

An article on
Rebuilding your Citroën DS frame
by
John Chassin

from
Why Citroen?
published by
Northfield Industries, Inc.
(1978)

*used with the permission of
John Chassin*



Table of Contents

Introduction	3
Safety	3
Work Sequence	5
Riveting Procedures.	12
Tools You Will Need	13
Riveting	13
Prevent Water From Entering Front Frame . . .	14
Rear Suspension Frame Repair	23
Rear Suspension Frame	26

*Original document scanned as individual pages
in JPEG format by Stan George*

*Individual page images were then compressed
and converted to TIFF in Adobe Photoshop 6.0.1 (Mac).
Text-only pages were then read with an Optical Character
Recognition program (OCR) (OmniPage Pro 8.0 - Mac).
Pages with images were optimized and sharpened in
ImageReady 3.0.1 (Mac).
Text and graphics were assembled
in Adobe InDesign 1.5 (Mac).
Document was exported as a PDF file.
Final hot links were added in Adobe Acrobat 5.0 (Mac).*

Blair Anderson <bdanderson@shaw.ca>

HOW TO RESTORE YOUR DS/ID FRAME

The assembly, fastening methods described in this paper, along with the precautions, cautions and warnings, are similar to the ones used by Citroën, as their Prototypes are being built for track testing. Also similar to the technology used to build F1 cars and commercial aircraft.

Welding on the frame is highly dangerous, since a fire might start rather easily, due to the proximity of conduits, fabrics and other flammable equipment. Welding is also dangerous in the long run, since the weld itself cannot be corrosion proof and tends to crack and tear off. It is also not possible to coat two plates to be assembled BEFORE assembly since the coating will ignite. In this case the metal would remain exposed to the air and therefore corrode.

Aluminum rivets are used in the aircraft industry, since the ships are mostly made of light alloys. It is not possible to use aluminum rivets with steel since the corrosion rate is extremely high compared to the steel-to-steel method used in the present case. Aluminum rivets will shear, after several years exposed to the elements, at 200 lbs. (1/8" rivets). Steel rivets have at least twice this strength.

Safety

DO NOT crawl under a car held by hydraulic pressure or a hydraulic jack. Always install stands, solid and stable. The same stand must be installed under the points shown on the bottom drawing of the DS. Install a wood board between the stands and the lifting points, avoid 4X4, they can "roll" and drop the car. Use 2X4 or larger ratio. Do not stack 2X4 so that they can slip, roll or shift in any way.

DO NOT work on hydraulic pipes under pressure, a leak might come out and hurt you.

DO NOT attempt to stop a hydraulic leak with your hand or fingers. Even with gloves on. You will get an injection of the fluid and will lose the body part that was injected with it.

DO NOT rock a car on stands.

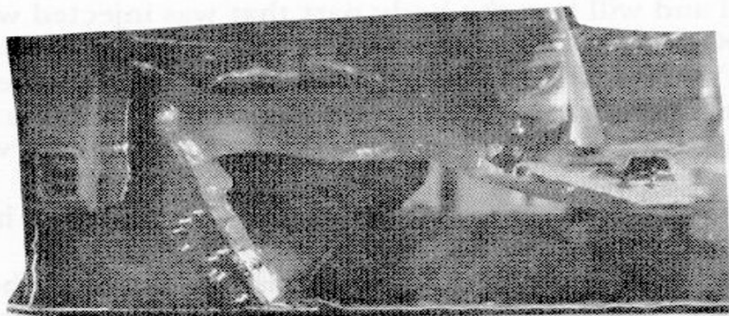
AVOID sitting in a car after it has been aligned. Wait until the frame is closed or at least until the plate C is fastened to E and B. This is not dangerous, but you might warp the frame.

DO NOT lift the car from the side, with a hydraulic jack, it might slip out.

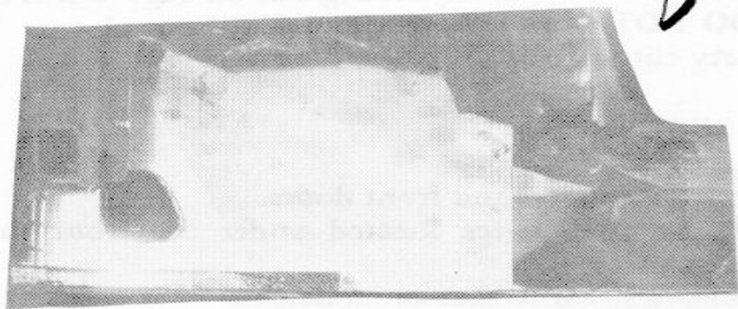
DO NOT look at the drill bit as it is cutting a hole, hide behind the drill's body. A broken drill bit might strike your eye. WEAR GOGGLES.

DO NOT look at the cutting disc on edge as it is cutting.

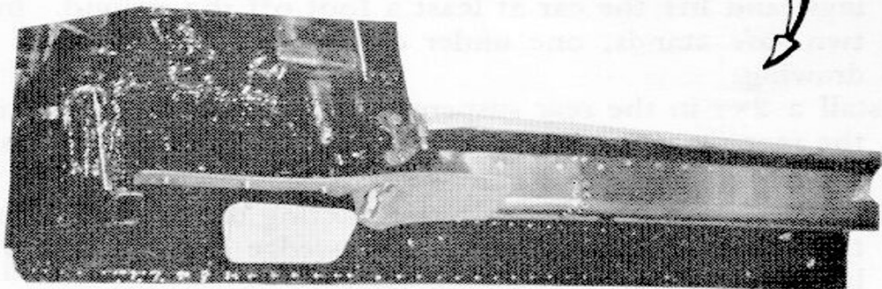
DO NOT work on sheet metal without gloves. You can get a nasty cut.



DS FRONT SPAR'S REPAIR



INSIDE PLATE POSITIONING



FINISHED REPAIR



Work Sequence

Remove front fenders and front doors.

Remove the two plates located under the front suspension castings.

If possible, raise car to maximum height.

Install a 2x4 or a 4x8 between the two front suspension castings, and lift the car at least a foot off the ground. Install two safe stands, one under each end of the lumber. See drawing.

Install a 2x4 in the rear suspension box area. Must not touch the rear suspension arm mechanism. Lift at least a foot off the ground and install stands.

Align the frame true optically by altering the height of one of the stands, ONE ONLY. Use wedge between stand and lumber.

Remove front wheels. Cover front bearings with rags or wrap them into plastic bag.

Drop hydraulic pressure.

Remove front suspension mechanism's protection plates.

Mark hydraulic lines and replace them. Keep fittings for reuse.

Drain hydraulic system to rear.

NOTE: DO NOT saw hydraulic lines, clip and round, or use pipe cutter. Always blow lines before installing. Patch lines with larger diameter line with at least a 2" overlap. Solder with tin or silver and torch. Make sure the molten metal sweats all through the lap. You can braze the patches, but the "sweating" is more difficult.

Remove ALL weakened metal. This means all metal that is rusted through, as rust layers show. Clean superficially rusted metal. Use shears, nibbler, pliers, disc cutter, hack saw, etc. Wear gloves! Leave extreme front part, under lift stud.

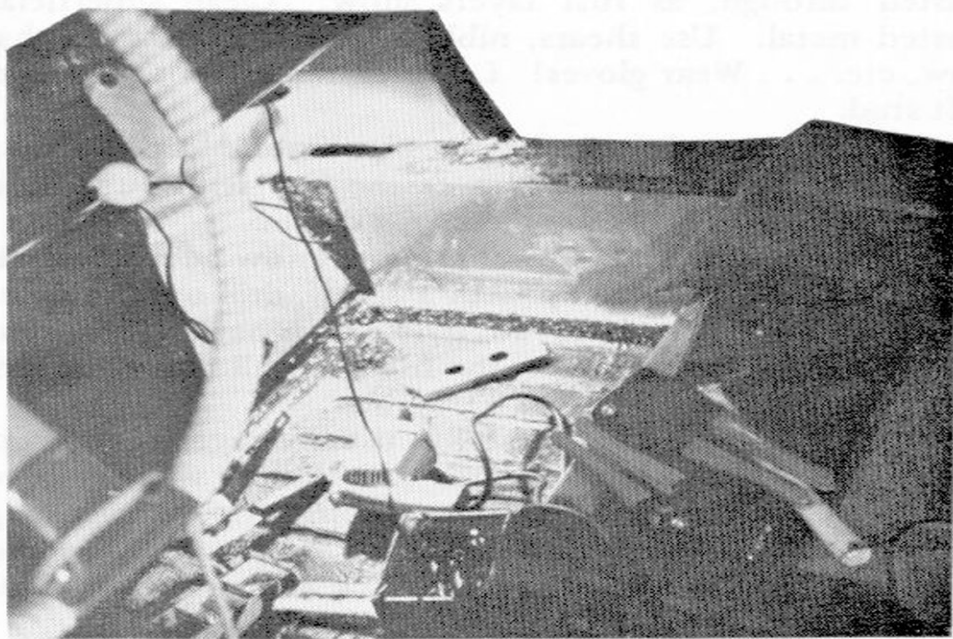
Be careful not to damage heater pipes or electrical ducts.

Remove frame caulking, Ziebart or the like with putty knife, at least two inches off of where laps will be.

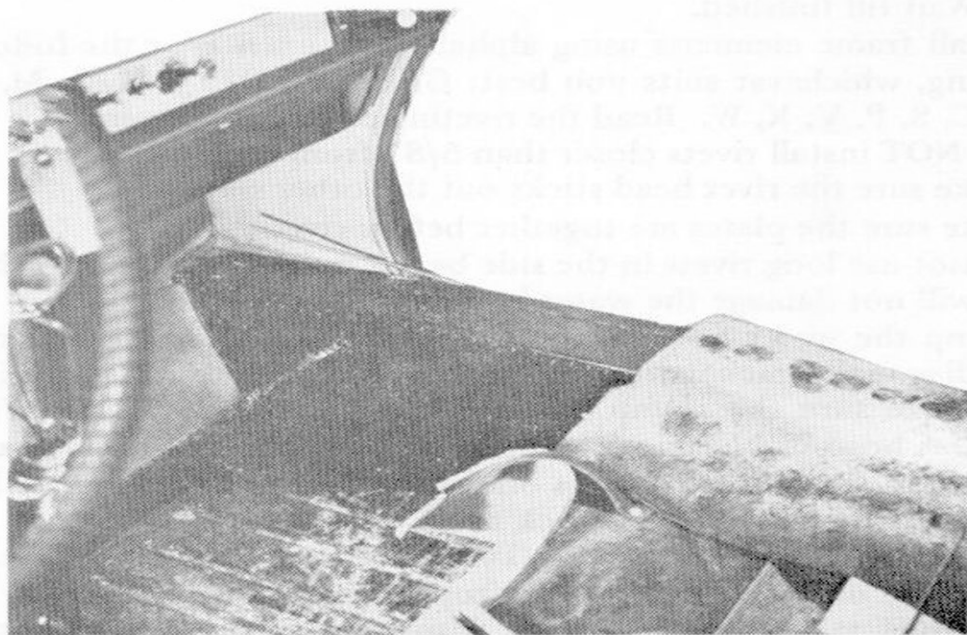
The front suspension's rear lower arms can now be reached. Remove their protective cup with a screw, drill out the dent in the nut and tighten it to 60 ft/lb. Turn back 1/8 turn and lock with a chisel whap on the nut. Install cup after greasing.

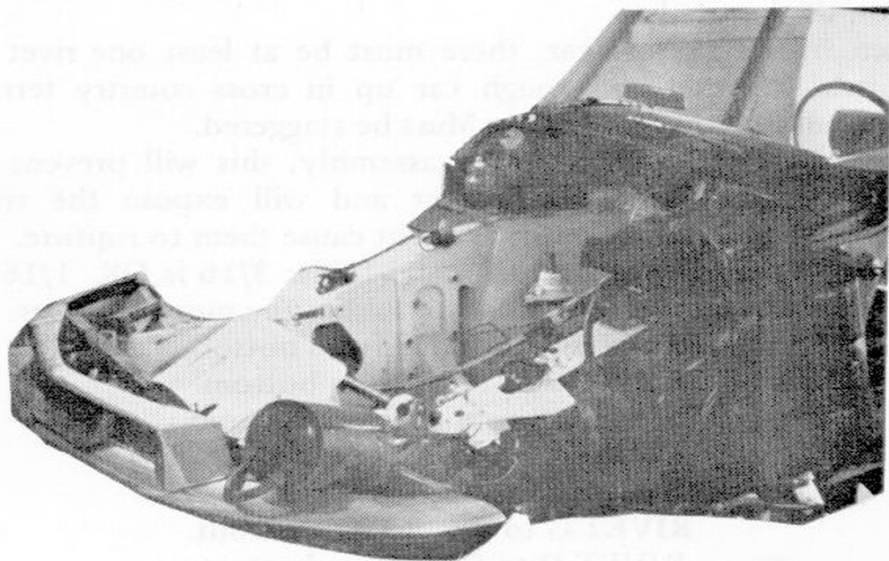
Alignment of frame. The frame has usually sagged causing difficult operation of front doors. Lift the firewall at the rear center; see drawing, until frame is straight. Optical alignment or ruler. When this is done, lift another mm. and hold it there. Do not use a hydraulic jack, as it will drop slowly down.

Remove remaining front frame under lift stud.

