SERVICE TRAINING

Film Supplement

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FILM 1
SEPT. 1937

by the SERVICE PROMOTION DEPARTMENT
PACKARD MOTOR CAR COMPANY - DETROIT

Bert: Service Manager. I must be in the right place. How are you, Tom?

Tom: Glad to see you, Bert. But why's our busiest dealer's service manager loafing around the distributorship this time of the year?

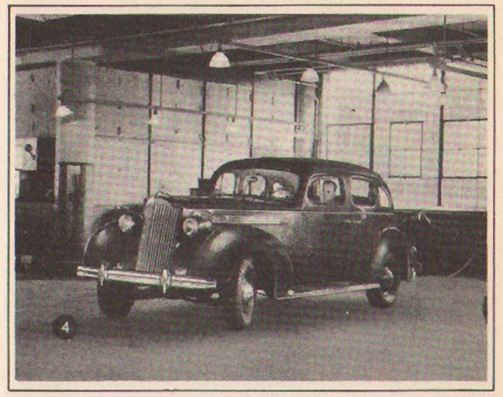
Bert: Came to pick up our new sixteenth series demonstrator.

Tom: Couldn't you send one of the boys . .

Bert: Listen, Tom . .

Bert: . . when there's a brand new line of cars to be seen, I'm going to be first to see 'em. Where are they? Lead me to 'em.

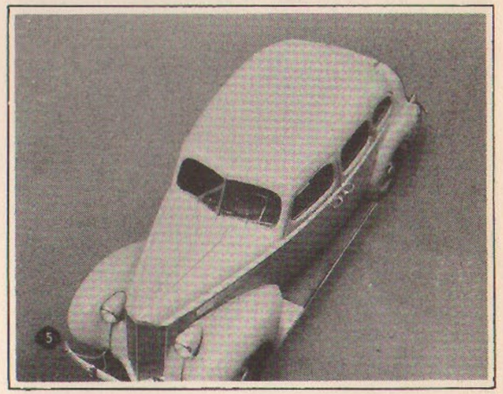
Tom: Right this way. There's yours just off the wash rack.



Bert: Say, that's a swell looking job. Is that an eight?

Tom: Yes-sir. Brand new and it still looks like a Packard.

Bert: There's something different about it all right. Fresh lines . . class . . Say! What's this?



Bert: . . an all steel top?

Tom: That's it . . and a perfect specimen. Using it on all the Junior line this year. A swell job too . . no noise at all. It's scientifically insulated with latest acoustic materials . . new spray treatment that improves with age instead of . .

Bert: Cut it, Tom. You don't have to sell me. Just let me look!

All Steel top on Packard Six and Eight only. The Super Eight and Twelve have a fabric top.

Bert: Swell lines. But, Tom, it looks longer.

Tom: Not much difference in overall length . . but the wheelbase is longer.

Tom: The six is a hundred and twenty-two . . and the eight's a hundred twenty-seven . . both seven inches longer.

Bert: Better ride, I'll bet.

Tom: Ride! Boy, oh, boy, she rides . . But, nuts, I forgot I wasn't going to do any selling.

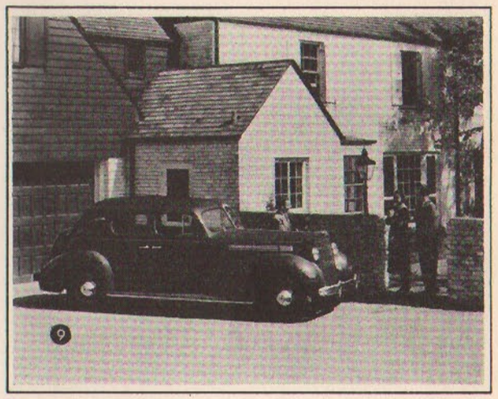
Bert: You're right, you're not, I'm going to take a ride.

Tom: Hey! Wait a minute . .

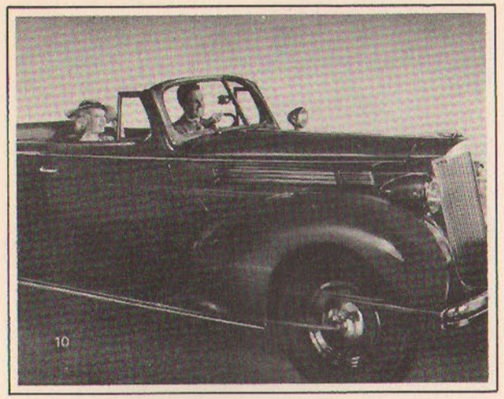
Tom: Come away from there. Ed's got to do his fitting and delivery job. You watch him.

Bert: Fitting and delivery! At a time like this?

Tom: There's no better time. The first cars in the hands of owners just about make or break the reputation of the car for the whole season.



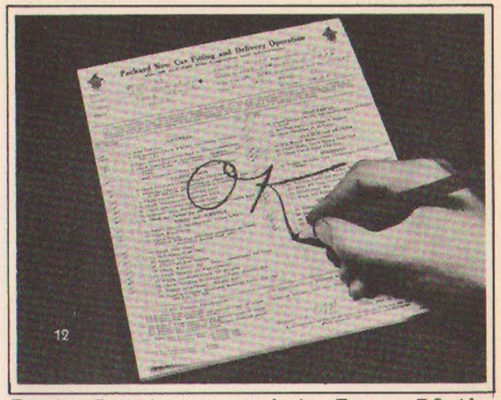
Tom: An owner's friends are enthused when they see the new car. They want to know how it rides, how it acts. The owner talks about it dozens of times a day. But is he saying . .



Owner A: You never saw a car like it. Built like a watch. Packard craftsmanship through and through.

Tom: Or, is he saying . .

Owner A: It looks snappy, but the brakes pull and the engine stalls every time I pull up to a light. Guess they just sling it together . . and count on getting by on its looks.

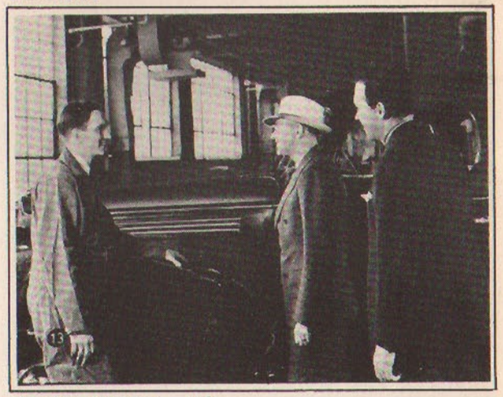


Bert: I get your point, Tom. If the first cars aren't in tip-top shape when we deliver 'em, there's going to be a lot of sour advertising right from the beginning.

Tom: And sales killed for the whole year.

Bert: Well, you've got to know something about 'em before you can put 'em in shape.

Tom: Right! And the best way to find out about 'em is to follow through on a fitting and delivery. Here comes Ed now.



Bert: Hello, Ed.

Ed: Hello, Bert. What d'ya think of the line?

Bert: It looks swell, but I don't know what makes the wheels go 'round yet. Tom's holding out on me. Says to watch you on the fitting and delivery.

Ed: That's one way of getting it.

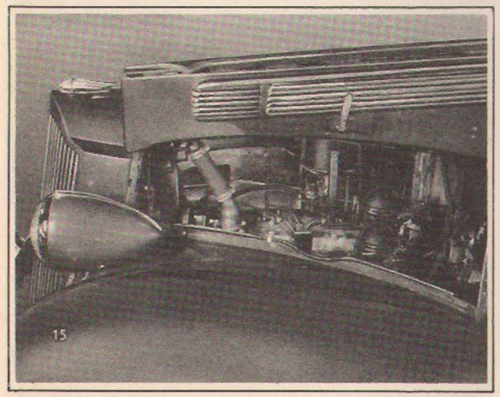
Bert: But I want the whole story.

Tom: Hold on, Bert.

See this check list? When you've covered these points there isn't much left to cover.

Bert: I know, Tom. It covers the whole car. Suppose we use the check sheet as a guide.

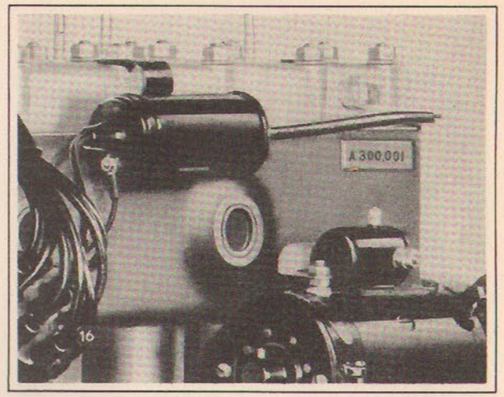
Tom: Good idea. Let's see, it's been washed . .



Tom: Ed'll be starting on the engine next.

Bert: Hold on a minute! Lets start at the beginning . . motor number, vehicle number . .

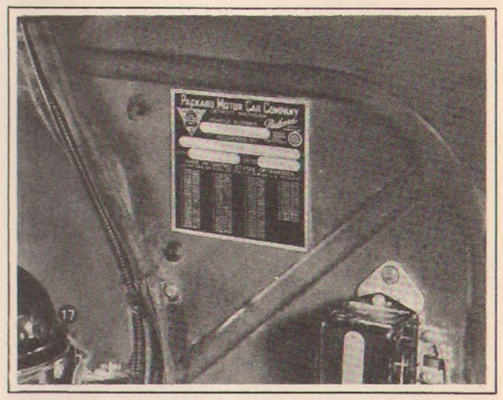
Tom: Right! I almost forgot. All right, we'll start at the beginning.



Tom: Here's the motor number . . stamped on the boss on the upper left side of the engine near the rear of the block. All sixteenth series cars start on a new series of motor numbers this year. The eight at A three hundred thousand and one, for instance, and the six at A fifteen hundred and one.

Motor Numbers

Packard Six ..... A-1501 and Up
Packard Eight ..... A-300001 and Up
Packard Super Eight. A-500001 and Up
Packard Twelve ..... A-600001 and Up



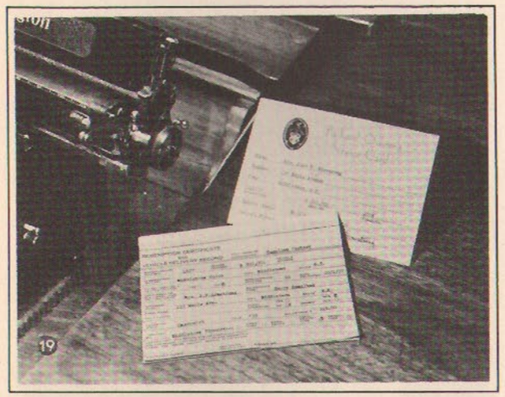
Tom: The vehicle number is on the patent plate on the dash . . with spaces for your company name and the date when you deliver the car to the owner.

Bert: We don't forget that, Tom . . we hammer 'em in.

Tom: It isn't a brass plate any more . . it's a decalc.

Tom: Can't use your steel stamp now. I'll have to sell you one of the new rubber stamps. It's easier than taking off and stamping the old brass plate. But don't forget it.

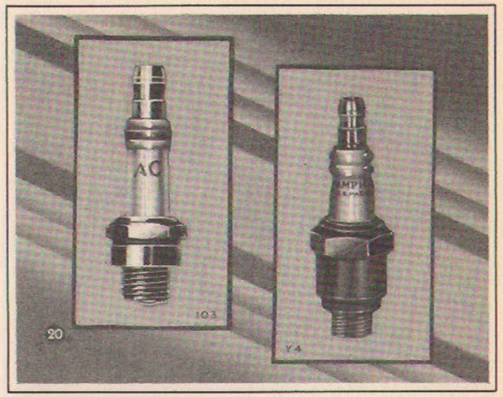
S.T. 2000 Patent Plate Stamping Set $7.00



Tom: Fill out the Combination Redemption Certificate and Vehicle delivery record card and shoot it to your distributor, just as soon as you deliver the car. And don't forget to fill out and give the owner his Owner's Card. If the patent plate isn't properly stamped and the delivery registered at the factory, the owner can't get warranty work done, and you won't get credit for parts and labor under the warranty.

