

Replacing the Upper Steering Column



By Richard Sowers, annotated in 2013 by John Sharpe
Original available at:

http://www.gmceast.com/technical/Sowers_Steering_Column_Upgrade_Repair.pdf

GMCES

This Presentation



- Multi-Function Switch
 - Electric Wiper Control
 - Electronic Cruise Switch
 - Dimmer Switch
- Telescopic Feature...
 - Directions not addressed in this presentation



DISCLAIMER:

Information presented is intended only as entertainment. Provocative ideas, thoughts, and opinions are for the GMC Motorhome enthusiast; there is no attempt to replace or supersede recommendations from General Motors Corporation, any other manufacturer or government agency. All opinions expressed are those of enthusiasts and not professional engineers of any kind. Mention of any product does not constitute endorsement. Neither authors nor any organization assume any responsibility for any repairs or modifications you choose to do to your coach. It is recommended that you get approvals from a certified engineer and applicable government entities before making material changes to any vehicle.



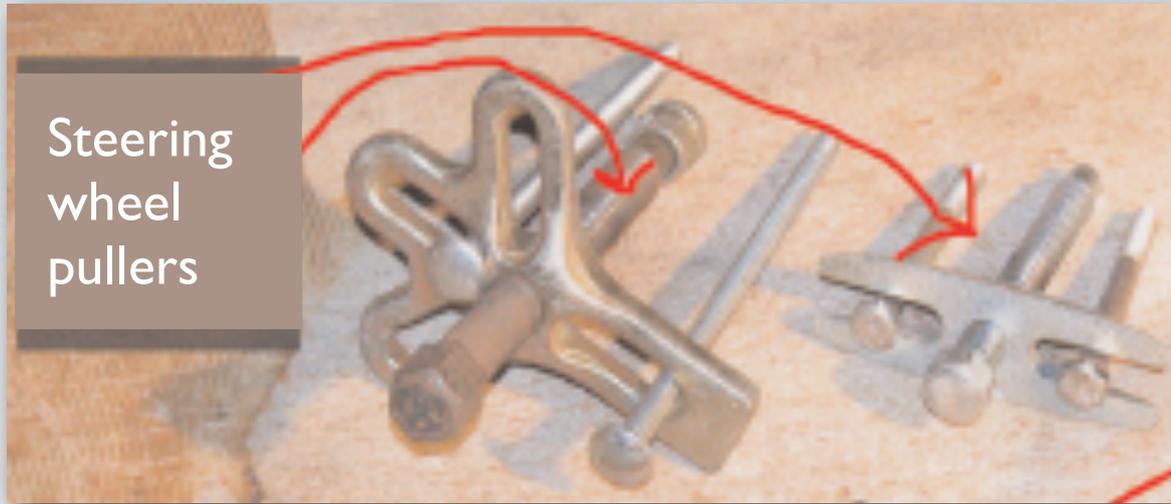
Donor Columns

- 88-94 Chevrolet/GMC Pick-ups/Suburbans/Astravans/Lumina APV's
- Most GM cars
- For telescoping; Cadillacs full-size 85-94
(wiper switch probably won't be compatible/)

Project Order

1. Find a column. The key is to find one that has a multi-function switch with only three wires.
2. Once you find a column, you need everything from the lower tilt block up. If you want to move your dimmer from the floor to the column, you need those parts also. Buying the complete column may be the best option.
3. Buy one of Ken Henderson's Electric Wiper Conversion Kit.
4. Add cruise switch for electronic cruise control

GMCES



Steering wheel pullers



Spring compressors



OR



OR



Home made pivot pin puller.

Harbor Freight
ITEM 43072-0VGA

Pull Steering Wheel



- Remove
- Horn switch
- Nut safety clip
- Nut



Remove Cover Plate

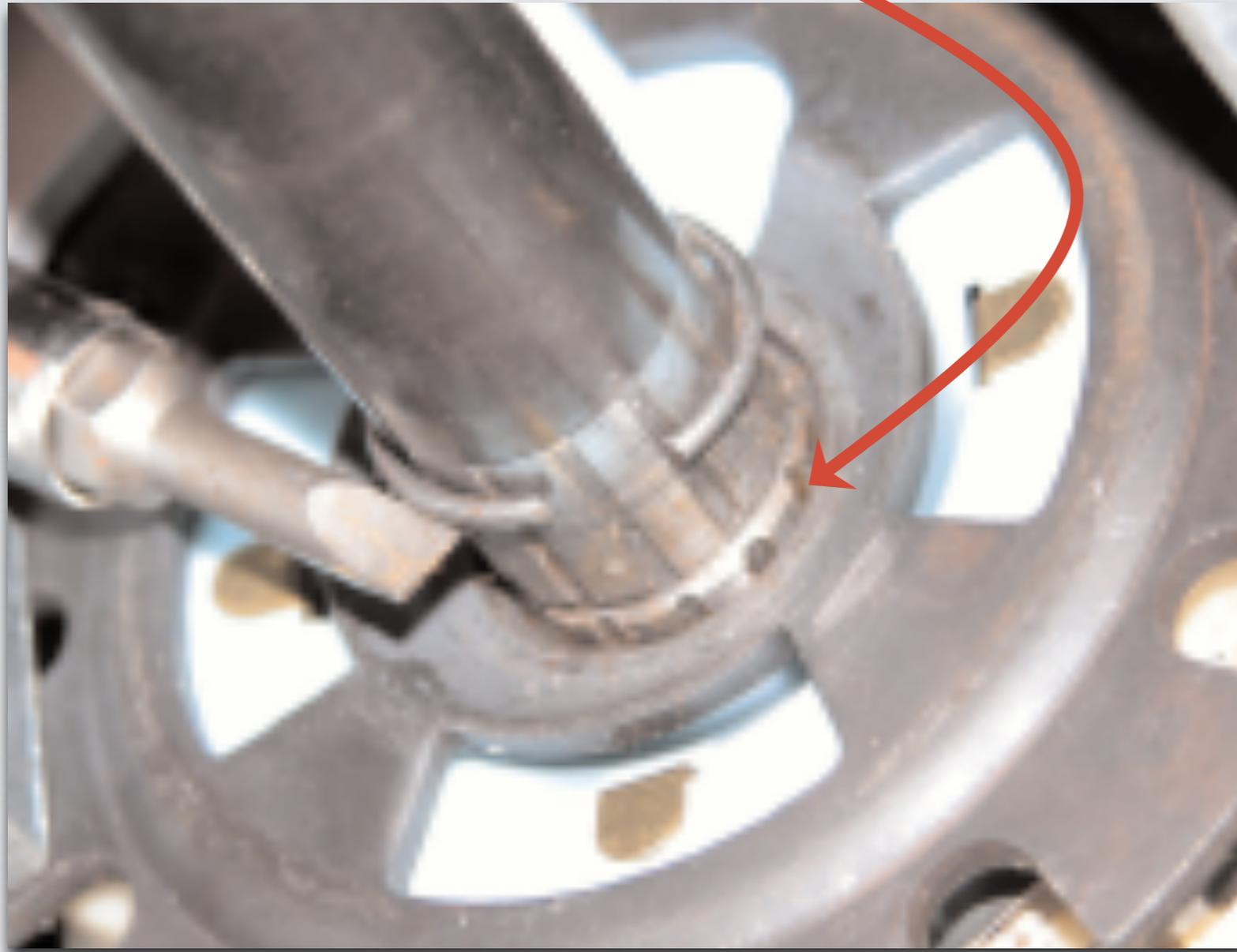


Depress Lock Plate

Only enough to remove clip
Cranking down too much will smash parts beneath



Remove Lock ring



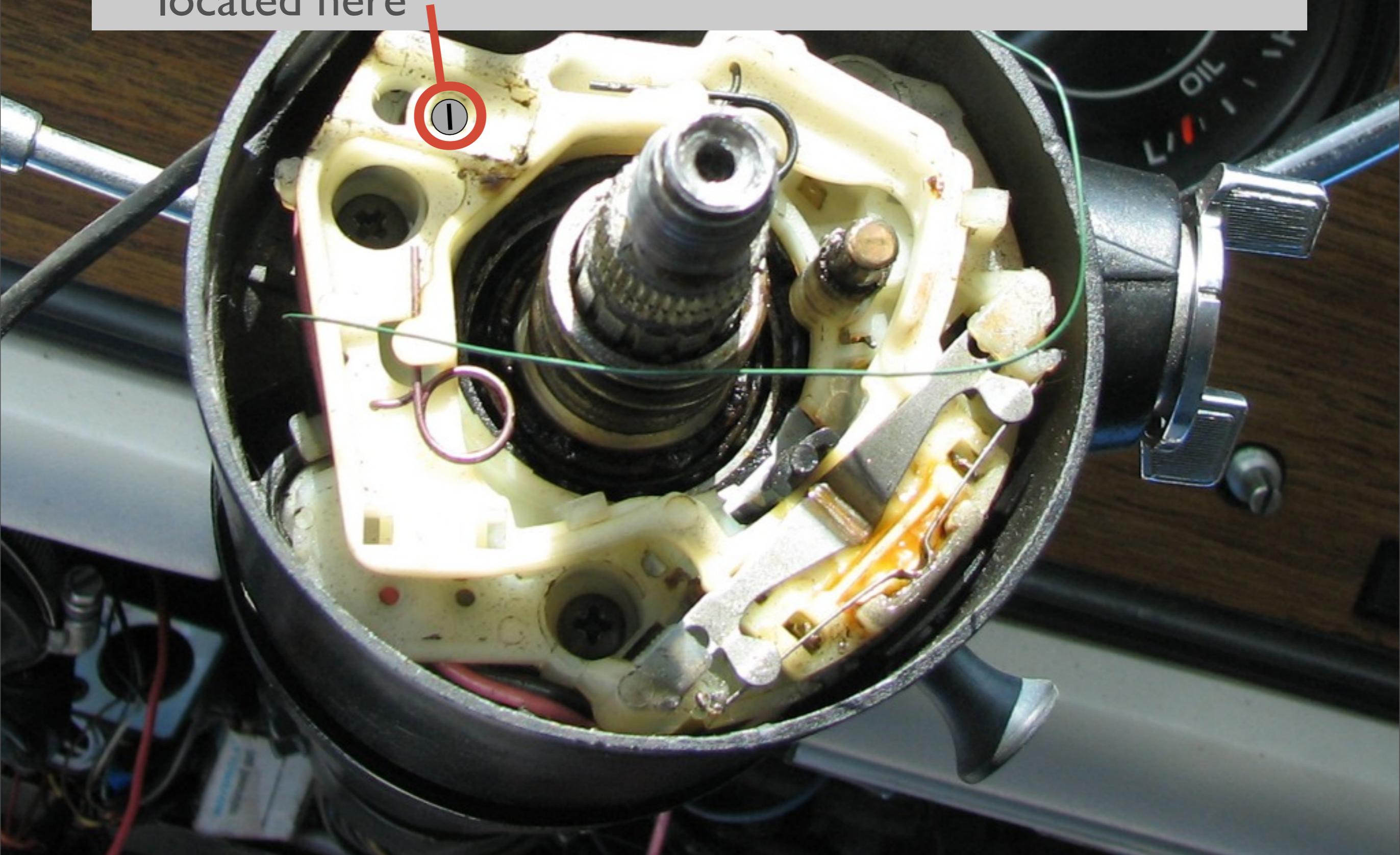
Probably depressed too far. It's easier to work with if only the minimum room to remove the clip is exposed.

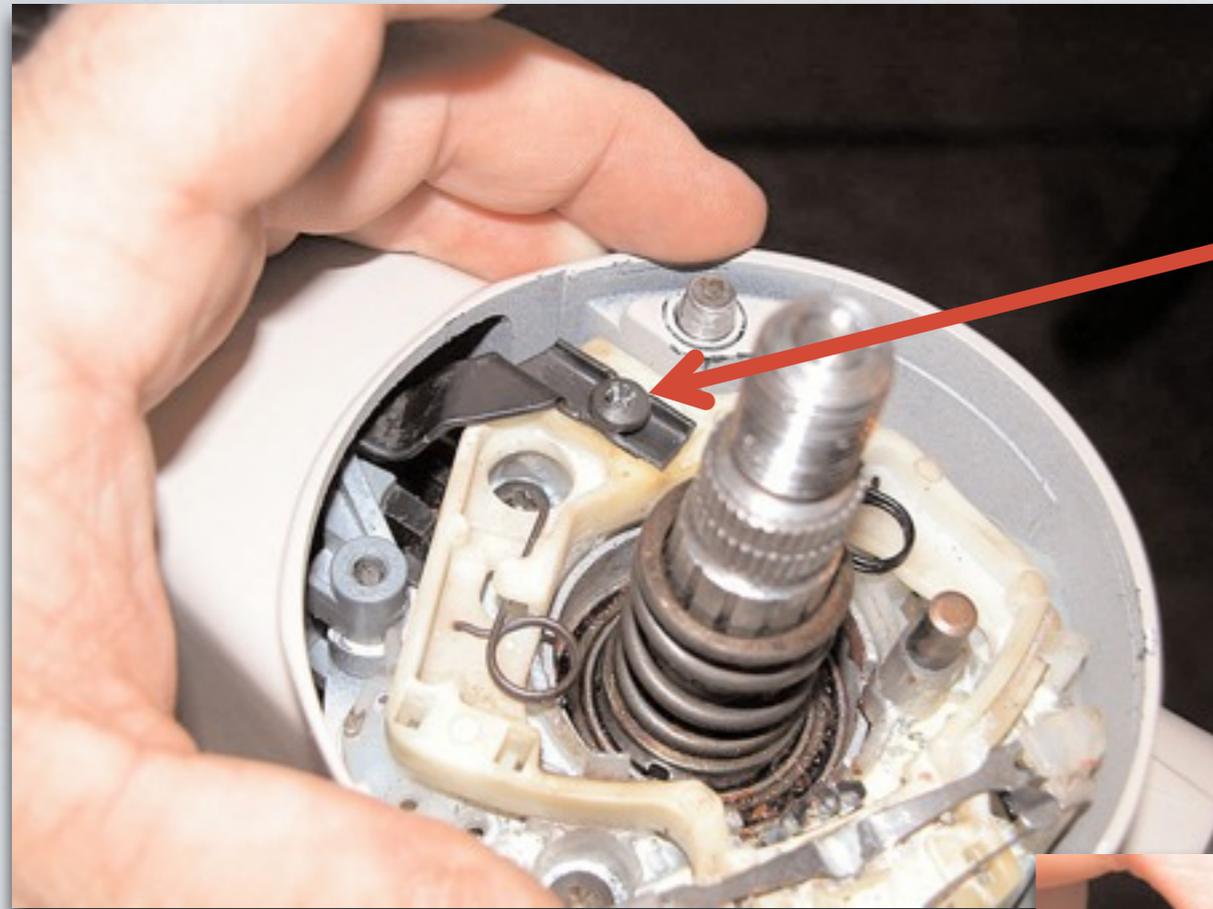


Then remove the Spring compressor, and take off the locking plate, and the horn link/flasher return cam.

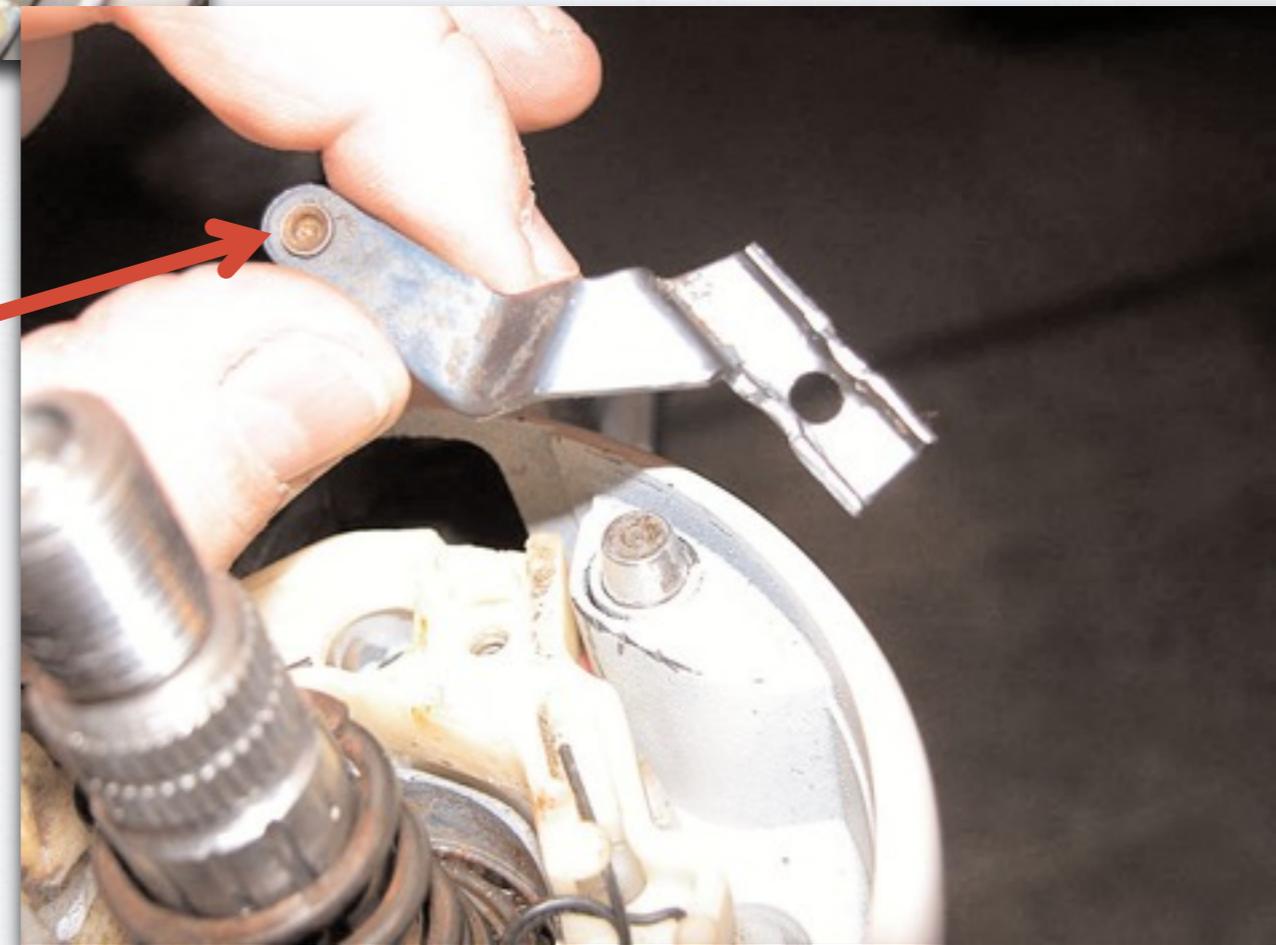


◆ Use the Maintenance Manual as a guide for performing this teardown and assembly. Remove the single screw located here

