

## REAR AXLE DRIVE SHAFT BREAKAGE.

The replacing of the drive shaft alone is not sufficient when rear axle drive shaft breakage occurs. When a drive shaft breaks, it signifies that the shaft has been subjected to an abnormal strain. Replacing the drive shaft does not remove the cause. Overhauling the clutch does.

All drive shaft breakages that have been brought to our attention have taken place in cars equipped with multiple disc clutches. We, therefore, suggest that the clutch action of all cars giving trouble be examined. If there is a tendency for the clutch to slip and grab, it denotes one of two things; either the clutch discs are worn, or the joint between the clutch and transmission is dry and binds.

A grabbing clutch is nearly always caused by worn bronze discs. The clutch should be removed and taken apart, and the clutch discs dressed down until they are perfectly smooth.

## TIMKEN BEARINGS FOR SERIES 9-A FRONT WHEELS.

If dealers replace the original Series 9-A front wheel bearings for Timken bearings, it is imperative that the outside bearing cup be made a press fit in the hub. Unless this can be done, it is advisable to change the hub as well as the bearings, otherwise the bearings will break down after a very short time.

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**MASTER PRIMERS.**

Every Franklin dealer is familiar with the advantages gained by the installation of Master Primers on Series 9 cars.

In order to eliminate as much cold weather trouble as possible, dealers should begin now to educate car owners on this subject and to encourage them to get their cars in proper condition.

Every owner of a Series 9-A car should be advised to install a Master Primer if his car is to be used during cold weather.

The primer, complete with all connections, can be furnished dealers for \$12.00 list; and can be installed in 4 1/2 hours, so that the cost of installing the primer is very reasonable, in view of the benefits to be derived.

Act now and have the cars ready when cold weather arrives.

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**FITTING HOODS.**

Cracked cowls have been observed on many tourists' cars which have been into the factory repair shop this Summer. These cases are generally due to improperly fitted hoods.

Dealers should check hoods on cars in their repair shops in order to keep them fitted properly and prevent cracking of cowls.

If necessary, move the hood hinge pins so that there will be a minimum clearance of 3/16" between the hood hinge and hood hinge pin.

There should also be 1/8" clearance between the hood and cowl. In some cases it would be advisable to install shims back of the hood stops on the dash, in order to obtain the proper clearance.

Approximately 1/4" clearance should be maintained between the hood and sill finish strips by raising or lowering the strips, using wood shims for adjustment.

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**COMPLAINT RECORDS.**

Maximum efficiency is not obtained from the complaint record system for several reasons.

1. Many records lack sufficient information to make them of value to the service department.

2. Many dealers do not use the complaint records, but write a letter regarding the trouble and give no reference to the number of car in question. Make out a complaint record on each case of trouble, filling in each space on the blank, even though a letter is written.

3. Complaints on paint do not always contain estimates for the necessary work. Adjustments of this sort will not be made without this information.

4. Complaint records should be forwarded to the factory as soon as trouble is discovered, not several months later.

Let each dealer consider the complaint record system a means of co-operating with the factory in eliminating troubles and improving the Franklin car.

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## SERIES 9-A STARTING SWITCHES.

From correspondence we have received from a number of dealers concerning the Series 9-A starting switch, we are led to believe that they have never read Service Bulletin #138.

At one time it was necessary to change the entire switch panel when anything happened to the starting switch. As most of the starting switch trouble in the early switches was caused by failure of the reverse mechanism, the repair described in Service Bulletin #138 was devised in order to discard the reversing mechanism. Besides the reversing mechanism practically the only part that can give trouble is the fibre switch back. These are carried in stock and can be furnished to dealers who want them.

No parts are carried for Series 9-B switches.

## FITTING CRANK SHAFT BEARINGS.

There are several matters pertaining to the fitting of crank shaft bearings that a large majority of dealers are not familiar with. When the bearings become loose, most mechanics believe that all that is necessary is to tighten the bearings. This they accomplish either by taking out a thin shim on each side of the bearing, or by filing the bearing cap. This may work out fairly well on the connecting rod bearings but not on the main bearing. The reason for this is that the main bearings do not wear the same amount, the end bearings usually wearing more than the center bearings. When the bearings are tightened, it can readily be seen that the crank shaft is sprung out of line, as the two end bearings are worn more than the center ones. This will cause the engine to vibrate and the bearings to wear out quickly. In view of this fact, we do not recommend the tightening of bearings.

Bearings should be refitted. By refitting the bearings we mean "scraping in".

When the bearings are worn slightly, the main bearing caps can be "scraped in" without removing the engine from the car. The connecting rod bearings can be "scraped in" just as easily as when the crank shaft is taken out of the engine by removing the connecting rod and installing it on the shaft from below.

