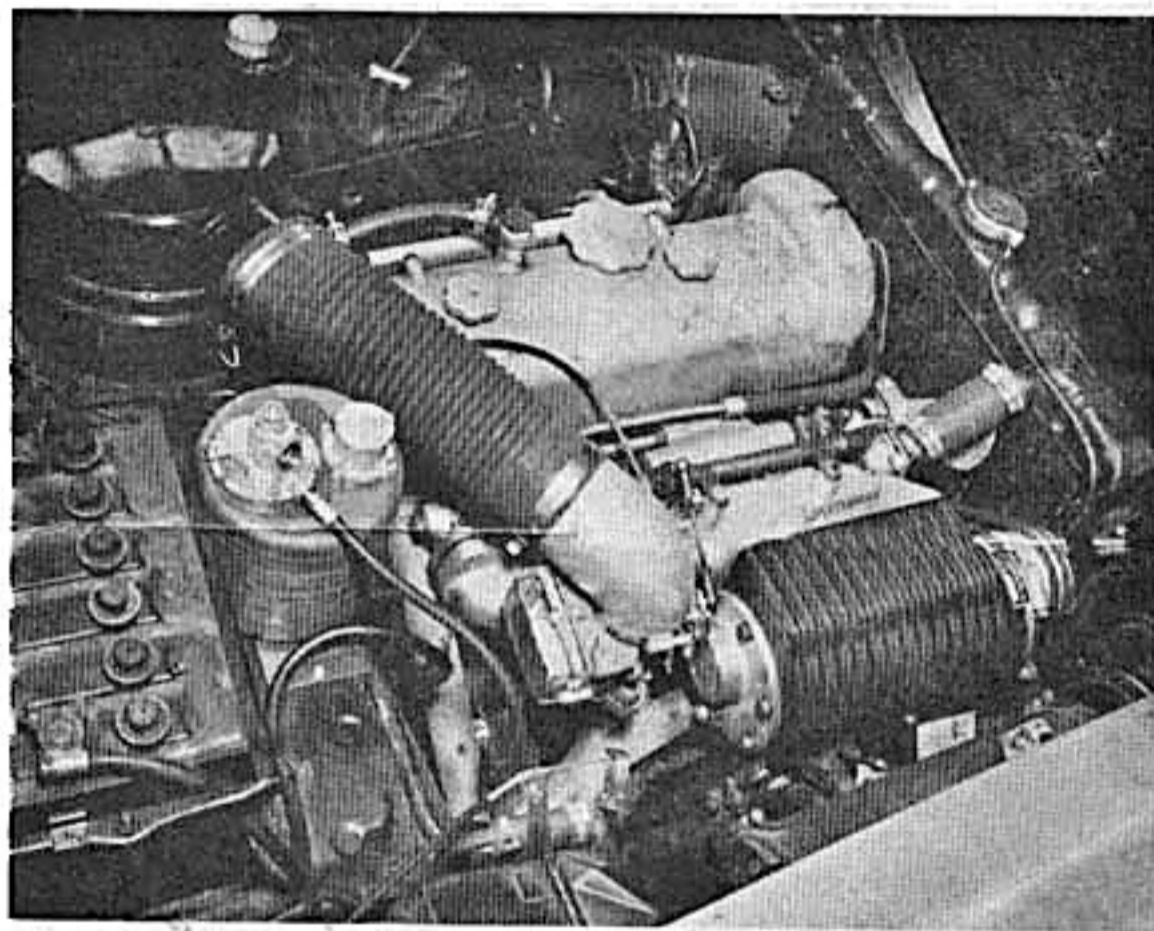


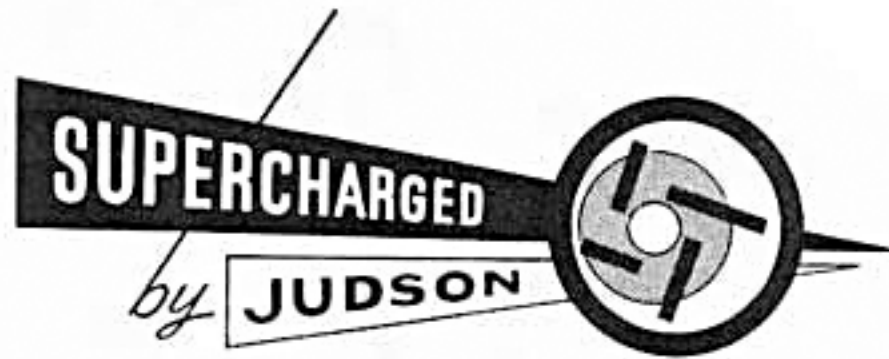
*Judson*  
*Supercharger*  
*Model 190*



INSTALLATION INSTRUCTIONS — MERCEDES BENZ 190 SL

OPERATION DATA — SERVICE — PARTS LIST

**JUDSON RESEARCH AND MFG. CO.**  
CONSHOHOCKEN,  
PENNSYLVANIA

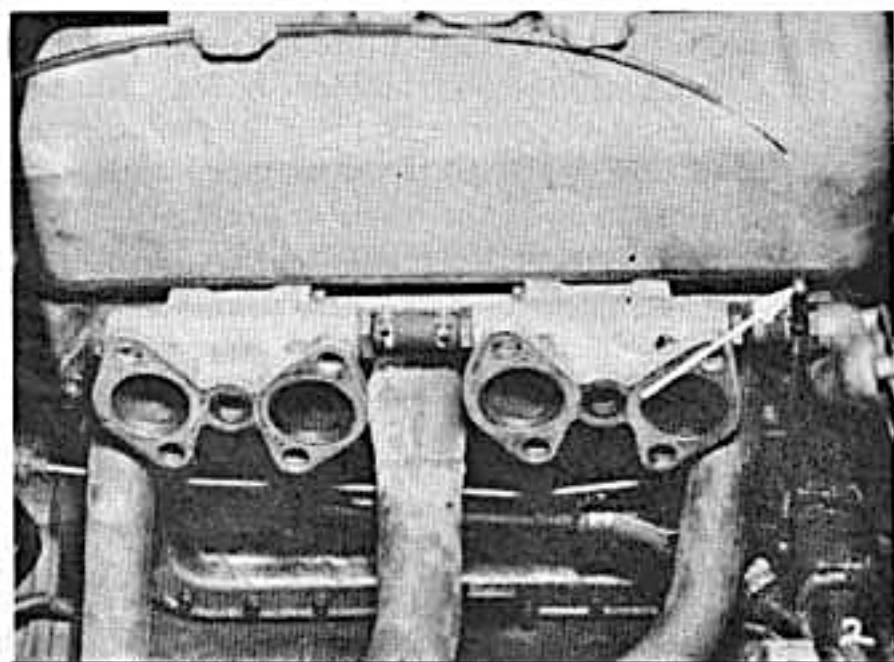


This data should be delivered to the purchaser upon completion of installation

