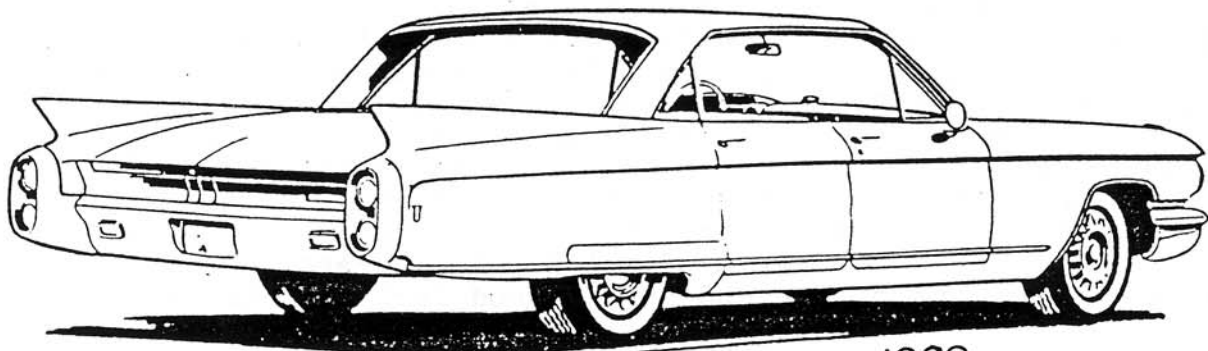


*Brougham*  
*Owners*  
*Association*

*Eldorado Brougham*



1960

*Newsletter Vol. 2 No. 3*

# Brougham Owners Association, Inc.

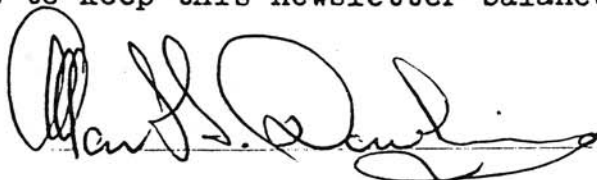
B.O.A. Newsletter Vol. 2. No. 3. Fall 1990

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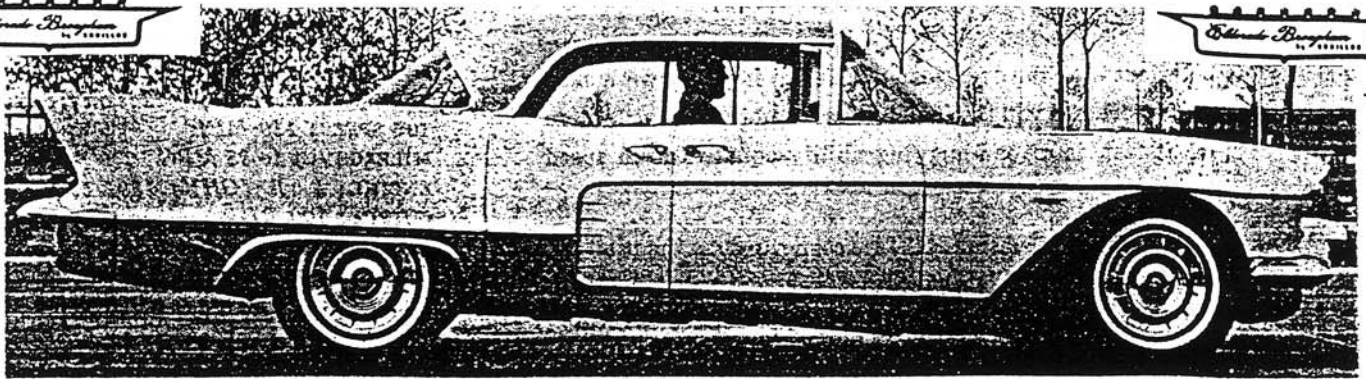
## President's Message

I could spend the next twenty pages trying to resolve the battle over what is "original," "restored," or "modified" and end up on the outs with one school of thought or the other. Suffice to say Broughams present some very unique problems to the restorer. In a lot of cases "restore" does not describe the dilemma faced by the majority of owners who have purchased a car that has seen 8 - 10 prior owners who all had a crack at keeping the car operational. In these cases, resurrection may be a better term. Yes, the car is restorable - but, to original maybe not. Some would even object to using the repro parts now available - not original. In some cases the parts now available may even be superior to the originals. One can get a bit carried away. Would I have points deducted for 1" 8.20 - 15 tires or a stainless exhaust? In some shows - yes. Some parts of the Brougham are just not out there. At the other extreme, a set of racing slicks & laker pipes is just not acceptable and I would expect to be condemned for such a gross violation of the intent of the vehicle. I remember seeing a new Brougham "improved" on by George Barris and was moved to tears. Today, if someone altered a 4000 mile original car I would feel the same way. I would also object to any of us finding it impossible to accept the work of a fellow member who has, at great expense and anguish, resurrected a Brougham to as close to original as possible with some well engineered modifications carried out in a true workmanship like manner. I have yet to meet a Brougham owner in the B.O.A. who is dedicated to building a street rod. They are all doing their best to preserve a treasure in automobile history. We are bound together by a love of the Brougham with all its difficulties.

This newsletter is dedicated to offering the best if not some times controversial information available about the Brougham. Its purpose is to serve the needs of all B.O.A. members. I have met or talked with many of you and have a good feel for what you want of the B.O.A. I will continue to try to satisfy the majority of you. I hope those of you who take issue with selected parts of this publication will send me your views or call. We are a very small and select group with more common goals than differences. Lets concentrate our efforts on the Brougham and let our egos ride in the back seat. I will do my best to keep this newsletter balanced with something of value for all.



# BROUGHAM HISTORY



## We drive the Cadillac Eldorado Brougham to see what

by Joe Wherry

**THE IDEA OF AIR SUSPENSION** for passenger carrying vehicles dates back farther than the automobile. In 1847 a Mr. John Lewis obtained patent letters on an early concept that was to have been used on wagons. Then in the early years of this century a Benjamin Bell did considerable work on sleeve-type air springs with pistons of various shapes—Bell, too, was granted a patent.

Twenty or more years ago several of our major rubber and tire manufacturing firms devoted much time to laboratory experiments directed toward the development of an economical, durable, and dependable method of smoothing out the bumps via air suspension. Indeed, one of the Big Four tire companies has a rolling example of a 1934 low-priced car with rubber air springs. Truth is that this semi-ancient experiment looks very little different from some of the current examples illustrated on these pages.

Before we checked with the tire "Big Four," we had a chance to drive the air-suspended Cadillac Eldorado Brougham. We enjoyed it, but found that only the most naive would subscribe to the idea that it gives a bump-free ride. Four air-spring assemblies replace conventional springs at each wheel. (See Figs. 1, 2 and 3.) These spring assemblies consist of a rubber bag open at top and bottom and looking not too unlike the familiar household gadget called the "plumber's friend." These open-end air bags fit into a bell-shaped receptacle which in turn is installed in the frame or chassis. The air springs are held in place by fairly ordinary retainers that, of course, are specially designed for this installation.

Three leveling valves, one at each rear wheel, and one at the front for both front air springs, meter the correct amount of air to each air spring. Actuated by a control rod which reacts to the upward or downward movement of each individual wheel, the leveling valves supply air to

their respective air cells to keep the road clearance of the car at a constant height regardless of the load carried in the trunk or inside.

A solenoid package consisting of two pairs of valves is placed automatically in operation whenever a door is opened or the ignition key turned on. One pair of valves meters air flow for fast or slow leveling; the other pair of valves blocks off air flow for parking operations (or when the car traverses occasional bumps and dips) and whenever one needs to change a wheel. *Rapid* leveling occurs whenever the passenger or luggage trunk load changes; *slow* leveling takes place when the car is in motion.

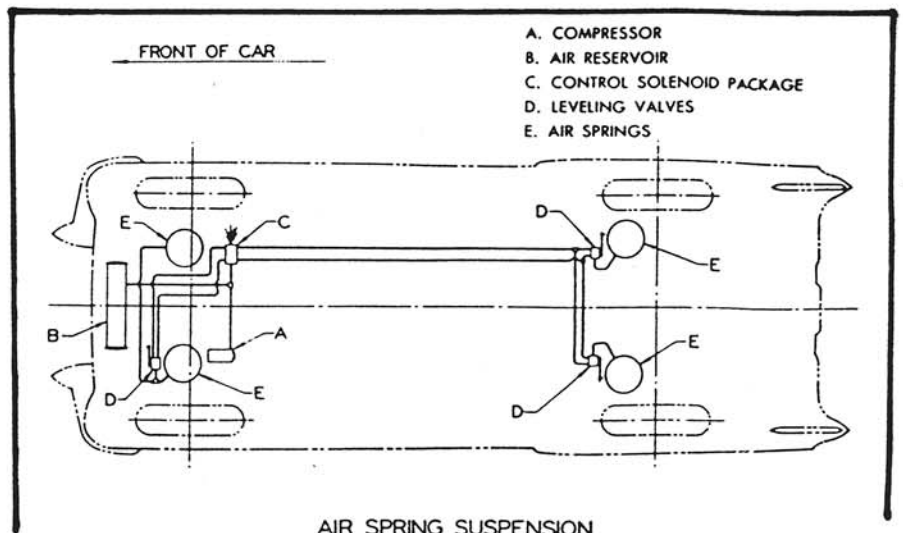
An air accumulator (or reservoir) and the compressor sit atop the generator, can be held easily in the hand, and are actually the heart of the entire system since they maintain the required supply of air for a level attitude and constant height above the ground. Powered with a 12-volt, 15-ampere electric motor, the compressor also contains a pressure activated limit switch, which starts and stops the compressor. Internal pressure is constantly

maintained at from 100 to 120 psi in the storage reservoir.

Open the door to enter and you immediately hear a low hum; sit in the driver's seat and as soon as the left side drops a shade, the leveling valves go into action and the car regains its unladen attitude. The pistons in the air springs, shaped much like a bullet, press upward into the air bag whenever a load is imposed—this accounts for the springing action which is softer and absolutely without noise.

A rough, busted-up three miles of ancient concrete road provided a good place to drive both a conventionally suspended Cad 60 Special and the new airborne Brougham. There is no doubt that the ride is amazingly improved, but riders and driver too (through the entire structure) still feel shocks; the edge or sharpness of the bump and rebound is taken away.

