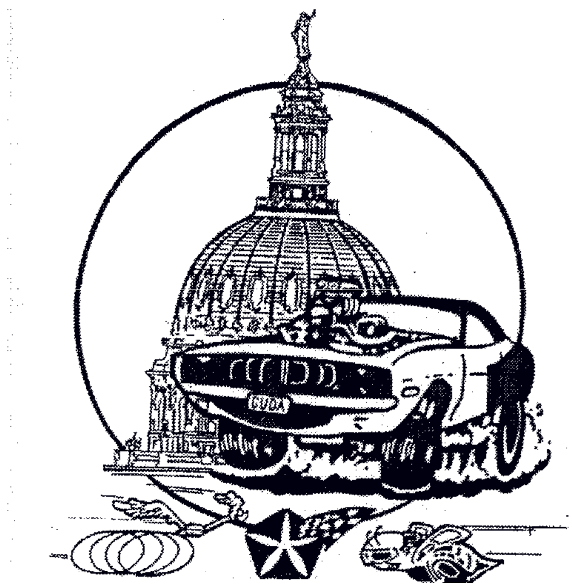
MOPAR MUSCLE CARS OF AUSTIN

Vol 24 No: 1



January 2009

Mopar Muscle Cars of Austin is a non-profit organization formed in September 1986. The MMCA is "Dedicated to the restoration, preservation, and promotion of Chrysler built products."

Monthly club meetings are currently being held the first Tuesday of every month at 6:30 PM Gethsemane Lutheran Church, Austin, Texas, located at 183 and Georgian Drive next door to the Humane Society.

http://www.mopar.org

The MMCA is open to all persons of good character. Yearly membership dues are $15.00 per person. As a member, you receive a monthly newsletter (Currently online at www.mopar.org) with free newsletter classifieds, a discount on parts at participating vendors, access to a network of Mopar parts and paraphernalia, and become eligible to attend club functions as well as show off your Mopar. Non-members may place an ad in the newsletter for a $2.00 monthly donation. Copies of the newsletter are available for a $1.00 donation.

2007-2008 Club Officers

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Join the Discussion

MMCA Discussion List is an easy way to contact club members, get technical advice, and find out about club events. To join go to
http://groups.google.com/group/MMCA-TX/subscribe

Letter from the Co-Assistant Editor (Feb 08)

Winters around here offer a nice break from the heat. It's a lot easier to heat my garage then to cool it. It's as simple as unhooking the hose on my dryer and running if for a cycle.

I am not the Editor of this publication, but the MMCA VP, but this newsletter needs to be written, so here goes again. With most of my home remodeling projects completed recently I am now able to focus my attention on my passion, my mopars.

I stopped by a friends shop recently, he was working on a customers 70 Challenger, that I had recently inspected for a cross-country buyer. It's a beautiful car, just off the rotisserie, but the motor bucked and kicked like an ol' mule, and likewise was not eager to move out of its way. But with some troubleshooting and some tuning that big block purred like a kitten and then roared like a lion. Add a little voltage to the coil input, set the timing, tune the carb, and voila. There was nothing wrong with the motor, it just needed its inputs corrected to run well.

This club and newsletter are similar to that engine in the way it needs input from its members to move along in a smooth and efficient manner. Please take an active roll in the club when you can. If you don't have much going on this week, or next, give a shout to the officers and see where you can lend a hand. This club doesn't take a lot of effort to run, but it does take some, and it needs you to take some responsibility for its direction and content.

Need some help with your project, we've been there, done that. Let us know, and hopefully we can help.

Roast 'em,

Chris Ryon

Dues Blues

Please remember to take a moment to send in your dues.
Call Harry Amon and find out when yours are due. $15/yr

You know who you are…..If you don't, then please pay anyway :)

Past Events

Rudys Car Show.

Nov 1st - Pie Run and Club Cruise. Drive out beautiful RR 1431 to the Bluebonnet Cafe in Marble Falls (for a slice of pie, or whatever tickles your palate). Meet at Rudys BBQ (at Hwy 183 & Duval) at 9:30 AM. The Marble Falls Car Show is that day and the weather is likely to be wonderful for a drive.

Didn't happen, but lets keep it on the agenda.

Dec 13th - Christmas Party at the Dean and Dave Haight's. White Elephant gift exchange.

Great Party, I think everyone had a great time and walked away with some nice presents and good memories.

Upcoming Events

Upcoming Club Events

Freeze Your Buns Junkyard Run
January 17th

Other Upcoming Events

Georgetown Area Car Club Annual Car Show
Sun City Community Center' May 2, 2009, 10:00 AM until 2:00 PM

TBD - The Twins Farm Party

Club Tech project {ongoing} (to be determined), All members are invited to come help and learn on someone else's project. Dinner (Pizza??) and soft drinks provided by member hosting. And if you have a project that you'd like a bunch of us to stand around and watch you sweat over (well, we'd probably feel guilty and lend a hand....) let us know and we'll schedule a Tech Event at your garage.

If you come across a new / old junkyard in Central Texas with a lot of old Mopars, let us know and maybe we'll check it out at next years Freeze Your Buns Junkyard Run

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Weekly/Monthly Events

Saturday Night Cruise Locations

- **New** location is behind the Texas Road House restaurant, at the Tinsletown Theatre in Pflugerville, (its new but growing).
- **Albertsons parking lot every Saturday night at the Y in Oak Hill** I haven't been there in several weeks, but the turnout was early and left early.

Calender of Events

January 2009

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
				1	2	3
4	5	**6 Monthly Meeting 6:30**	7	8	9	10
11	12	13	14	15	16	17 Freeze Your Buns Junkyard Run
18	19	**20 Officers Meeting/Tech Party 6:30**	21	22	23	24
25	26	27	28	29	30	31

February 2009

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
1	2	**3 Monthly Meeting 6:30**	4	5	6	7
8	9	10	11	12	13	14
15	16	**17 Officers Meeting/Tech Party 6:30**	18	19	20	21
22	23	24	25	26	27	28

Mopar on the Web

The Internet has made it a whole lot easier to participate in this fine hobby of ours. Keeping your car running, finding parts, benefiting from the knowledge and experience of other enthusiasts, and even just fine tuning our points of appreciation becomes a much simpler task with all the resources of the World Wide Web at our disposal. We'll try to keep you posted on the best and newest sites here. Be sure to shoot me a note if you find some cool Mopar websites, and I'll include them in upcoming newsletters – BC

Cool Links

This website has a good tech section

(http://www.4secondsflat.com/Technical_Information_for_Ignition_and_Carburetion.html)

An oldy, but still one of the best tech websites out there
(http://www.68cuda.com/).

Need wiring diagrams?
(http://www.mymopar.com/wiringdiagrams.htm)

Cool Links

Got Rust?
(http://www.rustbusters.com/locations.html) .

ET and HP calculator
(http://www.race-cars.net/calculators/et_calculator.html)

Find your Dragstrip here
(http://www.staginglight.com/links/trackfinder.html#TX)

Member Spotlight: -

If you would like to show us your vehicle or tell us your story about a favorite mopar or how you got into this hobby or the one that got away, let me know. We'd all love to hear about it.

Newsletter Editor, Bob Crockett: 64ragtop@earthlink.net

Mopar Tech

by Mark Hamilton

AMP gauges at the dash are troublesome. They should be by-passed, and then install a VOLT gauge.

The antiquated AMP gauge system has reduced more Dodge owners to pedestrian status than any other kind!

And (wire) "terminal illness" at firewall connectors has also been a major problem.

(Chrysler Corp. stayed with the old AMP gauge system long after other automakers switched to VOLT gauges, and Dodge trucks used the AMP gauge more recently than others, so we have used a Dodge truck as a model for this project.)

Dodge is not the only make with concerns about AMP gauge systems, early FORD Broncos, International SCOUT, and many old cars and trucks used the AMP gauge system too. But when the electrical system will be up-graded with more powerful alternators and more accessories, the AMP gauge should be removed, and the "main power system" should be modified.