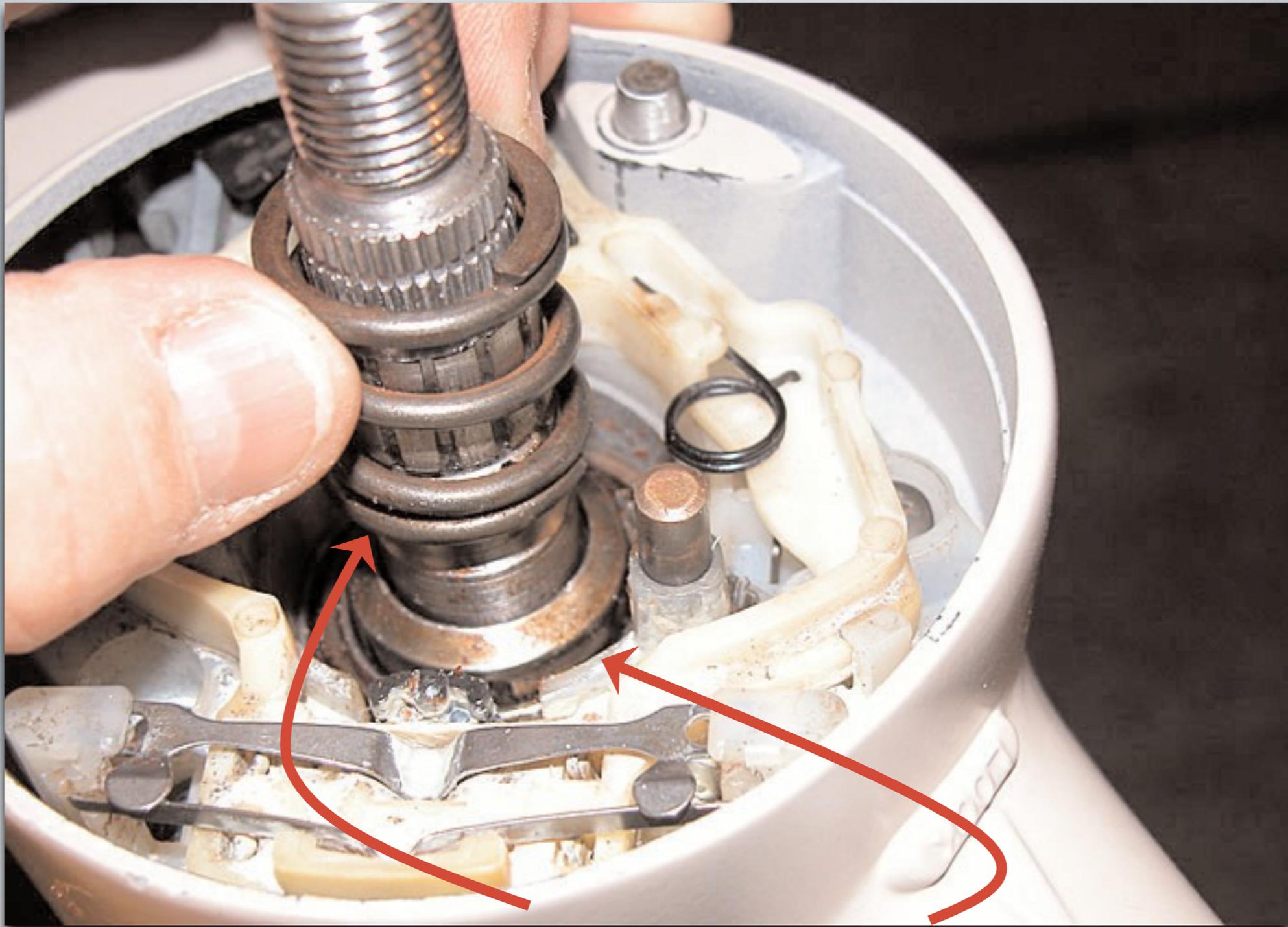




This is the lever screw on the donor column

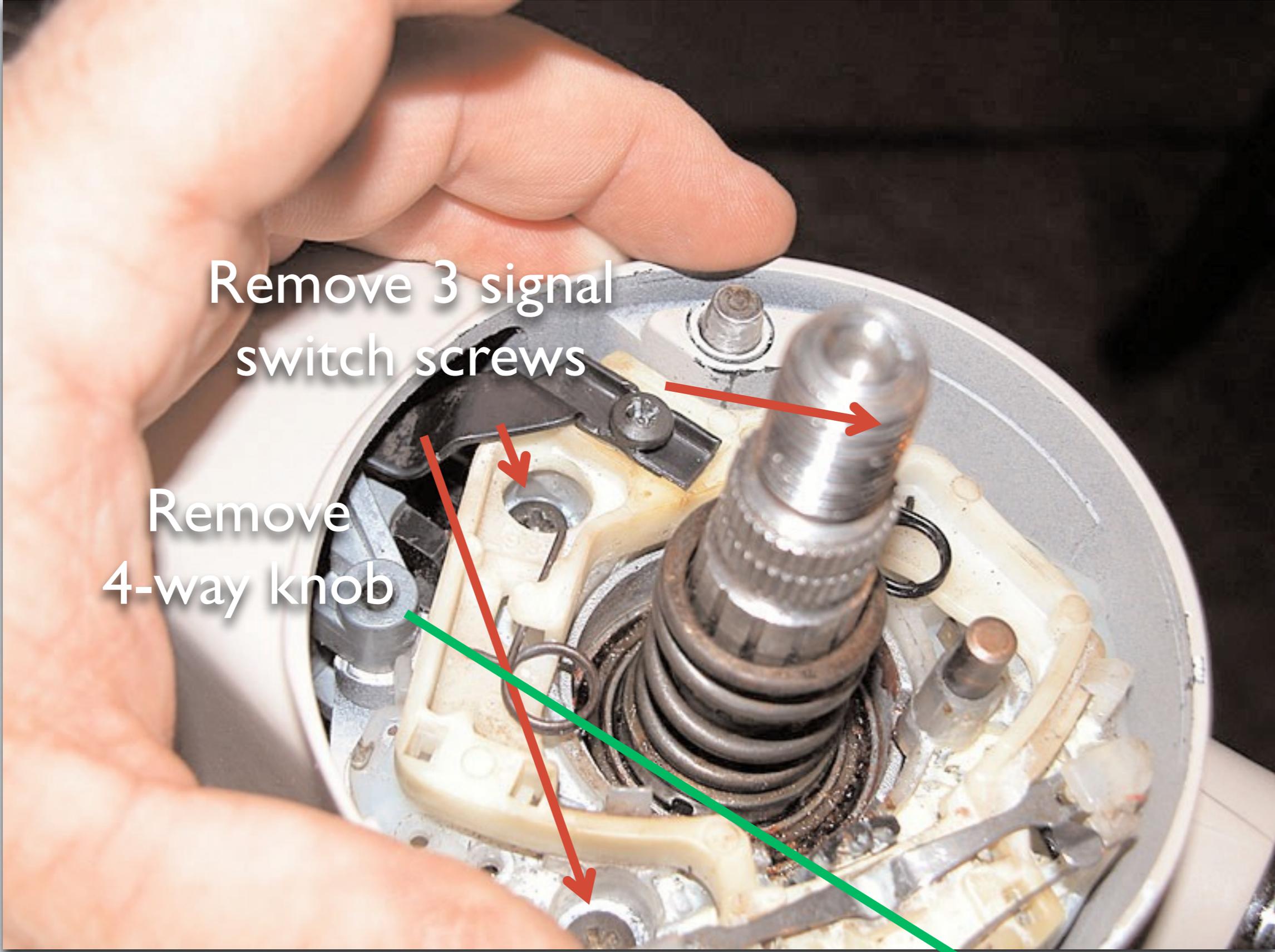


The other end of the lever rides in a groove in the wiper switch



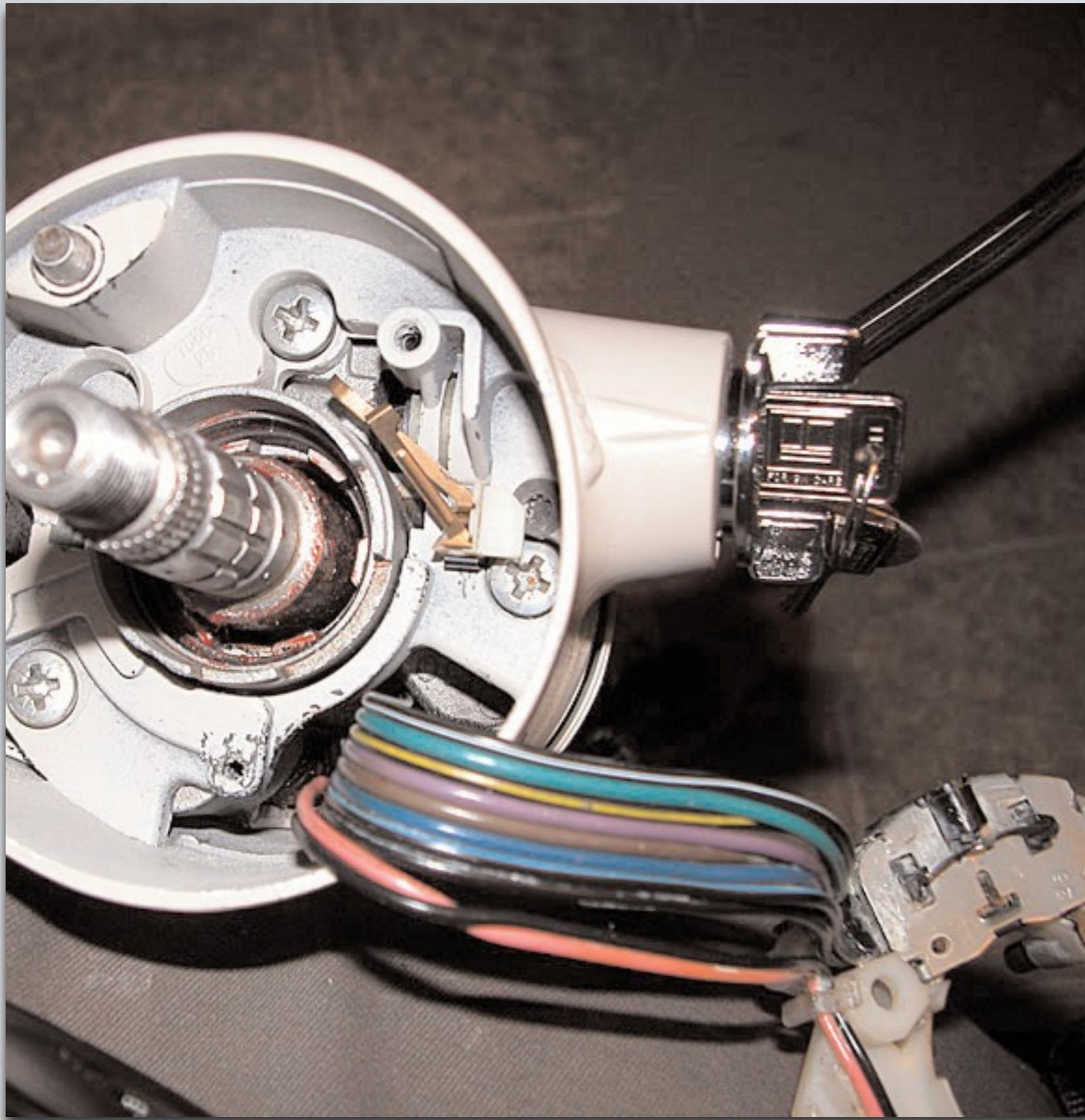
Remove the spring and the spring seat.





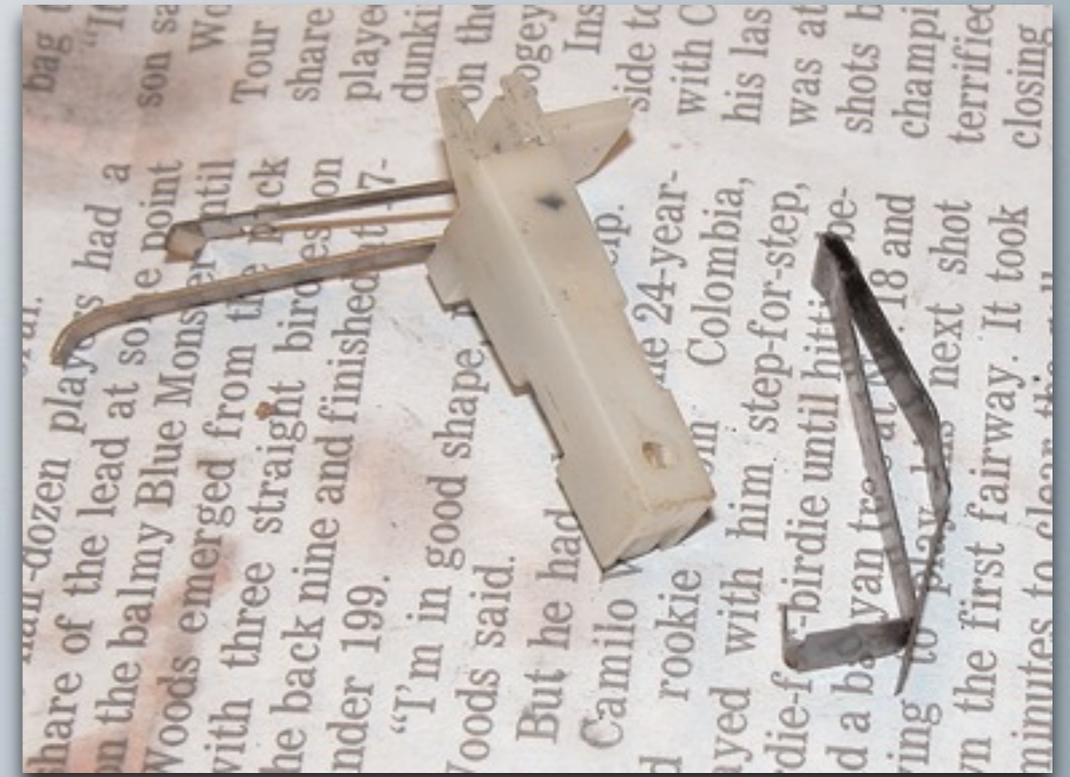
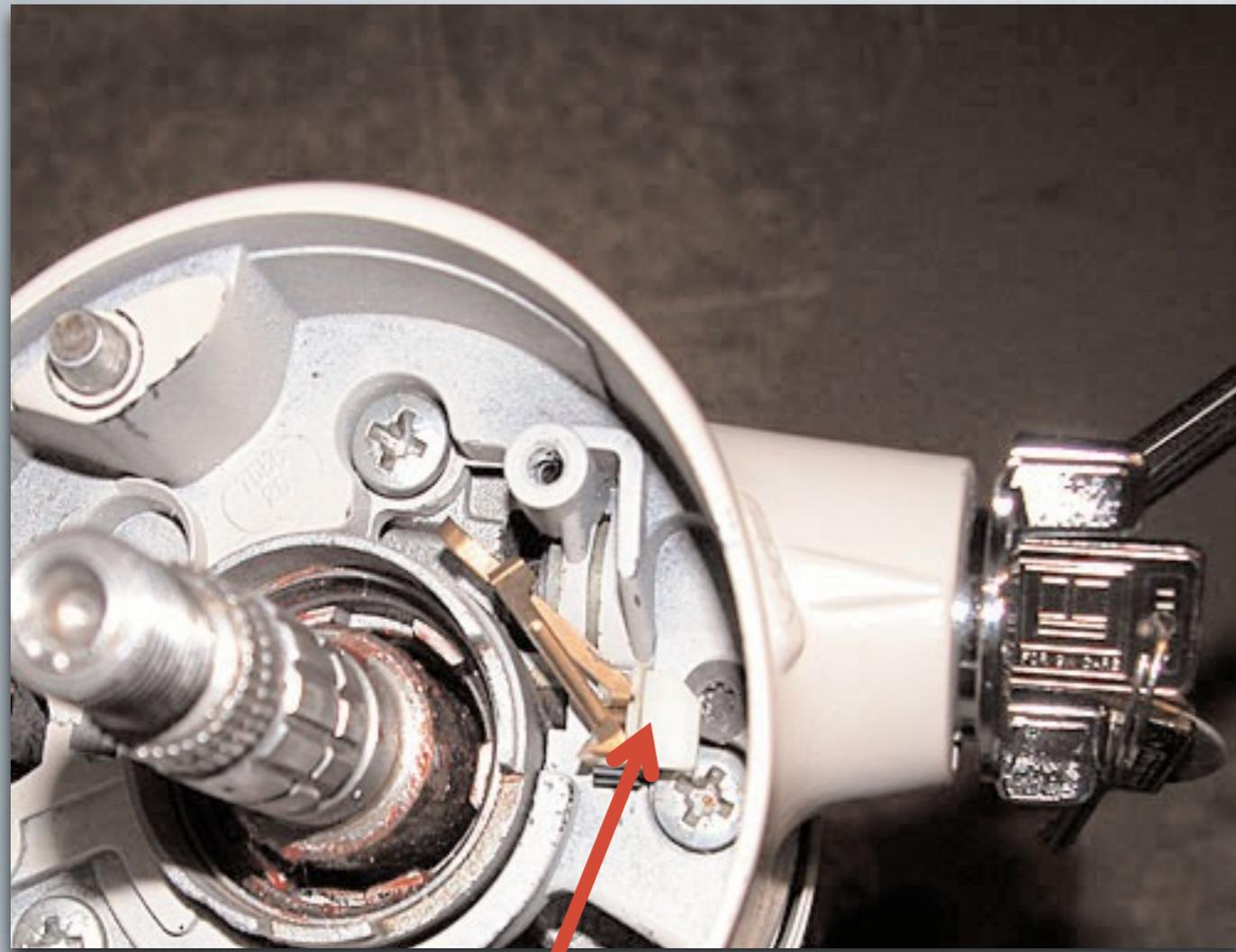
Remove 3 signal
switch screws

Remove
4-way knob



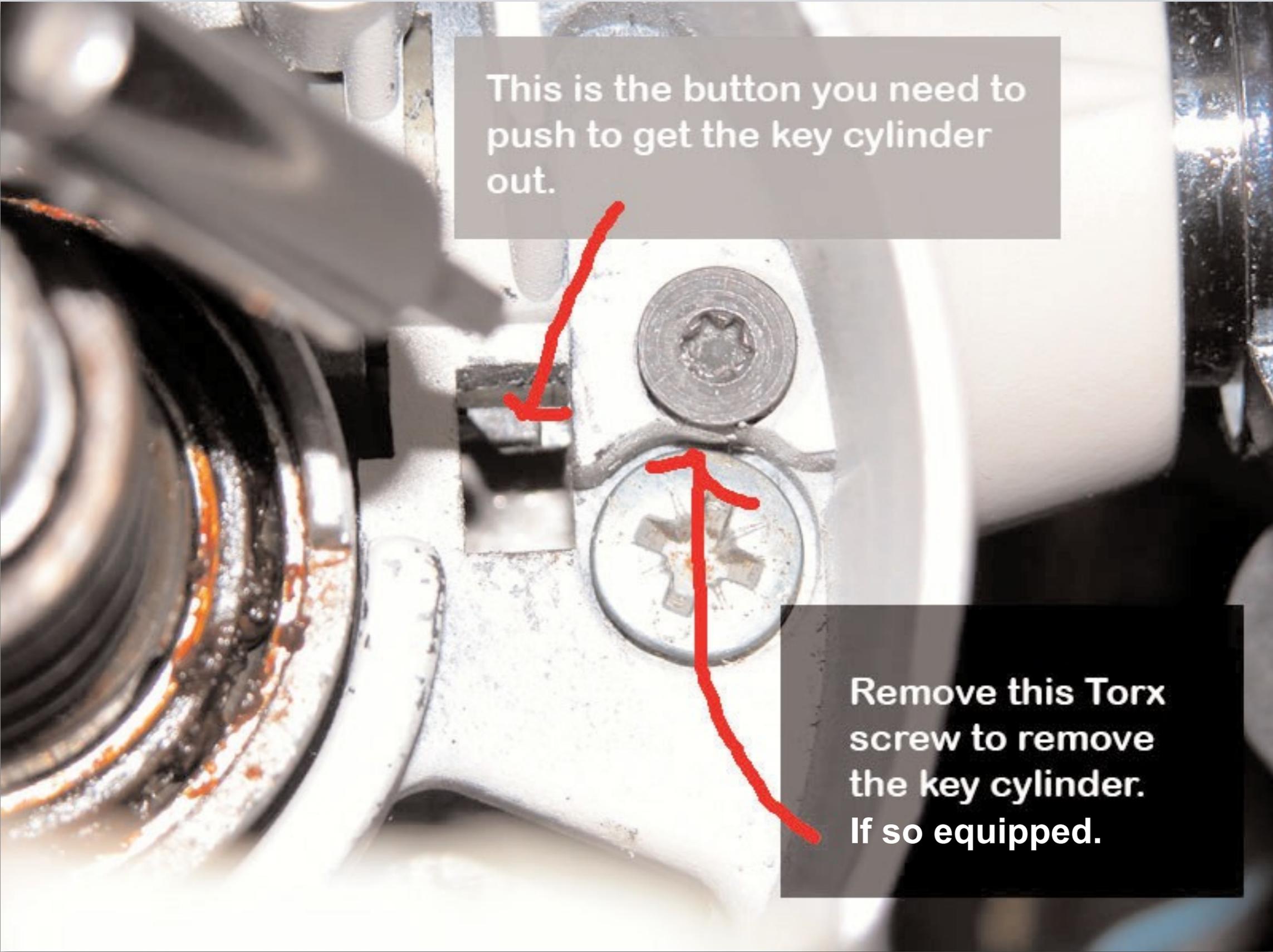
Disconnect the signal wires on the steering column and pull them up to remove the switch from the lock housing.





Remove the key reminder switch. Note how the tension spring is installed as you remove it. There are some different styles of the spring. Some are one piece, making them easier to install.



