



## Service Bulletin

LOCATION Charles City  
SUBJECT 1250-A Tractor Specifications  
NUMBER 430 254  
DATE 1-27-69  
FILE A General Information  
1 of 8

This bulletin contains service specifications for 1250-A Tractor. All components of tractor are not covered in this publication. A more complete bulletin will be issued in near future.

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## ENGINE SPECIFICATIONS

### GENERAL

Engine Serial Number Location	Near front of block on right side of engine
Weight of Engine (lbs)	657
Number of Cylinders	3
Firing Order	1-2-3
Bore	3.74
Stroke	4.33
Piston Displacement (cu. in.)	142.8
Engine Speed (rpm)	
Low Idle	650
Rated	2400
High No Load	2620-2650
Compression Ratio	17:1
Engine Operating Temperature	167-212° F.
Certified PTO Horsepower	38.5

### LUBRICATION

Type	Pressure
Oil Filter Type	Full-Flow, cartridge
Recommended Oil	Refer to Operator's Manual
Oil Pressure @ Engine Operating Temperature	
@ Minimum Pump Speed (psi)	9.9
@ Maximum Pump Speed (psi)	42.6-56.8
Oil Change Period	150 hrs.
Filter Element Change Period	Every other oil change
Crankcase Capacity - Without Filter	7-1/4 qts.
With Filter	8-1/4 qts.

### CAMSHAFT

Type of Drive	Gear driven
Journal Diameters	
Front	2.0078-1.9988
Center	1.9881-1.9870
Rear	1.9685-1.9673

### CAMSHAFT BUSHINGS AND BORES

Type	Bronze
Bushing Bore	
Front	2.1566-2.1576
Center	2.1370-2.1372
Rear	2.1173-2.1183
Bushing Inside Diameter	
Front	2.0110-2.0129
Center	1.9913-1.9933
Rear	1.9716-1.9736
Running Clearance	0.0031-0.0062

### CONNECTING RODS

Diameter of Piston Pin Bushing Bore	1.2599-1.2602
Diameter of Rod Bearing Bore	2.4570-2.4574
Weight Variation between Any Two Rods (max. ozs.)	3/16
Number of Connecting Rod Bolts	2

## CONNECTING ROD BEARINGS

Type  
Manner of Adjustment  
Running Clearance

Replaceable shell, precision bearings  
None  
0.0008-0.0022

## CRANKSHAFT

Type  
Material  
End Play Controlled by  
End Play  
Number of Main Bearings  
Main Bearing Journal Diameter  
Connecting Rod Journal Diameter  
Maximum Journal Out-of-Round  
Maximum Journal Taper  
Maximum Allowable Shaft Misalignment  
Flywheel Mounting Flange Runout

Integral counterweight balanced  
Cast steel  
No. 3 main bearing  
0.0032-0.0131  
4  
2.9999-2.9994  
2.3127-2.3122  
0.0004  
0.0005  
0.0019  
0.0009

## CRANKSHAFT MAIN BEARINGS

Type  
Material  
Manner of Adjustment  
Running Clearance  
Crankcase Bore

Replaceable shell, precision bearings  
Steel back, copper-lead alloy base,  
lead-tin plate  
None  
0.0014-0.0035  
3.1727-3.1734

## CYLINDER HEAD

Type  
Construction  
Number of Cap Screws  
Valve Port Diameters  
Intake  
Exhaust  
Valve Seat Angle - Intake and Exhaust