# MODEL 190 JUDSON SUPERCHARGER

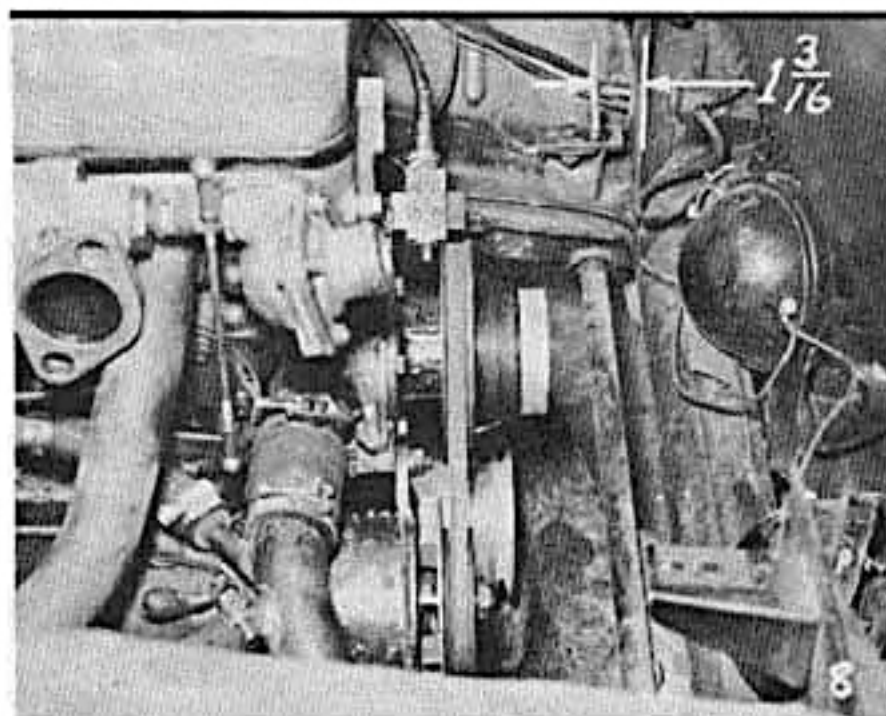
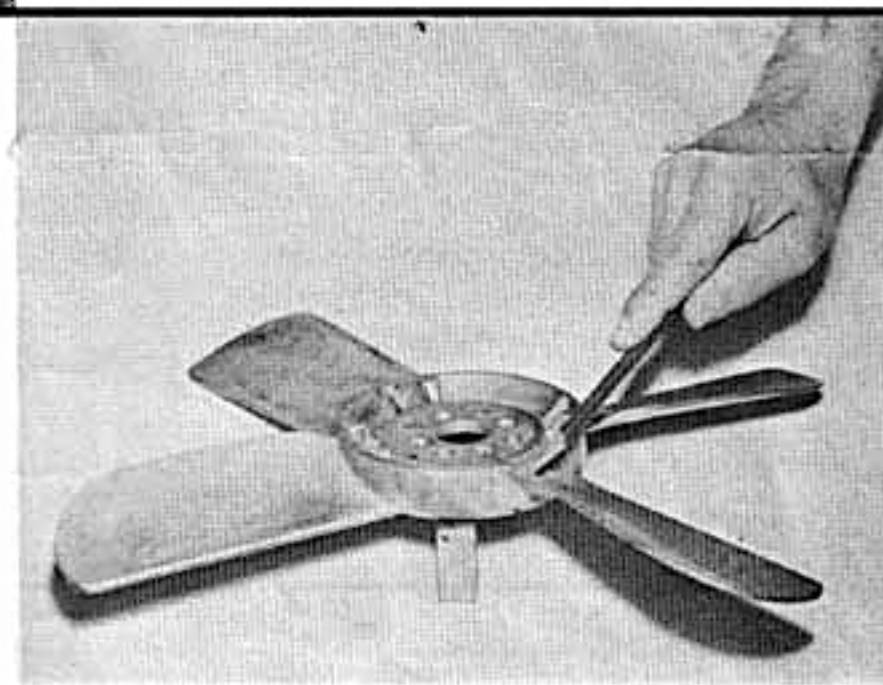
## INSTALLATION INSTRUCTIONS

Read installation procedure and information under data before proceeding with the installation. Instructions are presented in a step by step sequence. Refer to photo for illustration of each step. Do not remove seals from supercharger until ready for mounting.



