

# MODEL-RD JUDSON SUPERCHARGER

This data should be delivered to the purchaser upon completion of installation

## INSTALLATION INSTRUCTIONS - RENAULT DAUPHINE

INSTRUCTIONS ARE PRESENTED IN A STEP BY STEP SEQUENCE. FOLLOW INSTRUCTIONS CAREFULLY.

**ENGINE TUNE-UP**—The engine should be tuned or set-up as follows: (This can be done either before or after the supercharger has been installed on the engine.)

**VALVES**—Adjust the intake valves to .006 and the exhaust valves to .008.

**SPARK PLUGS**—The condition and quality of the spark plugs are extremely important on a supercharged engine. Spark plugs should be removed from the engine and examined carefully. If plugs show signs of wear they should be replaced. For maximum trouble free performance we recommend the use of Champion Spark Plug No. L-10 or L-7. Spark plugs should be gapped to .020 to .023.

**IGNITION**—The distributor points should be set at the stock setting .016 to .018 (50 to 54 degrees cam dwell). Set points before timing. Ignition timing on the 1957 and 1958 models should be set so that No. 1 cylinder fires when the notch in the crankshaft pulley is  $\frac{1}{2}$ " ahead (to the left) of the pin protruding from the engine. The ignition timing on the 1959 models with the vacuum advance to the distributor should be set at top dead center. Adjust timing at idle speed.

1. Remove air cleaner from carburetor. Remove fuel line leaving short rubber hoses on carburetor and fuel pump. Remove two heat tubes running from intake manifold to carburetor. Remove throttle linkage from carburetor. Remove carburetor from engine. (Depending upon type of wrench used, it may be necessary to remove valve cover in order to remove the inside nut from carburetor.) Loosen generator on bracket and remove drive belt.



2. With hammer bend over throttle spring anchor that is welded to bottom of exhaust manifold near pan. On the 1957 models, place asbestos shield over two small tubes protruding from exhaust manifold on engine. Asbestos shield is placed on 1958 and 1959 models as shown in photo using hook placed around intake manifold and through grommet in shield. Bolt intake adaptor to manifold as shown using new gasket between adaptor and manifold. (Do not use original thick fibre spacer.) The intake adaptor is bolted to the 1957 model equipped with the welded manifold by using the 3" and 2 $\frac{1}{4}$ " bolt and locknuts furnished with the kit. On the 1958 and 1959 models, it is necessary to remove the studs from the intake manifold and insert new studs furnished with the kit. The short end of the stud has a metric thread and is inserted into the manifold. The short stud is placed next to the engine and the stud can be inserted tightly by placing two standard 5/16" nuts on top end of stud and tightening one nut against the other. On 1957 models pull generator up to within approximately  $\frac{1}{2}$ " of exhaust manifold at rear and tighten bottom adjustment bolt. On 1958 and 1959 models, pull generator up as far as possible.

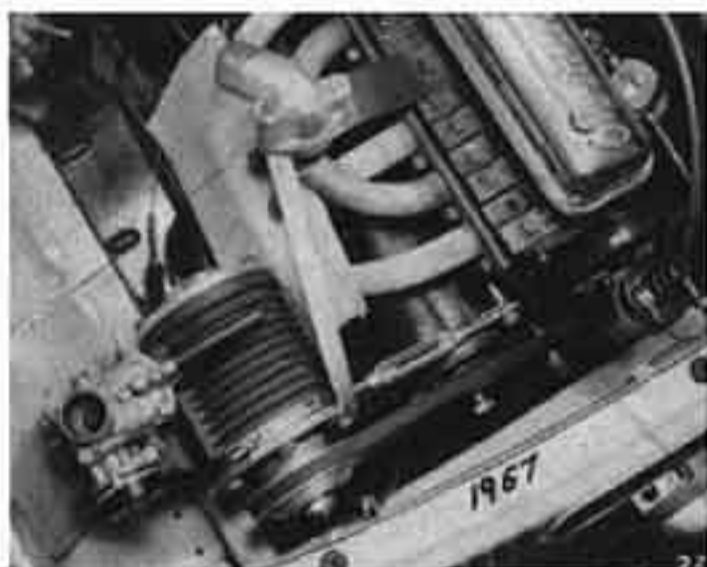
3. Remove the two motor mounting bolts from the left-front motor mount. It may be necessary to place a jack under the engine and raise the engine until load is removed from these bolts so that they can be removed. Discard the original bolts, nuts and washers. Place flat washer on 5/16" x 1 $\frac{3}{4}$ " hardened bolt furnished and insert in motor mount. The rear muffler support bracket which is fastened to the motor mount on 1958 and 1959 models can be reformed so that it can be fastened to the back of the supercharger support.



