

	<b>WORLD PRIME STEEL GmbH Hamburg Germany</b>	Basic Engine Model: KT4-78	Crue Number:	Page No.
		Engine Critical Parts List:	Date:	
Displacement : 4.3 litre (262.4 in <sup>3</sup> )		Bore: 105 mm (4.14 in.) Stroke: 124 mm (4.89 in.)		
No. Of Cylinders : 4		Aspiration : Turbocharged and Watercooled		

Engine Speed	Standby Power Rating		Prime Power Rating		Continuous Power Rating	
RPM	kWm	PS	kWm	PS	kWm	PS
1500	86	117	78	106	N/A	N/A

## Engine Performance Data @ 1500 RPM

OUTPUT POWER			FUEL CONSUPTION	
%	kWm	PS	Litre/ hour	U.S. Gal/ hour
100	86	95	22.1	5.838
<b>PRIME – LIMITED TIME RUNNING POWER</b>				
100	78	85	20.2	5.336
<b>PRIME – UNLIMITED TIME RUNNING POWER</b>				
100	78	85	20.2	5.336
75	58	63	15.2	4.015
50	39	42	10.3	2.720
25	19	21	6.1	1.611

## Gross Engine Power Output - kWm

CONVERSIONS: (Litres = U.S. Gal x 3,785) (kWm = BHP x 0,746) (U.S. Gal = Litres x 0,2642) (BHP = Engine kWm x 1,34)

**These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. Generator drive engines are not designed for and shall not be used in variable speed D.C. generator set applications.**

### STANDBY POWER RATING

Applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. Under no condition is an engine allowed to operate in parallel with the public utility at the Standby Power rating. This rating should be applied where reliable utility power is available. A Standby rated engine should be sized for a maximum of an 80% average load factor and 200 hours of operation per year. This includes less than 25 hours per year at the Standby Power rating. Standby ratings should never be applied except in true emergency power outages. Negotiated power outages contracted with a utility company are not considered an emergency.

### PRIME POWER RATING

Applicable for supplying electric power in lieu of commercially purchased power. Prime Power applications must be in the form of one of the following two categories:

#### UNLIMITED TIME RUNNING PRIME POWER

Prime Power is available for an unlimited number of hours per year in a variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any operating period of 250 hours. The total operating time at 100% Prime Power shall not exceed 500 hours per year. A 10% overload capability is available for a period of 1 hour within a 12-hour period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year.

#### LIMITED TIME RUNNING PRIME POWER

Limited Time Prime Power is available for a limited number of hours in a non-variable load application. It is intended for use in situations where power outages are contracted, such as in utility power curtailment. Engines may be operated in parallel to the public utility up to 750 hours per year at power levels never to exceed the Prime Power rating. The customer should be aware, however, that the life of any engine will be reduced by this constant high load operation. Any operation exceeding 750 hours per year at the Limited Time Prime Power rating should use the Continuous Power rating.

### COUNTINUOUS POWER RATING

Applicable for supplying utility power at a constant 100% load for an unlimited number of hours per year. No overload capability is available for this rating.

Data shown above represent gross engine performance capabilities obtained and corrected in accordance with ISO-3046 conditions of 100 kPa (29.5 in Hg) barometric pressure [110 m (361 ft) altitude], 25 °C (77 °F) air inlet temperature, and relative humidity of 30% with No. 2 diesel or a fuel corresponding to ASTM D2. See reverse side for application rating guidelines.

The fuel consumption data is based on No. 2 diesel fuel weight at 0.85 kg/litre (7.1 lbs/U.S. gal).

Power output curves are based on the engine operating with fuel system, water pump and lubricating oil pump; not included are battery charging alternator, fan, optional equipment and driven components.

