INSTALLATION INSTRUCTIONS

VW Type 24 40hp model for Aug 1960 & later cars

with belt tensioner

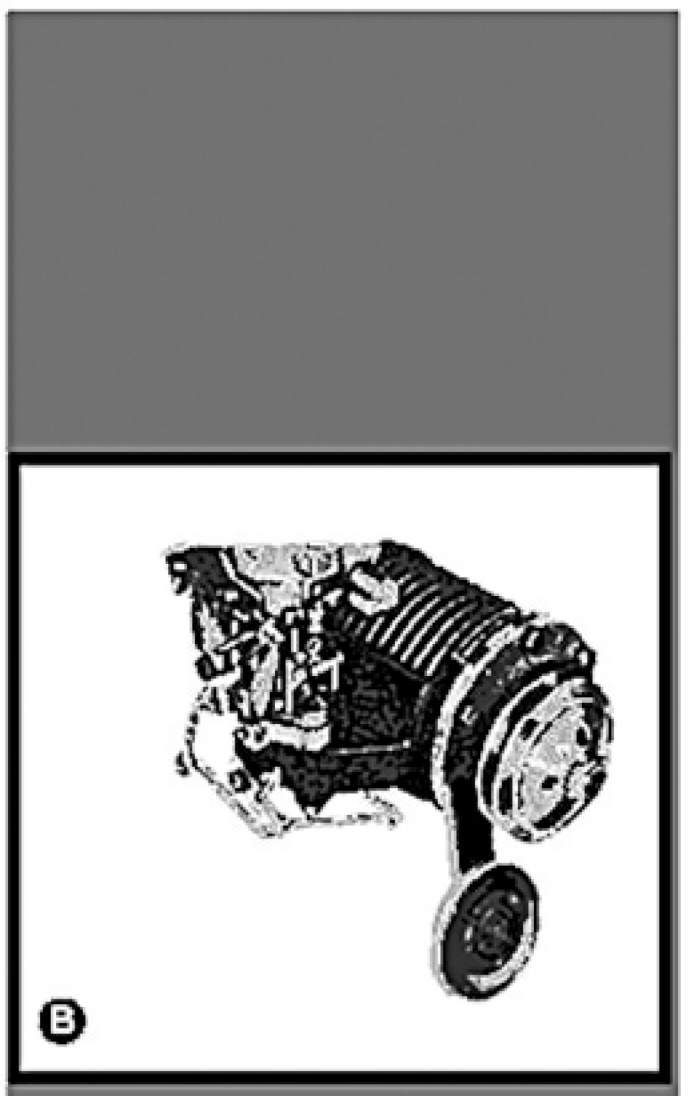
-- A --

I. Remove large bolt and washer from end of crankshaft pulley (on late models it will be necessary to remove the small pan located in front of the crankshaft pulley). Original crankshaft pulley is not removed. Remove any grease, paint or burrs in bore and on face of Volkswagen pulley. Install supercharger drive pulley by placing lip on back of the Judson pulley in bore of original VW pulley. Make sure that the two pins protruding from the back of the Judson pulley are in the slots of the VW pulley. Replace the bolt on the end of the crankshaft (discard washer). The lip on the back of the Judson pulley must be in the bore of the VW crankshaft pulley before tightening bolt. Start the engine and observe supercharger drive pulley to make sure it is properly mounted.

2. Remove the air cleaner assembly with heater hose, fuel line, vacuum line and carburettor from the engine. On late models remove the throttle positioner under the mounting flange of the carburettor as the throttle positioner is not used with the supercharged engine.

Plug the openings in the two hoses that were connected to the throttle positioner with two of the large self-tapping screws furnished with the kit.

-- B --



1. Remove both studs from the carburettor and replace with longer studs furnished. Screw the end of the stud with the least number of threads into the carburettor tightly. Remove the main jet from the side of the carburettor and replace with the new jet (solex No 135).

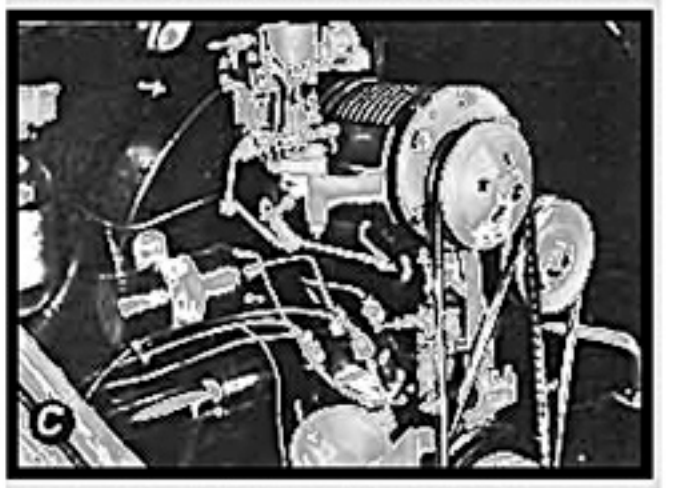
2.Place gasket on carburettor studs, aluminum spacer and another gasket. Mount carburettor with gaskets and spacer on the supercharger. Place small copper gasket washers on the studs before fastening with special locknuts (do not use lockwashers).

