SECTION 3

UNDERBODY

INDEX

UNDERBODY ALIGNMENT
All Corvair Styles

GENERAL BODY CONSTRUCTION

The body design used on the 10000 series is of an integral, all steel, welded construction, commonly known as "unitized" body construction. The over-all rigidity of the body is drawn from each of the individual metal components which, when welded together, comprise the body shell assembly. Panels forming the underbody area incorporate attachment provisions for the power train and the suspension systems. These panels, therefore, contribute the greatest amount of strength to the body assembly.

UNDERBODY GENERAL SERVICE INFORMATION

The underbody assembly is comprised of frame side rails, frame cross rails, floor pan cross bars, inner and outer rocker panels and other floor panel components. The underbody is of all-welded construction. The slightest misalignment in the underbody can affect door, front compartment lid, and engine compartment lid fits. Most important, however, underbody misalignment can influence the suspension system, thereby causing many of the problems that arise from a suspension misalignment. It is essential, therefore, that underbody alignment be exact to within 1/16" of the specified dimensions.

In the event of collision damage it is important that underbody alignment be thoroughly checked and, if necessary, realigned in order to accurately establish suspension, steering and engine mounting locations. There are many classifications of tools that may be employed to correct the average collision damage situation including frame straightening machines, lighter external pulling equipment and standard body jacks.

Frame tools are not considered as essential equipment for average collision repair operations; however, there will be many situations with this unitized type of construction as with other types of frame construction, where frame equipment will be required. There are also areas of repair where, even though not essential, frame equipment may prove beneficial.

IMPORTANT: Since each individual underbody component contributes directly to the over-all strength of the body, it is essential that proper welding, sealing and rust proofing techniques be observed during service operations. Underbody components should be rust-proofed whenever body repair operations, which destroy or damage the original rust-proofing, are completed. Particularly critical are the enclosed box areas. When rust-proofing critical under body components, it is essential that a good quality type of air dry primer be used (such as corrosion resistant zinc chromate). It is not advisable to use combination type of primer surfacers.

To assist in checking alignment of the underbody components, repairing minor underbody damage or locating replacement parts, the following underbody dimensions and alignment checking information is presented.

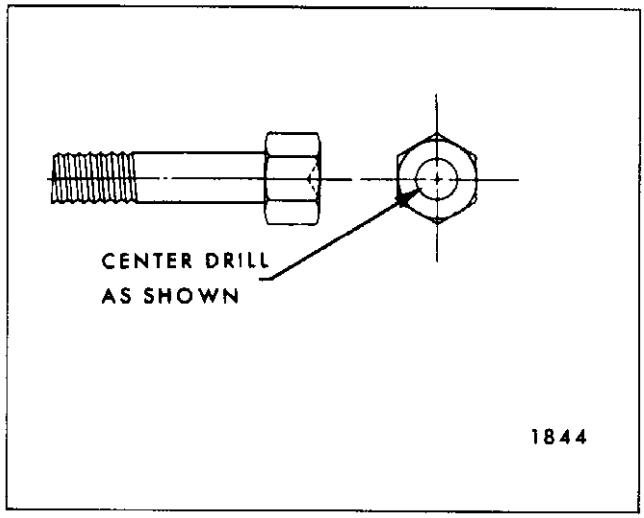

Fig. 3-1—Tram Gage Centering Bolt

ALIGNMENT CHECKING INFORMATION

Body Tram Gage

An accurate method of determining the alignment of the underbody utilizes a measuring tram gage. The tram gage required to perform all recommended measuring checks properly must be capable of extending to a length of 102". At least one of the vertical pointers must be capable of a maximum reach of 18".

Dimensions shown in the upper portion of Figure 3-2 are calculated on a horizontal plane parallel to the plane of the underbody. Precision measurements can be made only if the tram gage is also parallel to the plane of the underbody. This can be controlled by setting the vertical pointers on the tram gage according to the dimensions shown in the lower portion of Figure 3-2.

A proper tramming tool is essential for analyzing and determining the extent of collision misalignment present in underbody construction.

To facilitate centering the tram gage pointers at the suspension locations, special centering bolts (same size and thread as original attaching bolts) may be prepared as shown in Figure 3-1. Use center of bolt thread diameter for centering drill point. Depth of drilled-out cone should be the same for all centering bolts being used as a "set".

Underbody Alignment Reference Point Dimensions—(Fig. 3-2)

Dimensions to gage holes and other unthreaded holes are measured to dead center of the holes and