Cornering under power produces as much heeling over as in a regular line Cadillac and more than in some current domestic cars with suspensions engineered specifically to maintain a level cornering attitude, regardless of the stresses imposed



# RIDING ON AIR IN '58

**it'll be like and study air springs by three major firms.**

by the centrifugal action of a fast turn.

Nose dipping on fast stops is still present, as our accompanying photograph (taken at 1/500 second) shows. Of course the whole aim in the prestige car field is to give something not readily obtainable at modest prices, and a super-soft ride without the sharp hiccup effect of conventional steel springing has been the result.

When we try something new we naturally seek to compare it to the next best thing we have ever experienced. Hence, the ride of the Citroen DS-19 came to mind. The DS-19 has air-over-oil suspension, and we honestly believe it has every bit as good a ride as does the new Brougham. (Other pictures of the Brougham are on page 68.—Editor)

**FIRESTONE'S "AIRIDE" SYSTEM.** Soon

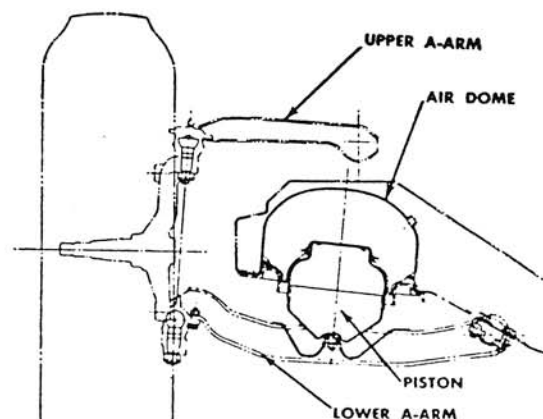
after this issue reaches the reader, Firestone will begin producing rubber air springs in volume in their new factory in Noblesville, Ind. The trade name for the system will be "Firestone Airide" when marketed by the maker. If the material placed in our hands is any indication, Firestone probably will be the biggest supplier, initially at least, of air suspension components. Since Firestone begins mass production in July, it's obvious that some buyers of '58 cars will ride on "Firestone Airide" springs.

According to Firestone officials, the "application of *Airide* springs to new passenger cars may be expected within the next year or two." The italics are ours, but the word *next* almost certainly indicates '58. And about one year ago Mr. J. E. Trainer, Firestone's Executive Vice-

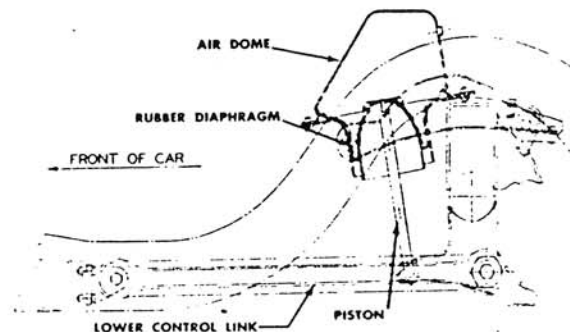
President, announced, "It appears certain that the research and development work done in this field will culminate in the application of air springs to passenger automobiles in the very near future."

The development work alluded to by Mr. Trainer was, principally, in cooperation with Greyhound Bus Corp. and G.M.C. The former has been operating air-suspended cross-country buses for some time and the latter has already exhibited a new lightweight railroad train equipped with air springs. Many trucks, too, have used Firestone's system for several years. A significant virtue that air suspension will bring to the passenger car driver is decreased maintenance and repair costs. A major bus company, after experiencing over 300 million miles with

continued on next page



**FIG. 2 ELDORADO BROUGHAM FRONT SUSPENSION**



**FIG. 3 ELDORADO BROUGHAM REAR SUSPENSION**



## "Riding on air in '58

*will be like sleeping on a soft mattress in a slight earthquake..."*

continued from preceding page

"Airide," has reported so few repairs and parts replacements that it "has stopped keeping replacement and repair cost records."

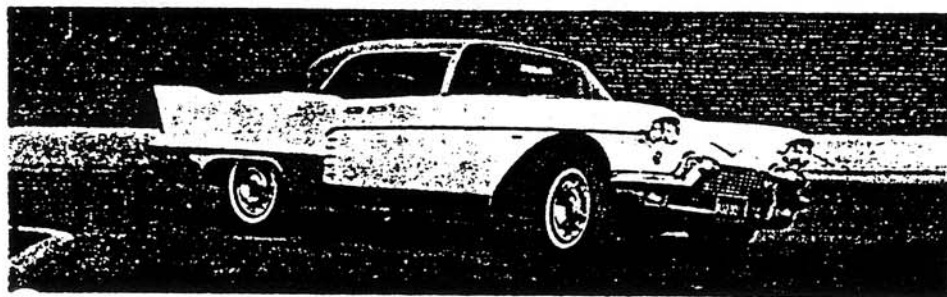
Here's how Firestone's Airide system works: A metal air tank, self-regulating valves, and the associated plumbing enclose a variable amount of air. The springs, one to each wheel, look something like a small rubber tire of the old "doughnut" variety popular back before the war. (See Fig 4.) Built around a drum from several plies of nylon fabric impregnated with rubber, the "spring" is vulcanized in a mold. Depending on the particular vehicle for which the spring is intended, one

your older car. In answer to our question as to whether some models of the Firestone air spring could be used as a replacement for the current coil springs in pre-'57 cars, we were told that there is a very good chance that this can be accomplished. This seems especially possible beneath those cars which have four-wheel coil-spring suspension (current Rambler, Nash, Hudson, and Buick models); where other makes are concerned, it is likely that the front coil steel springs may be replaceable with the "Airide" units. The one disadvantage would be finding suitable places for the installation of the compressor, storage tank, and the leveling

qualities decrease and high body maintenance results from the constant vibrations transmitted through the suspension system.

General has developed what they call *elongated air bellows* which are used extensively on commercial vehicles. On successful installations in Mack buses, four of these bellows are mounted above each axle at the ends of rigid truss beams; these bellows are then secured to the ends of the axle in exactly the same way as are conventional leaf springs.

The Goodyear *elongated bellows* air springs, quoting Mr. Hirtreiter, "consist of an upper and lower (air) bag with a gommated air passage connecting the two sections. (See Fig. 5.) The bags are vulcanized together and bonded to rectangular steel plates at the top and bottom. Each bellows is provided with a large solid rubber block in the upper bag to prevent a complete collapse of the suspension in event of deflection. Rectangular steel air reservoirs are attached to the frame (of the vehicle) and are parallel with the lower beams. These reservoirs communicate with



to three of the air bags are joined together to make a complete "Airide" spring. Installed at the ends of each axle (much in the same manner as are coil springs), these bellows are connected to the air tank and valves by metal tubing.

The air tank itself is kept at a suitable and predetermined pressure by a compressor which is usually driven off the generator (as in the case of the Brougham), and the valves are actuated by the amount of weight placed in the vehicle. Thus the vehicle's constant road clearance is maintained. Firestone officials hasten to point out that there is currently some discussion as to whether the valving system should be activated instantaneously or whether there should be a slight delay.

If instantaneous action is desired, there would be a constant exchange of inside air pressure in the air springs—whenever the vehicle was subjected to bumpy roads and in cornering. The consensus is, and this seems reasonable to us, that a delayed action is preferable—in other words, the number of passengers carried and the distribution of the load (as when heavy items are placed in the trunk) will actuate the air tank and valve systems. Thus, the compressor will be called upon to supply additional air when leveling or other lateral correction is needed.

"Airide" springs may be applicable to

valves with a rather complicated system of plumbing and actuating arms.

"AIR LIFT" RUBBER BAGS have been popular for several years and while these constitute only a *semi* sort of air suspension, they do go a long way towards accomplishing what full *air suspension* will do—namely, give you the smoothest ride you've ever experienced (the bumps and ruts, though still felt, will seem to have round edges and be more shallow. There will be less fatigue noticed by passengers and driver, and you will note a new quietness and seemingly more solid ride. Vibrations which loosen body and chassis bolts will be virtually eliminated with complete air suspension.

The fact that the wear and tear due to constant vibration is decreased almost to the vanishing point *may be* one reason why the swing to *integral* or *unitized* construction may be much less pronounced than was thought earlier this current model year.

GOODYEAR ENGINEERING PEOPLE have this to say of air suspension—stating the case as Goodyear's Mr. A. B. Hirtreiter (Industrial Products Design staff) sees it, conventional coil and leaf springs have one principal drawback: due to age and the associated deterioration, the riding



FIG. 4—Firestone Air Spring

the bellows through accurately machined orifices. The relative softness of the suspension and the natural frequency of the suspension is determined by the ratio of the bellows volume to the total volume of air."

Goodyear has more recently developed an air spring which is *self-sealing*. Installed on two end plugs, both tapered, the self-sealing spring requires neither bolts, nuts, nor clamps. The same sealing principle as that used on tubeless tires is applied, in this instance, and has so far been extremely successful. The seal is leak-proof and requires no tightening or any other adjusting.

Goodyear's air spring is in Hirtreiter's words, "built with integral bead and girdle rings and is a complete unit in itself. A small safety lip, similar to that used on passenger car tubeless tires, may be incorporated in the end plugs to help resist the bellows coming off their seats at excessive extensions."

Maintenance, therefore, is substantially reduced. If removal of the vehicle's axles is required, the air springs are removable in a very few minutes; they are just as quickly installed because they are held in place, as it were, by their own sealing action.

Art Hirtreiter goes on to explain that a newer development (not exclusive to Goodyear by any means), the *rolling sleeve or rolling lobe* type, requires very little, or none at all, expansion volume. (See Fig. 5.) In this type air spring the frequency is determined by the volume of air in the spring, the shape of the piston, the degree of exterior support, and the volume of the expansion tank. To get low frequency, a requirement for an ultra-soft ride, a piston having a decreasing section from the top to the bottom is necessary. This results in a decreasingly effective area in comparison to an increasing area (from top to bottom) as is common in bellows type air springs. It is just this type concept that was embodied in the 1947 Lewis patent.

Goodyear's rolling lobe air spring uses a self-contained air spring with a formed piston but there is no external air container; the construction is such that a fixed outside diameter is maintained without additional restricting means. Goodyear engineers believe that this rolling lobe type may offer the greatest overall advantages because of its greater simplicity, lower cost, flexibility which it has to an extreme, and a very low rate of frequency. At most, only a very small reservoir for expansion is necessary and, according to Hirtreiter, the complete elimination of the expansion chamber may be feasible.

