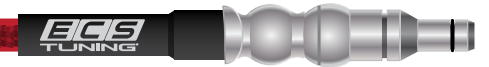




Improve clutch feel and function by installing an ECS Tuning Exact-Fit clutch line. Stronger than the stock rubber hose and built to last, their awesome looks and matching performance make them perfect for street, track, or show.



Installing our B8 Exact Fit clutch line is an afternoon project that can be completed in about 3 - 4 hours. At first glance it might seem a little intimidating, (especially when you see the original hose buried deep down in the cowl), but the reality is that with just a little patience, everything comes apart quickly and easily. As an added benefit, when you have everything apart, it's a great time to clean out the cowl drains and remove all of the leaves and debris that inevitably build up here. Then, once you remove the original hose, you'll have ours installed in a "snap", and reassembly will be even quicker! It's well worth the time!

Thank you for purchasing an ECS Tuning Exact-Fit clutch line. We appreciate your business!

PRODUCT INFORMATION: ECS TUNING EXACT-FIT CLUTCH LINES

Exact-Fit Clutch Line Construction

The core of an ECS Tuning Exact-Fit clutch line is made of extruded PTFE. Stronger than rubber, PTFE swells less under pressure, is flexible and durable, and is unaffected by chemicals and petroleum based fluids that can be damaging to stock rubber type clutch hoses.

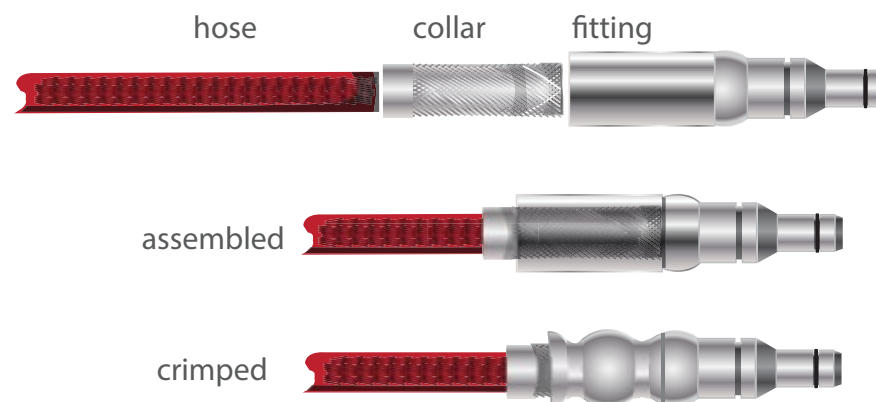
The inner core is surrounded by a stainless steel mesh that is stronger than the fabric mesh reinforcement used in stock hoses. As a result, the stainless mesh resists core expansion under pressure better than fabric mesh, and provides added shielding to protect the core from abrasion and impact damage. Less core expansion provides a consistent, positive clutch feel.

The outer coat is made of a bright red seamless polymer. Attractive and more impact resistant than synthetic and rubber materials that make up a stock hose, the Exact Fit outer layer also provides added protection from chemical and UV attack.



Exact-Fit clutch lines use a two piece fitting design. An aluminum crimp collar is slid over the hose end, then the collar and hose are inserted into a zinc-coated, corrosion resistant fitting, which is then crimped by a shaped set of dies that compress the fitting and collar tightly around the hose. The fitting collar changes shape when crimped to create multiple compression bands for added strength.

All of our ECS Tuning Exact-Fit clutch lines are engineered and constructed in house, complying to DOT FMVSS 106 standards and using DOT compliant hydraulic equipment. Finally, each and every hose is tested to 3000 psi before being packaged and shipped to you.



PRODUCT INFORMATION: ECS TUNING EXACT-FIT CLUTCH LINES

Audi B8 Exact-Fit Clutch Line Construction

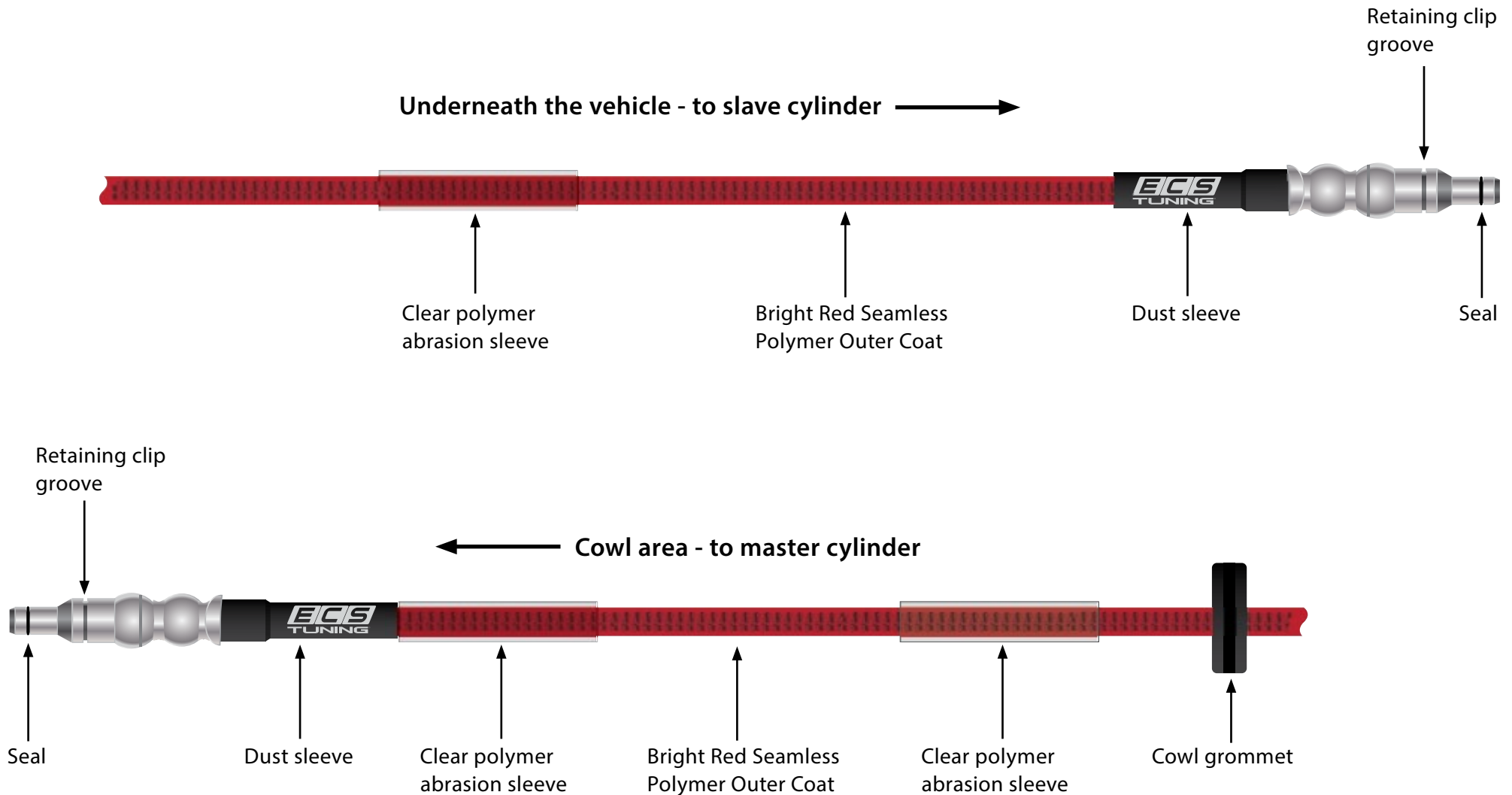


TABLE OF CONTENTS

Required Tools and Equipment	pg.5
Installation Overview	pg.6
Disassembly.....	pg.7
Installing the New Exact-Fit Line	pg.16
Bleeding the Clutch Hydraulic System	pg.19
Reassembly.....	pg.25
Schwaben Tools	pg.26



Never get underneath a vehicle that is supported only by a jack. Always make sure that the vehicle is securely supported on jack stands.

PREPARATION AND SAFETY

ECS Tuning cares about your health and safety. Please read the following safety information. This information pertains to automotive service in general, and while it may not pertain to every job you do, please remember and share these important safety tips.

