Ferguson

SERVICE MANUAL

SPECIFICATION AND DATA
TRACTORS TYPE TE—A20 and TE—D20

This specification initially gives data of the basic normal-width tractor, less engine; specifications of engines then follow.

Details applicable to tractors which deviate from this standard, e.g. narrow-width models, are given in Section T, under the title of 'Special Type Tractors.'

TRACTOR, LESS ENGINE

Overall Dimensions.

Wheel Base 70" (1778 mm.) Track : Front adjustable in 4" steps (102 mm) from 4ft. to 6ft. 8 ins. (1219 to 2032 mm.)
" Rear " " " " " 4ft. to 6ft. 4 ins. (1219 to 1930 mm.)

Turning circle : with brakes 16 ft. (4876 mm) without brakes 20 ft. (6095 mm).

Ground clearance 13" (330 mm.) Overall length 9 ft. 7 ins. (2921 mm.) Overall width 5 ft. 4 ins. (1625 mm.)
Overall height 4 ft. 8 ins. (1320 mm.) Weight (dry) 2500 lb. (1134 kg). Tyres front 4.00 × 19. Tyres rear 10.00 × 28.

Fill-Up Data.

Engine Sump 12 pints (6.8 litres)
Air Cleaner ¾ pint (.45 litres)
Cooling System 20 pints (11.3 litres)
Transmission casing 5 gallons (22.8 litres)
Belt Pulley ½ pint (.28 litres)
Fuel tank-TE-A20 : 8 gallons (36 litres)
-TE-D20 : 7 gallons (31.5 litres) and 1 gallon (4.5 litres)
Steering Box 5 pints. (2.9 litres)
Front Hubs (each) ⅝ pint (.30 litres)
Tyre pressures : Front 26 lb. per sq. inch
Rear 12 lb. per sq. inch

Component Details	Dimensions New		Clearance New		Permissible Worn Clearance or Dimension		Remarks
	Ins.	mms.	Ins.	mms.	Ins.	mms.	
Hydraulic Pump.							
Housing Bore for Control Valve Bush	.999 1.000	25.375 25.400					
			—.001 —.0025	—.025 —.064			
Control Valve Bush Ext. Dia.	1.001 1.0015	25.425 25.438					
Control Valve Bush Int. Dia.	.5925 .5030	15.959 15.062					
			.0005 .0012	.013 .031			
Control Valve Dia.	.5918 .5920	15.032 15.037					
Torque Loadings—Valve Chamber Clamp Bolts 70 lbs. ft. (9.675 kg.m). Pump Assembly Securing Bolts 45 lbs. ft. (6.25 kg.m).							
Hydraulic Lift Assy. Fork retraction spring—Free length inside hooks 4.88" (123.952 mm). Length under 12 lbs. (5.443 kg) load 6.94" (176.276 mm).							
Hydraulic Cylinder Bore	2.4995 2.5010	63.487 63.525					
			.0015 .0040	.038 .102	.006	.152	
Hydraulic Cylinder Piston Dia.	2.497 2.498	63.424 63.449					
Piston Ring Groove Width	.1255 .1265	3.188 3.213					
			.0015 .0035	.038 .089	.005	.126	
Piston Ring Width	.124 .123	3.150 3.124					
Piston Ring Gap (Closed)	.007 .013	.178 .330			.018	.457	
Linkage Check Chain Length.	8.015 7.980	203.581 202.692					Length of check chain taken between inside faces of end links.

Component Details	Dimensions New		Clearance New		Permissible Worn Clearance or Dimension		Remarks
	Ins.	mms.	Ins.	mms.	Ins.	mms.	
Check Chain Shackle Length	1.189 1.205	30.201 30.607					This dimension taken from pin hole centre to inside face.
Check Chain Assy. Total Length	10.358 10.425	263.093 264.795			10.7	271.76	This length between pin hole centres.
Transmission.							
Shifter Mechanism.							
Shifter Rail Dia.	.7465 .7475	18.961 18.987					
			.0015 .0035	.038 .089	.006	.152	
Shifter Rail Bore in Casing	.749 .750	19.025 19.050					
Plunger Spring Details.	Axial load 12 ± 1 lb. Load may be increased in increments of 3 lbs. (1.361 kg) by fitting 1/16" (1.588 mm) shims up to a maximum of 5/16" (7.938 mm) giving max. load of 27 lbs. (12.247 kg). Free length 1.571" (39.903 mm). Solid length .832" (21.133 mm). Nominal fitted length 1.32" (33.528 mm).						
Thickness of Shifter Forks at Pressure Faces.	.372 .368	9.449 9.347					
			.008 .016	.203 .406	.025	.634	
Width of Groove in Coupling Connectors	.380 .384	9.652 9.754					
Mainshaft.							
First Gear Bushing Bore.	2.0620 2.0635	52.375 52.413					
			.0015 .0052	.038 .132	.007	.177	
Mainshaft Dia. at Position of 1st Gear	2.0605 2.0583	52.337 52.281					
2nd Gear Bushing Bore.	2.0620 2.0635	52.375 52.413					
			.0015 .0052	.038 .132	.007	.177	
External Dia. of Bearing Connector	2.0605 2.0683	52.337 52.281					
Countershaft.							
3rd. Gear Bushing Bore.	2.0620 2.0635	52.375 52.413					
			.0015 .0052	.038 .132	.008	.203	
Ext. Dia. of Countershaft 3rd. Gear Bush	2.0605 2.0583	52.337 52.281					
4th. Gear Bushing Bore	2.0635 2.0620	52.413 52.375					
			.0052 .0015	.132 .038	.007	.177	
Ext Dia. of Connector Bearing.	2.0605 2.0583	52.377 52.281					
Reverse Gear Bushing Bore	1.1250 1.1256	28.575 28.590					
			.002 .003	.051 .076	.008	.203	
Reverse Shaft Dia.	1.123 1.122	28.524 28.499					
End Float—Main & Countershaft.			See Remarks				Fit shims behind mainshaft bearing retainer and P.T.O. Shaft bearing support to give preload of 7 to 12 lbs. ins. (.081—.138 kg.m). on main and countershafts.

Component Details	Dimensions New		Clearance New		Permissible Worn Clearance or Dimension		Remarks
	Ins.	mms.	Ins.	mms.	Ins.	mms.	
Backlash(A)—Sliding Coupling and Mating Teeth on Gear Wheels .008″ .203 mm .010″ .254 mm			**(B)**—Sliding coupling and mating teeth on connectors— .0005″ .013 mm. .0015″ .038 mm.		**(C)**— Gear teeth— .004″ .102 mm. .008″ .203 mm.		

Power Take-off Shaft.

