CUMMINS INC. Charleston, SC 29405	Basic Engine Model:	Curve Number:	
Marine Performance Curves	**KTA19-DM1**	**FR-4345**	
	Engine Configuration:	CPL Code:	Date:
	D193099MX02	**2910**	**10-Oct-11**

Displacement: **19 liter** **[1154.48 in³]**
Bore: **159 mm** **[6.26 in]**
Stroke: **159 mm** **[6.25 in]**
Fuel System: **Direct injection Cummins PT**
Cylinders: **6**

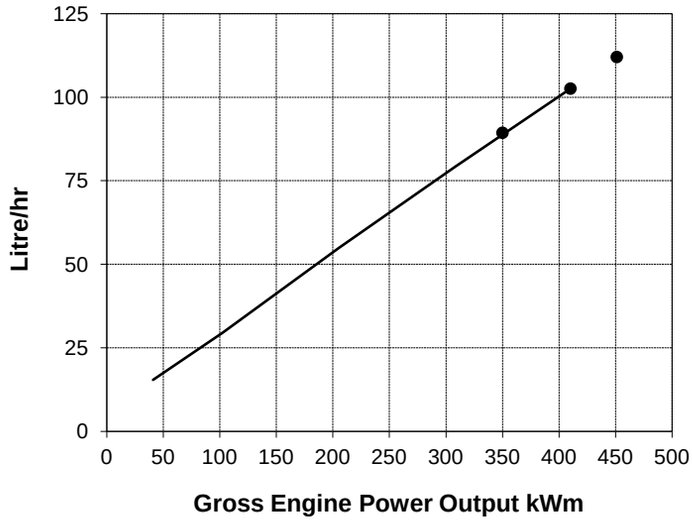
kW [hp] @ rpm
Advertised Power: **410[550]@1500**
Aspiration: **Turbocharged/Aftercooled**
Exhaust Type: **Dry**

CERTIFIED: This marine diesel engine complies with or is certified to the:
IMO Tier II (Two) NOx requirements of International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13

Engine Speed	Overload Capacity		Prime Power		Continuous Power	
RPM	kWm	BHP	kWm	BHP	kWm	BHP
1500	451	605	410	550	350	470

Engine Performance Data @ 1500 rpm

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	BHP	kg/kWh	Lb/ BHP-h	Liter/ hour	U.S. Gal/ hour
10% OVERLOAD CAPACITY						
110%	451	605	0.211	0.347	112.0	29.6
PRIME POWER						
100%	410	550	0.213	0.350	102.6	27.1
75%	308	413	0.219	0.360	79.1	20.9
50%	205	275	0.228	0.374	54.9	14.5
25%	103	138	0.245	0.403	29.5	7.8
10%	41	55	0.319	0.525	15.4	4.1
CONTINUOUS POWER						
80%	350	470	0.217	0.357	89.3	23.6



Rating Conditions: Ratings are in accordance with ISO 15550 and ISO 8528-5 reference conditions; air pressure at 100 kPa (29.61 in Hg), air temperature 25°C (77°F), and 30% relative humidity. The fuel consumption data is based on No. 2 diesel fuel weight at 0.85 kg/liter (7.0011 lb/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.
Values from engine control modules and displayed on instrument panels are not absolute. Tolerance varies, but is generally less than +/-5% when operating within 30% of rated power.
Unless otherwise specified, tolerance on all values is +/-5%.

Prime Power Rating is applicable for supplying continual electrical power at varied load. The following are the Prime Rating parameters:
* 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.
* There is a 10% overload capability for a period of 1 hour within a 12 hour period of operation. Total operating time at 10% overload shall not exceed 25 hours per year.

