This section deals with various aspects of body and frame restoration and maintenance.

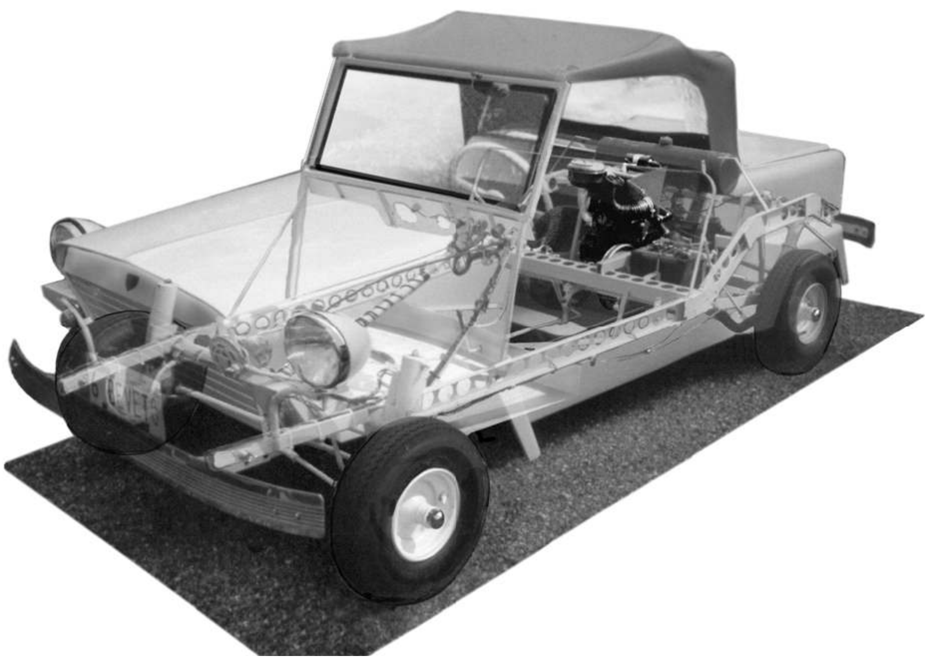
Section

C

Body & Frame

C-1 Lighten Up *By John White*

Bob's book, which is due back from the printers about now, tells how Claud and Dale built a series of prototypes before settling on the design of the Model 2. From what we know of those prototypes, they seem to have had one thing in common. They were too heavy. In building the final prototype that became the Model 2, they put a lot of effort into reducing the weight of the car. One of the most obvious techniques they used was punching holes in the frame.



So, how much difference did adding those make? Let's do a bit of math to find the answer to this question. The main frame rails used in the Model 2 were three inches wide with a one-inch leg at the top and bottom. They measured 87 inches in length. Each rail has 30 two-inch diameter holes punched in it plus one for the front cross member. How much weight would have been added if Midget Motors had just saved the work of punching holes?

Okay, the rails are made from 1/8” thick steel (or possibly 12 gauge; both are very close to the same thickness). Twelve-gauge plate weighs 4.375 pounds per square foot (144 square inches). If flattened out, the frame rail would be 5” wide by 87” long, or 435 square inches. Dividing 144 into 435 we get 3.0208333 square feet of metal in each rail. We’ll round this up to 3.021 square feet. To determine the weight of each non-punched rail, take 3.021 multiplied by 4.375, giving us a weight of 13.216875 pounds. That’s less than I thought it might be.

Next let’s figure the weight of the punched circles for the holes that were removed. Each hole is 2” in diameter, a radius of 1”. The area of a circle is equal to the value of Pi multiplied by the radius of a circle squared. Using this formula, 3.1416 x 1 squared. 1 squared is 1, so the area of each punched circle is the value of Pi, or 3.1416 square inches. If you multiply the area of each circle by the total number of circles, 31, you get a total area of 97.3846 square inches. Dividing 97.3846 by 144 gives us .68 square feet. The weight saved by punching the holes in each frame rail is 2.96 pounds. Each rail would weigh around 10.26 pounds in total. So the difference would have been 26.44 pounds for non-punched frames, versus 20.52 pounds for punched frames. A savings of 5.92 pounds of weight. Hmmm. Not nearly as much as I had thought it would.

But then considering the Model 2 went into production with only a 7 ½ horsepower Wisconsin AEN, I guess every little bit helped. If you take a 1952 Model 2 with the Plexiglas windshield, no winter enclosures, and (I’d assume) excluding the two-speed transmission option, it was advertised as the 500 pound car. This would work out that the 7 ½ horsepower Wisconsin would have to haul 66.7 pounds for each horsepower of the engine … ouch! That’s not counting passengers. I’d also assume things weren’t much better when the engine was upgraded to 8 ½ horsepower, because by then Midget Motors had changed to a heavier glass windshield, along with adding other changes and options.

When you consider all the effort of stamping out each of those frame holes individually, you might wonder why they bothered, just to save six pounds. But that’s just an example of their approach to the design. They saved a lot of weight compared to the earlier prototypes in many other ways, and in total appear to have reduced the overall weight by perhaps as much as a third.

Let’s look at a Model 3 King Midget’s frame and see what happens when the figures are run for the frame rails and center cross member behind the seat. Using the formulas from above, a single rail along one side (3”x1” channel) has a surface area of 458.44 square inches or 3.18 square feet. The rail thickness is the same as above at 4.375 pounds per square foot. The rail weighs in at 13.93 pounds per rail, not punched. The punched out holes number 30 holes per rail. The front punching, like the Model 2 frame rail, is for the front cross member. If we remove the weight of the 2” diameter punch outs, we find a savings of 2.96 pounds per rail. Two un-punched rails would weigh 27.86 pounds; with the punch outs 21.94 pounds. Not bad. Only a gain of 1.42 pounds over the Model 2 rails (though the Model 3 frame weight is increased by extra gussets due to its arching up over the rear wheels).

But wait. Now let’s also consider the cross member behind the seat. It is made up of two 3-inch by 1-inch pieces of channel, that are of slightly thinner material than the side frame rails. It looks to be 14-gauge stuff. The cross member measures 39 inches across and the perimeter would be 10 inches. This would give us a surface area of 390 square inches, or 2.71 square feet. The weight of 14-gauge steel comes in as 3.125 pounds per square foot. Total weight of a non-punched cross member, 8.46 pounds. The cross member car has 16 holes on top and 14 holes on the underside totaling 30 holes. Each hole is 1 ¾" in diameter. Total weight savings with the holes added; 1.56 pounds. This would knock the weight of this cross member down to 6.9 pounds. Total weight of these three parts is 28.84 pounds, reducing the total frame weight by 7.54 pounds due to punching those holes. It would seem then that most of the weight of the Model 3 was added in the engine cradle assembly and wheel cradle assemblies (springs, panhard bar, torque arms etc…).

