

Technical Data

1000 Series

1006TAG

ElectropaK

141 kW @ 1500 rev/min

Basic technical data

Number of cylinders 6
 Cylinder arrangement..... Vertical, in-line
 Cycle four stroke
 Induction system turbocharged air to air charge cooled
 Compression ratio 17.0 : 1
 Bore..... 100 mm (3.9 in)
 Stroke..... 127 mm (5.0 in)
 Cubic capacity..... 5,99 litres (365.0 in³)
 Direction of rotation..... clockwise, from the front
 Firing order..... 1, 5, 3, 6, 2, 4

Total weight of ElectropaK

-dry 586 kg (1291 lb)
 -wet 630 kg (1388 lb)

Overall dimensions

-height 1065 mm (41.92 in)
 -length 1685 mm (63.33 in)
 -width 773 mm (30.43 in)

Moments of inertia (mk²)

-engine 0,2996 kgf m² (1024 lbf in²)
 -flywheel See option drawings

Centre of gravity

Complete ElectropaK (wet engine / without fan guards)
 -forward from rear of block 402 mm (15.8 in)
 -above block centre line 187 mm (7.4 in)
 -offset to RHS 41 mm (1.6 in)

Performance

Note: All data based on operation to BSAU141A 1971; BS5514; 1987, ISO3046/1 1982; DIN6271

Cyclic irregularity for engine and flywheel
 -at 100% continuous power 0,0036
 Maximum overspeed limit..... 2050 rev/min
 Speed variation at constant load..... ± 0.8%
 Average sound level at 1 metre
 -bare engine without inlet / exhaust..... 94,9 dB(A)

Test conditions

-air temperature 25 °C (68 °F)
 -relative humidity 30%
 -barometric pressure 101,3 kPa (29.5 in hg)
 All ratings certified to within +3% to -5%

If the engine is to operate in ambient conditions other than those of the test conditions, suitable adjustments must be made for these changes. For full details, contact Perkins Technical Service Department.

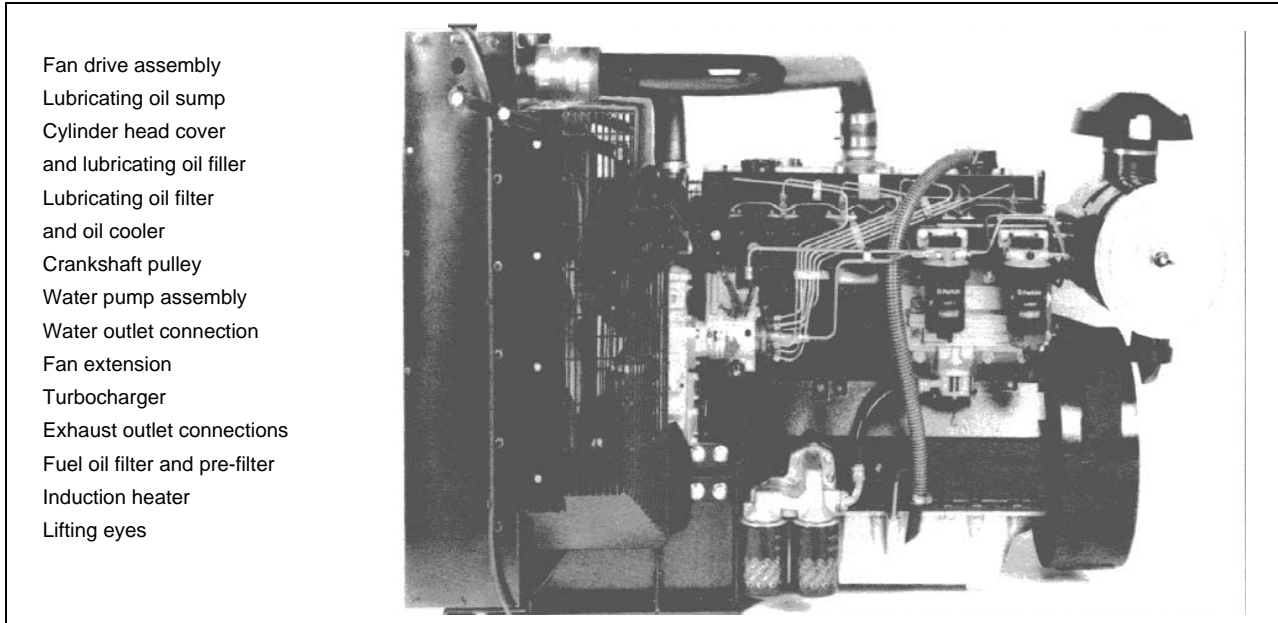
For details of load acceptance values, contact the applications department at Perkins Engines Company Limited, Stafford.

General installation

Designation	Units	Type of operation and application	
		(Continuous) Prime	Stand-by
		50Hz	50Hz
Gross engine power (to BSAU141A)	kW (bhp)	128,4 (171.4)	141 (187.7)
Fan loss	kW (bhp)	7,5 (10.1)	7,5 (10.1)
ElectropaK net engine power	kW (bhp)	121 (162.3)	133,5 (179)
Brake mean effective pressure	kPa (lbf/in ²)	1767 (256)	1964 (285)
Piston speed	m/s (ft/s)	6,35 (20.8)	6,35 (20.8)
Engine coolant flow	l/min (UK gal/min)	140 (30.8)	140 (30.8)
Combustion air flow	m ³ /min (ft ³ /min)	8,38 (295.9)	8,78 (310.1)
Exhaust gas flow	m ³ /min (ft ³ /min)	24,14 (852.5)	25,71 (907.9)
Exhaust gas temperature	°C (°F)	571 (1059.8)	585 (1085)
Cooling fan air flow	m ³ /min (ft ³ /min)	154 (5438)	154 (5438)
Total heat from fuel	kW (Btu/min)	339 (19279)	374 (21269)
Gross heat to power	kW (Btu/min)	127,5 (7251)	141 (8019)
Net heat to power	kW (Btu/min)	120 (6824)	133,5 (7592)
Heat to exhaust	kW (Btu/min)	115 (6540)	119 (6767)
Heat to water and lubricating oil	kW (Btu/min)	65,5 (3725)	70 (3981)
Heat to charge cooler	kW (Btu/min)	15,6 (887)	18,5 (1052)
Heat to radiation	kW (Btu/min)	15,4 (876)	25,7 (1462)

