White

Operator's Manual

HD 800A-6A
Power Unit or Engine
S/N 34900001 & Up

Operator's Manual

WH-O-HD800A-6A

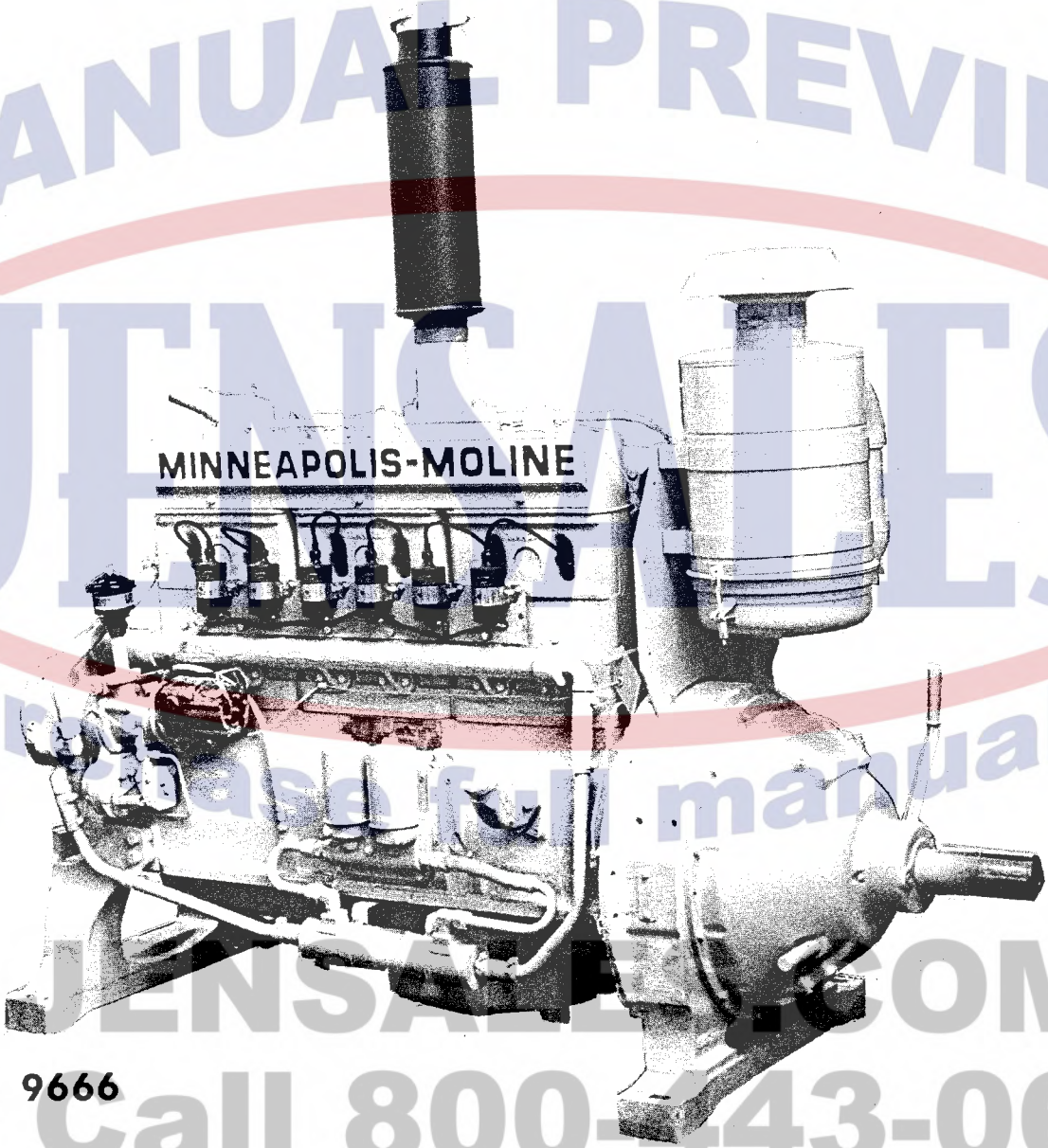
NOTES

WHITE

HD 800A-6A
Power Unit

OPERATION AND MAINTENANCE MANUAL

FORM NO. 432 441



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PISTON PINS:

Size and type	1-3/4" D x 4-1/2", full floating, pressure lubricated
Pin fit	.0001-.0004 loose @70° F.

