



CUMMINS INC.
 Charleston, SC 29405
 Marine Performance Curves
marine.cummins.com

Basic Engine Model
QSB 6.7

Engine Configuration
D313011MX03

Curve Number:
M-93960

CPL Code: **3887** Date: **22-Feb-19**

Displacement: **6.7 liter [408 in³]**
 Bore: **107 mm [4.21 in]**
 Stroke: **124 mm [4.88 in]**
 Cylinders: **6**
 Fuel System: **HPCR Bosch CRIN 3.0**

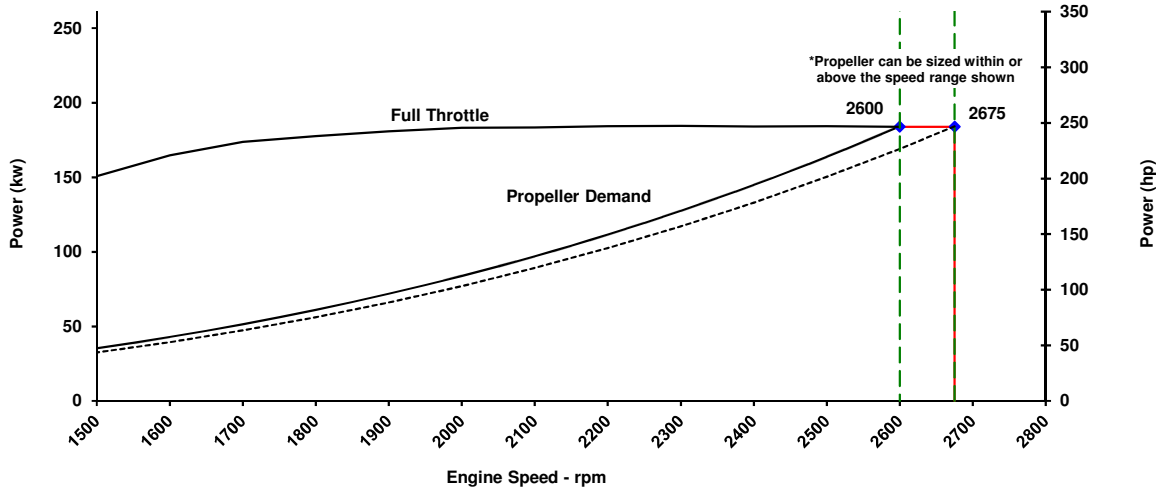
Rated Power: **184 kw [247bhp, 250mhp]**
 Rated Speed: **2600 rpm**
 Rating Type: **Heavy Duty**
 Aspiration: **Turbocharged / Sea Water Aftercooled**

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



Speed	Full Throttle				Propeller Demand				Fuel Consumption	
	Power		Torque		Power		Torque		L/hr	(gal/hr)
rpm	kw	(hp)	N-m	(ft-lb)	kw	(hp)	N-m	(ft-lb)		
2675	184	(247)	656	(484)						
2600	184	(247)	675	(498)	184	(247.0)	676	(498.9)	46.9	(12.4)
2500	184	(247)	704	(519)	164	(219.6)	625	(461.3)	43.1	(11.4)
2400	184	(247)	732	(540)	145	(194.3)	576	(425.1)	37.7	(10.0)
2300	185	(247)	766	(565)	128	(171.0)	529	(390.4)	32.9	(8.7)
2200	184	(247)	800	(590)	112	(149.6)	484	(357.2)	28.8	(7.6)
2100	183	(246)	834	(615)	97	(130.1)	441	(325.5)	25.2	(6.6)
2000	183	(246)	874	(645)	84	(112.4)	400	(295.2)	21.8	(5.8)
1900	181	(242)	908	(670)	72	(96.4)	361	(266.4)	18.4	(4.9)
1800	178	(238)	942	(695)	61	(82.0)	324	(239.1)	15.9	(4.2)
1700	174	(233)	976	(720)	51	(69.0)	289	(213.3)	13.9	(3.7)
1600	165	(221)	983	(725)	43	(57.6)	256	(188.9)	11.7	(3.1)
1500	151	(202)	960	(708)	35	(47.4)	225	(166.1)	9.5	(2.5)
1400	124	(166)	843	(622)	29	(38.6)	196	(144.7)	7.8	(2.1)
1300	107	(144)	786	(580)	23	(30.9)	169	(124.7)	6.4	(1.7)
1200	92	(124)	733	(541)	18	(24.3)	144	(106.3)	5.2	(1.4)
1100	78	(105)	678	(500)	14	(18.7)	121	(89.3)	4.2	(1.1)
1000	65	(87)	620	(457)	10	(14.1)	100	(73.8)	3.4	(0.9)
900	55	(73)	580	(428)	8	(10.2)	81	(59.8)	2.7	(0.7)
800	45	(61)	541	(399)	5	(7.2)	64	(47.2)	2.1	(0.5)
700	38	(51)	521	(384)	4	(4.8)	49	(36.2)	1.6	(0.4)
600	31	(42)	500	(369)	2	(3.0)	36	(26.6)	1.2	(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. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%. 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.

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].

Heavy Duty (HD). Intended for continuous use in variable load applications with a power factor of 60-75%. Full power is limited to 10 hours out of every 12 hours of operation. Reduced power operations must be at or below 80% load.

Propulsion Marine Engine Performance Data

Curve No. M-93960
 DS: D31-MX-2
 CPL: 3887
 DATE: 22-Feb-19

General Engine Data

Engine Model	QSB 6.7
Rating Type	Heavy Duty
Rated Engine Power	184 [247]
Rated Engine Speed	2600
Rated Power Production Tolerance	5
Rated Engine Torque	676 [499]
Peak Engine Torque @ 1500 rpm.....	983 [725]
Brake Mean Effective Pressure	1271 [184]
Indicated Mean Effective Pressure.....	1271 [184]
Maximum Allowable Engine Speed	2675

Maximum Continuous Torque Capacity from Front of Crank Specifications

Maximum Torque Capacity from Front of Crank ²	677 [499]
Compression Ratio	16.5:1
Piston Speed	10.7 [2115]
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.....	662 [1460]

Governor Settings

Default Droop Value.....	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
High Speed Governor Break Point.....	.....rpm	2675
Minimum Idle Speed Setting .....	.....rpm	550
Normal Idle Speed Variation .....	.....rpm	10
High Idle Speed Range Minimum .....	.....rpm	2670
Maximum .....	.....rpm	2680

Noise and Vibration

Average Noise Level - Top	(Idle).....	75
	(Rated).....	100
Average Noise Level - Right Side	(Idle).....	75
	(Rated).....	100
Average Noise Level - Left Side	(Idle).....	76
	(Rated).....	102
Average Noise Level - Front	(Idle).....	76
	(Rated).....	101

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle .....	.....l/hr [gal/hr]	33.0 [8.7]
Fuel Consumption at Rated Speed .....	.....l/hr [gal/hr]	46.9 [12.4]
Approximate Fuel Flow to Pump .....	.....l/hr [gal/hr]	215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Temperature .....	.....°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank .....	.....l/hr [gal/hr]	168.8 [44.6]
Approximate Fuel Return to Tank Temperature .....	.....°C [°F]	62.8 [145]
Maximum Heat Rejection to Drain Fuel .....	.....kW [Btu/min]	2.0 [112]

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 INC.
 COLUMBUS, INDIANA

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

gce.cummins.com

Propulsion Marine Engine Performance Data

Curve No. M-93960
 DS: D31-MX-2
 CPL: 3887
 DATE: 22-Feb-19

Air System¹

Intake Manifold Pressure	kPa [in Hg]	112 [33]
Intake Air Flow	l/sec [cfm]	255 [540]
Heat Rejection to Ambient	kW [Btu/min]	14 [798]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	550 [1,165]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	421 [790]
Exhaust Gas Temperature (Manifold)	°C [°F]	545 [1,012]

Emissions (in accordance with ISO 8178 Cycle E3)

NO _x (Oxides of Nitrogen)	g/kw·hr [g/hp·hr]	4.53 [3.38]
HC (Hydrocarbons)	g/kw·hr [g/hp·hr]	0.20 [0.15]
CO (Carbon Monoxide)	g/kw·hr [g/hp·hr]	0.63 [0.47]
PM (Particulate Matter)	g/kw·hr [g/hp·hr]	0.08 [0.06]
CO ₂ (Carbon dioxide)	g/kw·hr [g/hp·hr]	701.00 [522.74]

Emissions (in accordance with ISO 8178 Cycle E2)

NO _x (Oxides of Nitrogen)	g/kw·hr [g/hp·hr]	4.48 [3.34]
--	-------------------	-------------

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating	kPa [psi]	103 [15]
Max. Coolant Outlet Pressure from the Engine.....	kPa [psi]	414 [60]

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 INC.
 COLUMBUS, INDIANA

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

qce.cummins.com

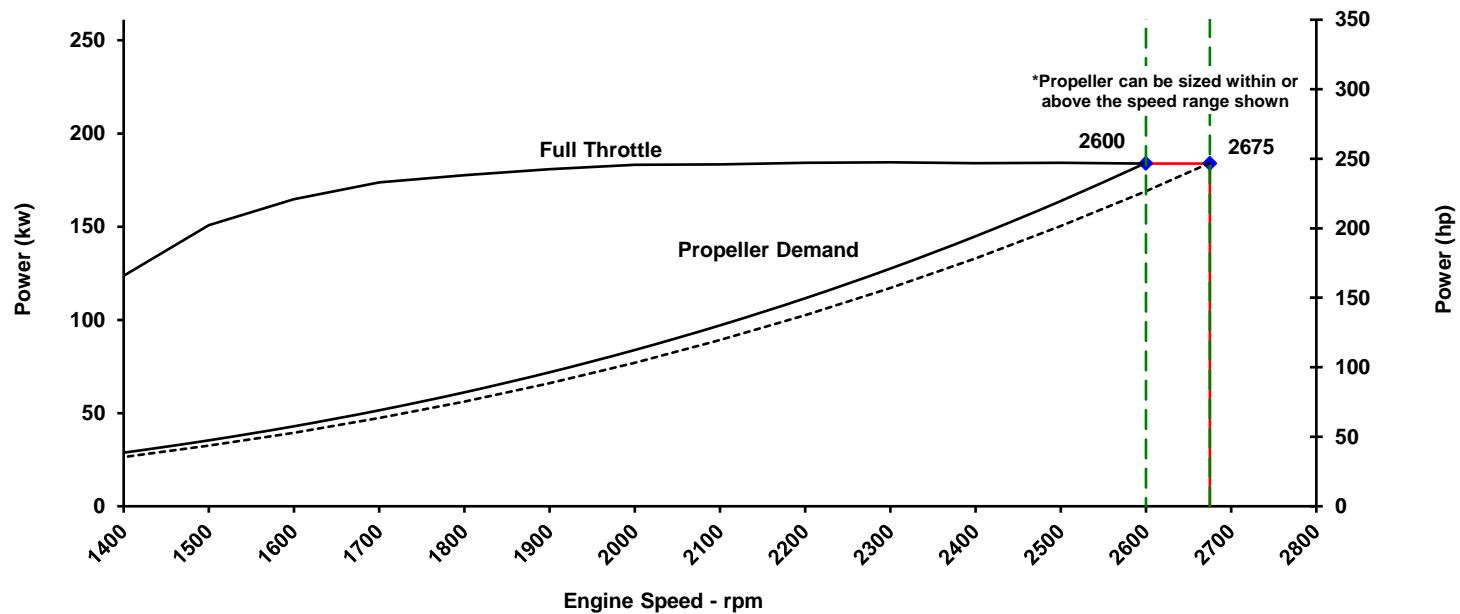


CUMMINS INC.
 Charleston, SC 29405
 Marine Performance Curves
marine.cummins.com

Basic Engine Model QSB 6.7	Curve Number: M-93858	
Engine Configuration D313011MX03	CPL Code: 3887	Date: 7-Nov-18

Displacement: 6.7 liter [408 in ³]	Rated Power: 184 kw [247bhp, 250mhp]
Bore: 107 mm [4.21 in]	Rated Speed: 2600 rpm
Stroke: 124 mm [4.88 in]	Rating Type: High Output
Cylinders: 6	Aspiration: Turbocharged / Sea Water Aftercooled
Fuel System: HPCR Bosch CRIN 3.0	

