

# 1969 THRU 1976 GM A & F-CAR STANDARD (NON-ADJUSTABLE) STEERING COLUMN DISASSEMBLY & REPAIR INSTRUCTIONS PAPER #1

## Disassembly and Repair Instructions Addressed in this Paper

	Degree of Difficulty	Page
REMOVE STRG WHEEL AND HORN PARTS	Easy	2 & 3
TIGHTEN TURN SIGNAL LEVER SCREW	Easiest	3
MOVING THE TURN SIGNAL SWITCH OUT OF THE WAY	Easy	4
REPLACE THE IGNITION LOCK CYLINDER	Easy	4 & 5
LOST IGNITION KEY – REPLACE LOCK CYLINDER	Easy	5
REPLACE THE KEY WARNING BUZZER SWITCH	Easy	5

### How the Paper is Setup

This is the first of three papers that address various replacement and adjustment procedures that can be performed on the GM A & F-car standard steering column. The first pages of each paper concern the disassembly and replacement procedures. The last pages concern reassembly of the column. There are some fairly easy steering column service procedures that are addressed in this Paper #1.

This paper makes reference to Descriptions #1, #2 and #3. They are included on a page of line drawings entitled GM A & F-Car Standard Steering Column Page #1.

Also there is a drawing entitled GM A & F-Car Standard Steering Column Blowup. Most steering column parts will be called out with the names and numbers from this blowup.

There is also an additional page entitled GM A & F-Car Steering Column Parts and Mounting which contains pictures of two types of steering wheels (Fig. A & B). It also contains drawings of the steering column attachment in the vehicle that will be useful if you proceed to Papers #2 and #3.

The drawings are all available from the author or from the host websight. You will find these pictures and descriptions to be most helpful.

### Types of GM A & F-Car Standard Steering Columns Addressed in these Papers

There were three different iterations of standard steering columns that were produced during the Muscle Car years of 1969 through 1976. They were column shift, floor shift, and manual shift models. All were second generation energy absorbing and function locking steering columns.

A word of caution: **DISCONNECT THE BATTERY.**

With the steering column disassembled it is possible to inadvertently move the ignition switch to the “start” position. Also you don’t want to keep the neighbors awake all night with the horn blowing.

## **Terminology and Background**

Starting with the 1969 model year, General Motors made two changes to all of their passenger cars that greatly affected the steering column. The changes were to meet federal motor vehicle antitheft standard (FMVSS 114) which was going into effect in January 1970. Up until that time, the ignition lock cylinder and the ignition switch were one unit and were attached to the instrument panel.

The first change was to separate the ignition lock cylinder from the ignition switch and move both components to the steering column. The lock cylinder was placed in the steering column head and the ignition switch was relocated on top of the steering column jacket (placing it up under the brake support bracket and difficult to access.) The second change was to lock the steering and the transmission shift functions with the ignition key.

The following definitions will help to identify the components. The ignition lock cylinder is the mechanism in the steering column head where you insert your ignition key. It is a purely mechanical device and works through a small gear and rack to push and pull a rod that actuates the ignition switch. The ignition switch is the electrical device that is mounted to the steering column down under the dash.

Unfortunately, making it more difficult for the car thief also makes the servicing of the steering column more complicated for the person(s) doing the servicing. Hopefully, this paper (and several others that I have authored) will assist your working on the Saginaw steering column and make the whole procedure less frustrating.

## **Remove the Steering Wheel and Hub**

First of all, as mentioned on the first page, disconnect your battery.

There are several different types of Chevelle steering wheels. Each is a little different to disassemble. They are as follows:

### **Regular Production Steering Wheel**

Review Fig. A for assistance. Remove the steering wheel horn shroud screws on the underside of the steering wheel. Lift the steering wheel shroud and horn contact lead from the steering wheel. Remove the steering wheel shaft nut #9.