Caution: The airflows shown in this table will provide acceptable cooling for an open power unit operating in ambient temperatures of up to 53 °C (46 °C if a canopy fitted). If the power unit is to be enclosed totally, a cooling test should be done to check that the engine cooling is acceptable. If there is insufficient cooling, contact Perkins Technical Service Department.

Standard base engine specification - YB35028



Typical easy order specification

Description	Option code
Engine rating - 121 kW (162.3 bhp) at 1500 rev/min	A8003
Flywheel	D8003
Starter motor (12V)	E8001
Alternator (12V)	N8001
Air filter	S8004
Fan	M8001
Front mountings (not required)	ZC000
Temperature switch	ZL802
Lubricating oil switch	ZJ801
Engine speed controller (12V)	ZA802
Radiator (includes air-to-air charge cooler, pipes and front mounting feet)	ZM801
Radiator and fan guards (includes air-to-air charge cooler, pipes and front mounting feet)	ZM802

The electronic governor system

The 1006TAG engine is fitted with both mechanical and electronic governors. The electronic governor controls the engine speed to within $\pm 0,25\%$.

If the electronic governor fails, the mechanical governor will control the maximum engine speed to 2050 rev/min.

The electronic governor system is made up of three parts:

The engine speed controller - This contains the adjustment screws to set the engine speed and is normally fitted to the control panel.

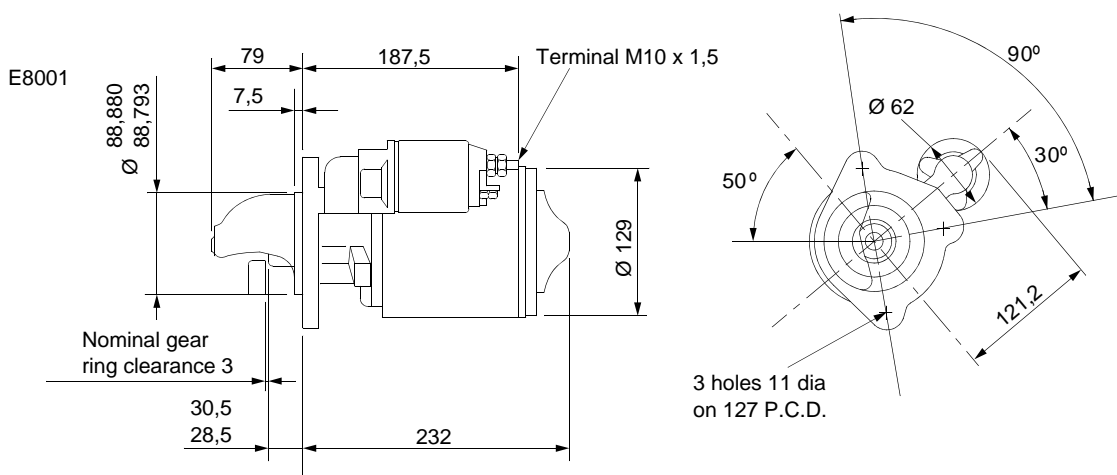
The actuator - This is contained within the fuel injection pump assembly and controls the engine speed.

The electro-magnetic sensor - This is fitted to the flywheel housing and measures the engine speed.

Cautions:

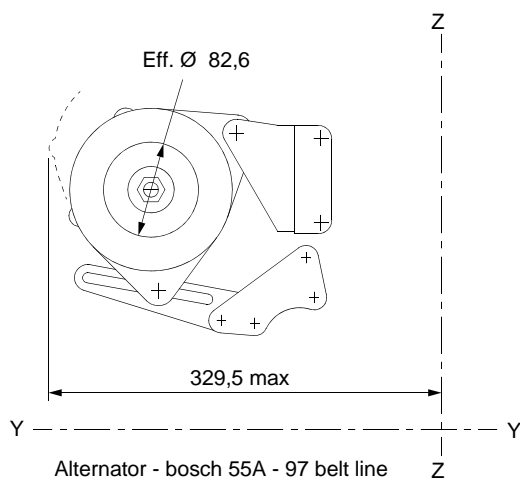
- Ensure that the electro-magnetic sensor (A4) is set correctly, and the cables are connected in accordance with the wiring diagram (A) on page 3.
- Ensure that there is electrical continuity between the frame for the engine and the frame for the control panel.

