

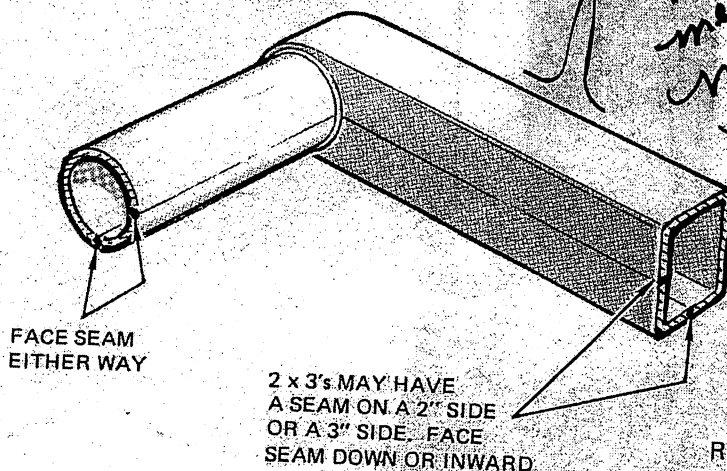
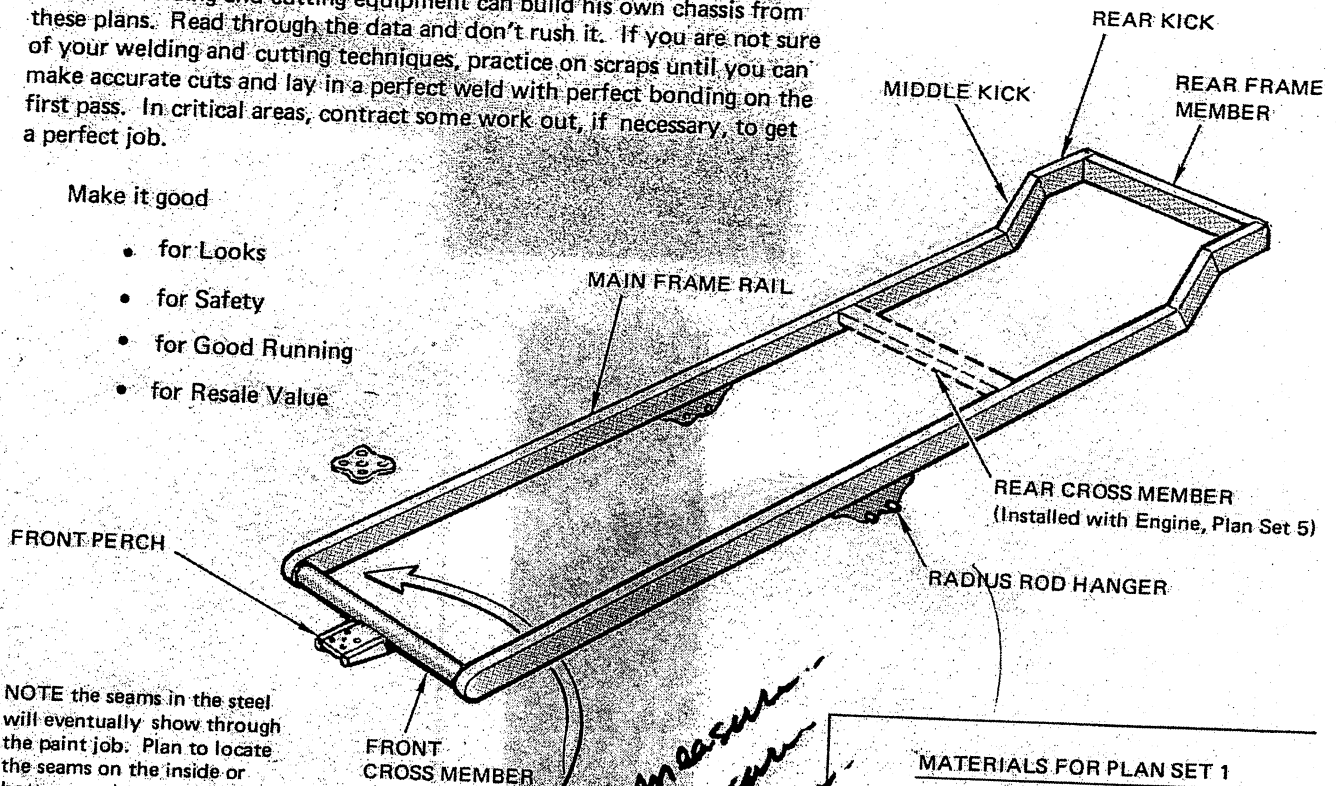
SET 1 - BUILDING FRAME

(7 sheets)

This chassis design and its production techniques were developed over a six year period of building hi-performance custom cars. These are consistent trophy winners at auto shows. A good craftsman who has access to welding and cutting equipment can build his own chassis from these plans. Read through the data and don't rush it. If you are not sure of your welding and cutting techniques, practice on scraps until you can make accurate cuts and lay in a perfect weld with perfect bonding on the first pass. In critical areas, contract some work out, if necessary, to get a perfect job.

Make it good

- for Looks
- for Safety
- for Good Running
- for Resale Value



MATERIALS FOR PLAN SET 1

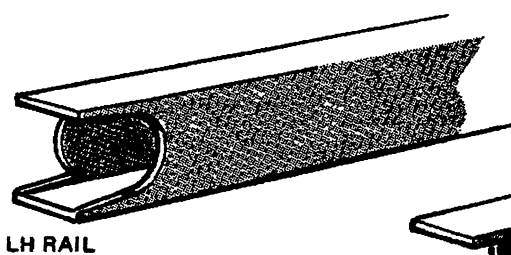
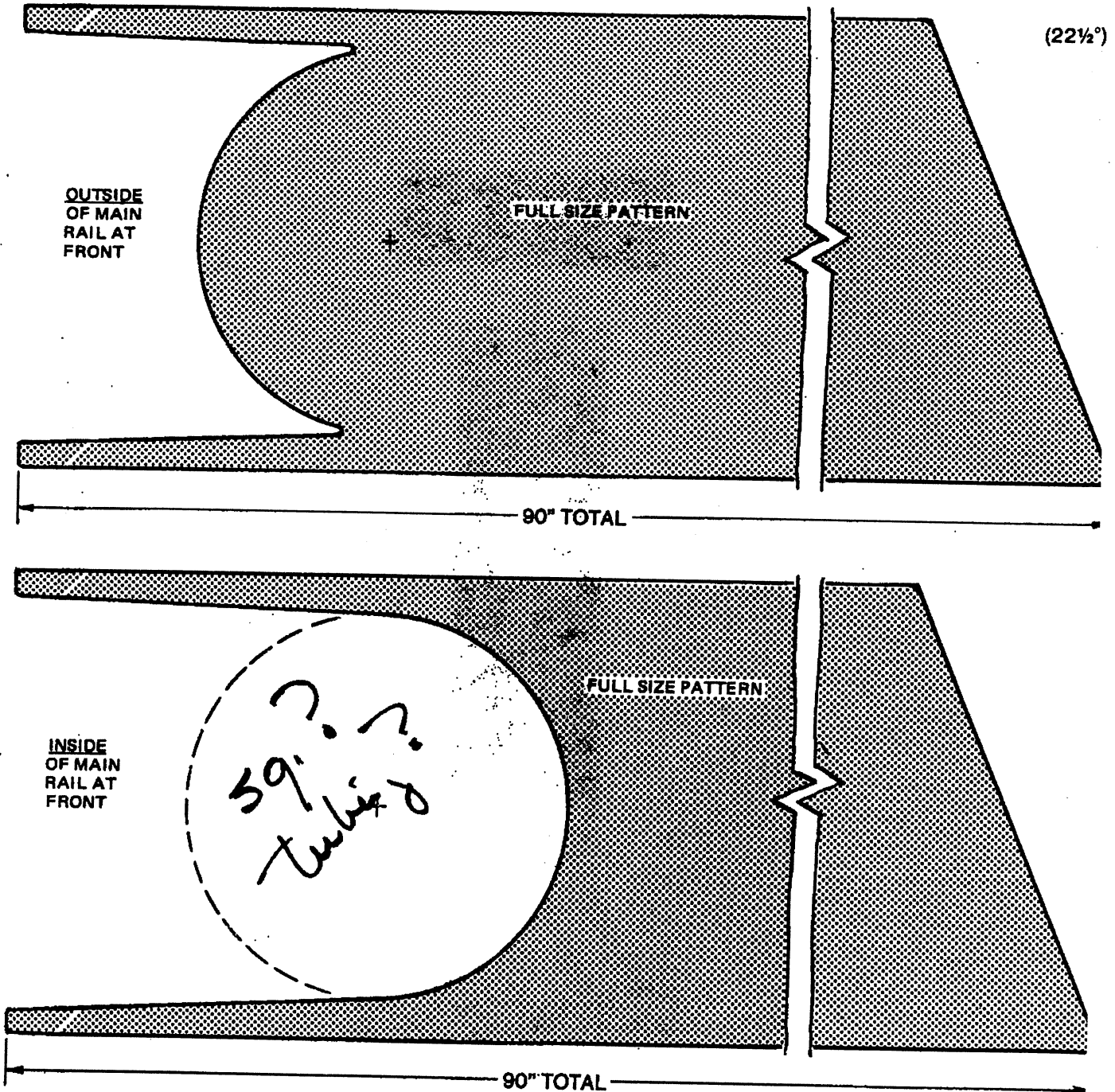
- 24 feet of 2 x 3 x .188 rectangular structural steel tubing
- 3 feet of 2 1/2 x .125 round, mild steel welded tubing
- 3/8" plate (see perch patterns, step (15))
- 3/8" plate - see step (26)
- 5" of 3/4" x .188 tubing, see step (27)

Re. cutting the 2 x 3 tubes - A hacksaw is the cheapest way, but that's a lot of work. A bandsaw is more accurate. An abrasive cut-off saw is the best and most accurate way. Torch cutting is quite practical if you have a steady hand and a grinder, and if "the man knows the torch." Torch cutting is the only way to notch the front end of the rails to fit the round crossmembers. At CCR, we now flame cut perch parts, hangers, etc. on an automatic flame cutting machine. In the early days, we cut them free hand with a torch. If this proves difficult, have a machine shop cut these parts, or order them from the CCR catalog.

Re. welding - Our cars are now all heli-arc welded throughout. Arc welding is possible if you do not allow the large heat volumes to build up and warp the material.

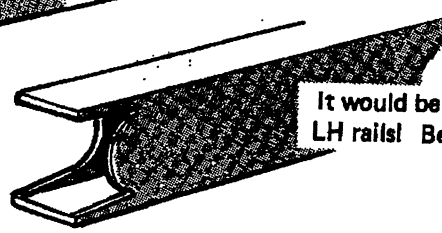
SET 1 - BUILDING FRAME

- 1 Cut 2 main frame rails from 2 x 3 x .188 as shown



LH RAIL

AT FRONT



RH RAIL

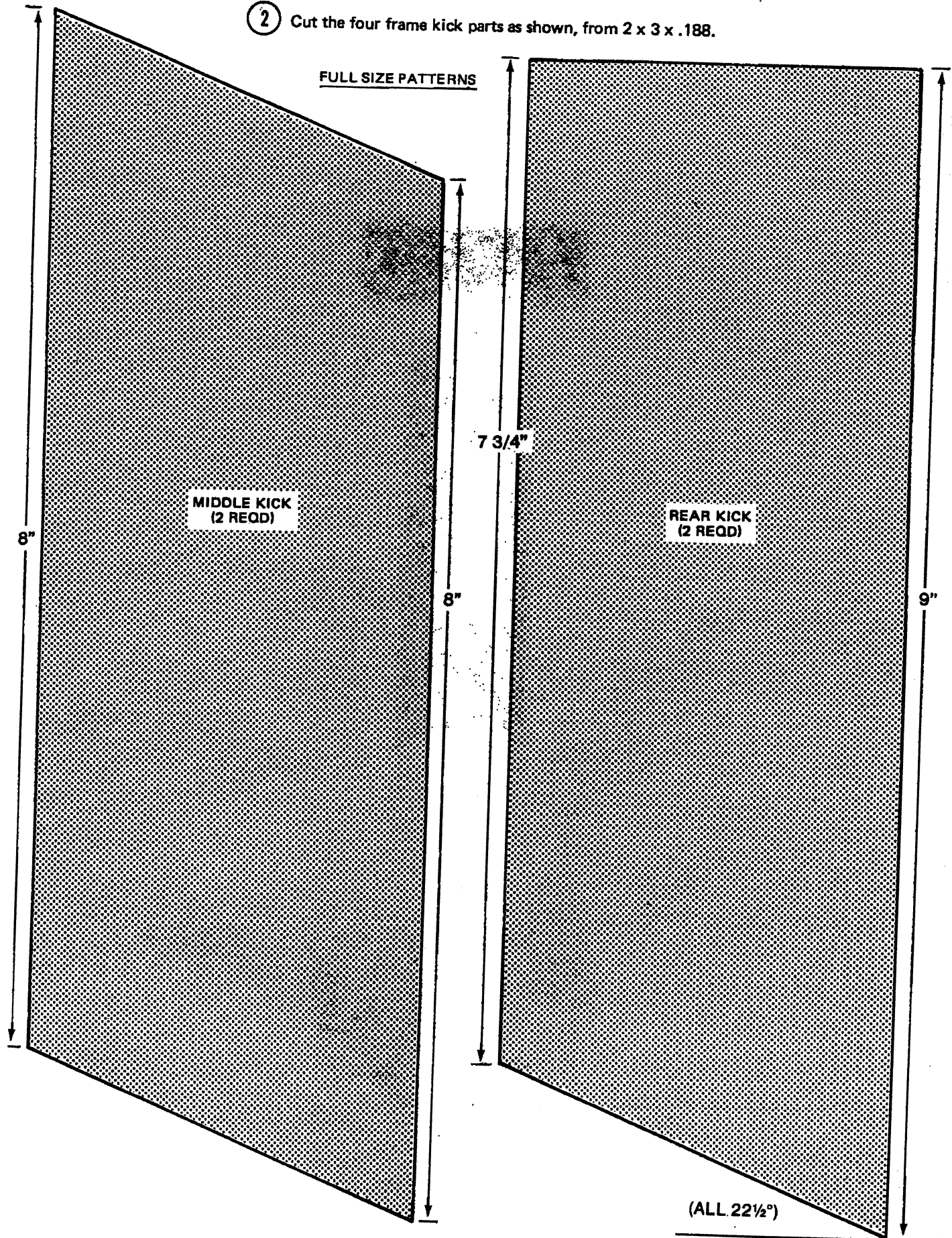
Don't cut your plans up. Trace and transfer patterns down carefully onto the steel through carbon paper or onto heavy paper if you prefer a cut-out pattern. Or use heavy vellum to trace off and cut out.

It would be embarrassing to make two LH rails! Be sure to make a R & L

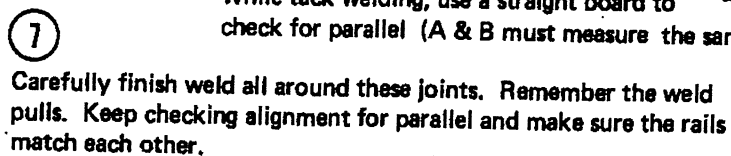
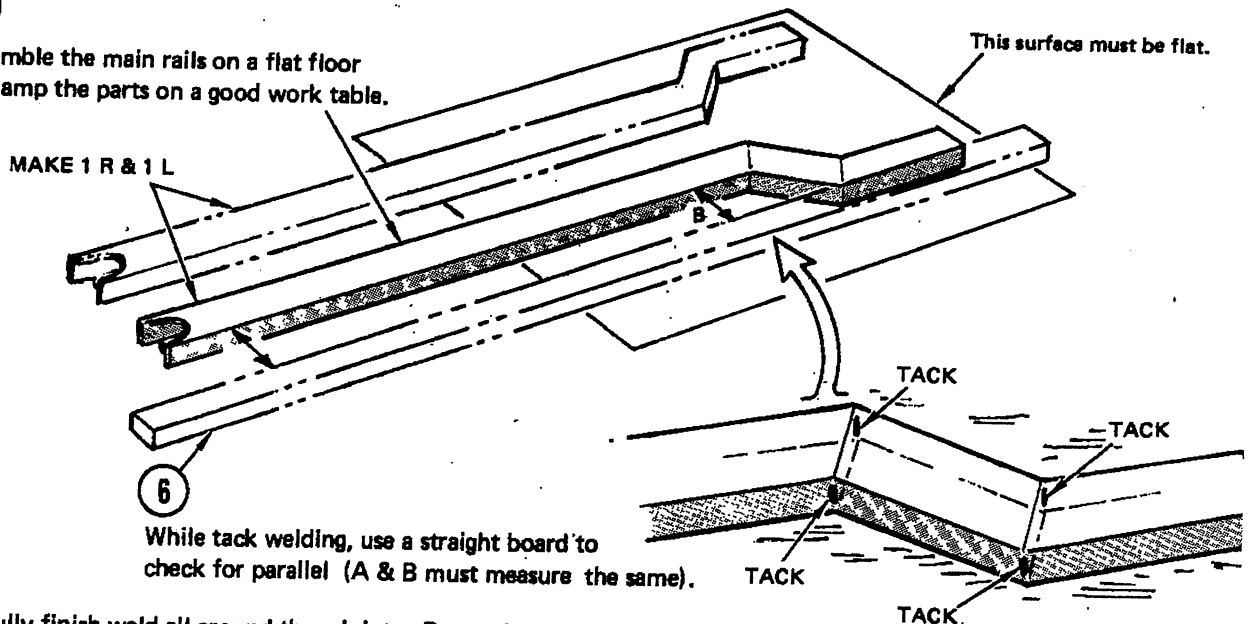
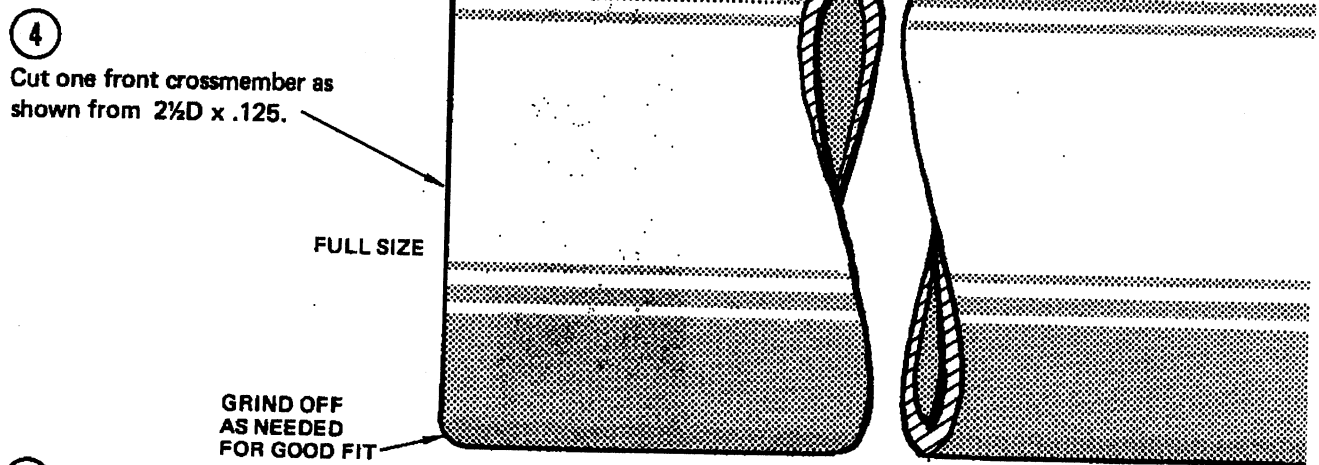
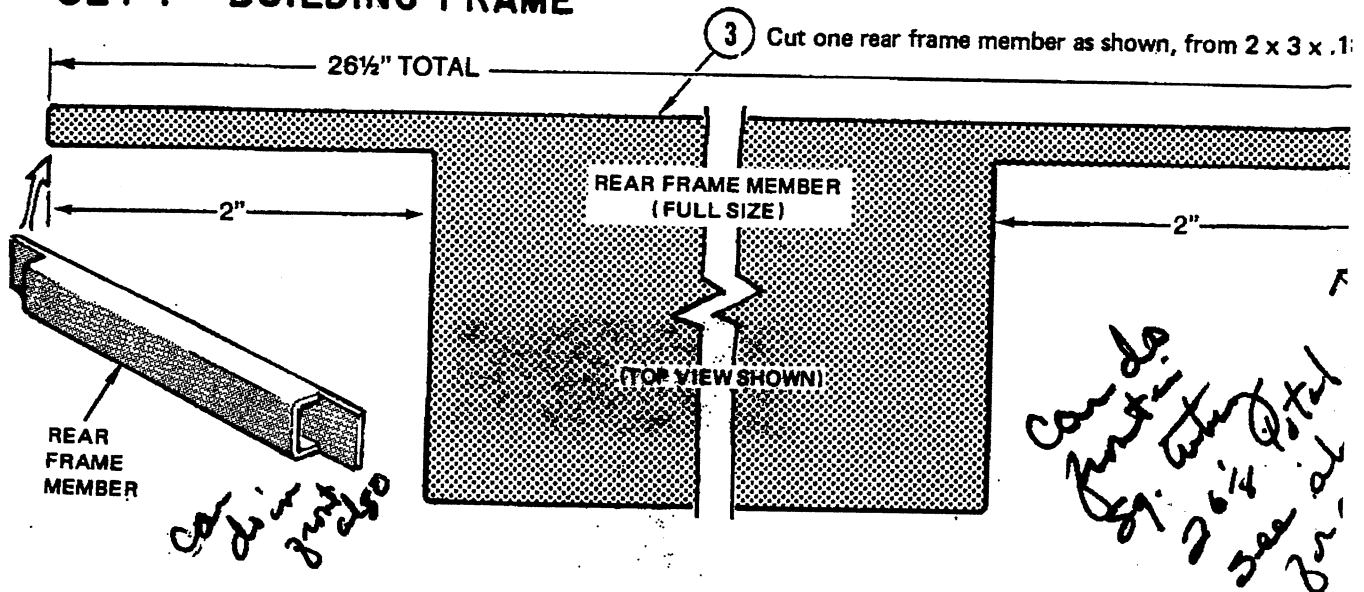
SET 1 - BUILDING FRAME

- ② Cut the four frame kick parts as shown, from 2 x 3 x .188.