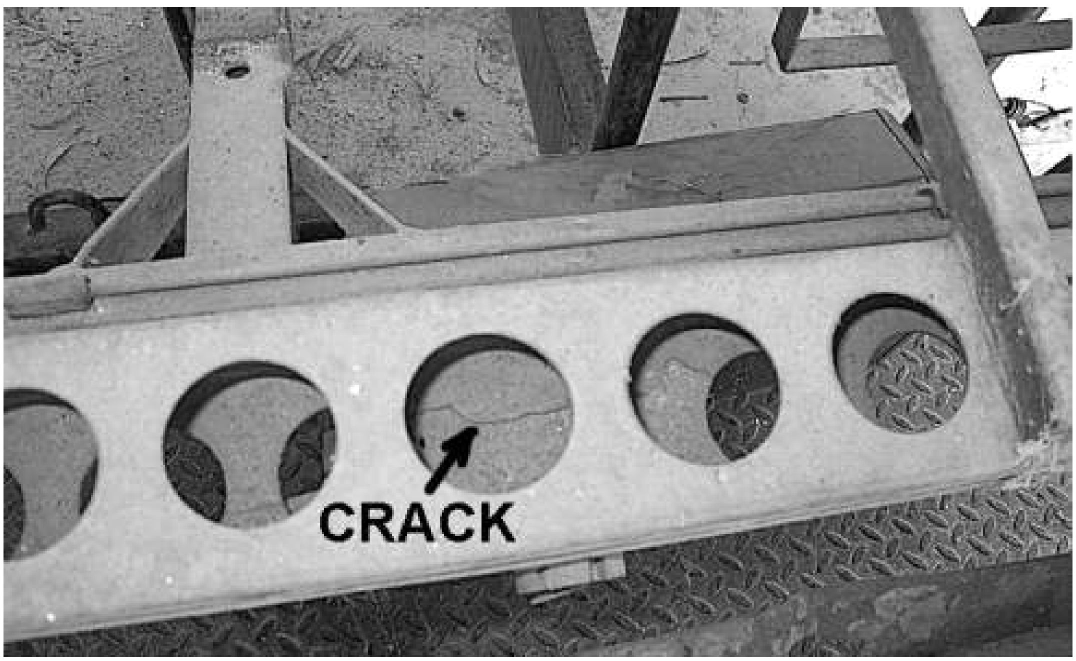
So was this extra work worth the time? If you had a Model 2 without the holes in the frame it would weigh about six pounds heavier or 67.4 pounds per horsepower versus 66.7 in the example above. A Model 3 at 670 pounds would increase to 678 pounds. How would this affect horse power of the Kohler 12 horse engine? Un-punched it would figure to 56.5 pounds per horsepower; punched out 55.8 pounds per horse. Like I stated, every little bit helps when you are working with the small engines that were available to Midget Motors at the time they were in the car-building business.

Many other things also helped Midget Motors save weight on their cars. The use of integral hub wheels (containing bearings and seals in the wheel itself) and the brake drum welded to the wheel, compared to a bolt-on wheel with separate hub and brake drum. I don't have a weight for the brake drum Midget Motors used, so I'll just use the wheels and hubs as examples here. Integral hub wheels come in at around 6 ¼ pounds per wheel, while the bolt on wheel (4-bolt) is 4 3/8 pounds. But wait, now you'll need a hub to bolt the wheel to. Hub assembly (¾"bearing), 3 ¾ pounds. Now your bolt-on wheel and hub assembly combined come in at 8 1/8 pounds, a gain of almost two pounds per wheel. Four wheels on a King Midget—an added weight of 7 ½ pounds. And I didn't include the brake drum for either example. So overall I think Midget Motors managed to trim weight where they could and still have a decent product. □

C-2 Frame Theory *by Bob V.*

How much strength did the King Midget frame lose because of all those holes? Practically none. The strength of a beam is mainly in its top and bottom web and what goes in between serves mostly just to keep those upper and lower parts organized and working together. That's the principle behind the design of an I beam and all sorts of other structural sections. If, for example, they'd made a full rectangular tube of similar dimensions, the weight would have nearly doubled, with very little additional strength.

On the other hand, we're talking a general rule here. Where point loads are involved, such as where the Model 3 frame makes its bends to rise above the rear wheel, they were wise to add those gussets because those are stress points and different rules apply.



In the cross member, John notes they used a pair of C channels, and where the engine cradle attaches to that cross member, they omitted one hole. That's because the cradle introduces a "point load" where it attaches, inducing a lot of stress. It appears they did not anticipate just how much stress, since that is a common point of structural failure, as evidenced by the photo below. In doing a restoration, especially if your frame has a crack there, consider welding a gusset to the bottom. It may not be entirely authentic, but perhaps Claud and Dale wouldn't mind. ◻

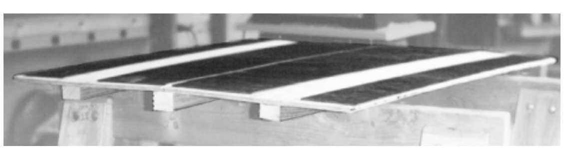
C-3 Get the Sag Out *Bob V.*

The boys at Midget Motors liked to note that their cars were made of the same thickness steel as "regular" cars. What they didn't say is, it was generally pretty soft stuff. That softness was complicated by the lack of compound surfaces. Bottom line, King Midgets are awfully easy to dent, and hard to repair properly.

The hood is a particularly tough challenge. Kids can't resist sitting on it, and it only takes once. Most have been caved in numerous times. If you reach inside and strain a little, most of the dent can be "oil-canned" back out, and it doesn't look too bad.

After a few such incidents though, the steel stretches and stays sagged.

The hood of my `64 was in decent condition, all things considered. That's it in the top photo (below) after being stripped and reshaped to tighten the radius of the corners (a styling detail I wished they'd done at the factory). Notice in the top photo the long level I put on it. You can see about an inch of light from the barn window sneaking in under the middle of the level. Not good. From the factory, that metal would have been straight. Those little grooves or raised channels were supposed to stiffen the hood and prevent sagging, but they were too shallow.



My objective was to "reverse" the sag. Instead of dropping an inch, bring it up an inch. Having never done sheet metal work, I had no idea how to accomplish the trick, but as you can see from the middle photo, I did at least get it back to a bit past straight.

