

**1971-74 H-Body Underbody Alignment Information**  
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# 1971-74 Vega Shop Manual

v8monza.com



## Section 2 FRAME

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## GENERAL DESCRIPTION

Most frame components are an integral part of the 14000 Series body. The remaining four removable components of the frame consist of: The front Crossmember Assembly, Front Crossmember Braces-Left and right, and the Transmission Support Crossmember (fig. 2-1). Refer to Figure 2-2 for Horizontal and Vertical checking Dimensions. Also refer to underbody photo, Figure 2-3, with component attachment.

## REPAIR PROCEDURES

No unusual procedure for replacement is required on the transmission crossmember braces. However, the following replacement steps are required when a new front crossmember part is required.

### GENERAL BODY CONSTRUCTION

#### Front Crossmember Part Replacement

1. Raise vehicle on hoist.
2. Using jack stands, remove weight of the engine from the body as much as possible without disconnecting the engine attachments.
3. Detach front crossmember front right and left K braces from the front crossmember only.
4. Disconnect the four bolts connecting the crossmember to the shock towers and remove crossmember.
5. Position new front crossmember to the right side and install two bolts.
6. Mark and drill the left front side hole in the crossmember, install bolt.
7. Install the left rear bolt through the elongated crossmember hole.  
**IMPORTANT:** Torque all bolts and screw assemblies to 35 ft. lbs. Do not over torque.
8. Remove jack stands.
9. Lower vehicle and remove from hoist.

## **CHECKING FRAME ALIGNMENT**

Vehicles involved in an accident of any nature which might result in a “swayed” or “sprung” frame should always be checked for proper frame alignment in addition to steering geometry and wheel alignment.

## **CAR PREPARATION**

Preparing the car for the frame alignment check involves the following:

1. Place the car on a level surface.
2. The weight of the car should be supported at the wheel locations.
3. A visual damage inspection should be made to eliminate needless measuring. Obviously damaged or misaligned areas can often be located by sight.

## **TRAMMING SEQUENCE**

When checking a frame for alignment in case of damage, the first step is horizontal checking with a tram from given points on opposite sides of the frame.

Frame alignment checks on all models should be made with the tram points set at the center of each locating point indicated and the cross bar level to insure accuracy.

When checking any section of the frame, the measurements should agree within  $3/16$ ". If they do not, it means that corrections will have to be made.

If a tram gauge is not available, the “plumb bob” method of checking may be used. To assure any degree of accuracy when using this method, the vehicle should be on a level floor.

By using this method, it is necessary to have a piece of cord attached to an ordinary surveyor’s plumb bob. When measuring the distance between two points, the free end of the cord should be placed on the reference point allowing the plumb bob to hang on the floor. A check mark should be made on the floor just under the tip of the plumb bob. This operation should be repeated at all reference points. With these points located on the floor, they may easily be measured with a rule.

The second step is checking the vertical dimensions from the datum plane to the points to be trammed. With the proper settings the tram bar will be on a plane parallel to that of the frame. The exception to this would be when one of the reference locations is included in the misaligned area; then the parallel plane between the frame and the tram bar may not prevail. After completion of the repairs, the tram gauge should be set at the specified dimension to check the accuracy of the repair operation.

## **ALIGNMENT REFERENCE POINT DIMENSIONS**

Dimensions to holes are measured to dead center of the holes and flush to the adjacent surface metal.

