

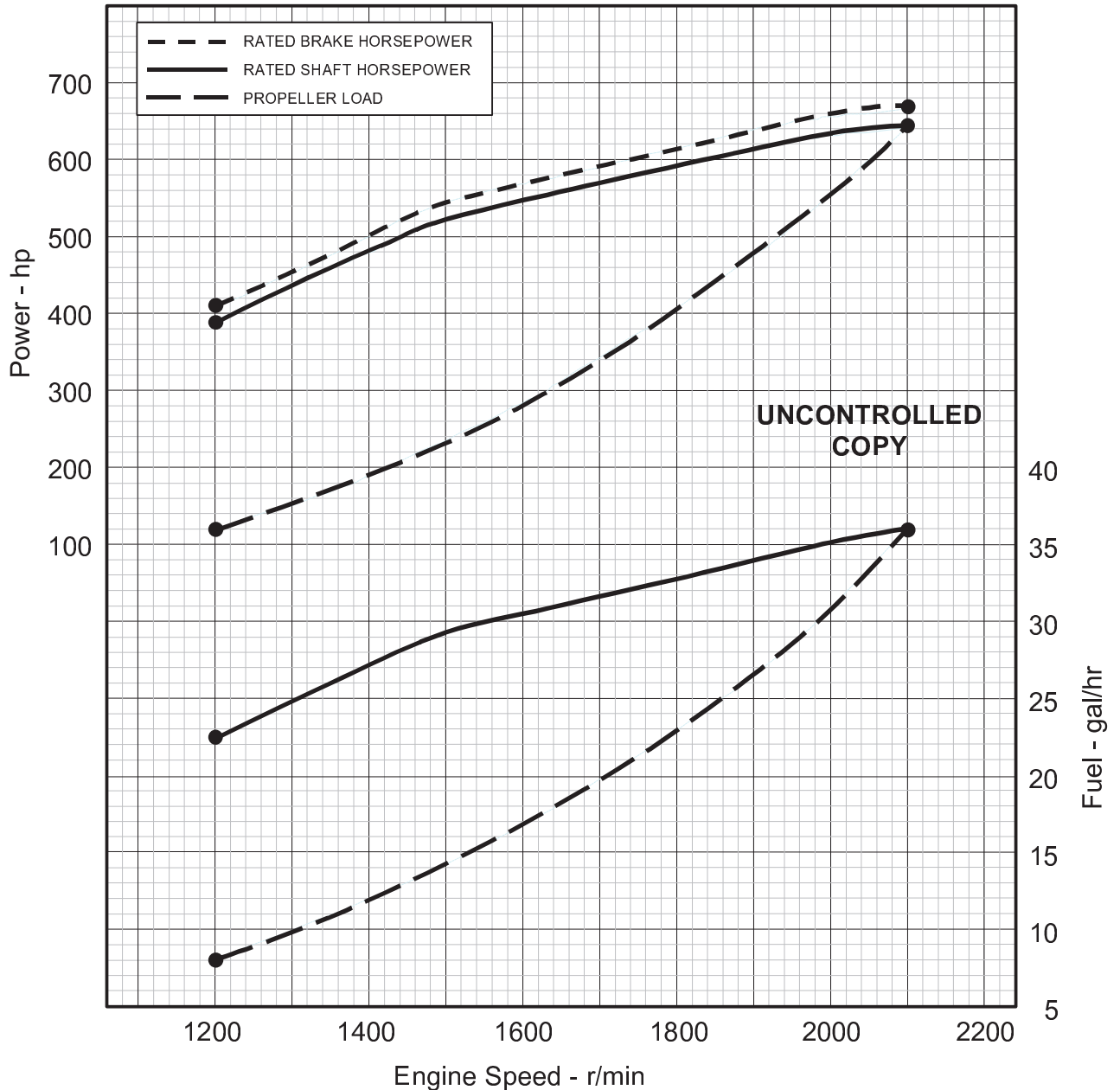


## Marine Power

**Model:** 12V-71TA DDEC®

**Rating:** 670 bhp (500 kW) @ 2100 r/min  
645 shp (481 kW) @ 2100 r/min

Intermittent  
Net Power



Power output guaranteed within 5% SAE J1228 conditions: 77°F (25°C) air inlet temperature; 29.31 in. Hg (99kPa) dry barometer; 100°F (38°C) fuel inlet temperature; .853 specific gravity at 60°F. Power rated in accordance with NMMA Procedure Air intake restriction: 10 in. H <sub>2</sub> O (2.5 kPa) Exhaust Back Pressure: 15 in. H <sub>2</sub> O (3.7 kPa)	<b>Conversion Factors:</b> Power: kW = bhp x 0.746 Fuel: kg/kW · hr = lb/bhp · hr x 0.608 Torque: N · m = lb · ft x 1.356	<b>Turbo:</b> TV7309 (0.96 A/R) <b>Injector:</b> 5234775 <b>Accessories:</b> DD518-1 Gear <b>Alternator:</b> 24V, 65A <b>Raw Water Pump:</b> Included
--	--	---