Leveling and height control valves are, in the Goodyear view, more subject to change, at this time, than the overall method of providing the actual air springing. As it stands now, though, Goodyear is in a position to go on air suspension for your car and mine; they've got the

know-how, and they have the actual air springs and the means to turn them out in the volume production that may be required before the printer's ink dries on this issue.

A letter received just prior to this writing from Goodyear's Art Hirtreiter had this interesting comment: "While the riding qualities are not nearly as constant with the *hydro-pneumatic* system, it, too, holds a great deal of promise for passenger car suspensions because of its simplicity and compactness. The built-in shock absorber principle and the absence of air compressor are two big factors which can very well overcome some of the minor shortcomings of the hydro-pneumatic design."

GENERAL TIRE CO. has less to say than the two previous firms, but they claim large reduction in the space required for installation and the "lowest spring rate—or softest ride—yet attainable."

A band-diaphragm unit is the General entry in the big air spring derby. This, briefly, is an air cell "retained by a metal band to form a rolling diaphragm." As in other concepts, the load is supported by the pressure of air acting against "an area (referred to as the 'effective area') permitting a constant car height regardless of the number of passengers."

The floating girdle band, which looks like a sleeve, on General's air spring (see Fig. 6—p. 69), takes a varying suspension geometry into consideration without disturbing or altering the spring's action. Made of Nygen fabric and rubber, the General air cell compresses the air which is then acted upon, due to the car's action, by the piston.

General's air spring differs from others in that: 1) The piston can be firmly attached to the suspension arm eliminating additional heavily loaded joints; 2) the space required is considerably less; 3) the characteristics derived allow greater design flexibility; 4) the design does not rely as greatly upon the fabric and rubber, thus assuring longer life.

These are General's statement, in brief, and not ours. We must hasten to say that we have not yet been able to sample the General air spring ride.

GOODRICH WOULD NOT COMMENT at this time but this does not mean that Goodrich is not busy with an air ride of their own. We know they are, and so are a number of smaller manufacturers like Armstrong, Norwalk, etc.

THE GREATEST BENEFITS of air suspension are increased durability and a no-

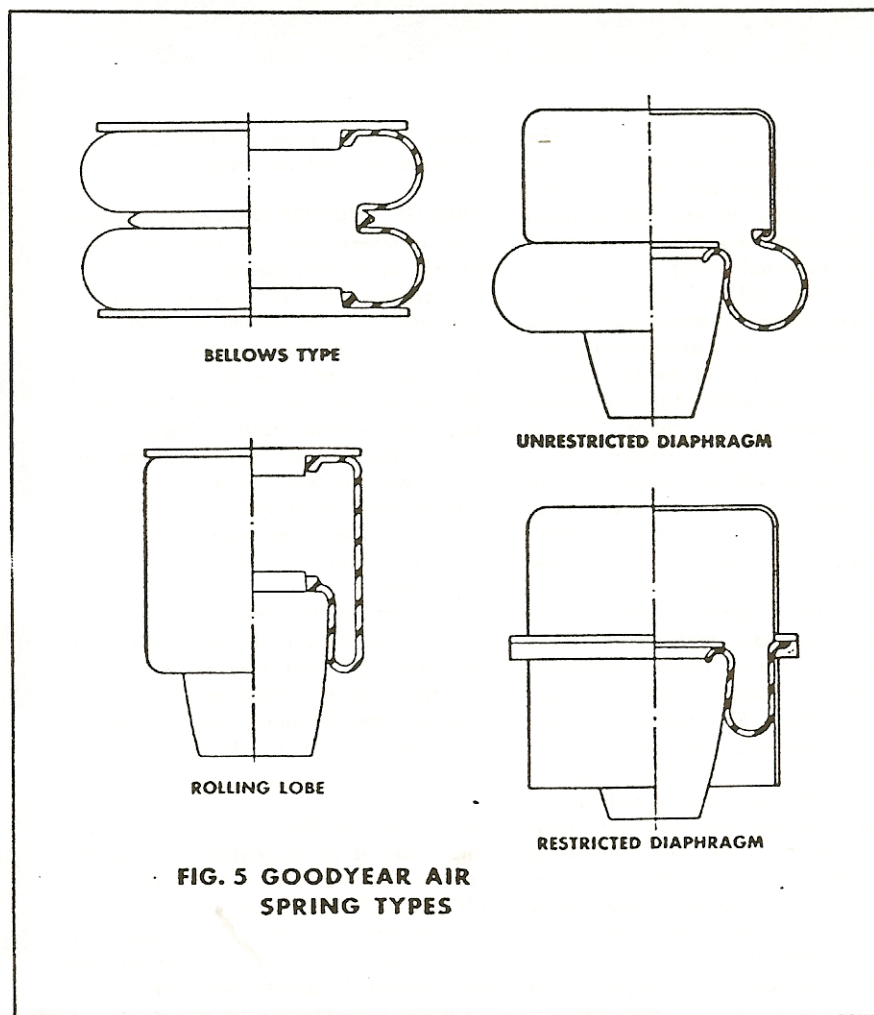


FIG. 5 GOODYEAR AIR SPRING TYPES



# RIDING ON AIR

continued from page 21

sag spring life—something steel springs cannot give. They also offer quieter operation (fewer road noises), and less servicing for the springs themselves. But, as we shall shortly see, there are other maintenance problems which could loom large—those which will concern the various valves, the compressor, the plumbing required, and the associated electrical circuits, solenoids, and the like.

The Republic Co. in Cleveland, Ohio is a prime manufacturer of height control valves whereas the majority of the rubber manufacturers concern themselves, mainly, with the design and making of the air cells or springs, and the pistons. The auto-

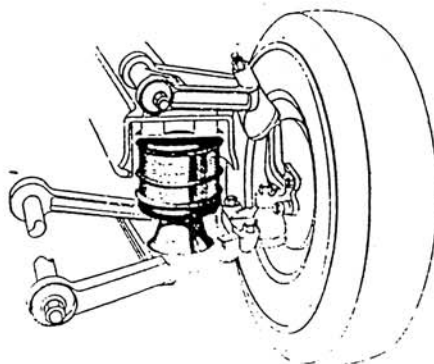


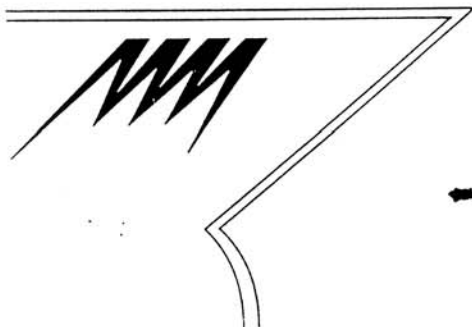
FIG. 6—General's Air Spring



mobile manufacturers are also rapidly increasing their specialized staffs to develop new systems and to work with the air cell and valve builders.

**WHAT'LL RIDING ON AIR** be like in 1958? It will be like riding in a very softly sprung, conventionally-sprung car on a slightly bumpy road with the sharp edges removed from all the breaks and chuckholes in the road. It will be laterally level and level fore and aft regardless of whether you load the trunk with a half ton of coal or not. It will be like sleeping on a soft mattress in a slight earthquake instead of on a GI sack mattress with a top kick trying to awaken you.

**WILL OTHER CARS HAVE IT?** Yes, you can expect it to be optional at extra cost on all Cadillacs as well as on several other makes, and if we say more at this time, we'll have to move out of Detroit. It can stand improvement, and that will come, but it is a great experience—so is the Eldorado Brougham.



## Repro Parts

Michael P. Rizzuto  
Restoration of Exotic and Classic Autos  
29710 Goetz Road, Quail Valley, CA 92381  
(714) 244-0460

Dear B.O.A. Members.

As you may have guessed, I've been busier than as one armed paper hanger. Enclosed is list of items currently being made available.

I wish to thank all of you for your interest and support. We need financial support for these projects more than anything. The problem is I'm trying to do on a budget what G.M. wrote a blank check for. Needless to say it needs to be a combined effort. Nobody can afford to restore just one Brougham correctly, because of the unavailability of very expensive to manufacture machine tool parts. The sooner we all realize that this is no longer a \$50,000 car, the better. Thanks again.

Good Luck,  
Michael Rizzuto, President  
Mastermind Creations,

SEE PAGE 7.....



Eachment X Orchard

169 County Road East • Colts Neck, N.J. 07722  
(201) 542-5404

9/15/90

DEAR AL:

I HAVE A LEAD AND INFO ON 1958 CAR # 593 OWNED BY:

STEVE NODZAK  
417 CORNELL DR.

HIS STORY IS THAT THIS CAR WAS OWNED BY JOHN WAYNE AND SHIPPED TO, OF ALL PLACES, AFRICA DURING THE FILMING OF ONE OF HIS MOVIES. STORY GOES THAT J.W. HAD A BIT TOO MUCH TO DRINK ONE NIGHT OVER THERE AND WHILE DRIVING THE BROUGHAM, HIT AN ELEPHANT AND THEN A RUBBER TREE! THE CAR WAS PRETTY MUCH TOTALED FROM STEVE'S DESCRIPTION.

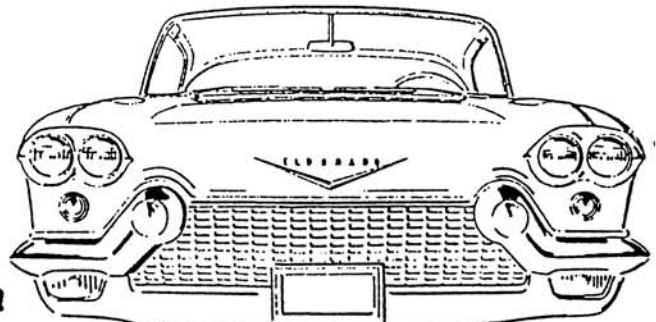
STEVE FOUND OUT ABOUT THE CAR THROUGH AN INSURANCE ADJUSTER WAY BACK IN 1958, TOOK A TRIP TO AFRICA TO SEE THE CAR AND SUBSEQUENTLY BOUGHT IT. HE HAS BEEN RESTORING IT EVER SINCE. I'VE SEEN THE CAR AND HE HAS IT ALL TOGETHER, STILL IN PRIME AND BASICALLY COMPLETE. HE NEEDS A FEW PARTS, HAS ALL THE USUAL LITTLE PROBLEMS WE ALL DO AND WANTS TO JOIN THE CLUB. I'M FEEDING HIM SOME OF OUR "LATEST TECHNOLOGY." ( AND INFO ABOUT THE CLUB )

*Dave Barclay*

NEW BROUGHAM ITEMS!