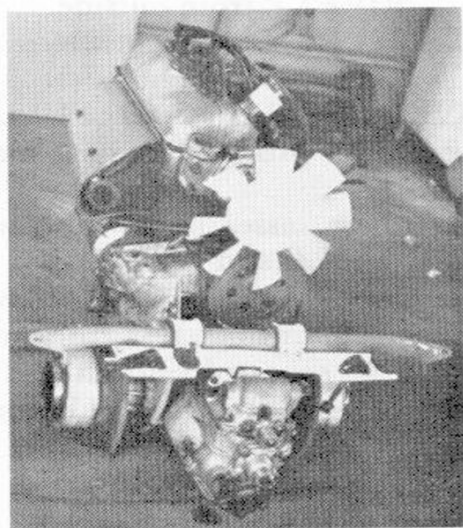


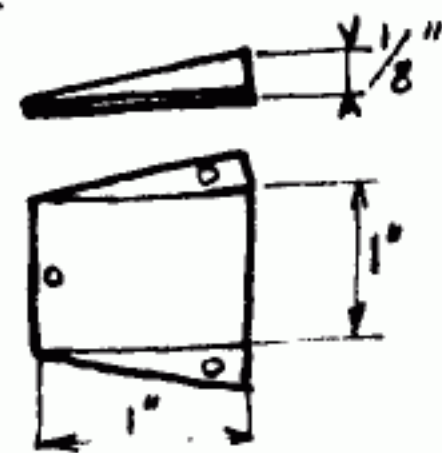
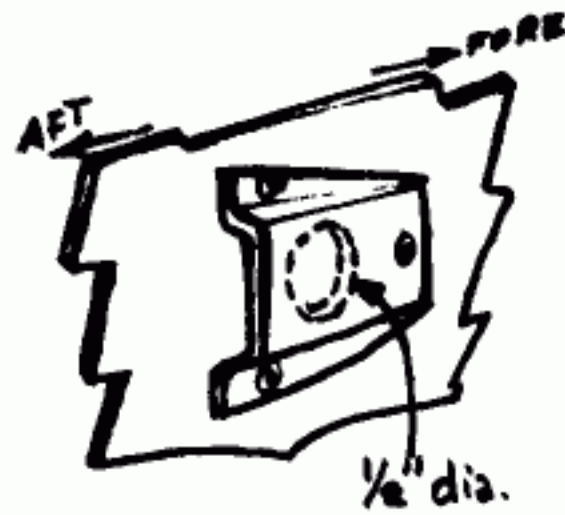
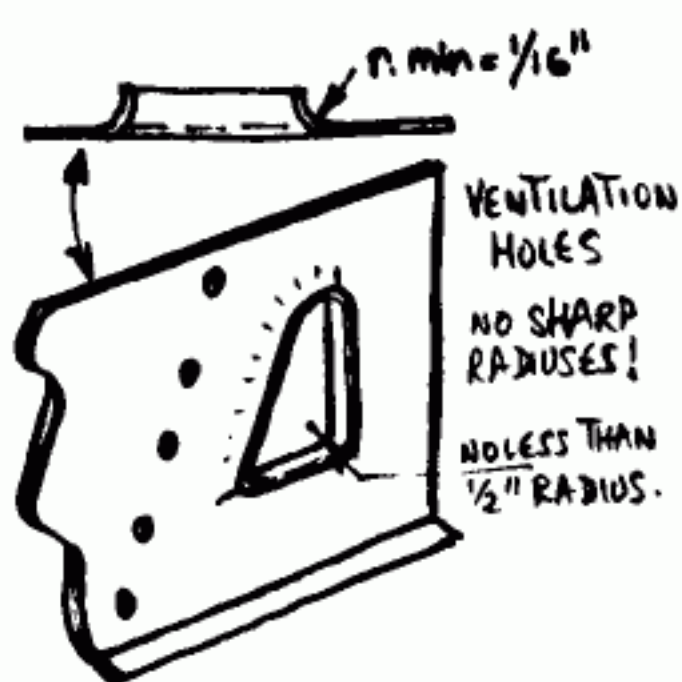
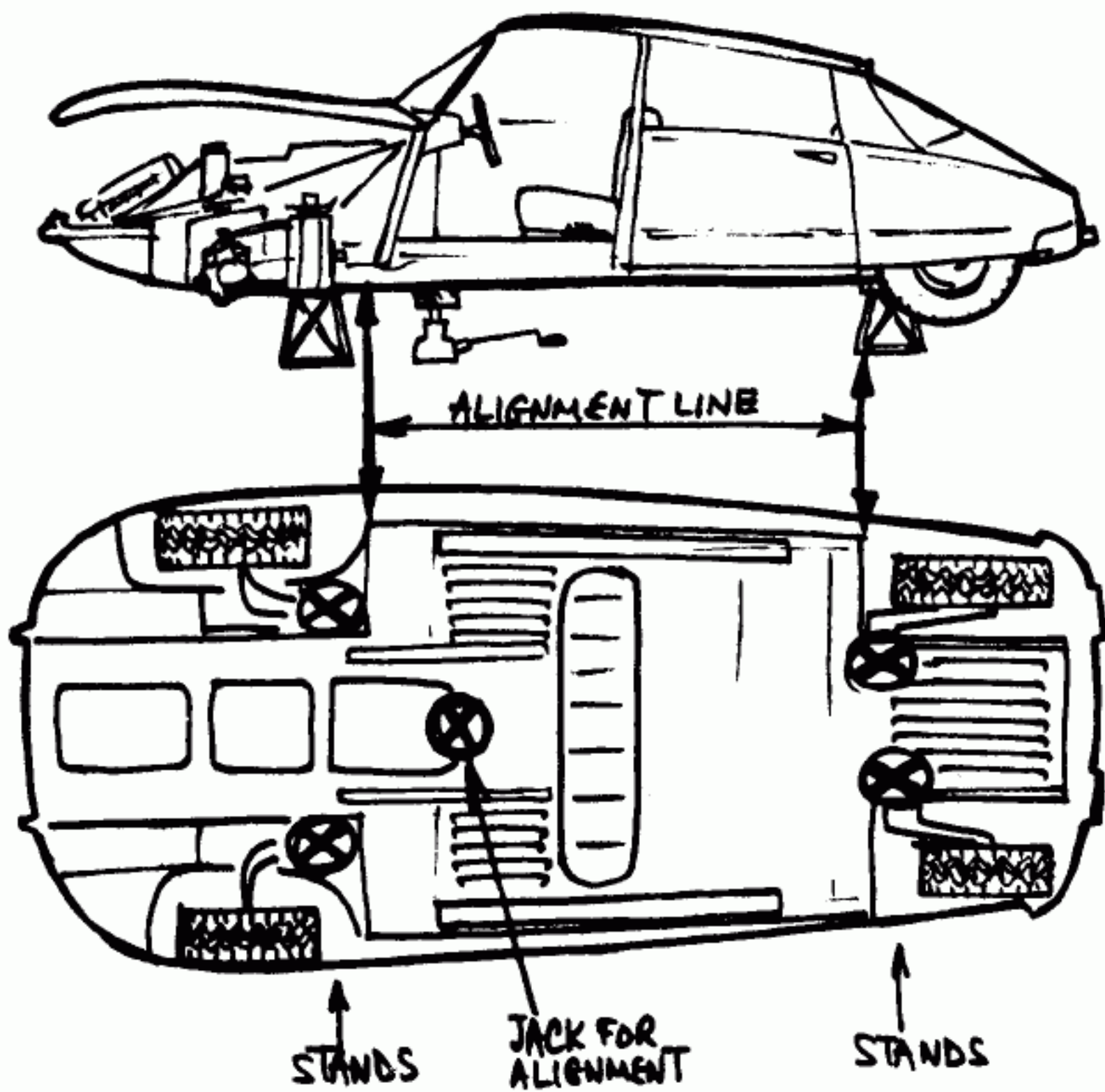
DS INSIDE FRONT SPAR REPAIR.





DS19 RESTORATION
NORI® (1968)





DO NOT SHAKE THE CAR SIDEWAYS FROM THEN ON. Wait till finished.

Install frame elements using alphabetic sequence or the following, whichever suits you best: G, BE, H, DF, J, K, L, M, N, C, S, P, V, X, W. Read the riveting procedures again.

DO NOT install rivets closer than $5/8''$ from each other.

Make sure the rivet head sticks out the other side.

Make sure the plates are together before riveting.

Do not use long rivets in the side beams unless you are sure they will not damage the water hose in it.

Clamp the water hose, in the side beams, up close to the small diagonal brackets, so as not to damage it while drilling. Make Sure the clamp will not cut or chafe the hose. Wrap the hose in electrical tape, or better, air conditioning tape. Make straps such as the ones used on the hydraulic rubber hoses, with a piece of truck tube.

DO NOT drill closer than $3/16''$ from the edge of new metal.

DO NOT drill closer than $1/2''$ from edge of original metal.

DO NOT tar metal parts while fitting them: the tar will not be fluid enough during assembly.

Insert rivets from outside so as to have only rivet heads exposed. Read riveting details further.

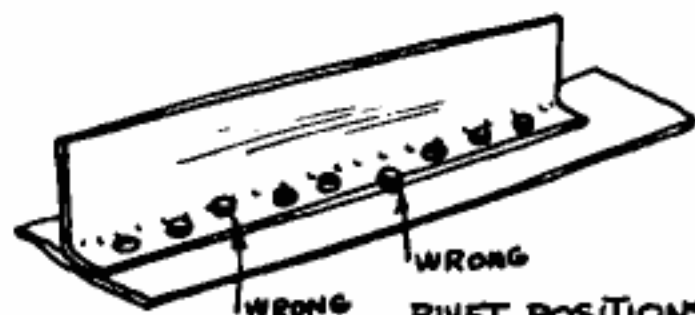
Install hydraulic lines BEFORE closing frame.

Tar each assembly just before assembly and right after again, on the laps only.

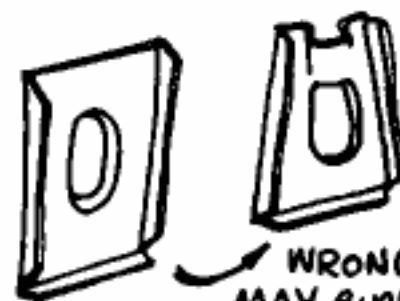
When riveting across car, there must be at least one rivet per inch. If you will rough car up in cross-country terrain, install two rows of rivets. Must be staggered.

Do not let tar harden before assembly, this will prevent the plates from coming together and will expose the rivets to high shear forces, which might cause them to rupture.

AVOID riveting too close to metal folds: $3/16''$ is OK, $1/16''$ is bad and can cause cracks in the fold as the metal fatigues.



WRONG RIVET POSITIONS ON LIPS.
SOLUTION: LEAVE RIVET AND FOLLOW TIGHTER PATTERN, TO CATCH UP.

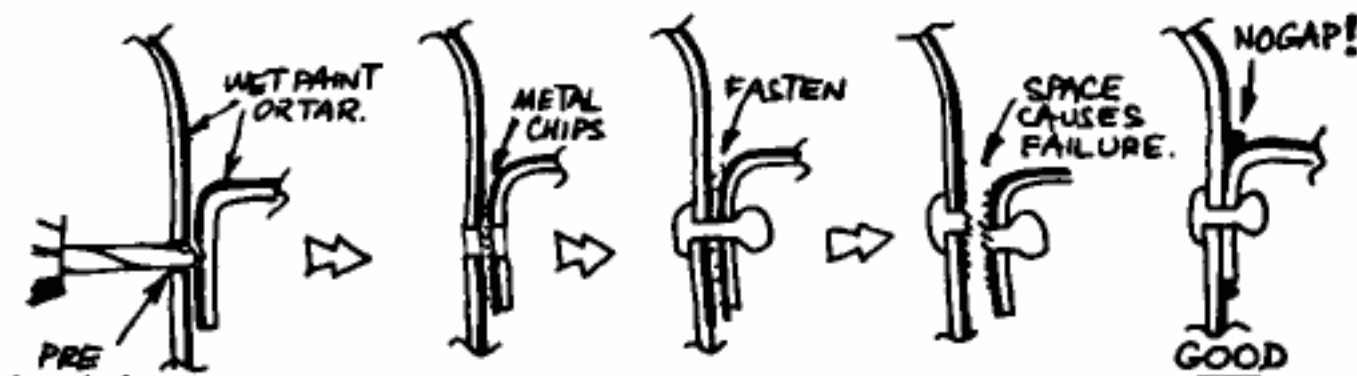


WRONG. MAY BUCKLE.
SOLUTION, ADD LIP ON TOP.

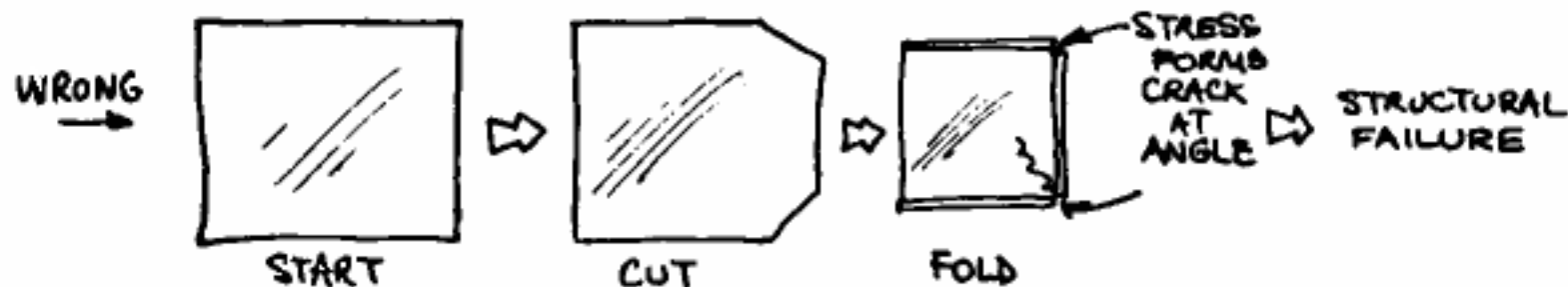
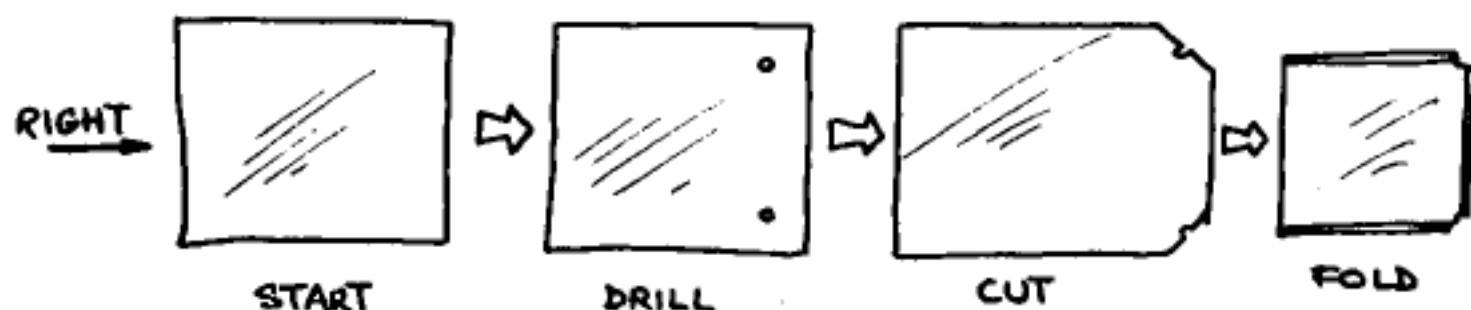


FORMING WITH PLIERS OR HAMMER.

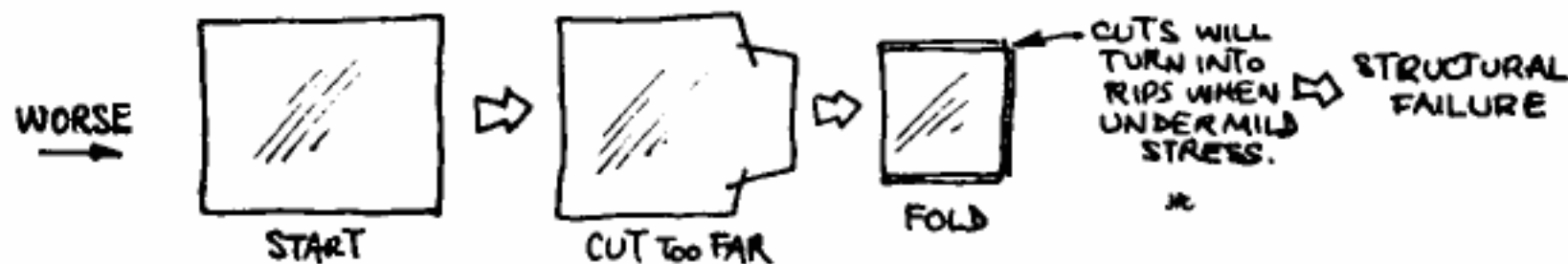
NO CRACKS!



