

AQUAMATIC 110



Since Volvo Penta introduced the first successful inboard-outboard combination in 1959, its fame has spread over the world and there have been many imitators. However, Volvo has stayed in front and now leads the way with the Aquamatic 110, an inboard engine with outboard drive that combines all the features that a boat owner could desire in a power package.

That Volvo Penta continues to show the way is no accident. It has carried on a continuing programme of research and development that has constantly improved the existing product. At the same time it has listened to suggestions from boat builders and the boating public that even further enhance the new outdrive combination.

AQUAMATIC

110

The result is the Aquamatic 110, a compact, efficient engine with a completely new outdrive, offering every feature that makes for a more efficient, economical, convenient and safe power package for the boat-buying public.

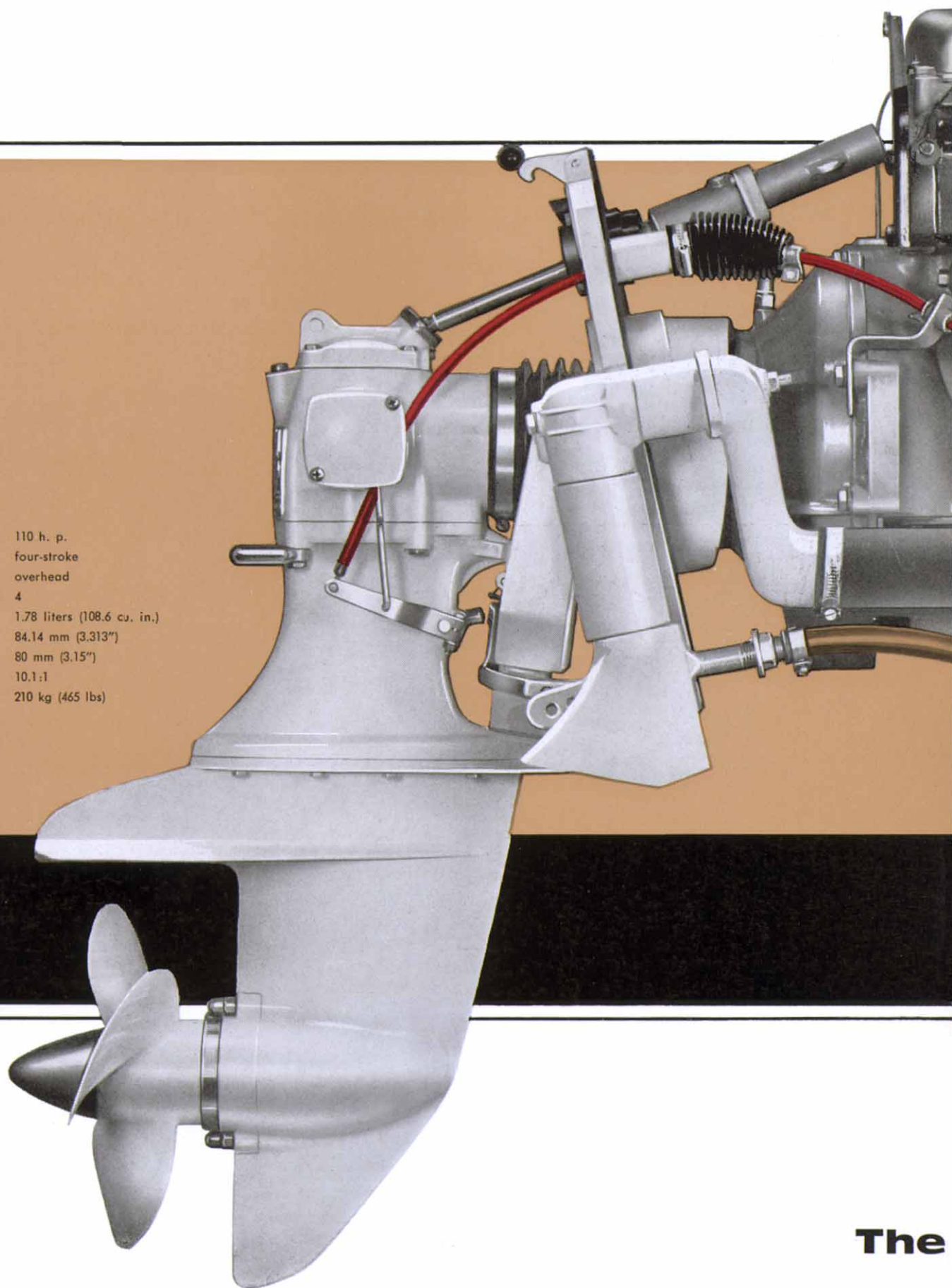
The new Aquamatic 110 features 110 h. p. along with the utility of Volvo Penta's new Silent-Shift cone-type clutch, the convenience of the new electric hydraulic lift and the quiet operation of the new underwater exhaust.