Michael P. Rizzuto  
Restoration of Exotic and Classic Autos  
29710 Goetz Road, Quail Valley, CA 92381  
(714) 244-0460

- At Last! Dome Lite Lenses. Perfect Reproductions!  
4 piece set : \$300.00
- Replacement for Glovebox Magnetic Cup Tray Plastic  
Vanity Mirror, approx, 19" x 3" : \$125.00
- Front Door Panel Armrest  
Supports (under leather).  
To replace commonly cracked  
molded plastic parts.  
(Leather door panel  
cars only).  
each:\$125.  
pair:\$225. MORE ON PG.16!!!!!!





## CADILLAC

### ADJUSTMENT and TUNE UP SPECIFICATIONS

Continued from Vol. 2. No. 2.

YEAR	1958	1958	1959-60	1959-60
CARBURETOR MODEL	2G	2GC	2G	2GC
CARBURETOR NO.	7012201 7012203 7012901 7012903	7012202 7012205 7012902 7012905	7013033 7013035	7013034 7013037

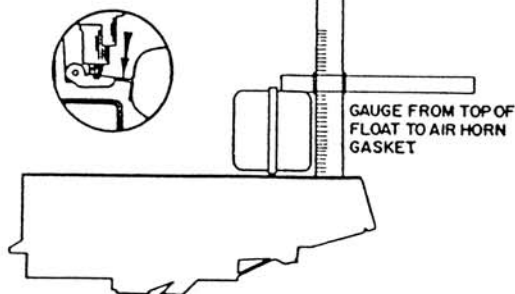
### ADJUSTMENT SPECIFICATIONS

ADJUSTMENT BULLETIN NO.		9-CA-3		9-CA-3		9-CA-3		9-CA-3	
ADJUSTMENT		SPEC.	FIG.NO.	SPEC.	FIG.NO.	SPEC.	FIG.NO.	SPEC.	FIG.NO.
FLOAT LEVEL	PRIMARY	23/32	2	23/32	2	23/32	2	15/16	2
	SECONDARY	-	-	-	-	-	-	-	-
FLOAT TOE	PRIMARY	-	-	-	-	-	-	-	-
	SECONDARY	-	-	-	-	-	-	-	-
FLOAT DROP	PRIMARY	1-29/32	3	1-29/32	3	1-29/32	3	1-29/32	3
	SECONDARY	-	-	-	-	-	-	-	-
FLOAT ALIGNMENT		-	-	-	-	-	-	-	-
VACUUM ASSIST SPRING		-	-	-	-	-	-	-	-
PUMP ROD LOCATION		-	-	-	-	-	-	-	-
PUMP ROD		1-3/16	4	1-3/16	4	7/8	4	1-3/16	4
IDLE VENT		-	-	1-1/16	5	-	-	1-1/16	5
INTERMEDIATE CHOKE ROD		-	-	-	-	-	-	-	-
VACUUM BREAK		-	-	-	-	-	-	-	-
AUTOMATIC CHOKE		-	-	7012202 7012205 2-N.R. 7012902 7012905 Index	9	-	-	Index	9
CHOKE ROD		-	-	.060	11	-	-	.060	11
FAST IDLE Turn screw in to contact low step of cam. Check tune-up spec. for proper RPM									
UNLOADER		-	-	.160	13	-	-	.160	13
SECONDARY LOCKOUT		.030	14	-	-	.030	14	-	-
SECONDARY CONTOUR		.015	15	-	-	.015	15	-	-
THROTTLE RETURN CHECK		-	-	-	-	-	-	-	-

### TUNE UP SPECIFICATIONS

IDLE R.P.M.	-	450-D	-	450-D
IDLE R.P.M. - AIR COND.	-	900-N-A/C ON	-	900-N-A/C ON
FAST IDLE	-	1700	-	1700
DWELL	-	30°	-	30°
POINT GAP	-	.016	-	.016
SPARK PLUG GAP	-	.035	-	.035
TIMING - Vacuum advance line MUST be disconnected and fitting plugged.	-	10° - BTDC @ 450 RPM	-	7½° - BTDC @ 450 RPM

BEND HERE TO  
ADJUST FLOAT LEVEL

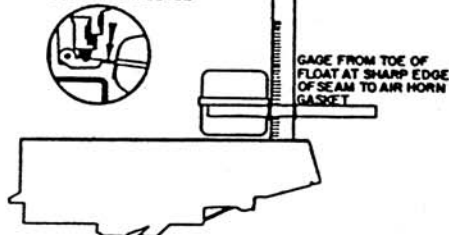


FLOAT LEVEL ADJUSTMENT

FIG. 1

With the air horn inverted and the gasket in place, measure the dimension from gasket surface to top of float. This dimension should be as specified in adjustment specification for model being serviced. To adjust, bend float arm, as shown in inset.

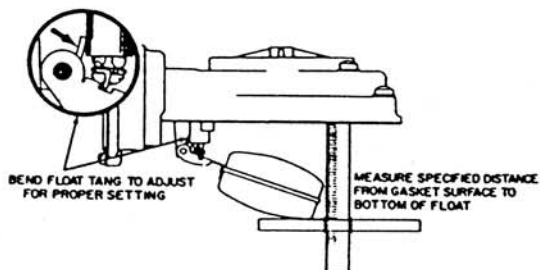
BEND HERE TO  
ADJUST FLOAT LEVEL



FLOAT LEVEL ADJUSTMENT

FIG. 2

With air horn inverted and air horn gasket installed measure the distance from the air horn gasket to the lower edge (sharp edge) of the float seam at the outer end of the float pontoon. To adjust, bend the float arm at rear, as shown in inset.

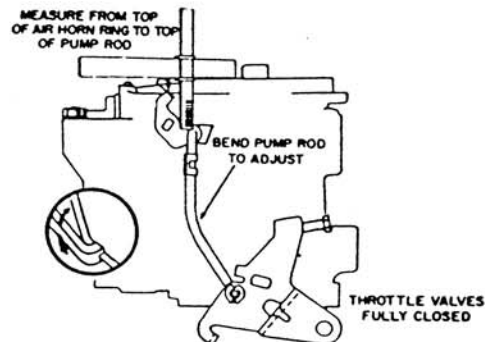


FLOAT DROP ADJUSTMENT

FIG. 3

With the air horn assembly held upright and floats suspended freely, measure dimension from air horn gasket to bottom of float pontoon at toe, adjust to specified dimension by bending tang which contacts seat at rear of float arm.

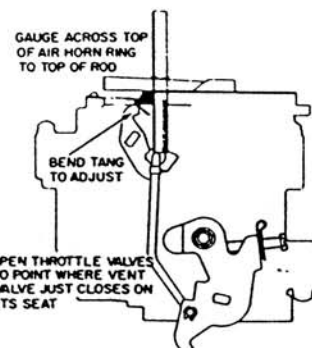
CO, WD, 131, 132, 16, 9X, 9FR, 9FD



PUMP ROD ADJUSTMENT

FIG. 4

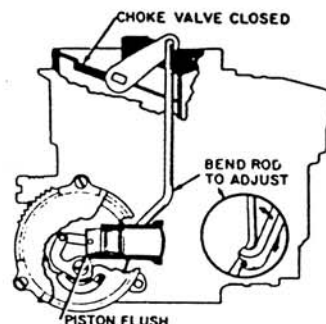
Back out idle stop screw and completely close throttle valves in bore. Place gauge on top of air horn ring. Bend the pump rod at lower angle to obtain specified dimension, to top of pump rod.



IDLE VENT ADJUSTMENT

FIG. 5

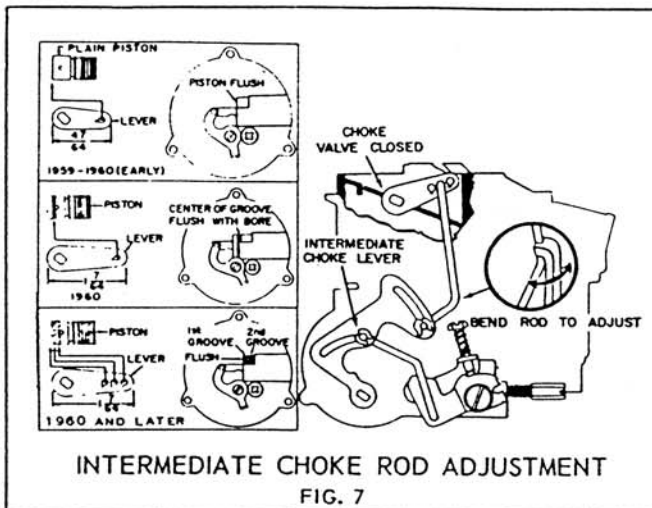
Open throttle until vent valve just closes. Place gauge on top of air horn ring. Dimension to top of pump rod should be as specified. Adjust by bending tang on pump lever.



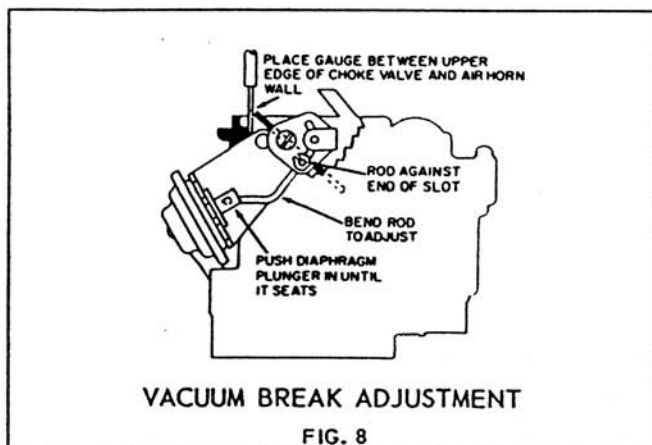
INTERMEDIATE CHOKE ROD ADJUSTMENT

FIG. 6

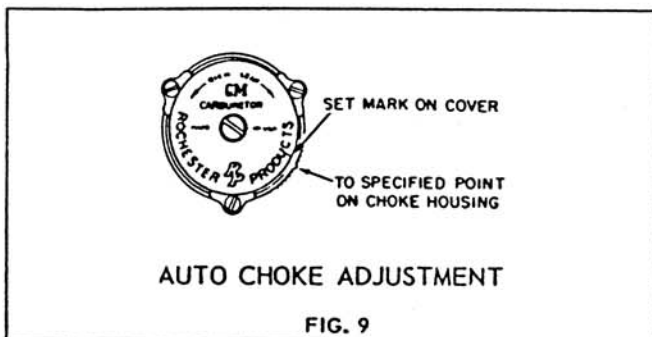
Remove the thermostat cover and coil assembly and inside baffle plate. Hold the choke valve completely closed and bend the intermediate choke rod as necessary so that the end of the choke piston is as specified, with the end of choke piston bore.



