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Minneapolis Moline

Operator's Manual

2-Star

Crawler

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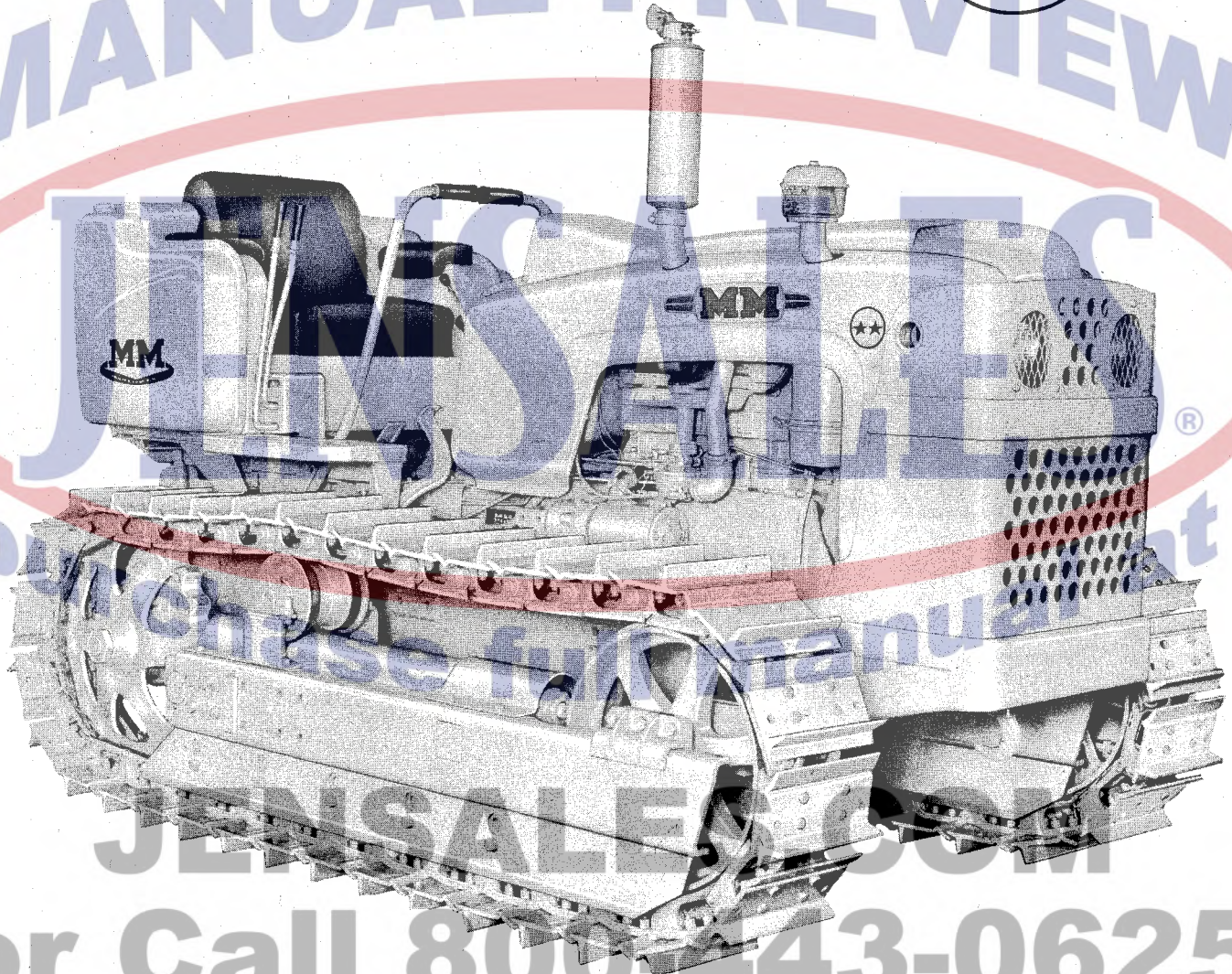
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MM-O-2STAR CRW

Operator's Manual

OPERATOR'S MANUAL

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2-STAR CRAWLER

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MINNEAPOLIS-MOLINE COMPANY

MINNEAPOLIS 1, MINNESOTA, U. S. A.