Complementing of these features are Volvo Penta workmanship and unequalled fuel economy that cannot be matched by any large 2-stroke outboard or 4-stroke 1/0. Aquamatic is the only marine engine to have its fuel economy tested and certified by an independent and recognized organization, NASCAR (National Association for Stock Car Auto Racing).

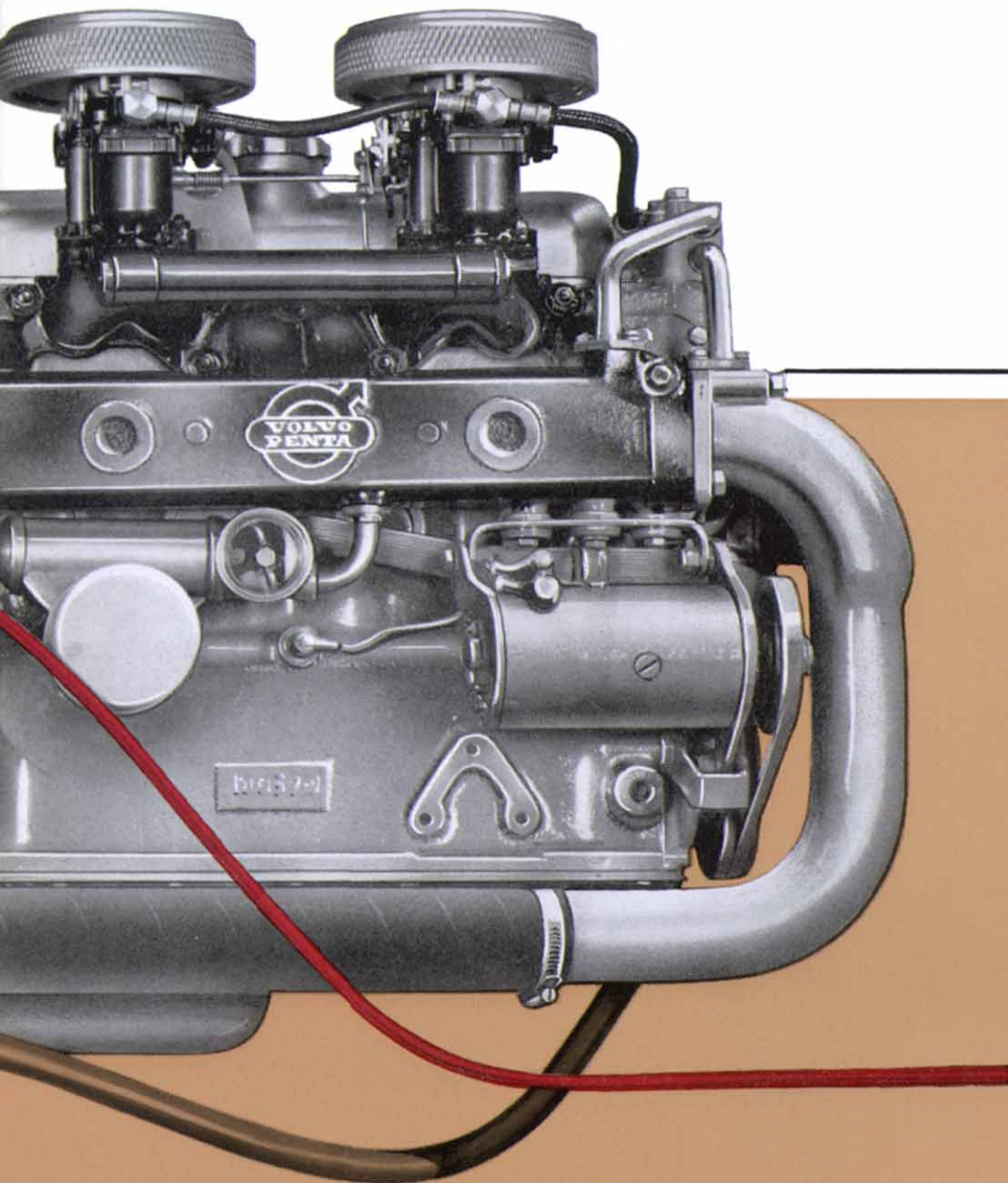
Here is truly the ultimate in recreational boating power.

DATA

Max. output	110 h. p.
Type of operation	four-stroke
Valves	overhead
Number of cylinders	4
Capacity, total	1.78 liters (108.6 cu. in.)
Bore	84.14 mm (3.313")
Stroke	80 mm (3.15")
Compression ratio	10.1:1
Total weight	210 kg (465 lbs)



The



In this booklet you'll find the various features of the Aquamatic 110 listed. But here is an overall view of the unit that has revolutionized recreational boating.