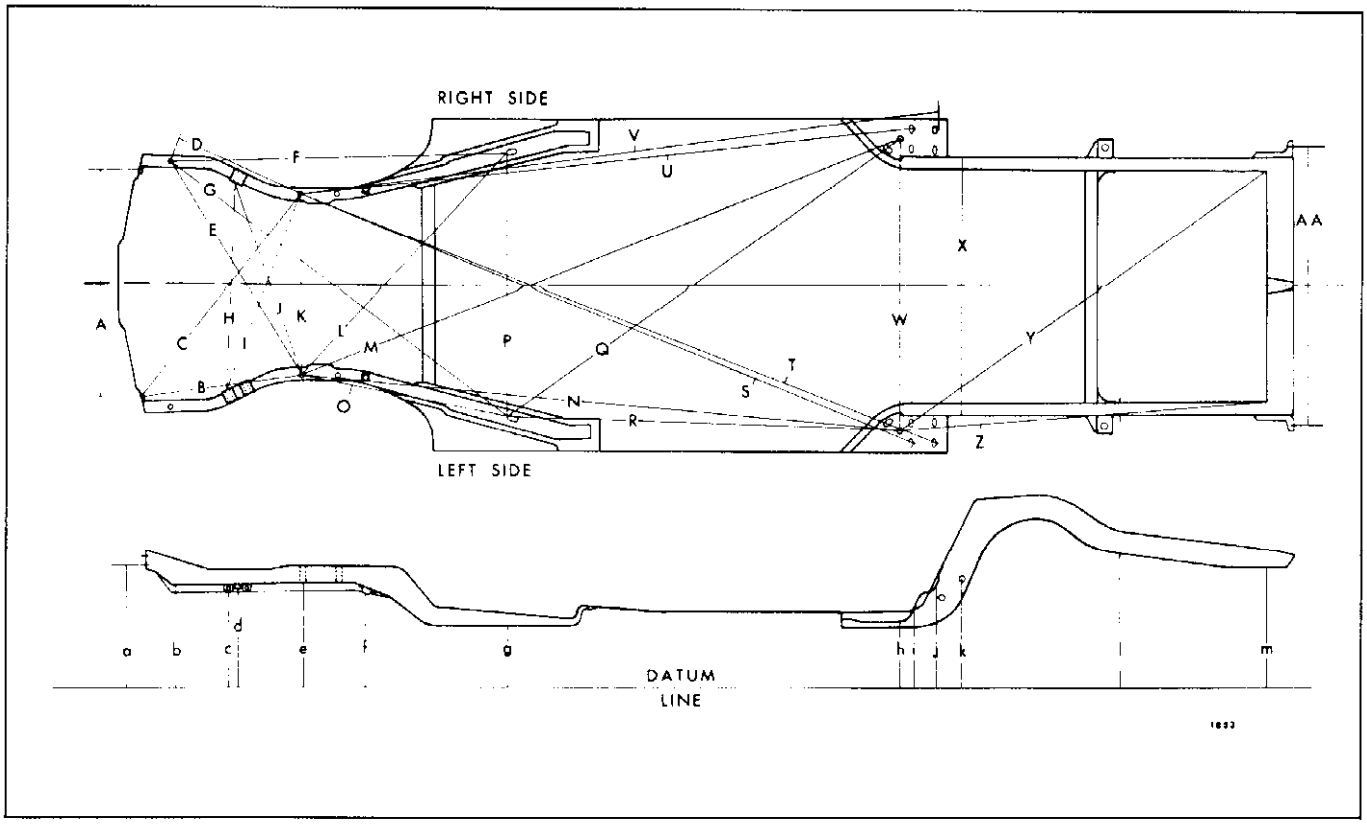

Fig. 3-2—Underbody Vertical Alignment Ref. Points

flush to the adjacent surface metal. Dimensions to body front tie down slots are measured to the front centerline edge of the slot (see Fig. 3-3). Dimensions to bolt or bolt hole locations are measured to the dead center of the thread diameter of the bolt or bolt hole, unless specified otherwise.

The following reference points are key locations and should be used wherever possible as a basis for checking other reference points:

1. Front suspension front attaching bolt holes or bolt heads.
2. 3/4 inch master gage hole in motor compartment side rail-to-rocker panel brace.
3. Rear suspension control arm lower and upper outer attaching bolt holes (upper edge of holes).

Horizontal Dimensions (Fig. 3-2)

Fig. Ref.	Dimension	Location
A	33-7/8	Center of front bumper lower attaching bolt holes.
B	24-3/8	Directly below center of front bumper lower attaching bolt hole and front suspension front attaching bolt head or bolt hole on same side of body.
C	39-1/16	Directly below center of front bumper lower attaching bolt hole and front suspension front attaching bolt hole or bolt head on opposite side of body.
D	15-7/8	3/4" hole in front compartment side rail and front suspension front attaching bolt hole or bolt head on same side of body.
E	35-9/16	3/4" hole in front compartment side rail and front suspension front attaching bolt hole or bolt head on opposite side of body.
F	46	3/4" hole in front compartment side rail and body tie down slot on same side of body (use front center of slot of side rail metal - See Fig. 3-3).
G	59-29/32	3/4" hole in front compartment side rail and body tie down slot on opposite side of body (use front center of slot of side rail metal - See Fig. 3-3).

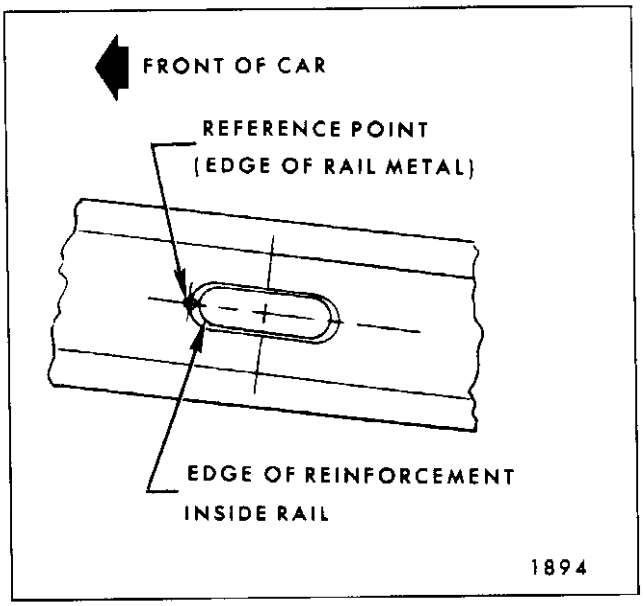

Fig. 3-3—Front Body-Tie Down Slot

Fig. Ref.	Dimension	Location
H	31-7/8	Lower inner edge of steering gear reinforcement directly below center of steering gear front attaching bolt hole (Fig. 3-4) and lower inner edge of front compartment right side rail directly below center of steering gear idler arm support lower attaching bolt hole (Fig. 3-5).