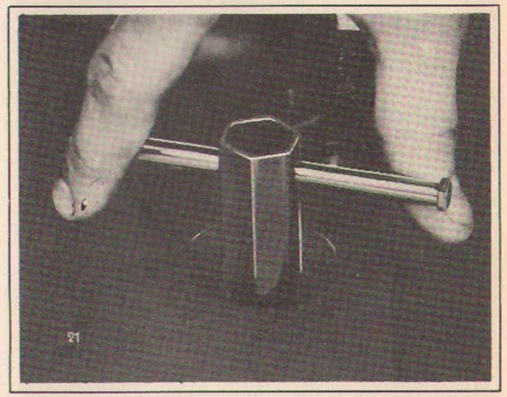
Bert: I know . . I got tripped up that way once.

Tom: Enough said. You won't let it happen again. Well, let's see where Ed is.



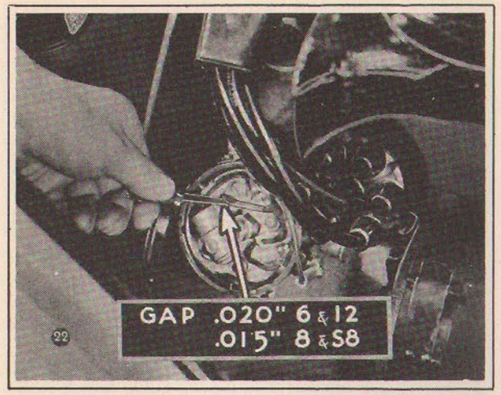
Ed: Just checking the plugs. The gap is twenty eight thousandths. Of course you have to use the round gauge to check 'em, you know.

Tom: We're still using ten millimeter spark plugs. For replacement, you can use AC hundred and three, or Champion Y-four. But don't tighten 'em with too much heft.



Tom: Don't want to strip the threads in the cylinder head. Use the plug wrench in the tool kit. And be careful not to touch the porcelain.

Bert: I get you. And how about the distributor points?



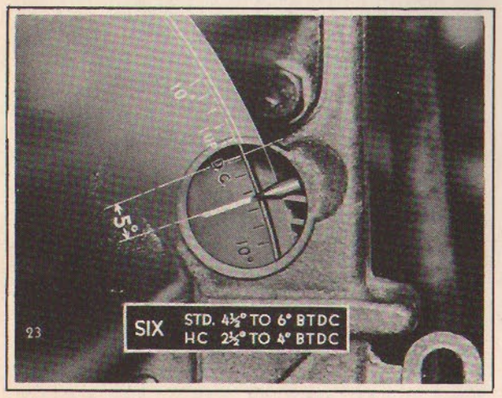
Ed: The gap is twenty thousandths on the six and twelve, and fifteen thousandths on the eight and super eight. The distributor is the vacuum automatic type using both vacuum spark control and automatic centrifugal advance.

Bert: Can't get away with "thin dime" mechanics these days. Is timing the same on the flywheel?

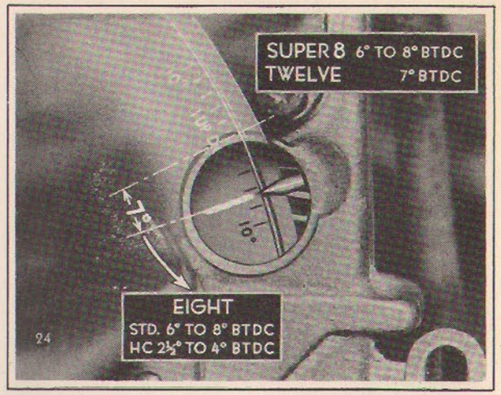
Ed: Just about to get into that.

DISTRIBUTOR POINT GAP SETTINGS

Six - .020" Super Eight - .015"
Eight - .015" Twelve - .020"



Ed: You set the spark four-and-a-half to six degrees before top-dead-center on the six, with the standard head. And with the high compression head, two-and-a-half to four degrees.

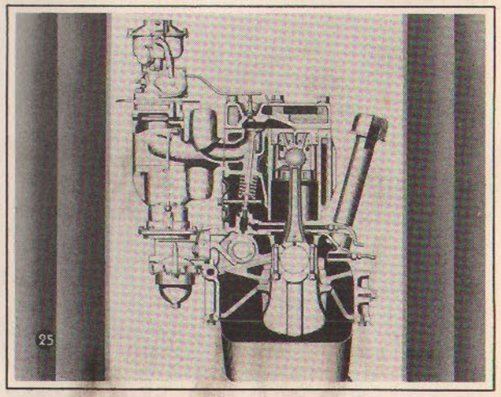


Ed: On the eight, it's six to eight degrees before top dead center with the standard head, or two-and-a-half to four degrees with the high compression head. The super eight is set at six to eight, and the twelve at seven degrees.

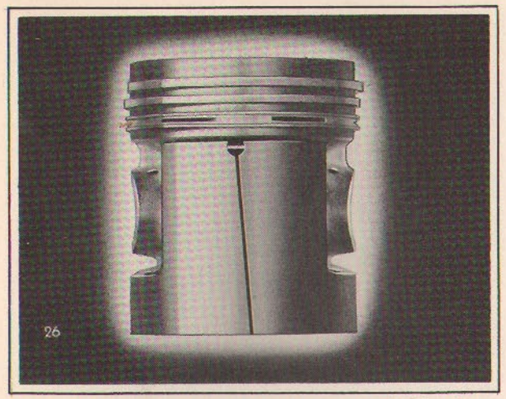
Tom: You can depend on Ed. He's got 'em memorized already.

Bert: What have they done to the engine?

Tom: No basic changes, as you can see.



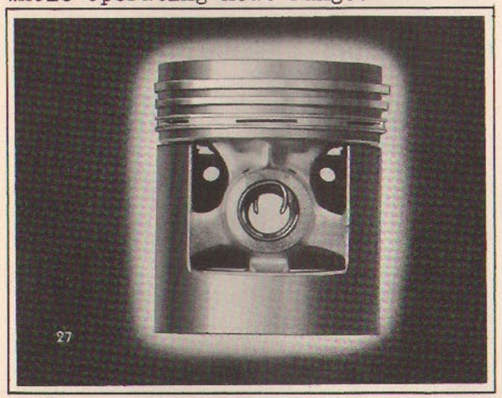
Tom: But there's a lot of refinements. Water jackets are longer for better cooling. Got thicker, deeper, main bearing caps that'll take it for sure. Six has a three and a half inch bore . . up a sixteenth. Torque on the six has been increased about ten foot-pounds. I could go on and on.



Tom: They're using heat-treated aluminum pistons with an expansion slot the full length of the skirt. Auto-thermic, they call 'em. Same as used on the six last year.

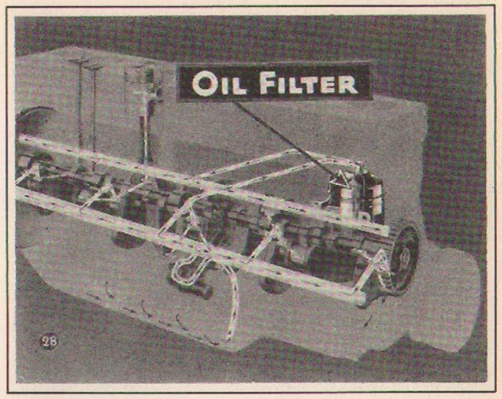
Bert: Auto-thermic? What does that mean?

Tom: Only that the piston stays approximately the same size through the whole operating heat range.



Tom: The steel strut is much wider than it has been. And there are bars of the aluminum alloy across the strut to give the action of a bi-metallic strip. The different rate of expansion of the two metals controls the expansion of the piston. And that, plus the cam grinding, keeps them approximately the same size throughout the operating heat range. And they're tin-plated to prevent scuffing when wearing in.

Pistons are fitted to .0015". A .0015" feeler strip 1/2" wide inserted between piston and cylinder wall on non-thrust side should require 12# - 18# to withdraw.

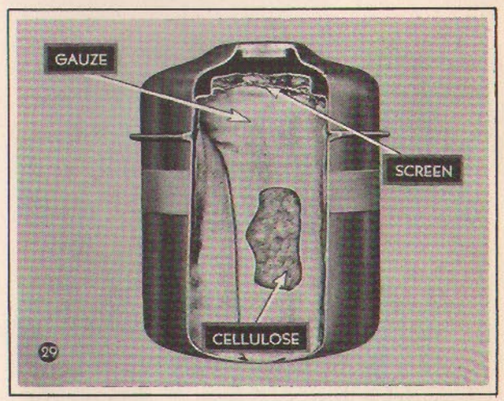


Tom: We're using pressure lubricated tappets - fed direct from the oil filter.

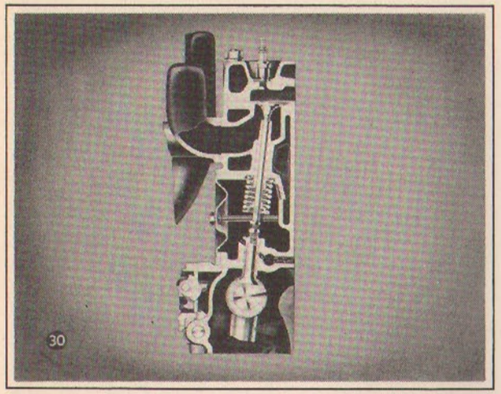
Bert: Oil filter? What kind?

Tom: A three-stage clarifying type that restores the oil to almost its original color. It's standard on both the six and eight.

Bert: Why three stages?



Tom: There are three filter elements . . gauze, cellulose, and a combination felt pad and fine metallic screen. The gauze takes out the larger particles, the cellulose filters out the smaller particles and the screen and felt pad keep the sludge from dumping over when the filter is choked. You replace the filter about every eight thousand miles, but not more than ten. But that isn't the valve mechanism.



Tom: New contour of the cam shaft gives you quieter operation. Valve tappets are mushroom type. Guides are reamed straight instead of tapered and have four thousandths clearance for exhaust valves, and two on the inlet.

Bert: Looks like we'll have to pull the cam shaft to take out the tappets.

Tom: Yes, you will.

Ed: And the tappets . .

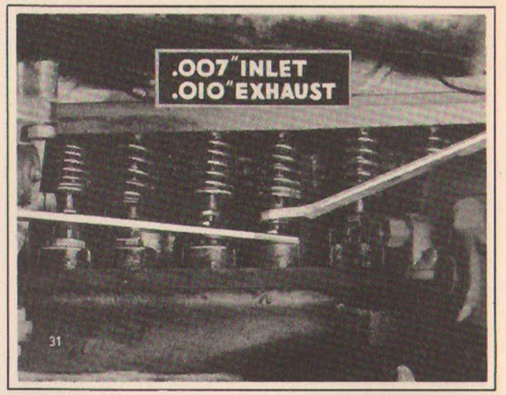
VALVE TIMING

	INLET		EXHAUST	
	Opens	Closes	Opens	Closes
Six	1°B.T.D.C.	38°A.L.D.C.	45°B.L.D.C.	5°A.T.D.C.
Eight	1°B.T.D.C.	39°A.L.D.C.	45°B.L.D.C.	5°A.T.D.C.
Super Eight.	30°B.T.D.C.	65°A.L.D.C.	65°B.L.D.C.	30°A.T.D.C.
Twelve	0°-.T.D.C.	45°A.L.D.C.	35°B.L.D.C.	10°A.T.D.C.