FULL SIZE PATTERNS

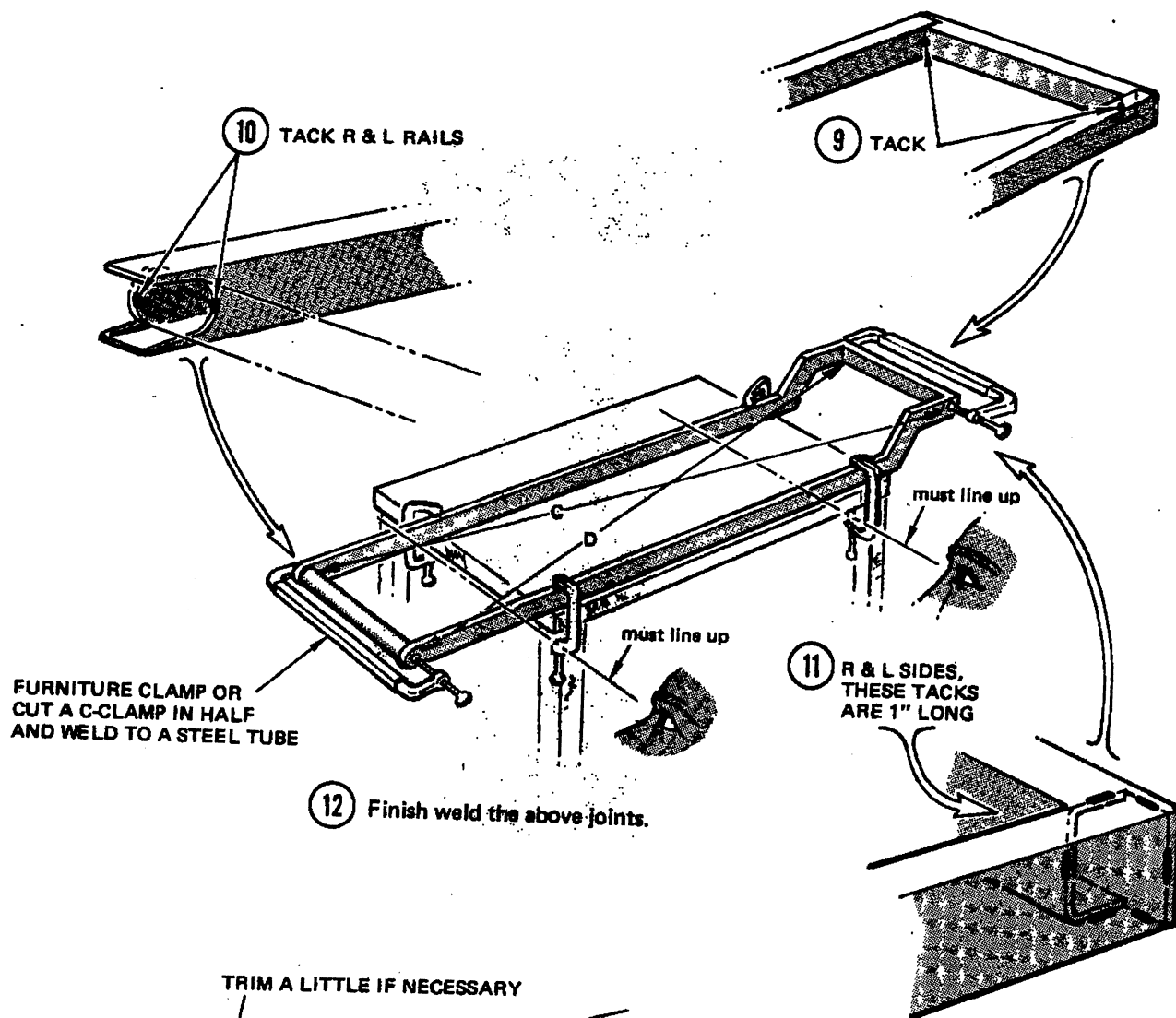


SET 1 - BUILDING FRAME

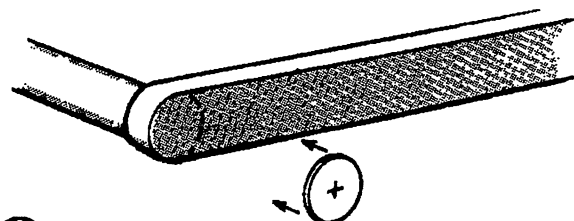


SET 1 - BUILDING FRAME

- 8 Clamp frame parts together as shown below. Then check that C and D measure the same (to get a square frame). Then tack weld as follows. Remember the frame will twist on finish welds if tacking isn't adequate.



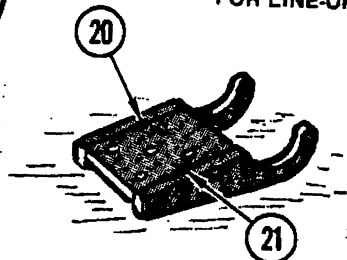
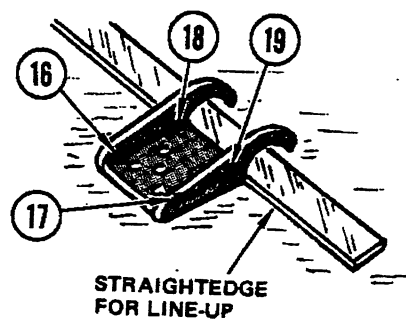
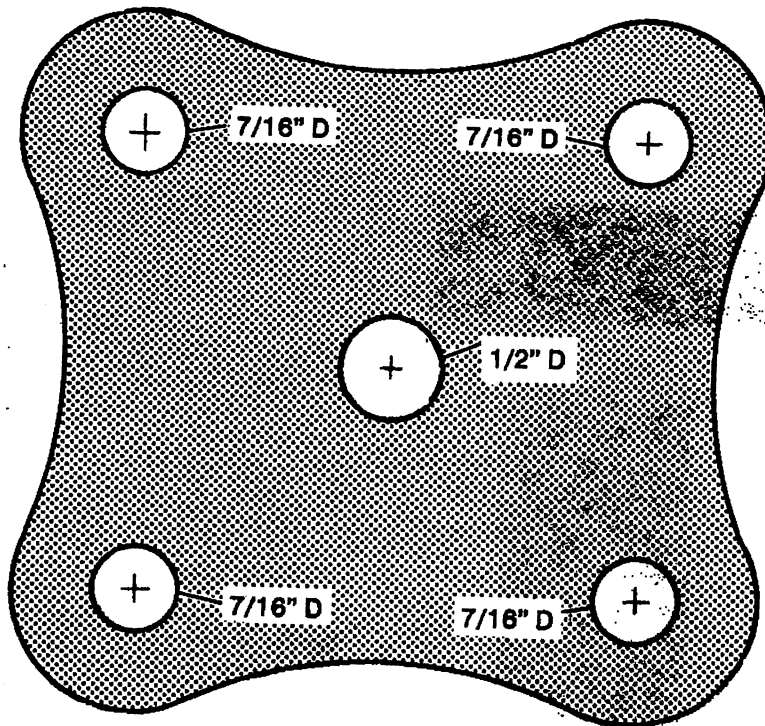
- 13 Apply heat to wrap the nose, then weld.



- 14 Then give the nose a smooth finish so lots of bondc won't be necessary. Cut a 3" disk from stiff paper and grind until nose matches disk.

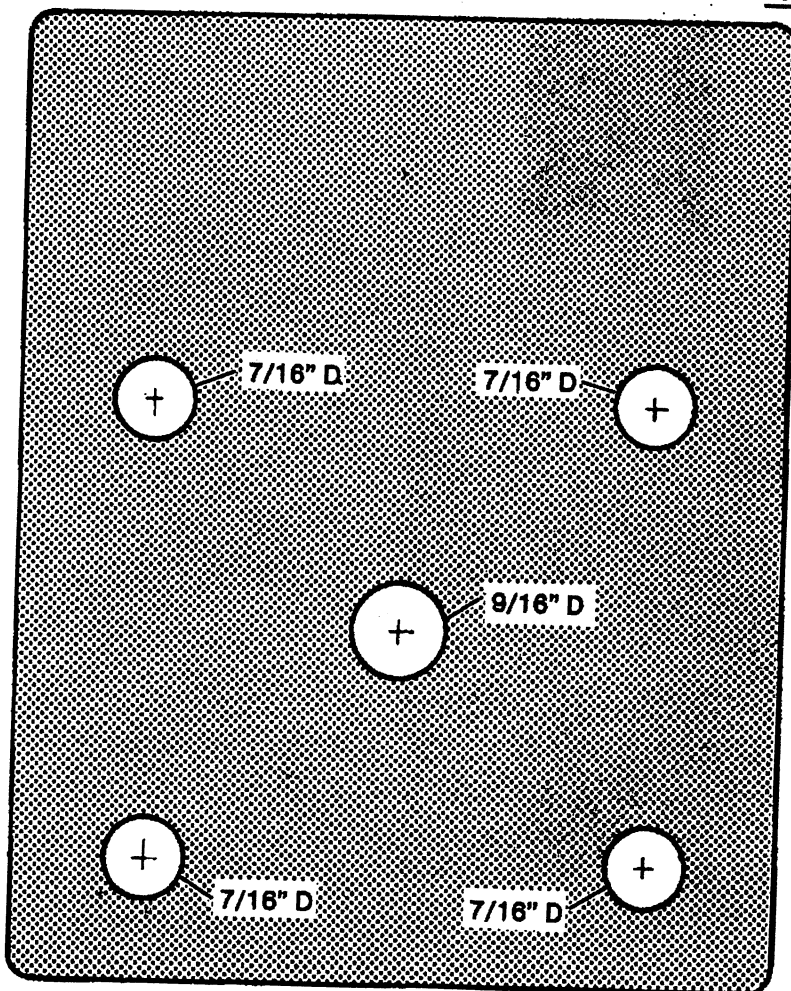
SET 1 - BUILDING FRAME

- 15 Cut these front perch parts from $\frac{3}{8}$ plate (one each reqd except as noted). Then tack as follows, and finish weld.



*2 x 3 1/2 in.
you can see
the hole*

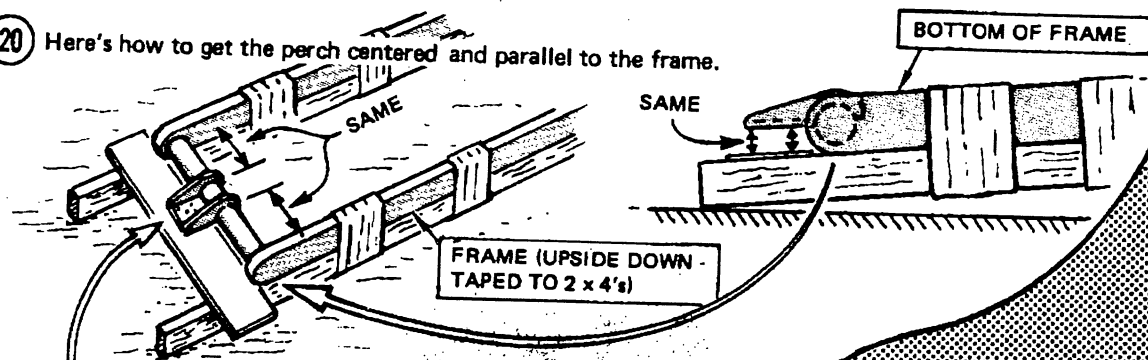
FULL SIZE PATTERNS



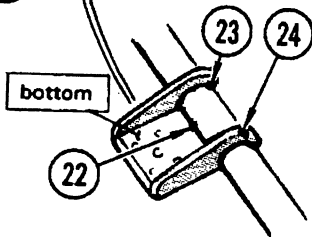
THIS ONLY
2 REQD

SET 1 - BUILDING FRAME

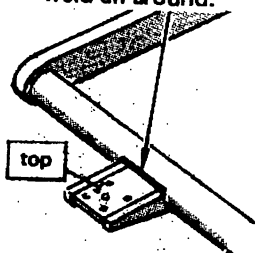
- 20 Here's how to get the perch centered and parallel to the frame.



- 21 Tack perch in place as follows.



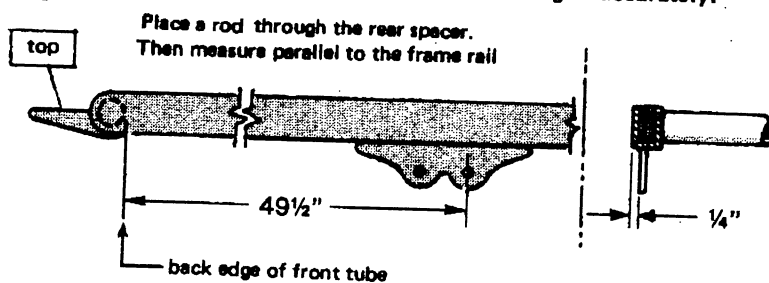
- 25 Weld across, then finish weld all around.



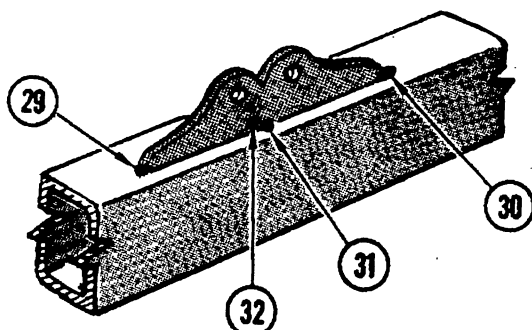
- 26 Cut 2 radius rod hangers from 3/8 plate.

*then find
a big
at clearing
Engineering*

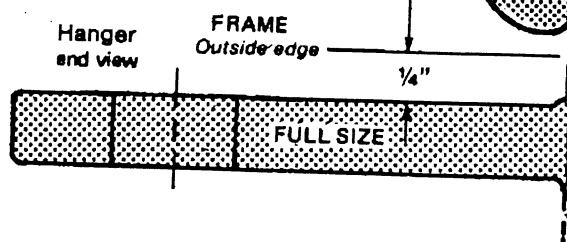
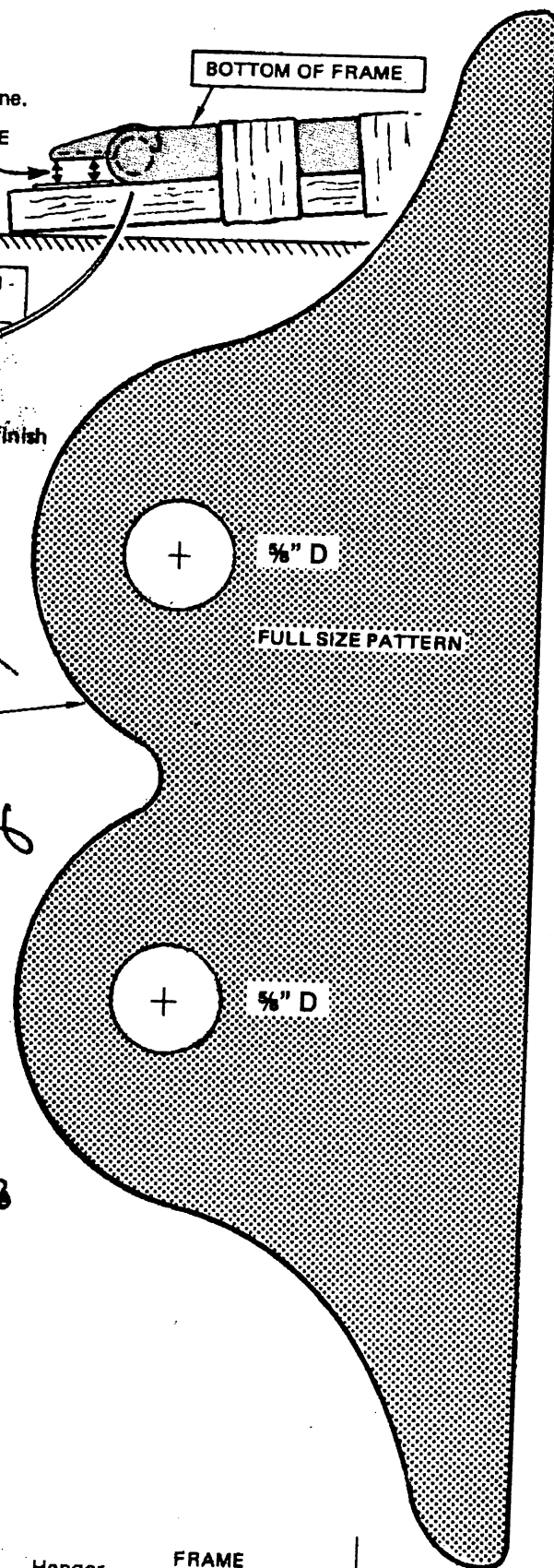
- 27 Locate the position for mounting these hangers accurately.



- 28 Invert frame and tack as follows.



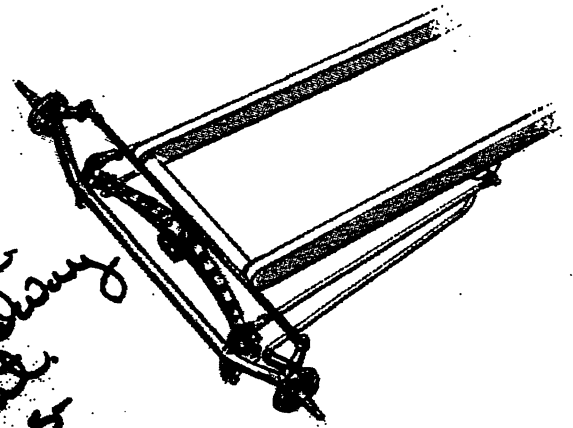
- 33 Then finish weld all around.