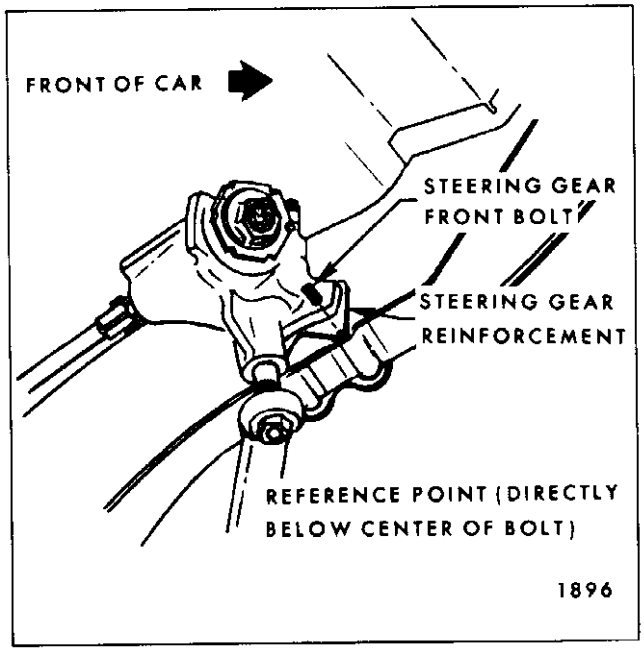

Fig. 3-4—Ref. Point at Steering Gear Reinforcement

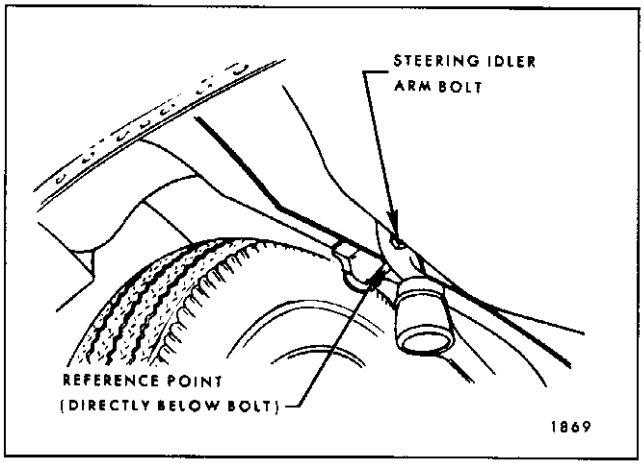

Fig. 3-5—Ref. Point at Steering Idler Arm

Fig. Ref.	Dimension	Location
I	31-15/16	Lower inner edge of steering gear reinforcement directly below center of steering gear front attaching bolt hole (Fig. 3-4) and front suspension front attaching bolt hole or bolt head on opposite side of body.
J	31-1/32	Lower inner edge of front compartment right side rail directly below center of steering gear idler arm support lower attaching bolt hole (Fig. 3-5) and front suspension front attaching bolt hole or bolt head on opposite side of body.
K	27-9/16	Front suspension front attaching bolt hole or bolt head.
L	45-23/32	Front suspension front attaching bolt hole or bolt head and body front tie down slot on opposite side of body (use front center of slot of side rail metal - See Fig. 3-3).
M	96-1/8	Front suspension front attaching bolt hole or bolt head on opposite side of body and 3/4" master gage hole in motor compartment side rail-to-rocker panel brace.
N	89-9/16	Front suspension front attaching bolt hole or bolt head and 3/4" master gage hole in motor compartment side rail-to-rocker panel brace on same side of body.
O	31-3/8	Front suspension front attaching bolt hole or bolt head and body front tie down slot on same side of body (use front center of slot of side rail metal - See Fig. 3-3).
P	40-3/16	Body front tie down slot (use front center of slot of side rail metal - See Fig. 3-3).
Q	72	Body front tie down slot (use front center of slot of side rail metal - See Fig. 3-3) and 3/4" master gage hole in motor compartment side rail-to-rocker panel brace on opposite side of body.
R	58-13/32	Body front tie down slot (use front center of slot of side rail metal - See Fig. 3-3) and 3/4" master gage hole in motor compartment side rail-to-rocker panel brace on same side of body.
S	98-1/8	Front suspension front attaching bolt hole or bolt head and rear suspension control arm lower outer attaching bolt hole (upper edge of hole) on opposite side of body.
T	101-3/8	Front suspension front attaching bolt hole or bolt head and rear suspension control arm upper outer attaching bolt hole (upper edge of hole) on opposite side of body.
U	91-3/8	Front suspension front attaching bolt hole or bolt head and rear suspension control arm lower outer attaching bolt hole (upper edge of hole) on same side of body.
V	94-7/8	Front suspension front attaching bolt hole or bolt head and rear suspension control arm upper outer attaching bolt hole (upper edge of hole) on same side of body.
W	44	3/4" master gage hole in motor compartment side rail-to-rocker panel brace.

Fig. Ref.	Dimension	Location
X	38-15/16	Outside edge of motor compartment side rail directly below transmission support upper attaching bolt. **NOTE:** This dimension is constant rearward to motor compartment rear cross rail.
Y	67-1/2	3/4" master gage hole in motor compartment side rail-to-rocker panel brace and lower edge of joint of motor compartment side rail and motor compartment rear cross rail on opposite side of body.
Z	55-1/32	3/4" master gage hole in motor compartment side rail-to-rocker panel brace and lower edge of joint of motor compartment side rail and motor compartment rear cross rail on same side of body.
AA	41-5/32	Rear bumper lower attaching holes.

Vertical Dimensions (Fig. 3-2)

Fig. Ref.	Dimension	Location
a	15-3/16	Center of front bumper lower attaching bolt holes.
b	12-9/32	Front edge of 3/4" diameter paint hole.
c	11-19/32	Lower inner edge of steering gear reinforcement directly below center of front attaching bolt hole (Fig. 3-4).
d	11-17/32	Lower inner edge of front compartment right side rail directly below center of steering idler arm support lower attaching bolt hole (Fig. 3-5).
e	12-13/32	Front suspension front attaching hole (front suspension removed).
	11-13/16	Front suspension front attaching bolt (suspension installed).
f	10-1/4	Front suspension rear attaching hole (front suspension removed).
	9-3/4	Front suspension rear attaching bolt (suspension installed).
g	6	Lower surface of front compartment side rail at body front tie down slot (front center of slot). Fig. 3-3.
h	6-13/16	3/4" master gage hole in motor compartment side rail-to-rocker panel brace.
i	8-3/8	Rear suspension control arm lower outer attaching bolt hole (upper edge of hole).
j	12-3/8	Rear suspension control arm upper outer attaching bolt hole (upper edge of hole).
k	13-13/32	Transmission support upper attaching bolt hole or bolt head.
l	18	Lower surface of motor compartment side rail at a point 1 inch rearward of read edge of motor compartment corner reinforcement.
m	15-3/32	Lower surface of motor compartment side rail adjacent to front edge of motor compartment rear cross rail.

UNDERBODY ALIGNMENT
Chevy II Styles

GENERAL BODY CONSTRUCTION

Description

Chevy II series bodies are of unitized construction with provisions for the attachment of an independent front end skirt assembly. The front end skirt assembly incorporates attachment provisions for the front end sheet metal, front suspension system, engine and other mechanical components. The removable front end skirt assembly is covered in detail in the "FRONT END SKIRT ASSEMBLY" section of the chassis manual.

The body is of integral all steel, welded construction. The over-all rigidity of the body is drawn

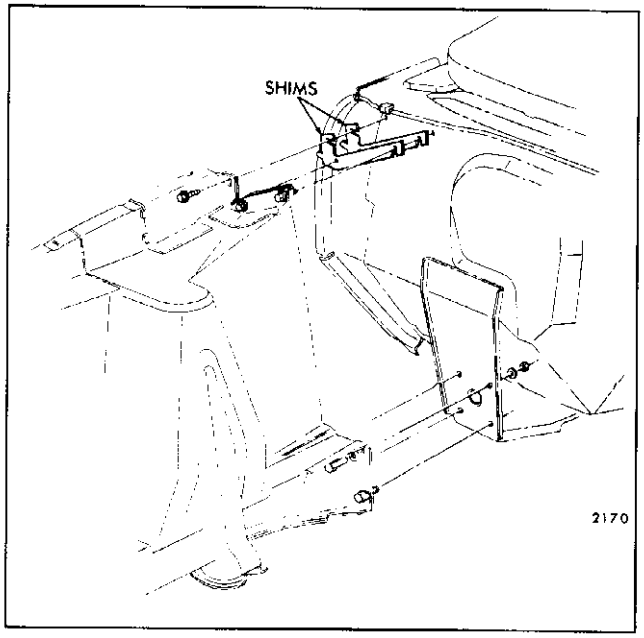

Fig. 3-6—Skirt-to-Dash Mounting

from each of the individual metal components which, when welded together, comprise the body shell assembly. Panels forming the cowl and dash and underbody incorporate attachment provisions for the front end skirt assembly and rear suspension system. These panels, therefore, contribute the greatest amount of strength to the body assembly.

UNDERBODY GENERAL SERVICE INFORMATION

Since each individual underbody component contributes directly to the over-all strength of the body, it is essential that proper welding, sealing and rust-proofing techniques be observed during service operations. Underbody components should be rust-proofed whenever body repair operations, which destroy or damage the original rust-proofing, are completed. When rust-proofing critical underbody components, it is essential that a good quality type of air dry primer be used (such as corrosion resistant zinc chromate). It is not advisable to use combination type primer surfacers.