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 (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				Propeller Demand					
	Power		Torque		Power		Torque		Fuel Consumption	
	kw	(hp)	N·m	(ft·lb)	kw	(hp)	N·m	(ft·lb)	L/hr	(gal/hr)
2675	184	(247)	656	(484)						
2600	184	(247)	675	(498)	184	(247.0)	676	(498.9)	46.9	(12.4)
2500	184	(247)	704	(519)	166	(222.2)	633	(466.8)	43.1	(11.4)
2400	184	(247)	732	(540)	148	(199.0)	590	(435.5)	38.4	(10.1)
2300	185	(247)	766	(565)	132	(177.4)	549	(405.1)	34.1	(9.0)
2200	184	(247)	800	(590)	117	(157.3)	509	(375.6)	30.1	(8.0)
2100	183	(246)	834	(615)	103	(138.8)	471	(347.0)	26.8	(7.1)
2000	183	(246)	874	(645)	91	(121.6)	433	(319.4)	23.3	(6.2)
1900	181	(242)	908	(670)	79	(105.9)	397	(292.7)	20.1	(5.3)
1800	178	(238)	942	(695)	68	(91.5)	362	(267.0)	17.5	(4.6)
1700	174	(233)	976	(720)	58	(78.4)	329	(242.3)	15.4	(4.1)
1600	165	(221)	983	(725)	50	(66.6)	296	(218.6)	13.2	(3.5)
1500	151	(202)	960	(708)	42	(55.9)	266	(195.9)	10.8	(2.9)
1400	124	(166)	843	(622)	35	(46.4)	236	(174.2)	8.9	(2.4)
1300	107	(144)	786	(580)	28	(38.0)	208	(153.6)	7.5	(2.0)
1200	92	(124)	733	(541)	23	(30.6)	182	(134.0)	6.2	(1.6)
1100	78	(105)	678	(500)	18	(24.2)	157	(115.6)	5.0	(1.3)
1000	65	(87)	620	(457)	14	(18.7)	133	(98.3)	4.1	(1.1)
900	55	(73)	580	(428)	11	(14.1)	111	(82.2)	3.2	(0.9)
800	45	(61)	541	(399)	8	(10.2)	91	(67.3)	2.5	(0.7)
700	38	(51)	521	(384)	5	(7.1)	73	(53.6)	1.9	(0.5)
600	31	(42)	500	(369)	4	(4.7)	56	(41.3)	1.4	(0.4)

*** 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. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%. 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.

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. 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.

Engine Performance Data

Curve No. M-93858
 DS: D31-MX-2
 CPL: 3887
 DATE: 7-Nov-18

General Engine Data

Engine Model	QSB 6.7
Rating Type	High Output
Rated Engine Power	184 [247]
Rated Engine Speed	2600
Rated Power Production Tolerance	5
Rated Engine Torque	676 [499]
Peak Engine Torque @ 1600 rpm.....	983 [725]
Brake Mean Effective Pressure	1271 [184]
Indicated Mean Effective Pressure.....	1271 [184]
Maximum Allowable Engine Speed	2675

Maximum Continuous Torque Capacity from Front of Crank Specifications

Maximum Torque Capacity from Front of Crank ²	677 [499]
Compression Ratio	16.5:1
Piston Speed	10.7 [2115]
Firing Order	1-5-3-6-2-4
Weight (Dry) - Engine With Heat Exchanger System - Average.....	662 [1460]

Governor Settings

Default Droop Value.....	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
High Speed Governor Break Point.....	rpm	2675
Minimum Idle Speed Setting	rpm	550
Normal Idle Speed Variation	±rpm	10
High Idle Speed Range Minimum	rpm	2670
High Idle Speed Range Maximum	rpm	2680

Noise and Vibration

Average Noise Level - Top	(Idle).....	dBa @ 1m	75
	(Rated)	dBa @ 1m	100
Average Noise Level - Right Side	(Idle).....	dBa @ 1m	75
	(Rated)	dBa @ 1m	100
Average Noise Level - Left Side	(Idle).....	dBa @ 1m	76
	(Rated)	dBa @ 1m	102
Average Noise Level - Front	(Idle).....	dBa @ 1m	76
	(Rated)	dBa @ 1m	101

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	l/hr [gal/hr]	33.0 [8.7]
Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle	l/hr [gal/hr]	16.8 [4.4]
Fuel Consumption at Rated Speed	l/hr [gal/hr]	46.9 [12.4]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	168.8 [44.6]
Approximate Fuel Return to Tank Temperature	°C [°F]	62.8 [145]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	2.0 [112]

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 INC.
 COLUMBUS, INDIANA

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

<http://marine.cummins.com>

Engine Performance Data

Curve No. M-93858
 DS: D31-MX-2
 CPL: 3887
 DATE: 7-Nov-18

Air System¹

Intake Manifold Pressure .....	.....kPa [in Hg]	112 [33]
Intake Air Flow .....	.....l/sec [cfm]	255 [540]
Heat Rejection to Ambient .....	.....kW [Btu/min]	14 [798]

Exhaust System¹

Exhaust Gas Flow .....	.....l/sec [cfm]	550 [1,165]
Exhaust Gas Temperature (Turbine Out) .....	.....°C [°F]	421 [790]
Exhaust Gas Temperature (Manifold) .....	.....°C [°F]	545 [1,012]

Emissions (in accordance with ISO 8178 Cycle E3)

NO _x (Oxides of Nitrogen) .....	.....g/kw-hr [g/hp-hr]	4.53 [3.38]
HC (Hydrocarbons) .....	.....g/kw-hr [g/hp-hr]	0.20 [0.15]
CO (Carbon Monoxide) .....	.....g/kw-hr [g/hp-hr]	0.63 [0.47]
PM (Particulate Matter) .....	.....g/kw-hr [g/hp-hr]	0.08 [0.06]
CO ₂ (Carbon dioxide) .....	.....g/kw-hr [g/hp-hr]	701.00 [522.74]

Emissions (in accordance with ISO 8178 Cycle E5)

NO _x (Oxides of Nitrogen) .....	.....g/kw-hr [g/hp-hr]	4.70 [3.50]
HC (Hydrocarbons) .....	.....g/kw-hr [g/hp-hr]	0.13 [0.10]
CO (Carbon Monoxide) .....	.....g/kw-hr [g/hp-hr]	0.91 [0.68]
PM (Particulate Matter) .....	.....g/kw-hr [g/hp-hr]	0.08 [0.06]
CO ₂ (Carbon dioxide) .....	.....g/kw-hr [g/hp-hr]	761.00 [567.48]

Cooling System¹

Sea Water Pump Specifications .....	.....MAB 0.08.17-07/16/2001	
Pressure Cap Rating .....	.....kPa [psi]	103 [15]
Max. Coolant Outlet Pressure from the Engine.....	.....kPa [psi]	414 [60]

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 INC.
 COLUMBUS, INDIANA

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

<http://marine.cummins.com>



CUMMINS INC.
 Charleston, SC 29405
 Marine Performance Curves
marine.cummins.com

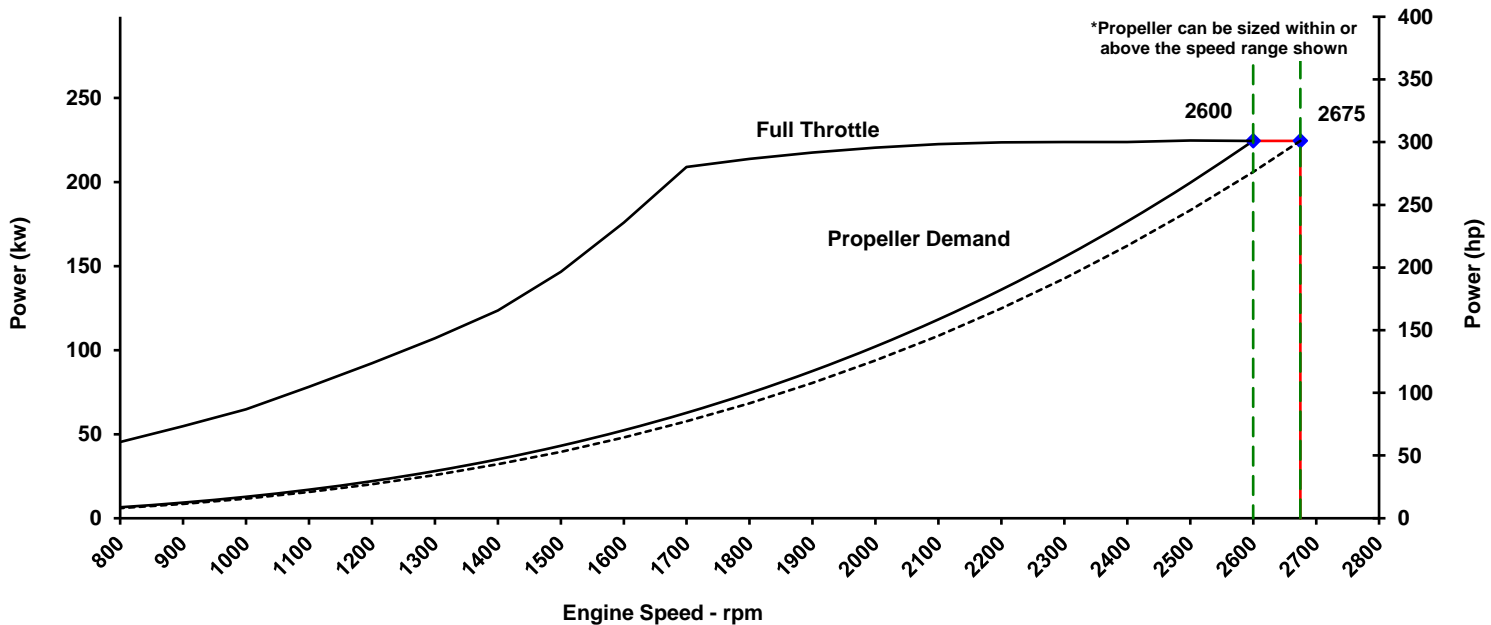
Basic Engine Model
QSB 6.7
 Engine Configuration
D313011MX03

Curve Number:
M-93859
 CPL Code:
3887
 Date:
7-Nov-18

Displacement: **6.7 liter [408 in³]**
 Bore: **107 mm [4.21 in]**
 Stroke: **124 mm [4.88 in]**
 Fuel System: **HPCR Bosch CRIN 3.0**
 Cylinders: **6**

Rated Power: **224 kw [301 bhp, 305 mhp]**
 Rated Speed: **2600 rpm**
 Rating Type: **High Output**
 Aspiration: **Turbocharged / Sea Water Aftercooled**

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 (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				Propeller Demand					
	Power		Torque		Power		Torque		Fuel Consumption	
	kw	(hp)	N·m	(ft·lb)	kw	(hp)	N·m	(ft·lb)	L/hr	(gal/hr)
2675	224	(301)	801	(591)						
2600	224	(301)	824	(608)	224	(301.0)	824	(608.0)	55.7	(14.7)
2500	225	(301)	858	(633)	202	(270.8)	771	(568.8)	51.2	(13.5)
2400	224	(300)	891	(657)	181	(242.5)	719	(530.7)	45.8	(12.1)
2200	224	(300)	971	(716)	143	(191.7)	621	(457.7)	35.6	(9.4)
2000	220	(296)	1052	(776)	111	(148.2)	528	(389.2)	27.7	(7.3)
1800	214	(287)	1133	(836)	83	(111.5)	441	(325.4)	20.6	(5.5)
1600	176	(236)	1049	(774)	61	(81.1)	361	(266.4)	15.5	(4.1)
1400	124	(166)	843	(622)	42	(56.6)	288	(212.3)	10.6	(2.8)
1200	92	(124)	733	(541)	28	(37.3)	221	(163.3)	7.1	(1.9)
1000	65	(87)	620	(457)	17	(22.8)	162	(119.8)	4.6	(1.2)
800	45	(61)	541	(399)	9	(12.5)	111	(82.0)	2.8	(0.7)
600	31	(42)	500	(369)	4	(5.7)	68	(50.3)	1.5	(0.4)

- * 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. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%. 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.

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.