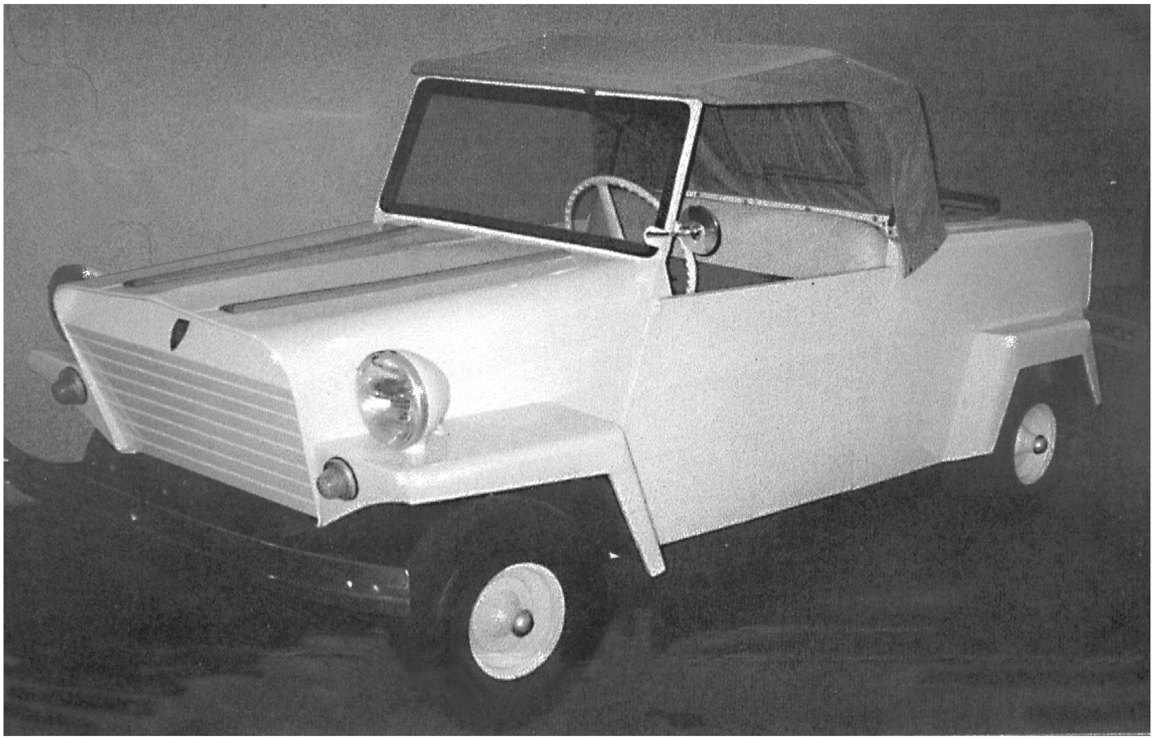
Look at the bottom photo. I took three strips of oak the length of the hood and sawed them into a curve having about an inch rise at the middle. Then I cut two pieces of plywood roughly the shape of the two halves of the hood. I joined them on the middle (wider) strip of oak, creating the shape I wanted for the hood.

Next I glued on strips of rubber mat, except where the hood grooves run.

Getting this assembly blocked in place was a challenge, but it fit. Next I drilled holes through the hood and dimpled them to "countersink" the screws that hold the whole works in place. It's important to run the screws into the oak. After the screws were tight, I filled them with Bondo, and that's all there was to it. □

Note: Two mistakes: I used brass screws, which have a different expansion ratio than steel, and I didn't allow long enough for the Bondo to completely cure. That’s why they tell you to put it on thin … and have patience! Bob V.

C-4 Hood Stiffener *by Bob V.*



The car above belongs to Jay Kaufman of Scottsdale, AZ. The Gneppers sent me this photo, of special interest because of the hood. Look closely. Jay's car has two oak strips set into the "stiffening" channels of the hood, complemented by an oak carrier on the deck. That's a clever way to strengthen the hood and add a nice touch at the same time. Thicker strips might be better yet. □

C-5 LETTERS: Deck Lid

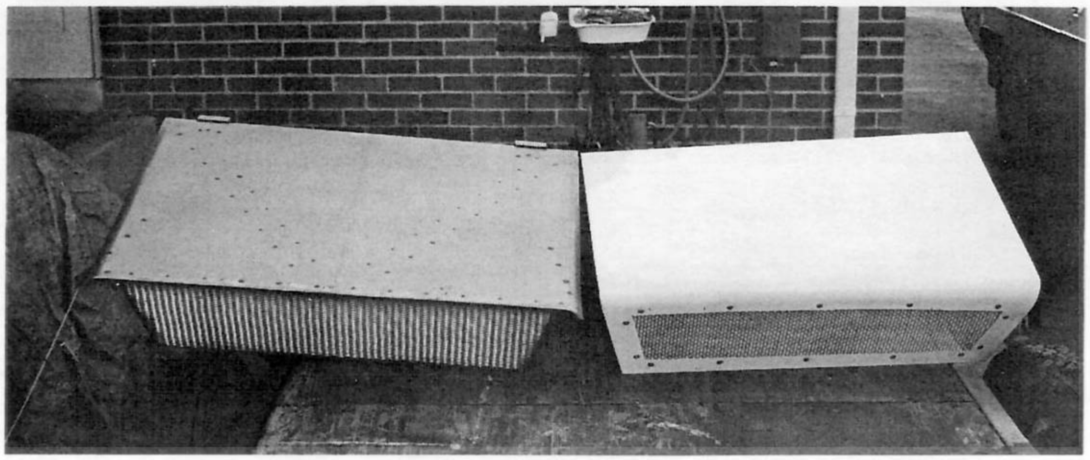
The deck lid is rough. I think it's got the wrong hinges; what kind were they? Was it a piano hinge or two separate 2" by 2" hinges?

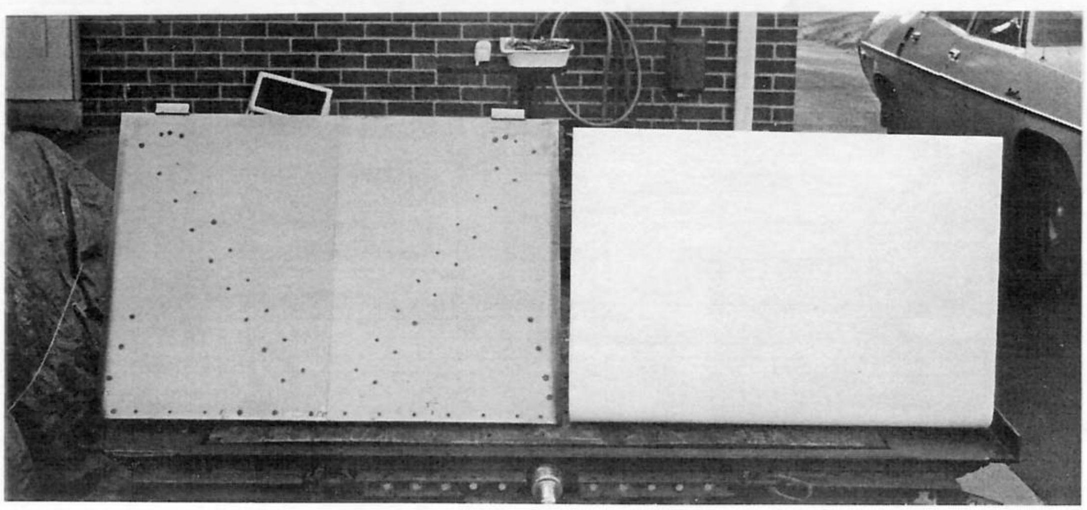
Some were piano hinges and some were 2x2 hinges.

A good way to fix your deck lid is to use ordinary curtain rods pop riveted into the lip for stiffening. The rods fit nicely, add a lot of stiffness, and the curve is just right for going around the corner and fitting into the rod going the next direction. I wrote an article on this patch trick for *KMN* several years ago. I also used the same curtain rods to reinforce the bottom skirt below the bumper. The curtain rod's curve fits just right into the radius of those corners, too. To top it all off, I used a curtain rod to make a prop for the lid. **Bob V**. □

TECHNICAL NOTE #14 *John Weitlauf*

C-6 Two Different Deck Lids:





The deck lid at left in photos is used only on 1957 and 1958 cars. It is steel material and quite different in style and dimensions from the other deck lid. Right side photos show the aluminum deck lid used on 1959-1970 cars. The deck lids are not interchangeable. Both deck lids are being reproduced. Some of the last KMs reverted to steel lids that look the same as the aluminum. ☐

The Doctor Will See You Now TECHNICAL INFORMATION ***by Old Doc Buckeye***

C-7 Deck Latches

(Editor's note: Old Doc Buckeye has owned King Midgets for years and, although his whereabouts is a secret, he can be reached with questions through the Editor.)