1—Remove flexible hose connecting air cleaner to air box on carburetor.  
Remove top of air cleaner.  
Remove gas line from fuel pump and carburetor.  
Remove carburetor drain lines.  
Remove air box from carburetors.  
Remove carburetors.  
Remove carburetor support tube from engine.  
Drain and remove radiator. Remove bottom radiator support studs.  
Remove fan (four bolts).  
Remove belt by loosening generator bracket.  
Remove pulley from crankshaft. Use American standard  $\frac{3}{4}$ " socket if metric socket is not available with car braked and in fourth gear.  
Remove carburetor drain tube guide from right hand bottom side of radiator.

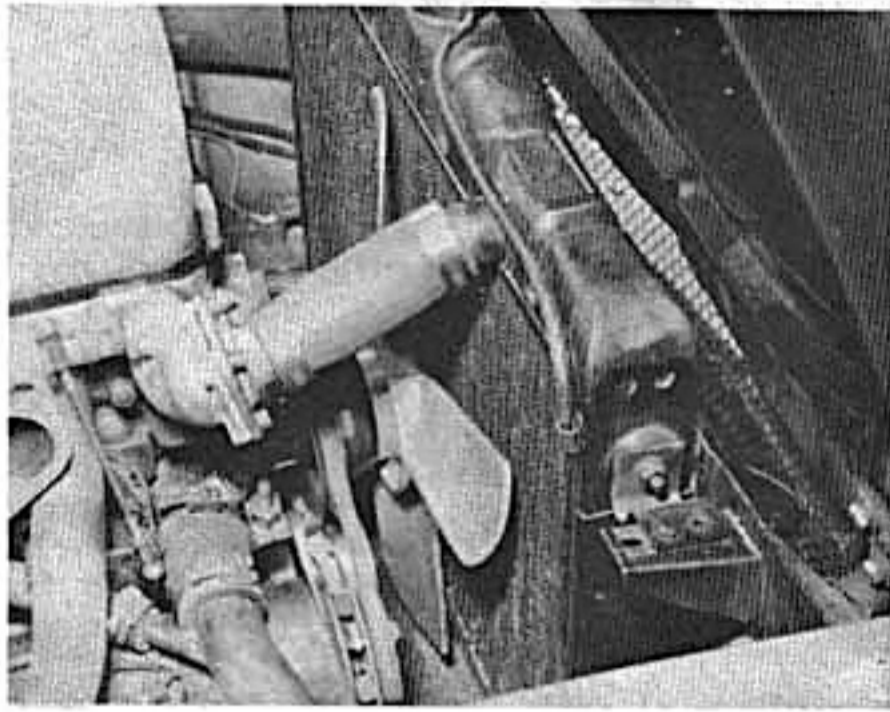
2—Original fan has two blades that extend beyond the hub. The excess on these two blades should be ground off so that they are flush with hub like the other two blades. Use a straight edge across the hub as a guide.



3—Install new crankshaft pulley making sure that the dowel extending from the crankshaft is inserted in the hole in the pulley. Use flat-washer next to pulley and internal lock-washer between head of bolt and flat-washer (use  $\frac{3}{4}$ " Standard American socket). Reinstall original fan belt and obtain proper tension by tightening generator bracket. Place fan spacer on fan pulley hub as shown. Replace fan using four metric bolts furnished.

Bolt radiator spacers to original radiator supports as shown using  $\frac{3}{16}$ " x 1" bolts and nuts and lock-washers. The dimension from center of stud on the radiator support spacer to the shield should be  $1\frac{3}{16}$ ".