With normal but frequent use, most of these Dodge trucks will have electrical wiring problems. The first to fail were often the trucks equipped with factory air conditioning. The air conditioning system adds a significant electrical load. And the "air" gets used in hot summer weather when heat will increase resistance at connections. The additional current flow when using the air conditioning and increased resistance with heat will break down the weak areas more quickly. With sufficient use, the non-air equipped trucks will also have electrical problems stemming from the same cause.

Typical Dodge electrical problems result from a very antiquated power distribution system. The main source of power for the Dodge electrical system is based upon an old design AMP gauge at the dash and related wiring system. It's a system that worked okay with a very small electrical system on Model A Fords way back in the late 1920's. But the old AMP-gauge-at-the-dash system is not reliable with increased current loads of the more modern electrical system.

Compounding the situation, the wiring system for the AMP gauge actually became weaker than it was over fifty years earlier. Assembly line labor was not so expensive in early years of the car. Affordable labor could consistently connect wires with "ring terminals" at screws or studs with nuts–resulting with reliable (low resistance) connections. With increased labor cost mandating fast moving assembly lines, and many more wiring circuits to install, "click together" connections have been widely used since back in the 1950's. And by the 1960's, even the AMP gauge (heavy current load circuit) was routed through a “click together” connection. The least reliable of “click together” connections for a heavy current load circuit is the male/female flat blade terminal design. And it happens that Dodge was built with this terminal design, even at the main power delivery circuit.

In summary, the AMP gauge and related wiring found in Dodge trucks of the sixties and seventies period was built with a recipe for failure. A 70amp alternator supporting powerful electrical accessories was typical equipment by 1979, and the load was too much for the method of wiring construction used. Naturally, it’s a system that often reduced Dodge owners to pedestrian status.

This feature clearly explains the shortcomings of using the old, traditional, AMP gauge at the dash. And largely because of the circuit design shortcomings, the best choice of gauge to monitor the electrical system is a “VOLT” rather than AMP gauge. A good explanation of the AMP vs. VOLT gauge may be found at www.autometer.com in the Tech Tips / FAQ section of the web sight.

THE HISTORY

In some ways, the Chrysler Corporation was pretty far advanced where electrical systems were concerned. (Chrysler gave us the Dodge, Plymouth and Chrysler line, and nowadays they all may be referred to as MOPAR.) Back in the early ‘60’s, MOPAR was the first to give us alternators rather than the older technology generators–Indeed the improvement was great. GM followed, and then Ford finally installed alternators as “standard equipment” on ’65 models.

1964 year model Chrysler products showed up with “Fusible Link wires” for reliable short-circuit protection of the main power circuit from the battery to the electrical system. Chevy didn’t use Fusible Link wires until ’66 models. And Ford didn’t use Fusible Links until some years after GM.

Chrysler/Dodge/Plymouth introduced a very good electronic ignition system with 1971 models. Ford introduced a somewhat less reliable electronic ignition with only some of their ’74 models. And GM gave us a very good electronic ignition with ’75 models.

In spite of being the first to give us “break through” technology with components, it seems that the “DODGE BOYS” were reluctant to depart from a very antiquated wiring system. The old, traditional, “full current load type” AMP-GAUGE-AT-THE-DASH and related wiring system was still in use with ’79 Dodge trucks. The AMP gauge circuit wiring had to deliver electrical current used by the entire electrical system, plus handle current to recharge the battery. The problem was that current load and the alternator output rating was a large amount by the end of the ‘70’s. Alternators with about a seventy amp available output were standard with air-conditioned models. And a weak terminal design was used where the AMP gauge wiring passed through the firewall. The large demand for electrical current often resulted with failures in the lengthy AMP gauge circuit, even in vehicles that were relatively new.

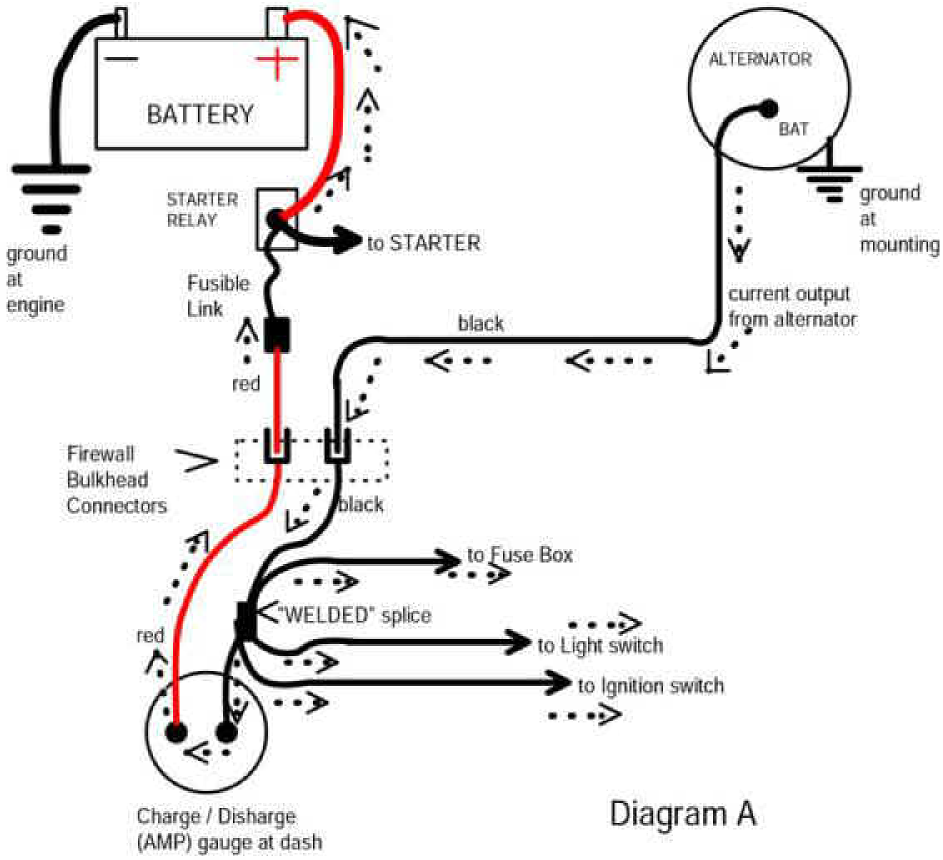


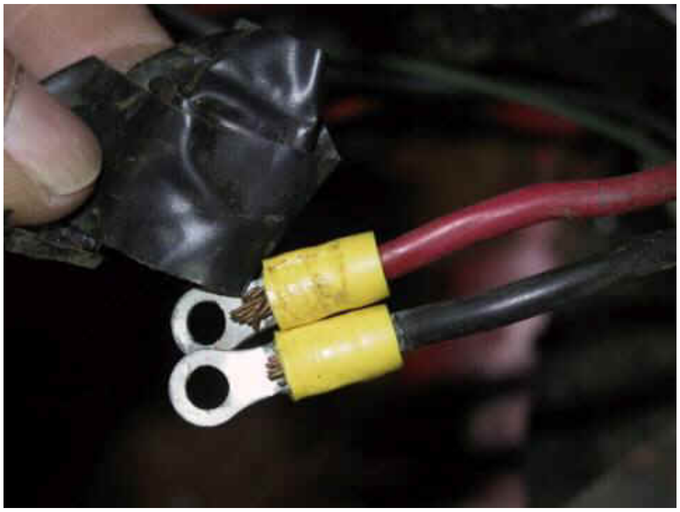
Diagram A

The original AMP gauge system served as the main power distribution system. This circuit is the power source for the entire electrical system. (see diagram A)

Amp gauges at the dash were standard equipment with Model A Fords, back in the late 1920's. And the fifteen amp capacity gauge at the dash worked fine with minimal electrical systems of that period. Current output from the small Model A generators was not even sufficient to support sealed beam headlights. (The old Model A was equipped with a small light bulb backed up by a large reflector in the headlight assembly.) The Model A only had one tail/brake light at the rear, a simple ignition system and a small battery about completed the electrical system. Such a small amount of electrical current flow through good connections at the AMP gauge wiring was no problem with the Model A Ford. And with current output limited by a cutout relay on the generator, the AMP gauge could handle the small battery charge rate. But as electrical systems became more powerful, Ford discontinued the old AMP gauge system long before the '70's.