VALVES:

Clearance	
Intake cold	.012"
Intake warm	.010"
Exhaust cold	.028"
Exhaust warm	.025"
Face-to-seat angle	
Intake	29°
Exhaust	44° or 29°
Seat Angle	
Intake	30°
Exhaust	45° or 30°
Stem diameter	.497-.496"
Stem-to-guide clearance	.0015-.0035"
Guide bore diameter	
Finished - (precision reamed)	.499-.500
Semi-finished - Ream to	.499-.500

SPARK PLUGS:

Gap	.015"
Torque	35 ft-lbs

ENGINE LUBRICATING SYSTEM:

Oil pump capacity	17.5 GPM, 50 PSI @ 1800 RPM
Crankcase capacity	
Standard base pan w/out spin-on filters	12 quarts
Standard base pan w/spin-on filters	14 quarts
Heat exchanger base pan w/out by-pass filters	18 quarts
Heat exchanger base pan w/by-pass filters	24 quarts

POWER TAKE-OFF:

Clutch	Standard - 14" Double disc
	Optional (Irrigation) - 14" Single disc
Shaft	3" diameter with 3/8" x 3/4" keyway
Flywheel housing	SAE No. 1 flange

MISCELLANEOUS:

Air cleaner	Oil bath-standard
	Dry type-optional
Electric starting equipment	12 volt, Delco-Remy
Recommended battery equipment	Three 12 volt, 72 amp hour
Distributor	
Dwell angle	31-37°
Breaker point opening	.018-.024"
Breaker point spring tension	19-23 oz.
Generator brush tension	28 oz.
Timing	
Natural Gas	20° BTDC
LP Gas	15° BTDC

If an in-line lubricator is not used in air supply line, check lubricant in end cover periodically and maintain oil level at hex plug (Fig. 10). Use SAE 20, high quality motor oil for refilling oil chamber.

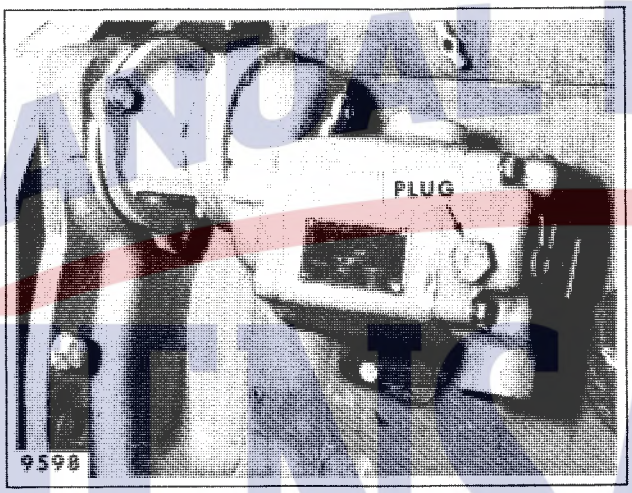

Fig. 10. Air Starting Motor

DISTRIBUTOR

Apply a trace of high-quality ball bearing lubricant to breaker cam every 250 hours of operation. Also, place two drops of light engine oil on felt wick under rotor.

Bendix breakerless distributor requires no lubrication.

FAN HUB

At initial engine servicing and after each 1000 hours of operation, turn fan hub so that vent plug and grease fitting are straight to either side (Fig. 11). Remove slotted vent plug and inject lithium base grease through grease fitting until grease is visible at vent plug opening. DO NOT OVERFILL – some air space must remain. Reinstall vent plug, tightening it securely.

Once annually, remove, disassemble, clean, and repack spindle bearings, using lithium base grease. Refer to Maintenance Section for disassembly and reassembly procedure.

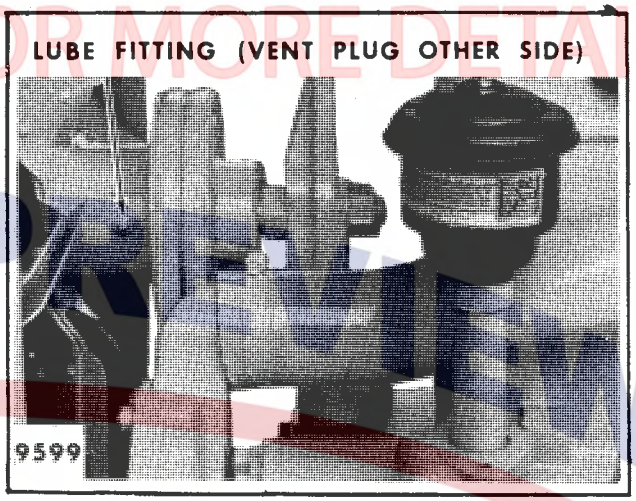

Fig. 11. Fan Hub Lube Fitting

CLUTCH AND POWER SHAFT

Lubricate clutch throwout collar, power shaft bearing and pilot bearing every 150 hours of operation, using an automotive lithium base grease. DO NOT apply excess grease to throwout collar.

