

Demirhan Sadıkoğlu  
2015

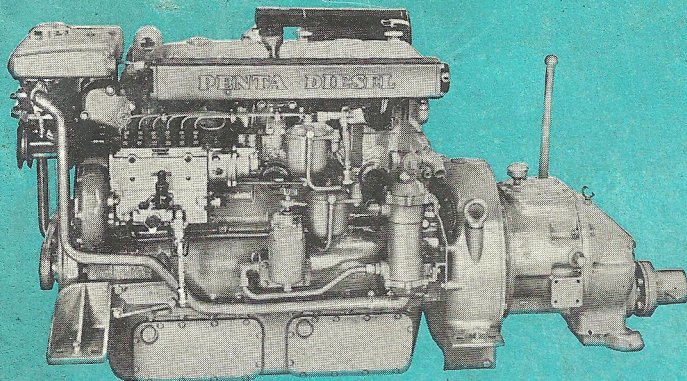
TAHIR ATANSAY  
Mertebani Sokak Kefeli Hürriyet Han 20  
Galata - İstanbul  
Tel. 43172



**THEY PICKED PENTA DIESEL**







#### PENTA MD 47 STARKE

A powerful motor of compact design. Since its weight is low — approx. 700 kg (1540 lb.) — the MD 47 is very suitable for all medium-size vessels such as cargo boats, pilot cutters, small cargo boats, cruisers etc.

##### Data:

Max. output .....	91 b.h.p. at 2500 r.p.m.
Marine output .....	82 b.h.p. at 2500 r.p.m.
Torque .....	25 kgm (180 lb.ft.) at 1700 r.p.m.
Capacity .....	4.7 litres
Number of cylinders ..	6
Bore .....	95.25 mm
Stroke .....	110 mm
Valves .....	overhead
Compression ratio ...	17:1
Net weight ... ..	approx. 1700 kg (1540 lb.)

#### PENTA MD 67 VIKING

This robust and reliable engine is one of the most popular Diesels in Scandinavia and, thanks to direct injection, very economical to run. It is easy to install and requires very little attention. Those who run MD 67 engines appreciate its ease in starting and this engine has been fitted in most types of boats where power and reliability are important factors, for instance fishing boats, pilot cutters, tugs, ferries, rescue cruisers and passenger boats.

##### Data:

Max. output .....	115 b.h.p. at 2400 r.p.m.
Marine output for light boats .....	up to 103 b.h.p. at 2400 r.p.m.
Marine output for heavy boats .....	up to 86 b.h.p. at 1800 r.p.m.
Torque .....	40 kgm (290 lb.ft.) at 1200 r.p.m.
Capacity .....	6.73 litres
Number of cylinders ..	6
Bore .....	105 mm
Stroke .....	130 mm
Valves .....	overhead
Compression ratio ...	17:1
Net weight .....	approx. 1000 kg (2205 lb.)

#### PENTA MD 96 TITAN

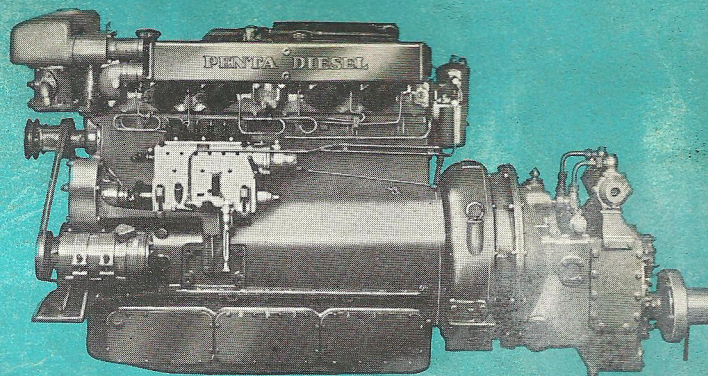
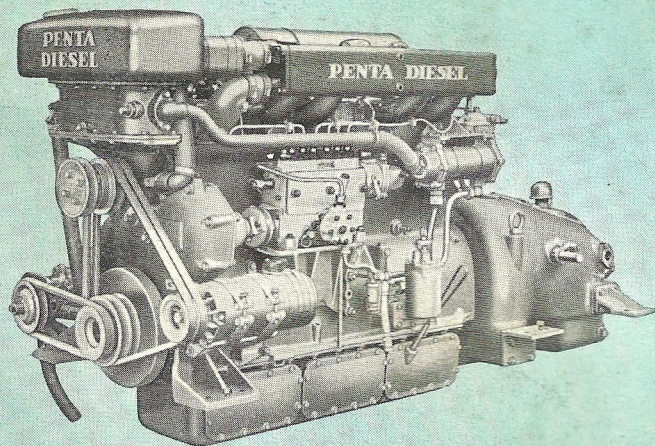
In boats where power and absolutely reliable operation is essential, the MD 96 is usually chosen as the power unit. This six-cylinder, well-balanced engine ensures dependable and vibration-free operation without causing stresses in the hull. Since all the controls are taken up to the bridge, it is exceptionally easy to manoeuvre this keeping crew requirements to a minimum.

##### Data:

Max. output .....	150 b.h.p. at 2200 r.p.m.
Marine output for light boats .....	up to 135 b.h.p. at 2200 r.p.m.
Marine effect for heavy boats .....	up to 125 b.h.p. at 1800 r.p.m.
Torque .....	max. 59 kgm (427 lb.ft.)
Capacity .....	9.6 litres
Number of cylinders ..	6
Bore .....	121.65 mm
Stroke .....	140 mm
Valves .....	overhead
Compression ratio ...	17:1
Net weight .....	approx. 1200 kg (2646 lb.)

##### Data about TMD 96

Direct injection, compressor charged Diesel	
Max. output .....	175 b.h.p. at 1800 r.p.m.
Max. output .....	up to 160 b.h.p. at 1800 r.p.m.
Max. torque .....	73 kgm at 1400 r.p.m.
As to the rest we refer the data about MD 96	



AKTIEBOLAGET

**PENTA**

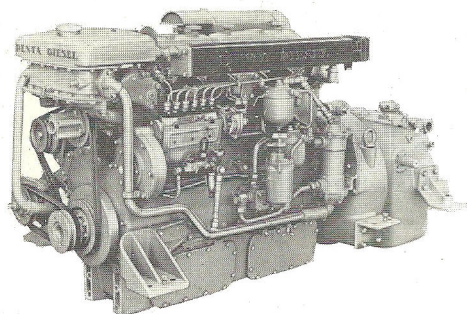
GÖTEBORG

Box 392 Telephone 22 84 20

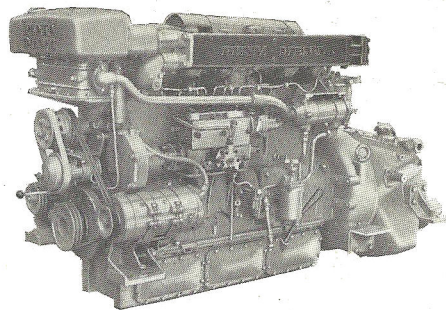
TELEGRAMS: PENTA



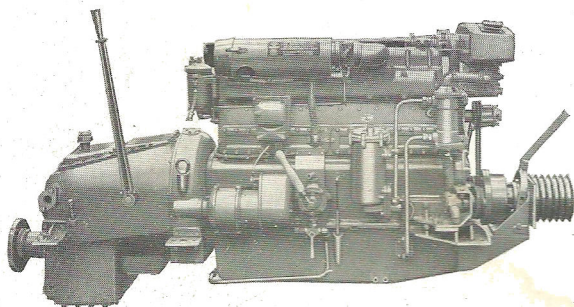




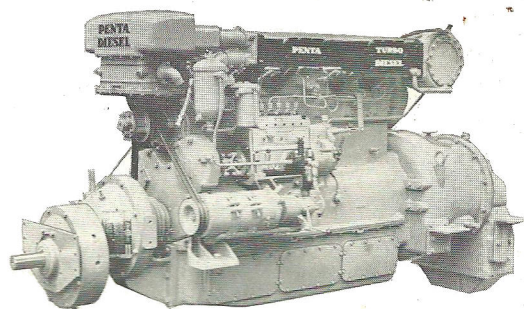
<b>MD 47</b>	Maksimal effekt .....	92 hk ved 2500 o/minutt
	Marine effekt	
	lett drift opp til ....	83 hk ved 2500 o/minutt
	tung drift opp til ....	71 hk ved 2000 o/minutt
	Marine dreiemoment ..	25 kgm ved 1400 o/minutt
	Slagvolum .....	4,7 l
	Sylinderantall .....	6
	Sylinderdiameter .....	95 mm
	Slaglengde .....	110 mm
	Ventilsystem .....	Toppventiler
	Kompresjonsforhold ..	17
	Nettvekt .....	ca 750 kg