Our first letter comes from a feller in Frustrated, New York. It begins, "Dear Doc Buckeye: Every time I open my engine cover, one of those darned hold-down latches slips down into the sill and I have to go through a long dance to get it up again. It's gotten to the point where I don't even want to check my oil!"

Now, boys, I saw this feller named Ralph Hatrack at the Jamboree and he was showin' off some pieces of 1/8" fuel line cut off about 5/16" long. He put them over the end of the latch down the straight part, and guess what? The part never slipped down. Pretty smart!

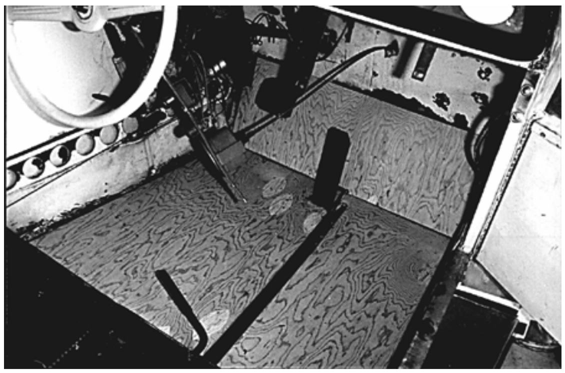
Dumb feller down the road saved a bunch of money by relining his brakes with molded semi-metallic lining. Those linings lasted a long time. Even when the drums were shot, the linings looked pretty good! Midget drums aren't made of hard cast iron like big cars, but of strap steel, which is soft. Want to line 'em up yourself? Get woven emergency brake lining for a Model "A" from the old Ford boys. Stops good, lasts long.

Winter's comin'. Use fuel stabilizer or drain out every drop of gasoline. This here new gas turns into trouble after 60 days. Oh ... maybe you were gonna rip that fuel system to pieces next spring anyway!

Keep drivin' them Midgets! ☐

C-8 Patching a Rusted Floor Pan *Bob V.*

Got a rusted and flabby floor pan? Who doesn't! Despite the "stiffening ribs," King Midget floor pans are notorious for rusting and sagging. On my `64, the pan was rusted through in many spots, scraps of metal had been pop-riveted in to cover major holes and the whole pan was rusty both inside and out. Looking at the challenge of replacing the pan, I decided to save the old one.

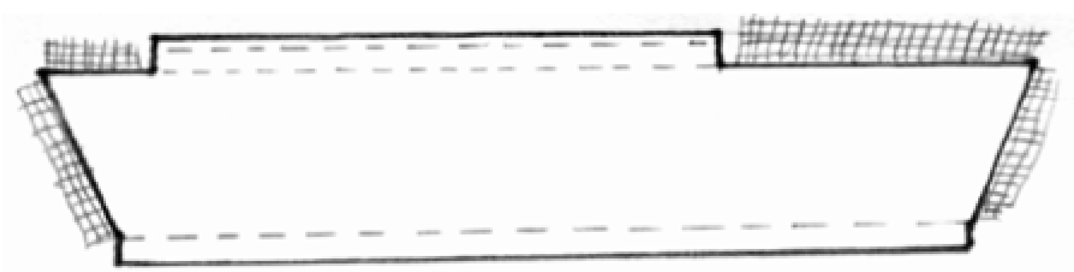


First, I cleaned away all the rust inside and out on the vertical sides of the floor pan. Underneath, it was impossible to get rid of all the rust, so I covered the steel with roofing tar on both sides as a sort of undercoating . Next, I cut pieces of quarter-inch exterior plywood to fit, leaving a channel for the accelerator cable as shown in the photo below.

With the car up on blocks, I supported the sagging pan with 2X4s and jacks, and ran screws through the rusty floor pan into the plywood, cinching it up against the plywood while the tar was still soft. Lots of screws. Next, I drilled through the pan and the plywood and permanently fastened the two together with pop rivets. Then the screws were removed, the holes filled, and a final coat of asphalt applied.

A new mat, cut from material available at the local builder's supply, fit better than the original, thanks to the channel provided in the plywood. The refurbished floor is flat and stiff, and looks great inside and out. It's not a permanent solution, but it was cheap and relatively easy.

For a worse case, try this trick. First cut out all the worst spots and remove the rust from what's left, both inside and out. Cut new galvanized panels long enough to reach between fenders and about a foot wide. Trim to fit; then bend a lip that hooks over the door sill and another underneath to support a new floor pan.



Prep the metal, then bond fiberglass cloth with resin to the back as shown. Rivet the bottom flap to the floor pan and bond the flaps to the body. A little Bondo to smooth the overlap and you're in business.

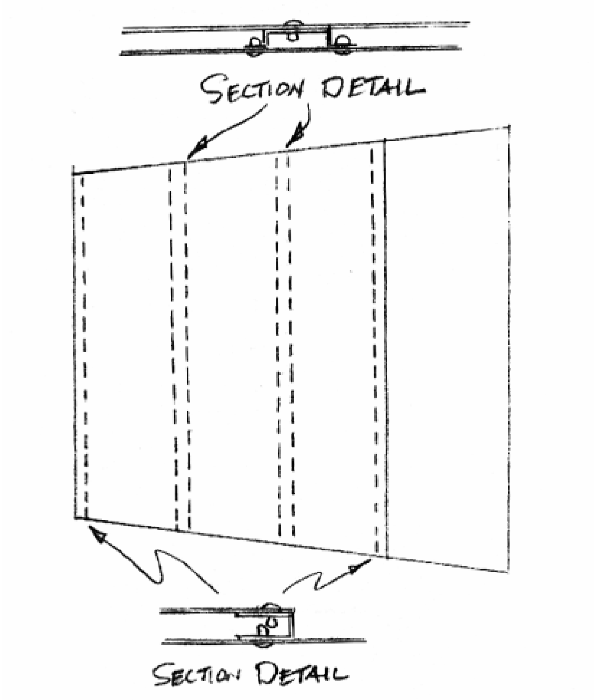
These tricks don't produce an authentic restoration, but Claud and Dale would probably approve. □

C-9 Floor Pans, Again *by Bob V.*

This is a follow-up to an article in this section of KMW #13.

The plywood, pop rivets and gunk floor pan plan has the merit of being cheap and stiff. Here's another solution that's just as stiff, just as cheap, and a whole lot nicer.

Fred Perry's floor pan was almost rusted out and sagging everywhere. He cut a piece of new steel to size (galvanized Fred? That would be best). Then he took two hat-shaped channels and two C-channels and pop-riveted them to the old floor. Those four strips should be stiff enough to suck in the Midget's saggin' gut, and hold it. Then pop rivet the new skin to the top of the channels, cover with carpet or rubber mat, and you're done!

