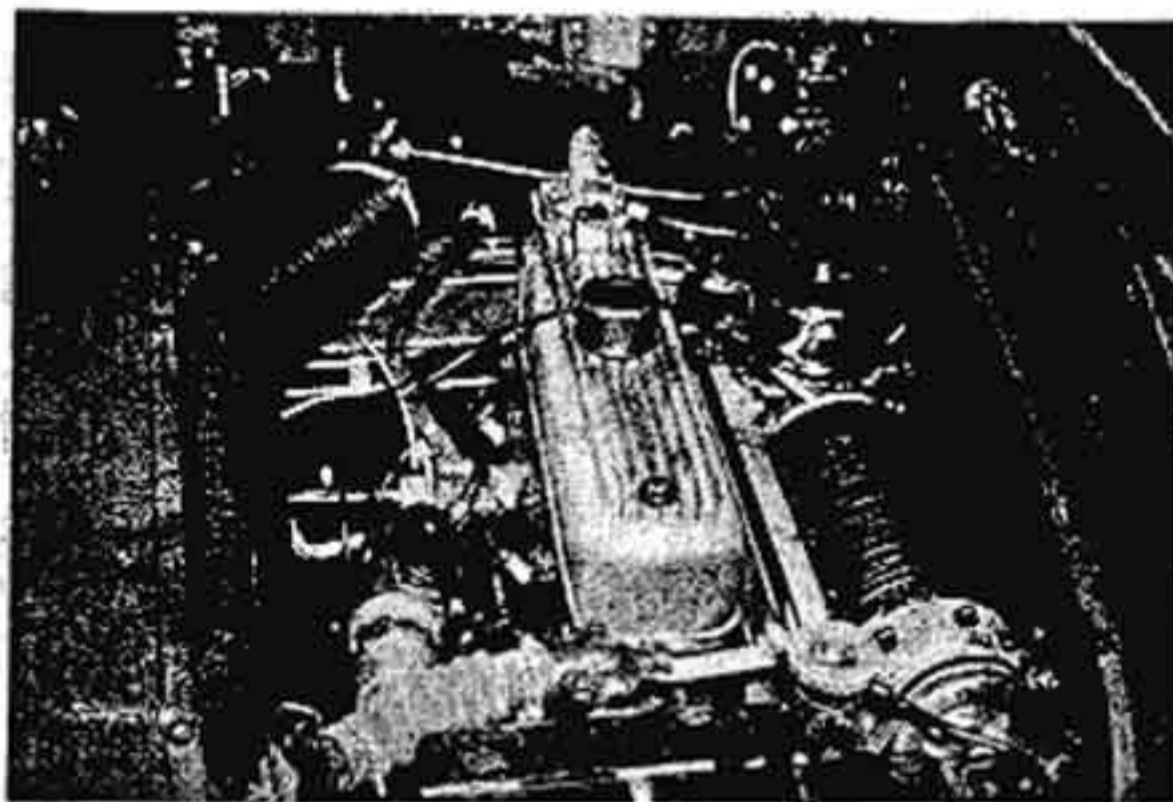


*Judson*

*Supercharger*

*Model MG-A*



INSTALLATION PROCEDURE

OPERATION DATA

SERVICE DATA

PARTS LIST

**JUDSON RESEARCH AND MFG. CO.**

CONSHOHOCKEN,  
PENNSYLVANIA

## INSTALLATION INSTRUCTIONS AND SERVICE DATA FOR THE MG-A SUPERCHARGER

# MODEL MG-A JUDSON SUPERCHARGER

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

### INSTALLATION - DATA - SERVICE - PARTS LIST

Read installation procedure and information under data over thoroughly 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.

The engine should be tuned or set-up as follows; prior to the supercharge installation:

Timing - The ignition timing should be set so that firing occurs ten degrees before top dead center, (the notch in the crank pulley will coincide with the pointer farthest to the right) see MG operation manual. This amount of advance is necessary due to the fact that the vacuum advance is discarded on the supercharged MG-A.

Valve Clearance - Remove the valve cover and the valve cover gasket from the engine. Refer to MG manual for correct procedure in adjusting valve clearance. Both intake and exhaust valves should have a clearance of .020 to .022. Do not replace the valve cover and gasket.

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 with Champion N-5 or NA-8. Plug gap should be reset .015 to .018. Spark plugs should be tightened or torqued to 30 ft. lbs.

