



CUMMINS INC.
Columbus, IN 47201
Marine Performance Curves

Basic Engine Model
QSC8.3-500 HO

Curve Number:
M-96721

Engine Configuration
D413038MX03

CPL Code:
5234

Date:
24-Jan-2019

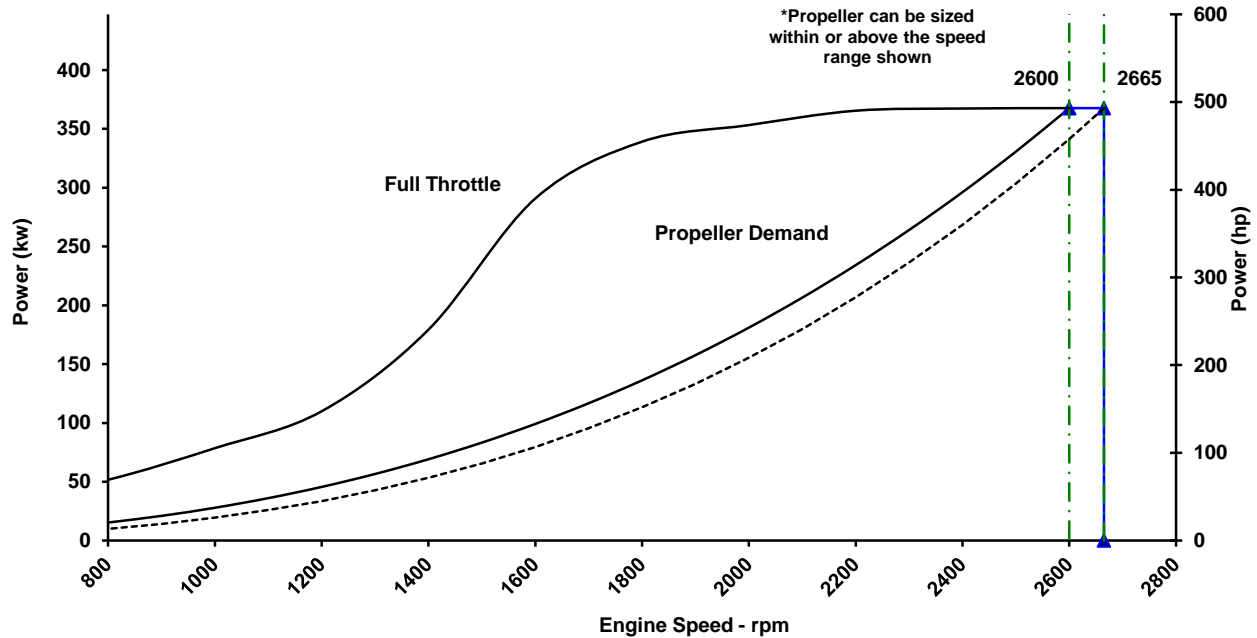
Displacement: **8.3 liter [505 in³]** Rated Power: **368 kw [493 bhp, 500 mhp]**
 Bore: **114 mm [4.49 in]** Rated Speed: **2600 rpm**
 Stroke: **135 mm [5.31 in]** Rating Type: **High Output**
 Fuel System: **HPCR** Aspiration: **Turbocharged / Sea Water Aftercooled**
 Cylinders: **6**

CERTIFIED: This diesel engine complies with or is certified to the following agencies requirements:

EPA Tier 3 - Model year requirements of the EPA marine regulation (40CFR1042)

IMO Tier II - Tier 2 (Two) NOx requirements of International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13

RCD - meets the requirements of the Recreational Craft Directive 94/25/EC as amended by 2003/44/EC in accordance with ISO 8178-1



Speed	Full Throttle- Power		Full Throttle- Torque		Fuel Cons.- Prop. Curve 2.7 Ex	
	rpm	kw (hp)	N-m (ft-lb)	L/hr (gal/hr)		
2665	368	(493)	1317	(972)		
2600	368	(493)	1350	(996)	96.2	(25.4)
2400	367	(493)	1462	(1078)	78.2	(20.7)
2200	365	(490)	1586	(1170)	60.3	(15.9)
2000	353	(474)	1687	(1244)	47.7	(12.6)
1800	339	(455)	1799	(1327)	36.1	(9.5)
1600	291	(390)	1735	(1280)	27.3	(7.2)
1400	179	(240)	1223	(902)	19.1	(5.0)
1200	110	(147)	874	(645)	13.1	(3.5)
1000	79	(105)	750	(553)	8.7	(2.3)
800	52	(69)	617	(455)	5.6	(1.5)
600	34	(46)	542	(400)	1.0	(0.3)

* Cummins Full Throttle Requirements:

- Engine achieves or exceeds rated rpm at full throttle under any steady operating condition
- Engines in variable displacement boats (such as pushboats, tugboats, net druggers, etc.) achieve no less than 100 rpm below rated speed at full throttle during a dead push or bollard pull
- Engine achieves or exceeds rated rpm when accelerating from idle to full throttle

Rated Conditions: Ratings are based upon ISO 15550 reference conditions; air pressure of 100 kPa [29.612 in Hg], air temperature 25deg. C [77 deg. F] and 30% relative humidity. Power is in accordance with IMCI procedure. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%.

Full Throttle curve represents power at the crankshaft for mature gross engine performance corrected in accordance with ISO 15550. Propeller Curve represents approximate power demand from a typical propeller. 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 deg. API gravity at 16 deg C [60 deg. F] having LHV of 42,780 kJ/kg [18390 Btu/lb] and weighing 838.9 g/liter [7.001 lb/U.S. gal].

