FRAME • • • • • • • SECTION 13

CONTENTS

GENERAL DESCRIPTION

a. FRAME FOR KAISER MODELS. The frame in the Kaiser models is of the channel type construction and has four crossmembers, an air scoop support, one X-member and two longitudinal members in addition to the frame side rails (Fig. 323). The double drop side rails provide a very low center of gravity and still maintain ample road clearance.

The number 1 crossmember supports the front suspension and engine front mounts. The radiator cradle, front fenders and related parts are also supported by a support bracket riveted to the front of this crossmember.

The number 2 crossmember supports the engine rear mount. This crossmember is bolted to the two longitudinal members and is detachable to facilitate transmission removal.

The X-member is riveted and welded to each side rail and the two longitudinal members for frame rigidity.

The number 3 crossmember is of U channel construction. The rear shock absorber upper support studs are located on the number 3 crossmember which also supports the fuel tank front mounting bracket.

The number 4 or rear crossmember is also of U channel construction. The rear end of the fuel tank and the tail pipe hanger are mounted to this crossmember. Three body mounting points are also provided in the rear crossmember.

In addition to the body mounting points located in the frame side rails and crossmembers, four body mounting brackets are also provided.

b. FRAME FOR FRAZER MODELS. The frame in the Frazer model is constructed differently than that of the Kaiser models in the type and location of the crossmembers, type of side rail construction and location of the body mounting brackets (Fig. 323).

The frame side rails are constructed of two channel members, fitted together with the channel flanges overlapping and welded at close intervals along the entire length. This forms a side rail having a rectangular box type cross section which provides the necessary strength and rigidity with minimum weight.

Crossmembers between the frame side rails are welded and riveted, or bolted, in place. Number 1 crossmember provides the mounting for the front suspension and cradles the engine front support. The air scoop support, located forward of the front crossmember can be replaced.

The number 2 crossmember is a channel type and is used to support the rear of the powerplant at the transmission. This crossmember is bolted in place and is easily replaced.

The number 3 crossmember is a box section type, depressed in the center for propeller shaft clearance. The propeller shaft center bearing support is mounted on this crossmember. The crossmember is replaceable although it is welded and riveted to the frame side rails.

Crossmember number 4 is a box section type member welded and riveted to the frame rails and is located behind the rear axle. The rear shock absorbers are attached to the forward side of this crossmember while the fuel tank is supported between the rear side of the crossmember and the number 5 channel type crossmember at the rear of the frame. The number 5 rear crossmember is riveted to the frame side rails.

Six body mounting brackets are attached with rivets along the outside of each frame side rail to support the body. Front and rear brackets are also welded to frame side rails in addition to being riveted. A body mounting bolt attaches the body to each one of the brackets, with a rubber mounting cushion used between the body and the bracket to provide flexibility.

CHECKING FRAME ALIGNMENT

Vehicles which have been in a collision, upset, or in an accident of any kind which might result in a twisted or sprung frame should be fully checked for proper frame alignment as well as for alignment of the front suspension and the rear axle. Various diagonal measurements that may be taken to check frame and wheel alignment or squareness are shown in Figs. 324 and 325.

Other similar measurements not illustrated may also be used but measurements must be carefully taken from corresponding points on frame side rails or crossmembers. Diagonal measuring will determine which section, if any, of the frame is bent and where to straighten frame to correct the alignment. If the body has been removed the diagonal measurements can easily be taken with trammels or a steel tape.

Measurements can also be obtained without removing the body from the frame by using a plumb bob and chalk line. Suspend the plumb bob from each point on the frame from which a measurement is to be taken, marking each point on the floor under the point of the plumb bob. Accuracy of the checking depends upon the floor being level and how accurately the marks are located. After all the points have been accurately marked on the floor, move the vehicle away from the floor layout and check as follows.

a. LAY OUT DIAGONAL LINES AND A CENTER LINE. Connect the points located on the floor by diagonal lines shown in Figs. 324 and 325 using a chalk line. Then, still using the chalk line, lay out a center line which, if the frame is in alignment, will fall on the intersection of all intersecting pairs of diagonals and the center points of the frame width

