feels spongy or releases too close to the floor, repeat the bleed procedure. FYI – micro bubbles may be present in the system due to actuation, accumulation on rubber parts, and machining marks within the system.
- 5.4 Further assistance and tech support is available by calling Modern Driveline at 208-453-9800 M-F 8-5 Mountain time or E-mail Tech@modern driveline.com
- 5.5 Enjoy your new hydraulic system and Thank You for “Making it Modern” We appreciate your business.



ITEM NO.	DESCRIPTION	QTY.
1	Hyd. Type 2 Master sub-Kit, Integral, LF Series	1
2	Clamp, Lower, hydraulic master	1
3	Clamp, Upper, hydraulic master	1
4	8-32 x 1.0 socket head cap screw	2
5	Bushing, roller bearing, 319S Master	1
6	Ball bearing 15mm ID, 35mm OD, 11mm wide	1
7	Cotter Pin, Hairpin, 3/8-1/2 wire size 5/64"	3
8	Plate Assy, 319S hydraulic, Cruise Cancel Switch	1
9	Ramp lever assembly, hydraulic master, 319S	1
10	Bracket, Main Master Hydraulic, 319S	1
11	Bushing, Ranged ID 3/8" OD 15/32" 5/16" LONHS	2
12	375 x 0.9 usable length Clevis pin	1
13	Rod ball end, 319S Master push rod	1
14	Bracket, Nut Plate, Main Master Hydraulic, 319S	1
15	Hex bolt, 1/4-20 x 0.75	2
16	1/4" flat washer	2
17	7/16-20 x .50 set screw	2
18	Bushing, split, M250, M11, 3/8" x 1/2"	2
19	Gasket, Hydraulic master, 319S	1
20	Magnet, .5 dia x .25 thick	1
21	BRACKET BASE	1
22	BOLT, 5/16-24 X 3/4 LONG	2
23	Nut, hex, 3/8-24	1
24	Hex bolt, 3/8-24 x 1	1
25	Lockwasher, 5/16"	2