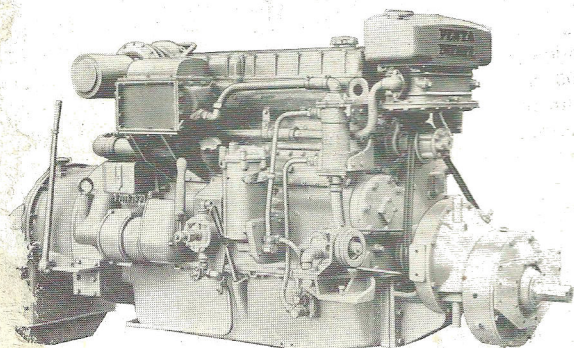
<b>MD 67</b>	Maksimal effekt .....	115 hk ved 2400 o/minutt
	Marine effekt	
	lett drift opp til ....	103 hk ved 2400 o/minutt
	tung drift opp til ....	87 hk ved 1800 o/minutt
	Marine dreiemoment ..	36 kgm ved 1200 o/minutt
	Slagvolum .....	6,7 l
	Sylinderantall .....	6
	Sylinderdiameter .....	105 mm
	Slaglengde .....	130 mm
	Ventilsystem .....	Toppventiler
	Kompresjonsforhold ..	17
	Nettvekt .....	ca 1000 kg



<b>MD 96</b>	Maksimal effekt .....	152 hk ved 2200 o/minutt
	Marine effekt	
	lett drift opp til ....	137 hk ved 2200 o/minutt
	tung drift opp til ....	127 hk ved 1800 o/minutt
	Marine dreiemoment ..	53 kgm ved 1100 o/minutt
	Slagvolum .....	9,6 l
	Sylinderantall .....	6
	Sylinderdiameter .....	121 mm
	Slaglengde .....	140 mm
	Ventilsystem .....	Toppventiler
	Kompresjonsforhold ..	17
	Nettvekt .....	ca 1200 kg



<b>TMD 96</b>	Maksimal effekt .....	175 hk ved 1800 o/minutt
	Marine effekt	
	lett drift opp til ....	160 hk ved 1800 o/minutt
	tung drift opp til ....	138 hk ved 1500 o/minutt
	Marine dreiemoment ..	66 kgm ved 1400 o/minutt
	Slagvolum .....	9,6 l
	Sylinderantall .....	6
	Sylinderdiameter .....	121 mm
	Slaglengde .....	140 mm
	Ventilsystem .....	Toppventiler
	Kompresjonsforhold ..	17
	Nettvekt .....	ca 1250 kg



<b>TIMD 96</b>	Maksimal effekt .....	205 hk ved 1800 o/minutt
	Marine effekt	
	lett drift opp til ....	185 hk ved 1800 o/minutt
	tung drift opp til ....	155 hk ved 1500 o/minutt
	Marine dreiemoment ..	74 kgm ved 1500 o/minutt
	Slagvolum .....	9,6 l
	Sylinderantall .....	6
	Sylinderdiameter .....	121 mm
	Slaglengde .....	140 mm
	Ventilsystem .....	Toppventiler
	Kompresjonsforhold ..	17
	Nettvekt .....	ca 1300 kg

## PENTA MARINE DIESELMOTORER



Aktiebolaget

**PENTA**

Göteborg

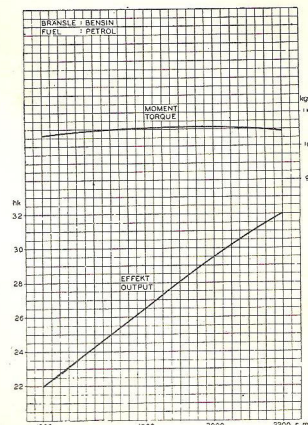
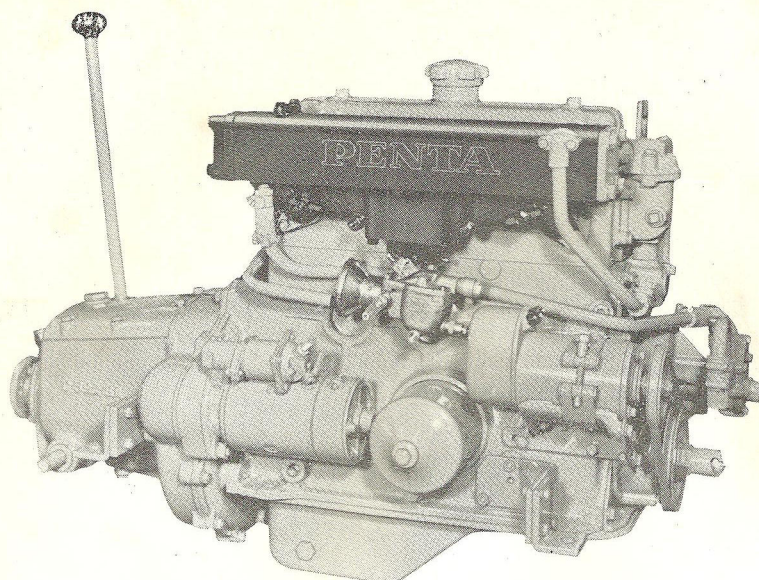
ETT VOLVOFÖRETAG

Tel: 22 20 00

Riks: 22 84 20

Telegram: Penta





# PENTA • BB 25

## Main data:

Output, petrol	22—32 h.p. at 1500—2200 r.p.m.
Output, paraffin	17—25 h.p. at 1500—2200 r.p.m.
Valves	Overhead
No. of cylinders	4
Displacement	1.6 litres (97.6 cu.ins)
Bore	79.37 mm (3.125")
Stroke	80 mm (3.150")
Compression ratio:	
Petrol	7.4:1
Paraffin	5:1
Engine weight, including reverse gear	180 kg (415 lb)
Engine weight, including reverse gear and reduction gear	205 kg (450 lb)
Direction of rotation (viewed from flywheel)	Anti-clockwise
Propeller type	Right-hand pitch

## Cylinder head.

Removable, of special cast-alloy.

## Cylinder block

of special-alloy cast iron.

## Pistons

of light-alloy, provided with two piston rings of which the upper is chromed and one oil ring.

## Connecting rods.

Drop-forged H-section and robustly proportioned.

## Crankshaft.

Drop-forged special steel, precisely balanced, three main bearings.

## Camshaft.

Drop-forged with hardened and ground cams. Three bearings.

## Valves.

Inlet valves of nickel-steel, exhaust valves of silicon-chrome steel with replaceable guides.

## Lubricating system.

Pressure and circulation lubrication by means of gear pump. All the lubricating oil passes through an oil strainer fitted in the sump and an oil cleaner fitted on the starboard side of the engine.

## Cooling system.

Gear type sea-water pump driven from the camshaft. The quantity of water delivered to the engine is thermostatically controlled so that correct running temperature is automatically obtained regardless of loading and water temperature.

## Carburettor.

Marine up-draught carburettor with controllable needle valve and return suction channel which prevents the formation of drops. Easily adjustable and provided with flame damper.

## Electrical equipment.

6 volt starter motor and dynamo with built-in relay.

## Instrument panel

Provided with a key switch, starter button, indicator lamps for oil pressure and charging, also choke control.

## Reverse gear

of planetary type with disc clutch and brake band. Reverse gear wheel made of hardened special steel. Propeller thrust taken up in SKF bearings. The most important moving parts are also carried in SKF bearings. The reverse gear is easily adjustable.

## Extra equipment.

Conversion set for paraffin. Reduction gear 2:1. Bevel gear. Rubber mounting.

