7219

INSTRUCTIONS FOR A-ARM FRONT, 4-LINK, 3 X 2 FRAME, FULL SIZE, ELIMINATOR CHASSIS

ITEM	QTY	SIZE/PART NO.	TUBE CODE	DESCRIPTION
1	2	4139		Cage Side
2	2	4208		Forward strut
3	1	4039		Main Hoop
4	1	4228		Cage top
5	2	4502		Rear frame 3 x 2
6	1	4709		Engine support loop
7	1	1 5/8 x 21	I	Rack and pinion crossmember
8	2	4503		Front frame 3 x 2
9	2	1 5/8 x 54	A B	Long side bar
10	2	1 5/8 x 23	H	Upper side bar
11	2	1 5/8 x 32	J K	Lower side bar
12	2	1 5/8 x 53	F G	Rocker support
13	1	1 5/8 x 54	C	Mid mount
14	1	3 x 2 x 72		Main hoop crossmember
15	1	1 5/8 x 54	D	Back brace
16	2	1 5/8 x 24	I	Frame crossmember
17	1	1 5/8 x 40	J	Long cross brace
18	1	1 5/8 x 60	E	Continuous cross brace
19	1	1 5/8 x 15	C	Short cross brace
20	2	1 5/8 x 19	F G	Cage side extension
21	2	1 5/8 x 12	A L	Foot brace
22	1	1 5/8 x 26	H	Transmission crossmember
23	2	1 5/8 x 20	L	Main hoop support
24	2	1 1/4 x 45	M N	Rocker triangulator
25	2	1 1/4 x 72	O P	Accessories strut
26	2	1 1/4 x 9	M	Rear strut support
27	4	1 1/4 x 6	N S	Roll cage gusset
28	1	1 1/4 x 52	Q	Cage top triangulator
29	2	1 1/4 x 36	R	Forward frame support
30	2	1 1/4 x 42	S T	Frame triangulator
31	4	2101		1/2 hole suspension tabs
32	2	2300		Rack and pinion brackets
33	8	2102		Lower A-arm bracket 3 x 2
34	4	2301		Lower bracket cap
35	2	1 1/4 x 15	Q S	Lower bracket support
36	2	1 1/4 x 12	T	Engine support
37	2	2001		Frame end cap
38	2	2329		Control arm cap
39	8	2125		Frame tab 1/2 hole
40	2	3200		Locknut 1/2 - 20
41	2	3100		Bolt 1/2 - 20 x 2 1/4
42	4	1000		Misalignment bushing 1/2
43	1	927219		Assembly drawing

All straight tubes are cut from the box #4404, it contains the following tubes:

QTY	SIZE	TUBE CODE	ITEM FROM INSTRUCTION
12	1 5/8 x .120 x 72	A	9 and 21
		B	9
		C	13 and 19
		D	15
		E	18
		F	12 and 20
		G	12 and 20
		H	10, 10 and 22
		I	7, 16 and 16
		J	11 and 17
		K	11
		L	21, 23 and 23
8	1 1/4 x .083 x 72	M	24, 26 and 26
		N	24, 27, 27, & 27
		O	25
		P	25
		Q	28 and 35
		R	29 and 29
		S	30, 27 and 35
		T	30, 36 and 36

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 rulebook to determine which tubes must be .118 minimum wall thicknesses. 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 1955-1957 Chevy. 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 full size 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 "G" 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 COMMON FULL SIZE CARS

Year & Model	Dim A	Dim B	Dim C	Dim D	Dim E	Dim F	Dim G
Chevy 55-57	115	54	27	39	71	26	30
Cuda 70-74	108	49	25	35	58	24	29
Challenger 70-74	110	51	25	37	61	24	29
Chevelle 64-66	115	54	27	44	70	26	30

1. The body should be prepared for the frame by first measuring forward from the rear axle centerline and marking the rocker panel at 34 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, deck lid, 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 hoop to the rocker panels; and 2 points attaching the bend in the cage side 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.

4. Install the 3 x 2 main hoop crossmember in the chassis between the rocker panels. To position the main hoop crossmember in the car, you must place the backside 34 inches forward of the rear axle centerline. The rocker supports need to be cut to length and installed through the main hoop crossmember. The forward end of the rear rail must be positioned at 22 inches. Use a piece of 3 x 2 tube to extend it forward to the crossmember location. Cut a 45-degree angle on the front of the rear frame and on one end of the 3 x 2 extension. When welded together, they will form a 90-degree corner and extend forward to the backside of the crossmember.

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 "F". Make the frame as wide as possible while leaving enough room for the tires. If the rear rails are narrower than the front, you will have to make a 1 x 3 triangular gusset to weld on the front side of the crossmember under the overhang of the rear frame rail. Use scrap 3 x 2 to make the gussets. Make sure the rails are centered 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 drive shaft.

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 even with the outside edge of the frame. 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 "G". 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. You will need 4 to 5 inches of clearance from the side of the tire to the inner front fender lip. Subtract 8 to 10 inches from the inner fender width. 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. Try to put the first bend by the new firewall location. This 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 15 3/4 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 with in 3 degrees of level.

11. Measure forward from the crossmember welded between the rocker panels 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 degrees camber, and 6 to 10 degrees of caster. Using a machinist level on the spindle flats can align the front end.

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 main hoop. It stands straight up and attaches to the top of the main hoop crossmember at the junction with the rocker support.

18. Install the seat back brace in the center of the bend on the main hoop.

19. Install the cage top per the assembly drawing, Dimension "E".

20. Tack the cage sides in place. Keep the lower leg of the cage side and the frame as close to 90 degrees as possible. This will make installation of the firewall easier.

21. Install the cage side extension and foot brace per the assembly drawing; the driver and passenger's sides are the same. The rocker supports should be installed under the cage side extension and main hoop. The rocker supports should be positioned so the front and rear ends are open. This will give you an effective and protective tube to run your battery cable and fuel lines through to the front of the chassis.

22. Install the mid mount bar at the correct height.

23. Install all three pieces of X-brace.

24. Install both rear frame accessory struts so that the lower end is centered over the rear crossmember. In some cases, the rear end will be forward of the rear crossmember to clear the rear window. The upper end attaches to the main hoop.

25. Install the rear strut supports between the rear frame accessory struts and shock crossmember.

26. Install all 3 pieces of the door bar X-braces.

27. Install the main hoop support tubes.

28. Install the forward struts per the Assembly Drawing. Make sure they clear the A-arm, tires and headers.

29. Install the strut support tube, frame struts, and lower bracket support per the assembly drawing.

30. Install the cage top triangulator.

31. Install the front and rear cage gussets.

32. 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 windshield 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, the engine runs uphill to the rear 2 degrees. Install the front engine support tubes with the motor plate to assure the correct location.

33. Install the transmission crossmember, and frame triangulators when you are installing the transmission.

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

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

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

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