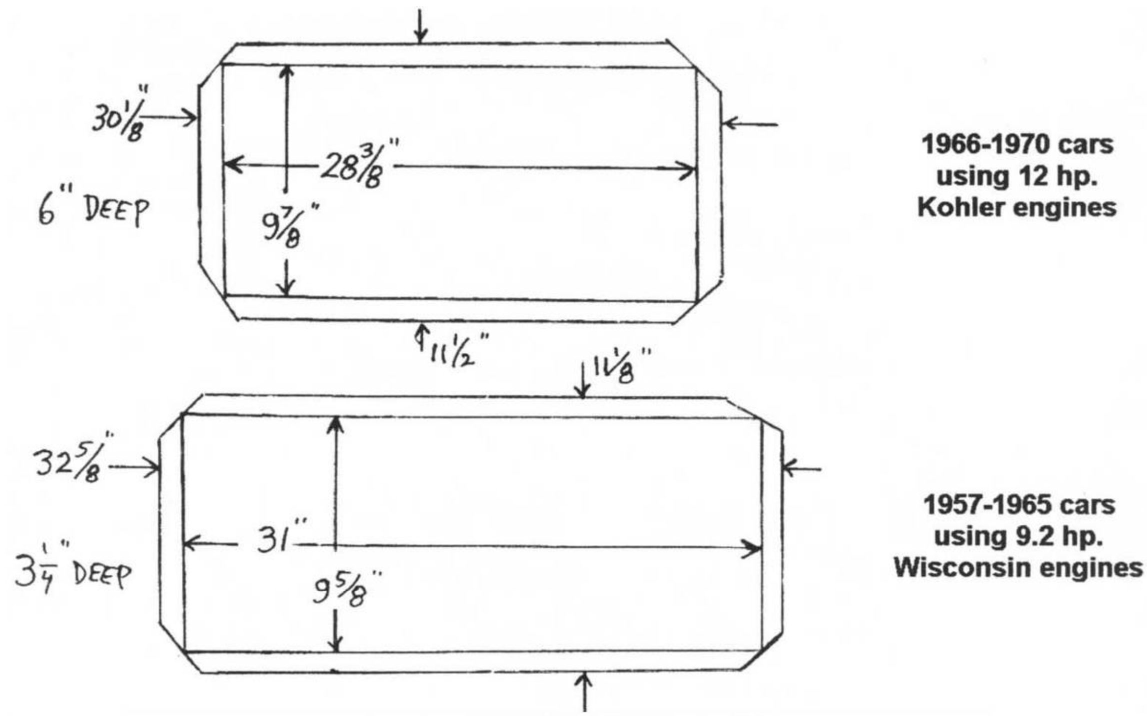


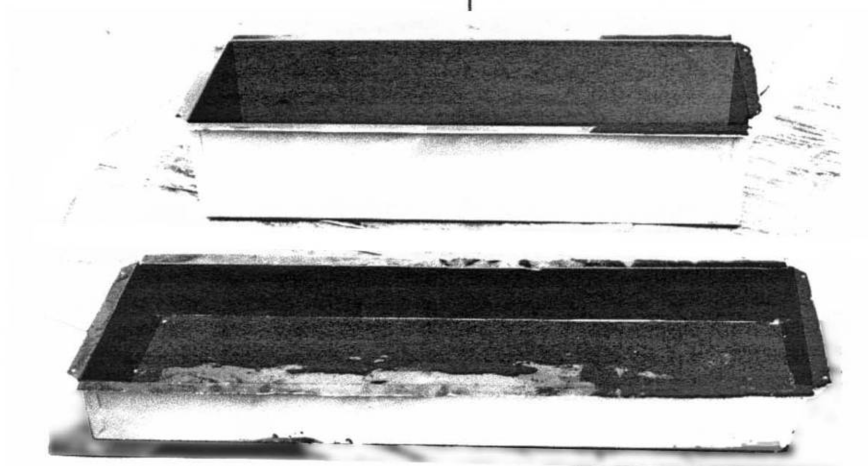
There would be some charm in bending flaps on the two edges, of a depth equal to the channels to provide added stiffness. Also, the new floor could be of plywood or some other material.

Fred says his approach "... got rid of most of the oil-can in the old floor and gave me a good surface to carpet over." ◻

Technical Note #21 *John Weitlauf*

C-10 Two Different Carrier Pans





C –

TECHNICAL NOTE #2
Heaters - "Funnel Shrouds"

Version 2 and Version 3 cars were available with heaters. There was no fan or blower, just a funnel-shaped sheet metal shroud to catch the hot air blowing over the head of the motor. See photo for original "funnel shroud" used on Wisconsin motors (up through 1965). Shown alongside to the left of photo were some reproductions I made up at one time ten years ago. A flexible metal exhaust hose about 2-3/8" fit over the opening and led to a hole in the floor pan under the driver's seat. If anyone has a good photo of the funnel shroud used on the 12 hp. Koehler engines, send it to me and I'll publish it. I don't believe there are any originals left for either type. Are they, perhaps, being reproduced?

At right, Alan Conley is making a point about the reverse transmission. This car has a proper heater shroud installed, but the hose to the driver's compartment has been coiled out of the way for the photo.

There's a cable beneath the seat that allows the driver to flip the shroud up (off) or down, to catch the heat blown past the engine's cooling fins. ◻

C-12 LETTERS: Door Hinges

The driver's door hinge needs replaced; it's busted and the door sags.

I'd guess you'd have no problem replacing the piano hinge on the door. Just get a similar hinge, and perhaps the next size bigger pop rivets to hold it in place, if the old holes are stripped. If the hinge is still there, you can probably reuse it, and if you don't want to drill bigger holes, use pop rivet washers. **Bob V**. □

C-13 LETTERS: Striker Plates

It's got screws missing from the striker plates.

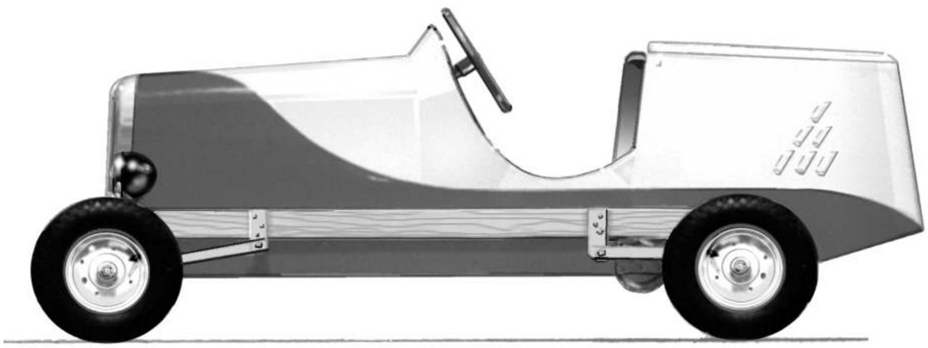
You can use bigger screws to secure the striker plates, or put a new piece of sheet metal up inside the door behind the striker to give the sheet metal screws a better bite. KM doors are not designed to be slammed, and when people do, they can loosen the striker plates in addition to other damage.

I saw a car at this year's Jamboree [1999] that had its striker plate bent toward the rear and it's latch bolt shortened enough the door could be closed just like a regular car. Neat. I hope to investigate how much trouble it is to make that modification. **Bob V**. □

C-14 Model 1 Plan Revisions *by John White II and Bob Vahsholtz*

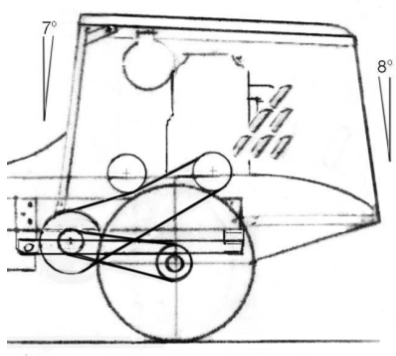
Nearly two-dozen sets of Model 1 plans have been sold so far and several of you are in the process of gearing up or building a car. At the Holland Jam, Scot Olene and Jim Berg had examples on display that were built largely based on the information in these plans. Nice cars!