Propulsion Marine Engine Performance Data

Curve No. M-93859
DS: D31-MX-2
CPL: 3887
DATE: 7-Nov-18

General Engine Data

Engine Model	QSB 6.7
Rating Type	High Output
Rated Engine Power	224 [301]
Rated Engine Speed	2600
Rated Power Production Tolerance	±5%
Rated Engine Torque	824 [608]
Peak Engine Torque @ 1700 rpm.....	1174 [866]
Brake Mean Effective Pressure	1548 [225]
Maximum Allowable Engine Speed	2675
Maximum Torque Capacity from Front of Crank ²	824 [608]
Compression Ratio	16.5:1
Piston Speed	10.7 [2115]
Firing Order	1-5-3-6-2-4
Weight (Dry) - Engine With Heat Exchanger System - Average.....	662 [1460]

Governor Settings

Default Droop Value.....	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
High Speed Governor Break Point.....	rpm	2675
Minimum Idle Speed Setting	rpm	550
Normal Idle Speed Variation	±rpm	10
High Idle Speed Range Minimum	rpm	2670
High Idle Speed Range Maximum	rpm	2680

Noise and Vibration

Average Noise Level - Top	(Idle).....	dBa @ 1m	75
	(Rated)	dBa @ 1m	100
Average Noise Level - Right Side	(Idle).....	dBa @ 1m	75
	(Rated)	dBa @ 1m	100
Average Noise Level - Left Side	(Idle).....	dBa @ 1m	76
	(Rated)	dBa @ 1m	102
Average Noise Level - Front	(Idle).....	dBa @ 1m	76
	(Rated)	dBa @ 1m	101

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	l/hr [gal/hr]	39.2 [10.4]
Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle	l/hr [gal/hr]	20.0 [5.3]
Fuel Consumption at Rated Speed	l/hr [gal/hr]	55.7 [14.7]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	168.8 [44.6]
Approximate Fuel Return to Tank Temperature	°C [°F]	65.6 [150]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	2.2 [126]

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, INDIANA

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

<http://marine.cummins.com>

Propulsion Marine Engine Performance Data

Curve No. M-93859
 DS: D31-MX-2
 CPL: 3887
 DATE: 7-Nov-18

Air System¹

Intake Manifold Pressure	kPa [in Hg]	138 [41]
Intake Air Flow	l/sec [cfm]	284 [602]
Heat Rejection to Ambient	kW [Btu/min]	17 [946]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	599 [1,269]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	436 [817]
Exhaust Gas Temperature (Manifold)	°C [°F]	574 [1,065]

Emissions (in accordance with ISO 8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	4.70 [3.50]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.10 [0.07]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.48 [0.36]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.09 [0.07]
CO ₂ (Carbon dioxide)	g/kw-hr [g/hp-hr]	687.00 [512.30]

Emissions (in accordance with ISO 8178 Cycle E5)

NOx (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	4.80 [3.58]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.20 [0.15]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.91 [0.68]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.08 [0.06]
CO ₂ (Carbon dioxide)	g/kw-hr [g/hp-hr]	738.00 [550.33]

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	103 [15]
Max. Coolant Outlet Pressure from the Engine.....	kPa [psi]	414 [60]

Sea Water Aftercooled Engine (SWAC)

Standard Thermostat Operating Range (Start to Open)	°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open)	°C [°F]	83 [182]

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, INDIANA

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

<http://marine.cummins.com>



CUMMINS INC.
 Charleston, SC 29405
 Marine Performance Curves
marine.cummins.com

Basic Engine Model
QSB 6.7

Curve Number:
M-93961

Engine Configuration
D313011MX03

CPL Code:
3887

Date:
22-Feb-19

Displacement: **6.7 liter [408 in³]**
 Bore: **107 mm [4.21 in]**
 Stroke: **124 mm [4.88 in]**
 Cylinders: **6**
 Fuel System: **HPCR Bosch CRIN 3.0**

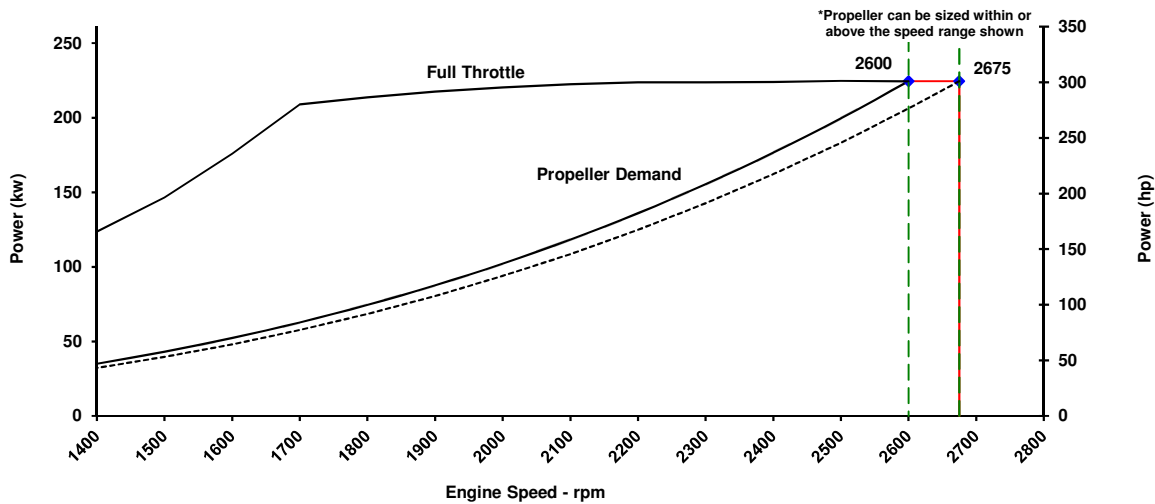
Rated Power: **224 kw [301bhp, 305mhp]**
 Rated Speed: **2600 rpm**
 Rating Type: **Medium Continuous Duty**
 Aspiration: **Turbocharged / Sea Water Aftercooled**

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



Speed	Full Throttle				Propeller Demand				
	Power		Torque		Power		Torque		Fuel Consumption
	kw	(hp)	N·m	(ft·lb)	kw	(hp)	N·m	(ft·lb)	L/hr (gal/hr)
2675	224	(301)	801	(591)	224	(301.0)	824	(608.0)	55.7 (14.7)
2600	224	(301)	824	(608)	224	(301.0)	824	(608.0)	55.7 (14.7)
2500	225	(301)	858	(633)	202	(270.8)	771	(568.8)	51.2 (13.5)
2400	224	(300)	891	(657)	181	(242.5)	719	(530.7)	45.8 (12.1)
2300	224	(300)	929	(685)	161	(216.2)	669	(493.6)	40.2 (10.6)
2200	224	(300)	971	(716)	143	(191.7)	621	(457.7)	35.6 (9.4)
2100	222	(298)	1011	(746)	126	(169.1)	573	(422.9)	31.7 (8.4)
2000	220	(296)	1052	(776)	111	(148.2)	528	(389.2)	27.7 (7.3)
1900	217	(292)	1093	(806)	96	(129.1)	484	(356.7)	23.8 (6.3)
1800	214	(287)	1133	(836)	83	(111.5)	441	(325.4)	20.6 (5.5)
1700	209	(280)	1174	(866)	71	(95.6)	400	(295.3)	18.1 (4.8)
1600	176	(236)	1049	(774)	61	(81.1)	361	(266.4)	15.5 (4.1)
1500	147	(196)	933	(688)	51	(68.2)	324	(238.7)	12.9 (3.4)
1400	124	(166)	843	(622)	42	(56.6)	288	(212.3)	10.6 (2.8)
1300	107	(144)	786	(580)	35	(46.3)	254	(187.1)	8.8 (2.3)
1200	92	(124)	733	(541)	28	(37.3)	221	(163.3)	7.1 (1.9)
1100	78	(105)	678	(500)	22	(29.5)	191	(140.9)	5.8 (1.5)
1000	65	(87)	620	(457)	17	(22.8)	162	(119.8)	4.6 (1.2)
900	55	(73)	580	(428)	13	(17.2)	136	(100.2)	3.6 (1.0)
800	45	(61)	541	(399)	9	(12.5)	111	(82.0)	2.8 (0.7)
700	38	(51)	521	(384)	6	(8.7)	89	(65.3)	2.1 (0.5)
600	31	(42)	500	(369)	4	(5.7)	68	(50.3)	1.5 (0.4)

*** 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. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%. 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.

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].

Medium Continuous (MCD). Intended for continuous use in variable load applications with a power factor of 40-60%. Full power is limited to six out of every 12 hours of operation. Reduced power operation must be at or below 80% load.

TECHNICAL DATA DEPT.

CHIEF ENGINEER

Propulsion Marine Engine Performance Data

Curve No. M-93961
 DS: D31-MX-2
 CPL: 3887
 DATE: 22-Feb-19

General Engine Data

Engine Model	QSB 6.7
Rating Type	Medium Continuous Duty
Rated Engine Power	224 [301] kW [hp]
Rated Engine Speed	2600 rpm
Rated Power Production Tolerance	±5%
Rated Engine Torque	824 [608] N·m [lb·ft]
Peak Engine Torque @ 1700 rpm.....	1174 [866] N·m [lb·ft]
Brake Mean Effective Pressure	1548 [225] kPa [psi]
Indicated Mean Effective Pressure.....	1548 [225] kPa [psi]
Maximum Allowable Engine Speed	2675 rpm

Maximum Continuous Torque Capacity from Front of Crank Specifications

Maximum Torque Capacity from Front of Crank ²	824 [608] N·m [lb·ft]
Compression Ratio	16.5:1
Piston Speed	10.7 [2115] m/sec [ft/min]
Firing Order	1-5-3-6-2-4
Weight (Dry) - Engine With Heat Exchanger System - Average.....	663 [1462] kg [lb]

Governor Settings

Default Droop Value.....	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
High Speed Governor Break Point.....	rpm	2675
Minimum Idle Speed Setting	rpm	550
Normal Idle Speed Variation	±rpm	10
High Idle Speed Range Minimum	rpm	2670
High Idle Speed Range Maximum	rpm	2680

Noise and Vibration

Average Noise Level - Top	(Idle).....	dBA @ 1m	75
	(Rated)	dBA @ 1m	100
Average Noise Level - Right Side	(Idle).....	dBA @ 1m	75
	(Rated)	dBA @ 1m	100
Average Noise Level - Left Side	(Idle).....	dBA @ 1m	76
	(Rated)	dBA @ 1m	102
Average Noise Level - Front	(Idle).....	dBA @ 1m	76
	(Rated)	dBA @ 1m	101

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	l/hr [gal/hr]	39.2 [10.4]
Fuel Consumption at Rated Speed	l/hr [gal/hr]	55.6 [14.7]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	160.1 [42.3]
Approximate Fuel Return to Tank Temperature	°C [°F]	65.6 [150]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	2.1 [119]

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 INC.
 COLUMBUS, INDIANA

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

gce.cummins.com

Propulsion Marine Engine Performance Data

Curve No. M-93961
 DS: D31-MX-2
 CPL: 3887
 DATE: 22-Feb-19

Air System¹

Intake Manifold Pressure	kPa [in Hg]	138 [41]
Intake Air Flow	l/sec [cfm]	284 [602]
Heat Rejection to Ambient	kW [Btu/min]	17 [946]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	599 [1,269]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	436 [817]
Exhaust Gas Temperature (Manifold)	°C [°F]	574 [1,065]

Emissions (in accordance with ISO 8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	4.70 [3.50]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.10 [0.07]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.48 [0.36]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.09 [0.07]
CO ₂ (Carbon dioxide)	g/kw-hr [g/hp-hr]	687.00 [512.30]

Emissions (in accordance with ISO 8178 Cycle E2)

NOx (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	4.94 [3.68]
--------------------------------	-------------------	-------------

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating	kPa [psi]	103 [15]
Max. Coolant Outlet Pressure from the Engine.....	kPa [psi]	414 [60]

Sea Water Aftercooled Engine (SWAC)

Standard Thermostat Operating Range (Start to Open)	°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open)	°C [°F]	83 [182]

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 INC.
 COLUMBUS, INDIANA

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

qce.cummins.com



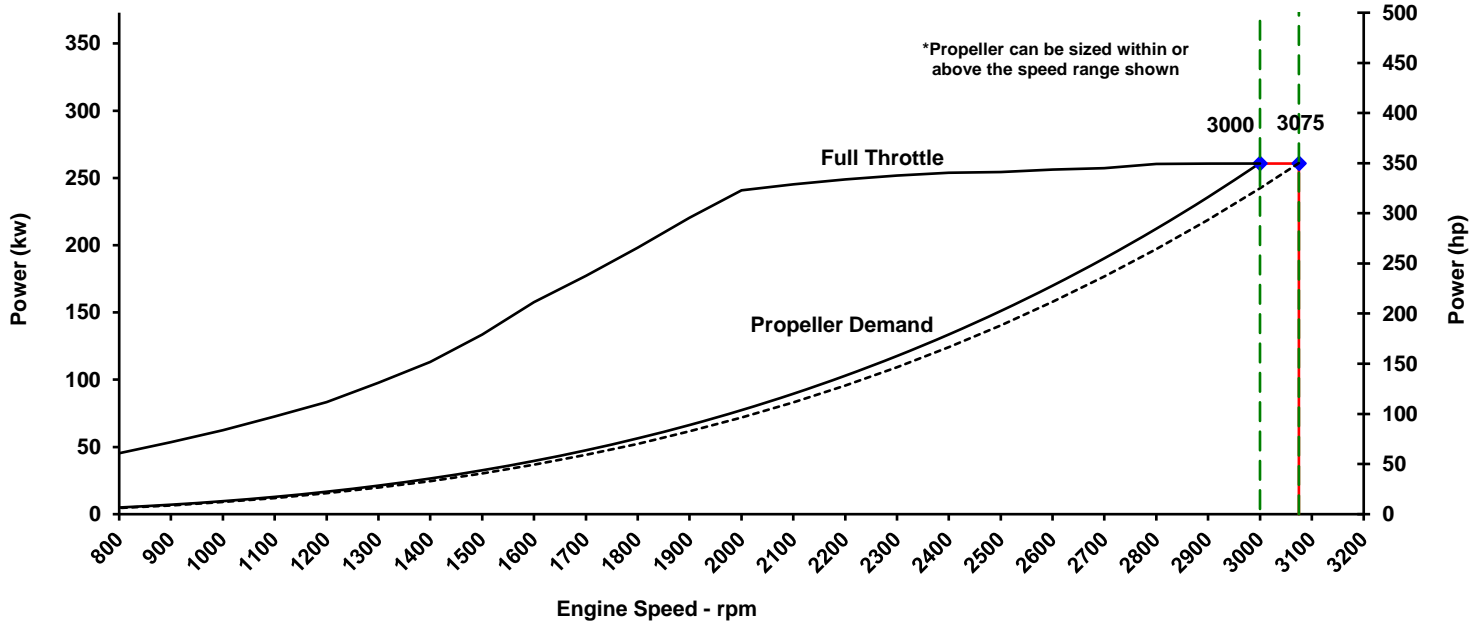
CUMMINS INC.
Columbus, IN 47201
Marine Performance Curves
marine.cummins.com