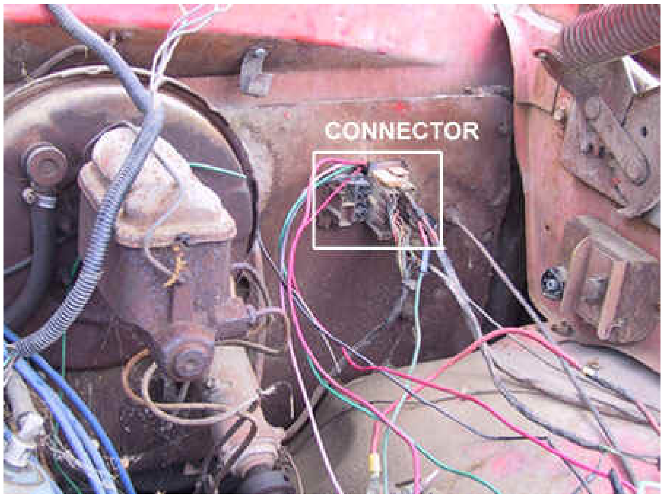
GM also up-graded their system long before the Dodge Boys. When GM introduced the alternator with '63 models, it was controlled by a more complicated but more efficient voltage regulator system. And the new GM system could support a warning light at the dash. The warning light was often standard equipment and the gauge was an option. GM vehicles built with the gauge option also had a more modern design of AMP gauge at the dash. The newer AMP gauge was a remote shunt type design–a length of the battery charging wire in the under-hood harness served as the shunt. The dash gauge and related wiring no longer handled heavy current load. Same with Ford in '65 and newer model cars–the Ford system could work with a warning light at the dash, and cars that came dash gauges had a remote shunt type amp gauge.

The Dodge alternator / voltage regulator system had no provision to operate a warning light. And Dodge (trucks) stuck with the old antiquated "full load type" AMP gauge design, at least into the late 1980 models. As is typical of Dodge trucks that were used a lot, the AMP gauge in this '76 Dodge was burned out. The plastic mounting area behind the dash is completely melted, and the lens and plastic trim is shriveled too. (This gauge is included in Diagram A.)



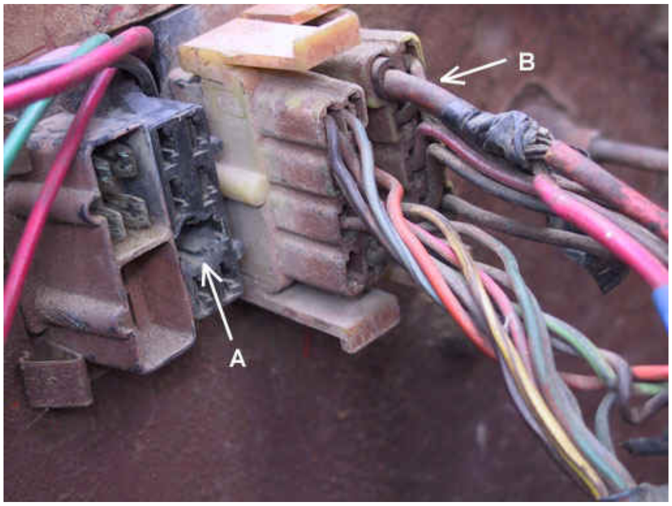
Amperage is a measure of current flow, and all of the current used to recharge the battery was routed through this gauge–which caused the gauge to display the battery charge rate. Both the alternator and the battery were mounted up front, under the hood. And the AMP gauge was at the dash. It was an arrangement resulting with a very long wire circuit charging the battery.

Large amounts of current flow through the AMP gauge will generate some heat too. The plastic cover at this gauge was only distorted by heat–but some Dodges have sizable holes burned in the dash where the AMP gauge used to be. Apparently, the shunt in the gauge has a sufficient amount of resistance to generate a damaging amount of heat with battery charging current flow.



A previous owner had replaced the terminals at the back of the AMP gauge, and then did a weak by-pass of the gauge by taping the two wire terminals together. (No doubt an attempt to get the old Dodge up and running.) It's fairly common to find the wires disconnected from the gauge, and a machine screw and nut clamping the terminals together, and finished by wrapping the screw and terminals with tape.

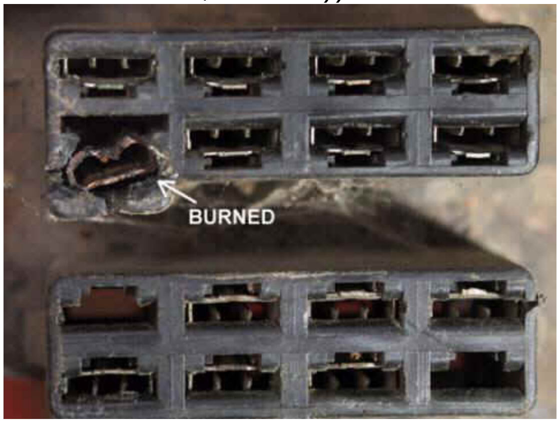
The AMP gauge wiring passed through the "firewall bulkhead connector," where standard, .250 inch wide, male/female flat blade connectors were used. (This connection is shown in Diagram A.) These terminals were reliable with circuits of much less current flow, as with turn signal, clearance lights, and temp or fuel gauges. But the design was certainly not up to the job of handling the entire alternator output. This was a problem spot in the AMP gauge system that often made Dodge owners walk.



Arrow **A** in the photo at the left points out a melted cavity in the plastic connector body, where a case of "terminal meltdown" occurred. This connection served as a pass-through for the main wire from the alternator to the dash area. When driving, the entire electrical system current load will pass through this connector. (Also seen

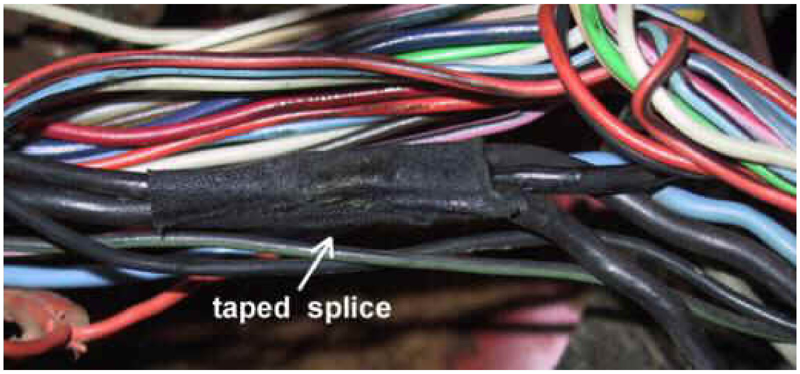
in Diagram A.) Ignition, lighting, heater fan, accessories, and electrical power in general flows through the connector. The wire color code is black at this circuit, and this model was equipped with 10 gauge wire. (Many earlier models had only a 12 gauge black wire.)
Arrow **B** points out the red, 10 gauge, battery charging wire.

After removing the connector with the red 10 gauge battery charging wire, a close inspection revealed that this side of the AMP gauge circuit was also suffering from a case of "terminal illness." (See arrow in photo at the left. This is the terminal used by the 10 gauge red wire at arrow "B," above.))