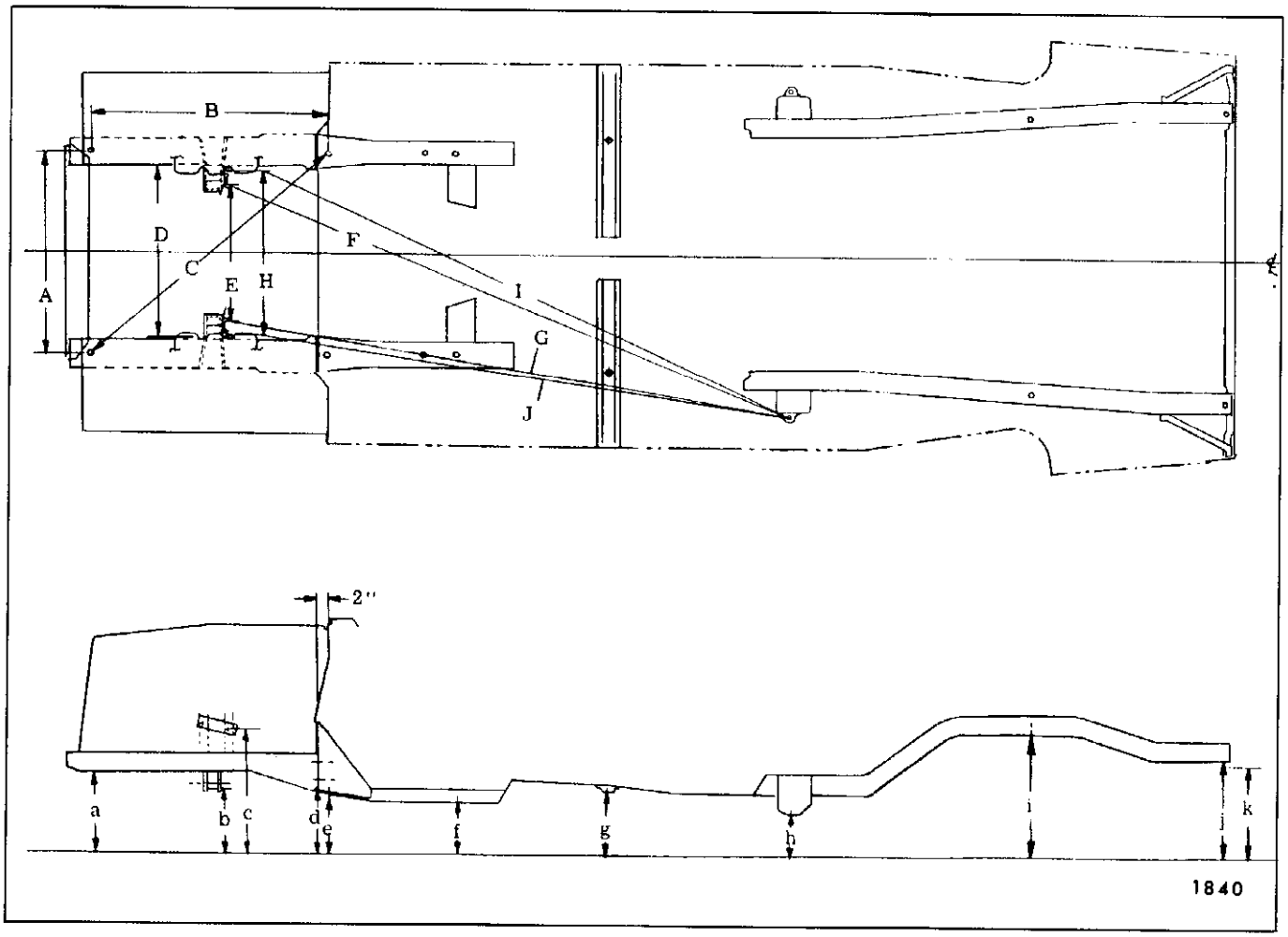

Fig. 3-7—Horizontal and Vertical Dimensions (Front Skirt Assembly)

ALIGNMENT CHECKING PROCEDURE

The underbody is comprised of body dash front braces, body floor pan cross braces, body compartment pan side rails, inner and outer rocker panels and other floor panel components. The underbody is of all welded construction. Misalignment in the underbody can affect front fender, door, rear compartment lid and glass opening alignment, station wagon tail gate and back body opening alignments. Most important, however, underbody misalignment can influence the suspension system, thereby causing many of the problems that arise from a suspension misalignment. It is essential, therefore, that underbody alignment be exact to within 1/16" of the specified dimensions.

In the event of collision damage, it is important that underbody alignment be thoroughly checked and, if necessary, realigned in order to accurately establish proper dimensions. There are many classifications of tools that may be employed to correct the average collision damage situation including frame straightening machines, lighter external pulling equipment and standard body jacks.

NOTE: Minor misalignment of the front end assembly to the body may be corrected by adding or removing shims at the upper skirt-to-dash attaching surface. Figure 3-6 shows both upper and lower attachment and the installed position of the shims. Shims are available in 1/32" and 1/8" thickness.

CAUTION: Do not change skirt assembly-to-dash shimming in an effort to adjust the door-to-fender gap or any other sheet metal appearance item. These shims regulate the front end assembly relationship to the body and should only be used to correct dimensions as shown in Figures 3-7 and 3-8.

To assist in checking alignment of the underbody components, repairing minor underbody damage or locating replacement parts, the following underbody dimensions and alignment checking information is presented.

Body Tram Gage

An accurate method of determining the alignment of the underbody utilizes a measuring tram gage. The tram gage required to perform all recommended measuring checks properly must be capable of extending to a length of 91". At least one of the vertical pointers must be capable of a maximum reach of 17".

Horizontal dimensions shown in the upper portion of Figures 3-7 and 3-8 are calculated on a plane parallel to the plane of the underbody. Precision measurements can be made only if the tram gage is properly adjusted so as to remain parallel to the plane of the underbody during measuring operations.

A proper tramming tool is essential for analyzing and determining the extent of collision misalignment present in underbody construction.

Principles of Tramming

In the upper portion of 3-7 and 3-8 all reference locations shown are symmetrical about the centerline of the vehicle. For example, when performing a cross-check of the body floor pan area, dimension "N" should measure the same distance in both diagonal directions of the cross-check operation. Cross checking operations are used to determine the relationship between two locations on the underbody.

To measure the distance accurately between any two reference points on the underbody, two specifications are required:

a. The horizontal dimension between the two points to be trammed.

b. The vertical dimension from the datum line to the points to be trammed. As an example, the diagonal measurement (calculated on a horizontal plane) between reference points of dimension line "N", shown in Figure 3-8, is 78 25/32 inches. The specifications from the datum line have a vertical height difference of 3 5/16 inches between the forward location of dimension "N" (at vertical dimension "e") and the rearward location of dimension "N" (at vertical dimension "h"). The vertical pointer used at the forward location should be positioned so as to extend 3 5/16 inches further from the tram bar than the pointer used at the rearward location. With the proper settings the tram bar will be on a plane parallel to that of the body plane. The exception to this would be when one of the reference locations is included in the misaligned area; then the parallel plane between the body and the tram bar may not prevail. After completion of the repairs, the tram gage should be set at the specified dimension to check the accuracy of the repair operation.