Rear splines 6 × 1.92″ (48.77 mm) long × 1.121″ (28.47 mm) dia. × .922″ (23.42 mm) dia. × .275″ (6.99 mm) wide.
1.123″ (28.52 mm) .932″ (23.67 mm) .277″ (7.04 mm)
21/64″ (8.33 mm) dia. hole at distance of ½″ (12.7 mm) from shaft end.
End Cover Int. Dia. 2½″ (63.5 mm).

Clutch.

Release Shaft Dia.	.997 .996	25.324 25.298					
			.004 .0065	.102 .165	.010	.254	
Bush Bore.	1.001 1.0025	25.425 25.464					
Clutch Springs.	9 green springs each of 105 lb. (47.627 kg) to 115 lb. (52.199 kg). 9 orange springs each of 90 lb. (40.823 kg) to 100 lb. (45.358 kg).						Orange springs superseded green springs after Tractor Serial No. 32872.

Free movement of pedal should be ⅜″ (9.5 mm). This dimension taken between upper side of pedal and underside of footrest bracket. Movement of release lever ends ½″ (13 mm). Variation in release lever height should not exceed .015″ (.381 mm).

Rear Axle.

Backlash — Crown wheel and pinion .004″ (.102 mm). Half shaft end float .008″ (.203 mm).
.025″ (.634 mm). .020″ (.508 mm).
Clearance between crown wheel and thrust pads .013″ (.033 mm).
.020″ (.508 mm).

Front Axle.

Centre Trunnion Bushing Int. Dia. Fitted.	1.756 1.764	44.602 44.806					
			.008 .017	.203 .432	.035	.088	
Centre Pin Dia.	1.747 1.748	44.347 44.399					
Bore of Outer Axle for Spindle Bushes	1.3735 1.3745	34.887 34.912					
			±.001	±.025			
Ext. Dia. Spindle Bushes.	1.3735 1.3745	34.887 34.912					
Int. Dia. Spindle Bushes	1.249 1.250	31.725 31.750					
			.003 .005	.076 .127	.010	.254	
Spindle Dia.	1.246 1.245	31.648 31.623					

Steering.

Backlash—Screw adjustment against rear faces of segments to give minimum backlash without binding.

Distances between ball centres and vertical plane through drop arm crankshaft centre 2.17″ (55.12 mm) with steering wheel in straight ahead position.

Pulley Attachment.

Pulley width 6½″ (165 mm) Dia. 9″ (229 mm). Gear Ratio to P.T.O. Shaft 1.86 to 1. Backlash between driving gears .004″ (.102 mm) .020″ (.508 mm)

PETROL ENGINE, PART No. 57963

(Manufactured by the Standard Motor Co.)

ENGINE—80 mm bore, fitted to tractors Type TE-A20, TE-C20.

Stroke 92 mm. Piston Displacement 112.9 cu. ins. (1850 c.c.) Compression ratio 5.77 to 1.

Maximum belt horse power—23.9.

Tightening Torque—Cylinder Head Nuts 60 to 65 lbs. ft. (8.25—8.95 kg. metres).
Big End Nuts 42 to 46 lbs. ft. (5.8—6.4 kg. metres).
Main Bearing Nuts 90 to 100 lbs. ft. (12.4—13.8 kg. metres).
Flywheel Cap Screws 42 to 46 lbs. ft. (5.8—6.4 kg. metres).

Component Details	Dimensions New		Clearance New		Permissible Worn Clearance or Dimension		Remarks
	Ins.	mms.	Ins.	mms.	Ins.	mms.	
Crankshaft.							
Journal Diameter	2.4795 2.4790	62.979 62.967					Similar tolerances for re-ground crankshaft to .020", .030", .040" (.508, .762, 1.016 mm) undersize.
			.0025 .0010	.064 .025	.006 dry	.152	
Bearing Diameter (Fitted)	2.4815 2.4805	63.030 63.015					
Crankshaft End Float.							
Centre Journal Length.	1.7507 1.7498	44.468 44.445					Crankshaft end float controlled by thickness of thrust washers.
			.0117 .0048	.297 .122	.010 dry	.254	
Centre Bearing Cap width + 2 thrust washers.	1.7450 1.7390	44.323 44.171					
Big End.							
Crankpin Diameter	2.0861 2.0866	52.987 53.000					Similar tolerances for re-ground crankshaft to .020", .030", .040" (.408, .762, 1.016 mm) undersize.
			.0024 .0006	.061 .015	.006	.152	
Bearing Diameter	2.0985 2.0872	53.302 52.015					
Connecting Rod End Float.							
Crankpin Length	1.1890 1.1870	30.201 30.150					
			.0115 .0075	.292 .191			
Con-Rod Width	1.1795 1.1775	29.959 29.909					
Ovality—Journals & Crankpins.					0.002	.051	Minimum diameter to be such that the permissible worn clearance for bearings is not exceeded.
Taper—Journals & Crankpins.					0.002	.051	
Small End.							
Bore for Bush	1.0000 .9995	25.4 25.387					
			—.0035 —.0050	+.09 —.13			Heat piston in boiling water for removal and fitting of gudgeon pin.
Bush, Ext. Dia.	1.0045 1.0035	25.514 25.489					
Bush, Int. Dia.	.8752 .8738	22.230 22.220					
			—.00035 —.00030	+.009 —.008			These clearance figures taken at 68°F.
Gudgeon Pin, Dia.	.87510 .87485	22.228 22.221					
			+.00045 —.00005	+.011 —.001			
Gudgeon Pin Holes in Piston	.8853 .87505	22.233 22.226					