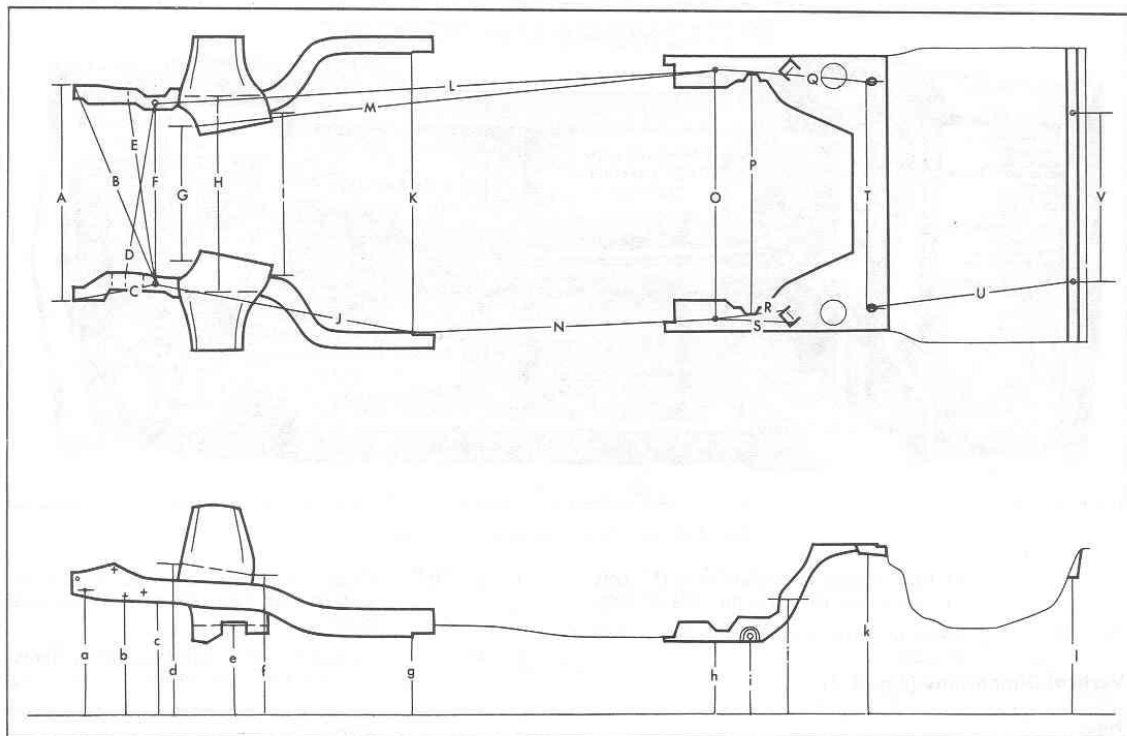


Fig. 2-2 Body Frame Checking Dimensions

## HORIZONTAL DIMENSIONS (Fig. 2-2)

Fig.  
Ref.

Dimension

Location

|  |          |  |
|--|----------|--|
| A  | 33-1/4"  | Between leading outboard surfaces of front side rails.   |
| B  | 33-1/4"  | From center of 3/4" master gage hole in lower surface of front rail (approximately 3-1/2" forward of shock absorber housing) to leading outboard lower edge of opposite side rail. |
| C  | 13-7/16" | From center of 3/4" master gage hole in front side rail to leading outboard lower edge of same rail.   |
| D  | 26-9/16" | From center of 3/4" master gage hole in right hand front rail to inboard surface of left hand front rail at steering gear forward lower mounting bolt hole.                        |
| E  | 28"      | From center of 3/4" master gage hole in left hand front rail to inboard surface of right hand front rail at steering idler arm lower bolt hole.                                    |
| <b>Note:</b> Reference points at steering gear and idler arm locations are <u>not</u> of equal distance from the vehicle centerline. |          |  |
| F  | 27-3/4"  | Between centers of 3/4" master gage holes in front rails.  |
| G  | 21-7/16" | Between centers of lower front suspension attaching bolt holes in shock absorber housing.  |

|   |           |   |
|---|-----------|---|
| H | 30-1/16"  | Between centers of either front or rear upper suspension attaching bolt holes in shock absorber housing.  |
| I | 25-15/16" | Between centers of lower rear suspension attaching bolt holes in shock absorber housing.  |
| J | 40-15/16" | From center of 3/4" master gage hole in front rail to lower corner of step near the rear of same rail.  |
| K | 42-3/4"   | Between front rails at lower corner of step.  |
| L | 88-1/4"   | From center of 3/4" master gage hole in front rail to center of 3/4" master gage hole in rear rail (located approx. 3-1/8" rearward of oblong shipping hook hole) on same side of body. |
| M | 82-1/4"   | From front lower surface of shock absorber housing, centered on suspension lower front attaching bolt hole to 3/4" master gage hole in rear rail on same side of body.                  |
| N | 48"       | From lower corner of step at rear of front rail to 3/4" master gage hole in rear rail on same side of body.   |
| O | 37"       | Between centers of 3/4" master gage holes in rear rails.  |
| P | 36-1/16"  | Between inboard surfaces of rear lower suspension arm mounting locations in rear rails.   |
| Q | 23-7/16"  | From the center of 3/4" master gage hole in rear rail to forward edge on center of 1-1/2" oblong hole in floor pan reinforcement at rear spring on same side of body.                   |
| R | 11-3/16"  | From the center of 3/4" master gage hole in rear rail to outboard surface of inboard portion of the upper suspension mounting bracket on same side of body.                             |
| S | 13"       | From the center of 3/4" master gage hole in rear rail to inboard surface of outboard portion of the upper suspension mounting bracket on same side of body.                             |
| T | 35"       | Between forward edge on center of 1-1/2" oblong holes in floor pan reinforcement at rear springs.   |
| U | 31-3/16"  | From forward edge on center of 1-12" oblong hole in floor pan reinforcement at rear spring to the center of the 9/16" hole in rear cross bar on same side of body.                      |
| V | 36"       | Between centers of 9/16" holes in rear cross bar.   |

