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Massey Harris
Massey Ferguson
Operator's Manual
333
Diesel

Operator's Manual

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WELCOME . . . TO BETTER—EASIER FARMING

This Massey-Harris Tractor was designed to make your farm work easier, faster -- more convenient. Precision-built of high quality materials under the most rigid manufacturing standards, it characterizes the latest engineering advancements and practical design that has made Massey-Harris farm machinery "a good buy" for over 109 years.

You can look forward to many years of trouble-free service and economical operation[®] with this tractor provided you handle it wisely -- with reasonable care. If given proper service and maintenance, if properly stored when not at work, it will return your investment many times over.

For helpful information regarding operation and maintenance of your new tractor, keep in close touch with your Massey-Harris dealer. Both he and his factory-trained staff can supply you with all the help you need to assure you many years of satisfactory, dependable performance.

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DATA

Engine: ED 208
 Cylinders 4
 Bore 3-11/16"
 Stroke 4-7/8"
 Displacement 208 cu. in.
 Compression Ratio 16.0-1
 Firing Order 1-3-4-2
 Intake Valve Clearance (Hot)014"
 Exhaust Valve Clearance (Hot)014"
 Lbs. Compression Cranking
 Speed 370-390 PSI

Injection Pump:
 Type PSB-Single Plunger
 Speed Crankshaft Speed
 Timing:
 Pump Port Closing
 Flywheel 22° BTDC

Torque Wrench Tensions:
 Cylinder Head Bolts 100-110 Ft. Lbs.
 Manifold 45- 50 Ft. Lbs.
 Connecting Rod 70- 75 Ft. Lbs.
 Main Bearings 85- 95 Ft. Lbs.

Speed (At Crankshaft):
 Full Throttle No Load 1670-1700 RPM
 Full Throttle Full Load 1500 RPM
 Low Idle 600- 700 RPM

Clutch - Foot Operated Single Dry Plate

Belt Pulley:
 Diameter 13-1/2"
 Face 6-1/2"
 Speed:
 Full Throttle No Load 976-993 RPM
 Full Throttle Full Load 875 RPM
 Feet Per Min. 3097

Power Take Off:
 Spline Size 1-3/8"
 Speed:
 Full Throttle No Load 605-615 RPM
 Full Throttle Full Load 543 RPM
 Height from Ground:

11x38	12x38	12x28	13x28
25"	26"	21"	22"

Ahead of Drawbar Pin 14-1/2"

Foot Brakes:
 Expanding Shoe. Double Disc (with Live P.T.O.)
 Individual Action or Pedals Interlocked.

Wheel and Tread (Rubber Tires):

	RT,HA	RS	Std.
Front Tire			
Size	5.50x16	9.00x10	5.50x16
Front Tread			
Rear Tire			
Size	11x38:	12x38:	12x28: 13x28

Wheel Torque Wrench Tension:
 Rear Wheel to Hub 9/16
 NC-RC 90-120 Ft. Lbs.
 Rear Wheel to Axle 1-15/16
 N.F. Std. 440 to 520 Ft. Lbs.
 Front Wheel 1/2 N.F. All- 70 to 80 Ft. Lbs.

General Dimensions:

	Std.	RC
Length	140"	137"
Height (over Steering Wheel)	70"	75"
Weight less Fuel and Operator	5654 approx.	
Ground	12x28	13x28
Clearance	10-3/16"	11-3/16"
Ground	11x38	12x38
Clearance	14-3/16"	15-3/16"

Draw Bar:

	12x28	13x28 ®
Height from Ground . . .	9-1/8x16-3/4"	10-1/8x17-3/4"
Lateral Adjustment	19-1/4"	

	11x38	12x38
Height from Ground	13-1/8x21-3/4"	14-1/8x21-3/4"
Lateral Adjustment	19-1/4"	

Capacities:

	U.S. Measure	Imperial Measure	Litres
Main Fuel Tank . .	23	19.09	87
Cooling System . .	23 Qts.	18-1/4	20.80
Engine Oil	22		
Incl. Filter	2 Gals.	1-2/3 Gals.	7.57
Trans. Case:			
R.C.	13 "	10-1/2 "	49.19
Steering Housing	1 Qt.	5/6 Qts.	.946
Hydraulic System	R.C. 12 Qts.	9-1/8 Qts.	11.35
	Std. 11 Qts.		10.40

NOTE: With Power Steering add 1 qt.