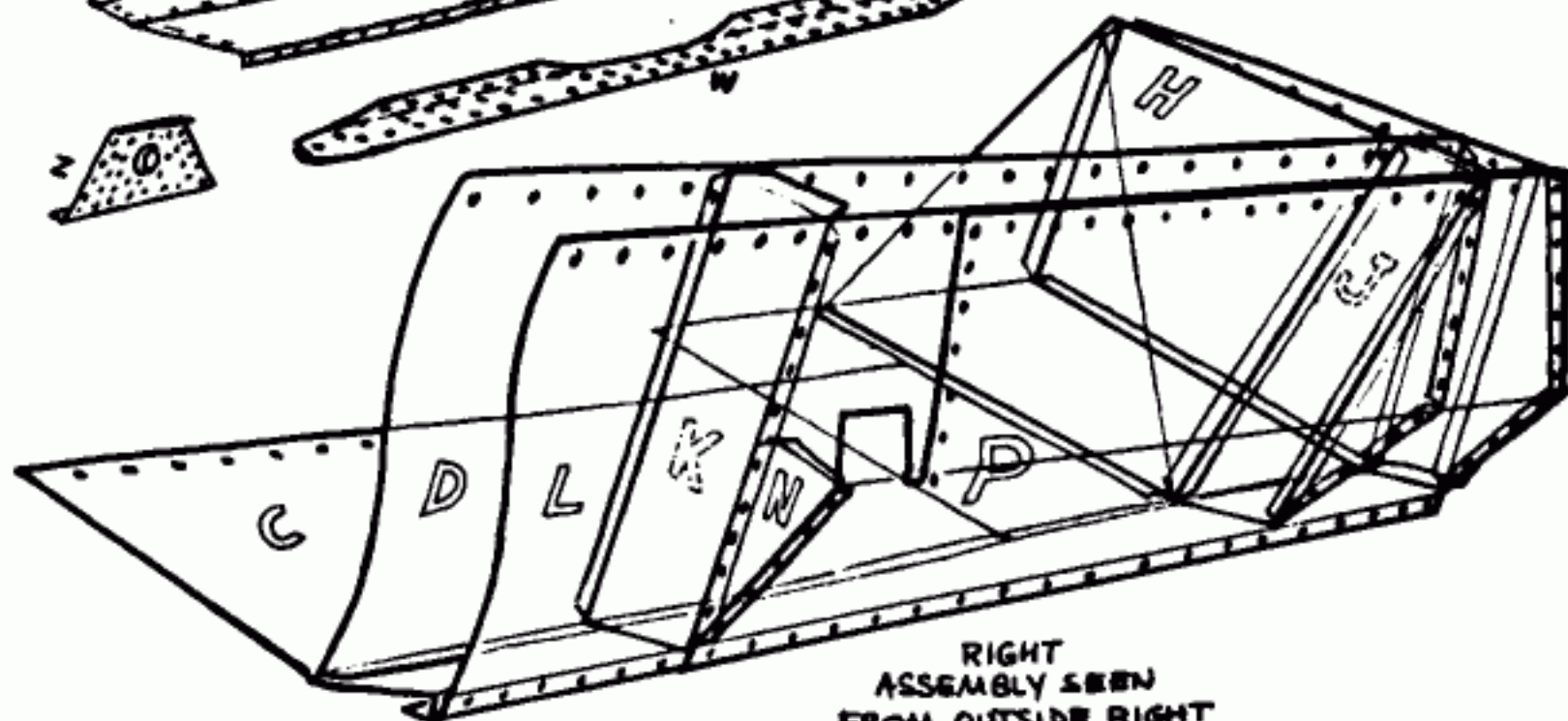
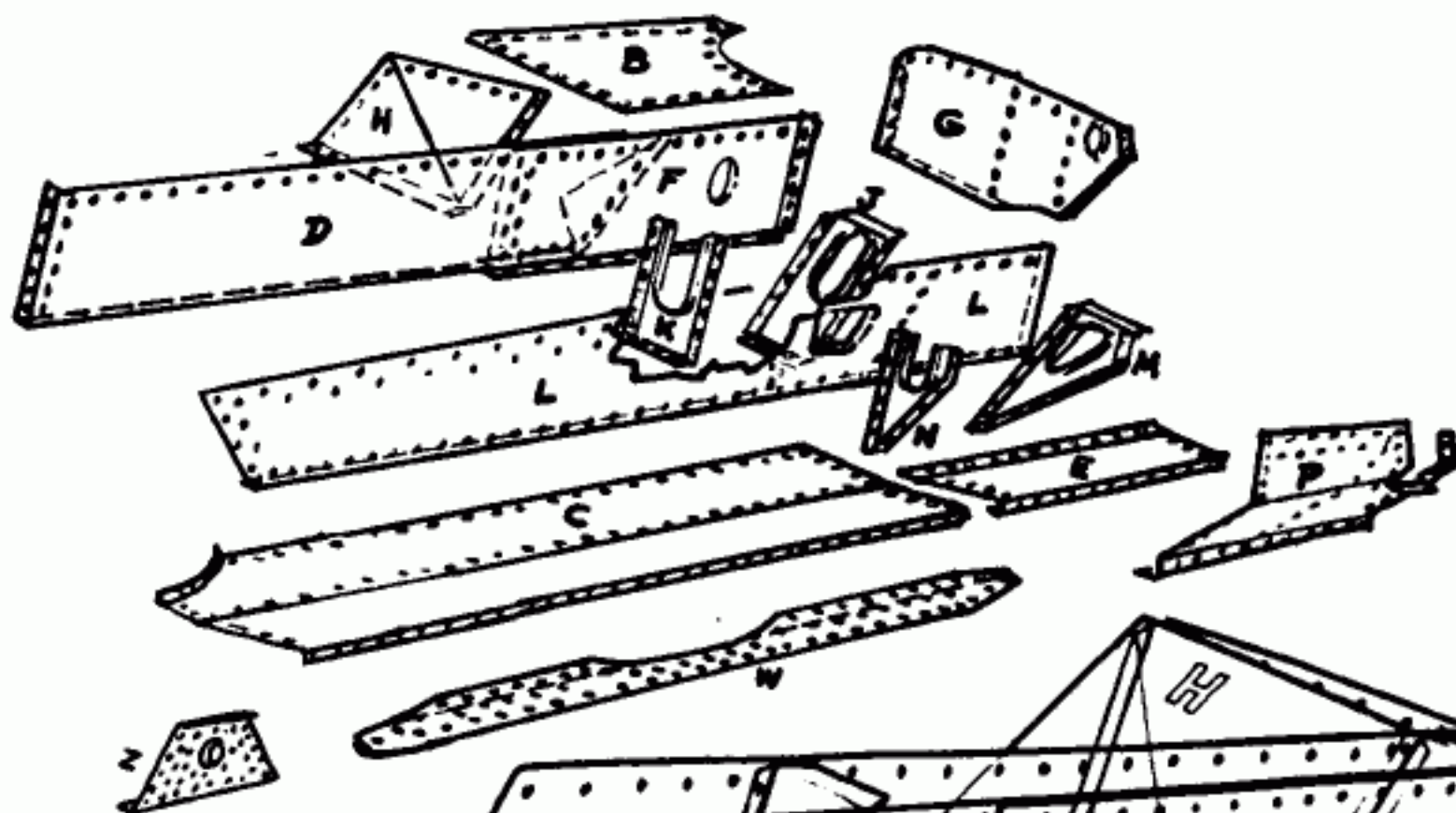
- HOW TO CUT (AND DRILL) FOLD CORNERS -



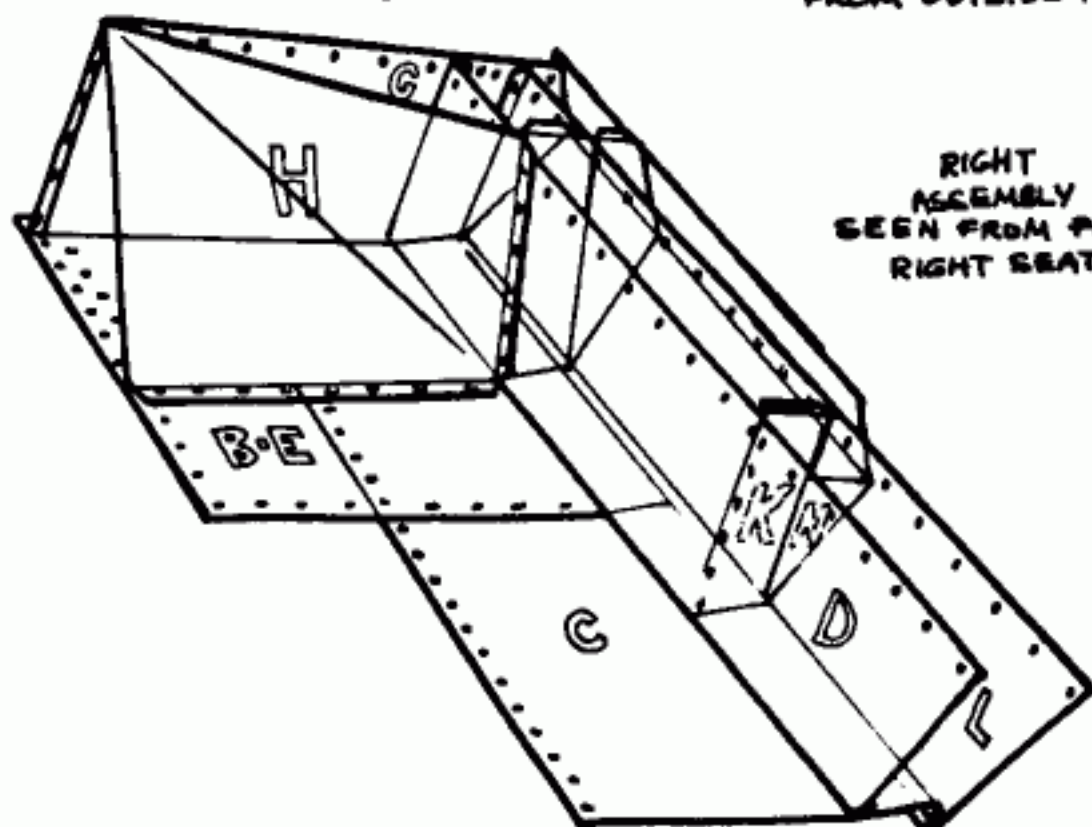
STRESS FORMS CRACK AT ANGLE
STRUCTURAL FAILURE



CUTS WILL TURN INTO RIPS WHEN UNDER MILD STRESS.
STRUCTURAL FAILURE



RIGHT
ASSEMBLY SEEN
FROM OUTSIDE RIGHT



RIGHT
ASSEMBLY
SEEN FROM FRONT
RIGHT SEAT

RIVET BE to frame from bottom.
RIVET C to floor from bottom.
RIVET DF to floor from bottom.
RIVET G to frame from inside.
RIVET G to BE from bottom.
RIVET G to F and L from front.
RIVET H to floor from bottom.
RIVET H to frame from inside.
RIVET J and K to DF from outside.
RIVET J and K to floor from bottom.
RIVET L from outside.
RIVET M and N same as J and K.
RIVET P from outside.
RIVET X from outside.
RIVET V from bottom.
RIVET W VERY CAREFULLY!

Slight variations between production runs make for necessary trimming.

The parts that are to be assembled with the utmost care are BE, G, H, F, J, L, M, P, C and W.

You may open ventilation holes in H, F, L, providing the holes' edges do not come closer than 1 1/2" from any rivet row. The holes' edges must be rounded smooth and curved as shown on the drawing page 111. Remove all burrs and avoid cracks as they may develop into splits and tears.

You may open one or several ventilation holes in the side of the frame, if you have an ID, or in the bottom of the same frame (outer side beam), providing you use reverse scoops. They will create a vacuum in the frame, which will bring air from the cabin.

Riveting Procedures

DO NOT drill, full speed ahead, a whole row of holes. You will find that they will not match the rivets as you fit them. Start at one end, drill and rivet. Position the plate with the vice-grips, and then proceed to drill-rivet, drill-rivet. Use Cleco fasteners; should the plates not be willing to come close together, you may use sheet metal screws to bring them along. Be careful, for the holes might not be aligned again, and the sheet metal screws will damage the bore of the hole, making cracks under stress.

Where the drill has reached, the rivet gun can reach too. USE STEEL RIVETS ONLY: aluminum rivets have only half the strength and will corrode to powder rapidly due to galvanic action between the different metals. DIP THE HEADS OF THE RIVETS IN TAR before inserting them into their final location.

If possible, deburr holes on BOTH sides.

NEVER hammer fold angles to sharp angles, this will create a weak zone for a crack.

Should you have a free edge, fold it with a 3/8" lip, so as to prevent its warping.

All metal edges must be smooth and free of cracks or burrs, as they might provoke

structural failures in time. Keep plates together while drilling and riveting. This prevents metal chips from coming between the two plates and separating them. The rivet would have to stretch between and would be overstressed. The two metal plates must be in contact as the rivet crushes the tar away.

Tools You Will Need

Pliers, long nose pliers, putty knife, cutting pliers, pipe cutters, soldering iron, solder (electronic silver), metric hex flat wrenches and/or sockets, body hammer, carpenter hammer, stiff paint brush, vice grips, sheet metal shears, mechanical jack or hydraulic jack (no scissor jacks, dangerous), nibbler, cutting disc, 20 drill bits 1/8" diameter, drill, small vice, two hands and lots of care and patience...

Riveting

When riveting:

Drill one hole at a time, through pre-drilled part. Install one rivet at a time. Do not drill ahead and then try to match holes with rivets.

Always deburr both sides of holes except when riveting per se where it is not possible in blind spots.

Clamp parts together before drifting for rivet.

Any wrong hole must be closed with a rivet.

The rivet's head must appear on the other side, so as to spread out there and not between the sheets. You are safer using a rivet that appears too long.

Avoid drilling into frame's weld points.

Hole Spacing

Do not install the rivets closer than 5/8" from each other. When part is riveted, tar the rivet heads. Dip rivet in tar before inserting into part to be fastened. Try to avoid welds, as it is difficult to drill them. Clean area of frame to be fastened to, tar and assemble.