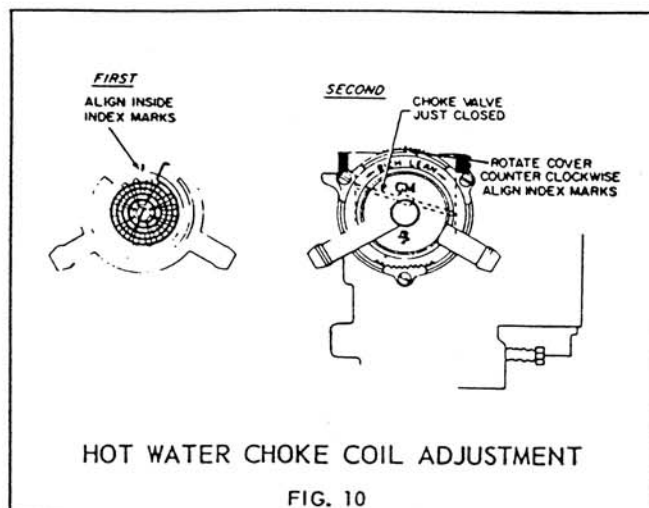
Remove the thermostatic cover and coil assembly and inside baffle plate. Open throttle valves and hold choke valve completely closed by pushing upward on intermediate choke lever. Adjust intermediate choke rod as necessary by bending so that choke piston is in the location shown above.



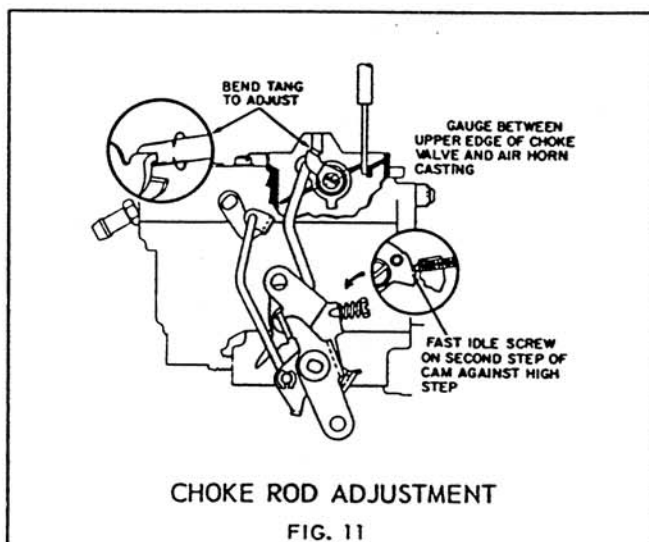
Push the vacuum break diaphragm plunger in until it is seated and make sure the choke valve is closed so the connecting rod is at the end of the slot in the choke shaft lever. In this position, adjust the rod by bending so that the specified gauge will fit between the upper edge of the choke valve and inside wall of the air horn casting. To adjust, bend the connecting rod at the point shown.



Loosen the three retaining screws and rotate the choke cover against coil tension until the index mark is in line with the specified point on the choke housing.



There are two adjustments necessary to provide proper choke indexing. The inner choke cover containing the choke thermostatic coil must be indexed with the outer cover. This indexing can be accomplished by aligning the scribe mark on the inner cover with the index point on the outer cover, as shown. The complete choke cover assembly has a scribe mark on the outside which must be aligned with the proper index point on the choke housing.



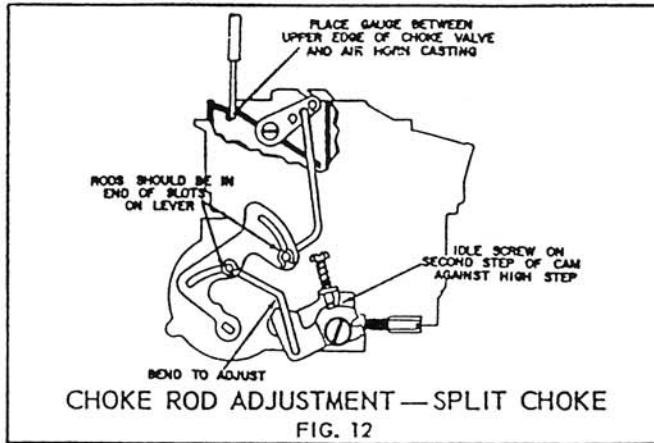
It is important to position both slow idle and fast idle screws, as follows, before making choke rod adjustment.

Step 1 - Models using single idle stop screw only - Turn stop screw in until it just contacts bottom step of fast idle cam. Then turn screw in one full turn.

Models using both a slow idle and a fast idle screw - Turn slow idle stop screw in until it just contacts stop. Then turn this screw in one full turn from this point. Next turn the fast idle screw in until it touches bottom step of fast idle cam.

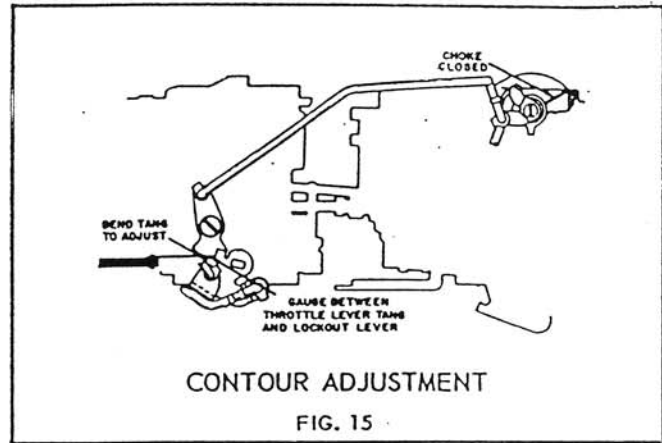
Step 2 - All models - Place idle screw on second step of fast idle cam against shoulder of high step. While holding screw in this position, check clearance between upper edge of choke valve and air horn wall, as shown. Adjust to specified dimension by bending tang on choke lever and collar assembly, as shown above.



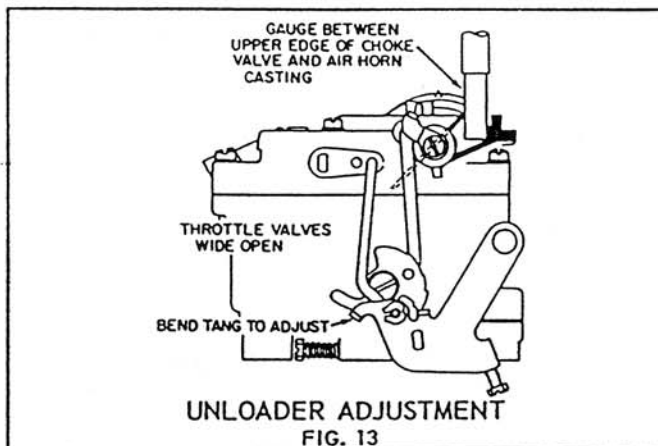


Position slow idle and fast idle screws as described in Step 1, Fig. 11, then place fast idle screw on the second step of the fast idle cam next to the high step as shown. Make sure intermediate choke rod and choke rod are in the ends of slots in the intermediate choke lever by pushing upward on lever.

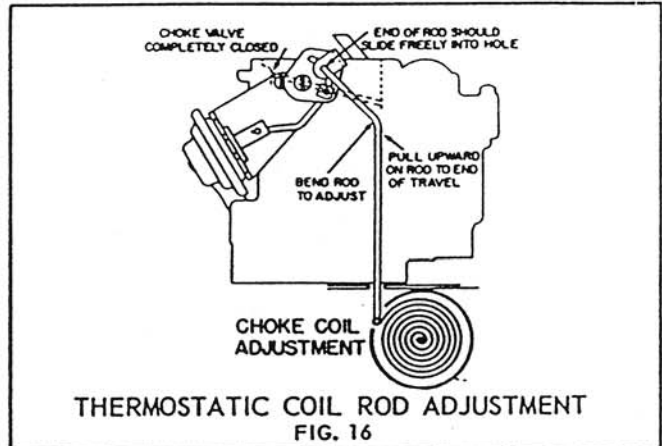
Bend the choke rod until the proper gauge will just fit between the upper edge of the choke valve and air horn wall.



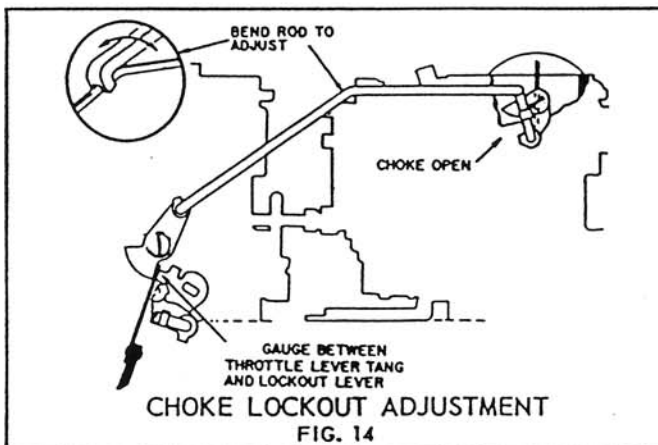
To adjust, hold the throttle valves completely closed. With the choke valve on the center carburetor in the closed position and the choke lockout lever rod connected, bend the lockout tang on the throttle lever to obtain specified clearance between the lockout lever and tang on the throttle lever of the carburetor to which the diaphragm assembly is attached.



With the throttle valves held wide open the choke valve should be open just enough to admit the specified gauge between the upper edge of the choke valve and inner air horn wall. Bend the tang on the throttle lever as shown to adjust.