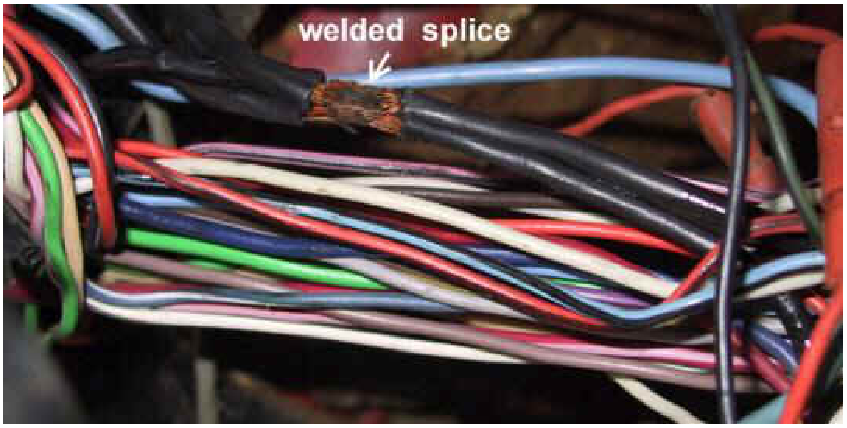


The plastic connector body surrounding the female flat blade terminal is beginning to melt away. And severe oxidation of the terminal itself is evidence that this terminal has been glowing hot. Notice that the other terminals in the connector body are still in good condition. The rusty appearance of this terminal is typical of wire terminals that have been hot while handling large amounts of current flow. (If moisture had caused the oxidation, all the terminals would have been corroded.)

We have opened part of the dash wire harness, to show the factory "welded splice" where wires branch off to the ignition switch, light switch, and the fuse box. (This splice is shown in Diagram A.) The "welded splice" is insulated by a factory installed, sticky cloth tape.



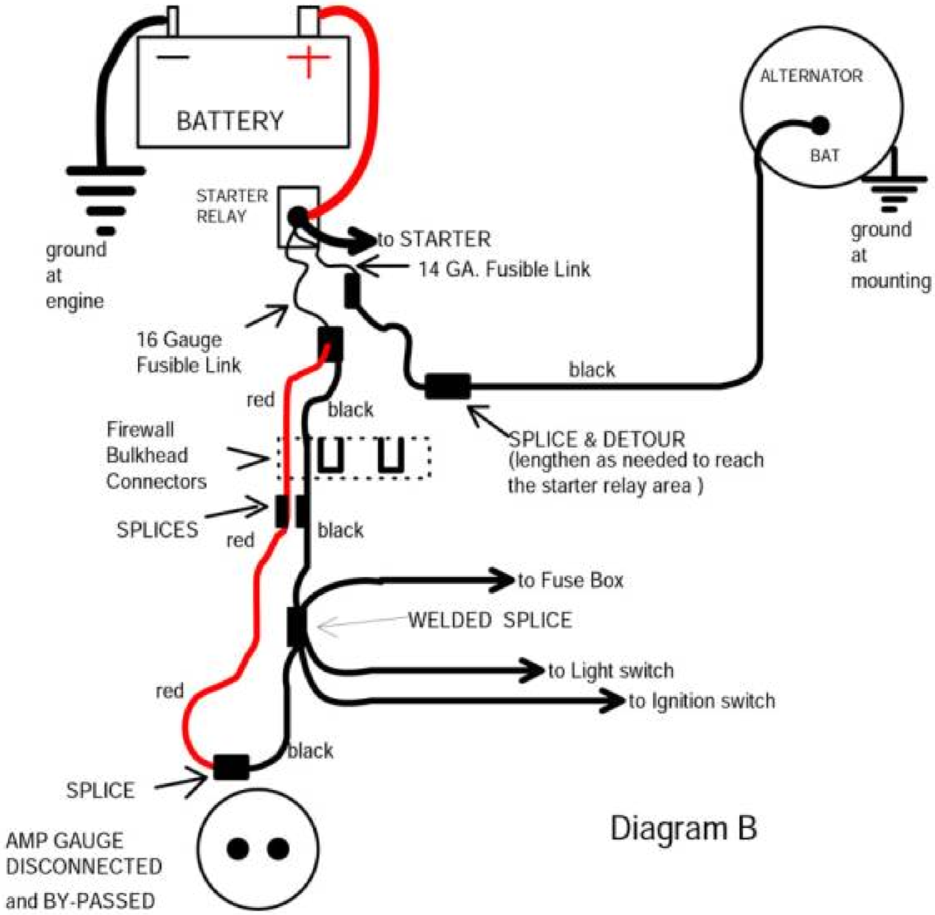
The original tape has been removed for this photo to expose the "welded spice."



Pressure and heat fused the copper wire strands together when making the splice. The method seems to be reliable, as in thirty years of workshop experience the author has never seen a failure with this splice. When electrical power loss occurs, this is certainly not the first place to look for the problem.

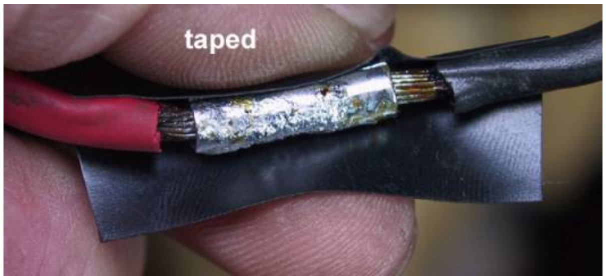
We have seen the weak areas, now we will make improvements. The male/female flat blade terminals for the AMP gauge wires at the firewall connector will be eliminated–because they are the weakest link in the system. The AMP gauge will be disconnected and by-passed–because the gauge often fails and sometimes it burns dashes. Alternator output will be routed directly to the BAT. POS. stud at the starter relay–because it's the most direct routing of power. And, we will make use of both legs of the old AMP gauge circuit–because it doubles the strength of the main power-up circuit to the "welded splice," which serves as power distribution.

When everything is working properly, the alternator is the source of power to the entire electrical system. With this new system, we have alternator output delivered to the BATTERY POSITIVE stud at the starter relay. The stud at the starter relay now becomes the "main buss" for power distribution. Battery charging current will flow directly to the battery, via the positive battery cable. The "welded splice" in the dash wire harness still serves as a junction for power distribution–but now we are sending power to the "welded splice" through both of the existing wires that were part of the old AMP gauge system. And the AMP gauge is by-passed.



The system mostly uses existing wires that were already in the wire harness. But since we are disconnecting, bypassing, and ignoring the AMP gauge, we can rearrange the wires to form a much stronger system. The male/female terminals at the firewall connector are also by-passed, the wires now pass directly through connector body connection.

We have also used the proper Fusible Link wires for short circuit protection. A 14 gauge Fusible link is protecting the 10 black wire circuit to the alternator. And a 16 gauge Fusible link protects the power-up wires to the "welded splice," which serves as main power distribution to the dash area.



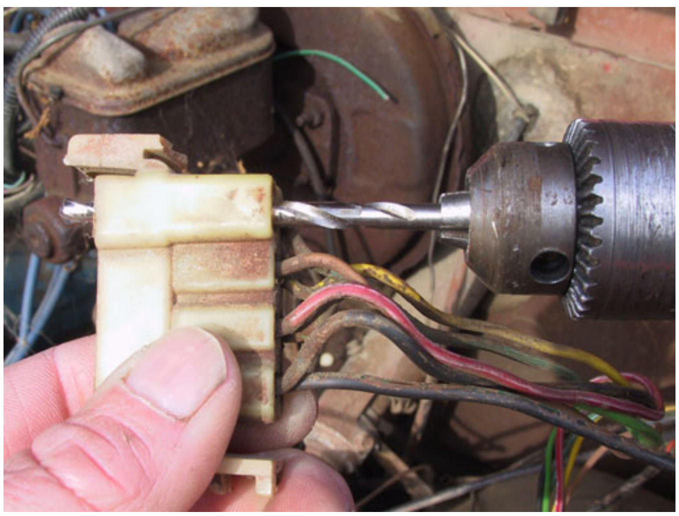
Craftsmanship and wire splicing methods will be critically important to reliability with the new system. We are working on wiring that must handle large amounts of electrical power every time the truck is driven. Our work has to be good or the outcome will be no better than the weak factory system. We have to use a few splices to complete the up-grade, and splicing is a job that not everyone does well. Resistance at all spices and connections must be minimized. Crimp-on butt connectors with yellow plastic insulation, wire nuts, or twisting and tapping wire together will not be reliable splicing methods. The old method of crimp first, then solder, then insulate is still the most reliable.

The best parts for the job are non-insulated butt connectors, which are made of copper and are tinned with solder. Good quality shrinkable tubing will insulate the splice, and a length of it must be slipped down the wire before installing the butt connector. We will also need a soldering gun or soldering iron, and a lead/tin rosin core solder.

