

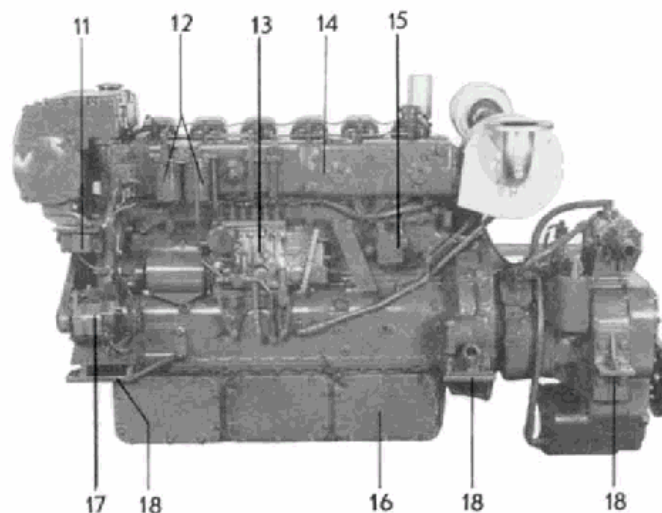
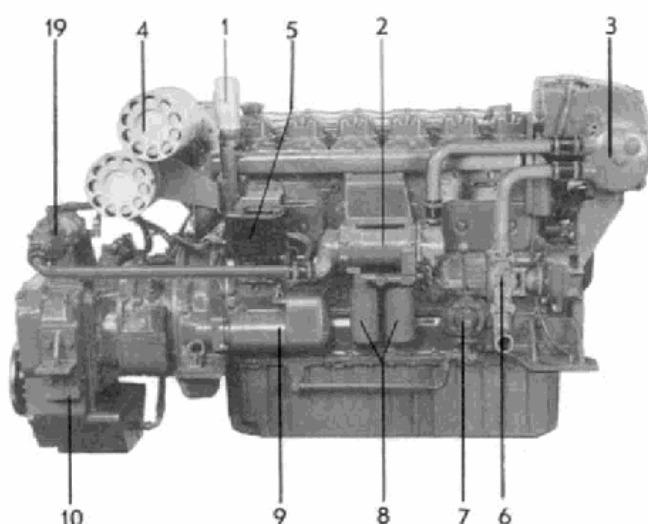
# VOLVO PENTA

## TMD 120A

Ref. no. 8107A  
Eng.



**6-cylinder, direct-injected 4-stroke diesel engine with turbo-charging.**  
**Propeller shaft output 226 kW (307 hp) – pleasure boats, 191 kW (260 hp) – commercial use.**



### STANDARD EQUIPMENT

**ENGINE BODY** – Cylinder block and cylinder heads of special-alloy cast iron. Separate cylinder heads, one for each cylinder, with steel gaskets. Replaceable, wet-type cylinder liners. Pistons of light-alloy with cast iron carriers.

Two compression rings and one oil scraper ring. The upper compression ring is chromed. Crankshaft and camshaft are journaled in seven bearings and have surface-hardened bearing races. Main- and big-end bearing shells of lead-bronze. At the front the crankshaft has a polygon profile intended for driving winches, pumps, etc. The camshaft, drive outputs, sea-water, injection and lubricating oil pumps are gear-driven. Overhead valves with replaceable valve seats.

Tool kit is supplied.

**FUEL SYSTEM** – Injection pump with centrifugal governor (13) and feed pump as well as flexible hoses with fuel pipe connections for the suction and return lines. Electrically operated stop device (15). Twin fine filters (12).

**COOLING SYSTEM** – Fresh-water cooling with heat exchanger (3) and removable, tubular type insert. 1 1/4" sea-water pump (6). The engine temperature is regulated by means of three thermostats.

**LUBRICATING SYSTEM** – Pressure lubricating system with double lubricating oil filters of spin-on type (8).

Sea-water cooled oil cooler (2). Scavenging pump for lubricating oil (7). Oil sump with inspection covers for lower crankcase (16). Oil separating filter for crankcase ventilation (1).

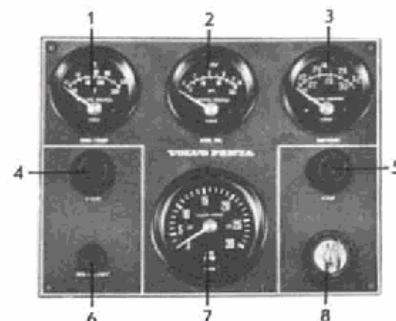
**SUPERCHARGING SYSTEM** – Exhaust gas driven turbo-compressor for supercharging the intake air. Air cleaner with changeable filter (4).

**EXHAUST SYSTEM** – Fresh-water cooled exhaust manifold (14). The turbo-compressor exhaust outlet has an exhaust elbow which can be fitted in different positions. Flexible compensator hose, 1090 mm (43 inch) in length, with connection flanges supplied separately.

**ELECTRICAL SYSTEM** – Two-pole electrical system in marine design, complete instrument panel. Connector on instrument panel and terminal board on engine (5). Alternator (17), 24 V/25 A (600 W) or 12 V/38 A (460 W) with fully transistorized charging regulator (11). Over-voltage protector of 24 V type. Starter motor (9), output 4.7 kW (6.5 h.p.).

Instrument panel with:

1. Temperature gauge
2. Oil pressure gauge
3. Voltmeter
4. Start contact
5. Stop contact
6. Rheostat, instrument lighting
7. Rev counter
8. Key switch



**ENGINE MOUNTING** – The engine is supplied with engine brackets for fixed mounting (18).

**POWER TRANSMISSION** – The engine is supplied with hydraulically operated reverse gear equipped with oil cooler (19) and pre-drilled propeller shaft flange according to the following alternatives:

- |                          |  |
|--------------------------|--|
| Alt. 1. Twin Disc MG 509 | red. ratio 1.5:1 for L-H and R-H prop. <sup>1)</sup> |
| 2.                       | red. ratio 2:1 for L-H and R-H prop. <sup>1)</sup>   |
| 3.                       | red. ratio 3:1 for L-H and R-H prop. <sup>1)</sup>   |
| 4. Twin Disc MG 514      | red. ratio 1.5:1 for L-H and R-H prop.*              |
| 5.                       | red. ratio 2:1 for L-H and R-H prop.*                |
| 6.                       | red. ratio 3:1 for L-H and R-H prop.*                |
| 7.                       | red. ratio 3.5:1 for L-H and R-H prop.*              |
| 8.                       | red. ratio 4.13:1 for L-H and R-H prop.*             |
| 9.                       | red. ratio 4.5:1 for L-H and R-H prop.*              |
| 10.                      | red. ratio 5.16:1 for L-H and R-H prop.*             |
| 11. SCG MRF 700 HD MK 4  | red. ratio 2:1 for L-H alt. R-H prop. (10)           |
| 12.                      | red. ratio 3:1 for L-H alt. R-H prop. (10)           |
| 13.                      | red. ratio 4:1 for L-H alt. R-H prop. (10)           |
| 14.                      | red. ratio 4.78:1 for L-H alt. R-H prop. (10)        |

\* With or without trolling device = slip valve for slow running.