- Park your car in a safe, well lit, level area.
- Shut the engine off and remove the key from the ignition switch.
- Make sure any remote start devices are properly disabled.
- **ALWAYS** wear safety glasses.
- Make sure the parking brake is applied until the vehicle is safely lifted and supported.
- If using an automotive lift, be sure and utilize the factory specified lift points. Lifting a vehicle in an incorrect location can cause damage to the suspension/running gear.
- When lifting a vehicle using a jack, always utilize the factory specified lift points. Lifting a vehicle in an incorrect location can cause damage to the suspension/running gear. **ALWAYS** support the vehicle with jack stands.
- **ALWAYS** read and follow all safety information and warnings for the equipment you are using.

Although this material has been prepared with the intent to provide reliable information, no warranty (express or implied) is made as to its accuracy or completeness. Neither is any liability assumed for loss or damage resulting from reliance on this material. SPECIFICALLY, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER WARRANTY IS MADE OR TO BE IMPLIED WITH RESPECT TO THIS MATERIAL. In no event will ECS Tuning, Incorporated or its affiliates be liable for any damages, direct or indirect, consequential or compensatory, arising out of the use of this material.

REQUIRED TOOLS

Standard Automotive Tools

- Protecta-Sockets (for lug nuts).....[ES#2221243](#)
- **3/8" Drive Ratchet**[ES#2765902](#)
- 3/8" Drive Torque Wrench.....[ES#2221245](#)
- **3/8" Drive Deep and Shallow Sockets**.....[ES#2763772](#)
- 3/8" Drive Extensions.....[ES#2804822](#)
- **Hydraulic Floor Jack**[ES#240941](#)
- **Torx Drivers and Sockets**[ES#11417/8](#)
- 1/2" Drive Deep and Shallow Sockets[ES#2839106](#)
- 1/2" Drive Ratchet
- 1/2" Drive Extensions
- 1/2" Drive Torque Wrench[ES#2221244](#)
- 1/2" Drive Breaker Bar[ES#2776653](#)
- File Set
- Air Nozzle/Blow Gun
- Bench Mounted Vise
- Crows Foot Wrenches
- **Hook and Pick Tool Set**[ES#2778980](#)

Required For This Install

Available On Our Website

- **1/4" Drive Ratchet**.....[ES#2823235](#)
- **1/4" Drive Deep and Shallow Sockets**[ES#2823235](#)
- 1/4" Drive Extensions[ES#2823235](#)
- 1/4" Drive Torque Wrench
- **Plier and Cutter Set**[ES#2804496](#)
- **Flat and Phillips Screwdrivers**[ES#2225921](#)
- **Jack Stands**[ES#2763355](#)
- Ball Pein Hammers
- Pry Bar Set.....[ES#1899378](#)
- Electric/Cordless Drill
- Wire Strippers/Crimpers
- Adjustable (Crescent) Type Wrenches
- Drill Bits
- Punch and Chisel Set
- Hex Bit (Allen) Wrenches and Sockets[ES#11420](#)
- Thread Repair Tools[ES#1306824](#)
- **Open/Boxed End Wrench Set**[ES#2765907](#)

Specialty Tools

- **Locking Hose Clamp Pliers**[ES#2702616](#)

INSTALLATION OVERVIEW

Where is the clutch line?

You can't see it from the top, but it's at the bottom of the cowl chamber, and it runs from the clutch master cylinder, underneath the vacuum brake booster, then down and out of the cowl to the clutch slave cylinder.

How do I get to it?

To get to it, you'll have to remove or reposition these main components:

- Cowl screen
- LH electrical junction box
- Wiper arms and wiper motor
- Cowl separation panel

How long will it take?

The amount of time it will take depends on your experience, but 3-4 hours should more than cover it, and that's if you take your time and clean everything up while you're in there.

What vehicle is used for these instructions?

We have performed this installation on our B8 S4. You may find some minor differences during your installation, depending on your actual model and options, but the main procedures and steps will remain the same.

With everything removed, the cowl is wide open and you have easy access to the line. If this looks like major surgery, don't be concerned, it's easier than it looks.

READY? Disassembly begins on the next page



DISASSEMBLY

1. REMOVE THE COWL SCREEN

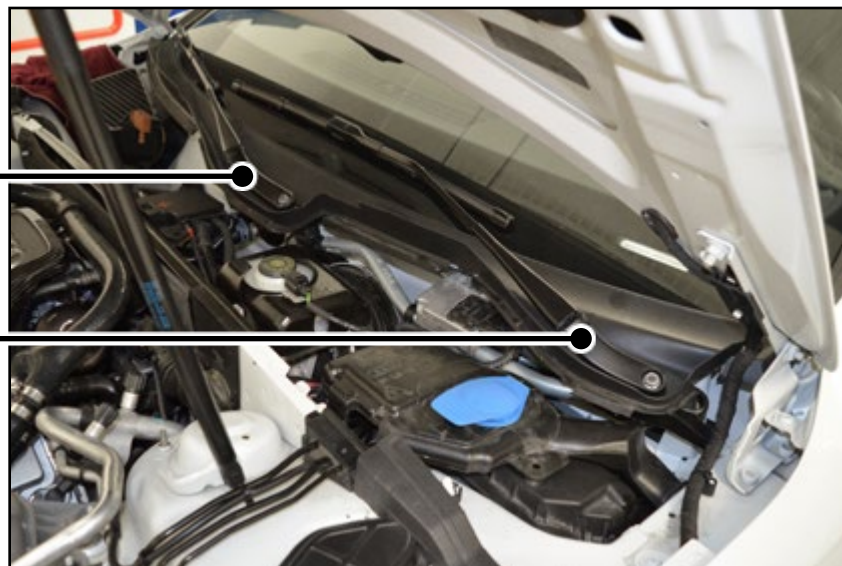
- Two screw in fasteners (L&R)
- One push clip in the middle, under the battery positive (+) junction cover



2. PULL OFF THE COWL SEAL

3. REMOVE THE WIPER ARMS

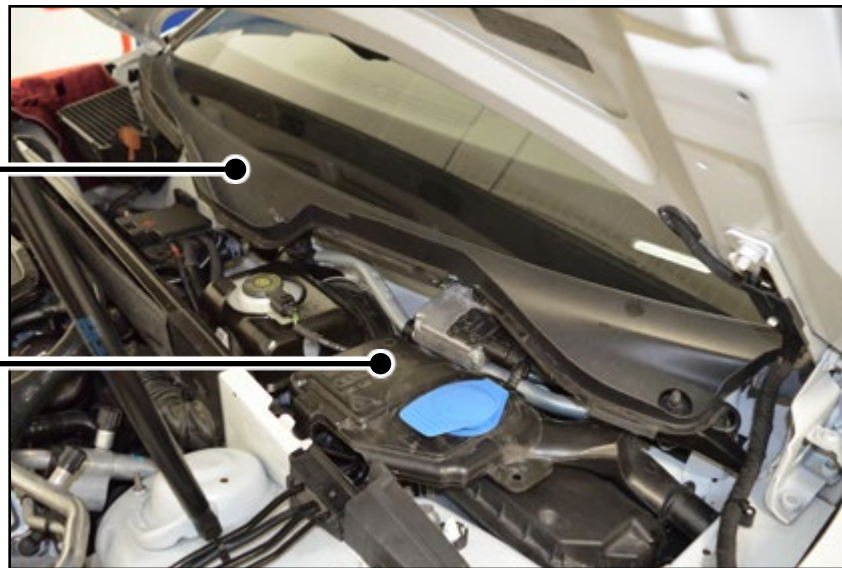
- Protective cap and 13mm nut on each one
- Gently rock them back and forth to remove from splined wiper shafts - a puller may be required if they do not release easily
- Note their position for reassembly



DISASSEMBLY

4. REMOVE THE WATER DEFLECTOR

- Four clips along bottom edge
- Top edge pulls out of plastic channel at base of windshield