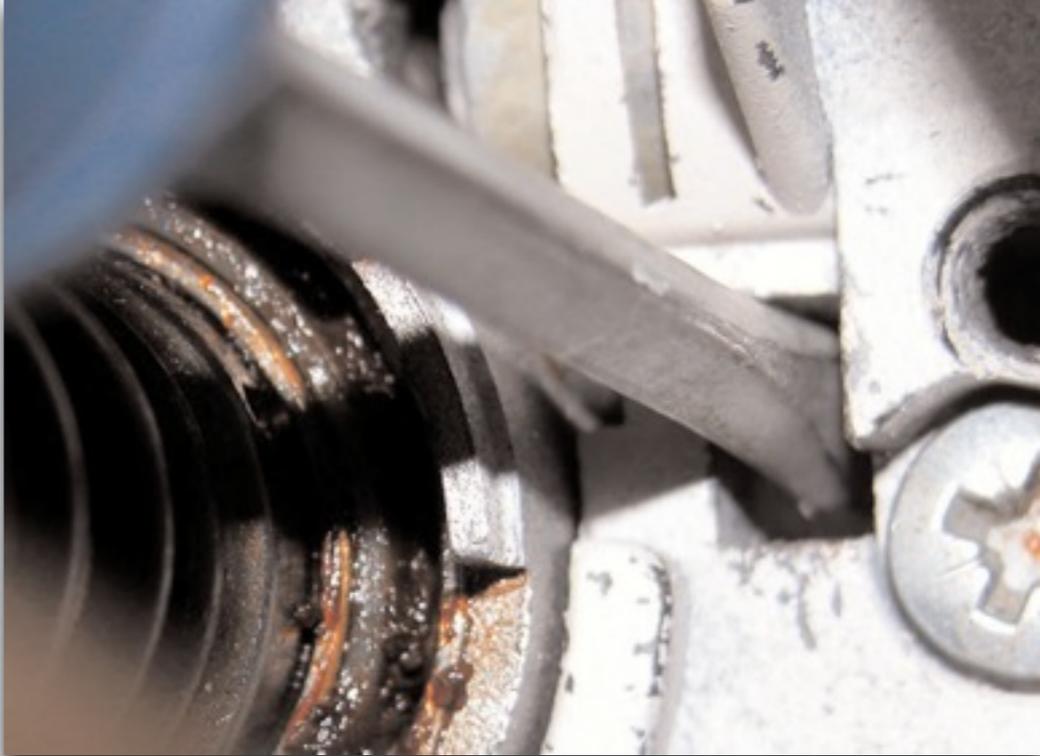


This is the button you need to push to get the key cylinder out.

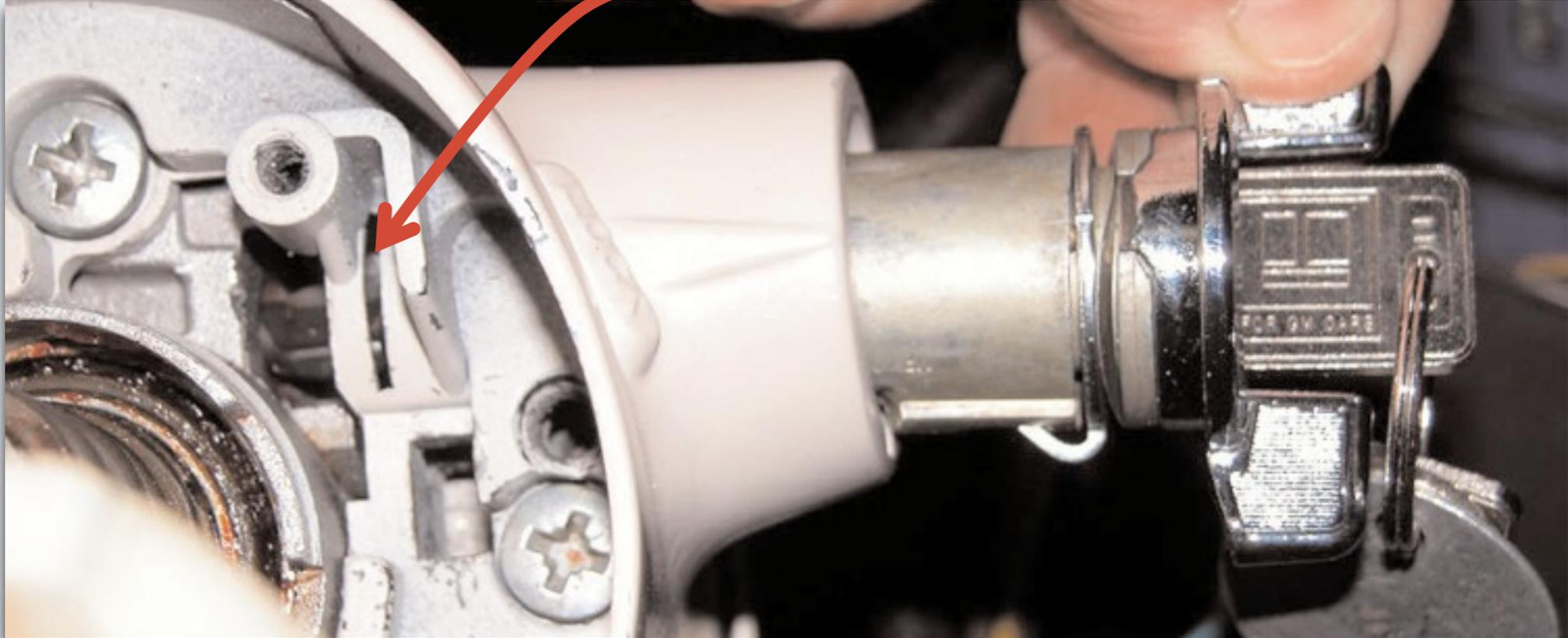
Remove this Torx screw to remove the key cylinder. If so equipped.

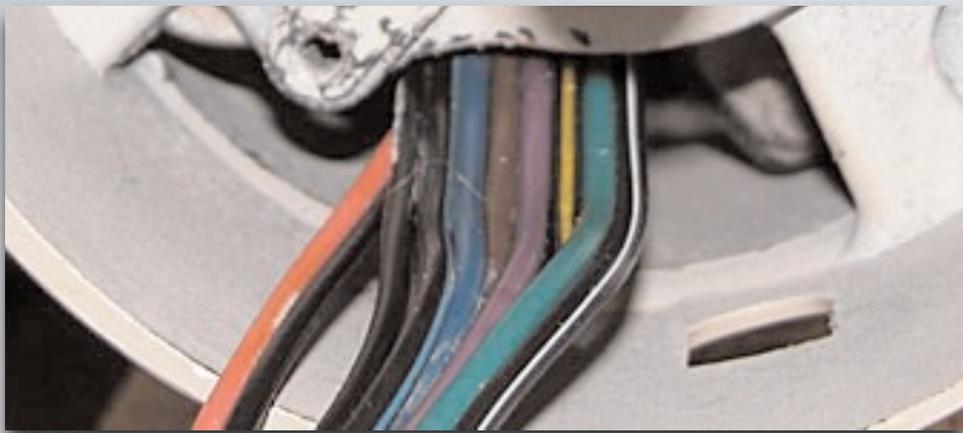
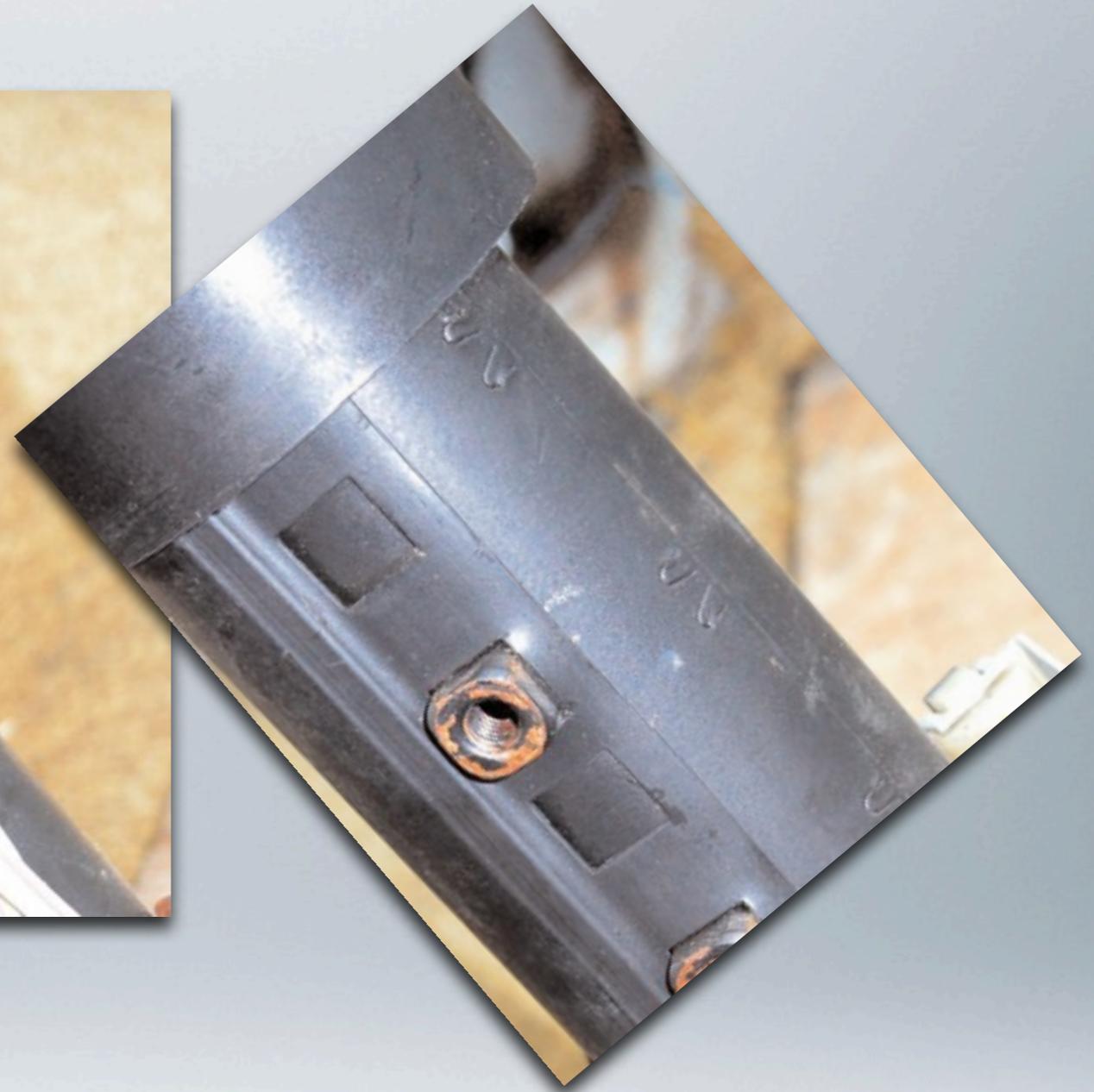


Depress the plunger and remove the ignition lock.



Some cylinders are held in place by a flat plunger in this slot

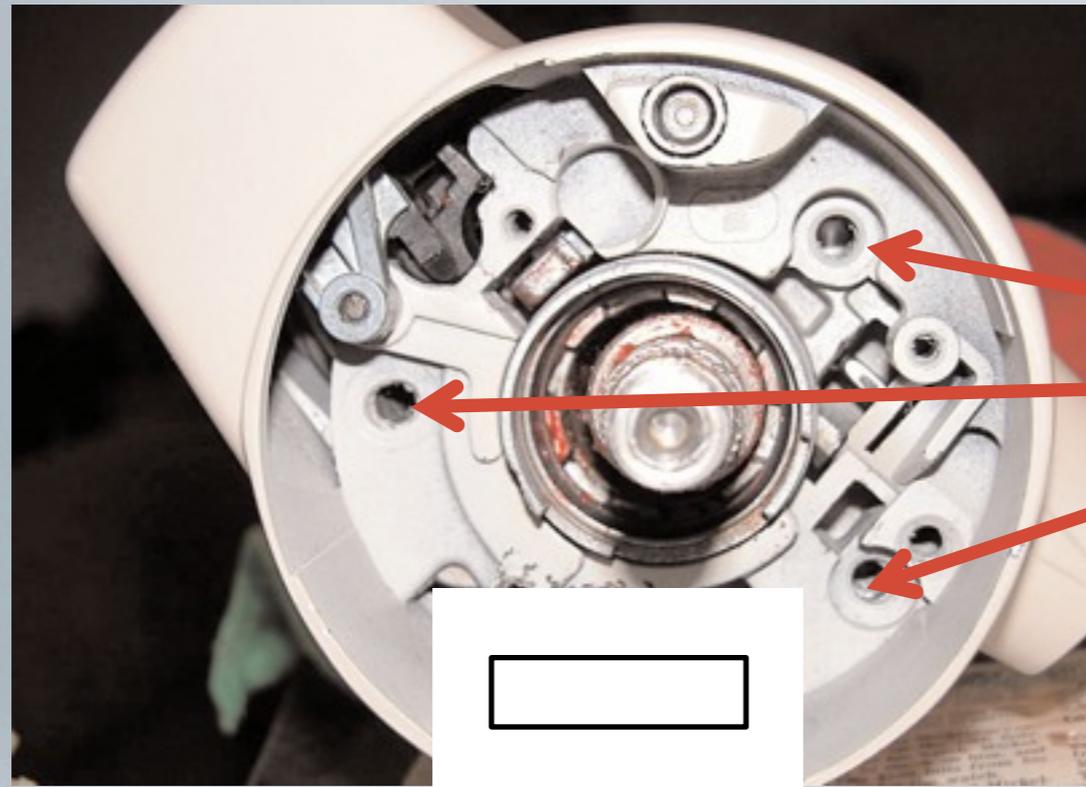




Remove the column bracket and the plastic wire chase. Feed the wires up through the lock housing.



Remove the three screws and slide the cover off

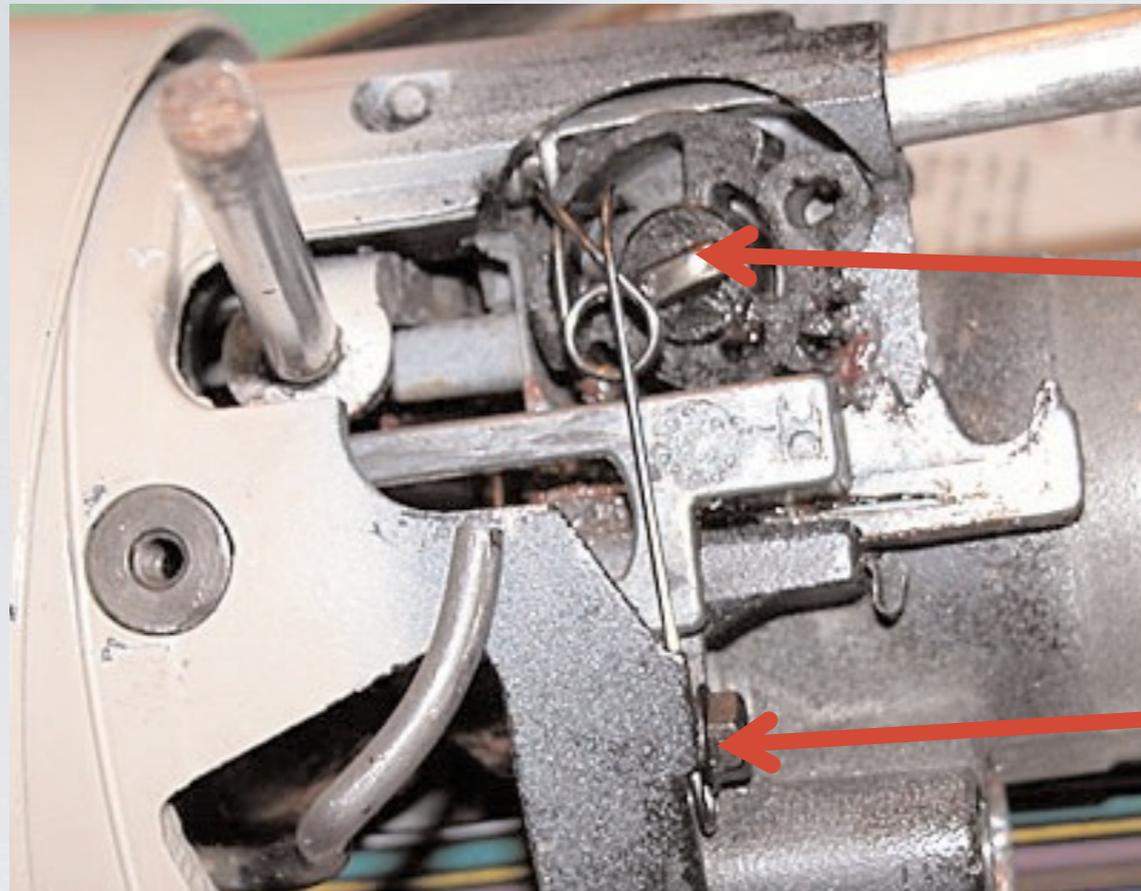


On late model columns these will be torx head screws. On the GMC column they will be phillips head screws.

On the donor column, feed the wiper wires up through the column as you remove the upper lock housing

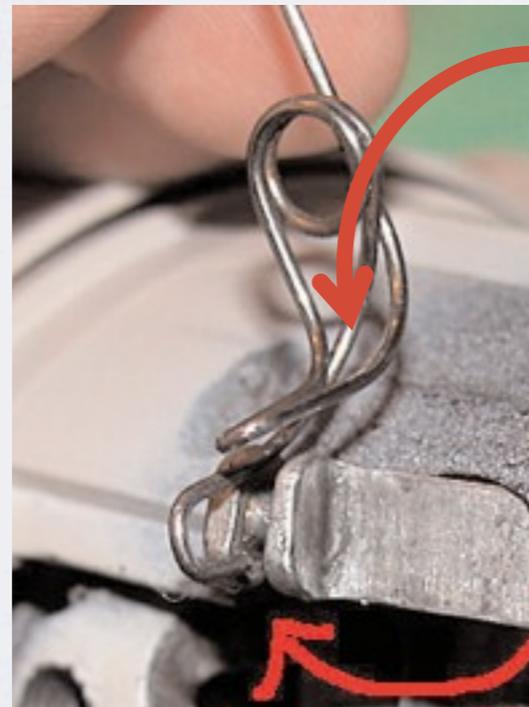


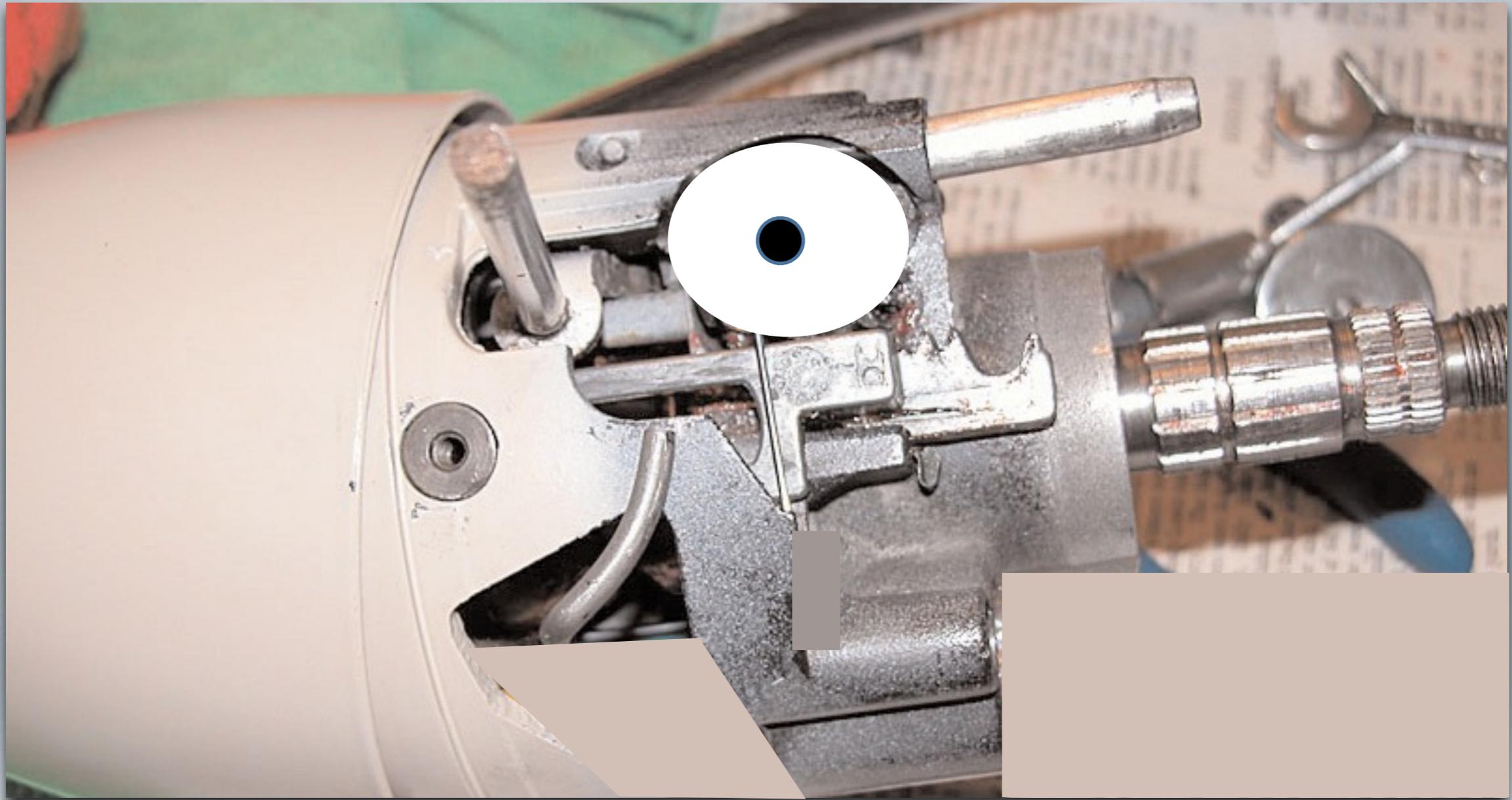
Remove the gear by...