After stripping the ends of the wires, we slipped shrinkable tubing down the wire. Then we ***crimped*** the non-insulated butt connector onto the wires. And ***then soldered*** the connection.

Electrical tape may be used for the first layer of insulation, before slipping the shrinkable tubing into place. (We are using this option because it provides a little extra padding and insulation over the splice.)

Then slide the shrinkable tubing into place, and apply heat to shrink the tubing tightly for a good seal. A disposable lighter works well when there is no breeze. A heat gun works very well and is safer too, as it is flameless. Hair driers do not produce enough heat to activate the better shrinkable tubing. **(The splice shown in the photos above is where we have disconnected and by-passed the AMP gauge at the dash.)**



Using a drill slightly larger than the O.D. of a 10 gauge wire, we are drilling out one of the slots in the engine side of the firewall connector body. A new wire will pass directly through the connector body without the weak male/female terminal arrangement.

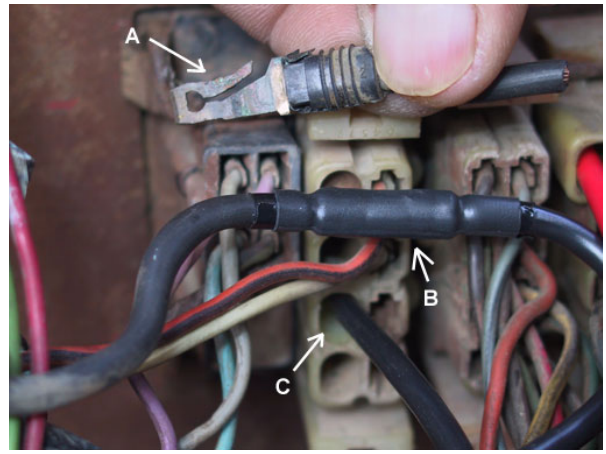
Both sides of the bulkhead connector must be drilled–the engine side and the dash wire harness side.

In the photo above, we are drilling out the dash harness side of the bulkhead connector. Before drilling this side, check from under the dash to be sure that wires are clear at the backside. And drill just deep enough to go through the connector–there are many wires at the other side, which could be damaged by the drill.

This connector body is easily dismounted from the firewall by releasing the latches. Removing the connector body and then dragging it under the dash will allow drilling it from the other side. With either method, be sure to get the correct slot so that the holes in both of the connector bodies will be aligned after assembly.

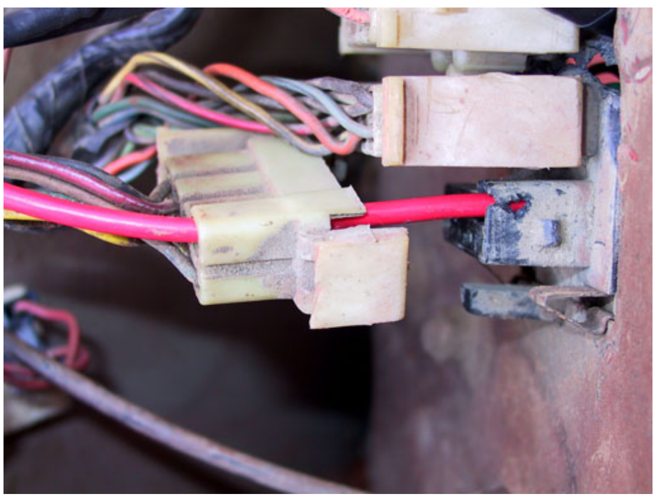
Often the old terminal is melted into the plastic connector body and tightly embedded. If the terminal cannot be removed without breaking the connector body, then we can use available unused slots for the new direct pass-through.

We have cut the original 10 gauge black wire from the alternator to the connector, and then removed the terminal with wire remnant from the connector body. (see arrow A)

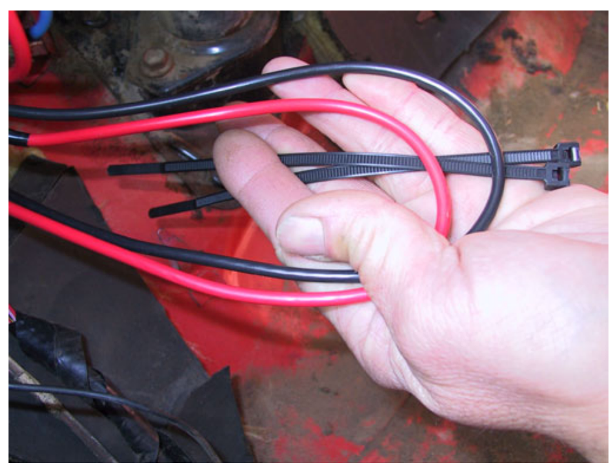


Splicing on a new length of wire has lengthened the original alternator output wire. Now it is routed to the starter relay, where a fusible link will be installed. (Arrow B points to the splice.)

At the dash side of the firewall connector, we also cut the wire and removed the terminal from the connector body. And we lengthened the wire at the dash side–it now passes directly through the drilled out connector bodies. (see arrow C)



At the dash side of the firewall connector, we have cut and lengthened the red and black 10 gauge wires. Both have been left long enough to pass through the holes drilled in the connector body and reach out to the starter relay area. Plus we added an extra 12 to 15 inches in length, which will be bundled to the dash harness.



The extra length bundled at the dash side of the wires will provide opportunity for service work. Should we ever need to inspect, test, or clean other terminals at the connectors, we can always remove the nylon ties and drag the extra length of wire through the connector bodies. Then the engine side connector body may be unlatched and slipped over the 10 gauge wire for access to terminals in the connector.

The photo at left shows the fusible Link installations, where the new wires will connect to the battery positive stud at the starter relay.

The red and black 10 gauge wires connect to a 16 gauge fusible link wire, which is actually identified as a metric size on this particular fusible link. (1.0 sq mm is the metric equivalent of 16 **A**merican **W**ire **G**auge size.) This circuit powers up the welded splice in the dash harness, which powers up all switches, fuses, and circuits at the entire dash area.

Short-circuit protection for the black 10 gauge wire to the alternator is provided by a 14 gauge fusible link (the light colored of the two, which is actually a 2.0 sq mm metric equivalent.)

The up-grade really is quite simple, and it does provide remarkable improvements to reliability and electrical system performance. The Dodge alternator/voltage regulator system will perform well with the up-grade. Expect more consistent voltage throughout the system as resistance is significantly reduced at the main power wiring.

Craftsmanship will have to be good, for the new system to be reliable. We are working with the main power delivery to the entire electrical system. Current to operate the entire system will flow from the alternator, through this circuit, every time the vehicle is driven.

Crimp-on connectors will not be good enough! They are prone to “Thermal Run-away” problems, which is exactly what happened to the crimped on butt connector shown in the above photo.

M.A.D. offers very quality non-insulated terminals made of “tinned” (solder coated) copper, which are perfect for the crimp first, then solder, then insulate with shrinkable tubing connections. (As with the splice that shown in this feature.)

The “tech is made simple” book, also available in through the M.A.D. catalog, teaches splicing and soldering techniques, all about the “Thermal Runaway” problem, and all about Fusible Link wires.

And the M.A.D. catalog offers excellent wire strippers and terminal crimping tool, ideally suited for this kind of work.

MAD™ ENTERPRISES

Adding shoulder belts or rear seat belts to vintage cars

While vintage cars are wonderful in many ways, safety is usually not on the list. The brakes on Plymouth Valiants can need beefing up, crumple zones don't exist, side impact standards were decades away, and rear seat belts were an option for years! Front shoulder belts were a nuisance from their introduction in the early 1970s until 1974, when they finally reached the modern era.

There is good news, though. You can, with some work and imagination, add shoulder belts to front and rear seats. The bad news is that they may not be as safe as the ones installed in modern cars - but we suspect they are better than nothing. Proceed at your own risk, we cannot be held liable for the consequences of reading further.