A number of errors, additions and corrections to the plans have been identified, and we'll note them here. Mark your plans if you have them. Corrections have been made to the originals.



Corrected side view drawing. *Some early sets show the color of the chassis components as black. We believe those painted at the factory were silver. The wheels were also most probably silver but the kits may have offered them in either cream or silver. The steering wheels may have been painted red, but we've not been able to verify this. The drawings show caps on the ends of the wheels, but they didn't have them. The front wheels had the castle nuts exposed. The left rear had a set screw collar at the end and the right rear had a welded-in hub with a bolt through it.*

On page 1, the angle of the seatback is shown as seven degrees. The angle the tail tilts forward is not shown, but works out, if the other dimensions are followed carefully, to eight degrees, which is not shown. These two angles are critical to the proper look of the car, and should not be varied by more than a degree.



On page 2 of the drawings, the jackshaft is shown wrong. It should be mounted above the mounting pad on the rear suspension arm. The pad was welded to the bottom of the arm which would make the centerline of the jackshaft about even with the top of the rear suspension arm. This is all in the upper right hand drawing on the page (also see photo on page 19 top right). This same drawing on page 2 has the chain sprockets shown backwards. The small sprocket would be on the jackshaft and the 40 or 48 tooth would be on the rear axle.

On page 3, the drawing of the side rail is shown in two sections of equal length. Only the front section (the top drawing) shows that half's length (36 inches). The other half (below it) is the same length, making the rail a total of 72 inches. We used two sections at large scale in order to make the hole locations clear, but were limited by the size paper we can print.

On page 5, it should be noted that the main engine plate is made from 1/8" steel plate.

On page 10, the turnbuckle shown is available from Wicks Aircraft Supply (800-221-9425).

On page 13, the material for the steering wheel should be specified as 1/2" black iron pipe. The hoop was roll-formed, butt-welded and ground at the factory.

On page 20, the two small drawings on the left side of the page (jackshaft mounting plates) were originally 1/8", but a bit thicker (3/16"?) would provide better strength.

Page 30 shows the engine wood cover rounded along the front edge. It isn't. Just the sides are rounded, and they should be flush with the metal below.

Keep us posted of any additional errors found or corrections needed. We want these drawings to be as accurate as possible. ◻

Note: We've sold 70+ sets of those plans and no further errors have emerged. Bob V.

C-15 LETTERS: M1 Springs

Those who are building the Model 1 KM, what are you using for front and rear springs? New or something from the junkyard? If from the junkyard, what car did they come from? Thanks! ***Kevin***

I'm making the springs and buying the stock at local machine/welding shop. The springs are pre-curved, come in 84" lengths, can be drilled ONCE, and can be cut with a cut-off abrasive. Cost is about $3/ft. I'm also using 22 ga., paintable galvanized metal for the body and a 4 x 10 sheet of that is $75. What are you using for wheels? **Dan Harms**

I used leaves from a Ford Falcon from a junk yard. **Lou Kelley**

If you have Tractor Supply Stores, they have small utility trailer springs, that are just about an exact fit. And 8" wheels and tires. For what it is worth, they are DOT approved wheels and tires. **Paul** ◻

Note: Lou Kelley first used wheelbarrow tires on his repro M1 and found them unsuitable. Even with light use, they puncture very easily. Bob V.

C-16 Letters: Rear Shock Bushing

Bob: I just posted this on the Yahoo KM group, but I thought I'd send it in as a letter to the editor etc. for the newsletter in case you find it useful. I also included a not-too-great photo.

Recently I rebuilt the rear suspension of my 1966 Model 3. In the process I discovered that my shock bushings were pretty deteriorated. I wasn't able to find a ready part number for these items, so I thought I would share my solution in case anyone else needs the information.

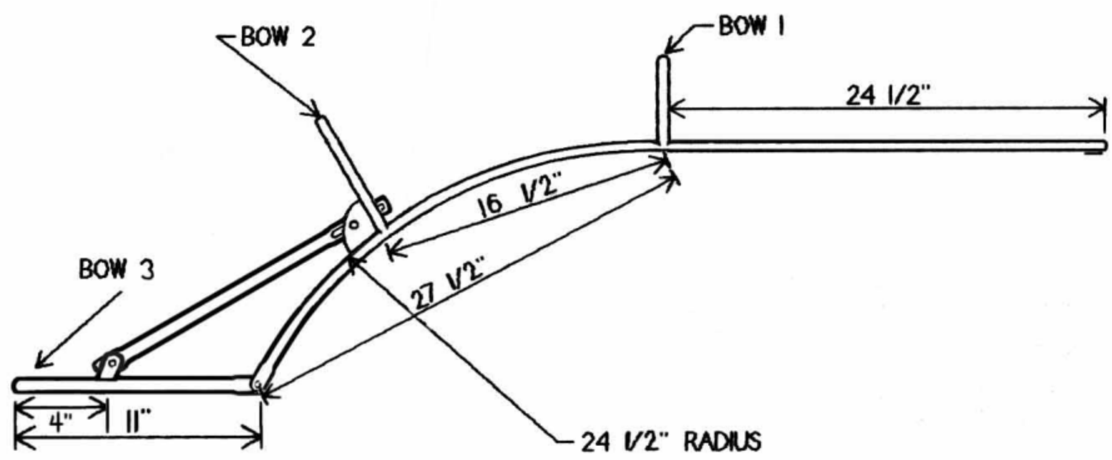
I ended up using "RB7" bushings, which are used in the front eye of 1936-1954 Chevrolet rear leaf springs. I ordered mine from Stengel Bros. in PA: http://stengelbros.3dcartstores.com/RB-7_p_6865.html They are the right I.D. (1/2 inch) and O.D (1-5/32 inch) but are about twice as long (about 2 inches) as the KM parts. I ordered two of these and cut them in half with a hacksaw to make four bushings.

I recommend putting a large "fender" washer on the bottom stud to prevent the bottom of the shock from "walking" off with unpleasant results (this happened to me once, and I was fortunate that it happened inside a box trailer or I might never have found the spring!).

For what it's worth, the bushings that I removed from my car looked as though they had also been cut down in a similar manner. I don't know if they were original or not, but perhaps the factory resorted to the same trick? Hope this is of interest. Bob Olbers

Thanks Bob. It's tips like yours and Randy's that make this a useful newsletter. One of these days we hope to accumulate them all into an updated King Midget maintenance manual. ◻

Note: Bingo!



C-17 Model 2 Top Frame *By Bob with a lot of help from John White and Ol' Doc Buckeye*

Since the Model 2's top doesn't fold, it's a bit of a pain. Yet for an authentic restoration—or if it happens to rain on your parade—it's important to have the frame, cover, side curtains and the whole works. You can purchase this stuff from Midget Motors but shipping that frame is just about as much trouble as making one yourself. Also, Model 2s vary somewhat in size and if you want a good fit, nothing beats building the frame yourself—assuming you're handy with a welder and can do a good job of it.

