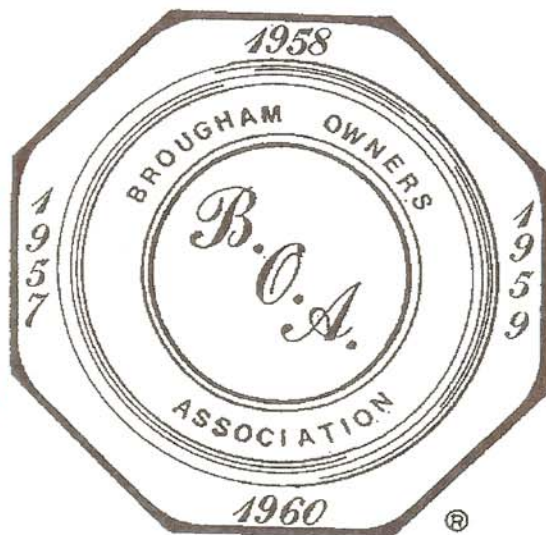




Summer



2002

*Brougham
Owners
Association*

**CARS ON CAMPUS
CONCOURS D'ELEGANCE**



**MICHIGAN STATE UNIVERSITY
EAST LANSING, MICHIGAN**

Newsletter Vol. 14 No. 2



Brougham Owners Association, Inc.



B.O.A. Newsletter Vol. 14 No. 2 Summer 2002

B.O.A. Website- <http://www.nacs.net/~adowling>

Published quarterly by THE BROUGHAM OWNER'S ASSOCIATION, a division of ALLAN & CO. ANTIQUES, INC. 16784 Timberline Drive, Strongsville, Ohio 44136. Membership dues are \$30.00 (in the U.S.) per year and are not prorated or reduced at any time. Renewals are billed upon receipt of your forth issue. Back issues are \$9.00 each to members. All rights reserved by B.O.A., INC. Reproduction of any part without written permission is strictly prohibited.



President's Message



Our schedule for 2002 submissions will be as follows:

September 1st for the Fall issue to be mailed September/November

December 1st for the Winter issue to be mailed December/January

I have had several requests to reprint some of our past articles from new members looking for accurate information on the technical aspects of the Brougham. We will begin with part one of the air suspension article that appeared in Vol. 3, No.1. Also for the benefit of our newer members, I have reduced the price on the complete back issue set of 52 back issues to \$250.00 + \$5.00 shipping and handling. The Town Car issue will be sold separately at \$20.00 due to the additional color pages that made that such a special issue. Any additional income from this sale will go directly to upgrading our future issues. I am checking into having the newsletter printed as opposed to copied as is now the case. Cost has always been the biggest issue in changing the format of the newsletter. $\$33.00 \times 180$ (at best) members = \$5930.00 to cover all expenses. If we could grow to the size of the "57" Chevy club - no problem. But, given the low production of the Brougham, we will most likely have to struggle by on what we have. Actually, we have done fairly well for fourteen years against some pretty tough odds. We have succeeded in getting the Brougham a bit of recognition and respect so long overdue.

Next issue we will have some exiting news from the world of miniature cars. Some are already available and finally a 1/18 scale model of the Brougham is in the works. There may even be two cast 1/18 models in the future. You will be the first to know the whole story and have an opportunity to be the first to order one or both of these models. Yes, we are working on having a 1/18 scale model of the Town Car after the first run of the Brougham model is complete..



Till next time

ON OUR COVER

The Brougham on our cover this issue is owned by Larry Muckey of Muskegon, Michigan. Larry has probably owned as many Broughams as any of our members and was instrumental in securing the Town Car restored and owned by Dick Baruk. Many thanks for the photo and the years of dedication to the preservation of the Brougham and your help with the Town Car.

BROUGHAM HISTORY

Air Suspension

Part I

by V. D. Polhemus and L. J. Kehoe, Jr.

"Reprinted with permission © 1958
Society of Automotive Engineers, Inc."

Experimental Development of the Air Spring

WE have been striving continually to effect an appreciable ride improvement in our cars by trying such devices as torsion bars, single leaf, and other types of steel springs. We have managed some minor improvements, but always wind up facing the fact that steel springs have definite limitations.

In 1953 Fox and Labelle¹ listed six undesirable features present when steel springs are used. However, the limitation which causes passenger-car engineers the most concern is that steel springs are not readily adaptable to increased static deflections without affecting the relationship between curb standing height and full-load ride clearance. This is probably the most controversial suspension problem today. The industry's trend, with lowered roof heights bringing lower floors, has intensified the chassis engineer's search for a solution which would permit maintaining soft ride without undesirable compromise.

Some years ago, feeling that a fundamental change was necessary, we began a development program which produced the type of air spring now in production for the Cadillac Eldorado Brougham.

To use air as a suspension medium is no new idea. It was proposed over 50 years ago but, as with many other ideas, practical application has been delayed.

At the beginning of our air-spring development program, we established certain criteria: reasonable cost and size; long life; adaptability to any type of suspension; its fundamental concept should permit any desired length of stroke being obtained without altering other design features; and last and most important, it should have correct rate characteristics.

In Fig. 1 is shown what we feel is the best shape of load-deflection curve. Considering first A-B, the curve for a considerable distance on either side of normal position is a straight line, neither gaining nor losing rate. This characteristic, when coupled with some form of standing height adjustment, permits a consistently balanced ride over major road irregularities. Second, the spring should have (at C) a high end load to reduce any sensation of "crash-through" over ruts and pot holes. Third, there should be a gradual blend (B-D) between the center (low rate) section and the high end rate (D-C) portion of the curve. Without a gentle transition, those abrupt swells, known variously as "donkey backs" or "thank you ma'ams," can upset an otherwise excellent ride. The last factor, while not a necessity, is very desirable. We feel that on rebound (at point E) a considerable reduction in load is worth seeking, both to reduce lift on braking and accelerating and to prevent excessive input to the frame and suspension members. Of course, a gradual blend (A-E) should be provided.

Somewhat over 10 years ago we investigated the double-convolution air spring and have retained an

eager interest in it. This form of air spring has much to recommend it for certain applications. It has proved itself as a heavy vehicle supporting device, having an excellent record of durability in its use on the General Motors Coach.

Certain basic problems led us to bypass the double-convolution bellows approach to passenger-car applications. As you are well-aware, scaling down an otherwise satisfactory device is not always a solution to an engineering problem. To appreciate the problems involved in using the double-convolution bellows in a passenger car, let us examine a familiar unit, one used on the GM Coach as a front-suspension spring. It has an outside diameter of 9 in. and has a stroke of 8 in.

At normal height it would have a load carrying capacity of 2000 lb at 65-psi operating pressure and might be used as a passenger-car front spring, if applied through a wishbone linkage. However, obtaining the necessary 300 lb per in. spring rate would involve using an additional 700-cu-in. reservoir. For long-stroke direct-acting rear-axle applications, the picture becomes more critical. A reduction in diameter to bring loads to, let us say, 1200 lb at 60-lb operating pressure means that we have reduced stroke to an unsatisfactory amount. Dynamic stability is, as with a coil spring, a function of spring rate, spring length, and spring diameter. It is apparent that it would be difficult to obtain longer stroke by increasing the number of convolutions because instability would result, and could be overcome only by guiding the bellows in some fashion. Even assuming that these difficulties could be solved, the load-deflection curve does not have the shape that we have previously determined to be the optimum.