The inboard-outboard concept had been around for many years before Volvo Penta introduced its version. That the Volvo Penta was the first to gain acceptance is a salute to its design and quality of construction.

Behind the Aquamatic 110 is a company with more than 60 years of marine engine experience. The engineering experience is reflected in the compact, tidy engine that can give years of trouble-free service with only normal maintenance schedules.

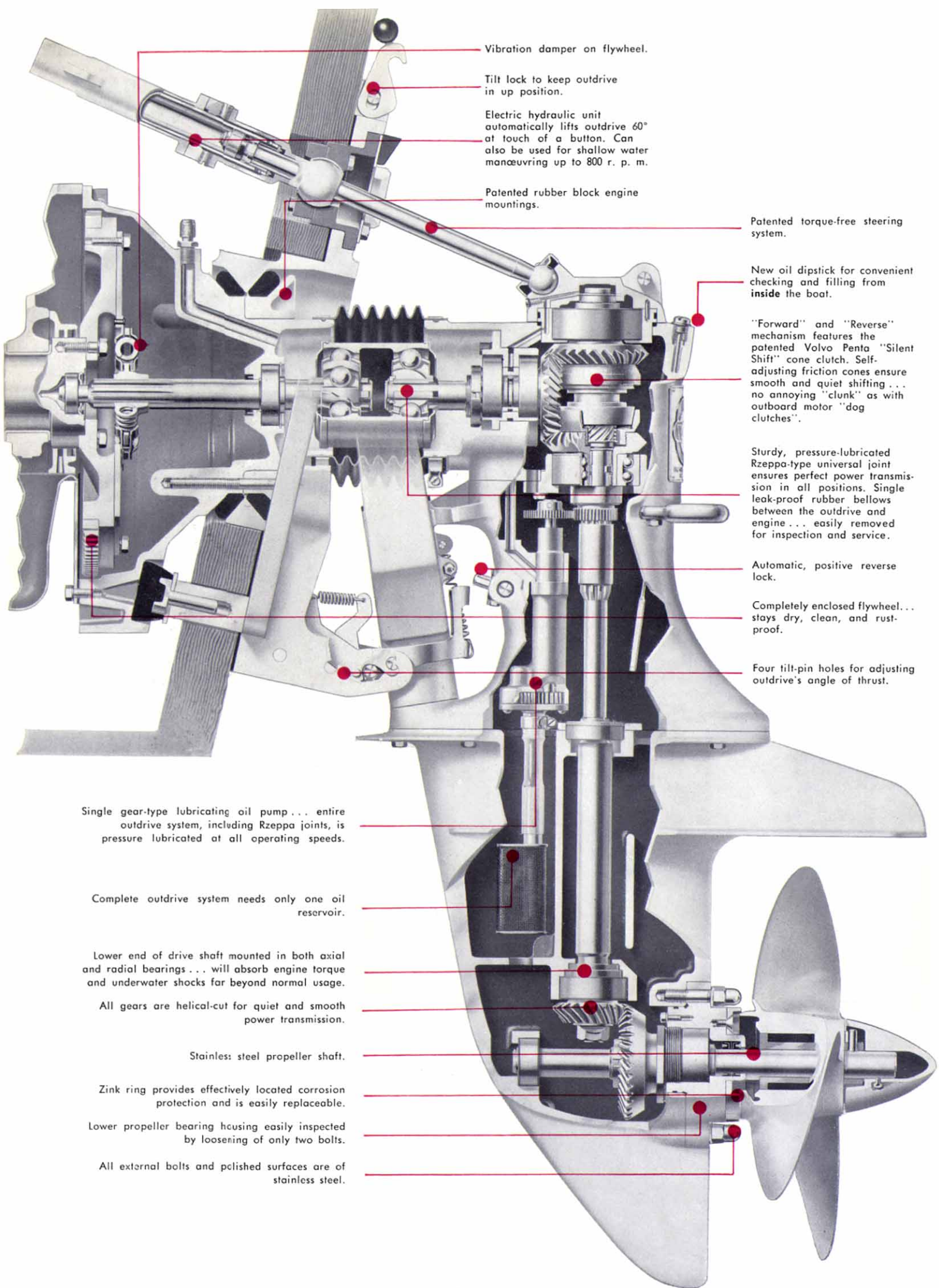
The outdrive shows engineering research and design at its most efficient. Combined as a single unit, the Aquamatic 110 becomes the only four-stroke 110 which has all of its components manufactured by the same company.