Component Details	Dimensions New		Clearance New		Permissible Worn Clearance or Dimension		Remarks
	Ins.	mms.	Ins.	mms.	Ins.	mms.	
Pistons & Sleeves.							
Piston Dia.—(Thrust Side Top Skirt)	3.1461 3.1472	79.908 79.939					Sleeves and pistons graded F.G.H. in steps of .0004" (.010 mm).
			.0028 .0034	.071 .086			
Sleeve Bore (Parallel)	3.1492 3.1503	79.99 80.018					
			.0013 .0019	.033 .048			
Piston Dia. (Thrust Side Bottom Skirt)	3.1476 3.1487	79.949 79.977					
Top Land Diameter	3.133 3.131	79.578 79.527	.0162 .0193	.412 .490			Piston fitted with three rings above gudgeon pin, one ring below.
Ring Groove Width Top and 2nd.	.0957 .0947	2.431 2.405					On engines S101E to S56962E a plain bottom scraper ring fitted below gudgeon pin.
			.0030 .0010	.076 .025	.005	.127	
Compression Ring Width Top & 2nd.	.0937 .0927	2.380 2.355					
Ring Groove Width (3rd.)	.1895 .1885	4.813 4.788					Similar tolerances for oversize pistons +.020" (.508 mm).
			.0030 .0010	.076 .025	.005	.127	Oversize rings + .010" (.245 mm) + .020" (.508 mm) + .030" (.762 mm).
Scraper Ring Width (3rd.)	.1875 .1865	4.763 4.737					Replacement sleeves available as standard size, and rebored + .020" (.508 mm).
Ring Groove Width (4th.)	.1580 .1570	4.013 3.987					
			.0030 .0010	.076 .025	.005	.127	
Scraper Ring Width (4th.)	.1560 .1550	3.962 3.937					
Ring Gap (Closed)			.010 .006	.25 .15			
Clearance Between :							
Sleeve & Upper Block			.045 .015	1.143 .381			Dimensions taken respectively at top flange and spigot of sleeve.
Sleeve & Lower Block			.003 .0005	.076 .013			
Stand-out of Sleeve			.003 .0055	.076 .140			Desired clearance when assembled.
Water Pump & Thermostat.							
Housing Bore for Bearing	1.1813 1.1807	30.005 29.990					
			+.0007 —.0004	+.018 —.010			
Bearing Case, Ext. Dia.	1.1811 1.1806	30.000 29.987					
Oil Pump.							
Approximate capacity at 50 lbs. per square inch (3.52 kg/sq. cm.) is 3.95 gallons (16.94 litres) per minute at 2.000 r.p.m. (Engine)							
Outer Rotor, outside dia.	1.598 1.599	40.589 40.615					
			.001 .003	.025 .075			
Housing, internal dia.	1.601 1.600	40.665 40.640					
Rotor depth—outer and inner :	0.9995 0.9985	25.387 25.362					
			.0005 .0015	.013 .038			A combined worn clearance of .004" (.101mm) indicates need of cover and housing face lapping.
Housing depth	1.001 1.000	25.403 25.400					

Component Details	Dimensions New		Clearance New		Permissible Worn Clearance or Dimension		Remarks
	Ins.	mms.	Ins.	mms.	Ins.	mms.	
Inner rotor, major dia.	1.171 1.172	29.743 29.769					
Inner rotor, minor dia.	.729 .731	18.517 18.567					
Clearance on rotors			.004 .0005	.102 .013			Where clearance exceeds .010" (.253 mm) new parts should be fitted.
Camshaft.							
Front Journal Dia.	2.0590 2.0595	52.299 52.311					
			.0045 .0025	.114 .051	.0065	.164	Max. wear on camshaft journals .003" (.076 mm) and .0035 (.088 mm) in cylinder block.
Bore in Block	2.0635 2.0620	52.413 52.375					
2nd Journal Dia. 3rd. " " Rear " "	1.71575 1.71525	43.580 43.567					
			.0045 .0025	.114 .051	.0065	.164	
Bore in Block	1.71975 1.71825	43.683 43.645					
Locating Groove	.1885 .1865	4.788 4.737					
			.0065 .003	.165 .076			This clearance determines camshaft end float.
Locating Plate	.1835 .1820	4.661 4.623					
Tappets & Valves.							
Tappet Bore in Block	.9380 .9373	23.825 23.807					
			.0013 .0002	.033 .005			
Tappet Dia.	.9371 .9367	23.802 23.792					
Valve Tip Clearance Inlet Exhaust			.010 .012	.254 .305			
Valve Guide Bore Dia.	.313 .312	7.950 7.925					
Inlet Valve Stem Dia.	.311 .310	7.899 7.874	.001 .003	.025 .076			
Exhaust Valve Stem Dia.	.309 .308	7.849 7.823	.003 .005	.076 .127			
Guide projection above spring seat.	9/16"	14.3					

Valve seating angle on valve head 45°. Valve seat angle in cylinder head 44½°.

Valve Springs.

Free length 1.716" (43.586 mm). Fitted load 38 lbs ± 2 lb. (17.237 kg ± .907 kg).
Fitted length 1.25 (31.75 mm). Full lift load 60 lb. (27 kg) approx.

Flywheel.

Spigot dia. (for Starter Gear Ring)	13.406 13.403	340.512 340.436			Flywheels balanced individually. Held to crankshaft by 4 set screws locked in pairs. Single dowel. Locating holes in flywheel 90° apart, in crankshaft 180° apart.
			—.031 —.023	—.787 —.584	
Starter Gear Ring Inside Dia.	13.380 13.375	339.852 339.725			

Run-out of clutch contact face at outer dia. should not exceed .003" (.076 mm).

Clearance between starter pinion and ring gear, Engine Serial No.SIE—S67028E, .156" (3.962 mm).
Engine Serial No. S67029E onwards .114" (2.896 mm).
Face-up starter mounting flange or fit shims to suit.

Component Details	Dimensions New	Clearance New	Permissible Worn Clearance or Dimension	Remarks
	Ins. mms.	Ins. mms.	Ins. mms.	

Carburettor.

Zenith Type 24 T—2.		**Zenith** Type 24T—2 (Min./Max. Adj. Jet)		**Holley.**	
Choke Tube	17	Choke Tube	17	Discharge Nozzle.	.104" (2.642 mm) with 4 holes .040" (1.016 mm) dia.
Main Jet	120	Main Jet	100	Float Needle Seat	.081" (2.057 mm). dia. .083" (2.108 mm) dia.
Adj. Needle	12	Adj. Needle	1.00 drilled		
S.R. Jet	50	S.R. Jet	50	Main Jet	.035" (.889 mm) dia.
Progression	120	Progression	120	High Speed Bleed	.0293" (.744 mm) dia.
Needle Seating	1.5 mm	Needle Seating	1.5 mm	Upper Idle Restriction	.046" (1.168 mm) dia.
Air Jet	2.0	Petrol level at 4' 6" Head	15 mm	Idle Discharge Hole	.052" (1.321 mm) dia.
S.R. Bottom Feed	1.5	Inter-con	1mm drilled	Second Idle Discharge Hole	.046" (1.168 mm) dia.
		Air Jet	2.0	Venturi	21/32" (16.669 mm) dia.
		Petrol Inlet Boss	Stamped M-M	Fuel Level at 3/4 (.341 kgm) fuel pressure	9/16" ± 1/32" (14.274 ± .787 mm) to top face of fuel bowl.
				Float cut-off position	7/16" (11.13 mm) measured between upper casting face and outer float top.

Governor.

Governor lever spring: Free length: inside hooks 3.8" (96.5 mm). End Play .005" (.127 mm) .010" (.254 mm) Rate: 18 lbs/in ± 5%. No of coils: 26.

Load at 1" (25.4 mm) deflection: 25 lbs. (11.34 kg) + 1 lb. (.454 kg.) Initial wound-in load: 7 lbs. (3.175 kg).

