

FRAME

All frames have high carbon pressed steel channel side rails, box type front cross member, cross member for supporting rear of engine, two diagonal center cross members and two cross members at the rear, back of the kick-up.

All frames are very similar in design, comparative parts being merely made longer or thicker gauge, as the need requires, to take care of longer wheelbase.

● CONVERTIBLE FRAMES

- Convertible frames are similar to closed body frames as regards design, number of cross members, and arrangement of parts, but the additional strength required to compensate for loss of body strength is provided as follows: The front inner side rails, rear kick-up reinforcements, and top and bottom plates at the junction of the diagonal cross members are increased in thickness, and reinforcing strips are added to the inside of both upper and lower flanges of the diagonal cross members.
- The addition of these strips to the diagonal cross member makes a convertible frame visually distinguishable from a closed body frame.

● SHIPPING CHAINS

- For securing the front end of the car in place in shipment in railroad cars the lower plate of front cross member has openings provided to permit looping a chain around each lower con-

● trol arm shaft. For haul-away trucks a flanged hole is provided in the front end of each side rail to accommodate the hold-down chains. ●

● This flanged opening in the side rails is also used when cars are half-decked for railroad shipment to take a heavy hook which compresses the front springs. On these half-decked cars the main hold-down chains are not looped around the lower control arm shafts but are secured to loops bolted to bottom flange of the side rails near the front of the body. These loops, which are used for cars half-decked in railroad cars only, must be removed before car is put into operation. ●

For all series the rear end of each side rail near the start of rear kick-up is provided with a large flanged hole through which the rear shipping chain is inserted.

● BUMPERS

● All series use the same front bumper equipment with a right and left section face plate formed around fenders. Face plate joins in the center at license plate holder and is supported by a continuous back bar mounted to the frame. ●

● Rear bumper on Series 40-60-90 are new but of one piece face plate type as used on 1941 models. ●

● Rear bumper on Series 50-70 are a new design with a right and left section face plate formed around fenders and joined at center license plate holder. ●