1006TAG ElectropaK, other details - YD35028

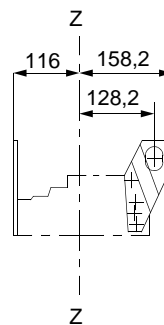


Starter motor

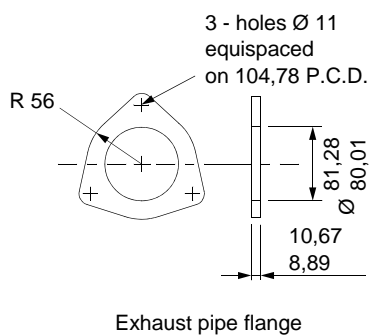
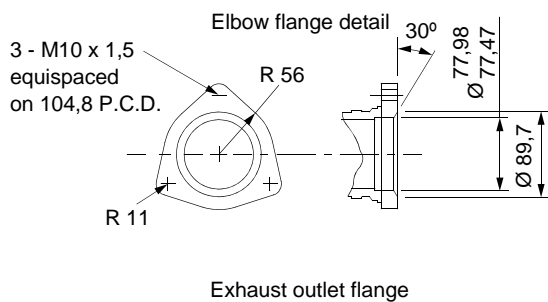
N8001



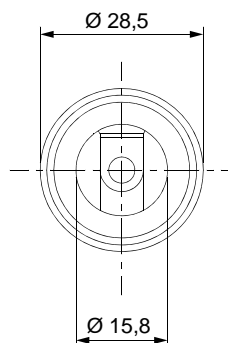
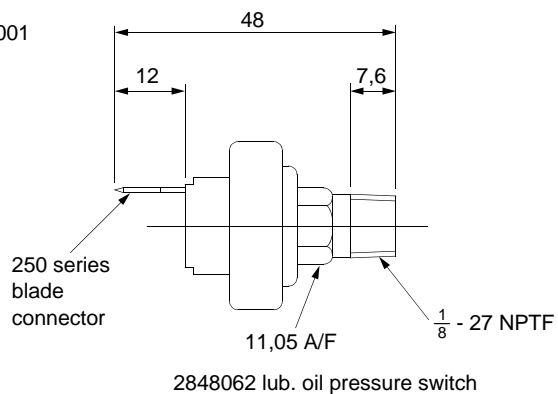
X0001



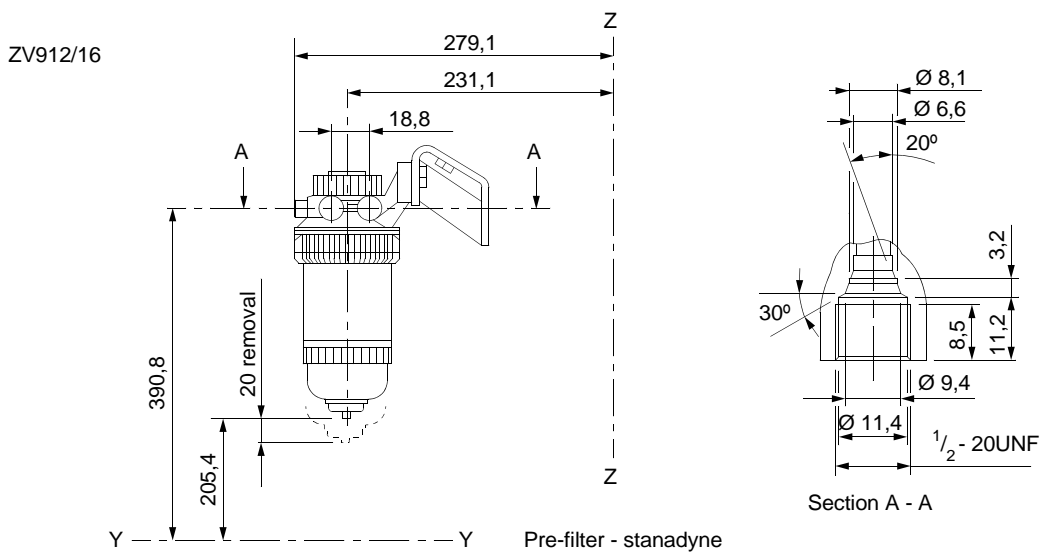
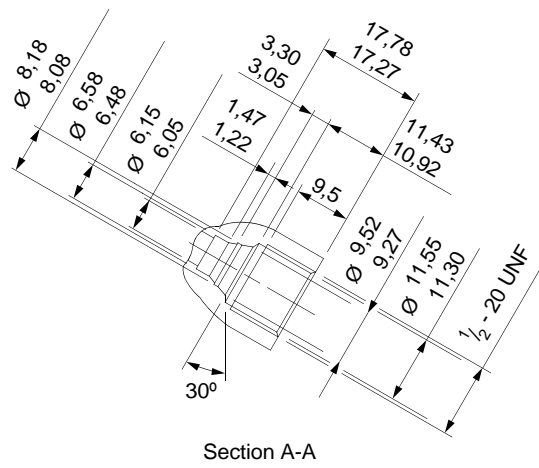
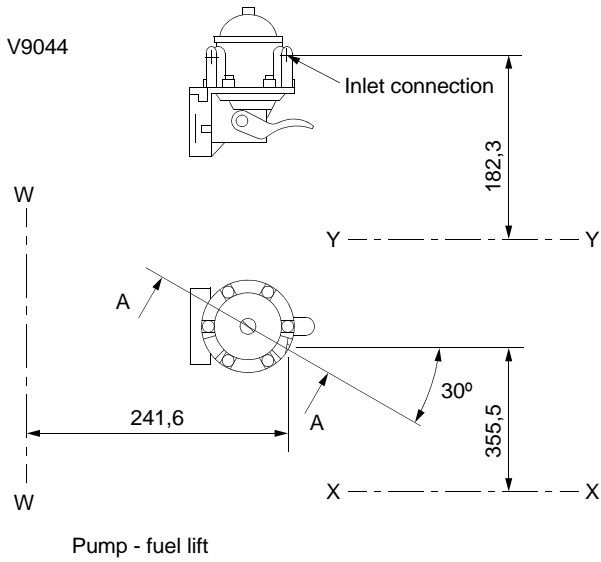
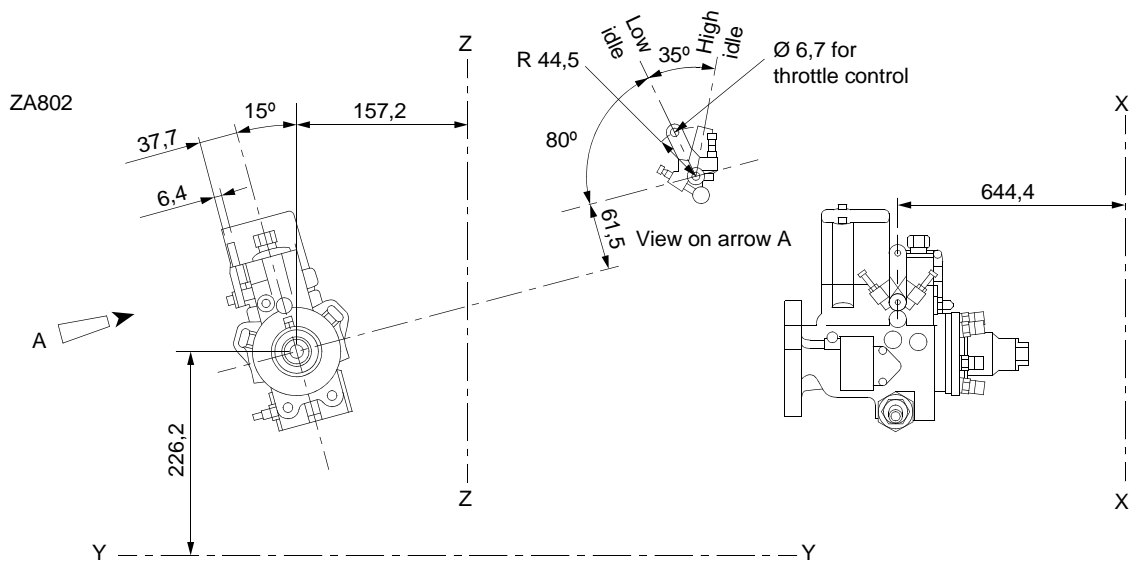
S8004