Overhead valve  
One piece  
14  
1.5748  
1.2991  
45°

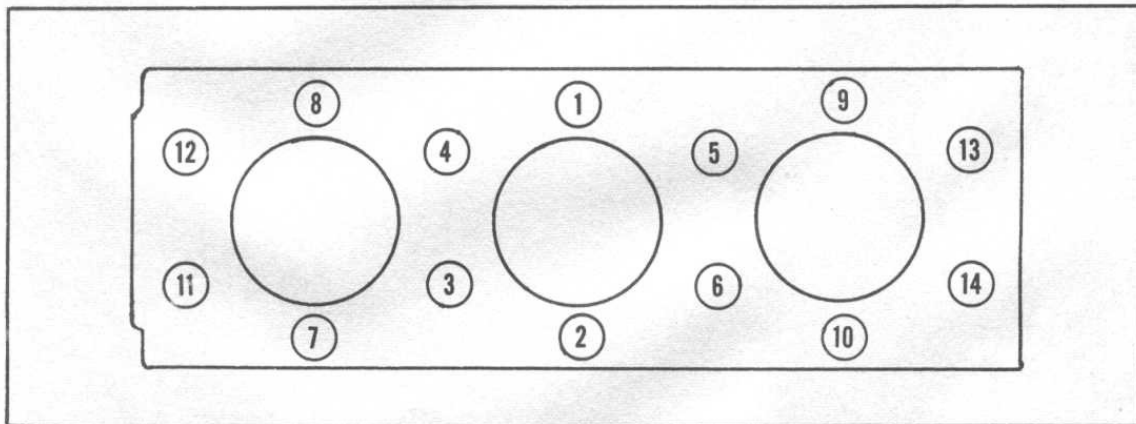


Fig. 1 Cylinder Head Cap Screw Tightening Sequence

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## OIL PUMP

Drive Gear Clearance 0.0023-0.0066  
Drive Shaft Clearance in Pump Body and Cover 0.0006-0.0021

## PISTONS

Material Aluminum alloy  
Maximum Diameter of Standard Piston (Measured 1.968 inches from bottom of piston and 90° from pin axis)  
Class A 3.7348-3.7344  
Class B 3.7352-3.7348  
Clearance between Piston and Sleeve 0.0052-0.0061  
Piston Pin Bore Diameter 1.2591-1.2618  
Install pistons with combustion chamber on fuel pump side of crankcase.

## PISTON PIN

Diameter 1.2593-1.2591  
Fit in Piston 0.0027L-0.0002T  
Clearance in Rod 0.0006-0.0011

## PISTON PIN BUSHING

Inside Diameter 1.2599-1.2602

## PISTON RINGS

Compression Rings 1 - chrome faced  
Oil Rings 2 - one scraper - one backbone-type, spring loaded scraper  
Diameter 3.7389-3.7400

## ROCKER ARMS

Running Clearance 0.0020-0.0006

## ROCKER ARM SHAFT

Diameter 0.7086-0.7079

## SLEEVES

Type Dry  
Material Cast iron  
Bore  
Class A 3.7401-3.7405  
Class B 3.7405-3.7409  
Crankcase Sleeve Bore 3.8932-3.8951  
Sleeve Outer Diameter 3.8984-3.8995

## TIMING GEARS

ASSEMBLY — With timing index and flywheel PMS 1 mark aligned (piston No. 1 at TDC), install timing gears (idler gear last) with numbers stamped on gears aligned as shown in Fig. 2.

### TIMING GEARS (CONT'D)

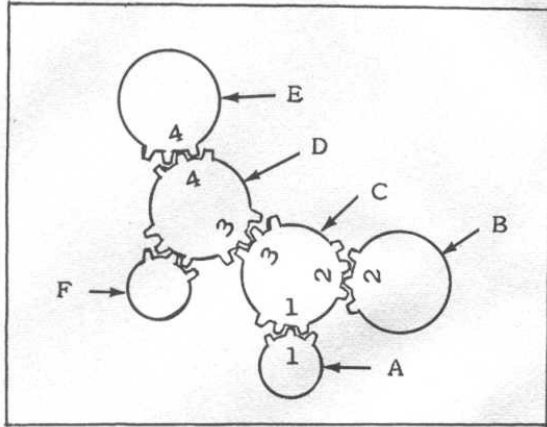


Fig. 2 Timing Gear Installation

- A. Crankshaft Gear
- B. Camshaft Gear
- C. Idler Gear
- D. Fuel Pump Drive Gear
- E. Fuel Injection Pump Drive Gear
- F. Hydraulic Pump Drive Gear