SET 2 - FRONT END

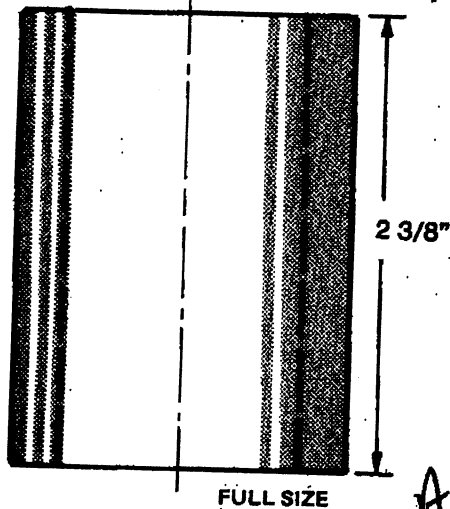
(6 sheets)

Complete front axles may be ordered from CCR and other sources. If you plan to make your own, note that the bending must be done right, using a mandrel bender. Variations from our dimensions are not critical. Some builders will drop the axle 5" to lower the car more. Place all parts in position before welding on radius rod hangers, and before cutting radius rods, to check that you have a good working layout. You can leave the axle straight with no drop.



*Arle
speedway
trip
mas*

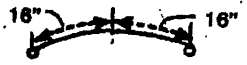
- ① Make 2 bosses from 1 3/8 OD x 13/16 ID tubing.



*Arle
150 2-5101
43 2-5101*

MATERIALS FOR PLAN SET 2

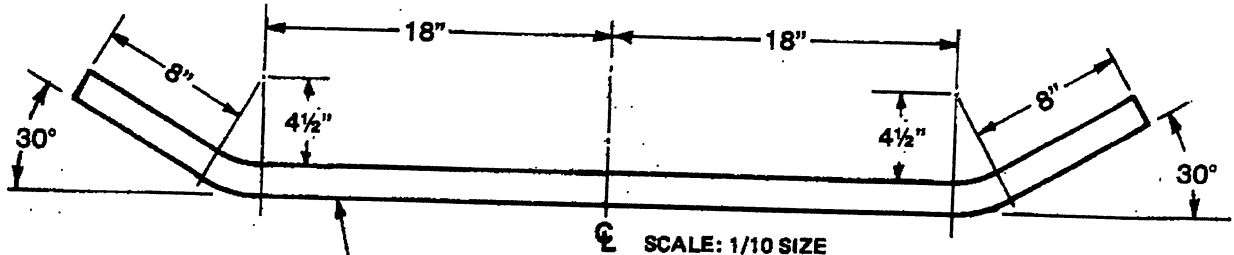
- 26 ft. of 7/8 dia. x .156 wall mild steel tubing (seamless)
- 6 ft. of 1 1/4 x .250 wall seamless tubing
- 6" of 1 3/8 OD, 13/16 ID tubing
- 4" of 1" OD x 1.20 wall tubing
- 1 set of 1 1/4 W, 9/16 pin shackles
- 1 spring, 1 1/4 W, 6-Leaf 1 1/4, 16 x 16, 32 OA
- 3/8 steel plate (see patterns)
- 4 male heim ends
- 4 clevises - see step ⑭



*Smk
25 1/2 - 26 1/4
Wall
42 1/2 - 57 1/2*

*RT has
Welding
255, 6471*

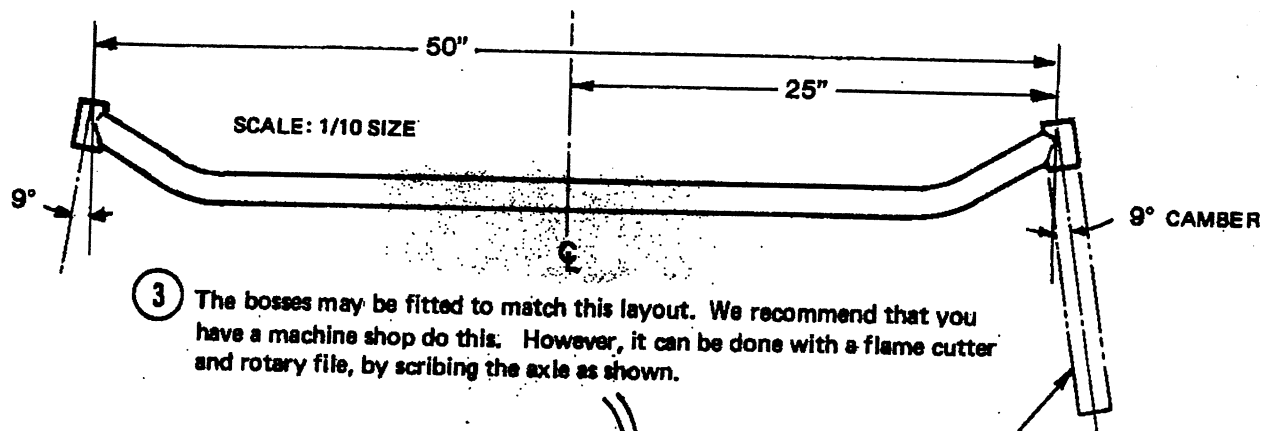
- ② Bend axle as indicated, using a mandrel bender.



SCALE: 1/10 SIZE

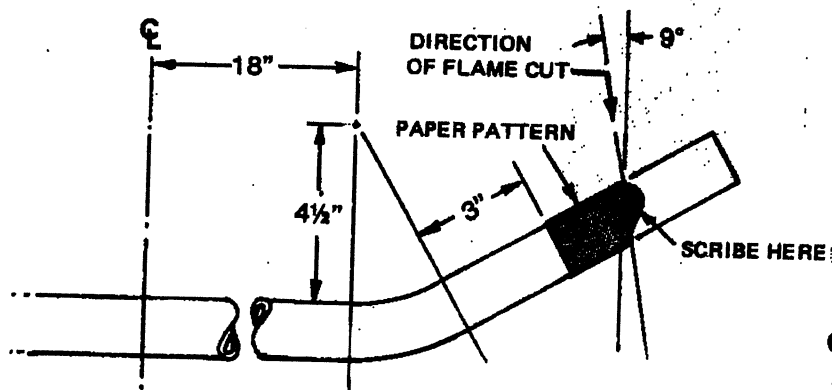
1 3/4" OD x .250 WALL SEAMLESS TUBING

SET 2— FRONT END



USE A LONG PIECE OF 1 3/8 OD PIPE AND KEEP CHECKING WHILE FITTING BOSSSES

FULL SIZE PAPER PATTERN
TRACE OFF -
DON'T CUT PLANS



CL AT TOP
SURFACE
OF AXLE

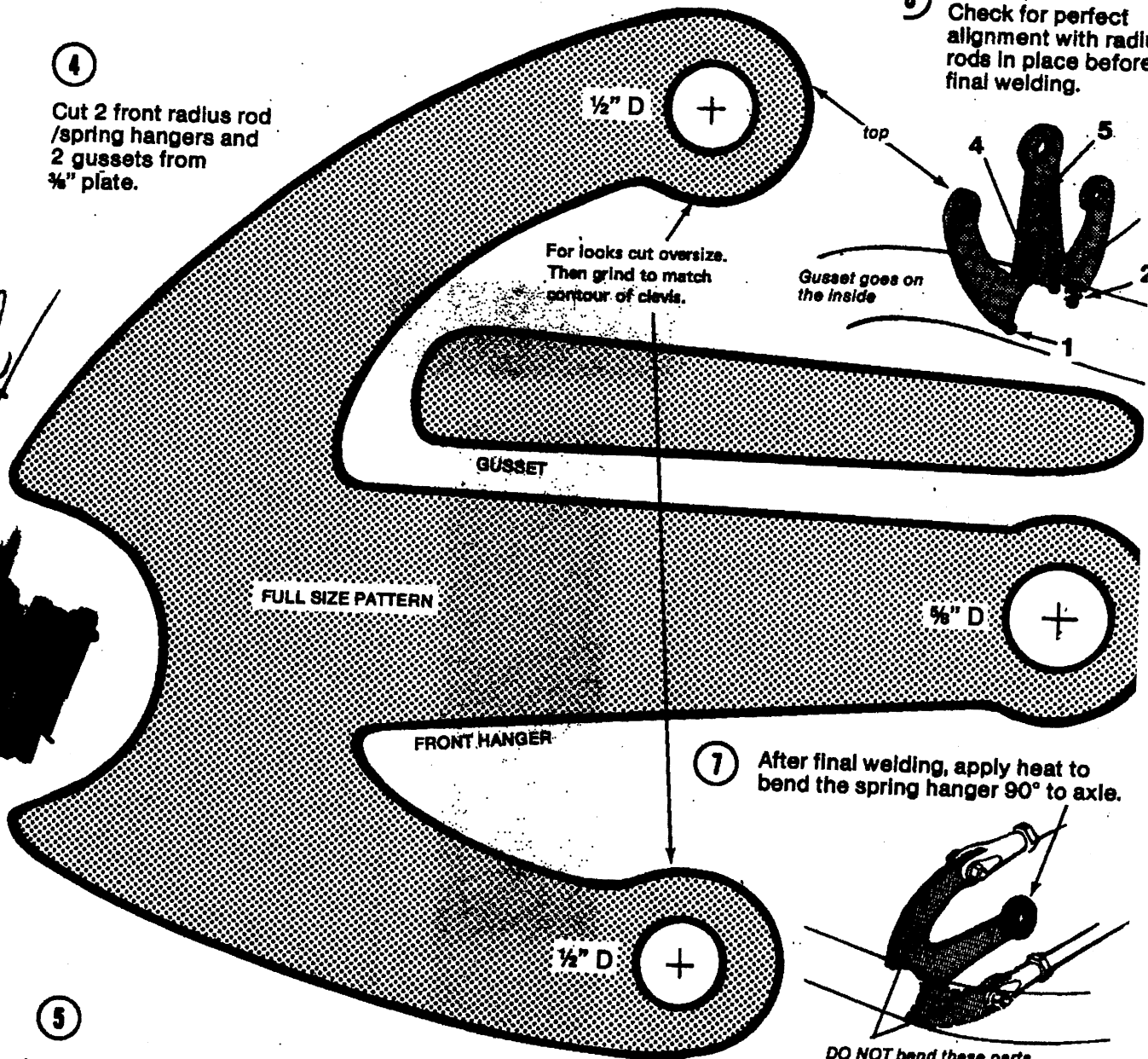
SET 2 - FRONT END

4

Cut 2 front radius rod /spring hangers and 2 gussets from $\frac{3}{8}$ " plate.

6

Check for perfect alignment with radius rods in place before final welding.



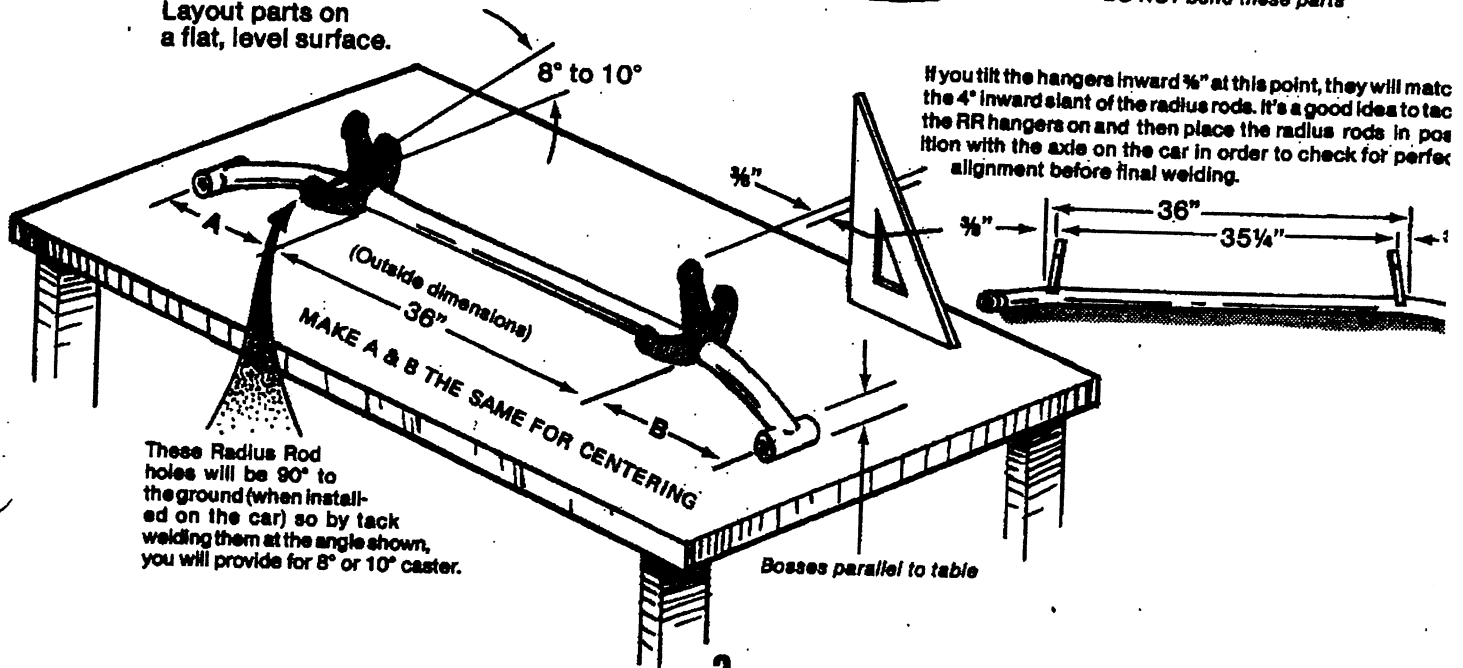
7

After final welding, apply heat to bend the spring hanger 90° to axle.



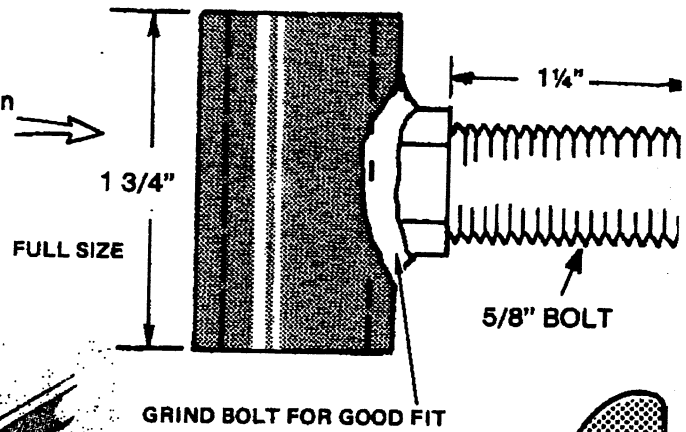
5

Layout parts on a flat, level surface.

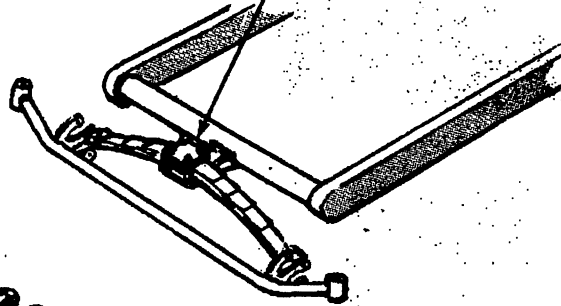


SET 2 - FRONT END

- ⑧ Make 2 shackle hangers as shown from 1" OD x .120 wall tubing

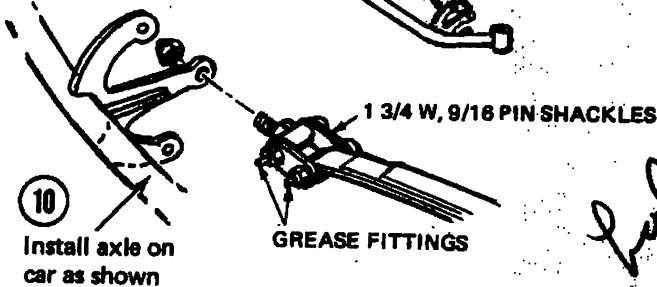


- ⑨ Install the spring on the front perch (the front perch is part of Plan Set 1)

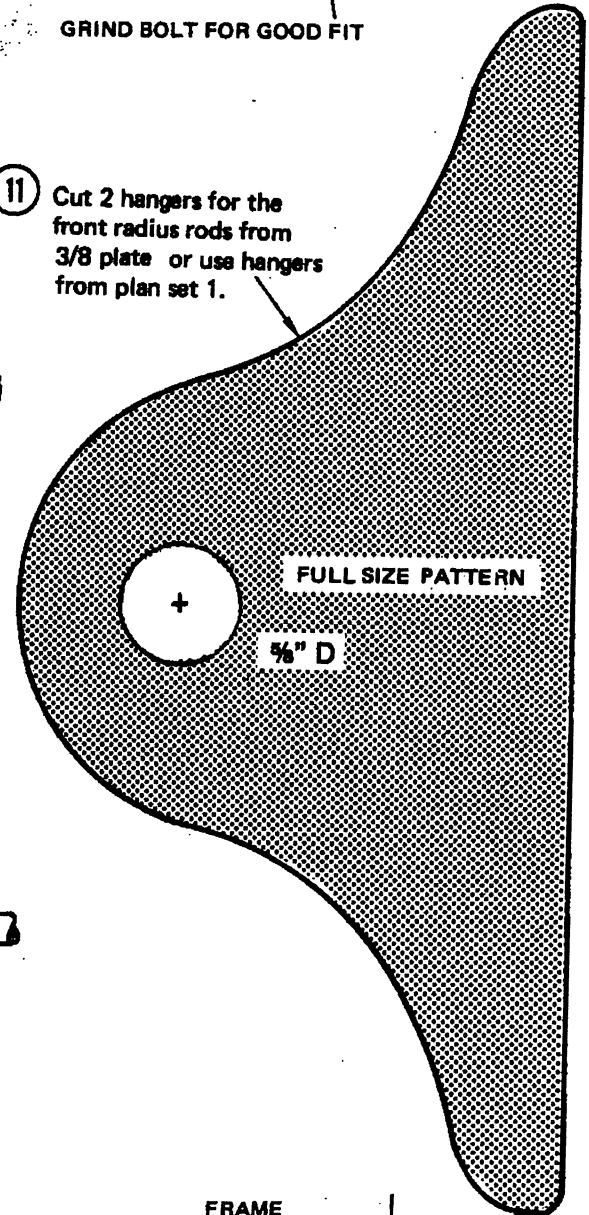


GRIND BOLT FOR GOOD FIT

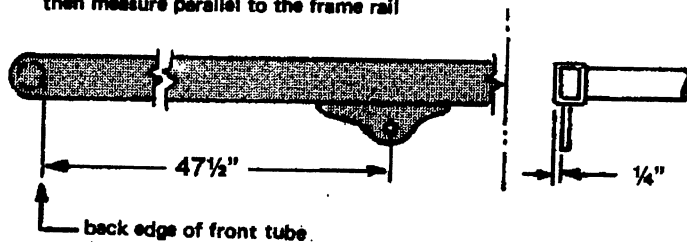
- ⑪ Cut 2 hangers for the front radius rods from 3/8 plate or use hangers from plan set 1.