Modify Your Drill Bit to Avoid Accidents

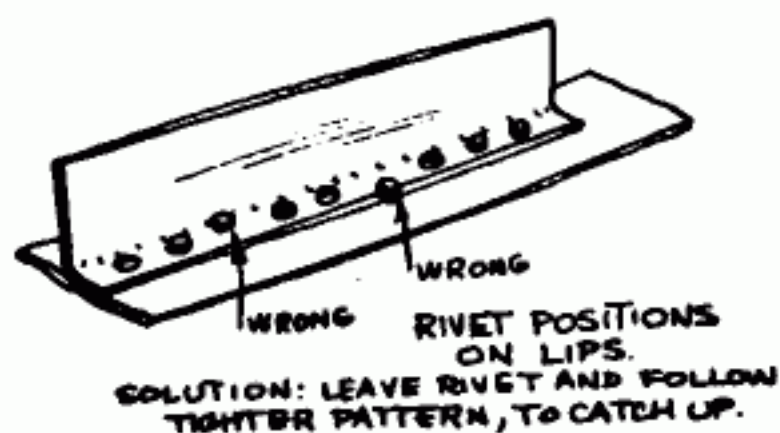
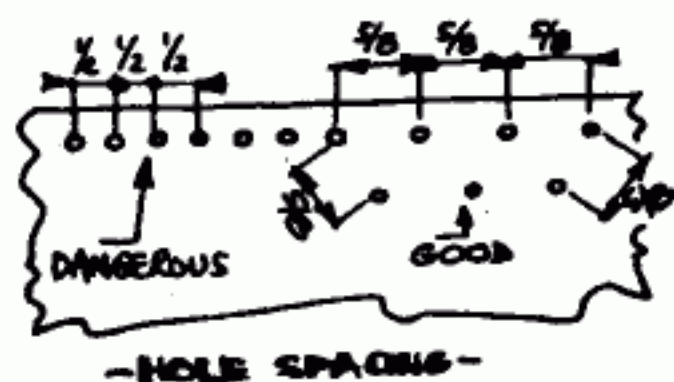
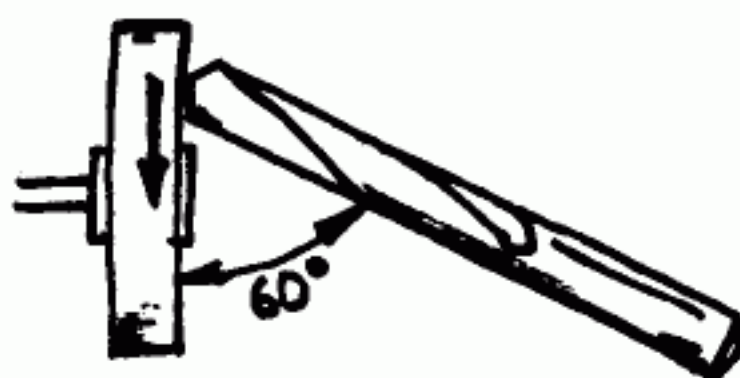
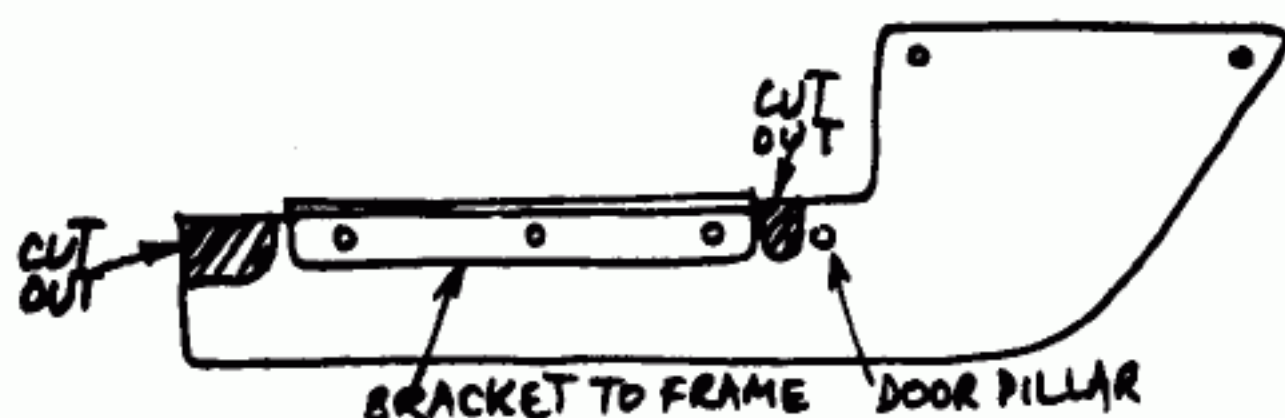
Do not drill into the frame without fitting over the drill bit a small length of old hydraulic tubing, so as to have only about 3/8" sticking out. This helps avoid breakage of the bit and prevents it from plunging into the frame, when the hole is finished, and eventually punching another hole in an electrical or water conduit.

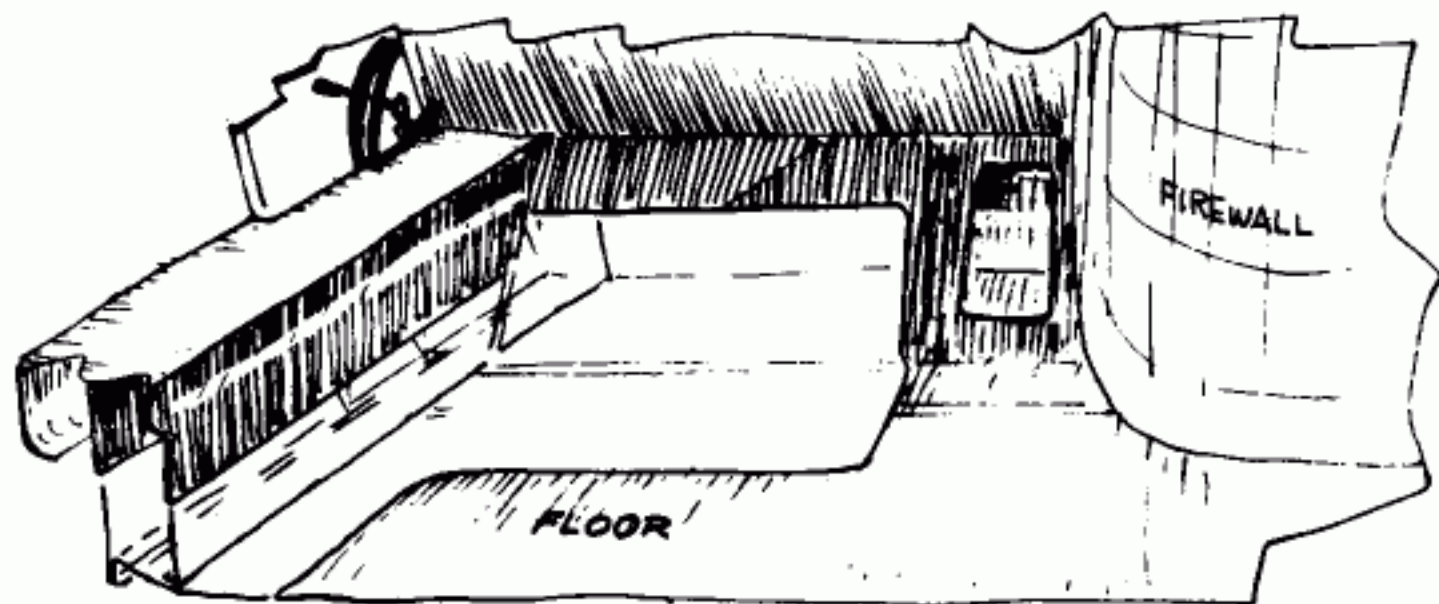
How to Sharpen Your Drill Bits

Use a small grinding wheel fitted on the drill. Present the drill bit as shown on the drawing and rotate the bit slowly while increasing the angle. Make sure both surfaces are equal, otherwise only one side will be cutting, which will fatigue the bit and ultimately cause breakage.

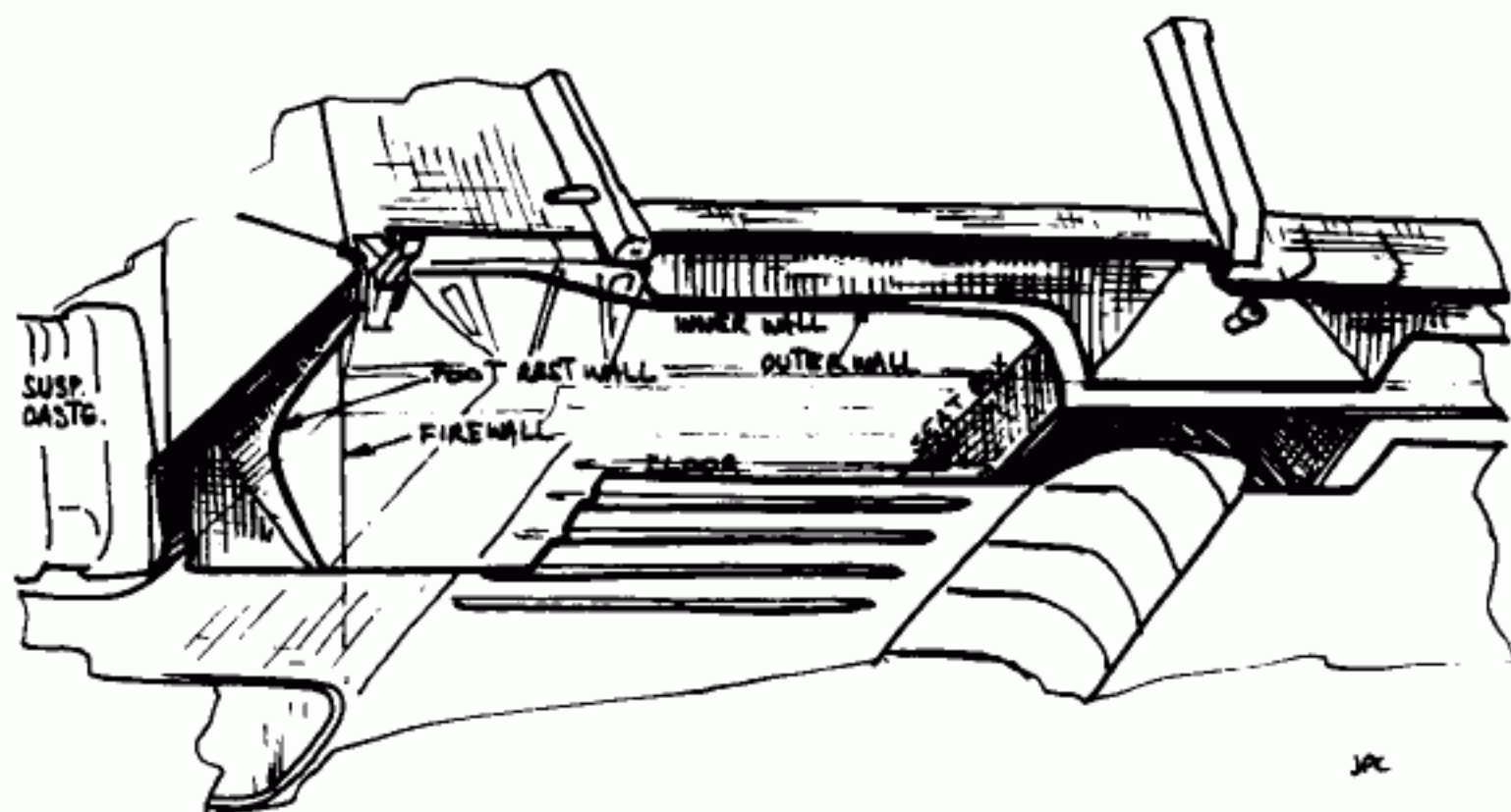
PREVENT WATER FROM ENTERING THE FRONT FRAME

As the car is washed, or during a rain, water runs in the gutter located in front of the windshield. From there, it runs into the hood hinge areas. The next place to go is along the sides of the frame, behind the rear of the front fenders. The water is stopped, however, at about the level of the bottom of the door, by a rubber flap which extends from the back of the wheel well around to somewhere under the front door. As mud and decaying leaves accumulate in this flap, the water cannot run down anymore and seeps into the frame, right where the rot gets the worst. Cut the rubber flap as shown here and seal any cracks in the frame with caulking or tar.

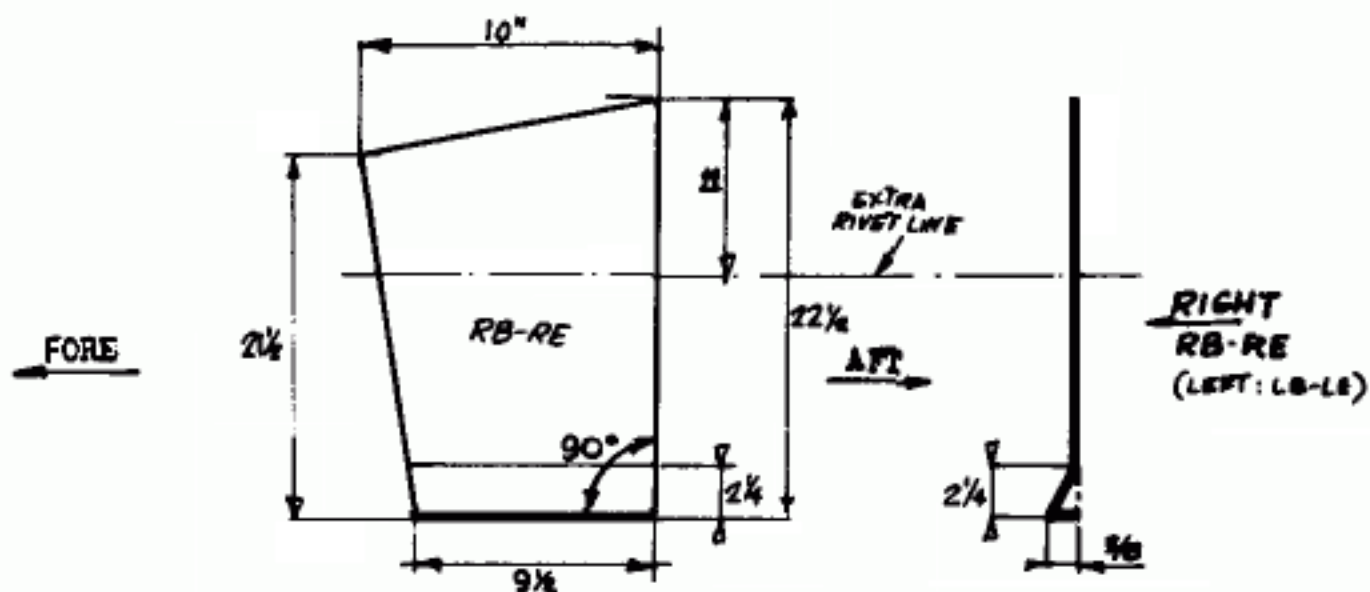




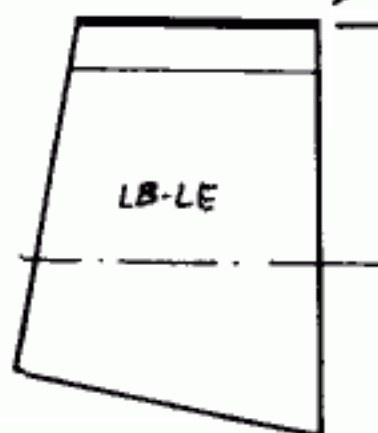
PARTIAL CHASSIS VIEW, BAD METAL REMOVED,
AS SEEN FROM DRIVER'S SEAT.