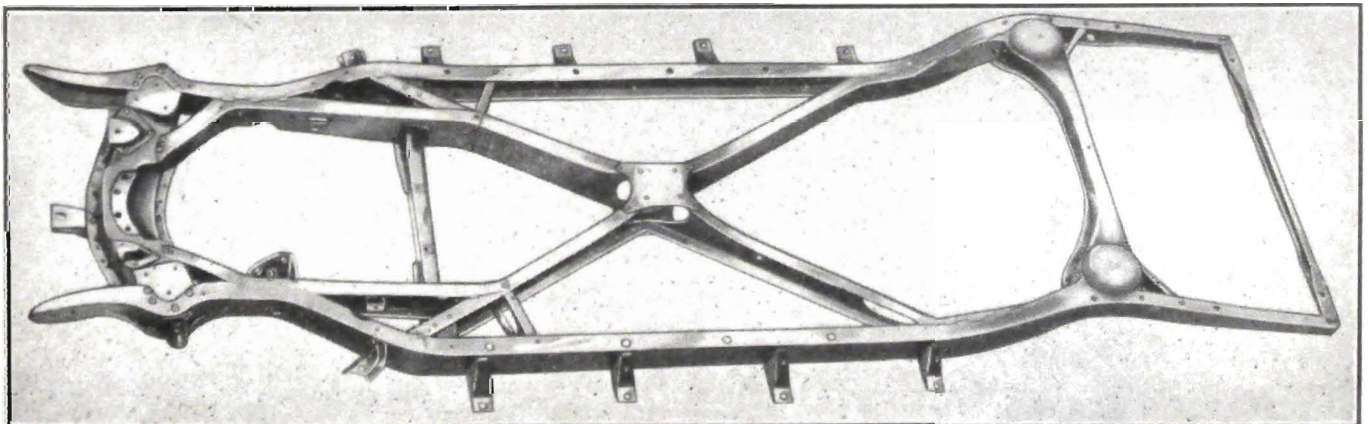


Fig. 2-1. Frame—Series 40

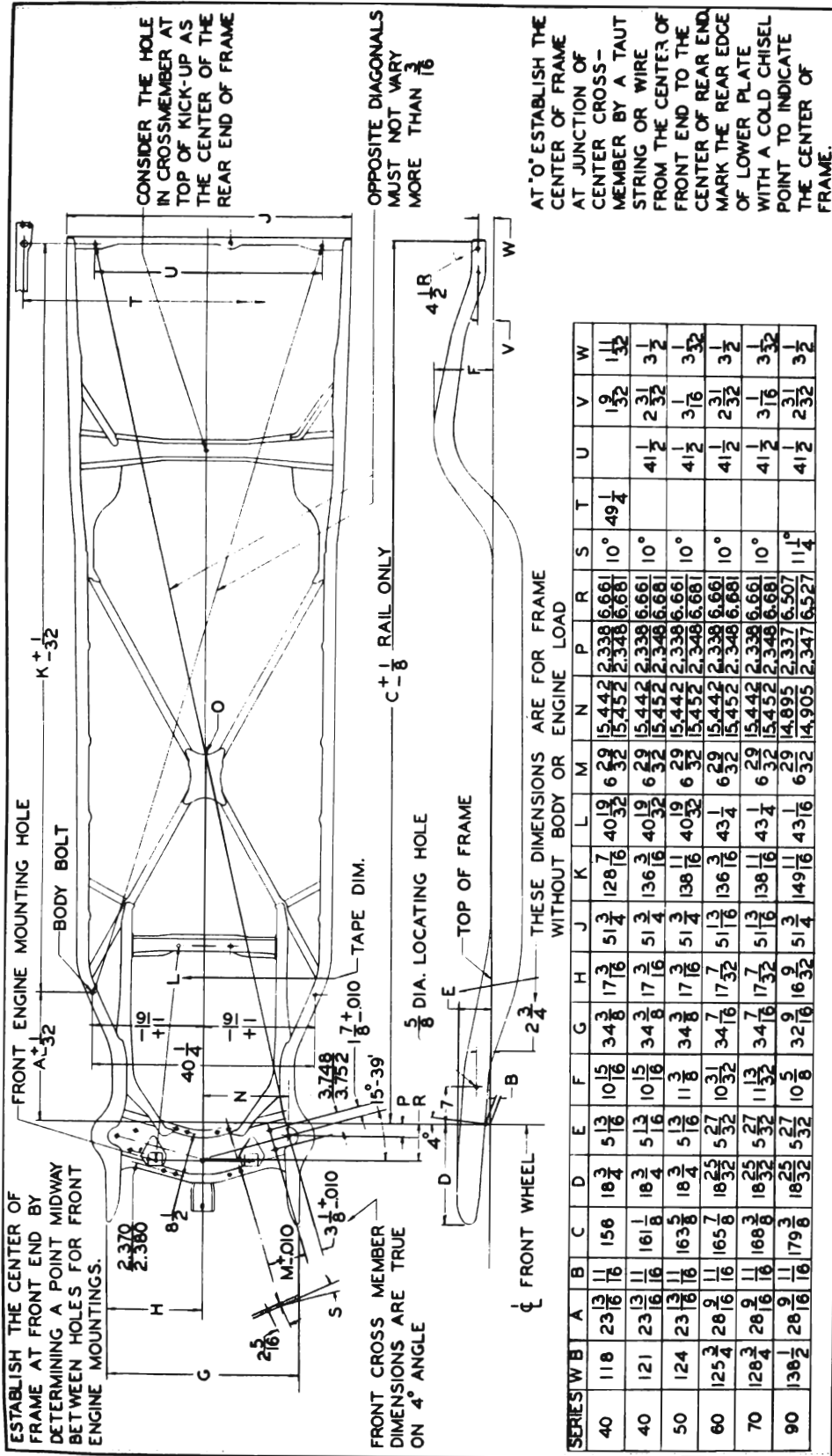


Fig. 2-2. Frame Dimensions

All bumpers have holes of sufficient size to allow for bumper adjustment. Special heat-treated bolts are used to attach bumpers to car.