Total quality control is achieved through individual testing of every single part — even the bolts. Piston-and-rod sets are individually and fitted after precision weighing and measuring.

The result is a family of engine-outdrive combinations that were fine enough to start a new trend in boating and then continue to show the way in the field. The Aquamatic 110 is the newest leader.

ultimate in recreational boating power





Vibration damper on flywheel.

Tilt lock to keep outdrive in up position.

Electric hydraulic unit automatically lifts outdrive 60° at touch of a button. Can also be used for shallow water manœuvring up to 800 r. p. m.

Patented rubber block engine mountings.

Patented torque-free steering system.

New oil dipstick for convenient checking and filling from inside the boat.

"Forward" and "Reverse" mechanism features the patented Volvo Penta "Silent Shift" cone clutch. Self-adjusting friction cones ensure smooth and quiet shifting... no annoying "clunk" as with outboard motor "dog clutches".

Sturdy, pressure-lubricated Rzeppa-type universal joint ensures perfect power transmission in all positions. Single leak-proof rubber bellows between the outdrive and engine... easily removed for inspection and service.

Automatic, positive reverse lock.

Completely enclosed flywheel... stays dry, clean, and rust-proof.

Four tilt-pin holes for adjusting outdrive's angle of thrust.

Single gear-type lubricating oil pump... entire outdrive system, including Rzeppa joints, is pressure lubricated at all operating speeds.

Complete outdrive system needs only one oil reservoir.

Lower end of drive shaft mounted in both axial and radial bearings... will absorb engine torque and underwater shocks far beyond normal usage.

All gears are helical-cut for quiet and smooth power transmission.

Stainless steel propeller shaft.

Zink ring provides effectively located corrosion protection and is easily replaceable.

Lower propeller bearing housing easily inspected by loosening of only two bolts.

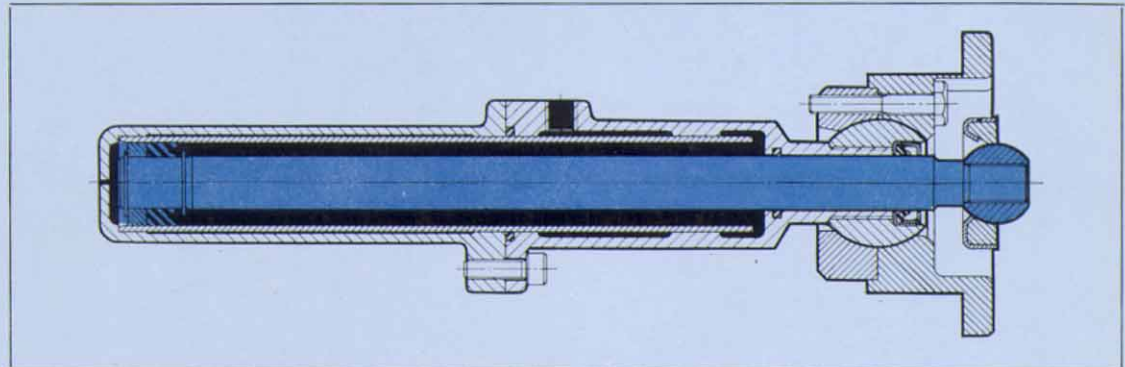
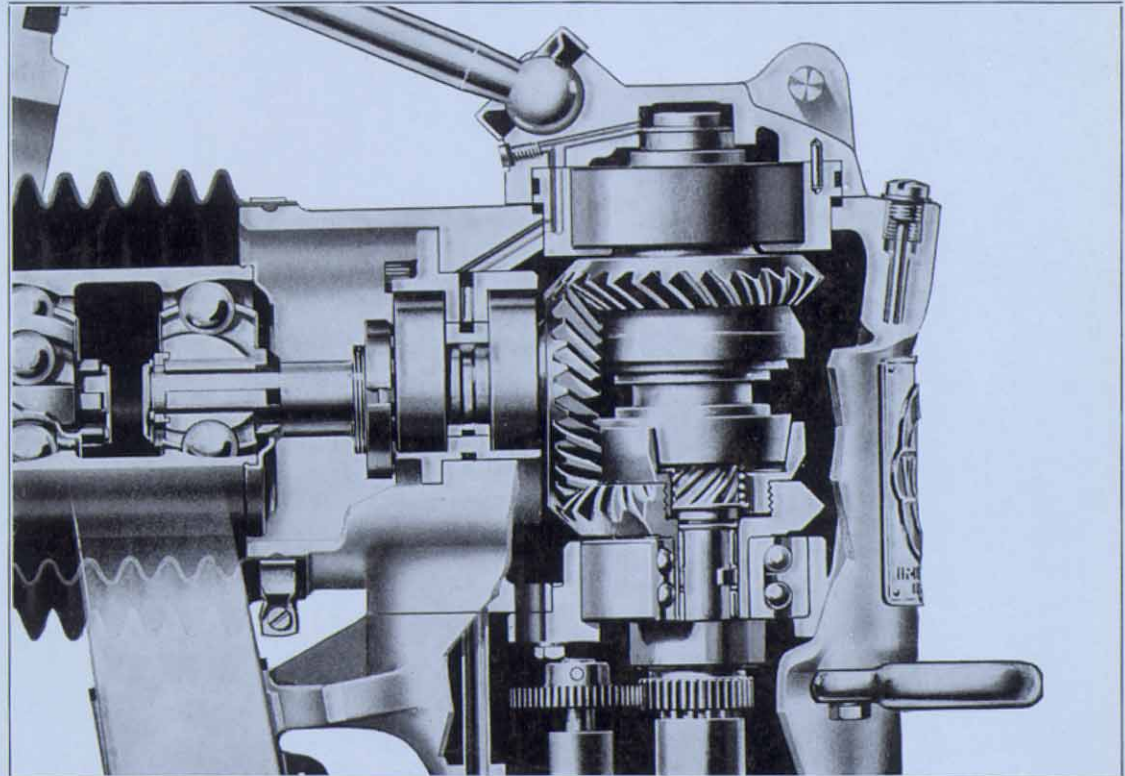
All external bolts and polished surfaces are of stainless steel.