PARTIAL CHASSIS VIEW, BAD METAL REMOVED,
BOTTOM, FRONT, LEFT SIDE.

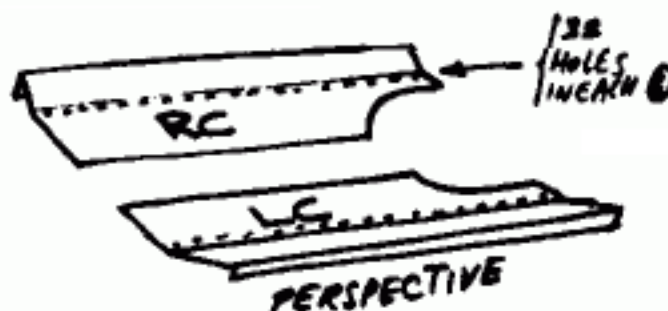
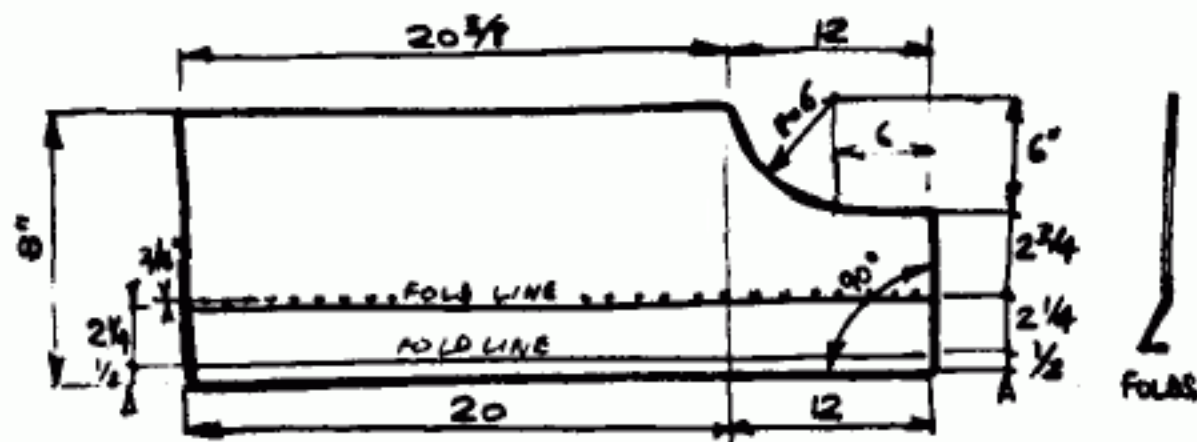


BOTTOM VIEW.



ONE RIGHT AND ONE LEFT,
SYMETRICAL.

ALIGN THIS LIP OPTICALLY
WITH REAR FRAME.

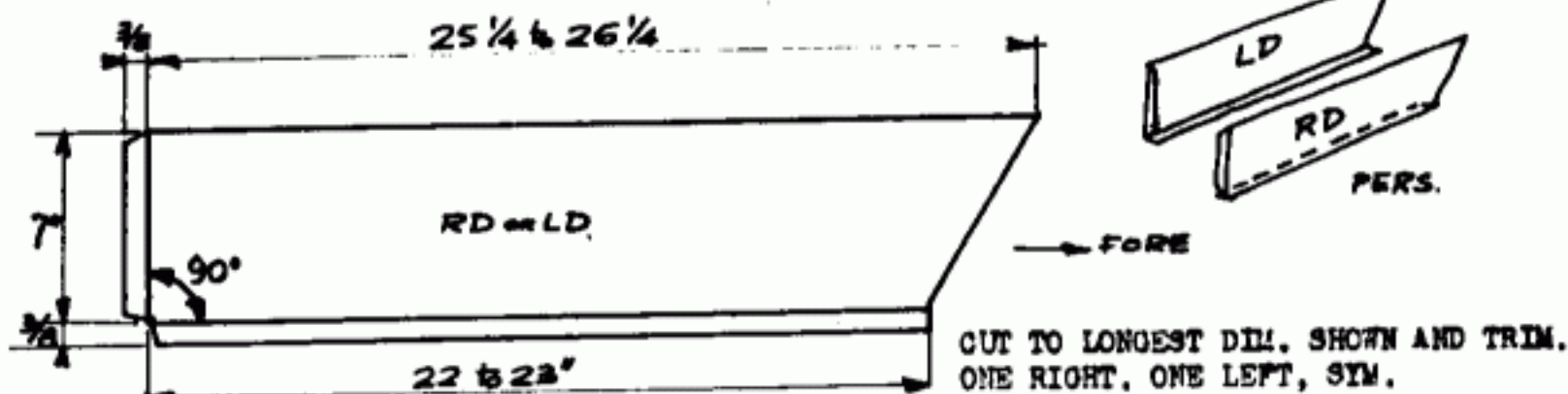


PERSPECTIVE

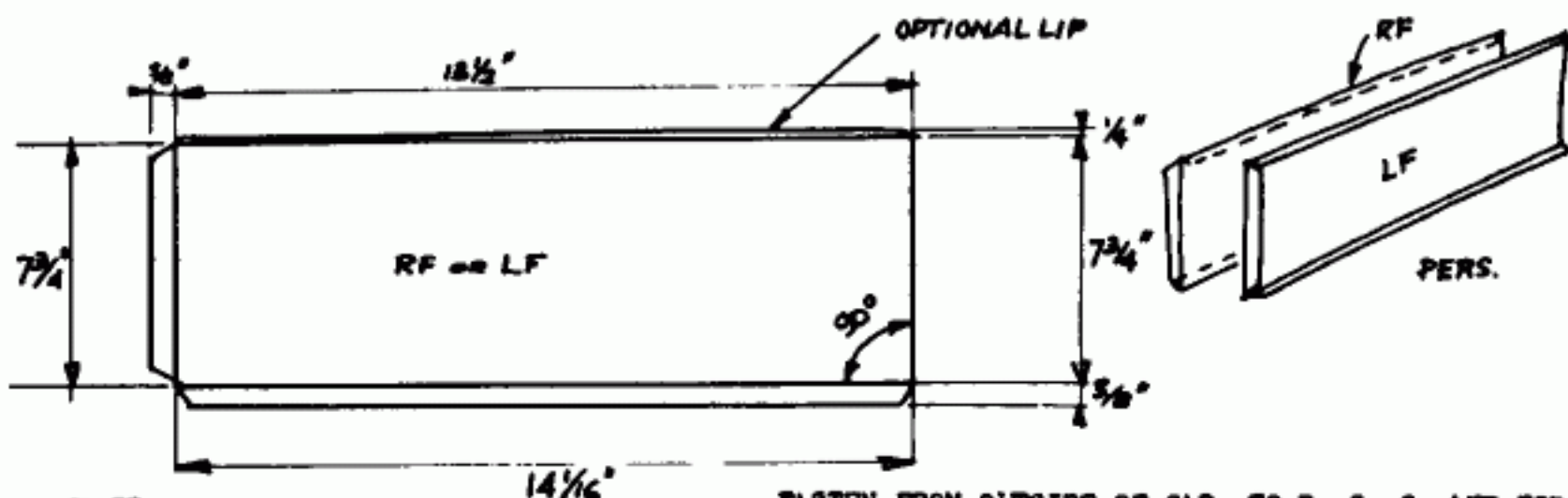
ONE RIGHT, ONE LEFT, SYMETRICAL.
TRIM AND DRILL BEFORE ASSEMBLY.

ALL HOLES ARE 1/8" DIA. DEBURRED ON BOTH SIDES.
ONE HOLE PER INCH, PLUS OR MINUS 1/4".

DO NOT LIP NOR DIMPLE R6 CURVE UNLESS TO FIT
MUFFLER AREA. CURVE MUST HAVE NO CRACKS.
AFTER ALIGNMENT FASTEN TO B-E AND FLOOR OF CAR TO
REAR. THIS PART WILL RECEIVE THE F, D, H, O, J, K,
L, W, X, V PARTS LATER IN THE SEQUENCE. C PART IS
MOUNTED UNDER B-E PART, ALIGN OUTER LIP AS
WITH B-E PART'S OUTER LIP (DWG # 18002).

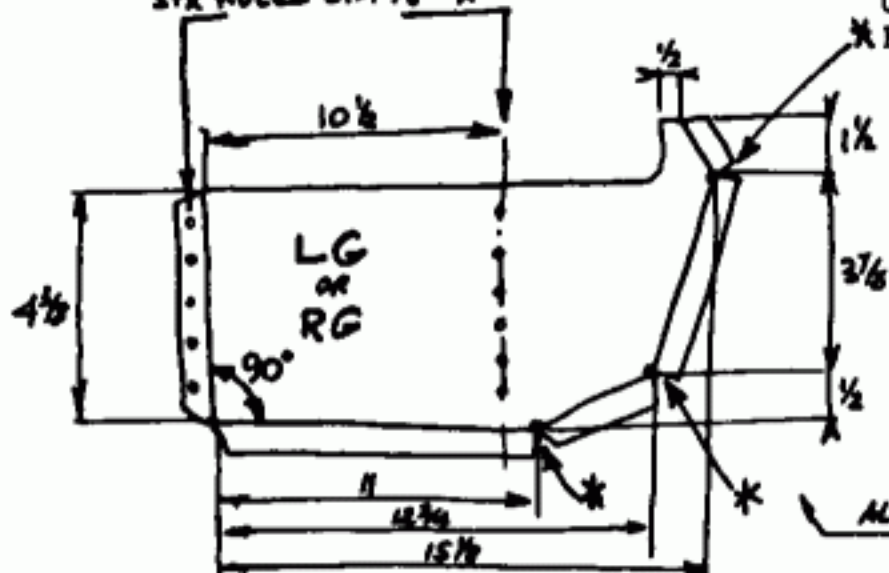


FASTEN TO, IN ORDER, C FROM BOTTOM OF CAR, REAR TO SEAT BOX FROM INSIDE CABIN, TOP TO FRAME FROM INSIDE CABIN (DO NOT DAMAGE LINES IN SPAR), DO NOT FASTEN TO F UNTIL H AND J ARE READY FOR FASTENING, SAME FOR K AND F REAR.



ONE RIGHT, ONE LEFT, SYM.
NO DRILLING BEFORE ASSEMBLY EXCEPT
FOLD-CORNER HOLE.

SIX HOLES DIA $\frac{1}{8}$ " *



FASTEN FROM OUTSIDE OF CAR TO B, C, O, AND TOP TO FRAME. DO NOT FASTEN TO H PART YET. THIS PART WILL FASTEN TO D, J AND K LATER IN THE SEQUENCE.

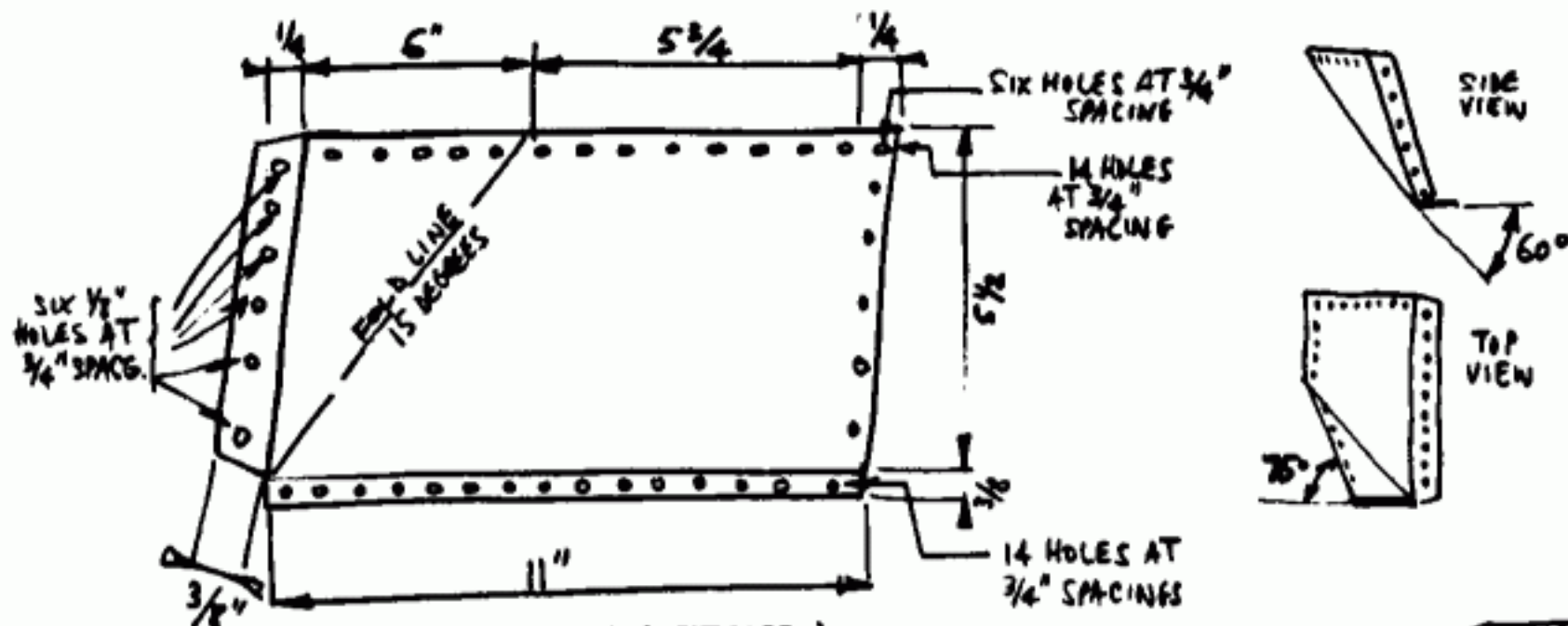
F'S BOTTOM MUST BE TRUE WITH G'S BOTTOM'S PLANE. OPTICALLY ALIGN F'S BOTTOM TO UNDER FRONT SEAT FLOOR BEFORE FASTENING F'S TOP TO FRAME.

FASTEN FROM FOOT REST AREA TO FRONT HORN. FASTEN TO B-E PART FROM BOTTOM OF CAR, ALIGN, THEN FASTEN TO FIREWALL FROM FRONT WHEEL AREA.

F, L, AND P PARTS WILL FASTEN TO THIS PART LATER IN THE SEQUENCE.
BEFORE ASSEMBLY: FOLD LIPS AND DRILL DIA $\frac{1}{8}$ ", 1" APART IN VERTICAL LIP ONLY.