4. Install lubricator as shown on flat spot of fender section using three screws furnished. (Two screws on outside bracket, one screw on top inside bracket). Drill  $\frac{1}{8}$ " holes for three screws. Screws are self-tapping type and make their own thread in the sheet metal. Place jar of lubricator at angle so that bottom does not rub on frame. Tighten clamping bolts on side of hangers.



5. Assemble carburetor on supercharger as shown using three gaskets and original spacer. Place one gasket furnished with kit between original fiber spacer and supercharger and two gaskets between spacer and carburetor. Bolt carburetor to supercharger using the two  $2\frac{3}{4}$ " bolts furnished. Place copper sealing gaskets under heads of bolts and under special locknuts (4). Remove original throttle arm from the carburetor, place  $\frac{5}{16}$ " lockwasher on throttle arm, place new throttle arm over shaft on top of lockwasher, replace original nut and tighten. Make sure that the new throttle arm is placed on the carburetor in the position shown in the photo. Install throttle lever on supercharger as shown bolting support brace to supercharger with  $\frac{5}{16}$ " x  $\frac{1}{2}$ " bolt and lockwasher (one end of lever is inserted in slot of throttle arm on carburetor and other end in hole of supercharger housing). Remove original main jet from carburetor and replace with main jet No. 110 furnished with the installation (this jet is covered by a large brass cap located halfway down body of carburetor and it is necessary to remove this cap in order to remove the jet). The main jet in the carburetor must be replaced with the jet furnished with the kit.



6. Place supercharger support protruding from bottom of supercharger on the bolt previously inserted in the motor mount. Place  $\frac{5}{16}$ " flatwashers over bolts and apply special locknuts on both bolts. Do not tighten these two nuts securely until later.

Install bar support from front bolt on supercharger to the outside bolt on the manifold adaptor as shown in the photo. The bent end of the support bar is fastened to the supercharger and the other end is fastened under the head of the bolt on the manifold adaptor. There are two braces included with the kit. The longer of the two braces is used on the 1957 model and the shorter of the two braces is used on the 1958 and 1959 models. On 1958 and 1959 models it will be necessary to remove the small lip around the bolt hole in the manifold flange so that the support will seat properly. This can be done with a hammer and a screwdriver. Do not tighten the bolts holding the brace until the belt has been installed. Install drive belt around pulley on crankshaft and pulley on supercharger. Remove the nut and lockwasher from top generator support bolt. Insert straight end of turnbuckle in hole on side of supercharger. On 1957 and 1958 models, the eye of the turnbuckle is placed on the generator bolt. On 1959 models, the lug welded to the turnbuckle is placed on the generator bolt. Replace the original nut on the generator bolt (discard lockwasher). Obtain proper tension on belt by adjusting turnbuckle. When proper tension is obtained on belt, lock the turnbuckle with the locking nut. The drive belt will tighten under heat and load and it is extremely important that an allowance be made for this. If belt is too tight it will place additional stress on the bearings in the supercharger and generator. (See information under drive belt adjustment). Fasten support bar securely by tightening bolt on supercharger and bolt on manifold adaptor. Tighten belts supporting supercharger to engine mount-using a socket wrench with extension.

7. Fasten connecting hose from supercharger to engine intake manifold adaptor as shown in photo using clamps. Install carburetor heat tubes. Two sets of heat tubes are furnished with the installation. The heat tubes marked in red are to be used on the 1958 and 1959 models. Use new brass ferrules furnished with the installation and original nuts for carburetor connection. Heat tubes are formed to fit and *should not be altered*. These tubes slip into the sleeves welded to manifold like the original ones removed (engine will not run properly unless tubes are used). Connect throttle by placing original pin through original throttle yoke and extension cable loop supplied with supercharger throttle linkage. Make sure that the throttle cable does not rub on the starter cable. Hook one end of original throttle spring in bottom hole of throttle linkage as shown in photo No. 5 and hook looped end into louvre at rear of car directly in line with the throttle connection. If the throttle bar hits the fender well in the open position, the well should be flattened with a hammer to provide clearance.