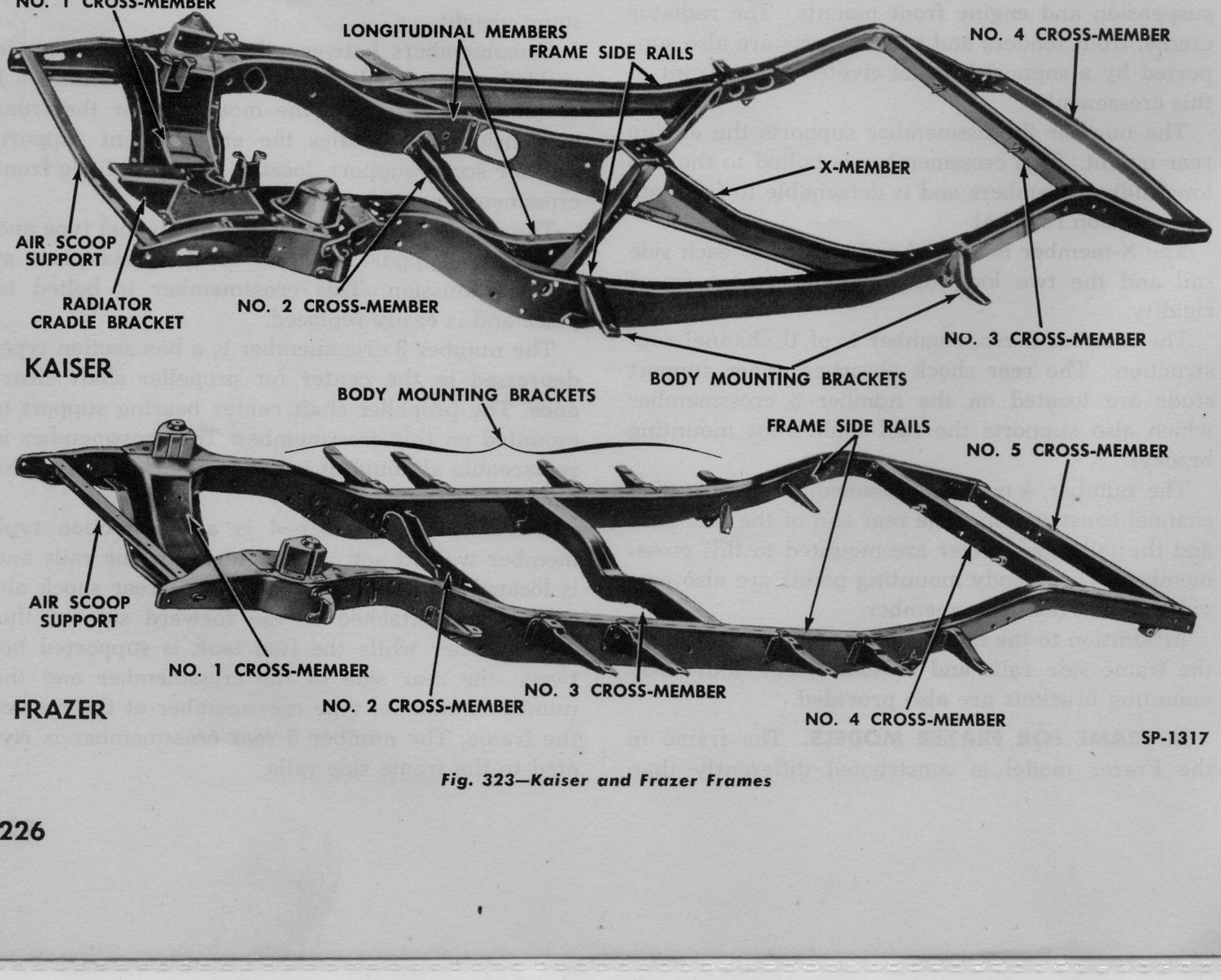

Fig. 323—Kaiser and Frazer Frames

at front and rear ends. If frame is not in alignment, the centerline can be located through the intersecting points of two pairs of equal length diagonals. Then, the intersecting point of any pair of diagonals or either frame width center point not falling within ¼ inch of the center line indicates misalignment in that part of the frame.

b. MEASURE THE DIAGONAL LINES ON FLOOR LAYOUT. If distance between the points connected by one diagonal line varies more than ¼ of an inch from the distance between points connecting the intersecting diagonal line the frame must be straightened to correct the unequal diagonals. Diagonal lines should also intersect within ¼ inch of the centerline of floor layout.

1. Kaiser (Fig. 324). Measure the distance between the points marked on the floor that are connected by the diagonal lines "H," "I," "J," "K," etc. Intersecting diagonals, such as "H" and "I" should measure the same within ¼ inch. If distance between the points connected by any one diagonal line as "H" varies more than ¼ inch from the distance between the points connected by the intersecting diagonal line "I" the frame must be straightened to correct the unequal diagonals. Diagonal lines should also intersect within ¼ inch of the center line of the floor layout. Other pairs of intersecting lines should also be checked and the frame straightened when corresponding diagonals are unequal.