VALVE SPRINGS

	Load Closed	Load Open
Six	50# @ 1-5/8"	120#
Eight	50# @ 1-5/8"	120#
Super Eight.	73# @ 3-1/16"	159#
Twelve	70# @ 2-7/32"	145#

NOTE: When checking valve timing, adjust No. 1 exhaust tappet to .017" clearance. Insert .004" clearance feeler gauge between tappet and end of valve stem. Turn flywheel in normal direction until feeler is tightly gripped, then continue turning slowly until feeler is just released. The timing indicator on the flywheel should indicate 5° A.T.D.C., or half way between No.1 U.D.C. and 10° A.T.D.C. at this point.

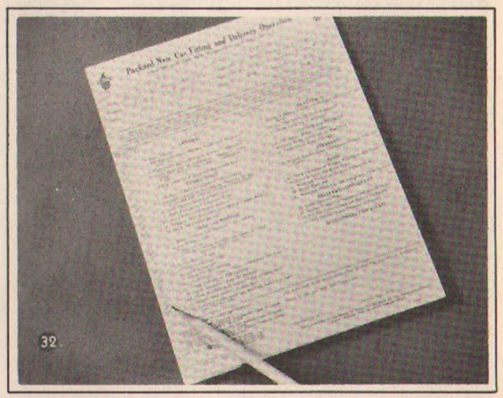


Ed: You adjust 'em hot to seven thousandths inlet, and ten thousandths exhaust. You can't use your old tappet wrenches, because the adjusting screw heads are smaller . . half an inch across the flats.

Tom: Trust Ed to have the statistics. How're you coming?

Ed: Fine, about ready for the cooling system.

S.T. 5104 Valve Tappet
Wrench ..... $1.00 Each



Tom: Spaces are filling up. That's one thing about Ed . . he's thorough. When he's through with the fitting and delivery, there's a check mark in every space.

Bert: You really check every point, Tom?

Tom: You bet. Check 'em all. But, of course, not many points need adjusting on a new car. Here's Ed on the cooling system.

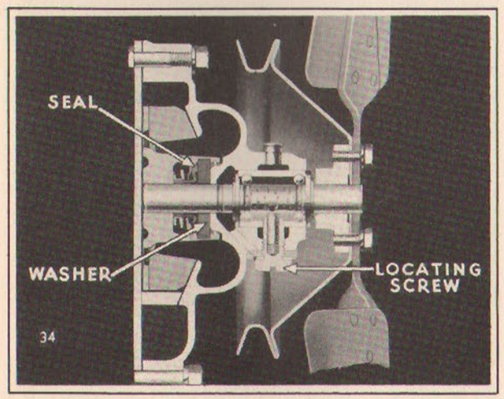
Ed: New pump on here, Bert, It's a honey . . ball bearing, pack-less . . never have to repack it.

Bert: How's it work . . what d'you have to do?

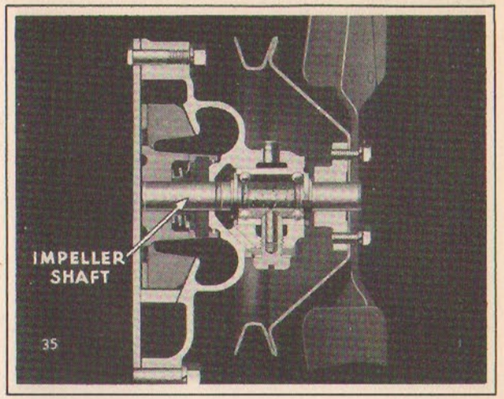
Ed: Just fill the oiler every five thousand miles . . that's all.

Bert: What if it does leak?

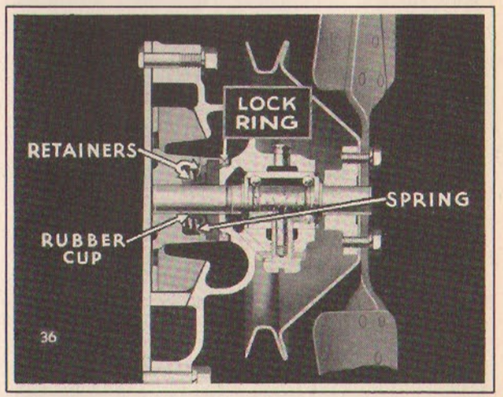
Tom: Not much chance.



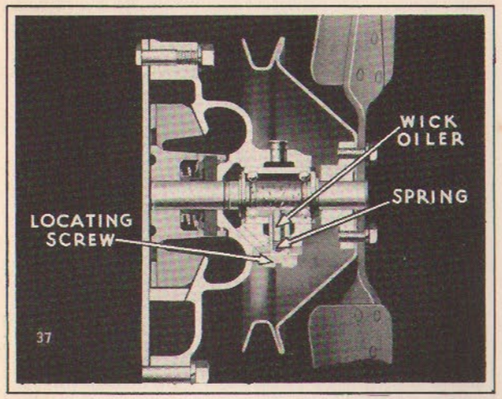
Tom: It's sealed by a composition thrust washer and a rubber seal. Wear on the thrust washer or decomposition of the rubber is about all that can cause a leak. If it leaks . . you'll have to replace 'em. To do it, first you remove the bearing locating screw . .



Tom: Then you press out the impeller shaft. Be sure the impeller rests evenly on the housing when you push the shaft out, or you'll break the housing. Then you take out the thrust washer and rubber seal. To install it . .

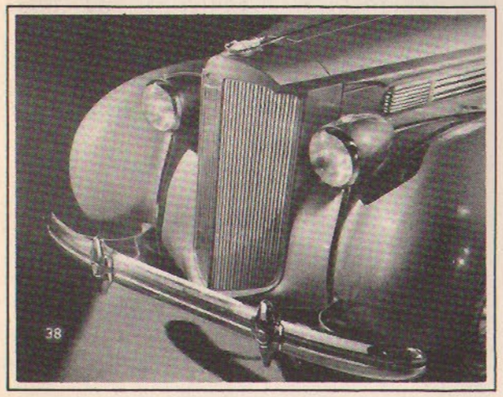


Tom: . . put the two retainers on the rubber cup and put the cup and spring in place in the impeller. When you install the thrust washer be sure the convex face is away from the impeller. Lock it in place with the locking ring and you're ready to install the shaft.



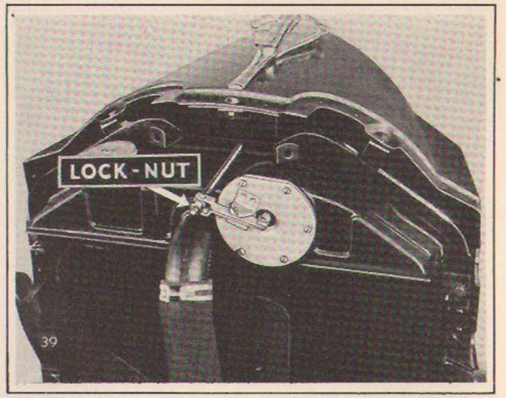
Tom: Coat the shaft with glycerine . . don't use white lead or oil. Then put the shaft and bearing assembly in the housing and locate the bearing with the locating screw. Be sure the spring and wick oiler are in place. Next, heat the impeller in boiling water up to a hundred and eighty degrees to expand it, and press it on the shaft far enough so you'll have forty thousandths clearance between the impeller and the housing.

Bert: And it's done. Gee, that's a swell pump.



Bert: Say, what's this . . automatic shutters?

Tom: Yes, just like the senior cars. The whole Packard line has 'em this year. But now the vanes run right from the bottom to the top of the opening in the grille. They're improved to get rid of the whistle, too.

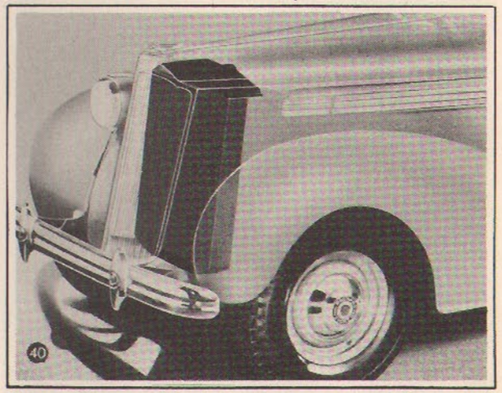


Tom: Thermostat's the same type . . There's just one adjustment . . the linkage. Pull up the lock nut so there's just a little tension holding the shutters closed when the water's cool. Only need it after the thermostat's been removed or the shutters taken off.

Bert: Radiator cores the same?

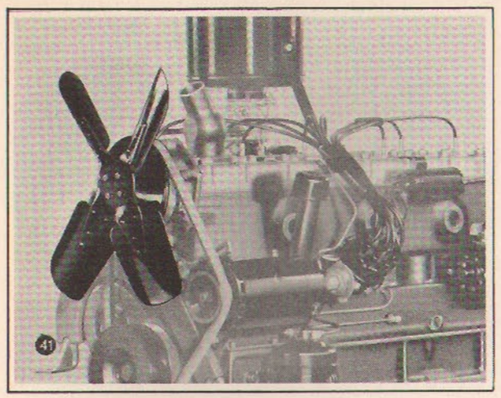
Tom: Nope. There's a whole new arrangement for more efficient cooling.

NOTE: The Six and Eight are not equipped with cylinder head thermostats except in the case of cars equipped with heaters at the factory.

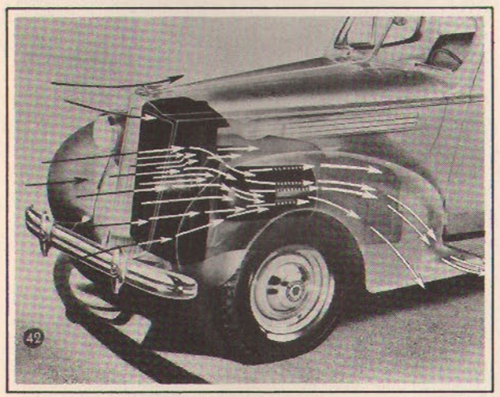


Tom: The radiator cores are wider and higher to give more cooling surface. You'll find the capacities of the cooling system given in the film supplement.

	6	8	S-8	12
Cooling System Capacity-Gals..	3-3/4	4	5	10
Gravity Flow of Radiator - Gals. Per Minute	36	38.5	32	40

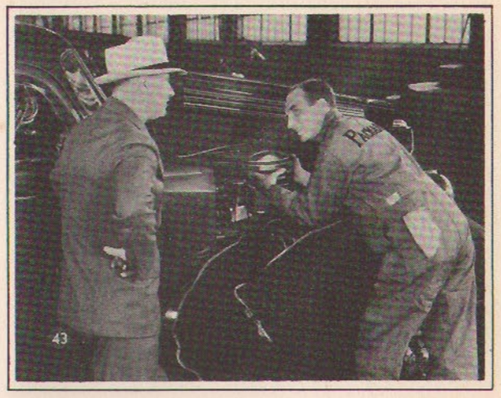


Tom: The fan is larger, and the speed of it has been reduced a little to make it quieter, but it pulls a larger volume of air through the radiator. And . .



Tom: . . these air tunnels under the fenders carry it away as fast as the fan pulls it in. Does a better cooling job.

Bert: Boy! That's real cooling. We'll have to put heaters under the hood to keep the engine warmed up. Let's get back with Ed. Where are you now, Ed?

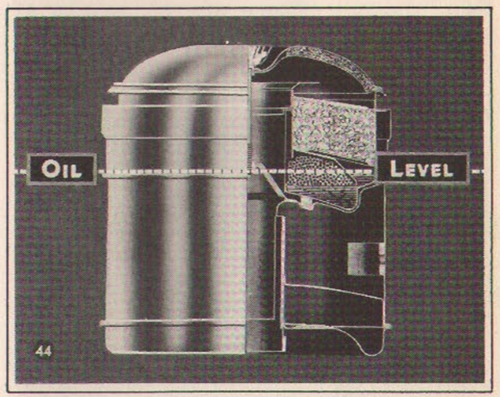


Ed: Filling the air cleaner.