Front and rear bumpers will be installed in production.

LICENSE BRACKETS

Front

All series have front license plate holders built-in with front bumper bar. The holder assembly is provided with a chrome finished backing plate on which is mounted two adjustable chrome finish clips for supporting license plates which are of the small width. When supporting full size plates these clips must be removed. See Fig. 2-3.

For making installation of the full size plate, the lower cross bar of the assembly should be removed by loosening the two nuts on back of the assembly. Locate the top of the plate in the two spring clips fastened to top of backing plate, then locate lower cross bar and fasten.

Rear

See "Electrical" section.

GRAVEL DEFLECTORS

Gravel deflectors are provided at both front and rear. The front deflector is an assembly of the front sheet metal and bumper and is fastened to both front fenders and grille bars.

The rear deflector is composed of two sections, the main section being fastened to the body and overlaps another section fastened to the bumper bar on Series 40-60-90. On Series 50-70 the body section of deflector is in three sections which overlap a one-piece bumper section. Both front and rear deflectors have clearance provided between bumper bar and deflector to prevent distortion of deflector when bumper is deflected.

FRAME CENTER LINE

On all series to establish or check frame center line, follow instructions given.

If frame is installed in car the center line may be checked by using a plumb bob. Car must be on level floor, and both sides of the front end of frame must be same distance from the floor. This is also true at the rear. See Fig. 2-2.

Locating holes are in vertical portion of side rails of all series frames just to rear of front shock absorbers.

After attaching paper to floor underneath car and between locating holes on each side, directly under rear end of X-member lower plate, and under center of cross member located at top of kick-up, proceed as follows:

1. Extend plumb bob from $\frac{5}{8}$ " locating hole on each side of frame and establish center on floor between the two holes.
2. Extend plumb bob from center hole in cross member at kick-up.
3. Draw a line or stretch a wire or string between front center of car as marked on floor and point on floor under the frame cross member used to establish rear center.
4. Extend plumb bob from rear lower edge of center X-member plate.

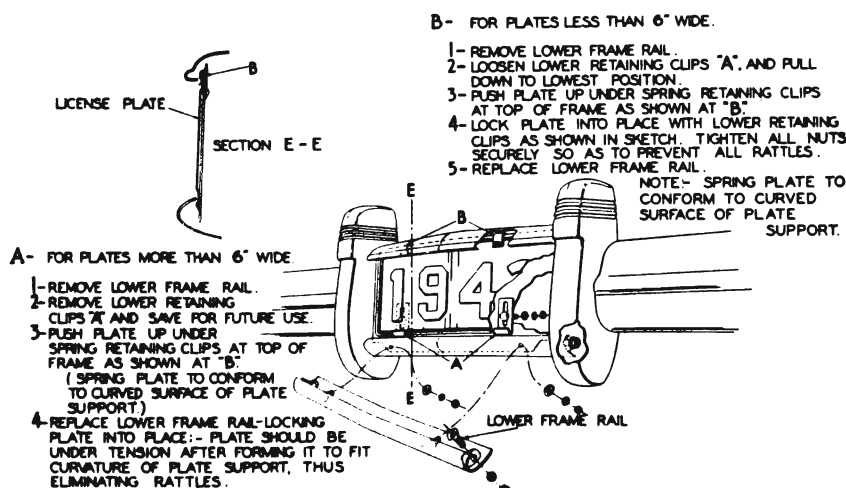


Fig. 2-3. License Plate Holder

When tip of plumb bob is on line between front center and rear center the point at rear of center X-member plate from which plumb bob is suspended is the correct center mark of frame.

FRAME SERVICE INFORMATION

Collision Repairs

In case of collision where bending or twisting is not excessive, it is permissible to straighten or weld the frame.

