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MANUAL PREVIEW

Adams Service Manual 414

Motor Grader

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Service Manual

AD-S-414MG

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HOW TO USE THIS BOOK

This manual has been prepared for the use of those who maintain and service the machine described on the front cover. It is divided into sections.

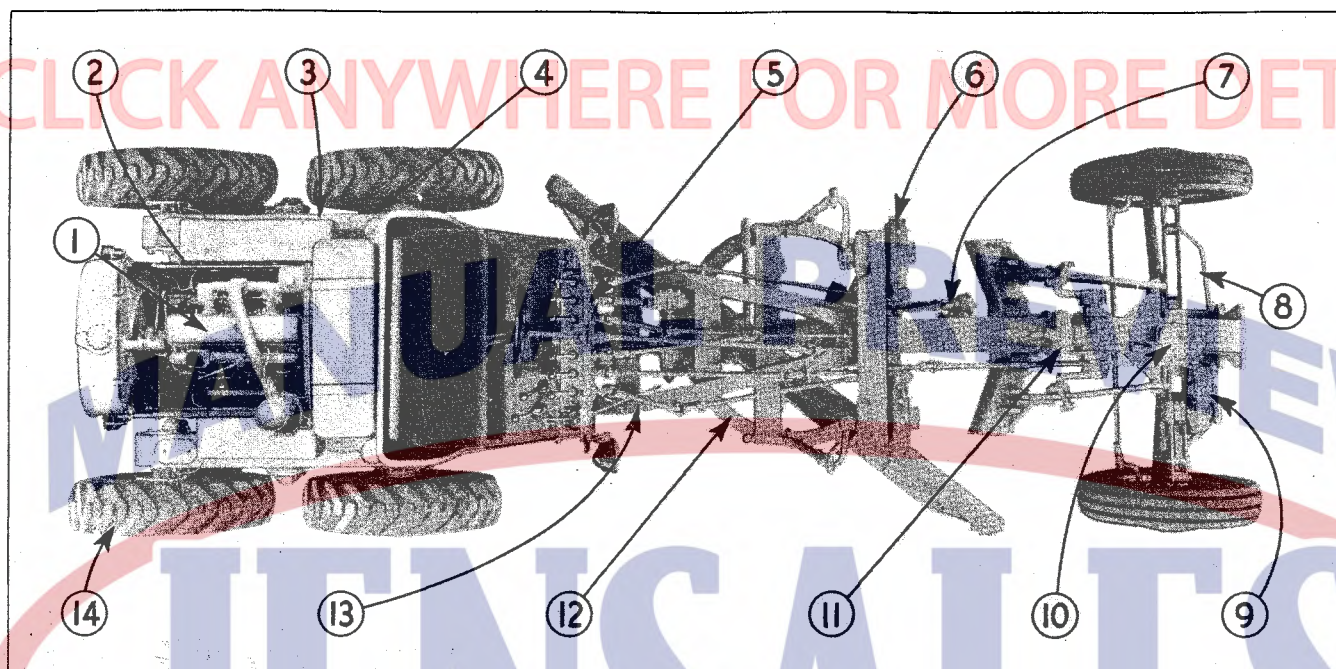
Each section has a numbered black tab which lines up with the corresponding section name and number on the righthand edge of this sheet. The black tabs are located quickly by bending the book back.

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INDEX



This maintenance manual is intended for the instructions of those men or organizations who have the responsibility of repairing and maintaining this machine. The reference numbers in the illustration above refers to the index below showing numbers of pages on which will be found instructions for the assemblies pointed out in the illustration.

In each section instructions are given for disassembly, inspection, and reassembly. When the method of disassembly and reassembly is obvious, instructions are given only for special points which should be watched.

Section No.