Distributor Point Setting - We recommend checking the distributor gap at this time although the stock gap is also recommended for the supercharged engine. (.014 to .016). If distributor is checked with a cam dwell meter, dwell should be 57 to 60 degrees.

Cylinder Head Nuts - We advise checking the tightness of the head nuts prior to supercharger installation. These should be tightened or torqued to 50 ft. lbs. This operation can be done later in the event that a torque wrench is not available.

INSTALLATION PROCEDURE IS AS FOLLOWS:



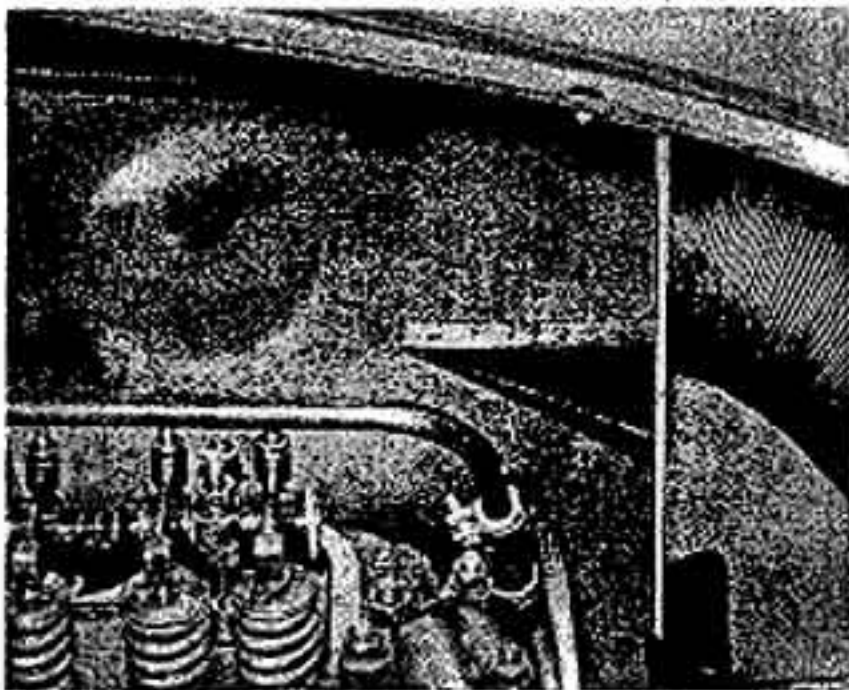
1. Drain and remove the radiator which is secured by six bolts (three on each side). Remove the fan by removing four small bolts. Remove crankshaft bolt located in center of pulley on crankshaft. Place supercharger drive belts on Judson crankshaft pulley. Place pulley with belts on front of original crankshaft pulley making sure that lip on Judson pulley is in center of the original pulley and that the rivet heads on original pulley

line up with holes in Judson pulley. Place 5/8 lock washer and then 5/8 flat washer on crankshaft bolt furnished and fasten pulley securely.

Place aluminum spacer between fan and water pump pulley using four replacement 1/4" bolts and original lockwashers.

The two grease fittings on the steering rack should be turned forward with a wrench so that these fittings can be serviced from under the car.

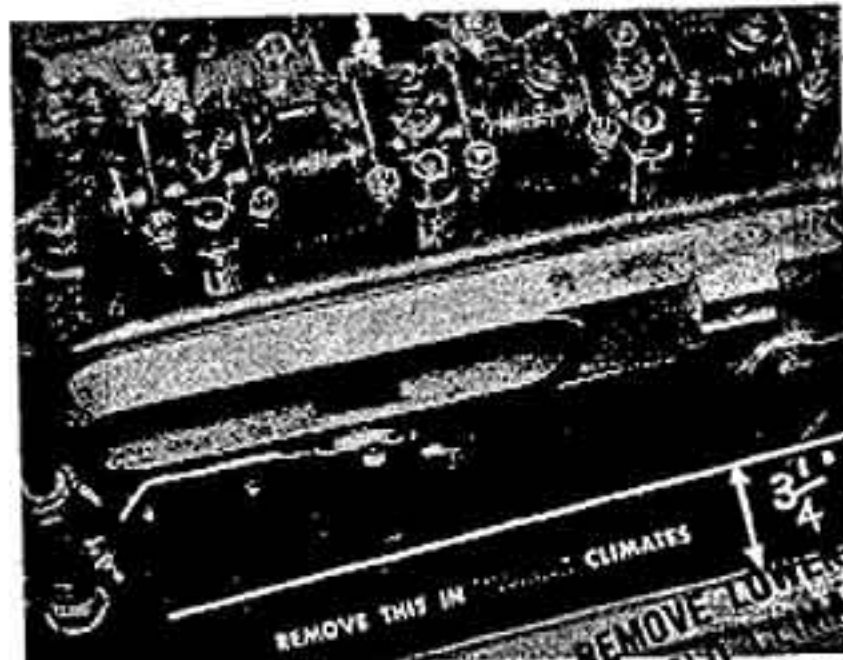
Remove the air cleaners and the intake manifold with two carburetors attached. Remove the vacuum advance line from the distributor.