Bert: On a brand new car?

Ed: You bet. They're shipped dry. Doesn't do much good if it hasn't got oil.

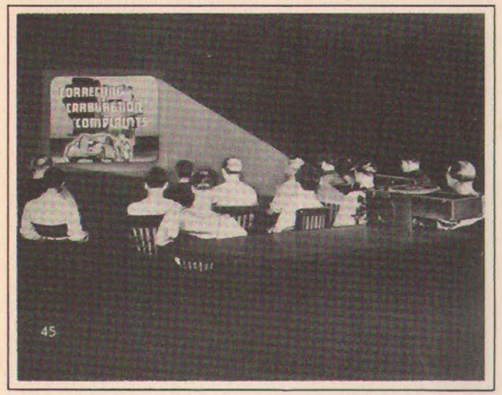
Tom: That's right, Bert.



Tom: Fill the air cleaner up to the level mark . . no more. Takes about half a pint. And use S.A.E. 50 engine oil. Nothing lighter except in extreme cold weather.

Ed: And remember to dip the filter on the crank case ventilator in oil, too.

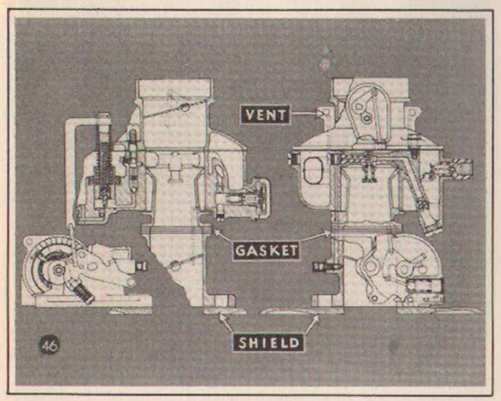
Tom: While you're right there, Bert, be sure you check the operation of the choke to see if it closes tight, opens full, and is free. If you find anything wrong . . well, you know what to do about it.



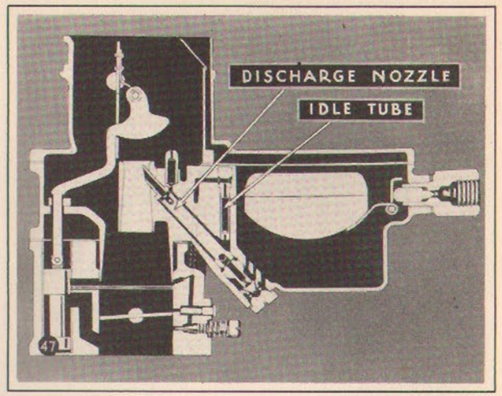
Tom: You've seen the slidefilm "Correcting Carburetor Complaints."

Bert: Oh, sure, but in Fitting and Delivery, all you have to do is check it.

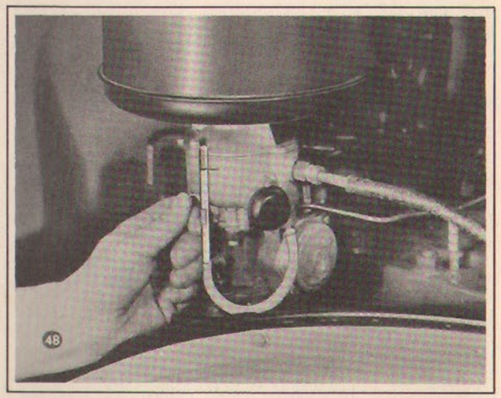
Tom: Right. There are a couple of more points on the carburetor, though.



Tom: The carburetor on the Six has a new venting of the float, and a new heat-proof gasket between the float and the main throttle body. And now there is a heat deflector between the carburetor and manifold to help prevent vapor lock.



Tom: The Eight has a new anti-percolating type of main discharge nozzle and a new idle tube. We won't get any more "popping" in the muffler.

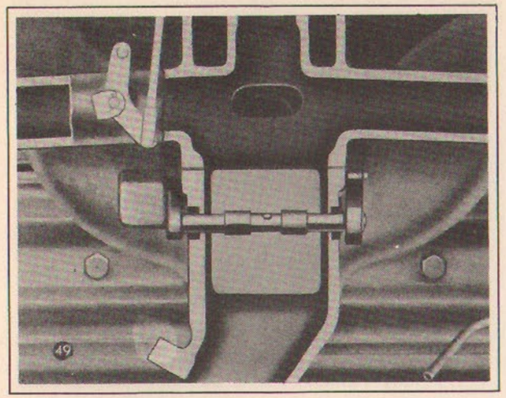


Tom: Check the carburetor float level and adjust it if necessary. Specifications are in the owner's manual and in the film supplement. Be sure that each of your boys has a copy of the supplement. Another thing you ought to check . .

	6	8	S-8	12
Float Level ...	17/32"	15/32"	5/8"	9/16"

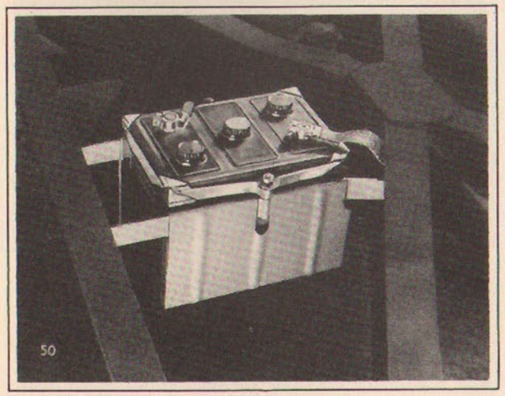
Below top of bowl, gasket removed.

S.T. 978 Carburetor Float Level Gauge $1.50

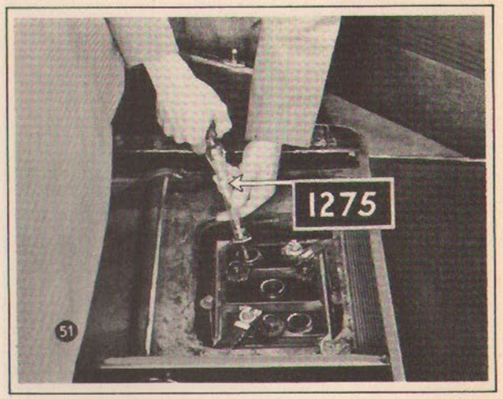


Tom: . . the heat control valve. The bearings in the manifold have been shortened by counterboring, cutting down the possibility of binding. On fitting and delivery, just make sure the spring is connected and the valve is free. Never oil it. Let's watch Ed. He's checking the battery and generator.

NOTE: A stuck heat control valve or one with the spring disconnected will cause poor low speed performance, slow warm up, lack of power . . conditions which are generally attributed to ignition or carburetion defects.

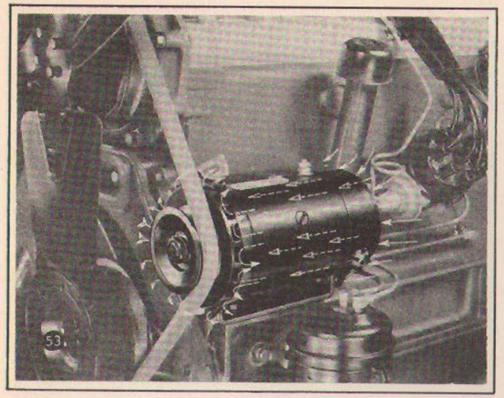


Ed: I always make sure the battery's clamped in the cradle. And I always check the battery . . make sure it's filled to the right level and fully charged. Sometimes the charge is lost in shipping and storing.



Ed: On the six, the hydrometer should show twelve seventy-five when you deliver the car . . fully charged. And the liquid level ought to be a quarter inch above the top of the plates.

Ed: The Hi-Level Battery is used on the eight. It's fully charged when the hydrometer reads twelve-fifty. Ought to be enough liquid in the battery to just cover the star in the filler holes. Now, to make sure the cover's on tight and I'm all through here.

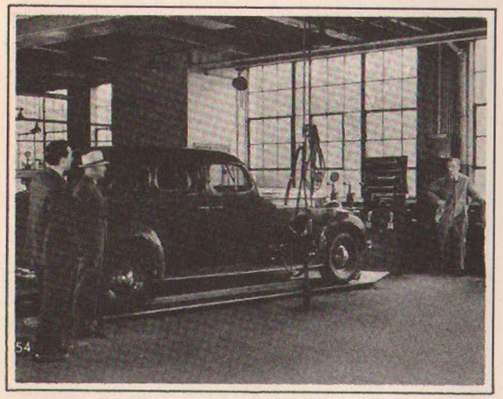


Ed: Generators are larger on the six and eight . . have greater capacity. Twenty-six and a half amps at eight volts on the six, twenty-five at eight volts on the eight. That's the reading with the generator hot, of course. Well, that's that.

Tom: Get a good view of the front end under here.

Bert: Looks pretty much the same to me.

Tom: It is the same, except for a change in the spring rate to harmonize with the rear springs. And the roller bearing in the lower support arm outer bearing has been changed. We used to have individual roller bearings . .

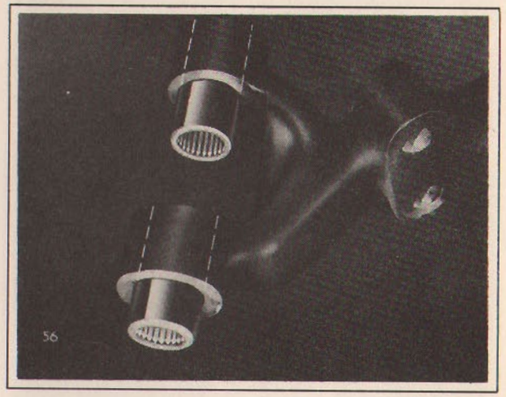


Ed: I'm going to hoist her, Tom.

Tom: Okay, hoist away. We'll have a chance to look underneath while he's lubricating it.

Bert: Anything new underneath?

Tom: Boy, is there ever! But let's start at the front.



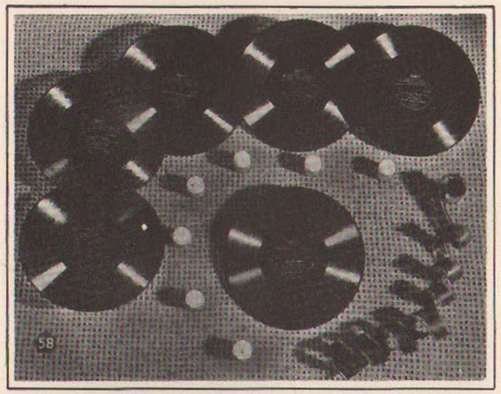
Tom: But now they're held in a case pressed into the lower arm. And you'll have to have a new aligning pin to line up the inner bushing. It's a real front end, Bert, and millions of satisfied owners have proved to us that we've got something to hang on to.

Bert: I know that.

S.T. 5102 Support Arm Inner Pin Bushing Aligner ...$1.00

Bert: That slidefilm, "Safe-T-Flex," drove it home to me. I was looking at it just the other day.

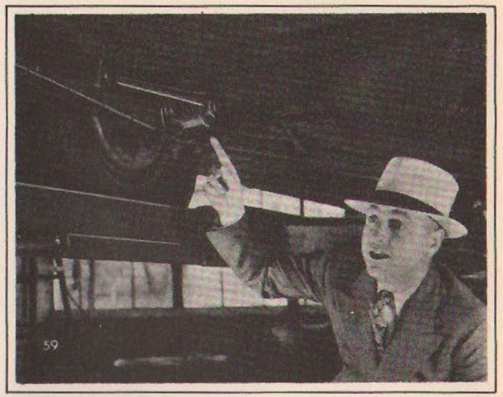
Tom: It's a good idea to review them about now, Bert. We get so tied up in the new stuff that we forget the old stuff is just as important as ever.