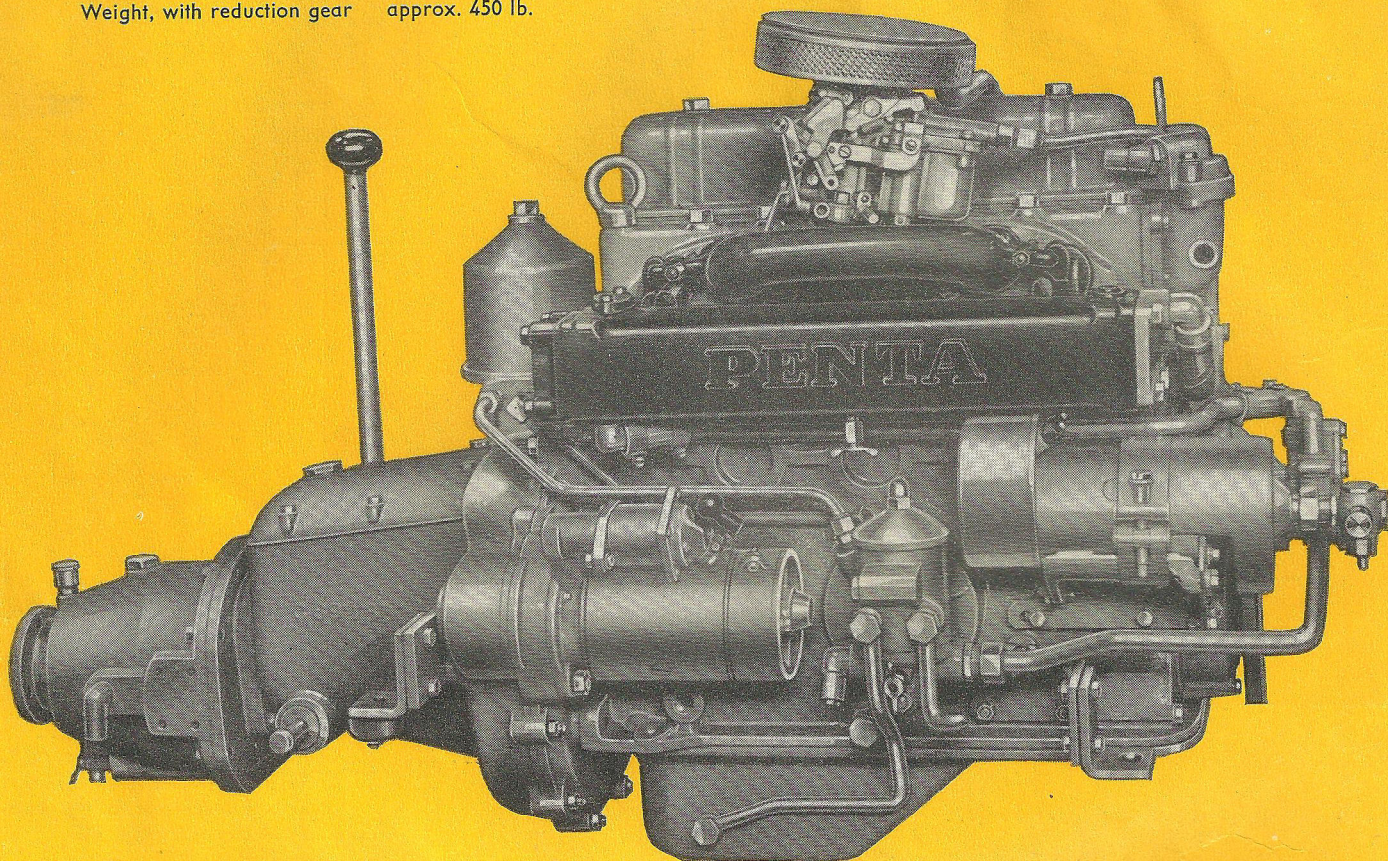






## DATA

Max. output	65 h. p.
Numbers of cylinders	4
Valves	Overhead
Capacity	97 cu.in.
Bore	3.125 in.
Stroke	3.15 in.
Compression ratio	8.2:1
Weight	approx. 400 lb.
Weight, with reduction gear	approx. 450 lb.



## PENTA PRESENTS BB 70

# BB 70

Penta presents BB 70 — the marine version of the engine from the Volvo PV 444 — the Swedish thoroughbred car.

The construction of Penta marine engines is backed by one of the most modern engine factories in Europe — and 50 years of valuable experience.

Take a good look at the BB 70 — a high-output sports engine in the light-weight class — all that a speed enthusiast can wish for and the ideal engine for all types of water sports.

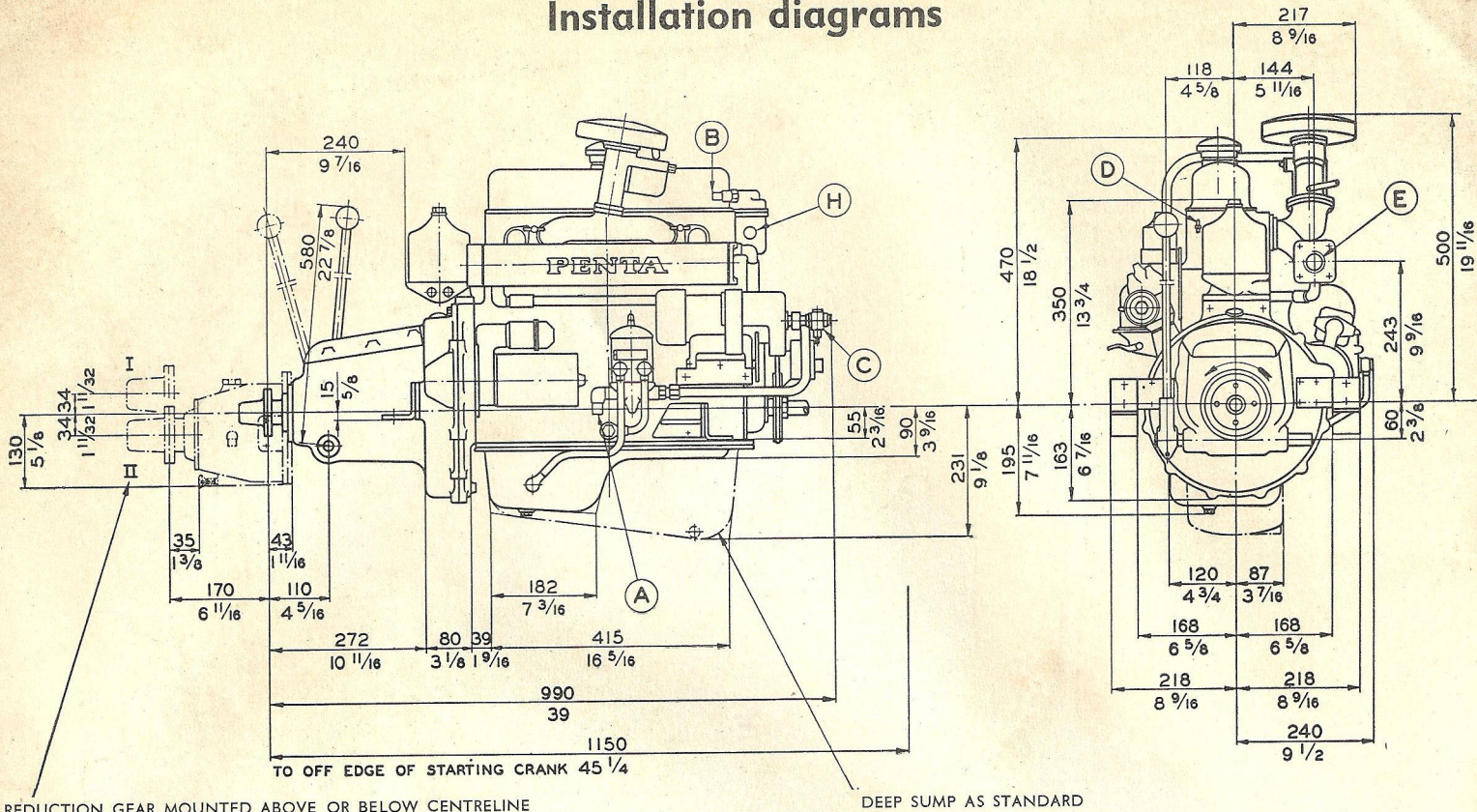
Those who run this engine will tell you how much they appreciate its complete dependability and quiet operation — and its low fuel consumption. Large-scale series production means low-priced spares. In other words, this is the engine you can both rely on and afford to run.



## BB 70 IS A PRODUCT OF SUPERB SWEDISH ENGINEERING



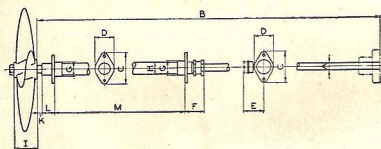
## Installation diagrams



- A. Cooling water inlet hose attachment for  $\frac{5}{8}$ " hose.
- B. Cooling water outlet hose attachment for  $\frac{5}{8}$ " hose.
- C. Revolution counter attachment.
- D. Oil pressure gauge attachment.
- E. Exhaust gas outlet, radius =  $1\frac{1}{2}$ ".
- F. Cooling water connection, reduction gear, hose attachment for  $\frac{5}{8}$ " hose.
- G. Fuel inlet copper pipe, ext. diam.  $\frac{5}{16}$ ".
- H. Connection for temperature gauge.

## PROPELLER EQUIPMENT FOR THE BB 70

Shaft of bronze or stainless steel.