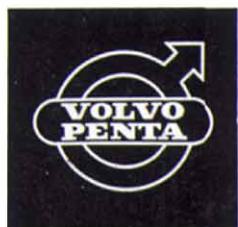
New Outdrive Features

Silent-Shift, cone-type clutch eliminates the shifting "clunk" of outboard-motor dog-type clutches. It's exclusive with Volvo Penta. Combined with Volvo Pentas' famous Rzeppa joint, it gives the operator faster, smoother shifting and superior maneuverability.

Electric hydraulic lift swings the outdrive up a full 60° and permits it to be locked there — all at the touch of a button. Device also serves to lower the unit into the water thereby eliminating a cumbersome and awkward procedure. The lift can be used for trolling in especially shallow water since it can be tilted slightly and still hold with the engine running up to 800 revolutions per minute.

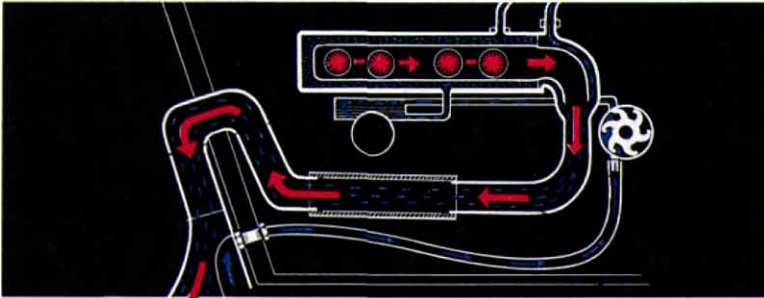
Ability to tilt a full 60° allows the outdrive to swing out of the way should it strike an underwater object or obstruction. This feature saves repair bills when the boat is operating in shallow water. Similar situation with an inboard would cripple the craft and keep it in the repair yard for several days.



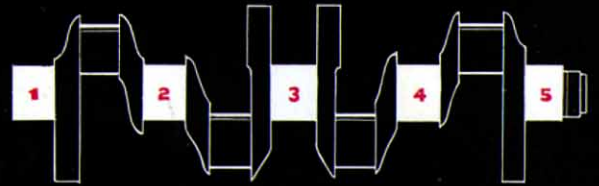




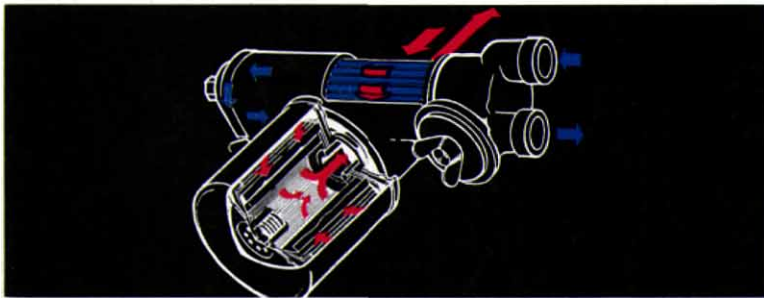
New Engine Features For Sea-Going Dependability