Basic Engine Model QSB 6.7	Curve Number: M-94133
Engine Configuration D313011MX03	CPL Code: 4191 Date: 7-Nov-18

Displacement: **6.7 liter [408 in³]**
Bore: **107 mm [4.21 in]**
Stroke: **124 mm [4.88 in]**
Fuel System: **HPCR Bosch CRIN 3.0**
Cylinders: **6**

Rated Power: **261 kw [350 bhp, 355 mhp]**
Rated Speed: **3000 rpm**
Rating Type: **High Output**
Aspiration: **Turbocharged / Sea Water Aftercooled**

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 (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 rpm	Full Throttle				Propeller Demand					
	Power		Torque		Power		Torque		Fuel Consumption	
	kw	(hp)	N·m	(ft·lb)	kw	(hp)	N·m	(ft·lb)	L/hr	(gal/hr)
3075	261	(350)	810	(597)						
3000	261	(350)	830	(612)	261	(350.0)	831	(612.7)	67.6	(17.9)
2900	261	(350)	858	(633)	238	(319.4)	784	(578.4)	62.9	(16.6)
2800	260	(349)	888	(655)	217	(290.5)	739	(544.9)	57.1	(15.1)
2700	257	(345)	910	(671)	196	(263.3)	695	(512.3)	51.9	(13.7)
2600	256	(344)	941	(694)	177	(237.8)	651	(480.4)	46.8	(12.4)
2400	254	(340)	1010	(745)	143	(191.6)	568	(419.3)	37.9	(10.0)
2200	249	(334)	1080	(797)	113	(151.5)	490	(361.6)	30.3	(8.0)
2000	241	(323)	1150	(848)	87	(117.1)	417	(307.6)	23.8	(6.3)
1800	198	(266)	1051	(775)	66	(88.1)	349	(257.1)	17.7	(4.7)
1600	158	(211)	940	(693)	48	(64.1)	285	(210.5)	13.0	(3.4)
1400	113	(152)	772	(569)	33	(44.7)	227	(167.7)	9.4	(2.5)
1200	83	(112)	664	(490)	22	(29.5)	175	(129.1)	6.6	(1.8)
1000	62	(84)	596	(440)	13	(18.0)	128	(94.7)	4.6	(1.2)
800	45	(61)	541	(399)	7	(9.9)	88	(64.8)	3.2	(0.8)
600	31	(42)	500	(369)	3	(4.5)	54	(39.7)	2.2	(0.6)

*** 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. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%. 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.

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]

Propulsion Marine Engine Performance Data

Curve No. M-94133
DS: D31-MX-2
CPL: 4191
DATE: 7-Nov-18

General Engine Data

Engine Model	QSB 6.7
Rating Type	High Output
Rated Engine Power	261 [350]
Rated Engine Speed	3000
Rated Power Production Tolerance	±5
Rated Engine Torque	831 [613]
Peak Engine Torque @ 2000 rpm.....	1150 [848]
Brake Mean Effective Pressure	1560 [226]
Maximum Allowable Engine Speed	3075
Maximum Torque Capacity from Front of Crank ²	831 [613]
Compression Ratio	16.5:1
Piston Speed	12.4 [2441]
Firing Order	1-5-3-6-2-4
Weight (Dry) - Engine With Heat Exchanger System - Average.....	658 [1450]

Governor Settings

Default Droop Value.....	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
High Speed Governor Break Point.....	rpm	3075
Minimum Idle Speed Setting	rpm	550
Normal Idle Speed Variation	±rpm	10
High Idle Speed Range Minimum	rpm	3070
Maximum	rpm	3075

Noise and Vibration

Average Noise Level - Top	(Idle)..	dBA @ 1m	75
	(Rated)	dBA @ 1m	100
Average Noise Level - Right Side	(Idle)..	dBA @ 1m	75
	(Rated)	dBA @ 1m	100
Average Noise Level - Left Side	(Idle)..	dBA @ 1m	76
	(Rated)	dBA @ 1m	102
Average Noise Level - Front	(Idle)..	dBA @ 1m	76
	(Rated)	dBA @ 1m	101

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	l/hr [gal/hr]	47.5 [12.5]
Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle	l/hr [gal/hr]	23.8 [6.3]
Fuel Consumption at Rated Speed	l/hr [gal/hr]	67.6 [17.9]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	148.2 [39.1]
Approximate Fuel Return to Tank Temperature	°C [°F]	79.5 [175]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	3.0 [171]

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, INDIANA

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

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

Propulsion Marine Engine Performance Data

Curve No. M-94133
DS: D31-MX-2
CPL: 4191
DATE: 7-Nov-18

Air System¹

Intake Manifold Pressure	kPa [in Hg]	196 [58]
Intake Air Flow	l/sec [cfm]	403 [853]
Heat Rejection to Ambient	kW [Btu/min]	20 [1159]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	734 [1,556]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	350 [661]
Exhaust Gas Temperature (Manifold)	°C [°F]	523 [972]

Emissions (in accordance with ISO 8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw·hr [g/hp·hr]	4.84 [3.61]
HC (Hydrocarbons)	g/kw·hr [g/hp·hr]	0.16 [0.12]
CO (Carbon Monoxide)	g/kw·hr [g/hp·hr]	0.40 [0.30]
PM (Particulate Matter)	g/kw·hr [g/hp·hr]	0.005 [0.00]
CO ₂ (Carbon dioxide)	g/kw·hr [g/hp·hr]	678.00 [505.58]

Emissions (in accordance with ISO 8178 Cycle E5)

NOx (Oxides of Nitrogen)	g/kw·hr [g/hp·hr]	4.89 [3.65]
HC (Hydrocarbons)	g/kw·hr [g/hp·hr]	0.20 [0.15]
CO (Carbon Monoxide)	g/kw·hr [g/hp·hr]	0.52 [0.39]
PM (Particulate Matter)	g/kw·hr [g/hp·hr]	0.05 [0.03]
CO ₂ (Carbon dioxide)	g/kw·hr [g/hp·hr]	688.00 [513.04]

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	110 [16]
Max. Coolant Outlet Pressure from the Engine.....	kPa [psi]	414 [60]

Sea Water Aftercooled Engine (SWAC)

Standard Thermostat Operating Range (Start to Open)	°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open)	°C [°F]	83 [182]

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, INDIANA

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

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



CUMMINS INC.
 Charleston, SC 29405
 Marine Performance Curves
marine.cummins.com

Basic Engine Model
QSB 6.7

Curve Number:
M-94375

Engine Configuration
D313011MX03

CPL Code:
4191

Date:
7-Nov-18

Displacement: **6.7 liter [408 in³]**
 Bore: **107 mm [4.21 in]**
 Stroke: **124 mm [4.88 in]**
 Cylinders: **6**
 Fuel System: **HPCR Bosch CRIN 3.0**

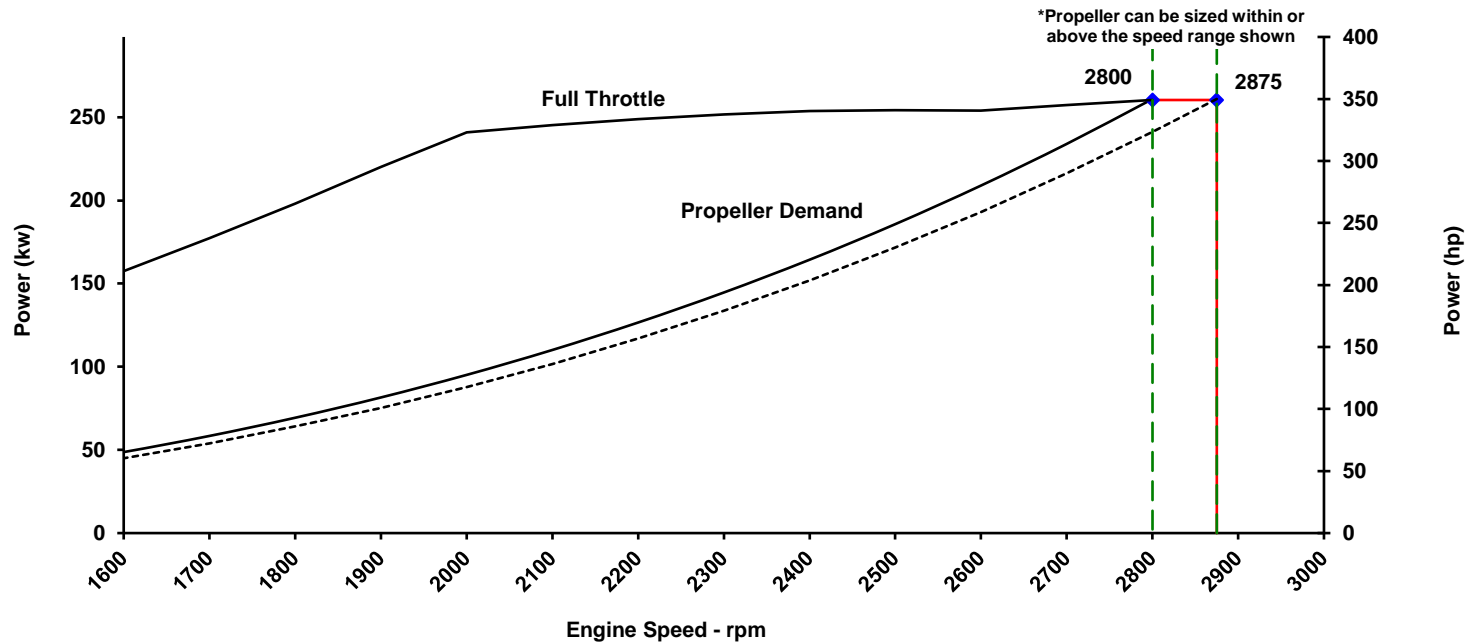
Rated Power: **261 kw [350bhp, 355mhp]**
 Rated Speed: **2800 rpm**
 Rating Type: **Intermittent Duty**
 Aspiration: **Turbocharged / Sea Water Aftercooled**

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



Speed	Full Throttle				Propeller Demand					
	Power		Torque		Power		Torque		Fuel Consumption	
	kw	(hp)	N·m	(ft·lb)	kw	(hp)	N·m	(ft·lb)	L/hr	(gal/hr)
2875	260	(349)	865	(638)						
2800	260	(349)	888	(655)	261	(350.0)	890	(656.5)	68.1	18.0
2700	257	(345)	910	(671)	237	(317.3)	837	(617.1)	61.5	(16.2)
2600	254	(341)	933	(688)	214	(286.5)	785	(578.8)	56.0	14.8
2500	254	(341)	971	(716)	192	(257.7)	734	(541.5)	50.8	(13.4)
2400	254	(340)	1010	(745)	172	(230.8)	685	(505.2)	45.3	12.0
2300	252	(338)	1045	(771)	153	(205.8)	637	(469.9)	40.2	10.6
2200	249	(334)	1080	(797)	136	(182.5)	591	(435.7)	36.0	9.5
2100	245	(329)	1115	(822)	120	(161.0)	546	(402.6)	31.8	(8.4)
2000	241	(323)	1150	(848)	105	(141.1)	502	(370.5)	28.1	(7.4)
1900	220	(295)	1107	(816)	92	(122.9)	460	(339.6)	24.3	(6.4)
1800	198	(266)	1051	(775)	79	(106.2)	420	(309.8)	21.0	(5.5)
1700	177	(238)	996	(734)	68	(91.0)	381	(281.1)	18.1	(4.8)
1600	158	(211)	940	(693)	58	(77.2)	344	(253.6)	15.6	(4.1)
1500	134	(179)	850	(627)	48	(64.9)	308	(227.2)	13.2	(3.5)
1400	113	(152)	772	(569)	40	(53.9)	274	(202.1)	11.3	(3.0)
1300	98	(131)	718	(530)	33	(44.1)	242	(178.1)	9.6	(2.5)
1200	83	(112)	664	(490)	26	(35.5)	211	(155.5)	8.1	(2.1)
1100	73	(97)	630	(465)	21	(28.1)	182	(134.1)	6.8	(1.8)
1000	62	(84)	596	(440)	16	(21.7)	155	(114.0)	5.7	(1.5)
900	54	(72)	568	(419)	12	(16.3)	129	(95.3)	4.6	(1.2)
800	45	(61)	541	(399)	9	(11.9)	106	(78.0)	3.7	(1.0)
600	31	(42)	500	(369)	4	(5.5)	65	(47.9)	2.4	(0.6)

*** 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. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%. 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.