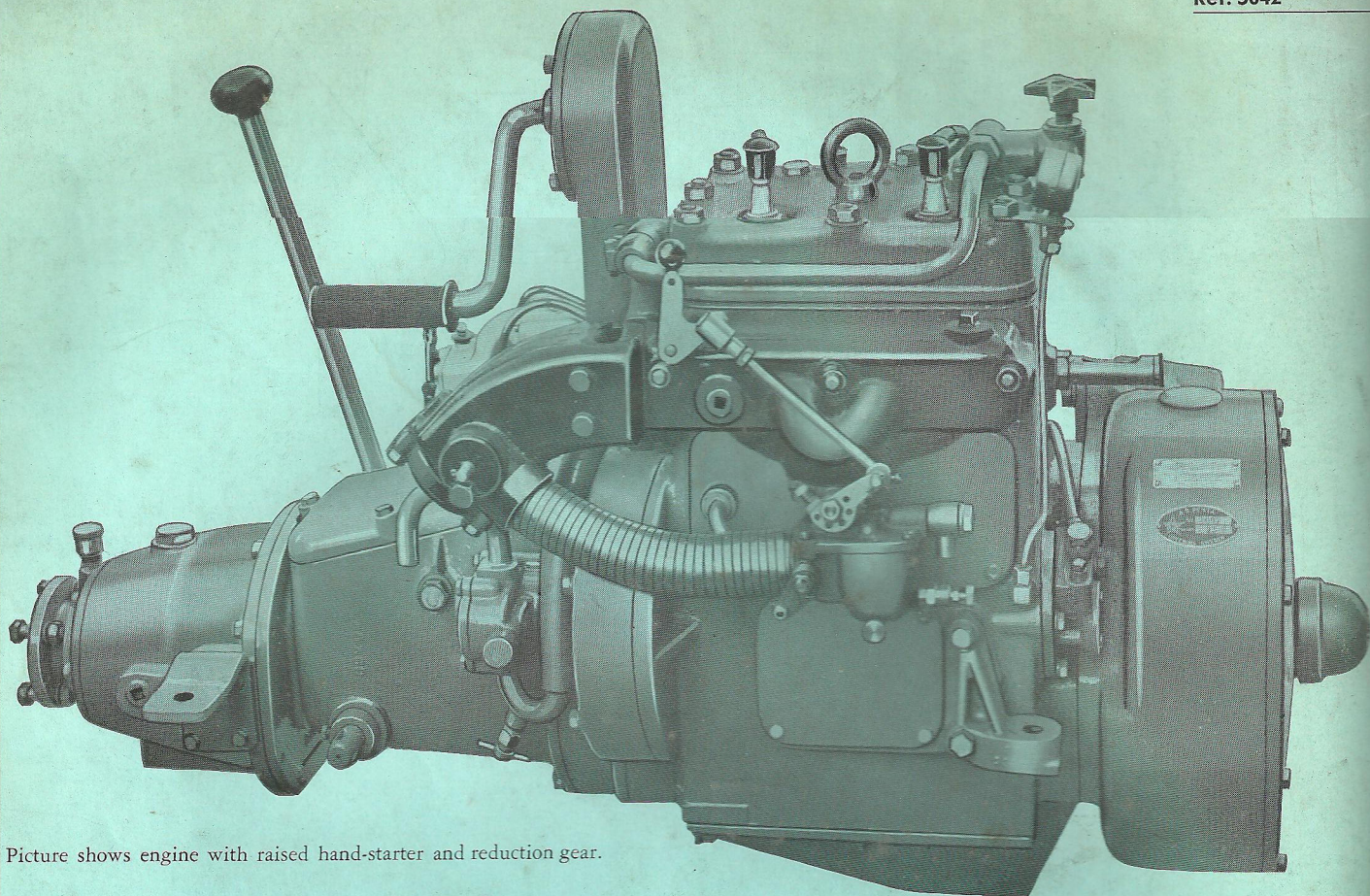
	A	B	C	D	E	F	G	H	I	K	L	M
mm	25	2000	90	58	70	75	42	34	64	abt 15	37	1000
in	$\frac{63}{64}$	$85\frac{3}{8}$	$3\frac{35}{64}$	$2\frac{9}{32}$	$2\frac{7}{8}$	$2\frac{61}{64}$	$1\frac{21}{32}$	$1\frac{11}{32}$	$2\frac{35}{64}$	$\frac{9}{8}$	$1\frac{29}{64}$	$42\frac{11}{16}$

For more detailed information, write to:



AKTIEBOLAGET  
**PENTA**  
 GÖTEBORG  
 SWEDEN  
 — a Volvo company





Picture shows engine with raised hand-starter and reduction gear.

## The C 23 Penta Marine Engine

The Penta C 23 is a light, powerful utility engine for boats from 5.5 to 8 metres in length (18' to 26'). It has shown its worth under tough working conditions. It can be supplied with electric starter, generator and reduction gear.

### *Light and easy to run*

Throttle and spark controls are easily accessible. There is an oil pressure gauge. The oil sump and oil filter are handily placed on the outside. The valve mechanism is easily reached for adjustment through a large port in the cylinder head.

### *You can run more cheaply on kerosene (paraffin)*

The kerosene model is fitted with a pre-heater for the air supply. This gives total combustion of the kerosene and prevents thinning the lubricating oil with unburnt fuel.

### *Automatic thermostat-controlled cooling system*

No taps, no hand controls. The thermostat maintains the correct running temperature under all conditions.

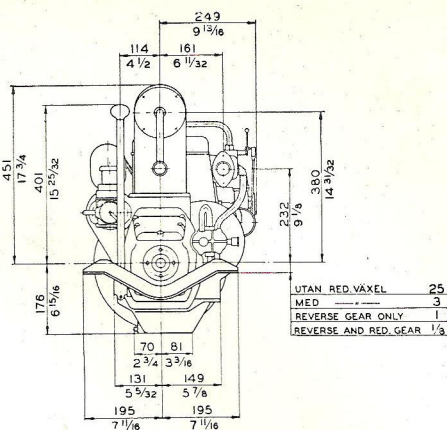
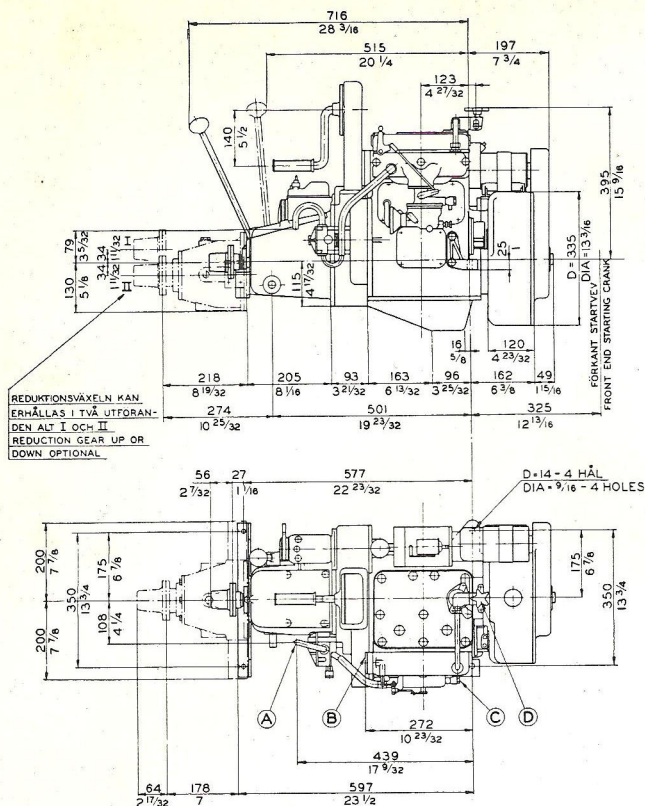
The design is rugged and all material is the best. Many features help maintenance costs down: replaceable cylinder liners, replaceable ready-fitted white metal-lined bearing shells on main bearings and connecting rod bearings, oil filter and thermostatic control of engine temperature.

