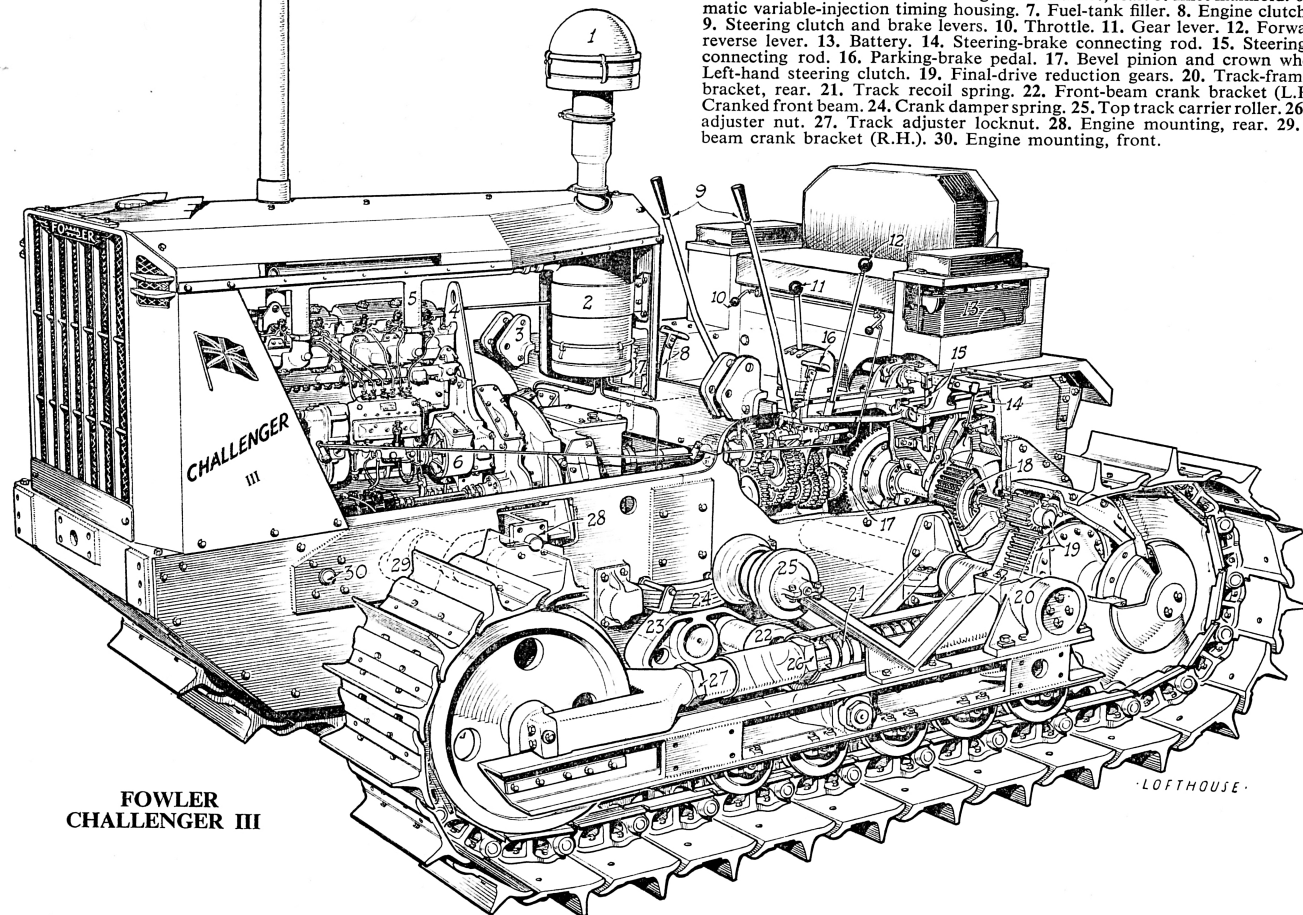


KEY TO NUMBERS ON DRAWING.—1. Primary oil-bath air cleaner. 2. Main oil-bath air cleaner. 3. Bulldozer hydraulic ram bracket (R.H.) can be used with L.H. bracket to hoist tractor. 4. Engine lift bracket, rear. 5. Inlet manifold. 6. Automatic variable-injection timing housing. 7. Fuel-tank filler. 8. Engine clutch pedal. 9. Steering clutch and brake levers. 10. Throttle. 11. Gear lever. 12. Forward and reverse lever. 13. Battery. 14. Steering-brake connecting rod. 15. Steering-clutch connecting rod. 16. Parking-brake pedal. 17. Bevel pinion and crown wheel. 18. Left-hand steering clutch. 19. Final-drive reduction gears. 20. Track-frame pivot bracket, rear. 21. Track recoil spring. 22. Front-beam crank bracket (L.H.). 23. Cranked front beam. 24. Crank damper spring. 25. Top track carrier roller. 26. Track adjuster nut. 27. Track adjuster locknut. 28. Engine mounting, rear. 29. Front-beam crank bracket (R.H.). 30. Engine mounting, front.



