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Fig. 1

MODEL VH4 OPEN ENGINE AND POWER UNIT
Next, remove the spark plug from No. 1 cylinder and slowly turn the flywheel clockwise, at the same time holding a finger over the spark plug hole, so that the compression stroke can be determined from the air blowing out of the hole.

The flywheel is marked with the letters 'DC' near one of the air circulating vanes. This vane is further identified by an 'X' mark cast on the end. See Fig. 11. When the air blows out of the No. 1 spark plug hole, continue turning the crank until the edge of the marked vane on flywheel is on line with the mark on the vertical centerline of the shroud as shown on Fig. 11. Leave flywheel in this position. At this point the keyway for mounting the flywheel is also on top. Reassemble spark plug.

Next, remove the inspection hole plug from the magneto timing opening, located in the gear cover as shown in Fig. 10.

Assuming that the magneto has been removed from the engine, the following procedure should be followed before remounting.

The Number 1 cylinder firing position of the magneto must be determined. Insert the ignition cable into the No. 1 tower terminal of the magneto end cap and hold the spark plug terminal at the other end, about 1/8" away from the magneto body. Turn the magneto gear in a clockwise rotation, tripping the impulse coupling, until the No. 1 terminal sparks, then hold the gear in this position. Mount the magneto to the engine, meshing the gears so that when the magneto is in place, the gear tooth marked with an 'X' will be visible through the lower half of the inspection hole in the gear cover, as shown in Timing Diagram, Fig. 11. Tighten the nut and capscrew for mounting the magneto to the gear cover, making sure the magneto flange gasket is in place.

The No. 1 terminal is identified on the magneto cap. The terminals follow the proper firing order of 1-3-4-2 in a clockwise direction viewing the cap end. The leads from the magneto should be connected to spark plugs of corresponding numbers.

No. 1 cylinder is the cylinder nearest the fan-flywheel of the engine in the left bank and No. 3 cylinder is the other cylinder in that bank. No. 2 cylinder is across from No. 3 cylinders. This can be checked by turning crankshaft over slowly by means of a hand crank. The impulse will also snap every 180° of flywheel rotation thereafter.

**DISTRIBUTOR - BATTERY IGNITION**

On engines equipped with Flywheel Alternator or direct mounted Generator, battery ignition is used in place of magneto ignition. The distributor is of the automatic advance type, and rotor turns at one-half engine speed in a counter-clockwise direction. As
The cylinder head must be removed if it is necessary to regrind valves, or to work on the piston, rings or connecting rods. All of the cylinder head screws are plainly in view and can be easily removed. Screws of different lengths are used, but these can be properly reassembled according to the various lengths of cylinder head bosses.

In reassembly; remove all carbon and lead deposits from combustion chamber. It is recommended that new cylinder head gaskets be used as the old gaskets will be compressed and hard and may not seal properly. Use a mixture of graphite and oil on the cylinder head screws to prevent them from rusting tight against the cylinder block. Tighten cylinder head screws to 24 ft. lbs. torque in the sequence shown in Fig. 21. After complete assembly and engine is run in, retorque head screws.

FUEL TANK

If a side mount fuel tank is used, disconnect fuel line and remove tank assembly as illustrated in Fig. 20.

CARBURETOR AND MANIFOLD

The carburetor and manifold can be removed as a complete unit. In reassembly; tighten the manifold nuts to 18 ft. lbs. torque. Tightening beyond specifications may cause the flanges to break.

GEAR COVER

Disconnect the governor linkage and remove governor housing and gear-flyweight assembly from shaft in gear cover. Take out the ten gear cover cap screws and drive out the two dowel pins as shown in Fig. 23. The cover can then be taken off — exposing the gear train as illustrated in Fig. 24.
FLYWHEEL ALTERNATOR

with solid state regulation

12 Volt - 10 amp and 25 amp Systems For WISCONSIN Single, Two and Four Cylinder Engine Models

NOTE: Optional 30 AMP Systems are also available

DESCRIPTION of Change

Beginning with engine serial No. 5188288, a new two module flywheel alternator system replaces the previously furnished three module system, that included an isolation diode module, and the two unit system without the isolation diode.

The isolation diode module was incorporated into the old system to eliminate battery discharge problems during shut down, cranking and idling.

INTERCHANGEABILITY

The Regulator module was not changed and is completely interchangeable between the new and old systems. The Rectifier module and Stator assembly have been modified to incorporate the advantages of an isolation diode without adding a third module. These new parts are not interchangeable with the old unless both rectifier and stator are replaced simultaneously. The new system has a three prong plug connector between the rectifier and stator — the old system has a two prong connector.

DESCRIPTION and OPERATION

This flywheel alternator is of the permanent magnet type and has no brushes, commutator, belts or adjustments. A series of coils (stator) is mounted to the engine gear cover, and the magnetic flux is provided by a permanent magnet in the flywheel which rotates around these stationary coils. Only four components make up this light weight space saving system: a flywheel with magnetic rotor, stator, rectifier module and regulator module.

The center-tap rectifier arrangement prevents damage to the alternator system when arc welding, because the winding acts as a choke and its inductance prevents the transient voltage from damaging the diodes.

Since the physical appearance of both 10 amp and 25 amp alternator systems are very similar, the 25 amp unit can be distinguished from the 10 amp unit by the ammeter calibrations, and by a 14 gage green wire in place of a 16 gage red wire, from the ammeter to the stator-regulator connector.

PRECAUTIONS to be exercised in the use of this flywheel alternator:

1. Do Not reverse battery connections. This is for a negative ground system only.
2. Connect booster batteries properly — positive to positive and negative to negative.
3. Do Not polarize the alternator.
4. Do Not ground any wires from stator or modules which terminate at connectors.
5. Do Not operate engine with battery disconnected from system.
6. Disconnect at least one battery lead if a battery charger is used.

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