In brief, with the double-convolution bellows, un-

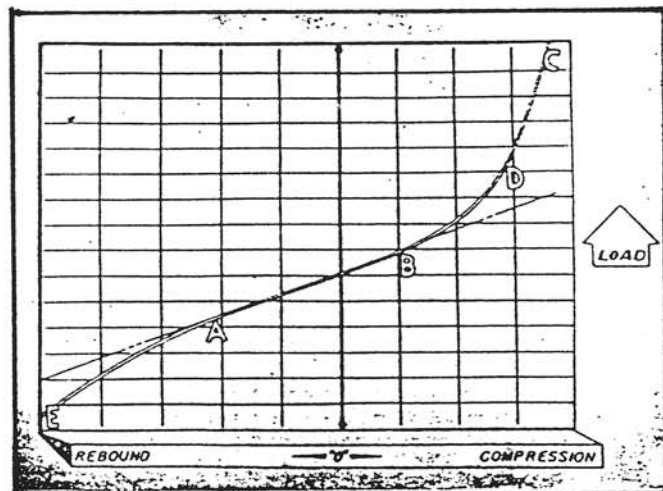


Fig. 1—Ideal load-deflection curve

¹ "Motor Coach Suspensions," by H. B. Fox and D. J. LaBelle. Paper presented at SAE National Transportation Meeting, Chicago, November 2-4,

desirable factors are present to a greater degree than we feel can be tolerated.

A piston compressing air in a chamber is a simple form of air spring. The load-carrying capacity of this spring is a matter of simple mathematics: area of piston X gage pressure = load. Applying the tight-fitting piston and chamber principle immediately presents certain practical problems. It would be difficult to obtain a 100% seal against air leakage without paying an excessive penalty, both in dollar cost for precision machining and in friction.

Our next step was to increase the piston clearance and install a rolling seal (Fig. 2). At one stride we have solved two problems: minor size variations of the piston and cylinder are inconsequential, and friction is eliminated. We still retain the virtues of the original piston concept.

The diaphragm will present no unusual problem of manufacture, a backlog of experience in tire making having solved most of the difficulties connected with making a rubber-impregnated fabric which can withstand flexing to a practical degree. No air springs were ever made, of course, with the diaphragm in the shape shown in the model.

It will be recognized that this still represents the basic concept of the straight piston and cylinder, and that we have not as yet satisfied the conditions laid down in the original graph which indicated the ideal spring. We obtain the long low rate, but gentle buildup and the high end load are missing. What is required is a variable-area piston (Fig. 3). This we obtain by increasing the outside diameter of the diaphragm and adjusting the piston and retainer to permit a regulated adjustment of effective piston area.

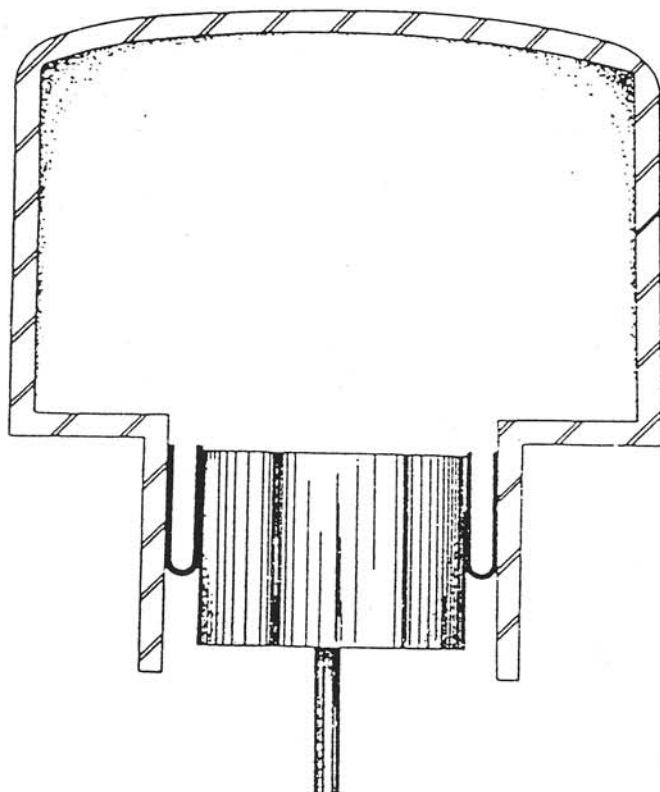


Fig. 2—Frictionless rolling seal

With this early hypothetical spring, the diaphragm is restrained between the piston and the outer skirt (diaphragm retainer), thus the effective diameter is fixed for some distance below and above the normal position. As can be seen from the upper piston position, when the diaphragm is lifted up and out of its previously restrained stations, an increase in effective diameter (and hence an increase in effective working area) is obtained. Looking at the view of the piston in its lowest position, it can be seen how the diaphragm, lifting away from the piston, produces greatly reduced effective diameter. In all positions the length of a horizontal line, tangent to the meniscus, determines the effective diameter. It will be noted the percentage increase in effective area in the full-compression position is less than the decrease in full rebound. This is necessary due to the fact that air pressure increase, as the piston enters the chamber, tends to assist in load buildup, while in rebound the air-pressure drop requires a more rapid reduction of effective piston area.

With our basic theory of design for an air spring established, the next step was developing a method of attaching the diaphragm to the piston and chamber. Two methods have been employed, both equally acceptable. The first, as shown in Fig. 3, used a circular wire bead ring encased in rubber, which sealed with a clamp plate to the piston and between the skirt and chamber at the outer rim. This forms a very satisfactory connection, and was used for some time in the early stages of the program.

Concurrent with our theoretical and design studies, an intensive program of car-building and road-test evaluation was instituted. It seemed quite obvious, at the time, that the best way of obtaining the air-chamber volume was to use the interior of the frame cross members. The first road car used aluminum cross members, front and rear. It presented seeming advantages which were not borne out in practice. We were troubled with porosity before installation, and in spite of a multitude of attaching screws, a reduction in frame stiffness was experienced in comparison with the conventional all-steel frame.

Drawing on this experience, a second car was built using integral-steel cross members containing the air chambers. This car was sent through our standard 25,000-mile durability test primarily to obtain information on cold-weather operation over gravel, freezing slush, ice, and snow. The chambers were built to simulate what could be expected from production tooling, with production limits, with the intention of introducing a sealant similar to that used in aircraft fuel cells. Again practical difficulties arose: The sealant was unpredictable in its adhesion; frame motions tended to cause leaks; we were unable to devise a suitable method of field repair; and, probably the greatest hurdle of all, there was inflexibility of chamber size alteration between models.

With the foregoing in mind, the next step was individual pots (Fig. 4). Advantages of this system are:

1. Simple shapes with reduced amount of welding.
2. Structural stresses removed from chambers.
3. Bench testing is possible.
4. Ease of installation and field service.