These tops are simple, yet they're surprisingly complex. To build your own, first take a look at a factory version of a Model 2 top so you're familiar with the general construction and details. Then you need a whole pile of quarter-inch black iron pipe and a bender that can manage a 2 ½ to 3 inch radius bend. That's for the corners of the bows, which are all alike.

A good place to start is to make the rear bow (#3 on the sketch). Measure the width out-to-out of the rear quarter panels of your car where that bow must fit. Allow some slack so that the bow doesn't rub or vibrate against the panels when your Wisconsin is idling. You'll probably find the rear bow should be about 35 ¼ to 35 ½ inches wide at the outside of the tubing. The curve of the radius at the corners should fit nicely over the curve of the body. Something like 2 ½ to 3 inches radius. Then fit that bow to the back of the body and mark where the hole needs to be for attaching it to the body bracket. That hole should be about 10 ½ to 11 inches in from the outside of the bow. Mash the end of the tube flat with a hammer on an anvil or convenient railroad track, hitting it from the outside so the inside of the flattened part remains flush with the rest of the tube. Get that piece right and you're well on your way.

Bows #2 and #1 are easier. They're the same width, but Bow 2 is approximately 7 inches deep instead of 11 and Bow 1 is about 4 ½ inches deep. These will be welded to the main top frame rail.

Next, the biggest and most critical piece, the main frame rail. Though big, it's pretty simple. It's just like the other bows—same width and radius corners—except it has *very* long extensions. So it's nearly three feet wide and then the main rails extend straight back

24 ½ inches. At that point, they begin a slow bend down to meet the rear bow (#3), and like it, the ends are flattened so the frame can hinge at that point. That slow radius has a diameter of 24 ½ inches—an important measurement. That curve must be nice and smooth.

Now you can weld Bows 1 and 2 in place at the dimensions shown. They are exactly perpendicular to the main rail and smooth welds are important for both strength and appearance. Bow #2 is stiffened by a quarter-circle 1/8 inch plate welded to the inside of the tubing, with a hole as shown. Bow 3 gets a little dog-leg plate welded on four inches from the back that sticks up about 2 ½ inches and has a hole in the top end.

Between that tab and the quarter-circle plate you'll need two braces made of 1/8 inch flat plate or ¾ inch by 17 ½ inch tubing flattened at both ends. At the bottom end it gets a hole to attach it to the dog-leg plate. At the top is a slot that's about 2 ½ inches long. That slot attaches the brace to the quarter-round plate and is the adjustment to keep the canvas taut.

At the front of the frame, weld on a pair of tabs with holes aligned to the bolts on the top of your windshield. You'll have to measure and weld those to suit your car, with about 30 or 31 inches between tabs. Finally, between those tabs, weld four one-inch pieces of 1/8 inch rod, slanted toward the back. These catch the front end of the canvas top.

Hey, I've omitted a ton of little details, but this gives you the vital dimensions. If you set out to build a top and have questions, give us a holler at KMM. We'll do our best to help, bearing in mind we've not actually built one of these things ourselves! When yours is done, send us photos and hints to help the next guy. ☐

Note: KMM refers to *King Midget Motoring*, a privately published newsletter, now defunct.

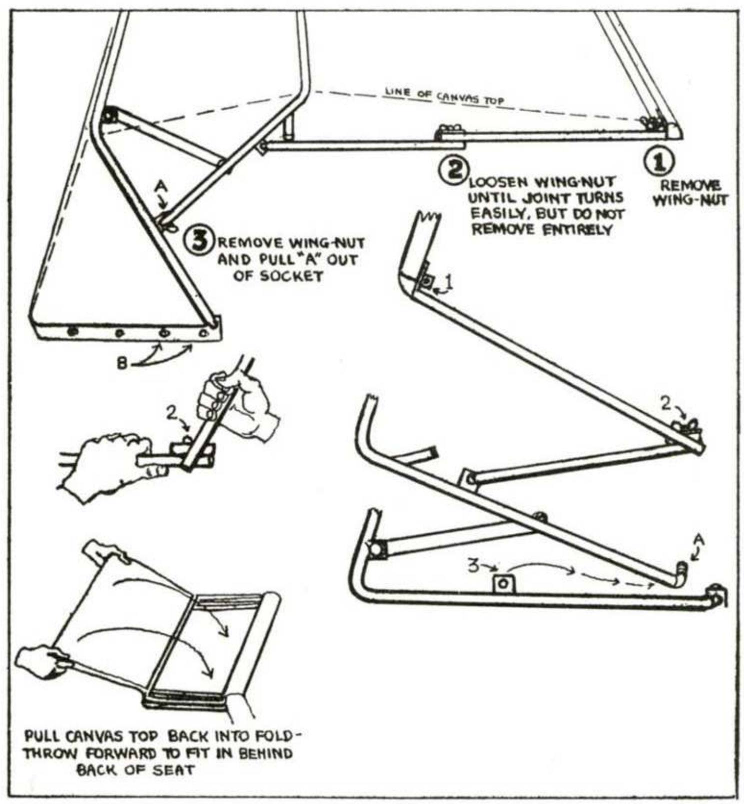
C-18 Tops *by Randy Chesnutt and Bob V.*

The M2 top, as built from the factory does not fold. It is a canvas covered rigid frame that is bolted to the body and windshield of the car. The top can be removed for storage. The concept of a folding top does exist. Denny Jasper built one some years ago. Lee Seats has built a duplicate and has plans available. It has a different design from the original, but works great.

Note: Lee Seats has duplicated Denny's folding top and is working on plans. Bob V.

To fold the M3 top, follow the 1967 Manual's instructions:

FOLDING TOP. To fold top, simply remove wing nut, (1) and let top rise off of windshield frame; Loosen wing nut (2) until joint turns easily, but you do not need to remove wing nut entirely; Remove wing nut (3) and pull out of socket and the top is folded. Then pull top cover material back and fold over into compartment back of seat. To put top up, simply reverse the procedure. Adjusting nut on each side of top bows can be screwed down to always take up any stretch in top material and always keep top tight.



Not a simple as it looks, but if the instructions are followed carefully, the top does fold away neat and tidy.