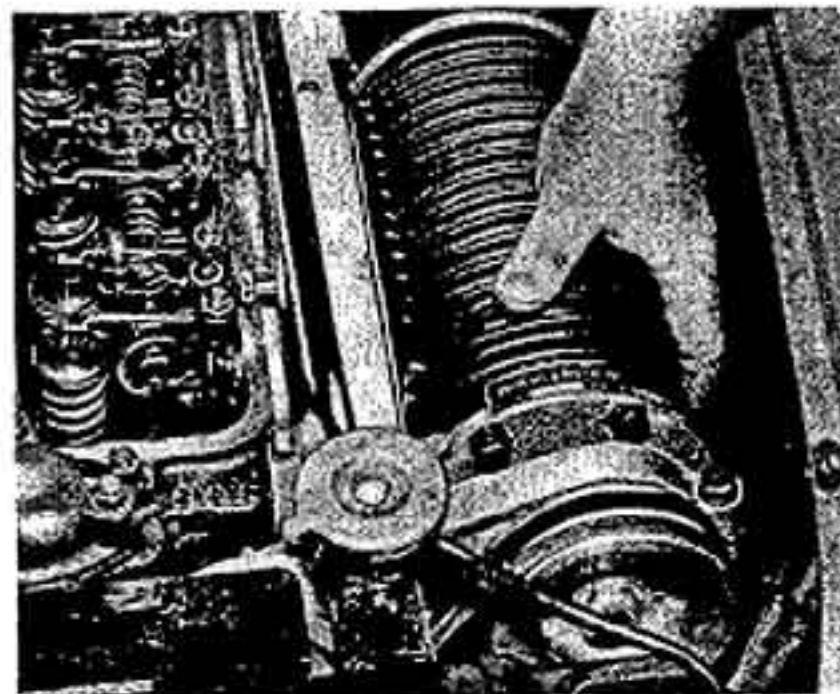
2. Remove the metal hose cuff by bending back and forth to break weld. See illustration showing cuff removed.



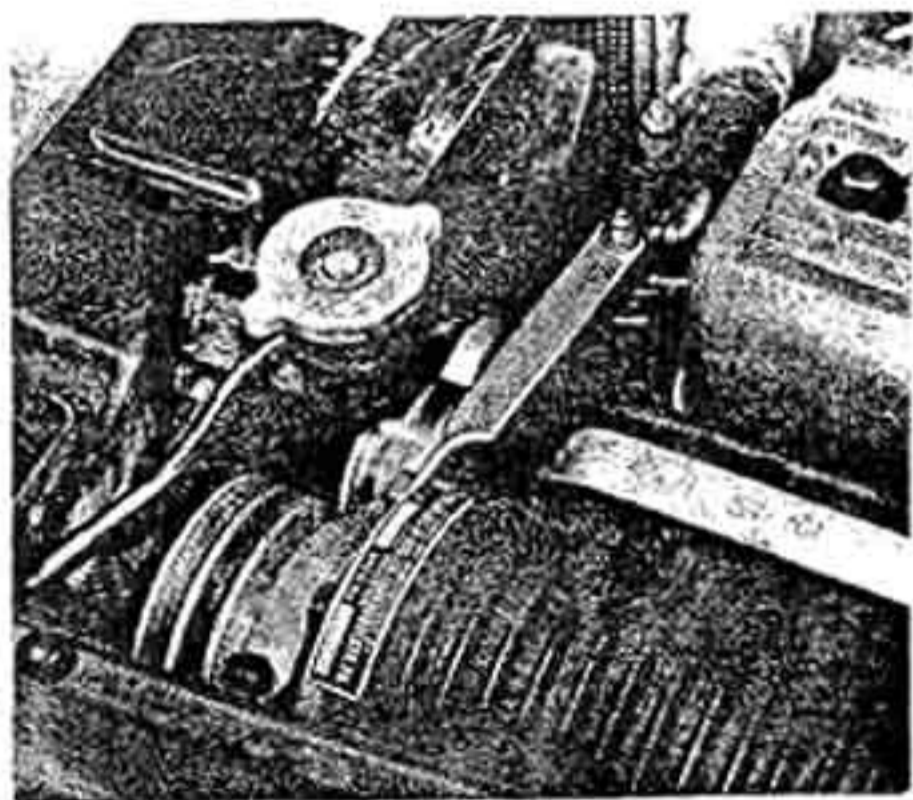
3. Replace radiator using original bolts and placing two spacer strips furnished between radiator and body flanges to move radiator forward. Reconnect radiator and heater hoses making sure that heater connection is pushed back and hose clamps are in position as shown in illustration.



