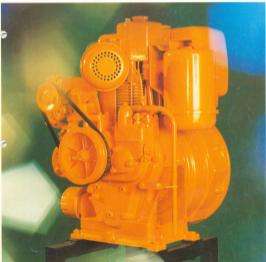


Air-Cooled Diesel Engines

FL 208 D/210 D



**Air-cooled DEUTZ
F1L 208 D and F1L 210 D
Four-stroke Diesel Engines**



Köckner-Humboldt-Deutz AG (KHD) has concluded a cooperation agreement with Motasacoche, Geneva (Switzerland) with the effect that the DEUTZ air-cooled power bracket, up to 3.70 kW (500 HP), formed by the traditional four diesel families, has now been extended down to 2 kW (2.7 HP).

The agreement was actually concluded in 1973 for the immediate purpose of jointly establishing a diesel engine company,

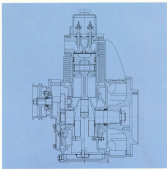
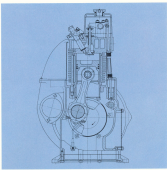
named DEUTZ MAG S.A., for the production of single-cylinder diesels from 2 kW (2.7 HP) to 10.3 kW (14 HP) with speeds ranging from 1500 rev/min to 3000/3600 rev/min.

KHD is distributing these engines worldwide – except Switzerland – under the designation DEUTZ FL 208/210 D. They are backed by the efficient KHD Service Organization also offering comprehensive advice on any practical installation problem.

Being air-cooled, the engines are indifferent to climatic conditions, easy to install, rugged, reliable and hence long-lived. Since there is no water for coolant, maintenance is fast and simple, and all problems of leakages, corrosion and anti-freezing are eliminated.

The DEUTZ MAG 208/210 D diesels are especially popular for smaller construction machinery and vehicles, calling for small weight and size, portable pumping sets for instance. But they are also a very compact power unit for many other applications in farming and forestry, construction and other industries: vibration rollers, soil stabilizers, dumpers, gardening tractors, mowers, plastering equipment, single-side tillers, generators, windlasses, handling and conveying equipment, pumping and cooling sets, and marine propulsion.

Cross Section



Longitudinal Section



Optional auxiliaries
marked by grey colour

Outstanding versatility

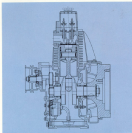
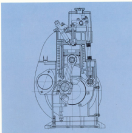
a feature of all air-cooled DEUTZ diesel engines, is ensured for the PL 208/210 D, too, by a great choice of standardised auxiliaries. Combined with the various power take-off facilities, therefore, all possible driving and installation problems can be ideally solved.

Cross Section

Built-in fuel tank with built-in filter cartridge. Optionally: Engine without tank, separate filter cartridge on the crankcase.

Camshaft-operated injection pumps plugged into the crankcase, four-hole injectors, inject for pre-ignition in the starting phase.

Flyweight-type governor on the crankshaft gear, extra speed control for spinning generators.



Longitudinal Section



Starting methods:

- hand-operated through cable
- hand-operated through crane handle-on-camshaft including decompressor in the rocker chamber
- electrically operated

Extra low-temperature starting kit.

Built-on of both air cleaner, bullhorn or hose silencer.

V-belt-driven three-phase alternator with integral regulator.

Power take-off from flywheel end or fan end:

- from balancing shaft
- from camshaft (half engine speed)

Facilities for driving a hydraulic pump.



**Production of
DEUTZ MAG Diesels
at Amersfoort (France)**

Right-hand:
Circular table-drilling
machine for cylinder heads

Automated:
Engine assembly line

Bottom-center:
Testbench

Bottom-right-hand:
Final assembly





Outstanding Design Features

Vertical single-cylinder four-stroke-diesel using direct injection.

Air-cooling by fan(s) mounted forward as inlets through a screen on the crankcase side.

Finned cylinder head and cylinder made from light alloy, liner made from special cast iron.

Inlet and exhaust valves in overhead arrangement in the cylinder head; valve guides and seat inserts of the replaceable type.

Valve drive via pushrods and rocker arms from camshaft carried in ball bearings and held in the crankcase.

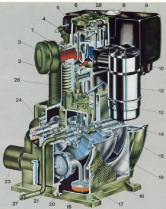
Camshaft drive from the crankshaft through gears at the engine's front end.

Light-alloy waterpump and cast-iron oil pump with mounting feet or light-alloy oil pump without feet (Range type version).

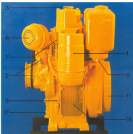
Main and big-end bearings fabricated from a special alloy.

Forward-tilting lubricating circuit with filter cartridge in full flow, oil cooling by the regular cooling air flow.

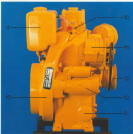




**Air-cooled Single cylinder
F1L 300 D Diesel Engine**



1. Oil bath air cleaner with cover plate
2. Speed control/stopping lever
3. Oil filler neck
4. Fuel tank
5. Oil filter cartridge (replaceable)
6. Exhaust silencer
7. Cylinder with cooling fins
8. Fuel filter
9. Oil dipstick
10. Injector
11. Flywheel with ring gear
12. Capst pulley for hand starting
13. Water pump
14. Cooling air inlet
15. Flywheel mounted blower
16. Alternator
17. Mounting facilities for hydraulic pump



1. Oil bath air cleaner with cover plate
2. Speed control/stopping lever
3. Oil filler neck
4. Fuel tank
5. Oil filter cartridge (replaceable)
6. Exhaust silencer

Full scale of delivery see special
sheet on Specification Data.

Electrically started engine

- | | | |
|--------------------------|--------------------------|---------------------------|
| 1. Three-phase generator | 11. Protective cap | 21. Oil pump |
| 2. Exhaust silencer | 12. Oil bath air-cleaner | 22. Oil pressure switch |
| 3. Piston | 13. Injection pump | 23. Lube-oil filter |
| 4. Injector nozzle | 14. Crankshaft | 24. Mass balancing shaft |
| 5. Rocker arm | 15. Flywheel blower | 25. V-belt pulley |
| 6. Oil filter neck | 16. Lube-oil dipstick | 26. Cylinder |
| 7. Valves | 17. Oil intake pipe | 27. Starting crank handle |
| 8. Cylinder head | 18. Oil pan | 28. Decompression |
| 9. Fuel tank | 19. Camshaft | |
| 10. Fuel filter | 20. Oil drain plug | |