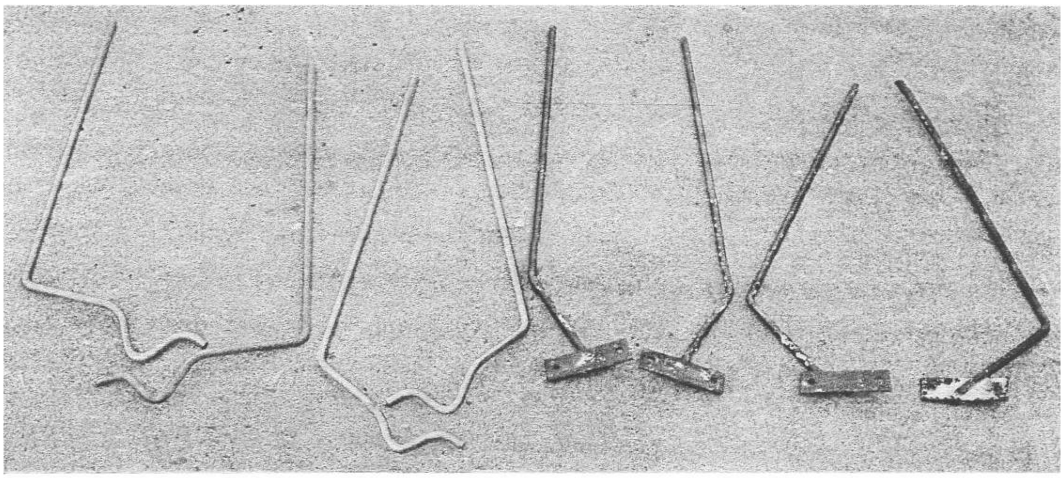
To put top up, reverse the procedure. Adjusting nut on each side of top bows can be screwed down to always take up any stretch in top material and always keep top tight. ◻

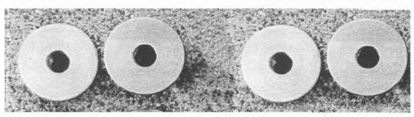
Note: A nifty cover for the compartment can be made see Modification Section M-8 for a tonneau cover. Bob V.

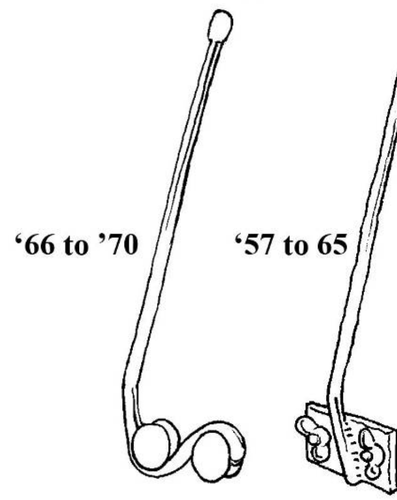
TECHNICAL NOTE #11 *by John Weitlauf*

C-19 Different Styles of Side Curtain Rods

The four rods at left side of photo below were used from 1966-1970. They are all different. The four rods at right side were used from 1957-1965 and also are all different. They snap onto the "discs" mounted on the doors that enable the rods to be put on and taken off quickly.







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C-20 LETTERS: Top Snaps

Bob: I'd like to say the people who believe that MMS should furnish the snaps that go on the body of the car with the tops are wrong. All that should be furnished with the top and side curtains is that portion of the snap that goes in the top material. The other half of the snap came on the car from the factory for the top (all M3s came with tops) and also on the doors if the car was ordered with doors. So anyone needing the half of the snap that goes on the body/doors would have to order that at extra cost. John White II
Sounds sensible John, but I’d not have thought of it. Perhaps that should be made clear when the top is ordered? Maybe it was? I don't know. Anyway, communication seems to be the main problem. □

C-21 LETTERS: Installing a Windshield Gasket

I have my ’58 King Midget painted and rolling chassis assembled. When installing my windshield with fresh weather-stripping, I really don’t want to mess up any of this nice fresh paint. Any advice or directions? What tools do I need? I would greatly appreciate any advice. Thanks! **Ian**

When I put the windshield in my ’58 I went to a tire store and got a bottle of the lubricant that they use for mounting tires. I put this on the slot and pushed in the spline, using a screwdriver with a wide flat blade and a roller made for installing window screen. It takes a LOT of pushing to get it in but it went, and I was using the old rubber. I have also been told that WD 40 will lubricate the rubber but the stuff from the tire store is water-soluble and cleaned up fairly easy. ***Don Balmer***

When your wife is not looking, borrow her dishwashing detergent. That stuff is super slick and helps the windshield slide right in. When I put the windshield back in my ‘58, that is what was recommended to me. What I like is that there are no chemicals that may affect the paint or the rubber. Also, all you need for clean up is just plain water. Works great—just do a little at a time and TAKE YOUR TIME. ***Don Blackburn*** ◘

C-22 Windshield Removal and Installation *By Lee Seats*

Windshield replacement is the most aggravating job on a King Midget.

The first thing to do is see if the old windshield gasket is free of cracking and still useable. A new replacement may be hard to locate (not to mention expensive).

If it looks OK, take a small flat bladed screwdriver (or the cotter pin puller shown on the next page) and peel out the locking strip on the inside of the windshield. Save it if you can.

If you're replacing the whole gasket, the best way to get the old one out of the frame is to cut the edge of the spline track with a utility knife all the way around the gasket.

Next, push the windshield out toward the hood. Lay a blanket or a big piece of cardboard on the hood to protect it. Once the unit is out you might want to check for rust on the windshield frame and treat it if there is some present.

Now comes the hard part. Start with one end of the new gasket at the top center of the frame. Hold the gasket in the frame and using a sharp knife, make a small V-cut at the top corner on both sides of the gasket. *Be sure you don't cut all the way thru the rubber when cutting the corners.* The gasket must remain one piece.

NOTE: On Model 3s the frame corners are not a 90-degree angle; so make the cuts proportionately, maybe cutting out a little less than necessary at first—you can always cut a little more! Check the fit, and if you need to cut more, then do so, but let the fit be very tight. The gasket will mash together and make a better seal.

Work the gasket into the frame as tight as possible working toward the bottom corner where you'll cut another small V.

Measure the distance between the corners and this is where the cuts need to be made in the rubber. This corner is not a 90-degree either so a small cut will do. Do the same for the next two corners, being sure to measure accurately before cutting.

At the top center you should have some overlap. Cut the gasket about a quarter inch too long. Make the cut as straight as possible for a nice fit. Check the fit of the cut.

Next is more fun; take the gasket back out of the frame and put it on the windshield glass. You can use tape as shown in the photo on the next page to help hold it in place.

NOTE: The windshield will be smaller than the groove in the gasket, and this is correct. Make sure the smaller side of the windshield is to the top.

Get some strong nylon string like used in laying block or pouring footers. Put a full length of string in the one-inch groove of the gasket and let six inches or so of each end stick out in the center at the bottom of the gasket. Get some dish soap and coat the 1" groove and the spline side of the gasket. Remember the spline side goes to the inside of the car.

This next part goes better with two people. You will need someone to help hold the assembly while you are working the gasket into the frame. Take the windshield and gasket with the string and the soap applied and put the bottom edge in first from the hood side. Work each side into the frame equally so as not to break the windshield. Make sure the string ends are sticking out inside the car.

As you pull the string ends, push from the outside to help the string do its job of pulling the gasket over the frame. You may need to use some picks to help the gasket slip over the frame. Do this on each side till you get to the top center and the gasket is in. Next cut four pieces of spline, making them about a quarter inch short of the corners. Coat the pieces and the spline groove with dish soap. Use a stubby flat blade screwdriver to work the spline into the groove. Try not to twist the spline as you work it into the groove. Do the bottom and top first then the sides.

When you are done, wipe off the excess soap and be darn proud. You will have accomplished the hardest job on a King!

This is a photo of Dick Russ' windshield being installed. The tape does not wrap around to the other side of the gasket. It is only on the rubber edge to hold the rubber against the glass keeping it firmly in place during the installation. Dick has used the cord method Lee suggests on other cars but on his Midget, the rubber was too hard so he used the cotter key puller shown below.

It goes around the inside of the rubber as he worked it in place. He used the same tool to install the rubber filler strip and found it worked fine. ◻