High Output (HO). Intended for infrequent use in variable load applications with a power factor of 10-30%. Full power is limited to one out of every eight hours of operation. Reduced power operation must be at or below 80% load.

[Signature]
CHIEF ENGINEER

Propulsion Marine Engine Performance Data

Curve No. M-96721
DS : 3075
CPL : 5234
DATE: 24-Jan-19

General Engine Data

Engine Model		QSC8.3-500 HO
Rating Type		High Output
Rated Engine Power	kW [hp]	368 [493]
Rated Engine Speed	rpm	2600
Rated Power Production Tolerance	±%	5
Peak Engine Torque @ 1800 rpm.....	N·m [lb·ft]	1799 [1327]
Brake Mean Effective Pressure	kPa [psi]	2052 [298]
Indicated Mean Effective Pressure.....	kPa [psi]	N.A. [N.A.]
Maximum Allowable Engine Speed	rpm	2685
Maximum Torque Capacity from Front of Crank ²	N·m [lb·ft]	271 [200]
Compression Ratio		16.3:1
Piston Speed	m/sec [ft/min]	11.7 [2303]
Firing Order		1-5-3-6-2-4
Weight (Dry) - Engine Only - Average	kg [lb]	N.A. [N.A.]
Weight (Dry) - Engine With Heat Exchanger System - Average.....	kg [lb]	896 [1975]
Weight Tolerance (Dry) Engine Only	3xStd Dev(±%)	N.A.

Governor Settings

High Speed Governor Break Point.....		rpm	2665
Minimum Idle Speed Setting		rpm	600
Normal Idle Speed Variation		±rpm	10
High Idle Speed Range Minimum		rpm	2665
Maximum		rpm	2685

Noise and Vibration

Average Noise Level - Top	(Idle).....		dBA @ 1m	82
	(Rated)		dBA @ 1m	98
Average Noise Level - Right Side	(Idle).....		dBA @ 1m	82
	(Rated)		dBA @ 1m	98
Average Noise Level - Left Side	(Idle).....		dBA @ 1m	82
	(Rated)		dBA @ 1m	98
Average Noise Level - Front	(Idle).....		dBA @ 1m	82
	(Rated)		dBA @ 1m	98

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle		l/hr [gal/hr]	66.0 [17.4]
Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle		l/hr [gal/hr]	33.6 [8.9]
Fuel Consumption at Rated Speed		l/hr [gal/hr]	96.1 [25.4]
Approximate Fuel Flow to Pump		l/hr [gal/hr]	151.4 [40.0]
Maximum Allowable Fuel Supply to Pump Temperature		°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank		l/hr [gal/hr]	55.3 [14.6]
Approximate Fuel Return to Tank Temperature		°C [°F]	85.1 [185]
Maximum Heat Rejection to Drain Fuel		kW [Btu/min]	1.3 [73]
Fuel Transfer Pump Pressure Range.....		kPa [psi]	N.A.
Fuel Pressure - Pump Out/Rail . Mechanical Gauge		kPa [psi]	N.A.
INSITE Reading		kPa [psi]	160000 [23206]

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.
- ⁵ May not be at rated load and speed. Maximum heat rejection may occur at other than rated conditions.

CUMMINS ENGINE COMPANY, INC
 COLUMBUS, INDIANA

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<http://marine.cummins.com/>

Propulsion Marine Engine Performance Data

Curve No. M-96721
DS : 3075
CPL : 5234
DATE: 24-Jan-19

Air System¹

Intake Manifold Pressure	kPa [in Hg]	214 [63]
Intake Air Flow	l/sec [cfm]	483 [1024]
Heat Rejection to Ambient	kW [Btu/min]	34 [1931]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	1038 [2200]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	451 [843]
Exhaust Gas Temperature (Manifold)	°C [°F]	649 [1200]

Emissions (in accordance with ISO 8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	5.27 [3.93]
HC (Hydrocarbons)	High Output (HO). Intended for infrequent use g/kw-hr [g/hp-hr]	0.20 [0.15]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.90 [0.67]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.04 [0.03]

Emissions (in accordance with ISO 8178 Cycle E5)

NOx (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	5.28 [3.94]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.20 [0.15]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.67 [0.50]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.06 [0.05]

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	103 [15]

Engines without Low Temperature Aftercooling (LTA)

Sea Water Aftercooled Engine (SWAC)

Coolant Flow to Engine Heat Exchanger	l/min [gal/min]	454 [120]
Standard Thermostat Operating Range (Start to Open)	°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open)	°C [°F]	81 [178]
Heat Rejection to Engine Coolant ³	kW [Btu/min]	234 [13337]

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N/A = Not Applicable

N.A. = Not Available

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CUMMINS INC.
Columbus, IN 47201
Marine Performance Curves