4. Remove exhaust manifold (two outlets) from supercharger. Remove carburetor from supercharger intake manifold. Place new manifold on engine fastening securely with original fasteners. Use original heat shield and bolt to manifold with two bolts and lockwashers that are furnished (3/8 x 3/4" bolts). Bend shield with pliers at bolt holes so that it will lay flat against bolt pads. IMPORTANT: Use Permatex or Gasket Sealer on these two bolts. Fasten heater tube to manifold using one clamp and 3/8 x 3/4" bolt and lockwasher as shown.



5. Place two 3/8 x 2" bolts with copper gaskets under head through end holes of manifold. Place 3/8 x 2-1/4" bolt through center hole (this is a positioning bolt only and will be removed and discarded). Place gasket on these three bolts as shown. Supercharger is held in position and long center bolt is screwed into housing by hand. Front of supercharger is tilted down and belts placed on supercharger pulley. Before placing belts on supercharger pulley, pull idler bracket up until idler pulley hits radiator filler tube as idler pulley rides on back top-side of belts. Supercharger is now pushed into position riding on center bolt. The two end bolts with copper gaskets under the heads are screwed into the supercharger snugly making sure that the gasket between the supercharger and the manifold is flat along the bottom of the manifold and lies flush against the face of the manifold. Remove long center bolt and replace with 3/8 x 2" bolt with copper gasket under head. Tighten all three bolts holding the supercharger to the manifold securely.

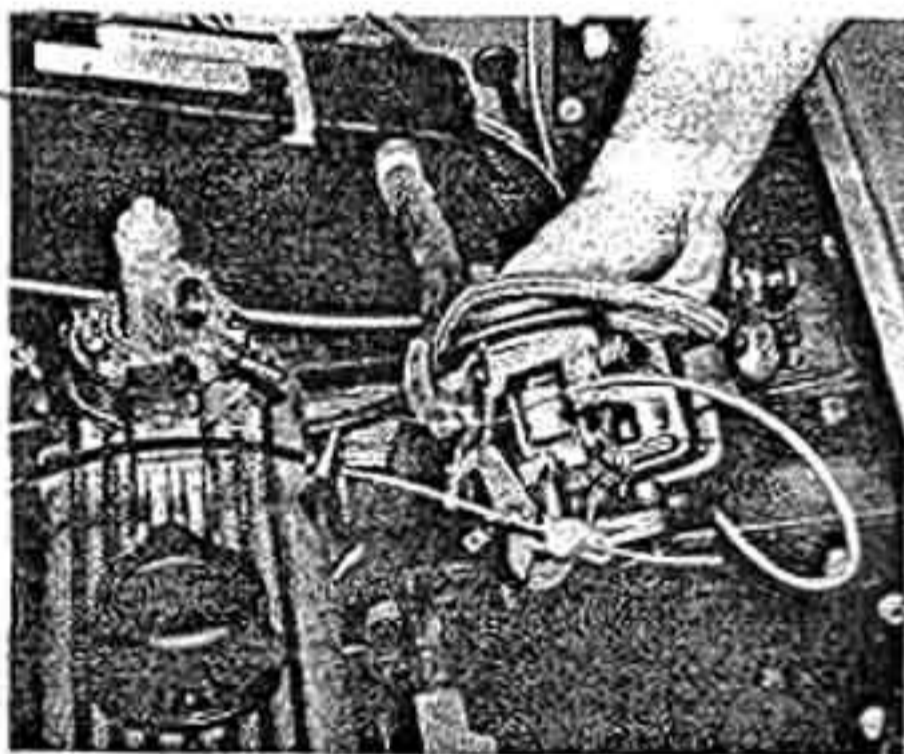


6. Place brace between supercharger and water outlet as shown. Push idler pulley down on belts and tighten in position making sure that clamping bolt is not overtightened. Idler pulley rides on top side of belts. If the clamping bolt on the idler is too tight it will crack the casting.