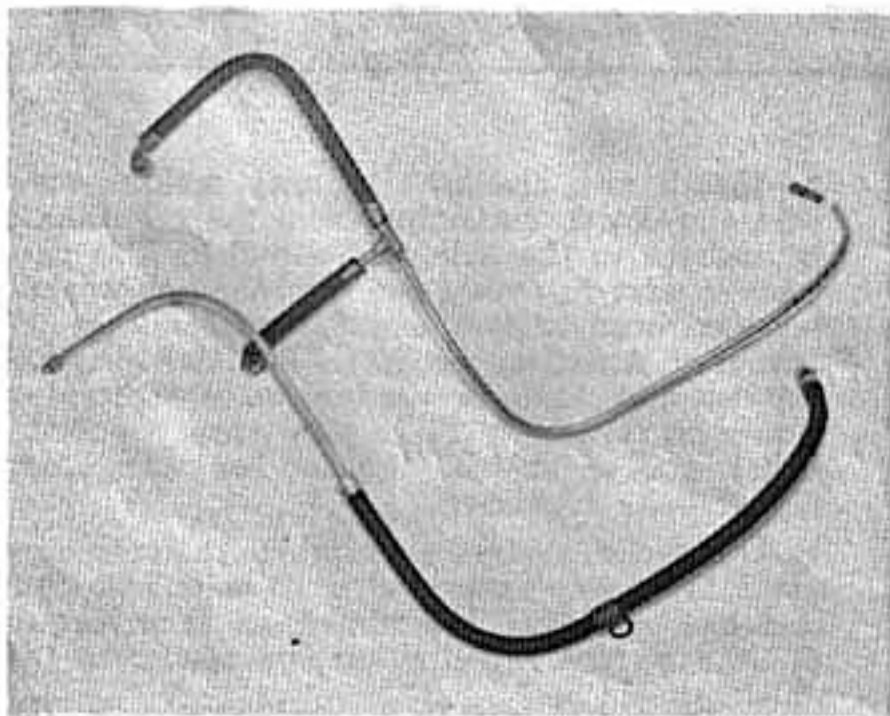
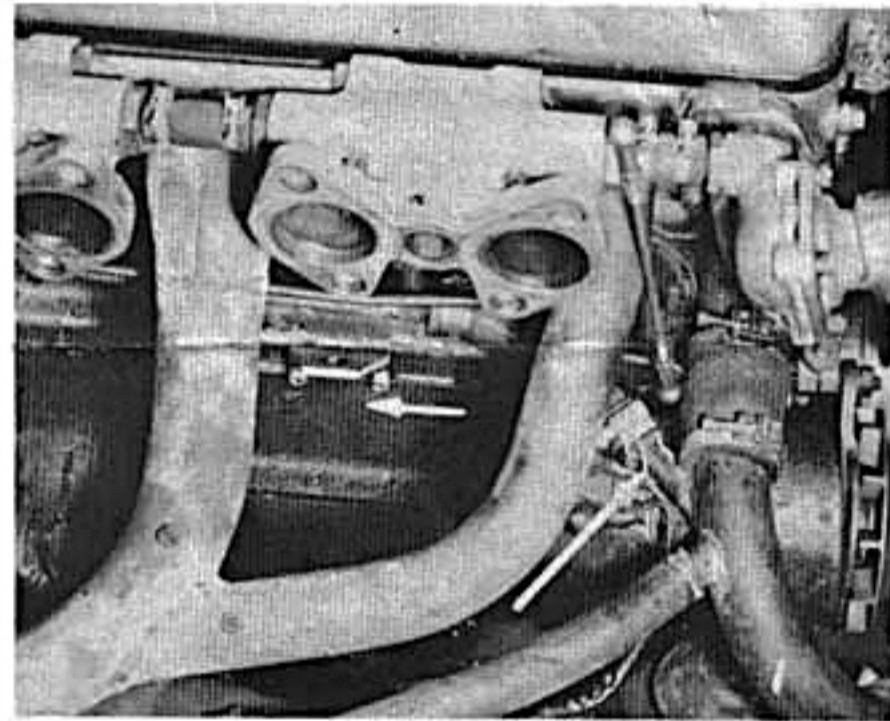




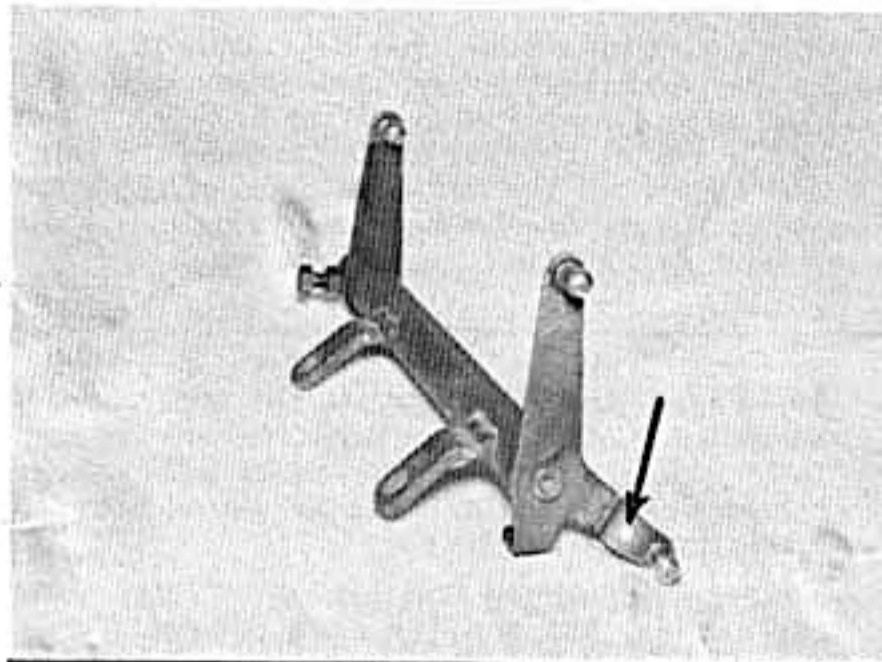
4—Replace radiator using original rubber grommets (one on top and one underneath radiator bracket) on  $\frac{3}{8}$ " studs protruding from spacers. Fasten with  $\frac{3}{8}$ " flat-washer and locknut. Do not force radiator down on rubber grommets too far as radiator bracket will hit head of  $\frac{5}{16}$ " bolt. Secure top of radiator with original spring clips as shown in photo. Bolt clip to bracket using the front hole. Reinstall radiator hoses. Rubber hoses should be examined prior to replacement and new hose installed if the original show sign of deterioration. If the hoses are replaced, make all hoses  $\frac{1}{2}$ " longer than original.