<sup>1)</sup> Only for pleasure boats, max. 500 operating hours per year.

## PRODUCT BULLETIN

## EXTRA EQUIPMENT

### FUEL SYSTEM

Twin fuel filters  
Water-separating fuel filter with glass or metal housing

### COOLING SYSTEM

Fresh-water filter

### LUBRICATING SYSTEM

Shift valve for oil filter

### EXHAUST SYSTEM

Silencer, dry

### POWER TRANSMISSION

Disengagable front-mounted power take-off  
Vee-belt pulley and flat belt pulleys for power take-off  
Drive outputs at front and rear of timing gear casing  
Drive output for side fitting  
Vee-belt pulley for crankshaft

### ELECTRICAL SYSTEM

Alternator, 24 V, 60 A  
Charging distributor for charging 2-battery system  
Electrically operated hourmeter  
Automatic alarm for oil pressure and water temperature – optical or acoustical  
Master switch

### ENGINE MOUNTING AND SOUND INSULATION

Flexible engine mounting  
Sound insulated casing

### BOAT ACCESSORIES

Bilge pump direct-driven mounted on timing gear casing  
Bilge pump for separate mounting  
Ejector for bilge pump  
Oils  
Paints  
Anti-freeze  
Rustproofing

### CONTROLS AND CONTROL SYSTEM

VP single-control lever for both speed and forward-reverse operation, top-mounted or side-mounted. Single or twin installation  
Neutral position switch – automatic safety interlock for VP-controls  
S-type control. Top-mounted, only speed regulation, or manoeuvring slip valve  
Control cables

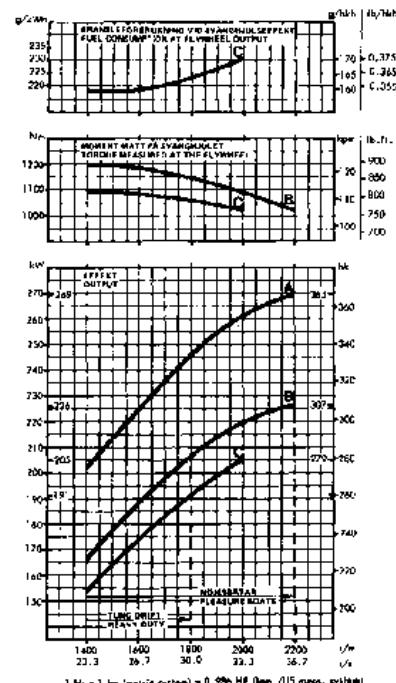
### PROPELLER EQUIPMENT

Flexible propeller shaft coupling  
Propeller shafts  
Propeller shaft sleeves  
Propellers

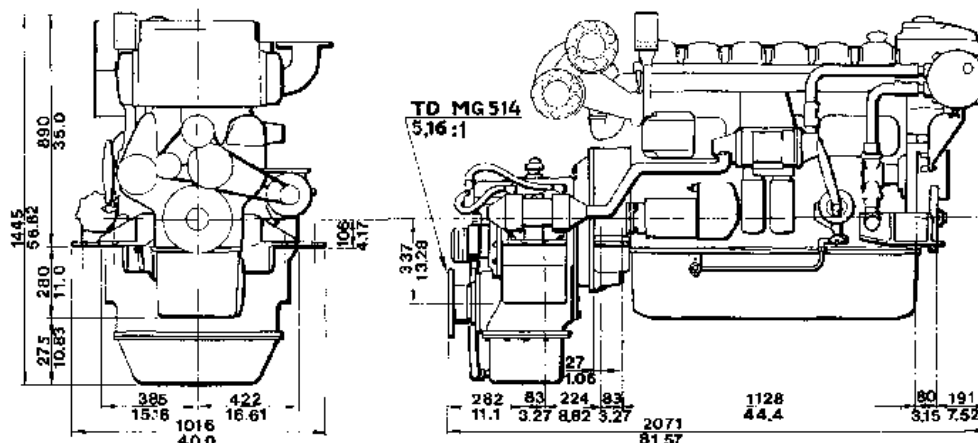
## DATA

Type of operation	4-stroke, turbo-charged diesel engine with direct injection and overhead valves
Designation	TMD 120A
Propeller shaft output, pleasure boats (B) <sup>1)</sup>	226 kW/36.7 r/s (307 h.p./2200 rpm)
Propeller shaft output, commercial use, heavy-duty operation (C) <sup>1)</sup>	191 kW/30 r/s (260 h.p./1800 rpm)
Numbers of cylinders	6
Capacity, total, dm <sup>3</sup> (liters) (in. <sup>3</sup> )	11.98 (730)
Bore, mm (in.)	130.17 (5.12)
Stroke, mm (in.)	150 (5.91)
Total weight, engine with TD 514 3:1, approx. kg (lb.)	1820 (4020)

- <sup>1)</sup>
- A: Max. flywheel output acc. to DIN 6270 Höchstleistung N<sub>H</sub>.
  - B: Intermittent output measured on the propeller shaft acc. to DIN 6270 Leistung B (corresponds for practical use also to 1-hour's output acc. to BS 649, 1958). May be taken out max. 1 hour per 12-hour period.
  - C: Continuous output measured on the propeller shaft acc. to DIN 6270 Leistung B für Dauerbetrieb (corresponds for practical use also to continuous output acc. to BS 649, 1958). On delivery from Volvo Penta, the engine is adjusted acc. to curve C 30.0 r/s (1800rpm).
- The flywheel output for the engines is approx. 5% higher than the indicated values for B and C curves. All measurements apply to a run-in engine.



## DIMENSION DRAWING



## VOLVO PENTA

S-405 08 Göteborg, Sweden  
Telephone: 031/23 54 60  
Cables: Penta Göteborg  
Telex: 207 55 PENTA S

### ENGINE DIAGRAM

**MARIN DIESELMOTOR  
MARINE DIESEL ENGINE**

Page No.  
Group No.

21 100-1

Rev.