### Engine data

Rated power:	
Petrol model	8 to 14 h.p. at 1000 to 1800 r.p.m.
Kerosene model	6.5 to 11 h.p. at 1000 to 1800 r.p.m.
Fuel consumption:	petrol, approx. 265 g./h.p.-hr. (.584 lb/hp/hr)
	kerosene, approx. 300 g./h.p.-hr. (.662 lb/hp/hr)
4-stroke cycle	
No. of cylinders:	2
Bore:	87.31 mm. (3.44")
Stroke:	90 mm. (3.54")
Cylinder capacity:	1.08 litres (65.8 cu.in)
Compression ratio:	petrol 6.5:1
	kerosene 4.6:1



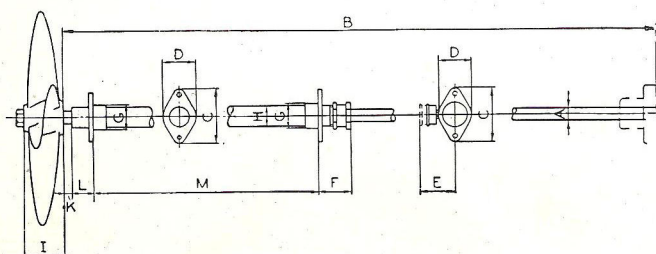




**Reduction gear:** 2:1 reduction gear is available; can be mounted directly on the reverse gear with the propeller shaft flange 34 mm (1.34") below or above the reverse gear shaft. The reduction gear has independent lubrication. Picture shows engine with raised hand-starter and reduction gear (see picture).

#### Net weight

Engine with reverse gear approx. 155 kg. (340 lb.).  
Engine with reduction gear approx. 180 kg. (395 lb.).  
Propeller, etc. 25 kg. (55 lb.).



	A	B	C	D	E	F	G	H	I	K	L	M
mm	25	2000	90	58	70	75	42	34	64	abt 15	37	1000
in	63/64"	79"	3 35/64"	2 9/32"	2 3/4"	2 61/64"	1 21/32"	1 11/32"	2 33/64"	abt 19/32"	1 29/64"	39"

#### Specifications

**Cylinder head:** removable, compression chamber of the latest design.

**Cylinder block:** chrome-nickel-alloyed iron with replaceable wet cylinder liners.

**Pistons:** three compression rings (top ring chromium-plated) and one oil ring.

**Connecting rods:** rugged, forged steel I-sections.

**Bearing shells:** white metal-lined steel bearing shells, extra-strong. Total bearing surface: main bearings 53 cm<sup>2</sup> (8 sq.in.), connecting rod bearings 30 cm<sup>2</sup> (4.65 sq.in.).

**Camshaft:** steel, cams integral with shaft.

**Valve tappets:** adjustable, hardened and ground.

**Coolant pump:** gear type, driven from camshaft.

**Lubrication:** combination pressure and splash.

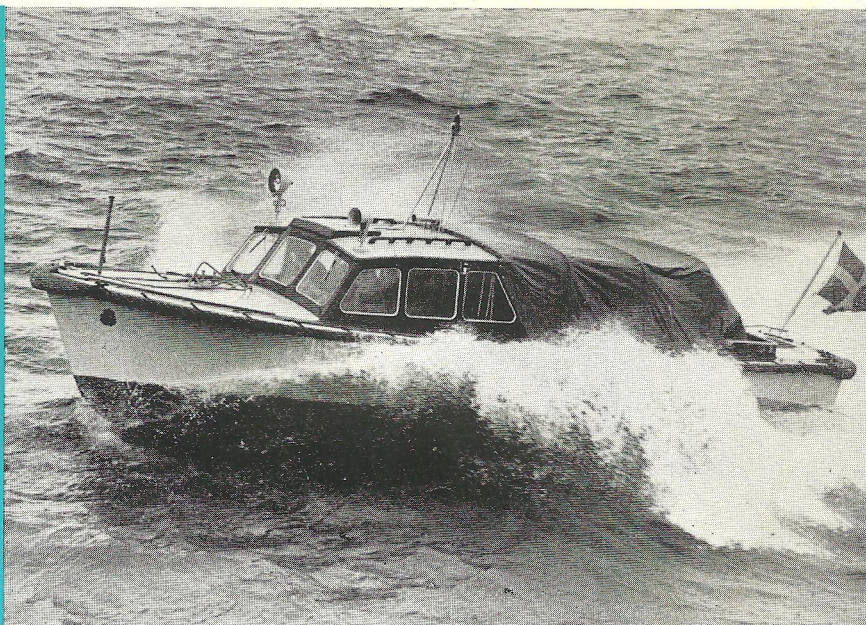
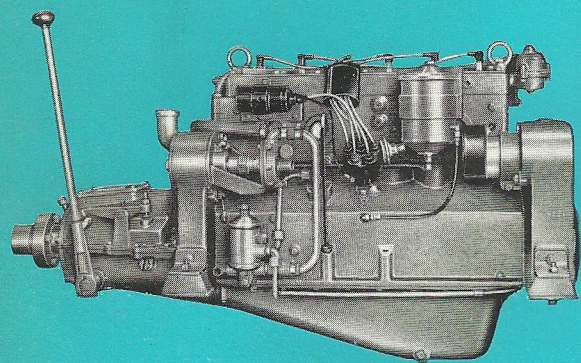
External pump and oil filter are easily accessible. Oil gauge provided. On engines with electrical equipment the gauge is replaced by an indicator lamp on the instrument panel. The carburettor is fitted with a flame guard which also serves as explosion protection.

Planetary reverse gear with disc clutch. SKF ball bearings. Pressure lubrication from the engine system.



AKTIEBOLAGET  
**PENTA**  
Göteborg, Sweden  
— a Volvo company





The PENTA ED 6 is built especially for fast, heavy crafts. It is a typical PENTA engine — powerful and reliable. Equipped with a reduction gear the PENTA ED 6 is a thrifty engine for long motor yacht cruises. Although plenty of power is developed you will be agreeably surprised by its easy and smooth running. The Penta name is a guarantee for high quality and reliable service — The ED 6 will give you many years of safe operation.

# PENTA - ED6

## Main data

Output	
gasoline (petrol) .....	30—84 bhp at 1000—3000 r.p.m.
paraffin .....	31—60 bhp at 1200—2500 r.p.m.
Number of cylinders .....	6
Cylinder capacity .....	3,67 litres (224 cu.in.)
Bore .....	84,14 mm (3.31")
Stroke .....	110 mm (4.33")
Compression ratio	
gasoline .....	6,5:1
paraffin .....	4,8:1
Valves .....	side
Max. installation angle with std. oil pan .....	8°
Net weight with reverse gear .....	approx. 370 kg (815 lbs)
Net weight with reverse and reduction gear 2:1 ....	approx. 420 kg (925 lbs)

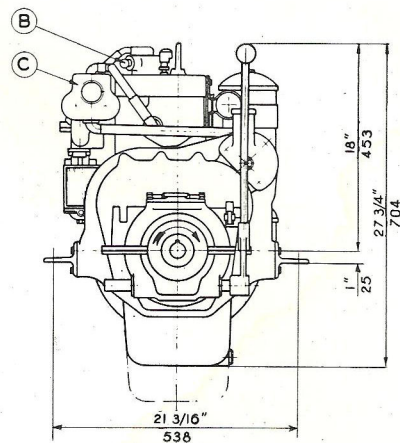
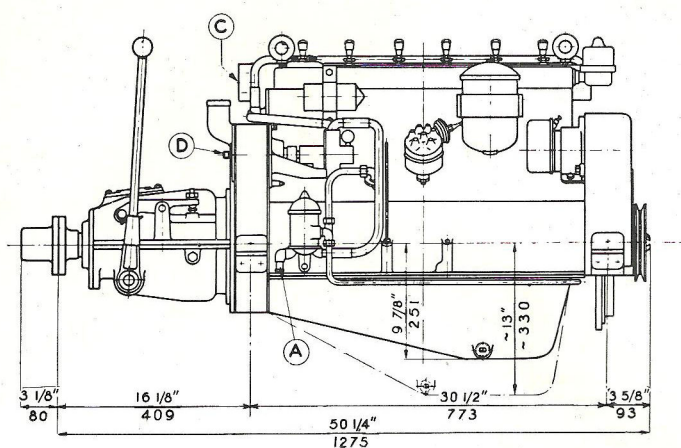
## Extra equipment