Driving the rod back toward the cylinder hole.

Remove the retaining screw. Lift the spring up and disengage from the locking pin. Remove the gear.

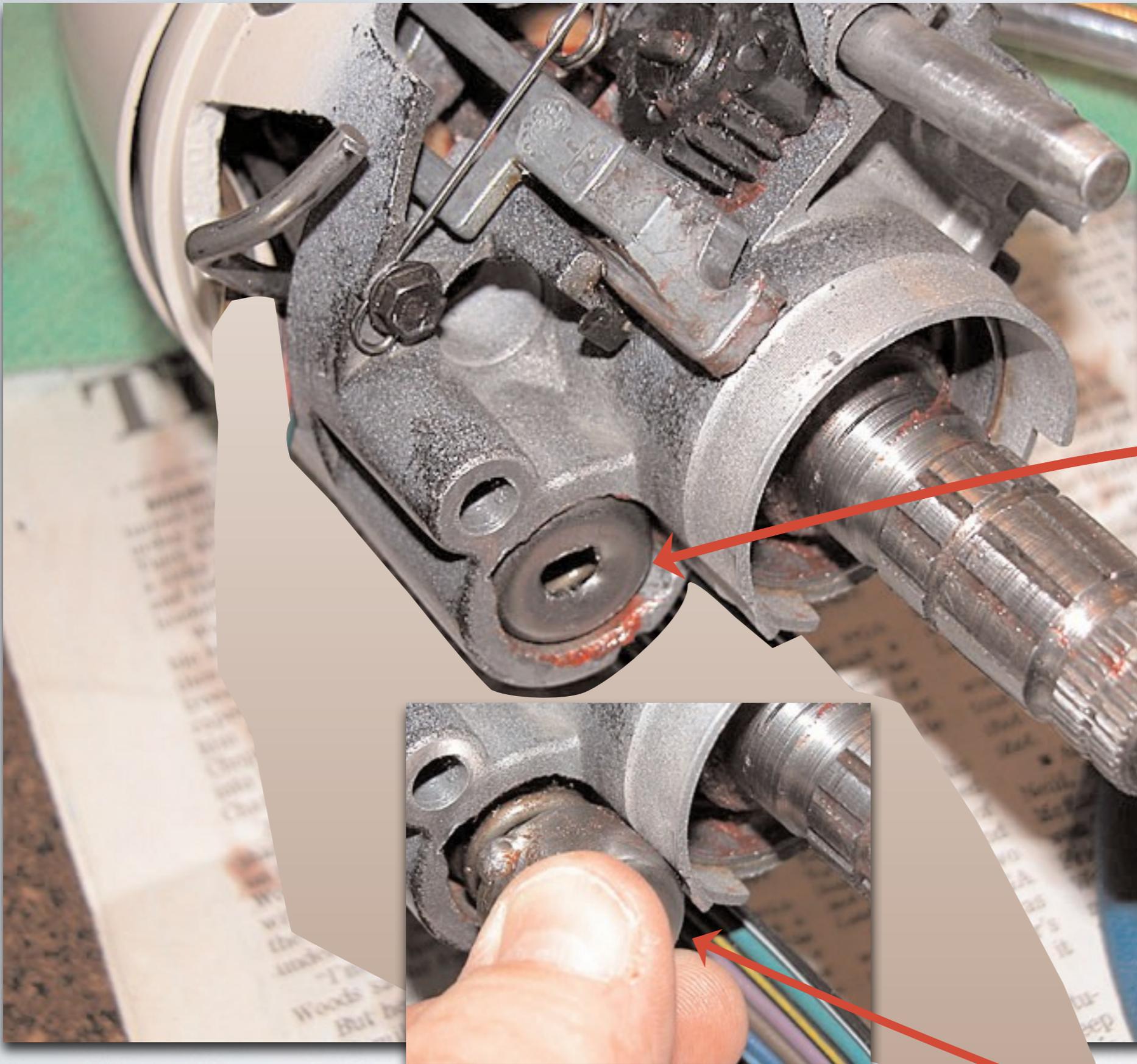




Put the tilt lever back on and tilt the column to the up position. This takes some of the tension off the spring.



Remove the tilt spring. Do this by putting a screw driver in the slotted spring cover, push down and turn to the left. The spring retainer will twist and come right out. Now remove the spring.



If working with the column in the coach, take precautions not to accidentally start the engine. Loosen and disengage the rod from the ignition switch or remove a battery cable or etc.

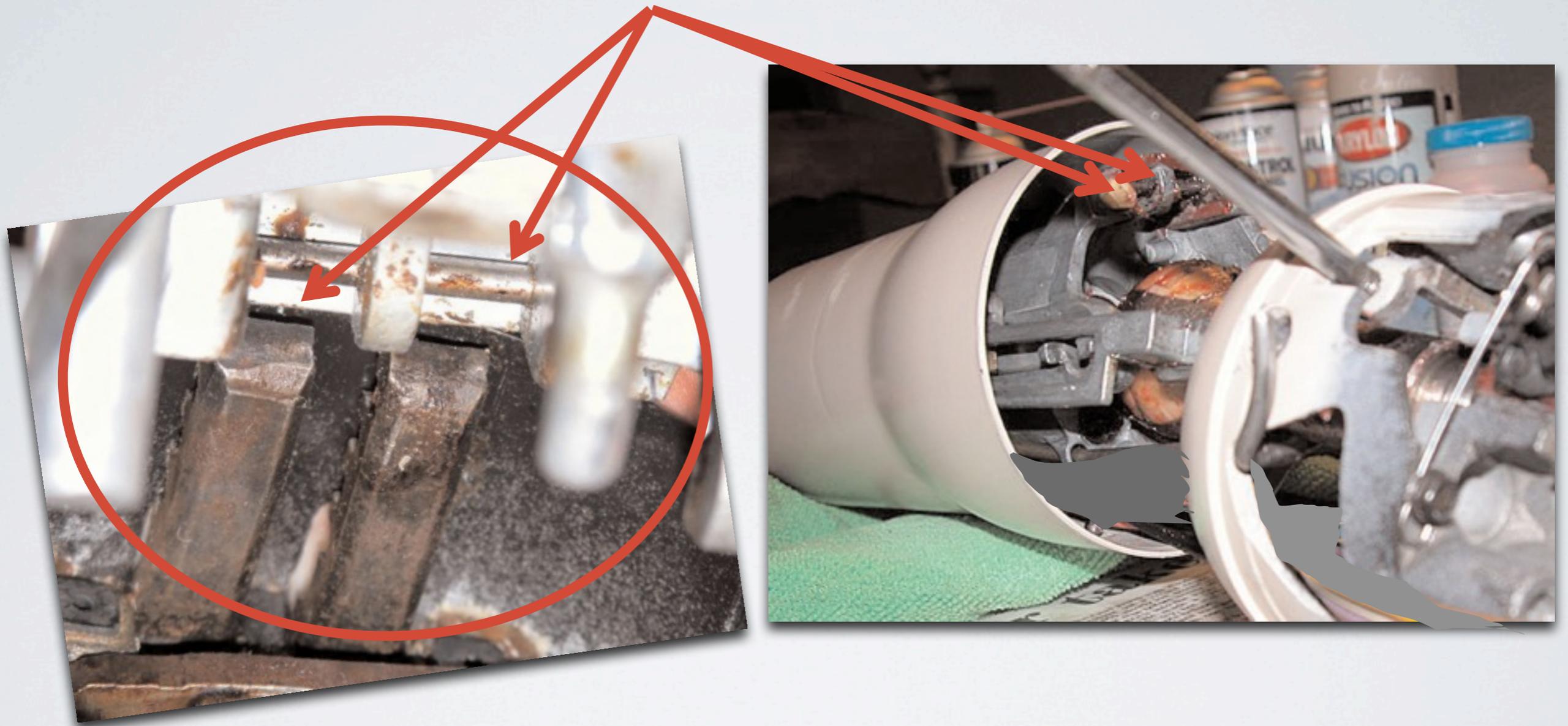
Remove both pivot pins



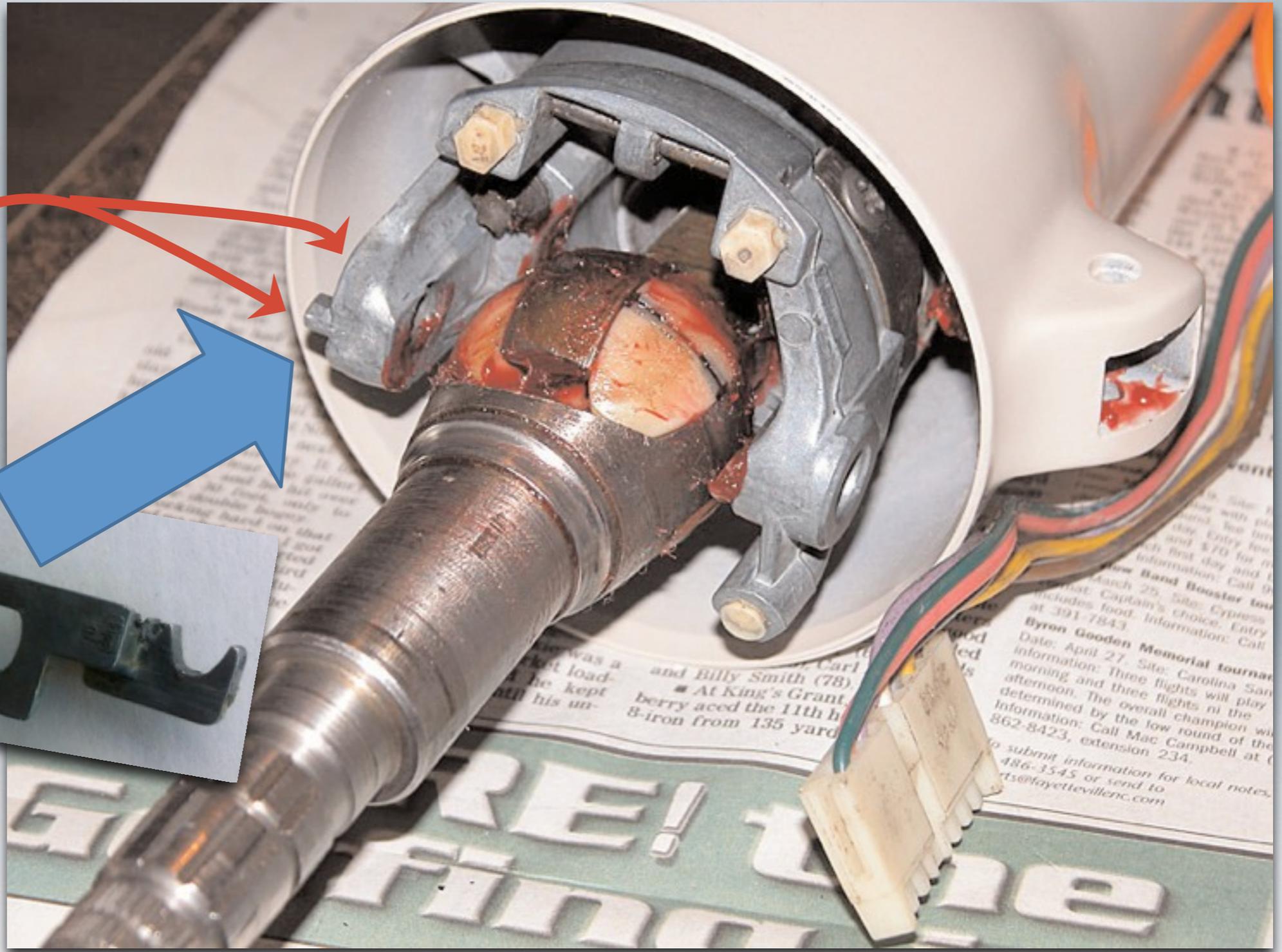
Socket



Lift the tilt lever and hold to full up then work the upper tilt housing to disengage from the pivot pins.



Start rod
upper push
block and
gear ride in
these slots.

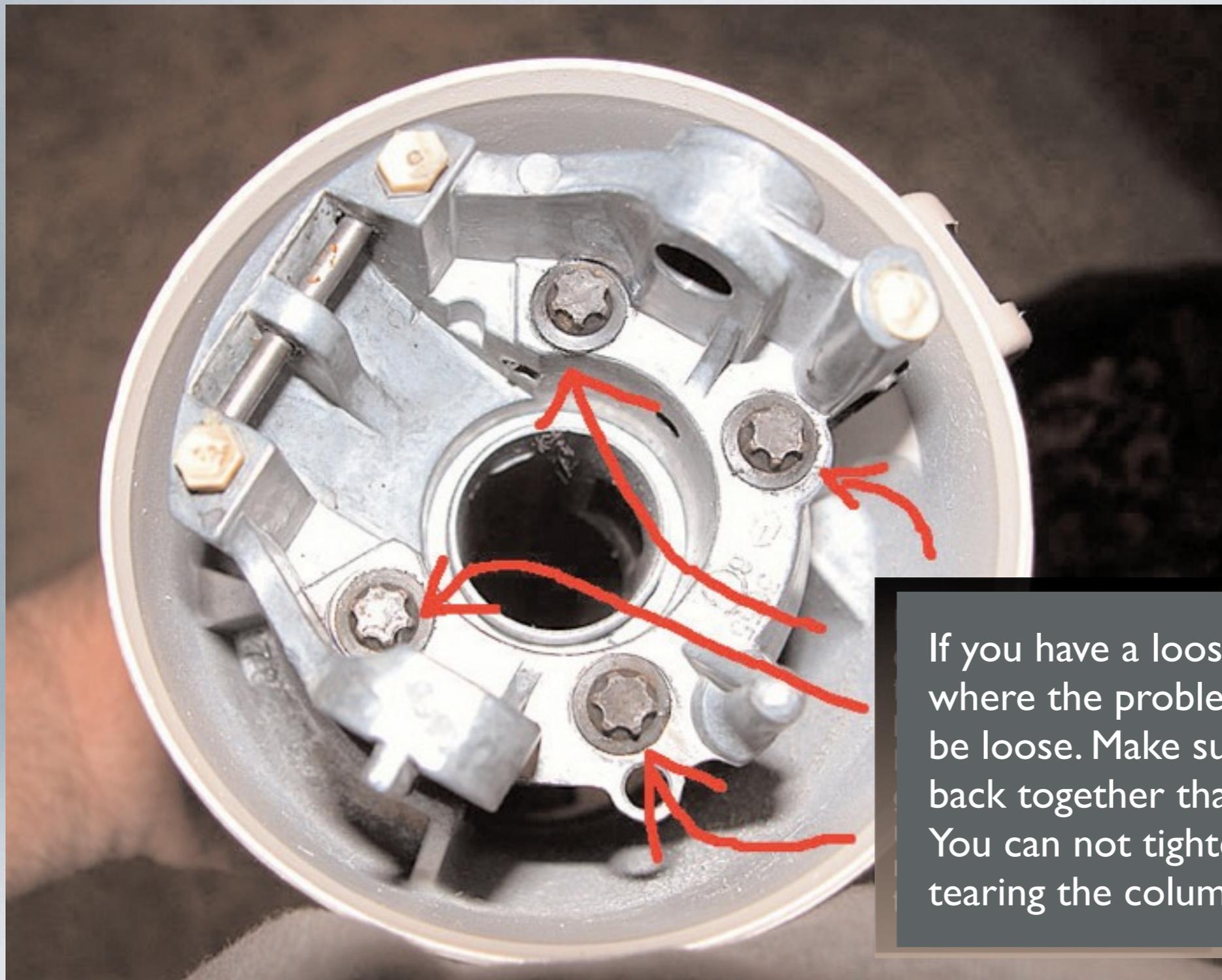


Upper shaft will only disengage from the lower shaft if they are 90 degrees to each other



The shafts have to be separated in order to get access to all four bolts.

Removing the lower shaft is in Richard Sowers original presentation but is not included here.



If you have a loose column, this is where the problem is. These bolts will be loose. Make sure when this goes back together that you use LockTight. You can not tighten these again without tearing the column down

Several of these blocks have been found to be cracked or broken, so inspect them carefully.





1990 Jeep
Original GMC

This is the guide that is needed for the push rod for the dimmer switch.

Made a guide from a washer to put under torx bolt and avoided removing steering shaft.

It's been reported that the guide is only a convenience for holding the dimmer push rod in place for assembly. If you are not using the dimmer switch on the column then having the guide is a non-issue.



Grease and
install the
lower
bearing in the
upper tilt
block. Note
that only grease
holds these
bearings in
place



Place the lobe of the gear into the notch on the push gear. Get this right because it sets up the relationship between the push road and the start switch.

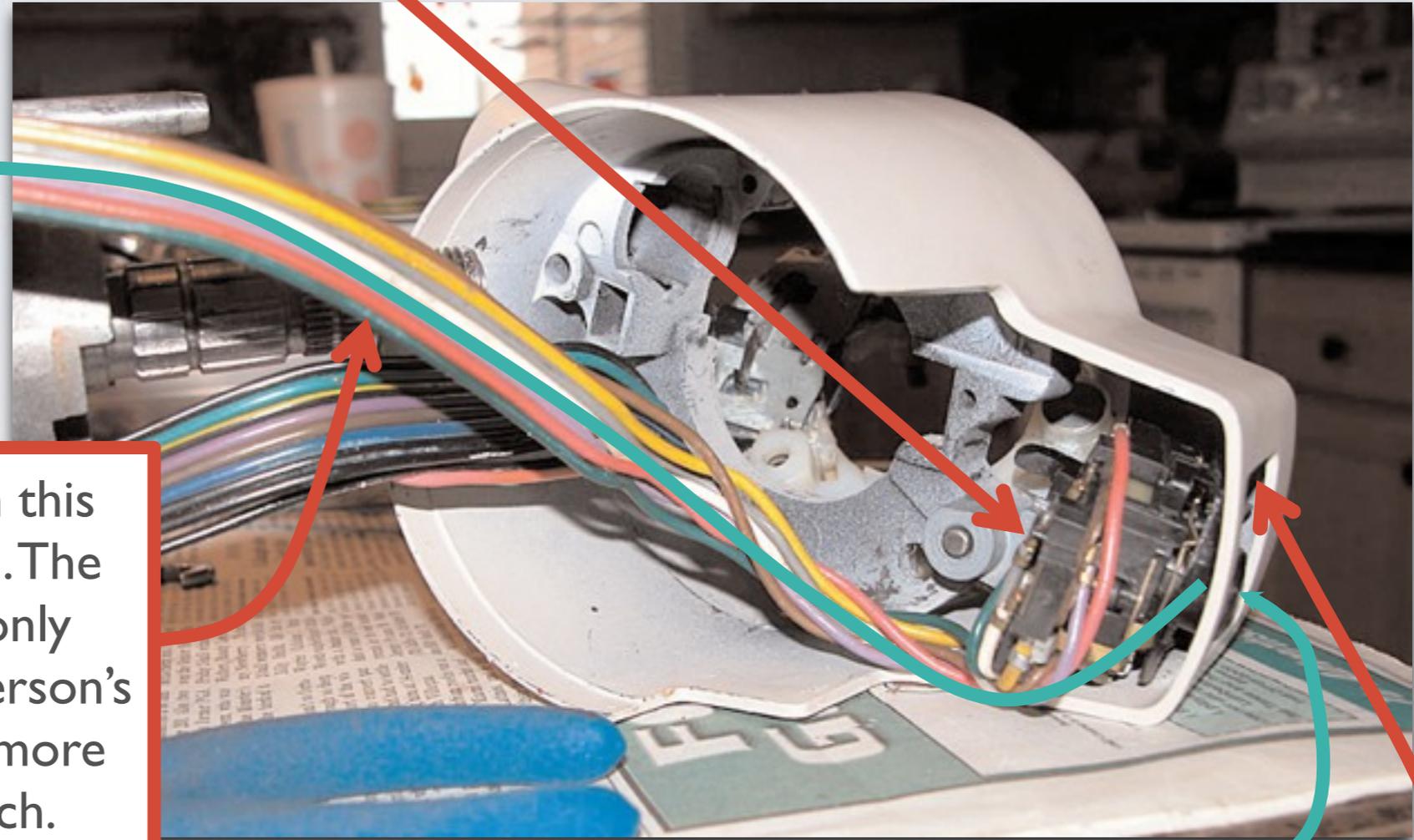
If a small, flat spring with a hook on each end fell out when you took the push gear out, this is where it goes. Hooks down, bend up.

Note the location of the flat spring that provides the tension for the gears.

This is the relationship of the gears in the start position.