You should be able to see a small indentation on the end of the column shaft and aligned with it a matching indentation on the steering wheel hub. They will allow the parts to be aligned properly when you reassemble the steering wheel hub to the column. If you can't find the markings, use a crayon or chalk to make your own alignment marks.

Use a steering wheel puller to remove the hub from the steering shaft. Thread the anchor screws into threaded holes provided in the steering wheel. Turn the center bolt of the tool clockwise (butting against the steering shaft) to remove the steering wheel. Do not hammer on the puller while turning.

## **Remove the Steering Wheel and Hub (Continued)**

### **Cushioned Rim Wheel**

Review Fig. B for assistance. Pry off horn button cap. Remove steering wheel nut #9.

Remove three screws that secure the upper horn insulator. Remove insulator, receiver, and Belleville spring.

Check for alignment marks and use a puller as described under Regular Production Steering Wheel.

### **Corvette Type Sport Wheel**

Pry off horn cap. Remove contact assembly attaching screws and remove contact assembly. You can now just remove the steering wheel from the hub by removing six screws. Or you can leave the steering wheel on the hub and remove them together as one unit.

Remove the steering wheel shaft nut #9.

Check for alignment marks and use a puller as described under Regular Production Steering Wheel.

### **Tighten Turn Signal Lever – Description #1**

Remove the three cover screws and lift the shaft lock cover #8 off the shaft. The cover screws have plastic retainers on the back of the cover so it is not necessary to completely remove the screws. Later columns have a plastic cover that is snapped in place. Pry off the cover with a screwdriver.

There should be a hole in the shaft lock plate #6 that will allow access to the turn signal lever screw which is located at about the 10 o'clock position in the column. You will probably need to turn the steering shaft to align the hole with the screw. If all you want to do is tighten the turn signal lever, you are done! Go to pages 6 & 7 to button up. Otherwise, you can wait until further in the process to remove the screw and lever.

### **Remove Shaft Lock – Description #1**

The spring, eyelet, and insulator can now be removed from the tower on the canceling cam #5.

Place the Shaft Lock Compressing Tool (J-23653) on the end of the steering shaft. Now, compress the steering shaft lock plate #6 as far as possible using the shaft nut #9. Pry the round wire lock plate retaining ring #7 out of the shaft groove.

I don't have the special compressing tool so I have someone press down on the shaft lock while I use two thin bladed screwdrivers to pry the ring out of the groove. (Note, that person needs strong thumbs, the preload spring has a lot of force.)

### **Remove Shaft Lock (Continued)**

Don't distort the ring. If you do, you must purchase a new ring. The GM part number for the ring is 5694191. It is available from any GM dealer. Note, with the retaining ring removed, the steering shaft is now free to slide right out of the steering column. If the column is to remain in the car during the service operation – don't worry about it.

Lift the shaft lock plate #6, cancelling cam #5, bearing preload spring #4, and the thrust washer #34 off the shaft.

### **Moving the Turn Signal Switch Up and Out of the Way – Description #2**

Push in the hazard warning knob #29 and remove the knob and screw. Remove the three turn signal switch screws #3. You may need to place the turn signal switch in "right turn" to access the upper right screw. Remove the turn signal lever #37. It has a single retaining screw #36.

Go down under the dash and remove the instrument panel trim cover under the steering column. You may have to remove an air conditioning duct as well.

Now pull down the turn signal switch connector out of the bracket on the column.

If you are only going to replace the lock cylinder #27 and/or the key warning buzzer switch #32 you can just pull the turn signal switch #2 out of the column far enough to work on them. You will not need to pull the wires all the way out of the column. Proceed to Description #3.

### **Removing the Turn Signal Switch from the Column**

If you are replacing the turn signal switch or disassembling the column head, you are going to need to pull the switch completely out of the column; proceed to Paper #2.