Description of Assembly

1	Engine
2	Transmission
3	Tandem
4	Brakes
5	Power Controls
6	Blade Controls
7	Circle Reverse
8	Front Axle
9	Front Wheel Lean
10	Steering
11	Scarifier
12	Circle
13	Frame
14	Wheels
15	Accessories
16	Lubricating Instructions

SEC. I - ENGINE

COOLING SYSTEM

GENERAL INFORMATION

Capacity U. S. Gal. - - - - -	18
Type - - - - -	Flat Tube
Thermostat Open - - - - -	165°
Thermostat, Wide Open - - - - -	190°
Water Pump Drive - - - - -	"V" Belt
Water Pump Fan Belt Tension Adjuster - - - - -	Turn one flange of pump pulley
Water Pump Capacity G.P.M. - - - - -	87
Fan Diameter - - - - -	20"
Fan Blades - - - - -	4
Fan R.P.M. Serial Nos. 680 and After - - - - -	2156
Fan R.P.M. Serial Nos. 1 thru 679 - - - - -	2097

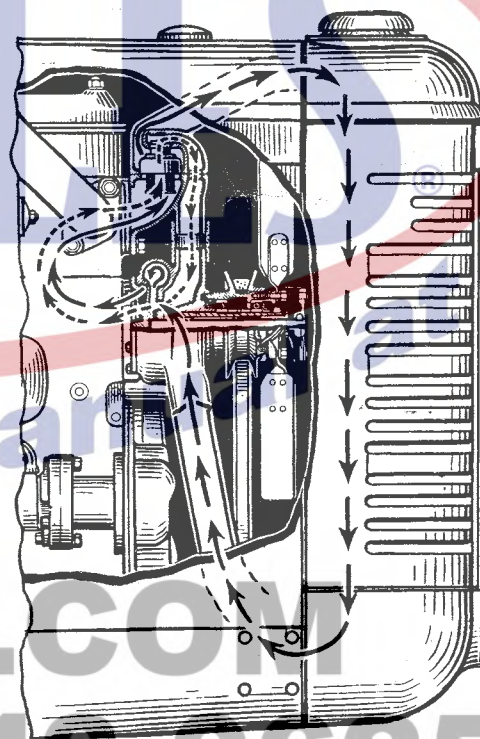
OPERATION

A positive centrifugal pump circulates water in the closed system between the engine block, cylinder head and radiator. The temperature is controlled by thermostat, by-pass type, set in casting attached to front of cylinder head. The path of the water circulation when the engine is cold is from the radiator bottom up through the pump thru the engine block up to the cylinder head and out into the thermostat, through the thermostat, and by passed back into the pump. Any water escaping into the radiator is made up from the supply at the bottom of the radiator.

This circulation during the warm-up period prevents formation of steam pockets. The thermostat starts to open at 165°. The temperature controls the opening of the thermostat which in turn controls the amount of water recirculated through the pump and also the amount of cooler water added from the radiator.

With the thermostat in the wide open position (190°F), the by-pass is closed, no water is circulated through the pump and flow is from the cylinder head through the radiator and back to the pump.

Always use clean water (rain or soft water preferred), water from creeks and stagnant pools, usually contain dirt or other matter which leaves a deposit in the system which impairs cooling efficiency. The cooling system should be cleaned occasionally.



Illust. 1 - Water circulating system. The water follows the path of the heavy arrows when the thermostat is open, and of the dotted arrows when the thermostat is closed.

SEC. I - ENGINE

WATER PUMP

The fan assembly and drive pulley run on ball bearings mounted on a sleeve which is a press fit in the water pump body. The impeller is driven through a full-floating type shaft.