When I told him of my concerns on buying a 1965 Dart for my family, Bill Watson wrote:

The front belts would have to be mounted on the "B" pillar, or on the upper door frame if it was a hardtop. I believe you would have to do some beefing up in the mounting area, especially in the case of the hardtop.

You could check the "B" pillar of a model with the shoulder belts already installed. You might be able use the bits from that car in the one you want to install the belts. This is something I have heard others talk about, but never heard what happened when they actually went through with it. Next time I visit the local yard, I'll have to take a closer look at the mounting hardware.

The floor mountings should be no problems as Chrysler had the floors drilled for belts, front and rear, from at least 1962. My 1965 Valiant has plates with a threaded bolt welded in place where the belts go (it only has front belts, but these plates are in the rear as well). My 1962 Valiant and Lancer have the holes front and rear with belts only on the front. There are no mounting plates, but the belts have a nut and bolt arrangement with a large round "washer" inside and out. The one under the floor is about 3" in diameter. The "washer" takes the strain in the case of an accident and spreads it over a larger area.

You could do something similar with the shoulders belts, just make sure they are round. The corners of square or rectangular ones could cut through the floor, or whatever panel the belts are mounted, in an accident. I suppose welding these plates/washers in place would also strengthen the support.

The seat belts, depending on their length, could be mounted at the same spot as the lap belt. Or, you could drill a hole through the floor in the area over the axle. This spot is higher than the floor where the seat is, and thus you would not need such a long belt. Also, the steel is thicker - just use a plate to add extra strength to the mounting point.

I cannot think of another point, unless you tried the wheelhouse, on a flat area. Again that would mean a shorter belt, but would need those plates to add more strength to the mounting point.

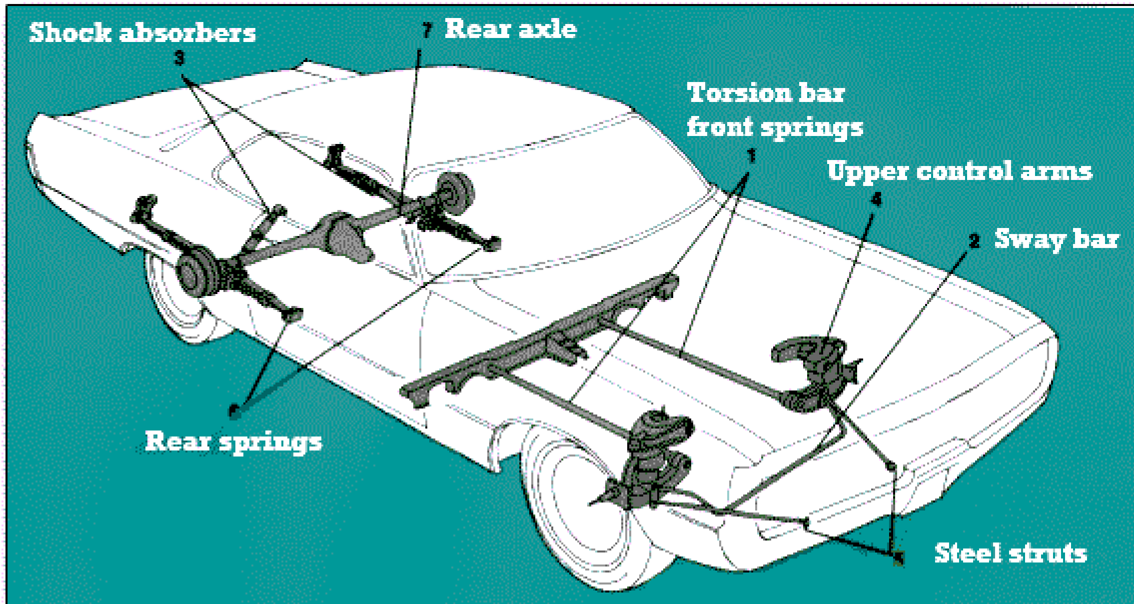
Some may consider it sacrilege, but I view it as being the same as installing turn signals on cars prior to 1955. They are a safety feature, and given the traffic these days, perhaps a safety necessity. The previous owner of my 1962 Valiant installed rear belts, and I will be doing the same with the other two. You have given me thought about installing front shoulder belts now, especially in the 1965. That one is my daily driver (or will be again when the new rear springs are installed).

Mopars in the Media

Source – Allpar.com

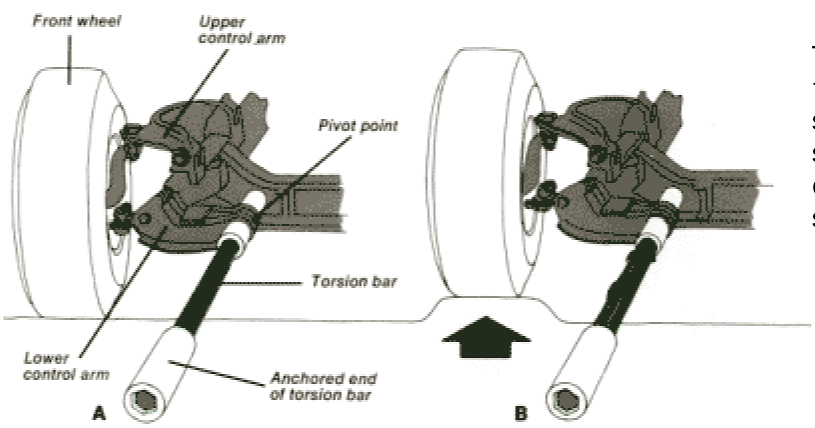
Chrysler Torsion Bar Suspensions (and Leaf Springs)

The torsion bar suspensions were used across the entire Chrysler Corporation lineup for decades, from Valiant to Imperial, after being originally devised (in Chrysler's form) by engineer Bob Batchelor; torsion bars were also used in European cars and the Cadillac Eldorado / Oldsmobile Toronado. One thing that made Chrysler's implementation unusual — other than its universal use — was the use of rear leaf springs with the front torsion bars, instead of rear coil springs. Though the main reason for using rear leaf-springs was most likely cost, Chrysler could boast of some advantages.



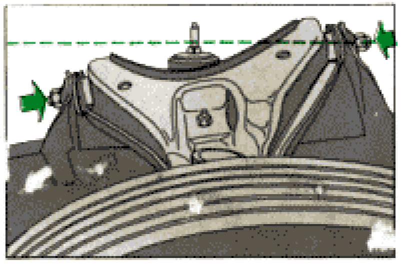
First, let's go over the components. The torsion bar front springs used a high proportion of chromium in their steel (though snapping was still not as infrequent as it could have been). The anti-sway bar resisted lean in turns, with various degrees of success depending on its thickness and the suspension tuning. Shock absorbers limited suspension oscillations. Diagonally mounted steel struts reinforced and positioned the front-wheel lower control arms. Widely spaced, off-center mounted rear springs cut acceleration squat and also resisted brake dive.

The angled upper control arms resisted brake dive; and in newer versions of the torsion-bar suspension (used in the 1970s and later) the upper control arm had a front pivot higher than its rear pivot instead of at equal height so that weight would shift forward when the brakes were applied, counteracting the extra weight caused by braking and helping to keep the car level. Likewise, the rear leaf springs were off center, with the rear axle mounted on the thick forward sections of the springs instead of on the centers, so that the stiffer forward sections of the springs would support the body during acceleration and braking shifts. The long, flexible portions behind the axle benefited the ride.