Control Rod: Free length: inside hooks 2.687" (68.25 mm). Rate: 64 lbs./in ± 5%. No of coils: 11½.

Compensating Spring: Load at ½" (12.7 mm) deflection: 38 lbs. (17.237 kg) ± 1½ lbs. (.681 kg). Initial wound-in load: 6 lbs. (2.722 kg).

VAPORISING OIL ENGINE, PART No. 500038

(Manufactured by the Standard Motor Co.)

ENGINE—85 mm bore, fitted to tractors Type TE-D20, TE-E20.

Stroke 92 mm. Piston Displacement 127 cu. ins. (2088 c.c.) Compression ratio 4.8 to 1.

Maximum belt horse power—23.9.

Tightening Torque—Cylinder Head Nuts 60 to 65 lbs. ft. (8.25—8.95 kg. metres).
Big End Nuts 42 to 46 lbs. ft. (5.8—6.4 kg. metres).
Main Bearing Nuts 90 to 100 lbs. ft. (12.4—13.8 kg. metres).
Flywheel Cap Screws 42 to 46 lbs. ft. (5.8—6.4 kg. metres).

Component Details	Dimensions New		Clearance New		Permissible Worn Clearance or Dimension		Remarks
	Ins.	mms.	Ins.	mms.	Ins.	mms.	
Crankshaft.							
Journal Diameter	2.4795 2.4790	62.979 62.967					
			.0025 .0010	.064 .025	.006 dry	.152	Similar tolerances for re-ground crankshaft to .020", .030", .040" (.508, .762, 1.016 mm) undersize.
Bearing Diameter (Fitted)	2.4815 2.4805	63.030 63.015					
Crankshaft End Float.							
Centre Journal Length.	1.7507 1.7498	44.468 44.445					
			.0117 .0048	.297 .122	.010 dry	.254	Crankshaft end float controlled by thickness of thrust washers.
Centre Bearing Cap width — 2 thrust washers.	1.7450 1.7390	44.323 44.171					
Big End.							
Crankpin Diameter	2.0861 2.0866	52.987 53.000					
			.0024 .0006	.061 .015	.006	.152	Similar tolerances for re-ground crankshaft to .020", .030", .040" (.508, .762, 1.016 mm) undersize.
Bearing Diameter	2.0985 2.0872	53.302 53.015					
Connecting Rod End Float.							
Crankpin Length	1.1890 1.1870	30.201 30.150					
			.0115 .0075	.292 .191			
Con-Rod Width	1.1795 1.1775	29.959 29.909					
Ovality—Journals & Crankpins.					0.002	.051	Minimum diameter to be such that the permissible worn clearance for bearings is not exceeded.
Taper—Journals & Crankpins.					0.002	.051	
Small End.							
Bore for Bush	1.0000 .9995	25.4 25.387					
			—.0035 +.0050	+.09 —.13			Heat piston in boiling water for removal and fitting of gudgeon pin.
Bush, Ext. Dia.	1.0045 1.0035	25.514 25.489					
Bush, Int. Dia.	.8752 .8738	22.230 22.220					
			+.00035 —.00030	+.009 —.008			These clearance figures taken at 68 F.
Gudgeon Pin, Dia.	.87510 .87485	22.228 22.221					
			+.00045 —.00005	+.011 —.001			
Gudgeon Pin Holes in Piston	.8853 .87505	22.233 22.226					

Component Details	Dimensions New		Clearance New		Permissible Worn Clearance or Dimension		Remarks
	Ins.	mms.	Ins.	mms.	Ins.	mms.	
Pistons & Sleeves.							
Piston Dia.—(Thrust Side Top Skirt)	3.3429 3.3438	84.905 84.933					Sleeves and pistons graded F.G.H. in steps of .0004" (.010 mm).
Sleeve Bore (Parallel)	3.3460 3.3471	84.988 85.016					
Piston Dia. (Thrust Side Bottom Skirt)	3.3442 3.3453	84.943 84.971					
Top Land Clearance			.017 .019	.432 .483			
Ring Groove Width Top 2nd and 3rd.	.0797 .0807	2.024 2.050	.0030 .0010	.076 .025	.005	.127	
Compression Ring Width Top 2nd & 3rd.	.0787 .0777	1.999 1.974					
Ring Groove Width (4th.)	.1895 .1885	4.813 4.788	.0030 .0010	.076 .025	.005	.127	Similar tolerances for oversize pistons +.020" (.508 mm). Oversize rings + .010" (.245 mm) + .020" (.508 mm) + .030" (.762 mm). Replacement sleeves available as standard size, and rebored + .020" (.508 mm).
Scraper Ring Width (4th.)	.1875 .1865	4.763 4.737					
Ring Groove Width (5th.)	.1580 .1570	4.013 3.987	.0030 .0010	.076 .025	.005	.127	
Slotted Scraper RingWidth (5th.)	.1560 .1550	3.962 3.937					
Ring Gap (Closed)			.010 .006	.25 .15			
Clearance Between :							
Sleeve & Upper Block			.045 .015	1.143 .381			Dimensions taken respectively at top flange and spigot of sleeve.
Sleeve & Lower Block			.003 .0005	.076 .013			
Stand-out of Sleeve			.003 .0055	.076 .140			Desired clearance when assembled.
Water Pump & Thermostat.							
Housing Bore for Bearing	1.1813 1.1807	30.005 29.990					
			+.0007 —.0004	+.018 —.010			
Bearing Case, Ext. Dia.	1.1811 1.1806	30.000 29.987					
Oil Pump. Approximate capacity at 50 lbs. per square inch (3.52 kg/sq. cm.) is 3.95 gallons (16.94 litres) per minute at 2.000 r.p.m. (Engine)							
Outer Rotor, outside dia.	1.598 1.599	40.589 40.615					
			.001 .003	.025 .075			
Housing, internal dia.	1.601 1.600	40.665 40.640					
Rotor depth—outer and inner :	0.9995 0.9985	25.387 25.362					
			.0005 .0015	.013 .038			A combined worn clearance of .004" (.101mm) indicates need of cover and housing face lapping.
Housing depth	1.001 1.000	25.403 25.400					