Multi-function Wiper Switch

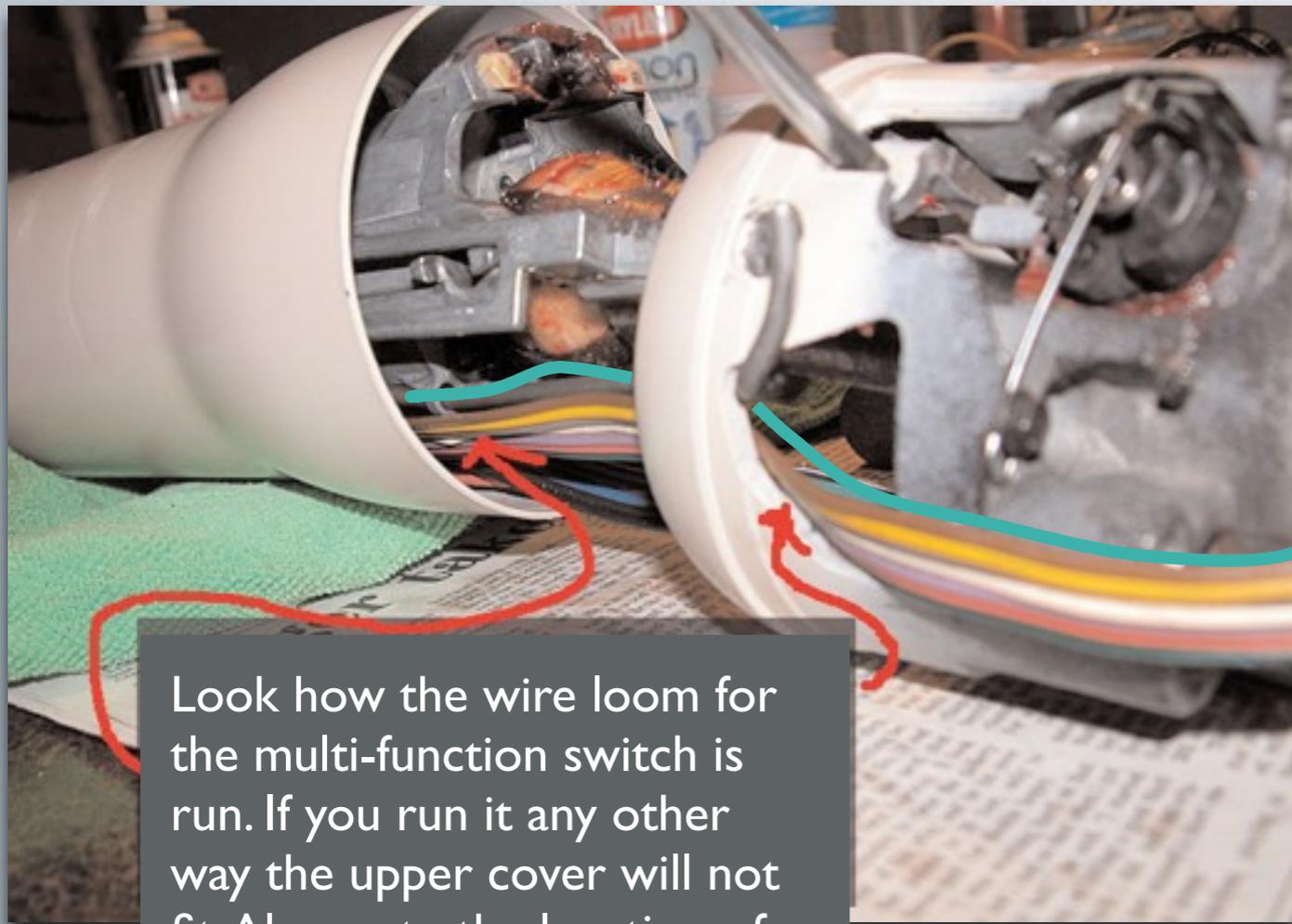


Note the switch shown in this photo is the wrong switch. The switch we are after has only three wires. See Ken Henderson's wiper documentation for more info on the correct switch.

Wiring for the cruise control needs to be fed down with the wiper wires.

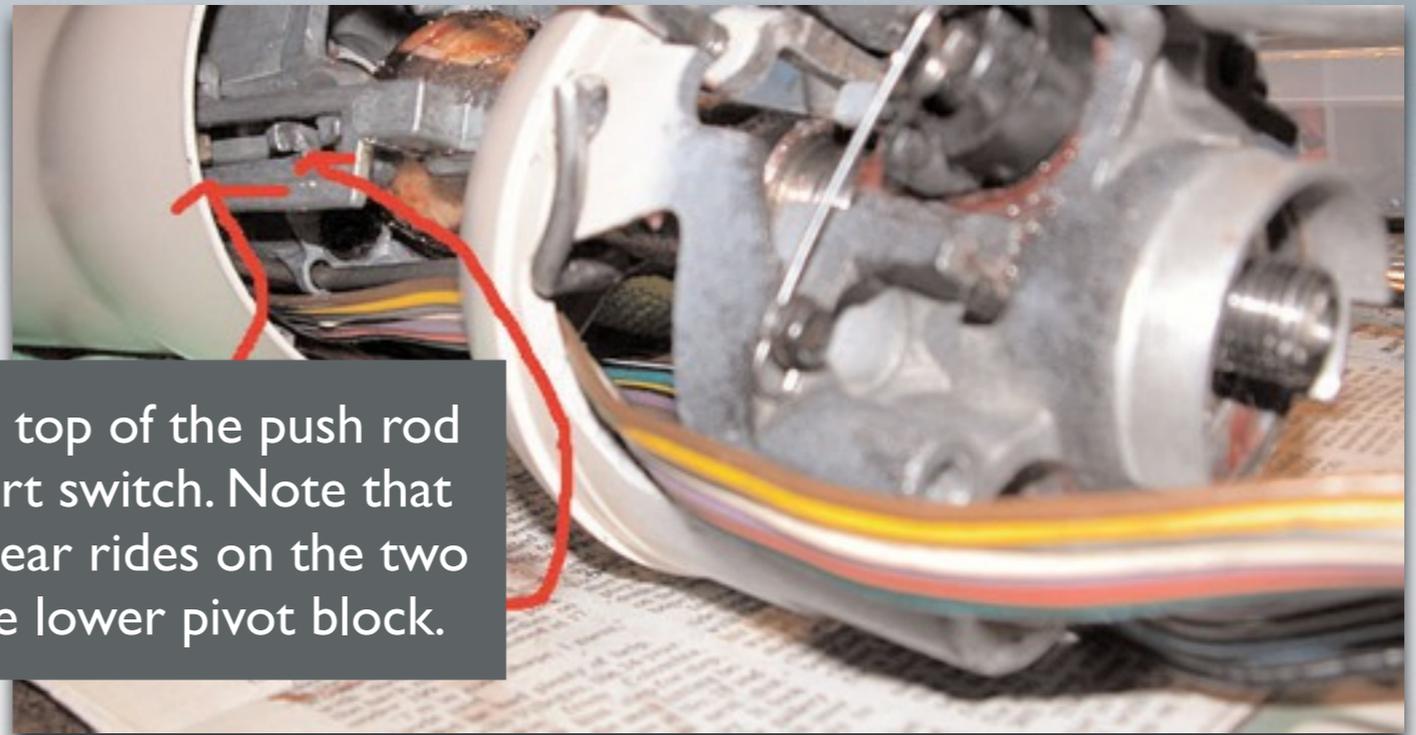
Housings are 1 or 2-piece, either will work. If using a telescoping upper, the slot for the lever usually has to be enlarged.





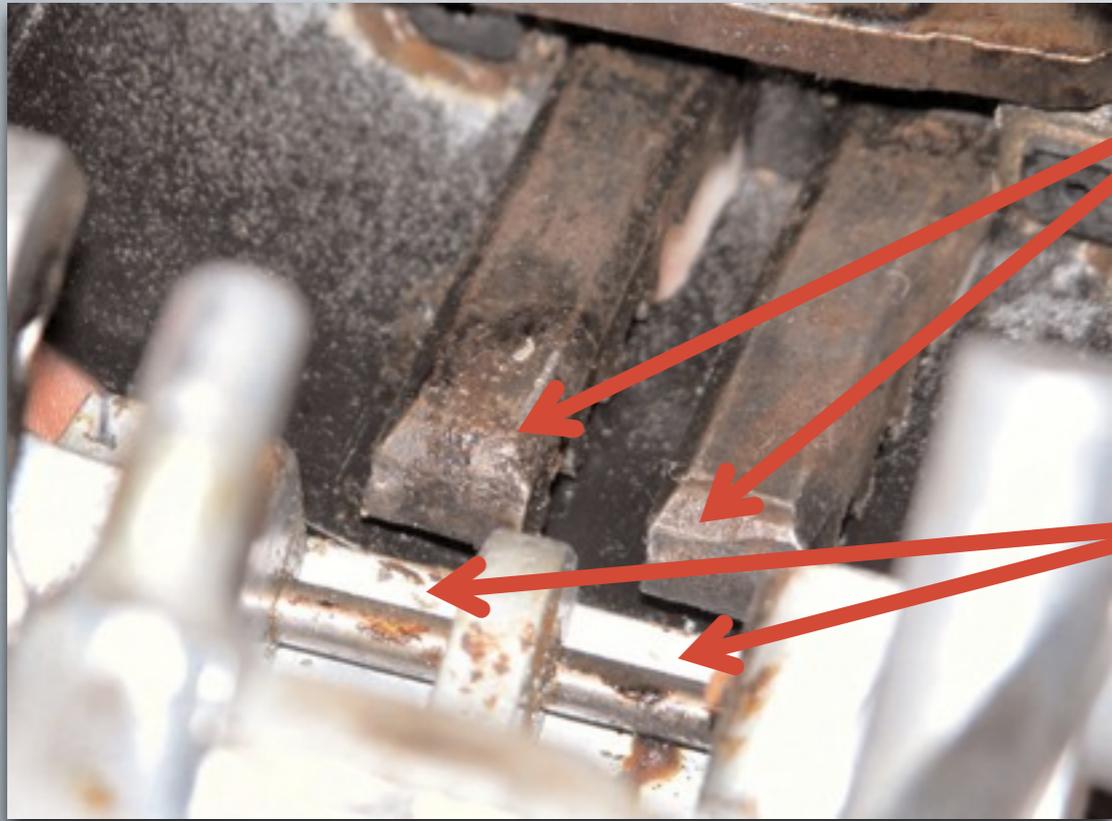
Feed the cruise control wires down through the opening at this time

Look how the wire loom for the multi-function switch is run. If you run it any other way the upper cover will not fit. Also, note the location of the dimmer switch push rod. Both must be in place before you put the upper pivot housing in place. These cannot be put in place later.



This is the top of the push rod for the start switch. Note that the push gear rides on the two pins on the lower pivot block.





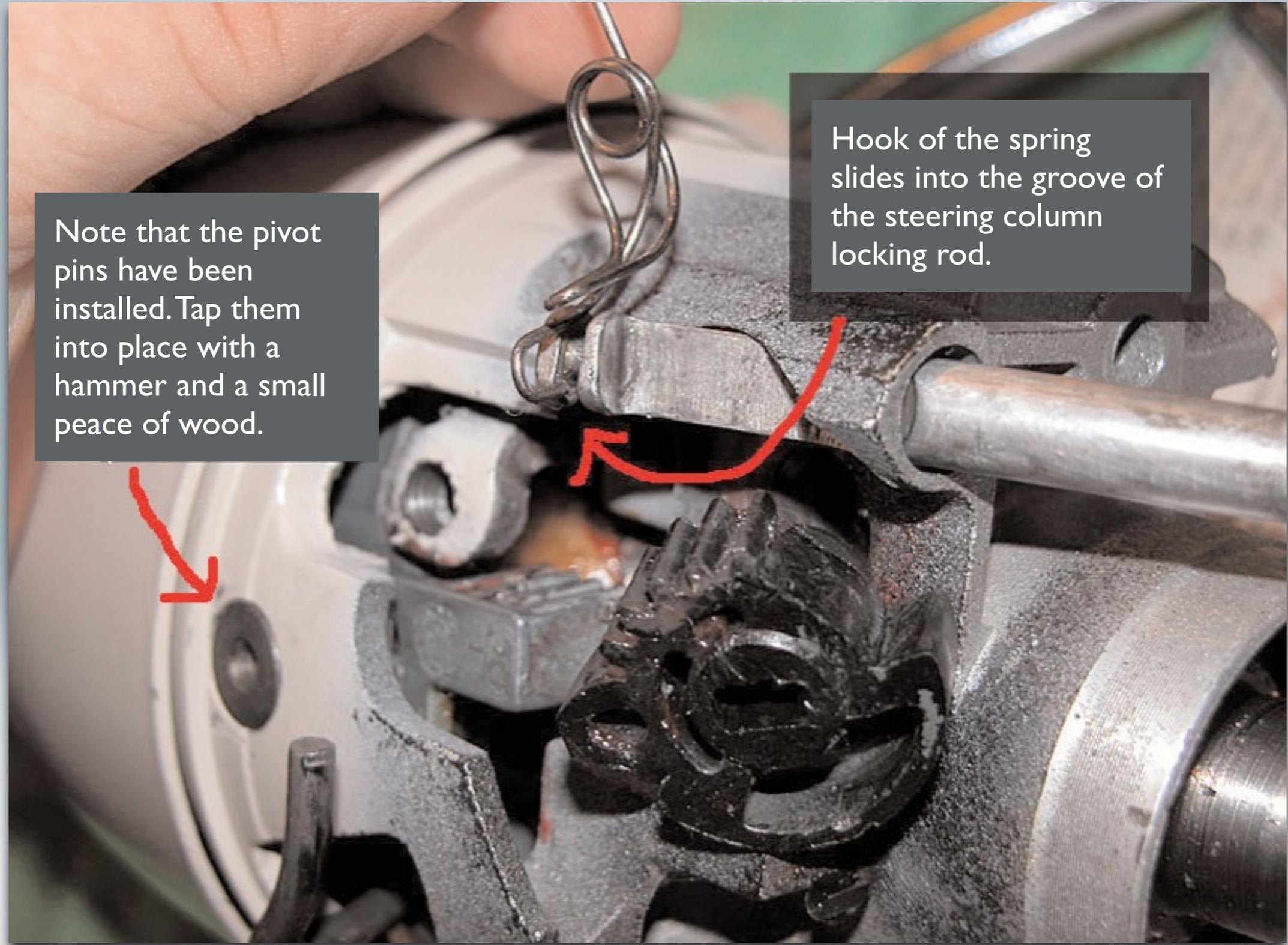
The teeth in these two bars

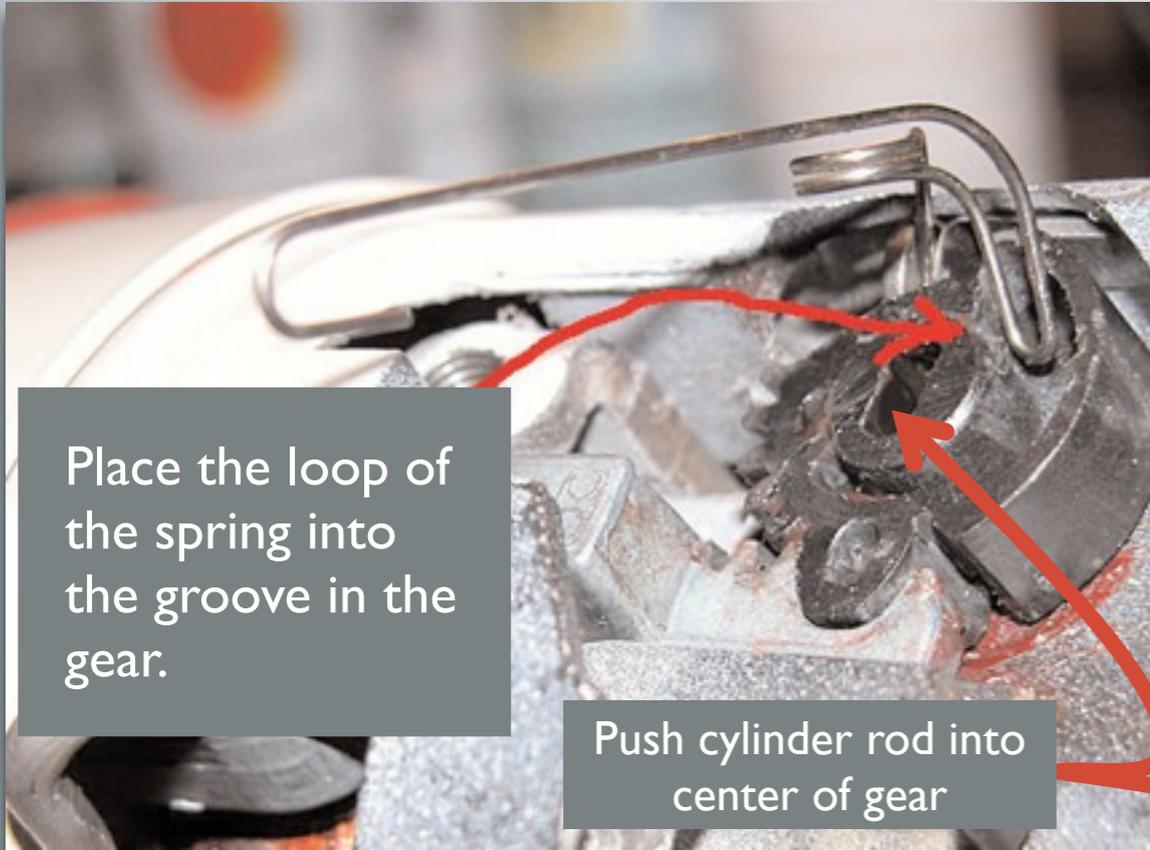
Sit on these two bars when it is in place.

Now install the tilt lever. Pull the lever forward as you slide the upper tilt block into place. Make sure the push gear moves into place as you slide the two parts together.



Install the pivot pins, add the locking pin and it's spring.

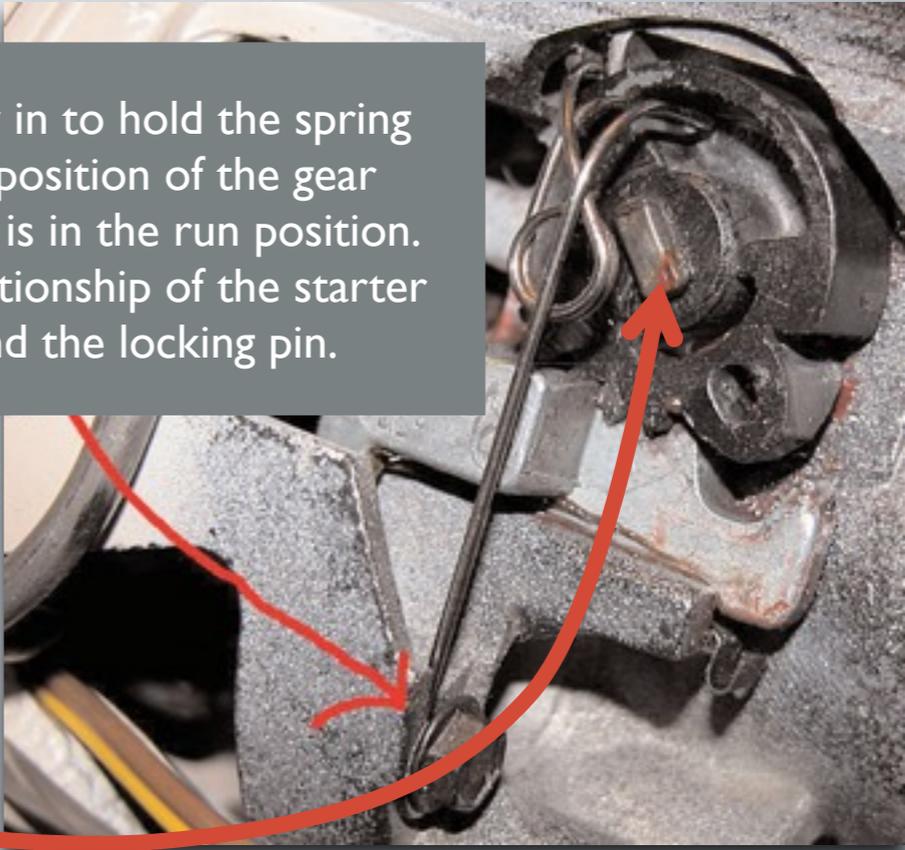




Place the loop of the spring into the groove in the gear.

Push cylinder rod into center of gear

Put the screw in to hold the spring in. This is the position of the gear when the key is in the run position. Note the relationship of the starter gear, spring and the locking pin.