To adjust, disconnect the upper end of choke thermostatic coil rod from choke lever. Hold the choke valve completely closed and pull upward on the thermostatic coil rod to the limit of its travel. The end of the rod should slide freely into the hole in the choke shaft lever. To adjust, bend rod.



To adjust, hold the choke valve in the wide open position. With the throttle valves slightly open on the carburetor to which the diaphragm is attached, there should be a clearance, as specified, between the lockout lever and the throttle lever as shown. Measure clearance with a feeler gauge and bend the lockout rod to adjust.



# RESTORATION & MAINTENANCE

## From Our Members

SEPTEMBER 15, 1990

RELEASE TO 1957-1958 Brougham Owners

RE: NEW BUMPERS

DEAR BROUGHAM OWNERS:

GOOD NEWS! THE BROUGHAM BUMPER PROJECT IS STILL ALIVE. NEVERTHELESS, THINGS HAVE BEEN DELAYED DEALING WITH THE SUPPLIERS AND FINISHERS INVOLVED AND MY DESIRE TO GET THESE THINGS PERFECT IN THE FIRST PLACE.

AT THIS POINT I AM ABOUT TO HAVE TWO CORRECTED RIGHT HAND REAR BUMPERS PLATED BY TWO DIFFERENT OUTFITS SO I CAN NAIL DOWN A PRICE. IF THESE COME BACK TO MY SATISFACTION, THE REAR BUMPERS WILL BE A REALITY

I'VE GOT MANY THOUSANDS OF DOLLARS INTO THIS PROJECT NOW PLUS MANY HOURS OF TIME AND TELEPHONE CALLS. I'VE HAD MY SHARE OF COLD FEET AND SWEATY PALMS BUT I STILL FEEL THE NEW BUMPERS ARE THE WAY TO GO.

IT IS IMPERATIVE THAT MEMBERS AND OWNERS KEEP ME POSTED AS TO THEIR WANTS AND DESIRES SO I WILL KNOW WHAT SORT OF RUN TO MAKE. FURTHER DETAILS TO FOLLOW.

DAVID BARCLAY  
169 COUNTY ROAD EAST  
COLTS NECK, NEW JERSEY 07722

PHONE: 201-544-9035

## Wiring Problem Solved

One of the greatest fears most Brougham owners have is of a dash fire that destroys the main wiring harness Pt. No 296 9382. In most cases a tragedy of this magnitude puts a quick end to any further restoration plans. Such was the case with a very nice car owned by member Steve Barton of Las Vegas, Nevada. Steve purchased the Brougham after the dash fire and in true Brougham owner spirit set out to save it. After considerable research Steve contacted Y&Z Parts and asked what seemed a hopeless question - "Can you manufacture the 7059 dash harness?" After checking their files, the answer was "Yes" - and from the original harness prints. Some connectors to the seat wiring were all they needed to construct a complete harness. Steve reports that the work is of the highest quality and matches the original down to the last detail. Y&Z Parts is located at 333 E. Street, Unit "A", Red Lands, Calif. 92374. If you call, the number is (714) 798-1498 - ask for Gene.

# RESTORATION & MAINTENANCE

## ELDORADO BROUGHAM REAR SUSPENSION NOISE COMPLAINTS

**T**HE following corrective action should be taken on any 1957 or 1958 Eldorado Brougham complaint of noise at rear lower link bushing or spherical joint.

The attaching bolt for the rubber bushing at the front end of the rear lower suspension arm should be checked for the correct torque specifications of 85 to 95 ft. lbs. Failure to have the proper torque may result in a "grunting" noise.

A "knocking" or "snapping" noise, traced to the spherical joint at the rear of the lower suspension arm, may be corrected by installation of a  $\frac{1}{4}$ " 28 UNF lube fitting, Part No. 109454. When installing the lube fitting, observe the following instructions carefully:

1. Remove the lower link with the spherical joint attached.
2. Select a flat on the hexagonal nut on the spherical joint and grind approximately  $\frac{1}{32}$ " from the surface to permit drilling through the case hardening.
3. Center punch a locating mark to the outside of the center line of the hexagonal nut and, using a low speed drill, drill a  $\frac{1}{8}$ " hole through to the ball at a slight angle toward the ball, as illustrated in Fig. 1.
4. Clean out metal chips and thread the hole, using a  $\frac{1}{4}$ "-28 tap, and clean out metal chips again. Then, install lube fitting.
5. A piece of strap iron should be arc welded (do not use a gas welder) from one flat to another, as in Fig. 1, to prevent the plug from blowing out if someone should use a high pressure grease gun. Be sure the joint is not over-heated.
6. Place the spherical joint in a vise and lubricate the joint with

### Freon Compressor Oil

An announcement in the June "Serviceman" stated that Freon compressors now being installed in production cars were being filled with 1000 viscosity oil instead of 525 as in the past. This does not apply to the 1958 Eldorado Brougham. When adding oil to the Brougham compressor, use only 525 viscosity oil

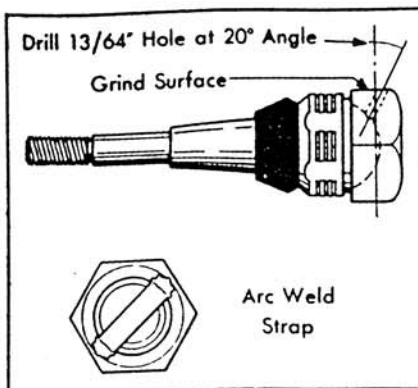


Fig. 1 AUG, 1958

chassis lube while rotating the lower link around to all possible positions.

**NOTE:** To get lubricant to all surfaces of the ball, it is preferable to use low pressure, such as with a hand grease gun. In some cases, it may be necessary to put the joint longitudinally in a vise,

applying a light pressure to the stud and plug ends to hold the stud side of the ball away from its seat while lubricating.

7. Install the regular nut and a second one as a lock nut on the spherical joint stud. Then, holding the lower link in a vise, use a power wrench on the stud nuts to whirl the ball in its socket. Use the wrench in short bursts to avoid overheating the ball and socket. While doing so, move the wrench to various positions to get contact between the ball and socket in as many positions as possible.
8. Repeat the lubricating operation as in Step 6.
9. Reinstall the lower link and spherical ball joint assembly on the car, making sure that the lower link is at design height when torquing the front bushing attaching bolt.

## TOOL FOR INSTALLATION OF SPHERICAL JOINT

**A** TOOL to facilitate the installation of a spherical joint on an Eldorado Brougham rear lower link may easily be made in the field. Use of the tool will also provide proper alignment as the spherical joint is screwed into the link.

To make the tool, a section approximately  $3\frac{7}{8}$ " long should be cut from a 1957 or 1958 drive shaft tube. On the rear side of a discarded water pump shaft hub, cut back a step  $\frac{1}{8}$ " that will fit into the inner diameter of the drive shaft tube.

The spherical joint should be placed through the lower link and the drive shaft tube positioned into the flange at the opposite side of the link, as shown in the exploded view in Fig. 4. Place the reworked water pump shaft hub over the joint stud threads, fitting the cut step in the hub into the section of drive shaft tube. Use the regular stud nut to supply some tension and to provide proper alignment as the spherical joint is screwed into the link.

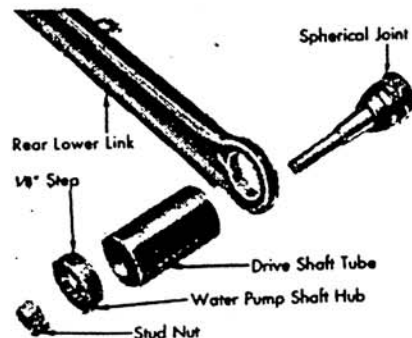


Fig. 4

## 1959 Brougham Hood Hinge Torque Rods

Field reports indicate the hood will not stay in the open position on some 1959 Eldorado Broughams. If such a case is encountered, the hood hinge torque rods should be adjusted to exert the maximum force. If the hood still tends to fall, the torque rods should be replaced.

The latest type rods, Part No. 1499643 (L.H.) and Part No. 1499644 (R.H.) are available from the factory Parts Warehouse. Care should be taken in adjusting the new torque rods to prevent the hood from opening with such force that the hood ornament might strike the front cross panel.

September, 1959.



## 1958 BROUGHAM FUEL PUMP ELECTRICAL CIRCUIT

**B**EGINNING with the introduction of the 1958 Eldorado Brougham, there has been a major change in the fuel pump electrical circuit.

The 1958 Brougham does not use the oil pressure actuated fuel pump switch. A fuel pump relay is used on the 1958 models that is actuated by generator voltage. The new fuel pump circuit is illustrated in Fig. 3.

The fuel pump relay directs current to the fuel pump through the starting circuit while the starter is operating. With the engine running, the generator furnishes the current to actuate the relay, thus breaking the starting fuel pump circuit and completing the fused fuel pump circuit from the ignition switch.

Once the engine has started, the fuel pump will not operate if, for any reason, there is no generator output.

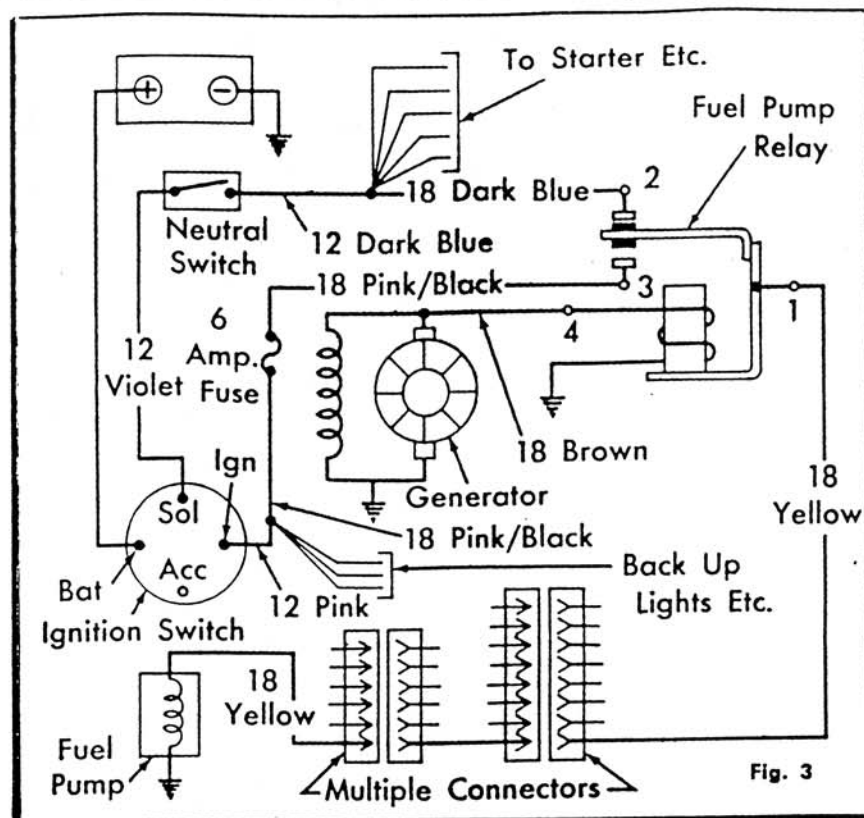
## NEW REAR LEVELING VALVES FOR 1957-58 BROUGHAMS

**T**HE original 1957-58 Brougham rear leveling valves, Part No. 553 6758, are now superseded by new, improved valves, Part No. 554 4193 left rear, and Part No. 554 4194 right rear. The new valves, which incorporate the latest production features, have been thoroughly tested and proven. They have a delay action as did the original valves. Because the valves have the same delay action as the originals, they may be replaced one at a time.