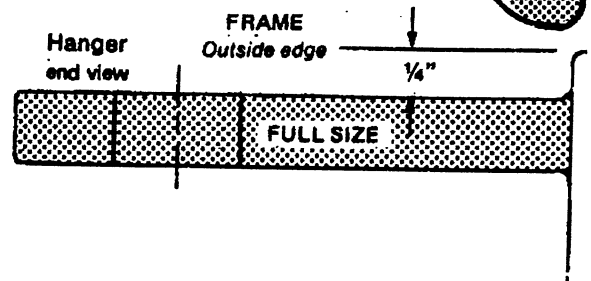
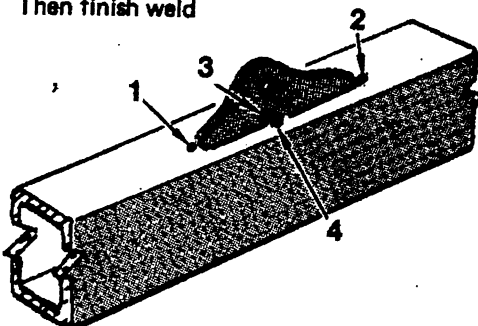
- ⑩ Install axle on car as shown



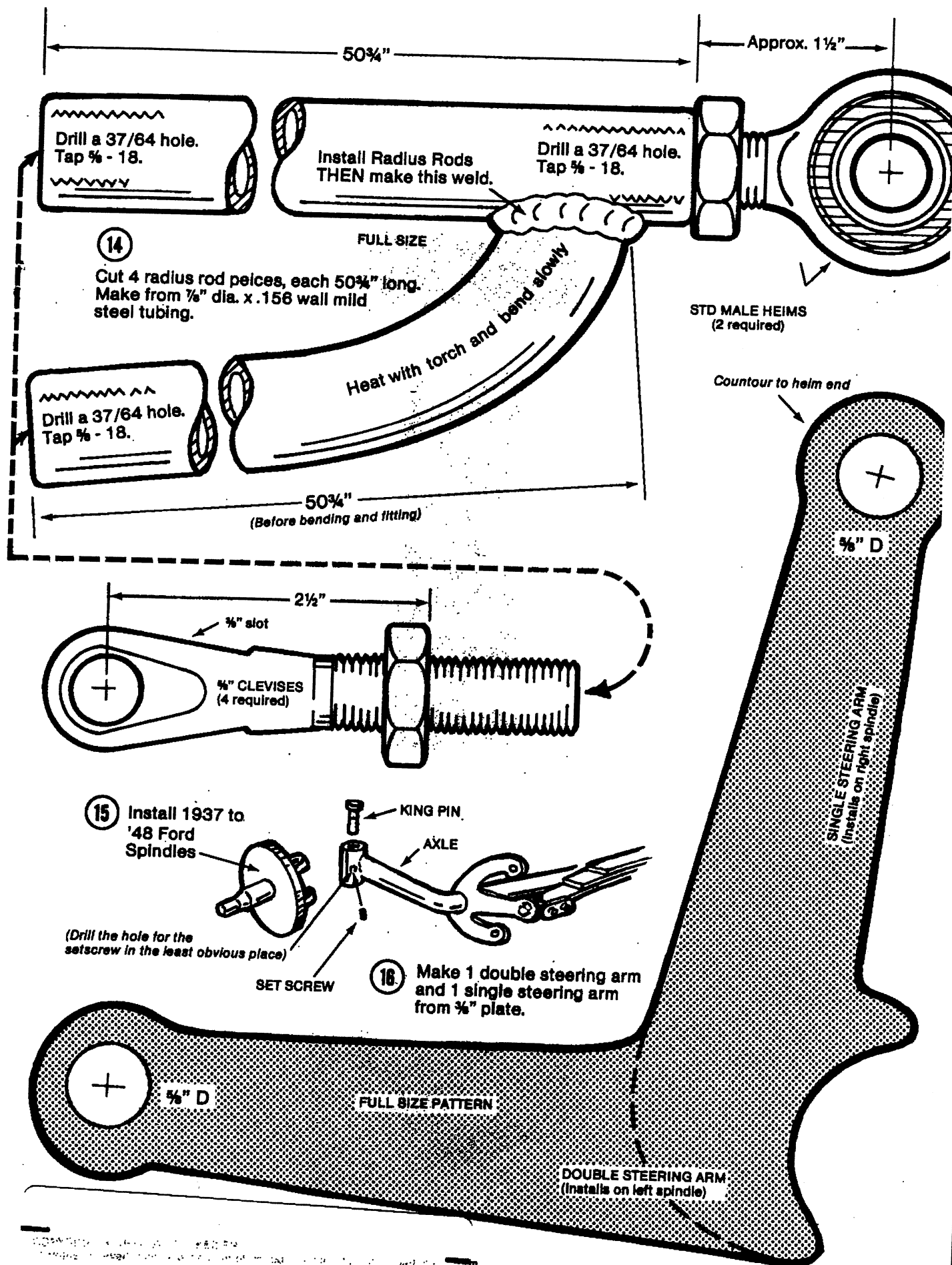
- ⑫ Locate the position for mounting the radius rod hanger accurately
Place a rod through the spacer, then measure parallel to the frame rail



- ⑬ Invert frame & tack as follows:
Then finish weld



SET 2 - FRONT END

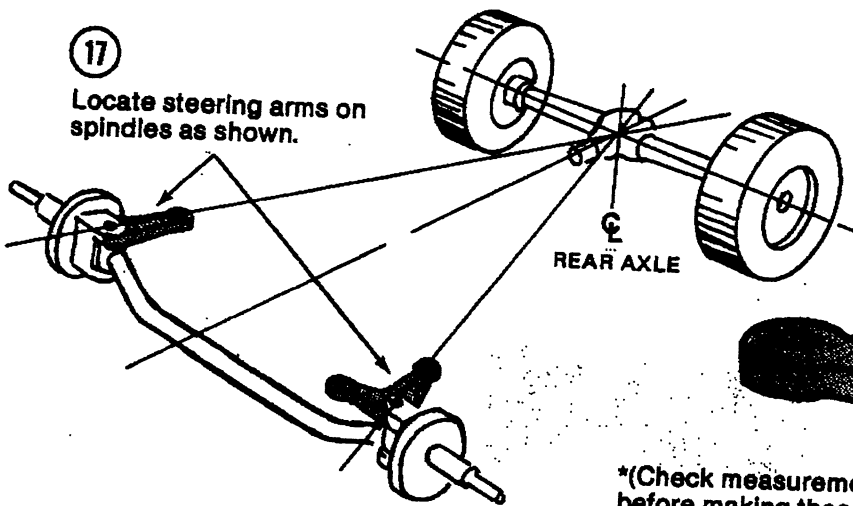


SET 2 - FRONT END

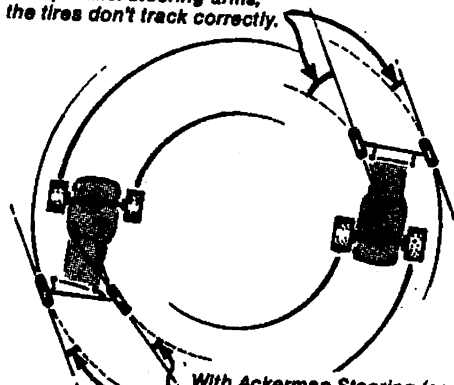
↑ Insert this end in typewriter. ↑

17

Locate steering arms on spindles as shown.



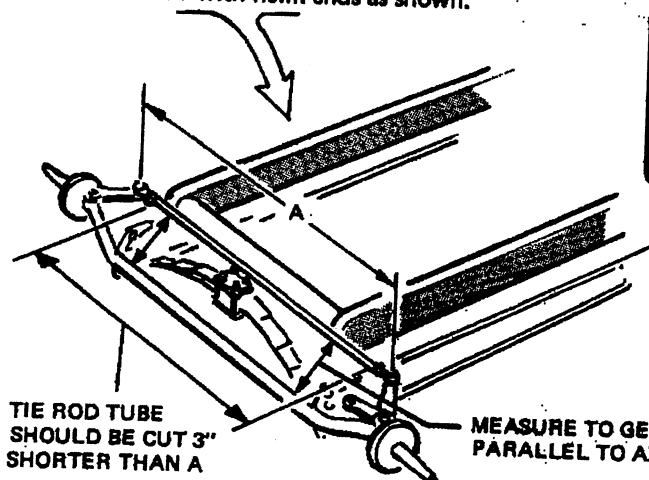
With parallel steering arms, the tires don't track correctly.



With Ackerman Steering (as per our installation) the tires will track perfectly.

19

Attach tie rod with heim ends as shown.



TIE ROD TUBE SHOULD BE CUT 3" SHORTER THAN A

MEASURE TO GET TIE ROD PARALLEL TO AXLE

20

With the wheels straight, this arm on the left spindle should be parallel to the axle (both when viewed from above and when viewed from the front).

21

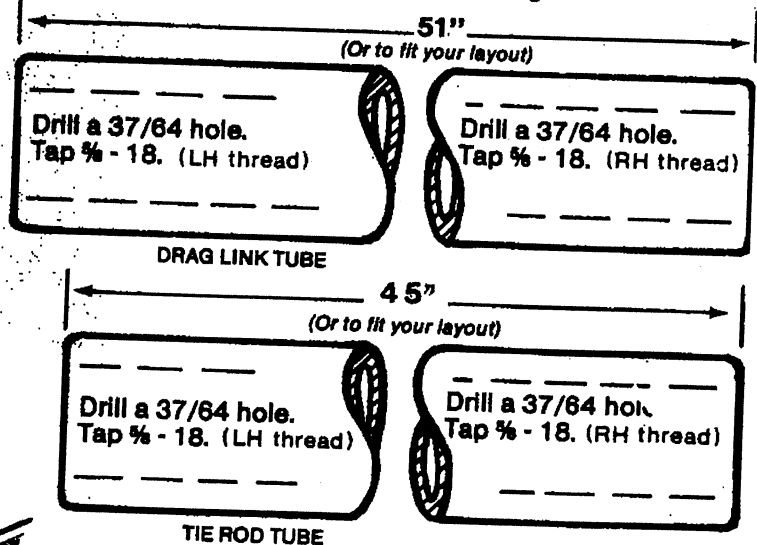
If needed, take the car to a F.E. Alignment shop. They will chain the F.E. down and use jacks to tweak axle for perfect alignment.

First tack here allows adjustment. Then tack in sequence.*

*(Check measurements in step 19 before making these welds)

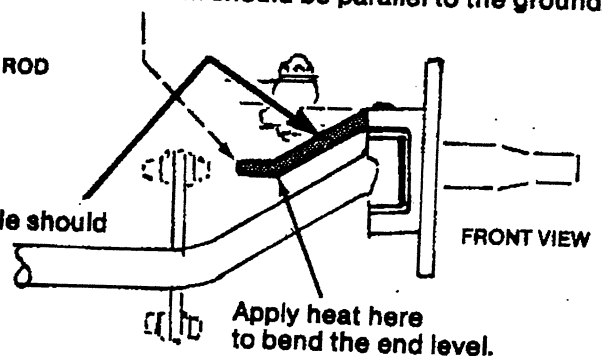
18

Make one tie rod and one drag link from $\frac{1}{2}$ " x .156 wall mild steel tubing.



TIE ROD TUBE

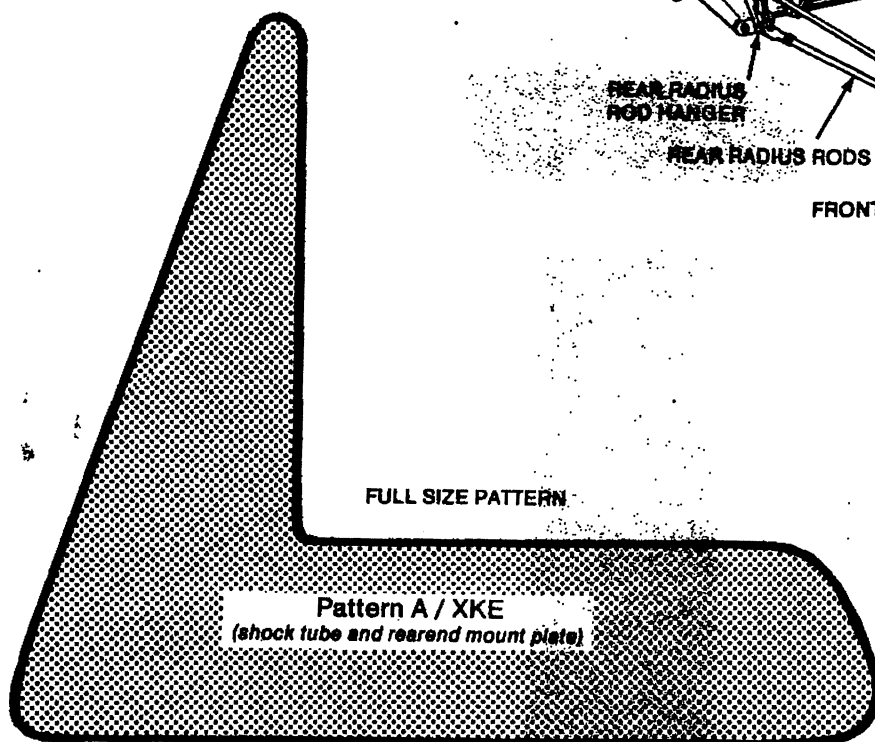
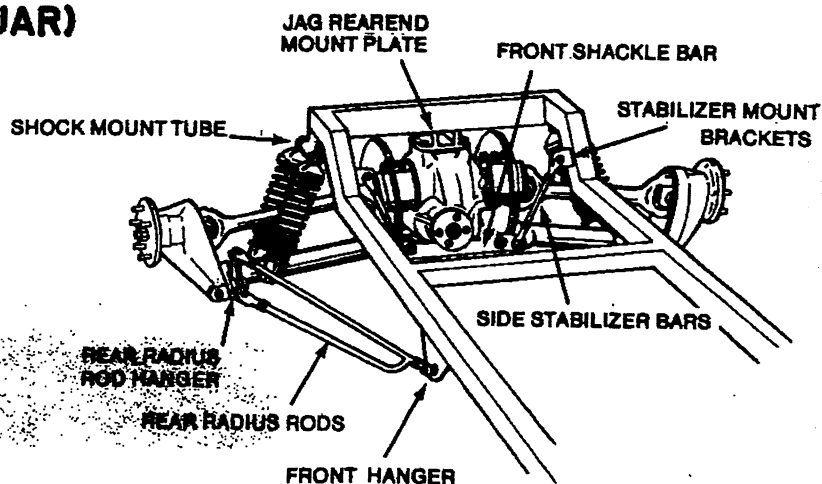
End of arm should be parallel to the ground.



FRONT VIEW

SET 3 - REAR END (JAGUAR)

(7 sheets)

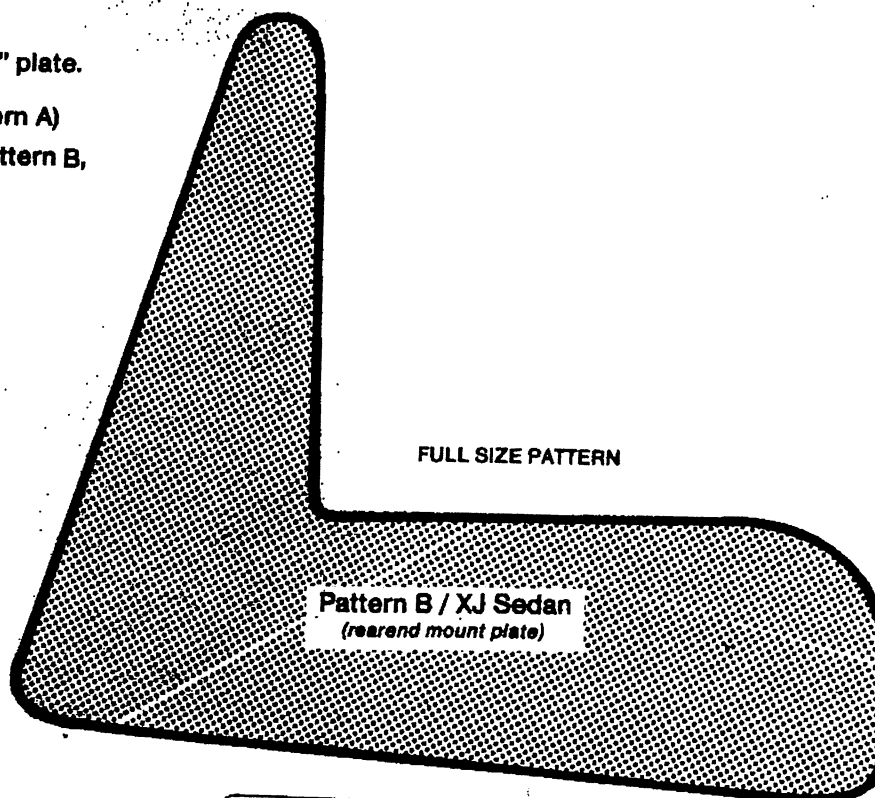


MATERIALS FOR SET 3

- 3/8 plate (see patterns)
- 17 ft. of 3/4" x .156 wall mild steel tubing (seamless)
- 1 ft of 7/8 OD x 5/8 ID tubing - step ②
- 6 clevises - steps ⑪ & ⑳
- 2 Heim ends - step ⑳
- 4" of 2" OD x .083 ID mild steel tubing — step ⑯

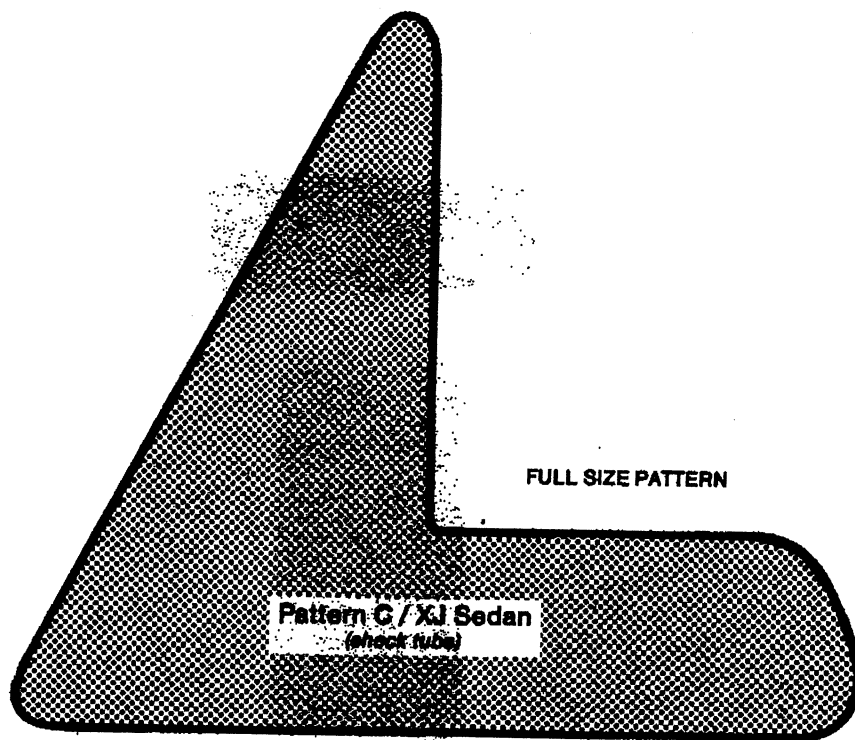
① 4 brackets required from 3/4" plate.