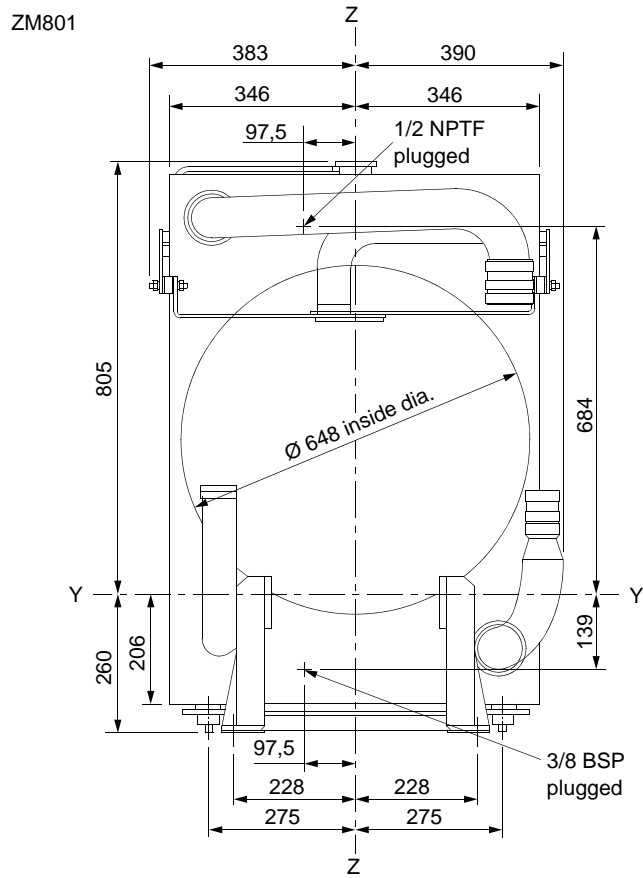
ZJ001



1006TAG Electropak, other details - YD35028



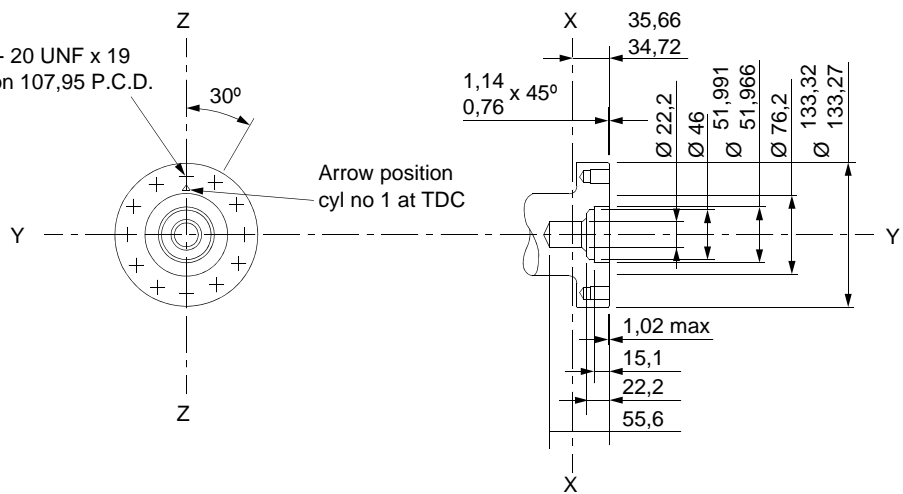
1006TAG ElectropaK, other details - YD35028



Engine front mounting bracket with radiator

D0000

12 holes 1/2 - 20 UNF x 19
equispaced on 107,95 P.C.D.



Crankshaft palm

To set the engine speed

1 Ensure that the speed control lever (A3) on the fuel injection pump is held in the fixed position and that adjustment screws are both locked.

2 Set the screw (A2) to position 30 on the dial.

Note: The settings on the dial are in increments of 10.