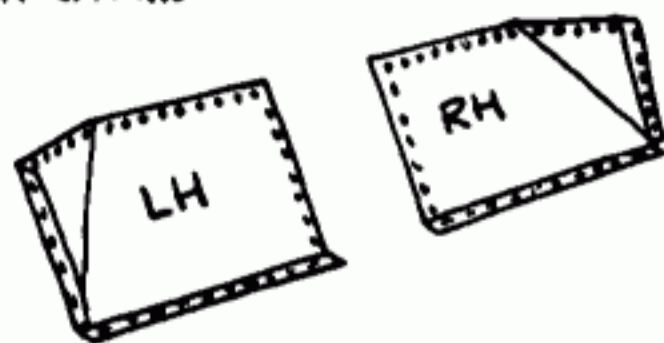
ONE PART RIGHT RG SYMETRICAL
ONE PART LEFT LG

All lips are $\frac{3}{8}$ " wide.



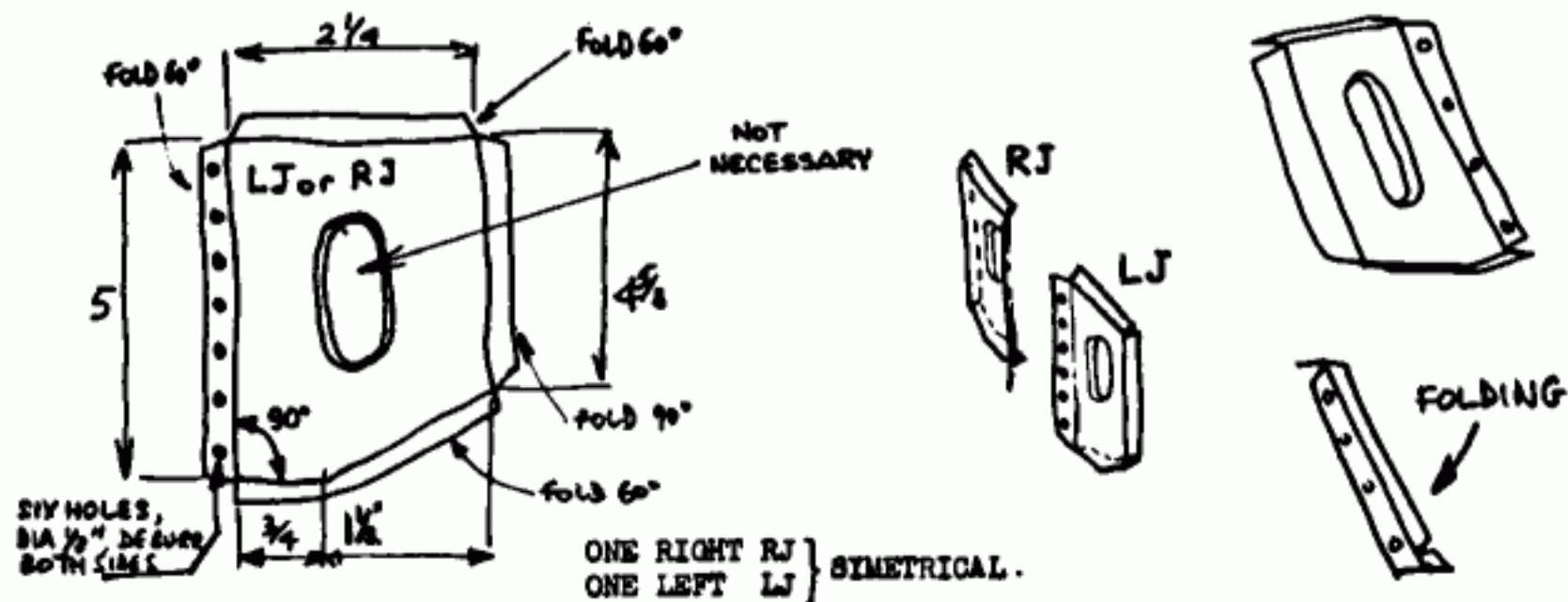
FASTEN IN ORDER TO INSIDE FIREWALL (INBOARD) FROM CABIN SIDE, TO FLOOR AND C AND E TOGETHER FROM THE BOTTOM OF THE CAR, TO THE TOP AND THE FRAME FROM THE CABIN SIDE. DO NOT RIVET TO D OR F YET.

SHOULD THE LIP OF THE B-E AND C OVERLAP BE MORE THAN 1 1/2" AWAY FROM THE H OVERLAP AND RIVET ROW, PUT AN EXTRA RIVET ROW FROM THE BOTTOM, NEXT THE EDGE OF THE B-E/C OVERLAP. IF NOT, SQUEEZE TWO ROWS AT 5/8" MINI SPACING ABOUT THE H LAP.

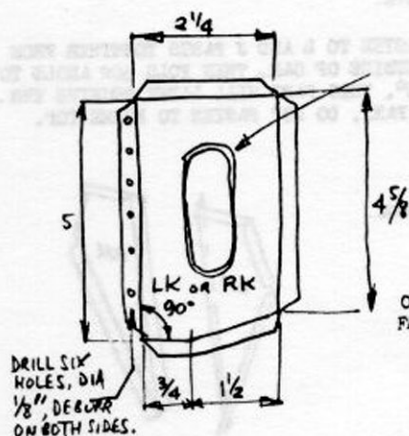


WARNING ! THIS PART IS NOT A RECTANGLE.

ONE RIGHT, ONE LEFT, SIM.



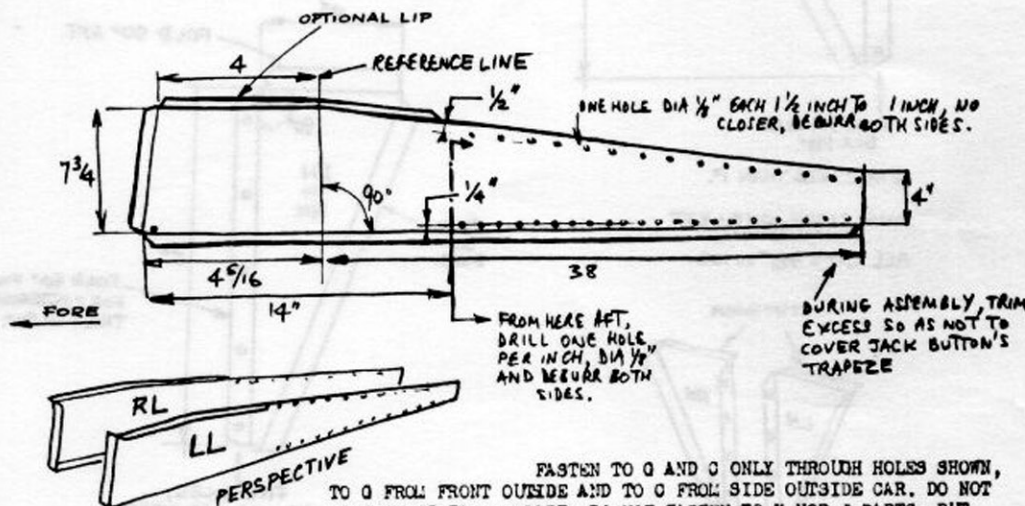
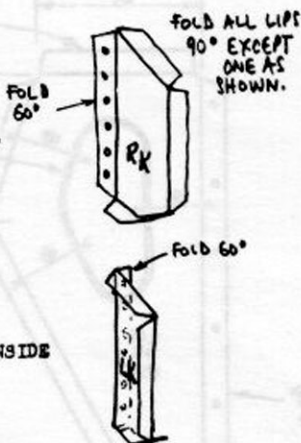
DRILL ONLY AS SHOWN.
DRILLED FROM INSIDE WITH H AND F AND D. FASTEN ALL FOUR (4) SHEETS FROM INSIDE OF CABIN. J WILL RECEIVE L AND R TOGETHER LATER IN THE SEQUENCE.



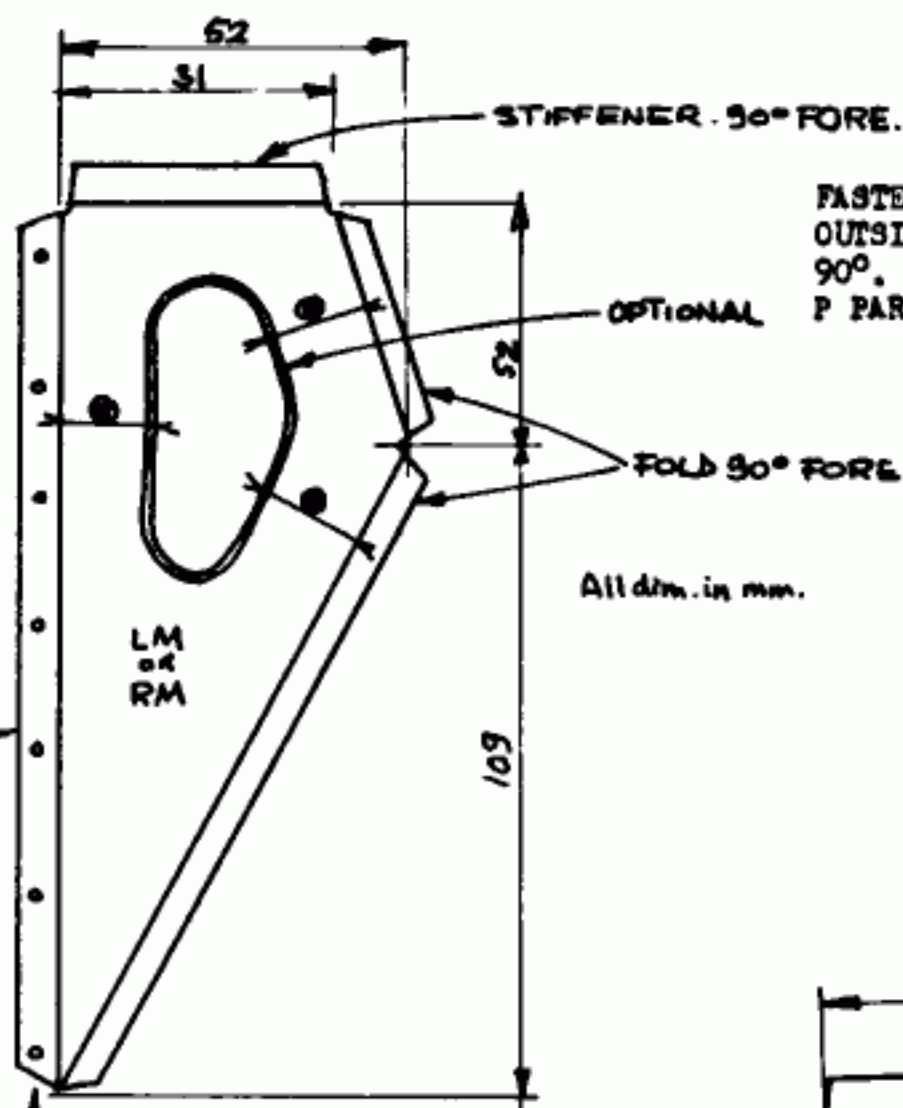
DRILL ONLY AS SHOWN

60° FOLD IS FOR EASE OF FASTENING, FOLD TO 90° AFTER RIVETING.

ONE RIGHT, ONE LEFT, SYM.
FASTEN WITH F AND D FROM INSIDE

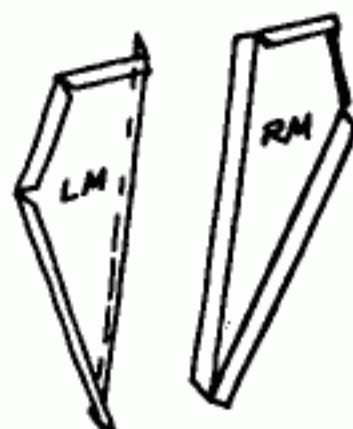


FASTEN TO Q AND C ONLY THROUGH HOLES SHOWN, TO Q FROM FRONT OUTSIDE AND TO C FROM SIDE OUTSIDE CAR. DO NOT FASTEN YET TO B-E PART. DO NOT FASTEN TO K NOR J PARTS, BUT LOCATE THEM FOR LATER ASS'Y WITH N AND M. GLECO OR GATHER L WITH TOP OF FRAME AND FASTEN TOGETHER FROM OUTSIDE.



FASTEN TO L AND J PARTS TOGETHER FROM OUTSIDE OF CAR, THEN FOLD 60° ANGLE TO 90°. THIS PART WILL LATER RECEIVE THE P PART. DO NOT FASTEN TO FRAME TOP.

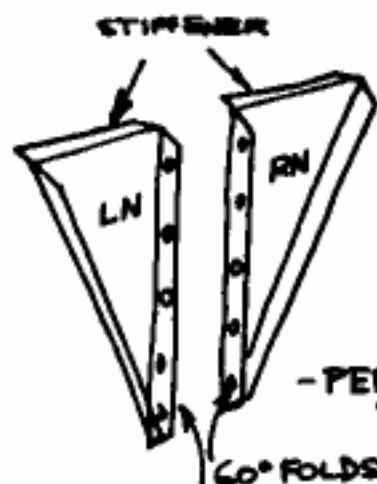
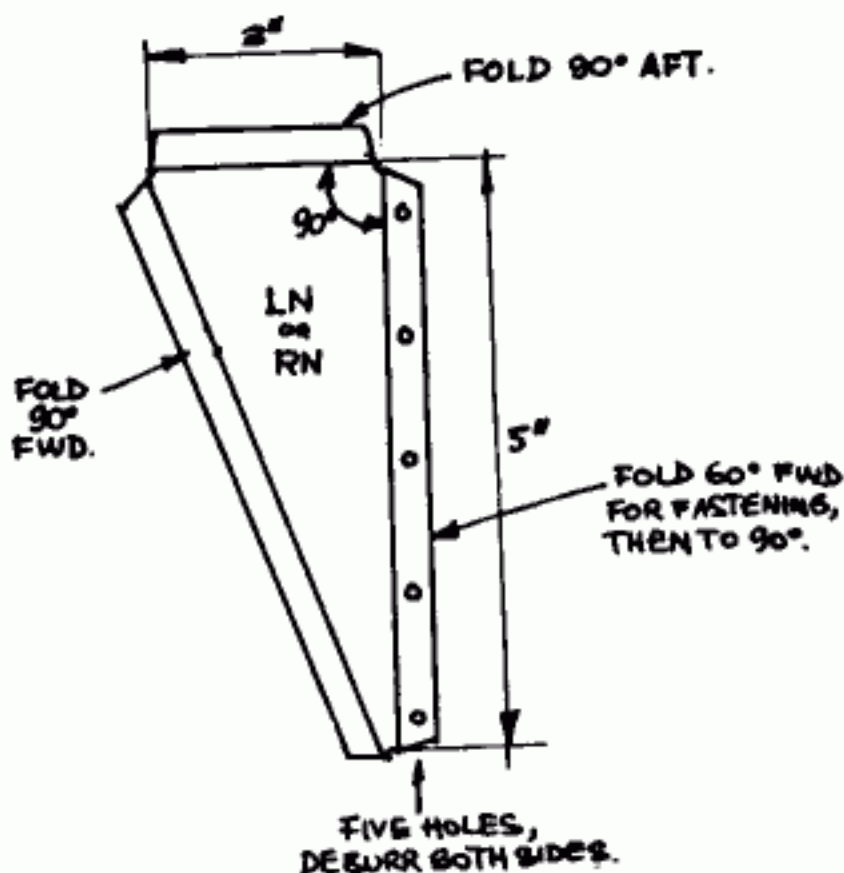
All dim. in mm.