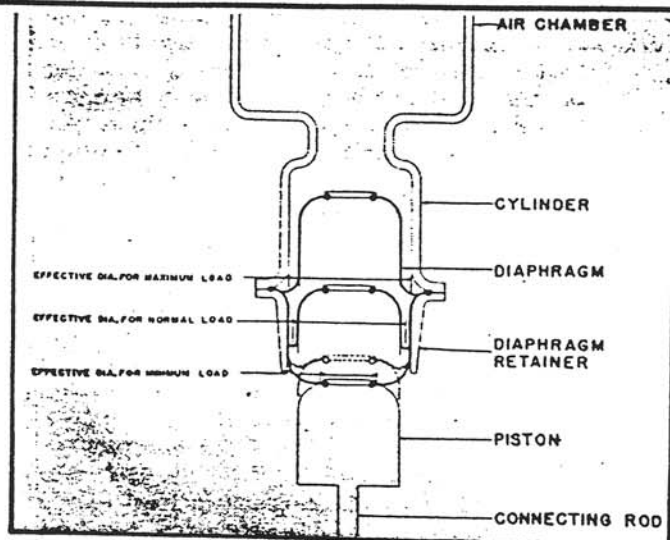


Fig. 3—Variable-area piston

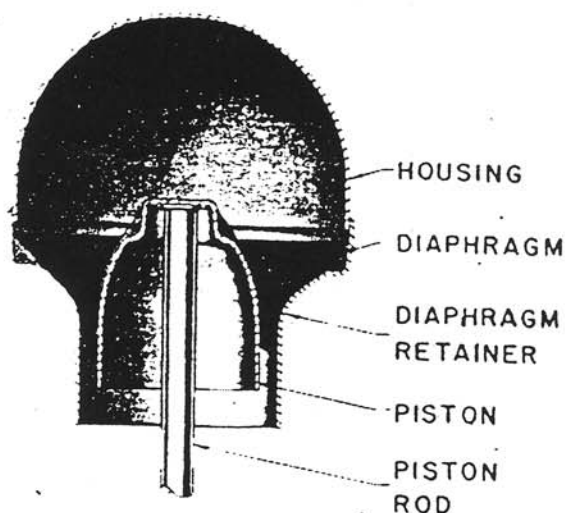


Fig. 4—Individual air spring

5. Interchangeability with optional steel springs.

At present, we see no better method.

Fig. 4 also shows the second method of attachment developed for connecting the diaphragm to the piston and the retainer. The steel bead rings are still used, but a wedge shaped rubber lip surrounds each ring. The internal air pressure on the rubber lips forms a seal much the same as does the tubeless tire to its rim. The diaphragm is installed in the retainer by temporarily deforming the normally circular outside bead into an oval shape that will pass up through the circular opening of the retainer.

In development work with its constant changes, of course, we cannot justify draw-die costs, in either time or money. Retainers and housings are usually made by spinning, and we find the surface obtained is adequate for sealing without any machining.

Selection and application of the suspension is the prerogative of the division using it and will be covered in Part II of this paper. However, brief mention might be made of some road-test cars used in the experimental development by engineering staff.

No serious problems are encountered when adapting air springs to a torque-tube rear suspension, so this type of installation was used to good advantage all during our development program.

Cars using a Hotchkiss suspension do not lend themselves to air-spring installation as readily as the torque-tube type. In Fig. 5 is shown the basic 4-link suspension we have used on cars originally equipped with Hotchkiss rear suspensions. We have made the minimum of frame changes, retaining the outer frame members. It will be noted that the piston rod is connected directly to the axle and piston stroke is the same as vertical wheel movement.

Spring Design

As previously mentioned, the desired load-deflection curve is the basis of preliminary design (Fig. 1). Knowing the load, operating pressure, and desired rate, the effective piston diameter is readily calculated, with clearance between the piston and retainer being established at a figure that has been

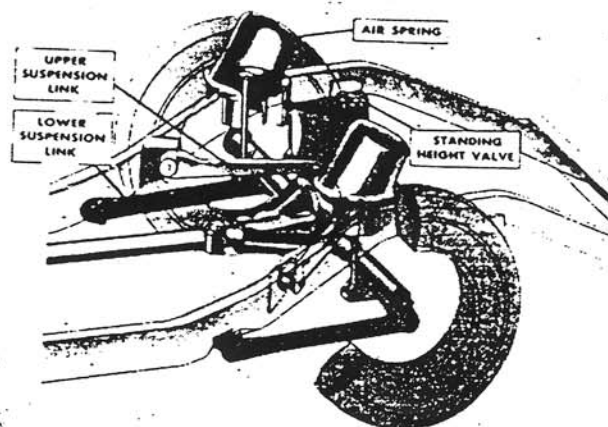


Fig. 5—Air springs as applied to 4-link rear suspension

found, from tire building experience, to be satisfactory for long life. Volume of the chamber is obtained from the formula:

$$R = \frac{\gamma \cdot Pa \cdot A^2}{V} \quad (1)$$

This of course, applies only to the derived A-B section of the curves, from the basic equation:

$$R = \frac{dw}{dh} = (Pa - 14.7) \frac{dA}{dh} + A \frac{dPa}{dh} \quad (2)$$

Gamma is accepted as being 1.4, the usual adiabatic factor for diatomic gases, but caution should be exercised since under certain conditions the spring may function in a region approaching isothermal operation, with the attendant lower rate.

When we first began developing the diaphragm spring we felt that the curve should show (in the B-C section) a constant rate of acceleration and so calculated it. With more experience we now use a simpler method. When the straight section of low rate A-B is established, the desired end load is placed on the graph. We have a family of curves which we recognize as giving a desirable blend and end rate. The same procedure is followed on the

unloading portion A-E of the curve.

In the example shown, the upper curve is calculated and found to be a fifth-order equation:

$$(W = 1227 - 163.6 h + 1.80 h^5) \quad (3)$$
$$0 \leq h < 3.66$$

For the unloading portion of the curve the equation is:

$$(W = 1227 - 163.6 h - 2.4 h^4) \quad (4)$$
$$0 \leq h < 4.91$$

With the values fed into an IBM No. 704, the profiles necessary for the piston and retainer can be established in 10 min. Before the programming was established it required two mathematicians two days to complete one calculation series.

We feel that with the diaphragm type of air spring we have met the conditions we laid down at the beginning of our development work regarding cost, size, life, adaptability, and ease of "tailoring" rate characteristics.

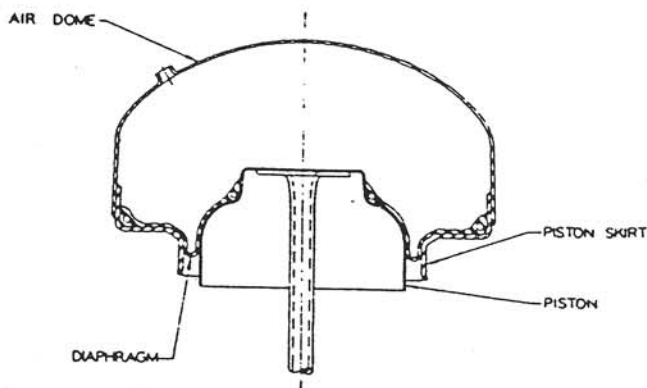
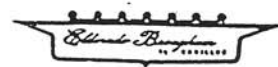


Fig. 7—Early design of front air spring



DISCUSSION

Describes Experiments in Air-Spring Development

—Charles J. Smith

Monroe Auto Equipment Co

WE, at Monroe, have been engaged in air-spring development to a limited degree for approximately three years. During this time we have experimented with a number of different systems, the majority of which perhaps represented an effort toward the ride problem but did not necessarily take care of the handling problem. Due to this experience, however, we do feel that we are qualified to recognize the right approach and we are convinced that the Cadillac design is a step in the right direction.