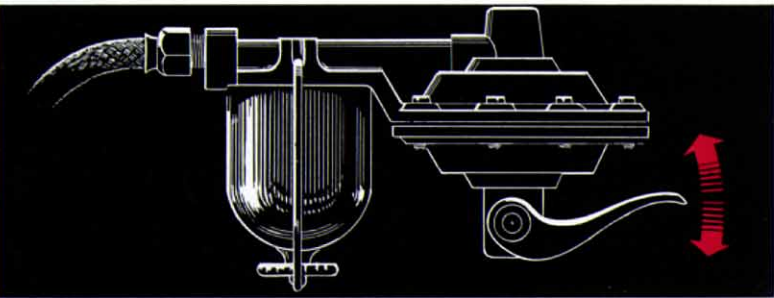
New combined water intake and underwater exhaust cools engine and buries engine noise. Exhaust can't bleed into the prop to cause cavitation and impair handling in reverse.



Five-main-bearing crankshaft identifies a rugged, top quality marine engine. Special bearing surfaces are held to an incredible variance of one micron (0.00004 in.).



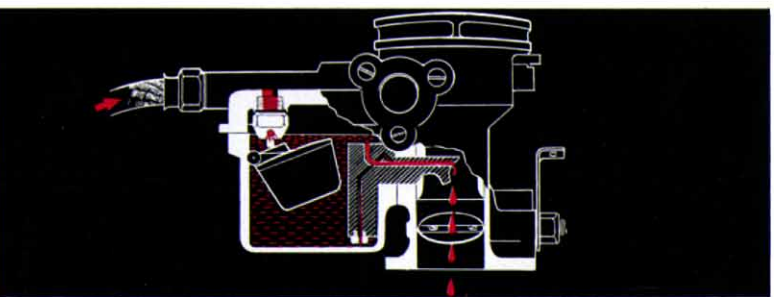
Combined oil filter and sea water-cooled oil cooler cleans and cools oil and redistributes it throughout the pressure lubrication system. Replaceable oil cleaner is directly attached to the oil filter.



Hand throttle on fuel pump allows priming of engine if necessary. New glass bowl on fuel filter allows easy cleaning and checking of fuel flow.



Unique construction of engine permits crankshaft gear to mesh with fibre camshaft gear and reduces noise and wear.

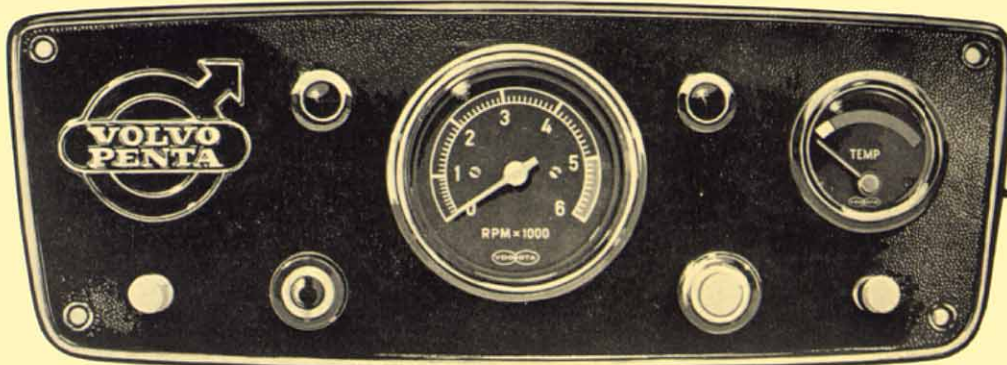


Drain-off port permits float chamber to fill without overflowing and creating hazard. Excess fuel is carried to engine intake manifold.

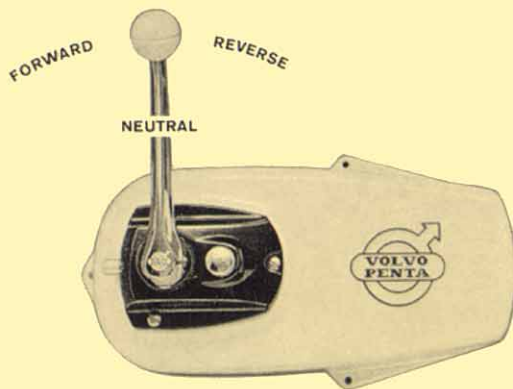
Installation Features

- 1** The Aquamatic 110 comes complete with instruments and instrument panel ready to plug-in to engine wiring harness.
- 2** Attached to the engine is a complete electrical system controlled at the instrument panel through the plug-in wiring harness.
- 3** Single lever Morse control combines forward, reverse, neutral and throttle. A neutral throttle button disengages gear control so that lever acts as a warm-up throttle.
- 4** Easy to install.