5—Move the original carburetor support bracket which is bolted to the side of the engine beneath the exhaust manifold. This should be moved towards the rear of the engine one bolt hole as shown. Discard flat washers from socket head screws and replace with lock-washers.

Snap carburetor spring clip over pipe as illustrated. Note from this photo how the original throttle connection is retained.



6—Cut off the end of original fuel line which was attached to the fuel pump. Retain original nut which will be used. Remove the insulation with bracket from tubing and slip over replacement fuel line. Bend new fuel line as shown in photo using the original fuel line as a guide or template.

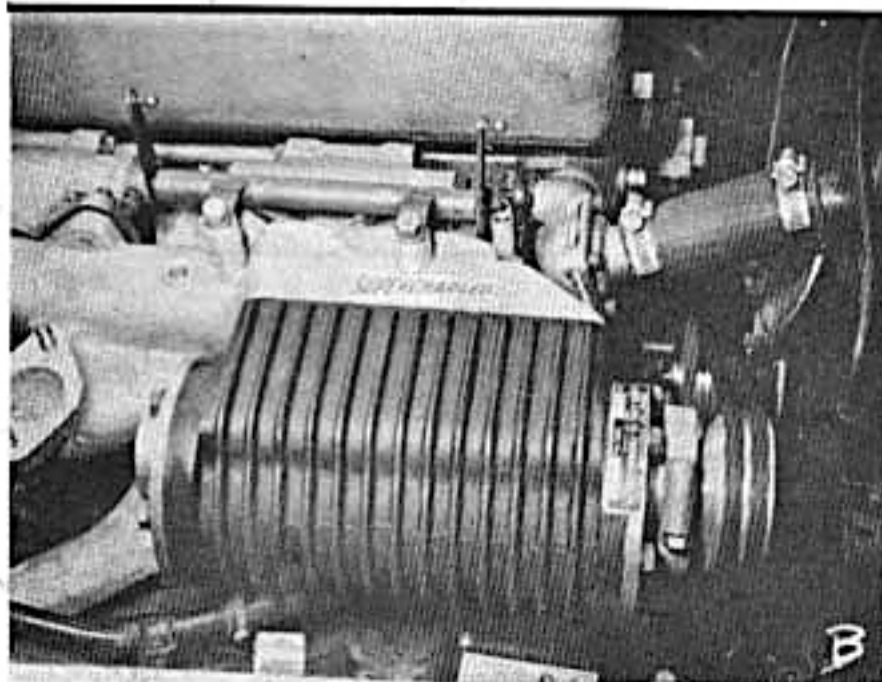
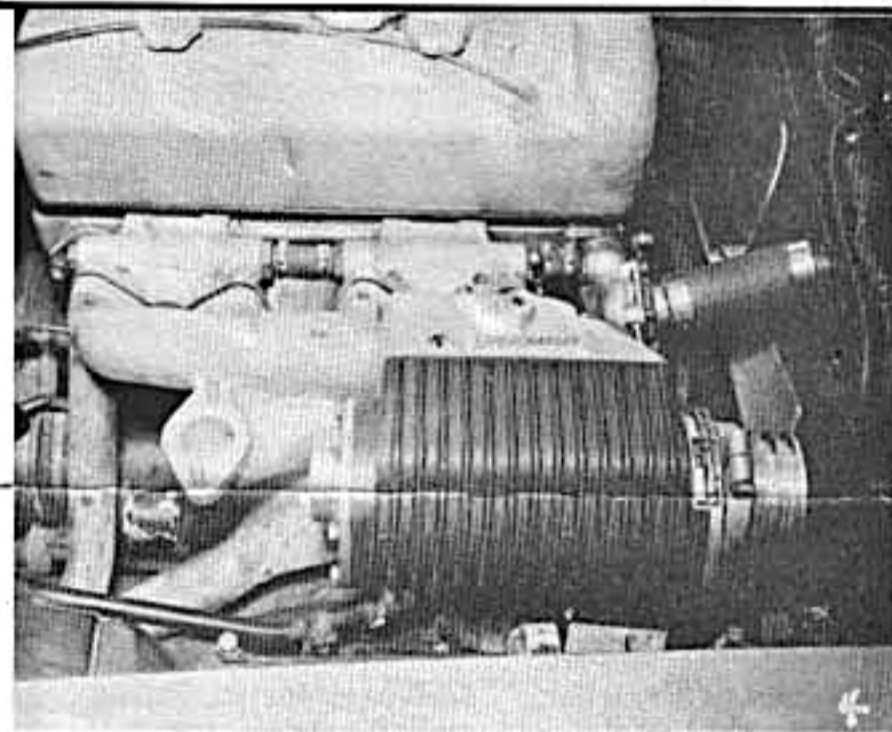


7—Remove the original throttle control from the carburetors. Remove lever arm which is fastened with set screw and reverse on shaft. (Both balls on end of arms now face in same direction.) Make sure that front and rear levers are in line and spot shaft with  $\frac{3}{16}$ " drill through the clamping bolt hole. This will permit the set screw to lock the arm to the shaft securely.