- XKE rearend (all 4 from pattern A)
- XJ Sedan rearend (2 from pattern B, and 2 from pattern C)



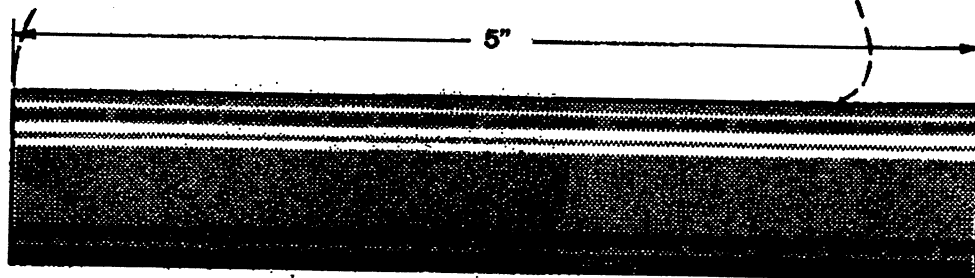
↑ Insert this end in typewriter. ↑

SET 3 - REAR END (JAGUAR)



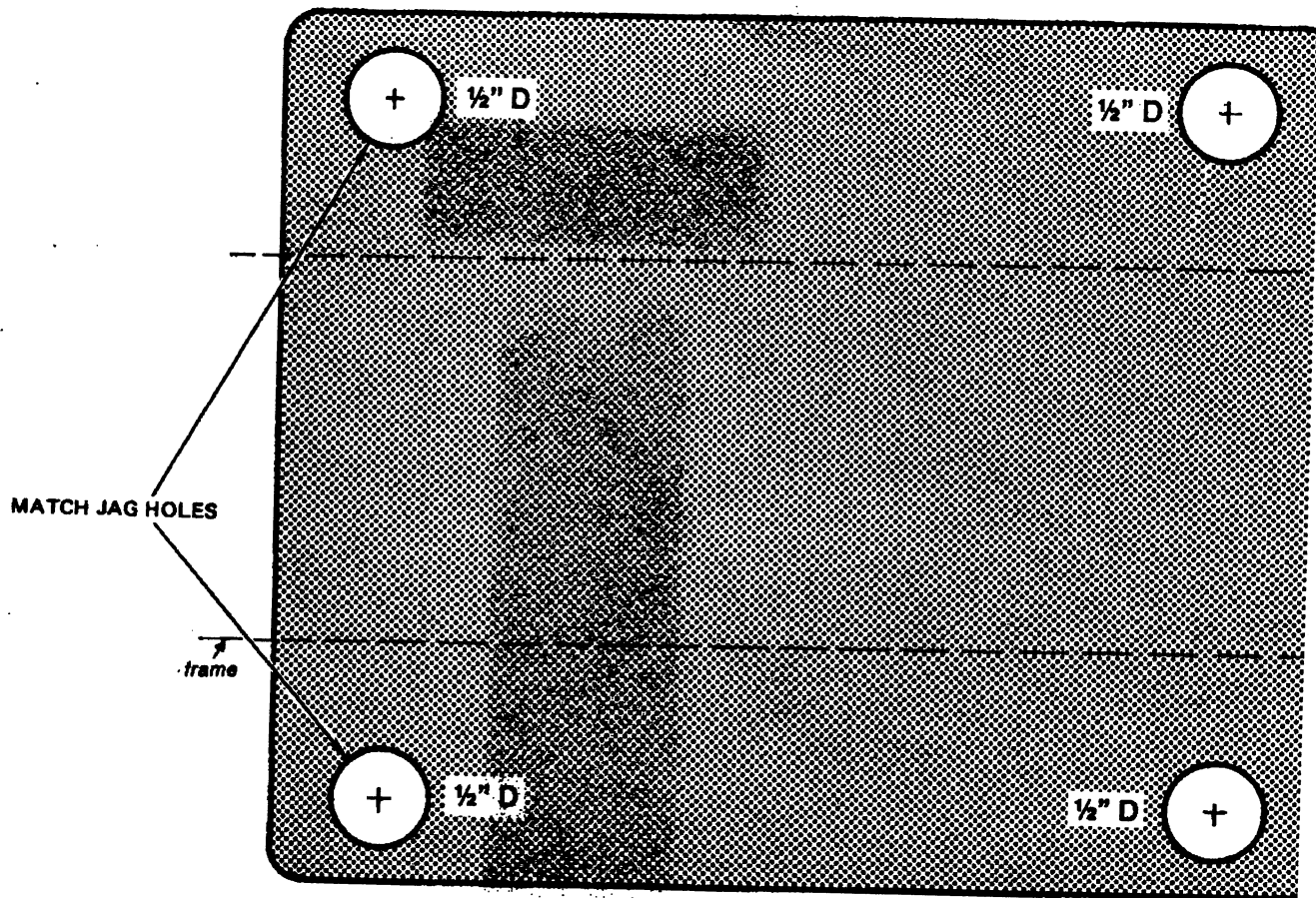
② Cut 2 shock mount tubes from 7/8 OD x 5/8 ID.

Attach all brackets
flush at this end

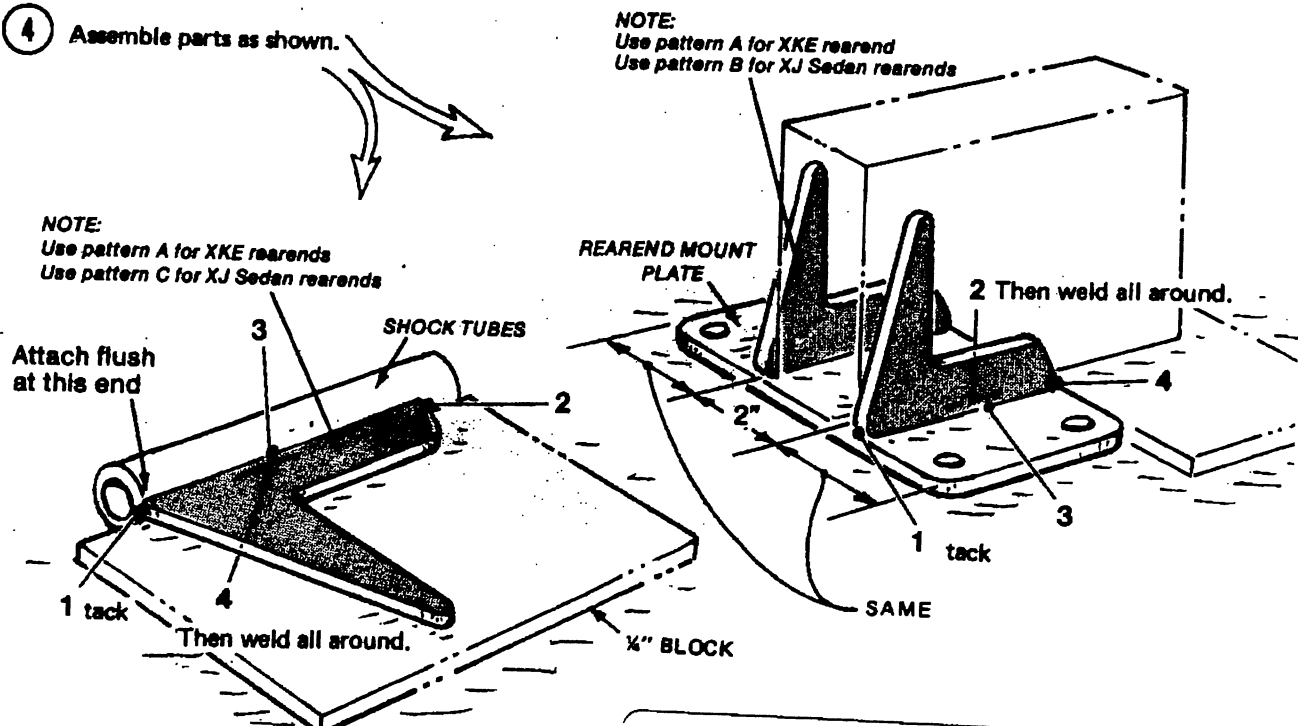


SET 3 - REAR END (JAGUAR)

- ③ Make 1 mount from 3/8 plate.



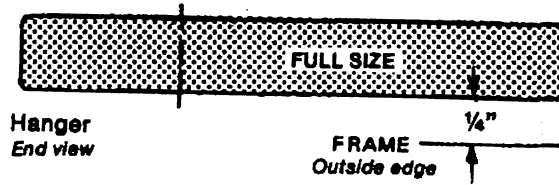
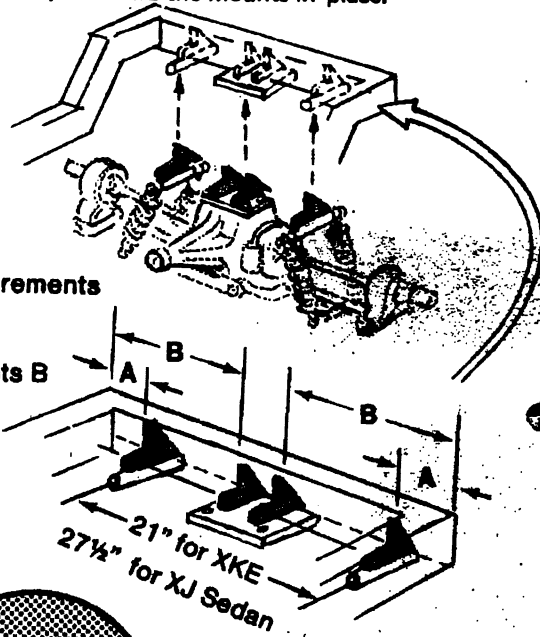
- ④ Assemble parts as shown.



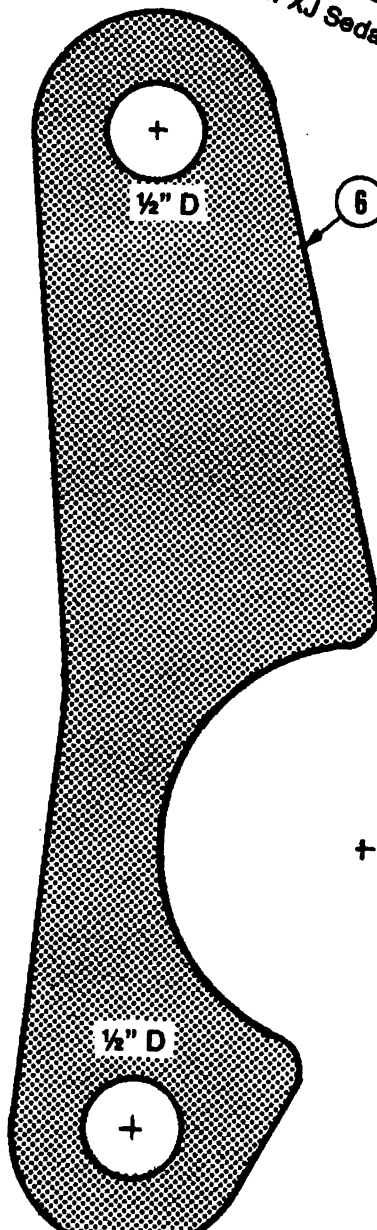
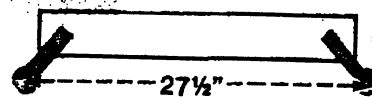
SET 3 - REAR END (JAGUAR)

- ⑤ Bolt the mounts to the Jag parts, jack the rear end into position, and weld the mounts in place.

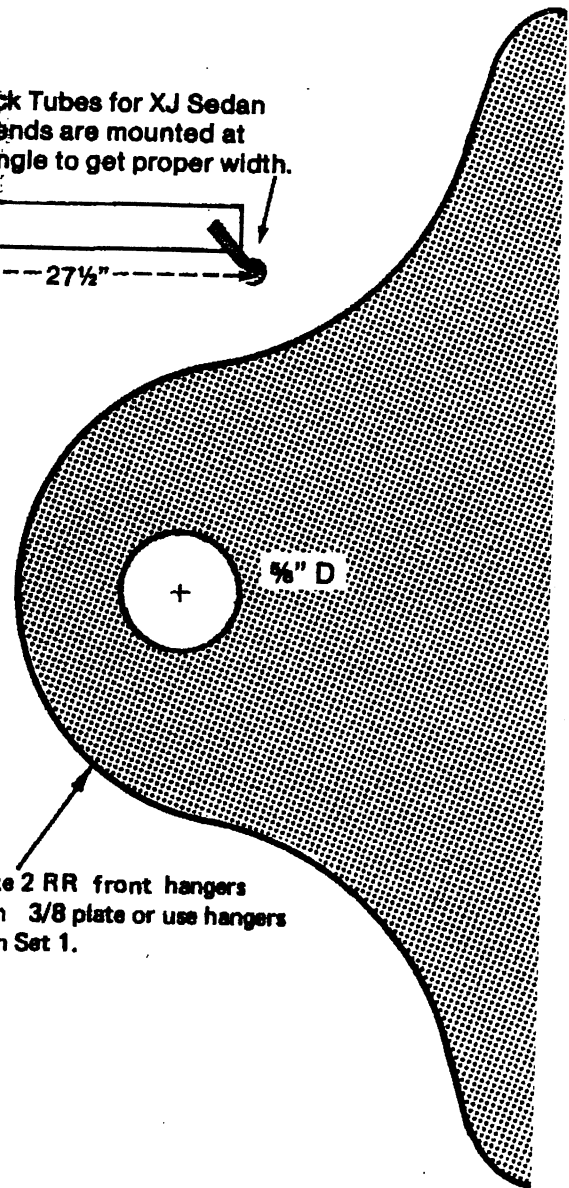
Make measurements A the same, and make measurements B the same for exact centering.



Shock Tubes for XJ Sedan rear ends are mounted at an angle to get proper width.

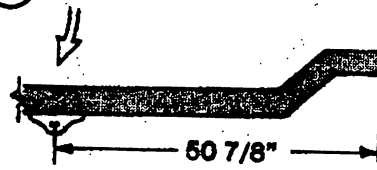


- ⑥ Make 2 rear RR hangers from 3/8 plate.

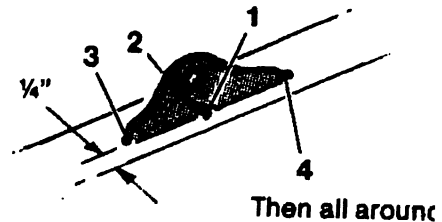


- ⑦ Make 2 RR front hangers from 3/8 plate or use hangers from Set 1.

- ⑧ Locate hangers on frame.



- ⑨ Weld as follows.



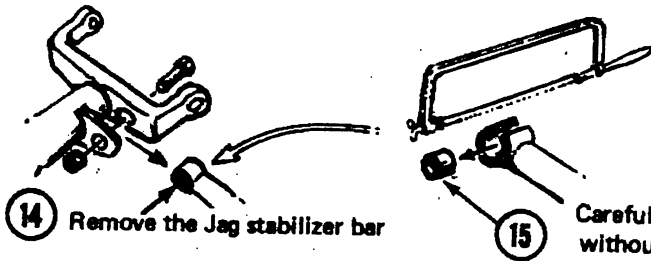
CLIPPING, SE 14 1964



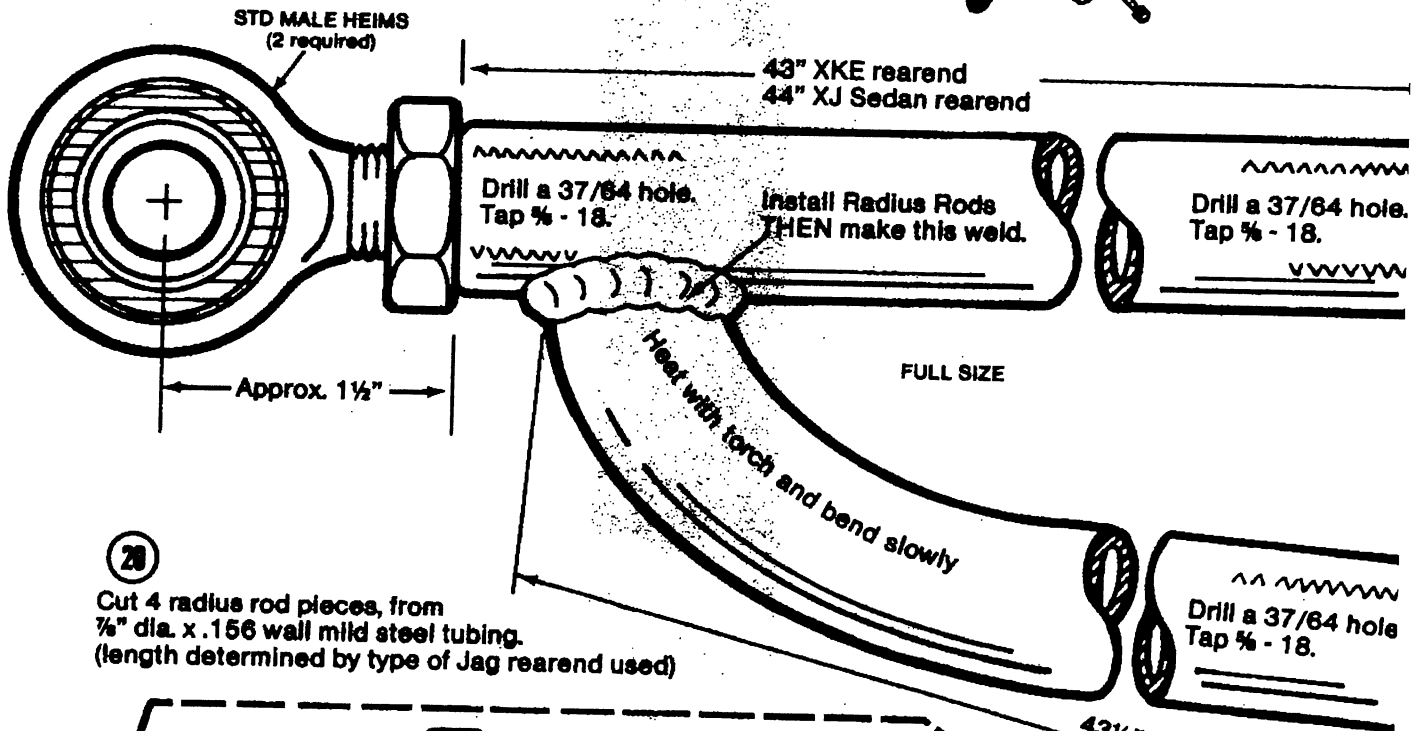
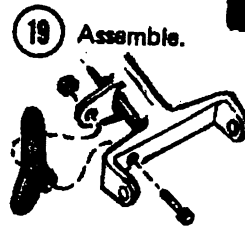
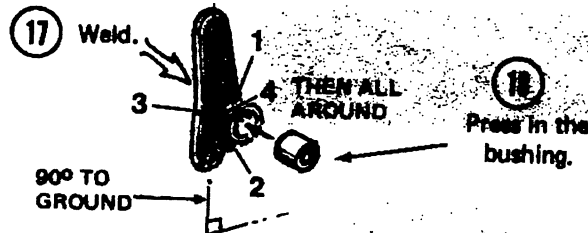
مجلس شورای اسلامی



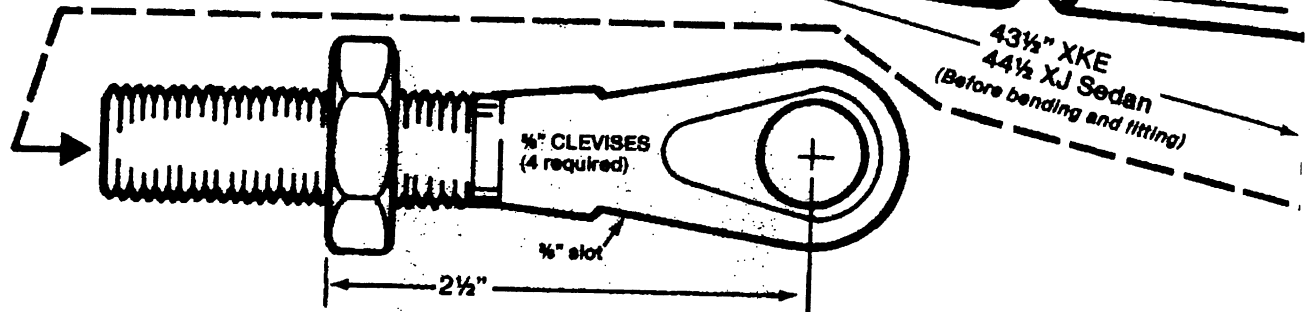
SET 3 - REAR END (JAGUAR)



16 Make 2 new RR adapters from 2" OD x 1.083 ± .003 ID

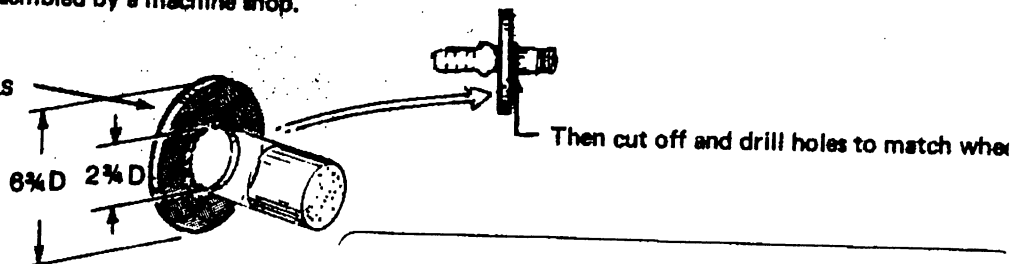


20 Cut 4 radius rod pieces, from 3/8" dia. x .156 wall mild steel tubing. (length determined by type of Jag rearend used)



21 If jag wheels are not used weld the Jag hub to an adapter. These should be assembled by a machine shop.

5/8 MILD STEEL PLATE
HOLES TO MATCH WHEELS



SET 4 - REAR END - (CONVENTIONAL)

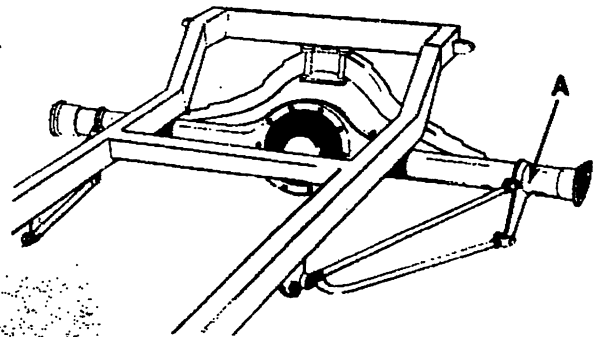
(5 sheets)

We use the 70 Charger RE, because it is more ruggedly built, has larger bearings, and the 3rd member is located on the centerline.