Basic Engine Model
QSC8.3-500 INT

Curve Number:
M-96722

Engine Configuration
D413038MX03

CPL Code:
5234

Date:
24-Jan-19

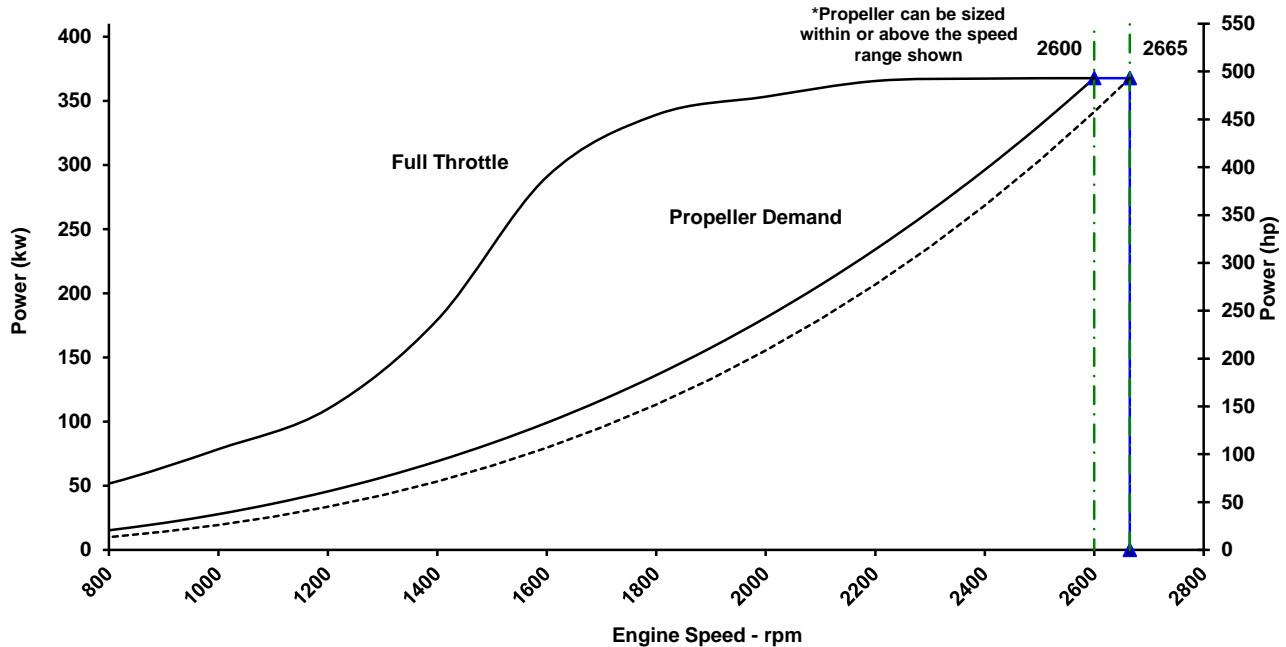
Displacement: **8.3 liter [505 in³]** Rated Power: **368 kw [493 bhp, 500 mhp]**
 Bore: **114 mm [4.49 in]** Rated Speed: **2600 rpm**
 Stroke: **135 mm [5.31 in]** Rating Type: **Intermittent Duty**
 Fuel System: **HPCR** Aspiration: **Turbocharged / Sea Water Aftercooled**
 Cylinders: **6**

CERTIFIED: This diesel engine complies with or is certified to the following agencies requirements:

EPA Tier 3 - Model year requirements of the EPA marine regulation (40CFR1042)

EU Stage IIIa - EC Nonroad Mobile Machinery Directive (2004/26/EC)

IMO Tier II - Tier 2 (Two) NOx requirements of International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13



Speed	Full Throttle- Power		Full Throttle- Torque		Fuel Cons.- Prop. Curve 2.7 Exp	
	rpm	kw (hp)	N·m (ft·lb)	L/hr (gal/hr)		
2665	368	(493)	1317	(972)		
2600	368	(493)	1350	(996)	96.2	(25.4)
2400	367	(493)	1462	(1078)	78.2	(20.7)
2200	365	(490)	1586	(1170)	60.3	(15.9)
2000	353	(474)	1687	(1244)	47.7	(12.6)
1800	339	(455)	1799	(1327)	36.1	(9.5)
1600	291	(390)	1735	(1280)	27.3	(7.2)
1400	179	(240)	1223	(902)	19.1	(5.0)
1200	110	(147)	874	(645)	13.1	(3.5)
1000	79	(105)	750	(553)	8.7	(2.3)
800	52	(69)	617	(455)	5.6	(1.5)
600	34	(46)	542	(400)	1.0	(0.3)

* Cummins Full Throttle Requirements:

- Engine achieves or exceeds rated rpm at full throttle under any steady operating condition
- Engines in variable displacement boats (such as pushboats, tugboats, net dragners, etc.) achieve no less than 100 rpm below rated speed at full throttle during a dead push or bollard pull
- Engine achieves or exceeds rated rpm when accelerating from idle to full throttle

Rated Conditions: Ratings are based upon ISO 15550 reference conditions; air pressure of 100 kPa [29.612 in Hg], air temperature 25deg. C [77 deg. F] and 30% relative humidity. Power is in accordance with IMCI procedure. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%.

Full Throttle curve represents power at the crankshaft for mature gross engine performance corrected in accordance with ISO 15550. Propeller Curve represents approximate power demand from a typical propeller. 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 deg. API gravity at 16 deg C [60 deg. F] having LHV of 42,780 kJ/kg [18390 Btu/lb] and weighing 838.9 g/liter [7.001 lb/U.S. gal].

Intermittent (INT). Intended for intermittent use in variable load applications with a power factor of 20-40%. Full power is limited to two out of every eight hours of operation. Reduced power operations must be at or below 80% load.