Reduction gear — ratio 2:1  
Oil pan permitting installation angles up to 15°

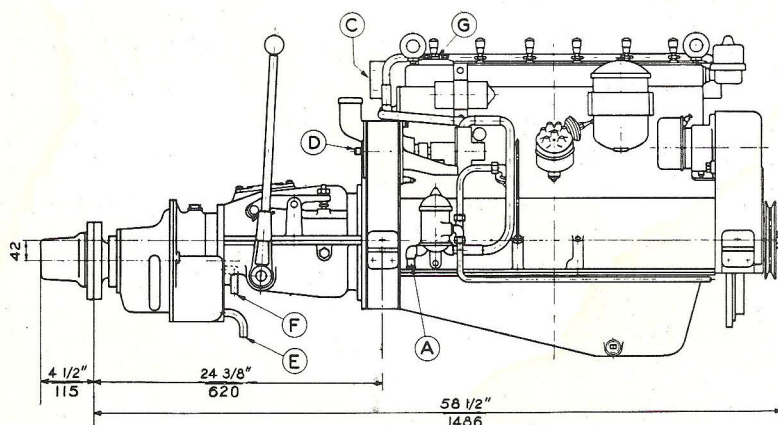


# DIMENSION DRAWINGS

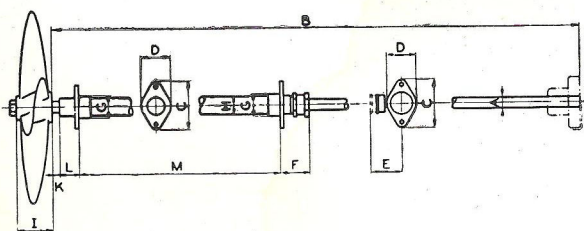
## ED 6 direct drive



## ED 6 with reduction gear 2:1



- A. Cooling water inlet  $\frac{5}{8}$ " rubber hose
- B. Cooling water outlet  $\frac{5}{8}$ " rubber hose
- C. Exhaust manifold flange R 2"
- D. Tachometer connection
- E. Cooling water inlet  $\frac{5}{8}$ " rubber hose
- F. Cooling water outlet  $\frac{5}{8}$ " rubber hose
- G. Fuel inlet — copper pipe  $\frac{5}{16}$ " o. d.



Propeller equipment for right-hand thread propeller.

Measurements .....		A	B	C	D	E	F	G	H	I	K	L	M
ED 6, direct drive .....	mm	35	3500	130	84	80	90	57	48	78	c:a 15	55	1500
	in.	1 $\frac{25}{64}$ "	138"	5 $\frac{1}{8}$ "	3 $\frac{5}{16}$ "	3 $\frac{5}{32}$ "	3 $\frac{35}{64}$ "	2 $\frac{1}{4}$ "	1 $\frac{57}{64}$ "	3 $\frac{5}{64}$ "	1 $\frac{9}{32}$ "	2 $\frac{11}{64}$ "	59"
ED 6, reduction gear 2:1	mm	40	4000	145	88	80	100	74	60	106	c:a 15	60	2200
	in.	1 $\frac{37}{64}$ "	158"	5 $\frac{45}{64}$ "	3 $\frac{15}{32}$ "	3 $\frac{5}{32}$ "	3 $\frac{15}{16}$ "	2 $\frac{29}{32}$ "	2 $\frac{23}{64}$ "	4 $\frac{11}{64}$ "	1 $\frac{9}{32}$ "	2 $\frac{23}{64}$ "	79"



AKTIEBOLAGET

# PENTA

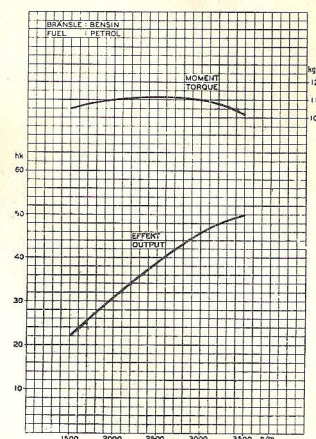
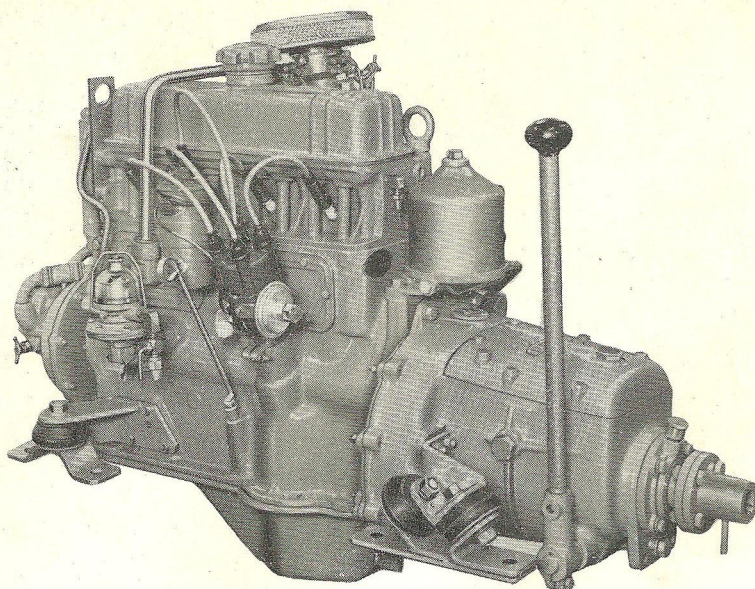
GÖTEBORG

— a Volvo company

Box 392, Göteborg 1, Sweden

Cables: Penta





# PENTA • MB 16

## Marine Engine

### Main data

Type of operation	Four-stroke
Valves	Overhead
Number of cylinders	4
Marine output, petrol	22—50 h.p.
Marine output, paraffin	17—27 h.p.
Engine speed, petrol	1500/3500 r.p.m.
Engine speed, paraffin	1500/2500 r.p.m.
Bore	79.37 mm (3.125")
Stroke	80 mm (3.150")
Capacity	1.6 litres
Weight, approx.	180 kg (400 lb.)

### Specifications

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

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

**Oil sump** of cast silumin permitting up to 18° while the engine is running.

**Pistons** of chill-cast light-alloy, each having two compression rings and one oil control ring. The upper compression ring on each piston is chromed.

**Connecting rods**, drop-forged and toughened. Easily replaceable lead-bronze lined big-end bearings.

**Crankshaft**, drop-forged and powerfully dimensioned. Dynamically balanced and carried in three main bearings. Easily replaceable white-metal lined main bearing shells.

**Camshaft** of special-alloy cast-iron with flame-hardened cams. Quiet-running fibre timing gears.

**Valves** of heat-resistant special steel.

**Fuel system.** The petrol version of the engine is fitted with a down-draught carburettor while the paraffin version has an up-draught carburettor. This up-draught carburettor has a needle valve and a return suction channel. Fuel pump with filter and water deflector. Pump driven from camshaft. Max. lift 1 metre (40").

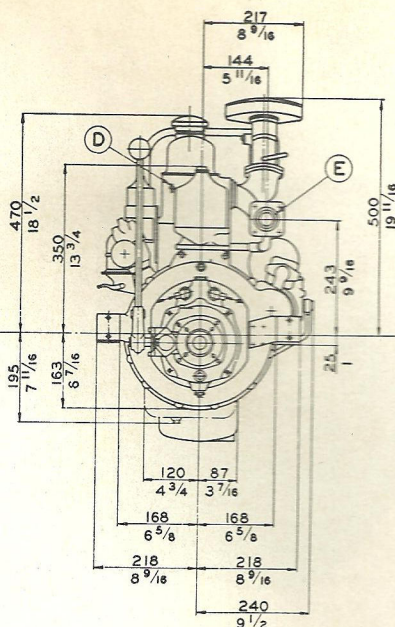
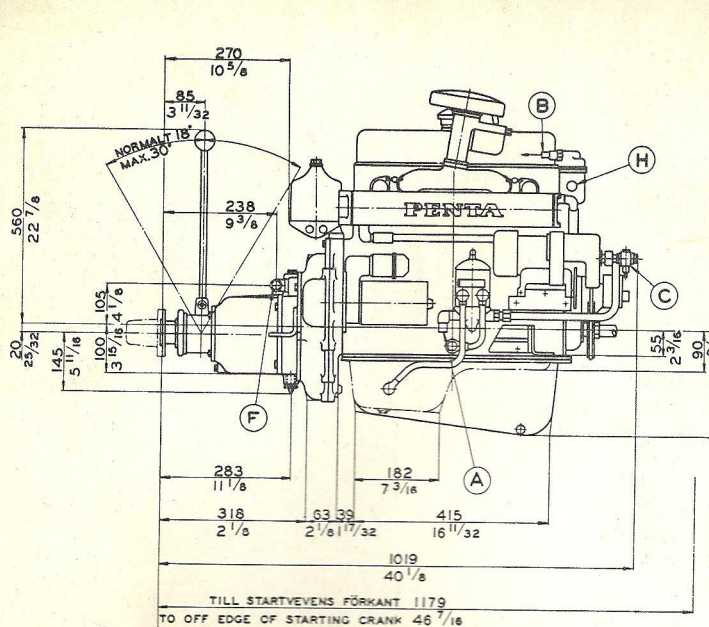
**Lubricating system.** Pressure lubrication. Oil to all the lubricating points passes through a full-flow filter with a replaceable element and then through a tubular oil cooler.

**Cooling system.** A thermostat automatically controls engine temperature. The engine is available in both sea-water and fresh-water cooled versions. On the fresh-water version, the cooling water is cooled in its turn by sea-water in a heat exchanger. The oil cooler and the exhaust manifold are sea-water cooled.