3 Turn the adjustment screw (A1) for the engine speed, in a counter-clockwise direction 20 complete turns. Then turn the screw in a clockwise direction 5 complete turns.

4 Start the engine and allow it to reach its normal temperature of operation. Initially, the engine speed will be low. To increase the speed of the engine, turn gradually the speed adjustment screw (A1) in a clockwise direction, until the correct engine speed is obtained.

Note: As load is applied to or removed from the engine, the engine speed will be electronically governed to within +0,25%. If this does not happen, further adjustments will be necessary.

5 If the time taken is too long for the engine to return to its correct speed, turn the adjustment screw (A2) gradually in a clockwise direction, to a position just above 30 on the dial.

6 Apply a load to the engine and check that the speed and governing are correct. If necessary, repeat operation 5.

7 If the time taken is too quick and the engine speed is erratic, turn the adjustment screw (A2) gradually in a counter-clockwise direction, to a position just below 30 on the dial.

8 Apply a load to the engine and check that the speed and governing are correct. If necessary, repeat operation 7

Note: It may be necessary to make further adjustments to the screws (A1) and (A2) until the correct speed and governing are obtained.

Caution: Any adjustments to these screws must be made gradually.

Identification of component numbers in triangles

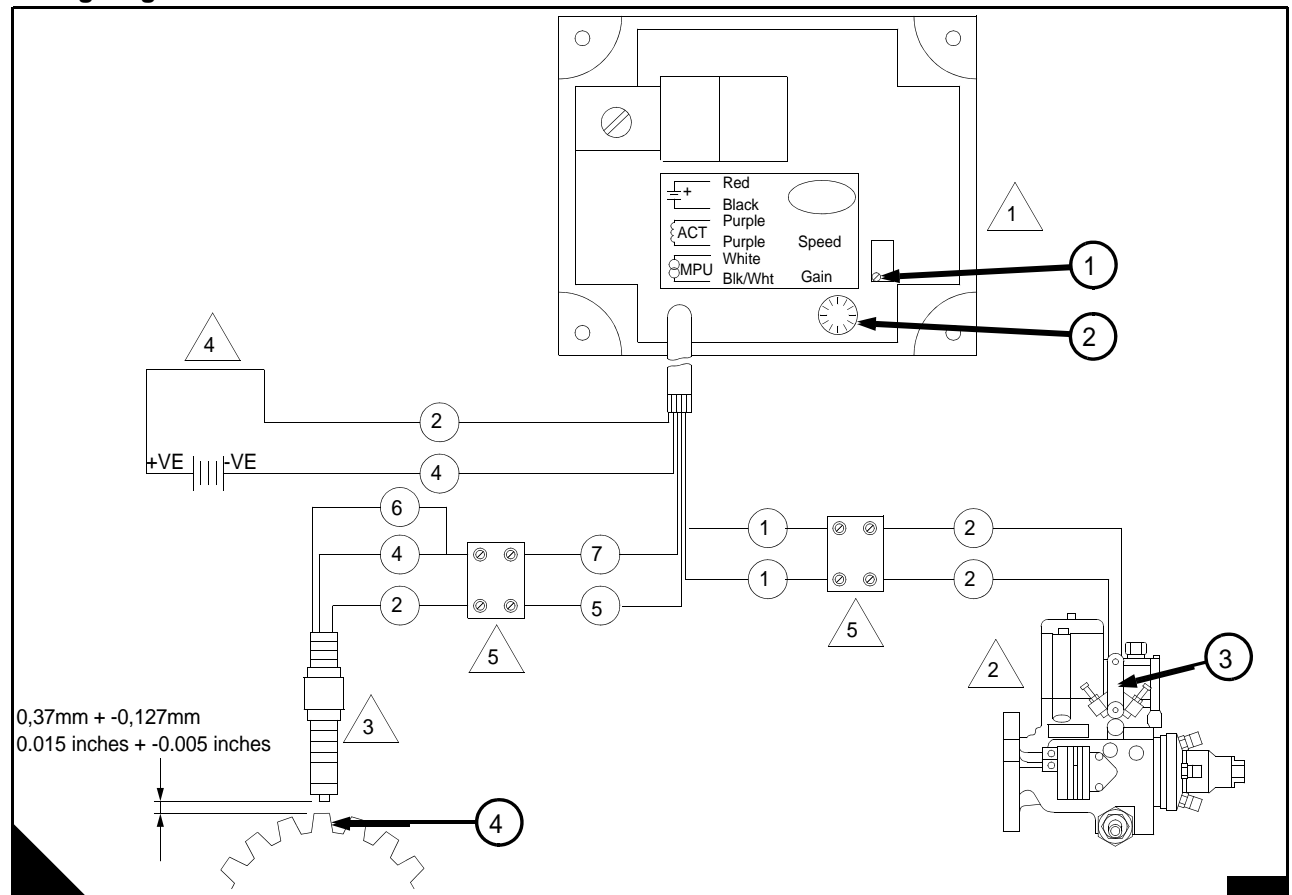
Number	Description
1	Controller for engine speed
2	Actuator
3	Electro-magnetic sensor
4	Battery
5	Connector