CHIEF ENGINEER

Propulsion Marine Engine Performance Data

Curve No. M-96722
DS : 3075
CPL : 5234
DATE: 24-Jan-19

Air System¹

Intake Manifold Pressure	kPa [in Hg]	214 [63]
Intake Air Flow	l/sec [cfm]	483 [1024]
Heat Rejection to Ambient	kW [Btu/min]	34 [1931]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	1038 [2200]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	451 [843]
Exhaust Gas Temperature (Manifold)	°C [°F]	649 [1200]

Emissions (in accordance with ISO 8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	5.27 [3.93]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.20 [0.15]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.90 [0.67]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.04 [0.03]

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	103 [15]

Engines without Low Temperature Aftercooling (LTA)

Sea Water Aftercooled Engine (SWAC)

Coolant Flow to Engine Heat Exchanger	l/min [gal/min]	454 [120]
Standard Thermostat Operating Range (Start to Open)	°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open)	°C [°F]	81 [178]
Heat Rejection to Engine Coolant ³	kW [Btu/min]	234 [13337]

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.

⁵ May not be at rated load and speed. Maximum heat rejection may occur at other than rated conditions.



CUMMINS INC.
Columbus, IN 47201
Marine Performance Curves

Basic Engine Model

QSC8.3-550 HO

Engine Configuration

D413038MX03

Curve Number:

M-96720

CPL Code:

5234

Date:

24-Jan-19

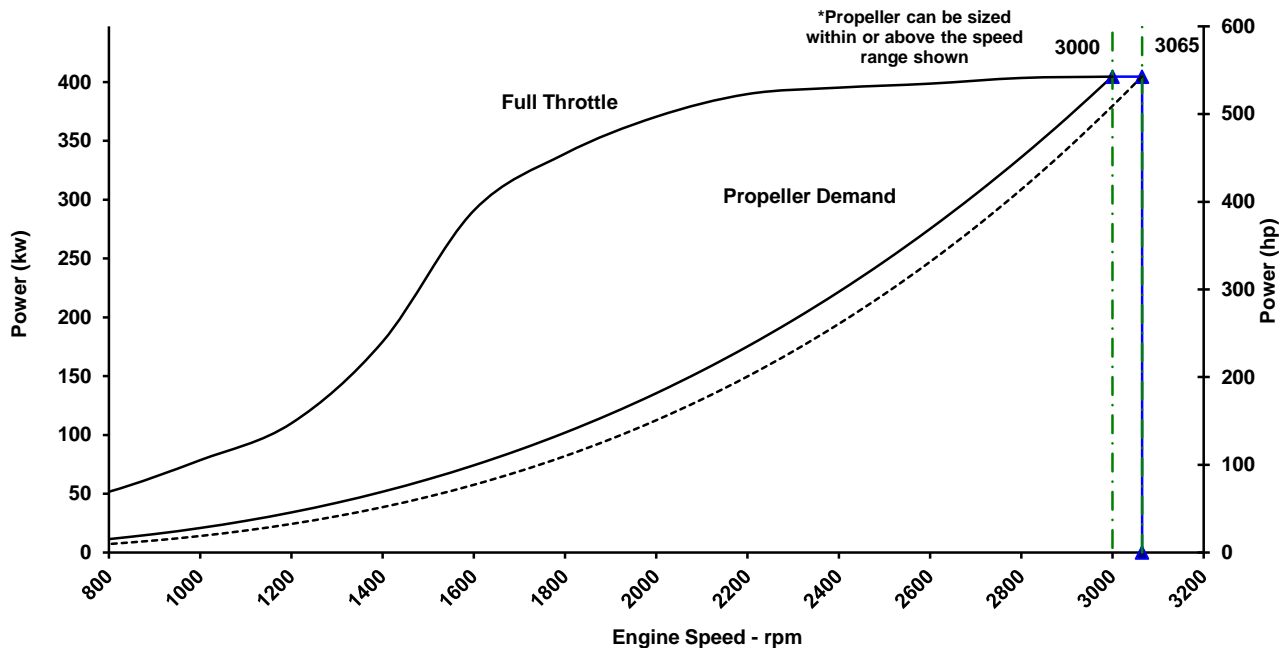
Displacement: **8.3 liter** [505 in³] Rated Power: **405 kw** [543 bhp, 550 mhp]
 Bore: **114 mm** [4.49 in] Rated Speed: **3000 rpm**
 Stroke: **135 mm** [5.31 in] Rating Type: **High Output**
 Fuel System: **HPCR** Aspiration: **Turbocharged / Sea Water Aftercooled**
 Cylinders: **6**

CERTIFIED: This diesel engine complies with or is certified to the following agencies requirements:

EPA Tier 3 - Model year requirements of the EPA marine regulation (40CFR1042)

IMO Tier II - Tier 2 (Two) NOx requirements of International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13

RCD - meets the requirements of the Recreational Craft Directive 94/25/EC as amended by 2003/44/EC in accordance with ISO 8178-1



Speed	Full Throttle- Power		Full Throttle- Torque		Fuel Cons.- Prop. Curve 2.7 Exp.	
	rpm	kw (hp)	N·m (ft·lb)	L/hr (gal/hr)		
3065	405	(543)	1261	(930)		
3000	405	(543)	1288	(950)	113.0	(29.9)
2800	404	(541)	1376	(1015)	89.8	(23.7)
2600	399	(535)	1464	(1080)	75.9	(20.1)
2400	395	(530)	1573	(1160)	58.8	(15.5)
2200	390	(523)	1692	(1248)	47.2	(12.5)
1800	339	(455)	1799	(1327)	28.8	(7.6)
1600	291	(390)	1735	(1280)	21.6	(5.7)
1400	179	(240)	1223	(902)	14.0	(3.7)
1200	110	(147)	874	(645)	9.8	(2.6)
1000	79	(105)	750	(553)	6.4	(1.7)
800	52	(69)	617	(455)	4.3	(1.1)