**Electrical system.** Six-volt battery ignition. Starter motor 0.6 h.p. Dynamo with built-in relay and a continuous output of 75 watts.

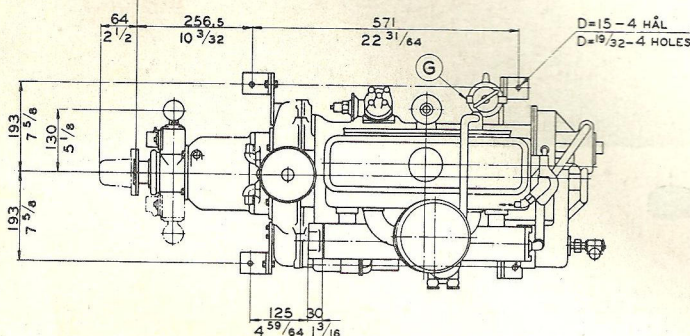
**Instrumentation.** Instrument panel with mechanical revolution counter, oil pressure gauge, engine temperature gauge, key switch, starter button, choke control, charging control lamp and switch for the indirect instrument lighting. Cable (3 metres = 10 ft.) and other components for connecting purposes are supplied together with the engine.





- A. Cooling water inlet for rubber hose  $\frac{3}{8}$ "
- B. Cooling water outlet for rubber hose  $\frac{3}{8}$ "
- C. Tachometer connection
- D. Oil pressure gauge connection
- E. Exhaust outlet R  $1\frac{1}{2}$ " pipe tap
- F. Cooling water connection reduction gear, rubber hose  $\frac{3}{8}$ "
- G. Fuel inlet copper pipe outer diam.  $\frac{5}{16}$ "
- H. Remote mounted cooling water thermometer connection

A. A FLÄNSRÖRELSE VID INKOPPLING  
AV FRAM. RESP. BACK  
A NORMAL=3 MAXIMALT=6  
F. FLANGE MOVEMENT WHEN "AHEAD" AND "ASTERN"  
RESPECTIVELY ARE ENGAGED  
A NORMAL=3 MM MAXIMUM=6 MM  $\frac{1}{8}$  RESP.  $\frac{15}{64}$



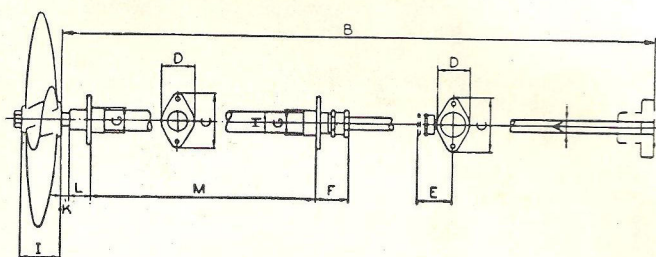
**Reverse gear.** The engines can be fitted with either a Type BS reverse gear or a Type RB combined reduction and reverse gear.

The Type BS reverse gear is of the multi-disc type with a marked neutral position and has ratio of 1:1. Separate splash lubrication.

The Type RB combined reduction and reverse gear — a revolutionary new PENTA patent — has cone clutches for both "Ahead" and "Astern" operation. It is designed in such a way that a ratio of 1.91:1 is automatically obtained without any increase in size or weight. The gear lever can be fitted in three different positions. Separate splash lubrication.

**Direction of rotation.** For both types of reverse gear, the direction of rotation requires the use of a left-hand thread propeller.

The dimensions drawing shows an engine with the combined reduction and reverse gear.



**Propeller equipment  
for left-hand thread propeller**

Dimensions

Reduction		A	B	C	D	E	F	G	H	I	K	L	M
1:1	mm	25	2000	90	58	70	75	42	34	64	approx. 15	37	1000
	inch	$\frac{63}{64}$	79	$3\frac{1}{2}$	$2\frac{1}{4}$	$2\frac{3}{4}$	3	$1\frac{5}{8}$	$1\frac{3}{8}$	$2\frac{1}{2}$	$\frac{5}{8}$	$1\frac{1}{2}$	$39\frac{1}{2}$
2:1	mm	30	2000	120	62	76	80	50	40	78	approx. 15	50	1500
	inch	$1\frac{3}{16}$	79	$4\frac{3}{4}$	$2\frac{1}{2}$	3	$3\frac{1}{8}$	2	$1\frac{5}{8}$	$3\frac{1}{8}$	$\frac{5}{8}$	2	$59\frac{1}{4}$

Without engagement



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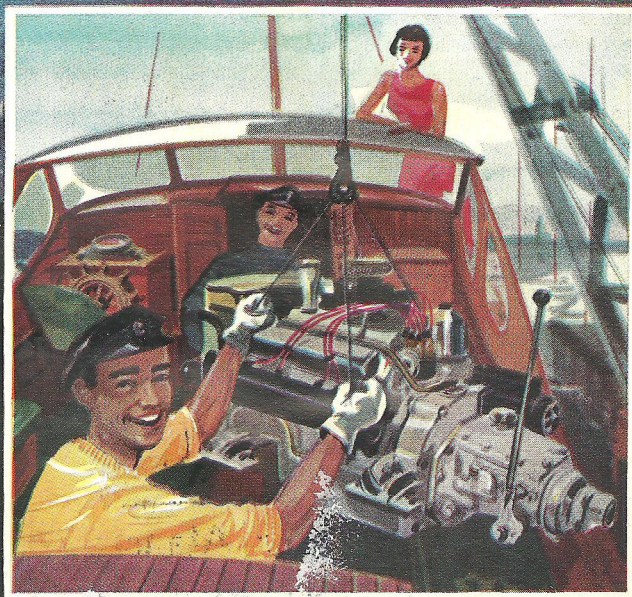
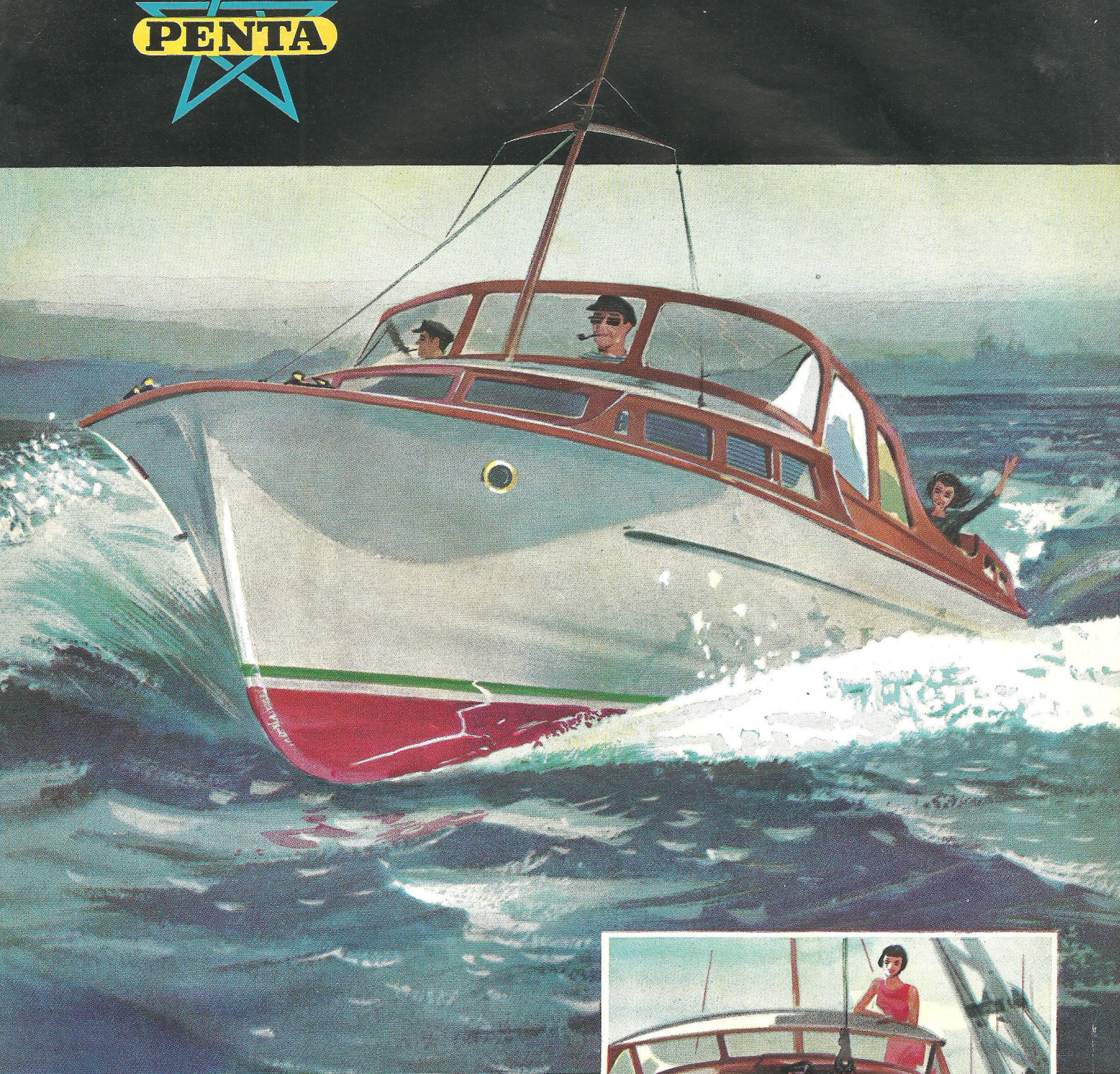
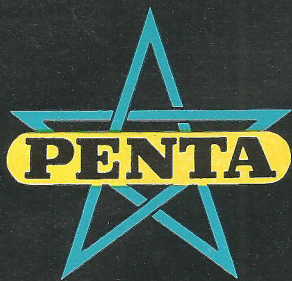
**PENTA**

