7457

INSTRUCTIONS FOR ELIMINATOR II STRUT FRONT, 4-LINK REAR, MILD STEEL, 37-41 WILLYS CHASSIS

Item	*Qty*	*Size/Part #*	*Tube Code*	*Description*
1	2	4123		Cage side
2	2	4218		Forward strut
3	1	4023		Main Hoop
4	1	4200		Windshield brace
5	2	4248		Rear frame Eliminator II
6	2	4709		Engine support loop
7	1	4708		Rack and pinion crossmember
8	2	4215	Y	Front frame 1 5/8 A-arm
9	2	1 5/8 x 49	A B	Long side bar
10	2	1 5/8 x 19	L	Upper side bar
11	2	1 5/8 x 25	I	Lower side bar
12	2	1 5/8 x 53	C D	Rocker support
13	1	1 5/8 x 39	E	Mid mount
14	2	4209		Main hoop to 4-link support crossmember
15	1	4210		Backbrace
16	2	1 5/8 x 20	J	Rear frame crossmember
17	2	1 5/8 x 36	K	Main hoop rear strut
18	1	1 5/8 x 22	L	Transmission crossmember
19	2	1 5/8 x 5	A B	Cage side Mount
20	2	1 5/8 x 5	A B	Cage side support
21	4	1 5/8 x 5	C D	Frame upright
22	1	1 5/8 x 23	F	Front crossmember
23	2	1 5/8 x 100	Z	Upper frame
24	4	1 1/4 x 24	R S	Frame diagonal
25	2	1 1/4 x 30	U	Rear frame support
26	3	1 1/4 x 24	T	Main hoop to rear strut back brace
27	2	1 1/4 x 36	M	Rear frame crossmember forward support
28	2	1 1/4 x 48	N O	Floor support
29	2	1 1/4 x 9	W	Rear strut support
30	4	1 1/4 x 6	X	Roll cage gusset
31	1	1 1/4 x 48	S	Cage top triangulator
32	2	1 1/4 x 36	P	Forward strut frame support
33	2	1 1/4 x 34	V	Frame triangulator
34	2	1 1/4 x 24	N O	Shock crossmember rear supports
35				Item number not used
36				Item number not used
37	2	1 1/4 x 36	Q	Front frame diagonal
38	2	1 1/4 x 12	U W	Front strut support
39	4	2015		Frame end cap 1 5/8 round
40	12	2101		1/2 hole suspension tabs
41	2	2300		Rack and pinion brackets
42	2	3200		Locknut 1/2 - 20
43	2	3100		Bolt 1/2 - 20 x 2 1/4
44	4	1000		Misalignment bushing 1/2
45	1	927457		Assembly drawing

OPTIONAL PIECES FOR FUNNY CAR CAGE #7226

46	1	4230	Funny car cage auxiliary hoop
47	2	4231	Funny car cage support loops

48 1 1 5/8 X 17 Funny car cage top (made from spare tube from chassis)

All straight tubes are cut from two boxes labeled #4404, they contain the following tubes:

Qty	***Size***	***Tube Code***	***Item from Instruction***
12	1 5/8 x .134 x 72	A	9, 19 and 20
		B	9, 19 and 20
		C	12 and 21
		D	12 and 21
		E	13
		F	22
		G	
		H	
		I	11 and 11
		J	16 and 16
		K	17 and 17
		L	18, 10 and 10
12	1 1/4 x .134 x 72	M	27 and 27
		N	28 and 34
		O	28 and 34
		P	32 and 32
		Q	37 and 37
		R	24
		S	24 and 31
		T	26
		U	25
		V	33 and 33
		W	38 and 29
		X	30
4	1 5/8 x 108 (labeled 4215)	Y	7, 7
		Z	23, 23

When you receive your chassis, the first thing to do is to make sure you have all the parts. Use the above list of components to verify that you have all the parts. The bent cage parts will usually be banded together in two bundles. The straight tubes will come in two identical boxes labeled #4404. The brackets will be in a small box labeled #3004. The assembly drawing will be in the same 8 1/2-x 11" envelope these instructions were in. If anything is missing, contact Chassisworks for assistance.

The straight tubes boxes will provide enough material to build your chassis provided you cut the correct lengths from each tube. The above chart will give you a guideline. The length of each tube from the instruction sheets are approximate. Do not cut the tubes before you need them and try to cut the long tubes first.

Chassisworks makes no guarantee or claims that this chassis will be accepted by any sanctioning body. It is the sole responsibility of the chassis' owner to determine that this chassis can be used for the owners intended use. We suggest that you carefully examine the rules that pertain to chassis construction for the associations that you race under and, make sure that this chassis fits those rules. We also require you to measure the diameter and wall thickness of every tube (bent and straight) that goes into the chassis to make sure it is the correct size for the rules. 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 a specific minimum wall thickness. Do not install

any tube that is not at least the minimum. Chassisworks will replace any tube that is undersized and has not been installed.

Read all the instructions completely and make sure you understand them before you begin. Only tack weld the chassis components whenever possible. This will make it easier to remove components if you make a mistake. All joints that are covered by another tube or bracket must be completely welded before they are covered up. This chassis must be tig (heliarc) welded by an experienced welder - your life depends on it!

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.

Do not assemble your chassis using only the dimensions on the assembly drawing. You must use a body to help in tube placement. The dimensions on the assembly drawing are for a 1937-1941 Willys Coupe.

This chassis can easily be modified to fit other fat fendered size cars. Most fat fendered cars are very close to the same width inside. They also have very similar windshield angles. This allows this cage to fit many cars. When altering the dimensions on the assembly drawing for different vehicles, do not change any dimensions that affect where any front or rear suspension brackets mount in relation to other brackets or the chassis will not work.