Car Preparation

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

1. Place the car on level surface.

2. The weight of the car should be supported at the wheel locations.

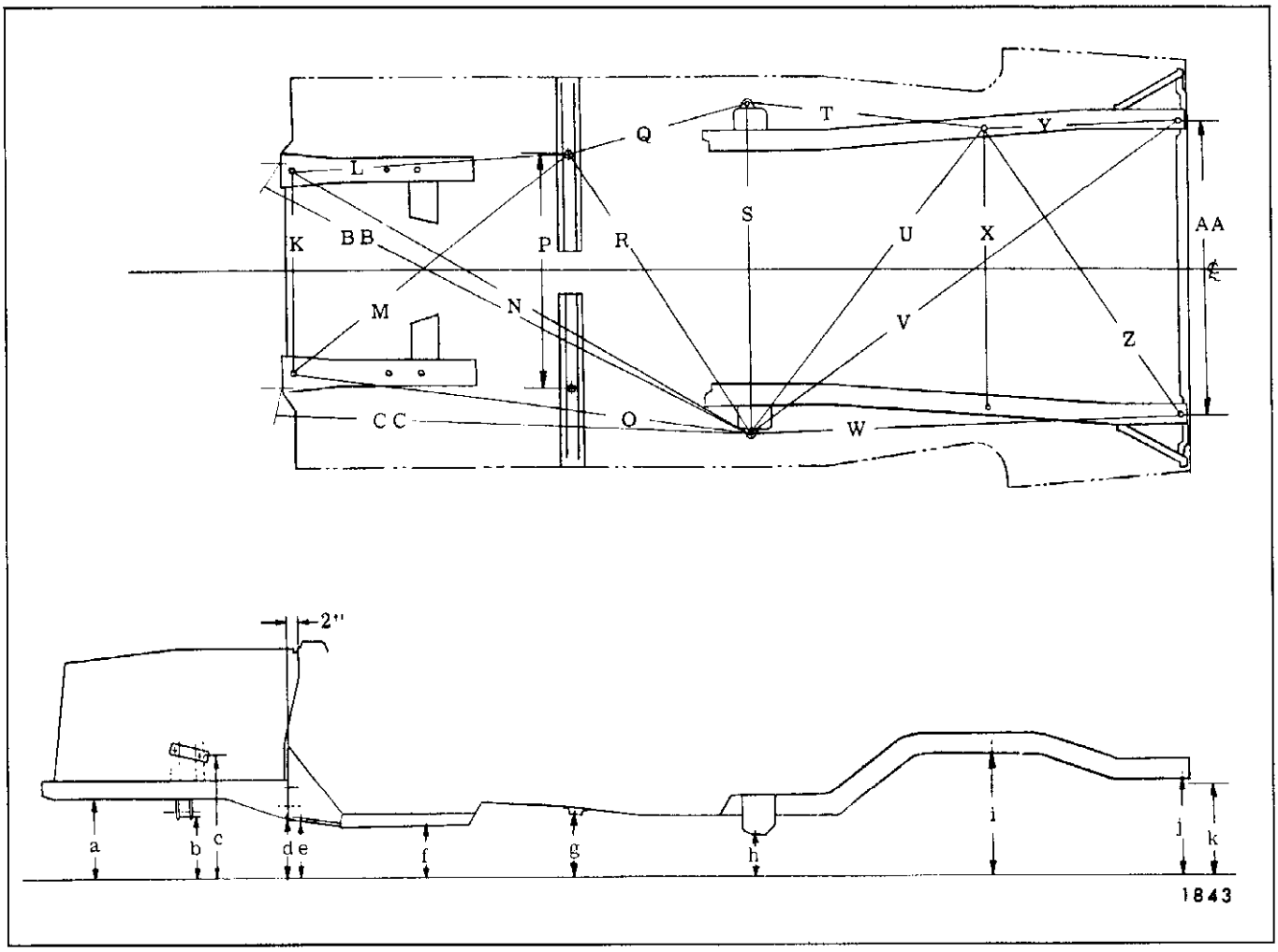

Fig. 3-8—Horizontal and Vertical Dimensions (Body Assembly)

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

The tramming sequence will vary depending upon the nature and location of the misaligned area.

Prior to performing any tramming operation, the accuracy of reference points to be used must be determined. A measurement that originates from a reference point which is included in a damaged area will produce untrue results and confuse the evaluation of the underbody condition. Unlike the conventional type of frame design, the unitized type of body construction seldom develops the condition of "diamond" in the floor pan area as a result of front or rear end collisions. Therefore, underbody alignment checking can usually originate from the body floor pan area. If inspection indicates that these locations have been disturbed and are not suitable for measuring, one of the undamaged suspension locations should be used as a beginning reference point. If a rare situation should exist where all of these locations are not suitable as reference points, repair operations should begin with the body floor pan area. All other underbody components should be aligned progressively from this area.

Underbody Alignment Reference Point Dimensions (Figures 3-7, 3-8, and 3-9)

Dimensions to gage holes and other unthreaded holes are measured to dead center of the holes and flush to the adjacent surface metal. Dimensions to bolt or bolt hole locations are measured to the dead center of the thread diameter of the bolt or bolt hole.

Figure 3-7 specifies dimension reference locations required for alignment of front end skirt assembly and for alignment of front end skirt assembly to body assembly. Figure 3-8 specifies

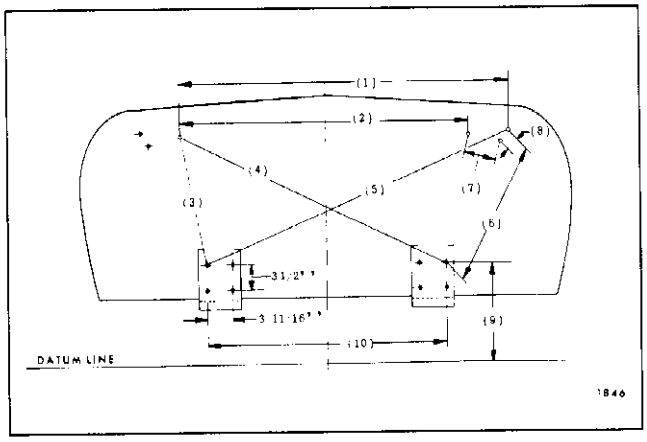

Fig. 3-9—Front View of Cowl and Dash

dimension reference locations required for alignment of underbody assembly. Figure 3-9 specifies cowl and dash reference locations required to check the skirt assembly attaching hole locations.

Horizontal Dimensions (Front End Skirt Assembly)

Fig. Ref.	Dimension	Location
A	30-5/32	15/32" gage hole at front of skirt side rails.
B	35	15/32" gage hole at front of skirt side rail to forward gage hole in dash front brace on same side of body.
C	46-3/16	15/32" gage hole at front of skirt side rail to forward gage hole in dash front brace on opposite side of body.
D	25-29/32	Skirt panel inner surface adjacent to front suspension upper control arm attaching points. (See Fig. 3-11).
E	20-7/8	Front suspension lower control arm adjusting cam guide (outer edge of inner flange - See Fig. 3-10).
F	90-19/32	Front suspension lower control arm adjusting cam guide (outer edge of inner flange - See Fig. 3-10) to gage hole in lower flange of rear spring front support on opposite side of body.
G	84-7/8	Front suspension lower control arm adjusting cam guide (outer edge of inner flange - See Fig. 3-10) to gage hole in lower flange of rear spring front support on same side of body.