NOTE: RT - Row Crop Twin Front Wheel
 RS - Row Crop Single Front Wheel

H.A. - High Arch
 Std. - Standard

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GROUND SPEED AT 1500 ENGINE RPM (All Models)					
RANGE	GEAR	11 x 38	12 x 38	12 x 28	13 x 28
LOW RANGE	1	1.43	1.47	1.23	1.26
	2	2.16	2.22	1.83	1.89
	3	2.87	2.95	2.44	2.52
	4	3.73	3.84	3.17	3.28
	5	7.97	8.21	6.77	7.00
	R	1.88	1.93	1.60	1.65
HIGH RANGE	1	2.44	2.51	2.07	2.14
	2	3.68	3.79	3.12	3.22
	3	4.88	5.03	4.15	4.28
	4	6.36	6.55	5.40	5.58
	5	13.6	14.0	11.50	11.80
	R	3.20	3.30	2.72	2.82

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PREVIEW

Today's Diesel engines have become the answer to a long standing demand for more economical power. In this field as well as that of the production of spark ignition engines, the Massey-Harris Co. is determined to maintain its reputation based on 109 years of leadership in a field of competition for better and more economical farming.

THE MASSEY-HARRIS DIESEL TRACTOR

The Diesel engine in this tractor is no more complicated or intricate than the gasoline or kerosene engine or no more difficult to maintain.

There are, however, a few practices which must be followed periodically to assure full benefits of the operating economy and long engine life that are an inherent feature in Diesel engines.

It is not possible to have this Service Manual complete in every detail and yet have it brief enough so that one can commit to memory all of the instructions enclosed herein. Hence, this preview is written as a guide and reminder of the important and constant points on tractor care and operation.

For detailed information on any part of the tractor, refer to that section.

THE WORKING PRINCIPAL

The Massey-Harris Diesel engine is a four stroke cycle type, which burns commercial Diesel fuels, ignited by heat of compression, without the assistance of spark plugs or externally heated surface. The following explanation of the function of the engine during each of the four strokes verifies the simplicity of its operating principal.

STROKE ONE

Beginning with the inlet stroke, with the exhaust valve closed and the intake valve open, air is drawn in through the air cleaner as the piston moves downward until a full charge of air is taken into the cylinder. The amount of air taken into the cylinder at each stroke is the same whether the engine is running at low speed or high speed; whether it is being run at full load, part load or low idle.

STROKE TWO

As the piston starts its upward travel on the compression stroke, both the inlet and exhaust

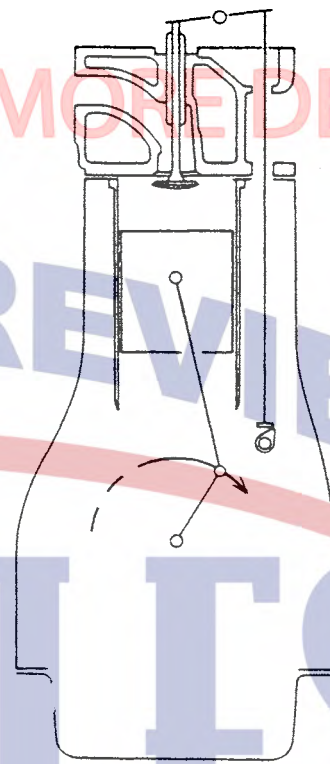


FIG. 1 - STROKE ONE

valves are closed. The upward travel crowds the air into a very small space in the combustion chamber and the energy cell. When nearly full compression is reached and at the time of the beginning of fuel injection, the air temperature has increased to a point above the self-ignition temperature of the fuel so when it is sprayed into this heated air it ignites and burns readily.

STROKE THREE

As the piston starts its downward travel on the power stroke, the injection having begun, combustion is in progress and continues to approximately the time the exhaust valve opens.

As explained under Stroke One, the amount of air taken into the cylinder is the same for each stroke regardless of load or speed. The speed and power of the Diesel engine is determined entirely by the duration or amount of fuel injected per stroke.

With the engine running at low idle injection occurs during only a small part of the full cylinder stroke. With the engine running at full speed, injection occurs during a much longer period.