The dimensions indicated by "A" and "B" are not comparable to other lines. However, the dimensions taken from the vehicle should check within ¼ inch of those shown in Fig. 324.

2. Frazer (Fig. 325). Measure the distance between the points marked on the floor connected by the diagonal lines "A," "B," "C," "D," etc. Intersecting diagonals, as "A" and "B," should measure the same within ¼ of an inch. Other pairs of intersecting diagonals "C" and "D" and "E" and "F" should also be checked and frame straightened to correct any misalignment indicated by unequal corresponding diagonals. The dimension indicated by "Q" is not comparable to any other line. However, the dimension taken from the vehicle should check within ¼ inch of that shown in Fig. 325.

c. CHECK FRAME SIDE RAILS. A line in a horizontal plane parallel to and ½ inch below the top edge of the frame side rail and $3\frac{15}{32}$ inches below the top edge of the frame side rail and $3\frac{15}{32}$ inches below the top surface of the plate in the center of the X-member, in the Kaiser models as shown in Fig. 324, should be parallel to and $2\frac{9}{32}$ inches below the bottom of the forward end of the side rail and 4⅞ inches below the top of the rear end of the side rail.

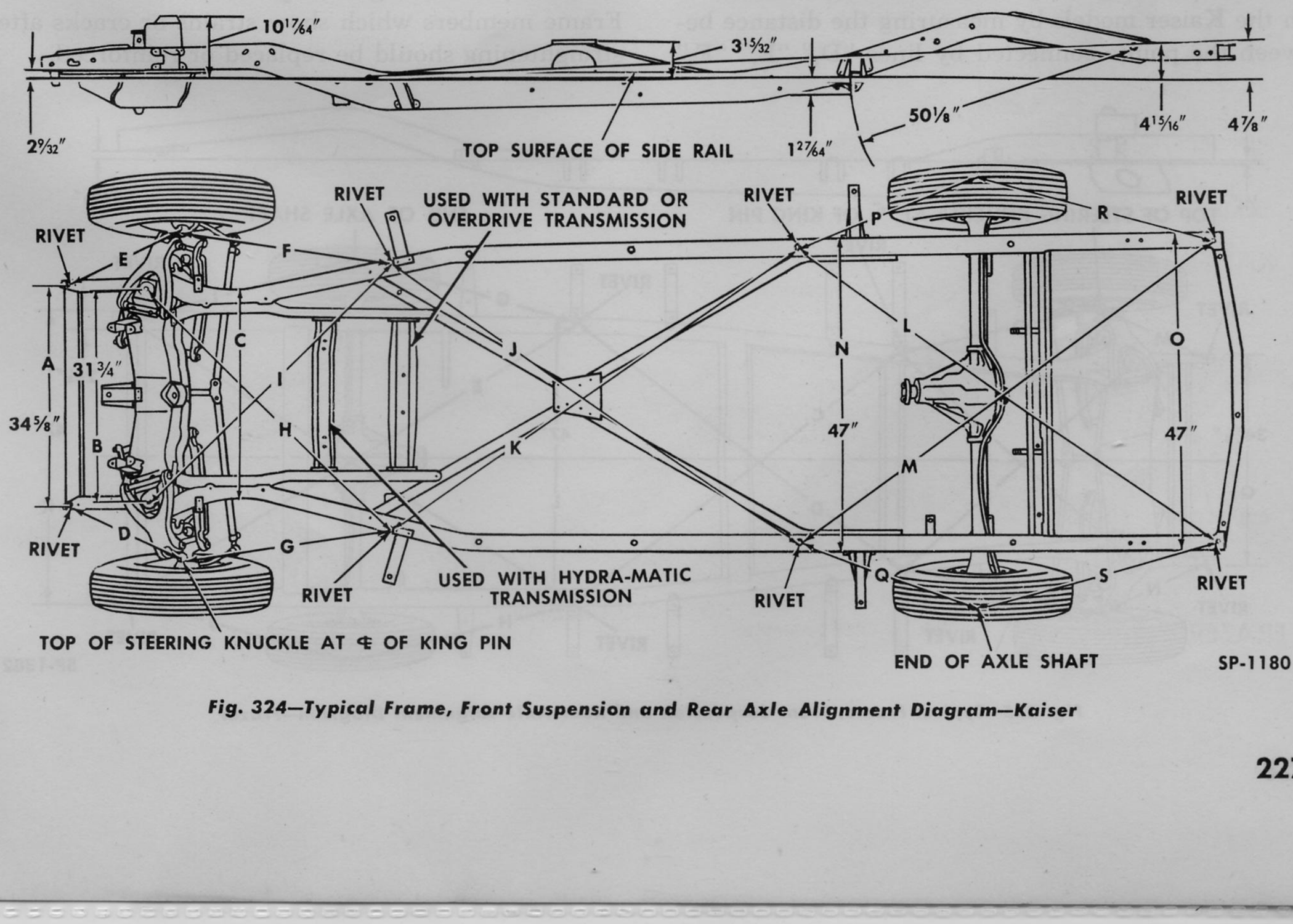

Fig. 324—Typical Frame, Front Suspension and Rear Axle Alignment Diagram—Kaiser

A line in a horizontal plane along the top edge of the frame side rail, in the Frazer models, when extended to the front end and rear ends of the frame as shown in the frame side view (Fig. 325) is parallel to and $\frac{1}{16}$ of an inch below the bottom of the forward end of the side rail and $1\frac{27}{64}$ inches below the center of the hole in the rear spring rear hanger.

Usually any damage to the frame, sufficient to buckle the side rails up or down, will be evident by visual inspection and checking by use of a straight edge or some other suitable fixture will not be necessary.

