

7405

**INSTRUCTIONS FOR A-ARM FRONT, 4-LINK REAR,
ROADSTER CHASSIS**

<u>ITEM</u>	<u>QTY</u>	<u>SIZE/PART NO.</u>	<u>TUBE CODE</u>	<u>DESCRIPTION</u>
1	1	4206		Front frame rail A-arm 1 5/8 (pair)
2	1	4236		Roadster firewall loop
3	1	4237		Roadster shoulder loop
4	1	4238		Roadster f/c cage middle loop
5	1	4239		Roadster f/c cage front loop
6	1	4240		Roadster f/c cage headrest (makes 2)
7	1	4241		Roadster f/c cage inner mount
8	1	4242		Roadster rocker tube
9	1	4243		Roadster rear frame (pair)
10	1	7010		Forward strut A-arm (pair)
11	2	4709		Engine mount tube-each one makes two
12	3	1 5/8 x 20	C,E	Rear frame crossmember
13	1	1 5/8 x 17	D	Long X-brace
14	1	1 5/8 x 32	C	Continuous X-brace
15	1	1 5/8 x 16	F	Short X-brace
16	1	1 5/8 x 24	F	Transmission crossmember
17	1	1 5/8 x 7	A	Transmission crossmember extension
18	1	1 5/8 x 23	D	Rack and pinion crossmember
19	2	1 5/8 x 17	E	Frame uprights
20	1	1 5/8 x 26	B	Corner frame upright
21	2	1 5/8 x 23	B	Center frame uprights
22	1	1 5/8 x 60	A	Main crossmember
23	1	1 5/8 x 14	F	Shoulder loop to inner mount support
24	1	1 5/8 x 32	D	Continuous floor crossmember
25	2	1 5/8 x 17	E	Short floor crossmember
26	2	1 1/4 x 41	G,H	Forward strut support
27	4	1 1/4 x 32	I,J	Side support
28	2	1 1/4 x 12	G,H	Driveline loop
29	2	1 1/4 X 15	G,H	Lower bracket support
30	2	1 1/4 x 8	I,J	Front engine support
31	8	2103		Lower A-arm bracket
32	12	2101		Suspension tab, 1/2 hole
33	4	2301		Lower bracket cap
34	2	2329		Control arm cap
35	2	2300		Rack and pinion mount
36	4	2015		Frame end cap 1 5/8 round
37	4	1000		Misalignment bushing 1/2
38	2	3100		Bolt 1/2 - 20 x 2 1/4
39	2	3200		Locknut 1/2 - 20
40	1	927405		Assembly drawing

All straight tubes are cut from the box #4407, it contains the following tubes:

<u>QTY</u>	<u>SIZE</u>	<u>TUBE CODE</u>	<u>ITEM FROM INSTRUCTION</u>
6	1 5/8 x .134 x 72	A	22 and 17
		B	20, 21 and 21
		C	14, 12 and 12
		D	24, 18 and 13
		E	19, 25, 25 and 12
		F	19, 16, 23 and 15
4	1 1/4 x .134 x 72	G	26, 28 and 29
		H	26, 28 and 29
		I	27, 27 and 30
		J	27, 27 and 30

NOTE: READ ALL INSTRUCTIONS AND MAKE SURE YOU UNDERSTAND THEM BEFORE YOU BEGIN!!! ONLY TACK WELD THE CHASSIS IN CASE YOU MAKE A MISTAKE AND HAVE TO REMOVE SOMETHING. Remove the body when the chassis is completely tacked together to make welding easier. Construction of a chassis cannot be accomplished without a jig. To assemble the chassis you will need a level surface as large as the car. This should be a steel table or an "I" beam. You will need to hold the body up off your surface at ride height, the table surface will simulate the ground. Also, weld a little of each joint at a time to help avoid distortion. Cut the straight tubes out as needed and be careful when measuring because lengths may vary a little from the instructions. With the advent of sonic testing, it is important that you measure the wall thickness of every tube in the roll cage that is subject to the sonic test. See your Association rule book to determine which tubes must be .118 minimum wall thickness. Do not install any tube that is not .118 minimum. Chassisworks will replace any tube that is undersized and has not been installed.

Do not assemble your chassis using only the dimensions on the assembly drawing. You must use a body to help in the tube placement. The dimensions on the assembly drawing are for a 1927 Ford Roadster. To vary the wheelbase, lengthen or shorten the distance from the firewall to the front axle centerline. If your body has a shorter wheelbase, do not shorten the driver's compartment more than is absolutely necessary, you need the leg room for the driver.

