



WHAT YOU SHOULD KNOW ABOUT TIRES

INFLATION PRESSURES:

Maintenance of the correct inflation pressure is one of the most important elements in tire care. The inflation pressure recommended for any model of car is carefully worked out as the best pressure to give an efficient balance of those factors in good car performance that are affected by inflation pressure. Some of these factors are: satisfactory ride, stability, acceptable steering, even tread wear, tire carcass cord life and immunity from blowouts.

Higher inflation pressure than recommended will give:

- A harder riding car;
- A tire more susceptible to various types of bruises;
- More tire chatter, resulting in uneven wear with high inflations;
- Fast tread wear at the center.

Lower inflation pressure than recommended will result in:

- Rapid and uneven wear on the edges of the tire tread;
- A tire more susceptible to rim bruises and various types of rupture;
- Increased cord fatigue or broken tire cords;
- Harder steering;
- Softer ride;
- Higher tire temperatures;
- Tramp and shimmy troubles will be increased.

TIRE BALANCE:

Tires are marked at the factory with a red mark on the sidewall near the bead denoting the light point of the casing. The valve stem is the heavy point of the tube and should always be placed at this mark.

All casings and tubes vary somewhat in their individual amounts of off-balance and are, therefore, matched at the factory to counterbalance each other.

Due to the irregularities in tread wear, caused by sudden brake applications, misalignment, low inflation pressure, tube or tire repairs, etc., a casing and tube assembly can lose its original balance. Consequently, if front end tramp or shimmy develops, one of the first items which should be checked is the tire and wheel balance.

RADIAL RUNOUT OR ECCENTRICITY:

Front end tramp or shimmy may be caused by Radial Runout of the tire and wheel assembly. This can be seen as a variation in the radius of the tire and wheel assembly by revolving the wheel when jacked clear of the ground. It may be caused by the wheel not being centered on its bolts—by a bent or distorted wheel—by an improperly mounted tire or by a variation in the tire tread surface caused by skidding the tire. The addition of weights at the maximum radius to purposely make the assembly heavy at this point will tend to offset the effect of the runout.

TREAD WEAR:

The life of a tire tread depends largely upon the driving habits of the operator. A careful operator may obtain four times as many miles from a set of tires as a slam-bang operator. Careful surveys of tire tread wear have shown distinctly different rates of tread wear in different localities throughout the country, depending upon the type of roads, mountainous, hilly or flat, the prevailing temperatures and the amount of rain or snow.

Taking the average tire life of the country as 100, individual districts would be rated as follows:

Detroit.....	129	Boston.....	96
Chicago.....	120	New Orleans.....	90
Dallas.....	116	San Francisco.....	85
New York.....	108	Philadelphia.....	83
St. Louis.....	101	Pittsburgh.....	77

TEMPERATURE:

Temperature has a great deal to do with the rate of tire tread wear. It is not at all uncommon for tires to wear twice as fast in summer as in winter. An increase of forty degrees in temperature reduced tread mileage by 33 per cent in an actual test.

ROADS:

Smooth roads allow the tire to deliver considerably more tire life than roads in poor condition. High crowned roads produce uneven wear, the shoulders (edges) of the tread wearing more rapidly than normal.

FAST RIDING:

High speed driving has a material effect on tire tread wear. As the speed is increased, the tires are called upon to do an amount of work which is altogether out of proportion to the apparent increase in speed. Every bit of power transmitted by the tires tends to produce slippage of the tire against the road and this increases the rate of wear of the tire tread.

QUICK START:

A quick start of any car requires more horsepower than a slow start. The tires are close to the point of actually spinning. The slippage which usually occurs in a quick start grinds the rubber off the tread.

QUICK STOPPING:

Sudden application of brakes is also extremely harmful to tires. Everyone has noticed the black streaks left on the road by an emergency stop. These streaks contain small particles of rubber which have been ground off the tread. Even when these streaks are not actually visible, particles of rubber are worn off by severe application of brakes.

FRONT VERSUS REAR TIRES:

Due to the fact that rear tires are the propelling tires, they usually give only 50 to 70 per cent of the mileage of front tires. This percentage depends upon front wheel alignment, brake adjustment, and the driving habits of the operator.