Component Details	Dimensions New		Clearance New		Permissible Worn Clearance or Dimension		Remarks
	Ins.	mms.	Ins.	mms.	Ins.	mms.	
Inner rotor, major dia.	1.171 1.172	29.743 29.769					
Inner rotor, minor dia.	.729 .731	18.517 18.567					
Clearance on rotors			.004 .0005	.102 .013			Where clearance exceeds .010" (.253 mm) new parts should be fitted.
Camshaft.							
Front Journal Dia.	2.0590 2.0595	52.299 52.311					
			.0045 .0025	.114 .051	.0065	.164	Max. wear on camshaft journals .003" (.076 mm) and .0035 (.088 mm) in cylinder block.
Bore in Block	2.0635 2.0620	52.413 52.375					
2nd Journal Dia. 3rd. " " Rear " "	1.71575 1.71525	43.580 43.567					
			.0045 .0025	.114 .051	.0065	.164	
Bore in Block	1.71975 1.71825	43.683 43.645					
Locating Groove	.1885 .1865	4.788 4.737					
			.0065 .003	.165 .076			This clearance determines camshaft end float.
Locating Plate	.1835 .1820	4.661 4.623					
Tappets & Valves.							
Tappet Bore in Block	.9380 .9373	23.825 23.807					
			.0013 .0002	.033 .005			
Tappet Dia.	.9371 .9367	23.802 23.792					
Valve Tip Clearance Inlet Exhaust			.010 .012	.254 .305			
Valve Guide Bore Dia.	.313 .312	7.950 7.925					
Inlet Valve Stem Dia.	.311 .310	7.899 7.874	.001 .003	.025 .076			
Exhaust Valve Stem Dia.	.309 .308	7.849 7.823	.003 .005	.076 .127			
Valve Head Diameter : Inlet	1.176 1.172	29.570 29.769					
Exhaust	1.051 1.047	26.695 26.594					
Guide projection above spring seat.	9/16"	14.3					

Valve seating angle on valve head 45°. Valve seat angle in cylinder head 44½°.

Valve Springs.
Free length 1.716" (43.586 mm). Fitted load 38 lbs ± 2 lb. (17.237 kg ± .907 kg).
Fitted length 1.25 (31.75 mm). Full lift load 60 lb. (27 kg) approx.

Flywheel.

Spigot dia. (for Starter Gear Ring)	13.406 13.403	340.512 340.436			Flywheels balanced individually. Held to crankshaft by 4 set screws locked in pairs. Single dowel. Locating holes in flywheel 90° apart, in crankshaft 180° apart.
			—.031 —.023	—.787 —.584	
Starter Gear Ring Inside Dia.	13.380 13.375	339.852 339.725			

Run-out of clutch contact face at outer dia. should not exceed .003" (.076 mm).

Clearance between starter pinion and ring gear, Engine Serial No.SIE—S67028E, .156" (3.962 mm).
Engine Serial No. S67029E onwards .114" (2.896 mm).
Face-up starter mounting flange or fit shims to suit.

B12.

Carburettor.

Zenith Type 24T—2 (Min./Max. Adj. Jet) Choke Tube : 17. Main Jet : 105. Adj. Needle : 1.25 drilled. S.R. Jet : 60. Progression : 120. Needle Seating : 1.5 mm. Petrol level at 4' 6" Head : 15 mm. Inter-con : 1mm drilled. Air Jet : 2.0. Petrol Inlet Boss and adjusting needle head Stamped V.O.

Governor.

Governor lever spring: Free length: inside hooks 3.8" (96.5 mm). End Play .005" (.127 mm) .010" (.254 mm) Rate: 18 lbs/in ± 5%. No of coils: 26.

Load at 1" (25.4 mm) deflection: 25 lbs. (11.34 kg) ± 1 lb. (.454 kg.) Initial wound-in load: 7 lbs. (3.175 kg).

Control Rod: Free length: inside hooks 2.687" (68.25 mm). Rate: 64 lbs./in ± 5%. No of coils: 11½.

Compensating Spring: Load at ½" (12.7 mm) deflection: 38 lbs. (17.237 kg) ± 1½ lbs. (.681 kg). Initial wound-in load: 6 lbs. (2.722 kg).

DIESEL ENGINE

(Manufactured by the Standard Motor Co.)

ENGINE—3 3/16" (80.96 mm) bore × 4" (101.6 mm) stroke, 4 cylinders, fitted to Tractors Type TE-F20.

Displacement 127.68 cu. ins. (2092 cc.) Compression Ratio 17 : 1 Firing Order 1, 3, 4, 2.

Maximum Belt Horse Power—26 at 2,000 r.p.m.

Tightening Torques :—
- Cylinder Head Nuts 75 to 80 lb. ft. (10.4—11.1 kg.m)
- Big End Nuts 65 to 70 lb. ft. (9—9.7 kg.m)
- Oil Pump Attachment 16 to 18 lb. ft. (2.2—2.5 kg.m)
- Flywheel Set Screws 90 to 100 lb. ft. (12.4—13.8 kg.m)
- Main Bearing Socket Screws 25 to 30 lb. ft. (3.5—4.1 kg.m)
- Centre Bearing Housing to Block 39 to 42 lb. ft. (5.4—5.8 kg.m)
- Clutch Fixing Screws 26 to 28 lb. ft. (3.6—3.9 kg.m)
- Injector Attachment 12 to 14 lb. ft. (1.6—1.9 kg.m)

Component Details	Dimensions New ins.	Dimensions New mms.	Clearance New ins.	Clearance New mms.	Remarks
Main Bearing Housings :					
Front					For checking external dia. of all Housings—break housing and assemble on a mandrell 2.9180"/2.9183" (74.117/74.125 mm.) dia. without bearings. Tighten Socket Screws 29—31 lb. ft. (4—4.3 kg.m).
Housing Spigot Ext. Dia.	5.0615 5.0605	128.562 128.537			
			.0030 .0005	.076 .013	
Bore in Cylinder Block	5.0635 5.0620	128.613 128.575			
Centre					
Housing Ext. Dia.	6.8115 6.8105	173.012 172.987			
			.0035 .0005	.089 .013	
Bore in Cylinder Block	6.8140 6.8120	173.076 173.025			
Rear					
Housing Spigot Ext. Dia.	6.8735 6.8725	174.587 174.562			
			.004 .001	.102 .025	
Bore in Cylinder Block	6.8765 6.8745	174.663 174.613			
Main Bearings.					For checking bore dia. assemble both halves with ring dowels fitted and tighten screws to 29—31 lb. ft. (4—4.3 kg.m).
Housing Bores, Front, Centre and Rear.	2.9165 2.9170	74.079 74.092			
Radial thickness of Bearings, Front, Centre and Rear	.08250 .08225	2.096 2.089			Front and rear Main Bearing Liners are identical but centre is .100" (2.54 mm.) wider.
Bearing Bore Dia. Front, Centre and Rear	2.7540 2.7530	69.952 69.926			With Bearings fitted into Housings tighten to specified torque setting.
			.0040 .0025	.102 .064	Desired clearance when assembled.
Crankshaft.					Similar tolerances for reground Crankshaft to .010", .020", .030", .040" (.254, .508, .762, 1.016 mm.) undersize.
Journal Dia.	2.7505 2.7500	69.863 69.850			
Crankshaft End Float					
Rear Journal Length	1.7507 1.7498	44.468 44.445			
			.0117 .0048	.297 .122	
Rear Bearing Housing width	1.559 1.557	39.599 39.548			
Thrust Washer thickness	.093 .091	2.362 2.311			