**FOWLER
CHALLENGER III**

·LOFTHOUSE·

FARM MECHANIZATION HANDBOOK

FOWLER CHALLENGER III

N.B.—This data refers to engines upwards of Serial No. 502278 stamped on rocker-cover name plate.

Engine: *Meadows*, compression-ignition, 6-cylinder, vertical, water-cooled, overhead-valve, 4-stroke, diesel oil. Bore and stroke $5\frac{1}{8} \times 5\frac{1}{8}$ in. Piston swept volume 633 cub. in. Compression ratio 16:1. Brake h.p. 95 at maximum governed speed of 1,550 r.p.m.

Cylinders: dry liners; maximum permissible wear on diameter 0.012 in.

Piston and connecting rod: can be removed from top of cylinder.

Ring data (counting from top):

Ring	Gap in unworn part of cylinder		Groove clearance	
	Correct	Max. permissible	Correct	Max. permissible
1	0.020–0.025 in.	0.030 in.	0.0035–0.0055 in.	0.0075 in.
2	0.012–0.016 in.	0.022 in.	0.0035–0.0055 in.	0.0075 in.
3	0.012–0.016 in.	0.022 in.	0.0035–0.0055 in.	0.0075 in.
4	0.012–0.016 in.	0.022 in.	0.002 –0.004 in.	0.006 in.
5	0.012–0.016 in.	0.022 in.	0.002 –0.004 in.	0.006 in.

Piston to cylinder clearance: at skirt, correct 0.0061–0.0079 in. Oversize pistons available: 0.020 in.

Gudgeon-pin clearance in connecting rod: correct 0.001–0.0014 in.; maximum permissible 0.002 in.

Big-end bearing: renewable pre-finished shell type, no adjustment; correct clearance 0.003–0.0045 in.; maximum permissible 0.006–0.0075 in.

Crankpin: maximum permissible ovality 0.003–0.004 in.

Main bearing: seven, renewable pre-finished shell type, no adjustment; correct clearance 0.003–0.004 in.; maximum permissible 0.006–0.007 in.

Main journal: minimum permissible worn diameter 3.636 in. before first regrind.

Crankshaft: undersizes available 0.010 in. and 0.020 in.

Valve: seat angle: inlet $45^\circ 24'$ – $45^\circ 36'$; exhaust 45° . Guide to stem clearances: correct 0.0015–0.0025 in.; maximum permissible 0.0035–0.004 in.

Valve spring: correct free length: outer 2.260 in., inner 2.140 in.

Tappet clearances: (hot) inlet 0.010 in., exhaust 0.012 in.

Valve timing: inlet opens 18° before T.D.C., closes 34° after B.D.C.; exhaust opens 40° before B.D.C., closes 8° after T.D.C.

Lubrication: pump-fed force feed. Correct pressure 50 lb. p.s.i.; minimum safe pressure 25 lb. p.s.i. **Filter:** full flow. **Pressure release valves:** main in oil pump body. Oil-cooler by-pass valve in outlet side of lubricating oil filters between filters and cooler.

Cooling system: Pump assisted, fan-belt tension permits 1 in. flex between pulleys.

Fuel system: injection begins at 36 – 26° before T.D.C. Injection pressure 2,572.5 lb. p.s.i. Timing marks on fuel-pump coupling. Firing order: 1, 5, 3, 6, 2, 4.

Governor: centrifugal; speed range 800–1,550 r.p.m.

Engine clutch: spring loaded, dry, single plate. Pedal-free movement 2 in. Clutch can be removed without disturbing engine or main gearbox after transfer box has been removed.

Steering: clutch and brake; clutch-lever free movement, 3 in. Brake-pedal free movement dependent on clutch levers.

Tracks: correct adjustment allows 2 in. slack at the top.

Pins and bushes: should be turned when wear has reduced bush diameter to $2\frac{1}{32}$ in. minimum. The bushes are recessed into outer links.

Threads: B.S.F. and B.S.W. Tightening torque in lb. ft.: cylinder head 110, big end 50, main bearing 90.