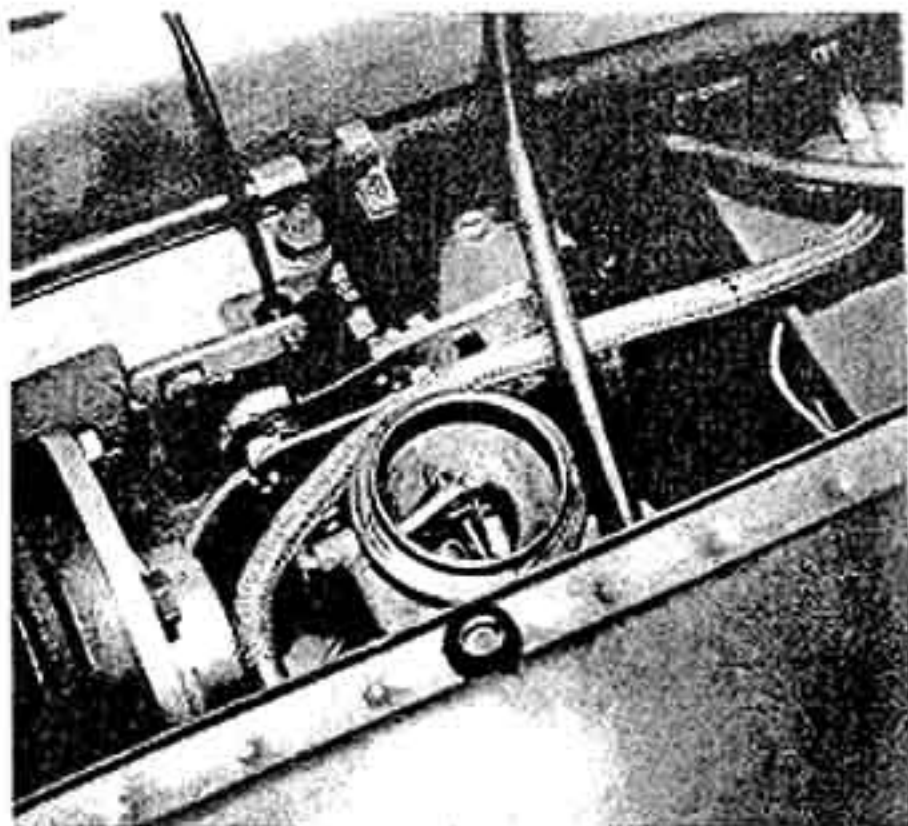
**IMPORTANT:** The drive belts will tighten when they get hot and it is extremely important that there be at least 1/2" slack in the drive belts. If belts are too tight it will place an additional stress on the bearings in the supercharger.

The original valve cover and valve cover gasket is discarded. Place new valve cover on top of gasket furnished, fastening to engine with original rubber grommets and hardware.

The rubber breather hose used on the original valve cover is no longer required as a breather is incorporated in the filler cap of the valve cover furnished with the installation.