When the bearings are considerably worn, however, the engine should be removed, the crank shaft taken out and trued up as carefully as possible and lapped. Then both the upper and lower bearing halves should be "scraped in." In trueing the crank shaft, always check the crank shaft and make sure that it is perfectly straight. It is impossible to "scrape in" the bearings the way they should be if the crank shaft is not perfectly straight.

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## VALVE SPRINGS.

We want to call the attention of our dealers to recent trouble that has been experienced with valve springs of new cars, while in test. The composition of some valve springs was found to vary considerably. Some springs would break while others would take a set. Broken springs of course are easily detected. Weak valve springs, however, are not so easily detected. Weak valve springs will cause a car to run erratically at low speeds, which is undesirable.

The foregoing is simply in the nature of a warning so that dealers will check the valve spring weights in doubtful cases. The valve springs when supporting a weight from 25 to 30 pounds, should have just enough tension to seat the valves.

Dealers who are in doubt about how to proceed in checking the spring weights can pursue the following method:

Make three weights from 2-1/2" shafting, 17", 2-1/8", and 1-7/16" long respectively. These weights will weigh approximately 25, 3 and 2 pounds. They can be drilled out if they weigh more. Press a 1/2" rod into a hole drilled into the end of the large piece. By drilling a 5/8" hole in the two small pieces they can be held in place without falling off the end of the large piece when the valve springs are being tested.

Test the valve springs when the valves are closed. Rest the twenty-five pound weight on the walking beam adjusting screw, the valve should remain closed. With the addition of the other two weights, the valve tested should at least just begin to open.

## TUNING THE ENGINE.

What comprises "tuning the engine"? There is more or less difference of opinion in regard to this. For the benefit of those dealers who are in doubt, we are submitting the standard "tune up" operation used in our service station which is composed of the following detailed operations:

- 1—Time valves and oil walking beams.
- 2—Clean and adjust spark plugs.
- 3—Clean and adjust Atwater-Kent contact points.
- 4—Examine and replace if necessary the Atwater-Kent lifter.
- 5—Clean carburetor strainer plug.
- 6—See that oil in engine is in good condition.
- 7—Clean and tighten battery connections, adding water to cells if necessary.

The average time for performing this work in the service station of the factory is 1 1/2 hours.

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## HOOD BANDS.

Dealers are familiar with the cracking of the cowl at the sharp corner where the sheet aluminum is bent over the dash. This cracking is caused either by neglecting to refit the hood, or by the continual hammering of the hood when it has been allowed to become loose on the hinge pins.

The break usually occurs first near the "V" blocks. -A great many dealers prefer to do nothing with this until the car is repainted, because of the unsightly appearance of a newly-painted hood band on a hood with the old paint.

The repair is very simple if the construction of the hood is altered to conform with the Series 9-B.

We are now in a position to furnish outer reinforcing bands for the hood. This is the only part necessary in making the change, with the exception of the anti-squeak material which goes at the edge of the cowl. To make the change, first remove the outer and the inner hood reinforcing bands, then file off the rear edge of the hood or move the hood hinge pins forward, whichever is necessary, until there is 1/4" clearance between the edge of the hood and the dash, all the way around. Nail a strip of 3/32" x 1/2" anti-squeak material around the cowl, with 3/4"-18 flat head nails, one edge of the anti-squeak material coming even with the dash. Apply the new hood outer reinforcing band so that it overlaps the hood 3/4". Use countersunk head copper or iron rivets to fasten the outer reinforcing band to the hood and inner reinforcing band. Use the same number of rivets as there are rivet holes in the inside band.

## DELIVERY OF PARTS.

Recently dealers in coming to the factory for delivery of cars have been in the custom of bringing large parts orders for delivery at the same time. Some of these orders have covered as high as thirty or forty items. Taking care of such large orders on so short a notice demoralizes the work in our Parts Stock Room to the extent that it holds up regular Sundry shipments.

It is therefore necessary to request dealers to mail these orders to us far enough in advance so that they can be handled a day prior to their arrival. Otherwise the orders cannot be accepted except for regular shipment by parcels post or express.

We find it necessary to limit the orders brought in by dealers to not more than ten items. Dealers should give this matter careful attention so that they will not be held up on their parts delivery when they are at the factory.

## CHANGE IN PRICE.

Hereafter the price of the Series 9-A Change Gear Hand Lever Spring, catalog No. 19150, will be twenty cents (20¢) list, instead of twelve cents (12¢).

## CREDIT ON PARTS.

After November 1, we will discontinue allowing credit for new parts returned, except for Series 9-A and 9-B cars. Dealers should go through their stock and return parts that they do not anticipate using, so that the parts will arrive at the factory prior to November 1.

FRANKLIN AUTOMOBILE COMPANY.

File this sheet.  
September 11, 1919.