The chassis can easily be adapted to fit other Roadster vehicles. When altering the dimensions on the blueprints for different vehicles, do not change any dimensions that are not inside rectangular boxes. Only the dimensions in the boxes should be altered to fit different vehicles. See the chart for dimensions for other vehicles. Dimensions "A" through "F" need to be determined for your car. Write them on the Assembly Drawing in the boxes provided. If your car is not in the chart, you will have to measure your body.

CHASSIS DIMENSIONS FOR OTHER ROADSTERS

<u>Year & Model</u>	<u>Dim A</u>	<u>Dim B</u>	<u>Dim C</u>	<u>Dim D</u>	<u>Dim E</u>	<u>Dim F</u>
1927 Ford Roadster	110	50	38	16	22	26
1932 Ford Roadster	105	48	35	16	22	26

1. Prepare the body for the frame by first measuring forward from the rear axle centerline and marking the rocker panel at 22 inches. The wheelbase should also be measured, this will be Dimension "A". Both of these dimensions will be used when installing the frame. Also,

measure the width of the car at the rocker panels, you will need this dimension later to assure the body is installed at the correct width.

2. Prepare the body by cutting out the entire floor and firewall, and by removing the doors, decklid, windows, and suspension. The body should be cut up so all that remains is the single outer skin. Make sure you have removed all of the double panels in the roof, door pillars, rocker panels and quarter panels. When you are finished, the body needs to mount to the chassis in at least 6 places: 2 points attaching the rear frame rails to the taillight panels; 2 points attaching the main crossmember to the running boards; and 2 points attaching the firewall loop to the "A" pillar just below the windshield. Add more mounts if the body is still flimsy.

3. Before starting, position the body so it is at the desired ride height off the ground. Block the rocker panels and rear of the frame so the car will be held steady. You need at least 3 inches of ground clearance from the front bumper to the tire and 12 inches behind the tire. Do not let your car sit too low. See the blueprint for the minimum fender height off the ground. This will provide the tire clearance necessary for the stated tire size.

4. Install the 1 5/8 main crossmember in the chassis under the running boards. To position the main crossmember in the car, you must place the backside 22 inches forward of the rear axle centerline.

5. Shorten the front of the rear frame rails so it is the correct height per the Assembly Drawing. Measure from the back of the crossmember to the taillight panel, this length will be Dimension "D" plus 22 inches. Cut the frame rails to this length and tack them in place. The frame rails should be centered in the car an equal distance from the car's centerline. They should be 28" to 20" wide on the outside, this will be Dimension "E". Make the frame as wide as possible while leaving enough room for the tires. Center the rails on the taillight panel, the quarter panel, and on the crossmember. They should both be an equal distance from each side of the car and at the same height.

6. Install the crossmembers. The rear crossmember should be even with the bottom of the frame and approximately 1/2-inch forward of the taillight panel. Weld the shock brackets to the center cross-member at the dimension shown on the assembly drawing. Make sure they are straight to each other. Put the crossmember between the frame rails at the dimensions shown. Install the forward crossmember at the height shown to clear the driveshaft.

7. Install the chassis 4-link mount (part of #6205 4-Link). The 4-link mount attaches to the bottom of the frame and crossmember. The brackets are centered under the frame 3/16 of an inch from each side. Use a rod end to get the correct spacing between them. The brackets must be straight or the 4-link will not fit right.

8. The two 1/2 x 2 1/4 inch bolts and the two 1/2 inch locknuts are used in the upper shock mounts to mount the shocks. The four misalignment bushings are also used in the shock mounts. One goes on each side of the shock bearings to fill the gap in the shock mount bracket. Use #6216 Adjustable Shock Mount for the lower mount.

9. Before you can install the front frame, you must determine what frame width you need for your tires to clear your fenders, this will be Dimension "F". Due to the many different front wheel and tire combinations, you should do the following calculations for your vehicle, even if it is listed in the chart.

Step 1: Determine the outside front tire width that you need. Measure the width between the front fenders. In most Roadster chassis the outside width of the tires will be the same width as the fenders. This will equal the outside tire width.

Step 2: To determine the hub width, you need to know how much wider the outside of the tire is than the front hub. Put a yardstick across the outside of the tire and measure through the center to the side of the wheel that bolts to the hub. When the wheel is bolted on, it is this much wider than the hub. Multiply this by 2 and subtract this amount from the outside tire width you calculated in step one. This will be the required hub width.

Step 3: Subtract 26 1/4 inches from the hub width to find the outside frame width. The frame cannot be narrower than 24 inches. Write your frame width on the Assembly Drawing.