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.

TECHNICAL DATA DEPT.

CHIEF ENGINEER

Propulsion Marine Engine Performance Data

Curve No. M-94375
 DS: D31-MX-1
 CPL: 4191
 DATE: 7-Nov-18

General Engine Data

Engine Model	QSB 6.7
Rating Type	Intermittent Duty
Rated Engine Power	261 [350]
Rated Engine Speed	2800
Rated Power Production Tolerance	±5
Rated Engine Torque	890 [657]
Peak Engine Torque @ 2000 rpm.....	1150 [848]
Brake Mean Effective Pressure	1672 [242]
Indicated Mean Effective Pressure.....	1972 [286]
Maximum Allowable Engine Speed	2875

Maximum Continuous Torque Capacity from Front of Crank Specifications

Maximum Torque Capacity from Front of Crank ²	888 [655]
Compression Ratio	16.5:1
Piston Speed	11.6 [2278]
Firing Order	1-5-3-6-2-4
Weight (Dry) - Engine With Heat Exchanger System - Average.....	658 [1450]

Governor Settings

Default Droop Value.....	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
High Speed Governor Break Point.....	rpm	2875
Minimum Idle Speed Setting	rpm	550
Normal Idle Speed Variation	±rpm	5
High Idle Speed Range Minimum	rpm	2870
High Idle Speed Range Maximum	rpm	2880

Noise and Vibration

Average Noise Level - Top	(Idle).....	dBA @ 1m	75
	(Rated).....	dBA @ 1m	100
Average Noise Level - Right Side	(Idle).....	dBA @ 1m	75
	(Rated).....	dBA @ 1m	100
Average Noise Level - Left Side	(Idle).....	dBA @ 1m	76
	(Rated).....	dBA @ 1m	102
Average Noise Level - Front	(Idle).....	dBA @ 1m	76
	(Rated).....	dBA @ 1m	101

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	l/hr [gal/hr]	47.7 [12.6]
Fuel Consumption at Rated Speed	l/hr [gal/hr]	68.1 [18.0]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	147.6 [39.0]
Approximate Fuel Return to Tank Temperature	°C [°F]	79.5 [175]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	3.0 [170]

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 INC.
 COLUMBUS, INDIANA

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

<http://marine.cummins.com>

Propulsion Marine Engine Performance Data

Curve No. M-94375
 DS: D31-MX-1
 CPL: 4191
 DATE: 7-Nov-18

Air System¹

Intake Manifold Pressure	kPa [in Hg]	183 [54]
Intake Air Flow	l/sec [cfm]	363 [770]
Heat Rejection to Ambient	kW [Btu/min]	20 [1159]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	721 [1,527]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	391 [736]
Exhaust Gas Temperature (Manifold)	°C [°F]	563 [1,045]

Emissions (in accordance with ISO 8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	4.84 [3.61]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.16 [0.12]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.69 [0.52]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.04 [0.03]
CO ₂ (Carbon dioxide)	g/kw-hr [g/hp-hr]	496.00 [369.87]

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating	kPa [psi]	110 [16]
Max. Coolant Outlet Pressure from the Engine	kPa [psi]	414 [60]

Sea Water Aftercooled Engine (SWAC)

Standard Thermostat Operating Range (Start to Open)	°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open)	°C [°F]	83 [182]

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 INC.
 COLUMBUS, INDIANA

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

<http://marine.cummins.com>



CUMMINS INC.
Columbus, IN 47201
Marine Performance Curves
marine.cummins.com

Basic Engine Model

QSB6.7 380HO

Curve Number:

M-94131

Engine Configuration

D313011MX03

CPL Code:

4191

Date:

7-Nov-18

Displacement: **6.7 liter [408 in³]**
Bore: **107 mm [4.21 in]**
Stroke: **124 mm [4.88 in]**
Fuel System: **HPCR Bosch CRIN 3.0**
Cylinders: **6**

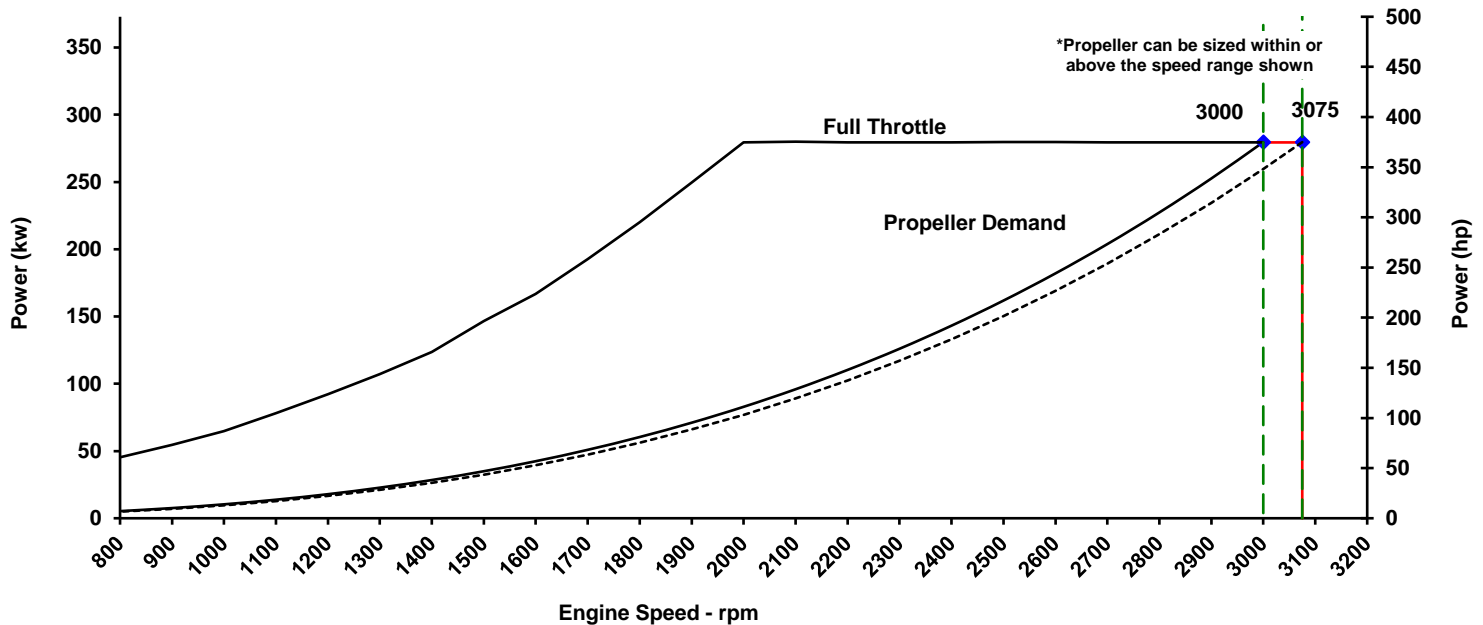
Rated Power: **280 kw [375 bhp, 380 mhp]**
Rated Speed: **3000 rpm**
Rating Type: **High Output**
Aspiration: **Turbocharged / Sea Water Aftercooled**

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 (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				Propeller Demand					
	Power		Torque		Power		Torque		Fuel Consumption	
	rpm	kw	(hp)	N·m	(ft·lb)	kw	(hp)	N·m	(ft·lb)	L/hr	(gal/hr)
3075	279	(375)	868	(640)	280	(375.0)	890	(656.5)	73.9	(19.5)
3000	279	(375)	889	(656)	232	(311.3)	792	(583.8)	60.8	(16.1)
2800	279	(375)	953	(703)	210	(282.2)	744	(548.8)	55.2	(14.6)
2700	279	(375)	988	(729)	190	(254.8)	698	(514.7)	49.6	(13.1)
2600	280	(375)	1028	(758)	153	(205.3)	609	(449.2)	40.1	(10.6)
2400	279	(375)	1112	(820)	121	(162.3)	525	(387.5)	32.4	(8.6)
2200	280	(375)	1213	(895)	94	(125.5)	447	(329.5)	25.2	(6.7)
2000	279	(375)	1334	(984)	70	(94.4)	373	(275.5)	18.7	(4.9)
1800	220	(295)	1167	(861)	51	(68.7)	306	(225.5)	13.5	(3.6)
1600	167	(224)	995	(734)	36	(47.9)	244	(179.7)	9.8	(2.6)
1400	124	(166)	843	(622)	24	(31.6)	187	(138.3)	6.7	(1.8)
1200	92	(124)	733	(541)	14	(19.3)	138	(101.4)	4.4	(1.2)
1000	65	(87)	620	(457)	8	(10.6)	94	(69.4)	2.7	(0.7)
800	45	(61)	541	(399)	4	(4.9)	58	(42.6)	1.6	(0.4)
600	31	(42)	500	(369)						

*** Cummins Full Throttle Requirements:**

- Engine achieves or exceeds rated rpm at full throttle under any steady operating condition
- 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. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%. 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.

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]

Propulsion Marine Engine Performance Data

Curve No. M-94131
DS: D31-MX-2
CPL: 4191
DATE: 7-Nov-18

General Engine Data

Engine Model	QSB6.7 380HO
Rating Type	High Output
Rated Engine Power	280 [375]
Rated Engine Speed	3000
Rated Power Production Tolerance	5
Rated Engine Torque	890 [657]
Peak Engine Torque @ 2000 rpm.....	1335 [985]
Brake Mean Effective Pressure	1672 [242]
Indicated Mean Effective Pressure.....	1672 [242]
Maximum Allowable Engine Speed	3075

Maximum Continuous Torque Capacity from Front of Crank Specifications

Maximum Torque Capacity from Front of Crank ²	N·m [lb·ft]	891 [657]
Compression Ratio		16.5:1
Piston Speed	m/sec [ft/min]	12.4 [2441]
Firing Order		1-5-3-6-2-4
Weight (Dry) - Engine With Heat Exchanger System - Average.....	kg [lb]	662 [1460]

Governor Settings

Default Droop Value.....	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
High Speed Governor Break Point.....	rpm	3075
Minimum Idle Speed Setting	rpm	550
Normal Idle Speed Variation	±rpm	10
High Idle Speed Range Minimum	rpm	3070
Maximum	rpm	3080

Noise and Vibration

Average Noise Level - Top	(Idle)..	dBA @ 1m	75
	(Rated)	dBA @ 1m	100
Average Noise Level - Right Side	(Idle)..	dBA @ 1m	75
	(Rated)	dBA @ 1m	100
Average Noise Level - Left Side	(Idle)..	dBA @ 1m	76
	(Rated)	dBA @ 1m	102
Average Noise Level - Front	(Idle)..	dBA @ 1m	76
	(Rated)	dBA @ 1m	101

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	l/hr [gal/hr]	50.4 [13.3]
Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle	l/hr [gal/hr]	25.5 [6.7]
Fuel Consumption at Rated Speed	l/hr [gal/hr]	73.9 [19.5]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Temperature (D2 Fuel).....	°C [°F]	70.1 [158]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	141.9 [37.5]
Approximate Fuel Return to Tank Temperature	°C [°F]	79.5 [175]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	2.9 [163]

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, INDIANA

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

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

Propulsion Marine Engine Performance Data

Curve No. M-94131
DS: D31-MX-2
CPL: 4191
DATE: 7-Nov-18

Air System¹

Intake Manifold Pressure	kPa [in Hg]	223 [66]
Intake Air Flow	l/sec [cfm]	432 [915]
Heat Rejection to Ambient	kW [Btu/min]	22 [1255]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	805 [1,705]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	350 [662]
Exhaust Gas Temperature (Manifold)	°C [°F]	536 [996]

Emissions (in accordance with ISO 8178 Cycle E3)