TECHNICAL DATA DEPT. **CHIEF ENGINEER**

Auxiliary Marine Engine Performance Data

Curve No.	**FR-4345**
DS :	**4964**
CPL :	**2910**
DATE:	**10-Oct-11**

General Engine Data

Engine Model		KTA19-DM1			
Rating Type		Prime Power		Overload	
Rated Engine Power	kW [hp]	410	[550]	451	[605]
Governed Engine Speed	rpm		1500		
Rated HP Production Tolerance	±%		3		
Rated Engine Torque	N·m [lb·ft]	2611	[1926]	2872	[2118]
Low Idle Speed Range	Minimum rpm		675		
	Maximum rpm		775		

Maximum Continuous Torque Capacity from Front of Crank

Maximum Torque Capacity from Front of Crank[2]	N·m [lb·ft]	2374	[1751]		
Brake Mean Effective Pressure	kPa [psi]	1734	[252]	1908	[277]
Compression Ratio			13.9:1		
Piston Speed	m/sec [ft/min]	8	[1563]		
Firing Order			1-5-3-6-2-4		
Friction Power	kW [hp]	45	[60]		
Steady State Stability Band at Constant Load	%		0.25		
Weight Dry - Engine Only	kg [lb]	1724	[3800]		
Weight Dry - Engine With Heat Exchanger	kg [lb]	1905	[4200]		

Fuel System[1]

Approximate Fuel Flow to Pump	l/hr [gal/hr]	337	[89.0]	337	[89.0]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60	[140]	60	[140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	234	[61.9]	225	[59.4]
Approximate Fuel Return to Tank Temperature	°C [°F]	85	[185]	85	[185]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	1.1	[63]	1.0	[58]
Fuel Rail Pressure	kPa [psi]	848	[123]	1014	[147]
Average Fuel Consumption- ISO 8178 D2 Test Cycle	l/hr [gal/hr]	52.5	[13.9]		

Air System[1]

Intake Manifold Pressure	mm Hg [in Hg]	159	[47]	179	[53]
Intake Air Flow	l/sec [cfm]	403	[854]	426	[902]
Heat Rejection to Ambient	kW [Btu/min]	39	[2200]	48	[2730]

Exhaust System[1]

Exhaust Gas Flow	l/sec [cfm]	1156	[2450]	1251	[2650]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	460	[860]	469	[875]
Exhaust Gas Temperature (Manifold)	°C [°F]	605	[1120]	616	[1140]
Heat Rejection to Exhaust	kW [Btu/min]	295	[16800]	325	[18500]

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

1 **Unless otherwise specified, all data is at rated power conditions and can vary ± 5%.**
2 **No rear loads can be applied when the FPTO is fully loaded. Max PTO torque is contingent on torsional analysis results for the specific drive system. 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

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Auxiliary Marine Engine Performance Data

			Curve No.	**FR-4345**	
			DS :	**4964**	
			CPL :	**2910**	
			DATE:	**10-Oct-11**	
Emissions (in accordance with ISO 8178 Cycle D2)					
NOx (Oxides of Nitrogen)		g/kw·hr [g/bhp·hr]	7.253	[5.409]	
HC (Hydrocarbons)		g/kw·hr [g/bhp·hr]	0.388	[0.289]	
CO (Carbon Monoxide)		g/kw·hr [g/bhp·hr]	5.224	[3.896]	
CO_2 (Carbon dioxide)		g/kw·hr [g/bhp·hr]	0.068	[0.050]	
Emissions (in accordance with ISO 8178 Cycle E2)					
NOx (Oxides of Nitrogen)		g/kw·hr [g/bhp·hr]	7.291	[5.437]	
HC (Hydrocarbons)		g/kw·hr [g/bhp·hr]	0.328	[0.245]	
CO (Carbon Monoxide)		g/kw·hr [g/bhp·hr]	7.822	[5.833]	
CO_2 (Carbon dioxide)		g/kw·hr [g/bhp·hr]	0.065	[0.048]	
Cooling System[1]					
Sea Water Pump Specifications		MAB 0.08.17-07/16/2001			
Pressure Cap Rating (With Heat Exchanger Option)		kPa [psi]	103	[15]	
Maximum Pressure Drop Across Any External Cooling		kP [psi]	34	[5]	
Jacket Water Aftercooled Engines (JWAC)					
Coolant Flow to Main Cooler (with open thermostat)		l/min [gal/min]	594	[157]	
Standard Thermostat Operating Range	Start to open	°C [°F]	82	[180]	
	Full open	°C [°F]	93	[200]	
Heat Rejection to Engine Coolant[3]		kW [Btu/min]	295	[16800]	329 [18700]

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