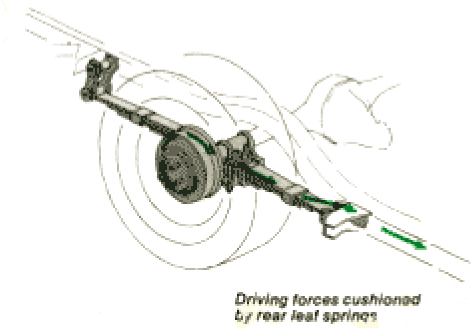
The rear leaf springs were fastened at two points to the understructure for stability, while coil springs mounted in a single place and required stabilizing bars or links. The wide spacing of the leaf springs also helped stability. More to the point, the leaf springs cushioned driving and braking shocks, resisting dive without firm tuning. They also were better at adjusting to varying loads, at least when using multileaf setups (there were monoleaf springs on some base models). The lighter loads were

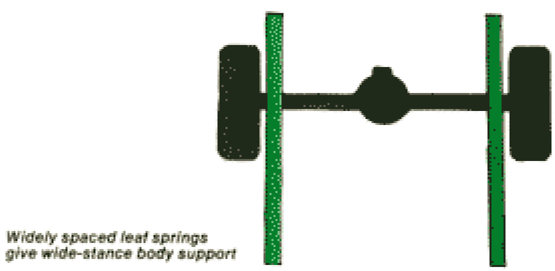
Pivot points on control arm

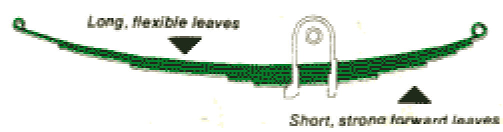


Rear axle resting on leaf springs

handled by the long, flexible leaves, and heavier loads by the short, stronger leaves. This essentially provided a substitute for the now-common variable spring rates.



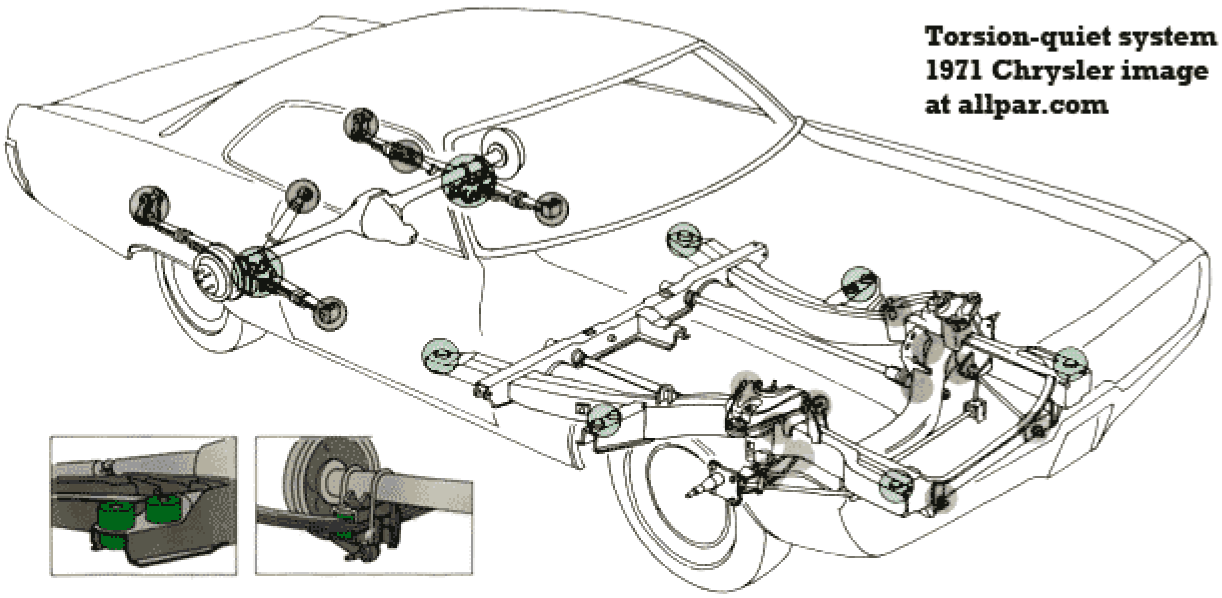




The front end of the torsion bar connected to the front wheel’s lower control arm; the rear end of the torsioon bar was anchored in the sub frame so the bar could not turn. When the front wheel rose over a bump, the lower control arm pivoted around the points where the torsion bar was mounted, twisting the bar. The chrome steel in the bar resisted the twist, holding the wheel on the road.

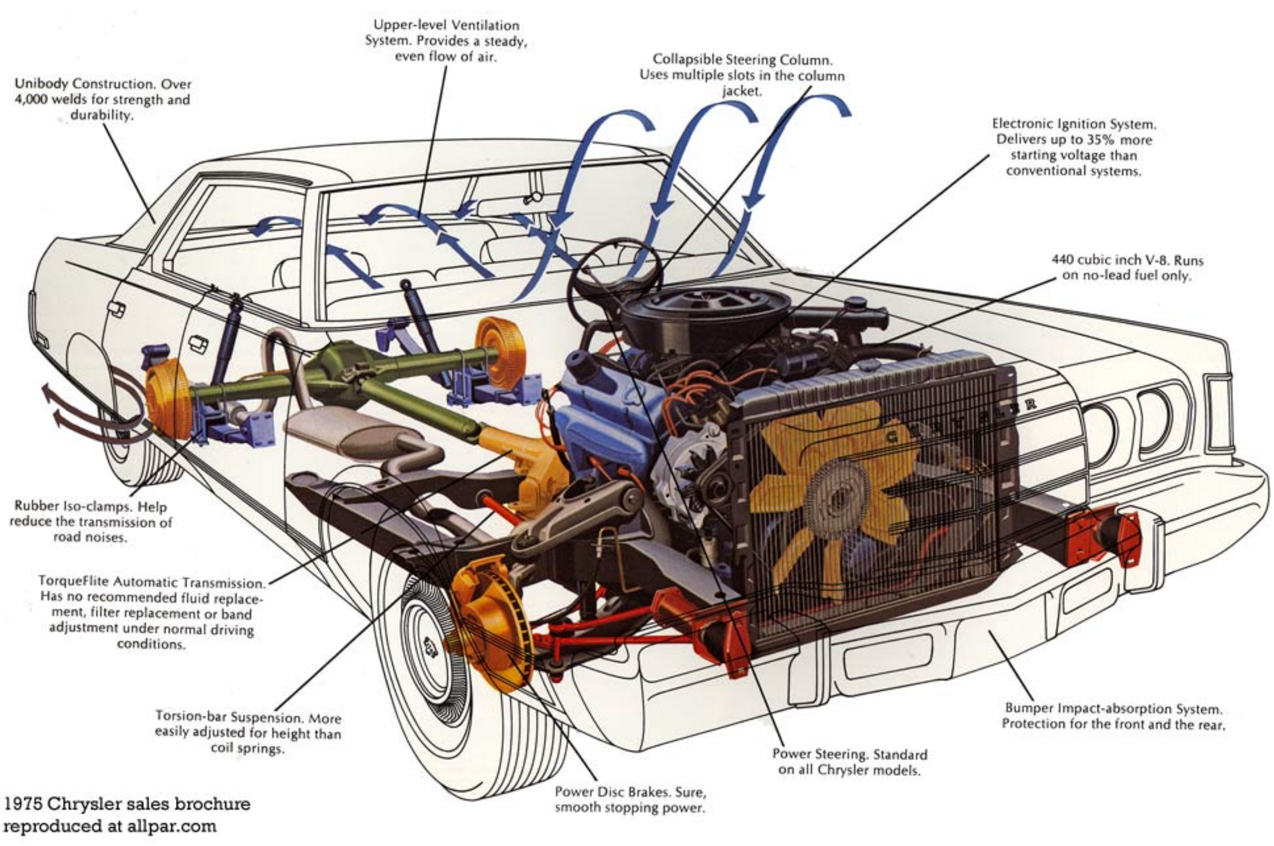
One advantage of the system used by Mopar tuners through the years has been the ability to easily raise or lower the front end of the car by adjusting the torsion bars; with coil springs, the springs must be replaced. Likewise, if the car sagged with age, the torsion bar on that end could be replaced while a spring would be shimmed or replaced.

The related Torsion-Quiet system described rubber cushions which isolated the subframe and leaf springs, reducing vibration and noise the same way that rubber engine mounts do. The problem, though, is that as isolation was added, stiffness was necessarily and by definition reduced, so that cornering was degraded.