5. REMOVE THE WASHER FLUID FILL SPOUT

- 13mm nut at front
- Spout slides toward passenger side then lifts out



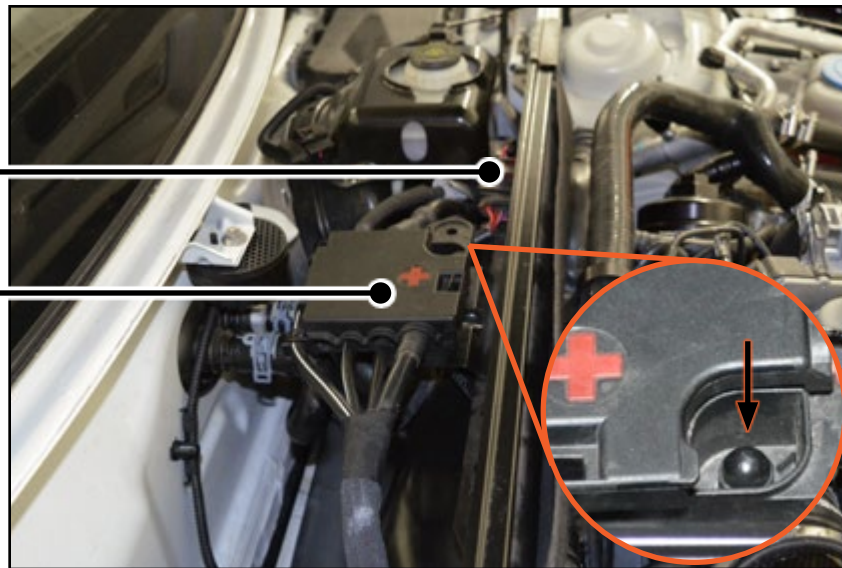
6. REMOVE THE WIPER TRANSMISSION/MOTOR

- Protective shield on drivers side
- Electrical connector on top
- Three 10mm bolts

DISASSEMBLY

7. RELEASE THE CONNECTOR FROM THE COWL BRACE

- One "push in" fastener holds it to the cowl brace
- It is not necessary to disconnect the halves of the electrical connector

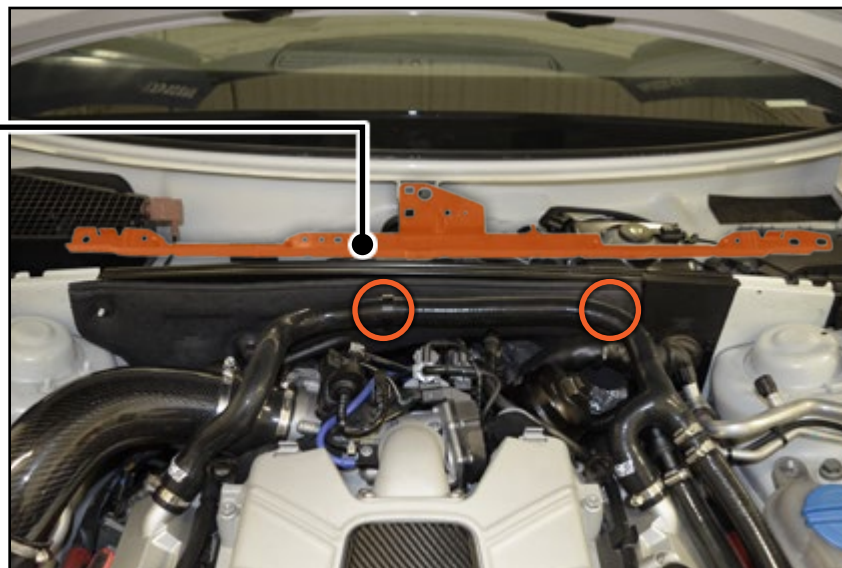


8. REMOVE THE POSITIVE JUNCTION BOX FROM COWL BRACE

- Remove protective cap and 10mm bolt
- Slide towards LH (drivers) side to remove
- It is not necessary to disconnect any wires

9. REMOVE THE COWL BRACE

- 13mm nut on RH (passenger) side
- Two 10mm bolts in center



NOTE:

- Brace is hidden behind cowl separation panel, shown visible here for descriptive purposes
- LH (driver) side is held down by washer fill spout nut
- The two bolts are hidden by the crank vent hose for our catch can system. They may be visible on your car.

DISASSEMBLY

10. REMOVE THE UPPER HARNESS RETAINER PANEL

- Release two clips on bottom
- Release two hidden clips near top
- Slide upward

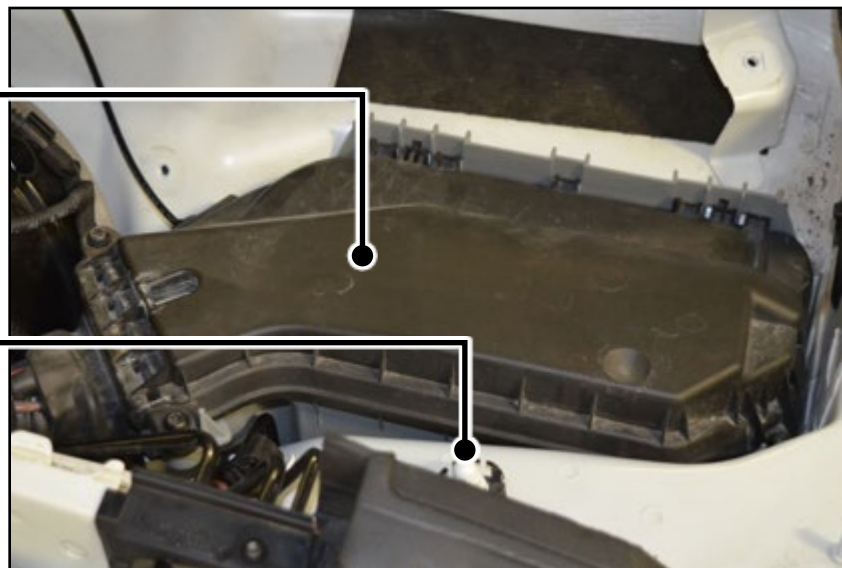
11. REMOVE THE 10mm NUT

12. REMOVE THE JUNCTION BOX COVER

- Three T30 Torx Screws

13. REMOVE THE GROUND WIRE

- 10mm Nut



DISASSEMBLY

14. SLIDE THE ECU OUT OF THE JUNCTION BOX

- Release clip on each side
- Do not remove ECU connectors
- Flip ECU backwards out of the way



15. DISCONNECT THE BATTERY NEGATIVE TERMINAL

- Battery located in trunk under spare
- 10mm nut
- Be sure to disconnect and isolate negative terminal



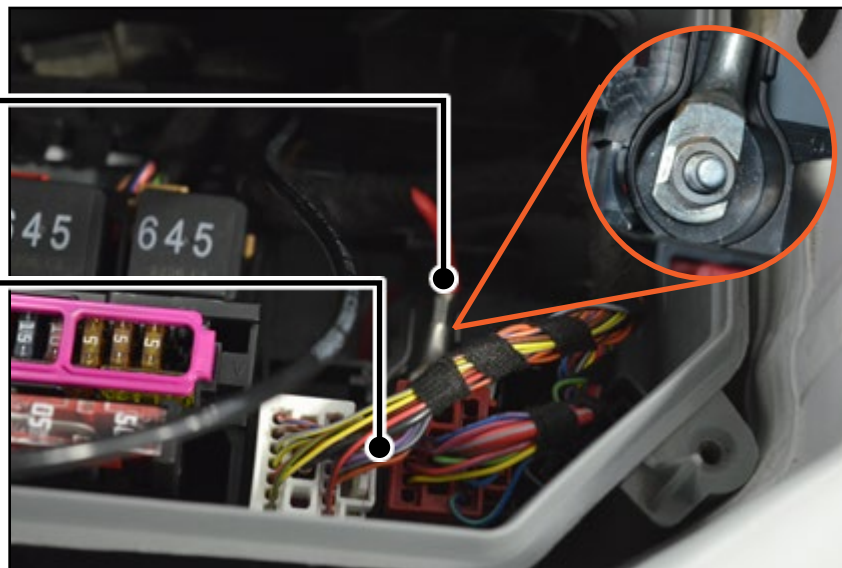
16. DISCONNECT THE RED POSITIVE CABLE

- 10mm nut

17. UNPLUG THE RED & WHITE ELECTRICAL CONNECTORS

NOTE:

- The tube visible in these pictures is for a boost gauge. If you have a boost gauge installed with a tube in this location, you will need to move it out of the way.