Component Details	Dimensions New ins.	Dimensions New mms.	Clearance New ins.	Clearance New mms.	Remarks
Big End.					
Crankpin Dia.	2.3115 2.3110	58.712 58.699	 .0035 .0020	 .089 .051	Similar tolerances for reground crankshaft to .010", .020", .030", 040", .060" (.254, .508, .762, 1.016, 1.524 mm.) undersize.
Bearing Bore Dia.	2.3145 2.3135	58.789 58.763			
Con. Rod Bore Dia.	2.4575 2.4570	62.421 62.408			For checking bearing bores—assemble Con. Rod and tighten to specified setting.
Bearing Shell thickness	.07175 .07150	1.822 1.816			
Connecting Rod End Float.					
Crankpin Length	1.4390 1.4370	36.551 36.500	 .0105 .0065	 .267 .165	For service purposes :— Max. permissible variation in Con. Rod total weights 1½ ozs. (42.52 gms.). Metal may be removed from web on bearing cap for fine weight adjustment.
Con. Rod Width	1.4305 1.4285	36.335 36.284			Con. Rod assembly weight graded—N, P, Q, S, T, U—in 1½ oz. stages.
Small End.					
Bore for Bush	1.126 1.125	28.600 28.575	 —.0050 —.0025	 —.127 —.064	
Bush External Dia.	1.1300 1.1285	28.702 28.664			
Bush Internal Dia.	1.0002 .9998	25.405 25.395	 +.00035 —.00035	 +.009 —.009	Specified clearance using drawing sizes, but bore of Bush machined to suit Gudgeon Pin for the required fit.
Gudgeon Pin Dia.	1.00015 .99985	25.404 25.396	 +.0003 —.0003	 +.008 —.008	Specified clearance using drawing sizes but desired fit of gudgeon pin in Piston obtained by selective assembly.
Gudgeon Pin Holes in Piston.	1.00015 .99985	25.404 25.396			Heat piston in hot oil for fitting.
Pistons, Sleeves and Inserts.					
Wellworthy Type Pistons.					
Original Piston Skirt Dia. (Round and Parallel).	3.183 3.182	80.848 80.823	 .0070 .0050	 .178 .127	Ungraded up to Engine No. SA.7739E.
Sleeve Bore (Parallel).	3.1890 3.1880	81.001 80.975			Replacement sleeves available as standard size only, (i.e. no provision made for reboring and fitting oversizes).
1st Modification—Engine No. SA.7740E — SA.9205E. Piston Skirt Dia. —F. Grade (Round and Parallel).	3.1834 3.1829	80.858 80.846			Pistons and Sleeves graded F & G.
—G. Grade	3.1838 3.1834	80.868 80.858	 .0056 .0047	 .142 .120	
Sleeve Bore —F. Grade (Parallel).	3.1885 3.1880	80.988 80.975			Replacement Pistons and Sleeves available at standard size only (i.e. no provision for oversizes).
—G. Grade	3.1890 3.1885	81.001 80.988	 .0056 .0047	 .142 .120	

Component Details		Dimensions New ins.	mms.	Clearance New ins.	mms.	Remarks
Wellworthy Type Pistons—*continued.*						
2nd Modification—Engine No. SA.9206E—SA.23082E.						
Piston Skirt Dia.—Top	—F. Grade	3.1833	80.856			Alternative to B.H.B. type Pistons.
(Oval ground tapered skirt)		3.1829	80.846			
	—G. Grade	3.1838	80.868			Grade to be measured at top of skirt thrust side.
		3.1834	80.858			
3rd Modification—Engine No. SA.23083E and future.						
Piston Skirt Dia.—Top	—F. Grade	3.1837	80.866			
(Oval ground tapered skirt)		3.1833	80.856			
	—G. Grade	3.1842	80.879			
		3.1838	80.868			
				.0052	.132	
				.0043	.110	
Sleeve Bore	—F. Grade	See 1st Modification.				
(Parallel)	—G. Grade					
Ovality—Top of Skirt		.005	.127			
		.004	.102			
—Bottom of Skirt		.001	.025			
		.000	.000			
Piston Head Dia.		3.158	80.213			Piston Head Dia. up to SA.15104E — 3.1625"/3.1595" (80.328/80.252 mm.)
(Parallel).		3.155	80.137			
				.02300	.584	
				.01925	.489	
Cylinder Insert		3.17800	80.721			
Lower Internal Dia.		3.17725	80.702			
B.H.B. Type Pistons (Introduced as an alternative at Engine No. SA.21735E).						
Original						
Piston Skirt Dia.—Top	—F. Grade	3.1838	80.868			Grade to be measured at top of Skirt Thrust side.
(Oval ground tapered skirt)		3.1834	80.858			
	—G. Grade	3.1843	80.882			
		3.1839	80.871			
				.0051	.129	
				.0042	.107	
Sleeve Bore	—F. Grade	See under Wellworthy type Piston—1st Modificaton.				
(Parallel).	—G. Grade					
1st Modification—Engine No. SA.21914E—SA.29605E.						
Piston Skirt Dia.—Top	—F. Grade	3.1842	80.879			
(Oval ground tapered Skirt).		3.1838	80.868			
	—G. Grade	3.1847	80.892			
		3.1843	80.882			
				.0047	.120	
				.0038	.096	
Sleeve Bore	—F. Grade	As above.				
(Parallel)	—G. Grade					
2nd Modification—Engine No. SA.29606E and future.				.0052	.135	
				.0043	.110	
Piston Skirt Dia.—Top	—F. Grade	3.1837	80.866			
(Oval ground tapered skirt).		3.1833	80.856			
	—G. Grade	3.1842	80.879			
		3.1838	80.868			
Ovality—Top of Skirt		.0122	.310			
		.0098	.249			
—Bottom of Skirt		.0024	.061			
		.0008	.020			
Piston Head Dia.		3.1583	80.221			
(Parallel)		3.1543	80.120			
				.0237	.602	
				.01895	.481	
Cylinder Insert		3.17800	80.721			
Lower Internal Dia.		3.17725	80.702			