SPECIFICATIONS

GENERAL:

Make	Minneapolis-Moline
Bore and stroke	3 $\frac{3}{8}$ " x 5"
Number of cylinders	4
Piston displacement (cu. in.)	206
Normal governed speed (full load)	1900 RPM
Normal governed speed (no load)	2090 RPM
Fuel equipment	Standard equipment for regular grade gasoline

CRANKSHAFT:

Material	Drop forged steel, heat-treated with tocco-hardened journals
Main bearings — Front	Precision type — Trimetal
Center	Precision type — Trimetal
Rear	Precision type — Trimetal

CONNECTING RODS:

Material	Drop forged steel, heat-treated
Type of bearing	Precision type — Trimetal

PISTON:

Material	Aluminum alloy
Rings	3 compression; 1 oil
Piston pin	Full floating

CYLINDER HEAD & VALVE MECHANISM:

Type	Valve in head
Valve inserts	Exhaust valves
Valve rotators	Exhaust valves, positive type
Tappets	Cylindrical type
Camshaft material	Cast proferall metal
Camshaft drive	Helical gear

OILING SYSTEM:

Oil pump	Gear type
Oil filter	Full flow; replaceable cartridge; 1 U.S. qt. capacity
Base pan capacity	6 U.S. quarts
Lubrication	Force feed to rear, center and front, main bearings, conn. rods, valve mechanism, front and center camshaft bearings and accessory shaft
Crankcase ventilation	Breather on valve cover

IGNITION:

Type	Battery — 12 volts
Firing order	1-3-4-2

CARBURETOR — Gasoline 1" SAE flange

FUEL PUMP Electric, 12 volt

GOVERNOR Mounted on crankshaft—ball and cam type

SEAT.....Large, wide foam rubber seat and back cushions with arm rests

Height — above grouser tip	13½"
Width of drawbar opening	2½"
Total lateral movement	16"
Dia. drawbar pin	1¼"

Diameter track frame shaft	3"
Length track frame shaft	63½"
Number track rollers — each frame	
Upper	1
Lower	5
Track shoe length — center to center of pins	6½"
Width — high lug grouser shoes	12" or 14"
Width — track street shoes (optional)	14"
Length of track on ground	74½"
(Center drive sprocket to center front idler)	
Total ground contact area (sq. in.)	1788
Size — track shoe bolts (4 per shoe) diameter	½"
Size — track pins	1½₂" O.D. x 7½"
Size — track bushings	1²½₂" O.D. x 4⅞"
Number — shoes per track	34

FINAL DRIVE:

Drive sprocket shaftTapered roller bearing mounted
Bull gearsOne piece forged steel bull gears.
Mounted on tapered involute splined shafts

Design Two shafts; sliding gear, 5 forward speeds; 1 rev.
Shafts mounted on tapered roller bearings

Gears Heat treated alloy steel. Straight spur 20°
full depth teeth, all teeth shaved

Location	Between eng. and gear shift trans.
Pump Data* —	
Pump	Gear type
Capacity	7 gpm
*Must be tandem mounted on end of hydraulic pump, listed in hydraulic equipment.	
Capacity	5½ U.S. gals.
Oil heat exchanger	Oil cooling tubes located in radiator bottom tank

Location	Ahead of transmission
Type	Hydraulic actuated, Multi-disc, wet type, clutched, planetary gear train
Size	6¾"
Control	Foot operated

STEERING CLUTCHES: (One for each track)

Location Differential shaft
Type Triple disc
Size 8" O.D. x 5" I.D.
Control Independent R.H. and L.H. handles
(Located in front of operator)

STEERING BRAKES: (One for each track)

Location Differential shaft
Type Dual disc
Size 7" O.D. x 4" I.D.
Control Same handles as for steering clutches

BRAKES: (Same as steering brakes)

Control One master brake pedal located on R.H. side next to
foot accelerator — foot operated

EXTRA EQUIPMENT:

Power Take-Off —
Shaft size 1 $\frac{3}{8}$ " — 6B S.A.E. spline
Speed — (@ 1900 Eng. R.P.M.) 1845 R.P.M.
Type Continuous running

Hydraulic Equipment —
Reservoir capacity Approx. 9 U.S. gal.
Location Behind seat
Control Hand levers on R.H. side near seat
Hydraulic pump* — capacity Approx. 25 gpm at 1550 rpm

*Driven from end of P.T.O. drive shaft.



