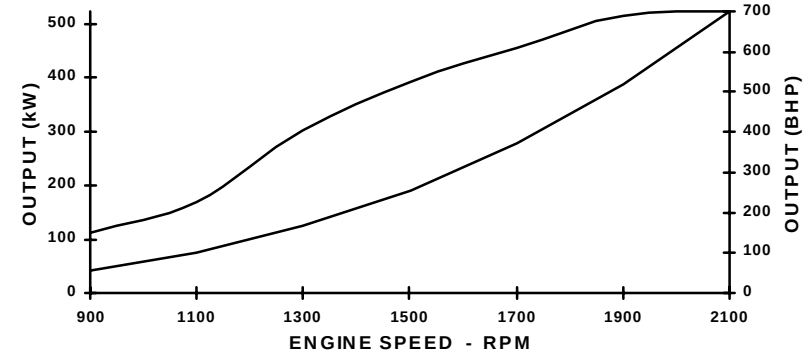
CUMMINS ENGINE COMPANY, INC Columbus, Indiana 47201 **Marine Performance Curve**	Basic Engine Model: **KTA19-M4**		Curve Number: **M-4278**	*Marine* *Pg. No.* **K19** **155**
	Engine Configuration: **D193080MX02**	CPL Code: **2356**	Date: **03 Aug 05**	

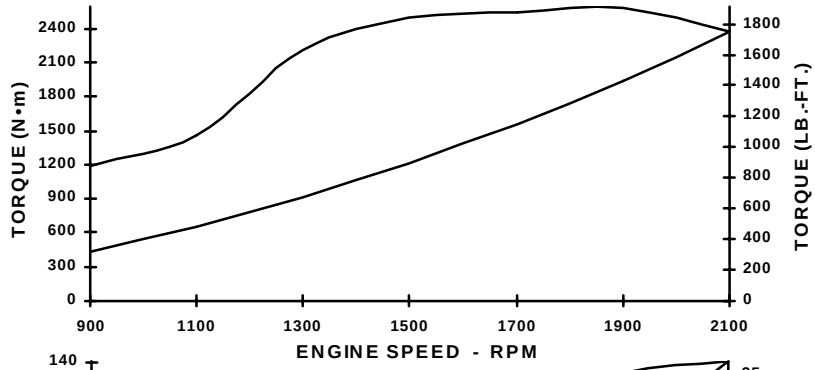
Displacement:	**19 litre**	**[1150 in.^{3}]**		kW [HP] @ RPM
Bore:	**159 mm**	**[6.25 in.]**	Advertised Power:	**522 [700] @ 2100**
Stroke:	**159 mm**	**[6.25 in.]**		
Fuel System:	**PT**		Aspiration:	**Turbocharged/Aftercooled**
Cylinders:	**6**		Rating Type:	**Heavy Duty**

CERTIFIED: This marine diesel engine conforms with the NOx requirements of the International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13 as applicable.



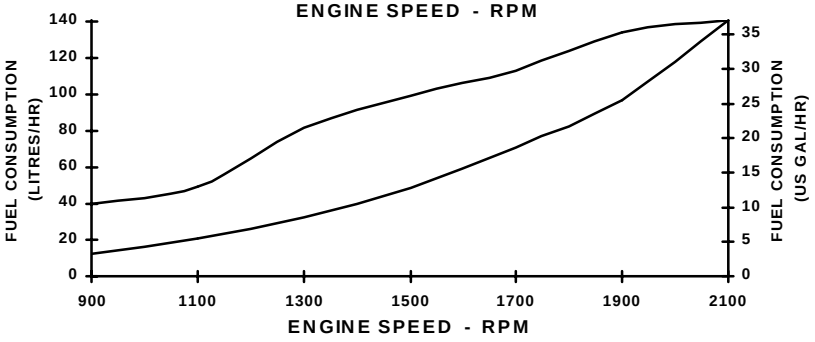
RATED POWER OUTPUT CURVE

RPM	kW	BHP
2100	522	(700)
1900	515	(690)
1700	455	(610)
1500	393	(526)
1300	302	(405)
1100	168	(225)
900	112	(150)



FULL LOAD TORQUE CURVE

RPM	N•m	lb.-ft.
2100	2374	(1751)
1900	2586	(1907)
1700	2553	(1883)
1500	2498	(1842)
1300	2217	(1635)
1100	1455	(1073)
900	1191	(878)



FUEL CONSUMPTION - PROP CURVE

RPM	Litres/hr	Gal/hr
2100	140.6	(37.1)
1900	96.8	(25.6)
1700	70.8	(18.7)
1500	48.1	(12.7)
1300	31.9	(8.4)
1100	20.5	(5.4)
900	11.9	(3.1)

Rating Conditions: Ratings are based upon ISO 8665 and SAE J1228 reference conditions; air pressure of 100 kPa [29.612 in. Hg], air temperature 25°C [77°F], and 30% relative humidity. Power is rated in accordance with IMCI procedures. Member NMMA.

Rated Curves (upper) represent rated power at the crankshaft. Propeller Curve (lower) is based on a typical fixed propeller demand curve using a 3.0 exponent. Propeller Shaft Power is approximately 3% less than rated crankshaft power after typical reverse/reduction gear losses and may vary depending on the type of gear or propulsion system used.