Tom: I keep a complete file of our films where the boys can review 'em anytime. I pull 'em out for service meetings when we seem to need a review. And I put every new man to looking 'em over as soon as I take him on.

Bert: It's a good idea, but right now I'm interested in the new stuff.

Tom: All right, Bert. Come back here and I'll show you something that is new.

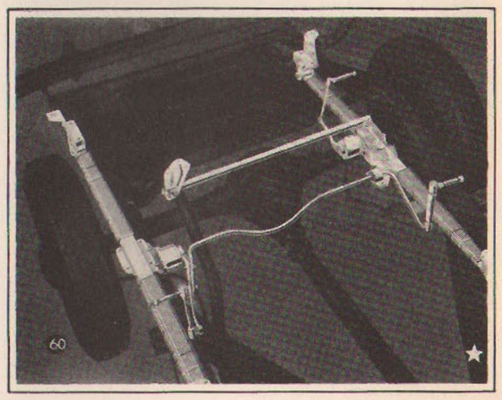


Bert: What in . . what's this all about? Somebody put the shock absorbers in the wrong place!

Tom: Depends on the way you look at it.

Bert: But what is it . . what's it all about?

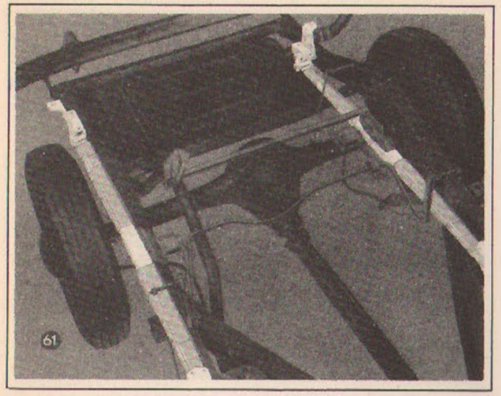
Tom: Something to give you a ride you never dreamed of. But it's not so complicated.



Tom: The entire rear suspension has been redesigned by changes in the springs, the spring shackles, the sway bar, the lateral stabilizer, and the placing of the shock absorbers . .

Bert: Whoa . . wait a minute, one at a time, Tom.

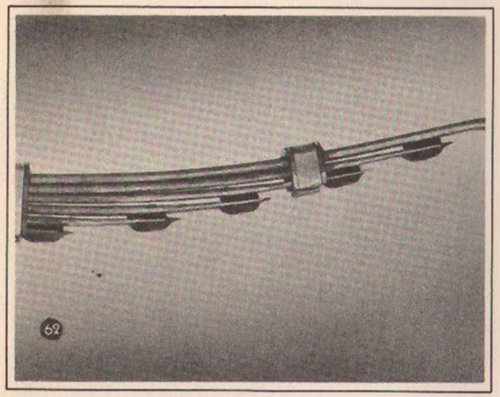
Tom: Okeh, take a minute to look 'em over. Lets look at 'em a little closer.



Tom: The rear springs are softer and wider . . and the leaves are separated by a combination of rubber and composition buttons in the cups at the end of the spring leaves.

Bert: Funniest springs I ever say. Thought the leaves had to slide on each other to give you a good ride.

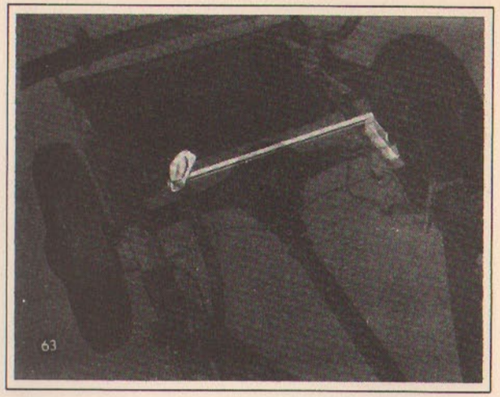
Tom: Not these.



Tom: You've got free movement with a predetermined constant friction . . static friction, anyway. Acts a lot like a coil spring. You can keep the Hotchkiss drive, though . . don't have to have a torque arm like you would if coil springs were used.

Bert: How's the rubber going to take the side thrust?

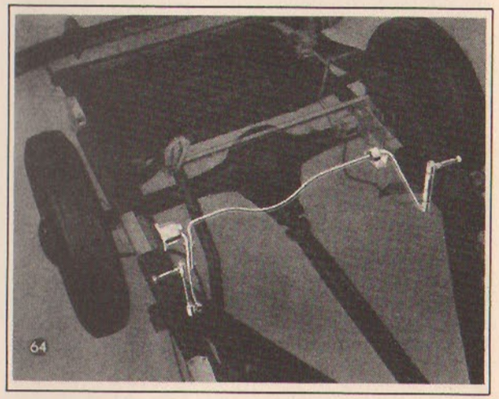
Tom: Doesn't . . clips on the springs do that.



Tom: The lateral stabilizer helps, too. You see, it's hooked to the spring pad on the left side and to the frame on the other. Prevents any cross-wise vibration or movement of the frame with relation to the axle.

Bert: Oh, I get you. I suppose it's rubber bushed.

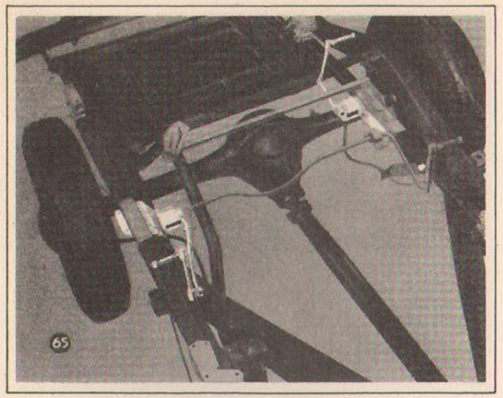
Tom: Yep.



Tom: Then there's the sway-bar for roll control. It's rubber bushed, too. It's fastened to the shock absorber on the right side and to the frame at the left.

Bert: Yeah, but what's the idea of that funny arrangement of the shock absorbers?

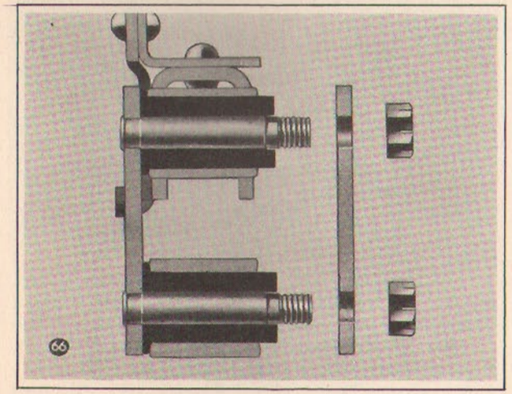
Tom: To get more control.



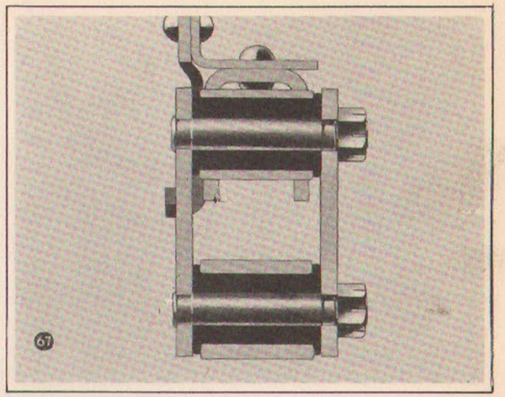
Tom: They're mounted on the axle housing instead of the frame, right one facing front and left one facing rear. The right one works with driving torque and . .

Bert: I get you . . the left one works with braking torque. Who thought that up?

Tom: Packard, my boy, Packard. But skip it.



Tom: Both front and rear shackles of the rear springs are rubber bushed. It's a tubular piece of rubber a little longer than the spring eye and flanged at one end. When you tighten the shackle bolt . .



Tom: . . the side plate is drawn in, flattening the end of the rubber core to form a flange just like you have on the other side.

Bert: I see. But what kind of service problems we going to run into with this new suspension?

Tom: Very few. There's really only one new service operation . . locating the lateral stabilizer.

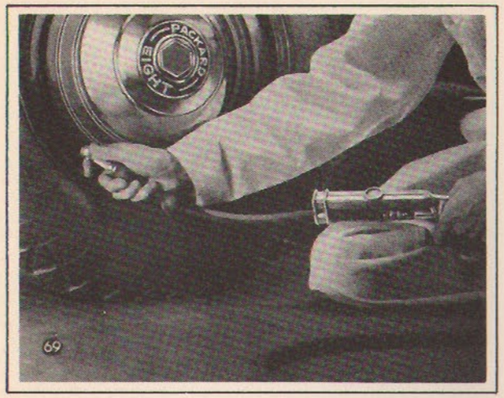
Tom: With a normal load in the front and rear seats, just loosen the bolts and let it find its own position. Then tighten the bolts. 'Sall there is to it.

Bert: Nothing else?

Tom: Do you see anything else that can get out of whack?

Bert: Nothing.

Tom: Except this . .

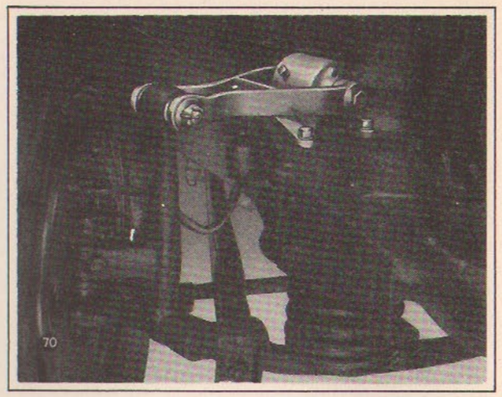


Tom: The tire pressure has to be right. The car is much more sensitive to tire pressure with this new suspension. Always be sure the tires are inflated to the correct pressure for the particular body model you're working on. You'll find a table in the film supplement.

TIRE PRESSURES

MODEL	Tire Pressure In Lbs, When Tire Is Warm		When Tire Is Cool	
	Front	Rear	Front	Rear
Six - 1600	24	26	22	23
Eight - 1601	24	26	22	23
Super-8 1604 Coupes .	26	28	24	25
Eight 1602				
Super-8 1603-4 5 Passenger Sedan ...	26	30	24	27
Super-8 1604 Victoria				
Super-8 1605	26	32	24	29
Twelve 1607				
Twelve 1608 Convertible Sedan .	28	30	26	27
Twelve 1608 7 Passenger Sedan ...	28	32	26	29
Eight 1601-A	28	36	26	33

Tires become heated and air pressure increases as the car is driven, depending on climatic conditions and car speed. For best riding qualities, tires must be inflated to recommended pressures.

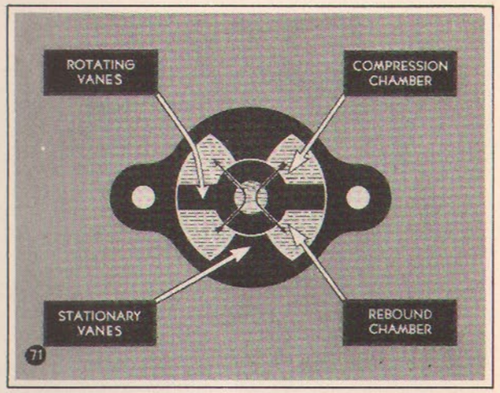


Bert: What kind of shocks are these?

Tom: The Houdaille vane type, used only on the eight.

Bert: I know the kind. Have a couple of stationary and a couple of rotating vanes.