Drill  $\frac{3}{16}$ " hole at first bend in center of short lever arm as shown in photo.

8—If the supercharger is shipped with carburetor assembled to the manifold, it should be removed prior to mounting the supercharger on the engine.

Place original rubber gaskets (gaskets must be in good condition) over studs on the supercharger manifold with the flat side next to the supercharger manifold and the collars facing the engine. Do not use original steel spacers or rubber washers. Place supercharger on engine, place thin flat-washers over four top studs and screw on locknuts finger tight. Supercharger should then be pulled up or away from the bottom so that washers and nuts can be inserted on the bottom studs. All nuts should be screwed on studs far enough to clear Mercedes manifold before any attempt is made to finally tighten any or all of the nuts. (The front bottom nut is the only difficult one to get started on the stud. This should be done by placing washer and nut on stud with left hand and using forefinger of right hand placed under radiator hose from front of engine.) Using a short  $\frac{3}{4}$ " open end wrench, tighten all nuts fastening supercharger to engine in sequence starting at bottom front to bottom rear and from top rear to top front. This should be done twice to even the pressure on the gaskets.



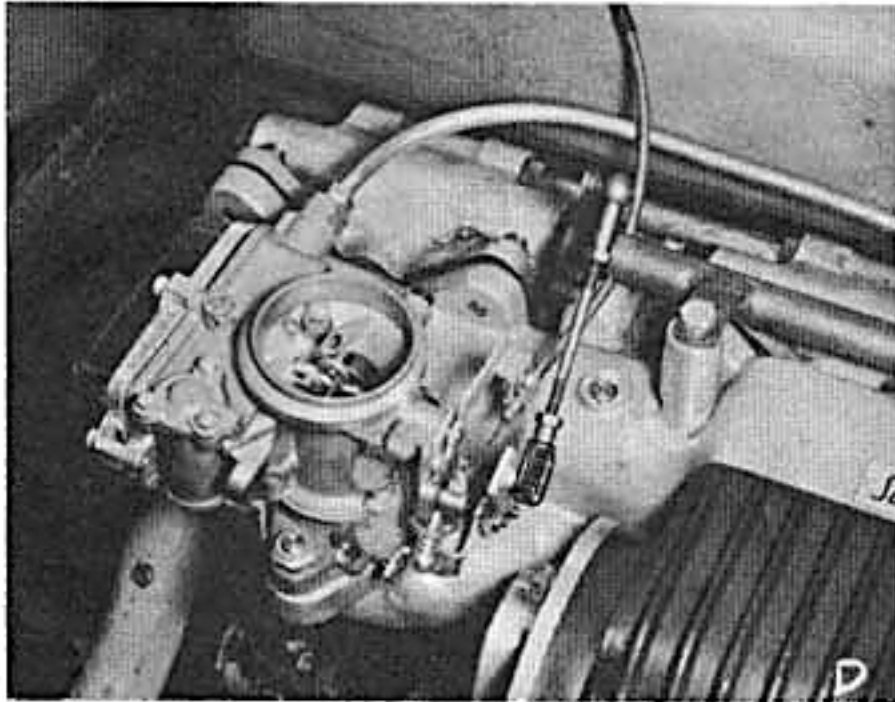
9—Fasten the previously prepared throttle control to the supercharger as shown in photo using two  $\frac{3}{16}$ " bolts and lock-washers furnished. Snap original throttle rod on the ball joint of the throttle bracket. Place original throttle spring through drilled hole in arm and to clip previously inserted on water pipe.

Install the supercharger support brace. Remove the long bolt from the bottom rear of supercharger. Place bolt welded to support through original carburetor support bracket which was moved on side of engine. Slotted end of support is then bolted to supercharger using bolt and washers just removed.



Insert barbed brass fitting for oil line into threaded hole under the carburetor flange.

Install drive belts over crankshaft and supercharger pulleys with idler pulley hanging straight down. Belts can be installed by placing one belt at a time on the crankshaft pulley, placing car in fourth gear and pushing car so that the belt can be rolled on the supercharger pulley. With belts installed, idler pulley is pulled up tightly. The idler pulley runs on the flat of the belt on the underneath side. Make sure that the belts are pulled up with idler so that they clear the nut on the end of the generator shaft. Idler is secured by tightening clamping bolt. Rotate fan by hand to make sure that it clears idler pulley. There should be clearance between idler bracket and supercharger pulley.