WHEEL ALIGNMENT:

Improper alignment will produce very rapid and uneven tread wear. A large excess of camber or toe-in has made tires wear out ten times faster than normal.

CROSS-COUNTRY VERSUS CITY DRIVING:

It has been found that cross-country driving at an even rate of speed, will give better tread wear than city driving where frequent starts and stops greatly increase the rate of tread wear.

WHAT IS A TOURIST?

The question has been raised in connection with the Service Policy as outlined in Trade Letter 2757 as to the proper interpretation of the term "tourist."

In our "Service to Packard owners" we are changing the second paragraph, ending the first sentence after the word "services" and omitting "at the service station of any authorized Packard dealer or distributor."

In section 2 under "Adjustment" we are entering after the word "provided" "It is taken to the service station of the dealer from whom the car was purchased" and omitting "taken to an authorized Packard service station—etc."

However, we are still leaving the section which provides for service to the actual tourist and the actual tourist then becomes an owner who drives from one distributing territory into another, but **WITHIN ANY GIVEN DISTRIBUTER TERRITORY THE OWNER WILL HAVE TO GO TO THE DEALER FROM WHOM HE PURCHASED THE CAR, or ARRANGEMENTS WILL HAVE TO BE MADE FOR THE DEALER FROM WHOM HE PURCHASED THE CAR TO PAY FOR THE WARRANTY WORK OF AN ADJUSTMENT NATURE DONE BY ANOTHER DEALER IN THAT SAME DISTRIBUTER TERRITORY.**

BRAKE SQUEAK—120

We occasionally hear of a very slight high pitched squeak in 120 brakes just before coming to a full stop.

This, you will recall, was corrected in the Twelfth Series cars by the addition of a spring around the brake drum, piece No. 216588. This same spring can be used on the 120 by unscrewing the ends, cutting off 5 inches and screwing back together. This should take care of the condition on the 120 the same as it has on the 1200.

The spring must be tight on the drum to get proper results. When screwing the spring back together, be sure it is tight so it cannot separate on the road.

SERVICE MEETING

A Service Meeting will be held at the Factory in Detroit on Thursday and Friday, October 24th and 25th.

The program will consist of a thorough discussion of the mechanical repairs and adjustments of both the larger Packard cars and the One Twenty. Merchandising service for profit will receive special attention.

Packard Service Policy toward owners will be clearly outlined, and the rules and routine for the handling of all problems dealing with material and labor adjustments, between Factory and Distributors and Dealers will be described. There will be opportunity for discussion of individual problems with the various department heads of the Service Division. Everyone will see the factory.

Those wishing to drive home should arrange well in advance for their cars so that no time need be taken from the meeting for these details. Driveaways will start immediately after noon of the second day—Friday.

Service men, from both Distributors and Dealers will gain much from attendance at this meeting.

Reservations will be made at the Statler Hotel. In your letter specify whether single or double room is desired and give names of those who will attend.

GAS LINE CLOGGED OR VAPOR LOCK?

After all the instructions that have been sent out, we are still getting complaints from owners regarding vapor lock.

It seems on these jobs that everything we have suggested has been done to eliminate this condition, but still, according to the owner, there is no improvement.

We have investigated several of these jobs lately, and in every instance have found the condition caused by an obstruction in the gasoline line. Will you please, in any case of so-called vapor lock, be sure that the gas tank, all gasoline lines, fuel pump and carburetor are thoroughly cleaned? Merely blowing out the line will not correct the condition. A thorough job must be done.

SHOCK ABSORBER VALVES FRONT—120

New type rebound and compression valves are now being shipped from service stock. They assist materially in reducing the "swishing" noise which has been apparent on the front shock absorbers on the 120.

The part numbers and code symbols remain the same as previously used. The new valves can be distinguished by two holes at the bottom on the inside, whereas the original valve had only one.