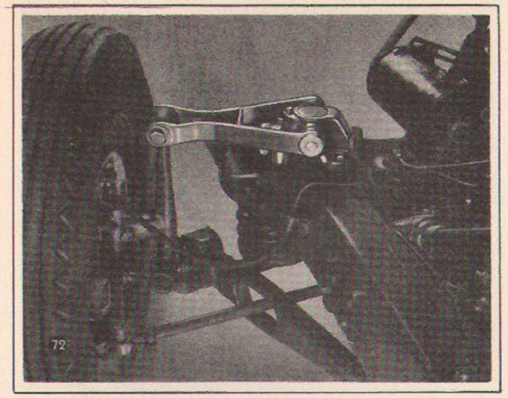
Tom: That's right.



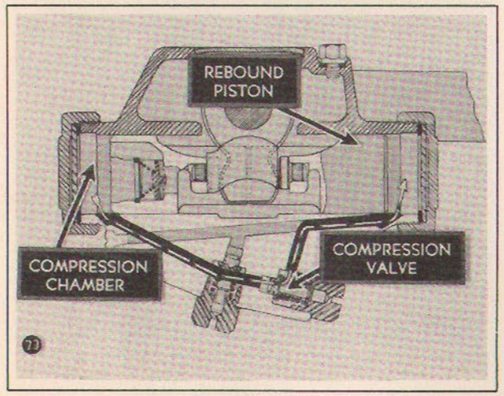
Tom: The rebound and compression chambers are connected through orifices in the central shaft which keep the pressures equalized. On rebound, for example, the fluid is forced through the orifices from the rebound to the compression chamber. The orifices are fitted with blow-off valves which relieve sudden high pressure.

Bert: They're used only on the eights, eh?

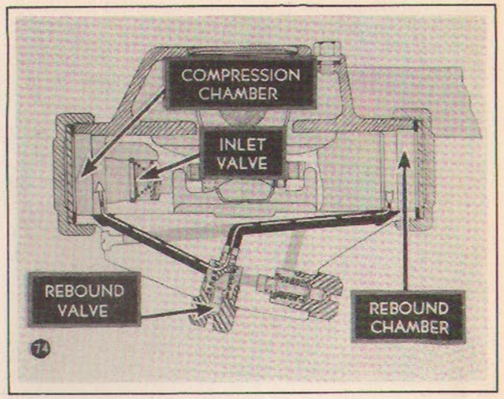
Tom: Yep.



Tom: The six, super-eight, and twelve use a new Delco end-to-end discharge type. It reduces the squish and gives you perfect ride control.



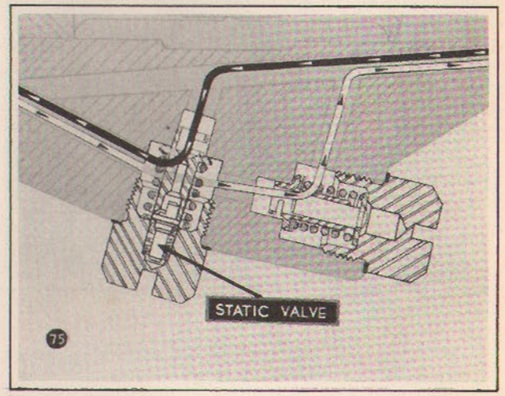
Tom: This cross-section shows you how it works. On compression, the fluid is forced out of the compression cylinder, along the passage-way, through the compression valve and into the chamber behind the rebound piston.



Tom: On rebound it works just the opposite. Fluid passes from the rebound chamber through the rebound valve to the compression chamber. The inlet valve in the piston draws fluid from the body of the shock when it's needed.

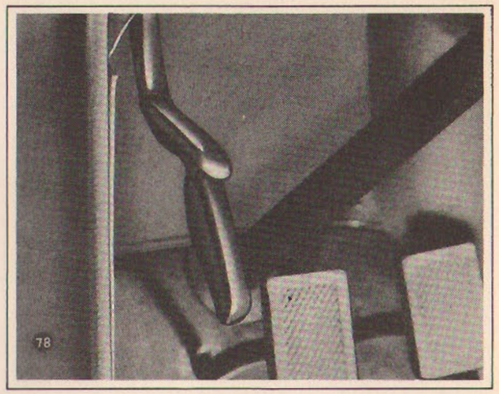
Bert: Looks like the shock used in the twelve last year.

Tom: Except for one thing.



Tom: Some of the valves have a new static valve in the orifice to supply the static friction which the interleaf friction of the springs used to supply. They're not in all the valves, though . . depends on the amount of friction you need, and that's determined by the body model. So be sure not to change shocks from one body style to another. And another thing . .

Tom: . . be sure you use the right fluid for each kind of shock . . Packard Delco Shock Absorber Fluid for the Delco type. And Packard Houdaille for the Houdaille shocks on the eight. One won't work in the other.



Tom: There's a new pistol-grip hand brake lever, and the linkage is rubber insulated. More protection against noise and vibration. There's also a larger re-inforcing rib on the brake drum to reduce squeak. That's all there is to the brakes,

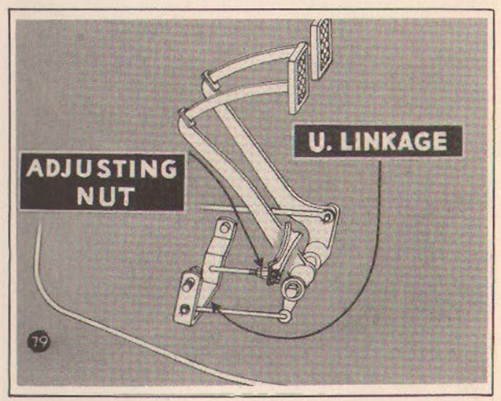
Tom: What do you think of this ride system?

Bert: I think I'd like to try it out on the road.

Tom: Sorry, we'll have to treat you like a customer. None of 'em gets a ride until we're through with fitting and delivery.

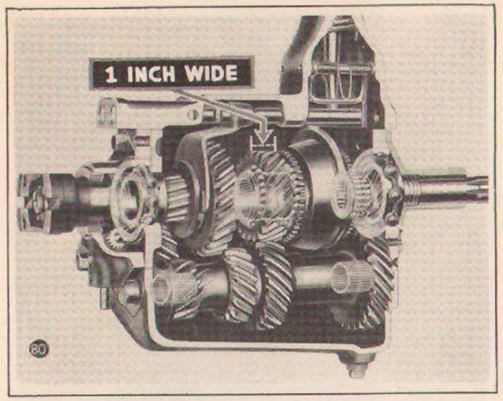
Bert: Well, we'll keep looking underneath. Any changes in the brakes?

Tom: Only minor ones.



Tom: The clutch pedal is connected through a U-shaped link between the engine and frame to give the engine a chance to flex in its rubber mounting without moving the linkage. You adjust for one-and-a-half inches free travel of the pedal, though, on all but the twelve.

Bert: How about the transmission?



Tom: Same . . except that on the six and eight the second speed gear is a full inch wide for greater tooth bearing area. Not to get back to the rear of the car . .

Tom: . . You'll be glad to hear we're using Timkens for the rear wheel bearings.

Bert: And you can lubricate 'em?

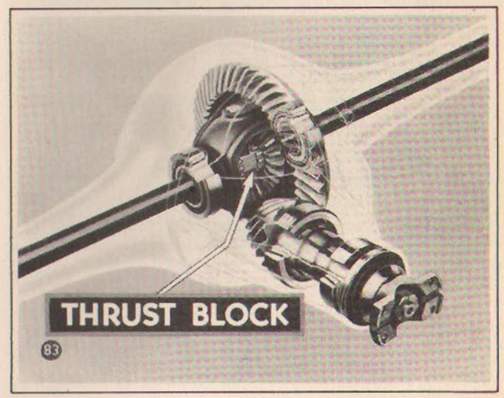
Tom: You bet you can. But there's room for fifteen times as much lubricant around 'em, so it shouldn't be necessary often . . about once every thirty thousand miles. There's a special tool to do it with . . like the one for the senior line.

Tom: When you're using the tool, or any time you have the hub off, be careful of the grease seals. If they're damaged, the lubricant will all leak out.

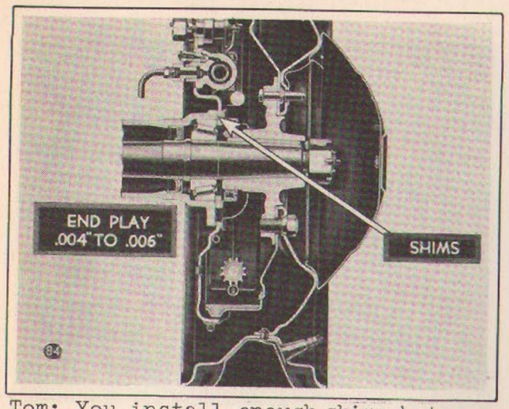
Bert: How about the wheel bearing adjustment?

Tom: It's entirely new. You see . .

S.T. 5100 Rear Axle Shaft Bearing Lubricator $4.00



Tom: There's a thrust block between the two axle shafts in the differential which transfers inward thrust on one wheel to outward thrust on the other. It makes a difference when you're adjusting for end play because the thrust block must be kept central and free to float. To make the adjustment . .



Tom: You install enough shims between the backing plate and axle housing to get the proper total end-play. Be sure you have equal shims on each side or you may get interference between the brake drum and backing plate.

Bert: So that's it. And what about the differential?

NOTE: Total end play, Six and Eight rear axles .004" to .006."

Bert: I see it isn't angle set any more.

Tom: Don't need it with the longer wheelbase and new rear seat position. But otherwise it's the same. Same preload of pinion and differential bearings.

Bert: . . like it's explained in the transmission and differential film. But how's Ed coming?

Ed: Coming along.

NOTE: Pinion shaft bearing pre-load with ring gear removed 25 to 30 inch pounds.

Differential carrier bearing pre-load spread ..... .010" - .012."

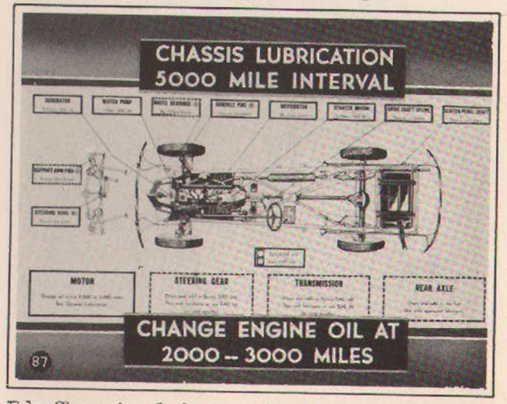
STANDARD REAR AXLE RATIO'S

Six ..... 4.54 to 1 Eight (1602) 4.7 to 1
Eight (1601) 4.36 to 1 Super Eight. 4.69 to 1
Twelve 4.41 to 1

Ed: Get to the body soon as I check the transmission and differential oil level. By the way, did you tell Bert about the new five thousand mile lubrication period?

Bert: No, he didn't, Ed. What's new about it?

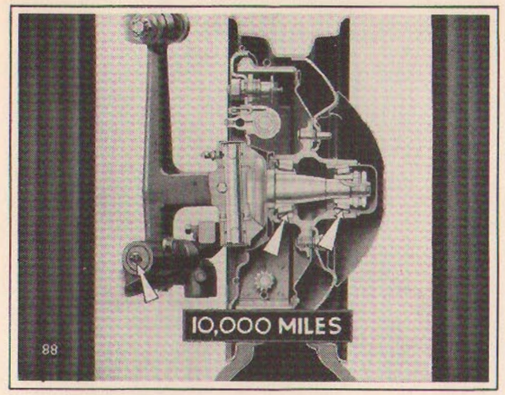
Ed: It's a whole new set-up.