Component Details	Dimensions New ins.	mms.	Clearance New ins.	mms.	Remarks
Ring Groove Width (Top, 2nd & 3rd).	.0832 .0822	2.113 2.088			Piston Rings :— Three Compression Rings and one slotted Scraper Ring all above Gudgeon Pin. Chromium plated top Compression Ring—deleted on the Wellworthy Piston at Engine No. SA8309E and re-introduced at Engine No. SA.28867E.
			.0055 .0035	.140 .089	
Compression Ring Width (Top, 2nd & 3rd)	.0787 .0777	1.999 1.974			
Ring Groove Width (4th).	.1602 .1592	4.069 4.044			
			.005 .003	.127 .076	2nd and 3rd Compression Rings; tapered periphery rings introduced at Engine No. SA. 28867E, marked "T" denoting the taper and must be fitted with "T" upwards.
Slotted Scraper Ring Width (4th).	.1562 .1552	3.967 3.942			
All rings—fitted gap			.014 .009	.356 .229	
Lower Block Dia. for Sleeve.	3.4073 3.4068	86.546 86.532			For service purposes, oversize Piston Rings, +.010" (.254 mm.) only, available for fitting in existing worn Cylinder Sleeve bores.
			.0021 .0008	.053 .020	
Sleeve External Dia.	3.4060 3.4052	86.512 86.492			
Upper Block Recess Dia. for Inserts and Sleeve Flange.	3.65725 3.65625	92.894 92.868			
			.00245 .00045	.062 .011	
Cylinder Insert Lower External Dia.	3.6558 3.6548	92.857 92.832			
Cylinder Insert Upper— Width of Slot. (See Remarks).	1.265 1.255	32.131 31.877			When upper insert is fitted in bore 3.6565" (92.875 mm.) dia. When in free state, gap increases by .03" (.762 mm.) nominally.
Cylinder Insert Upper— Radial Thickness.	.2335 .2325	5.931 5.906			
Gasket Cylinder Sleeve—Thickness.	.012	.305			
Sleeve Flange Thickness (Up to Engine No. SA.23082E).	.12575 .12475	3.194 3.169			Slot in bottom of Sleeve.
Sleeve Flange Thickness (Engine No. SA.23083E and future).	.21575 .21475	5.480 5.455			Without slot in bottom of Sleeve.
Depth of recess for Cylinder Inserts in Cylinder Block.	.9072 .9057	23.043 23.005			
Depth of Cylinder Inserts Lower Insert	.2390 .2380	6.071 6.045			Specified insert depths are over flats. As the mating surfaces are cones, these dimensions cannot be used directly for calculating the 'nip.'
Upper Insert (Up to Engine No. SA.23082E).	.5510 .5500	13.995 13.970			Use original Upper Insert only with Sleeve Incorporating Slot; later type only with slotless Sleeve, which has the thicker flange.
Upper Insert (Engine No. SA.23083E and future).	.461 .460	11.709 11.684			
Stand out of upper insert above block (with new Sleeve gasket).			.0045 .0010	.115 .025	
Stand out of Piston at T.D.C. above top face of Cylinder Block (not insert)			+.010 —.003	+.254 —.076	
Water Pump					
Housing Bore for Bearing	1.5749 1.5744	40.003 39.990			
			+.00061 —.00040	+.015 —.010	
Bearing Case External Dia.	1.57480 1.57429	40.000 39.987			
Spindle Dia.	.6264 .6256	15.905 15.893			Drive to impellor imparted through interference fit of impellor on spindle. Incorporated at Engine No. SA. 14655E.
			—.0022 —.0012	—.056 —.030	
Impellor Bore	.6245 .6240	15.863 15.850			

Component Details	Dimensions New ins.	mms.	Clearance New ins.	mms.	Remarks
Thermostat. Up to Engine No. SA.17122E.					
Valve begins to open	167 — 176 F.	(75 — 80 C.)			Stamped No. X43570/11
Valve fully open	203 F.	(95 C.)			
Valve Lift	.312	7 94			
Engine No. SA.17123E and future.					
Valve begins to open	154 — 163 F.	(68 — 73 C.)			Stamped No. X43570/16
Valve fully open	185 F.	(85 C.)			
Valve Lift	.312	7.94			
Oil Pump					
Approximate capacity at 50 lb/sq. in. (3.52 kg/sq. cm.) is 3.95 galls. (16.94 litres) per minute at 2000 engine r.p.m. (Oil pump runs at engine speed).					
Oil Pressure 40-60 lb/sq. in. (2.8—4.2 kg/sq. cm.).					
Bore Inner Rotor	.4987 .4993	12.667 12.683			
			.0012 .0002	.030 .005	
Pump Shaft Dia.	.4985 .4981	12.662 12.651			
			.0014 .0005	.036 .013	
Bush Internal Dia.	.4995 .4990	12.688 12.675			
Outer Rotor Outside Dia.	1.599 1.598	40.615 40.589			
			.006 .004	.152 .102	
Housing Internal Dia.	1.604 1.603	40.742 40.716			
Rotor Depth—Inner and Outer	.9995 .9985	25.388 25.362			
Pump Housing Depth from flange face to bottom of bore	.8410 .8400	21.361 21.336			
Depth of Recess in Front Main Bearing Housing	.157 .156	3.988 3.962			
Gasket Thickness (Uncompressed).	.006	.152			
End Clearance			.0035 .0005	.089 .013	End clearance allowing for .002" (.051 mm.) compression of gasket. A combined worn clearance of .005" (.127 mm.) indicates need of facing bearing housing recess and facing.
Inner Rotor Major Dia.	1.172 1.171	29.769 29.743			
Inner Rotor Minor Dia.	.731 .729	18.567 18.517			
Clearance on Rotors			.004 .001	.102 .025	Measured when major dia. of inner rotor and minor dia. of outer rotor are in line; when this clearance exceeds .010" (.254 mm.) new parts should be fitted.
Camshaft					
Journal Dias.	1.5595 1.5590	39.612 39.599			
			.0045 .0025	.115 .064	Provision made for vernier setting of the valve timing with camshaft chainwheel on centre.
Bore in Block and Front Bush Internal Dia.	1.5635 1.5620	39.713 39.675			
Camshaft End Float					
Front Bearing Length	1.373 1.370	34.874 34.798			
			.0075 .0020	.191 .051	
Front Journal Length	1.3775 1.3750	34.988 34.925			

Component Details	Dimensions New ins.	mms.	Clearance New ins.	mms.	Remarks
Tappets and Valves					
Bore in Block.	.5630 .5623	14.300 14.282			
			.0012 .0003	.030 .008	
Tappet Stem Dia.	.5620 .5618	14.275 14.270			
Valve Tip Clearance Inlet & Exhaust (Cold).			.012	.305	
Valve Guide Bore Dia. Inlet & Exhaust.	.3130 .3120	7.950 7.925			Valve Guides not interchangeable; except between Engine No. SA.17677E and SA.29403E when the inlet guide was common.
			.0023 .0008	.058 .020	
Inlet Valve Stem Dia.	.3112 .3107	7.904 7.892			
			.005 .003	.127 .076	
Exhaust Valve Stem Dia.	.309 .308	7.849 7.823			
Valve Head Dia. Inlet	1.252 1.248	31.801 31.699			
Exhaust	1.127 1.123	28.626 28.524			
Valve Lift : Inlet	.3075	7.810			
Exhaust	.342	8.687			
Valve Seating Angle on Valve Head 45°. Valve Seat Angle in New Cylinder Head 89° included.					When seats in Cylinder Head are re-cut for servicing, utilize a 90° (incl.) cutter.