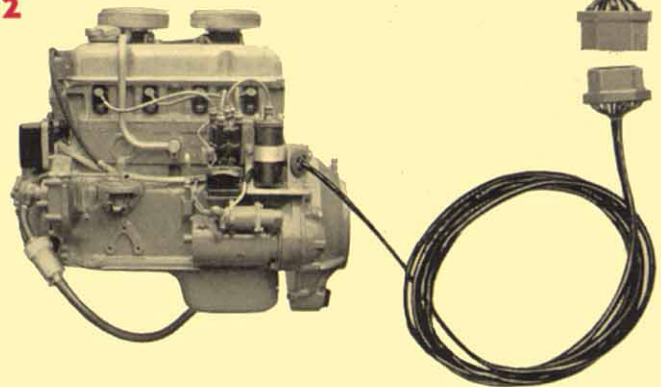
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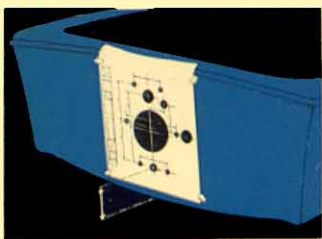
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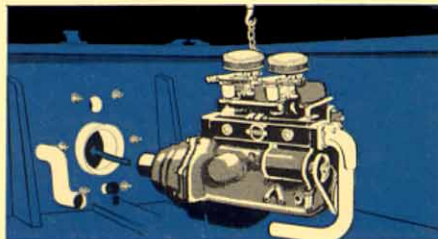
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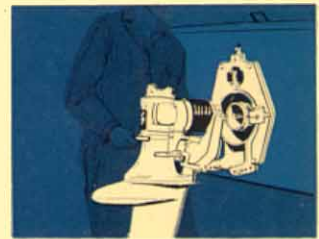
Position template on transom and cut holes.



Position mounting plate and bolt to transom.



Bolt engine to mounting plate.



Attach outdrive unit to engine and mounting plate.

- 1959 Orange Bowl Regatta 9 hour marathon (4 world records).
- 1959 Miami-Nassau ocean race (188 miles).
- 1959 Gold Coast marathon (130 miles).
- 1960 Orange Bowl Regatta 9 hour marathon.
- 1960 Around Miami Beach race.
- 1960 Miami-Nassau ocean race (1st in single and twin engine classes).
- 1960 Gold Coast marathon.
- 1960 Pelican Harbour 100 mile marathon.
- 1961 Orange Bowl Regatta 9 hour marathon.
- 1961 Around Miami Beach race.
- 1961 Gold Coast marathon.
- 1961 International Offshore Powerboat race, Cowes-Torquay.
- 1962 Orange Bowl Regatta 9 hour marathon (4 world records).



Fuel economy certified

NASCAR tested 10 Aquamatic 110-powered craft at Daytona, Fla. and certified these average speed and fuel consumption figures:

	Engine RPM	MPH	Imp. gallon per hour
On plane	3000	18.0	1.97
Slow cruising	3500	23.3	2.83
Medium cruising	4000	27.9	3.11
Fast cruising	4500	31.7	4.31
Wide open throttle	4927	33.6	5.70

Average weight (without passengers and test equipment) 1854 lbs.

Average length 18 ft 5 in.



- 1962 Around Nassau ocean race.
- 1962 Miami-Bimini ocean race (100 miles).
- 1962 Around Miami Beach race.
- 1962 International Offshore Powerboat race, Cowes-Torquay.
- 1962 Paris 6 hour marathon.
- 1962 Gold Coast Marathon.
- 1962 Around Long Island Marathon.
- 1963 Orange Bowl Regatta 9 hour marathon (4 world records).
- 1963 Bimini race.
- 1963 Around Long Island Marathon (2 classes).
- 1963 Anzio-Corsica race.
- 1963 International Offshore Powerboat race, Cowes-Torquay.
- 1963 Paris 6 hour marathon.



Worldwide Proof of Aquamatic 110 Performance

Engine components

Cylinder block of special-alloy cast-iron, cast integrally with the crankcase.