Model F106/F104 1000/1200, 1200/1400, 1400/1600  
Type

Date 12/1982

#### NOTES

ENGINE SPECIFICATIONS AND OPERATING DATA		
1. GENERAL DATA		
2. OPERATING DATA		
1. Model		1
2. Type		2
3. Displacement (cc)	1000	1000
4. Displacement (cc)	1200	1200
5. Displacement (cc)	1400	1400
6. Displacement (cc)	1600	1600
7. Displacement (cc)	1800	1800
8. Displacement (cc)	2000	2000
9. Displacement (cc)	2200	2200
10. Displacement (cc)	2400	2400
11. Displacement (cc)	2600	2600
12. Displacement (cc)	2800	2800
13. Displacement (cc)	3000	3000
14. Displacement (cc)	3200	3200
15. Displacement (cc)	3400	3400
16. Displacement (cc)	3600	3600
17. Displacement (cc)	3800	3800
18. Displacement (cc)	4000	4000
19. Displacement (cc)	4200	4200
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25. Displacement (cc)	5400	5400
26. Displacement (cc)	5600	5600
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55. Displacement (cc)	11400	11400
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61. Displacement (cc)	12600	12600
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63. Displacement (cc)	13000	13000
64. Displacement (cc)	13200	13200
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274. Displacement (cc)	55200	55200
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285. Displacement (cc)	57400	57400
286. Displacement (cc)	57600	57600
287. Displacement (cc)	57800	57800
288. Displacement (cc)	58000	58000
289. Displacement (cc)	58200	58200
290. Displacement (cc)	58400	58400
291. Displacement (cc)	58600	58600
292. Displacement (cc)	58800	58800
293. Displacement (cc)	59000	59000
294. Displacement (cc)	59200	59200
295. Displacement (cc)	59400	59400
296. Displacement (cc)	59600	59600
297. Displacement (cc)	59800	59800
298. Displacement (cc)	60000	60000
299. Displacement (cc)	60200	60200
300. Displacement (cc)	60400	60400
301. Displacement (cc)	60600	60600
302. Displacement (cc)	60800	60800
303. Displacement (cc)	61000	61000
304. Displacement (cc)	61200	61200
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322. Displacement (cc)	64800	64800
323. Displacement (cc)	65000	65000
324. Displacement (cc)	65200	65200
325. Displacement (cc)	65400	65400
326. Displacement (cc)	65600	65600
327. Displacement (cc)	65800	65800
328. Displacement (cc)	66000	66000
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330. Displacement (cc)	66400	66400
331. Displacement (cc)	66600	66600
332. Displacement (cc)	66800	66800
333. Displacement (cc)	67000	67000
334. Displacement (cc)	67200	67200
335. Displacement (cc)	67400	67400
336. Displacement (cc)	67600	67600
337. Displacement (cc)	67800	67800
338. Displacement (cc)	68000	68000
339. Displacement (cc)	68200	68200
340. Displacement (		

**120 Series**

Model 120000  
Capacity 120000

Draw No. 100

#### TABLE 1

1. Engine displacement and operating speed		
2. Fuel consumption		
3. Lubrication		
4. Cooling		
5. Exhaust		
6. Electrical		
7. Dimensions		
8. Weight		
9. Performance		
10. Fuel consumption		
11. Lubrication		
12. Cooling		
13. Exhaust		
14. Electrical		
15. Dimensions		
16. Weight		
17. Performance		
18. Fuel consumption		
19. Lubrication		
20. Cooling		
21. Exhaust		
22. Electrical		
23. Dimensions		
24. Weight		
25. Performance		
26. Fuel consumption		
27. Lubrication		
28. Cooling		
29. Exhaust		
30. Electrical		
31. Dimensions		
32. Weight		
33. Performance		
34. Fuel consumption		
35. Lubrication		
36. Cooling		
37. Exhaust		
38. Electrical		
39. Dimensions		
40. Weight		
41. Performance		
42. Fuel consumption		
43. Lubrication		
44. Cooling		
45. Exhaust		
46. Electrical		
47. Dimensions		
48. Weight		
49. Performance		
50. Fuel consumption		
51. Lubrication		
52. Cooling		
53. Exhaust		
54. Electrical		
55. Dimensions		
56. Weight		
57. Performance		
58. Fuel consumption		
59. Lubrication		
60. Cooling		
61. Exhaust		
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90. Fuel consumption		
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105. Performance		
106. Fuel consumption		
107. Lubrication		
108. Cooling		
109. Exhaust		
110. Electrical		
111. Dimensions		
112. Weight		
113. Performance		
114. Fuel consumption		
115. Lubrication		
116. Cooling		
117. Exhaust		
118. Electrical		
119. Dimensions		
120. Weight		