d. CHECK FRONT SUSPENSION AND REAR AXLE ALIGNMENT. In addition to checking alignment of the frame itself, it is also important to check the alignment of the front suspension and the rear axle in relation to the frame. The front wheel on one side of the frame may be closer to the rear axle than the opposite front wheel, and the rear axle may shift forward or backward on one side or endwise.

If misalignment of the rear axle is indicated by the checks below the axle may have shifted in relation to either or both rear springs due to looseness in the U bolt mountings or other causes. The cause should be determined and axle position corrected, replacing parts as necessary.

1. Kaiser (Fig. 324). Check for these conditions on the Kaiser models by measuring the distance between the points connected by lines "D," "E," "F," "G," "P," "Q," "R," and "S." Corresponding lines as "F" and "G," and "P" and "Q" should measure the same within ¼ of an inch.

2. Frazer (Fig. 325). Check for these conditions on the Frazer models by measuring the distance between the points connected by lines "O," "P," "N," "M," "L," "K," "G," "H," "I" and "J." Corresponding lines, as "O" and "P" and "G" and "H" should measure the same within ¼ of an inch.

FRAME REPAIR

a. GENERAL. When a vehicle has been in a collision, upset or an accident where bending, twisting, or other distortion of the frame is severe, replacement of the frame as a complete assembly is recommended. This is, of course, a major operation requiring experienced shop personnel and adequate shop equipment. Replacement procedure will vary considerably depending on facilities and is, therefore, not given in detail in this manual. Where damage to the frame is less severe, straightening may be practical and is permissible. Damaged crossmembers can either be straightened or replaced as separate parts.

b. STRAIGHTENING THE FRAME. Use of heat is not recommended when straightening frames. Heat weakens the structural characteristics of the metal; therefore, all straightening should be done cold. Frame members which show strains or cracks after straightening should be replaced or reinforced.