* Cummins Full Throttle Requirements:

- Engine achieves or exceeds rated rpm at full throttle under any steady operating condition
- Engines in variable displacement boats (such as pushboats, tugboats, net dragners, etc.) achieve no less than 100 rpm below rated speed at full throttle during a dead push or bollard pull
- Engine achieves or exceeds rated rpm when accelerating from idle to full throttle

Rated Conditions: Ratings are based upon ISO 15550 reference conditions; air pressure of 100 kPa [29.612 in Hg], air temperature 25deg. C [77 deg. F] and 30% relative humidity. Power is in accordance with IMCI procedure. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%.

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

High Output (HO). Intended for infrequent use in variable load applications with a power factor of 10-30 %. Full power is limited to one out of every eight hours of operation. Reduced power operation must be at or below 80% load.

CHIEF ENGINEER

Propulsion Marine Engine Performance Data

Curve No. M-96720
DS : 3075
CPL : 5234
DATE: 24-Jan-19

General Engine Data

Engine Model	QSC8.3-550 HO
Rating Type	High Output
Rated Engine Power	405 [543]
Rated Engine Speed	3000
Rated Power Production Tolerance	5
Rated Engine Torque	1289 [951]
Peak Engine Torque @ 1800 rpm.....	1799 [1327]
Brake Mean Effective Pressure	1958 [284]
Indicated Mean Effective Pressure.....	N.A. [N.A.]
Maximum Allowable Engine Speed	3085
Maximum Torque Capacity from Front of Crank ²	0 [0]
Compression Ratio	16.3:1
Piston Speed	13.5 [2657]
Firing Order	1-5-3-6-2-4
Weight (Dry) - Engine Only - Average	N.A. [N.A.]
Weight (Dry) - Engine With Heat Exchanger System - Average.....	896 [1975]
Weight Tolerance (Dry) Engine Only	N.A.

Governor Settings

High Speed Governor Break Point.....	3065
Minimum Idle Speed Setting	600
Normal Idle Speed Variation	10
High Idle Speed Range Minimum	3065
Maximum	3085

Noise and Vibration

Average Noise Level - Top	(Idle).....	dBA @ 1m	82
	(Rated)	dBA @ 1m	98
Average Noise Level - Right Side	(Idle).....	dBA @ 1m	82
	(Rated)	dBA @ 1m	98
Average Noise Level - Left Side	(Idle).....	dBA @ 1m	82
	(Rated)	dBA @ 1m	98
Average Noise Level - Front	(Idle).....	dBA @ 1m	82
	(Rated)	dBA @ 1m	98

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	l/hr [gal/hr]	76.0 [20.1]
Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle	l/hr [gal/hr]	38.3 [10.1]
Fuel Consumption at Rated Speed	l/hr [gal/hr]	113.0 [29.9]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	162.8 [43.0]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	49.8 [13.1]
Approximate Fuel Return to Tank Temperature	°C [°F]	85.1 [185]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	1.1 [65]
Fuel Transfer Pump Pressure Range.....	kPa [psi]	N.A.
Fuel Pressure - Pump Out/Rail . Mechanical Gauge	kPa [psi]	N.A.
INSITE Reading	kPa [psi]	160000 [23206]

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.

⁵ May not be at rated load and speed. Maximum heat rejection may occur at other than rated conditions.

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COLUMBUS, INDIANA

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• Engine achieves or exceeds rated rpm at full throttle under any steady operating condition

Propulsion Marine Engine Performance Data

Curve No. M-96720
DS : 3075
CPL : 5234
DATE: 24-Jan-19

Air System¹

Intake Manifold Pressure	kPa [in Hg]	223 [66]
Intake Air Flow	l/sec [cfm]	560 [1186]
Heat Rejection to Ambient	kW [Btu/min]	34 [1931]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	1253 [2654]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	483 [900]
Exhaust Gas Temperature (Manifold)	°C [°F]	666 [1230]

Emissions (in accordance with ISO 8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	4.59 [3.42]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.20 [0.15]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.58 [0.43]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.07 [0.05]

Emissions (in accordance with ISO 8178 Cycle E5)

NOx (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	4.76 [3.55]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.20 [0.15]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.72 [0.54]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.06 [0.05]

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	103 [15]

Engines without Low Temperature Aftercooling (LTA)

Sea Water Aftercooled Engine (SWAC)

Coolant Flow to Engine Heat Exchanger	l/min [gal/min]	473 [125]
Standard Thermostat Operating Range (Start to Open)	°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open)	°C [°F]	81 [178]
Heat Rejection to Engine Coolant ³	kW [Btu/min]	254 [14477]

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 COLUMBUS, INDIANA

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CUMMINS INC.
Columbus, IN 47201
Marine Performance Curves

