

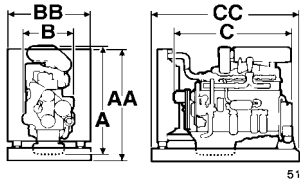
# VOLVO PENTA INDUSTRIAL DIESEL

# TWD731VE

175 kW (238 hp) crankshaft power acc. to ISO 3046

TWD 731 VE

- Turbocharged
- Water to air intercooled
- Diesel fuel
- Displacement indication (l)
- Generation
- Version
- Versatility engine
- Emission controlled



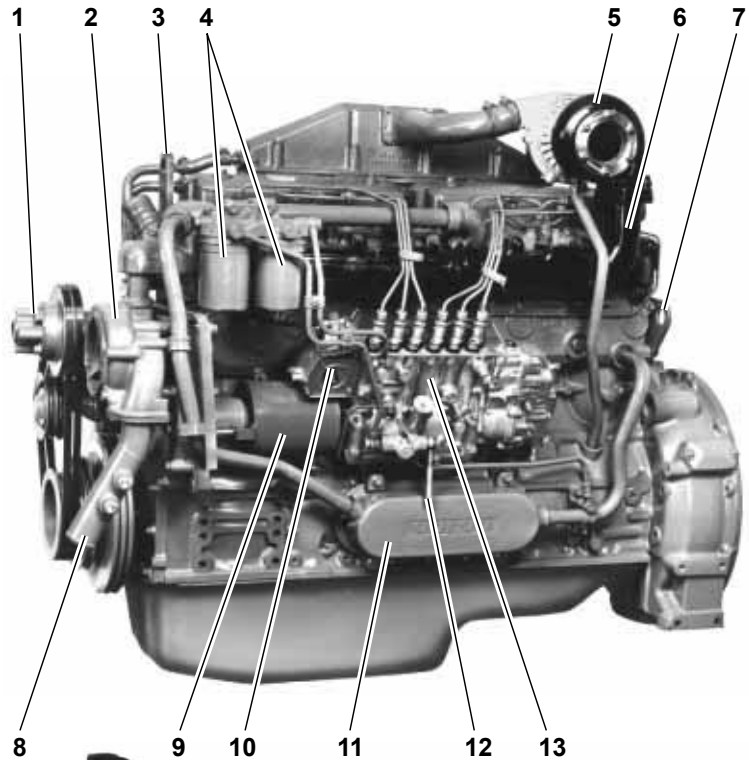
mm / in.

A = 1110 mm / 43.7 in. AA = 1410 / 55.5

B = 641 mm / 25.2 in. BB = 1029 / 40.5

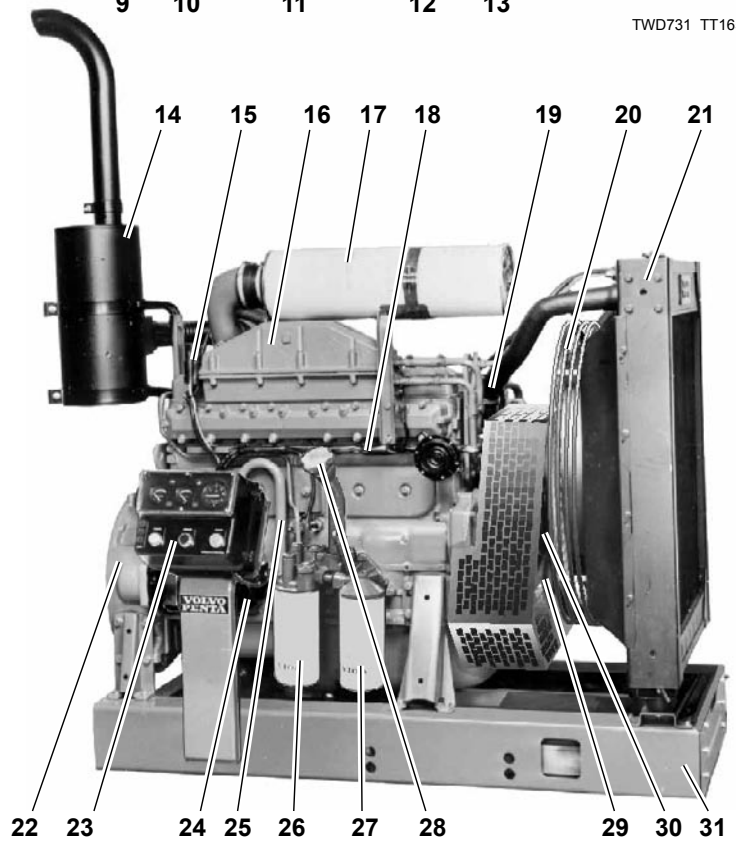
C = 1265 mm / 49.8 in. CC = 1861 / 73.3

- Based on Volvo's well proven, dependable six-in-line turbocharged engine.
- Built with a high degree of precision to withstand high outputs and at the same time correspond to high demands on operational safety and service life.
- Exhaust gas emission controlled.
- Smoke control through effective smoke limiter.
- Low fuel consumption and low noise level.