FRONT WHEEL SUSPENSION—120 CASTER AND CAMBER ADJUSTMENT

The permanency of caster and camber adjustment is indeed one of the virtues of the exclusive Packard

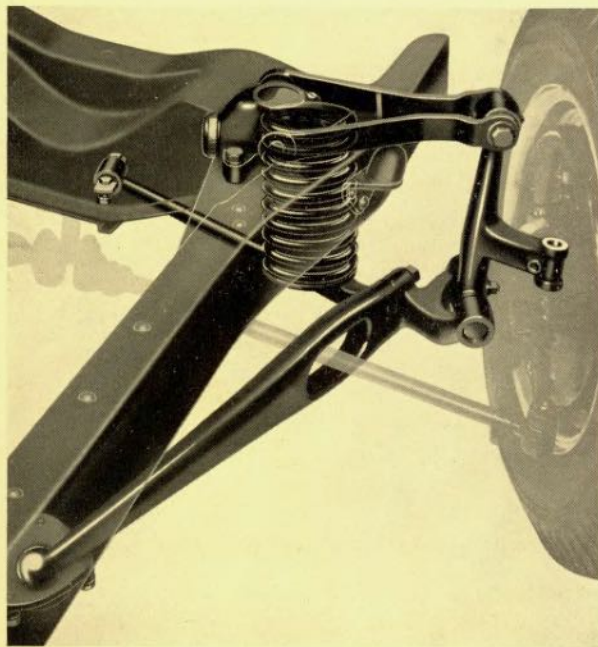
SafeTfleX independent front wheel suspension. Once properly adjusted, no further attention should ever be necessary. We realize, however, that the human element enters into the problem, and that it is possible for these cars to reach the field improperly adjusted, and also that collision, or other accidental damage, may make re-adjustment necessary.

It is imperative that the top of the frame side rails be 18 inches above and parallel with the ground before checking or changing caster or camber. Do not attempt a check-up or adjustment until the car has been loaded to meet this requirement.

The desired caster angle is 2 degrees. $1\frac{1}{2}$ degrees minimum and $2\frac{1}{2}$ degrees maximum is permissible, but the variation in angle between right and left wheels must not exceed $\frac{1}{2}$ degree. Two tapered shims are available for this purpose. Piece No. 0304699 provides an increase in angle of $\frac{1}{2}$ degree and piece No. 0304698 provides an increase in angle of 1 degree.

While we have no record of cases in which a reduction of caster angle was indicated, the tapered caster shims are actually reversible and may be used to reduce caster angle should that be necessary. These shims are made solid and undoubtedly many will prefer to use them this way, but installation can be greatly facilitated by slotting the holes, and our experience shows this to be a feasible procedure.

The desired camber angle is 1 degree with a permissible variation of $\frac{1}{4}$ degree plus or minus. Properly positioned, each wheel will have a camber angle between $\frac{3}{4}$ of a degree and $1\frac{1}{4}$ degrees, and the variation between right and left wheel will not exceed $\frac{1}{2}$ degree. Front wheel support upper bearing pilots, located in the outer end of the shock absorber arms, provide the adjustment means. One concentric and three offset pilots provide seven adjustment positions. Piece No. 303075 is concentric and provides central location of the bearing. 303076 is offset $\frac{1}{8}$ inch. 303077 is offset $\frac{1}{8}$ inch and 303078 is offset $\frac{3}{16}$ inch. The offset pilots are all reversible and may be used to increase or decrease camber angle. The length of the vertical wheel support is such that the $\frac{1}{16}$ -inch gradation of the pilots gives approximately $\frac{1}{3}$ degree change



in camber angle. It will be seen that camber angle within the specified limits can be easily obtained.

Occasionally we are advised of a tendency in certain cars to pull to the right or to the left. We believe this characteristic is definitely associated with camber angle, and our factory experience has been that the fault can be eliminated by bringing camber adjustment of both wheels within the specified limits. We urge that this procedure be followed before resorting to other expedients.

It would seem advisable to acquaint One Twenty owners with the type of adjustment used in order that they may appreciate the advantage of having these adjustments made at an Authorized Packard Service Station where the parts necessary for proper adjustment are available. Adjustments secured by bending the arms or levers of the suspension system should certainly be avoided.

REBUSHING KING PINS

When the king pin bushings have been worn to the extent that it is necessary to replace them it is almost always necessary to replace the king pins as well.

1. Jack up the front end of the car.
2. Remove the wheels, brake drums, and brake backing plate.
3. Remove the plugs at the ends of the bearing bosses in the steering knuckle taking care not to damage the plug seats.
4. Withdraw the locking bolt.
5. Drive the king pin out.
6. Press the old bushings out.
7. Push in the new bushings so that the groove on the inside will be either to the front or the rear when the knuckle is in place on the car. This position brings one of the four holes in the bushing wall in line with the hole from the grease fitting.
8. Broach the bushings after inserting, with a special broach No. ST-5046. *Never ream these bushings.*
9. Before rebuilding, clean everything with gasoline and re-oil properly.