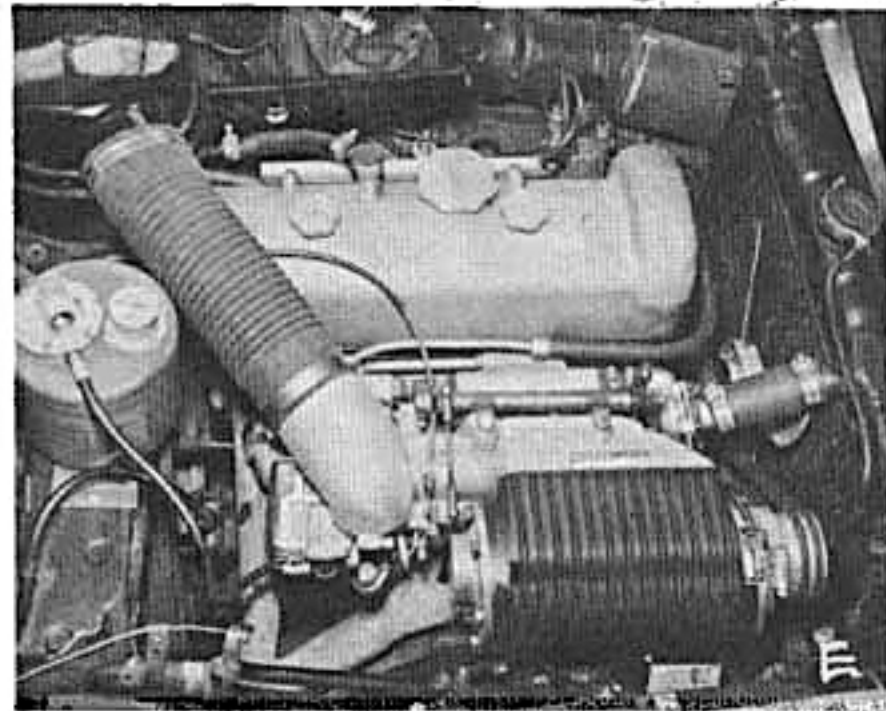
10—Fasten the carburetor to the supercharger as shown. Connect choke wire from control next to ignition key to carburetor choke (other choke control is not used and can be placed between lubricator and battery).

Connect replacement fuel line to fuel pump using the original nut and the small copper ferrule furnished with the kit. The end of the fuel line must bottom in the fitting on the fuel pump before tightening nut.

Connect throttle control lever and carburetor as shown in photo. Use the connecting ball socket rod from the front carburetor (the shortest rod). Unscrew the original Mercedes ball socket from one end of the rod and screw into ball socket fastened to carburetor. Some adjustment of this rod may be necessary in order to get the correct accelerator pedal height.

11—Remove the battery cable clamp nearest the engine. Cable is pulled to one side as shown and lubricator is fastened to the fire wall with the two screws furnished. Use lubricator mounting bracket as template to drill  $\frac{1}{8}$ " holes for self tapping screws. Lubricator tank should be against battery hold-down frame and  $4\frac{1}{4}$ " from air cleaner base. If lubricator is placed too far from center of car it will hit the hood. Connect the oil line from the lubricator to the brass fitting under the carburetor using the aluminum ferrule furnished.

Place air horn on carburetor, replace air cleaner top and connect hose as shown. Tighten all clamps including the clamp securing the air horn to the carburetor.



12—Refill the radiator.

13—Fill the automatic lubricator with No. 10 HD (detergent) motor oil. The engine must not be started unless the lubricator is connected and filled with oil. The lubricator tank has a capacity of two quarts.

14—Remove the spark plugs and examine for wear and corrosion. If spark plugs are not in good condition they should be replaced. Champion N-8 spark plugs should be used (XN-8 if a resistor spark plug is required for the radio). Plugs should be gapped .032

15—The valve cover should be removed from the engine so that the valve clearance and the tightness of the head bolts can be checked. The stock valve clearance of .004 on the intake valve and .008 on the exhaust valve is recommended. Head bolts should be tightened in the proper sequence to 60 ft. lbs. torque.

16—Mercedes or Bosch Distributor #VJ4BR11 must be used on the supercharged engine. 1955 models were equipped with Distributor #VJUR4BR11 and if this model distributor is on the engine it should be replaced with model #VJ4BR11.

The stock distributor gap is also recommended for the supercharged engine (.015 to .016). Dwell should be 52 to 55 degrees if distributor point setting is checked with a cam dwell meter.

It is absolutely essential that the ignition timing be retarded on the supercharged engine. The ignition timing should be set so that firing occurs at top dead center. If the distributor is adjustable from a control on the dash panel, the red dot should be at the top (or middle range) when ignition timing is set.

SET AT 8° TDC

#### INSTALLATION IS COMPLETE

Start the engine. As soon as the engine is running, adjust the lubricator as per instructions under lubrication. After engine is warm, set idle mixture on carburetor. The idle adjustment on the carburetor is the slotted brass screw located on the side of the carburetor next to the engine. Adjust back and forth until a smooth idle is obtained. The idle speed adjustment screw is spring loaded and located on the throttle arm of the carburetor. Set idle speed at approximately 1000 RPM.

1500 RPM

#### DATA

**LUBRICATOR ADJUSTMENT:** (correct lubrication is very important). To adjust the lubricator proceed as follows: Start the engine. The small knurled knob on the top 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 three to 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 adjustment should be checked after the first one hundred or two hundred miles. 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 of the supercharger are greased and sealed at the factory. Use any good grade of SAE No. 10 detergent motor oil. **Do not use an upper cylinder lubricant** as most top oils are primarily a cleaner and not a lubricant. Do not use a multiple viscosity oil. 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 should be adjusted and left alone** as any variance which will occur at idle will be slight under actual operation and is averaged out over the vacuum range of the engine.

**FUEL:** Premium grade or high octane gasoline is necessary on the supercharged engine. Super premium fuels are not necessary.