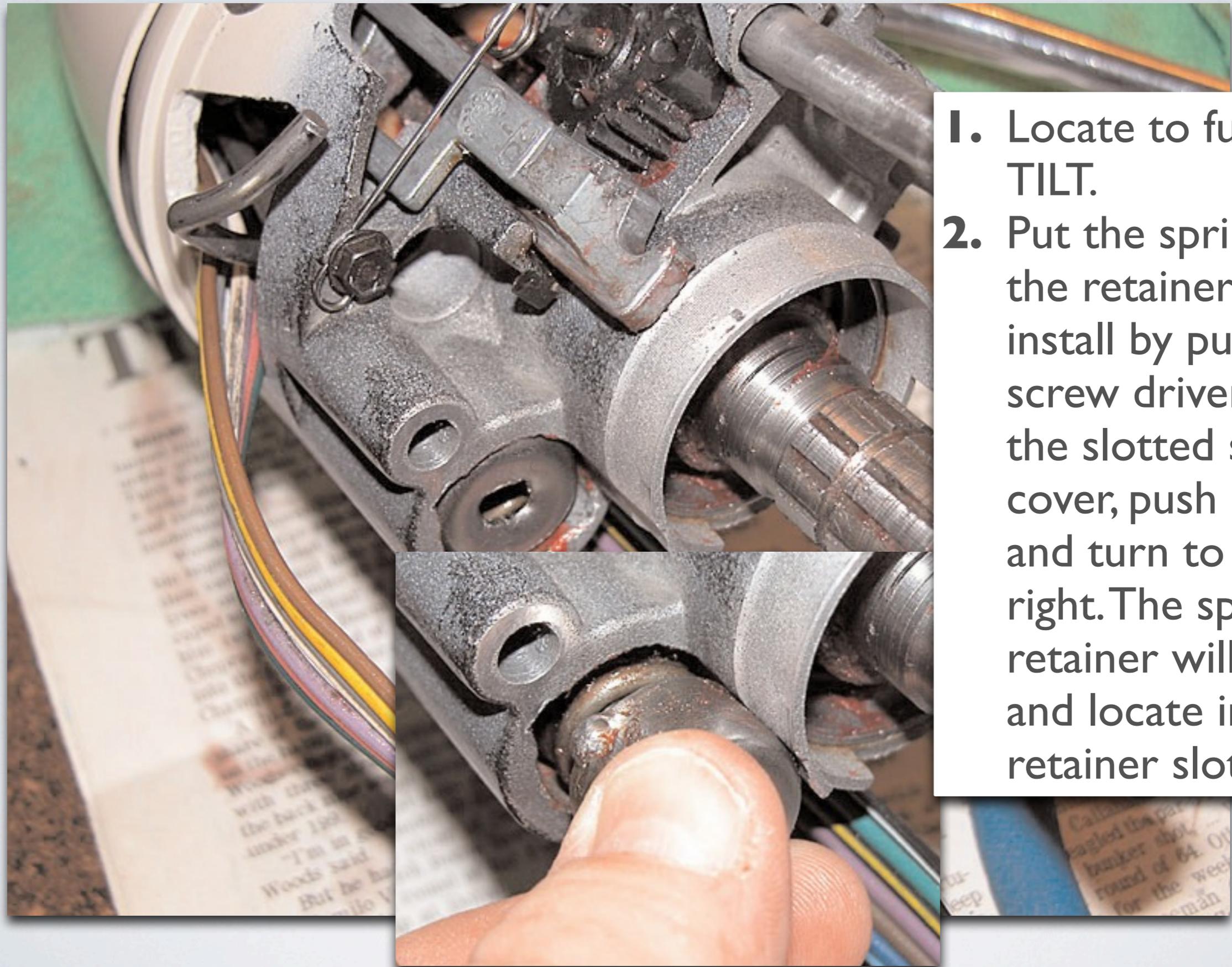
Position of the gear locking pin and spring with the starter engaged.



Position of the gear, locking pin, and spring with the key in the lock position.

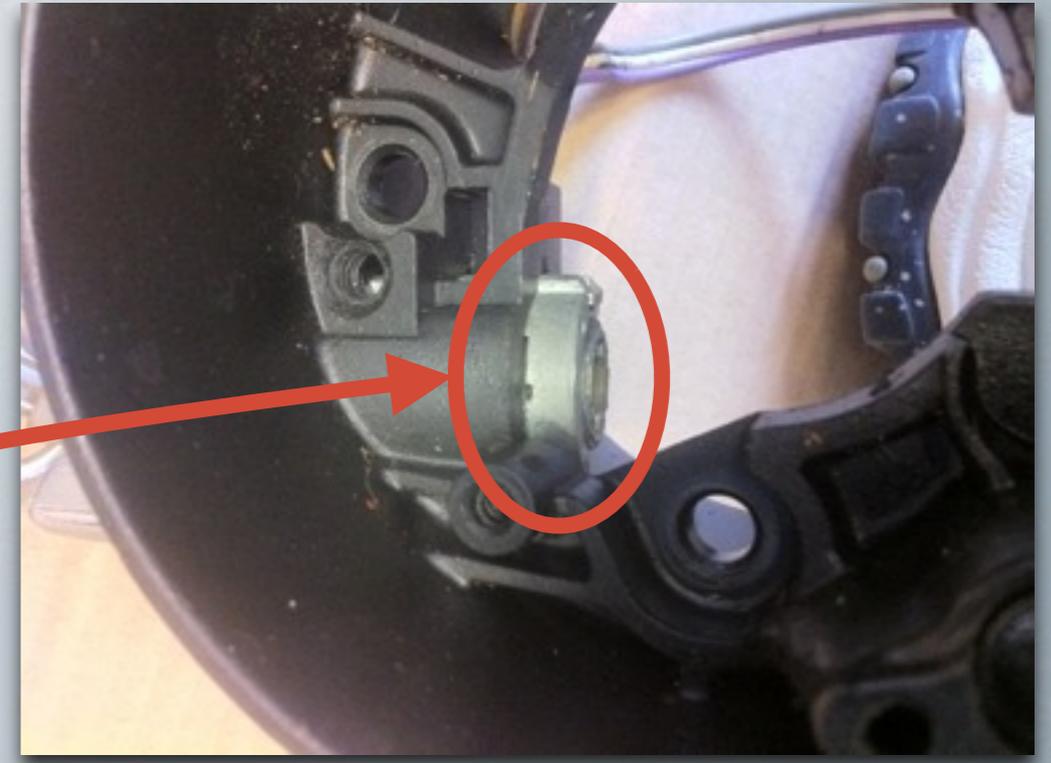


Reinstall the tilt spring.

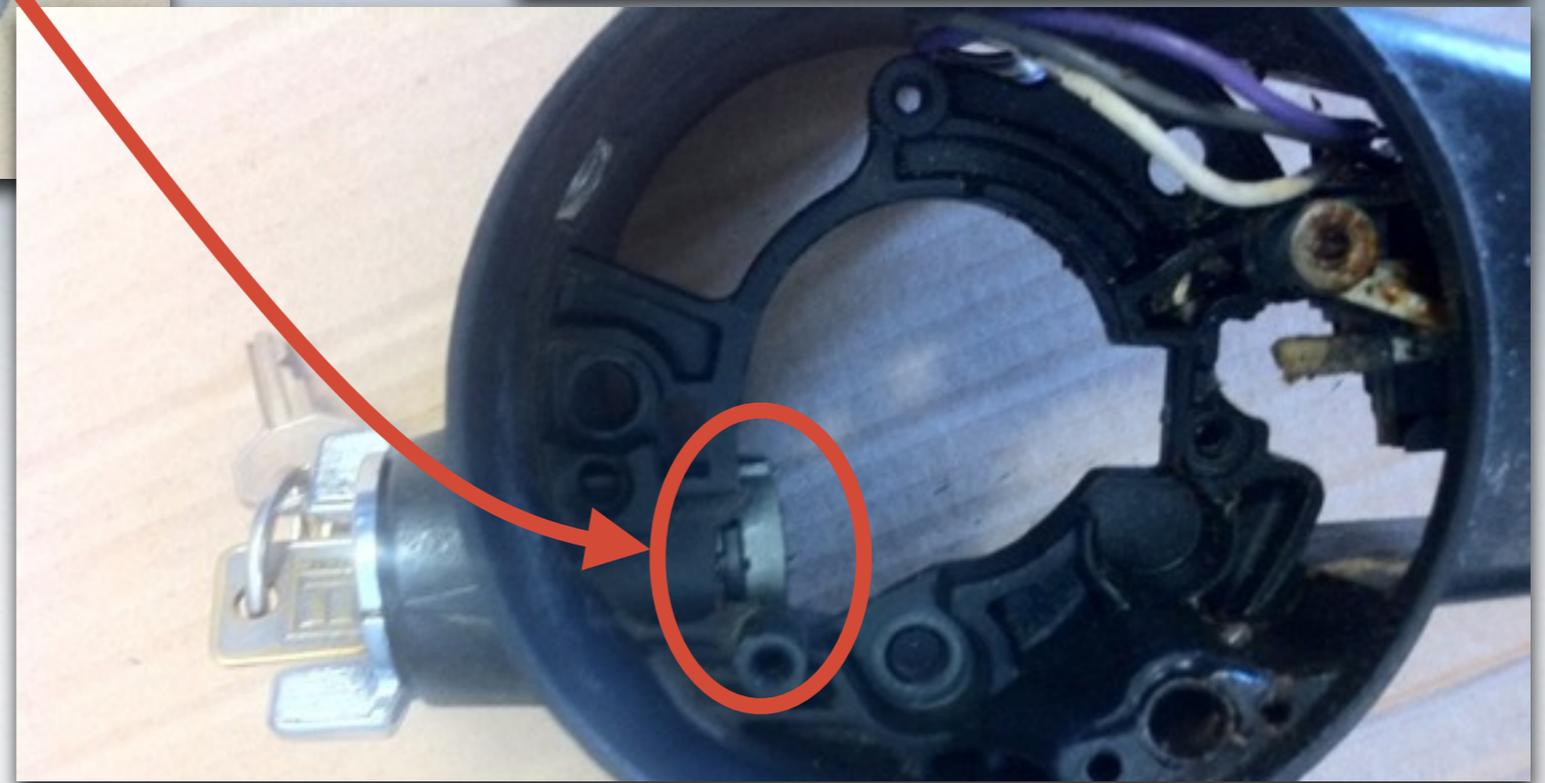


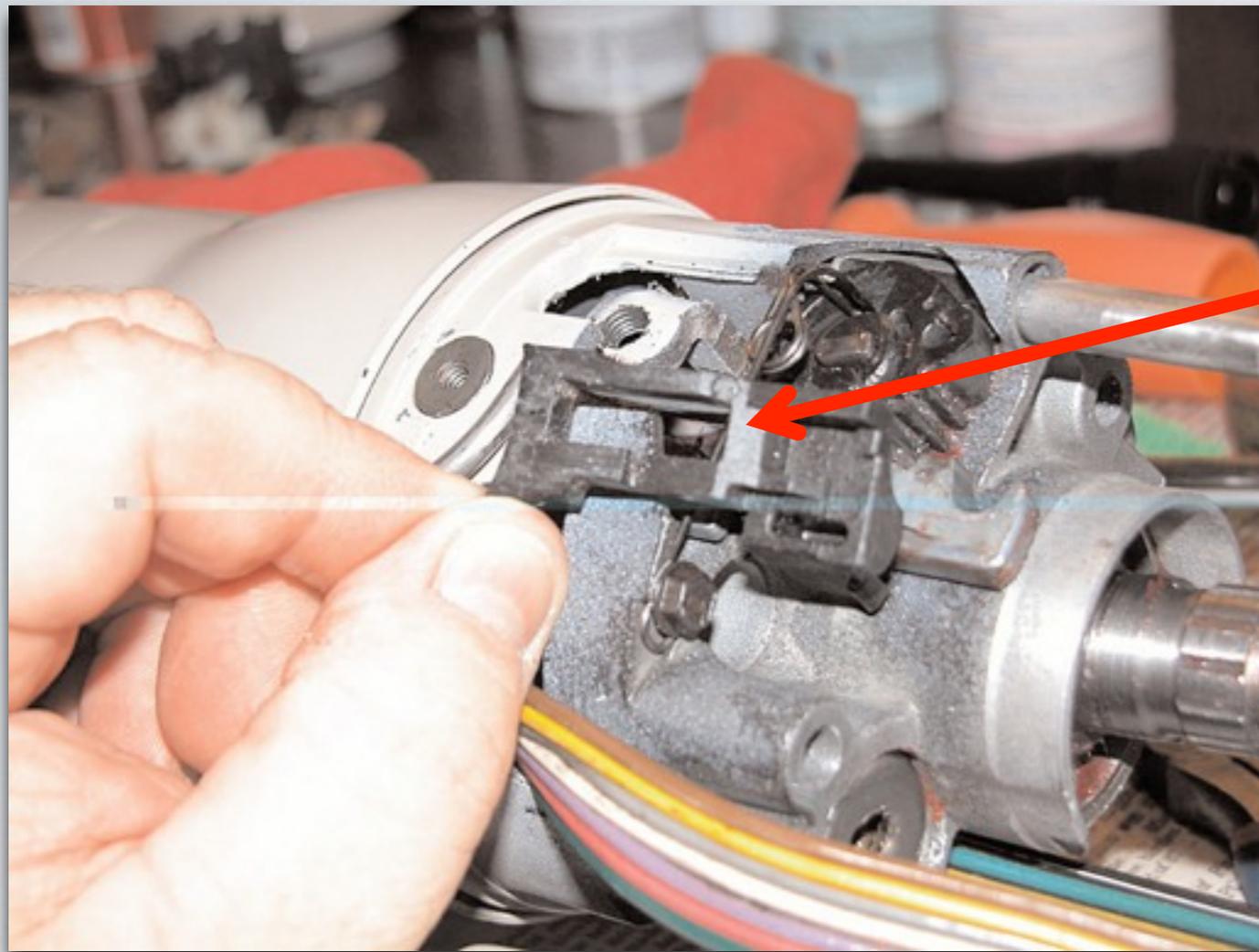
1. Locate to full TILT.
2. Put the spring in the retainer and install by put a screw driver in the slotted spring cover, push down and turn to the right. The spring retainer will twist and locate in the retainer slot.

Modify donor housing for GMC ignition lock



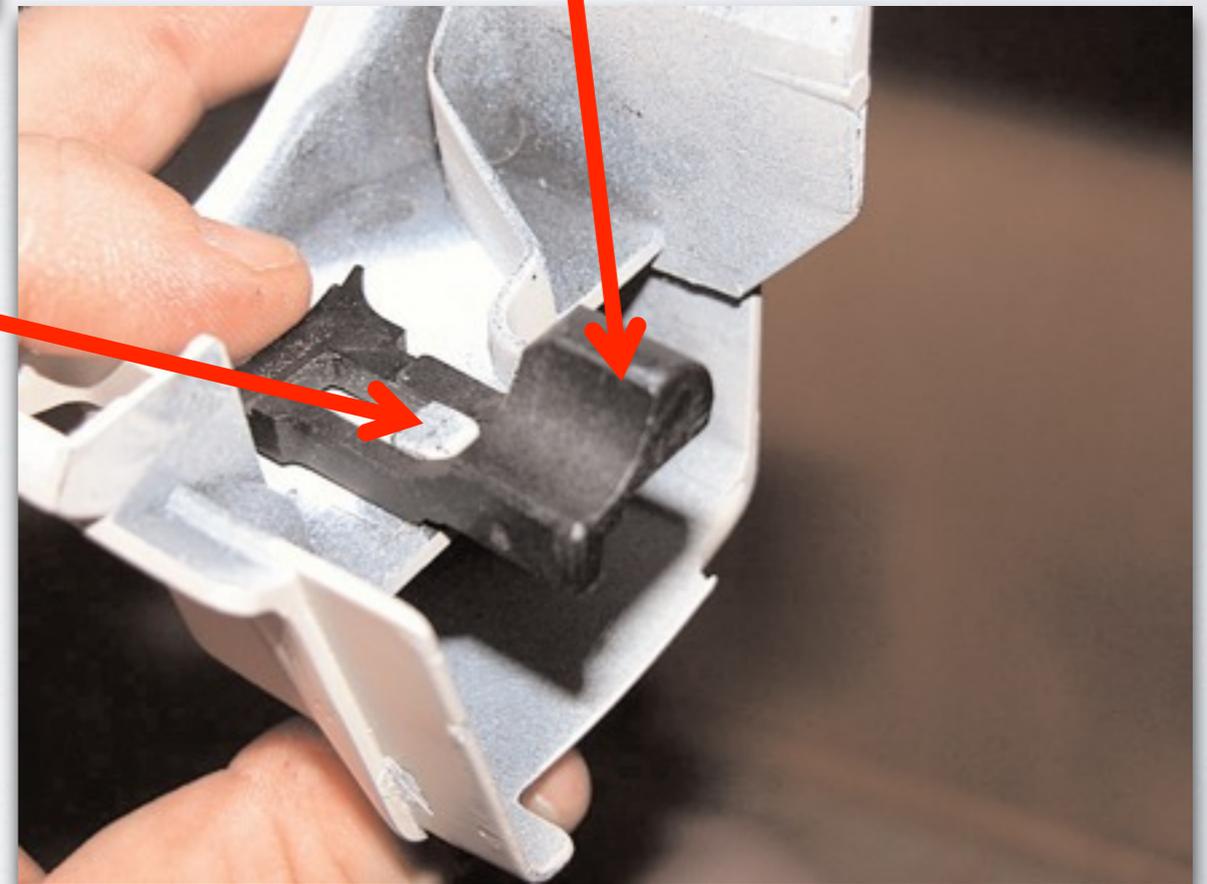
Using a switch with groove for the pin could have been used without modification by simply installing the removed cylinder retaining screw.





The dimmer switch
push block.

This is the pin it rides
on. Note the position.
Grease can aid in
holding it in place
during assembly

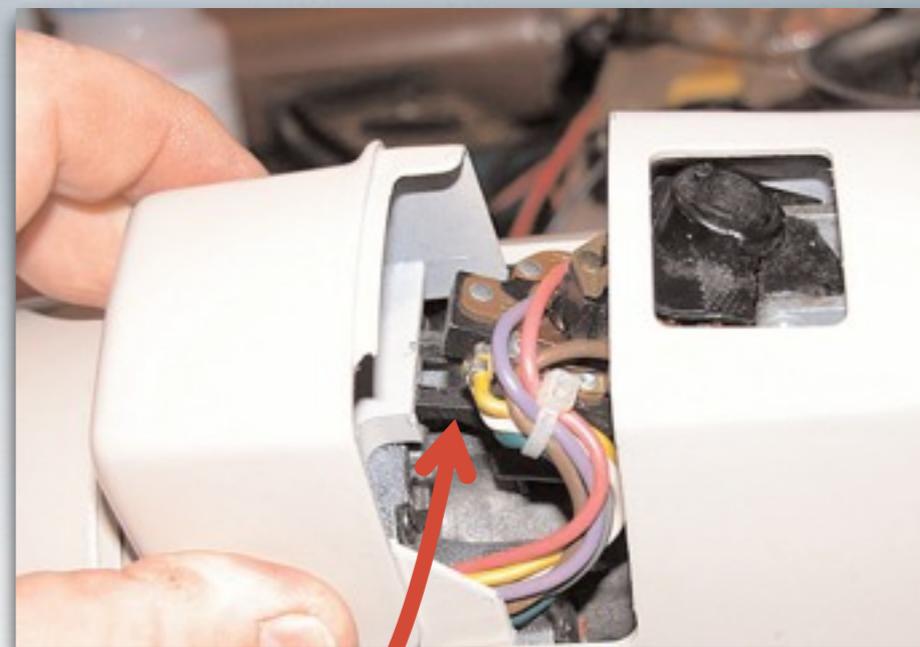




Slide the upper cover on, make sure to guide the wires (Wiper & Turn-signal) and the dimmer push block into place.