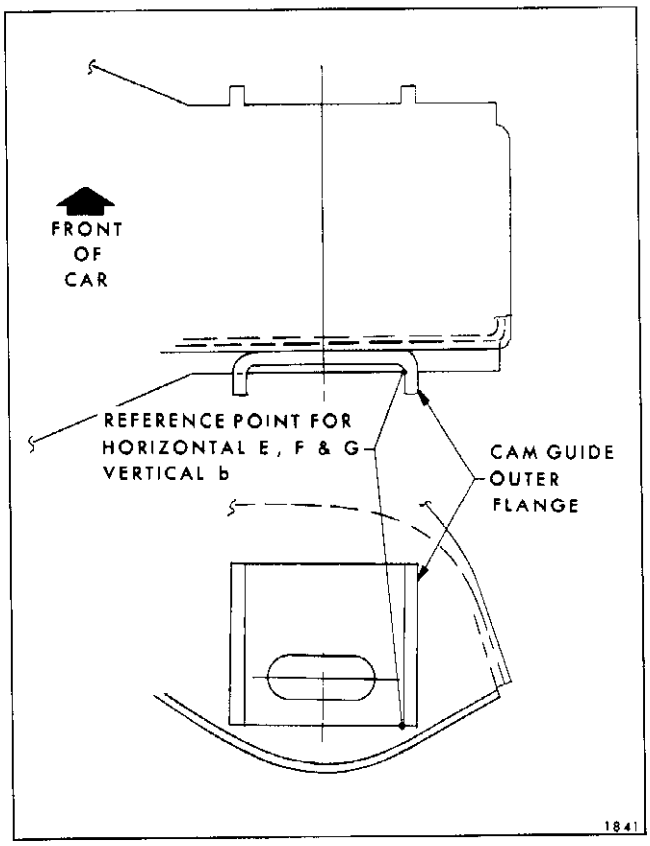

Fig. 3-10—Lower Control Arm Adjusting Cam Guide

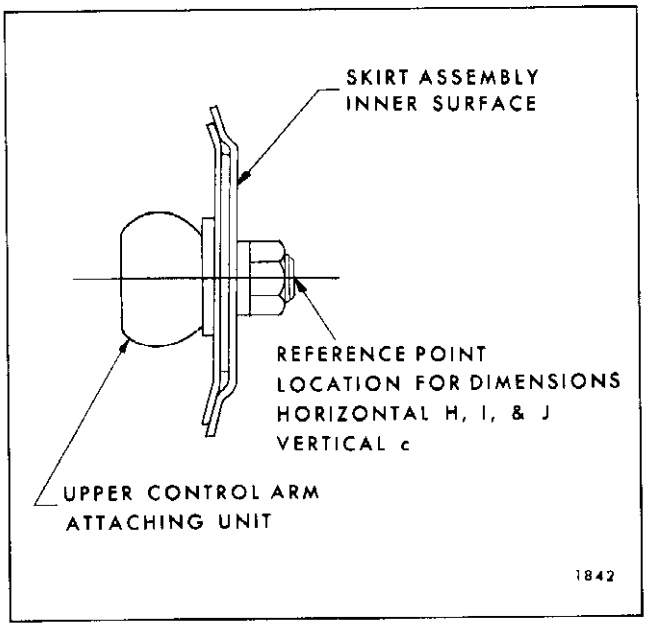

Fig. 3-11—Upper Control Arm Rear Attaching Stud

Fig. Ref.	Dimension	Location
H	24-1/2	Front suspension upper control arm rear attaching stud - center of thread end (See Fig. 3-11).
I	90-13/32	Front suspension upper control arm rear attaching stud - center of thread end (See Fig. 3-11) to gage hole in lower flange of rear spring front support on opposite side of body.
J	83-5/8	Front suspension upper control arm rear attaching stud - center of thread end (See Fig. 3-11) to gage hole in lower flange of rear spring front support on same side of body.

Horizontal Dimensions (Body Assembly)

Fig. Ref.	Dimensions	Location
K	30-5/32	Forward gage hole in dash front brace.
L	41-3/4	Forward gage hole in dash front brace to 11/32" gage hole in floor pan cross brace on same side of body.
M	53-1/16	Forward gage hole in dash front brace to 11/32" gage hole in floor pan cross brace on opposite side of body.
N	78-25/32	Forward gage hole in dash front brace to gage hole in lower flange of rear spring front support on opposite side of body.
O	69	Forward gage hole in dash front brace to gage hole in lower flange of rear spring front support on same side of body.
P	35-17/32	11/32" gage hole in floor pan cross brace.
Q	27-15/32	11/32" gage hole in floor pan cross brace to gage hole in lower flange of rear spring front support on same side of body.
R	49-19/32	11/32" gage hole in front pan cross brace to gage hole in lower flange of rear spring front support on opposite side of body.
S	48	Gage hole in lower flange of rear spring front support.
T	35-1/2	Gage hole in lower flange of rear spring front support to 1/4" gage hole in compartment pan side rail at center of kickup area on same side of body.
U	56-3/4	Gage hole in lower flange of rear spring front support to 1/4" gage hole in compartment pan side rail at center of kick-up area on opposite side of body.
V	79-1/16 (Sedan & Coupe)	Gage hole in lower flange of rear spring front support to rear bumper attaching bolt or bolt hole on opposite side of body.
	82-31/32 (Sta. Wag.)	
W	64-17/32 (Sedan & Coupe)	Gage hole in lower flange of rear spring front support to rear bumper attaching bolt or bolt hole on same side of body.
	69-9/32 (Sta. Wag.)	
X	40-13/16	1/4" unthreaded gage hole in compartment pan side rail at center of kick-up area.
Y	29-3/32 (Sedan & Coupe)	1/4" unthreaded gage hole in compartment pan side rail at center of kick-up area to rear bumper attaching bolt or bolt hole on same side of body.
	38-15/16 (Sta. Wag.)	
Z	51-1/4 (Sedan & Coupe)	1/4" unthreaded gage hole in compartment pan side rail at center of kick-up area to rear bumper attaching bolt or bolt hole on opposite side of body.
	54-3/32 (Sta. Wag.)	
AA	43-7/16	Rear bumper attaching bolt or bolt hole.
BB	80-7/8	Front face of dash lower attaching pad directly under centerline

Fig. Ref.	Dimension	Location
		of outer holes in attaching pad (See Fig. 3-12) to gage hole in lower flange of rear spring front support on opposite side of body.
CC	70-5/32	Front face of dash lower attaching pad directly under centerline of outer holes in attaching pad (See Fig. 3-12) to gage hole in lower flange of rear spring front support on same side of body.