On initial installation of the new type left rear valve, Part No. 554 4193, it is necessary to locally fabricate two new (valve-to-tee) air lines. This requires 8 feet of  $\frac{3}{16}$ " O.D. copper tubing, 4 Ferrules, Part No. 573 656, and 4 Brougham Flare Tube Union Nuts, Part No. 146 7164. In addition, one ball joint adjusting link, Part No. 147 3096, is required.

When ordering a left rear valve for initial installation, any of the above material not in local stock should also be ordered. It should be noted that Part No. 146 7164 (Flare Tube Union Nut) is a Brougham part and that the comparable part for other series cars cannot be used satisfactorily.

On initial installation of the new type right rear valve, Part No. 554 4194, one ball joint adjusting link, Part No. 147 3096, is required in addition to the valve itself.



The supersession of the original front leveling valve, Part No. 553 6759, by the new type valve, Part No. 554 4195, was announced in the August, 1960 "Serviceman."

Instructions necessary for installations are included with each valve.

## 1957 & 1958 BROUGHAM AIR COMPRESSOR SERVICE

**P**ROPER lubrication of the 1957 and 1958 Eldorado Brougham Air Suspension compressor should not be overlooked.

When the wafer type oil filter assembly is cleaned at the regular 6,000 mile interval, it is advisable to go a step further and make sure the compressor is actually getting sufficient oil.

Remove the compressor oil filter assembly and the oil inlet metering valve. Clean the valve assembly in a suitable solvent, and make sure the weighted jiggle pin is free. While still removed from the compressor, assemble the metering valve and filter to the oil pressure line.



To avoid operating the air compressor without an oil supply, disconnect the black lead from the air ride protective relay at the compressor starting relay, and tape the end of the lead.

Hold a cloth or can under the oil metering valve, have someone start the engine, and check the amount of oil flow. With the engine warmed up to normal operating temperature, and operating on the high step of the fast idle cam, you should count at least 30 drops of oil per minute. If this minimum requirement is not met, the trouble should be located and corrected.

After reassembling the oil metering valve and the filter to the compressor, reconnect the black feed wire and operate engine and compressor while carefully checking for leak-proof connections.

The above check should also be performed if a compressor is overhauled or if there is any reason to suspect insufficient lubrication.

If, during overhaul, it is found that an excessive amount of oil has passed the crankshaft bearing and entered the motor end of the compressor, the oil return line to the engine should be checked to make sure it is clear.

**April, 1959**


## 1959-60 ELDORADO BROUGHAM SERVICING

### Windshield Wiper Transmissions and Links

Two types of windshield wiper motor to transmission links, adjustable and non-adjustable, have been used in production on the 1959 Eldorado Brougham overlapping type windshield wipers. Service replacement of these units should be of the type originally removed from the car.

Although the transmission and link assemblies differ, the motors are interchangeable. The service procedure published in the Brougham Service Information Booklet applies to both units.

### Brougham Servicing

 SERVICING the 1959-60 Eldorado Brougham sliding rear quarter window controls is not difficult if the principles of good diagnosis are followed. Shot gun diagnosis and blind disassembly will not do the job.

A primary consideration is a knowledge and understanding of normal operation. This is fully described in the 1959 Brougham Service Information Booklet and the 1960 Brougham Supplement.

The control system should be operated in the various possible ways. The cause of any malfunction should then be pin-pointed by use of the schematic diagrams in the Brougham publications.

Fig. 4, on Page 8 of the 1959 publication, and the 1959 or 1960 Rear Quarter and Door Window Circuit Layout should be used to trace circuits and to locate and identify units on the car.

Supplementing these publications, additional information is published from time to time in the Cadillac "Serviceman". Brougham articles are identified by the Brougham shield. An index of such articles through March, 1960, is located on the last page of the 1960 Brougham Service Information Supplement.

OCT, 1960

*Brougham Servicing*

## SUPPORT KIT ELIMINATES BROUGHAM MIRROR SHAKE

THERE is a possibility that some 1959 Eldorado Broughams may develop an inside rear view mirror vertical shake condition.



In order to minimize this condition, a Mirror Support Kit, Part No. 1499228, has been released for service use. The Kit includes complete installation instructions and is now available from the factory Parts Warehouse.

After the Kit is installed, adjustment of the support should be per-

formed in such a way that the rubber bumper is compressed just to the point where the shake is eliminated.


### Brougham Heater Performance

Incorrect heater hose routing on 1959 Eldorado Broughams may cause erratic heater performance and possible heater core damage.

Each 1959 Brougham should be inspected for correct routing. Refer to Page 71 of the November, 1958 "Serviceman" for correct routing information. Disregard breakpoint Engine Number listed in this article, as it does not apply to Broughams.

JAN, 1960

## BROUGHAM REAR QUARTER WINDOW DIAGNOSIS

 FIELD reports indicate that repairs to 1959 Eldorado Brougham rear quarter window controls have been delayed unnecessarily in some instances. Faulty Diagnosis is the most common cause, resulting in parts being ordered that do not correct the condition.

The rear quarter window control system on each side of the car operates independently of the other side. Each system employs identical units. Normally, if the quarter window controls on one side of the car are inoperative, those on the other side

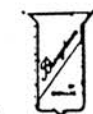
remain operative. This provides a ready source of known-good units to prove the diagnosis.

When diagnosis indicates that a relay, diode, or door jamb switch is faulty, the corresponding unit can be moved from the operative to inoperative side of the car. In this way, it is possible to make sure that the required parts are ordered and that there is no delay as the result of ordering incorrect parts.

NOTE: Be sure that disconnected wire ends are protected from shorting accidentally when parts are transferred.

March, 1960

### Diode Installation



The diodes used in the 1959-60 Brougham rear quarter window system can be installed in a reverse direction. Because of this possibility, a wiring diagram should always be used whenever diodes are installed, to be certain they are installed correctly. The symbols stamped on the installed diode should correlate with the symbols on the wiring diagram.

### Battery State of Charge

Some cases of erratic operation of the 1959-60 Brougham rear quarter window system have been found to be due to a battery that is below the specified minimum charge. This system is more sensitive to battery condition than are some other units on the car. It should be remembered that some kinds of shop work can rapidly discharge the car's battery.

NOV, 1960

## SILICONE LUBRICANT AIDS IN BELLOWS INSTALLATIONS

WHEN installing the Air Suspension bellows or diaphragms on late model Cadillacs, care should be taken when selecting the type of silicone lubricating compound to be used on the sealing lips.

Of the numerous silicone compounds available, field reports indicate that several are not suitable for use on the bellows or diaphragms. Laboratory tests indicate that one satisfactory silicone lubricant is 4X Compound (Dow Corning). This compound does not harden and cake even when exposed to the Freon vapor sometimes used for leak testing.

When coating the sealing lip, care should be taken to avoid getting silicone on the outer surface of the bellows, as this might trap abrasive dust and scuff the bellows.

SEPT, 1960

- Original Delco Tar Top Batteries with Delco Yellow Caps, authentic in every way. : \$195.00
- Leather Door Panel Strip Sets. Triangular points for attaching leather to cardboard and trim panel to bottom of door. 12 piece die stamped set : \$300.00
- Front Air Dome Piston parts:
  - \*Special large "O" ring and molded rubber bolts, four piece set. (Attaches piston to "A" frame) : \$145.00
  - \*Replacement Collar for Dome piston, retains "O" ring & bolt. (Welds on to replace commonly crushed parts.)  
2 piece set : \$125.00
- Hubcap red center crest emblems. each : \$ 40.00  
set : \$150.00
- Side Mirror rebuilding kit. Price reduction. :  
each : \$ 89.50
- Rear End Parts:
  - \*Ham "A" arm outer bushings. 4 piece set : \$ 85.00
  - \*Ham "A" arm center pivot bushing, 1 piece : \$ 95.00
  - \*Trailing arm bushing, 2 pieces : \$ 65.00

#### New Services

- Any air ride component completely rebuilt bench tested, concours detailed, ready to install Perfection guaranteed.
  - \*air compressor, each : \$600.00
  - \*Leveling valves, each : \$600.00
  - \*Lockout valves, each : \$300.00
- Mouton (sheepskin) carpet replacements. Pre-sewn and ready to install. Correct 1/2 " pile. All colors.  
\$1,100 - 1,300 per set, varies by color.

#### IN THE WORKS

- Please call or write if interested in the following:
  - Fuel Tanks (die stamped)
  - Front Cowl "V"s vees.
  - Windshields
  - Special stainless molding clips



# Classified

## IMPORTANT NOTE

All articles, ads, etc. will pertain to the 1957-60 Brougham unless designated otherwise.

1958 Brougham - 22,000 mi., car is in restoration, body & paint work complete. All parts are marked for re-assembly. Car is black with full leather interior and mouton carpets. Contact: C.V.Lewis, (313) 797-0555 or (315) 853-5461 6am - 8am or after 12:30 am.