Most of our preliminary work was done on a Nash car, which could quite easily be converted from coil springs to air springs. This consisted of several types of metal cylinders and also various rubber assemblies; in all about 10 different types. With this combination we invariably found that when we lowered the oscillating rate, the riding qualities improved, but the handling of the car became unsatisfactory. This would indicate that the features of high-roll center and low center gravity incorporated in the Cadillac design are major contributing factors which insure good-handling characteristics. While we feel that 55 cycles may not be the optimum frequency and that an even lower frequency might be desirable, the afore-mentioned problem remains a challenge which chassis designers will accept. The proper leveling system will be a definite factor in solving the problem. The system described in the paper can readily be seen as a necessity for good handling. On several occasions we have had difficulty with a 4-valve system, where one front wheel and the opposite rear wheel supported the load and handling became extremely poor. The feature of rapid leveling when doors are opened or ignition is turned on, combined with controlled rate of leveling when the car is in operation, is very good.

One problem which confronted us in our development work, and which apparently was not of major significance

in the Cadillac design, was a definite feeling of "harshness" in the ride. Experimentation showed that proper location of the units to relieve loads on suspension bearings reduced friction. Lower oscillating rates gave us the best results for harshness and ride. Although the diaphragm-type unit appears ideal from a frictional standpoint, it is rather surprising that a compromise design which would lend itself to the installation of either coil springs or air springs would show any improvement as far as harshness was concerned.

The paper does not indicate the wheel travel obtainable on either front or rear wheels. We feel that, in spite of the feature of constant ride height, a wheel travel of about 8" in the front and about 10" in the rear would be desirable. It is possible, however, to cut this down somewhat by the varying rate of the springs.

It is our belief that, when the ultimate design in air suspension is reached, an improved type of shock absorber will be required. The elimination of friction in the suspension system will mean that this unit will be required to do more of the damping. Existing designs with 4-coil springs have already pointed up this fact. We feel that units with greater piston displacement will provide the required damping without increasing harshness, provided proper mounting location giving good displacements can be obtained.

The approach to the rear-suspension problem with the 4-link design would appear to have considerable merit and, since this is a very complex problem, I shall not attempt any detailed discussion at this time. Several other designs have been tried, among which are: Packard type, conventional torque-tube type, and dedion type. There are many features of the latter type which we feel would merit serious consideration.

Some advantages of the constant-level air-suspension system not mentioned in this paper are improved lighting and vision out of the rear window.

We feel, as do the authors, that the air-suspension principle has a great potential and that, as soon as the public has the opportunity to become acquainted with its advantages, the demand will be even greater than that which we have witnessed in the case of automatic transmissions, power steering, power brakes, power windows, and the like.

Allan Dowling

From Stockholm Sweden

By Jerry Jansson



From: jerry jansson <jerrys@pi.se>
To: BOA Allan Dowling <adowling@nacs.net>
Subject: Maybe somee materila from Sweden???
Date: Thursday, May 09, 2002 2:50 PM

Hi Allan,
hope you are OK!
Read in one of your newsletters that you needed material to be used in the newsletter.
I just recently got "hooked" on Broughams and have started to write a story about how i became owner of two of them.

How I became owner of one and then one more Brougham!!!

As most of you know Broughams nearly always becomes an obsession! After my first encounter with a Brougham, at "the New Auto Toy Store" in Ft Lauderdale back in feb 2000 (a very strange "tomato-red 58?"), I started to search for info about these fantastic vehicles. When finding Yann Saunders fantastic "the New Cadillac Database" I was definitely "hooked". Just had to get one!!! Had a lots of contact with lots of people, but no car. It was in February 2001 one of my "brokers" called me and said he found one and it was in Europe, down in Germany. It was EB57#284 a repainted, partly fixed car. So after seeing two blurry e-mailed photos, he flew down to Germany to make a deal and take it home.

He then drove it to Stockholm, apprx. 2000kms. Through rain, sleet, snow, ice you name it. First time I saw it was covered in road dirt, which in Sweden during the winter consists of sand and salt!!!!!! But the beauty shone through all the dirt and my first "affair" with a Brougham began! First thing that happened after reconditioning the car was that it ran out of gas when driving back to my garage. Stuck in the opening of a very busy garage on a very busy narrow street!!!! Fun?!?!?! This mishap caused a lot of dirt, rust and goo to move itself from the tank and fuel lines into the carbs. Since someone had "forgot" to install a fuel filter, this meant that the carbs had to be restored!!!

Three weeks later the engine was purring again and it was time for a drive. After some 20 mins there was a loud "klonk" and the whole car started to vibrate!!! Limped back to the garage and the next day it was back to the mechanics place. Holy XXXX!!!!!! The bolts holding the rear suspension control yoke to the rear axle housing had snapped!!! After dismounting the thing we discovered that some work had been done to the rear end and when assembling it again the mechanics (probably the same guys who "forgot" the fuel filter") had "forgot" to put all the bolts back, we could only see that they had used two out of four and those two had snapped!!!! Called the guy who drove it from Germany and told him to buy Lotto tickets!!! If those bolt had snapped on the Autobahn....?!?!?!?

After these minor mishaps, the car worked OK for the rest of the summer 2001. Went to a couple of meets and it was always a crowd magnet. In October I left the car with the guys at Competition Motors, they are very well respected Jaguar, Ferrari, Maserati etc etc restorers and were very happy to get "a real car" to work with. Not officially, but that's what the mechanics said to me when the owner Johan wasn't listening!!!

It's going to be a part restoration, everything mechanical, engine complete resto, gearbox, driveline, rear axle, front end, brakes, fuel system and tank, cable bundle etc etc. This is costly enough so we leave the suspension as it is, maybe we will reinstall the AirRide at a later date.

Carl Erik told me he would fix them. Fantastic, had never rode in a Cadillac with working airsuspension and the experience was positive, to say the least.

Was driven back to the airport and left for Stockholm the same evening. The next day I decided I absolutely needed one more car!!!! Called Carl Erik and the deal was made. On March the 10th I flew to Aalborg again, to pick up the car. Was met by the whole family and went to the warehouse where the car was waiting. Wipers working, gas tank all filled up. Had a great Danish lunch at their place and took off for the ferry in good time. Arrived to Fredrikshavn with more than an hour to spare. That's what I thought anyway, the fast ferry had stopped loading 4 minutes ago and the next ferry, not a fast one, was four and a half hours away!!!

Had to spend all this time in a northern Danish coastal town in the beginning of

March. Took a drive up to the town of Skagen, it's a place where the Atlantic Ocean and the North Sea meet. It started to rain, but the wipers worked perfectly, so no problem whatsoever, car was running great!!!

The slow ferry left at eight p.m. and the passage lasted 3 hrs and 15 mins.

Drove off the ferry in Gothenburg, after blocking everybody for 10 mins while I tried to find the parking brake release!!! It had started to snow, so I just turned on the wipers, at least tried to!!!! They were on the blink again, so I started the journey to Jonkoping on snowy roads in a vehicle close to six meters long with summer tires and no wipers!!!! That is usually less than two hours away, but after one and a half hours of trying to see the road through the wet snow I decided to stop in Borås and check into a hotel (with a garage).