NO _x (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	4.77 [3.55]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.12 [0.09]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.73 [0.54]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.10 [0.07]
CO ₂ (Carbon dioxide)	g/kw-hr [g/hp-hr]	688.75 [513.60]
CH ₄ (Methane)	g/kw-hr [g/hp-hr]	0.006 [0.00]

Emissions (in accordance with ISO 8178 Cycle E5)

NO _x (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	4.91 [3.66]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.13 [0.10]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.76 [0.57]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.10 [0.07]
CO ₂ (Carbon dioxide)	g/kw-hr [g/hp-hr]	701.80 [523.33]
CH ₄ (Methane)	g/kw-hr [g/hp-hr]	0.006 [0.00]

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	103 [15]
Max. Coolant Outlet Pressure from the Engine.....	kPa [psi]	414 [60]
Sea Water Aftercooled Engine (SWAC)		
Standard Thermostat Operating Range (Start to Open)	°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open)	°C [°F]	82 [180]

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, INDIANA

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

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



CUMMINS INC.
Columbus, IN 47201
Marine Performance Curves
marine.cummins.com

Basic Engine Model
QSB6.7 380ID
Engine Configuration
D313011MX03

Curve Number:
M-94132
CPL Code:
4191
Date:
7-Nov-18

Displacement: **6.7 liter [408 in³]**
Bore: **107 mm [4.21 in]**
Stroke: **124 mm [4.88 in]**
Fuel System: **HPCR Bosch CRIN 3.0**
Cylinders: **6**

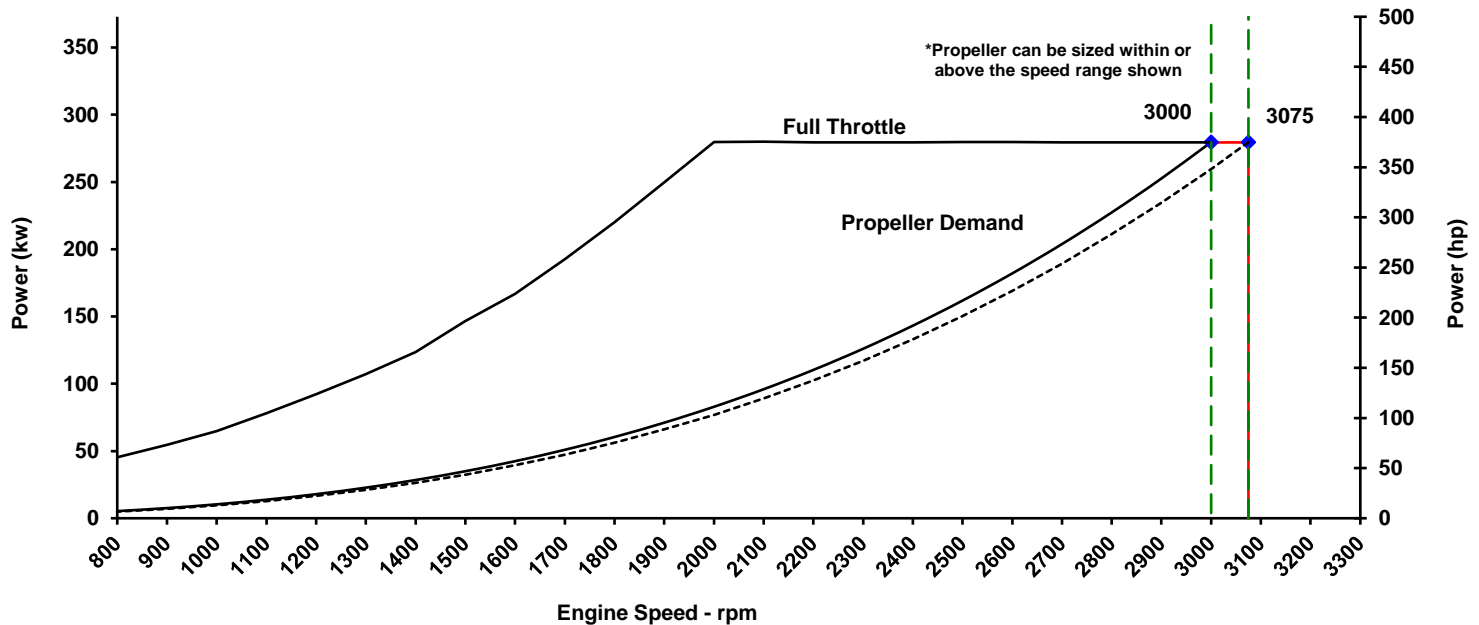
Rated Power: **280 kw [375 bhp, 380 mhp]**
Rated Speed: **3000 rpm**
Rating Type: **Intermittent Duty**
Aspiration: **Turbocharged / Sea Water Aftercooled**

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



Speed	Full Throttle				Propeller Demand						
	Power		Torque		Power		Torque		Fuel Consumption		
	rpm	kw	(hp)	N·m	(ft·lb)	kw	(hp)	N·m	(ft·lb)	L/hr	(gal/hr)
3075	279	(375)	868	(640)							
3000	279	(375)	889	(656)	280	(375.0)	890	(656.5)	73.9	(19.5)	
2900	280	(375)	921	(679)	255	(342.2)	840	(619.7)	67.2	(17.8)	
2800	279	(375)	953	(703)	232	(311.3)	792	(583.8)	60.8	(16.1)	
2700	279	(375)	988	(729)	210	(282.2)	744	(548.8)	55.2	(14.6)	
2600	280	(375)	1028	(758)	190	(254.8)	698	(514.7)	49.6	(13.1)	
2400	279	(375)	1112	(820)	153	(205.3)	609	(449.2)	40.1	(10.6)	
2200	280	(375)	1213	(895)	121	(162.3)	525	(387.5)	32.4	(8.6)	
2000	280	(375)	1335	(985)	94	(125.5)	447	(329.5)	25.2	(6.7)	
1800	220	(295)	1167	(861)	70	(94.4)	373	(275.5)	18.7	(4.9)	
1600	167	(224)	995	(734)	51	(68.7)	306	(225.5)	13.5	(3.6)	
1400	124	(166)	843	(622)	36	(47.9)	244	(179.7)	9.8	(2.6)	
1200	92	(124)	733	(541)	24	(31.6)	187	(138.3)	6.7	(1.8)	
1000	65	(87)	620	(457)	14	(19.3)	138	(101.4)	4.4	(1.2)	
800	45	(61)	541	(399)	8	(10.6)	94	(69.4)	2.7	(0.7)	
600	31	(42)	500	(369)	4	(4.9)	58	(42.6)	1.6	(0.4)	

*** 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. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%. 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.

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.

Propulsion Marine Engine Performance Data

Curve No. M-94132
DS: D31-MX-2
CPL: 4191
DATE: 7-Nov-18

General Engine Data

Engine Model	QSB6.7 380ID
Rating Type	Intermittent Duty
Rated Engine Power	280 [375]
Rated Engine Speed	3000
Rated Power Production Tolerance	±% 5
Rated Engine Torque	890 [657]
Peak Engine Torque @ 2000 rpm.....	1335 [985]
Brake Mean Effective Pressure	1672 [242]
Indicated Mean Effective Pressure.....	1672 [242]
Maximum Allowable Engine Speed	3075
Maximum Torque Capacity from Front of Crank ²	891 [657]
Compression Ratio	16.5:1
Piston Speed	12.4 [2441]
Firing Order	1-5-3-6-2-4
Weight (Dry) - Engine With Heat Exchanger System - Average.....	662 [1460]

Governor Settings

Default Droop Value.....	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
High Speed Governor Break Point.....	rpm	3075
Minimum Idle Speed Setting	rpm	550
Normal Idle Speed Variation	±rpm	10
High Idle Speed Range Minimum	rpm	3070
High Idle Speed Range Maximum	rpm	3080

Noise and Vibration

Average Noise Level - Top	(Idle)..	dBA @ 1m	75
	(Rated)	dBA @ 1m	100
Average Noise Level - Right Side	(Idle)..	dBA @ 1m	75
	(Rated)	dBA @ 1m	100
Average Noise Level - Left Side	(Idle)..	dBA @ 1m	76
	(Rated)	dBA @ 1m	102
Average Noise Level - Front	(Idle)..	dBA @ 1m	76
	(Rated)	dBA @ 1m	101

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	l/hr [gal/hr]	50.4 [13.3]
Fuel Consumption at Rated Speed	l/hr [gal/hr]	73.9 [19.5]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	70.1 [158]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	141.9 [37.5]
Approximate Fuel Return to Tank Temperature	°C [°F]	79.5 [175]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	2.9 [163]

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, INDIANA

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

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

Propulsion Marine Engine Performance Data

Curve No. M-94132
DS: D31-MX-2
CPL: 4191
DATE: 7-Nov-18

Air System¹

Intake Manifold Pressure	kPa [in Hg]	223 [66]
Intake Air Flow	l/sec [cfm]	432 [915]
Heat Rejection to Ambient	kW [Btu/min]	22 [1255]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	805 [1,705]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	350 [662]
Exhaust Gas Temperature (Manifold)	°C [°F]	536 [996]

Emissions (in accordance with ISO 8178 Cycle E3)

NO _x (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	4.77 [3.55]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.12 [0.09]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.73 [0.54]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.10 [0.07]
CO ₂ (Carbon dioxide)	g/kw-hr [g/hp-hr]	688.75 [513.60]

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	110 [16]
Max. Coolant Outlet Pressure from the Engine.....	kPa [psi]	414 [60]

Sea Water Aftercooled Engine (SWAC)

Standard Thermostat Operating Range (Start to Open)	°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open)	°C [°F]	82 [180]

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, INDIANA

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

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



CUMMINS INC.
Columbus, IN 47201
Marine Performance Curves
marine.cummins.com

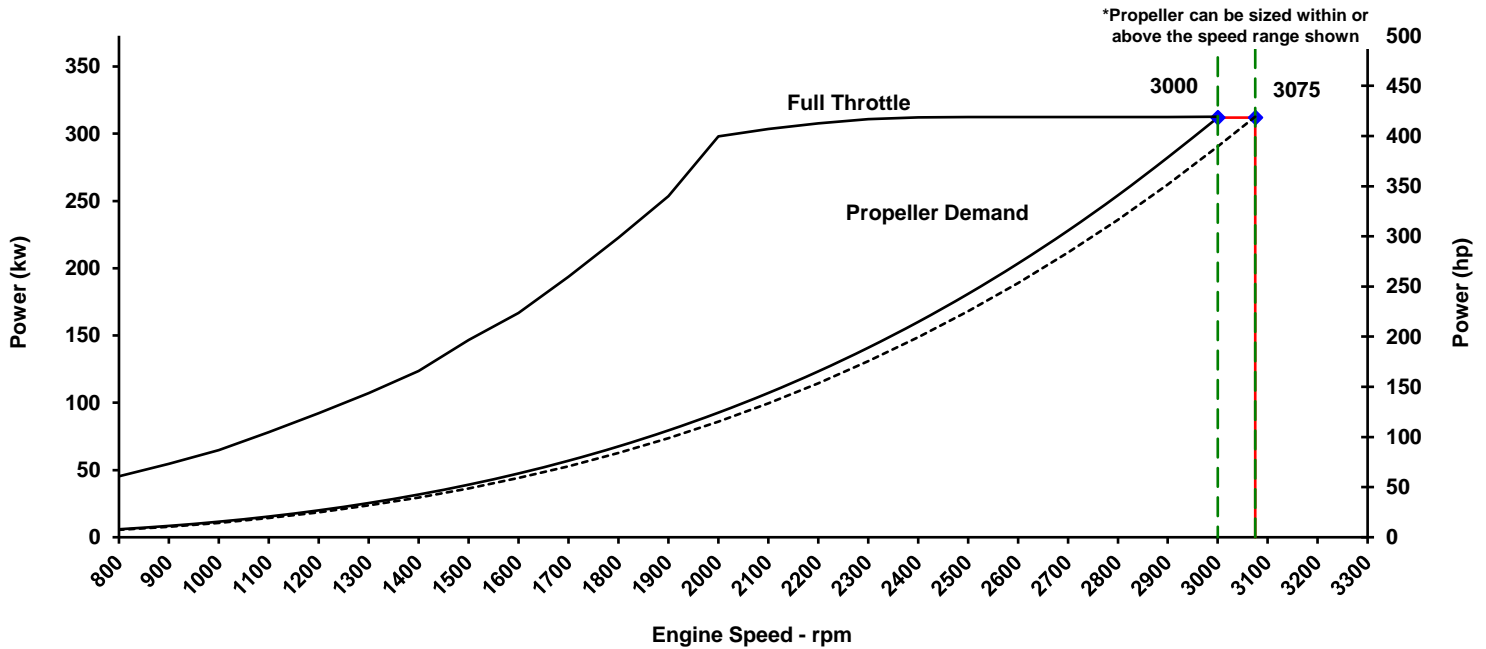
Basic Engine Model
QSB 6.7
Engine Configuration
D313011MX03