DRILL 7 HOLES
DIA 1/8".

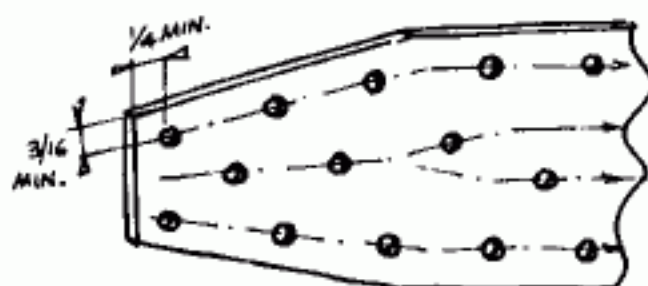
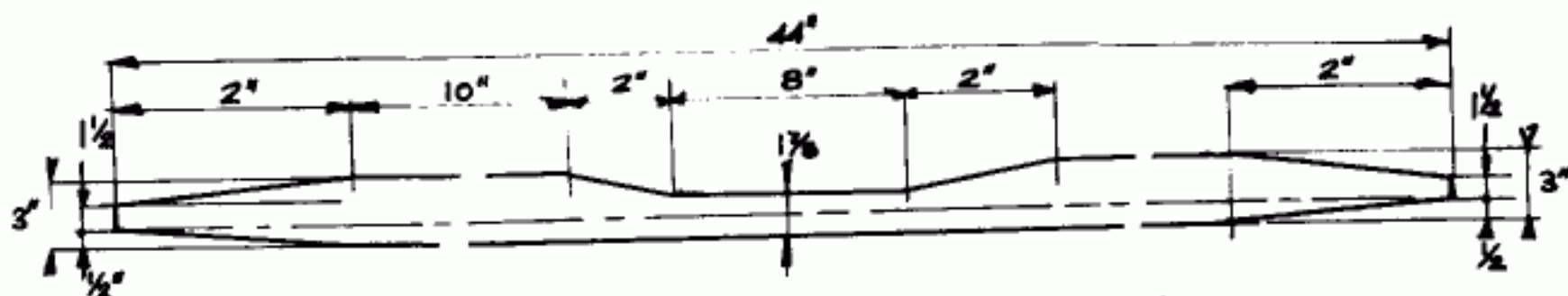
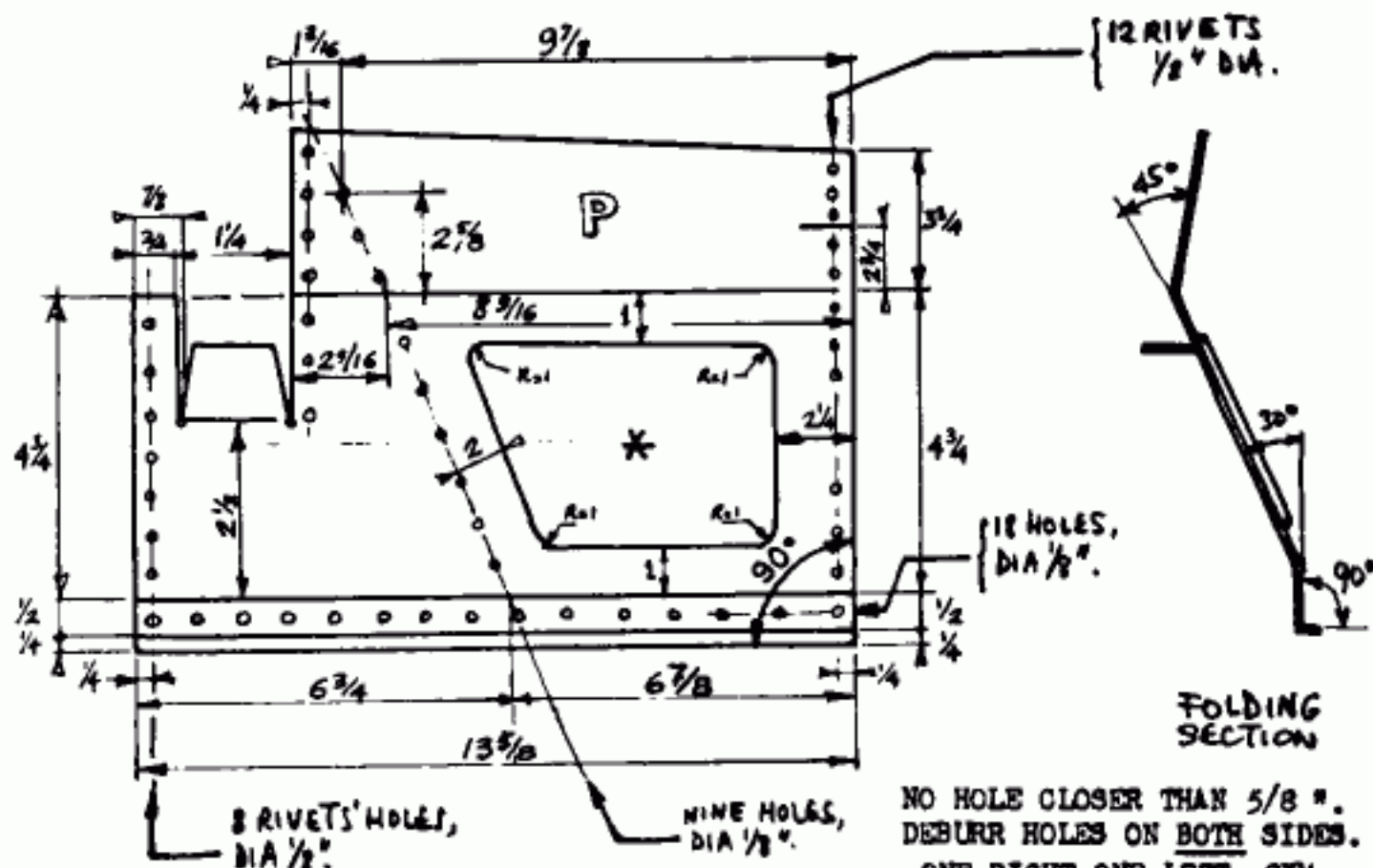
● NOT LESS THAN 1".

ONE RIGHT, ONE LEFT
SYMMETRICAL.
ALL LIPS 3/8" WIDE.

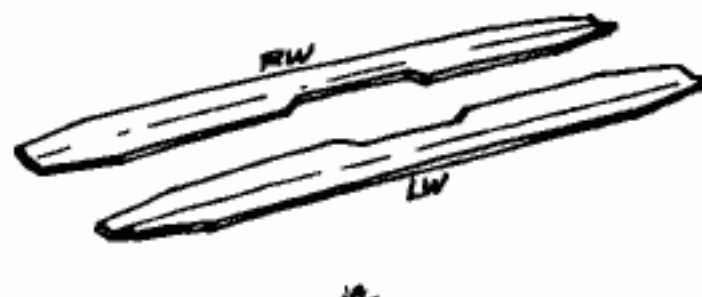


ALL LIPS ARE 3/8" WIDE.

FASTEN TO L AND K PARTS FROM OUTSIDE OF CAR.
FOLD 60° ANGLE TO 90°.
THIS PART WILL RECEIVE THE REAR OF THE P PART
LATER IN SEQUENCE.



NO HOLE CAN BE
CLOSER THAN $5/8"$
TO ANOTHER HOLE.



ONE RIGHT } SYMMETRICAL
ONE LEFT }
ALL HOLES $\frac{1}{8}$ " DIA, DEBURRED BOTH SIDES.
HOLE LOCATION TOLERANCES $\pm \frac{1}{16}$ " IN ANY DIRECTION.
NO CRACK, NO BURRS IN NECK.
A MINIMUM OF 28 RIVETS MUST BE PROPERLY
INSTALLED ON EACH SIDE OF THE NECK.
ONLY ONE ROW OF RIVETS, IN CENTERLINE OF THE NECK.

PRODUCTION: THIS PART MUST BE IN INTIMATE CONTACT WITH ALL CONCERNED METAL PARTS. AS THE FASTENING PROGRESSES, USE CLECOS OR OTHER DEVICES TO BRING THE SHEETS TOGETHER. SHOULD A SLIGHT DEPRESSION EXIST IN THE METAL UNDER, HAMMER W INTO IT AND PRESS THE RIVETING TOOL SO AS TO HAVE BOTH SHEETS AS CLOSE AS POSSIBLE.

To Replace Frame Covers on DS Models

Installation:

Remove old plates. Keep washers, dispose of the old screws.

Keep the rubber anti rattles located on the bottom of the frame.

Screw the new plates starting by the rear ones, into the frame door bottoms, into the previous holes.

Once all the plates are fastened, clamp the bottoms of the plates around the bottoms of the frame. You may use the rubber anti rattles again. Should you not wish to use them again, weep holes must be punched on the bottom of the plates and the assembly should be tarred or the like before putting in contact.

Once the bottom of the plates is aligned with the bottom of the frame, pinch the lip of the plate that is overhanging inboard of the frame bottom. This lip, must be pinched up, so as to provide a “hook” all along the frame. Do not use tools for this pinching, since they will damage the metal.

The front of the front plates must be carefully caulked in the front and top edges to prevent water from entering. Caulking should be done just before screwing into frame.

It is recommended to caulk or tar the top lip in contact with the doorframe bottoms in order to slow galvanic corrosion.

Rear Suspension Frame Repair

Lift car's rear end, use rear trunk lower lip first. Then rest car's side members, near rear. Should the side members be weakened by corrosion, install a piece of 2x4, approximately 2 feet long between stand and frame.

Rear wheels must be hanging.

Remove fender and wheel on damaged side.

Open hydraulic tank's cap, and leave off until the suspension lever has been lowered and the suspension has lowered itself. Should a defective suspension sphere fail, the escaping nitrogen will not cause the rupture of the hydraulic tank.

Remove suspension sphere, two hydraulic lines, one on the suspension cylinder, and one on the rubber boot.

Do not raise the suspension lever from now on.

Remove cylinder lock nut, lock clamp and rod-knuckle clip. In certain models, the knuckle will come apart.

Extract push rod from knuckle. Extract cylinder-piston-boot-pushrod assembly forward.

Remove boot from cylinder. Remove piston from cylinder. Examine piston and cylinder for cracks. Cylinder usually cracks near 0 ring seats. Replace the set if cracked. Check the new set for hard points. Use 600 paper to remove "high" spots. Clean with alcohol in red fluid cars, kerosene with green fluid cars. Blow air and insert carefully.

Keep all hydraulic parts clean.

Cut metal around bracket (shears or nibbler). No torch.

Remove bracket, straighten. Clean, deburr. Here is the only exception to the no weld rule: the bracket may be welded where cracks have appeared. Make sure the flame is not oxidizing.

Make top plate and side curved plate.

Clamp bracket to plates and plates to car's frame.

Align bracket as shown.

Spray parts lightly with black lacquer when aligned properly.

Unclamp and rivet side-curved plate to bracket following paint marks, follow schedule.

Fasten top plate on bracket. Follow paint marks.

Cut trunk's wall out.

Clamp bracket assembly to car's frame, check alignment again.

Fasten assembly to frame, top plate first, front of side-curved plate next.

Fabricate reinforcement plate. This is optional and not really recommended since it gives too much strength to rear suspension and can cause a frame failure, in the side member area, should another rear suspension failure recur (bad sphere or missing rubber stop).

Tar all parts just before assembly.

Fabricate trunk wall and fasten as shown.

All plates must be in intimate contact. No gaps.

All laps and rivets must be tarred or the like.

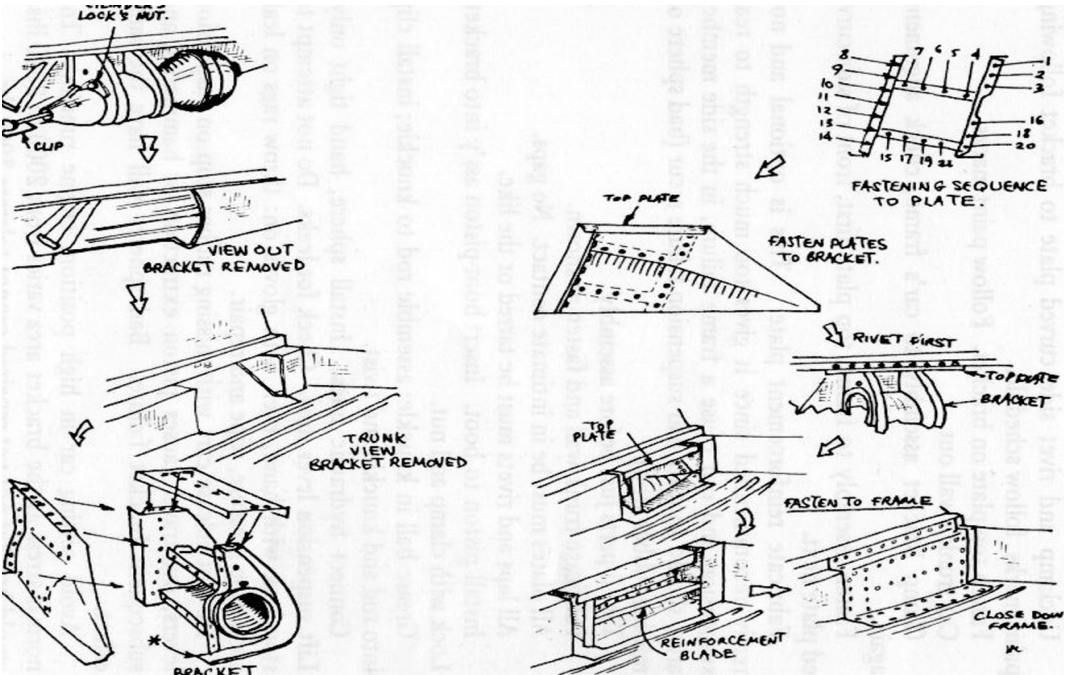
Install piston to boot. Insert boot-piston assembly into bracket. Lock with clamp and nut.

Grease ball in knuckle; assemble rod to knuckle; install clip into rod and knuckle and twist.