Valve Springs.

Rate : Inner 56.8 lb/in. (1014.3 kg/m)
Outer 106 lb/in. (1892.9 kg/m)

Fitted Length : Inner 1.125" (28.575 mm.) Free Length : Inner 1.51" (38.354 mm.) approx.
Outer 1.219" (30.963 mm.) Outer 1.600" (40.64 mm.) approx.

Fitted Load + 2 lb./—1 lb. (.908—.454 kg.) :
Inner 22 lb. (10 kg.)
Outer 40 lb. (18.1 kg.)

Full Lift Load :

	Inlet	Exhaust
Inner	39.5 lb. (17.9 kg.)	41.5 lb. (18.8 kg.)
Outer	72.5 lb. (32.9 kg.)	76.5 lb. (34.7 kg.)

Valve Timing (Crankshaft Degrees).

Exhaust opens	45° before B.D.C.
closes	5° after T.D.C.
Inlet opens	5° before T.D.C.
closes	25° after B.D.C.

Decompression Cam Clearances.

			Remarks
Cylinder Nos. 1, 2 and 4	.030	.762	Set with slot in shaft end vertical, located, on all except very early models, by fitting a dowel ($\frac{3}{16}$" dia.) through 3rd pedestal extension.
Cylinder No. 3	.045	1.143	

Flywheel.

					Remarks
Spigot Dia. (for starter gear ring)	13.094 13.091	332.588 332.511			Flywheels balanced individually. Held to Crankshaft by 6 set screws locked in pairs. Single dowel locating flywheel on Crankshaft.
			—.031 —.023	—.787 —.584	
Gear Ring Inside Dia.	13.068 13.063	331.927 331.800			
Crankshaft Spigot Dia.	4.0002 3.9995	101.605 101.588			
			+.0012 —.0004	+.030 —.010	
Flywheel Dia. for Spigot.	4.0007 3.9998	101.778 101.595			

Run-out of clutch contact face at outer dia. should not exceed .003" (.076 mm.).

Component Details	Dimensions New ins.	mms.	Clearance New ins.	mms.	Remarks
Jockey Chainwheel Assembly					
Spigot Dia.	.749	19.025			
Wheel Carrier	.748	18.999			
			.0025	.064	
			.0008	.020	
Chainwheel Bush	.7505	19.063			
Internal Bore	.7498	19.045			
Front Pivot Dia.	.499	12.675			
	.498	12.649			
			.0025	.064	
			.0008	.020	
Bore in Timing Cover	.5005	12.713			
	.4998	12.695			
Rear Pivot Dia.	.4998	12.695			
	.4993	12.683			
			.0012	.030	
			.0000	.000	
Bore in Cylinder Block	.5005	12.713			
	.4998	12.695			
Injector Pump Drive.					
Pump Drive	.8748	22.220			Drive Bush for chainwheel gives vernier adjustment for pump timing in $1\frac{1}{2}$ stages up to 6°.
Shaft Minor Dia.	.8743	22.207			
			.0012	.030	
			.0000	.000	
Locating Bush Int. Dia.	.8755	22.238			
	.8748	22.220			
Locating Bush Ext. Dia.	1.28105	32.538			
	1.28055	32.526			
			.0014	.035	
			.0000	.000	
Chainwheel Bore	1.28195	32.561			
	1.28105	32.538			
Pump Drive Shaft Major Dia.	1.1233	28.532			
	1.1215	28.486			
			.0042	.107	
			.0015	.038	
Bearing Housing	1.1257	28.593			
Internal Dia.	1.1248	28.570			
Drive Shaft End Float.					
Length of Shaft	2.1900	55.626			
	2.1875	55.563			
			.0075	.191	
			.0030	.076	
Length of Housing	2.1845	55.487			
	2.1825	55.436			
Injector Pump and Injectors.					
Injection Spill Cut-off 30° (Crankshaft) before T.D.C.					Timing hole in flywheel and Cylinder Block when aligned with $\frac{1}{4}$" (6.35 mm.) dia. tommy bar locates Nos. 1 and 4 spill cut-off timing.
Slots in Pump Mounting Flange allows for the following movement. Pumps Pt. Nos. 300342 and 300781—total 10° (Crankshaft). Pumps Pt. Nos. 300964 and 300972—total 16° (Crankshaft).					
Injector Breaking Pressure.	120 ats. (123.5 kg/sq. cm.). (1764 lb/sq. in.).				
Spray Angle.	4°				
Valve Lift.	.0276	.700			

Electrical Equipment.

Dynamo :

Runs at 1.72 engine speed.

Component Details	Dimensions New ins.	mms.	Clearance New ins.	mms.	Remarks

Starter Motor.

Number of Teeth in Flywheel Gear Ring and Starter Pinion 113 and 11 respectively.

End Clearance between disengaged starter pinion and Flywheel Gear Ring .090" (2.29 mm.)—Distance from mounting flange to front face of Flywheel Gear Ring 1.090" (27.69 mm.).

Starter Pilot Switch should make electrical contact when the leading face of the starter pinion is $1\frac{5}{8}$" (41.28 mm.) from the starter motor mounting flange face.

Batteries.

Specific Gravity 1.28 — 1.30 at 60°F. (15°C.).

Up to Tractor Serial No. 207705.	120 ampere hour capacity at 10 hour discharge rate 2 — 6 volt 17 plate units connected in series. Recharge rate 13 amps.
Tractor Serial No. 207706 and future.	115 ampere hour capacity at 10 hour discharge rate. 2 — 6 volt 19 plate units connected in series. Recharge rate 12 amps.

Clutch.

Clutch Dia.	10 254
Clutch Springs :	12 green springs each of 105 lb. (47.627 kg.) to 115 lb. (52.199 kg.).

Fill-up Data.

Fuel Tanks.	Main. 7 Imp. Gallons (31.85 litres). Auxiliary Tank. $\frac{3}{4}$ Imp. Gallon (3.4 litres). Ki-gass Tank. $\frac{3}{4}$ pint (.43 litres).
Engine Sump.	12 pints (6.8 litres).
Air Cleaner Bowl.	$\frac{3}{4}$ pint (.43 litres).
Cooling System.	15 pints (8.5 litres).

Tractor Weight Approx. :

Up to Tractor Serial No. 325000	2700 lb. (1225 kg.)
Tractor Serial No. 325001 and future.	2770 lb. (1256 kg.)