### VALVES

Stem Diameter	0.3149-0.3143
Running Clearance in Guides	0.0009-0.0020
Valve Timing	
Clearance for Checking Valve Timing	0.018
Intake Opens	3° BTDC
Intake Closes	23° ABDC
Exhaust Opens	48°30' BBDC
Exhaust Closes	6° ATDC
Valve Clearance	
Intake and Exhaust (cold setting)	0.010

### VALVE GUIDES

Bore	0.3158-0.3164
Outside Diameter	0.5518-0.5507

### VALVE SPRINGS

Number per Valve	2
Type	Double-pitch
Assemble with close-pitch coils toward cylinder head face.	

### VALVE LIFTERS

Diameter	0.5499-0.5492
Bore in Crankcase	0.5511-0.5518
Running Clearance	0.0012-0.0026

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## TORQUE VALUES IN FOOT POUNDS (OILED)

Cylinder Head Cap Screws	87
Main Bearing Cap Screws	108
Connecting Rod Cap Screws	76
Rocker Arm Shaft Bracket Cap Screws	17
Flywheel Cap Screws	83
Alternator and Fan Drive Pulley Cap Screws	36
Alternator and Fan Drive Pulley Hub Nut	14
Fan Screws	17
Timing Case Cap Screws	17
Oil Pump Body Mounting Cap Screws	17
Oil Pressure Relief Valve	51

## FUEL SYSTEM

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### INJECTOR NOZZLES

Opening Pressure (psi)	3250
Spray Orifices	4
Torque Values (Foot Pounds - Oiled)	
Injector Nuts	17

### FUEL INJECTION PUMP

Make	CAV
Governor	
Idle Speed	650
Rated Speed	2400
High No-Load Speed	2620-2650
Transfer Pump Pressure	

<u>Engine RPM</u>	<u>PSI</u>
200	17-26
2400 No-Load	70-84
Maximum Torque Speed	54-65

Advance Movement

<u>Engine RPM</u>	<u>Degrees</u>
Set @ 1500	5.2-6.2
Total @ 1900	7.3-7.8

Torque Values

	<u>Inch Pounds</u>	<u>Foot Pounds</u>
End Plate Screws	43	
Fuel Inlet Connection		38
Fuel Inlet Pipe Connection		10
Distributor Rotor Screw	24	
Transfer Pump Rotor	65	
Head Locating Screw		14
Advance Device Stud Nut		11
Advance Device Stud	60	
Cam Advance Screw		38
Advance Spring Cap		21
Spring Cap Screw	38	
Advance Piston Plug		21
Drive Plate Screws		21
(Tighten to specified torque, loosen, then re-tighten to same torque)		
Governor Cover Studs	60	
Governor Cover Stud Nuts	38	
Throttle Lever Nut	30	
Cut-Off Lever Nut	30	
Damper		29
Drive Shaft Gear Lock Nut		60

## ELECTRICAL SYSTEM

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### ALTERNATOR

Cut-in Speed @ 12-V (68° F)	950-1050 rpm
Current Output to Battery @ 14-V, 5000 rpm and Operating Temperature	42 amp
Maximum Current (Approximately)	53 amp
Field Resistance @ 68° F.	4.4-4.6 ohms

### REGULATOR

Core-Armature Gap	0.073-0.077
2nd Stage Contact Gap	0.014-0.022

### WARNING LIGHT SWITCH

Winding Resistance	27-31 ohms
Contact Opening Voltage	5.3-5.7 V
Contact Closing Voltage	3.0-4.0 V

### COOLING SYSTEM

Thermostat Opening Temperature	178-185° F.
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### CLUTCH – ENGINE AND POWER TAKE-OFF

Clutch Plate	
Outside Diameter	10
Inside Diameter	6.457
Thickness	0.354
Drive Shaft and Coupling Spline Side Clearance (max.)	0.0029
Clearance between Throw-out Collar and Disengagement Levers	0.1181
Clearance between Gauge Block and Lever Tip (Clutch Assembly Mounted on ST-170 Fixture)	0.0394
PTO Disengagement Lever Clearance (Fig. 3)	0.059
Clutch Springs	
Free Length	2.6023
Compressed Length	1.78 ins. @ 25-27 lbs.