Seven hours and about \$130 later I continued the voyage to my destination. Had an agreement with a local garage that they would get the car registered, reconditioned, new tires etc etc before I was to pick it up 3 weeks later. I then took the train to Stockholm.

The reason I left the car in Jonkoping was that it was going to be exhibited at the "Performance and Custom Car Show" during Easter 2002. There was a special Cadillac "100 years of Cadillac" exhibition at the show and a 60 Brougham is something not too many people have ever seen "live".

The show was a great success, 52000 visitors in four days! I showed together with EB57#63, a more or less original car with lots of charm. We had a little "57-60 Brougham Owners Scandinavia" area, right behind us were the custom Caddys area and across the isle there was the two specially invited customs. One of them was the Rose, a Mercury custom and representing the builders were the famous "Kustomizer" John D'Agostino from Antioch CA.

He is currently "Kustomizing" two Broughams, one 57 and one 58. He confessed that this was the second time he laid eyes on a PininFarina Brougham!!! We had a great time, lots of interest for the Broughams.

We are also fixing up the interior. New dash, vinyl, leather and the famous Mouton carpet has also arrived from Mike Rizzuto at Mastermind. Had lots and lots of assistance from him during this (had sent him lots and lots of \$\$\$\$'s as well, but that's another story). He's always a pleasure to deal with, maybe the future will find him a way to clone himself into more Mike's???? That might help him to get time to do everything he has his mind set on doing!!!

During this long winter (up here we have about 5 months of freezing, rain and snow) I started to try to find out how many more 57 - 60 Broughams there might be in Scandinavia (that's Denmark, Finland, Iceland, Norway and Sweden for you guys). Don't know if you know, but the owning and restoring of old American cars are a big thing up here.

Up until today I have found four 57's, six 58's (one is a parts car), one 59 and two 60's!!! There are rumours about a couple of more cars and I hope I can get more info in the near future. So that's at least 13 cars out of the estimated 481 survivors!!! That's nearly 3% of the surviving cars that are up here in the cold north!

One of the 60's were in Aalborg, a northern Danish town famous for it's Akvavit (a schnapps I like!). Imported from California back in 1994 by Mr Munk, a local "metal and welding guy". At that time it was , according to Mike Rizzuto who was also interested in buying it then, a decent car with an unusually well preserved interior. Mr Munk used the car as his daily driver, had a mobile phone installed, drove the car in his "working overalls". He also left it outside during the winter and that's not a thing to do with Italian built Broughams!!! During this time I think it got a new coat of paint and the front sofa was reupholstered. In 1999 Carl Erik Svensson bought it and continued to fix small problems, like new metal under the battery.

When I first talked to Carl Erik he told me the car was up for sale, he had just bought a new house, had a new kid and bought a 58 convertible, so he had placed ads in various magazines to see if there were any serious buyers out there.

The sane side of me said that I absolutely not needed one more car. I live in central Stockholm and already owned the 57 Brougham, a 59 Seville and a 00 Lincoln Navigator and garages are at premium here!!! The other side said, "Why not, you can always have a look at it" and the restoration of the 57 probably wont be done this summer and you had the 59 so long etc etc. So I flew down to Aalborg a rainy day in February 2002. Was met at the airport by Carl Erik and we drove off to a big warehouse that he and his family runs. The Brougham was parked beside a 1930's Rolls that his brother had renovated, the carinterest runs in the family. The car started up at the first try and the airride started to raise the car. It had been standing since last authumn, so the suspension made a lot of "squeaky" noises but otherwise everything seemed OK. Took a drive in the rain, wipers were not working but

After four days it was time to pack up and go home, car started up great. When closing the windows, the right side rear quarter window was not working!! Made some attempts to get it working by lowering and raising the rear door window. This only resulted in the door window getting stuck in the lover position. So it was a three and a half hours drive back to Stockholm with the heater on.!!!

All this was a month ago, the windows are still giving me a hard time, was able to raise the door window, but the quarter window is still stuck. Car is a pleasure to drive and everybody loves it!!!!

My plans for this one is to fix the windows and the AC. Get a new loop-pile carpet and replace all rubber parts so it can be "used outside" even if it's raining.

So that's the story how I came to be a "two Brougham owner"!!!

Cheers
Jerry Jansson
Stockholm
Sweden

———— **SAVE. BACK ISSUE SPECIAL SAVE** ————

With the growing numbers of new members we have, we have decided to continue offering our back issues at a considerable savings over individual pricing. The first thirteen years of the B.O.A. can be your for \$250.00 plus \$5.00 shipping and handling. See the development of the B.O.A. from Vol. 1 No.1 to today. We have made a lot of progress over the years. New members - take advantage of this offer. You will find just about every topic covered that concerns the history of the Brougham and restoration of your Brougham. Order from B.O.A. at the Timberline address.



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100 YEARS OF



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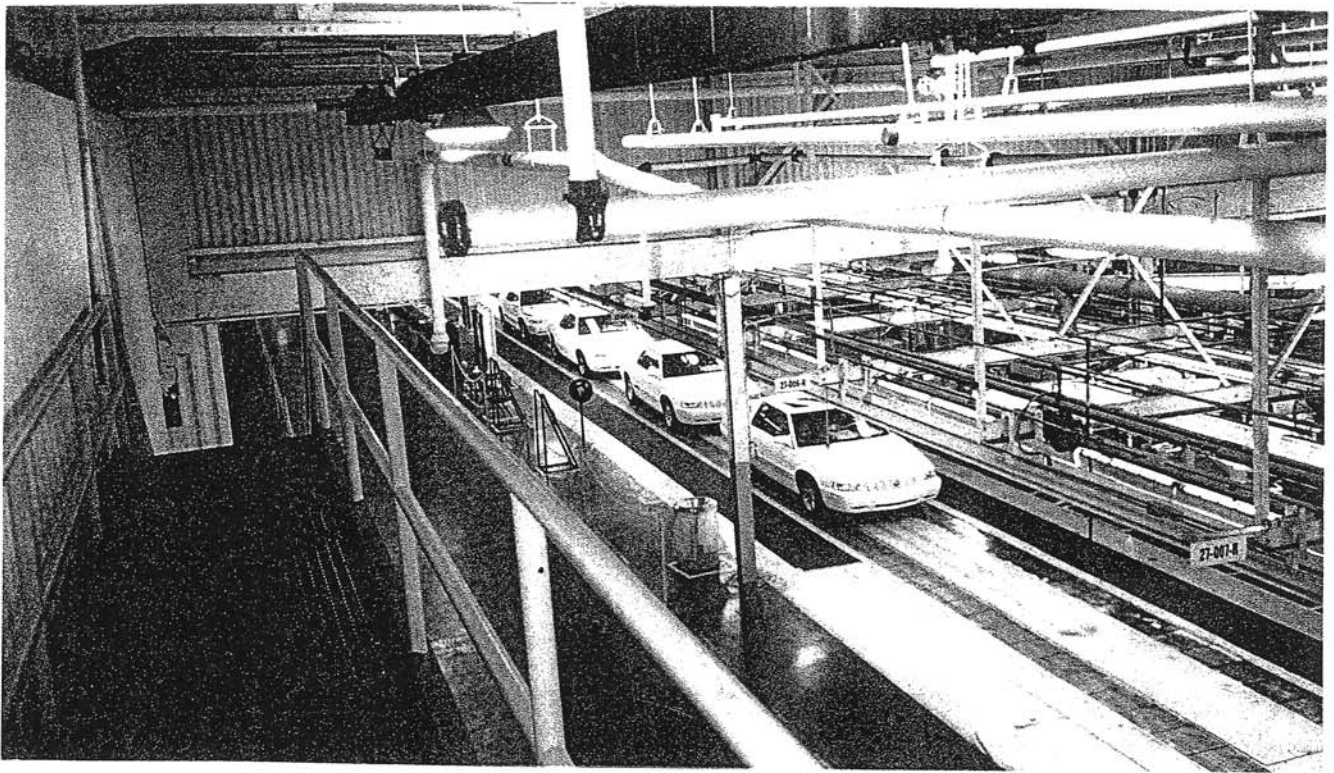