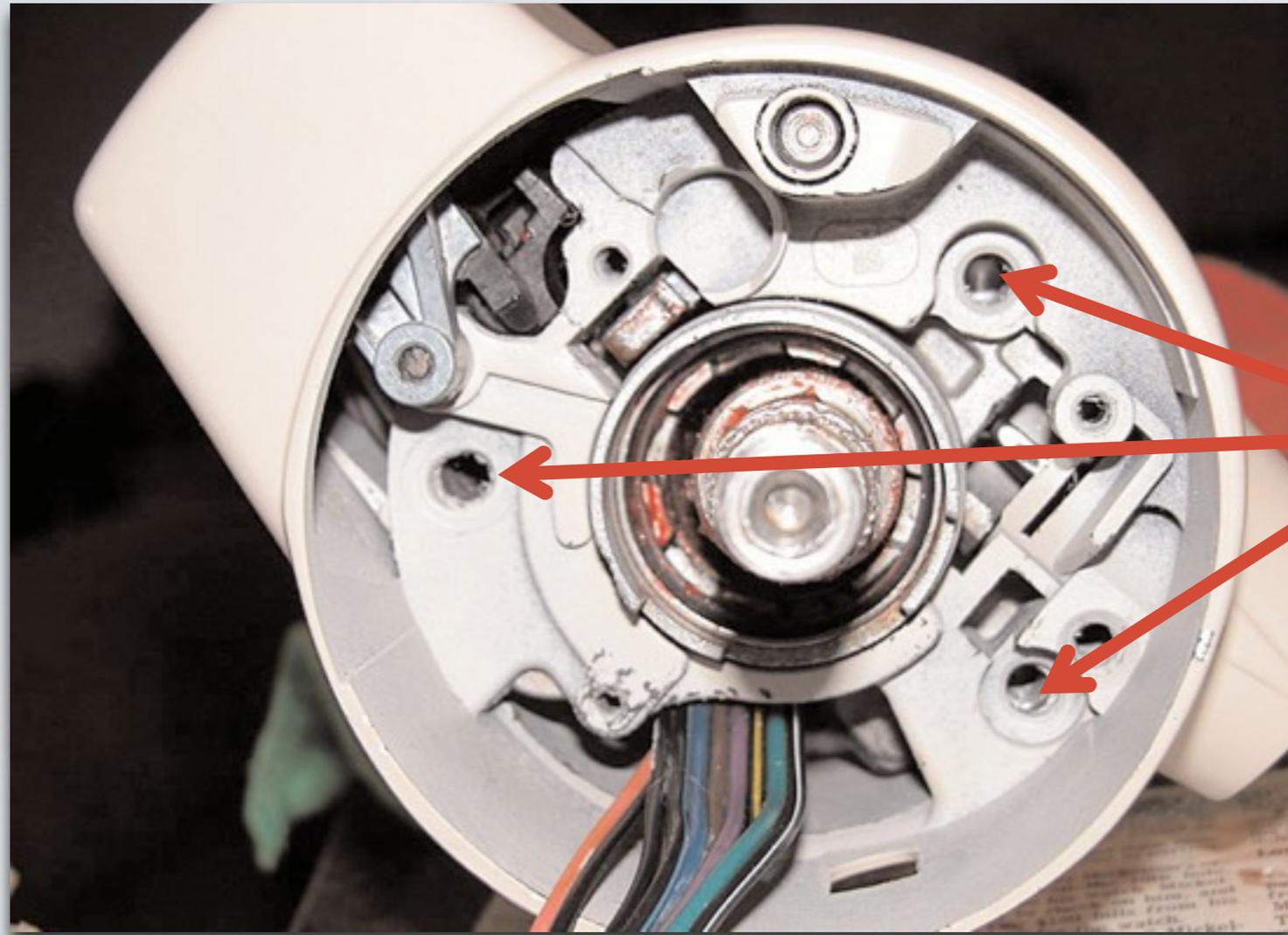
Note: Push block is not shown in this picture

If using a two piece housing, assemble it as they are slid into place.



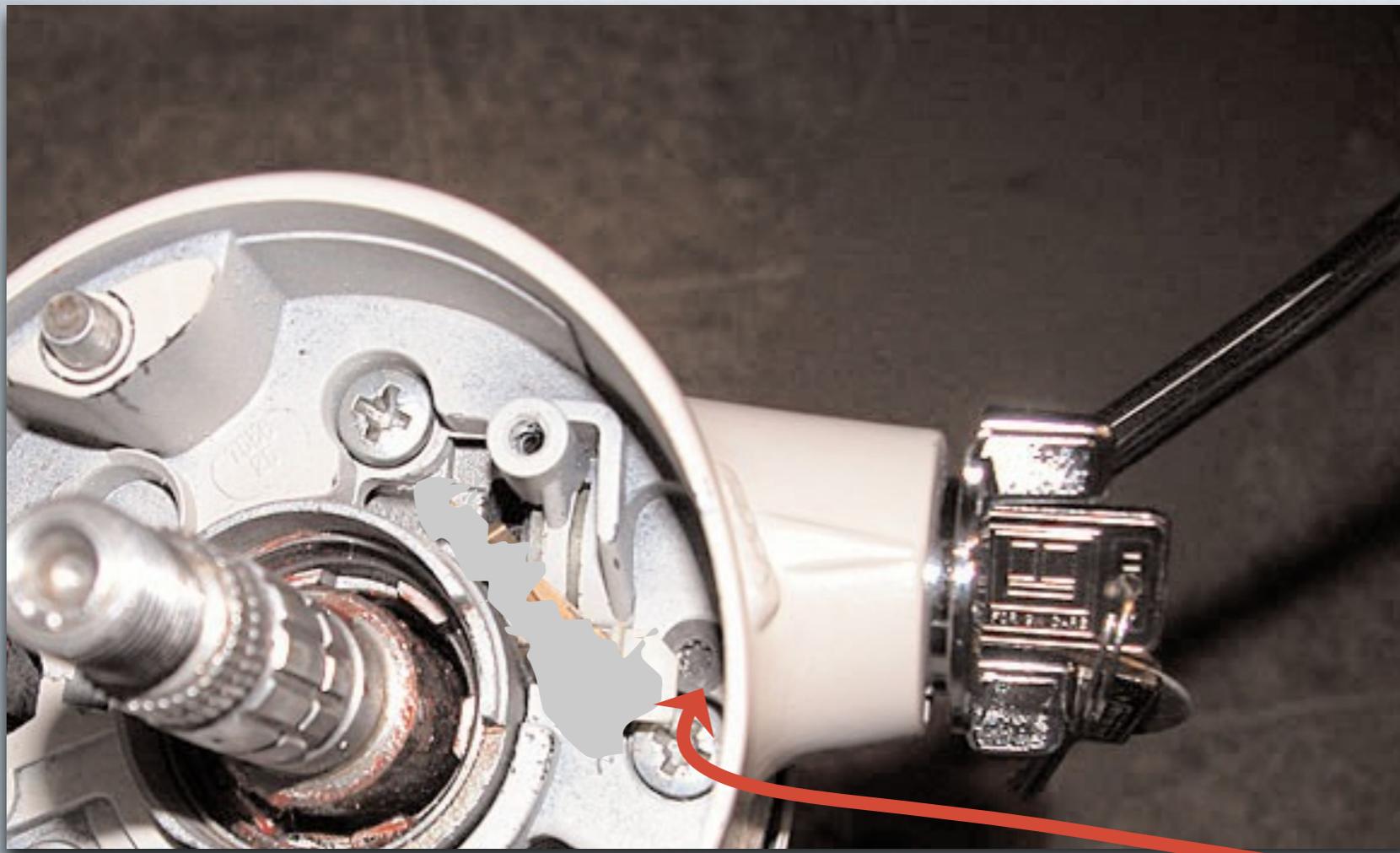
Dimmer switch
push block





Install the lock housing retainer screws from the donor column.

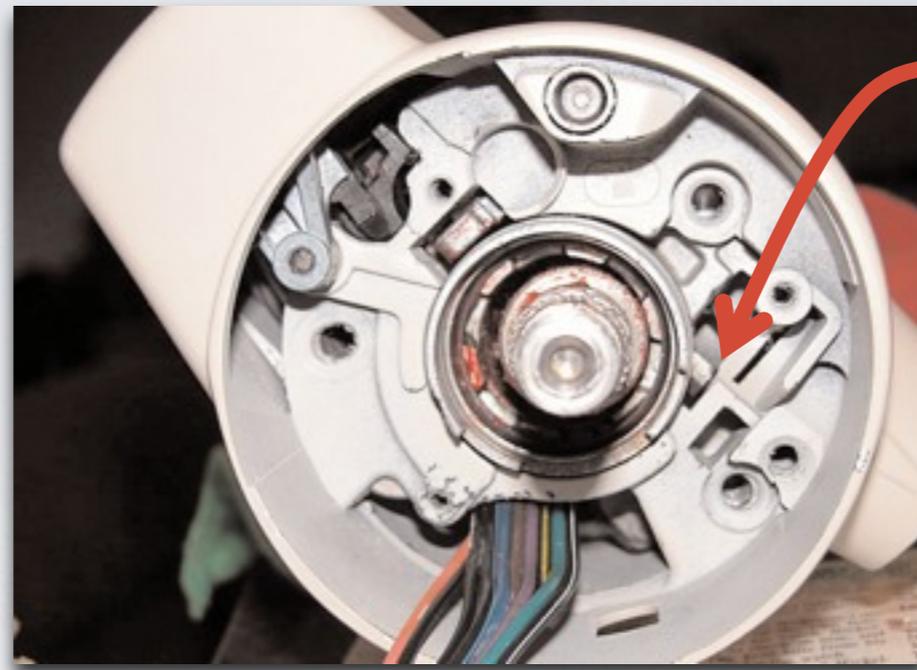




Install the lock cylinder. Line up the cylinder with the slots and rotate the key so the tail shaft engages the rod. If so equipped, install the retaining pin screw.



Install the key reminder switch



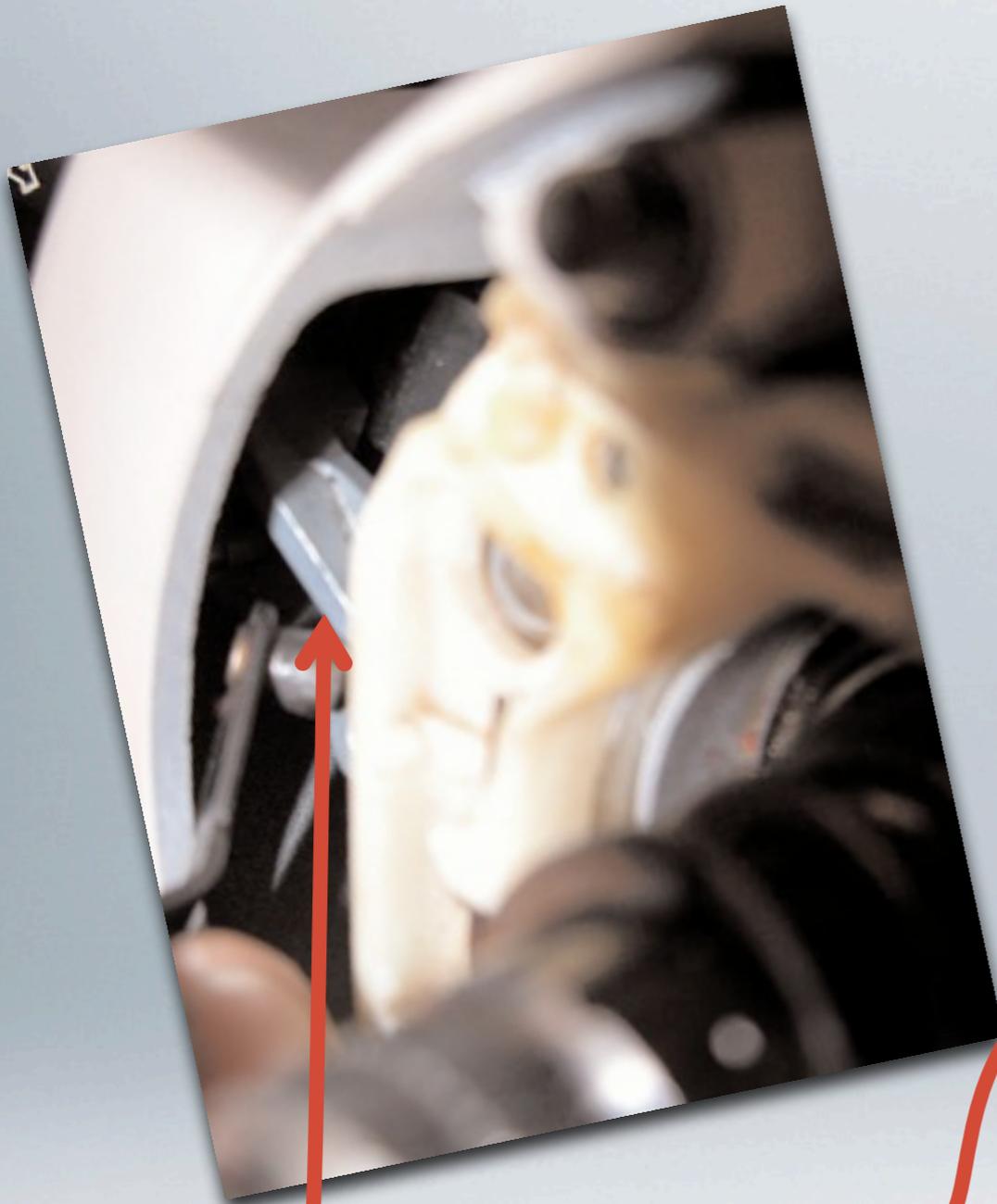
Slot for switch

Note: Most late model switches are one piece with an intergraded spring.

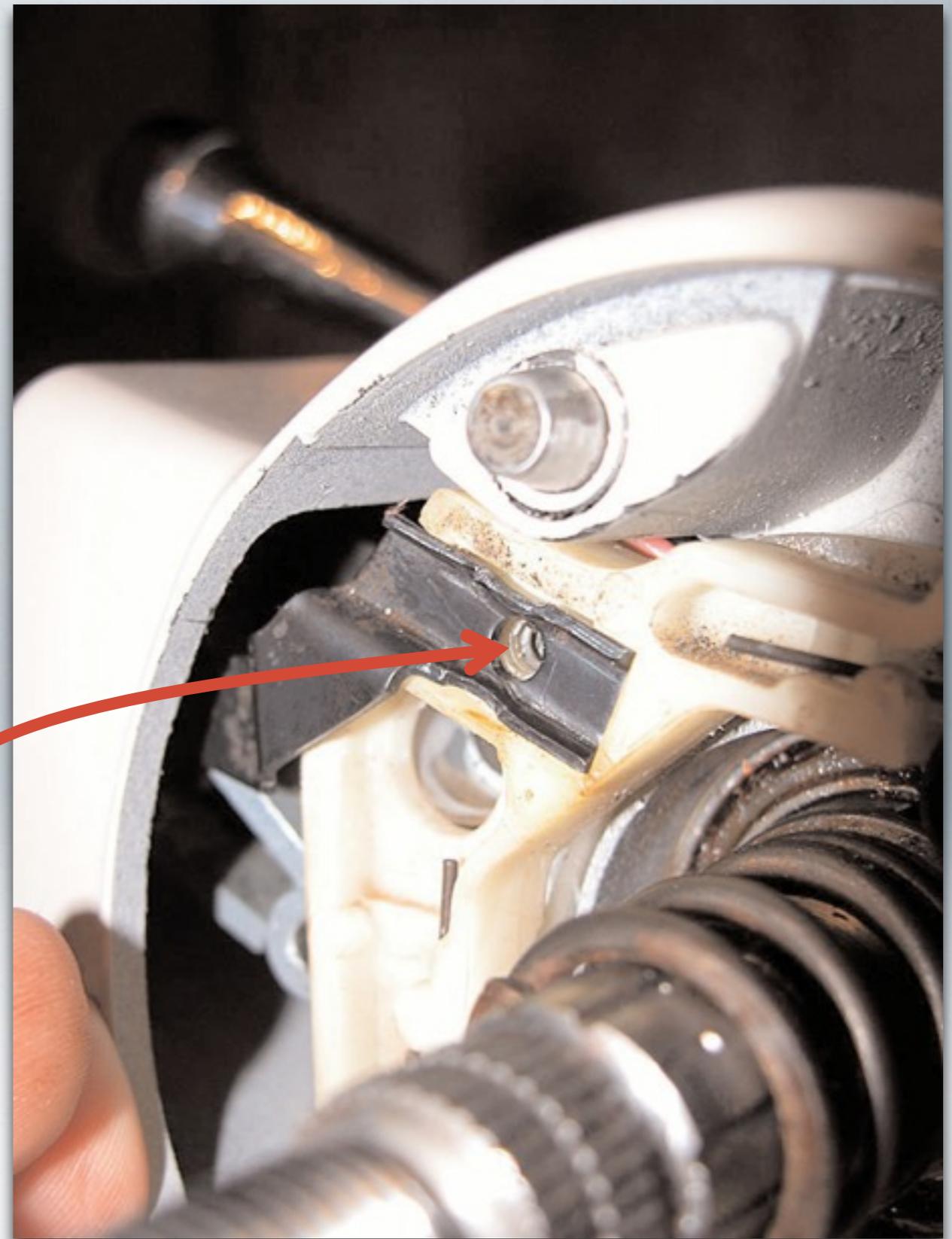


Feed wires down through column to work the turn signal switch into place. Install the mounting screws and 4-way flasher knob.





Slide the pin that is on the arm down the underside of the arm on the multi function switch.



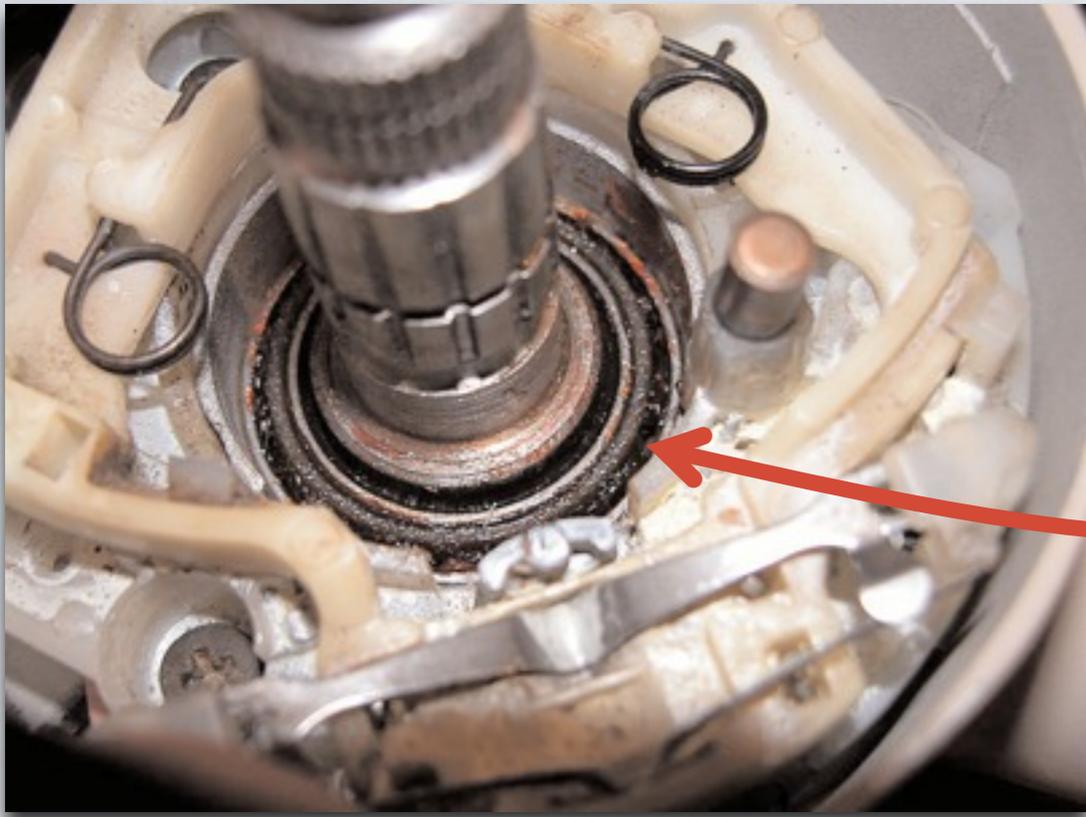
Screw into place





Install the wires
into the plastic
wire conduit



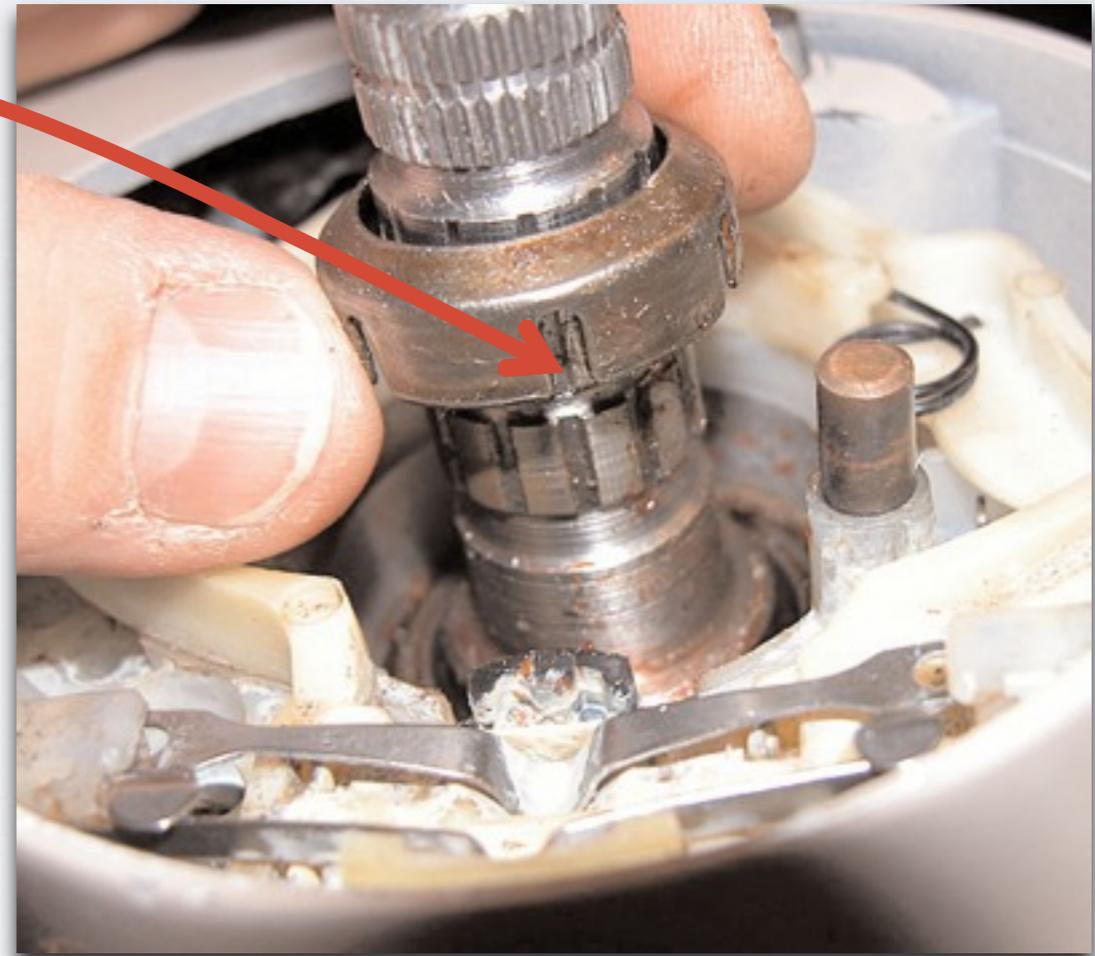


Install upper bearing and race.