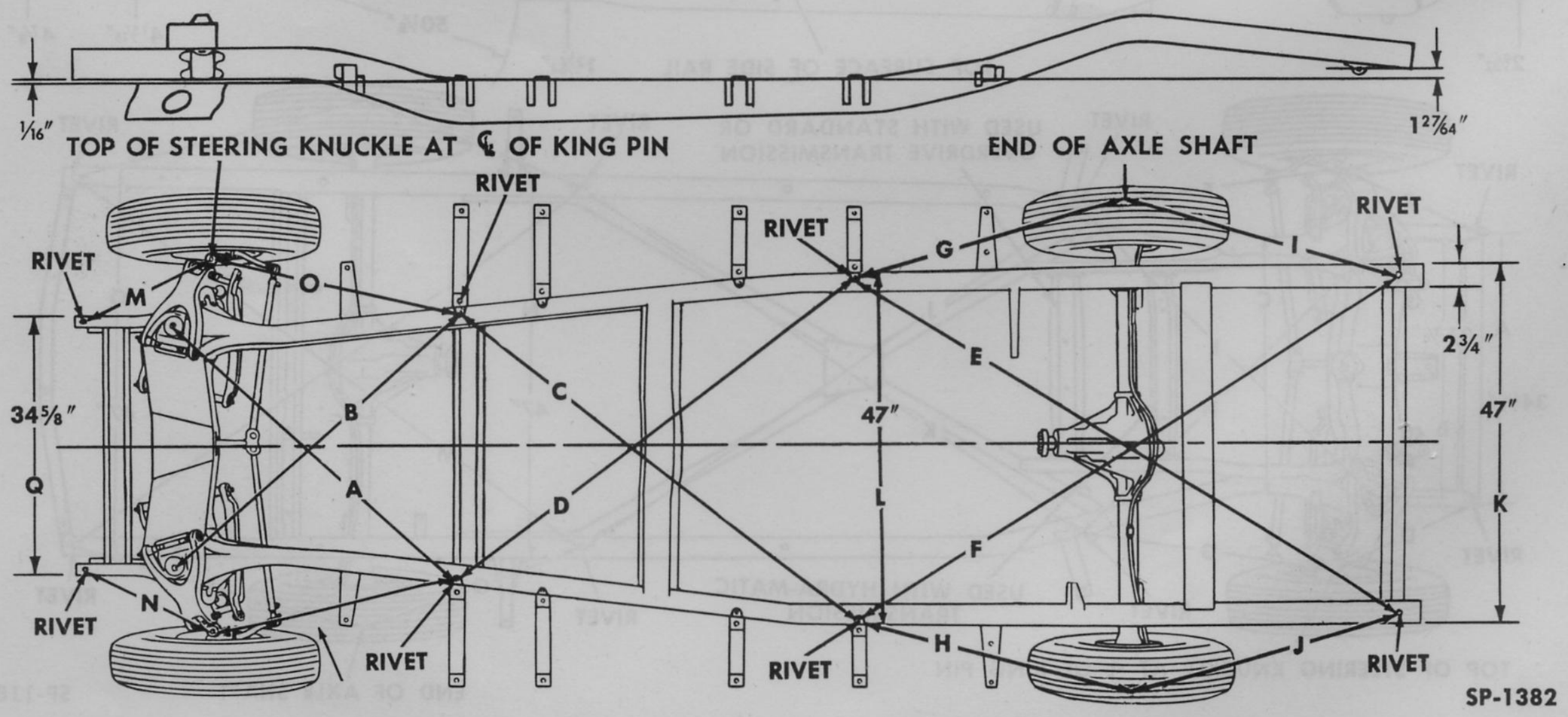

Fig. 325—Typical Frame, Front Suspension and Rear Axle Alignment Diagram—Frazer

No established rules can be made on the necessity for, or the type and size of, reinforcements to install on frame members. Replacement is usually more practical and satisfactory when damage is sufficient to require reinforcement of a part of the frame. Reinforcement is often impractical because of the position of existing crossmembers or units attached to the frame; therefore, it is necessary that the repairman use his best judgment to decide what should be done in each specific case. When reinforcing a member, reinforcement material should not exceed in thickness the part to be reinforced and should be of comparable strength.

c. REPLACING CROSSMEMBERS. Crossmembers which are bolted to frame side rails offer no replacement problem. Remove bolts and damaged crossmember and install new one, bolting it in place.

Crossmembers welded and riveted to attach them to frame side rails are more difficult to replace. Welds must be cut loose using a chisel. Do not use a torch as the heat will weaken the frame side rail. Drill heads of rivets and then cut them off using a chisel. Drive out rivets after removing the heads. Drilling the heads of rivets first will facilitate their removal without distorting the holes in the frame.

Install new crossmember using hot rivets. Weld crossmember to frame if original member was welded. Use only the shielded-arc welding method, welding the new member to the frame side rails as close to the manner in which the original crossmember was welded as possible.

d. WELDING AND RIVETING. The shielded-arc method of welding is recommended for all frame welding. Heat generated during welding is localized and burning of material is held to a minimum with this method. Also the finished weld can be ground, filed or drilled if necessary. Standard mild steel welding rod should be used.

For heads of rivets inside the box section of the frame side rail on Frazer models, a hole must be cut in the side of the rail opposite the rivet for access to rivet head when removing and installing rivets. Drilling the ends of rivets before cutting and driving them out will permit removal without distorting holes in the frame side rails. Do not leave removed rivets inside the side rail to cause rattling.

When replacing crossmembers or body mounting brackets use rivets the same size as those removed and install them in original holes. Round head rivets should be long enough to protrude twice the diameter of the rivet before riveting. Rivets should be installed hot. After rivets are installed, any holes cut in the frame side rail for accessibility must be filled by fitting a piece of metal in each hole and welding it in place to prevent weakening of the frame.

KAISER-FRAZER SHOP MANUAL

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