**BREAK-IN-PERIOD:** No breaking-in-period is required for the Judson Supercharger. We do, however, recommend that the engine be run slowly or at idle for at least fifteen minutes before placing the engine or supercharger under load.

**IDENTIFICATION DECAL:** An identification decalcomania for placing on the inside of the windshield is included with the installation. See instructions for mounting on back of the 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.



**BELT REPLACEMENT:** In case of drive belt breakage the supercharger will cease functioning but the engine will continue to operate. The drive belts are a standard size and is the same size belt used on the 1955 Chrysler. The local Chrysler dealer can furnish these belts in matched pairs. Belts can also be purchased from any automotive jobber under Gates number 8218 as a matched set. Do not make belts too tight. Belts are of premium quality and should last for at least 30,000 miles.

**SUPERCHARGER PRESSURE:** The Judson Supercharger replaces the vacuum in the manifold with a pressure in proportion to the load placed on the engine. There is always a vacuum in the manifold when the engine is at idle or when the engine is not under load. The vacuum in the manifold is replaced with a pressure as the throttle is opened and the engine is placed under load. Highest boost pressures are obtained under full throttle operation when accelerating or going up an incline. Pressure will vary according to condition of engine, altitude, speed, humidity and engine load. Maximum manifold pressure because of these conditions will vary between 4½ to 5½ pounds. Even when the engine is not operating with a manifold pressure at idle or when there is no load on the engine, the efficiency of the engine has been increased due to the improvement in volumetric efficiency. There is a direct relationship between fuel consumption and manifold boost as the horsepower available increases with the boost pressure. When you do not use the additional power afforded by the supercharger by pushing the engine, you do not pay for it through increased fuel consumption.

**WARRANTY:** The Judson Supercharger is warranted to be free from defects in material and 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. factory. Approval must be obtained before returning supercharger or parts to the factory for replacement. All transportation charges on supercharger or parts must be borne by purchaser.

#### **ITEMS TO CHECK FOR LACK OF PERFORMANCE**

**INSTALLATION:** It is very important that the instructions be followed exactly in installing the supercharger on the engine. Mistakes usually made: idler pulley running on inside of belt instead of back of belts as instructed, choke not completely opened when dash button is pushed in, throttle not opening completely due to throttle pedal hitting floor (adjust throttle rod as per instruction No. 10), defective high tension ignition wiring, weak coil, worn or incorrect spark plugs, improperly gapped spark plugs, timing not adjusted as per our instructions and the use of the old style distributor.

**ENGINE:** Maximum performance after supercharging is a function of engine condition and tuning. Engine deficiencies often unnoticed before supercharging sometimes prevent increased 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.

The ignition system on the supercharged engine should be in good condition and properly adjusted, incorrect timing and point setting as well as faulty plugs or ignition wiring affects performance considerably and contributes to poor performance. See installation data for timing, point and plug settings.

If poor performance cannot be attributed to any of the above after a thorough checking it can be assumed that the trouble is of an internal mechanical nature and the engine itself should be checked by a competent mechanic. Best performance for dependability is obtained from the stock engine. We do not recommend increasing the compression ratio, the use of a special cam or making any other basic modifications on the supercharged engine.

**NOTE:** On the supercharged Mercedes, fastest acceleration is attained by feeding the gas to the engine steadily rather than flooring the accelerator pedal suddenly.



## SERVICE DATA

# JUDSON MODEL 190 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 manifold from the supercharger.
2. Remove the six bolts holding on the rear cover.
3. Use two  $\frac{5}{16}$ " 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. Remove idler bracket from front cover. 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, this is important.
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 or sealer prior to replacement.

# PARTS LIST

## JUDSON MODEL 190 SUPERCHARGER

Mention model and specification number on name plate in ordering parts

PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
1901	Housing	1511	Shaft Spacer Tube
1304	Rotor Assembly	1517	End Plug
1505	Front Cover	1910	Carburetor
1502	Rear Cover	1322	Carburetor Gasket
1902	Supercharger Pulley	1911	Supercharger Gasket
1904	Manifold	1510	Shaft Nut
1308	Idler Bracket	1545	Key for Shaft
1309	Idler Pulley	1914	Throttle Clip
1905	Lubricator	1912	Crankshaft Bolt
1913	Air Horn	1541	Oil Line Fitting (2)
1903	Crankshaft-Pulley	1540	Oil Line Ferrule (2)
1906	Fan Spacer	1339	Idler Shaft Bolt
1907	Radiator Spacer (2)	1551	Nut for above
1908	Support Brace	1920	Fan Spacer Bolts (4)
1532	Oil Line	1921	Manifold Bolts (7)
1318	Vanes (4)	1342	Idler Clamp Bolt
1909	Drive Belts (2)	1919	Carburetor Studs (2)
1550	Bearings (3)	1915	Gas Line
1513	Front Seals (2)	1916	Mounting Studs
1501	Rear Seal	1917	Mounting Locknuts
1556	Snap Ring (2)	1918	Mounting Washers

The Judson Supercharger is fully covered by patents and patents pending.

**JUDSON RESEARCH & MFG. CO.**  
CONSHOHOCKEN, PENNA.



**ADDITIONS & REVISIONS**



**JUDSON** RESEARCH AND MFG. CO  
CONSHOHOCKEN, PA.