10. Position the new front frame rails in the chassis. The rear end will most likely be too long, it attaches to the crossmember welded between the rocker panels. Put the first bend 6 to 12 inches in front of the firewall location. The firewall will be determined by Dimensions "B" and "C". If the front frame does not clear the grillwork, shorten it. Be careful not to cut too much. The end of the frame must be at least 13 inches forward of the front spindle centerline. The rails should be parallel at the correct width you determined and centered in the frame. Measure diagonally to make sure the frame is square. Measure from the side of the frame to the body in several places to make sure the frame is centered in the body.

The top of the frame rail (measured at the front spindle line) should be 16 inches off the ground. This will give you 3 inches of ground clearance on the bottom of the frame. The frame does not have to be level in the engine bay or the driver's compartment. Use whatever frame rake is necessary to attach the rear of the frame correctly. The top of the frame in the engine compartment should be within 3 degrees of level.

11. Measure forward from the main crossmember under the running boards to locate the front spindle line, this Dimension is equal to "B" and "C". Use a large square or plumb bob to put a line on both sides of the new front frame rails, which will represent the front spindle centerline. All of your brackets will locate off of this line.

12. Using the A-arm assembly tool #6706, install the lower A-arm brackets to the frame. Bolt the brackets together with the correct spacers. See the Assembly Drawing for the correct dimensions. Hold the assembly under the frame and tack it in place. The rear A-arm bracket goes 3/4 of an inch behind the spindle centerline. Use the control arm cap to gusset the front pair of lower A-arm brackets. Use two lower A-arm bracket caps on each rear set of lower A-arm brackets. One caps the bottom of the brackets and the other provides an additional gusset for the top adjustable shock mount. See the Assembly Drawing for the correct location.

13. Cut the 1 5/8-inch tube to the correct length for the rack and pinion crossmember. Install it between the front A-arm brackets so it is even with the bottom and rear edges of the front A-arm brackets. Install the rack and pinion mounts per the dimensions on the assembly drawing. If the frame outside width is less than 29 inches, you will have to trim the driver's side rack and pinion mount as it will actually weld to the lower A-arm bracket. Just tack weld the crossmember in place until after you have checked for bump steer on the front end.

14. Install the upper A-arm brackets and adjustable shock mount (purchased separately). Use the #6706 Spacer Set to properly space the brackets. See the Assembly Drawing for the correct dimensions. Position the A-arm brackets so the adjustable shock mount is 1/4 inch forward of the front spindle line. Just tack weld the upper mounts in place until after you have installed the A-arms and been able to properly align the front end.
15. Install the complete front suspension and steering less the springs. Align the front end to 1/32 to 1/8-inch toe in, zero degree camber, and 6 to 10 degrees of caster. The front end can be aligned by using a machinist level on the spindle flats.
16. Move the spindle through its full travel to make sure nothing binds up. Also, check for bump steer. If assembled correctly, all unnecessary bump steer can be removed by shimming the tie rods up and down at the spindle or by raising or lowering the rack and pinion slightly (1/16 of an inch at a time).
17. Install the firewall loop. It stands straight up and attaches to the top of the front frame at the junction of Dimensions B and C.
18. Install the shoulder loop per the drawing. Use the frame uprights to hold the rear up.
19. Install the funny car cage inner mount per the drawing.
20. Install the funny car cage per the assembly drawing. Start with the middle loop.
21. Install the driver's rocker tube per the drawing. Make sure it clears the body.
22. Install all three pieces of X-brace.
23. Install both sides of the chassis consisting of the frame uprights with side supports, and shoulder loop to inner mount support.
24. Install the forward struts per the Assembly Drawing. Make sure they clear the A-arm, tires and headers.
25. Install the forward strut support tube, and lower bracket support per the assembly drawing.
26. Install the engine support tubes at the mid mount per the drawing (each "U" bend makes 2 parts). If the engine is too far back, it can be moved forward for more clearance. The mid plate attaches to the front of the engine support tubes. Install the tubes at 2 degrees from perpendicular to the ground. Remember that the engine runs uphill to the rear 2 degrees. Install the front engine support tubes with the motor plate to assure the correct location.
27. Install the transmission crossmember, and the transmission crossmember extension in the correct location for the transmission you are using.
28. Install the floor crossmember in an X-design between the frame rails behind the transmission crossmember.

29. Install the tubes to the main crossmember to form the rear driveshaft loop. Notice that the tube placement is for a driveshaft that is offset to the passenger side 1/2 inch from the centerline of the chassis.

30. Use the frame end caps to cap the forward ends of the front frame rails.

31. Recheck all dimensions, remove the body and finish welding the chassis.

32. Chris Alston's Chassisworks, Inc., carries a complete line of accessories to make completion of your car easier.

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