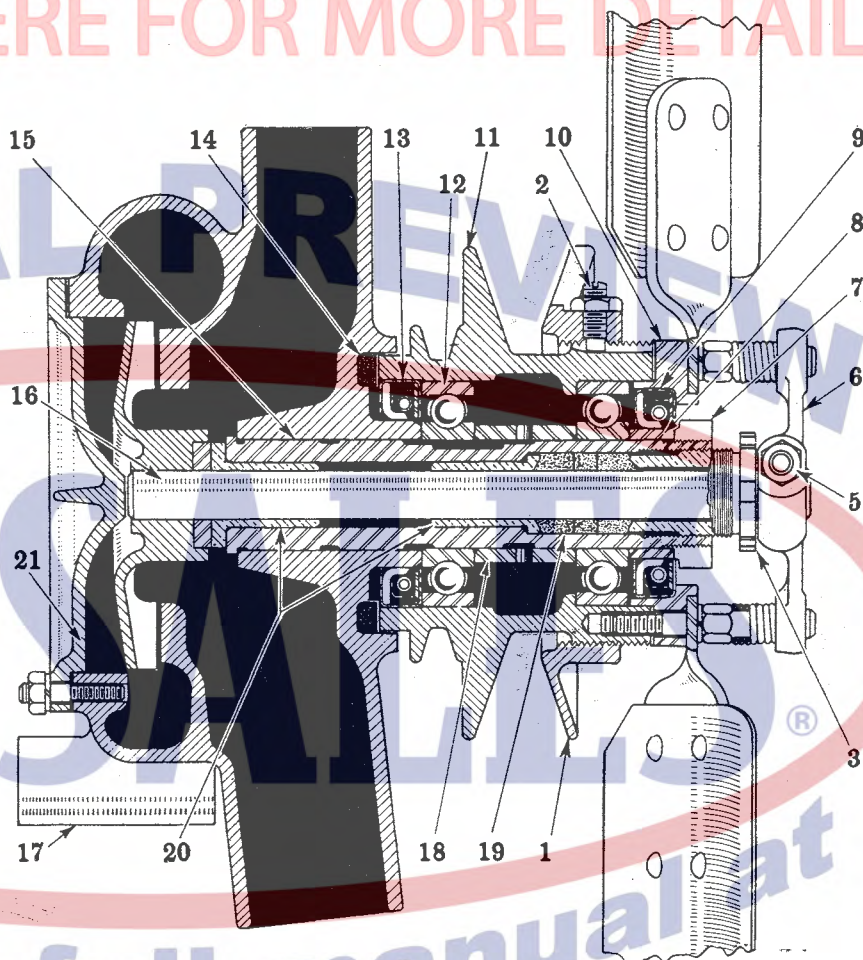
Due to wear after considerable service, the pump may leak. When this occurs, tighten the packing nut (3), Illust. 4, just enough to stop the leaking. After all the adjustment is taken up on the packing nut, it will be necessary to add more packing, or preferable, to remove the old packing and install new packing (19). For service, packing is obtainable in split segments 1/4" thick.

In order to install new water pump packing, it is necessary to remove the pump assembly from the engine. The water pump can be removed after disconnecting the hoses, removing the left half of the fan shroud, removing the fan belt, and bolts holding the pump to the crankcase. A gasket is used between the pump and the crankcase at each point where a bolt is used to fasten the pump to the crankcase.

To replace the packing (19), remove the driver pin (5) and driver (6). Unscrew and remove the packing nut (3). Remove the cover (21) on the back of the pump and slide out the impeller with shaft for easy removal of the packing.

If the adjustable flange (1) has been broken it is only necessary to remove the fan, nut (7), bearing retainer (10), and unscrew the flange.

Place the impeller and shaft back in the pump and install new packing. Place enough packing in the pump so that when the packing nut is installed, sufficient threads on the nuts on the outside of sleeve (15) will allow for take-up as the packing wears. Reassemble the pump by reversing the foregoing instructions.