Vertical Dimensions (Complete Underbody) (See Figure 3-8 and 3-7)

a	11-9/16	15/32" gage hole at front of skirt side rail.
b	9-3/16	Lowest point of front suspension lower control arm adjusting cam guide (See Fig. 3-10).
c	18-5/16	Center of front suspension upper control arm rear attaching stud center of thread end (See Fig. 3-11).
d	9-11/32	Joint of front end skirt assembly and dash lower attaching pad on line even with bottom surface of both members (See Fig. 3-12).
e	9-1/16	Lower surface of dash front brace at center of forward gage hole.
f	7-23/32	Lower surface of dash front brace at rear gage hole.
g	9-13/32	Lower surface of floor pan cross brace at 11/32" gage hole.
h	5-3/4	Lower surface of rear spring front support at gage hole in lower flange.
i	17-13/32	Lower surface of compartment pan side rail at 1/4" unthreaded gage hole at center of kick-up area.
j	13-7/8 (Sedan & Coupe)	Lower surface of compartment pan side rail spring support reinforcement at rear bumper attaching bolt hole (See Fig. 3-13).
	12-1/32 (Sta. Wag.)	

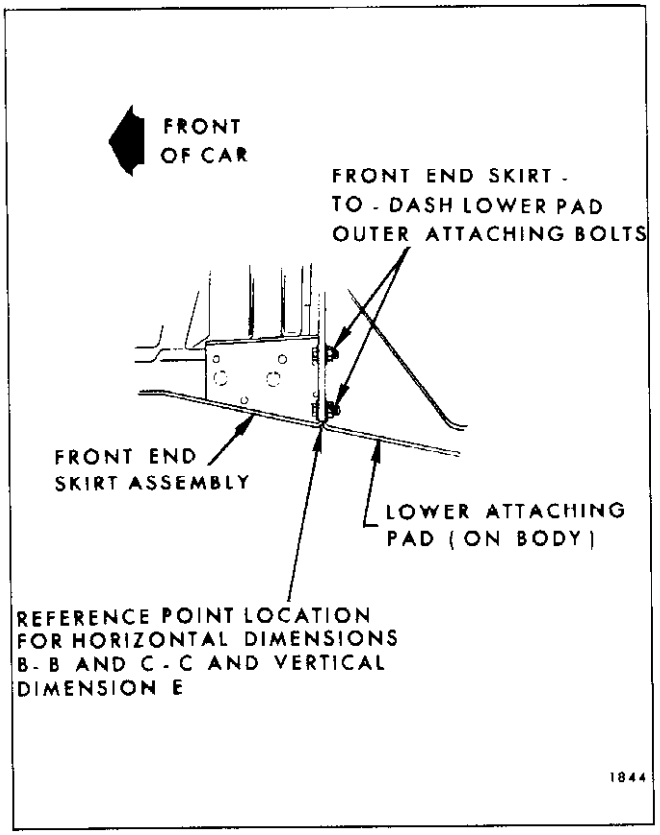

Fig. 3-12—Front End Skirt-to-Dash Lower Attaching Pad

Fig. Ref.	Dimension	Location
k	13-11/32 (Sedan & Coupe)	Center of lower surface of rear bumper attaching bolt head (See Fig. 3-13).

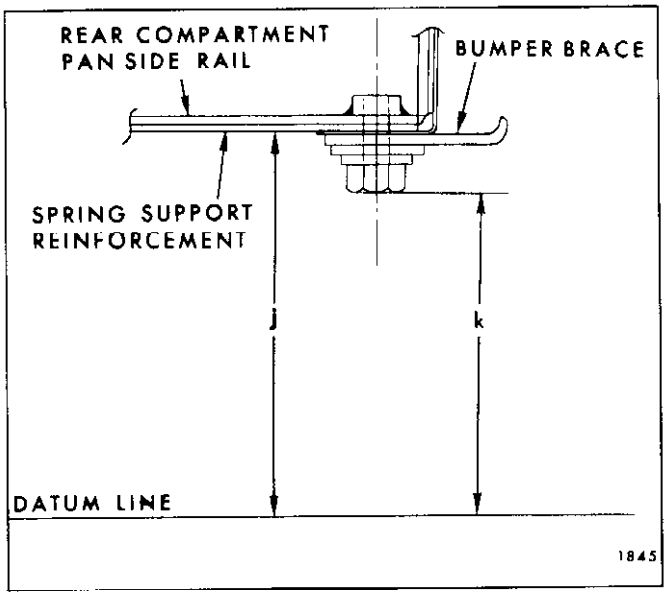

Fig. 3-13—Rear Bumper Attaching Bolt

Fig. Ref.	Dimension	Location
	11-15/32 (Sta. Wag.)	

Cowl and Dash Dimensions

All dimensions are between attaching holes for front end skirt assembly.

Fig. Ref.	Dimension	Location
(1)	46-11/16	Inner threaded hole in upper attaching surface to outer threaded hole on opposite side of dash.
(2)	41-3/32	Inner threaded hole in upper attaching surface to inner threaded hole on opposite side of dash.
*(3)	18-3/4	Inner threaded hole in upper attaching surface to upper outer hole in lower attaching pad on same side of dash.
*(4)	41-3/4	Inner threaded hole on upper attaching surface to upper outer hole in lower attaching pad on opposite side of dash.
*(5)	47	Upper outer hole in lower attaching pad to outer threaded hole in upper attaching surface on opposite side of dash.
*(6)	21-1/32	Upper outer hole in lower attaching pad to outer threaded hole in upper attaching surface on same side of dash.
(7)	4-11/16	Between the two innermost threaded holes in upper attaching surface on same side of dash.
(8)	1-7/8	Between the two outermost threaded holes in upper attaching surface on same side of dash.

*NOTE: When checking dimensions 3, 4, 5 or 6 the upper pointer should be extended 2" longer than the lower pointer.

UNDERBODY ALIGNMENT
"F" Body Styles

DESCRIPTION

"F" series bodies are of unitized construction. A stub frame supports the front end sheet metal, front suspension, engine and other mechanical components. Unitized construction demands that underbody components be properly aligned to insure correct suspension location. In the event of collision damage it is important that the underbody be thoroughly checked and, if necessary, realigned in order to accurately establish suspension locations.

The tools and materials needed to check alignment and repair collision damage are described in the Corvair and Chevy II Underbody Alignment sections.

To assist in checking alignment of the underbody components, repairing minor underbody damage or locating replacement parts, the following underbody dimensions and alignment checking information is presented.

UNDERBODY ALIGNMENT REFERENCE POINT DIMENSIONS (Fig. 3-14)

Dimensions to gage holes are measured to dead center of the holes and flush to adjacent surface metal unless otherwise specified. The master gage holes adjacent to the #1 body mount and in the side rails near the rear spring front attachment, are key locations and should be used wherever possible as a basis for checking other reference points.