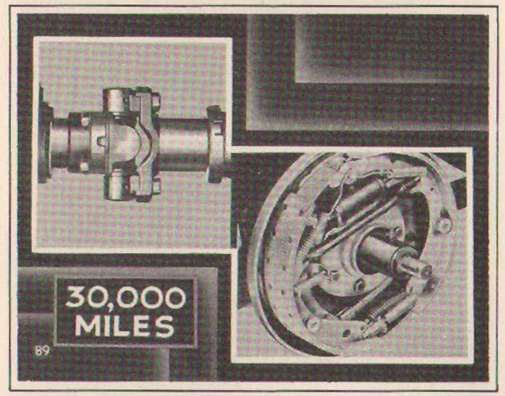
Ed: Chassis lubrication's been changed to five thousand mile intervals . . knuckle pins, steering connecting and tie-rods, universal joint splines, water pump shaft, generator, starter, distributor and the clutch and brake pedals. Engine oil's changed at two to three thousand miles, of course.

CRANKCASE OIL CAPACITY

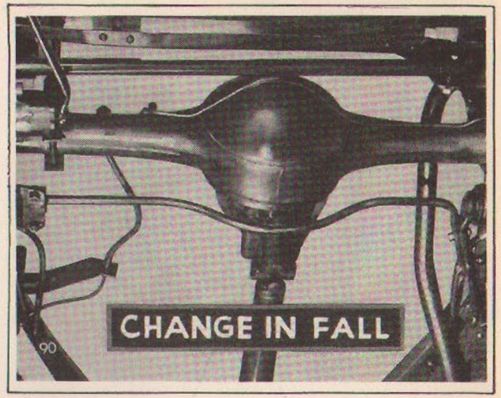
Six . - 6 qts. Super Eight - 8 qts.
Eight - 6 qts. Twelve .... - 10 qts.



Ed: Then at ten thousand miles . . . you lubricate the outer support arm pins and repack the front wheel bearings, in addition to the five thousand mile points.

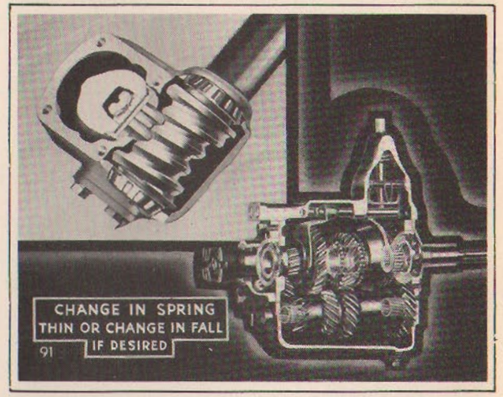


Ed: At thirty thousand miles, you repack the rear wheel bearings and disassemble and repack the universal joints. And always put in new grease seals.



Ed: The differential lubricant is changed in the fall . . using factory approved hypoid gear lubricant.

	6	8	S-8	12
Differential Capacity	6 pts.	6 pts.	6½ pts.	6 pts.



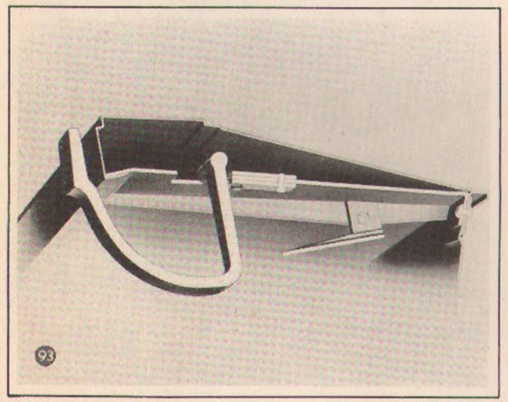
Ed: Transmission and steering gear are changed in the spring and thinned or changed in the fall.

Bert: S.A.E. ninety in winter and hundred and sixty in summer, isn't it?

Ed: Yep . . mineral gear oil . . and you use the same in the steering gear.

	6	8	S-8	12
Transmission Capacity	2 pts.	2 pts.	4½ pts.	4½ pts.
Steering Gear Capacity	11 oz.	11 oz.	¾ pt.	¾ pt.

Ed: The water pump bearings take a shot of S.A.E. thirty engine oil at every lubrication. Just add enough oil to make it run out the overflow. And, oh yes . .



Ed: . . they're using a new kind of hinge pin on the upper front door hinge on the super-eight and twelve. Got special oil-less bushings that don't need lubrication. Guess that's about all.

Tom: Good work, Ed. You know, Bert . .

Tom: Ed reads the lubrication chart like he does the funnies. He can hardly wait until one comes out.

Ed: It's the only way I can find out how to lubricate a car. I never was much good at telling when and how and with what to lubricate a fitting by the dirt on it. I like to know before I find the fitting.

Tom: And a good system to follow, too.

Ed: Well, I'll check the front end and I'll be ready to let 'er down.

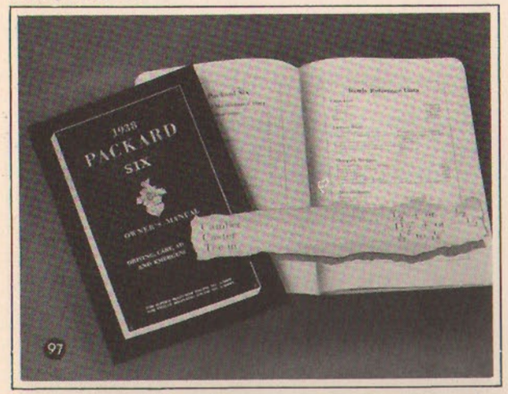
Bert: Front end! Why, Ed, this is a new car. That's just a waste of time.

Tom: Oh yeah?

Tom: What's going to happen if an adjustment's loose or a cotter key's missing? We check 'em all for tightness and cotter pins. Only takes a second.

Bert: Guess it's worth it at that.

Tom: I'll say it is. And after we check 'em on the lift, we check the alignment.

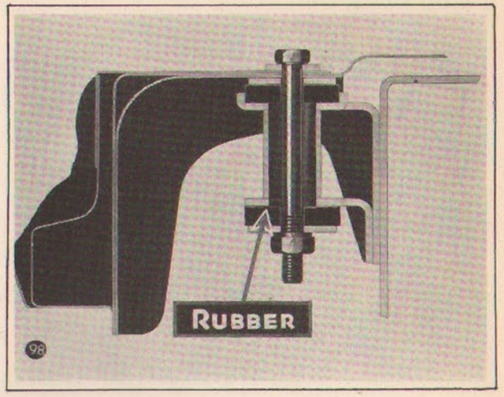


Tom: Specifications are in the Owner's book . . right here. Pays to check 'em all . . caster, one-and-one-half degrees plus or minus a half; camber, one half plus or minus a half and toe-in, zero to one sixteenth. If you change one, recheck 'em all. And don't forget to neutralize the bushings.

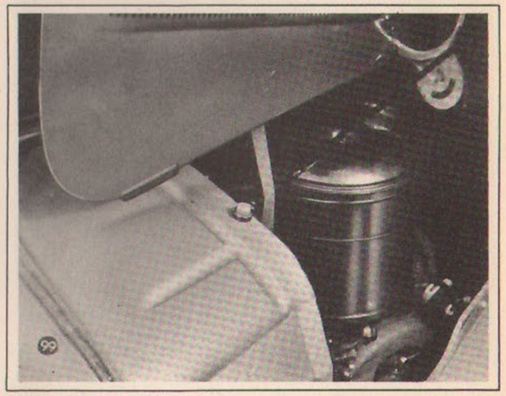
Bert: Again? All right . . what's next?

Tom: Body, I guess.

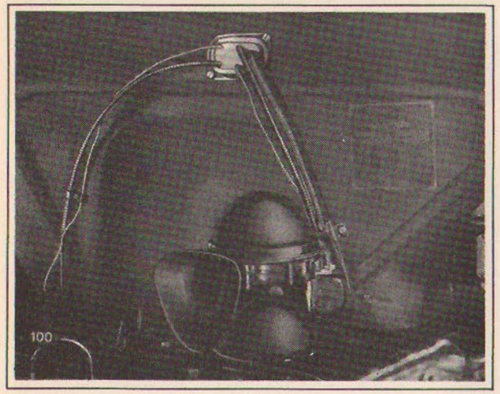
	CASTER	CAMBER	TOE IN
Six	1° to 2°	0° to 1°	0" to 1/16"
Eight	1° to 2°	0° to 1°	0" to 1/16"
Super Eight	2° to 3°	¾° to 1¼°	1/16" to 1/8"
Twelve	0° to -½°	¾° to 1¼°	1/16" to 1/8"



Tom: We're using the out-rigger type mounting with rubberized fabric spacers to insulate the body. No special adjustment on the body bolts . . just pull 'em up snug. When Ed lets her down, we'll look at the exterior appointments.



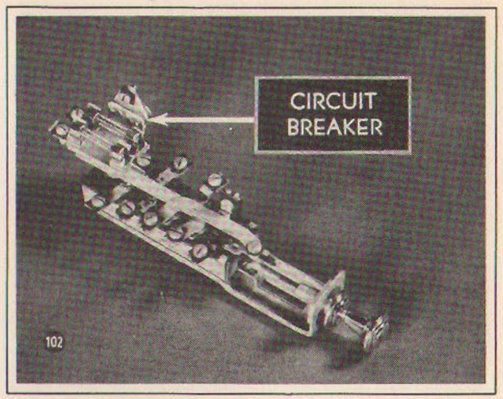
Tom: There's a rubber bumper on the hood to rest on the cowl when it's up and to keep it from rattling when it's down. But looking at it from the service angle . . .



Tom: . . let's take the wiring system. Wiring and all connections . . speedometer cable, heat indicator, battery indicator . . all go through the dash and come down the front side.

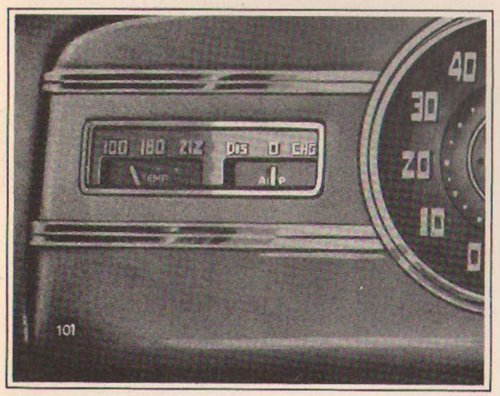
Bert: Makes a much neater job, doesn't it?

Tom: And saves time. Only one harness, and everything where you can reach it. By the way . .

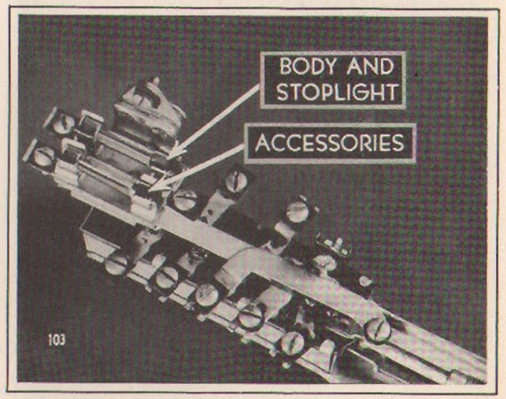


Tom: The headlamps are on a circuit breaker. But you'll notice there are two fuses on the fuse block on the Junior line.

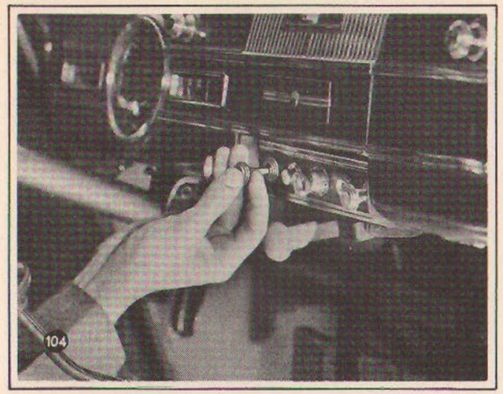
NOTE: Instrument board fuses 20 amp., 25 volt.



Tom: . . the battery indicator isn't an ammeter. It's simply an indicator that tells whether the battery is being charged or discharged. If the battery is fully charged, the voltage regulator cuts the charge, so the indicator stays about zero and the hand won't fluctuate.