Details for cables identified in circles

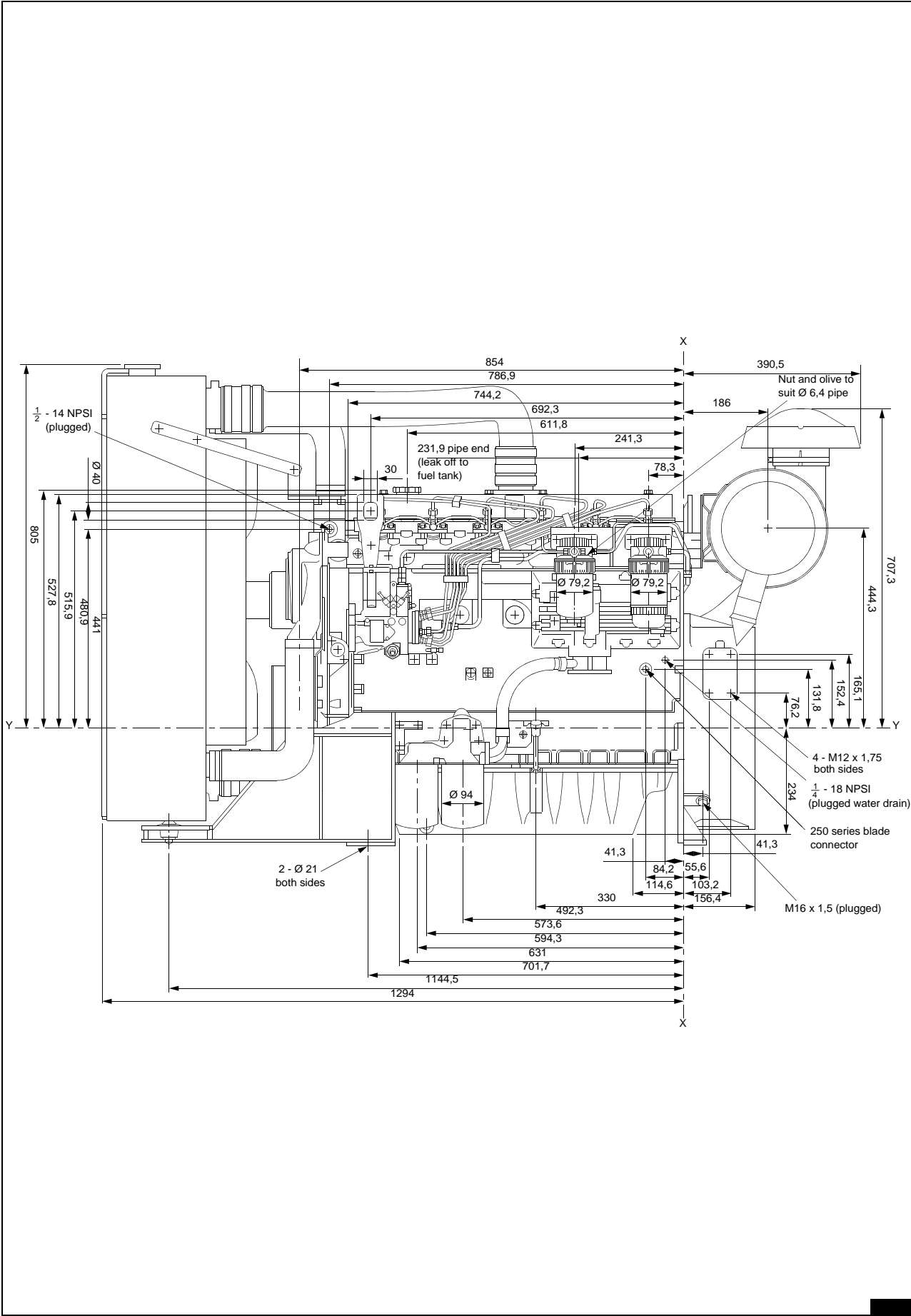
Circuit	Number	Colour
Controller to actuator	1	Purple
	2	Red
Controller to battery	2	Red
	4	Black
Controller to sensor	2	Red
	7	Black/White
	5	White
	6	Earth/shield

Caution: The plastic connector that is supplied (loose) for the circuit 'controller to actuator', should be fitted with a crimping tool of the correct size. If it is not, the connector may be damaged.