Certified by: *JR Hebringer*

**Curve No.** E4-7122-32-14  
**Rev. / Date:** 1 / 1-29-98  
**Sheet No.** 1 of 2

### Performance Curve

# MARINE SPECIFICATION SHEET

## General Data

Model	7122-7K22, -7K23
Number of Cylinders	12
Bore and Stroke – in. x in. (mm x mm)	4.25 x 5.00 (108 x 127)
Displacement – in. <sup>3</sup> (L)	852 (13.97)
Compression Ratio	17.0:1
Piston Speed – ft/min (m/min)	1750 (533)
Exhaust Valves	4
Combustion System	DIRECT INJECTION
Engine Type	63.5° VEE – 2 Cycle
Aspiration	TURBOCHARGED

## Configuration

Injection Device	EUI
Turbocharger	TV7309 (0.96 A/R)
Charge Air Cooling System	JWAC
Blower Type	100% Bypass
Blower Drive Ratio	2.05:1
Low Idle Speed – r/min	550
Maximum No Load Speed – r/min	2200
Engine Crankcase Vent System	OPEN

## Physical Data

Size:	WITH GEAR	WITHOUT GEAR
Length – in. (mm)	106.0 (2693)	72.95 (1853)
Width – in. (mm)	49.70 (1262)	49.70 (1262)
Height – in. (mm)	63.97 (1625)	63.97 (1625)
Weight, dry – lb (kg)	8020 (3638)	5020 (2277)
Weight, wet – lb (kg)	8521 (3865)	5421 (2459)
Center of Gravity Distance:		
From R.F.O. Flange/Bik. (x axis) – in. (mm)	Not Available	
Above Output Shaft (y axis) – in. (mm)	Not Available	
Right of Output Shaft (z axis) – in. (mm)	Not Available	
Installation Drawing	Not Available	

## Mechanical Data

E4-7000-32-1

## Marine Gear

Type	DD-518-1
Reduction Ratio	4.03:1
Lube Oil Capacity – qt (L)	52 (49.2)
(marine gear must use straight viscosity oil)	
Gear Weight, dry – lb (kg)	2390 (1084)
Center of Gravity Distance:	
From R.F.O. Flange (x axis) – in. (mm)	11.41 (290)
Above Output Shaft (y axis) – in. (mm)	6.54 (166)
Right of Output Shaft (z axis) – in. (mm)	1.77 (45.0)

## Fuel System

Fuel Injector Part number	5234775
Injector Timing Height – in.	1.520
Fuel Consumption – lb/hr (kg/hr)	252.0 (114.3)
Fuel Spill Rate gal/hr (L/hr)	270.0 (1022.1)
Total Fuel Flow gal/hr (L/hr)	306.0 (1158.5)
Maximum Fuel Inlet Temperature – °F (°C)	140 (60)
Maximum Fuel Pump Suction:	
Clean System – in. Hg (kPa)	6 (20.3)
Dirty System – in. Hg (kPa)	12 (41)
Fuel Filter Size, Primary – microns	30
Fuel Filter Size, Secondary – microns	12
Recommended Supply Line I.D. – in. (mm)	0.5 (12.7)

## Lubrication System

Oil Pressure at Rated Speed – lb/in. <sup>2</sup> (kPa)	49-70 (338-483)
Oil Pressure at Low Idle – lb/in. <sup>2</sup> (kPa)	5.0 (34)
In Pan Oil Temperature – °F (°C)	200 – 250 (93 – 121)
Oil Flow – gal/min (L/min)	64 (242)
Oil Pan Capacity – at Installation Angle	0° 15°
High Limit – qt (L)	42.0 (39.7) 38.0 (36.0)
Low Limit – qt (L)	32.0 (30.3) 28.0 (26.5)
Total Engine Oil Capacity with Filters – qt (L)	46.0 (43.5) 42.0 (39.7)
Maximum Installation Angle – Degrees	15.0

## Electrical System

Recommended Battery Capacity (CCA @ 0°F):	
12 Volt System, Above 32°	1900
12 Volt System, Below 32°	2500
24 Volt System, Above 32°	950
24 Volt System, Below 32°	1250
Maximum Resistance of Starting Circuit:	
12 Volt System – ohms	0.0012
24 Volt System – ohms	0.002