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.

When altering the dimensions on the assembly drawing 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.

Prepare the body for the frame by first measuring forward from the rear axle centerline and marking the rocker panel at 23 inches. This dimension will be used to position the body correctly on the chassis when viewed from the side. The mark on the body at 23 inches should be in line (when viewed from the side) with the back of the main hoop crossmember where the 4-link mounts. This will position the new chassis rear axle centerline in the same location in reference to the body that the stock rear axle centerline had. In some vehicles, it will be necessary to move the rear axle centerline rearward 1 to 3 inches from stock to provide adequate room for the rear wheel tubs against the fender. To do this, just move the body forward in reference to the chassis 1 to 3 inches. Measure the stock wheelbase and this will be Dimension A. In some body styles, the front tires will have to be moved forward to provide enough room for the engine. If you move the front tires forward, add this amount to the wheelbase. If your body was also set back to provide wheel tub clearance, this amount will usually be added to the front fenders to make the front end long enough. 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.

Cut up the body by trimming all inner panels. You just want the single outer skin. You need to attach the body at the rocker panel, A- pillar, B-pillar, rear valance, and top 4 corners of the cage. On steel bodies, weld tabs to the chassis and body that bolt together. This will make it easier to remove and re-install the body as you build the car. Fiberglass bodies should be attached to sheet metal plates and fiber-glassed inside the body. Cleco the body to the plates until the final assembly when the plates should be fiberglassed in. Do not use pop rivets, they will rattle out and crack the fiberglass.

1. Install the 4-link support in the chassis between the rocker panels. The dropped portion of the support attaches to the rear of the main frame. The top of the 4-link support is level with the doorsill, where it

attaches to the main hoop. To position the 4-link support correctly in the car, you must place the backside 23 inches forward of the rear axle centerline. Fit the main frame with the 4-link support tube so you can tack the 4-link support to the main frame to hold it up. Fit the main frame per the assembly drawing. Install the front frame crossmember.

2. Install the rack and pinion mounts to the rack and pinion crossmember. Determine the center of the crossmember and mark where the brackets go according to the dimensions on the assembly drawing. Tack the brackets to the crossmember at 90 degrees to the crossmember and both at the same height. Cut the legs off the crossmember to locate the rack and pinion brackets at the correct distance above the frame. Tack weld the crossmember above your frame rails at the correct location. It will be necessary to grind on the rack and pinion brackets to make them fit the crossmember properly. Next, install the brackets at the correct angle and spacing according to the assembly drawing.

3. Install the main hoop. It tilts back 4 inches and attaches to the front of the lower main hoop 4-link support crossmember at the junction with the rocker support.

4. Install the upper 4-link crossmember. Use the 4-link chassis mounts to help position it at the correct location.

5. Install the rear frame rails per the dimensions on the assembly drawing. Measure from the back of the main hoop crossmember to the tail light panel. Subtract 23 inches and this will be Dimension D. The frame rails should be centered in the car and 3 inches narrower than the outside width of the 4-link brackets. This will be Dimension F. Make the 4-link brackets outside width as wide as possible while leaving enough room for the rear tires. Install the two rear frame crossmembers per the assembly drawing. Install the rear upper shock mount so it is centered under the frame. Install the chassis 4-link front mounts on the main hoop crossmember and the upper 4-link crossmember. The upper crossmembers front side is even with the main hoop crossmembers rear side when viewed from the side. Two 1/2 x 2 1/4 inch bolts and 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 #6247 Adjustable Shock Mount for the lower mount.

6. Tack the cage sides with rocker tubes 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.

7. Tack the windshield brace in place. Make sure the front end is at the correct location.

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

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 11 1/2 inches from the hub width to find the top strut width. Write your top mount width on the assembly drawing.

10. Install the front upper strut mount suspension tabs per the assembly drawing. The easiest way to install the forward roll cage struts is to make a bracket that holds the suspension tabs in place. Fit the brackets and forward strut tube together and grind a little on each until it fits. The brackets will be rotated differently on the tube because the tube crosses them at an angle. The four 1/2 x 2 1/4" bolts and the four 1/2" locknuts are used in the upper front and rear shock mounts to mount the shocks. The eight misalignment bushings are used to fill the gap in the shock mount.

11. After all the mounts are tacked in place, install the complete front suspension and steering less the springs. Use the remaining 1/2" bolts and misalignment bushings to attach the top of the strut. 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.

12. Move the strut 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 arm or by raising or lowering the rack and pinion slightly (1/16 of an inch at a time).

13. Install the upper frame rail per the assembly drawing. It runs from the rear frame forward of the 4-link to the forward strut just above the lower frame rails.

14. Install the cage sides mount and the cage side support tubes along with the frame uprights per the assembly drawing. This assembly is the cage side mount.

15. Install all three pieces of the x-brace.

16. Install the three pieces of the door bar x-brace.

17. Install the main hoop support tubes. They can be attached to the seat back brace to clear a bench seat.

18. Install the bracket support tube and frame struts per the assembly drawing.

19. Install the funny car cage if you purchased this option.

20. Install the cage top triangulator.

21. Install the front and rear cage gussets.

22. Install the remaining frame, upright, transmission crossmember, frame triangulator, and frame diagonals when you are installing the transmission.

23. Install the engine support tubes. The motor plate and midplate attach to the face of the tubes.

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

25. Chris Alston's Chassisworks carriers a complete line of accessories to make completion of your car easier.

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