WHEEL ALIGNMENT

The wheels must be in alignment to give steering ease and long tire mileage. Before attempting to check the car for toe-in the following rules should be followed.

1. Correctly inflate all tires.
2. Place the car on a smooth level floor.
3. Turn the wheels so they point straight ahead.
4. Adjust front wheel bearings. This can be done by tightening the nut and then backing it off two or three notches as measured by the locking washer.

The toe-in should then be measured with an accurate gauge, taking the measurements between the front wheel rims. Correctly aligned wheels show between "O" and " $\frac{1}{8}$ " toe-in. If the wheels are not bent and do not check to the desired dimensions it will be necessary to adjust the cross tubes.

1. Loosen all clamps on cross tubes.
2. Turn both rods an equal amount so that they remain the same length.
3. Check tubes for length and correct them to make them equal if necessary.
4. Securely tighten clamps when finished. Clamping screws should be vertical and to rear of tubes.

MODERN SERVICE EQUIPMENT DELIGHTS SEATTLE CUSTOMERS

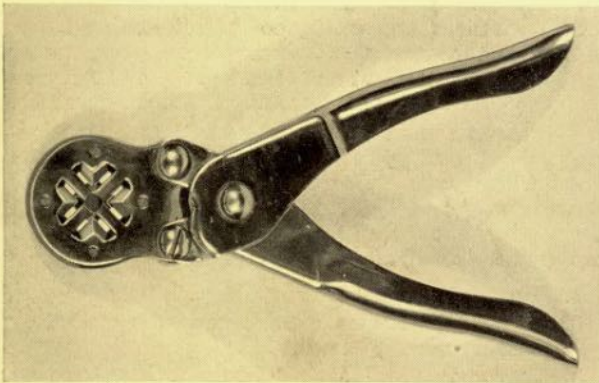


CABLE CONNECTOR TIP CRIMPING TOOL

This tool was designed for the 10th, 11th, 12th, and 14th Series, and the One Twenty Model, for crimping head and tail light cable connector tips, male and female, piece numbers 201736 and 201737.

Remove just enough insulation from cable. The exposed wire strands are then placed into male or female connector tip. Place the connector tip in center of the crimping tool, flush with the crimping jaws. Compress the handle and crimp the connector tip to the cable. This will give you a positive and permanent connection.

With this method of crimping the wires, it is not necessary to solder, and this will eliminate the time for heating the soldering iron, and does away with any corrosion which happens in soldering.



Tool No. ST-957—Price \$8.50

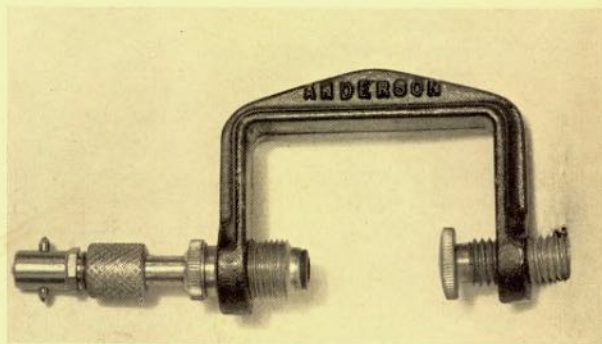
SPRING COVER LUBRICATING TOOL

Car springs sometimes become dry, even though they are equipped with metal covers. When this occurs the spring leaves move sidewise, and make a very unpleasant noise. We have adopted a simple "lubro-clamp" that by drilling a hole into the cover, or using the hole which has been provided in the cover of the One Twenty, you will be able to grease the springs under pressure.

It is necessary, however, to raise the car at the frame, allowing the springs to sag. This separates the leaves so that you can properly lubricate the springs.

This price includes a bag of fifty (50) "lubroplugs". These plugs are to be inserted in small hole drilled in the spring cover and stop the grease from coming out. When purchased separately these plugs are \$1.50 a bag less 30 per cent.

Full instructions are enclosed with every clamp.



Tool No. ST-958—Price \$2.50