

Engine Data Sheet

RESTRICTED TO MILITARY VEHICLES

ENGINE MODEL : VTA-903

MAXIMUM RATING: 600 HP at 2600 RPM
448 kW at 2600 RPM

REFERENCE INFORMATION:

CONFIGURATION NUMBER
CPL NUMBER
PERFORMANCE CURVE NUMBER PR-4478
INSTALLATION DIAGRAM NUMBER

GENERAL ENGINE DATA

Type 4 Cycle; 90° Vee; 8 Cylinder
Aspiration Turbocharged & Aftercooled
Bore — in. (mm) × stroke — in. (mm) 5.5 (140) × 4.75 (121)
Displacement — in³ (litre) 903 (14.8)
Compression Ratio 14.5:1
Dry Weight — lb. (kg)
Wet Weight — lb. (kg)
C.G. Distance From Front Face of Block (Engine Only) — in. (mm)
C.G. Distance Above Crank Centerline (Engine Only) — in. (mm)
Moment of Inertia of Rotating Components (Excluding Flywheel) — lb-ft² (kg-m²)
Firing Order 1-5-4-8-6-3-7-2

ENGINE MOUNTING

Maximum Allowable Bending Moment at Rear Face of Block — lb-ft (N·m) 1000 (1350)

EXHAUST SYSTEM

Maximum Allowable Back Pressure — in. Hg (mm Hg) 3.0 (75)
Exhaust Pipe Size Normally Acceptable — in. (mm) 6.0 (152)

AIR INDUCTION SYSTEM

Maximum Allowable Intake Air Restriction With Heavy Duty Air Cleaner
Clean Element — in. H₂O (mm H₂O) 15 (381)
Dirty Element — in. H₂O (mm H₂O) 25 (635)
Minimum Allowable Dirt Holding Capacity With Heavy Duty Air Cleaner — gm/CFM (gm-L/s) 25 (11.8)

COOLING SYSTEM

Coolant Capacity — Engine only — U.S. quart (litre) 36 (34)
Standard Thermostat (modulating) — Range — °F (°C)
Maximum Coolant Pressure (Exclusive of Pressure Cap) — PSI (kPa) 35 (241)
Minimum Allowable Pressure Cap — PSI (kPa) 14 (97)
Maximum Allowable Top Tank Temperature — °F (°C) 230 (110)
Minimum Recommended Top Tank Temperature — °F (°C) 140 (60)
Minimum Allowable Fill Rate — U.S. GPM (L/min) 5 (20)
Maximum Allowable Initial Fill Time — min. 5
Minimum Allowable Coolant Expansion Space — % of System Capacity 5
Maximum Allowable Deaeration Time — min. 25
Minimum Allowable Drawdown — U.S. quart (litre) 13 (12)
(Drawdown Must Exceed the Volume Not Filled at Initial Fill & Must Not Include Expansion Space)

LUBRICATION SYSTEM

Oil Pressure @ Idle — PSI (kPa) 10 (69) Minimum
@ Rated Speed — PSI (kPa) 40-60 (276-414)
Oil Flow at Rated Speed — U.S. GPM (L/min)
Maximum Allowable Oil Temperature — °F (°C) 280 (138)
Oil Pan Capacity High/Low — U.S. gal (litre)
Total System Capacity () U.S. gal (litre)
Angularity of Oil pan () — Front Down
— Front Up
— Right Side Down
— Left Side Down

FUEL SYSTEM

Maximum Fuel Consumption at Maximum Rated Output and Speed — lb/hr (kg/hr)	207 (94)
Maximum Fuel Flow to Pump at Maximum Rated Output and Speed — lb/hr (kg/hr)	1000 (454)
Maximum Allowable Restriction to PT Fuel Pump — With Clean Fuel Filter — in. Hg (mm Hg)	4 (100)
— With Dirty Fuel Filter — in. Hg (mm Hg)	8 (200)
Maximum Allowable Injector Return Line Restriction — With Check Valves — in. Hg (mm Hg)	6.5 (165)
— Less Check Valves — in. Hg (mm Hg)	2.5 (64)
Minimum Allowable Fuel Tank Vent Capability — ft ³ /hr (L/hr)	15 (425)
(With 2.5 in. Hg (63 mm Hg) or Less Back Pressure)	

ELECTRICAL SYSTEM

Minimum Recommended Battery Capacity — Cold Soak at 0° F (-18° C) or Above	
Engine Only	— Cold Cranking Amperes — 24 Volt — CCA
	— Reserve Capacity — 24 Volt — min
Maximum Allowable Resistance of Starting Circuit — with 24 volt Starter — Ohms	0.002

PERFORMANCE DATA

Minimum Low Idle Speed — RPM	775
Minimum No-Load Governed Speed — RPM	2900
Maximum No-Load Governed Speed — RPM	3040
Maximum Overspeed Capability — RPM	
Minimum Ambient Temperature For Unaided Cold Start — °F (°C)	
Breakaway Torque at Minimum Unaided Start Temperature — lb-ft (N•m)	
Minimum Cranking Speed Required For Unaided Cold Start — RPM	
Cranking Torque at Minimum Unaided Start Temperature — lb-ft (N•m)	
Crankshaft Thrust Bearing Load Limit — Maximum Intermittent — lb (N)	
— Maximum Continuous — lb (N)	
Maximum Allowable Power From Front of Crankshaft — HP (kW)	
Maximum Allowable Power From Accessory Drive — HP (kW)	

All data is based on the engine operating with fuel system, water pump, lubricating oil pump, air cleaner, and muffler; not included are alternator, compressor, fan, optional equipment and driven components. Data represents gross engine performance capabilities obtained and corrected in accordance with SAE J1349 conditions of 29.61 in Hg (100 kPa) barometric pressure (300 ft. (90 m) altitude), 77 °F (25 °C) inlet air temperature, and 0.30 in. Hg (1 kPa) water vapor pressure with No. 2 diesel fuel or a fuel corresponding to VV-F-800.

	MAXIMUM	
	FULL POWER	PEAK TORQUE OR CHECK POINT
Engine Speed — RPM	2600	2000
Gross Power Output — BHP (kW)	600 (448)	460 (343)
Torque — lb-ft (N•m)	1212 (1643)	1208 (1638)
Nominal Rail Pressure — PSI (kPa)		
Intake Manifold Pressure — in. Hg (mm Hg)		
Brake Mean Effective Pressure — PSI (kPa)	202 (1393)	202 (1393)
Piston Speed — ft/min (m/s)	2060 (10.5)	
Friction Horsepower — HP (kW)		
Intake Air Flow — CFM (L/s)	1520 (717)	
Exhaust Gas Flow — CFM (L/s)	3880 (1831)	
Exhaust Gas Temperature — °F (°C)	930 (499)	
Heat Rejection to Ambient — BTU/min. (kW)		
Heat Rejection to Coolant — BTU/min. (kW)	14700 (258)	
Engine Water Flow — U.S. GPM (L/s)	150 (9.5)	115 (7.3)

CERTIFIED WITHIN 5%:

CHIEF ENGINEER

Engine Model: VTA-903