Basic Engine Model
QSC8.3-600 HO

Curve Number:
M-96718

Engine Configuration
D413038MX03

CPL Code:
5234

Date:
24-Jan-19

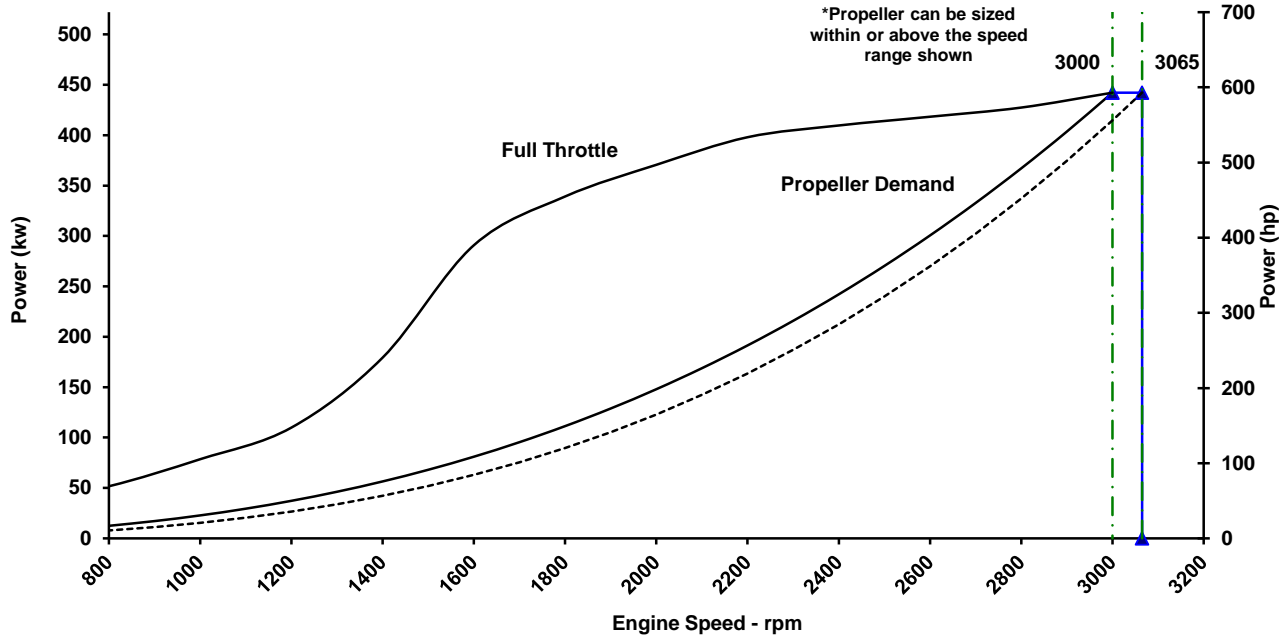
Displacement: **8.3 liter [505 in³]** Rated Power: **442 kw [593 bhp, 600 mhp]**
 Bore: **114 mm [4.49 in]** Rated Speed: **3000 rpm**
 Stroke: **135 mm [5.31 in]** Rating Type: **High Output**
 Fuel System: **HPCR** Aspiration: **Turbocharged / Sea Water Aftercooled**
 Cylinders: **6**

CERTIFIED: This diesel engine complies with or is certified to the following agencies requirements:

EPA Tier 3 - Model year requirements of the EPA marine regulation (40CFR1042)

IMO Tier II - Tier 2 (Two) NOx requirements of International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13

RCD - meets the requirements of the Recreational Craft Directive 94/25/EC as amended by 2003/44/EC in accordance with ISO 8178-1



Speed	Full Throttle- Power		Full Throttle- Torque		Fuel Cons.- Prop. Curve 2.7 Exp.	
	rpm	kw (hp)	N-m (ft-lb)		L/hr (gal/hr)	
3065	442	(593)	1377	(1016)		
3000	442	(593)	1407	(1038)	123.1	(32.5)
2800	427	(573)	1457	(1075)	103.3	(27.3)
2600	418	(561)	1536	(1133)	79.4	(21.0)
2400	410	(549)	1630	(1202)	64.1	(16.9)
2200	398	(534)	1727	(1274)	50.4	(13.3)
1800	339	(455)	1799	(1327)	31.0	(8.2)
1600	291	(390)	1735	(1280)	22.4	(5.9)
1400	179	(240)	1223	(902)	14.2	(3.7)
1200	110	(147)	874	(645)	11.1	(2.9)
1000	79	(105)	750	(553)	7.5	(2.0)
900	64	(86)	683	(504)	6.0	(1.6)
800	52	(69)	617	(455)	4.9	(1.3)
600	34	(46)	542	(400)	1.0	(0.3)

* Cummins Full Throttle Requirements:

- Engine achieves or exceeds rated rpm at full throttle under any steady operating condition
- Engines in variable displacement boats (such as pushboats, tugboats, net draggers, etc.) achieve no less than 100 rpm below rated speed at full throttle during a dead push or bollard pull
- Engine achieves or exceeds rated rpm when accelerating from idle to full throttle

Rated Conditions: Ratings are based upon ISO 15550 reference conditions; air pressure of 100 kPa [29.612 in Hg], air temperature 25deg. C [77 deg. F] and 30% relative humidity. Power is in accordance with IMCI procedure. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%.

Full Throttle curve represents power at the crankshaft for mature gross engine performance corrected in accordance with ISO 15550. Propeller Curve represents approximate power demand from a typical propeller. 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 deg. API gravity at 16 deg C [60 deg. F] having LHV of 42,780 kJ/kg [18390 Btu/lb] and weighing 838.9 g/liter [7.001 lb/U.S. gal].

High Output (HO). Intended for infrequent use in variable load applications with a power factor of 10-30%. Full power is limited to one out of every eight hours of operation. Reduced power operation must be at or below 80% load.