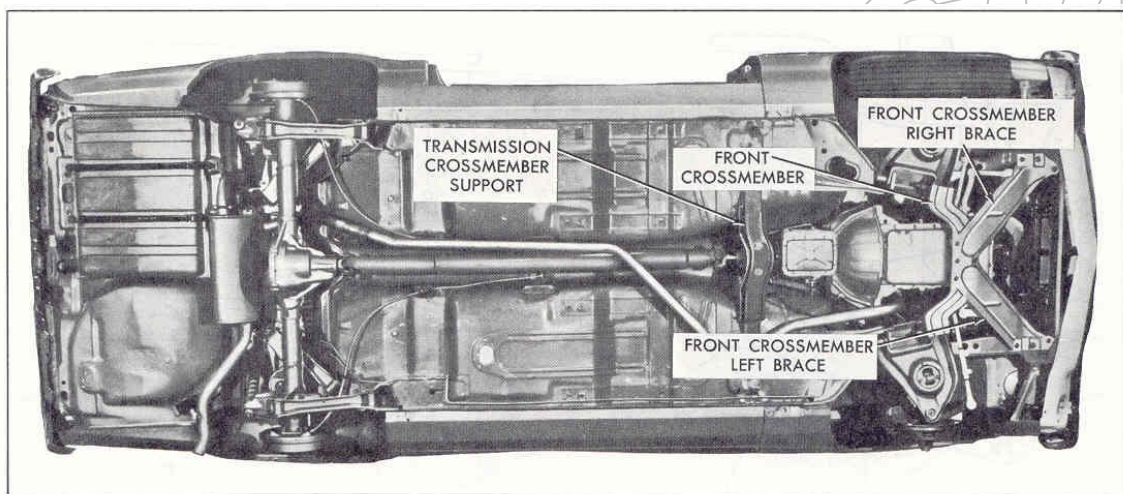


Fig. 2-3 Body Frame Component Attachment

### VERTICAL DIMENSIONS (Fig. 2-3)

Fig.  
Ref.