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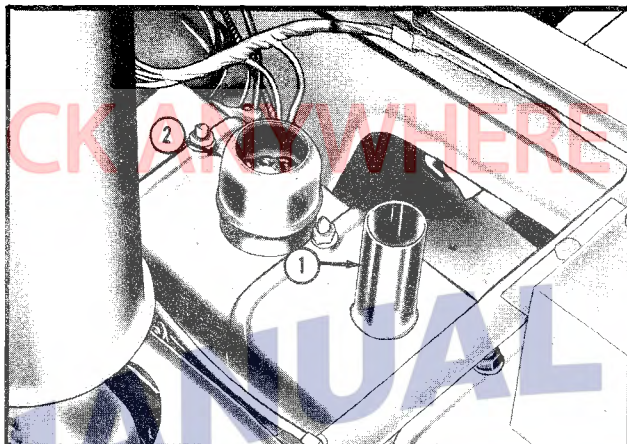


FIG. 2

- 1. Filler
- 2. Breather

When changing the crankcase oil, drain it after the engine has been running and the oil is still warm. Crankcase sludge will be held in suspension, and it will be drained with the oil before it has a chance to settle out.

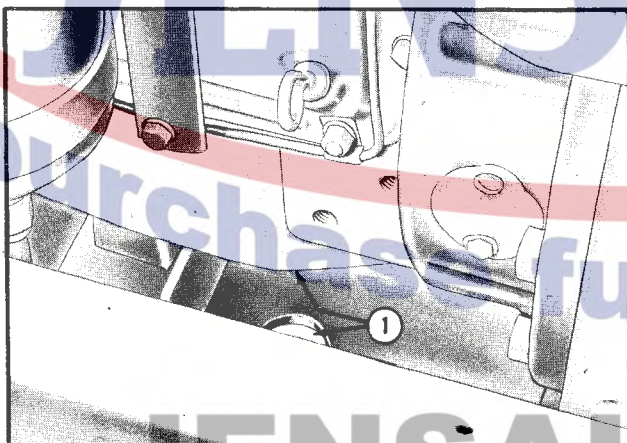


FIG. 3

- 1. Drain plug (in line with opening in plate)

OIL FILTER

The 2-Star Crawler has a full-flow, replaceable-cartridge type oil filter. Fig. 4. Under normal operating conditions, we recommend changing the cartridge every 400 hours of operation. When operating the tractor under extremely dusty or adverse conditions, the cartridge should be changed at proportionately shorter intervals.



FIG. 4

- 1. Engine oil filter

To replace the filter cartridge, loosen the center tube nut, and allow the oil to drain. Remove the shell, the center tube nut, and the filter cartridge. Do not lose the spring and spring retainer. Fig. 5. Flush out the inside of the shell, and wipe out the filter base with a lint-free rag. Check the condition of the copper gasket between the center tube nut and the shell. Replace this gasket if it is damaged or worn excessively. Clean the oil passages in the center tube. Place the new rubber gasket in the filter base. Install a new cartridge (10P732) and the retainer, spring, shell, copper gasket, and center tube nut in the order shown in Fig. 5.

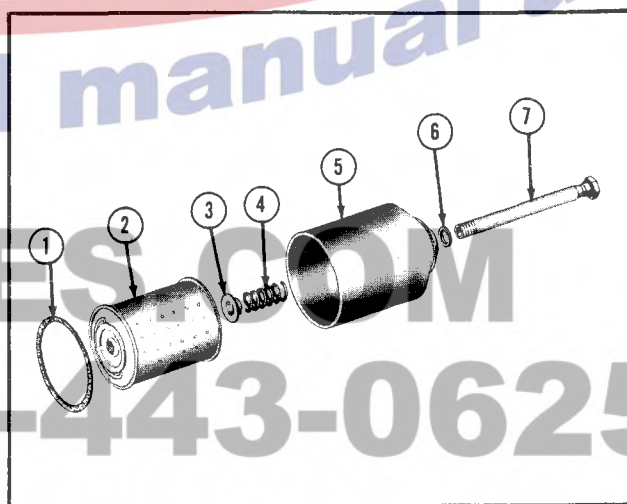


FIG. 5

- 1. Rubber gasket
- 2. Cartridge
- 3. Spring retainer
- 4. Spring
- 5. Shell
- 6. Copper gasket
- 7. Center tube nut

Tighten the stud enough to prevent leaks, but use care to avoid over-tightening.

NOTE: Add one extra quart of oil to the crankcase when a new filter cartridge is installed.

AIR CLEANERS

The air cleaners consist of the pre-cleaner, the air cleaner body, and the oil cup. Fig. 6.

Air cleaner service is very important to long engine life and efficient engine operation. An engine can be severely damaged in a very short time if the air cleaner is neglected. Dirt that enters the engine acts just like the abrasive material used in some grinding compounds. Therefore, every precaution must be used to prevent dirt from entering the engine. A dirty or clogged air cleaner could also result in increased fuel consumption and loss of engine power.