DISASSEMBLY

18. CAREFULLY FOLD THE ECU, FUSE PANEL, AND HARNESS FORWARD OUT OF THE COWL.



19. REMOVE THE LOWER HARNESS RETAINER PANEL

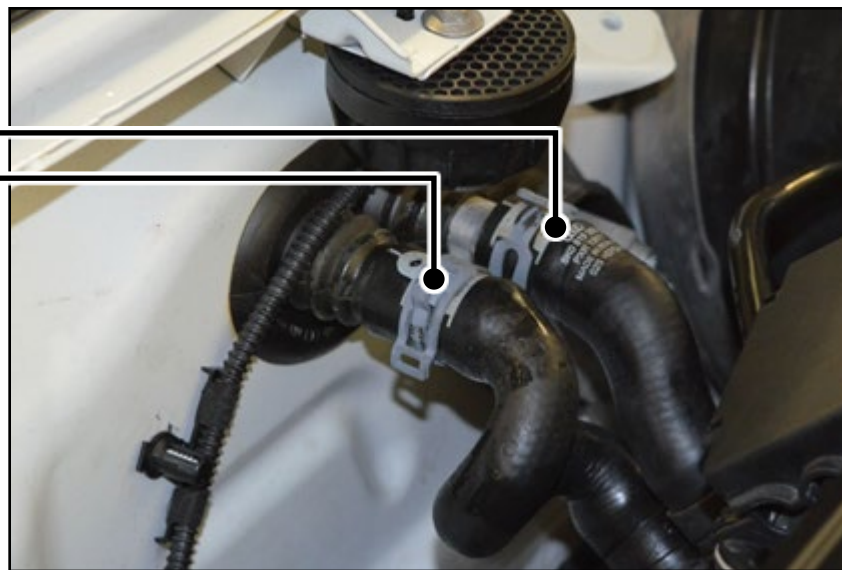
- Release two clips on bottom
- Slide upward slightly to remove



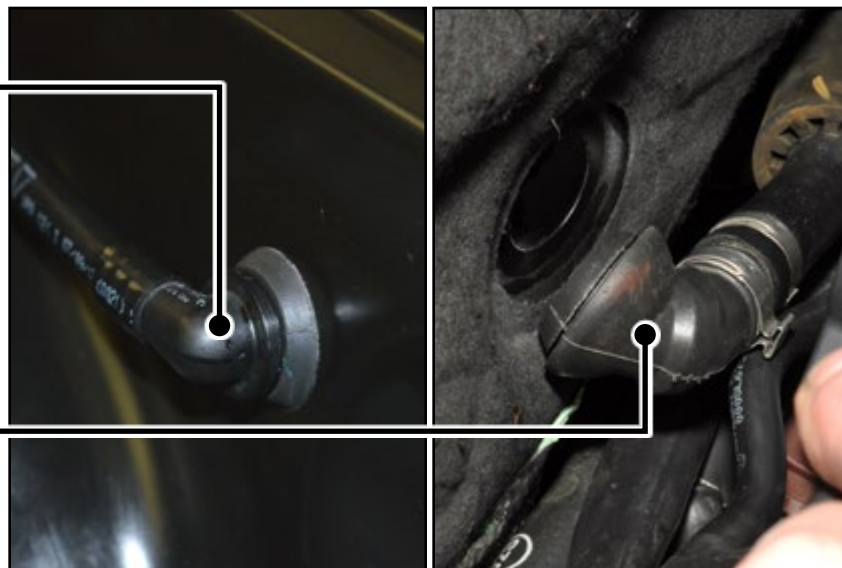
DISASSEMBLY

20. REMOVE BOTH HEATER HOSES FROM THE HEATER CORE

- Use spring clamp pliers to release tension on clamps
- Clamp hoses to prevent coolant loss



21. GENTLY PRY THE BRAKE BOOSTER LINE OUT OF GROMMET ON BACK OF COWL SEPARATION PANEL



22. PULL THE BRAKE LINE GROMMET OUT OF FRONT OF COWL SEPARATION PANEL

DISASSEMBLY

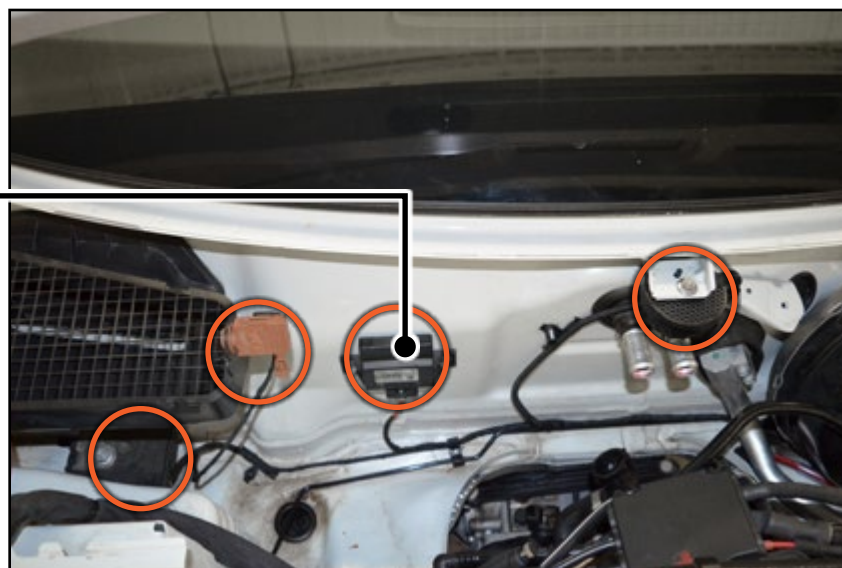
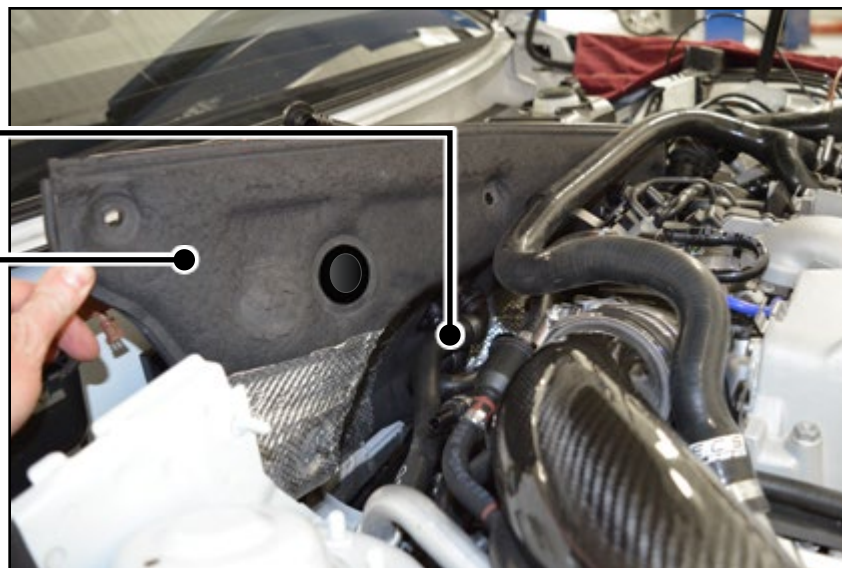
23. DISCONNECT HEATER HOSES FROM THE FRONT OF COWL SEPARATION PANEL

- Lift separation panel upward and tilt back for access
- Pull clip out of each then remove
- Pull each hose end straight off; o-ring seals hold ends tightly, expect to use moderate force

24. LIFT THE COWL SEPARATION PANEL UP AND REMOVE FROM VEHICLE

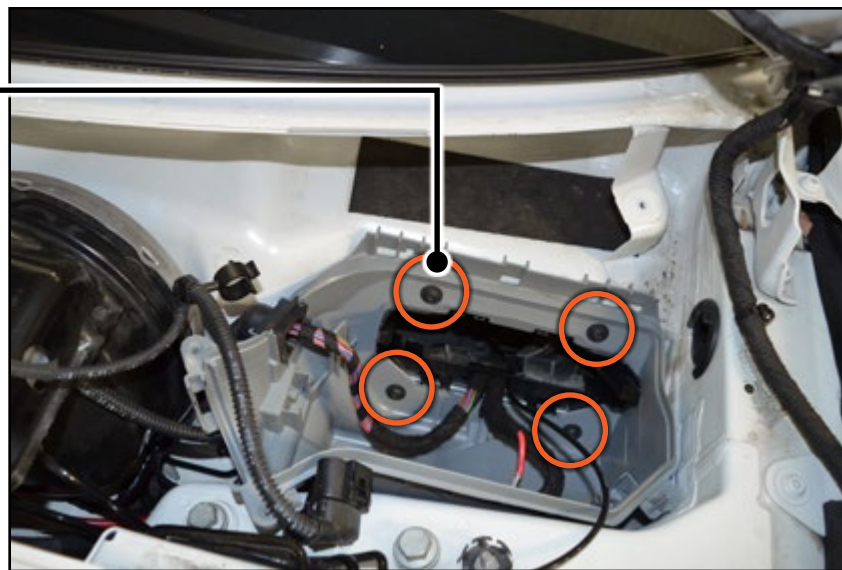
25. DISCONNECT THE WIRING HARNESS FROM ACCESSORIES