Lansing Craft Centre April 22, 2002

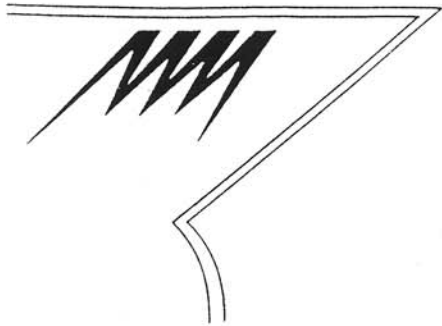


I had a personal invite to attend this event from Cadillac Motor Car and Greg Wallace and to display my Brougham. There were only for Eldorados on hand. One was owned by Bill Mitchell (a "68" prototype) now in the hands of my friend Ron Brooks from Muskegon, A "71" convertible and a "72" convertible owned by Harvey Cadillac from Grand Rapids. But, the Brougham still stood out above the rest as far as the Cadillac employees were concerned. Ninety eight percent of the workers had never seen one or had any idea that they produced such an Eldorado. Before the lunch there were ant least 30 people around the Brougham compared to three or five around the other cars. As of April 22, 2002, there will be no more Eldorados produced. The name is moth balled and the G.M. Lansing plant will begin making SUV'S and Chevy pick-up trucks in October of this year.

Larry Muckey
Muskegun, Michigan



What a shame to see the end of this era. Not necessarily this particular model; but, all the great history associated with the name Eldorado. Starting in 1953, many of the greatest creations of Cadillac were known as Eldorado. Always the top of the line and unique in appointments and styling firsts, these were the trend setters in the Cadillac line-up. You could always spot an Eldorado at any angle and could only dream of what it was like to own one. Cadillac can call their new creations by any acronym they like, but the name Eldorado will always be remembered as the ultimate in Cadillac design that culminated in the Eldorado Brougham.



MASTERMIND T.M. inc.

Michael P. Rizzuto
32155 "B" Joshua Drive
Wildomar, CA 92595-8403
Phone/FAX 909-674-0509
Est. 1975

**1957-60 Flexible Stainless Steel Exhaust
Shroud Kit 57ZB23-001, 59ZB23-001**

Dear Cadillac enthusiast,

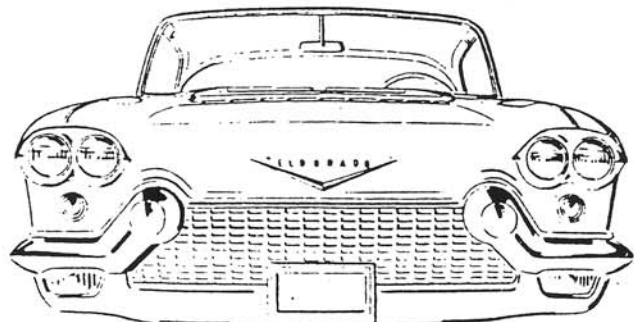
Thank you very much for your interest in our OEM replica exhaust shroud kit. Like many of us you most likely found out the hard way that these parts were original equipment on all Cadillacs. Over the years the exhaust pipes on most of our cars have been replaced with incorrect parts, almost without exception deleting the flexible shroud. Chances are you have one of these cars and have discovered by omission that these parts had several purposes. The first and most important was as a sound deadener, these parts quiet down considerably the noise from the exhaust manifold pipes to the muffler inlet. This is where most of the noise resonates because it is closest to the engine and it has not yet had an opportunity to be quieted by the muffler system. The second important purpose was to absorb and dissipate excess heat from the manifold area, which can sometimes lead to fuel vapor lock problems. The third important purpose was strictly cosmetic. You probably have already noticed the exhaust pipes are quite visible and unsightly at the lower edge of the wheel well. These shrouds enhance the refined and finished look of our Cadillacs considerably when viewed from the front wheel area. I have always been a firm believer in restoring my Cadillacs to exact OEM specifications so that they perform as they were intended. After all who wants a noisy and unsightly Cadillac? If that were to be the case, might as well have a Chevrolet I always say! Unfortunately very few in the past shared my view, which is why this important detail was nearly lost to history.

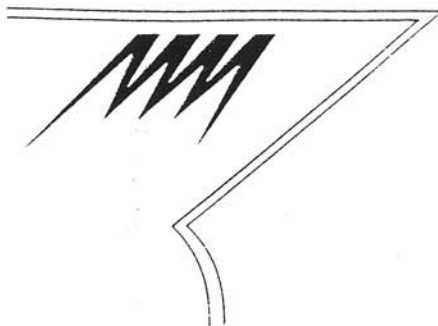
The primary reason these parts were not reinstalled on your car when the exhaust system was replaced was because they were simply unavailable. As you may know the OEM parts were galvanized mild steel. These eventually rusted and looked really bad and then were thrown away. We have chosen to replicate these parts in stainless steel for cosmetic reasons and for its longevity. They can be used equally successfully with mild steel or stainless steel exhaust systems. They will outlast the OEM parts by a long way, however it is a bit harder to install the stainless steel than the galvanized mild steel. The stainless steel also severely shortens the life span of the dies required to manufacture these parts, which adds significantly to the cost of producing them. For a bit less money we do offer these shrouds in galvanized mild steel for those of you who are so inclined.

At long last it is possible to restore your exhaust system correctly with parts that are exact replicas of the OEM equipment. I hope you take advantage of this opportunity made possible by the significant research, development and financial investment required by us to replicate these parts. Thank you again for your interest.

Sincerely,

Michael Rizzuto





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32155 "B" Joshua Drive
Wildomar, CA 92595-8403
Phone/FAX 909-674-0509
Est. 1975

Interior Dye 99ZZ14-002

Dear Faded Interior Sufferer,

Thank you for your interest in our revolutionary interior dye system. Finally there is an easy way to revitalize an old faded interior that is in good condition otherwise! It is also great for dyeing new material that is not quite the right OEM color. Unlike anything previously available these dyes are designed to work on both leather and vinyl. This new space age system has superb adhesion, coverage and durability. You will find it extremely easy to work with as well. The material is ready to spray as is and requires only water clean up. The OEM colors will have been very well researched and matched to perfection so you can be sure of authenticity. Your dye would be delivered with detailed application instructions, specific for both new or old leather and vinyl.

The fact that this system is designed to work on both leather and vinyl will save you a great deal of money and aggravation. No longer will you have to pay for expensive color matching and formulation costs twice for each color. This can be very costly for most cars that have two-tone interiors. If you have two-tone leather and vinyl that means four color match charges at roughly \$40- \$50 each, after which you still need to buy the dye! With our material you do not even have to pay for that once! It also eliminates the problem of the leather dye and vinyl dye not matching each other exactly, which was a common problem on even the best OEM finished interiors.