Curve Number:
M-94129
CPL Code:
4191
Date:
7-Nov-18

Displacement: **6.7 liter [408 in³]**
Bore: **107 mm [4.21 in]**
Stroke: **124 mm [4.88 in]**
Fuel System: **HPCR Bosch CRIN 3.0**
Cylinders: **6**

Rated Power: **312 kw [419 bhp, 425 mhp]**
Rated Speed: **3000 rpm**
Rating Type: **High Output**
Aspiration: **Turbocharged / Sea Water Aftercooled**

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 (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 rpm	Full Throttle				Propeller Demand					
	Power		Torque		Power		Torque		Fuel Consumption	
	kw	(hp)	N·m	(ft·lb)	kw	(hp)	N·m	(ft·lb)	L/hr	(gal/hr)
3075	312	(419)	971	(716)						
3000	312	(419)	995	(734)	312	(419.3)	995	(734.0)	81.1	(21.4)
2900	312	(419)	1029	(759)	285	(382.6)	939	(692.9)	73.4	(19.4)
2800	312	(419)	1066	(786)	260	(348.0)	885	(652.8)	66.5	(17.6)
2700	312	(419)	1105	(815)	235	(315.5)	832	(613.6)	60.4	(15.9)
2600	312	(419)	1147	(846)	212	(284.9)	780	(575.5)	55.0	(14.5)
2400	312	(419)	1242	(916)	171	(229.5)	681	(502.3)	43.8	(11.6)
2200	308	(413)	1335	(985)	135	(181.5)	587	(433.2)	35.1	(9.3)
2000	298	(400)	1424	(1050)	105	(140.3)	500	(368.4)	27.7	(7.3)
1800	223	(299)	1181	(871)	79	(105.6)	418	(308.0)	20.9	(5.5)
1600	167	(224)	995	(734)	57	(76.8)	342	(252.1)	15.1	(4.0)
1400	124	(166)	843	(622)	40	(53.6)	272	(200.9)	10.8	(2.8)
1200	92	(124)	733	(541)	26	(35.3)	210	(154.6)	7.5	(2.0)
1000	65	(87)	620	(457)	16	(21.6)	154	(113.4)	5.2	(1.4)
800	45	(61)	541	(399)	9	(11.8)	105	(77.6)	3.5	(0.9)
700	38	(51)	521	(384)	6	(8.2)	84	(61.8)	2.9	(0.8)
600	31	(42)	500	(369)	4	(5.4)	65	(47.6)	3.1	(0.8)

- * Cummins Full Throttle Requirements:**
- Engine achieves or exceeds rated rpm at full throttle under any steady operating condition
 - 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. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%. 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.

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-94129
DS: D31-MX-2
CPL: 4191
DATE: 7-Nov-18

General Engine Data

Engine Model	QSB 6.7
Rating Type	High Output
Rated Engine Power	312 [419]
Rated Engine Speed	3000 rpm
Rated Power Production Tolerance	±% 5
Rated Engine Torque	995 [734] N·m [lb·ft]
Peak Engine Torque @ 2000 rpm.....	1424 [1050] N·m [lb·ft]
Brake Mean Effective Pressure	1869 [271] kPa [psi]
Maximum Allowable Engine Speed	3075 rpm
Maximum Torque Capacity from Front of Crank ²	995 [734] N·m [lb·ft]
Compression Ratio	16.5:1
Piston Speed	12.4 [2441] m/sec [ft/min]
Firing Order	1-5-3-6-2-4
Weight (Dry) - Engine With Heat Exchanger System - Average.....	662 [1460] kg [lb]

Governor Settings

Default Droop Value.....	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
High Speed Governor Break Point.....	rpm	3075
Minimum Idle Speed Setting	rpm	550
Normal Idle Speed Variation	±rpm	10
High Idle Speed Range Minimum	rpm	3070
High Idle Speed Range Maximum	rpm	3080

Noise and Vibration

Average Noise Level - Top	(Idle).....	dBA @ 1m	75
	(Rated)	dBA @ 1m	100
Average Noise Level - Right Side	(Idle).....	dBA @ 1m	75
	(Rated)	dBA @ 1m	100
Average Noise Level - Left Side	(Idle).....	dBA @ 1m	76
	(Rated)	dBA @ 1m	102
Average Noise Level - Front	(Idle).....	dBA @ 1m	76
	(Rated)	dBA @ 1m	101

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	l/hr [gal/hr]	55.0 [14.5]
Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle	l/hr [gal/hr]	27.8 [7.3]
Fuel Consumption at Rated Speed	l/hr [gal/hr]	81.1 [21.4]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	134.7 [35.6]
Approximate Fuel Return to Tank Temperature	°C [°F]	79.5 [175]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	2.7 [155]

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, INDIANA

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

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

Propulsion Marine Engine Performance Data

Curve No. M-94129
DS: D31-MX-2
CPL: 4191
DATE: 7-Nov-18

Air System¹

Intake Manifold Pressure	kPa [in Hg]	237 [70]
Intake Air Flow	l/sec [cfm]	442 [936]
Heat Rejection to Ambient	kW [Btu/min]	25 [1396]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	871 [1,845]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	399 [750]
Exhaust Gas Temperature (Manifold)	°C [°F]	588 [1,090]

Emissions (in accordance with ISO 8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw·hr [g/hp·hr]	4.90 [3.65]
HC (Hydrocarbons)	g/kw·hr [g/hp·hr]	0.12 [0.09]
CO (Carbon Monoxide)	g/kw·hr [g/hp·hr]	0.35 [0.26]
PM (Particulate Matter)	g/kw·hr [g/hp·hr]	0.09 [0.07]
CO ₂ (Carbon dioxide)	g/kw·hr [g/hp·hr]	677.00 [504.84]

Emissions (in accordance with ISO 8178 Cycle E5)

NOx (Oxides of Nitrogen)	g/kw·hr [g/hp·hr]	5.00 [3.73]
HC (Hydrocarbons)	g/kw·hr [g/hp·hr]	0.14 [0.10]
CO (Carbon Monoxide)	g/kw·hr [g/hp·hr]	0.43 [0.32]
PM (Particulate Matter)	g/kw·hr [g/hp·hr]	0.09 [0.07]
CO ₂ (Carbon dioxide)	g/kw·hr [g/hp·hr]	682.00 [508.57]

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	110 [16]
Max. Coolant Outlet Pressure from the Engine.....	kPa [psi]	414 [60]

Sea Water Aftercooled Engine (SWAC)

Standard Thermostat Operating Range (Start to Open)	°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open)	°C [°F]	83 [182]

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, INDIANA

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

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

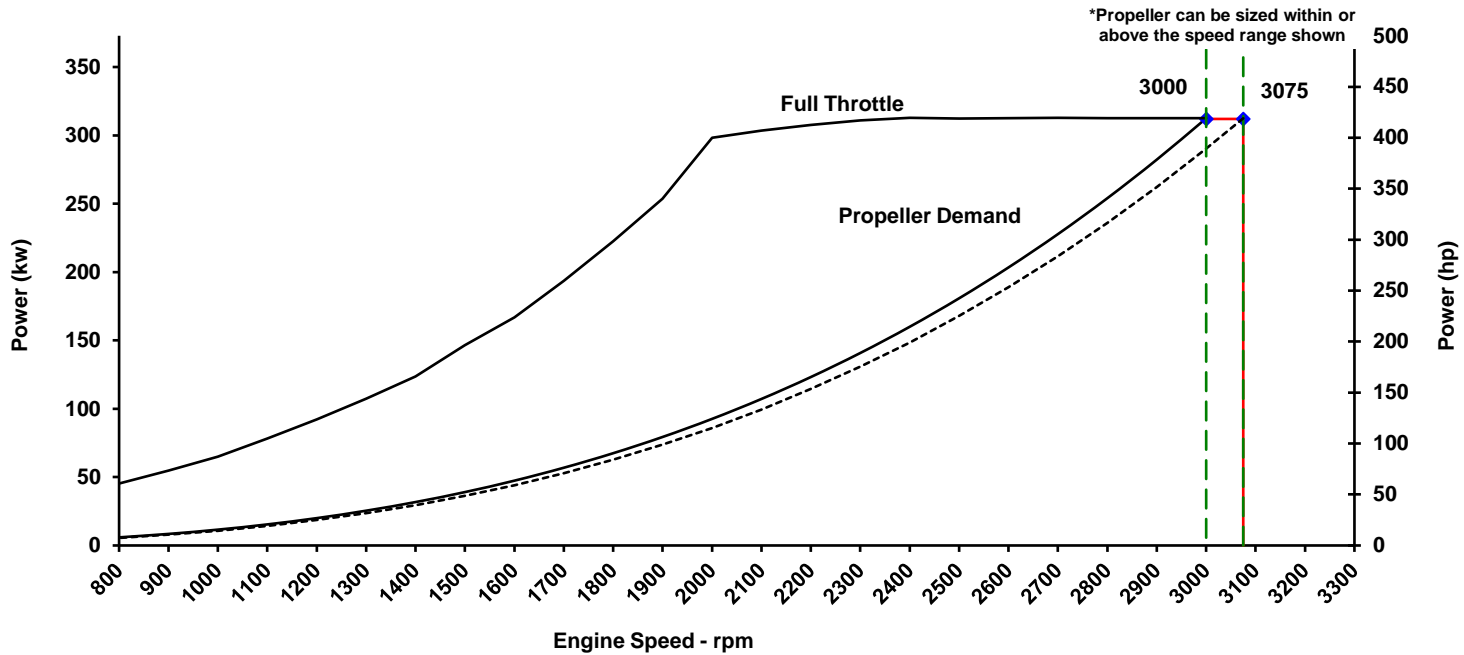


CUMMINS INC.
Columbus, IN 47201
Marine Performance Curves
marine.cummins.com

Basic Engine Model QSB 6.7	Curve Number: M-94130	
Engine Configuration D313011MX03	CPL Code: 4191	Date: 7-Nov-18

Displacement: 6.7 liter [408 in³]	Rated Power: 312 kw [419 bhp, 425 mhp]
Bore: 107 mm [4.21 in]	Rated Speed: 3000 rpm
Stroke: 124 mm [4.88 in]	Rating Type: Intermittent Duty
Fuel System: HPCR Bosch CRIN 3.0	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 (Two) NOx requirements of International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13



Speed	Full Throttle			Propeller Demand			Fuel Consumption	
	Power		Torque	Power		Torque	L/hr (gal/hr)	
	kw	(hp)	N-m (ft-lb)	kw	(hp)	N-m (ft-lb)		
rpm								
3075	312	(419)	971 (716)					
3000	312	(419)	995 (734)	312	(419.0)	995 (733.5)	82.2	(21.7)
2900	312	(419)	1029 (759)	285	(382.4)	939 (692.4)	73.4	(19.4)
2800	312	(419)	1066 (786)	259	(347.8)	884 (652.3)	66.5	(17.6)
2700	312	(419)	1106 (816)	235	(315.3)	831 (613.2)	60.4	(15.9)
2600	312	(419)	1148 (847)	212	(284.7)	780 (575.1)	55.0	(14.5)
2400	312	(419)	1245 (918)	171	(229.4)	681 (502.0)	43.8	(11.6)
2200	308	(413)	1335 (985)	135	(181.4)	587 (432.9)	35.1	(9.3)
2000	298	(400)	1424 (1050)	105	(140.2)	499 (368.2)	27.7	(7.3)
1800	223	(299)	1181 (871)	79	(105.5)	417 (307.8)	20.9	(5.5)
1600	167	(224)	995 (734)	57	(76.8)	342 (252.0)	15.1	(4.0)
1400	124	(166)	843 (622)	40	(53.5)	272 (200.8)	10.8	(2.8)
1200	92	(124)	733 (541)	26	(35.3)	209 (154.5)	7.5	(2.0)
1000	65	(87)	620 (457)	16	(21.6)	154 (113.3)	5.2	(1.4)
800	45	(61)	541 (399)	9	(11.8)	105 (77.5)	3.5	(0.9)
600	31	(42)	500 (369)	4	(5.4)	64 (47.6)	3.1	(0.8)

*** 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. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%. 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.

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.

TECHNICAL DATA DEPT.