8. Install new gas line from fuel pump to carburetor. Bend the copper line as shown in illustration. Connect the vacuum advance line from the distributor to the carburetor on 1959 models by reforming the original vacuum advance line and using the 3/16" copper tubing and hose connection furnished as an extension. Connect oil line from brass fitting on lubricator to brass fitting on supercharger located under the carburetor flange. Use aluminum ferrule on both ends of oil line. Mount air cleaner on the carburetor. The brass vent on the carburetor fits into the hole in the air cleaner mounting flange. Fill the supercharger lubricator with SAE No. 10 detergent motor oil. Fill float chamber of carburetor by pumping lever on side of fuel pump. Start the engine and adjust the lubricator in accordance with the instructions under lubricator adjustment.



#### INSTALLATION IS COMPLETE

NOTE: A special installation kit is not available for the Renault Dauphine equipped with the Ferlec clutch due to the small number of these models in operation. If the car is equipped with a Ferlec clutch, it is necessary to move the control case 1½" to the left and towards the rear of the car to the second set of holes in the case mounting bracket. The control lever assembly of the Ferlec must then be reworked to accommodate the supercharger.

## DATA

**IMPORTANT**—Use No. 10 detergent motor oil in the lubricator. Do not use any brand of upper cylinder lubricant other than Marvel. If Marvel is not used, any good grade of No. 10 detergent motor oil is satisfactory. It is not necessary for the engine to be running when the lubricator is filled with oil. Do not start the engine unless the lubricator is filled with oil and connected to the supercharger. Due to the fact that the gasoline has been drained from the carburetor, it will be necessary to prime the carburetor by working the lever on the side of the fuel pump two or three times which will fill the float chamber of the carburetor. As soon as the engine is running adjust the lubricator as per instructions under lubrication. After engine is warm set idle and mixture on carburetor. Do not exceed fifty-five (55) miles per hour for first 100 miles of operation after supercharger has been installed. Although supercharging does increase top speed its principal purpose is to increase torque (acceleration, passing ability, maintaining speed on hills and mountains, reduce gear changing, and a higher average cruising speed). Top speed is determined in general by

engine design and we therefore recommend that the normal top speed of 68 miles per hour not be exceeded for an extended length of time.

**LUBRICATOR ADJUSTMENT**—(Correct lubrication is very important): To adjust the lubricator proceed as follows: Start the engine, remove the top of the lubricator by unscrewing the small cap on the very top. Here you will find a small knurled knob. This should be unscrewed a half turn to get the oil flowing and then adjusted with your fingers until the lubricator is putting out approximately one drop of oil every four seconds at idle. This can be timed through the small window on the lubricator. Screw clockwise to decrease the amount of oil consumption. Oil consumption should run one quart of oil every 800 to 1,000 miles and the oil level should be checked occasionally so that you do not run out of lubricant. Engine and lubricator should be warm while adjustments are being made. The oil from the automatic lubricator is to oil the bore of the supercharger housing and also acts as an upper cylinder lubricant. The two main rotor bearings are greased and sealed at the factory for life. Use any good grade of SAE

No. 10 detergent motor oil or Marvel upper cylinder lubricant. Do not use any other type or brand of upper cylinder lubricant other than Marvel as most top oils are primarily a cleaner and not a lubricant. In making a long descent from high altitudes it is advisable to open the throttle occasionally to insure adequate lubrication because of the high vacuum. The lubricator will require readjustment after approximately two hundred miles or if you switch from Marvel oil to motor oil. Oiler should be adjusted and left alone as any variance which will occur will be slight and is averaged out over the vacuum range of the engine.

**FUEL**—Although it is not necessary we recommend the use of premium grade or high octane gasoline for best performance on the supercharged engine.

**AIR CLEANER**—Wash air cleaner in gasoline every 3000 to 5000 miles.

**DRIVE BELT ADJUSTMENT**—Drive belt is adjusted by loosening brace bolt at manifold adaptor and adjusting turnbuckle. This tightens belt on the generator also. The arc of contact across the generator pulley with the drive belt is more than ample for the requirements of the generator due to the fact that the generator is driven from the tension side of the belt and the contact pressure on the generator pulley increases when the engine is running. Do not place the generator closer than  $\frac{1}{2}$ " at closest point from exhaust manifold of engine. In case of drive belt breakage the supercharger will cease functioning but the engine will continue to operate as an unsupercharged engine. The drive belt is a standard size and is available everywhere.