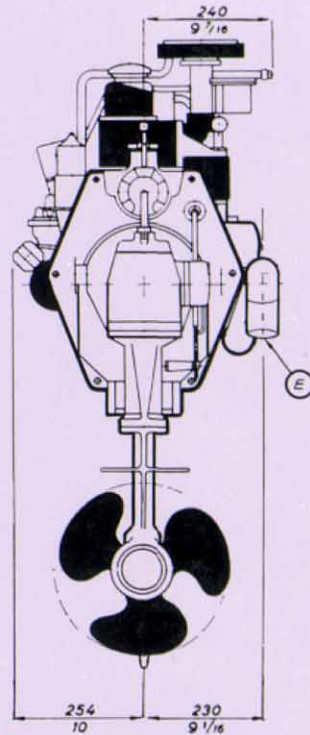
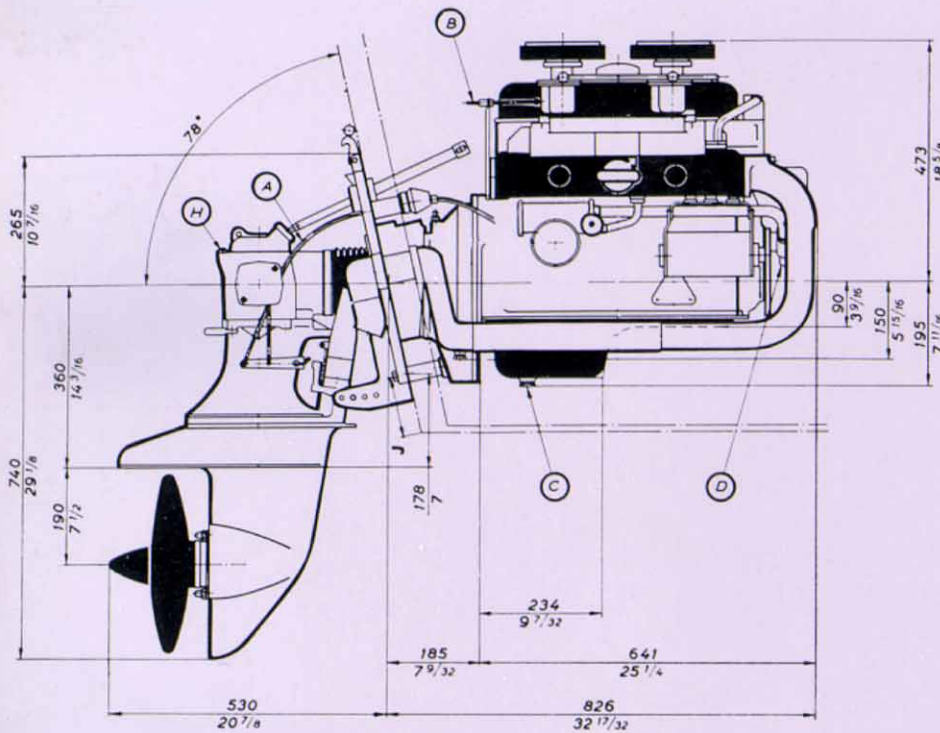
Cylinder head of special-alloy cast-iron with high degree of heat resistance.

Oil pan of steel, permits inclination of 18° while engine is running.

Pistons of chill-cast light-alloy each with two compression rings and one oil control ring. Upper compression ring chromed.

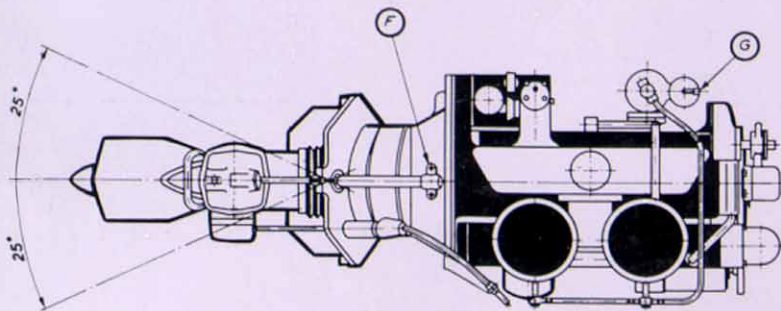
Connecting rods, drop-forged, case-hardened. Lead-bronze lined connecting rod bearings, easily replaceable.

Crankshaft, drop-forged, powerfully dimensioned, dynamically balanced and carried in five bearings. Leadbronze lined main bearing shells, easily replaceable.



DIMENSION DRAWING

- A Gear shift cable
- B Throttle cable
- C Oil drain, if the installation permits
- D Water inlet 5/8" hose
- E Exhaust outlet
- F Connection for steering cable
- G Fuel inlet, copper fitting, outer diam. 5/16"
- H Oil dipstick
- J Depends on size and design of boat.



Camshaft of special cast-iron with flame-hardened cams. Quiet-running fibre timing gears. Valves of heat-resistant special steel.

Fuel system. Two down-draft carburetors. Fuel pump with filter and water deflector. Pump driven from camshaft.

Lubricating system. Pressure lubrication. Oil to all the lubricating points passes through a full-flow oil cleaner with a replaceable element combined with an oil cooler.

Cooling system. Sea-water cooled. Engine temperature automatically regulated by means of thermostat.

Electrical system. 12 volt battery ignition. 1.0 h p starter motor. Generator with built-in relay, continuous output 75 W.