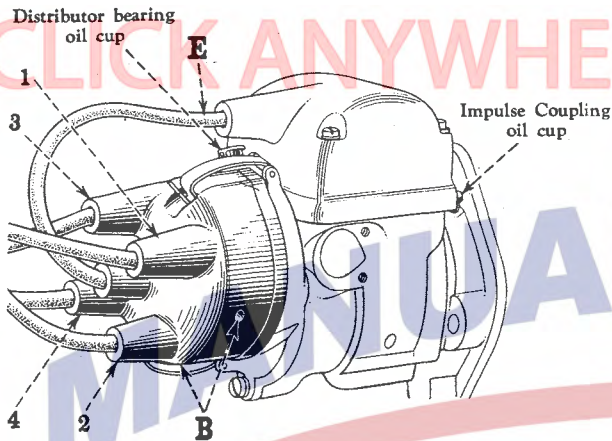


ILLUST. 4 - Cross section of the water pump. (1) Pulley flange. (2) Set screw. (3) Packing Gland. (5) Pin. (6) Driver. (7) Nut. (8) Spacer. (9) Oil Seal, Front. (10) Bearing Retainer. (11) Pulley Hub. (12) Bearing. (13) Oil Seal, Rear. (14) Felt Washer. (15) Sleeve. (16) with Shaft. (17) Pump Body. (18) Spacer.

SEC. I - ENGINE

have been eliminated. The flange is mounted to a drive bracket which is connected to the front plate of the engine. All shimming and lining up of various bolt holes when coupling the magneto to the engine is eliminated. Fine adjustment of timing is accomplished by rotating the magneto in slotted holes in flanges of bracket and magneto.

Designed for operation with four cylinder engines, the entire mechanism is fully enclosed and protected against entrance of dirt, dust and moisture. The serial number is stamped on the magneto frame and will identify the magneto and give all necessary information about it.

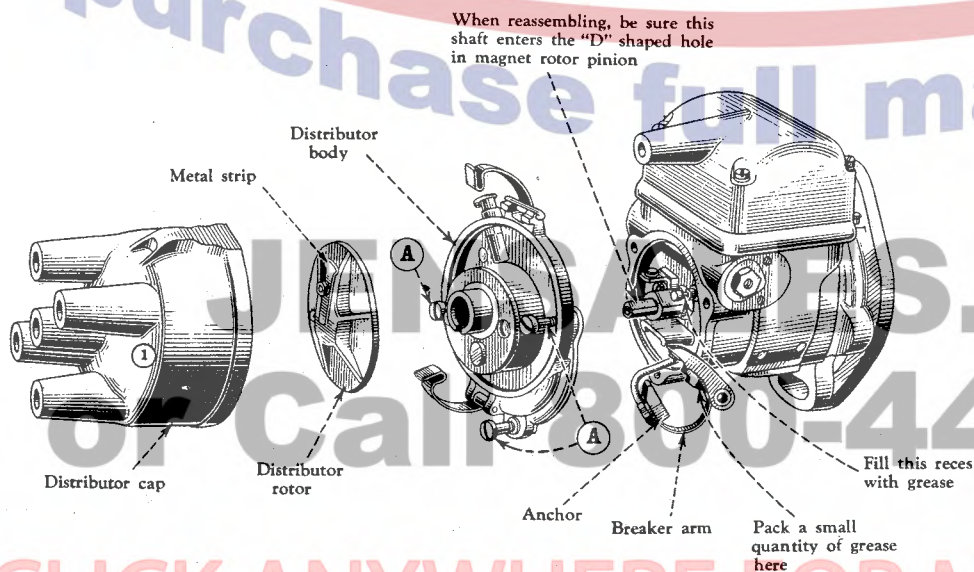


ILLUST. 7 - H 4 Magneto.

LUBRICATION

Every week oil impulse coupling, Illust. 7, liberally with very light grade of engine oil. Fill distributor bearing oil cup once after every 500 hours of operation with the same grade oil. Do not oil oftener as excessive oil might wear to the breaker points, causing rapid point wear.

The magneto requires very little attention other than properly lubricating the oil cups as specified above. It is important, however, to keep the breaker arm chamber clean, as oil in the breaker points will cause rapid point wear. Over lubrication of the distributor bearing oil cup might cause a dirty breaker point chamber. After every 500 hours of operation, the breaker point chamber should be inspected to assure that it is clean. See that the points are in good condition and have the proper clearance. If the chamber is clean, no attention is necessary other than checking the clearance of the points and greasing of the breaker arm post and rubbing block. If the chamber is dirty, all parts must be thoroughly cleaned and the points should be



ILLUST. 8 - Breaker Mechanism.

lubrication of the distributor bearing oil cup might cause a dirty breaker point chamber. After every 500 hours of operation, the breaker point chamber should be inspected to assure that it is clean. See that the points are in good condition and have the proper clearance. If the chamber is clean, no attention is necessary other than checking the clearance of the points and greasing of the breaker arm post and rubbing block. If the chamber is dirty, all parts must be thoroughly cleaned and the points should be

SEC. I - ENGINE

Illust. 7, back into socket in coil cover.