Tom: The body wiring and stop light are carried on the first fuse. Second fuse carries any accessories you install . . cigar lighter, clock, and so forth. And as before, there's a cartridge fuse in the lead to the rear lights and instrument lights so the instrument lights will go out and warn you when the rear lights are out.



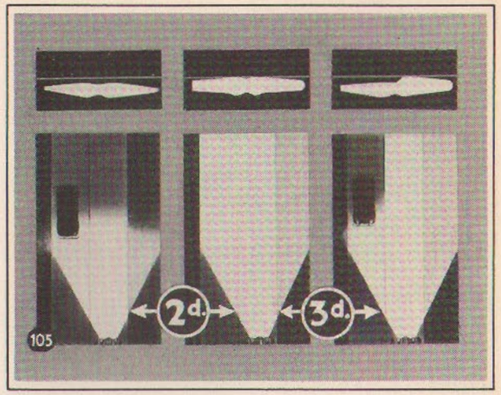
Tom: There's a change in the lighting beam arrangement of the head lamps. With the switch pulled out to the first stop, the parking, instrument, and tail lights are on.

Bert: That's the way it was before.

Tom: But here's the difference . .

LIGHTING TABLE

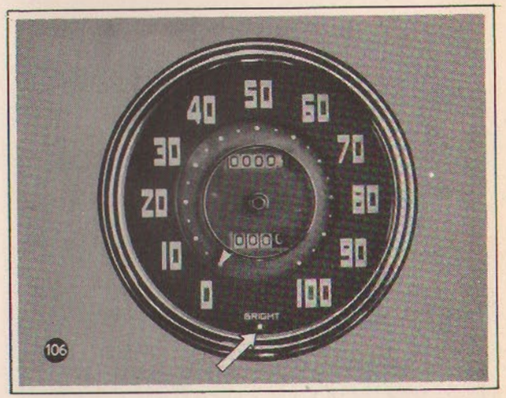
	Six and Eight		Super-8 and Twelve	
	Candle Power	Mazda No.	Candle Power	Mazda No.
Headlamp	32-32	2330-L	Right 32-32 Left 32-32	2330-L 1104
Front Parking and Fender	1-1/2	55	1-1/2	55
Instrument Board Panel	1-1/2	55	1-1/2	55
Instrument Board Clock	1-1/2	55	1-1/2	55
Instrument Board Reading	1-1/2	55	1-1/2	55
Instrument Board Signal	1-1/2	55	1-1/2	55
Instrument Board Radio	1-1/2	55	1-1/2	55
Instrument Board Htr. Switch	0.8	51	0.8	51
Rear-Stop and Tail (two filament) .	21-3	1158	..	..
Rear Stop	..	..	15	87
Rear Tail	..	..	3	63
Rear License Plate	3	63	..	..
Dome	6	81	..	..
Fog Light	32	1321	32	1321



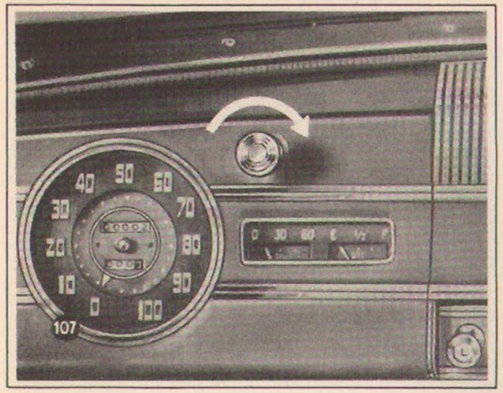
Tom: When you use the second, or city driving stop, both beams of the headlamps can be raised or lowered by the foot switch. When the switch is pulled, all the way out, the foot switch tilts down the left headlamp beam only.

Bert: Oh, a different hook-up.

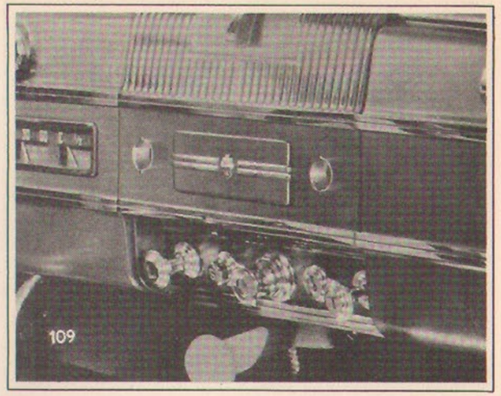
Tom: Yes.



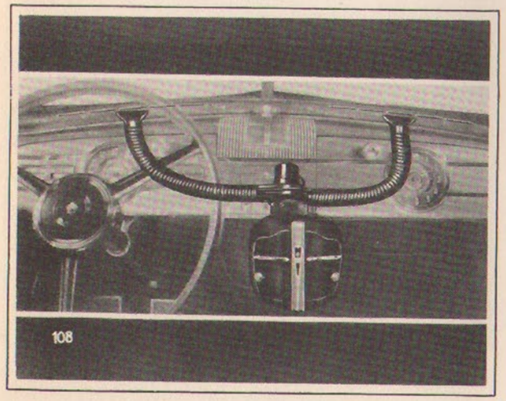
Tom: And we still have an indicator lamp behind the speedometer dial that shows whether the beams are raised or depressed.



Tom: The instrument light switch is a rheostat type to control the degree of brightness. Turning it way over to the bright position snaps on the reading lamp. You can see how it's hooked up from the wiring diagram, but it's something to remember. That's about all on the wiring. Accessories, though . .



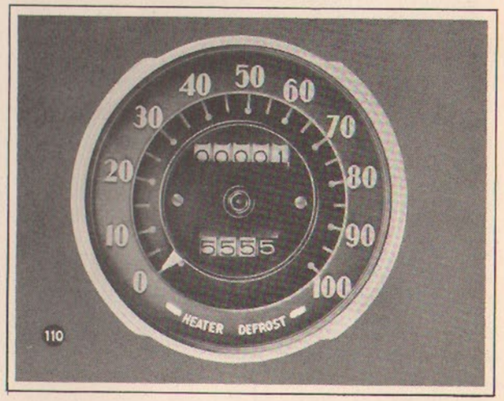
Tom: There's two bosses on the back of the instrument panel to locate the heater and defroster switches in both lines of cars. You just drill through the panel as shown in the instructions, and file out the holes. The switches on the six and eight are the same as they were last year . . with a bulb in the knob, which lights to indicate when they are on. But there's a new arrangement on the senior line.



Tom: There's two defroster vents in the windshield moulding . . one on each side.

Bert: Switches go on in the same place?

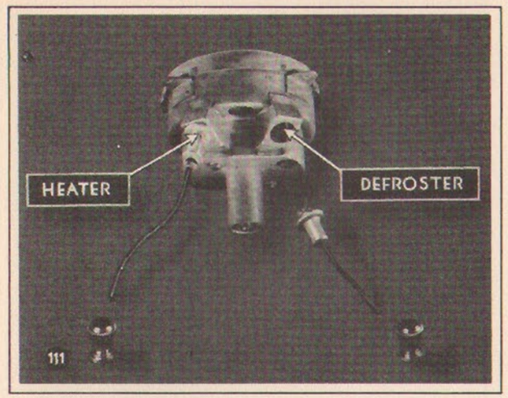
Tom: No, they're mounted on the instrument panel.



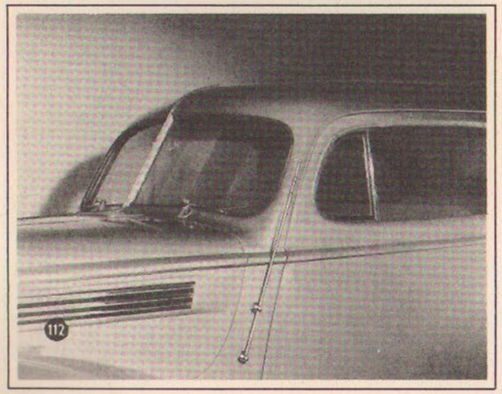
Tom: When the switch is on, the word "heater" or "defroster" shows up on the speedometer face, right in front of your eyes.

Bert: How's that?

Tom: Well, instead of putting the warning light in the knob of the switch . .

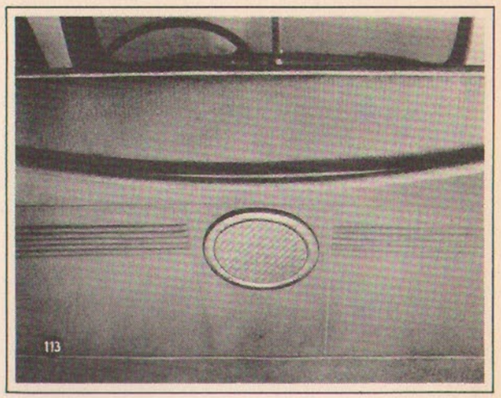


Tom: . . they put the bulb on the end of a lead so it could be mounted on the back of the speedometer dial. There's a special receptacle for the bulb that clamps right onto the dial. So, when the switch is on, the bulb lights up, and you see the word "heater" or "defroster" illuminated on the speedometer face.

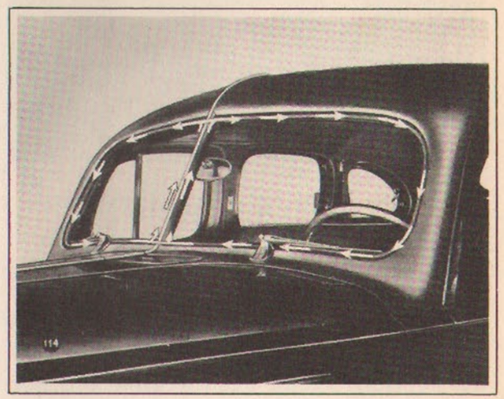


Tom: With the all-steel roof on the Junior line, we're using a cowl-type antenna for the radio. Slopes at the same angle as the windshield. Using the template that comes with the radio, you drill two holes and install it. That's all there is to it. The lead wire comes out of the lower stud. And here's something new . .

NOTE: The running board type antenna is also available, although our tests indicate the cowl type to be the more efficient.



Tom: . . there's provision for an auxiliary radio speaker in the rear compartment . . hooked onto the radio in the front compartment. The job of installing doesn't have to be handled by a trim man . . it's simple. Just follow the instructions.



Tom: The same rubber grommet's used for both panes of the windshield. Makes it absolutely water-tight. But it means you have to take out both panes to replace either one. Ah, we're just in time.

Tom: Ed's wiping his hands. He must be through. All done, Ed?

Ed: All done. Let's see, here's the check sheet . .

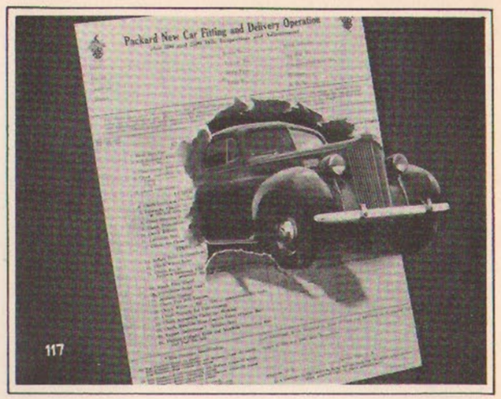
Ed: Every point's checked off. She's ready to go.

Tom: Atta boy, Ed. We know whoever gets this car will appreciate everything Packard engineers built into it.

Bert: They built plenty into it. And now, how about that ride? I'll bet it'll be perfect.

Tom: It is perfect. But there's just one way to know that every owner will find his car in perfect condition when he takes delivery.

Bert: I got you . . thorough fitting and delivery. It'll make 'em shine. You've sold me, Tom.



Bert: We'll make the sixteenth series Packard line shine as Packard has never shone before!

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