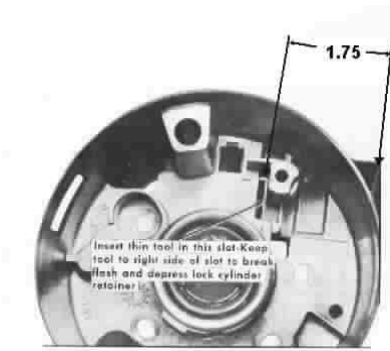
### **Remove Lock Cylinder – Description #3**

When removing the lock cylinder from the column, most shop manuals recommend inserting the ignition key and turning the lock cylinder to the RUN position. However, the lock cylinder can also be removed without the ignition key being inserted. Either way will prevent damage to the key warning buzzer switch.

The 1969 thru 1976 lock cylinders are held in place by a metal spring tab that sticks out of the lock cylinder. This tab engages a narrow, rectangular slot in the column housing #30. Looking straight into the column housing, this slot is vertical and located right on the centerline of the lock cylinder, 1.75 inches from the underside of the chrome wings on the lock cylinder. **See FIG. 1 on the next page.**

If your steering column has never had the lock cylinder replaced, there will most likely be a thin die casting metal membrane covering the slot. Keeping a thin bladed tool to the right side of the slot, break the housing flash. Now depress the spring tab.

## Remove Lock Cylinder (Continued)



**Fig. 1**

### **Remove Lock Cylinder**

#### **1969 through Early 1979 Standard Columns**

Also I have found that if you don't push the spring tab pretty much in the center it will not release the lock cylinder because it tends to rock side to side. Don't be tempted to pry on the lock cylinder wings to get the lock cylinder moving. The wings will pop off and they can't be put back on. With the tab depressed the lock cylinder should slide right out. If replacing the ignition lock cylinder is all that you required, skip to page 5 and proceed.

There is one other method that is sometimes used to remove a lock cylinder that I do **not** approve. Some people screw a slam-puller into the lock cylinder and slam it out of the column (usually shearing the spring tab.) The slam-puller shocks are very hard on the column housing and your instrument panel.

### **Lost Ignition Key**

If for some reason you do not have the ignition key, you can still disassemble your steering column to the point where you can depress the metal spring tab and remove the lock cylinder. You can then have a locksmith make new keys for that original lock cylinder or install a new one. Replacement lock cylinders are readily available from GM dealers as well as most automotive supply stores.

An earlier version of this paper indicated that you were required to drill out the lock cylinder in order to replace it if you did not have the ignition key. I now believe that destruction of the lock cylinder is not required. The metal spring tab that retains the lock cylinder can be depressed regardless if you have a key or not.

### **Removing Key Warning Buzzer Switch - Description #3**

The key warning buzzer switch #32 has a switch clip #31 holding it in place. Insert the ignition key and turn the lock cylinder to the "run" position. Take a paper clip or piece of stiff wire and bend a hook about 1/4 inch from the end and insert the hook into the exposed loop of the switch clip. Pull up and out on the wire to remove both the clip and the switch.

If replacing the key warning buzzer switch is all that was required, reassembly instructions follow directly.

**Note:** All of the previous service operations can be performed with the column still in the car. To remove any further parts from the upper end, the column should be dropped and the ignition switch #45 should be removed. Please download and proceed with Papers #2 and #3 to continue your repairs.

**The following procedures address reinstalling the key buzzer switch, the ignition lock cylinder and reassembling the steering column.**

### **Reassembly - Ignition Lock Cylinder – Description #3**

Hold the lock cylinder sleeve and rotate the ignition key clockwise against the stop. You should be able to retract the plastic key buzzer tab and the metal spring tab should retract easily with slight pressure as well. Insert the cylinder into the turn signal housing #30 with the key on the cylinder sleeve aligned with the keyway in the housing. Push in to abutment of the cylinder and sector. Rotate the knob counterclockwise, maintaining a slight pressure inward on the cylinder until the drive section of the cylinder mates with the sector #26. Push in until the spring tab pops into the housing groove.