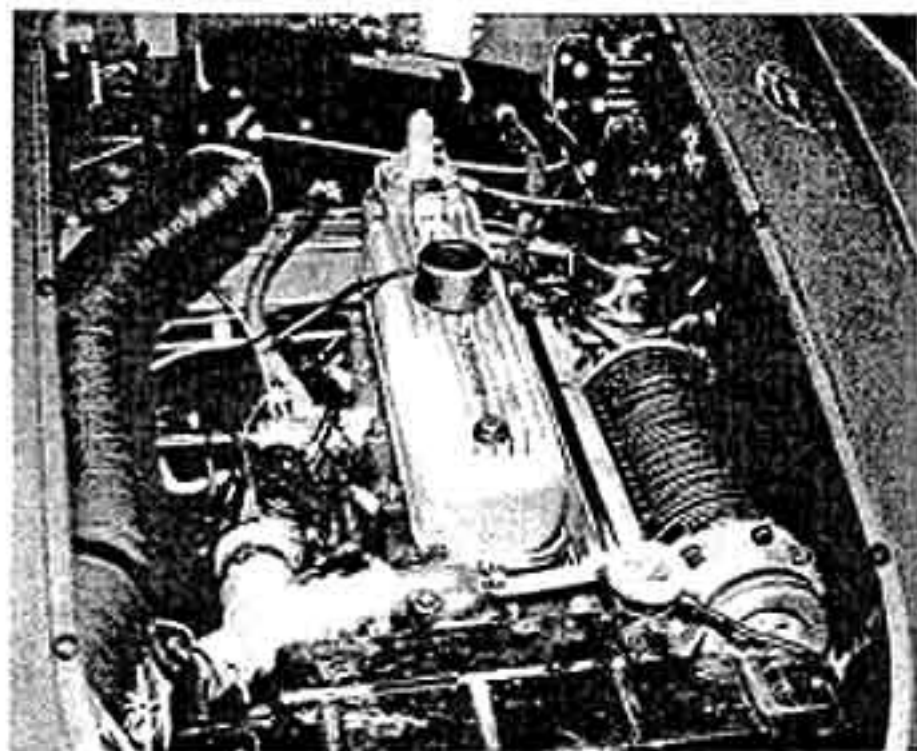


7. Attach choke wire to the carburetor as shown in illustration. Place original throttle stud in carburetor throttle lever using hole closest to the carburetor (do not use end hole, see picture). Use spring and washer with cotter pin on stud as on original carburetor connection. Use the original fuel line that originally connected the two carburetors and with the special 1/2" bolt and two fibre washers (one on each side of brass fuel fitting) screw into carburetor finger tight. See fuel line connection at carburetor in illustration. Carburetor is now dropped into position on intake manifold with gasket and tightened securely with slotted machine screws.



8. Push gas line into position as shown in illustration and tighten 1/2" fuel line bolt on side of carburetor.

Attach throttle cable retaining arm to manifold with 5/16" bolt and lockwasher as shown. Make sure that cable is allowing throttle to close completely. If cable is not allowing throttle to close completely the idle will be affected. Cable may have to be adjusted so that throttle will close properly. This is done by slackening nut on throttle arm of carburetor and moving cable.



9. Place small aluminum ferrule on end of oil line from lubricator and push end of hose onto barbed brass fitting located on intake manifold under carburetor. Place air cleaner on carburetor and tighten clamping screw.

10. Refill radiator.

11. Fill lubricator located in rear of valve cover with SAE No. 10 detergent motor oil or Marvel upper cylinder lubricant. Do not start the engine unless lubricator is connected and filled with oil. Use No. 10 detergent motor oil or Marvel oil only. Do not fill lubricator with any other type or brand of upper cylinder lubricant.

#### INSTALLATION IS COMPLETE

Turn on the ignition switch and allow sufficient time for fuel pump to fill carburetor with gasoline. Start engine. As soon as the engine is running, adjust the lubricator immediately 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 halfway down the front of the carburetor next to the supercharger. Adjust back and forth until a smooth idle is obtained. The idle speed adjustment screw is located on the throttle arm of the carburetor.

#### DATA

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 five to six seconds at idle. This can be timed through the small window on the lubricator. Screw clockwise to decrease the amount of oil consumption. It is advisable to give the supercharger an excess of oil for the first half hour of operation (one drop every four seconds). 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 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 as most top oils are primarily a cleaner and not a lubricant.

**NOTE:** The engine must be stopped in order to read the oil level in the lubricator through the sight glass on the side of the valve cover. It is not necessary to fill lubricator while engine is operating. Capacity of lubricator is 4/5 qt.

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:** Premium grade or high octane gasoline is necessary for best performance on the supercharged engine.

**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.

**ENGINE TEMPERATURE:** Due to the amount of cam overlap in this engine, the supercharger aids greatly in scavenging the burned gasses from the cylinder. This in turn lowers the cyclic temperature. As a result, even though more power is being developed the overall operating temperature is slightly lower on this engine when supercharged with a Judson. For this reason it is necessary in colder climates (thirty degrees F or lower) to block off the air intake leading from the front of the car.