Note: Grease is a great aid in holding the bearings in cage during assembly.

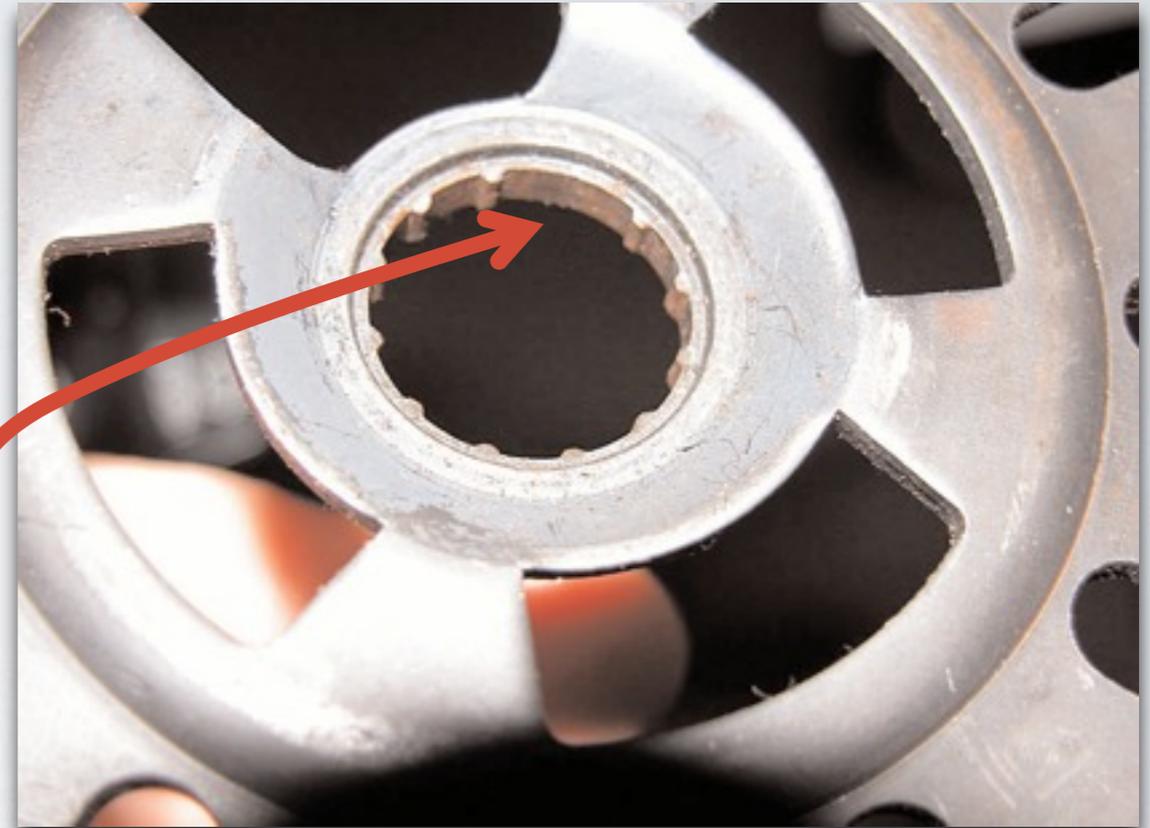
Install the spring seat.

Note: how it is placed, with the slits going down.





Set the spring and horn brush into place

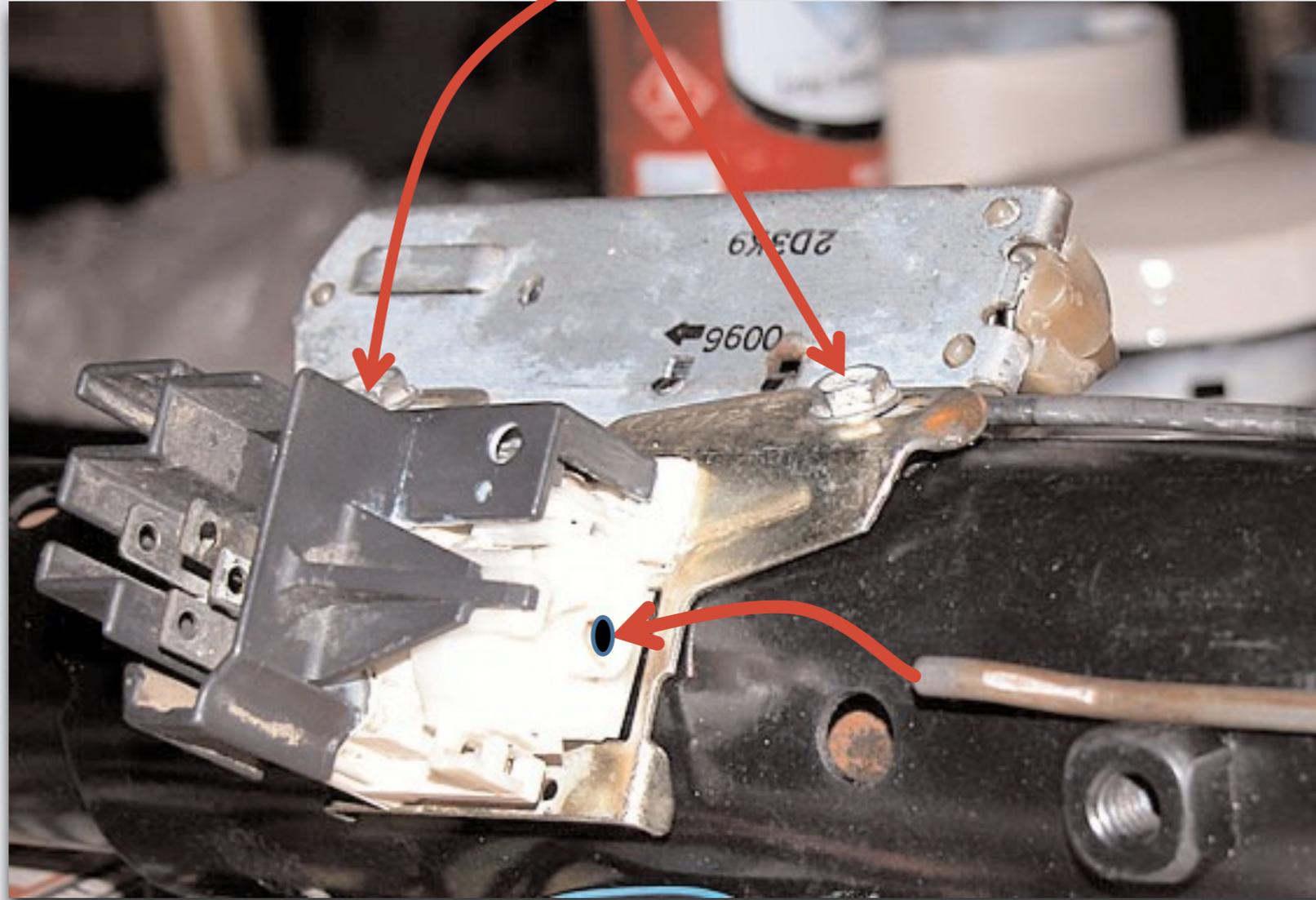


Locate slot onto upper

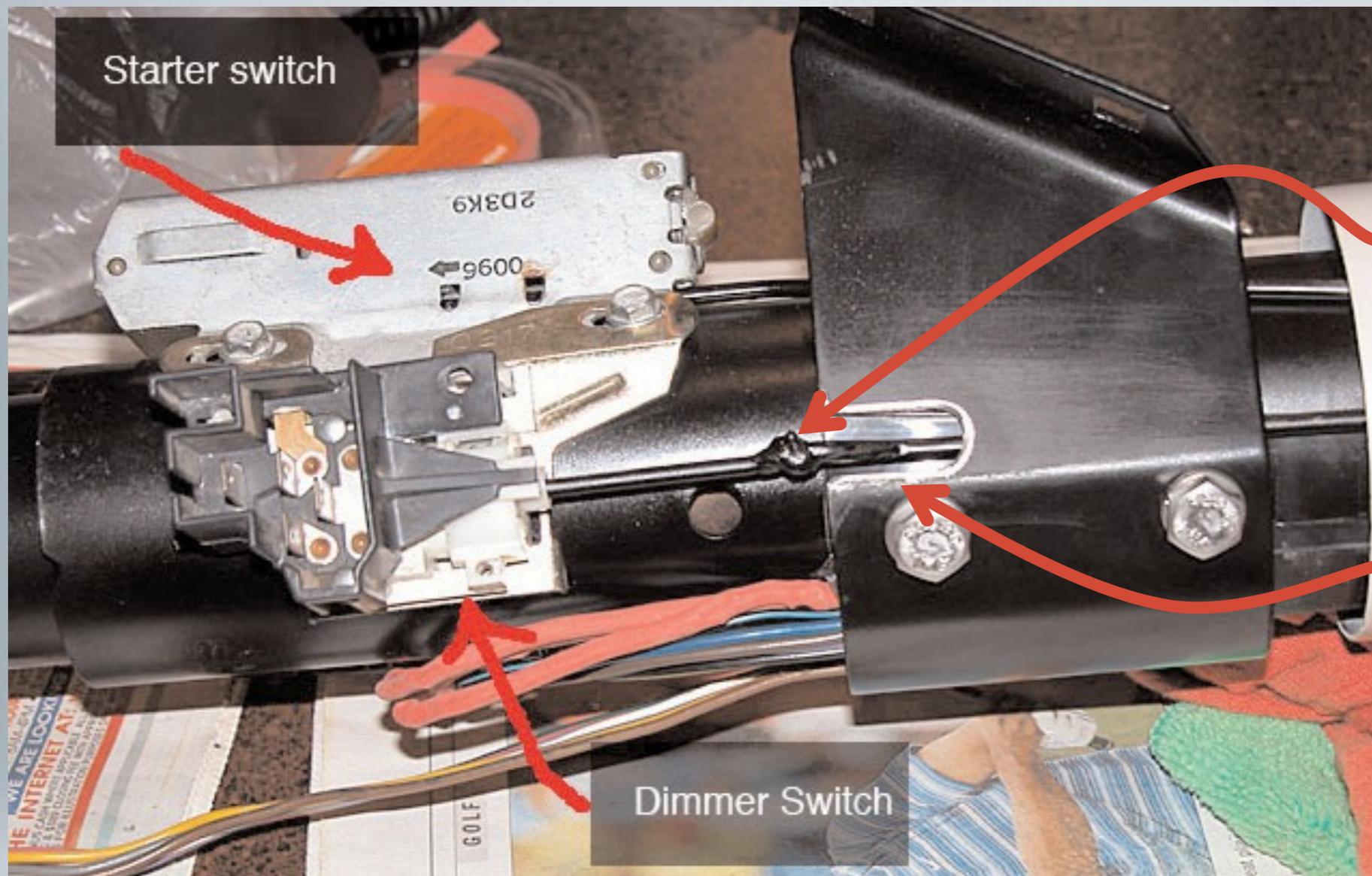


Install the retainer clip

Mount the dimmer switch sharing the ignition switch screw(s)



Sometimes the pushrod has to be modified. This one was too short.



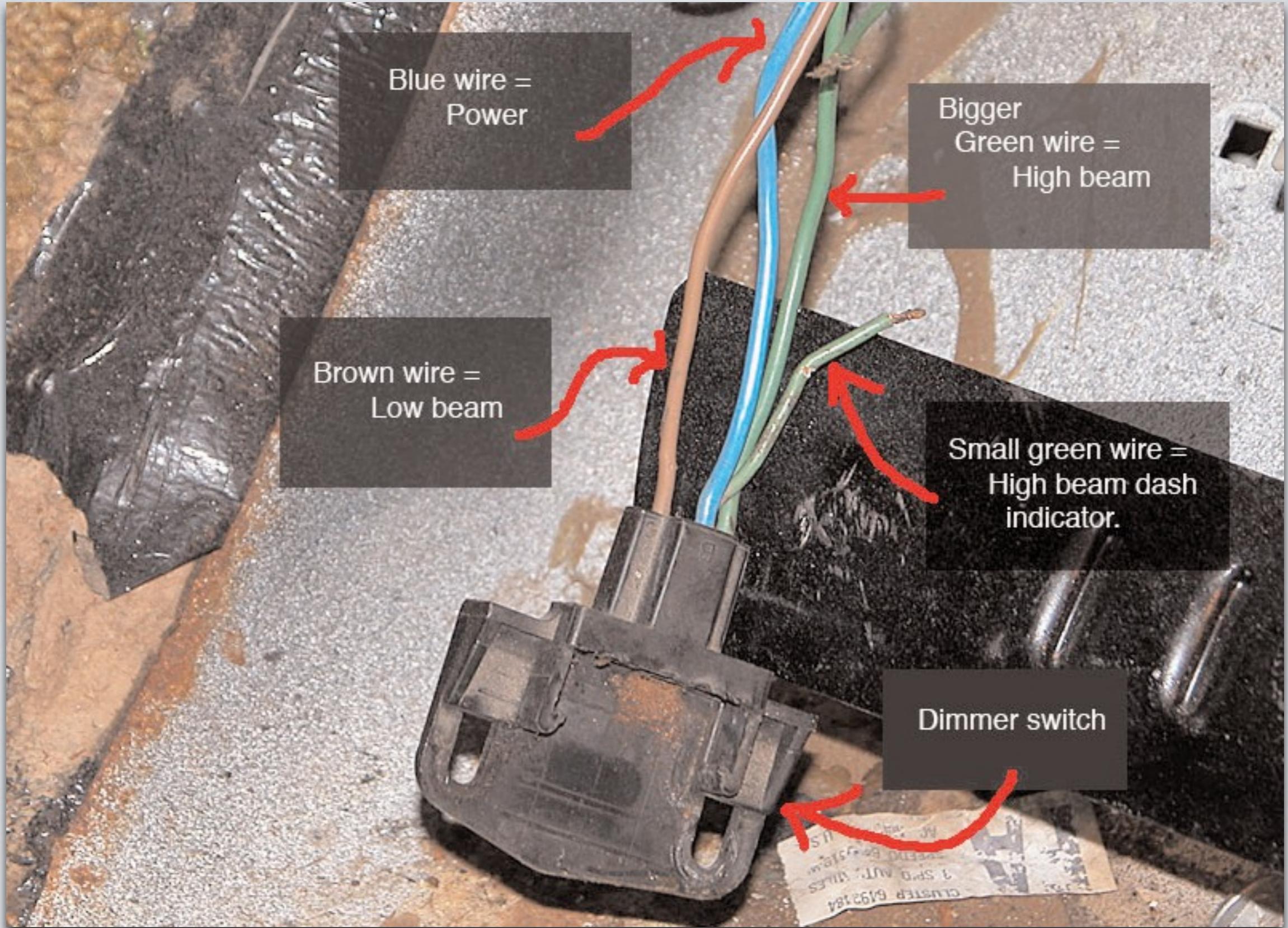
Push rod
welded
together.

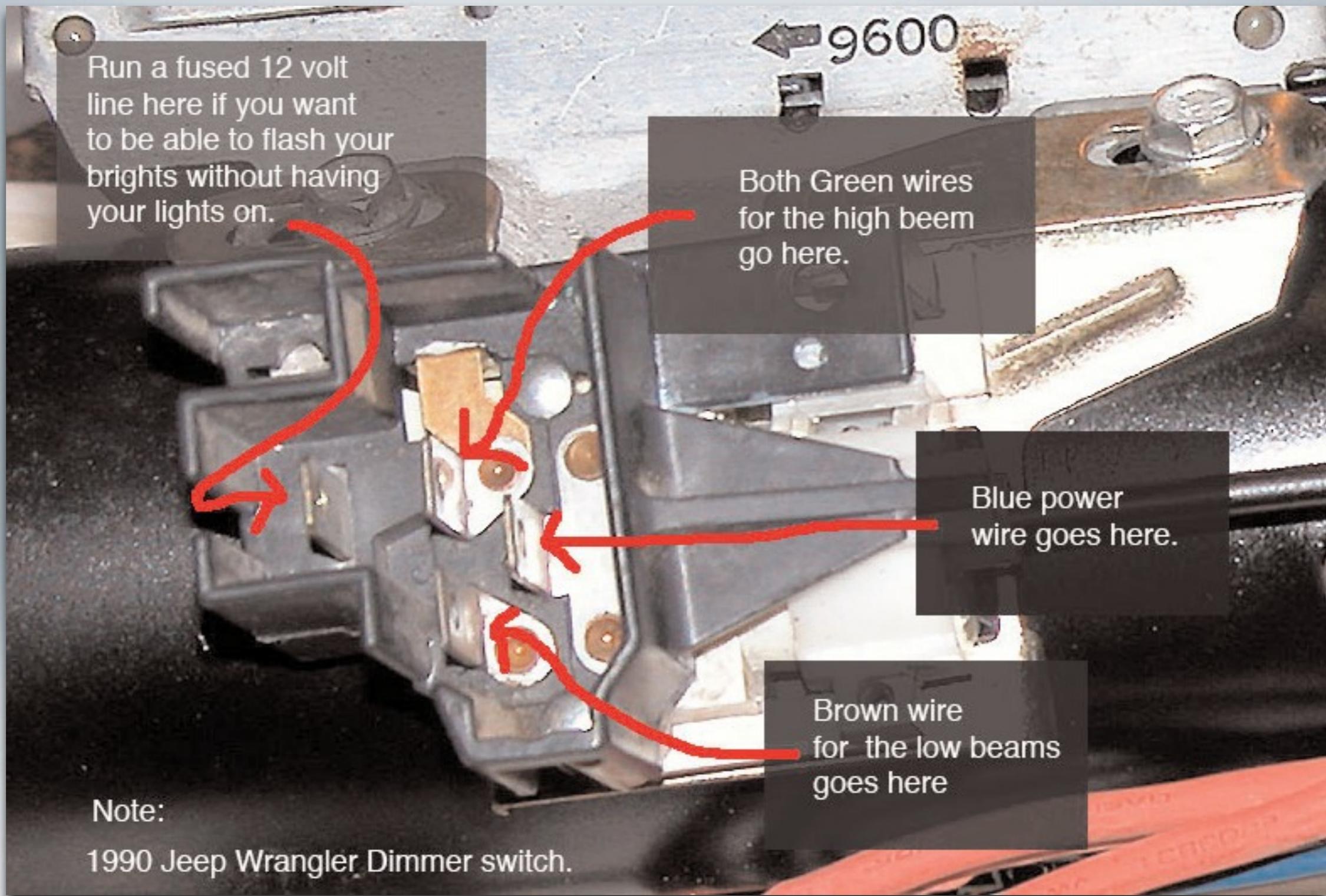
Slot ground
for
clearance.

Chuck Boyd uses a piece of brake line for a splice sleeve and crimps it to each rod.



Floor switch wiring





Run a fused 12 volt line here if you want to be able to flash your brights without having your lights on.

Both Green wires for the high beam go here.

Blue power wire goes here.

Brown wire for the low beams goes here

Note:
1990 Jeep Wrangler Dimmer switch.



Review the instructions that Ken Henderson provides with his wiper kit on how to wire the multi function switch for wipers.

<http://www.gmcwipersetc.com/GMC%20Electric%20Wiper%20Instructions%20-%20Rev%203B.pdf>

Review the instructions that John Sharpe provides for the Delphi Stepper Motor Cruise Control.

<http://www.gmcmhphotos.com/photos/cruise-control-ac-delphi-electro-motor/p21936-1.html>

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Thanks to Richard Sowers and Chuck Boyd for their input and insight.