3. Connect throttle linkage to the carburettor as shown in photo. The throttle linkage is tapped together to facilitate assembly to the supercharger. Tape should not be removed from linkage until it is assembled to the carburettor and supercharger. Make sure that the control rod running underneath and inserted into the supercharger is lined up with the support bolted to the supercharger and that it moves freely. Test linkage for free movement before fastening control arm to carburettor. The control arm is fastened to the carburettor with the 5/16" x 1/2" screw with the serrated washer under the head of the screw. The carburettor control arm slips into the slot of the carburettor where the original cable rod was fastened. 5/16" screw is then inserted in to the carburettor control arm where the cable clamp was originally inserted. Place a drop of oil on the three connections of the carburettor linkage (support arm, carburettor control arm and where the rod is inserted in the supercharger) .The original throttle return spring is retained on the late models. Do not install air cleaner on carburettor at this time.

-- C --

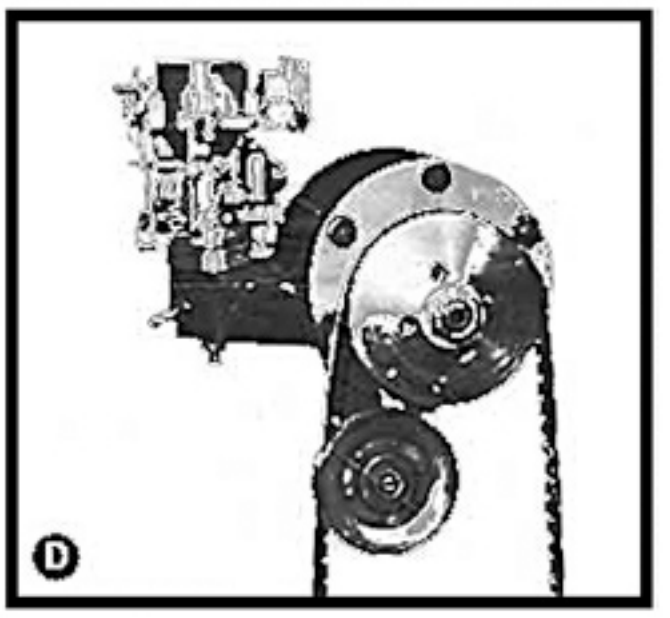
1. Re-locate wires across the front of shroud so that they will clear the supercharger. Place gasket over studs on supercharger and drop supercharger into position on intake manifold. Fasten supercharger to manifold using lockwashers and regular nuts. Install slotted brace from under first nut on crankcase to bottom bolt on supercharger as shown. It is necessary to remove the nut and washer from the crankcase stud to install supercharger brace.

2. Place the end of the original throttle rod through the eye of the supercharger throttle lever and clamp with the original throttle rod clamp from the carburettor. The clamp goes on the end of the original throttle rod inserted through the eye of the throttle linkage. Make sure that throttle action is smooth and that full movement is being obtained.



-- D --

An idler pulley is provided with the Model VW-24 kit to obtain proper belt tension. Install belt on both pulleys. Pull idler over on inside of belt as shown until slack is removed from belt and tighten clamping bolt on supercharger. Belt should have approximately ½" slack on opposite side.



-- E --

1.Replace electrical wire connection(s) to carburettor. Install new fuel line from fuel pump to carburettor using two clamps furnished with kit. Reform and install original vacuum advance line from distributor to carburettor. On late model engines make sure that the hose connection for the throttle positioner on the carburettor is plugged. Place air cleaner assembly on carburettor. It may be necessary to close the hood slightly to obtain clearance for mounting of the air cleaner. Install new crankcase vent hose from nipple on side of air cleaner to fitting next to oil filler cap.

2. Mount the lubricator on the firewall as shown in photo using three self-tapping metal screws furnished. If vehicle is equipped with an automatic transmission or if it is a 1970 model the lubricator will have to be mounted on the other side of the engine compartment. Drill 1/8" holes for the screws. Mount lubricator high enough so that the rear spark plug is accessible for removal and the fill spout on the lubricator accessible for refill through the back of the deck lid.

3. Connect the oil line from the lubricator to the supercharger by inserting fitting on end of oil line in lubricator and pushing other end of oil line on fitting screwed into supercharger under carburettor.

4. Fill the automatic lubricator with No. 10 detergent (HD motor oil). Do not start the engine unless the lubricator is connected and filled with oil.

Note A: In order to obtain supercharger clearance on the 1970 models it is necessary to remove the short center section of the drain pan extending into the engine compartment.

Note B: In making the installation on 1200cc and 1300cc engines as manufactured through 1966 it will be necessary to re-locate the wires from the tail lamp on the inside of the rear deck lid in order to obtain clearance. On some early models there may be insufficient clearance over the supercharger pulley to close the rear decklid. In this case it will be necessary to slightly increase the bow in the rear deck lid.