Box 392, Göteborg 1  
Sweden

Cables: Penta

— a Volvo company

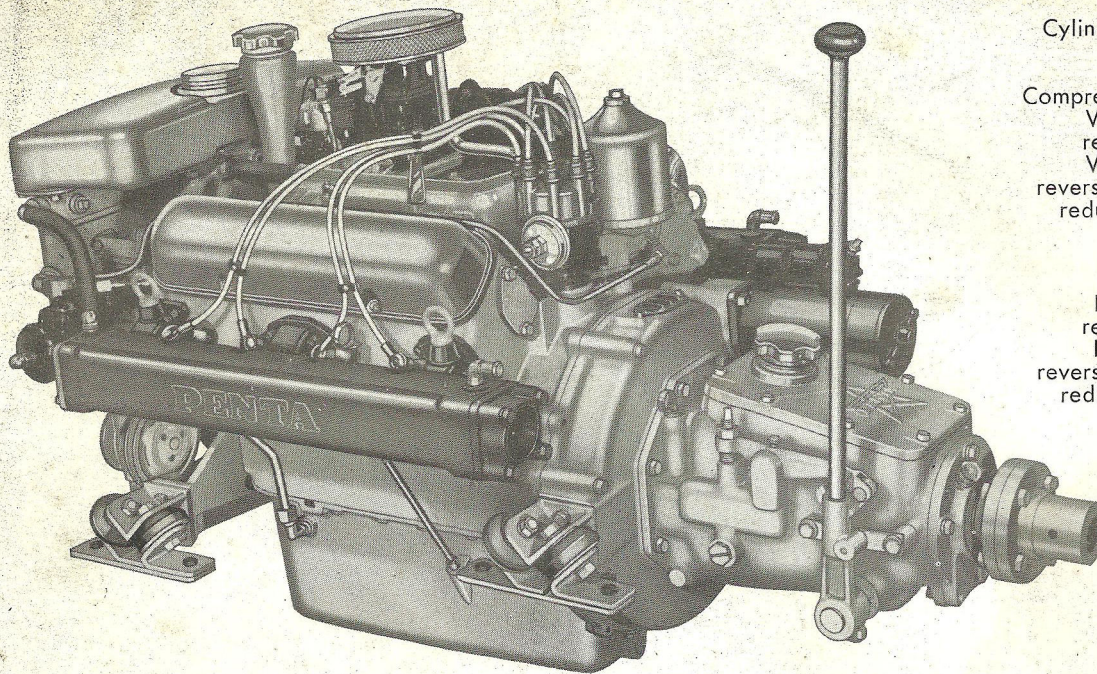




**MB 36A**



# MAIN DATA MB 36 A



Potential	72—120 hp
R.p.m.	2000—4000
Number of cylinders	V 8
Valves	Overhead
Cylinder volume	3,6 l. (220 cu. ins.)
Stroke	80 mm (3,14 ins.)
Bore	84,14 mm (3,31 ins.)
Compression ratio	7,6:1
Weight with reverse gear	340 kilos (750 lbs)
Weight with reverse gear and reduction gear	390 kilos (890 lbs)
Height	824 mm (32,45")
Width	700 mm (27,56")
Length with reverse gear	1260 mm (49,60")
Length with reverse gear and reduction gear	1471 mm (57,91")

## Penta Presents the MB 36 A

The MB 36 A is an overhead valve, four-stroke, V8 petrol (gasoline) engine with an output range of 70—120 bhp at 2000—4000 r.p.m. and a torque of 26 kgm (188 lb.ft.) at 2200 r.p.m. The displacement of the engine is 3,6 litres (219,6 cu.ins.) bore 84,14 mm. (3,31 ins.) stroke 80 mm. (3,14 ins.) and compression ratio 7,6:1. The engine is fitted with a double carburettor with manual choke and a mechanical fuel pump which permits low-level installation of the fuel tanks. The induction manifold is fresh-water warmed to counteract fuel condensation and to ensure the correct distribution of the fuel-air mixture to the eight cylinders. The air filter fitted on the double-down-draught carburettor also functions as a flash eliminator. The MB 36 has exceptionally low fuel consumption — about 205 grams/hp/hr. (0.452 lb./hp/hr).

The oil system has a capacity of about 10 litres (17,5 Imp. pints). All oil passes through a full-flow filter on its way to the bearings, valve mechanism etc. This filter has paper elements which are easily replaceable. This ensures that the oil is purified to a high degree. Standard equipment includes a tubular oil cooler.

Fresh water cooling is standard on the MB 36 A in order to avoid sea-water corrosion of the engine block and cylinder heads. A circulating pump forces fresh water through the engine. This fresh water is cooled by means of sea-water in the heat exchanger. The sea-water is fed by a "Jabsco" pump with a neoprene rubber impeller which is not affected by sludge etc. The temperature of the cooling water is automatically regulated by means of a thermostat which ensures a rapid warm-up and maintains the correct working temperature in the engine. This "Jabsco" pump also delivers water to the oil cooler and the exhaust pipe jacket. The capacity of the fresh water system is about 17 litres (3¾ Imp. gallons).

Electrical equipment consists of a 12-volt battery system with automatic centrifugal and vacuum ignition advance mechanisms, 1 bhp starter motor, 130-watt built-in dynamo and a voltage regulator. The reverse gear is of the planetary type with a wet multi-disc clutch for travel ahead and brake hands for travel astern. It has a

fixed neutral position and perfect neutral operation so that the propeller does not rotate when the engine is idling.

This engine can be used to good advantage in heavier boat types if it is supplemented with a reduction gear. This gear is water-cooled and has a ratio of 2:1.

The steady, vibration-free operation which is typical of V8 engines can be improved even more by fitting Penta-type rubber mounting blocks. The elegant instrument panel accompanying the engine should be fitted in the wheel-house. Perfect control of the function of the engine is ensured by means of the gauges and switches on the panel: choke control, thermometer, oil pressure gauge, tachometer, charging control indicator, starter switch, ignition switch and indirect instrument lighting.

Compared with its output of 120 hp the weight of the MB 36 is low about 340 kgs (750 lb.) with the reverse gear and about 390 kg (860 lb.) with reverse gear and reduction gear. This is important when the aim is to achieve high speeds in light-weight boats.

This new V8 engine is very compactly constructed and has the following overall external dimensions: height 824 mm 32,45", width 700 mm 27,56", length with reverse gear 1260 mm 49,60", length with reverse gear and reduction gear 1471 mm 57,91".

Further information about the MB 36 A:

Special-alloy cast-iron cylinder heads with fully finished spheroidal combustion chambers. The block is carried down below the crankshaft line ensuring rigidity and giving an unbroken, completely oil-tight sealing edge. Chill-cast light-alloy pistons, each with two compression rings and one three-part oil control ring. The upper compression ring on each piston is chromed. Drop-forged, case-hardened connecting rods. Crankshaft of hardened special steel, statically and dynamically balanced, carried in five bearings. Main bearings and big-end bearings consist of replaceable shells of the tri-metal type. Cast, flame-hardened camshaft, carried in five white-metal lined steel bushings, chain driven. Nickel-steel inlet valves, chrome-nickel alloy steel exhaust valves resistant to tetra-ethyl fuel.



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**PENTA**

Göteborg, Sweden

P.O. Box 392

Telephone 22 84 20

Telegrams Penta

— a Volvo company