## Parts

1960 Brougham parts: Door sill plates, rear doors (black door panels), front seat (black leather), passenger side fender skirt, trunk pull down, Brougham "V" for front of car, also emblem for  $\frac{1}{4}$  panel, drip rails, many side moldings and misc. trim and mechanicals. Ed Pashukewich, 34407 Ann Arbor Trail, Livonia, MI. 48150 (313) 261-2282-Phone

57/58 Right front bumper. Plater chromed over crack. Re-plate job fair to good. Good for #2 or #3 car. \$250.00 plus \$10.00 shipping. Allan Dowling, 19 Manning Dr., Berea, Ohio 44017

Brougham water pumps in stock. Rebuilt & tested. \$95.00 with core. Rudy Stahl: (419) 729-4785 shop, or (419) 729-1123 home.

PARTS - I have some to trade and I do have used bumpers+++ just about anything else. C.V. Lewis, Rd. 2 Rt. 49 RB 108-B Marcy, N.Y. 13403

57/58 Cartridge oil filters Fram CH - 106 PL "Brougham" (8) for \$50.00 plus \$4.00 shipping. Allan Dowling, 19 Manning Dr., Berea, Ohio 44017

Many parts from parts cars over the years. Call Gerald Schantz (904) 677-4373. No letters or lists Please.

FOR SALE - Front fender lower mouldings: (left-hole drilled thru to secure, restorable) \$20.00, (right-hole, dents, scratches, could be restored) \$10.00. Front fender upper moulding (left) hole at rear easy to fix \$35.00. Terminal to starter cable \$25.00. Left exhaust plate-fits behind bumper/w skirt mounts \$20.00. Heater unit (cowl /w housings (needs to be recorded) \$45.00. Instrument cluster chrome (needs plating, perfect to re-chome while your cluster is in your car. All (3) pcs. \$125.00. Gen./fuel lens \$20.00. Oil/temp. lens \$20.00. Fuel gage dash unit \$35.00. Oil pres. dash unit \$35.00. Turn sig. green dash indicator right (tube broken) \$10.00.

Allan W. Dowling, 19 Manning Dr., Berea, Ohio 44017

## Parts

57/58 Lower impact bar. Sawed in half for plating & stripped. Right half broken out at bottom, can be welded. \$175.00 + \$10.00 shipping. Allan W. Dowling, 19 Manning Dr., Berea, Ohio 44017.

Original "57" Brougham shop manual. Excellent condition. Have one only \$5.00. Allan W. Dowling, 19 Manning Dr., Berea, Ohio 44017

## Parts Wanted

Need 57 - 58 gas tank in good condition. Call Steve Barton, (702) 876-4861.

PARTS WANTED - 1957 Brougham needs complete assembly of intake manifold, both 4 barrel WCFB Carter carburetors, and air cleaner. Bill Heusser, 3966 Patric Henry Place, Agoura Hills, Ca. 91301 Nite-(818) 706-0663 or days-(818) 715-4250.

57/58 Left door conduit cover needed. Contact Robert I. Moe, 1676 19th Ave., San Francisco, Ca. 94122. (415) 664-3142.

PARTS WANTED - 57/58 Power antenna. Complete front bumpers and grill assembly. 57 complete 2-4 manifold, carbs and air cleaner. Phil Toy, 3146 Anza St., San Francisco, Ca. 94121 (415) 668-4929

PARTS WANTED - 57/58 fan shroud. Also need letter "L" for trunk. Contact: Jerry Schantz, 29 Rio Pinar Trail, Ormond Beach, Fla. 32174 After 10:00 p.m. (904) 677-4373.

PARTS WANTED - 1957 Brougham - need long front fender moulding for left side of car. Have a right side one to trade or will buy outright. Gilbert Dobbins, 15 Laurence Place, Plymouth Meeting, Pa. 19462. Eves: (215) 825-9071.

## Wanted

The following members are looking for Broughams, can any one help?

WANTED - 1957-60 Brougham, unrestored and drivable. Mike Paone, 38 Orchard Lane, Berkely Heights, N.J. 07922 Days-(201) 464-3322 Eves.-(201) 322-6486

WANTED - 1957 or 1958 Cadillac Brougham No. 1/2 - 2/3 condition able to drive home. Will pay cash. Contact George. Ojai, Calif. Res: (805) 646-8714, Work: (805) 646-7736.

## LITERATURE

1. 57-58 photofacts radio diagrams free to B.O.A. members. Send letter size S.A.S.E. to: B.O.A., 19 Manning Dr., Berea, Ohio 44017
2. History of the Brougham air ride. (25) pages of lectures given at the S.A.E. National passenger car, body and materials meeting Detroit, Mich. March 5-7, 1957. \$15.00 to B.O.A. members, \$20.00 all others. Allan Dowling, 19 Manning Dr., Berea, Ohio 44017
3. Eldorado Brougham electrical system and compressor lubrication improvements. Oct. 4, 1957 to all dealers (6) pages. Not in manual. \$5.00 to B.O.A. members, \$10.00 all others. Allan Dowling, 19 Manning Dr., Berea, Ohio 44017
4. Eldorado Brougham electrical circuit diagrams. (18) pages. Not in manual. \$12.00 to B.O.A. members, \$18.00 all others. Allan Dowling, 19 Manning Dr., Berea, Ohio 44017
5. 57-58 Jack instructions \$10.00 Ea. Gerald Schantz, 29 Rio Pinar Trail, Ormond Beach, Fla. 32014.
6. 57-58 exhaust louver template. Free to B.O.A. members. Send letter size S.A.S.E. to B.O.A., 19 Manning Dr., Berea, Ohio 44017
7. 1959 Brougham service supplement (15) pages \$15.00 to B.O.A. members, \$18.00 all others. Allan Dowling, 19 Manning Dr., Berea, Ohio 44017.
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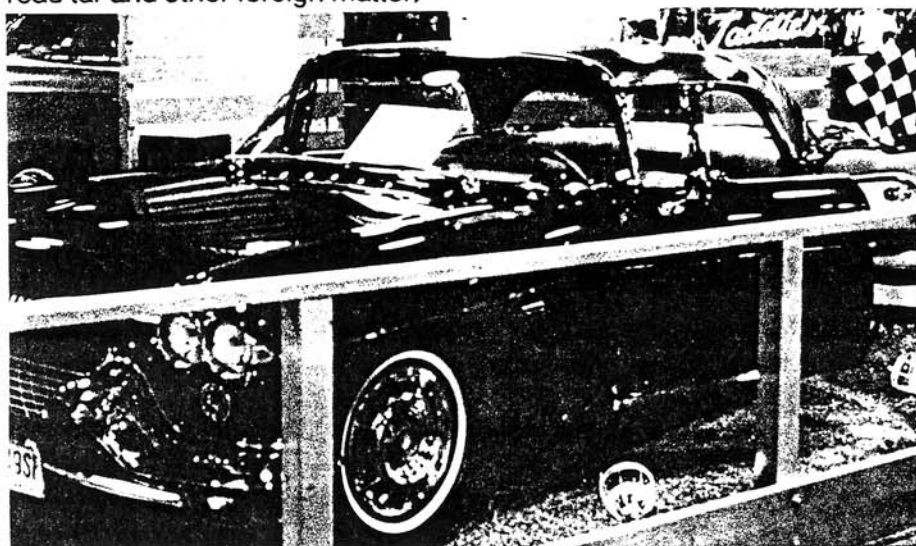
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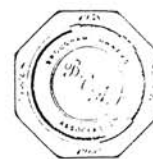
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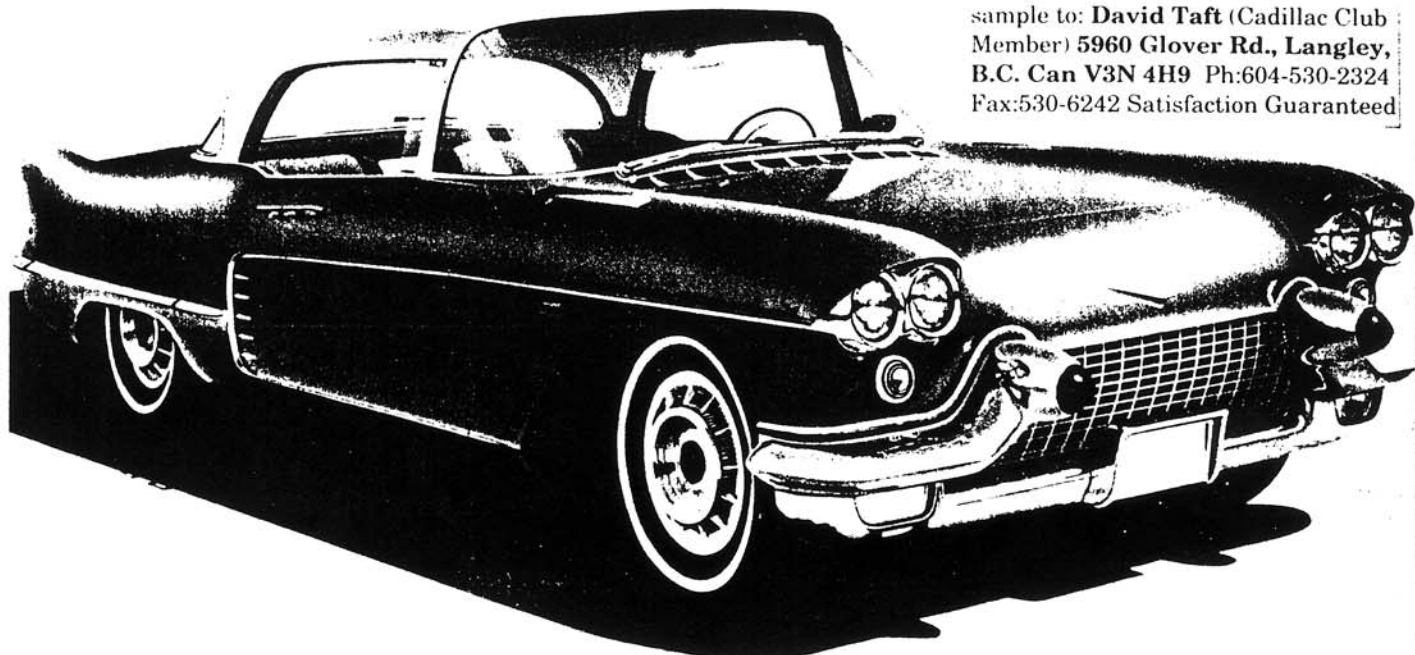
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