Note C: The pre-heater hose connected to the intake of the air cleaner is removed. In extremely cold climates however, the pre-heater hose should be connected at the flange and vented to the general area of the air cleaner.

ENGINE ADJUSTMENTS

The supercharged engine must be checked and set up as follows before starting the engine.

VALVE CLEARANCES. Valve clearances should remain stock and set to Volkswagen specifications for your particular engine.

IGNITION POINT SETTING. Stock gap of .016 (0.4mm) is recommended (51 to 55 degrees if set with cam dwell indicator).

IGNITION TIMING. Set ignition timing 10 degrees BTC. Factory settings on many VW engines is TDC and the supercharged engine will not perform properly at this setting. When using an ignition timing light, with the extreme right hand mark on the VW crank pulley lined up with the crankcase centre line, the timing is set at 10 degrees BTC. In some sections of Europe, South America and Asia where only low grade fuels are available, it may be necessary to set the timing at 7.5 degrees BTC.

SPARK PLUGS. The condition of the spark plugs is extremely important on a supercharged engine. Plugs should be in good condition. We recommend using the stock spark plug or the plug as recommended by Volkswagen for your particular engine and with the same gap. The spark plugs should be securely tightened in the head and if possible set with a torque wrench to 25 ft./lbs.

CARBURETTION. The main jet furnished with the supercharger kit provides the correct air fuel ratio throughout the speed range of the engine and no other modifications should be made on the carburettor.

INSTALLATION IS COMPLETE

Start the engine. It will be difficult to start the engine as the gasoline has been drained from the carburettor. As soon as the engine is running adjust the lubricator. Reset the idle speed if necessary after engine is warm.

CONVERTIBLE MODEL. It is necessary to remove a section of the drain pan located on the inside of the rear deck lid in order to obtain clearance for the supercharger.

KARMANN GHIA COUPE. On this model it is necessary to make a revision in the rear deck lid because of insufficient clearance in the engine compartment. A modification or scoop for the rear deck lid is available for the Ghia installation. Complete instructions and a template for mounting the modification is packed with the scoop.

BUS. There is insufficient clearance in the engine compartment to mount an air cleaner unless the panel directly over the carburettor is modified. In order to mount the carburettor on some models it is necessary to remove a 4" section of the reinforcing rib located on the underside of the panel directly over the carburettor.

DATA

LUBRICATOR ADJUSTMENT. To adjust the lubricator proceed as follows; Start the engine. The small knurled knob on the very top (under protecting cap) 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 six 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 1000 miles and the oil level should be checked occasionally so that you do not run out of lubricant. Engine and lubricant should be warm while adjustments are being made. The adjustment should be checked after the first 100 miles. The oil from the automatic lubricator is to oil the bore of the supercharger housing and also acts as an upper cylinder lubricant. Use 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. NOTE; The lubricator should be adjusted and left alone as any variance that will occur at idle will be slight under actual operation.

AIR CLEANER SERVICE. The air cleaner should be removed from the carburettor and washed out in gasoline or kerosene every 3000 to 5000 miles.

FUEL. Premium grade or high octane gasoline is recommended for maximum performance on the supercharged engine. Super premium fuels are not necessary.

BREAK-IN PERIOD. The supercharged car should not be operated at speeds in excess of 60mph for the first 1000 miles. We do not recommend supercharging a Volkswagen engine with less than 3000 miles of service nor do we recommend consistently exceeding the RPM limit of the engine as specified by Volkswagen.

NOISE. The supercharger may sound noisy when it is first started or within the first hour of operation. This noise is nothing to be concerned about and will disappear completely within the first 50 miles of hard driving. A clicking noise sometimes at idle or after backing off of the throttle after a hard run is a 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 at reduced efficiency. The drive belts are a standard size and can be purchased from any automotive jobber under Gates number 6267*. Belts are of a premium quality and should last for at least 25000 miles.

WARRANTY. The Judson Supercharger is warranted to be free from defects in material and workmanship under normal use and service. In case 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.

* The original Gates belt was 8210 but these are no longer available.

ITEMS TO CHECK FOR LACK OF PERFORMANCE

INSTALLATION. It is very important that the instructions be followed carefully when installing the supercharger on the engine. It is essential that there be no leaks in the induction system. The hose connections for the original throttle positioner on the carburettor must be plugged and there can be no leaks in the vacuum advance hose or the lubricator hose. The small copper washer gaskets must be placed under the locknuts fastening the carburettor to the supercharger. A leak in the induction system will account for a rough idle and a tendancy for the engine to stall. Throttle action in the carburettor must be fully opened when the accelerator pedal is fully depressed.

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 a 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 upsets the fuel/air ratio resulting in a lean mixture, a hot running engine, a poor idle, engine stalling, detonation, a noisy supercharger and restricted top speed. All connections should be checked for leaks including where the intake manifold is bolted to the head. The manifold itself should be checked for a crack.

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. A leak in the vacuum advance diaphragm on the distributor will restrict the top speed of the Volkswagen above 50mph. A faulty or worn fuel pump, a dirty carburettor or a sticking carburettor float will also account for a hot running engine and restricted top speed. 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.