CHIEF ENGINEER

Propulsion Marine Engine Performance Data

Curve No. M-96718
DS : 3075
CPL : 5234
DATE: 24-Jan-19

General Engine Data

Engine Model	QSC8.3-600 HO	
Rating Type	High Output	
Rated Engine Power	442 [593]	kW [hp]
Rated Engine Speed	3000	rpm
Brake Mean Effective Pressure	2139 [310]	kPa [psi]
Compression Ratio	16.3:1	
Piston Speed	13.5 [2657]	m/sec [ft/min]
Firing Order	1-5-3-6-2-4	
Weight (Dry) - Engine Only - Average	N.A. [N.A.]	kg [lb]
Weight (Dry) - Engine With Heat Exchanger System - Average.....	896 [1975]	kg [lb]
Weight Tolerance (Dry) Engine Only	N.A.	3xStd Dev(±%)

Governor Settings

High Speed Governor Break Point.....	3065	rpm
Minimum Idle Speed Setting	600	rpm
Normal Idle Speed Variation	10	±rpm
High Idle Speed Range Minimum	3065	rpm
Maximum	3085	rpm

Noise and Vibration

Average Noise Level - Top	(Idle).....	dBA @ 1m	82
	(Rated)	dBA @ 1m	98
Average Noise Level - Right Side	(Idle).....	dBA @ 1m	82
	(Rated)	dBA @ 1m	98
Average Noise Level - Left Side	(Idle).....	dBA @ 1m	82
	(Rated)	dBA @ 1m	98
Average Noise Level - Front	(Idle).....	dBA @ 1m	82
	(Rated)	dBA @ 1m	98

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	83.6 [22.1]	l/hr [gal/hr]
Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle	42.0 [11.1]	l/hr [gal/hr]
Fuel Consumption at Rated Speed	123.1 [32.5]	l/hr [gal/hr]
Approximate Fuel Flow to Pump	181.7 [48.0]	l/hr [gal/hr]
Maximum Allowable Fuel Supply to Pump Temperature	60.0 [140]	°C [°F]
Approximate Fuel Flow Return to Tank	58.6 [15.5]	l/hr [gal/hr]
Approximate Fuel Return to Tank Temperature	85.1 [185]	°C [°F]
Maximum Heat Rejection to Drain Fuel	1.4 [77]	kW [Btu/min]
Fuel Transfer Pump Pressure Range.....	N.A.	kPa [psi]
Fuel Pressure - Pump Out/Rail . Mechanical Gauge	N.A.	kPa [psi]
INSITE Reading	160000 [23206]	kPa [psi]

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.
- ⁵ May not be at rated load and speed. Maximum heat rejection may occur at other than rated conditions.

CUMMINS ENGINE COMPANY, INC
 COLUMBUS, INDIANA

All Data is Subject to Change Without Notice - Consult the following Cummins intranet site for most recent data:

<http://marine.cummins.com/>

Propulsion Marine Engine Performance Data

Curve No. M-96718
 DS : 3075
 CPL : 5234
 DATE: 24-Jan-19

Air System¹

Intake Manifold Pressure	kPa [in Hg]	230 [68]
Intake Air Flow	l/sec [cfm]	580 [1230]
Heat Rejection to Ambient	kW [Btu/min]	37 [2124]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	1336 [2830]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	510 [950]
Exhaust Gas Temperature (Manifold)	°C [°F]	705 [1300]

Emissions (in accordance with ISO 8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	4.76 [3.55]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.20 [0.15]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.61 [0.45]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.09 [0.07]

Emissions (in accordance with ISO 8178 Cycle E5)

NOx (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	4.68 [3.49]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.20 [0.15]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.73 [0.54]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.09 [0.07]

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	103 [15]

Engines without Low Temperature Aftercooling (LTA)

Sea Water Aftercooled Engine (SWAC)

Coolant Flow to Engine Heat Exchanger	l/min [gal/min]	473 [125]
Standard Thermostat Operating Range (Start to Open)	°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open)	°C [°F]	81 [178]
Heat Rejection to Engine Coolant ³	kW [Btu/min]	270 [15345]

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.

⁵ May not be at rated load and speed. Maximum heat rejection may occur at other than rated conditions.

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CUMMINS INC.
Columbus, IN 47201
Marine Performance Curves

