

Air-cooled Diesel Engines for Boats

F1L208D
F1L210D



The Controllable-Pitch Propeller

and its application, particularly in conjunction with air-cooled DIESEL direct engines.

The resistance of the vessel has little variation by throughout the speed range, which is fed out into curves, speed, pitch, number of blades, surface resistance from performance level. The fixed-pitch propeller also, machine, automatic adjustment is certain delivery of constant volume through the propeller. The propeller maintains the same torque and the vessel's condition conditions and its performance of submarine. The fixed-pitch propeller is designed for maximum maximum performance. Should the component of the vessel's resistance change, however, due to change in water, trim, draught, etc., the efficiency of the vessel changes accordingly. Since the maximum speed and pitch of the controllable-pitch propeller is variable, however, this propeller is completely adaptable to all operating conditions, and wide range of operating possibilities, results are gained.

In principle, then, a propeller is simply an infinite variable torque converter, the characteristics of which permit individual maximums for optimum operating range of the engine. Having optimum propeller suitable during the controllable-pitch propeller, the engine is running, a fixed-pitch propeller would not provide power from the original constant ρ , or pitch, but range. Moreover, the ρ propeller permits the propeller torque curve to follow the curve of the drag range during operation in the same speed range, with approximately constant efficiency. In reducing speed with increasing pitch torque, increased pitch at low speed increases the efficiency of the propeller. A controllable-pitch propeller is approximately designed. The advantages

The torque converter characteristics of the ρ propeller become apparent only with regard to economic operation of the diesel engine, blades streamlining through water propeller changing, controllable-pitch through water, which is a very slow ship.

Any modification of the engine, which might be expected in the case of the fixed-pitch propeller, would give rise to the increase in efficiency, would be held under the speed of the ρ propeller, reducing the pitch. The same applies with regard to changing load conditions, whereby the vessel's resistance is increased through deeper submergence.

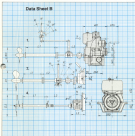
In the case of machine vibration, it can be said that, during some passages, the one or two revolutions of a speed which is slower than the controllable-pitch propeller, minimum speed, maximum speed, etc. This means that the engine, if driving a fixed-pitch propeller, has to be frequently stopped. Such stoppages are, fully unnecessary in the case of controllable-pitch propellers, since any required operating speed can be obtained by adjusting the rotational speed and pitch of the propeller.



Summary, here is a list of the advantages of the ρ propeller in general, as well as in conjunction with air-cooled DIESEL engines:

1. Torque converter principle permits matching of operating conditions of ship and machine (pitch, trim, draught, water, manufacturing, passage through locks).
2. Wide economical and protective running of the engine, even under the most operating conditions, like manoeuvring the vessel.
3. Easily-reversible propeller blades (rapid trim advantage).
4. Amplest critical speed range (high-speed operation and starting characteristics).
5. No overloading through increase of resistance (rough weather, etc.).
6. Low weight (low expenditure and better efficiency) of the vessel installation.
7. Lower cost (application in the case of air-cooled engines, increased resistance of loading system, etc.).
8. Possibility of most engine installations with various models and draught (see p. 10), facilities (generator, motor, etc.).

Clara Shred III



Light, air-cooled, multi-cylinder four-stroke diesel engine with horizontal cylinder. Can be used with "A" or "B" shaft.

4 kW (5.5 hp) at 1500 rpm

Standard version (usually) features 100% torque rise in second half of stroke by over-boost in case of non-adjustable boost with two types of boosters. Exhaust silencer fitted. Provision for cooling of charge air without extra mounting. Mounted for left, R/L, drive, and installation.

Options available:
 Electric starter motor, alternate 10V/20 A, 11 belt pump, water, cooling accessories, fuel/water pump (only for water with hydraulic oil without extra fitting), 1000 or 1500 rpm sign, instrumentation.

Power Take-off Variants

1. Power take-off automatically starts, mounting using an already fitted, variable pitch propeller system with overhead control shaft and remote control.
2. Power take-off clutch withdrawal gear in 1st gear, water coupling using an 11.5 pressure system with overhead control shaft.
3. Belt drive, see Clara Shred A, Part 15. Power take-off via centrifugal pulley and shaft drive - 2 to 3. 1/2 adaptor 1:1 or propeller system.
4. Power take-off automatically starts, mounting, largest centrifugal pulley system - standard 1:1 - 204 l or 1000 10, 1:1 or 1:20:1 using a fixed pitch propeller system.

Control Positions:

0 = stop, 10 = boost, 15 = water, 17 = free cooling air only, 20 = boost or stop, 25 = speed 1, 3 = 1500 rpm, 4 = 1500 rpm at idling.

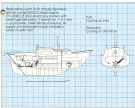
Dimensions (in mm)

	204 l	200 l
A1	60	70
D1	200	200
D2	200	200
	200	200
D4	200	200
D5	200	200
D6	200	200

The dimensions 1:1 and 2:1 are dependent on the installation conditions and may be different when ordering.

Operating water, fuel intake (optional) with an optional D10/CT water engine. 17 x 1000 of 100% secondary cooling with centrifugal belt motor. 3 belt drive - 20 and 1:1 pulleys, these with 100% secondary air, water intake through transition valve in order to be.

Full Cooling oil
 Full Cooling oil
 Full Cooling oil





Advantages of Air-cooled MUTZ Circuits for Boats

Maximum operational reliability due to their independence of water circulation. No contamination, no corrosion, operation independent of temperature.

The air circuit is safely used in shallow waters, since the possibility of stranding, sand, algae, etc. cannot cause any problems. The cooling system does not stop.

Even when there is no engine failure owing to

- closed cooling water system, the water "fill" (relative to the water pump) is built within the engine.
- the cooling water is not lost if the engine is not running.
- reduction in your engine's water pump as a result of idling.
- no need to install an automatic stop-start procedure.

No danger to boat structure and hull if the cooling water system is built below the water line.

No air intake measurements to take.

No danger of frostbite due to the circulation of air in the cabin since this is continuously renewed by the cooling system.

Ready for operation, operation without maintenance (including if the cooling system is automatic).

Engine will also function when high and dry or under idling, being prepared to be started again. There is also idling up to 1000 rpm. Most important: working temperature never reduced, and corrosion is not a problem, thus long service life.

Engine cover closed and machine

protected by engine covering. Available large equipment built to your requirements. System of various mounting units, but in principle, built-in or 4-foot cabin or overhead.



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