**CYLINDER HEAD:** The head on this engine whether supercharged or unsupercharged is prone to warpage. This will cause a blown head gasket. In the event that this occurs have the cylinder head resurfaced at your local automotive jobber and use a steel head gasket.

**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 as a normally aspirated engine. The drive belts are a standard size and is the same size belt used on the 1953-1954 Chrysler. The local Chrysler dealer can furnish these belts in matched pairs. Belts can also be purchased from a local automotive jobber under Gates number

8219 as a matched set. Do not make belts too tight. See Step 6 of installation data. Belts are of premium quality and should last for at least 40,000 miles. *Belt - Dayco # 15435*  
*Gates XL 7440*

**FOR COMPETITION OR CONTINUOUS HIGH SPEED DRIVING:** The SU fuel pump should be replaced with a Bendix electric fuel pump, model #476090, 12 Volt, positive ground. Replacement of the fuel pump is essential if road speeds are to exceed 90 mph. Depending on the engine and the driving habits of the individual it may also be necessary to go to a colder spark plug in which case we recommend Champion N-3 or NA-10. No modification to the carburetor is required.

**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. Higher 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 4-1/2 to 6 pounds. Even when you are 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.

**GAUGE INSTALLATION:** A supercharger gauge is available as an accessory for the Judson Supercharger. The gauge has readings in both inches of mercury for vacuum and pounds per square inch for pressure. Supercharger gauge consists of the following: gauge, length of neoprene hose, two fittings, union and two aluminum hose ferrules. Installation procedure is as follows:

1. Cut 2" hole in dash panel to right of choke and heater knob as shown in illustration in literature. If car is equipped with windshield washer, the control knob on the dash panel can be moved to the right.
2. Remove the pipe pressure plug located on the top of the exhaust manifold of the supercharger. See photo No. 4. Insert barbed fitting.
3. Screw barbed fitting on back of gauge using union furnished.
4. Insert gauge in hole cut in dash panel and secure with clamp on back of gauge.
5. Place aluminum ferrule on end of hose and insert hose on barbed fitting in manifold. **CAUTION:** Hose must be connected at both ends and a hole or cut in the hose will affect performance of the engine and supercharger life.

**AIR CLEANER:** To clean air cleaner wash out in kerosene or gasoline. This is recommended every 3,000 to 5,000 miles.

**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. 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.

#### CHECK SHEET 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; drive belts too tight, idler pulley running on inside of belt instead of top side or back of belts as instructed, copper washer gaskets not under manifold bolt heads as instructed, throttle cable not adjusted properly not allow throttle on carburetor to close or open completely, choke not completely opened when dash button is pushed in, sealer not placed on bolts holding heat shield to manifold.

**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. Of these three a leak is the most common cause of poor performance. A leak in the induction system upsets the fuel/air ratio resulting in a lean mixture, a hot running engine, a flat spot in the low speed range, a poor idle, engine stalling, detonation, hard starting, a noisy supercharger and restricted top speed. All connections should be checked for leaks

including where the intake manifold is bolted to the block and the manifold connections on the supercharger. If installation is equipped with a gauge, both connections should be checked as well as the hose.

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. As previously stated spark plug condition is very important.

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.



## SERVICE BULLETIN

### JUDSON MG-A SUPERCHARGER

---

IGNITION - Connect the original vacuum advance line from the distributor to the carburetor by using the short piece of 3/16" copper tubing and neoprene hose packed with the carburetor. The hose is used as a sleeve to connect the two copper lines. The fitting required for the 3/16" copper tubing is inserted in the carburetor at the vacuum connection. IGNITION TIMING SHOULD BE SET AT THE STOCK SETTING (7 DEGREES BTDC).

LEAKS IN INDUCTION SYSTEM - The largest single cause for poor performance on the supercharged MG-A is a leak in the induction system. Extreme care must be used in placing the gasket between the supercharger and the exhaust manifold bolted to the supercharger. Make sure that the gasket is flat along the bottom of the flange and is not crooked or crimped. See photo preceeding Step 5 of the installation instructions.