## MASTER VIBRATORS AND PRIMERS.

Now is the time for dealers to begin to check over the master vibrators and primers on all cars coming into their service stations. Check the vibrators and see that they draw the proper amount of current when they buzz, as set forth in the Series 9-B Repairman's Manual and Service Department Bulletin No. 150.

## UNIVERSAL JOINT SLEEVE FASTENING ON SERIES 4, 5, 6, and 7.

There has been some difficulty experienced in these models because of loosening or shearing-off of the cap screws holding the sleeve over the universal joint between the engine and the transmission.

In a great many cases this has been taken care of by increasing the size of the cap screws. Another satisfactory way is to place a standard 2" hose clamp on the shoulder of this joint just outside the sleeve. When this hose clamp is applied, it will hold the sleeve on, regardless of whether there are any cap screws in it, and it makes a very good job.

## SERIES 9-B SUCTION YOKE HEATERS FOR SERIES 9-A CARS.

In cold climates where owners anticipate driving Series 9-A cars during the winter, we believe it will be to the owner's advantage to have the Series 9-B Suction Yoke Heater installed. The Series 9-B Suction Yoke Heater is of a great deal larger capacity than the Series 9-A and, therefore, heats the intake pipe faster, hence there is a lesser tendency for condensation to occur. The larger Suction Yoke Heater will be of special advantage in cases where owners have trouble with the fouling of spark plugs due to improper needle valve adjustment.

Parts required to make the change are the exhaust pipe, suction yoke heater intake pipe, suction yoke heater, and suction yoke heater exhaust pipes with mufflers. Price of above parts is \$18.00 net. The change can be made in about two and one-half hours.

## STARTING SWITCH LEFT ON "START" WITH ENGINE STALLED.

Notwithstanding the fact that owners are given instructions not to leave the starting switch on "Start" position with the engine in gear or stalled, there are a number of instances where owners are prone to commit this blunder. Of course, when the starting switch is left on "Start" position under the foregoing circumstances, the battery is drained and the starter is heated in many cases to a high enough temperature to melt the solder at the points where the armature wires are connected with the commutator bars. If the owner or dealer attempts to start the car by cranking, or if there is enough current in the battery to crank the engine, the molten solder will be thrown out of the commutator. Therefore, never attempt to start the engine under these circumstances. If an air hose is convenient, remove the brush cover and direct a current of air on the starter windings. Cool the windings and the commutator before attempting to start. If air is not available, then let the car stand until the starter has cooled off.

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**CLEANING BYZANTINE VELVET UPHOLSTERY ON SERIES 9-B ENCLOSED CARS.**

A number of our dealers have noticed what appears to be a discoloration of the Byzantine velvet when water or gasoline has been used to remove spots. These spots have also occurred when it has rained upon the upholstery through open windows.

The apparent discoloration is not due to dye fading. It is caused by the water or gasoline raising the nap.

When removing dirt or grease spots go over a considerable surface with a sponge. If, for instance, a grease spot is removed from a seat cushion go over the entire seat cushion with a moist sponge after removing the grease spot.

We suggest that our dealers avoid as far as possible having workmen work inside of an enclosed car with greasy overalls. The only satisfactory way to work inside of an enclosed body is to cover all upholstery with covers. It is preferable to have individual seat covers for the front seats and covers for the rear seat and sides made of some heavy material that grease and oil will not penetrate.

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**OIL PUMP ADJUSTMENT ON SERIES 9-B CARS.**

On all Series 9-B cars which have been leaving the factory for several months, the by-pass of the oil pumps has been closed. In a majority of cases it is preferable to have the by-pass closed. In cases where there seems to be a tendency for fouling the spark plugs, the oil pump can be adjusted according to the instructions contained in previous Service Bulletins and the Series 9-B Repairman's Manual.

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**REBORING CYLINDERS.**

Dealers seem to be in doubt as to how much wear of the cylinders is allowable, in other words—when should the cylinders be rebored?

Whether the cylinders should be rebored or not cannot be determined by the mileage the car has travelled. Where the oil has been changed every 400 or 500 miles, as recommended, the cylinders will not show the wear at 15,000 miles that they would if the oil had been changed only at 1000-mile intervals.

The only way to determine definitely whether the cylinders need reboring is to remove the cylinders and measure the bore with a micrometer. If the cylinders are worn .006" or more, they should be rebored and oversized pistons fitted.

In many cases where dealers overhaul Series 9 cars and where they want to make the cost of overhauling as small as possible, they endeavor to expand the pistons sufficiently to compensate for the wear. This makes a very unsatisfactory job and one that will not give satisfaction. Do not expand the pistons to fit the cylinders where the wear is .006" or more, but have the cylinders rebored and oversize pistons fitted. This costs more but it is the only way to make a satisfactory job.

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**PRICE CHANGE.**

The price of the Series 8 Spark Plug Wrench has been reduced to 50¢ list, instead of 63¢ list.

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File this sheet.  
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