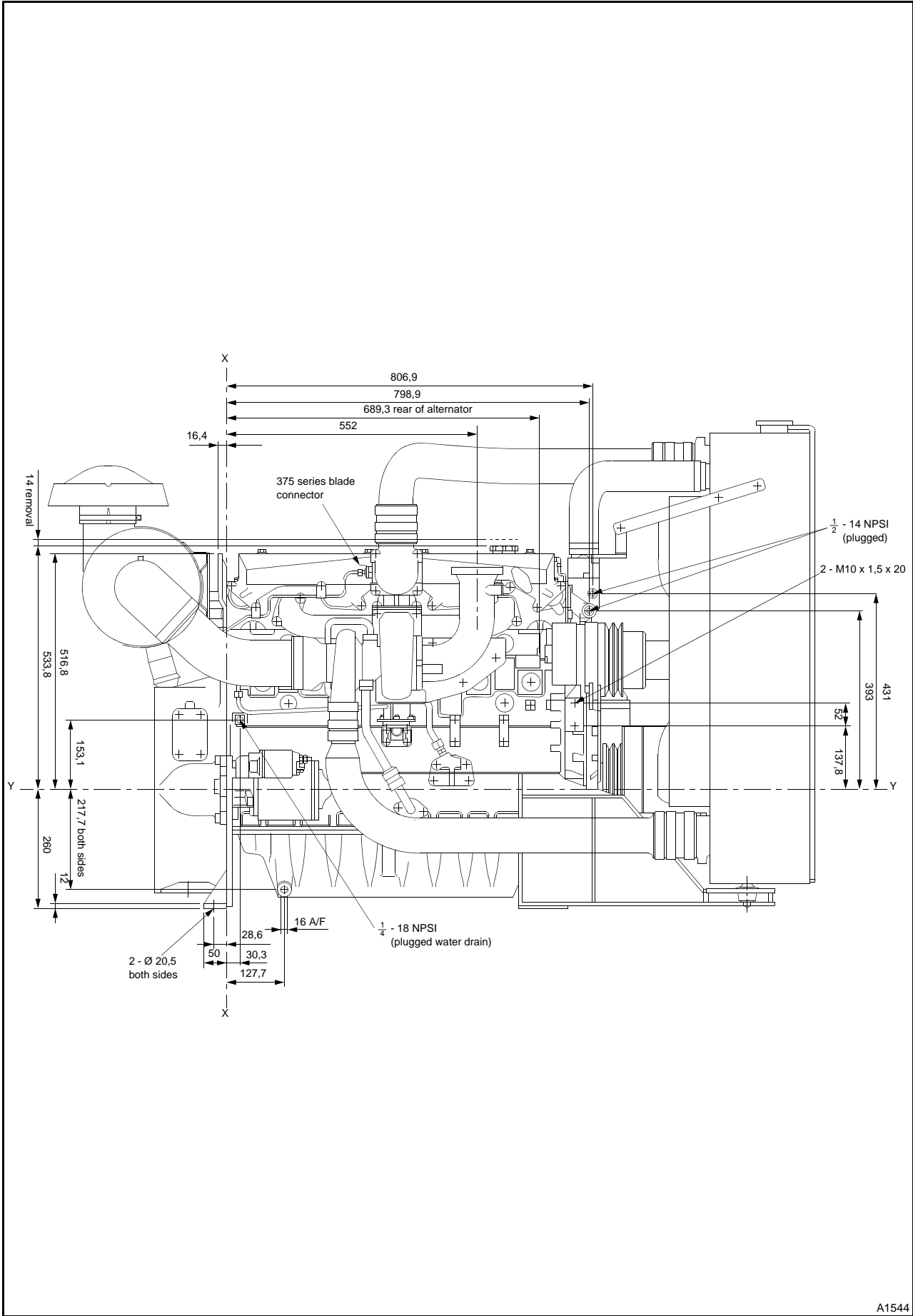
Wiring diagram



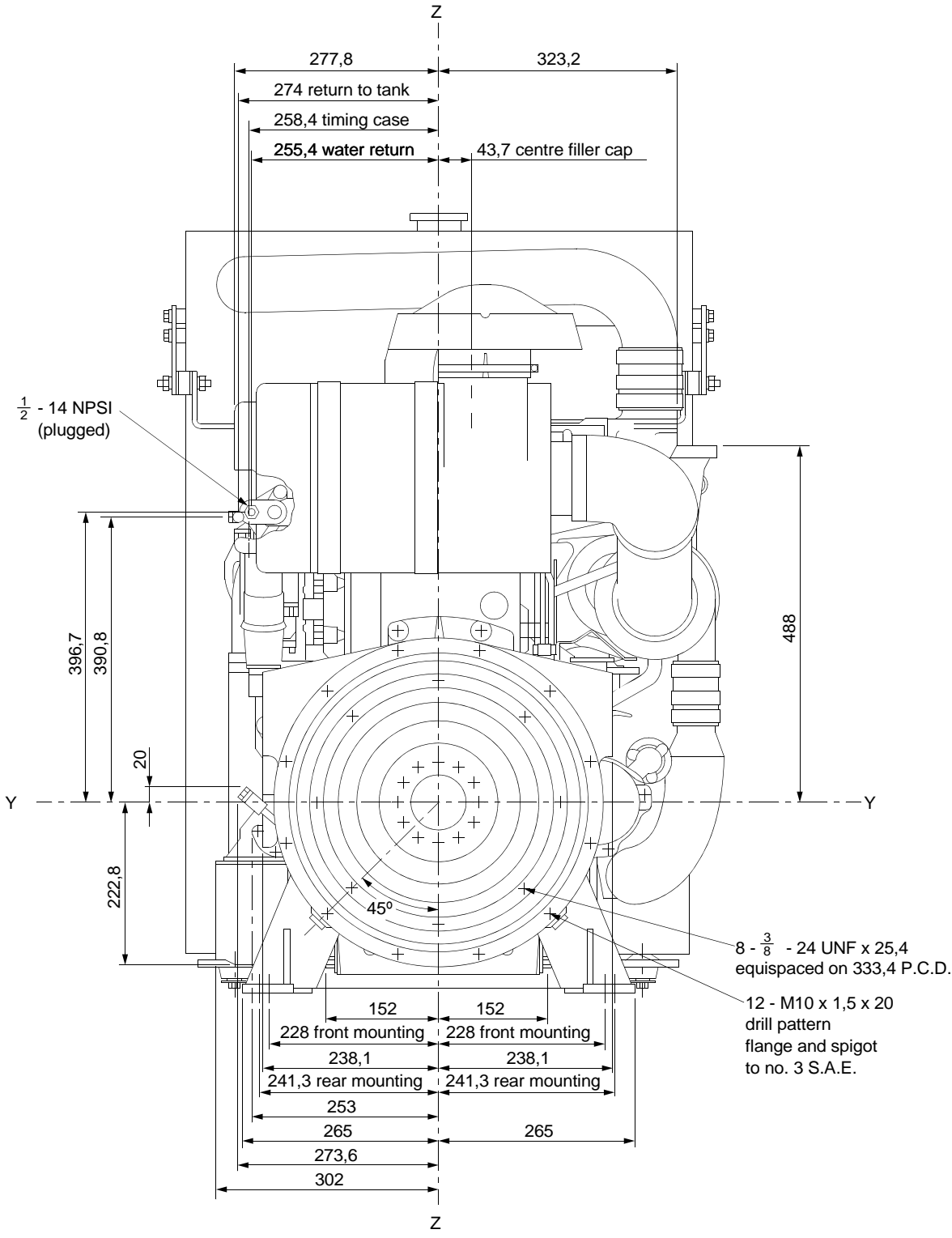
1006TAG ElectropaK, left side view - YD35028