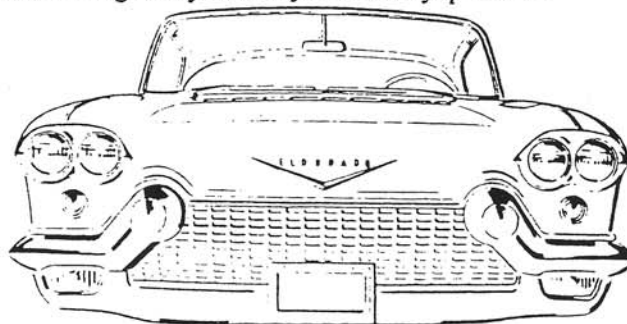
If you wish to place an order please submit detailed information on the make, model, year and OEM interior trim code of your car. If we already have formula information on file we will send your dye to you within a short time. If not we would need to custom formulate a match for your specific needs. This will take a bit longer to accomplish, but we can and will do it. There will be no additional charge to you, however a two-quart minimum purchase of each color needing formulation would be required. To do this we would require in addition to the above-mentioned items the best un-faded OEM color samples that you can supply to us. These color samples must be of the OEM leather or vinyl, not replacement material. The best place to find such un-faded samples is under sections of upholstery that have never been exposed to the sun. These samples can be found in a variety of places depending on the make and model of your car. Take things apart and hunt around is my best advice.

For added durability in high wear areas like carpet heel pads, door panel armrests, and seat cushions we recommend adding our catalyst to the mix prior to application. This will make these surfaces more durable. It is not absolutely necessary however. It will work fine without it. The surface will just be a bit less durable over the long term on high wear areas. If you wish to add this catalyst to your order please let us know when ordering.

That's all there is for now. I will look forward to helping you revitalize your interior. You would not be disappointed with the professional results you will achieve using our system. If you have any questions please feel free to call.

Sincerely,

Michael Rizzuto





MASTERMIND T.M., inc.

Michael P. Rizzuto
32155 "B" Joshua Drive
Wildomar, CA 92595-8403
Phone/FAX 909-674-0509
Est. 1975

59ZB09-003

1959-66 Intake Manifold Choke Heat Tube Assembly

Dear Cadillac owner,

Thank you for your inquiry into our replacement choke repair parts. At long last something is available with which to repair this extremely common, but difficult problem! As you already have most likely discovered, your OEM parts have deteriorated beyond recognition from many years of exposure to hot exhaust gas, and thousands of heating and cooling cycles. This, as you may know, creates exhaust leaks that are impossible to stop as well as an inoperable choke, which is now most likely damaged or at the very least clogged with soot and carbon from coming in direct contact with exhaust gases. You no doubt have looked at the odd way this choke heat device was built into the manifold, seemingly with no way to remove it, and scratched your head like I did when I first looked at it. After many years of scratching we have finally developed a perfect repair procedure along with the required parts. Help is at hand!

Our new tube and what I like to call the twisted linguine part are exact replicas of the OEM parts. They were built using two different metal alloys as our lab analysis told us that the OEM parts were. Our repair kits come complete with two pages of highly detailed, step by step instructions that will make this previously impossible job simple for you to do yourself. The instructions alone are worth the price of the kit! They are guaranteed to save you endless frustrating hours and possibly the sacrifice of one or two manifolds to scientific experiments. Every tool needed is clearly explained. Many common problems and important facts about your manifold, some that you may not be aware of, are discussed in great detail. There is no need to beat your head against the wall trying to figure this thing out on your own. You know what they say everything is easy when you know how to do it!

When removing the old choke tube and installing the new one it is best to use our supplemental tool kit for the job. This choke repair kit is sold with or without tools because the tools are re-usable for those of you who are doing this job more than once. Also some people have their own tools and would prefer to use them instead. If you choose to use your own tools that is fine, keep in mind though, most of the critical drills and cutters supplied with our kit are specially hardened and work perfectly for this job. Standard drills will most likely dull out on you before you get half way through the job, resulting in a lot of wasted time and possibly inferior results.

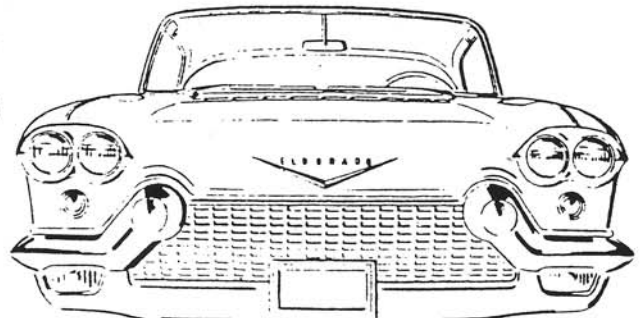
Once you complete this repair you will find that the choke on your car will work so well that you will think you are dreaming of a day long ago when your car was new! I would bet you have probably never seen one work correctly! It does work extremely well when it is properly rebuilt. Thank you again for your interest in our products. We always strive to help you help yourself by supplying only the highest quality restoration parts and services. Please feel free to call if you have any questions.

CHOKE REPAIR KIT \$85

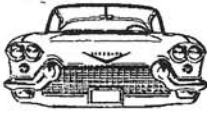
OPTIONAL TOOL KIT \$60

Sincerely,

Michael Rizzuto

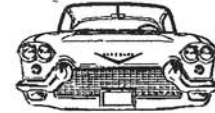


CLASSIFIED



IMPORTANT NOTE

All articles, ads, etc., will pertain to the 1957-1960 brougham unless designated otherwise.



CARS FOR SALE

1957 Brougham - #241 New Paint, new brakes and exhaust. Needs bumpers plated for show. A rust free car with all vanities. \$27,500.00. Contact: Larry Muckey (616) 777-1849

1957 Brougham - #195 Black #2 car without vanities on springs located in Kansas. For complete details contact: Matt Massoth (913) 651-2866. Asking \$20,000.00

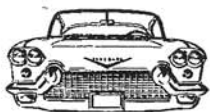
1958 Brougham - # 651. Chamonix white, solid black leather interior (all original). Black mouton carpet. 34,000 Miles. Perfect glass and roof. Converted to coil springs. John Foster Dulles car. \$30,000.00. Contact: Ken Ward for further details. (513) 521-2029.

1957 Brougham - #351. Blue, Stainless steel roof. Original Car with 45,000 miles. Show condition. AACA winner. Car has all vanity items. Converted to springs. Looking for best offer. Contact Keith Geisow (908) 233-2339.

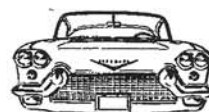
BROUGHAM FOR SALE? YOUR AD BELONGS HERE!
NO CHARGE TO B.O.A. MEMBERS!