- Number of accessories may vary depending on model; there are four on this B8 S4
- This allows for slack in the wiring harness during next steps



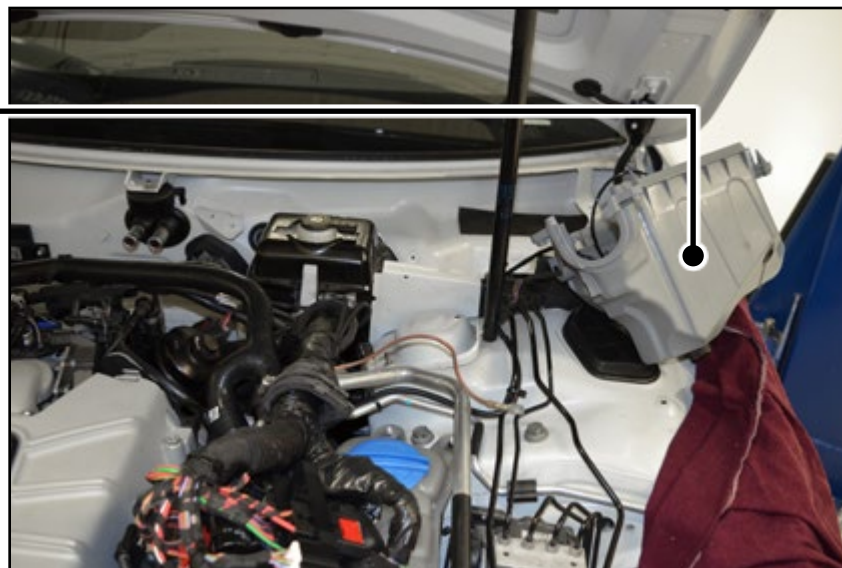
DISASSEMBLY

26. REMOVE THE FOUR T30 JUNCTION BOX SCREWS



27. LIFT THE JUNCTION BOX OUT OF THE COWL AND PLACE IT TO THE SIDE

- Press in the ECU cradle tabs and push the cradle slightly into the vehicle
- Gently pull the wiring harness under the brake booster to get enough slack to lift the junction box out of the way.



**DISASSEMBLY IS COMPLETE. YOU ARE NOW READY TO
INSTALL THE NEW CLUTCH LINE!**

INSTALLING THE NEW EXACT-FIT LINE

1. DISCONNECT THE ORIGINAL CLUTCH HOSE AT THE CLUTCH MASTER CYLINDER

- Pull out retaining clip with small pick
- Pull hose out of master cylinder



BRAKE FLUID WARNING

- Draw excess fluid from master cylinder reservoir to prevent spillage
- Place rags under line to catch fluid
- Clean up spills rapidly



2. DISCONNECT THE ORIGINAL CLUTCH HOSE FROM THE SLAVE CYLINDER LEAD-IN LINE

- Pull out retaining clip with small pick
- Pull hose out of connecting union
- Skid plate/insulation panel may need to be removed for access



VEHICLE MUST BE RAISED FOR ACCESS

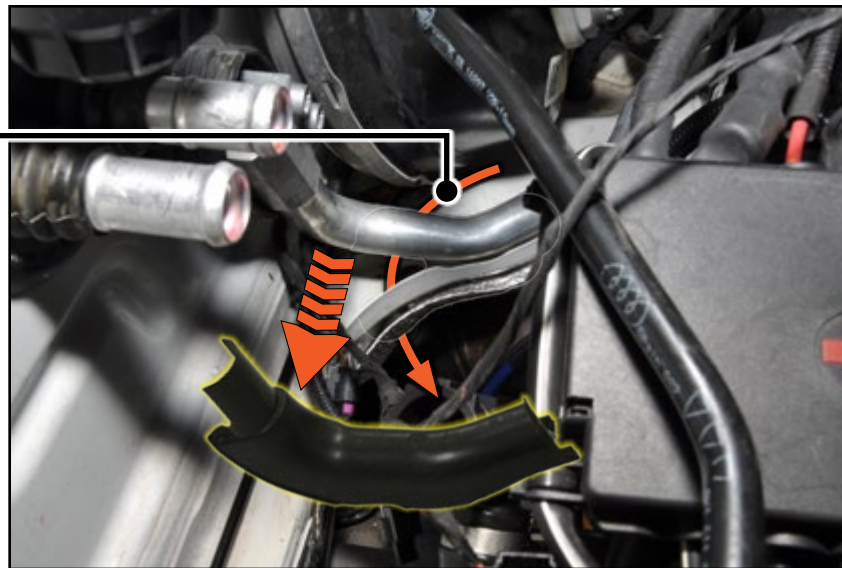
- Be sure to use safe lifting practices and properly support the vehicle with jack stands



INSTALLING THE NEW EXACT-FIT LINE

3. REMOVE THE ORIGINAL HOSE FROM CAR

- Remove protective cover from A/C line
- Push hose grommet through hole in cowl
- Guide the original hose around the brake booster and down through the hole in bottom of cowl
- With patience, original hose can be removed intact, you may decide to cut or break it to make it easier



4. GUIDE THE NEW EXACT-FIT LINE THROUGH HOLE IN COWL AND SEAT THE GROMMET INTO PLACE.

- Reference page 3 and note that **two** clear polymer sleeves should be located on the cowl, or top side of the line.



NOTE:

- Check the clearance of the A/C line cover. You may need to trim it slightly to clear the new Exact-Fit line.

INSTALLING THE NEW EXACT-FIT LINE

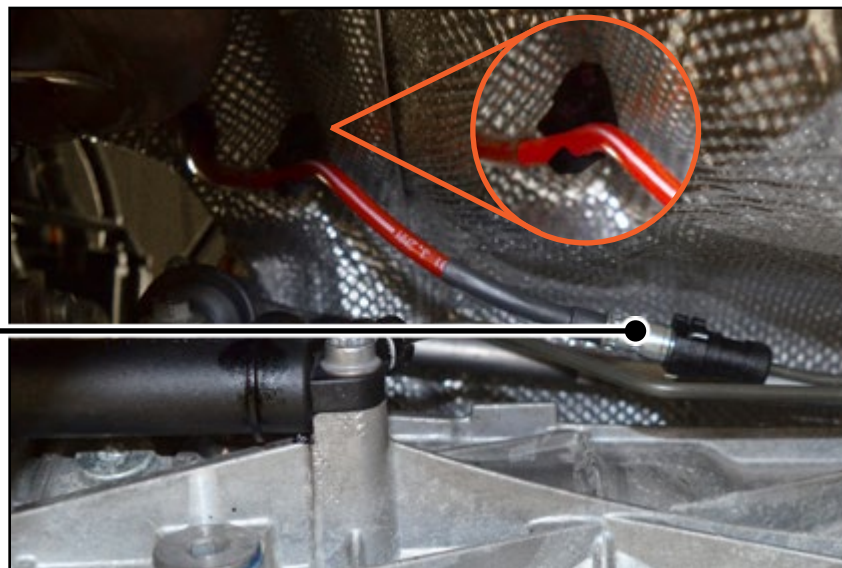
5. CONNECT THE NEW LINE TO THE CLUTCH MASTER CYLINDER

- Run the hose under the brake booster
- Make sure the clip on the master cylinder is fully seated to hold the line end in place



6. UNDERNEATH THE CAR, CONNECT THE NEW LINE TO THE SLAVE CYLINDER LEAD-IN LINE

- Make sure the clip on the slave cylinder is fully seated
- Push the line into the existing retainer