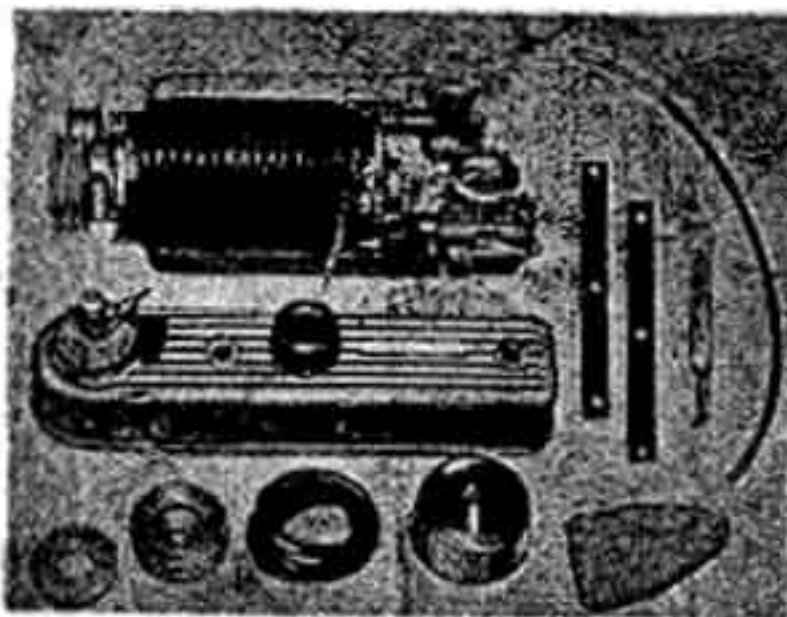
SPARK PLUGS - The condition and quality of the spark plugs is extremely important in order to get the maximum performance from the supercharged engine. If plugs show signs of wear they should be replaced with Champion N-5 or N-8.

ENGINE TEMPERATURE - For best performance it is essential that an operating water temperature is maintained of at least 180 to 190 degrees F as indicated on the water temperature gauge. A flat spot on acceleration and less performance than can be expected will result if the water temperature is less than this (it gives the impression of improper carburation). In cold climates, if the engine was manufactured prior to 1957 or if after installing the supercharger the engine is running cold (less than 180 degrees F) the water thermostat should be replaced with Harrison thermostat No. 3136185, type 108 P-180 degrees. This replacement thermostat can be secured from any Chevrolet or United Motors dealer. In extreme cold climates, a section of the radiator should be covered to reduce the cooling capacity of the radiator.

CARBURETOR - An incorrect flat level in the carburetor affects performance considerably and should be checked. The float on the side of the carburetor which can be seen through the transparent cover should be level. When viewed from above, the float should not touch the top of the transparent cover. If the float level is incorrect in the carburetor it can be adjusted by removing the transparent cover and bending the float arm. The carburetor furnished with the supercharger installation is equipped with an accelerating pump and it is necessary to depress the accelerator considerably more than the SU for maximum acceleration. In the event that the choke control will not return, the spring from the original carburetor set up can be used as a return spring for the choke.

IF PULLEY ON CRANKSHAFT RUBS STEERING GEAR RACK HOUSING - There should be approximately one eighth inch (1/8") clearance between the face of the supercharger drive pulley on the crankshaft and the steering rack tube. If there is not, the following should be done before the radiator is replaced; the steering rack tube is bolted to the frame with two flanges (one on each side), the four bolts holding these flanges (two in each flange) to the frame should be removed and flat washers placed on the bolts between the flanges and the frame so that there is approximately 1/8" clearance at the pulley. This revision does not affect the steering geometry, but toe-in should be checked.

## MG-A PACKING LIST



Supercharger with idler assembly, intake manifold, exhaust manifold and carburetor assembled (fuel bolt, fibre washers and spring attached to carburetor.)

Valve cover with lubricator and cap assembled

Crankshaft pulley

Two (2) drive belts (#87RC05)

Fan Spacer

Valve cover gasket

Oil line (19") with one fitting assembled

Air cleaner

Two (2) radiator spacers

Support brace

Installation data

Decalcomania

One bag of parts containing:

(1) Throttle bar

(1) Crankshaft bolt 5/8 x 1-1/2

(1) 5/8 Flat washer

(1) 5/8 Lock washer

(3) 3/8 x 3/4 bolts

(3) 3/8 Lock washers

(1) 5/16 x 1/2 bolt

(1) 5/16 Lock washer

(4) 1/4 x 1-1/2 bolts

(1) 3/8 x 2-1/4 bolt

(1) Oil line ferrule

If gauge is included with shipment: (1) gauge, 5' length of hose with ferrule and fittings attached, (1) aluminum ferrule and (1) barbed fitting.