PARTS FOR SALE

(1) NOS windshield washer unit with decal \$150.00. Jar \$50.00. (2) Hubcaps in original boxes \$225.00 each. (1) Oil pressure gauge Stewart Warner \$80.00. (1) Delco distributor cap \$17.50. (5) T-3 headlamp bulbs \$12.50 each. (2) AC-PF 122 Oil filter cartridges \$15.00 each. (3) Delco Remy coils (used) \$12.50 each. (3) Blue cap points \$10.00 each. (2) Vanity mirrors (original) white and light gray \$125.00 each. (2) Vanity compacts complete with mirror, comb, lipstick, Evan's powder puff, etc. \$950.00 each. Window switches 2 & 4 poles with escutcheon trim. (1) Outside driver's door remote mirror in show condition with mint handle \$150.00. (1) Complete radio \$90.00. (2) Clocks. Glove box opener \$35.00. (1) Right side vent window motor and trans. \$75.00. (1) Seat motor and trans. (left side) \$75.00. (2) WCFB carb kits \$45.00 each. (1) Trunk hinge motor and clutch unit \$125.00. (1) Master brake cylinder. (needs kit) \$35.00. (1) 13/4 Gas fillpipe neoprene hose 11/2' long \$10.00. (1) Air conditioning condenser (original and very good) \$60.00. (1) Original wheel completely restored (mint Chrome \$950.00. (1) decent original wheel with slight pitting of Chrome \$150.00. (5) Restorable Kelsey Hayes wheels \$50.00 each. Jack instruction card #12.50. I.D. Card for under hood \$10.00. Starter \$50.00. Transmission and torque converter \$175.00. Voltage regulator \$75.00. Various relays and motors. Right and left rear bumpers (mint) new Chrome. Front bumper license plate bracket with back up plate (mint chrome). Original new anodized license plate frame (mint). Buckets of cadmium plated bolts, clips, & brackets. Doors and trunk lids (very reasonable). Power steering pumps. A.C. Compressor & misc. parts. Exhaust manifolds. Cigarette lighters. Arpege perfume (2) in original (sealed) box (1) 1 oz. bottle with gold label. Call: Jerry Schantz evenings only (386) 677-4373 (Fla.) till June 15th then (828) 387-4860 North Carolina.



PARTS FOR SALE



PARTS FOR SALE- 57/58 Brougham: (20) year collection of parts. What do you need? Contact: Dr. Zeiger (310) 275-8156 with your needs.

PARTS FOR SALE- 57/58 Brougham: A trailer load good used Brougham parts. Inquire with your needs. Trades for your spares considered. Please send list of parts you need Contact: Mike Rizzuto (909) 674- 0509.

PARTS FOR SALE - 57/58 Brougham: Left (driver's side) lower stainless rocker panel cover. Very good condition \$200.00. Heater blower motor (main unit) \$40.00. N.O.S. window regulator motor \$75.00. Original shop manual (Brougham) (near mint) \$95.00, Original shop manual (Brougham) (some wear) \$75.00, "57" shop manual (good) \$45.00, "58" supplement (fair) \$35.00, Original powder puff \$50.00. Valve cover hold down bolt kit. Front end stabilizer rebuild kit. Contact: Allan Dowling at (440) 238-8474

Many prices reduced for quick sale

PARTS FOR SALE - 57/58 Brougham: (1) Good chrome fender louver \$75.00, (1) Set of front bumpers \$400.00 Each, (1) Air compressor with brackets and lines \$450.00, (1) 1958 tri-power manifold \$100.00, (1) Driver's side rear door lower shield (die cast) Good chrome) 200.00, (1) Set front door lower stainless \$250.00, (1) Set center pillar lower finish stainless \$60.00, (1) Cowl grill (chrome) \$175.00, (1) Heater core assembly \$75.00, (1) Original glove box with lens and trunk control \$75.00, (1) Passenger side vent window (good chrome) \$75.00, Cigarette lighters \$20.00 each, (1) Driver's side center wheel well \$75.00, (1) Driver's side wheel well above fiber glass \$50.00, (1) Driver's side fiber glass splash guard (like new) \$100.00, (1) Driver's side back body piece (skirt mount & exhaust \$75.00, (1) White rear vanity mirror (original) \$395.00, , (1) Door striker plate \$15.00, , (1) Box of door and window tracks, etc. (best offer). (1) Passenger window switch \$100.00, (1) Generator tell tale relay \$20.00, (1) Trunk light socket \$10.00, (4) Door lock knobs \$100.00, (1) Headlight knob \$25.00, (1) Rear ash tray \$10.00, (4) Door handles \$40.00, (1) Exterior mirror \$20.00, Exterior windshield trim, (1) Left rear upper door panel \$25.00. Contact: Marion Falat (847) 381-4295

PARTS FOR SALE - For Pininfarina bodied Broughams. A lot of miscellaneous parts such as window motors, trunk motor, valence trim, windshield chrome frame, rear bumper, taillight, trunk panels, ashtrays, relay clusters, side mirror, various chrome and trim pieces. Inquire about the lot or individual pieces. Call Lars at: (718) 797-5201. Or E-mail: Wassard@att.net

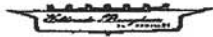
CARS WANTED

1957 - 1960 Eldorado Broughams in any condition, even parts cars. Contact: Peter Krell at (972) 458-2004. Dallas Texas.

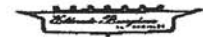
1957/58 Brougham #2, #3 car either in original condition or properly restored. Car does not have to be concours. Contact: Mitchell Terk of Jacksonville, FL @ (904) 306-9854. E-mail: mterk@bellsouth.net

FREE LITERATURE

1. 57/58 Photofacts radio diagrams. **Free** to B.O.A. members. Send letter size S.A.S.E. to: 16784 Timberline Drive, Strongsville, Ohio 44136
2. 57/58 exhaust louver template. **Free** to B.O.A. members. Send letter size S.A.S.E. to: 16784 Timberline Drive, Strongsville, Ohio 44136
3. 57/58 Brougham Pre-delivery inspection sheet. **Free** to B.O.A. members. Send letter size S.A.S.E. to: 16784 Timberline Drive, Strongsville, Ohio 44136



LITERATURE



4. Eldorado Brougham electrical system and compressor lubrication improvements. October 1957 to all dealers (6) pages. Not in manual. \$10.00 to B.O.A. members.
5. Eldorado Brougham electrical circuit diagrams. (18) pages. Not in manual. \$20.00 to B.O.A. members.
6. Eldorado Brougham service supplement 1959. (15) pages. \$20.00 to B.O.A. members.
7. Eldorado Brougham service supplement 1960 (5) pages. \$10.00 to B.O.A. members.
8. Full color Xerox copy of FORTUNE ad. 10x13 suitable for framing. This was the only ad ever published. \$15.00 to B.O.A. members.
9. Set of (6) 8x10 glossy photos from the originals at G.M. Tech Center. (3) of the Towncar. \$55.00/set to B.O.A. members.
10. Color copy of U.S.Steel advertising material featuring the "56" prototype Brougham \$10.00 to B.O.A. members.
11. Rare 10x12 factory rendering of "56" Towncar. Includes descriptive material on features ect.. B/W Xerox copy. \$10.00 to B.O.A. members.
12. Complete set of news releases from Cadillac on the "57" Eldorado Brougham. \$20.00 to B.O.A. members.
13. Set of (5) 8x10 photos from "HERE IT IS THE ELDORADO BROUGHAM" sales brochure 1957. \$55.00/set to B.O.A. members.



NEW MEMBERS



Raymond Bentley
Everson, PA
#664

John Muller
Atlanta, GA
#87 (60)

Bill Olson
SantaFe, NM
#574

Roy Schnauss
Jacksonville, FL

Mitchell Terk
Jacksonville, FL