### **Reassembly – Key Warning Buzzer Switch**

Assemble the buzzer switch with the formed end of the clip under the end of the switch and the spring bowed away from the switch on the side opposite the contacts. Push the spring and switch into the cover to the step with the contacts toward the lock cylinder bore. If the lock cylinder is in place, rotate it to the “run” position and make sure that the plastic tab on the lock cylinder that actuates the buzzer switch is retracted.

### **Reassembly - Turn Signal Switch**

Install the three switch mounting screws. Assemble the hazard warning knob. Install the turn signal lever. Clip the turn signal switch “harmonica” connector onto the bracket on the steering column jacket.

Snap the vehicle wiring harness onto the turn signal switch “harmonica” connector.

**Note:** It has been reported that sometimes if you have a new turn signal switch, the new switch connector will not snap onto the original wiring harness in your vehicle. It will be close but still will not snap correctly.

If you have this problem, take the connector from your original switch and swap it onto the wires of your new switch. Use the wire from a heavy paper clip and insert it into the "harmonica" connector from the contact side to disengage each wire and contact. There should be a small molded square channel in the connector that will guide you to a metal tang on the contact that holds it in place. Once you depress the tang and pop the wire and contact out of the connector, you should take a small knife blade and bend the tang back out so that it will engage the old connector correctly.

Make sure you install the wires in the correct order. The wiring order is the same for all C3 harmonica connectors regardless of year.

### **Reassembly - Washer, Spring, Cancelling Cam, Shaft Lock, and Retaining Ring**

Place the thrust washer #34, upper bearing preload spring #4, and the cancelling cam #5 onto the upper end of the shaft. Make sure that the two lobes on the cam are centered between the springs on the turn signal switch. Make certain that the turn signal switch is in the “neutral” position and the hazard warning plunger is out. **The switch assembly may be damaged if you don’t follow these instructions!**

Compress the shaft lock #6 with the special tool or by hand and install the round wire retaining ring #7. Make sure it is fully seated. If you distort the ring you will have to purchase a new one from your local GM dealer. Reinstall the shaft lock cover #8 (it either snaps in place or has three screws).

### **Reassembly - Steering Wheel and Horn Contact**

These assembly operations are common for all types steering wheels:

Make sure that the horn lower insulator, eyelet and spring are in place in the horn contact tower.

Align the markings on the steering shaft and steering wheel hub. Torque the steering wheel nut to 30 ft-lbs. Caution: Do not over-torque the shaft nut or the steering wheel hub may rub on the steering column housing.

**The following reassembly sequences are unique to each steering wheel.**

#### **Regular Production Steering Wheel**

Place the steering wheel shroud onto the steering wheel while guiding the horn contact lead into the directional signal cancelling cam tower.

Install the shroud attaching screws on the underside of the steering wheel. Reconnect the battery ground cable. You are done!

#### **Cushioned Rim Steering Wheel**

Install the belleville spring, receiver and horn upper insulator and secure with three screws.

Install horn button cap. Connect battery ground cable. You are done!

#### **Corvette Type Sport Wheel**

Attach steering wheel to hub with six screws.

Place horn contact on steering wheel and attach with three screws.

Snap horn button in place. Reconnect the battery. You are done!!!

**Final Words of Caution:**

To maintain the energy absorbing function of the steering column, always replace screws, bolts, and nuts as specified.

Plastic parts that are 30+ years old can be very brittle! Handle your steering column parts with care.

When a steering column assembly is removed from the car, special care must be taken in handling it. A sharp blow on the end of the steering shaft, leaning on the assembly, or dropping the assembly could shear or loosen the plastic fasteners that maintain column rigidity.

**A helpful hint to make this job a bit easier.** Take a large towel and roll it up the long way. Leave a short tail. Stuff the towel up between the windshield and dash pad. Let the short tail hang over the instrument cluster forming a table. As you disassemble the column, place the small retainers, screws, plates, etc up on the towel from left to right in the order that you remove them. The towel forms a nice no-slip table and prevents the small parts from dropping down your defroster ducts and becoming a permanent part of your air distribution system. When you go to reassemble the column, your parts are all handy and in the correct order for reinstallation.

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