1. Fuel consumption is based on the test results of the engine at 1000 RPM.

2. Lubrication is based on the test results of the engine at 1000 RPM.

3. Performance is based on the test results of the engine at 1000 RPM.

4. Fuel consumption is based on the test results of the engine at 1000 RPM.

5. Lubrication is based on the test results of the engine at 1000 RPM.

6. Performance is based on the test results of the engine at 1000 RPM.

7. Fuel consumption is based on the test results of the engine at 1000 RPM.

8. Lubrication is based on the test results of the engine at 1000 RPM.

9. Performance is based on the test results of the engine at 1000 RPM.

10. Fuel consumption is based on the test results of the engine at 1000 RPM.

11. Lubrication is based on the test results of the engine at 1000 RPM.

12. Performance is based on the test results of the engine at 1000 RPM.



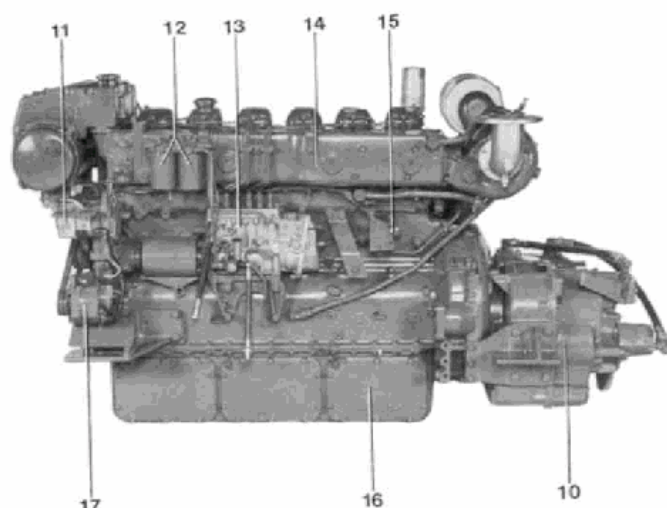
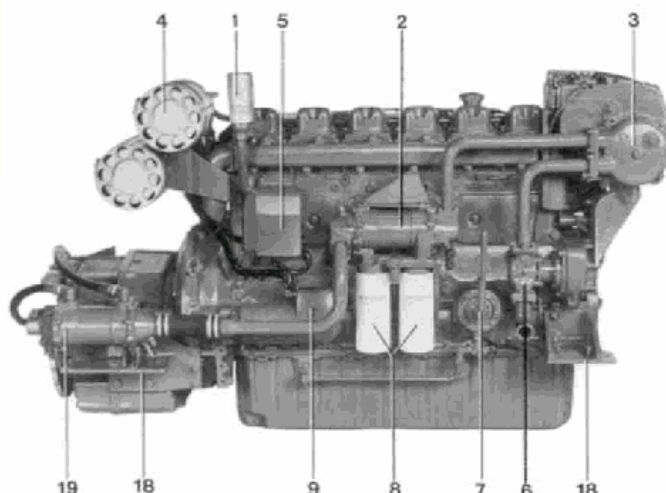
13. Fuel consumption is based on the test results of the engine at 1000 RPM.





**6-cylinder, direct-injected 4-stroke diesel engine with turbo-charging.**

**Flywheel power at sea level conditions 257 kW (350 hp). Air pressure 1,01 bar (29,2 in. merc), temperature 15°C (60°F).**



### STANDARD EQUIPMENT

**ENGINE BODY** – Cylinder block and cylinder heads of special-alloy cast iron. Separate cylinder heads, one for each cylinder, with steel gaskets. Replaceable, wet-type cylinder liners. Pistons of light-alloy with cast iron carriers. Two compression rings and one oil scraper ring. The upper compression ring is chromed. Crankshaft and camshaft are journalled in seven bearings and have surface-hardened bearing races. Main- and big-end bearing shells of lead-bronze. At the front the crankshaft has a polygon profile intended for driving winches, pumps, etc. The camshaft, drive outputs, raw-water, injection and lubricating oil pumps are gear-driven. Overhead valves with replaceable valve seats.

**FUEL SYSTEM** – Injection pump with centrifugal governor (13) and feed pump as well as flexible hoses with fuel pipe connections for the suction and return lines. Electrically operated stop device (15). Twin fine filters (12).

**COOLING SYSTEM** – Fresh-water cooling with heat exchanger (3) and removable, tubular type insert. 1 1/4" raw-water pump (6). The engine temperature is regulated by means of three thermostats.

**LUBRICATING SYSTEM** – Pressure lubricating system with double lubricating oil filters of spin-on type (8). Raw-water cooled oil cooler (2). Scavenging pump for lubricating oil (7). Oil sump with inspection covers for lower crankcase (16). Oil separating filter for crankcase ventilation (1).

**SUPERCHARGING SYSTEM** – Exhaust gas driven turbo-compressor for supercharging the intake air. Fresh-water cooled turbine housing. Air cleaner with changeable filter (4).

**EXHAUST SYSTEM** Fresh-water cooled exhaust manifold (14). The turbo-compressor exhaust outlet has an exhaust elbow which can be fitted in different positions. Flexible compensator hose, 590 mm (23 in.) in length, with connection flanges supplied separately.

**ELECTRICAL SYSTEM** – 24 V with starter motor (9), output 4.7 kW (6.5 hp.).

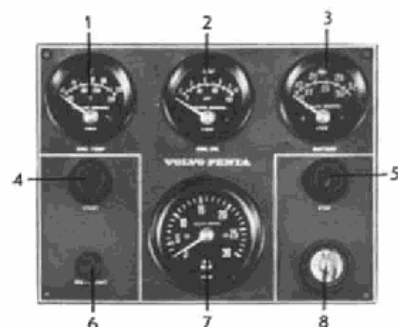
**ENGINE MOUNTING** – The engine is supplied with engine brackets for fixed mounting (18).

### EXTRA EQUIPMENT

**ELECTRICAL SYSTEM** – Two-pole electrical system in marine design, complete instrument panel. Connector on instrument panel and terminal board on engine (5). Alternator (17), 24 V/55 A (1320 W) or 60 A (1440 W) with fully transistorized charging regulator (11). Overvoltage protector of 24 V type.

Instrument panel with:

1. Temperature gauge
2. Oil pressure gauge
3. Voltmeter
4. Start contact
5. Stop contact
6. Rheostat, instrument lighting
7. Rev counter
8. Key switch



**POWER TRANSMISSION** – Hydraulically operated reverse gear equipped with oil cooler (19) and pre-drilled propeller shaft flange according to the following alternatives:

- |         |                   |   |
|---------|-------------------|---|
| Alt. 1. | Twin Disc MG 510A | red. ratio 1.5:1 for L-H and R-H prop. <sup>1)</sup> (10) |
| 2.      |                   | red. ratio 2:1 for L-H and R-H prop. <sup>1)</sup> (10)   |
| 3.      |                   | red. ratio 2.5:1 for L-H and R-H prop. <sup>1)</sup> (10) |
| 4.      | Twin Disc MG 514  | red. ratio 1.5:1 for L-H and R-H prop.*                   |
| 5.      |                   | red. ratio 2:1 for L-H and R-H prop.*                     |
| 6.      |                   | red. ratio 3:1 for L-H and R-H prop.*                     |
| 7.      |                   | red. ratio 3.5:1 for L-H and R-H prop.*                   |
| 8.      |                   | red. ratio 4.13:1 for L-H and R-H prop.*                  |
| 9.      |                   | red. ratio 4.5:1 for L-H and R-H prop.*                   |
| 10.     |                   | red. ratio 5.16:1 for L-H and R-H prop.*                  |
| 11.     |                   | red. ratio 6:1 for L-H alt. R-H prop.*                    |

<sup>1)</sup> Not for continuous duty.

\* With or without trolling-device = slip valve for slow running.

**CLASSIFICATION** – The engine can be delivered classified in accordance with the requirements of the major classification societies.