On Chevy RE's the 3rd member is off center, and this looks bad next to our transverse leaf spring.

Also on Chevys, the housings are thin at A, and the RR hangers tend to rip loose.

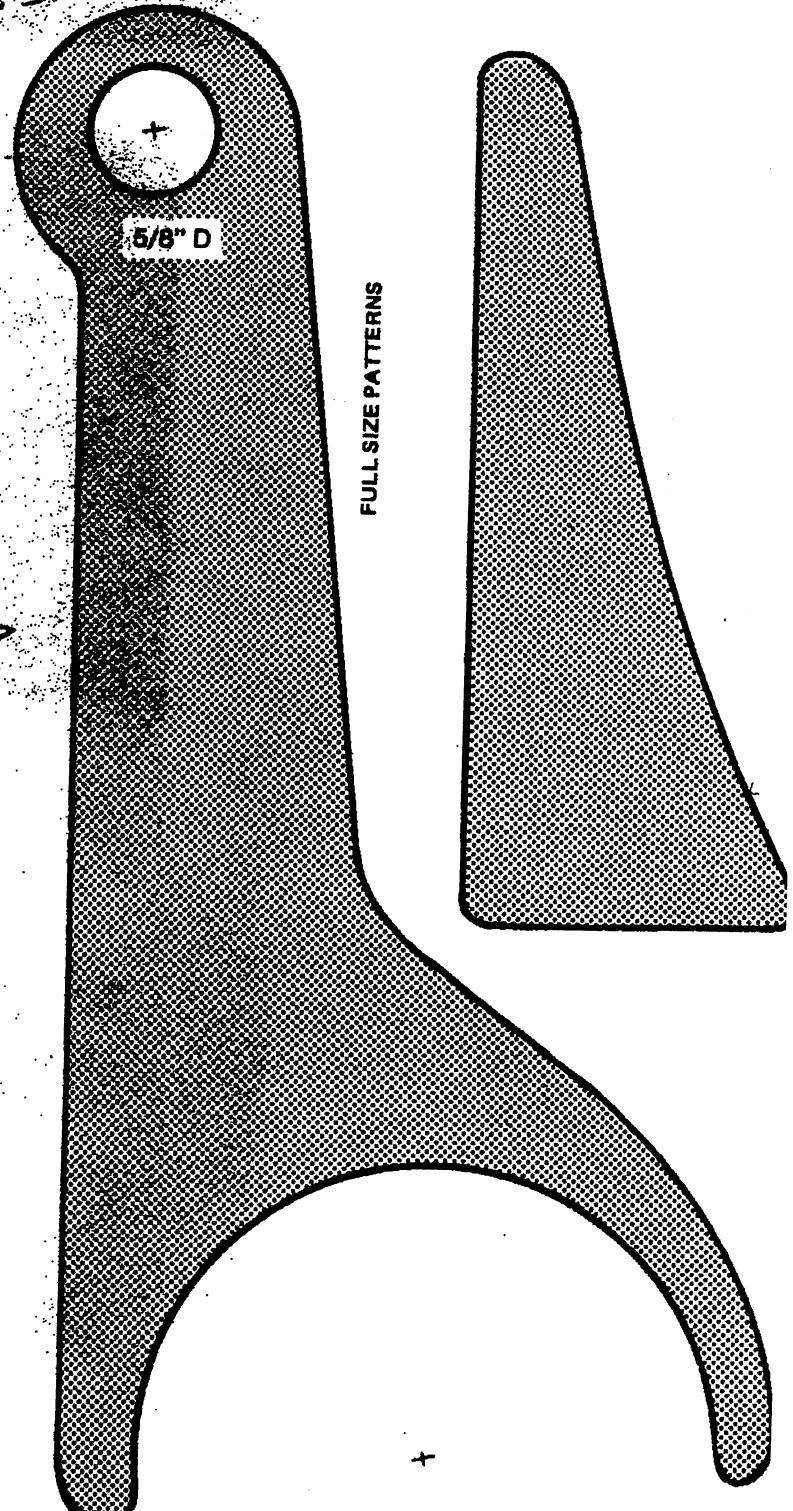


①

Before starting your installation, plan ahead to get the rear end, the drive shaft, and the engine crankshaft to line up as much as possible so as to put less wear on your universal joints. It's a good idea to dummy everything together with tack welds, and install your wheels and tires, and simulate the body weight in order to check this out while it's still easy to make changes.

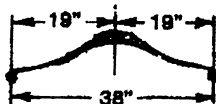
②

Make 2 each, spring hanger parts, from 3/8 plate.



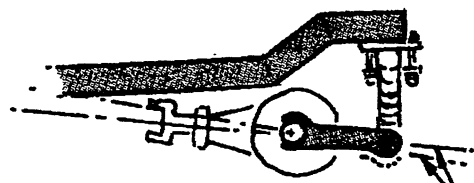
MATERIALS FOR SET 4

- 3/8 plate (see patterns)
- 13 ft. of 3/4" x .156 wall, mild steel tubing (seamless)
- 2 Hiern ends - step ⑭
- 4 clevises - step ⑭
- 1 rear spring, 1 3/4 W, 8 leaf, 19, 19, 38 OA, center to center.



- 4\"/>

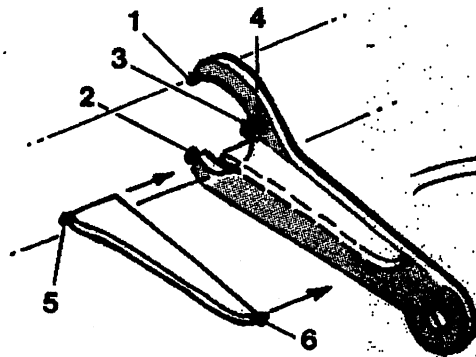
SET 4 - REAR END (CONVENTIONAL)



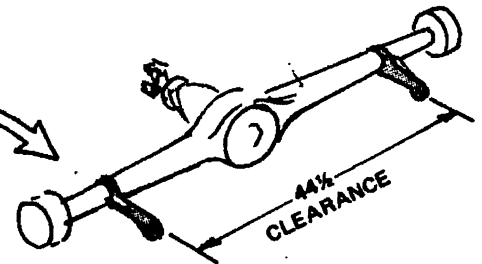
- ③ Mount the arms on the RE so as to get the best drive shaft angle as per step 1.

CHANGING THE ANGLE OF THE SPRING HANGERS CHANGES THE DRIVESHAFT ANGLE

- ④ Welding sequence.

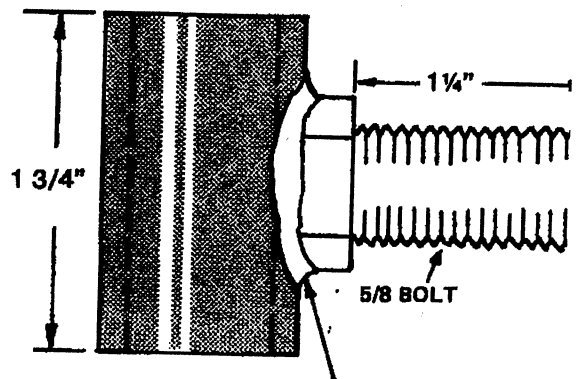


Then weld all around.



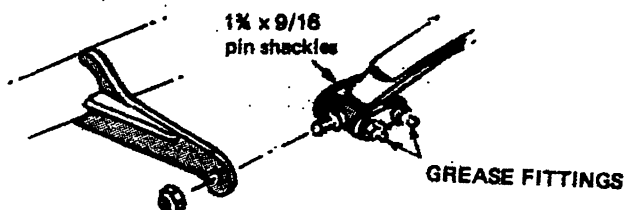
- ⑤ Make 2 Shackle Hangers as shown, from 1" OD x .120 wall tubing.

FULL SIZE



Weld carefully. This supports the whole car.

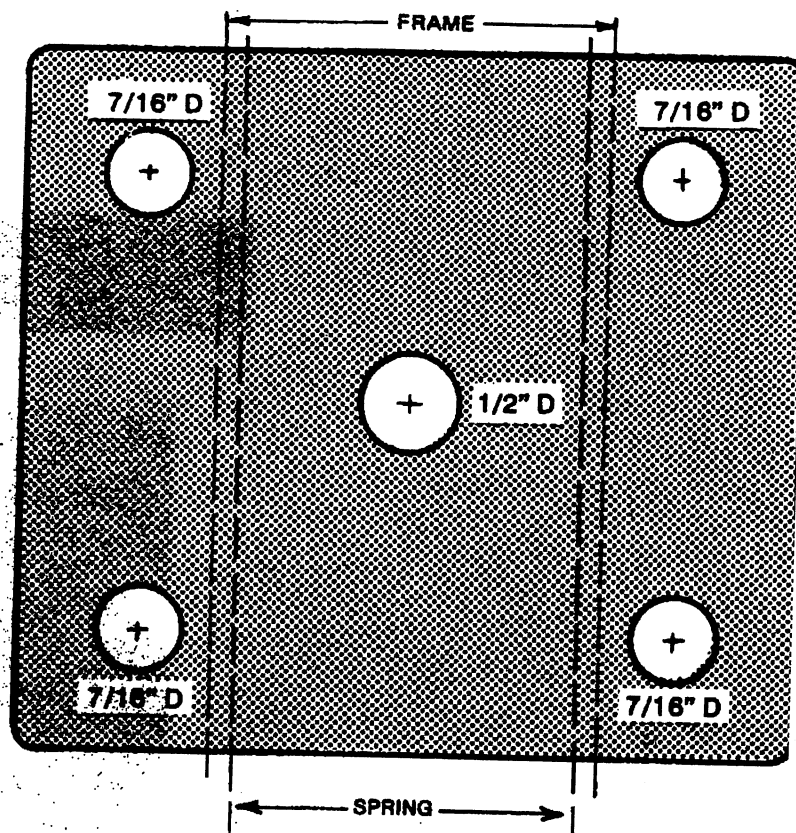
- ⑥ Use a bumper jack to spread the spring ends, then attach as shown.



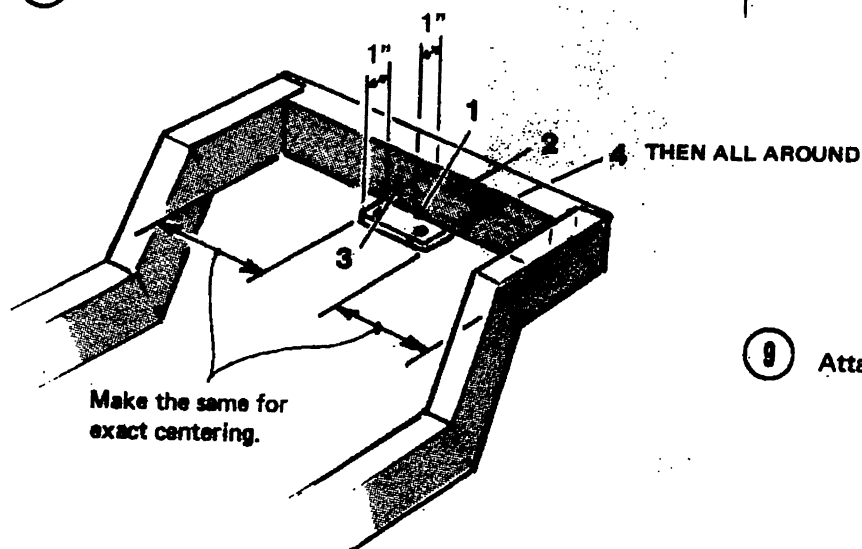
SET 4 - REAR END - (CONVENTIONAL)

- ⑦ Make 2 rear perch parts from 1/4 plate. →

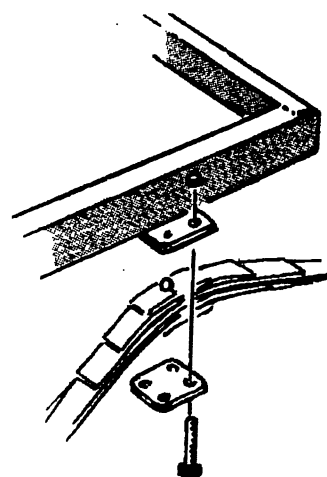
FULL SIZE PATTERN



- ⑧ Weld as shown

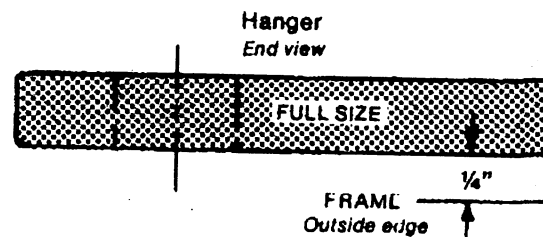
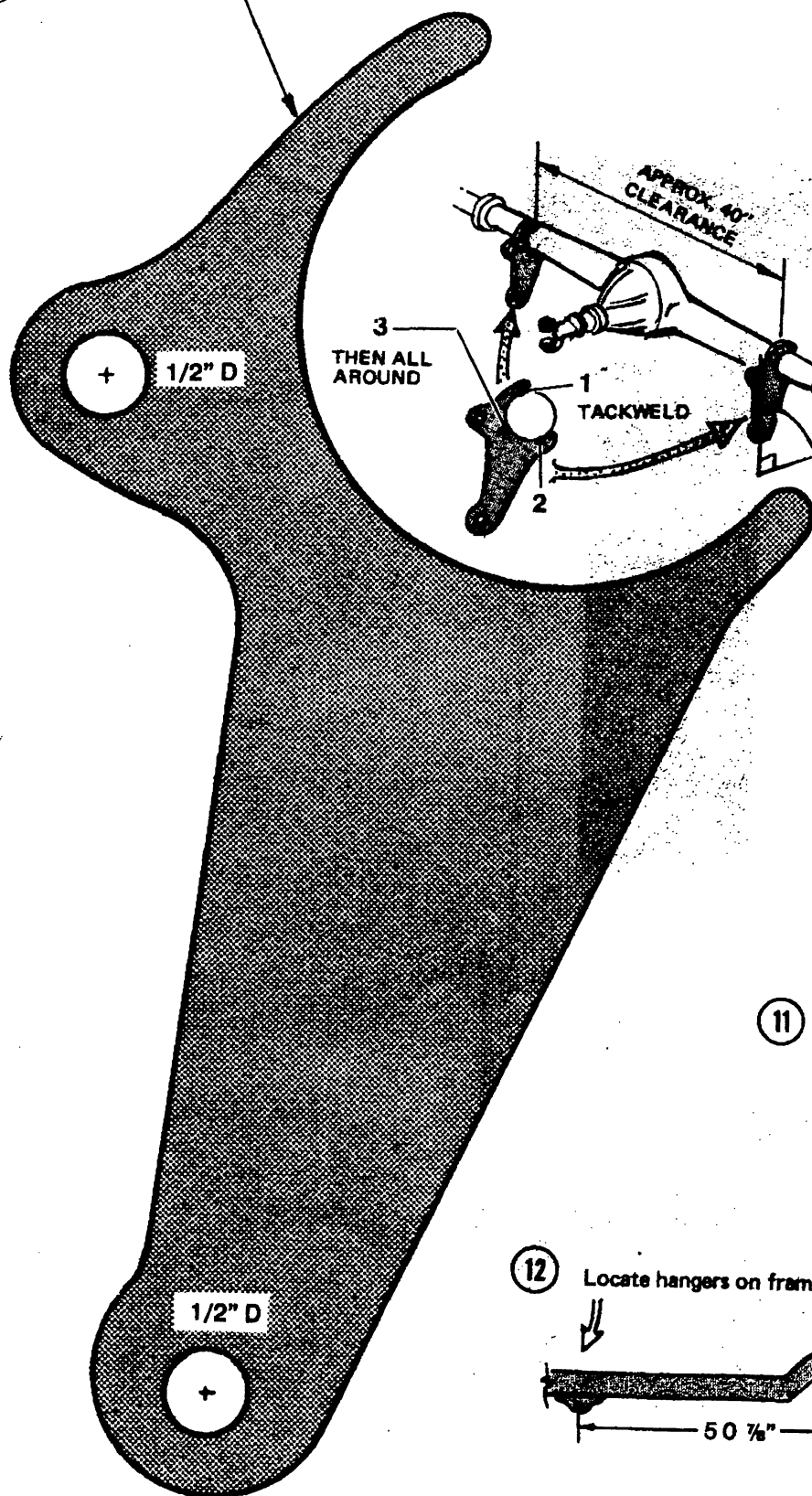


- ⑨ Attach spring to perch.

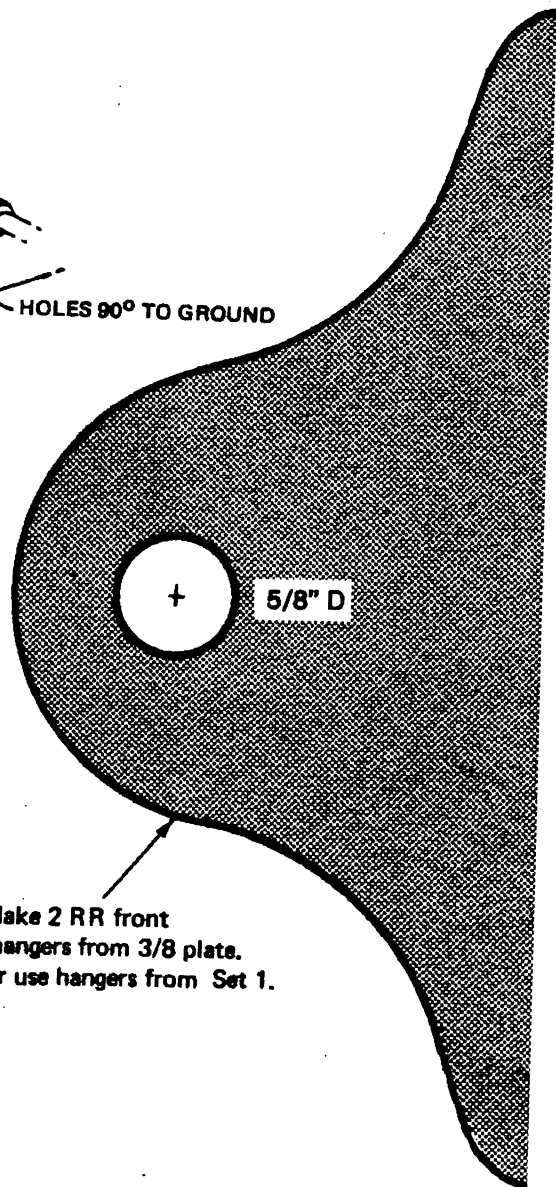


SET 4 - REAR END (CONVENTIONAL)

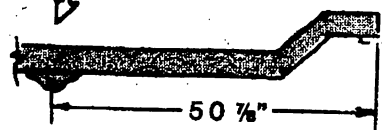
- ⑩ Make 2 radius rod rear hangers from 3/8 plate.