For decades, using torsion bars rather than the systems used by GM and Ford on most of their vehicles helped Chrysler to have a smoother ride with better cornering than they would have with a more conventional (given the times and costs) system. Through the years, Chrysler vehicles tended to corner better than their domestic counterparts - or felt better. The company eventually went to other designs, when their cars were downsized, and the advantages of torsion bars were outweighed by the disadvantages - a clear and unavoidable tradeoff between noise, vibration, and harshness on one hand, and cornering capabilities on the other. The more isolation was added, the worse the cornering would be.

Here's a color cutaway showing some of these components:

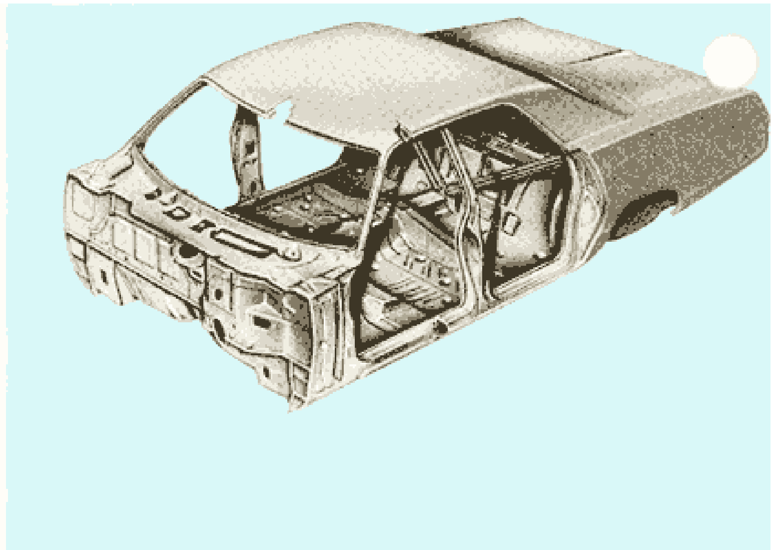


This is how it fit in with Unibody:

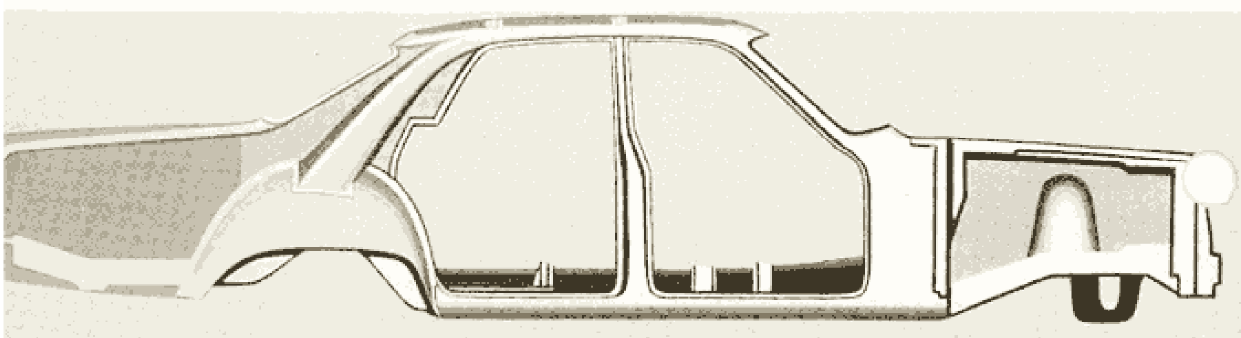
Unibody... a rugged basic structure

There are two basic ways to unite the body and the frame of a car. One way is to build the body and frame separately, and bolt them together. That's the way most competitive cars are built.

The other way, used by Dodge, is to build the body and frame as one unit. In this single body-frame unit, called Unibody, the structural members are welded together, so all of the elements contribute to the overall strength of Unibody. The elements reinforce one another. Monaco and Polara use a sub-frame assembly up front to support the front suspension, engine, transmission and steering. This sub-frame is completely isolated from the body by thick rubber cushions that help to damp out vibrations and sounds.



Steel beams and braces welded into Unibody for strength. Box-section steel beams, U-shaped steel channels and other steel braces are welded-in parts of every Unibody. The see-through illustration shows how these welded-in beams form a structure that surrounds the passengers and extends to all parts of the car body. Box-section (four-sided) beams are used in areas where maximum strength is required—front and rear underbody supports, side sills, windshield framework, roof side rails, rear window header and door pillars.



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Mopar Muscle Cars of Austin 10th Anniversary License Plate Frames.
These are metal frames with black-on-white lettering. Frames are now officially real cheap!
Contact Harry Amon (512) 345-5832 and he might just give you a pair (or charge $5 each, $8 for a pair). 8/06

Mopar Muscle Cars of Austin gift store
Check out the many item in our new gift store. From T-shirts to beer mugs to lunch boxes, it's got it all.
Go to www.mopar.org and click on "SHOP".

-Need help with your Mopar Project? (Especially E-body) Give me a call, I like to help others with their restification.
Call Chris Ryon (512)699-0629 (10/08)

Good set of Performer LT Radial A/P RWL truck tires, 265/75/15, $100, good looking tires for your old truck.
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Lots of Full Size Jeep parts, interior, wiring, trim, lights, switches, flared fenders, etc. -cheap-
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400 Big block, 40K miles, turns freely, no intake, thermoquad carb. Needs rebuilt. $300
Call Chris Ryon (512)699-0629 (10/08)

68 Barracuda fastback, 318, new 600 Holley, Offy intake, old school Al valve covers, HP manifolds, duels, 8 ¾ rear, 727, console floor shift, recovered black buckets, white panels rallye gauges, some rust at hood edge and behind rear wheels, 14" small bolt rallye rims, electronic ignition, runs, but needs work. Drum brakes, have discs ready to go on. $5000
Call Chris Ryon (512)699-0629 (10/08)

-65 Barracuda drivers side rear wheel molding. $15
-65 blue Barracuda fold down rear seat(needs recovering) $65
Contact Dustin at hell_fish_65@hotmail.com (10/06)

440 Valve springs and retainers good for .540" lift (new in box)
Contact Isaac Jackson (512) 251-8999 (10-08)

Parting out 400 Mopars, 1953 to 1976, southeast of Austin. Email your parts request to **DrMopar440@aol.com**
Web: http://www.drmopar.com (10-06)

Items Wanted

Want to buy junk Mopars in Austin area
Contact Glenn at 512 376 6600 after 6 PM (6-06)

Help Wanted/Given

Computer and some HTML help given. I will be glad to help any club members that need a hand.
Contact Dustin Cloud at 680-9958 (6-06)

General auto help available, looking to gain mechanical experience. I'll try to work around my buy schedule.
Joe Hoppe 452-6400 (6-06)

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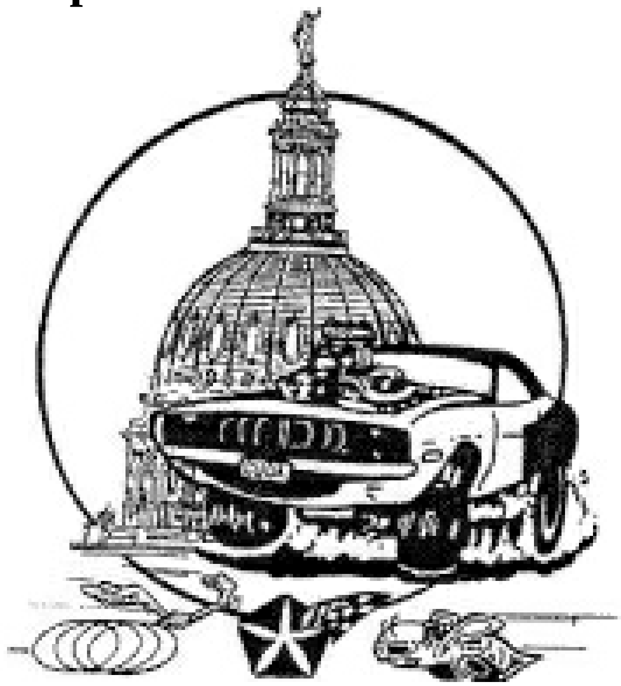

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