## EXTRA EQUIPMENT

### FUEL SYSTEM

Twin fuel filters  
Water-separating fuel filter with glass or metal housing

### COOLING SYSTEM

Fresh-water filter  
Raw-water filter

### LUBRICATING SYSTEM

Shift valve for oil filter

### EXHAUST SYSTEM

Silencer, dry

### POWER TRANSMISSION

Connection parts for Volvo Flygmotor's hydraulic pumps  
Disengagable front-mounted power take-off  
Drive outputs at front and rear of timing gear casing  
Drive output for side fitting  
Vee-belt pulley for crankshaft

### ELECTRICAL SYSTEM

Charging distributor for charging 2-battery system  
Electrically operated hourmeter  
Automatic alarm for oil pressure and water temperature – optical or acoustical  
Master switch

### ENGINE MOUNTING

Flexible engine mounting

### BOAT ACCESSORIES

Disconnectable scavenger pump 1 1/4"  
Disconnectable bilge pump 2" with vacuum sensor switch  
Bilge pump direct-driven mounted on timing gear casing  
Bilge pump for separate mounting  
Ejector for bilge pump  
Tool kit  
Oils  
Paints  
Anti-freeze  
Rustproofing

### CONTROLS AND CONTROL SYSTEM

VP single-control lever for both speed and forward-reverse operation, top-mounted or side-mounted. Single or twin installation  
Neutral position switch – automatic safety interlock for VP-controls  
S-type control. Top-mounted, only speed regulation, or manoeuvring slip valve  
Control cables

### PROPELLER EQUIPMENT

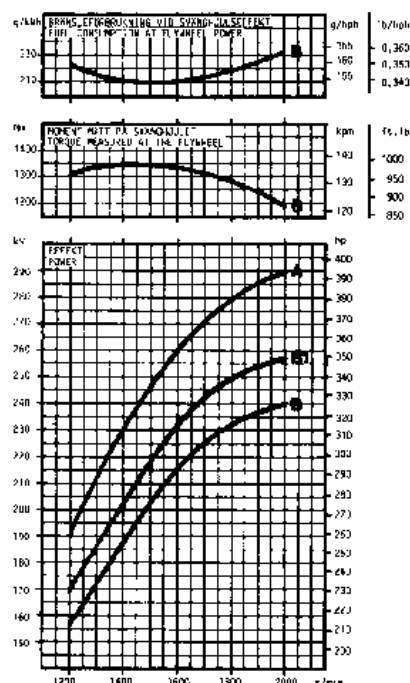
Flexible propeller shaft coupling  
Propeller shafts  
Propeller shaft sleeves  
Propellers

## DATA

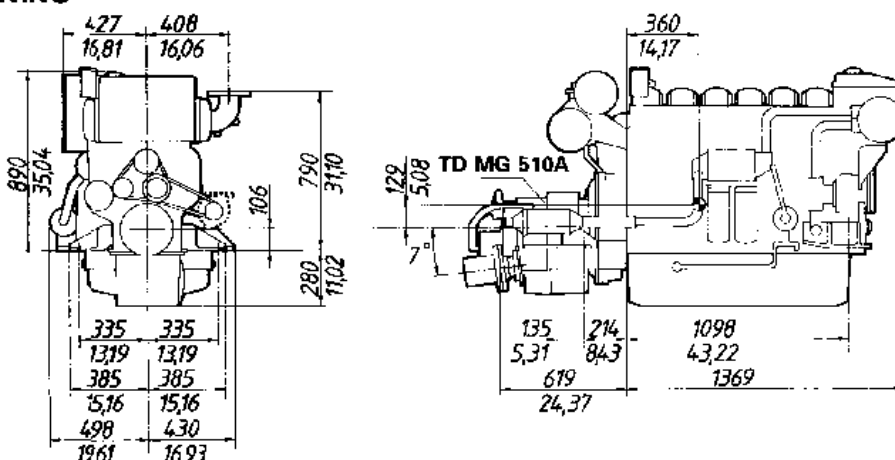
Type of operation	4-stroke, turbo-charged diesel engine with direct injection and overhead valves
Designation	TMD 120B
Propeller shaft power	
Pleasure craft duty (B) <sup>1)</sup>	240 kW (326 hp) at 2000 r/min
Light commercial duty (CI) <sup>2)</sup>	225 kW (307 hp) at 1800 r/min
Continuous duty (C) <sup>2)</sup>	211 kW (287 hp) at 1800 r/min
Number of cylinders	6
Capacity, total, dm <sup>3</sup> (in. <sup>3</sup> )	11,98 (730)
Bore, mm (in.)	130,17 (5.12)
Stroke, mm (in.)	150 (5.91)
Total weight, engine with TD MG 510A, approx. kg (lb.)	1660 (3660)

- <sup>1)</sup> Curve A: Highest flywheel power obtainable in the test room without thermal overload. This power corresponds to DIN 6270 "Höchstleistung".  
Curve B1: Flywheel power for pleasure craft duty (sea level conditions). Air pressure = 1,01 bar (29.2 in. merc), temperature = 15.0°C (60°F).  
Curve B: Propeller shaft power for pleasure craft duty according to DIN 6270 Leistung B (corresponds for practical use also to 1-hour's power according to BS 648, 1958). Only occasional use at full engine throttle. Normal cruising is expected to be at a comfortable part-throttle operation.  
The flywheel power for the engine is approx 4% higher than the indicated values for B-curve.  
All measurements apply to a run-in engine.

- <sup>2)</sup> Engine Diagram see separate sheet Group 21 no 140-3.



## DIMENSION DRAWING



# VOLVO PENTA

S-405 08 Göteborg, Sweden  
Telephone: 031/23 54 60  
Cables: Penta Göteborg  
Telex: 207 55 PENTA S

## ENGINE DIAGRAM

MARINE DIESEL ENGINE

Model No.  
Serial No.

21

1000.0

Date

Model No. 1208  
Serial No. 1000.0

Date 01/10/2022

2100 kW

### TECHNICAL DATA

General Data		
Model No. 1208		
Serial No. 1000.0		
Rated Power	2100 kW	2800 HP
Rated Speed	1500 RPM	1500 RPM
Rated Torque	13200 Nm	13200 Nm
Rated Fuel Consumption	100 kg/h	100 kg/h
Rated Air Consumption	100 m³/h	100 m³/h
Rated Water Consumption	100 m³/h	100 m³/h
Rated Oil Consumption	100 l/h	100 l/h
Rated Exhaust Gas Temperature	400 °C	400 °C
Rated Exhaust Gas Pressure	1.0 bar	1.0 bar
Rated Exhaust Gas Flow	100 m³/h	100 m³/h
Rated Exhaust Gas Velocity	100 m/s	100 m/s
Rated Exhaust Gas Density	1.2 kg/m³	1.2 kg/m³
Rated Exhaust Gas Viscosity	0.01 Pa·s	0.01 Pa·s
Rated Exhaust Gas Thermal Conductivity	0.02 W/m·K	0.02 W/m·K
Rated Exhaust Gas Specific Heat Capacity	1.0 kJ/kg·K	1.0 kJ/kg·K
Rated Exhaust Gas Molecular Weight	28.97 kg/kmol	28.97 kg/kmol
Rated Exhaust Gas Universal Gas Constant	8.314 J/mol·K	8.314 J/mol·K