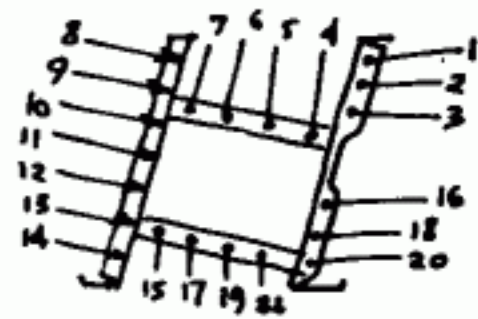
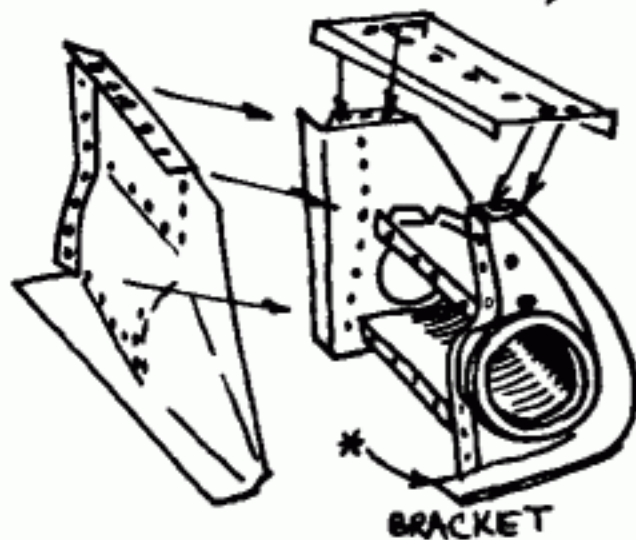
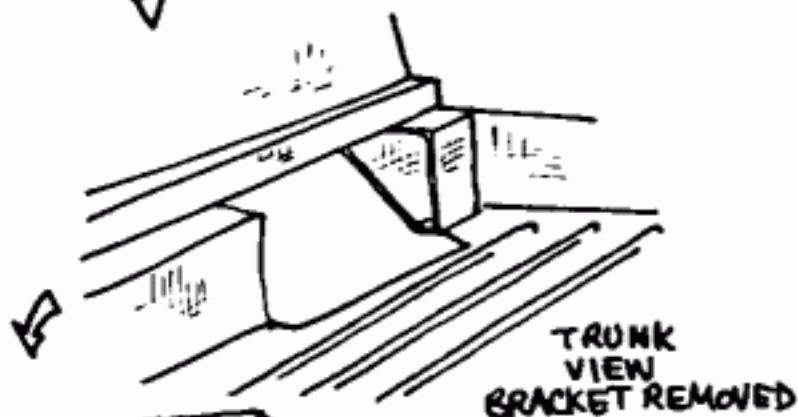
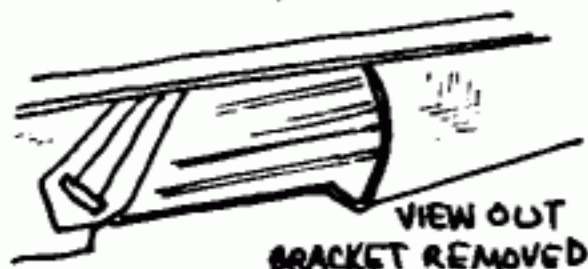
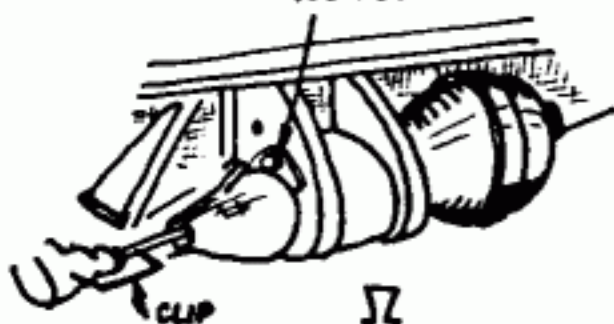
Connect hydraulic lines. Install sphere, hand tight only. Lift suspension lever now. Check for leaks. Do not attempt to stop leak with hand, even with gloves on: throw rags on leak area; drop pressure, wipe and repair.

Do not release cars with missing rubber stop on suspension levers; over-travel causes piston extraction or hammering and subsequent bracket failure. Bad spheres will have the same effect.

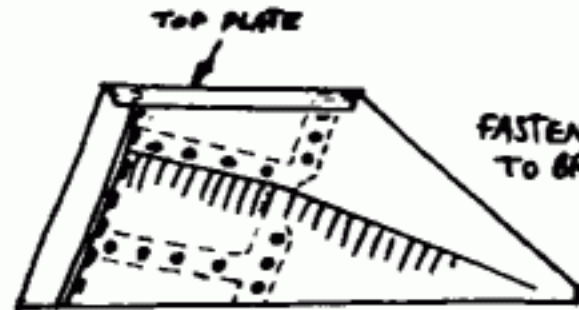
Avoid setting car in high position, engine running. The normal stress at the bracket area varies from 2000 to 2300 lbs. An old bracket not yet repaired cannot tolerate 3000 lbs.



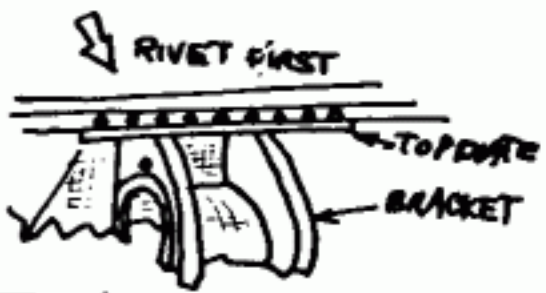
CYLINDER'S
LOCK'S NUT.



FASTENING SEQUENCE
TO PLATE.



FASTEN PLATES
TO BRACKET.



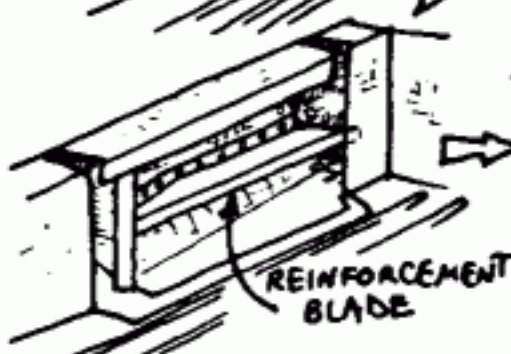
RIVET FIRST

TOP PLATE

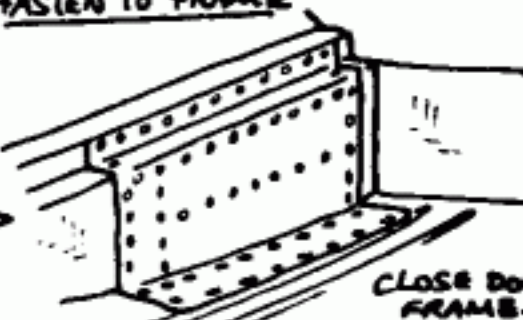
BRACKET



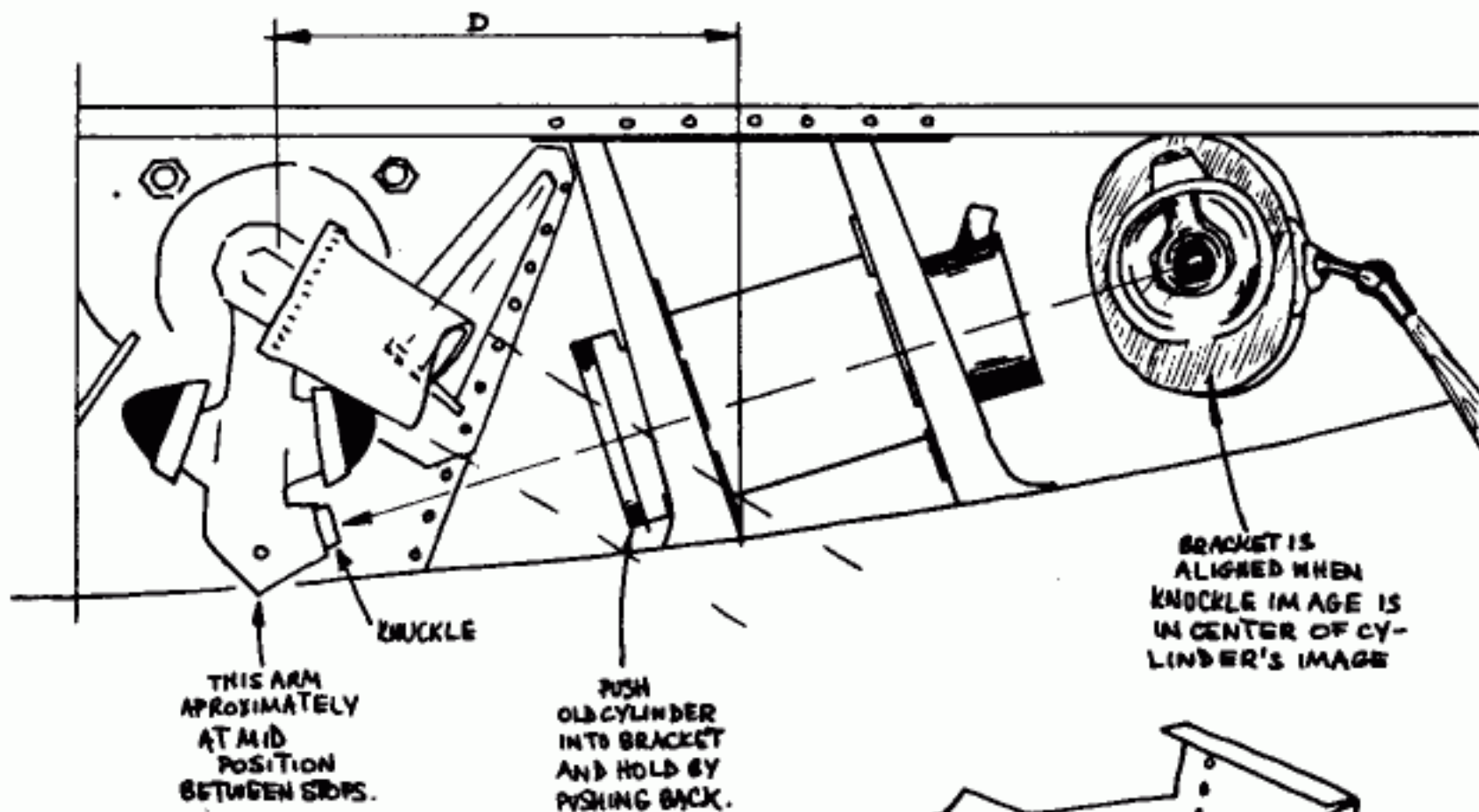
FASTEN TO FRAME



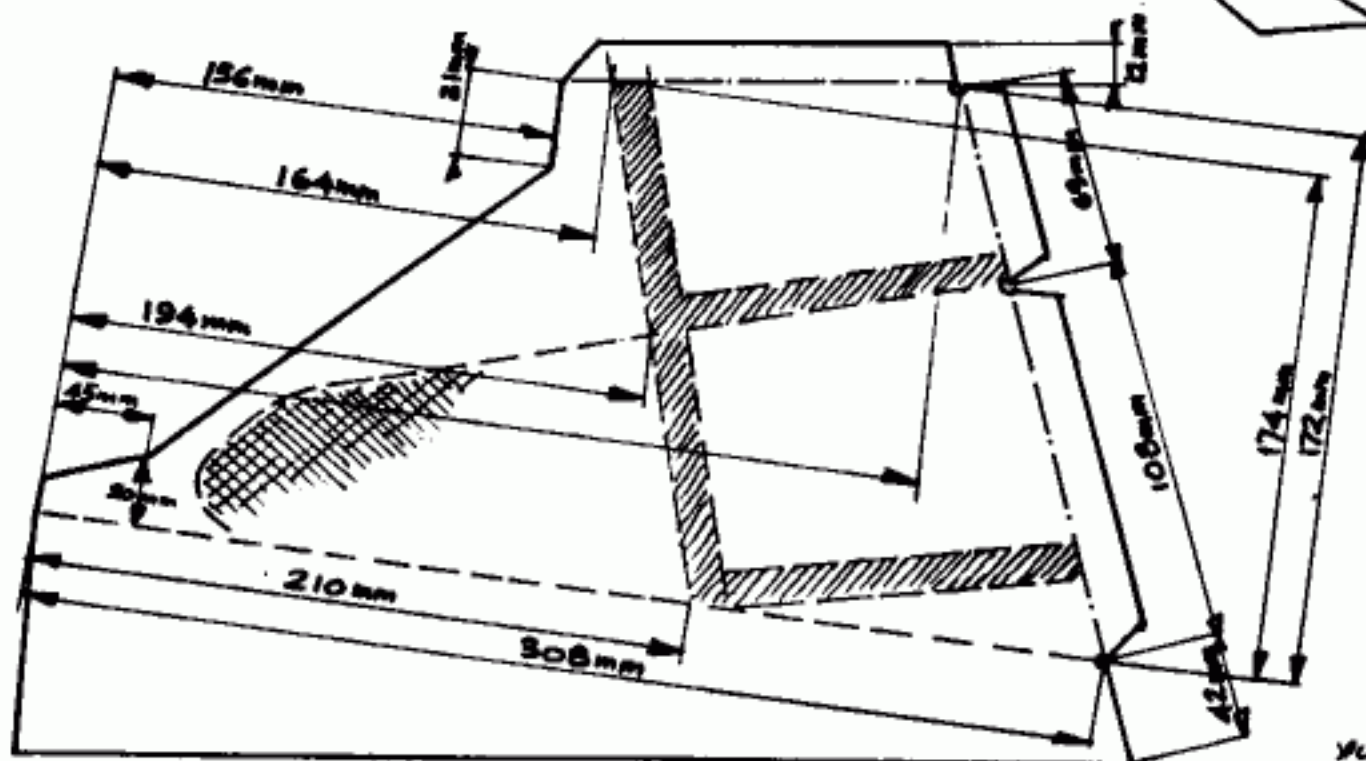
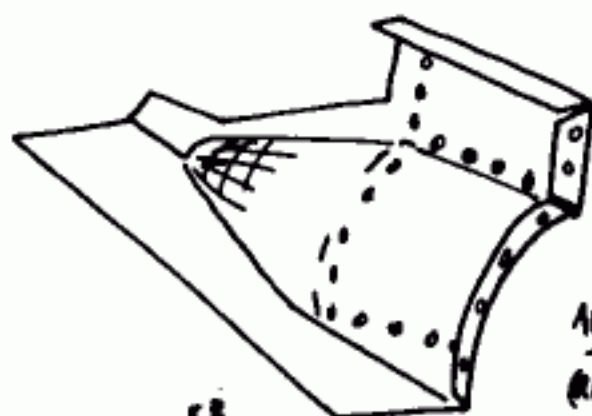
REINFORCEMENT
BLADE



CLOSE DOWN
FRAME.



SEE PAGE 65



1. CLAMP CURVED PLATE IN POSITION.
2. CLAMP BRACKET IN APPROXIMATE POSITION.
3. INSERT OLD CYLINDER AND SHIFT ELEMENTS UNTIL ALIGNMENT OK.
4. "D" DISTANCE FROM BRACKET'S HEEL TO ARM'S AXLE MUST BE THE SAME ON BOTH SIDES OF CAR $\pm \frac{1}{8}$ INCH.
5. CYLINDER MAY BE OFFSET BY ± 1.5 DEGREE. DO NOT SHIM CYLINDER! AN IRREGULAR SHIM SUCH AS A PARTIAL WASHER WILL DESTROY THE CYLINDER'S SHOULDER. MARK ALIGNED PARTS WITH SPRAY.
6. DO NOT RELEASE CARS WITH MISSING RUBBER STOPS.

Rear Suspension Frame