Fuel Consumption is based on fuel of 35° API gravity at 16°C [60°F] having LHV of 42,780 kj/kg [18390 Btu/lb] and weighing 838.9 g/liter [7.001 lb/U.S. gal].

Heavy Duty Rating: This power rating is intended for continuous use in variable load applications where full power is limited to six (6) hours out of every twelve (12) hours of operation. Also, reduced power operations must be at or below 200 RPM of the maximum rated RPM. This is an ISO 3046 Fuel Stop Power Rating and is for applications that operate 3,000 hours per year or less.

CHIEF ENGINEER

Marine Engine Performance Data

Curve No. M-4278
DS-4964
CPL: 2356
DATE: 03 Aug 05

General Engine Data

Engine Model		KTA19-M4
Rating Type		Heavy Duty
Rated Engine Power	kW [HP]	522 [700]
Rated Engine Speed	RPM	2100
Rated HP Production Tolerance	%	±3
Rated Engine Torque	N•m [ft/lb]	2374 [1751]
Peak Engine Torque	N•m [ft/lb]	2586 [1907]
Brake Mean Effective Pressure	kPa [PSI]	1586 [230]
Minimum Idle Speed Setting	RPM	650
Normal Idle Speed Variation	RPM	±25
High Idle Speed Range - Minimum	RPM	2115
High Idle Speed Range - Maximum	RPM	2205
Maximum Allowable Engine Speed	RPM	N.A.
Maximum Torque Capacity from Front of Crank[2]	N•m [ft/lb]	2542 [1875]
Compression Ratio		13.8:1
Piston Speed	m/sec [ft/min.]	11 [2188]
Firing Order		1-5-3-6-2-4
Weight (Dry) Engine Only - Average	kg [lb]	2073 [4570]
Weight (Dry) Engine With Heat Exchanger System - Average	kg [lb]	2251 [4962]
Weight Tolerance (Dry) Engine Only	%	±10

Noise and Vibration ..... N.A.

Fuel System[1]

Fuel Consumption @ **rated speed**	litre/hr [GPH]	135 [35.7]
Approximate Fuel Flow to Pump	litre/hr [GPH]	235 [62]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	49 [120]
Approximate Fuel Flow Return to Tank	litre/hr [GPH]	100 [26]
Approximate Fuel Return to Tank Temperature	°C [°F]	59 [138]
Maximum Heat Rejection to Drain Fuel	kW [BTU/min]	N.A.
Fuel Rail Pressure - Gauge	kPaG [PSIG]	1269 [184]
Fuel Rail Pressure - INSITE	kPaA [PSIA]	N/A

Air System[1]

Intake Manifold Pressure	mm Hg [in. Hg]	1499 [59]
Intake Air Flow	litre/sec [CFM]	748 [1584]
Heat Rejection to Ambient	kW [BTU/min.]	26 [1480]

Exhaust System[1]

Exhaust Gas Flow	litre/sec [CFM]	1860 [3940]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	433 [810]
Exhaust Gas Temperature (Manifold)	°C [°F]	638 [1180]

Emissions (in accordance with ISO8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw-hr [g/bhp-hr]	8.81 [6.57]
HC (Hydrocarbons)	g/kw-hr [g/bhp-hr]	0.76 [0.57]
CO (Carbon Monoxide)	g/kw-hr [g/bhp-hr]	1.64 [1.22]
PM (Particulate Matter)	g/kw-hr [g/bhp-hr]	N.A.

TBD = To Be Decided **N/A = Not Applicable** **N.A. = Not Available**

[1]All Data at Rated Conditions

[2]Consult Installation Direction Booklet for Limitations

[3]Heat rejection to coolant values are based on 50% water/ 50% ethylene glycol mix and do NOT include fouling factors. If sourcing your own cooler, a service fouling factor should be applied according to the cooler manufacturer's recommendation.

[4]Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.

CUMMINS ENGINE COMPANY, INC.
COLUMBUS, INDIANA

Cooling System[1]

ea Water Pump Specifications..... Refer to MAB 0.08.17-07/16/2001

Pressure Cap Rating (With Heat Exchanger Option)	kPa [PSI]	103 [15]
Engines with Standard Aftercooling (if applicable)		
Coolant Flow to Engine Heat Exchanger/Keel Cooler	litre/min. [GPM]	N/A
Standard Thermostat Operating Range (Start to Open)	°C [°F]	N/A
Standard Thermostat Operating Range (Full Open)	°C [°F]	N/A
Heat Rejection to Engine Coolant[3]	kW [BTU/min.]	N/A
Engines with Low Temperature Aftercooling (if applicable)		

Main Cooler

Coolant Flow to Engine Heat Exchanger/Keel Cooler	litre/min. [GPM]	644 [170]
Standard Thermostat Operating Range (Start to Open)	°C [°F]	82 [180]
Standard Thermostat Operating Range (Full Open)	°C [°F]	94 [202]
Heat Rejection to Engine Coolant[3]	kW [BTU/min.]	267 [15,200]

LTA Cooler

Coolant Flow to LTA Heat Exchanger/Keel Cooler	litre/min. [GPM]	114 [30]
LTA Thermostat Operating Range (Start to Open)	°C [°F]	66 [150]
LTA Thermostat Operating Range (Full Open)	°C [°F]	77 [170]
Heat Rejection to LTA Coolant[3]	kW [BTU/min.]	148 [8400]

INSTALLATION DRAWINGS

With Subsystems	3170333

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