1006TAG ElectropaK, right side view- YD35028



1006TAG ElectropaK, rear view - YD35028



This page has been left intentionally blank

Cooling system

Radiator

-face area ... 0,401 m² (4.3 ft²)
 -rows and materials ... 3 rows, brass
 -gills/inch and material ... 14, copper
 -width of matrix ... 637 mm (25.1 in)
 -height of matrix ... 630 mm (24.8 in)
 -pressure cap setting... 68,9 kPa (9.9 lbf/in²)
 Maximum top tank temperature ... 103 °C (217 °F)
 Estimated cooling air flow reserve (see 'caution' in General
 Installation data table on page 1) ... 0,15 kPa (0.59 in H₂O)

Charge cooler

-type ... fin and tube
 -rows and materials ... 1 row / 62 mm (2.4 in) - Aluminium
 -number of blades ... 10 - Aluminium

Fan

-diameter ... 635 mm (25 in)
 -drive ratio ... 1.25 : 1
 -number of blades ... 10
 -material ... composite

Coolant

Maximum pressure head at pump... 6,8 m (22.3 ft)
 Coolant capacity
 -with radiator ... 37,22 litres (65.5 UK pints)
 -without radiator ... 12,7 litres (22.4 UK pints)
 -drain down capacity ... 35,3 litres (62.2 UK pints)
 Minimum temperature to engine ... 76 °C (169 °F)
 Temperature rise across engine ... 8 °C (14 °F)
 Max permissible external system resistance... 35 kPa (5 lbf/in²)
 Thermostat operation range... 82-93 °C (180-199 °F)
 Recommended coolant:

Electrical system

-type ... Negative ground
 -alternator... 55A 12/24V options
 -starter motor... 12/24V options

Cold start recommendations

Minimum starting temperature °C	Grade of engine lubricating oil	Battery specifications			
		BS3911 Cold start amps	SAEJ537 Cold cranking amps	Number of batteries needed	Perkins Type
-10	10W	340	540	2	D (069)
-10	20W	340	540	2	D (069)
-15	10W	340	540	2	D (069)
-20	5W	340	540	2	D (069)

Exhaust system

Maximum back pressure for total system ... TBA
 Inside diameter of outlet flange ... 78 mm (3.1 in)
Note: Changes to induction restriction, exhaust back pressure and fuel viscosity/temperature/specific gravity, can affect power output.
 For further details contact Perkins Technical Service Department.

Fuel system

Type of injection ... Direct
 Fuel injection pump ... Rotary/Stanadyne DB4
 Fuel atomiser... Bosch/RSU/4 hole (0.35 mm diameter)
 Injection pressure ... 24,7 MPa (243.8 atm)

Fuel lift pump

-delivery/hour... 122,4 litres (215 UK pints)
 -pressure ... 30 kPa (4.35 lbf/in²)
 Maximum suction head ... 1,8 m (6.0 ft)
 Maximum pressure head ... 3,0 m (9.8 ft)
Diesel Fuel to conform to BS 2869 1983 class A2 ASTM D97566T Number 2D.

Governor type ... Electronic / Mechanical

Fuel consumption

litres/hour (UK gallons/hour)

Power rating %			
110	100	75	50
34,6 (7.61)	31,5 (6.93)	24,1 (5.3)	16,5 (3.52)

Induction system

Maximum permissible air intake restriction at engine

-clean filter ... 3,0 kPa (12 in H₂O)
 -dirty filter ... 5,0 kPa (20 in H₂O)
 -air filter type ... dry element
 Minimum dirt capacity... 353 g/m³/min
 Turbocharger type ... Garrett T04E/36/0,84-62-1

Lubrication system

Capacities

- total ... 19 litres (33.5 UK pints)
- sump only ... 16 litres (28.2 UK pints)
- Maximum operating angles
- front up, front down, right side ... 25°

Lubricating oil pressure

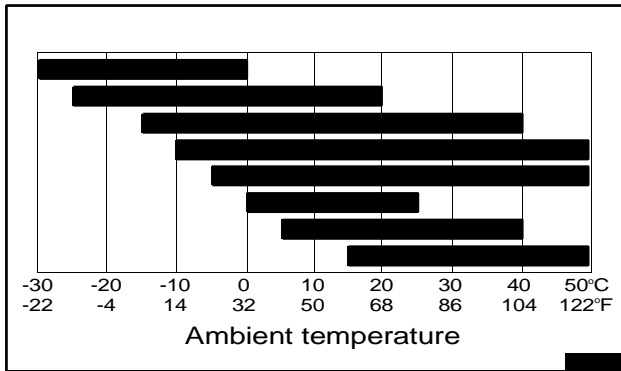
- relief valve opens... 345 - 414 kPa (50 - 59 lbf/in²)
- at rated speed... 300 - 340 kPa (43 - 49 lbf/in²)
- idle speed ... 62 - 90 kPa (9 - 13 lbf/in²)

Lubricating oil temperature

- at normal operation... 105 °C (221 °F)
- maximum ... 125 °C (257 °F)
- Lub. oil consumption as a % of fuel consumption... 0.2% max

Recommended SAE viscosity

A Single of multigrade lubricating oil which conforms to API CD/SE or CCMC D4 must be used.



Mountings

- Type ... 4 point rubber mounting
- Maximum bending moment at rear face of block ... 1130 Nm (835 lbf ft)

@ Perkins®

Perkins Engines Company Limited
 Peterborough PE1 5NA United Kingdom
 Telephone +44 (0) 1733 583000
 Fax +44 (0) 1733 582240
 www.perkins.com

All information in the document is substantially correct at the time of printing but may be subsequently altered by the company.

Distributed by