Bump crankshaft rearward after lubricating pilot bearing. Do not over-lubricate and avoid using heavy viscosity grease. These procedures will relieve forward thrust on crankshaft which could result in premature rear main or thrust bearing failure.

If fitting for pilot bearing in end of shaft is inaccessible, move fitting to alternate location as shown in Fig. 12. Install plug in end of shaft.

Fig. 12. Clutch & Power Shaft

block is on high point of the cam lobe. Set point gap to .018 to .024 inch (Fig. 25). Gap should be set to wider opening to compensate for wear on rubbing block.

Check alignment of points to be sure they are centered. Apply a dab of ball bearing lubricant to breaker cam and reinstall dust shield, rotor, and cap. After completing service work on points, check ignition timing as explained on page 23.

If distributor is to be removed from engine for service, turn engine over until No. 1 piston is at top of its compression stroke. Remove distributor cap and mark position of rotor in relation to distributor body. Also mark position of distributor housing in relation to adapter housing. Use these marks to install distributor in its proper position at reassembly.

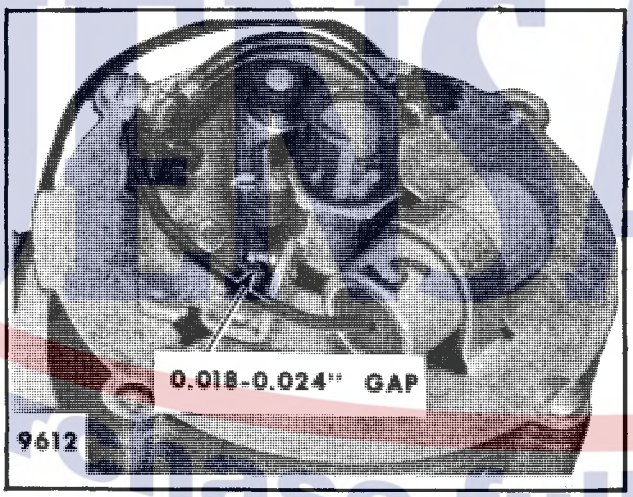

Fig. 25. Point Gap

DISTRIBUTOR (BREAKERLESS)

Breakerless distributor requires no maintenance or service except an occasional cleaning of rotor contact point and contacts inside distributor cap. Keep wire connections and terminals between transmitter and distributor clean and free of corrosion or oil.

If distributor is removed from engine for any reason, turn engine over in direction of rotation, until No. 1 piston is at top of its compression stroke.

Remove distributor cap and note position of rotor in relation to vertical timing marks inside body. There are two vertical marks for determining rotor position, depending on direction of distributor rotation. Distributor rotor turns in a clockwise direction when looking down into body, so with No. 1 piston at top of its compression stroke, trigger vane nearest rotor should be pointing to vertical mark indicated in Fig. 26.

NOTE: FIG. 26 SHOWS ROTOR OUT OF POSITION TO FIRE NO. 1 CYLINDER TO ILLUSTRATE TIMING MARK IN HOUSING.

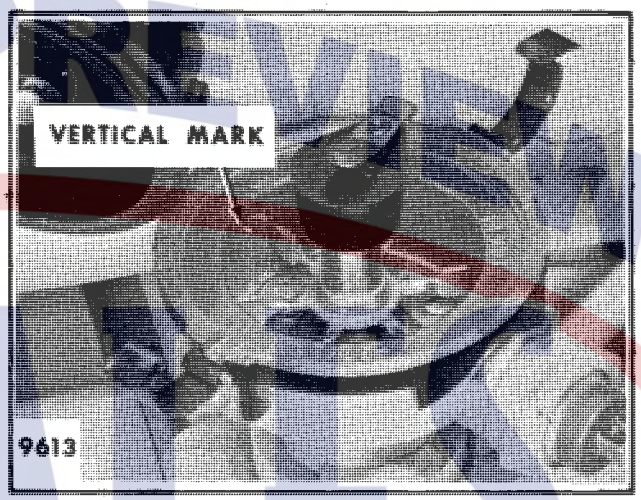

Fig. 26. Timing Distributor

MAGNETO

Field service of magnetos used on HD800A-6A power units is limited to cleaning or replacing breaker points and replacing condensor. Whenever major service becomes necessary, take magneto to an authorized magneto service station that has proper facilities and specialized equipment for overhauling and testing magneto.

IMPORTANT: IF DIFFICULTY IS EXPERIENCED WITH A MAG-TRONIC BREAKERLESS MAGNETO, TAKE IT TO AN AUTHORIZED AMERICAN-BOSCH MAGNETO SERVICE STATION FOR INSPECTION AND TESTING.

To clean or replace contact points, remove distributor cover. Figs. 27, 28, and 29 show contact points and condensors of three magnetos available for HD800A-6A power unit. The Mag-tronic magneto does not have contact points.