Heat can be applied without materially weakening the steel, provided this is kept below 1200° F. (deep cherry red, viewed in subdued daylight, as in an average shop). Heat in excess of 1200° F. will weaken the metal structure.

Bolts and nuts, with S.A.E. threads, can be used in place of rivets, where these cannot be bucked up for riveting, provided the frame holes are reamed to size for the next size larger bolts and the threads of the bolts burred to prevent the nut from loosening. Lockwashers should not be used under the nuts.

Parts Available

Front cross member, rear cross member, cross member at the rear kick-up, member supporting rear of engine are available for service.

For Series 40-50-60-70 the braces from side

rail to cross member at top of kick-up are also available.

Frame Alignment with Axle

These illustrations give the limits to provide proper alignment of front suspension, rear axle, body, radiator, hood, etc. The dimensions shown are for a frame assembled with power plant, body, etc., and resting on the wheels. See Figs. 2-4 and 2-5.

Tack or paste paper on the floor under points A and A', G and G', B and B', D and D', E and E', and mark the points, using a plumb bob. Roll car out of the way and draw the following lines: F to F', D to D', A to B', and A' to B. Also center line C to C.

The distance M and M' should be equal within $\frac{1}{8}$ ".

The diagonal lines A to B', and A' to B, should be equal within $\frac{1}{8}$ ". If not, look for bent or shifted frame and correct.

The distance, L and L', should be equal within $\frac{1}{8}$ ", measured from ends of axle shafts. If not, check rear axle alignment to see if rear wheels are parallel with line C to C. If rear axle is in proper alignment points E and E' should be the same distance from center line C to C. If not, look for misalignment of engine in frame, shifting of rear axle on springs, or bent axle housing and torque tube.