CARE OF SPARK PLUGS

Spark plugs should be removed every 200 or 300 hours, or oftener if necessary, for cleaning and checking gaps between electrodes. A gap of .035" to .040" (or thickness of gauge marked spark plugs") should be maintained between the electrodes. When making this adjustment, always bend the outer electrode and never the center electrode as it may damage the insulator. Sand blasting is the recommended method of cleaning spark plugs. Caution: Never scrape or clean the insulator with anything which will scratch the porcelain. Scratched porcelain allows carbon and dirt to accumulate much faster.

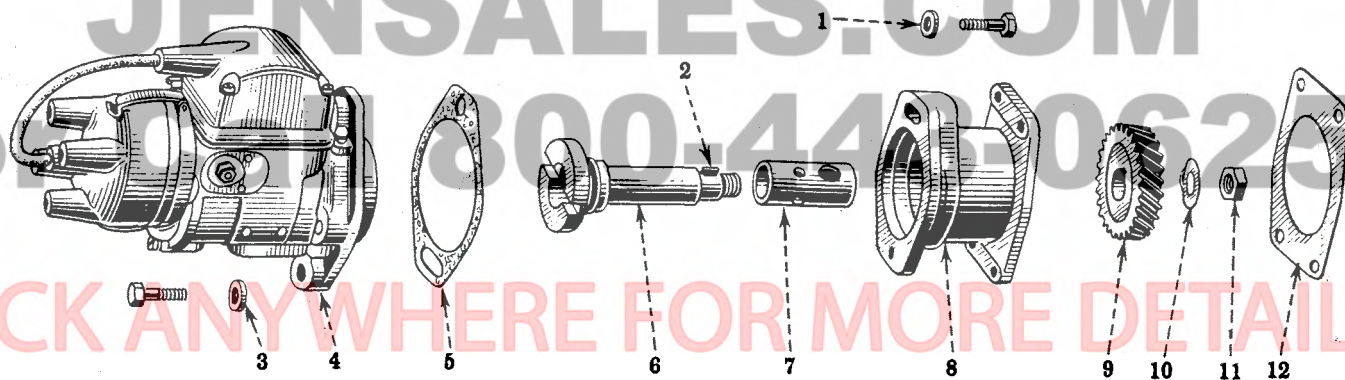
The spark plugs selected after careful tests as best suited for this engine are the Champion No. 44 or A.C. No. 18 and should be used. Only a complete set of either type of spark plugs should be used on the engine.

Note: There should be 1/4" minimum clearance between the spark plug cables and cylinder head. This will prevent shorting out of the spark plugs and also will move the cable away from the extreme heat of the cylinder head. If the cable touches the head, heat soon causes the rubber to become soft and ruin the cable.

MAGNETO DRIVE

If it becomes necessary to remove the magneto drive assembly for repair, first remove the magneto as described under that heading. Then run out the four 3/8 x 1-1/2" cap screws that secure the magneto drive housing (8) Illustration 12, to the front plate.

The gear (9) is a press fit on the shaft (6). It can be removed by either pressing the shaft through the housing or by applying a puller to the gear. The bushing in the housing is replaceable, steel back babbitt. When replacing the bushing, the 9/16" holes should be assembled to the front end of the bracket and arranged vertically to coincide with a similar opening in the housing. The four 3/16" holes are then toward the magneto end. The end of the bushing should be flush with the front face of the housing. After installing the bushing it must be reamed to provide a clearance between the bushing and shaft of .001" to .003". Particular care must be taken while reaming this hole to have the bore square with the mounting face



ILLUST. 12 - Exploded view of magneto drive.