**TECHNICAL DATA DEPT.  
CHIEF ENGINEER**

**CERTIFIED WITHIN 5%**

**CHIEF ENGINEER**

# WORLD PRIME STEEL

## Engine Data Sheet

ENGINE MODEL :KT4-78

CONFIGURATION NUMBER :

DATA SHEET :  
DATE :  
PERFORMANCE CURVE :

INSTALLATION DIAGRAM  
• Fan to Flywheel :

CPL NUMBER  
Engine Critical Parts List :

### SPECIFICATIONS

Engine Type.....	In-line,4 strokes, water-cooled
Combustion Type.....	Direckt injection
Cylinder Type.....	Dry liner
Number of cylinders.....	4
Bore x stroke .....	105(4.14) x 124(4.89)
Displacement.....	4.3(262.4) lit.(in3)
Compression ratio.....	17.3:1
Firing order.....	1-3-4-2
Injection timing.....	13.5°BTDC
Dry Weight.....	Approx. 450kg (992.1 lb)
Dimension (LxWxH).....	1012x723x1102 mm (39.9x28.5x43.4in)
Rotation.....	Counter clockwise viewed from
Fly wheel housing.....	SAE NO.3
Fly wheel.....	SAE NO.11.54

### ENGINEERING DATA

Water Flow.....	117 liters/min @1,500 rpm
Heat Rejection to coolant.....	11.7 kcal/sec 1,500 rpm
Air flow.....	5 m3/min @1,500 rpm
Exhaust gas flow.....	11.5 m3/min @1,500 rpm
Exhaust gas temp.....	600 °C @1,500 rpm
Max. Permissible restrictions	
Intake system.....	3 kPa inital 6 kPa final
Exhaust system.....	6 kPa max.
Max. Permissible altitude.....	2,000 m

### MECHANISM

Type.....	Over head valve
Number of valve.....	Intake 2, exhaust 2 per cylimder
Valve lashes at cold.....	Intake 0.25mm (0.0099 in) Exhaust 0.50mm (0.0197 in.)

### VALVE TIMING

	Opening	Close
Intake valve.....	20.9° BTDC	44.9° ABDC
Exhaust valve.....	51.7° BBDC	11.7° ATDC

### COOLING SYSTEM

Cooling method.....	Fresh water forced circulation
Water capacity (engine only).....	6.8 liters (1.8 gal.)
Pressure system.....	Max. 0.5 kg/cm2 (7.11 psi)
Water pump.....	Centrifugal type driven by belt
Water pump capacity.....	117 liters (30.9 gal.)/min at 1,500 rpm (engine)
Thermostat.....	Wax-pellet type Opening temp. 82°C Full open temp. 95°C
Cooling fan.....	Blower type, plastic 550 mm diameter, 9 blades

**FUEL SYSTEM**

Injection pump.....	In-line "AD" type
Governor.....	Electric type Mechanical type
Feed pump.....	Multi hole type
Injection nozzle.....	250 kg/cm2 (3556 psi)
Opening pressure.....	Full flow, cartridge type
Fuel filter.....	Diesel fuel oil
Used Fuel.....	

**LUBRICATION SYSTEM**

Lub. Method.....	Fully forced pressure feed type
Oil pump.....	Gear type driven by crankshaft
Oil filter.....	Full flow, cartridge type
Oil pan capacity.....	High level 13 liters (3.4 gal.) Low level 11 liters (2.9 gal.)
Angularity limit.....	Front down 25 deg. Front up 35 deg.

**ELECTRICAL SYSTEM**

Charging generator.....	24V x 55A
Voltage regulator.....	Built-in type IC regulator
Starting motor.....	24V x 4.5kW
Battery Voltage.....	24V
Battery Capacity.....	120 AH

**PERFORMANCE DATA**

All data is based on: Engine operating with fuel system, water pump, lubricating oil pump, air cleaner and exhaust silencer; no included are battery charging alternatör, fan, and optional driven components

- Engine operating with fuel corresponding to grade No. 2-D per ASTM D975
- ISO 3046, Part 1, Standard Reference Conditions of:  
Barometric Pressure : Air Temperature :  
Altitude : Relative Humidity :

N.A. – Data is Not Available

N/A - Not Applicable to this Engine

TBD - To Be Determined

ENGINE MODEL : KT4-78

DATA SHEET :

DATE :

CURVE NO. :