1. The engine is a four-stroke, four-cylinder, turbocharged diesel engine.

2. The engine is designed to operate at a rated power of 2100 kW and a rated speed of 1500 RPM.

3. The engine is equipped with a turbocharger to increase the power output.

4. The engine is equipped with a cooling system to maintain the operating temperature.

5. The engine is equipped with a lubrication system to reduce friction.

6. The engine is equipped with a fuel system to deliver the fuel to the cylinders.

7. The engine is equipped with a governor to maintain the rated speed.

8. The engine is equipped with a vibration damper to reduce the vibration.

9. The engine is equipped with a noise abatement system to reduce the noise.

10. The engine is equipped with a safety system to prevent accidents.

11. The engine is equipped with a control system to operate the engine.

12. The engine is equipped with a monitoring system to monitor the engine.







## EXTRE COMFORT

### CLIMATE CONTROL

Four heat zones  
Four heat pumps  
Four independent fan heat and cool air flow controls

### COOLING SYSTEM

Four-stage fan

### COMFORTABLE SEATING

Soft foam seat of foam

### COMFORTABLE SLEEPING

Comprehensive through ventilation

Heater fan

### COMFORT CONVENIENCE

Comprehensive four independent zone control  
Heater pumps with the 4th control for  
the 4th zone  
Four controls for heat and cool air flow  
per zone  
Four independent heat pumps  
Heater fan for ventilation

### COMFORTABLE SEATING

Heater fan for ventilation and cool  
air flow control - for sleeping comfort

### COMFORTABLE SLEEPING

Comprehensive four independent zone control  
Heater pumps with the 4th control for  
the 4th zone

### COMFORT CONVENIENCE

Comprehensive four independent zone control

Heater fan for ventilation

Heater fan for ventilation

Heater fan for ventilation

Heater fan for ventilation

Heater fan for ventilation

Heater fan for ventilation

Heater fan for ventilation

Heater fan for ventilation

Heater fan for ventilation

Heater fan for ventilation

Heater fan for ventilation

### CLIMATE

Four heat pumps

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Four heat pumps

## CARDS

Card 1: General information on the 4th zone control system

Card 2: General information on the 4th zone control system

Card 3: General information on the 4th zone control system

Card 4: General information on the 4th zone control system

Card 5: General information on the 4th zone control system

Card 6: General information on the 4th zone control system

Card 7: General information on the 4th zone control system

Card 8: General information on the 4th zone control system

Card 9: General information on the 4th zone control system

Card 10: General information on the 4th zone control system

Card 11: General information on the 4th zone control system

Card 12: General information on the 4th zone control system

Card 13: General information on the 4th zone control system

Card 14: General information on the 4th zone control system

Card 15: General information on the 4th zone control system

Card 16: General information on the 4th zone control system

Card 17: General information on the 4th zone control system

Card 18: General information on the 4th zone control system

Card 19: General information on the 4th zone control system

Card 20: General information on the 4th zone control system

Card 21: General information on the 4th zone control system

Card 22: General information on the 4th zone control system

Card 23: General information on the 4th zone control system

Card 24: General information on the 4th zone control system

Card 25: General information on the 4th zone control system

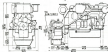
Card 26: General information on the 4th zone control system

Card 27: General information on the 4th zone control system

Card 28: General information on the 4th zone control system

Card 29: General information on the 4th zone control system

## DISMOUNTING GUIDE



## AB-VELO-POWER

Box 100, 1-100 (Hochschule 1, Berlin)

Telephone: 030/12 14 10

Telefax: 030/12 14 10

Telefax: 030/12 14 10

Printing on chlorine-free paper











# TAMD 121C



## VOLVO-PENTA TAMD 121C

Pressure lubrication system with  
remote oil monitoring system

Simple, efficient, reliable cooling  
system with 2000 l/h flow

Assembly very convenient after first start, thanks to the automatic workstand. The TAMD 121C is 100% dry-lubricated. Another feature: the mainshaft is fully submerged and always at 100°C. This means that the oil is always at the optimal viscosity and is continuously circulated. Furthermore, the mainshaft is never damaged, as the oil is always at the optimal viscosity and is continuously circulated.

### Big horsepower

A really big horsepower for example 2000 hp (1471 kW) at 1800 rpm. The TAMD 121C is 100% dry-lubricated. Another feature: the mainshaft is fully submerged and always at 100°C. This means that the oil is always at the optimal viscosity and is continuously circulated.

### Anticorrosion lubricating oil system

To ensure that the engine always runs with the highest quality, the TAMD 121C engine has been equipped with an automatic oil change system. The oil is always at 100°C. This means that the oil is always at the optimal viscosity and is continuously circulated. Furthermore, the mainshaft is never damaged, as the oil is always at the optimal viscosity and is continuously circulated.

Simple to  
use and  
easy to  
maintain

At 1000 l/h  
flow, the  
TAMD 121C  
can be used  
with a  
remote oil  
monitoring  
system



A 1000 l/h flow rate is required for the  
TAMD 121C. The engine is equipped with  
a remote oil monitoring system for  
continuous oil level control.



A 1000 l/h flow rate is required for the  
TAMD 121C. The engine is equipped with  
a remote oil monitoring system for  
continuous oil level control.

3000w 400 hp



The TAMD 121C is equipped with a  
remote oil monitoring system for  
continuous oil level control.

### Improved operating economy

The new engine is equipped with a  
remote oil monitoring system for  
continuous oil level control. The engine  
is equipped with a remote oil monitoring  
system for continuous oil level control.  
The engine is equipped with a remote  
oil monitoring system for continuous  
oil level control. The engine is  
equipped with a remote oil monitoring  
system for continuous oil level control.

The engine  
is equipped  
with a  
remote oil  
monitoring  
system

At 1000 l/h  
flow, the  
TAMD 121C  
can be used  
with a  
remote oil  
monitoring  
system

Simple to  
use and  
easy to  
maintain

At 1000 l/h  
flow, the  
TAMD 121C  
can be used  
with a  
remote oil  
monitoring  
system

Simple to  
use and  
easy to  
maintain

200 hp 1800 rpm - 270 hp 1800 rpm

## TAMD 121 D

6-cylinder, 4-stroke, direct-injected, turbocharged marine diesel  
with aftercooler — crankshaft output 210 kW (285 hp)

The LPA90-1200 is a powerful, reliable and accurate non-inventational program. It is a true-to-life simulation of a very complex machine, and it is designed to help you learn the correct way to use the machine. It is a true-to-life simulation of a very complex machine, and it is designed to help you learn the correct way to use the machine.