Clutch centering tool STA-188 may be used to facilitate installation of clutch assembly on tractor.

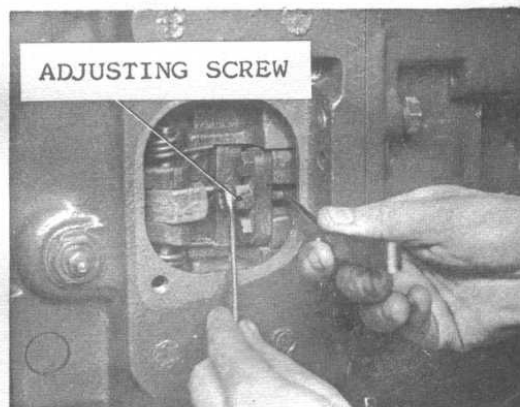


Fig. 3 PTO Disengagement Lever Adjustment

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## TRANSMISSION

For service of transmissions without creeper drive, refer to 1250 Tractor Shop Manual No. 432 502.

## FINAL DRIVES AND BRAKES

Final Drive Pinion and Bull Gear Tooth Backlash	0.0059-0.0098
Final Drive Driven Shaft and Bull Gear Hub Spline Clearance	0.0019-0.0018
Brake Band Liner Thickness	0.2362
Brake Linkage Pins and Bushings (Assembly Clearance)	0.0015-0.0056

## FRONT AXLE AND STEERING

Spindle Shaft and Bushing Clearance	0.0009-0.0044
Spindle Thrust Washer Thickness	0.1574-0.1545
Spindle Thrust Washer Cup Thickness	0.0429-0.0358
Pivot Shaft and Bushing Clearance	0.0009-0.0044
Pivot Shaft Washer Thickness	0.2066-0.2007
Steering Arm Shaft and Bushing Clearance	
Upper	0.0196-0.0053
Lower	0.0324-0.0452
Torque Values - Foot Pounds (Oiled)	
Axle Support Screw	159-174
Front Wheel Hub Nuts	159-203
Front Wheel Disc Screw	90-98
Lever-to-Linkage Ball Joint Nuts	40

## HYDRAULIC SYSTEM

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Pump		Gear Type	
Rotational Speed at 2400 Engine RPM		2180 rpm	
Capacity (gpm)			
0 psi		5.75	
2133 psi		5.0	
Three-Point Hitch Cylinder			
Bore		3.54 in.	
Displacement		34.1 cu. in.	
Lift Time @ 2400 rpm		1.6 sec.	
Safety Valve Setting		2845-2987 psi	
Pressure Relief Valve Setting		2062-2205 psi	
Dimensions			
Piston Clearance in Cylinder Bore		0.0014-0.0071	
Spool and Control Valve in Control Valve Block		0.0009-0.0013	
Rocker Shaft Clearance in Bushings			
Right End		0.0039-0.0078	
Left End		0.0039-0.0076	
Manual Control Lever Clutch Plate Thickness		0.0787	
Thickness of Maximum Lift Arm Adjustment Screw Washers		0.0196-0.0019	
Control Spring Load Adjustment Shim Thickness		0.0118-0.0019	
Control Spring End Spacing		1.7519-1.8307	
Spring			
Test Length			
Compressed			
Torque Values - Foot Pounds (Oiled)			
Cylinder Safety Valve		22-29	
Cylinder Discharge Valve Plug		43-51	
Rear Cover Stud Nuts		51-56	
Hydraulic Lift Stud Nuts		87-94	
	Control Valve	Cylinder Discharge Valve	
	1.81	0.87	
	0.79 in. @ 4.0-4.8 lbs.	0.39 in. @ 5.0-5.7 lbs.	

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