Basic Engine Model
QSC8.3-600 LD

Engine Configuration
D413038MX03

Curve Number:
M-96719

CPL Code:
5234

Date:
24-Jan-19

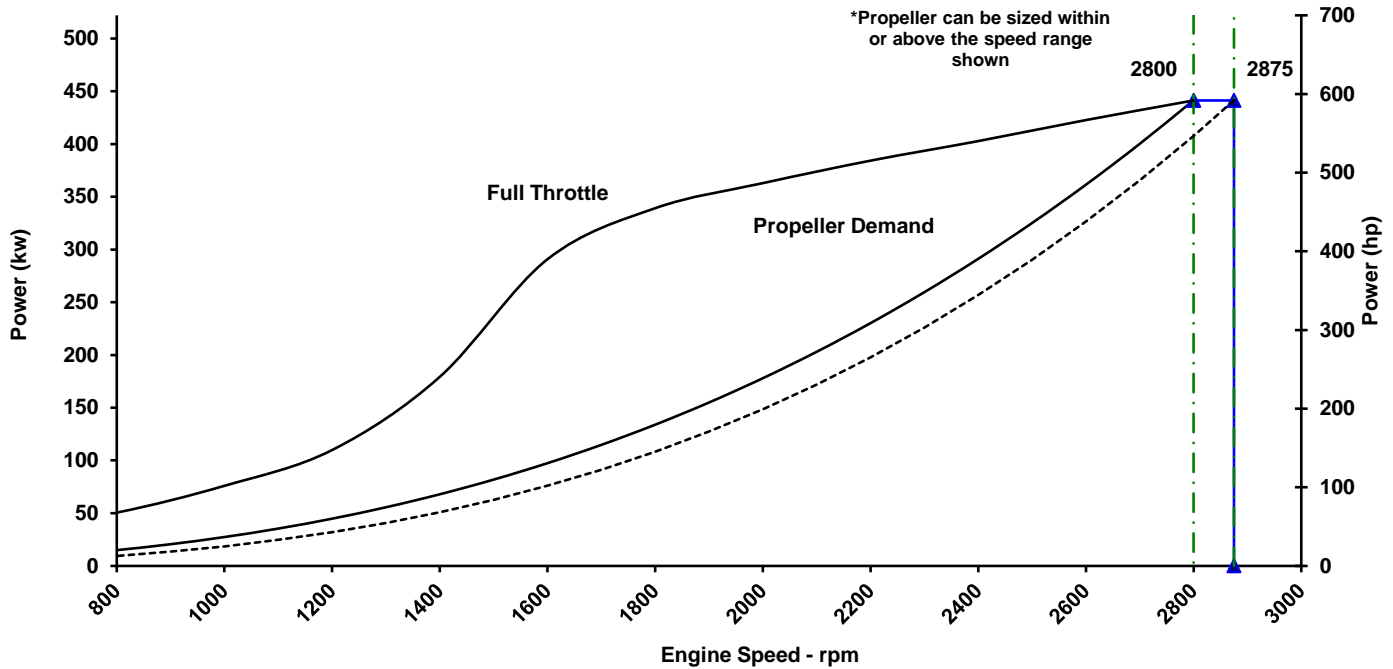
Displacement: **8.3 liter [505 in³]** Rated Power: **441 kw [592 bhp, 600 mhp]**
 Bore: **114 mm [4.49 in]** Rated Speed: **2800 rpm**
 Stroke: **135 mm [5.31 in]** Rating Type: **Light Duty Commercial**
 Fuel System: **HPCR** Aspiration: **Turbocharged / Sea Water Aftercooled**
 Cylinders: **6**

CERTIFIED: This diesel engine complies with or is certified to the following agencies requirements:

EPA Tier 3 - Model year requirements of the EPA marine regulation (40CFR1042)

EU Stage IIIa - EC Nonroad Mobile Machinery Directive (2004/26/EC)

IMO Tier II - Tier 2 (Two) NOx requirements of International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13



Speed	Full Throttle- Power		Full Throttle- Torque		Fuel Cons.- Prop. Curve 2.7 Exp.	
	rpm	kw (hp)	N-m (ft-lb)		L/hr (gal/hr)	
2875	441	(592)	1466	(1081)		
2800	441	(592)	1505	(1110)	122.7	(32.4)
2600	423	(567)	1552	(1145)	97.6	(25.8)
2400	403	(540)	1603	(1182)	76.1	(20.1)
2200	384	(515)	1668	(1230)	59.6	(15.7)
2000	363	(487)	1733	(1278)	46.4	(12.2)
1800	339	(455)	1799	(1327)	36.1	(9.5)
1600	291	(390)	1735	(1280)	26.8	(7.1)
1400	179	(240)	1223	(902)	19.2	(5.1)
1200	110	(147)	874	(645)	13.1	(3.5)
1000	76	(102)	725	(535)	8.8	(2.3)
800	51	(68)	603	(445)	5.6	(1.5)

* Cummins Full Throttle Requirements:

- Engine achieves or exceeds rated rpm at full throttle under any steady operating condition
- Engines in variable displacement boats (such as pushboats, tugboats, net druggers, etc.) achieve no less than 100 rpm below rated speed at full throttle during a dead push or bollard pull
- Engine achieves or exceeds rated rpm when accelerating from idle to full throttle

Rated Conditions: Ratings are based upon ISO 15550 reference conditions; air pressure of 100 kPa [29.612 in Hg], air temperature 25deg. C [77 deg. F] and 30% relative humidity. Power is in accordance with IMCI procedure. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%.

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

Light Duty Commercial (LD). Intended for intermittent use in variable load applications with a power factor of 10-30%. Full power is limited to one hour out of every eight hours of operation. Reduced power operation must be at or below 80% load.

CHIEF ENGINEER

Propulsion Marine Engine Performance Data

Curve No. M-96719
DS : 3075
CPL : 5234
DATE: 24-Jan-19

Air System¹

Intake Manifold Pressure	kPa [in Hg]	230 [68]
Intake Air Flow	l/sec [cfm]	540 [1145]
Heat Rejection to Ambient	kW [Btu/min]	37 [2124]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	1244 [2635]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	540 [1,004]
Exhaust Gas Temperature (Manifold)	°C [°F]	709 [1307]

Emissions (in accordance with ISO 8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	5.08 [3.79]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.20 [0.15]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	1.06 [0.79]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.06 [0.04]

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	103 [15]

Engines without Low Temperature Aftercooling (LTA)

Sea Water Aftercooled Engine (SWAC)

Coolant Flow to Engine Heat Exchanger	l/min [gal/min]	473 [125]
Standard Thermostat Operating Range (Start to Open)	°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open)	°C [°F]	81 [178]
Heat Rejection to Engine Coolant ³	kW [Btu/min]	270 [15345]

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