**LACK OF PERFORMANCE**—Providing the installation has been properly made and in accordance with these instructions, maximum performance after supercharging is a function of engine condition and tuning. Engine deficiencies often unnoticed before supercharging sometimes prevent the increase in performance that can be expected from the supercharged engine. Because of this, the supercharger will often be blamed for poor performance when such is not the case. If the installation has been made in accordance with the instructions and the performance is poor it is usually due to one of the following: A leak in the induction system, improper valve clearance or a faulty ignition system. A leak in the induction system results in a poor idle, a rough running engine, hard starting and a noisy supercharger. The manifold adaptor must be bolted securely to the intake manifold and both hose connections must be tightly clamped. The copper bolt gaskets furnished with the installation must be used under both the head of the bolt and

**IDENTIFICATION DECAL**—An identification decalcomania for placing on the inside of a window is included with the installation. See instructions for mounting on back of decal.

**NOISE**—The supercharger may sound noisy when it is first started or within the first half hour of operation. This noise is nothing to be concerned about and will disappear completely within the first 20 to 40 miles of hard driving. A slight clicking noise sometimes at idle or after backing off of the throttle after a hard run is characteristic of a vane type supercharger.

under the nut fastening the carburetor to the supercharger. These copper gaskets prevent leakage at this point. Special locknuts are furnished with the installation kit and lockwashers are not necessary or required. The condition and quality of the spark plugs are extremely important on the supercharged engine. To avoid detonation and for best performance Champion I-10 or L-7 spark plugs should be used. Incorrect timing and point setting as well as faulty plugs affects performance more on the supercharged engine than on the unsupercharged engine. Best performance for dependability is obtained from the stock engine. We do not recommend increasing the compression ratio, changing the cam or making any other basic engine modifications on the supercharged engine.

**FOR CONTINUED HIGH SPEED DRIVING**—If speeds of 70 MPH or over are to be maintained the exhaust pipe and muffler on the Renault Dauphine engine should be replaced with an Abarth exhaust muffler which is available through all Renault dealers. The Abarth exhaust muffler prevents excessive back pressure and offers less restriction. For normal driving it is not necessary to replace the Renault exhaust muffler.

**TIRE PRESSURE**—For best performance we recommend that the tire pressure be increased to 20 lbs. in the front tires and 25 lbs. in the rear tires.

**WARRANTY**—The Judson Supercharger is warranted to be free from defects in material or workmanship under normal use and service. In case of failure of any part within ninety (90) days from date of original purchase by user, due to defective material or workmanship, we will repair, replace the defective part or furnish a new supercharger free of charge, F.O.B., Conshohocken, Pa. Factory approval must be obtained before returning supercharger or parts for replacement. All transportation charges on supercharger or parts must be borne by purchaser.

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The Judson Supercharger is fully covered by patents and patents pending

**JUDSON RESEARCH AND MFG. CO.**

CONSHOHOCKEN, PENNSYLVANIA

## SERVICE DATA

# JUDSON MODEL RD SUPERCHARGER

**VERY IMPORTANT:** In reassembling the supercharger, make sure that the end covers are assembled to the main housing in exactly the same relationship as when removed. Make a note of their position on the housing before removing.

### Disassemble the Supercharger in the Following Manner

1. Remove the supercharger from the engine and place on a clean bench. Remove the carburetor and throttle linkage from the supercharger.
2. Remove the six bolts holding on the rear cover.
3. Use two 5/16" USS bolts and screw into the tapped holes in the rear cover. These act as jack screws to remove the rear cover and bearing from the shaft. Jack screws should be tightened slowly and the same amount on both sides of the cover so that the bearing and cover will be pulled off the shaft straight.
4. After the rear cover has been removed the vanes can be removed from the rotor. **IMPORTANT:** Before removing the vanes take special notice of the slots in the vanes. Vanes must be replaced in the same manner or supercharger will not function. Slots in vanes face to the center or toward the shaft.
5. To remove the rotor assembly, remove the six bolts holding on the front cover and the front cover can be removed from the housing with the complete rotor assembly.
6. To remove the front cover from the shaft: remove the nut from the shaft and then the pulley. Rotor shaft can then be forced out of the front bearing using an arbor press.
7. To remove the bearing and seals from the front cover: remove the snap ring, drive out the bearing from the inside, drive out seals in same manner. Take notice of the relative position of the two seals so that they can be replaced correctly.
8. In replacing the end cover on the shaft, seals should be carefully worked over the spacer on the shaft to prevent damage.
9. To remove the bearing from the rear cover: push out cap from inside of housing, remove the snap ring from the housing, push out bearing from inside of cover. In reassembling, the cover cap is forced into the groove by striking in the center. Edge of cover should be coated with Permatex prior to replacement.