## Cooling System

Engine Heat Rejection – Btu/min (kW)	31820 (559.5)
Engine Radiated Heat – Btu/min (kW)	1160 (20.4)
Coolant Flow:	
Fresh Water Flow – gal/min (L/min)	250 (946)
Raw Water Flow – gal/min (L/min)	88 (333)
Maximum Water Pump:	<b>Fresh Water</b> <b>Raw Water</b>
Inlet Restriction – in. Hg (kPa)	3.0 (10.2) 5.0 (17.0)
Fresh Water Capacity – qt (L)	142 (134.4)
Maximum Coolant Pressure	
(Exclusive of Pressure Cap) – lb/in. <sup>2</sup> (kPa)	17 (117)
Maximum Raw Water Pump Pressure – lb/in. <sup>2</sup> (kPa)	14 (97)
Maximum Top Tank Temperature – °F (°C)	210 (99)
Recommended Raw Water Pipe I.D.	
Inlet – in. (mm)	4.0 (152)
Outlet – in. (mm)	3.0 (76)
Recommended Sea Strainer Size:	
(Max. Screen Opening – 2.0 mm)	
Simplex – in. (mm)	3.0 (76)
Duplex – in. (mm)	4.0 (102)

## Air System

Maximum Temperature Rise	
(Ambient Air to Engine Inlet) – °F (°C)	30 (16.7)
Maximum Air Intake Restriction:	
Clean Air Cleaner – in. H <sub>2</sub> O (kPa)	10 (2.5)
Dirty Air Cleaner – in. H <sub>2</sub> O (kPa)	15 (3.7)
Engine Air Flow – ft <sup>3</sup> /min (m <sup>3</sup> /min)	1920 (54.4)
Air Box Pressure – in. Hg (kPa)	53.5 (180.7)
Recommended Intake Pipe Dia.	
Single – in. (mm)	8.0 (203)
Dual – in. (mm)	6.0 (152)
Minimum Net Engine Room Vent Area, – in. <sup>2</sup> (cm <sup>2</sup> )	184 (1189)
Maximum Crankcase Pressure – in. H <sub>2</sub> O (kPa)	3.0 (0.75)

## Exhaust System

Exhaust Flow – ft <sup>3</sup> /min (m <sup>3</sup> /min)	3870 (109.6)
Exhaust Temperature – °F (°C)	600 (316)
Maximum Back Pressure – in. Hg (kPa)	2.5 (8.4)
Recommended Exhaust Pipe Diameter:	<b>Dry</b> <b>Wet</b>
Single – in. (mm)	8.0 (203) 10 (254)
Dual – in. (mm)	5.0 (127) 8.0 (203)

## Performance Data

BMEP – lb/in. <sup>2</sup> (kPa)	148.4 (1023)
Friction Power – fhp (kW)	116 (87)

Engine Speed r/min	Brake Power bhp (kW)	Shaft Power shp (kW)	Rated Fuel Usage gal/hr (L/hr)	Rated BSFC lb/bhp-hr (g/kW-hr)
2100	670 (500)	645 (481)	36.1 (136.5)	0.376 (229)
1950	650 (485)	626 (467)	34.6 (131.1)	0.372 (226)
1800	615 (459)	592 (442)	32.8 (124.1)	0.373 (227)
1500	545 (407)	524 (391)	29.3 (110.8)	0.375 (228)
1200	407 (304)	390 (291)	22.5 (85.4)	0.387 (235)

Engine Speed r/min	Prop Load shp (kW)	Prop Fuel Usage gal/hr (L/hr)	Prop BSFC lb/bhp-hr (g/kW-hr)
2100	645 (481)	36.1 (136.5)	0.376 (229)
1950	516 (385)	28.6 (108.1)	0.371 (226)
1800	406 (303)	22.9 (86.7)	0.378 (230)
1500	235 (175)	14.2 (53.7)	0.401 (244)
1200	120 (90)	8.0 (30.2)	0.432 (263)

## Emissions Data

Smoke, Rated Speed – Bosch Number	0.4
Noise – dB(A) @ 1	107
Additional Noise Data	Not Available
NO <sub>x</sub> – g/hr	8320
CO – g/hr	1100
HC – g/hr	142
SO <sub>2</sub> – g/hr	1143

**UNCONTROLLED  
COPY**

All values are at rated speed and power at SAE J1228 with standard engine hardware, unless otherwise noted.

Curve No. E4-7122-32-14  
Rev. / Date: 1 / 1-29-98  
Sheet No. 2 of 2

All information subject to change without notice.

Detroit Diesel and Spinning Arrows Design ® are registered trademarks of Detroit Diesel Corporation.  
© 1998 DETROIT DIESEL CORPORATION