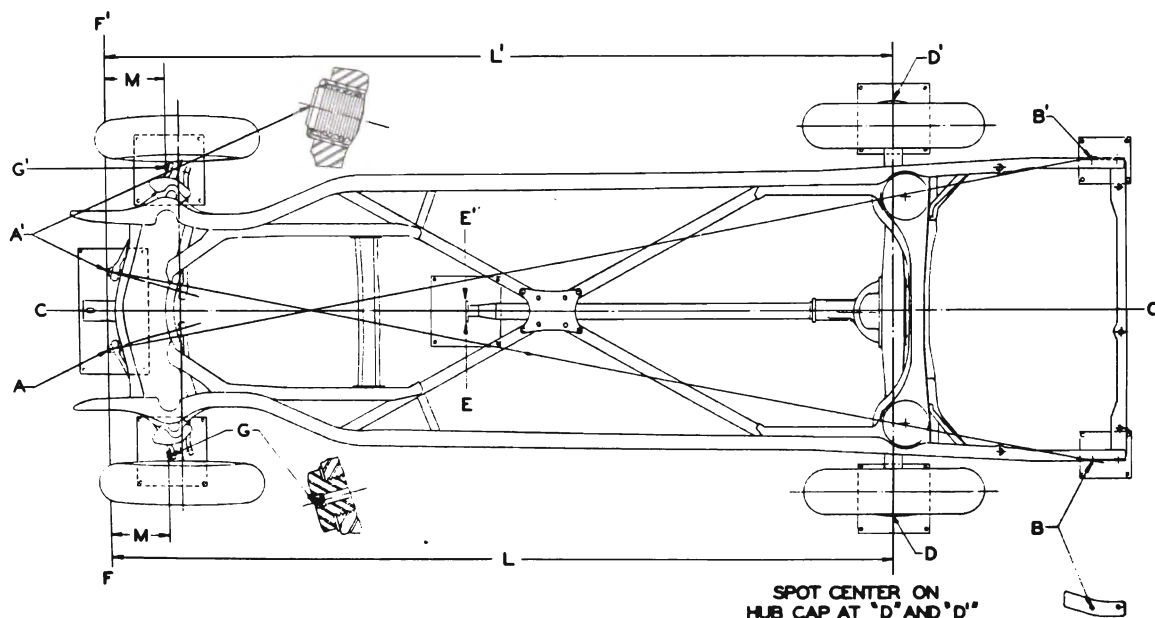
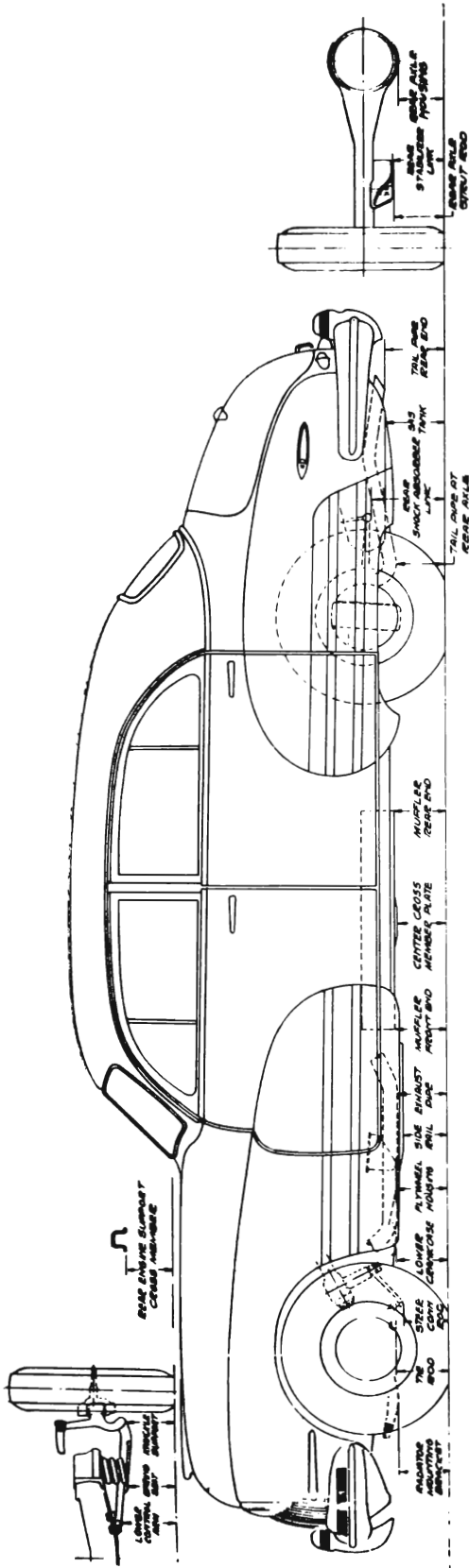