Horizontal Dimensions (Fig. 3-14)

Fig. Ref.	Dimension	Location
A	38-3/16	Rear edge at centerline of 1" gage hole.
B	34-15/16	Rear edge at centerline of 1" gage hole and center of master

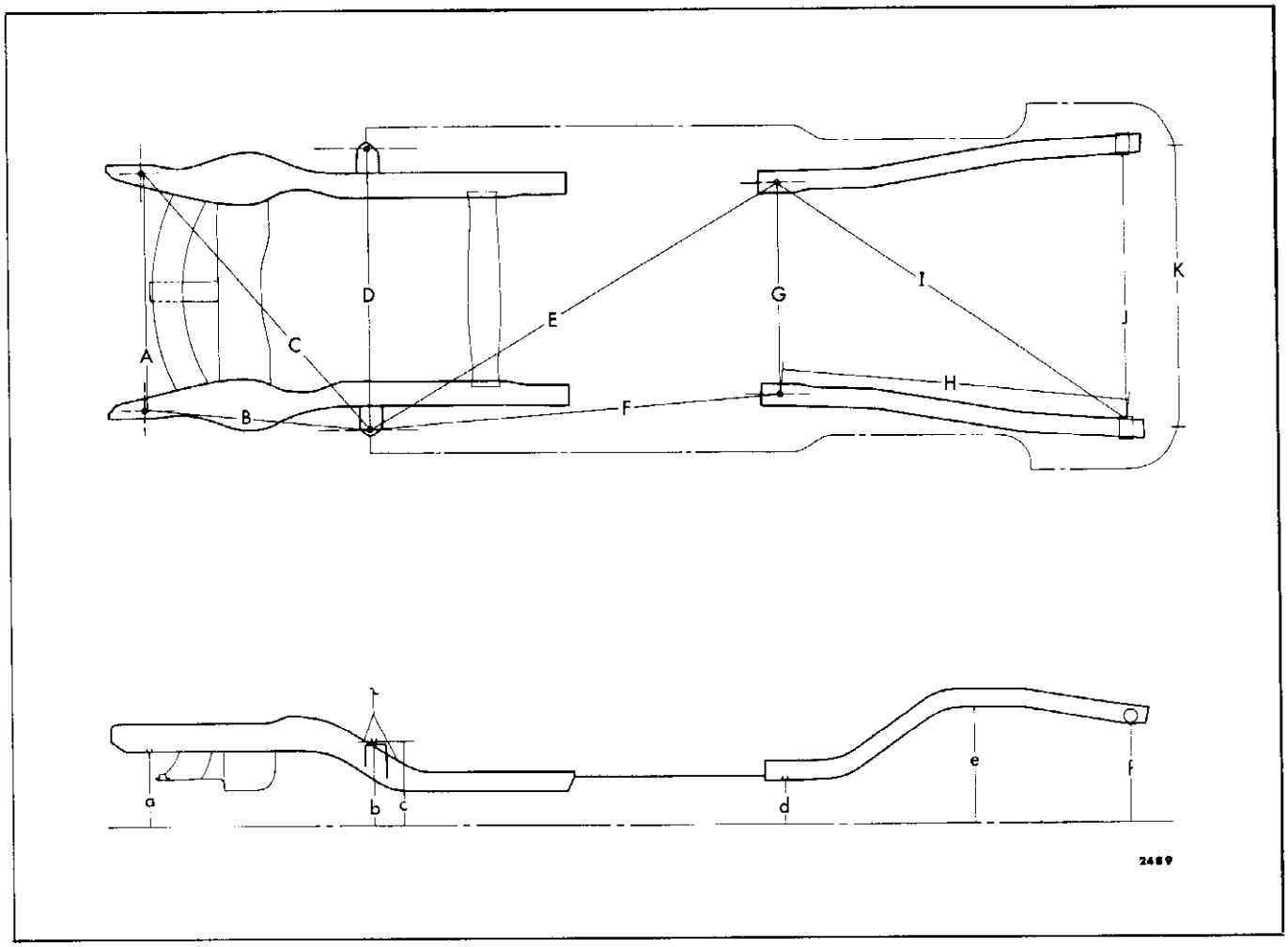

Fig. 3-14—Horizontal and Vertical Checking Dimensions

Fig. Ref.	Dimension	Location
		gage hole adjacent to #1 body mount on same side of frame.
C	54-11/16	Rear edge at centerline of 1" gage hole and center of master gage hole adjacent to #1 body mount in opposite side of frame.
D	44-9/16	Center of master gage hole adjacent to #1 body mount.
E	75-7/8	Center of master gage hole adjacent to #1 body mount and center of master gage hole in side rail on opposite side of body.
F	65-1/4	Center of master gage hole adjacent to #1 body mount and center of master gage hole in side rail on same side of body.
G	33-1/2	Center of master gage hole in side rail.
H	55-3/16	Center of master gage hole in side rail and a point at inboard edge of same side rail at centerline of shackle bolt hole (See Fig. 3-15).
I	66-11/16	Center of master gage hole in side rail and a point at inboard edge of opposite side rail at centerline of shackle bolt hole (See Fig. 3-15).
J	42-7/8	Inboard edge of side rail at centerline of shackle bolt hole (See Fig. 3-15).
K	44-7/8	Center of rear bumper lower attaching bolts.

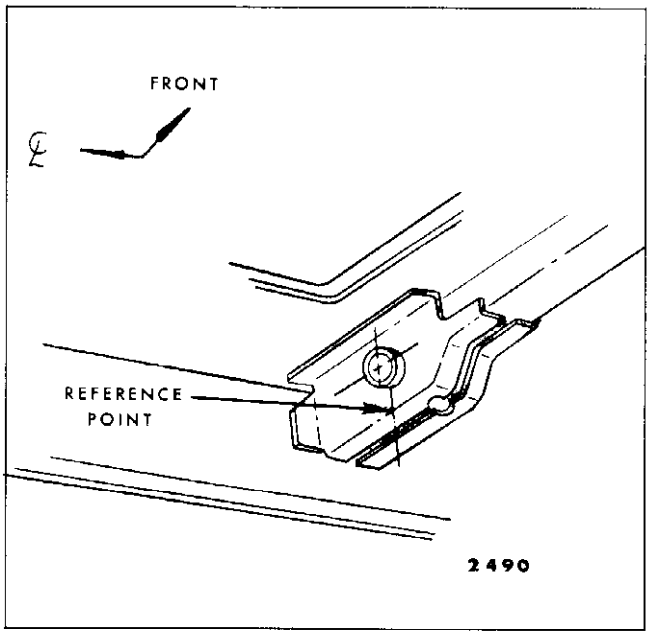

Fig. 3-15—Side Rail at Spring Rear Shackle Hole

Vertical Dimensions (Fig. 3-14)

Fig. Ref.	Dimension	Location
a	11-15/16	1" gage hole at front of frame.
b	13	Master gage hole adjacent to #1 body mount in frame.
c	13-13/16	Master gage hole adjacent to #1 body mount on body.
d	6-15/16	Master gage hole in side rail.
e	11-3/4	Lower surface of side rail at kick up either side of rear axle housing.
f	15-11/16	Lower surface of side rail at centerline of shackle bolt hole.