The integrated and outside handle are one unit. Smooth and pleasant free turning. Handles are not tapered design with flared, streamlined cross-sections. Integrated fastener technology provides high-tensile steel pins into the entire handle assembly.

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**Example 2**—*Intangible assets are not identifiable*  
 Suppose, in the preceding example, that the trademark is owned by the parent company and the subsidiary has no right to use the trademark. In this case, the trademark is not identifiable and the subsidiary should not recognize an intangible asset.

<sup>1</sup> Includes first exchange trading as well as subsequent trading on the specified exchange. Trading is sorted according to the first exchange on which trading occurs.

Positive thought is the most important factor. Coping with anger is a two-step process, and one has to be in control of his or her anger and emotions. For example, if a person is angry, he or she should not let his or her anger get the best of him or her. If a person is angry, he or she should not let his or her anger get the best of him or her. If a person is angry, he or she should not let his or her anger get the best of him or her.

Table 1 shows that the number of respondents from the 10 countries, including Australia, ranged from 10 to 20 and that the total number of respondents was 140. The majority of the respondents were:

[illegible]

WOLFGANG  
HILF





# TMD 122A

*6-cylinder, 4-stroke, direct-injected, turbocharged marine diesel engine. Crankshaft output\* 205 kW (280 hp).*

The TMD 122A is a powerful, reliable and economical marine diesel engine with a long life expectancy. Designed for a pollution-free environment, this engine is developed to meet specific customer and marine requirements.

The engine block and cylinder head are made of cast iron. Intake, exhaust and supercharger are made of stainless steel. The engine is designed with generous vibration-dampening characteristics. Optimised friction system to obtain top-class efficiency throughout the power range 10-90%.

The electrical system is of the plug-in type and other options are readily installed.

The engine is also equipped with a number of other options for pumps, turbochargers and other. Compact design, low weight and low weight in operation increase manoeuvrability, installation and spare parts space for the perfect fit on board.

The TMD 122A can be equipped with heat exchanger cooling, hot water pump, oil-water separator.

With extra fuel pump, designed to facilitate servicing.

They include: oil separator, pump. Water for the water air, gas and air, fuel tank, air oil pump, air separator.

Close to the water, the way to remove it, connecting hot water, air without connecting pump, and air oil pump to remove the separator.

In order to comply with the requirements of classification societies and shipping authorities relating to operation in restricted environments, this engine will be supplied in a fully classified version.

These features are well established service network in more than 100 countries. Authorized workshops with Service Parts, maintained by qualified personnel make sure that you get the best service.

\*Crankshaft output according to ISO 8846.



The TMD 122A with various gear. Total power 300 kW.

**VOLVO  
PENTA**



# TAMD 122A

**6-cylinder, 4-stroke, direct-injected turbocharged marine diesel  
with aftercooler - crankshaft power\* 294 kW (400 hp)**

The TAMD 122A is a powerful, reliable and economical marine diesel engine. Using Volvo Penta's extensive engineering experience, this engine is well adapted for all specific customer and marine requirements. The engine block and cylinder head structure is cast iron, rigid, vibration-free operation as a result of an extremely well-balanced design with specially distributed crankshaft bearings. Turbocharger system is clean top-line design throughout operational operating range.

The electrical system on this engine type and all the other engines already installed, is 24 volt diesel system in standard.

The engine can be equipped with number of other options for pumps, compressors and for the. Compact external measurements and low weight in relation to power output, low noise and more room space for the propeller, for example.

Heat exchanger cooling or hot cooling is available in order to comply with the requirements of turbocharged engines and shipping authorities relating to emission in exhaust systems. This engine is also adapted to a fully diesel-fuel system.

Many details have been designed to facilitate servicing. These include replaceable upper blades for the valves as opposed to old facilities, and a separate injection system to enable the easy removal of clogging, hot bearings without removing the oil pump, and oil oil pump to remove the lubricating oil.

Volvo Penta has a well-organized service network in more than 100 countries. Authorized dealerships will Service Parts are called by qualified personnel make sure that your technical service.

\* Crankshaft power according to ISO 3081.



Photo: Volvo Penta AB, Sweden. The engine is shown with the standard 24 volt diesel system in standard.

**VOLVO  
PENTA**









# TAMD122P

**Pleasure Duty (PD)**

**5-cylinder, 4-stroke, direct-injected, turbocharged marine diesel engine with aftercooler - 2000 shaft power\* 241 kW (328 hp)**

\*According to ISO 15926

## **High performance combined with outstanding reliability and environmental care**

The TAMD122P is a high performance engine with very low emissions, the environmental perfect boat.

The engine is turbocharged and also meets other high specific demands for use, like: (Oxygen sensor) fuel systems. The engine's unique torque characteristics will ensure an outstanding fuel economy response.

## **Quality and low noise levels**

The 5-cylinder 4-stroke engine is fully protected balanced and with low noise characteristics throughout its life. The engine's steady, vibration-free operation and low noise level, which together provide the highest level of environmental safety.

The low noise, high performance and zero maintenance design will assure many hours of satisfying operation.

To maintain state-of-the-art performance, operation and maintenance, (throughout its entire life) the engine is equipped with an automatic service interval system. The engine is also fitted with replacement cylinder liners and valves to ensure maximum durability and service life throughout.

## **Low exhaust emission levels**

High-pressure injection technology, low compression ratio and fuel injection system. The greater efficiency of the system combined with high-pressure injection results in low exhaust emissions.

## **Strong cooling type**

The low gas temperatures in specific fully independent low-emission engine components. The increased cooling rate will assure maximum power and prolonged service life.

## **Easy service and maintenance**

Easy accessible service and maintenance contribute to the ease of service of the engine.

## **Comprehensive service**

### **Afterlife**

From Volvo Penta with professional help.

TAMD122P 1200  
2000 shaft power (328 hp)

241 kW  
328 hp



work of authorized service agents is required. Volvo Penta 24-hour service throughout the world. These service centers will ensure that Volvo Penta is always at your side to ensure maximum life for your pleasure service.