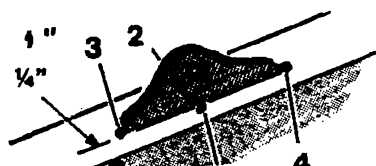
- ⑪ Make 2 RR front hangers from 3/8 plate, or use hangers from Set 1.



- ⑫ Locate hangers on frame.

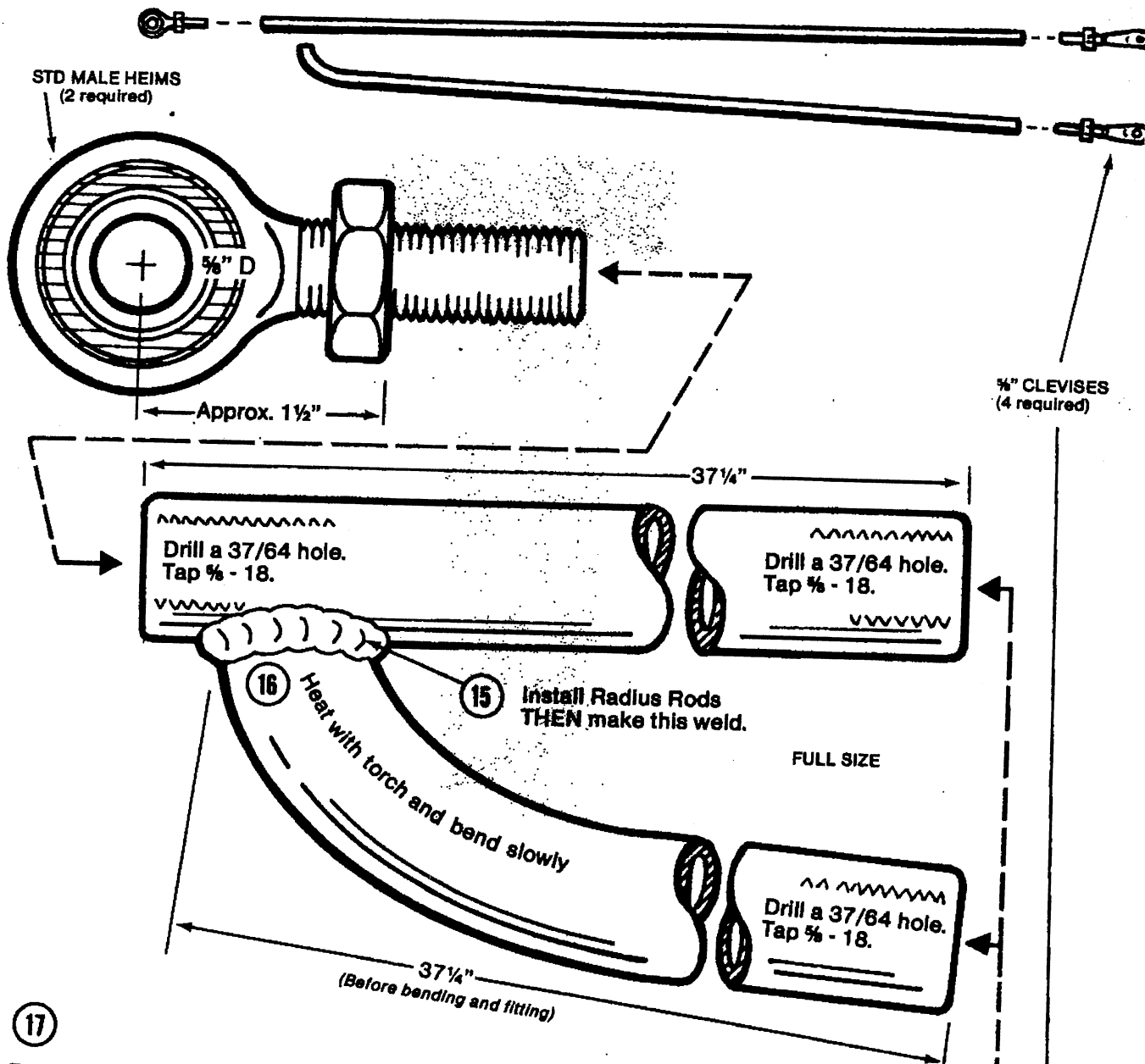


- ⑬

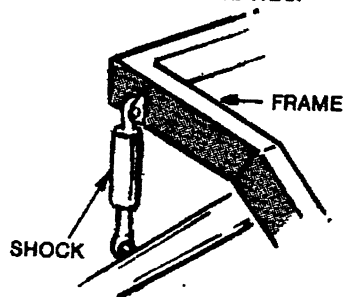


SET 4 - REAR END (CONVENTIONAL)

- ⑭ Cut 4 radius rod pieces, each $37\frac{1}{4}$ " long.
Make from $\frac{7}{8}$ " dia. x .156 wall mild steel tubing.



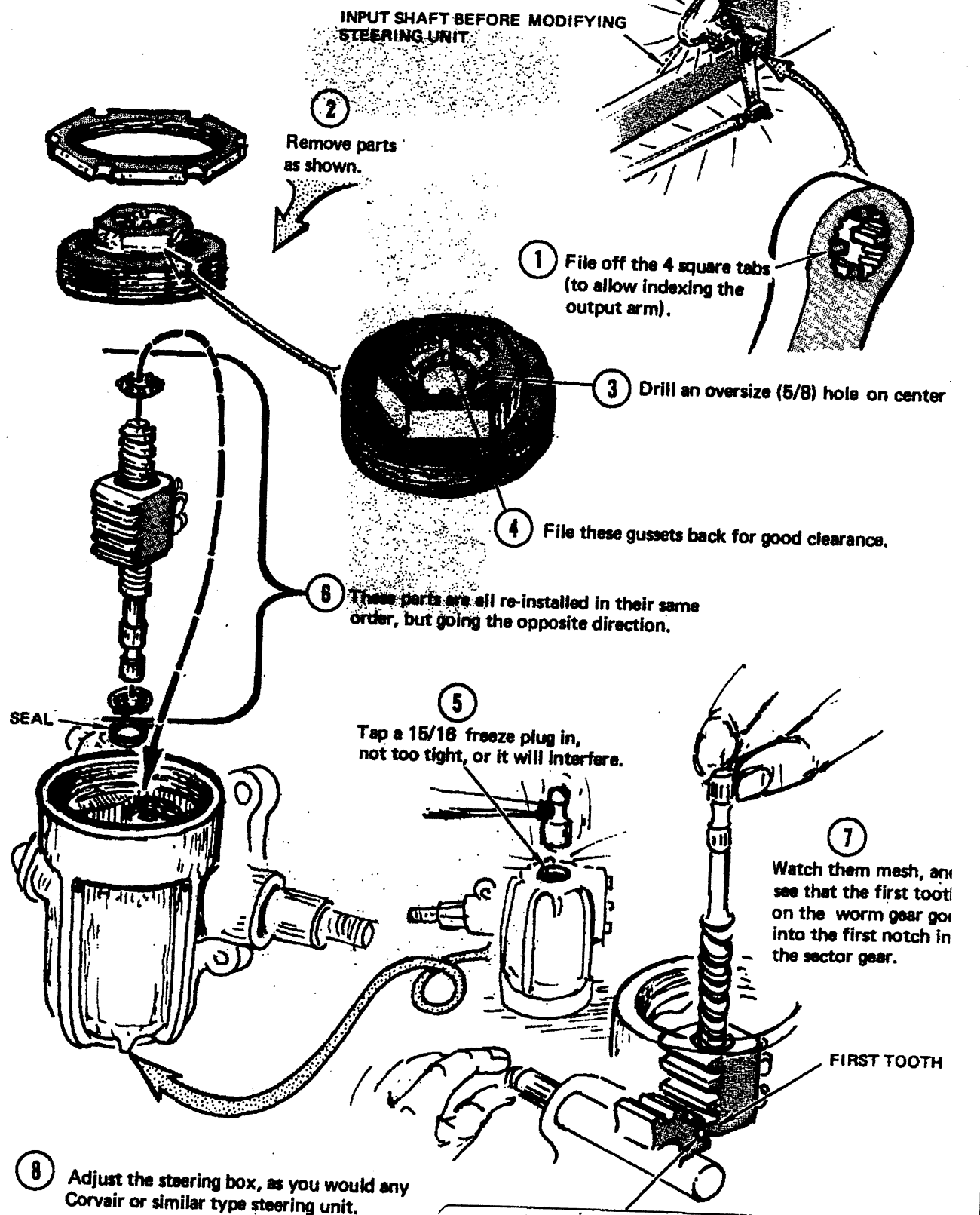
- ⑰ Recommended shock
installation for a safe ride.



(shock kits available from CCR)

SET 5 - STEERING AND MOTOR MOUNTS

Corvair steering is ideal for street rods. It's low in cost, and parts are easy to get. (Over one million Corvairs were manufactured). This installation is light in weight and good looking. You don't have to notch the body of the car or make holes in the side. Everything runs parallel to the frame. There is good leg room to get in and out of the car.

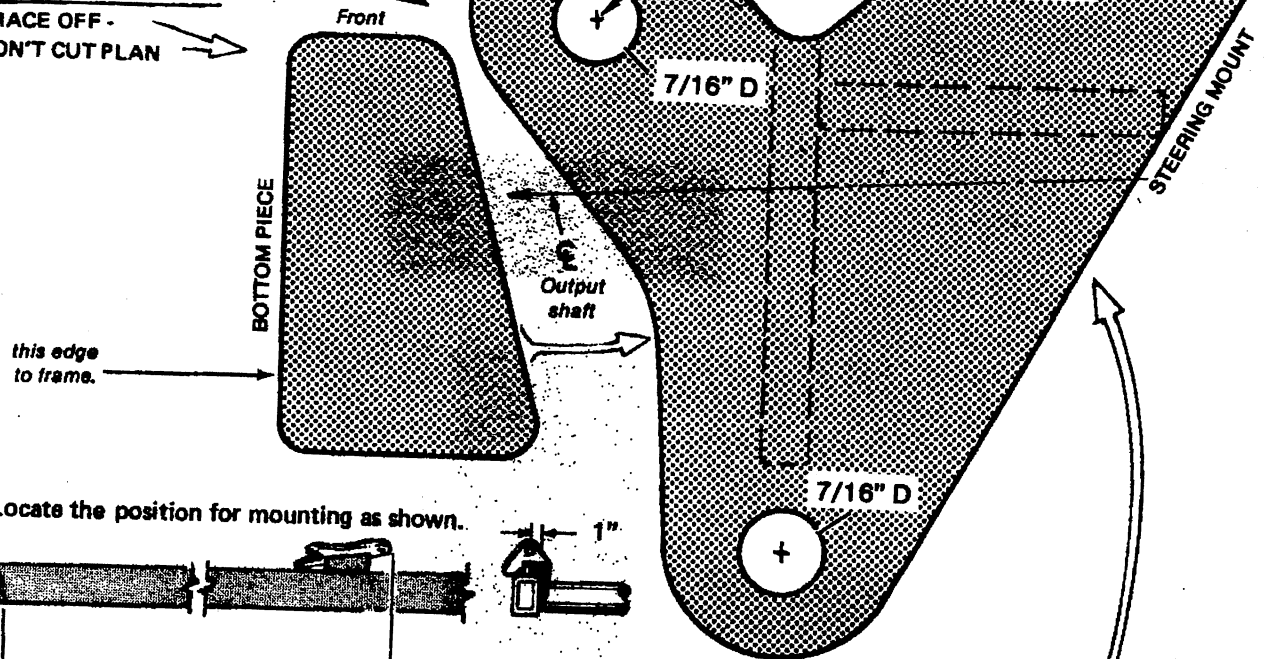


SET 5- STEERING AND MOTOR MOUNTS

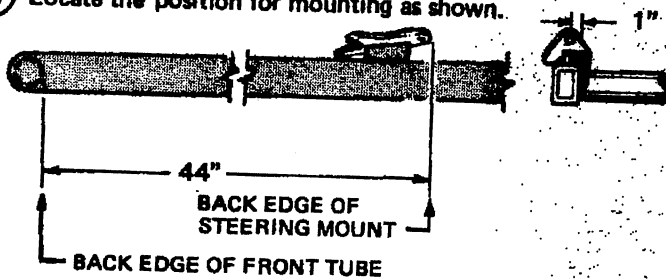
- ⑨ Cut steering mount parts from 1/4 plate.

FULL SIZE PATTERNS

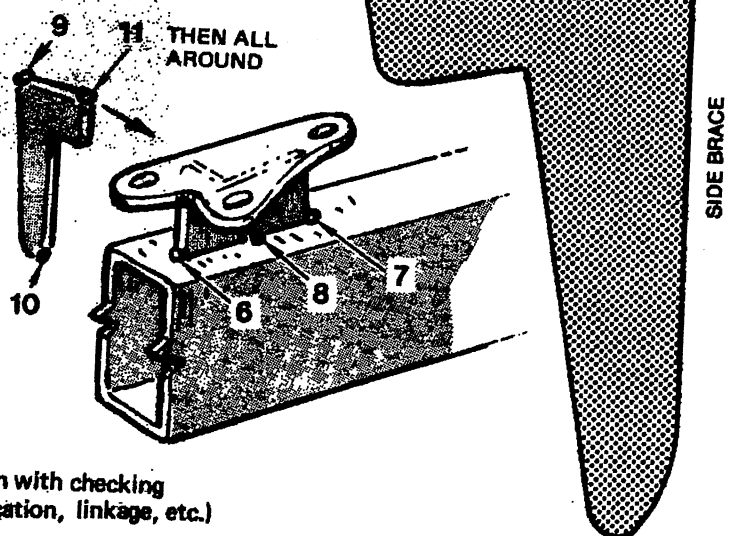
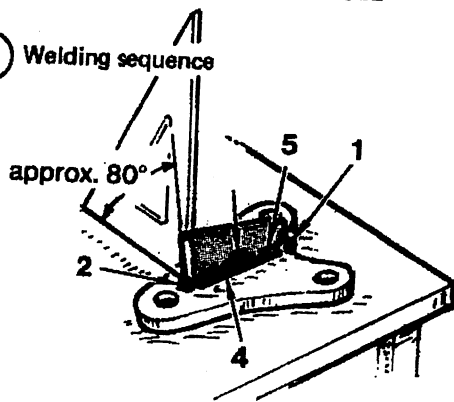
TRACE OFF -
DON'T CUT PLAN



- ⑩ Locate the position for mounting as shown.



- ⑪ Welding sequence



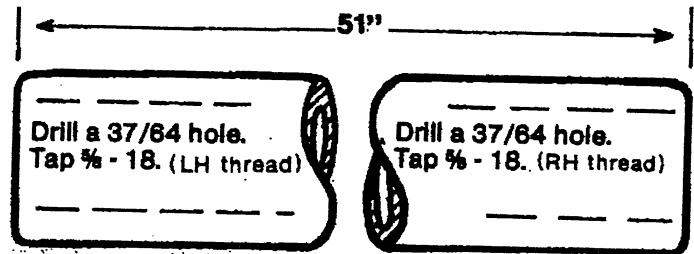
All tack welds after ⑪-2 are done in conjunction with checking locations, angles, etc. of parts (steering wheel location, linkage, etc.)

MATERIALS FOR SET 5

- 1 Corvair steering box
- 1/4 plate, see patterns
- 3/8 plate, see patterns
- 2 Heim ends - step ⑬
- 2 biscuit mounts step ⑱
- 48" of 3/4" x .156 wall, mild steel tubing (seamless)

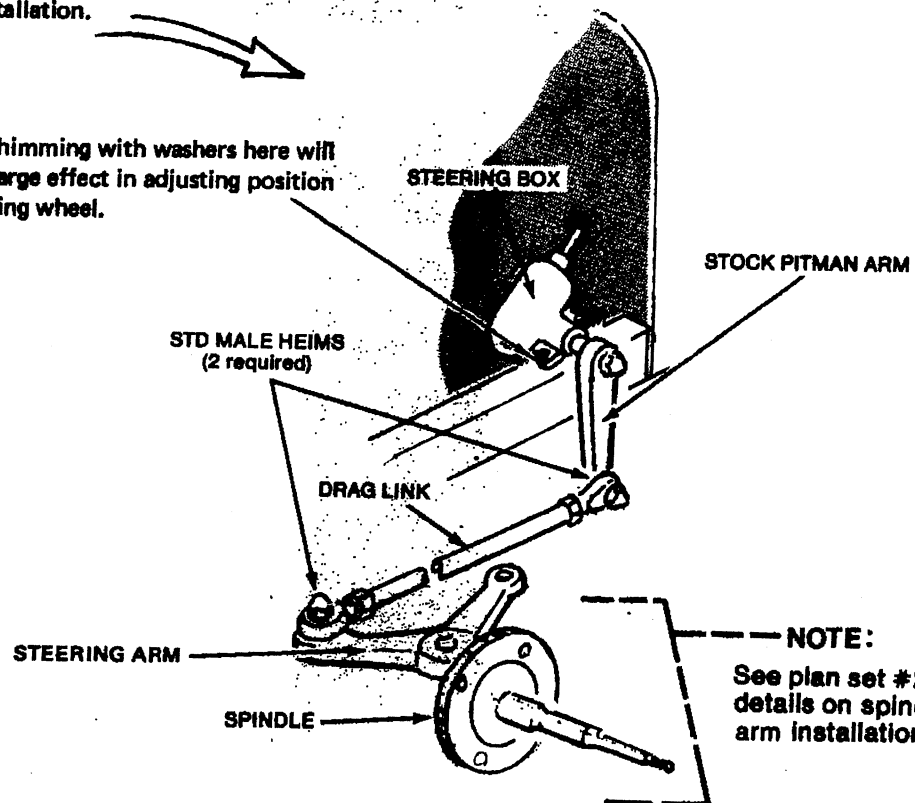
SET 5 - STEERING AND MOTOR MOUNTS

- ⑫ Make one drag link from $\frac{1}{2}$ " x .156 wall seamless tubing.



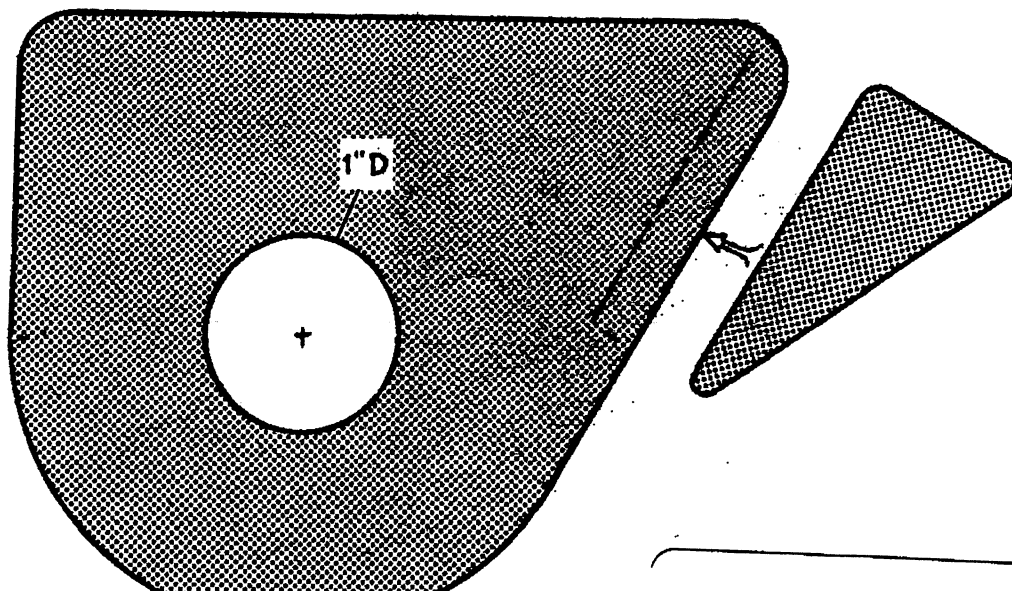
- ⑬ Finish installation.

Slight shimming with washers here will have a large effect in adjusting position of steering wheel.