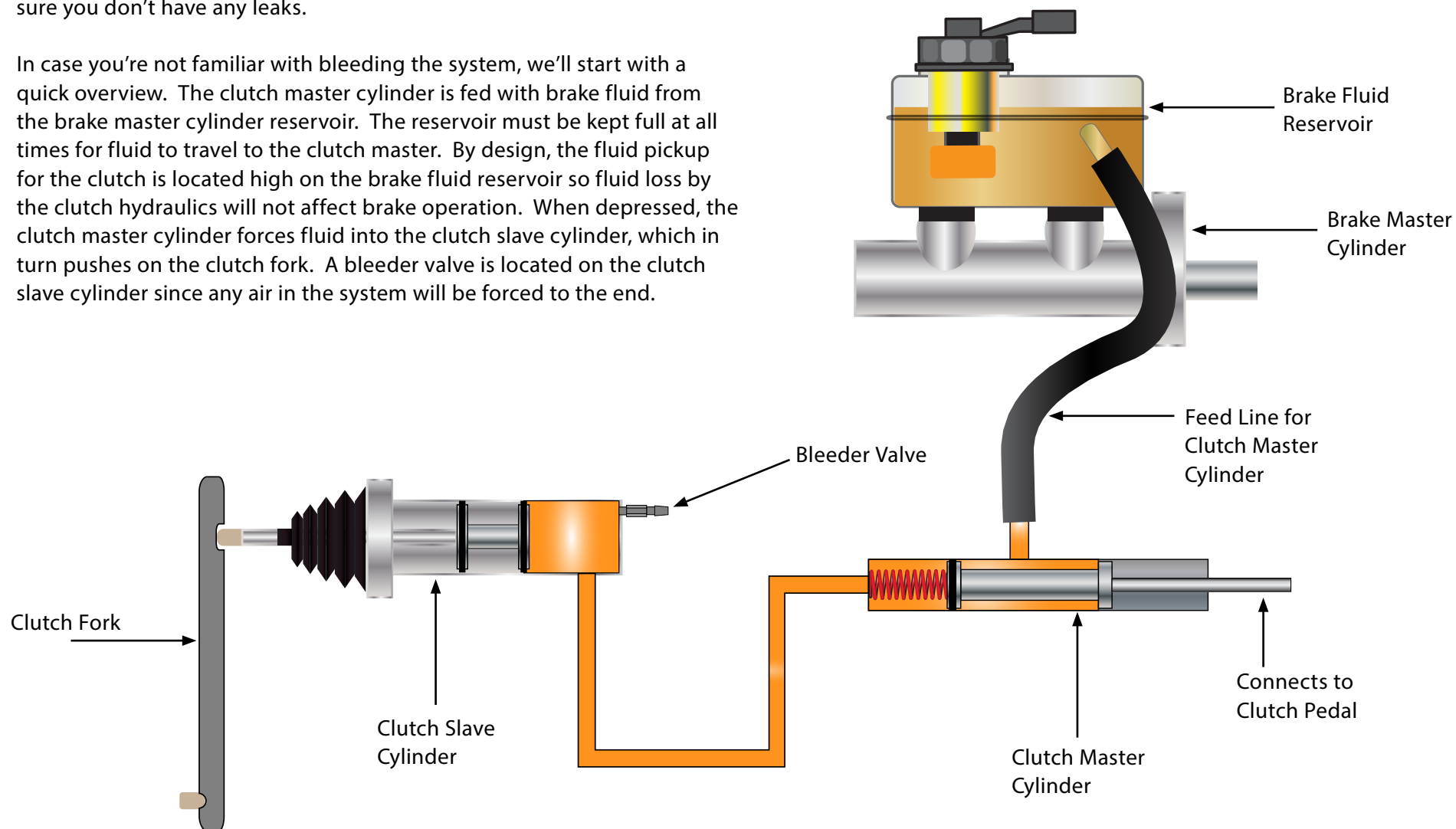


WITH THE NEW LINE IN PLACE, IT'S TIME TO BLEED THE SYSTEM!

BLEEDING THE CLUTCH HYDRAULIC SYSTEM

Before you reassemble the vehicle, it's best to bleed the clutch and make sure you don't have any leaks.

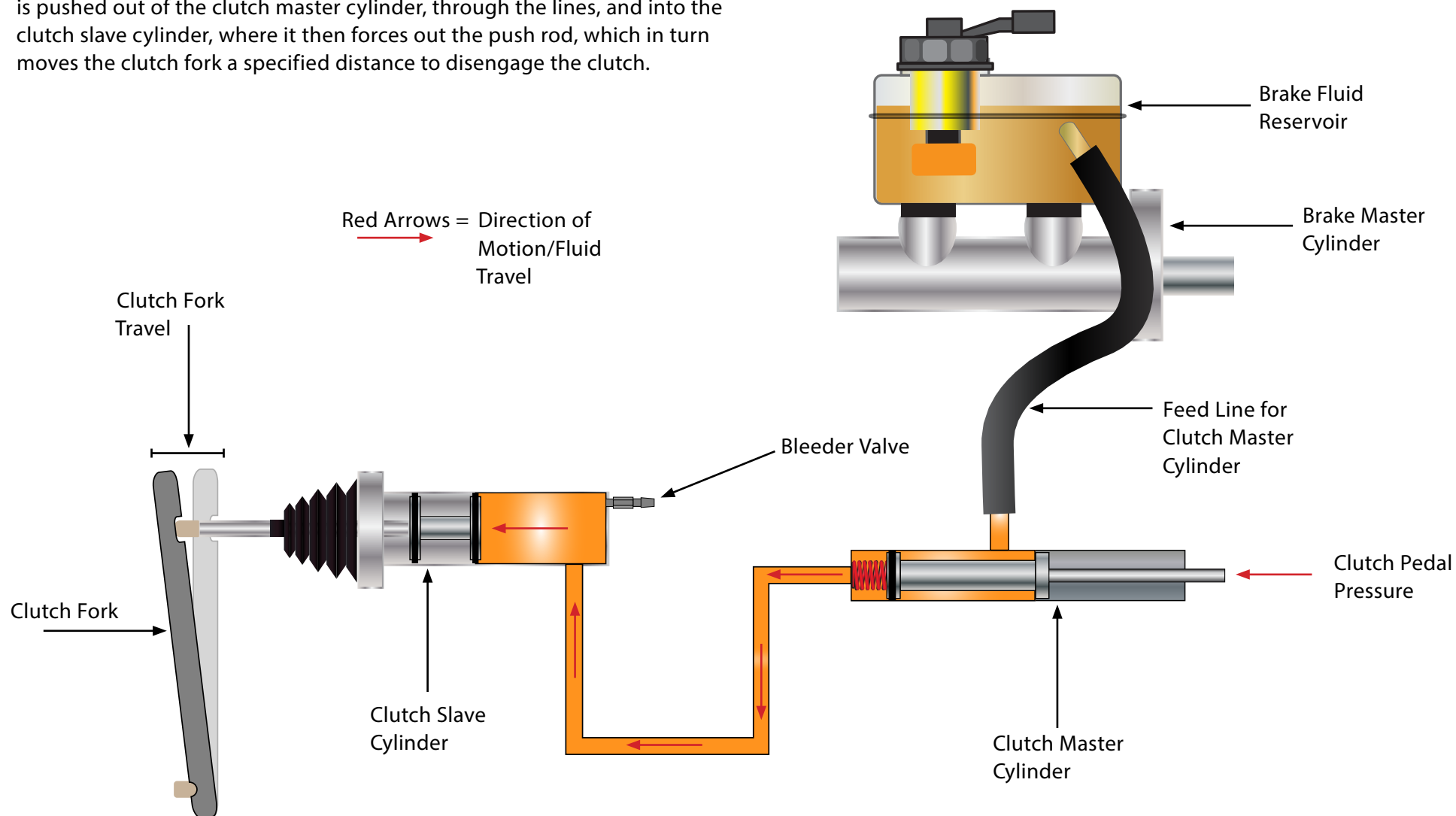
In case you're not familiar with bleeding the system, we'll start with a quick overview. The clutch master cylinder is fed with brake fluid from the brake master cylinder reservoir. The reservoir must be kept full at all times for fluid to travel to the clutch master. By design, the fluid pickup for the clutch is located high on the brake fluid reservoir so fluid loss by the clutch hydraulics will not affect brake operation. When depressed, the clutch master cylinder forces fluid into the clutch slave cylinder, which in turn pushes on the clutch fork. A bleeder valve is located on the clutch slave cylinder since any air in the system will be forced to the end.



Note: Drawing is for reference; components may not appear identical.