Fig. 2-4. Axle and Frame Alignment



ITEMS	SERIES 40-A	SERIES 40-B	SERIES 50	SERIES 60	SERIES 70	SERIES 90
Lower Control Arm.....	8 ⁷ / ₃₂ "	8 ⁹ / ₁₆ "	8 ⁹ / ₁₆ "	8 ⁵ / ₈ "	8 ⁵ / ₈ "	10 ¹ / ₁₆ "
Front Spring Seat.....	7 ⁹ / ₃₂ "	7 ⁵ / ₈ "	7 ⁵ / ₈ "	7 ¹ / ₁₆ "	7 ¹ / ₁₆ "	9"
Knuckle Support.....	7 ²⁷ / ₃₂ "	8 ³ / ₁₆ "	8 ³ / ₁₆ "	8 ¹ / ₄ "	8 ¹ / ₄ "	9 ¹ / ₄ "
Engine Support Cross Member.....	8 ¹ / ₃₂ "	7"	8 ³ / ₈ "	7 ¹ / ₁₆ "	7 ¹ / ₁₆ "	8 ¹ / ₂ "
Radiator Mounting Bracket.....	8 ¹ / ₃₂ "	7 ⁷ / ₈ "	7 ⁷ / ₈ "	8 ⁷ / ₁₆ "	8 ⁷ / ₁₆ "	9 ⁷ / ₈ "
Tie Rod at Wheel.....	7 ¹⁷ / ₃₂ "	7 ¹ / ₁₆ "	7 ⁷ / ₈ "	7 ¹ / ₂ "	7 ¹ / ₂ "	8 ³ / ₄ "
Steering Conn. Rod at Pitman Arm.....	7 ³ / ₃₂ "	7 ¹ / ₁₆ "	7 ¹ / ₁₆ "	7 ¹ / ₂ "	7 ¹ / ₂ "	10"
Lower Crankcase.....	6 ²⁹ / ₃₂ "	7 ¹ / ₄ "	7 ¹ / ₄ "	7 ¹ / ₁₆ "	7 ¹ / ₁₆ "	9 ¹ / ₈ "
Flywheel Housing.....	6 ¹ / ₁₆ "	7 ³ / ₃₂ "	7 ³ / ₃₂ "	7 ³ / ₃₂ "	7 ³ / ₃₂ "	8 ¹ / ₂ "
Side Rail.....	6 ¹ / ₂ "	6 ²⁷ / ₃₂ "	6 ²⁷ / ₃₂ "	6 ⁷ / ₈ "	6 ⁷ / ₈ "	7 ³ / ₈ "
Exhaust Pipe.....	6 ²¹ / ₃₂ "	7"	7"	6 ¹⁵ / ₁₆ "	6 ¹⁵ / ₁₆ "	7 ³ / ₈ "
Muffler Front End.....	6 ¹⁷ / ₃₂ "	6 ⁷ / ₈ "	6 ⁷ / ₈ "	6 ¹⁵ / ₁₆ "	6 ¹⁵ / ₁₆ "	7 ³ / ₈ "
Center Cross Member Plate.....	6 ³ / ₄ "	7 ³ / ₃₂ "	7 ³ / ₃₂ "	7 ⁵ / ₃₂ "	7 ⁵ / ₃₂ "	7 ⁹ / ₁₆ "
Muffler Rear End.....	6 ⁵ / ₈ "	6 ³¹ / ₃₂ "	6 ³¹ / ₃₂ "	7 ¹ / ₃₂ "	7 ¹ / ₃₂ "	7 ⁹ / ₁₆ "
Tail Pipe at Rear Axle.....	8 ⁷ / ₁₆ "	8 ⁷ / ₁₆ "	8 ⁷ / ₁₆ "	8 ¹ / ₂ "	8 ¹ / ₂ "	7 ³ / ₄ "
Rear Shock Absorber Link.....	11 ³ / ₁₆ "	11 ²⁵ / ₃₂ "	11 ²⁵ / ₃₂ "	11 ²⁷ / ₃₂ "	11 ²⁷ / ₃₂ "	9 ¹ / ₈ "
Gas Tank.....	9 ³ / ₃₂ "	9 ¹⁷ / ₃₂ "	9 ¹⁷ / ₃₂ "	9 ¹⁹ / ₃₂ "	9 ¹⁹ / ₃₂ "	10 ⁷ / ₈ "
Tail Pipe Rear End.....	9 ¹ / ₂ "	9 ³ / ₃₂ "	10 ¹ / ₃₂ "	10 ¹ / ₃₂ "	10 ¹ / ₃₂ "	11 ¹ / ₁₆ "
Rear Axle Strut Rod.....	7 ¹⁵ / ₁₆ "	8 ⁹ / ₃₂ "	7 ⁵ / ₈ "	8 ¹ / ₃₂ "	8 ¹ / ₁₆ "	8 ⁵ / ₃₂ "
Rear Stabilizer Link.....	None	None	None	None	None	None
Rear Axle Housing.....	7 ⁹ / ₁₆ "	7 ² / ₃₂ "	7 ² / ₃₂ "	7 ² / ₃₂ "	7 ² / ₃₂ "	8 ¹ / ₃₂ "

GROUND CLEARANCE DIMENSIONS WITH NORMAL LOAD—SEDAN MODELS