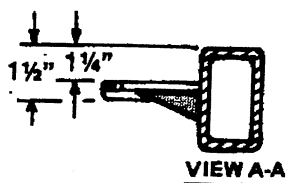
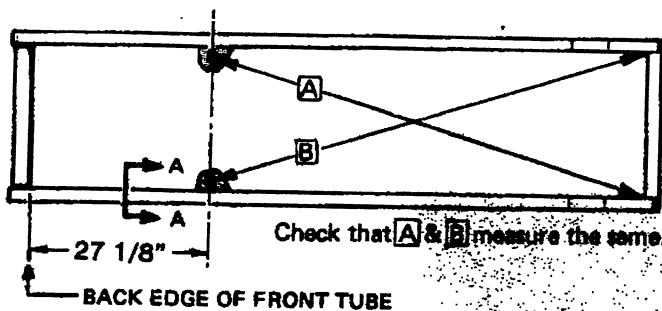
NOTE:
See plan set #2 "Front End" for details on spindle and steering arm installation.

- ⑭ Make 2 ea. motor mounts from $\frac{3}{8}$ " plate.

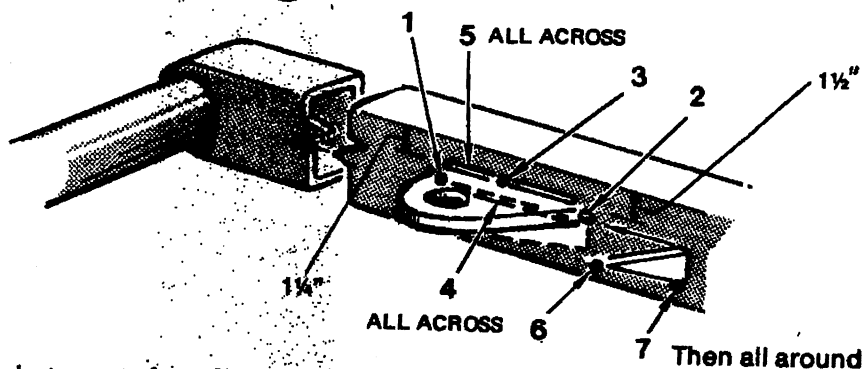


SET 5 - STEERING AND MOTOR MOUNTS

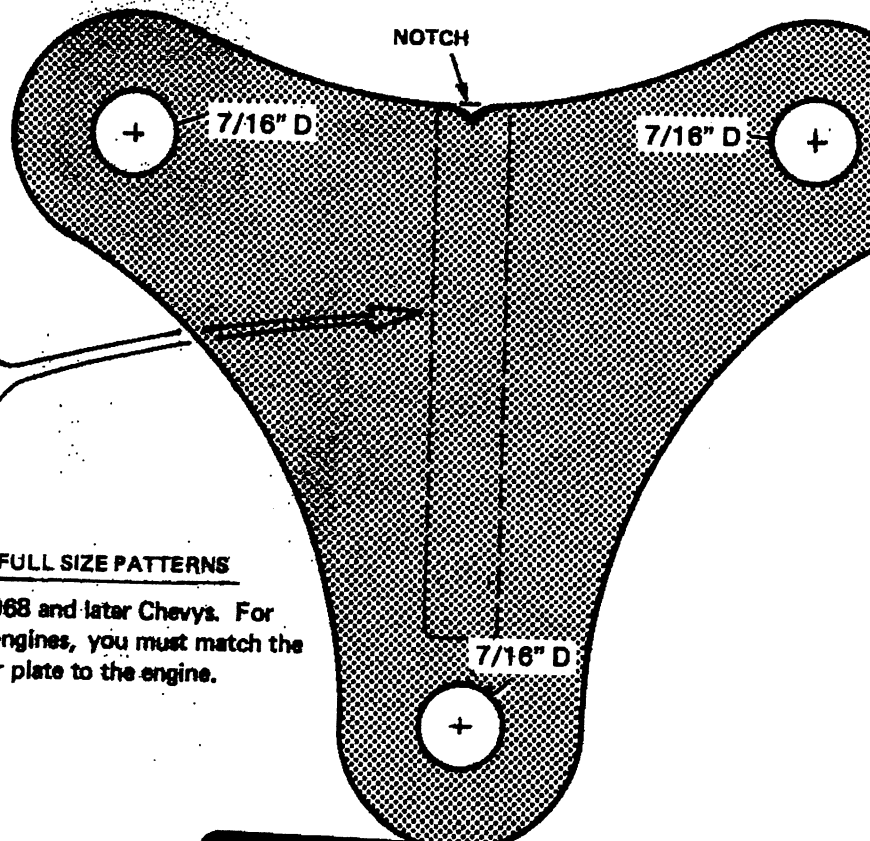
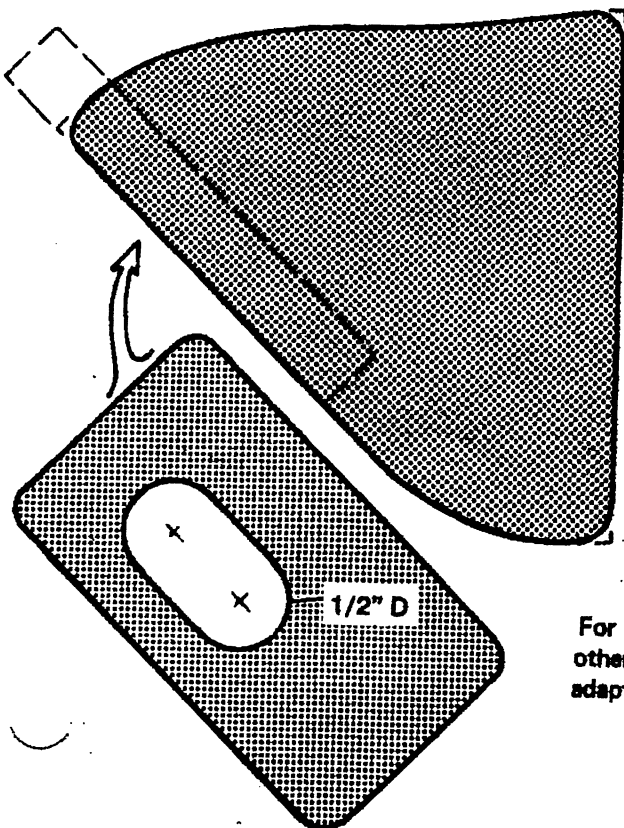
- ⑮ Locate the position for mounts accurately.



- ⑯ Sequence for welding.



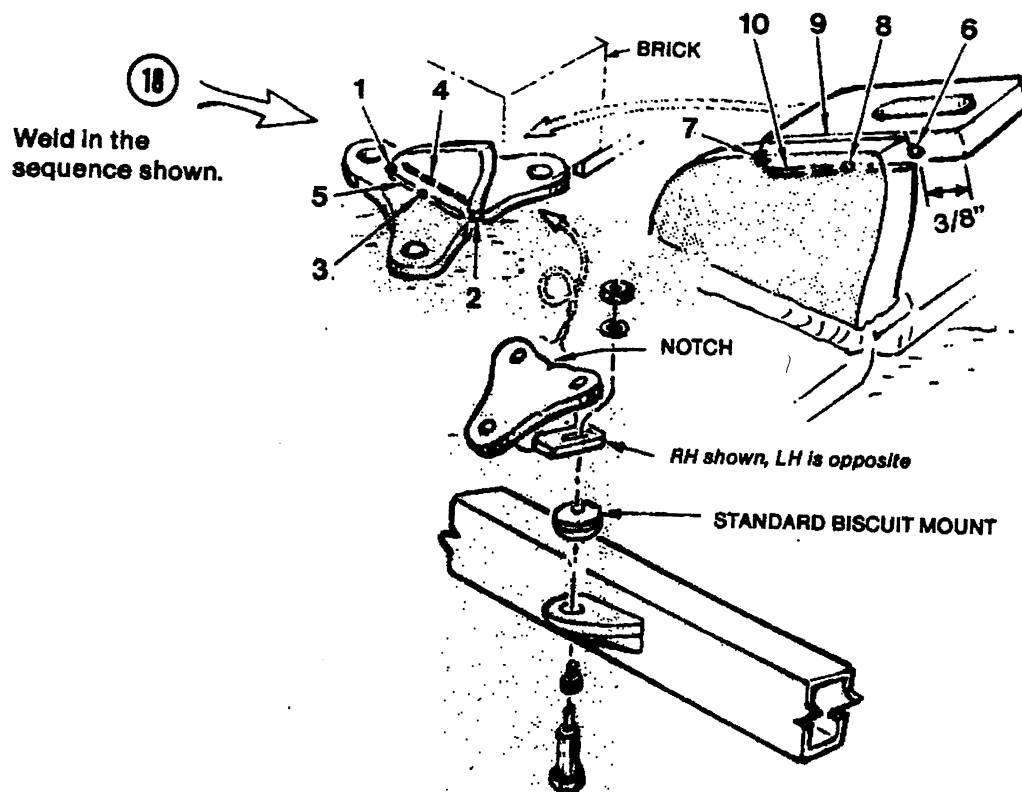
- ⑰ Make 2 ea. motor mount adapter parts from 3/8" plate.



FULL SIZE PATTERNS

For 1968 and later Chevys. For other engines, you must match the adapter plate to the engine.

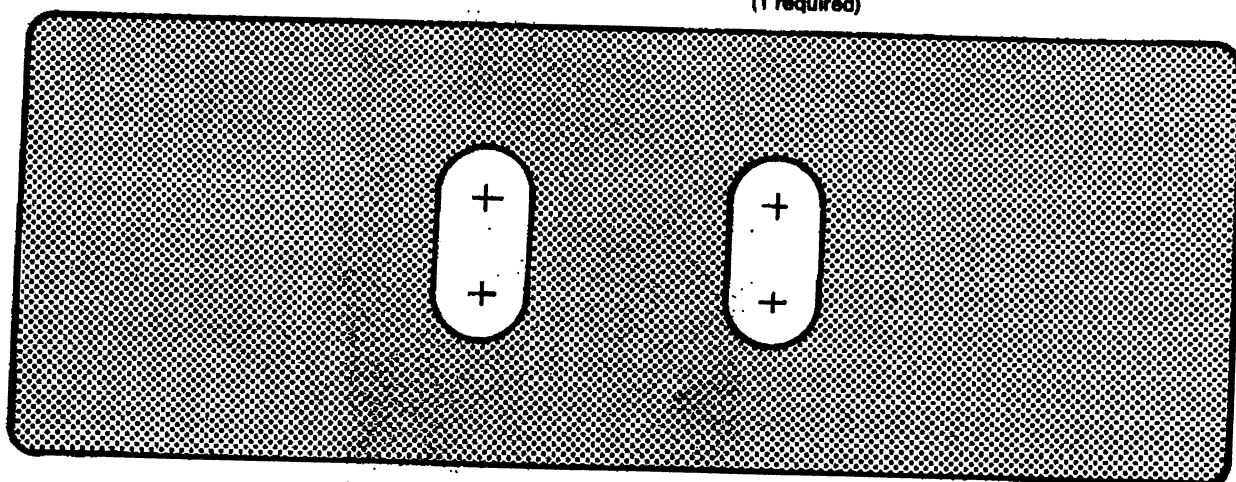
SET 5 - STEERING AND MOTOR MOUNTS



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Make the rear trans mounting parts from 3/8 plate.

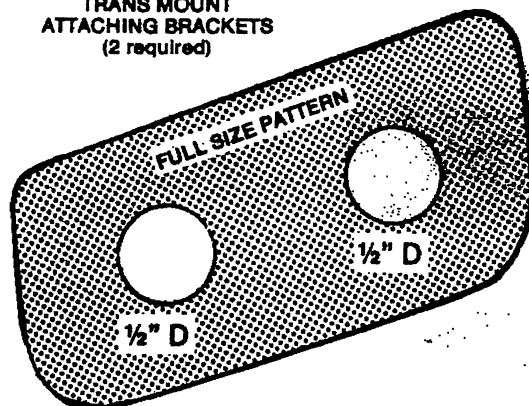
TRANS MOUNT
CENTER PLATE
(1 required)



FULL SIZE PATTERN

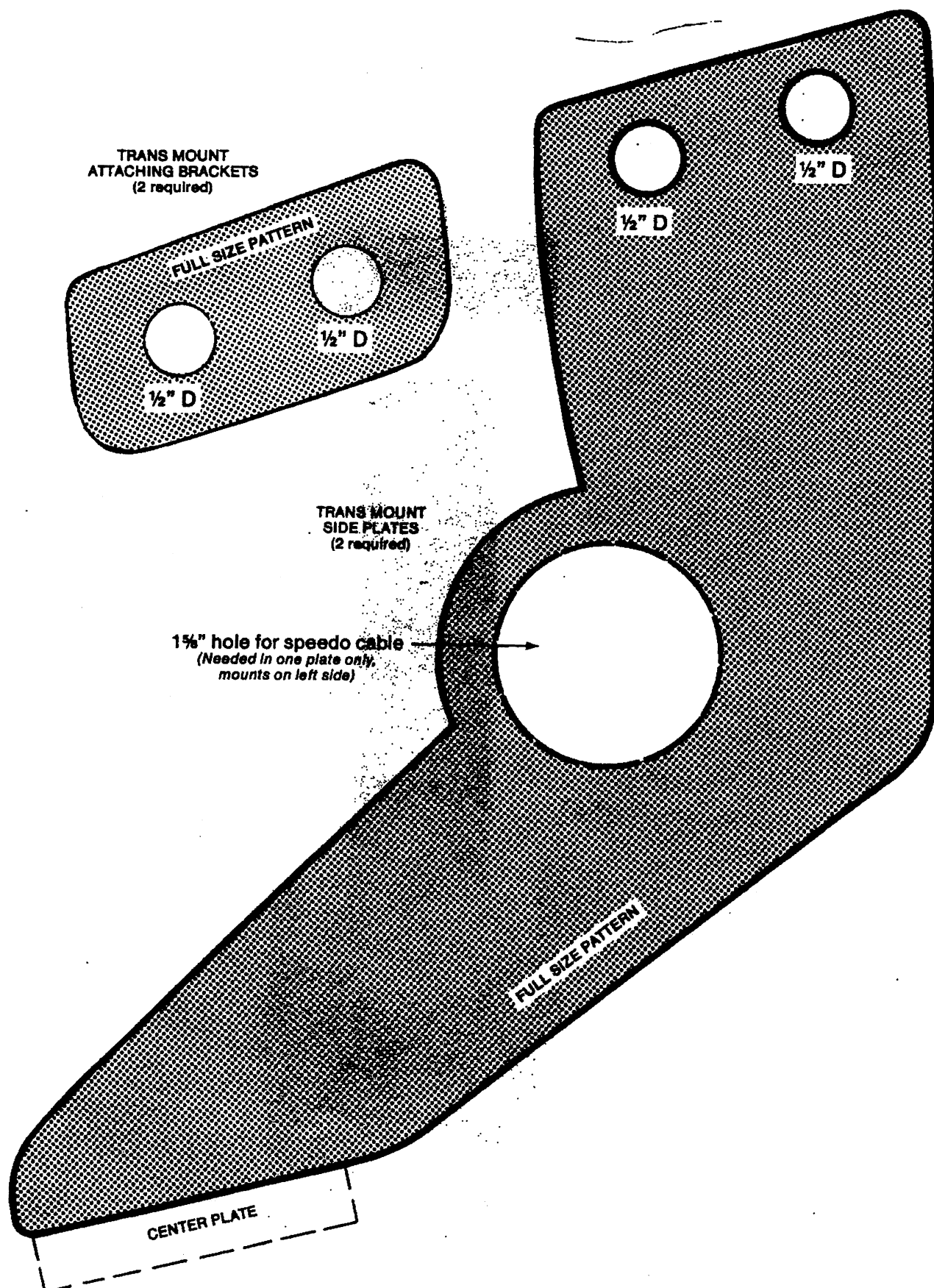
SET 5 - STEERING AND MOTOR MOUNTS

TRANS MOUNT
ATTACHING BRACKETS
(2 required)

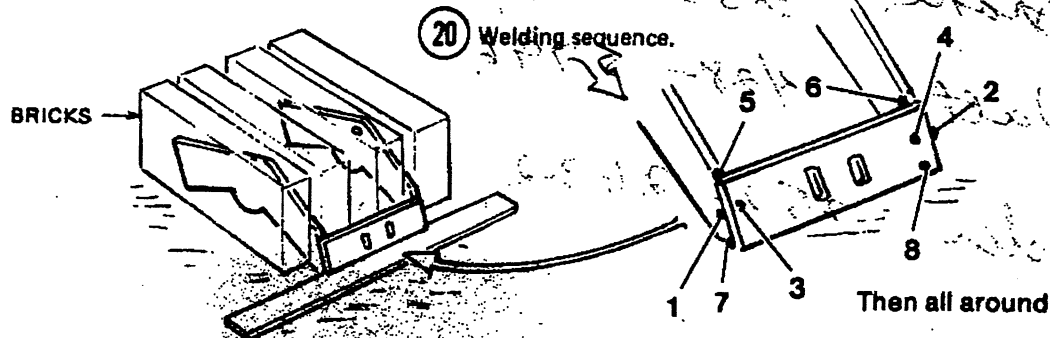


TRANS MOUNT
SIDE PLATES
(2 required)

1 1/2\" hole for speedo cable
(Needed in one plate only,
mounts on left side)

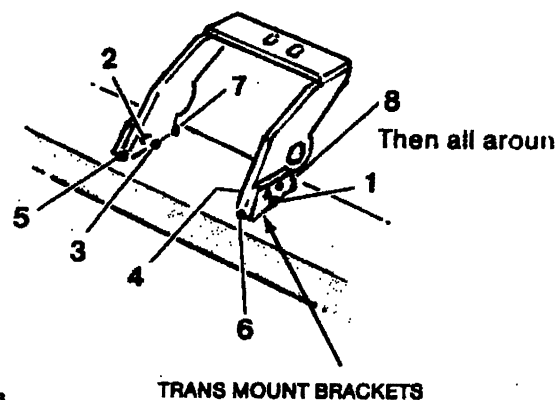
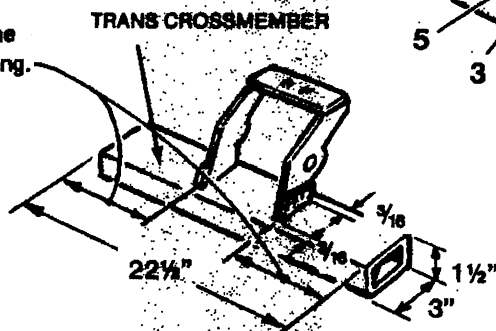


SET 5 - STEERING AND MOTOR MOUNTS

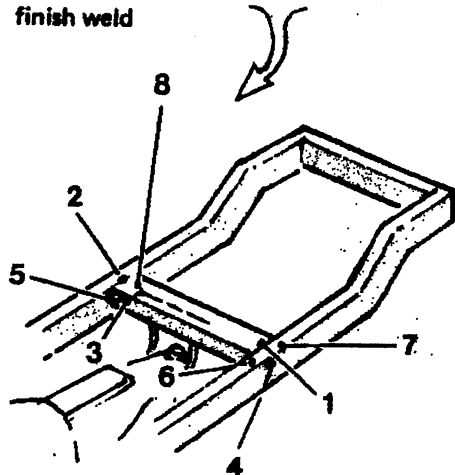


- 21
- Make one Trans Crossmember from $1\frac{1}{2}$ " x 3" x .188 steel tube to dimensions shown.
 - Bolt Trans Mount to Trans Mount Brackets and position on crossmember as shown.
 - Tackweld Trans Mount Brackets to crossmember on the outside edges. Unbolt and remove Trans Mount and finish welding brackets as shown.

Make these the same to get exact centering.



- 22
- With the engine (with transmission) loosely installed on the front mounts, bolt the trans. mount to your transmission. Then jack up the engine and tack weld as shown. Then finish weld



Check all fits for your particular transmission, before finish welding.

Alternate procedure:

First weld crossmember to frame. Then bolt the trans. mount to the trans. Then jack up the engine and weld the mount to the crossmember.