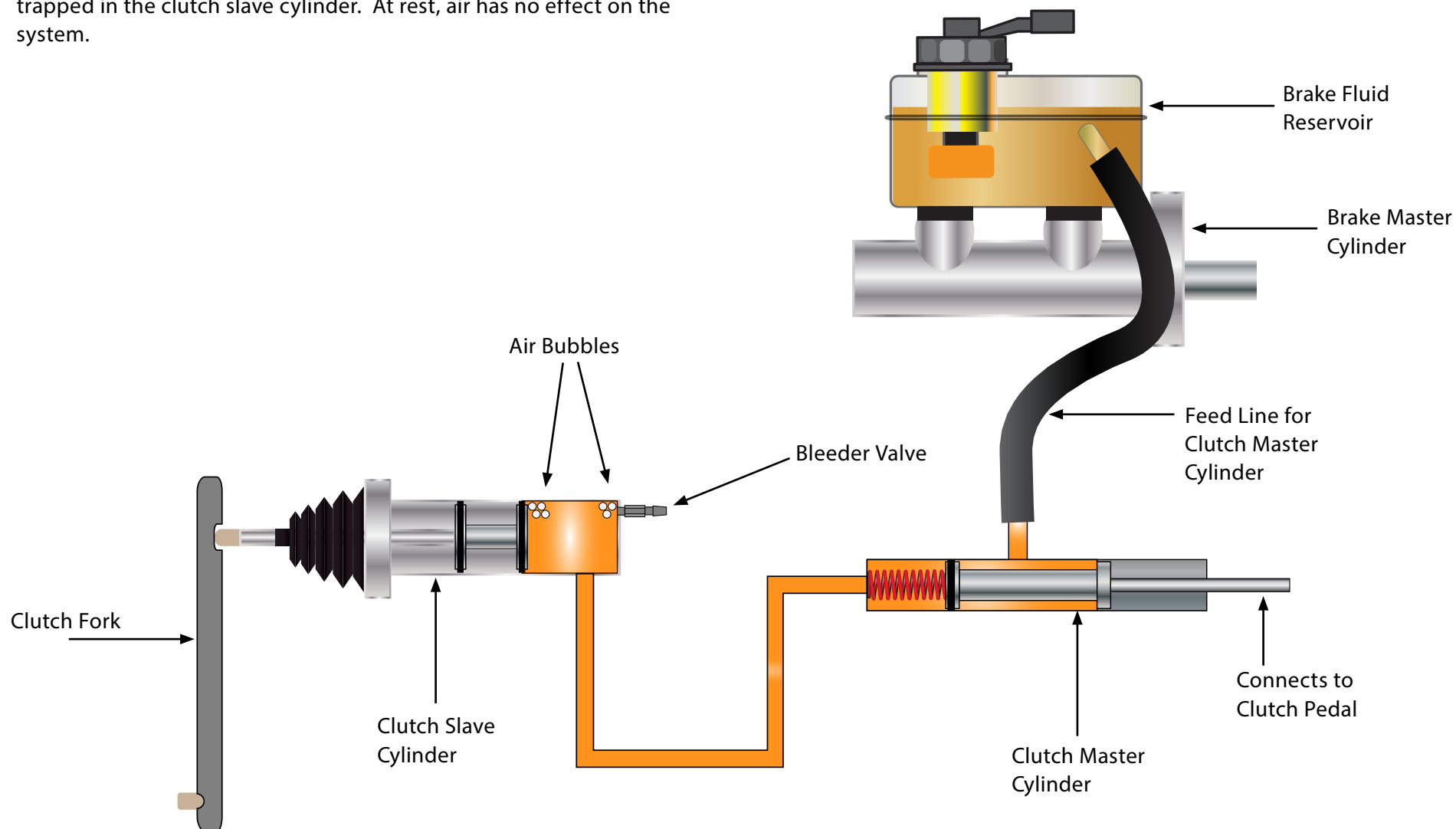
BLEEDING THE CLUTCH HYDRAULIC SYSTEM

During normal operation, when you press on the clutch pedal, brake fluid is pushed out of the clutch master cylinder, through the lines, and into the clutch slave cylinder, where it then forces out the push rod, which in turn moves the clutch fork a specified distance to disengage the clutch.



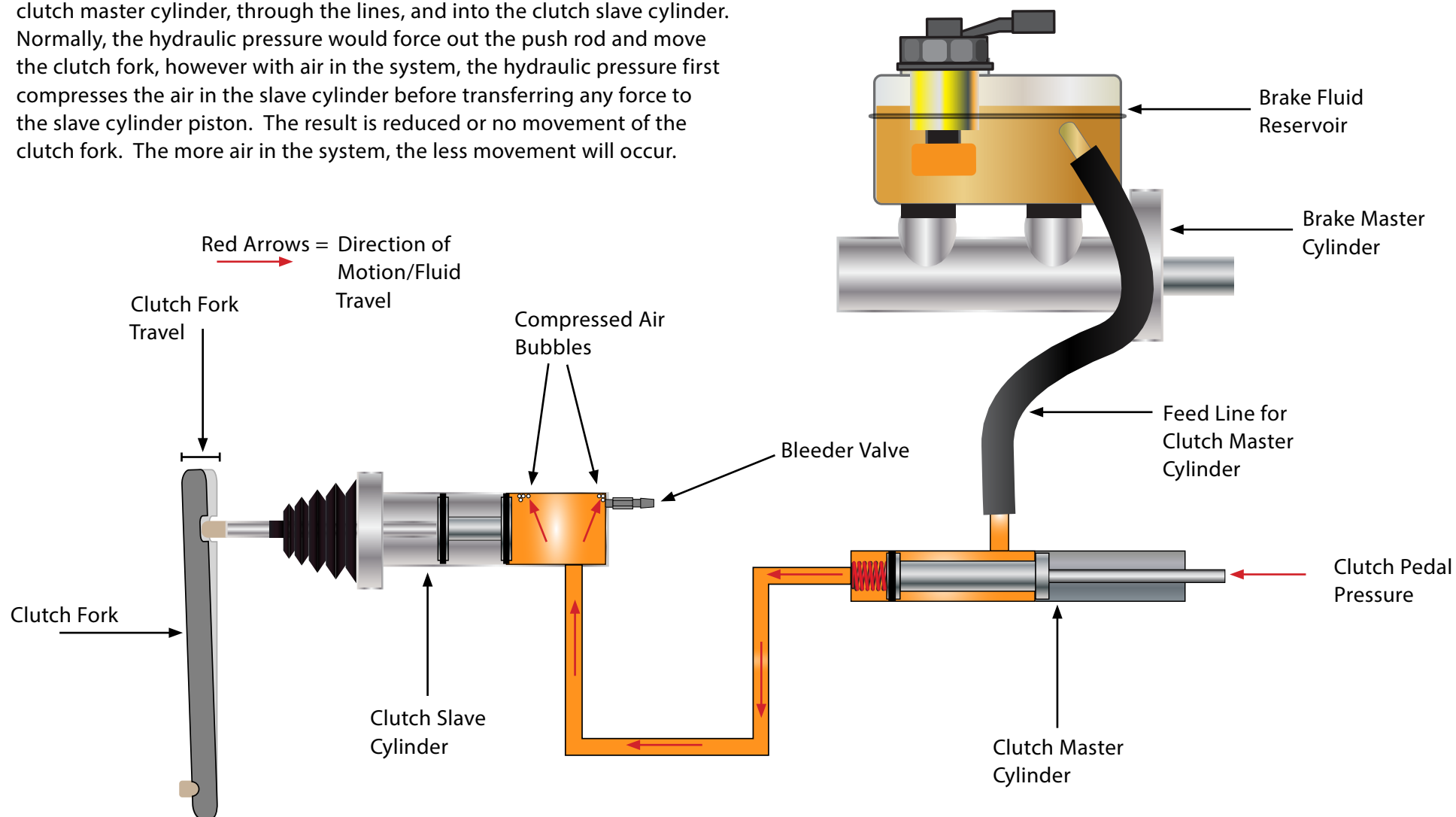
BLEEDING THE CLUTCH HYDRAULIC SYSTEM

Here is the clutch hydraulic system at rest, but there are air bubbles trapped in the clutch slave cylinder. At rest, air has no effect on the system.