TWD731 TT165

1. Fan hub
2. Gear-driven coolant pump
3. Lift eyelet
4. Twin fuel filters of throw-away type
5. Turbocharger
6. Air cooled exhaust manifold
7. Lift eyelet
8. Coolant pipe, inlet
9. Pump coupling guard
10. Smoke limiter
11. Oil cooler
12. Fuel pipes for tank connection
13. Injection pump
14. Silencer
15. Relay for inlet manifold heater
16. Intercooler
17. Air filter
18. Cable iron
19. Coolant pipe, outlet
20. Fan guard
21. Radiator
22. Flywheel housing SAE 2
23. Instrument panel
24. Starter motor
25. Crankcase ventilation
26. Full-flow oil filter of spin-on type
27. By-pass oil filter
28. Oil filler
29. Vibration damper
30. Automatic belt tensioner
31. Base frame



TWD731 TT380

Power pac with optional equipment

**VOLVO  
PENTA**

# TWD731VE

Volvo Penta reserves the right to make changes at any time, without notice, as to technical data, prices, materials, standard equipment, specifications and models, and to discontinue models.

## Technical Data

### General

In-line four-stroke diesel engine with direct injection

Turbocharged and water to air intercooled

Number of cylinders 6

Displacement, total 6.73 liters / 411 in<sup>3</sup>

Firing order 1-5-3-6-2-4

Rotation direction, anti-clockwise viewed towards flywheel

Bore 104.77 mm / 4.12 in

Stroke 130 mm / 5.12 in

Compression ratio 17.7:1

Dry weight, kg/lb Power Pac 1048/2309 Engine only 770/1696

Wet weight, kg/lb Power Pac 1109/2443 Engine only 812/1789

TWD731VE	Speed, rpm	1800	2000	2200	2400
<b>Performance</b>	Test no.	29000795			
IFN Power					
without fan	kW / hp	168 / 228	174 / 237	177 / 241	175 / 238
with fan	kW / hp	164 / 223	169 / 230	170 / 231	166 / 226
ICXN Power					
without fan	kW / hp	153 / 208	158 / 215	161 / 219	159 / 216
with fan	kW / hp	149 / 203	153 / 208	154 / 209	150 / 204
Torque at					
IFN Power	Nm / lbft	889 / 656	830 / 612	768 / 566	696 / 513
ICXN Power	Nm / lbft	812 / 599	754 / 556	699 / 516	633 / 467
Mean piston speed	m/s / ft/sec	7.8 / 25.6	8.7 / 28.5	9.5 / 31.2	10.4 / 34.1
Effective mean pressure at ICXN Power	MPa / psi	1.66 / 240	1.55 / 225	1.44 / 209	1.30 / 188
Max combustion pressure at ICXN Power	MPa / psi	13.9 / 2015	13.5 / 1957	13.3 / 1928	13.4 / 1943
Total mass moment of inertia, J (mR <sup>2</sup> )	kgm <sup>2</sup> / lbft <sup>2</sup>	1.63 / 38.61			
Degree of irregularity at ICXN Power		1:103	1:181	1:296	1:472
Residual speed droop					
at load increase from 0 to 100% at IFN Power	%			6-8	
Friction Power	kW	24	28	31	37

### Lubrication system

Lubricating oil average consumption at

ICXN Power

g/kwh

0.30

Oil system capacity including filters

liters

29

### Fuel system

Specific fuel consumption at

25% of IFN Power

g/kWh / lb/hph

252 / 0.433

267 / 0.433

285 / 0.462

310 / 0.502

50% of IFN Power

g/kWh / lb/hph

215 / 0.348

222 / 0.360

233 / 0.377

248 / 0.402

75% of IFN Power

g/kWh / lb/hph

206 / 0.333

211 / 0.342

219 / 0.355

227 / 0.368

100% of IFN Power

g/kWh / lb/hph

204 / 0.330

209 / 0.355

219 / 0.355

230 / 0.373

### Intake and exhaust system

Air consumption at IFN Power

m<sup>3</sup>/ min / cfm

13.1 / 461

15.0 / 530

16.6 / 586

17.8 / 628

Max allowable air intake restriction

kPa / In wc

5 / 20

Heat rejection to exhaust at IFN Power

kW / BTU/min

123 / 6995

132 / 7507

148 / 8416

165 / 9383

Exhaust gas temperature after turbine at

IFN Power

°C / °F

455 / 850

440 / 825

430 / 805

435 / 815

Max allowable back-pressure in exhaust line

kPa / In wc

5.4 / 21.7

7.0 / 28.1

8.8 / 35.3

10.0 / 40.0

Exhaust gas flow at IFN Power

m<sup>3</sup>/min / cfm

32.3 / 1140

35.3 / 1245

38.1 / 1345

40.5 / 1430

Exhaust gas smoke

Bosch units

0.5

0.4

0.5

0.6

### Cooling system

Heat rejection radiation from engine

at IFN Power

kW / BTU/min

10 / 569

10 / 569

10.5 / 597

10.5 / 597

Heat rejection to coolant at IFN Power

kW / BTU/min

106 / 6028

115 / 6540

122 / 6938

127 / 7222

### Power Standards

The engine performance corresponds to ISO 3046, BS 5514 and DIN 6271. The technical data applies to an engine without cooling fan and operating on a fuel with calorific value of 42.7 MJ/kg (18360 BTU/lb) and a density of 0.84 kg/litre (7.01 lb/US gal, 8.42 lb/Imp gal), also where this involves a deviation from the standards.

ICXN Power rating corresponds to ISO Standard Power for continuous operation with 10% overload available. It is intended for constant load applications with uninterrupted service for extended periods of time. The ICXN power can be exceeded by 10% 1 hour within any period of 12 hours of continuous operation. The average load factor must not exceed the continuous rating.

### Rating Guidelines

IFN Power rating corresponds to ISO Overload Power. It is intended for applications where intermittent power is utilized less than 1 hour within any period of 12 hours of continuous operation. The average load factor must not exceed the continuous rating.

# VOLVO PENTA

**AB Volvo Penta**

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