Check condition of points and clean them with a fine cut point file if they are severely burned, pitted or corroded. Replace points if they cannot be cleaned up satisfactorily. Replace condensor when new points are installed.

Adjust contact points to obtain a .015" gap with points wide open (cam follower on high part of cam lobe).

Pistons are available for unit in standard, .020", .040", and .060" oversize. To obtain correct fit for oversize pistons, cylinders must be bored to 5.3385-5.3395", 5.3585-5.3595" or 5.3785-5.3795", as applicable.

When reinstalling blocks, use new gaskets. Tighten place bolts inside crankcase evenly to 170-175 ft-lbs.

CAMSHAFT

To remove camshaft, remove rocker arm assemblies and push rods, keeping push rods in their original order. Use a piece of wire inserted down through each push rod hole to hold tappets up so that they will clear camshaft lobes and bearing journals when camshaft is removed.

Two front bearing surfaces of camshaft turn in bushings in crankcase. Nominal inside diameter of front bushing is 3.344-3.342", and second 3.3135-3.3115". Bearing clearance for No. 1 and 2 is .002 to .007"; for No. 3 and 4, .003 to .005". If wear on bushings exceeds .005-.008", there will be excessive play on camshaft and possible damage to timing gears. To replace bushings, press out old ones and press in new (Fig. 54).

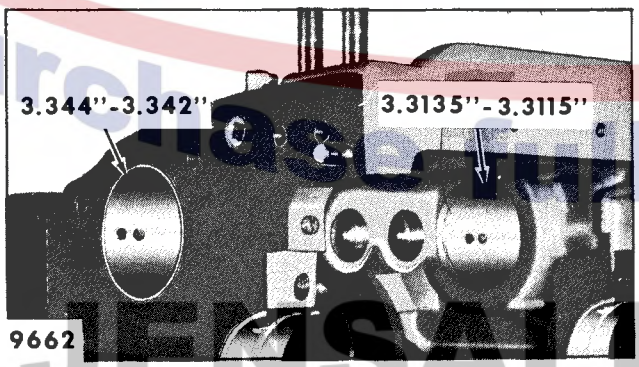

Fig. 54. Camshaft Bushings

Replacement bushings are precision reamed during manufacture and require no further machining after assembly, provided they are not damaged during installation.

When reinstalling camshaft, remember to time camshaft gear with crankshaft gear (No. 1 tooth in No. 1 tooth space).

CAMSHAFT END PLAY

Camshaft should have .010-.025" end play. To adjust, loosen lock nut shown in Fig. 55, turn adjusting screw all the way in, then back screw out to obtain proper end play. Tighten lock nut.

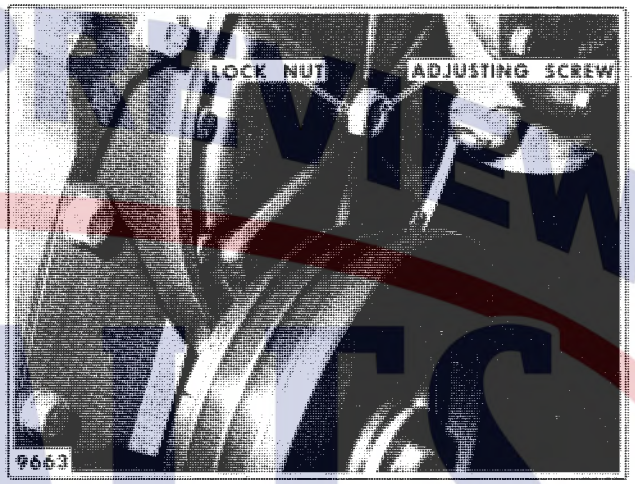

Fig. 55. Camshaft End Play Adjustment

PTO CLUTCH

If satisfactory clutch adjustments can no longer be obtained, it indicates that driving plates are badly worn and must be replaced.

To gain access to clutch plates, it will be necessary to remove complete clutch assembly from engine. Remove bolts securing clutch housing to flywheel housing. Install a fairly long 1/2"-13 bolt in tapped hole in each side of bell housing. Turn bolts in evenly to force clutch housing away from flywheel housing.

Pull pilot bearing from shaft. Straighten bent over portion of lock washer and remove nut and washer.

Disconnect grease tube from shifter collar. Install a 5/8"-11 bolt in each tapped hole in clutch backing plate and attach a suitable puller. Remove clutch assembly from shaft.

Before removing floating plate and sliding sleeve assembly, check fit of shifting collar on sleeve. Collar should fit snug on sleeve with no evidence of drag.

If collar is loose on sleeve and shims are installed between collar halves, remove shims to obtain proper fit. If collar is worn so that it is loose with shims removed, replace collar.

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