BLEEDING THE CLUTCH HYDRAULIC SYSTEM

When the clutch pedal is depressed, brake fluid is pushed out of the clutch master cylinder, through the lines, and into the clutch slave cylinder. Normally, the hydraulic pressure would force out the push rod and move the clutch fork, however with air in the system, the hydraulic pressure first compresses the air in the slave cylinder before transferring any force to the slave cylinder piston. The result is reduced or no movement of the clutch fork. The more air in the system, the less movement will occur.



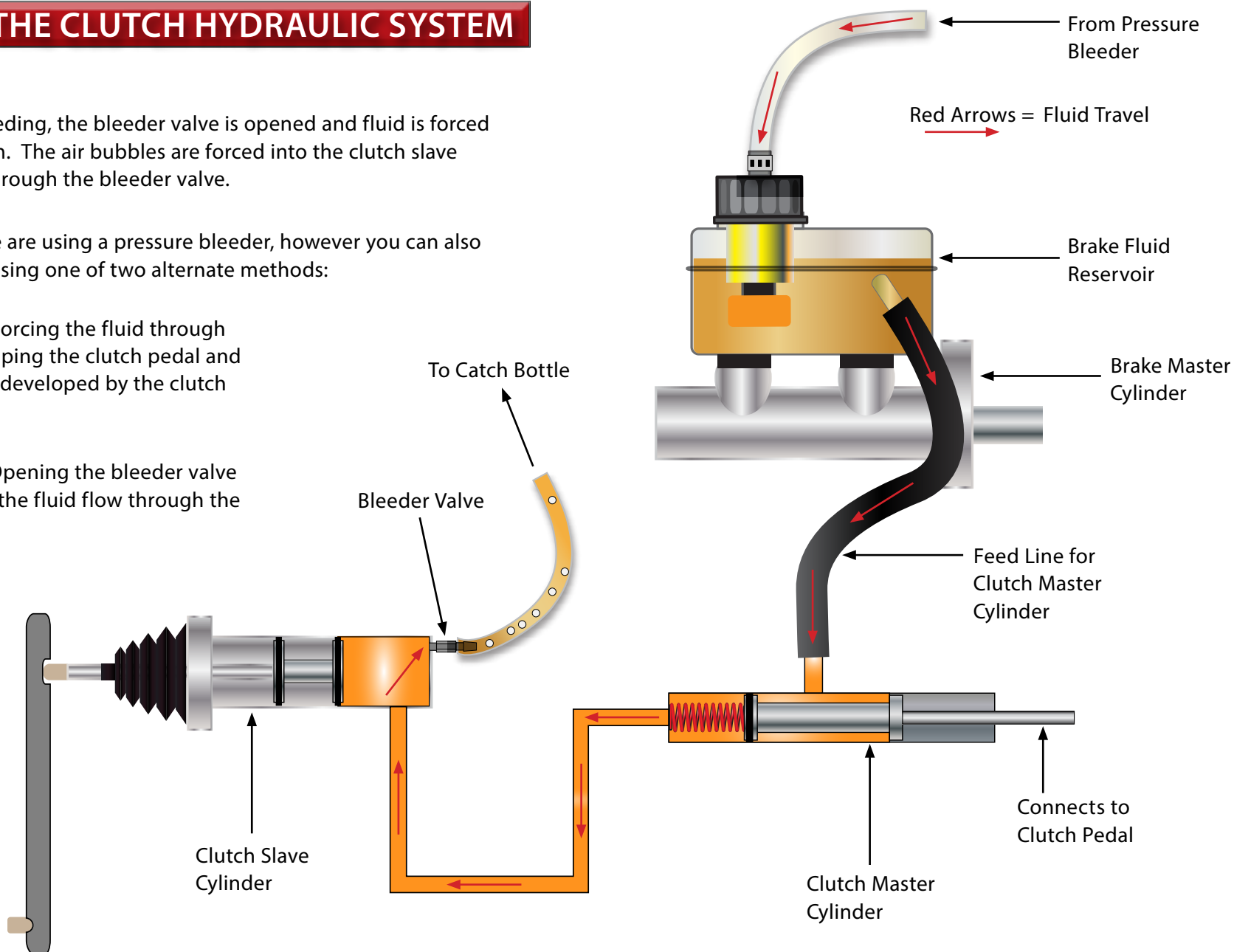
BLEEDING THE CLUTCH HYDRAULIC SYSTEM

During system bleeding, the bleeder valve is opened and fluid is forced through the system. The air bubbles are forced into the clutch slave cylinder and out through the bleeder valve.

In this example, we are using a pressure bleeder, however you can also bleed the system using one of two alternate methods:

Manual Bleeding: Forcing the fluid through the system by pumping the clutch pedal and using the pressure developed by the clutch master cylinder.

Gravity Bleeding: Opening the bleeder valve and simply letting the fluid flow through the system.



BLEEDING THE CLUTCH HYDRAULIC SYSTEM

Now that we've covered the process, it's time to bleed the air out of the system. Decide what method you are going to use, keeping in mind the following:

- Gravity bleeding is quite often very effective and is always a good method to begin with. Simply fill the reservoir, open the bleeder and wait until fluid flows out bubble free. Close the bleeder screw and see how the pedal feels.
- With manual bleeding, have a helper pump the pedal and hold pressure on it, then open and close the valve. Repeat this process until you obtain a normal pedal feel.
- Due to the design of clutch hydraulic systems, it can sometimes be difficult to get all of the air out. You may have to use a combination of different methods to successfully bleed the system.

A pressure bleeder will efficiently force clutch (brake) fluid through the system.



Pressure Bleeder
[ES#2774831](#)

A catch bottle makes bleeding or flushing a one person job, and makes it a lot cleaner too.



Catch Bottle
[ES#2773388](#)

A high quality brake fluid such as Pentosin Super DOT 4 should be adequate for most systems.



Brake Fluid
[ES#1971190](#)

REASSEMBLY

Reassembly is simply the reverse of removal, and you'll find it'll go really quick. There are just a couple things that might be a little tricky, so we'll leave you with these tips:

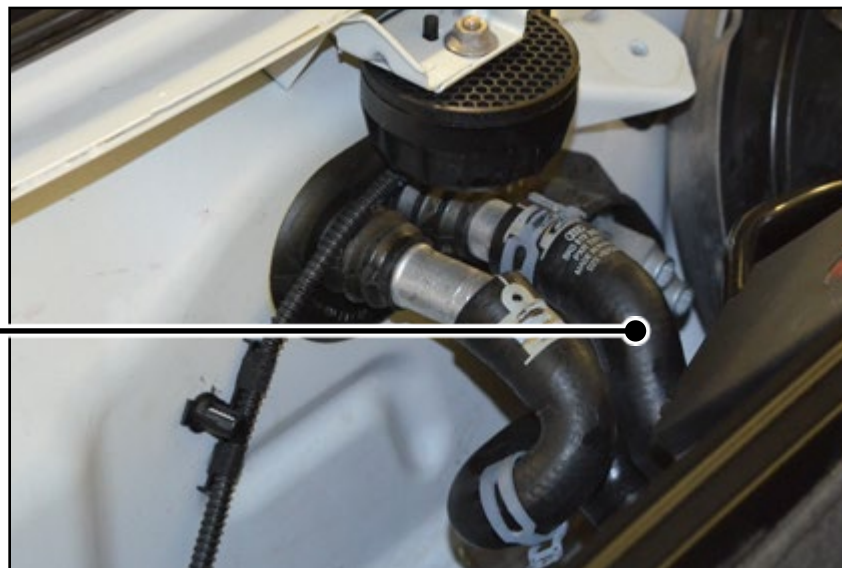
COWL SEPARATION PANEL

- When reinstalling the cowl separation panel, there is a tab at the base of the cowl. Make sure to get it hooked behind this tab.



BEFORE INSTALLING THE COWL SCREEN, BLEED THE COOLING SYSTEM

- The passenger side heater hose has a small hole in the top.
- Leave the hose off the heater core so the hole is exposed.
- Fill the coolant reservoir and run the engine at 2000 RPM's until coolant flows out.
- Install the hose, top off the system, and install the reservoir cap.



THANK YOU FOR YOUR BUSINESS!

SCHWABEN - BUILD THE ULTIMATE TOOL COLLECTION

At ECS Tuning, we carry a line of high quality Schwaben tools and equipment to help you build your ultimate tool collection. Never before has affordability and quality been so closely related. Our entire Schwaben line is subjected to strict in house testing for strength and durability. See what we have to offer and equip your garage without breaking the bank.