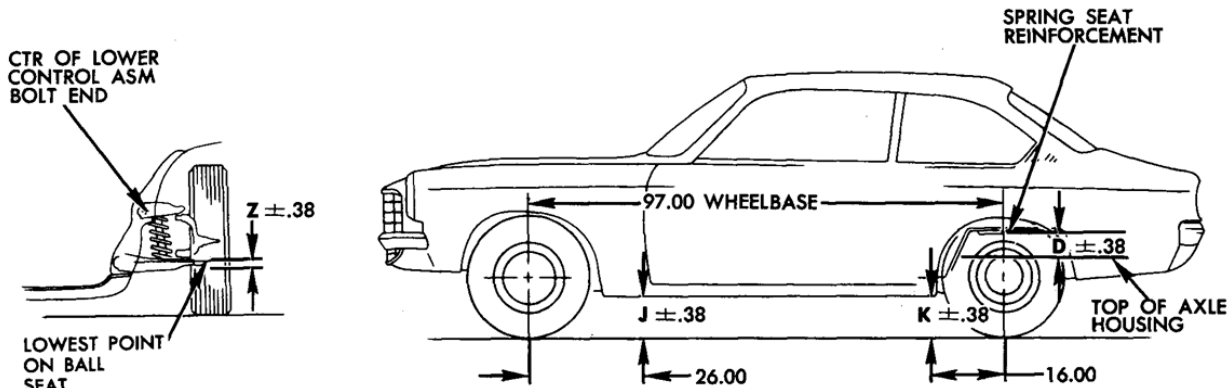
Dimension

Location

|   |          |   |
|---|----------|---|
| a | 8-1/4"   | Center of front bumper back bar lower attach bolt hole.                                 |
| b | 7-13/16" | Left side – center of steering gear lower forward attaching bolt hole.                  |
|   | 9-7/16"  | Right side – center of steering idler arm lower attaching bolt hole.                    |
| c | 7-1/8"   | Left side – lower surface of front rail adjacent to 3/4" master gage hole.              |
|   | 7-1/2"   | Right side – (same location as above).  |
| d | 12-5/8"  | Center of upper front suspension attaching location on shock absorber housing.          |
| e | 3-7/16"  | Center of lower front suspension attaching bolt holes in shock absorber housing.        |
| f | 11"      | Center of upper rear suspension attaching location on shock absorber housing.           |
| g | 1-1/16"  | Lower corner of step near end of front side rail.                                       |
| h | 1-9/16"  | Lower surface of rear rail adjacent to 3/4" master gage hole.                           |
| i | 1-3/4"   | Center of rear suspension lower control arm mounting location.                          |
| j | 7-5/8"   | Center of rear suspension upper control arm mounting location.                          |
| k | 15-5/16" | Lower surface of floor pan reinforcement at rear spring adjacent to 1-1/2" oblong hole. |
| l | 9-15/16" | Lower surface of rear cross bar adjacent to 9/16" hole.                                 |

## Specifications 2

**Dimensions "Z", "J", "K" & "D" vertical to ground  
and apply to reg. prod. With P/S, P/B and radio  
full capacity of fuel, oil and coolant**



| Model         | Z    | D     | J    | K    |
|---------------|------|-------|------|------|
|               | Curb | Curb  | Curb | Curb |
| Sedan         | 2.08 | 10.05 | 7.58 | 7.61 |
| Coupe         | 2.08 | 10.05 | 7.60 | 7.65 |
| Wagon & Panel | 2.08 | 10.05 | 7.61 | 7.68 |

### Wheel Alignment Specifications †(All Vehicles at Curb Weight)

|                | ††1<br>Service Checking  | ††2<br>Vehicle Inspection                              | ††3<br>Service Reset                     |
|----------------|--|--|--|
|                | Specification for diagnose<br>is for warranty repair or<br>customer paid service | Specification for periodic<br>motor vehicle inspection | Specification for resetting<br>alignment |
| Caster         | *-1 3/4° to +1/4°  | -2 3/4° to +1 1/4°                                     | @-3/4° ±1/2°                             |
| Camber         | *-3/4° to +1 1/4°  | -1 1/4° to +1 3/4°                                     | @-1/4° ±1/2°                             |
| Toe-in (Total) | 1/8" to 3/8"   | 1/8" toe out to 5/8" toe in                            | 1/4" toe in ±1/16"                       |

†Curb Weight means weight of vehicle including production options and full capacity of engine oil, fuel and coolant.

††See explanatory copy in front suspension section.

\*CASTER and CAMBER must not vary more than 1° from side to side.

@CASTER and CAMBER must not vary more than 1/2° from side to side.

\$Toe setting must always be made after caster and camber.

†††Check toe-in setting after any camber change.

### Torque Specifications

|                                    |              |  |              |
|------------------------------------|--------------|--|--------------|
| Upper Ball Joint Nut.....          | *30 Ft. Lbs. | Stabilizer Bar Bracket.....  | 27 Ft. Lbs.  |
| Lower Ball Joint Nut.....          | *30 Ft. Lbs. | Stabilizer Bar to Control Arm Bolt....   | 90 In. Lbs.  |
| Upper Control Arm Pivot - Nut..... | 60 Ft. Lbs.  | Wheel Bearings   |              |
| Lower Control Arm Cam Nut.....     | 125 Ft. Lbs. | Preload.....   | 0            |
| Lower Control Arm Bumper.....      | 120 In. Lbs. | End Movement.....  | .001 to .005 |
| Shock Absorber - Lower Screw.....  | 20 Ft. Lbs.  | **Plus a maximum of 1/6 turn to align cotter<br>pin - DO NOT back off nut for cotter pin<br>insertion. |              |
| Shock Absorber - Stem.....         | 90 In. Lbs.  |  |              |