## **Technical description**

### **Engine features**

- 5-cylinder, 4-stroke, 4-valve, 1200 cc, 1200 cm<sup>3</sup>
- 1200 cc, 1200 cm<sup>3</sup>, 4-valve, 1200 cc, 1200 cm<sup>3</sup>
- 1200 cc, 1200 cm<sup>3</sup>, 4-valve, 1200 cc, 1200 cm<sup>3</sup>
- 1200 cc, 1200 cm<sup>3</sup>, 4-valve, 1200 cc, 1200 cm<sup>3</sup>
- 1200 cc, 1200 cm<sup>3</sup>, 4-valve, 1200 cc, 1200 cm<sup>3</sup>
- 1200 cc, 1200 cm<sup>3</sup>, 4-valve, 1200 cc, 1200 cm<sup>3</sup>
- 1200 cc, 1200 cm<sup>3</sup>, 4-valve, 1200 cc, 1200 cm<sup>3</sup>
- 1200 cc, 1200 cm<sup>3</sup>, 4-valve, 1200 cc, 1200 cm<sup>3</sup>
- 1200 cc, 1200 cm<sup>3</sup>, 4-valve, 1200 cc, 1200 cm<sup>3</sup>
- 1200 cc, 1200 cm<sup>3</sup>, 4-valve, 1200 cc, 1200 cm<sup>3</sup>

### **Fuel system**

- Fuel injection system, 1200 cc, 1200 cm<sup>3</sup>
- Fuel injection system, 1200 cc, 1200 cm<sup>3</sup>
- Fuel injection system, 1200 cc, 1200 cm<sup>3</sup>
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- Fuel injection system, 1200 cc, 1200 cm<sup>3</sup>

### **Exhaust system**

- Exhaust system, 1200 cc, 1200 cm<sup>3</sup>
- Exhaust system, 1200 cc, 1200 cm<sup>3</sup>
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- Exhaust system, 1200 cc, 1200 cm<sup>3</sup>

### **Lubrication system**

- Lubrication system, 1200 cc, 1200 cm<sup>3</sup>
- Lubrication system, 1200 cc, 1200 cm<sup>3</sup>
- Lubrication system, 1200 cc, 1200 cm<sup>3</sup>
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- Lubrication system, 1200 cc, 1200 cm<sup>3</sup>
- Lubrication system, 1200 cc, 1200 cm<sup>3</sup>

### **Turbocharger**

- Turbocharger, 1200 cc, 1200 cm<sup>3</sup>
- Turbocharger, 1200 cc, 1200 cm<sup>3</sup>
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- Turbocharger, 1200 cc, 1200 cm<sup>3</sup>
- Turbocharger, 1200 cc, 1200 cm<sup>3</sup>

### **Electrical system**

- Electrical system, 1200 cc, 1200 cm<sup>3</sup>
- Electrical system, 1200 cc, 1200 cm<sup>3</sup>
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- Electrical system, 1200 cc, 1200 cm<sup>3</sup>

### **Equipment**

- Equipment, 1200 cc, 1200 cm<sup>3</sup>
- Equipment, 1200 cc, 1200 cm<sup>3</sup>
- Equipment, 1200 cc, 1200 cm<sup>3</sup>
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- Equipment, 1200 cc, 1200 cm<sup>3</sup>

### **Fast system**

- Fast system, 1200 cc, 1200 cm<sup>3</sup>
- Fast system, 1200 cc, 1200 cm<sup>3</sup>
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- Fast system, 1200 cc, 1200 cm<sup>3</sup>

### **Cooling system**

- Cooling system, 1200 cc, 1200 cm<sup>3</sup>
- Cooling system, 1200 cc, 1200 cm<sup>3</sup>
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- Cooling system, 1200 cc, 1200 cm<sup>3</sup>
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- Cooling system, 1200 cc, 1200 cm<sup>3</sup>
- Cooling system, 1200 cc, 1200 cm<sup>3</sup>

### **Power transmission**

- Power transmission, 1200 cc, 1200 cm<sup>3</sup>
- Power transmission, 1200 cc, 1200 cm<sup>3</sup>
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- Power transmission, 1200 cc, 1200 cm<sup>3</sup>

### **Shaft system**

- Shaft system, 1200 cc, 1200 cm<sup>3</sup>
- Shaft system, 1200 cc, 1200 cm<sup>3</sup>
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- Shaft system, 1200 cc, 1200 cm<sup>3</sup>
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**VOLVO  
PENTA**



# TAMD122P EDC

5-cylinder, 4-stroke, direct-injected, turbocharged marine diesel engine with aftercooler — crankshaft power\* 440 bhp (323 kw)

\*1500 rpm, 20°C ambient

## EDC — innovative technology in diesel control and monitoring, combined with high performance

The TAMD122P is a high performance engine designed for long-term fleet performance.

Equipped with Volvo Electronic Diesel Control — electronically controlled governing system which optimizes engine performance. The system also monitors engine speed, which is used as a warning system, reduced amount of fuel used in operation, lower power, air pressure and other controlling items.

The engine is turbocharged and after-cooled, with separate large charge-air filter, for fuel consumption, excellent air intake and low maintenance expenses.

### Highly vibration-dampening

The Volvo Penta inboard engine is given a vibration-dampening system with possibility of increased propeller loading. This means lower vibration and less maintenance for the transom.

The EDC system gives improved operational control with fuel and water in the sump. The electronic system also can automatically identify engine faults, resulting much less time from maintenance and less engine wear and tear. Fuel efficiency is increased through longer runs.

Multiple electronic controls for high-level protection level.

### Low exhaust emission levels

High pressure injection pump, fuel-air injection nozzle in conjunction with the EDC system ensures full combustion. The pump contributes to low exhaust emission with high power and a clean exhaust stream.

### Easy installation

Plug in electronic components instead of rewiring. The EDC system makes servicing and performance maintenance easy, allowing for shorter installation time.

### Ease of service and maintenance

The Volvo Penta inboard is self-diagnosing. Clearly accessible service and maintenance points contribute to the ease of service of the engine.

Volvo Penta 122P with Volvo EDC electronic control



## Comprehensive service options

### Options

Volvo Penta have a full catalogue of Volvo authorized service centers in over 100 countries throughout the world. These service centers offer Volvo and Volvo Penta Penta service and support to ensure the best possible service.

## Technical description

### Engine and block

- 5-cylinder, 4-stroke, direct-injected, with air filter and aftercooler, fuel injection pump
- 1200 rpm
- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump

### Fuel system

- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump

### Exhaust system

- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump

### Lubrication system

- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump

## Turbocharger

- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump

## Electrical system

- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump

## Equipment

- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump

## Monitoring

- 1200 rpm electronic self-adjusting pump

## Starting system

- 1200 rpm electronic self-adjusting pump

## Electrical system

- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump
- 1200 rpm electronic self-adjusting pump

## Power transmission

- 1200 rpm electronic self-adjusting pump

## Exhaust system

- 1200 rpm electronic self-adjusting pump