The air cleaner connections should be inspected daily and must be kept tight. Damaged or cracked hoses should be replaced immediately. Any leaks — no matter how small — can admit enough dirt or dust to cause serious damage to the engine. Be sure the hose clamps are on the tubes when they are tightened.

The pre-cleaner prevents coarse material from entering the air cleaner. Clean the pre-cleaner whenever it becomes filled with dirt to the mark indicated on the pre-cleaner.

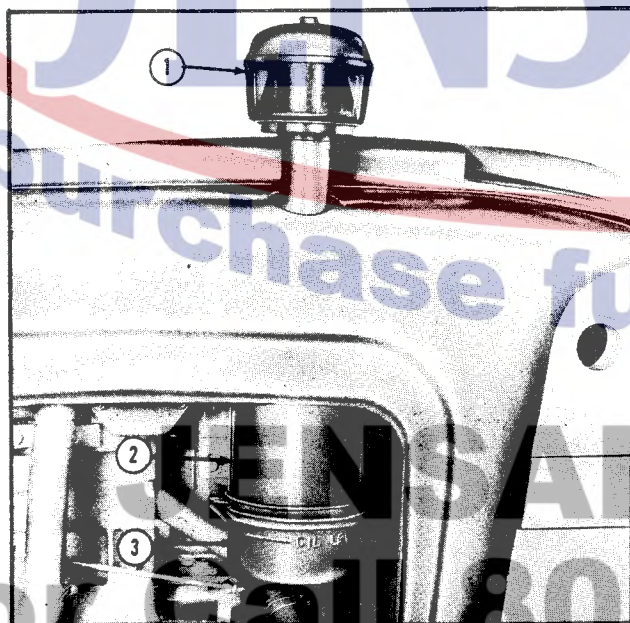


FIG. 6

1. Pre-cleaner
2. Air cleaner body
3. Oil cup

When operating under normal conditions, clean and refill the air cleaner oil cup daily with the same grade and weight oil used in the engine crankcase. When operating

under maximum load or extremely dusty conditions, service the air cleaner oil cup twice each day or every 5 hours of operation. However, do not depend entirely upon visible detection of dust, or lack of dust in the surrounding air, to determine how often to service the air cleaner. The air cleaner will become saturated with very fine dust much more rapidly than it will in conditions where the dust particles are fairly coarse and easily visible to the eye. Fine particles of dust may become suspended in the oil without leaving any noticeable sediment in the cup. NEVER allow more than ½ in. of dirt to collect in the cup, and do NOT let the oil become thick with suspended dirt.

To service the oil cup, remove the oil cup from the air cleaner, and clean out all the oil and dirt. Inspect the lower screen of the cleaner element. The screens inside the cleaner should never be removed for cleaning as this upsets their relative position to each other and destroys their filtering effect. Clean out the center tube, using a rag and stick, to remove any dirt or dust which may have accumulated. Refill the oil cup to the level mark with clean engine oil, and replace the oil cup. Always use the same weight and grade of oil that is used in the engine crankcase.

NOTE: Do not over-fill the oil cup. To obtain the best performance from the air cleaner, keep the oil level up to the level mark.

Every time the engine oil is changed, remove the complete air cleaner from the engine. Then, in addition to the regular service, soak and clean the entire air cleaner body in a suitable cleaning fluid until all the dirt and dust in the inner screens and center tube have been removed. Dry the air cleaner.

CRANKCASE BREATHER

The crankcase breather should be serviced each time the air cleaner is serviced. To service the breather, wash it in a suitable cleaning solution. After drying it, saturate the element with engine oil, and reinstall the breather on the filler spout.

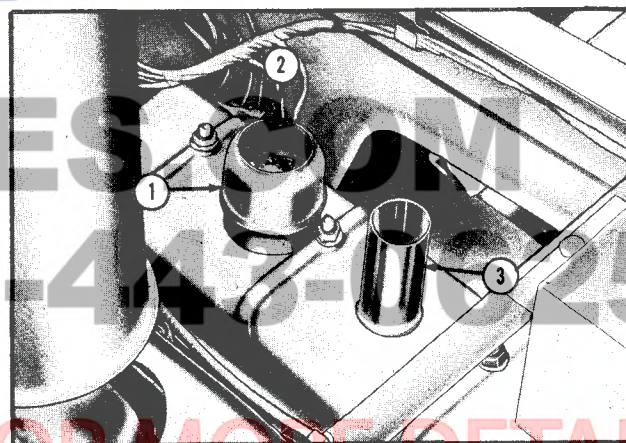


FIG. 7

1. Breather
2. Element in breather
3. Filler spout