[Signature]
CHIEF ENGINEER

Propulsion Marine Engine Performance Data

Curve No. M-94130
 DS: D31-MX-2
 CPL: 4191
 DATE: 7-Nov-18

General Engine Data

Engine Model	QSB 6.7
Rating Type	Intermittent Duty
Rated Engine Power	312 [419]
Rated Engine Speed	3000
Rated Power Production Tolerance	5
Rated Engine Torque	995 [734]
Peak Engine Torque @ 2000 rpm.....	1424 [1050]
Brake Mean Effective Pressure	1868 [271]
Maximum Allowable Engine Speed	3075
Maximum Torque Capacity from Front of Crank ²	995 [734]
Compression Ratio	16.5:1
Piston Speed	12.4 [2441]
Firing Order	1-5-3-6-2-4
Weight (Dry) - Engine With Heat Exchanger System - Average.....	662 [1460]

Governor Settings

Default Droop Value.....	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
High Speed Governor Break Point.....	rpm	3075
Minimum Idle Speed Setting	rpm	550
Normal Idle Speed Variation	±rpm	10
High Idle Speed Range Minimum	rpm	3070
Maximum	rpm	3080

Noise and Vibration

Average Noise Level - Top	(Idle).....	75
	(Rated).....	100
Average Noise Level - Right Side	(Idle).....	75
	(Rated).....	100
Average Noise Level - Left Side	(Idle).....	76
	(Rated).....	102
Average Noise Level - Front	(Idle).....	76
	(Rated).....	101

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	l/hr [gal/hr]	55.0 [14.5]
Fuel Consumption at Rated Speed	l/hr [gal/hr]	82.2 [21.7]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	133.6 [35.3]
Approximate Fuel Return to Tank Temperature	°C [°F]	79.5 [175]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	2.7 [154]

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, INDIANA

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

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

Propulsion Marine Engine Performance Data

Curve No. M-94130
 DS: D31-MX-2
 CPL: 4191
 DATE: 7-Nov-18

Air System¹

Intake Manifold Pressure	kPa [in Hg]	237 [70]
Intake Air Flow	l/sec [cfm]	442 [936]
Heat Rejection to Ambient	kW [Btu/min]	25 [1396]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	897 [1,900]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	399 [750]
Exhaust Gas Temperature (Manifold)	°C [°F]	588 [1,090]

Emissions (in accordance with ISO 8178 Cycle E3)

NO _x (Oxides of Nitrogen)	g/kw·hr [g/hp·hr]	4.90 [3.65]
HC (Hydrocarbons)	g/kw·hr [g/hp·hr]	0.12 [0.09]
CO (Carbon Monoxide)	g/kw·hr [g/hp·hr]	0.35 [0.26]
PM (Particulate Matter)	g/kw·hr [g/hp·hr]	0.09 [0.07]
CO ₂ (Carbon dioxide)	g/kw·hr [g/hp·hr]	677.00 [504.84]

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	110 [16]
Max. Coolant Outlet Pressure from the Engine.....	kPa [psi]	414 [60]

Sea Water Aftercooled Engine (SWAC)

Standard Thermostat Operating Range (Start to Open)	°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open)	°C [°F]	83 [182]

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, INDIANA

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

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

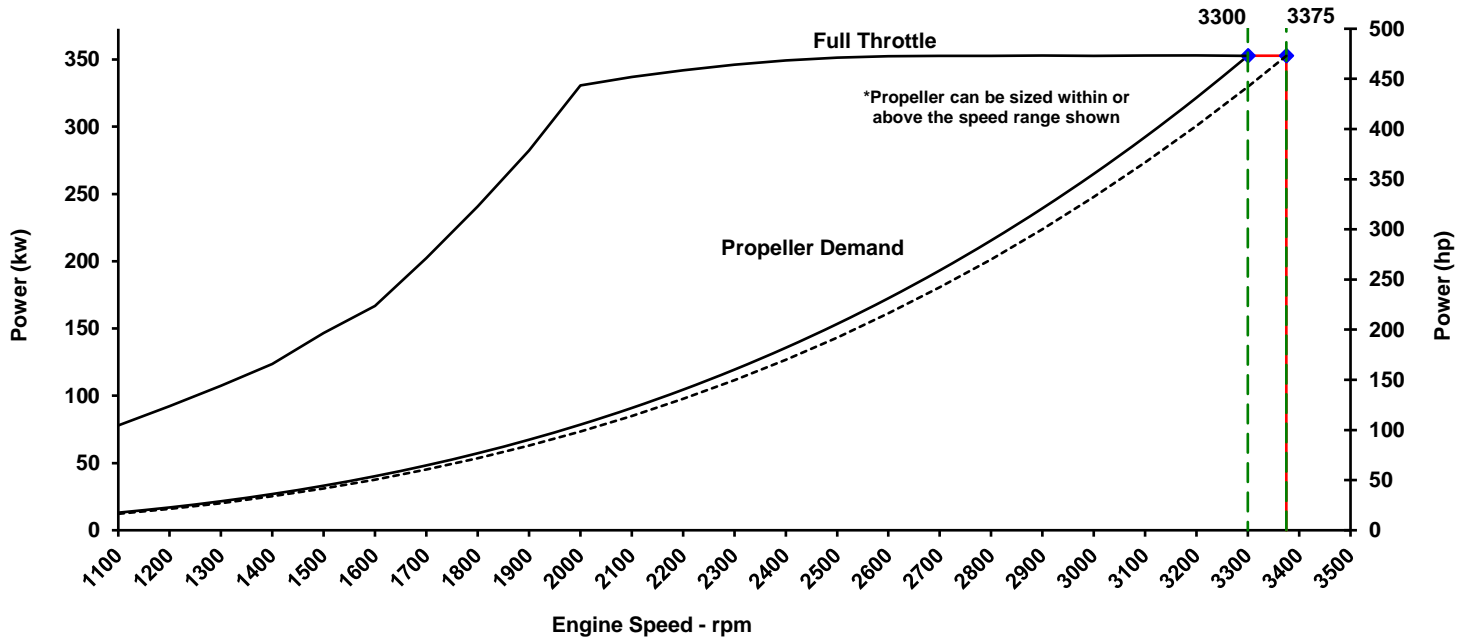


CUMMINS INC.
Columbus, IN 47201
Marine Performance Curves
marine.cummins.com

Basic Engine Model QSB 6.7	Curve Number: M-94127	
Engine Configuration D313011MX03	CPL Code: 4191	Date: 7-Nov-18

Displacement:	6.7 liter [408 in³]	Rated	353 kw [473 bhp, 480 mhp]
Bore:	107 mm [4.21 in]	Rated	3300 rpm
Stroke:	124 mm [4.88 in]	Rating Type:	High Output
Fuel System:	HPCR Bosch CRIN 3.0	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 (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				Propeller Demand				
	Power		Torque		Power		Torque		Fuel Consumption
	rpm	kw (hp)	N·m (ft·lb)	N·m (ft·lb)	kw (hp)	N·m (ft·lb)	N·m (ft·lb)	L/hr (gal/hr)	
3375	353	(473)	998	(736)					
3300	353	(473)	1021	(753)	353	(473.0)	1021	(752.8)	96.2 (25.4)
3200	353	(473)	1053	(777)	325	(435.3)	969	(714.4)	86.6 (22.9)
3100	353	(473)	1087	(802)	298	(399.5)	918	(676.9)	78.7 (20.8)
3000	353	(473)	1123	(828)	273	(365.7)	868	(640.2)	71.2 (18.8)
2900	353	(473)	1162	(857)	249	(333.7)	819	(604.3)	64.6 (17.1)
2800	353	(473)	1203	(887)	226	(303.5)	772	(569.3)	58.4 (15.4)
2600	353	(473)	1295	(955)	185	(248.5)	681	(501.9)	47.9 (12.7)
2400	349	(468)	1390	(1025)	149	(200.2)	594	(438.1)	38.4 (10.1)
2200	342	(459)	1485	(1095)	118	(158.3)	512	(377.8)	31.1 (8.2)
2000	331	(444)	1580	(1165)	91	(122.4)	436	(321.3)	24.4 (6.4)
1800	241	(323)	1277	(942)	69	(92.1)	364	(268.6)	18.3 (4.8)
1600	167	(224)	995	(734)	50	(67.0)	298	(219.9)	13.4 (3.5)
1400	124	(166)	843	(622)	35	(46.7)	238	(175.2)	9.7 (2.6)
1200	92	(124)	733	(541)	23	(30.8)	183	(134.8)	6.9 (1.8)
1000	65	(87)	620	(457)	14	(18.8)	134	(98.9)	4.8 (1.3)
800	45	(61)	541	(399)	8	(10.3)	92	(67.7)	3.5 (0.9)
600	31	(42)	500	(369)	4	(4.7)	56	(41.5)	2.2 (0.6)

- * Cummins Full Throttle Requirements:**
- Engine achieves or exceeds rated rpm at full throttle under any steady operating condition
 - 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. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%. 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.

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-94127
DS: D31-MX-2
CPL: 4191
DATE: 7-Nov-18

General Engine Data

Engine Model	QSB 6.7
Rating Type	High Output
Rated Engine Power	353 [473]
Rated Engine Speed	3300
Rated Power Production Tolerance	±5
Rated Engine Torque	1021 [753]
Peak Engine Torque @ 2000 rpm.....	1580 [1165]
Brake Mean Effective Pressure	1917 [278]
Maximum Allowable Engine Speed	3375
Maximum Torque Capacity from Front of Crank ²	1021 [753]
Compression Ratio	16.5:1
Piston Speed	13.6 [2685]
Firing Order	1-5-3-6-2-4
Weight (Dry) - Engine With Heat Exchanger System - Average.....	658 [1450]

Governor Settings

Default Droop Value.....	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
High Speed Governor Break Point.....	rpm	3375
Minimum Idle Speed Setting	rpm	550
Normal Idle Speed Variation	±rpm	10
High Idle Speed Range Minimum	rpm	3370
Maximum	rpm	3380

Noise and Vibration

Average Noise Level - Top	(Idle)..	dBA @ 1m	75
	(Rated)	dBA @ 1m	100
Average Noise Level - Right Side	(Idle)..	dBA @ 1m	75
	(Rated)	dBA @ 1m	100
Average Noise Level - Left Side	(Idle)..	dBA @ 1m	76
	(Rated)	dBA @ 1m	102
Average Noise Level - Front	(Idle)..	dBA @ 1m	76
	(Rated)	dBA @ 1m	101

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	l/hr [gal/hr]	64.1 [16.9]
Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle	l/hr [gal/hr]	32.3 [8.5]
Fuel Consumption at Rated Speed	l/hr [gal/hr]	96.2 [25.4]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	119.5 [31.6]
Approximate Fuel Return to Tank Temperature	°C [°F]	79.5 [175]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	2.4 [138]

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, INDIANA

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

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

Propulsion Marine Engine Performance Data

Curve No. M-94127
DS: D31-MX-2
CPL: 4191
DATE: 7-Nov-18

Air System¹

Intake Manifold Pressure	kPa [in Hg]	246 [73]
Intake Air Flow	l/sec [cfm]	475 [1007]
Heat Rejection to Ambient	kW [Btu/min]	29 [1630]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	1038 [2,200]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	455 [850]
Exhaust Gas Temperature (Manifold)	°C [°F]	649 [1,200]

Emissions (in accordance with ISO 8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw·hr [g/hp·hr]	4.99 [3.72]
HC (Hydrocarbons)	g/kw·hr [g/hp·hr]	0.15 [0.11]
CO (Carbon Monoxide)	g/kw·hr [g/hp·hr]	0.63 [0.47]
PM (Particulate Matter)	g/kw·hr [g/hp·hr]	0.10 [0.07]
CO ₂ (Carbon dioxide)	g/kw·hr [g/hp·hr]	695.00 [518.26]

Emissions (in accordance with ISO 8178 Cycle E5)

NOx (Oxides of Nitrogen)	g/kw·hr [g/hp·hr]	5.02 [3.74]
HC (Hydrocarbons)	g/kw·hr [g/hp·hr]	0.17 [0.13]
CO (Carbon Monoxide)	g/kw·hr [g/hp·hr]	0.65 [0.48]
PM (Particulate Matter)	g/kw·hr [g/hp·hr]	0.11 [0.08]
CO ₂ (Carbon dioxide)	g/kw·hr [g/hp·hr]	695.00 [518.26]

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	110 [16]
Max. Coolant Outlet Pressure from the Engine.....	kPa [psi]	414 [60]

Sea Water Aftercooled Engine (SWAC)

Standard Thermostat Operating Range (Start to Open)	°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open)	°C [°F]	83 [182]

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, INDIANA

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

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



CUMMINS INC.
 Charleston, SC 29405
 Marine Performance Curves
marine.cummins.com

Basic Engine Model
QSB 6.7 INT

Curve Number:
M-95035

Engine Configuration
D313011MX03

CPL Code:
4191

Date:
7-Nov-18

Displacement: **6.7 liter [408 in³]**
 Bore: **107 mm [4.21 in]**
 Stroke: **124 mm [4.88 in]**
 Cylinders: **6**
 Fuel System: **Cummins High Pressure Common Rail**

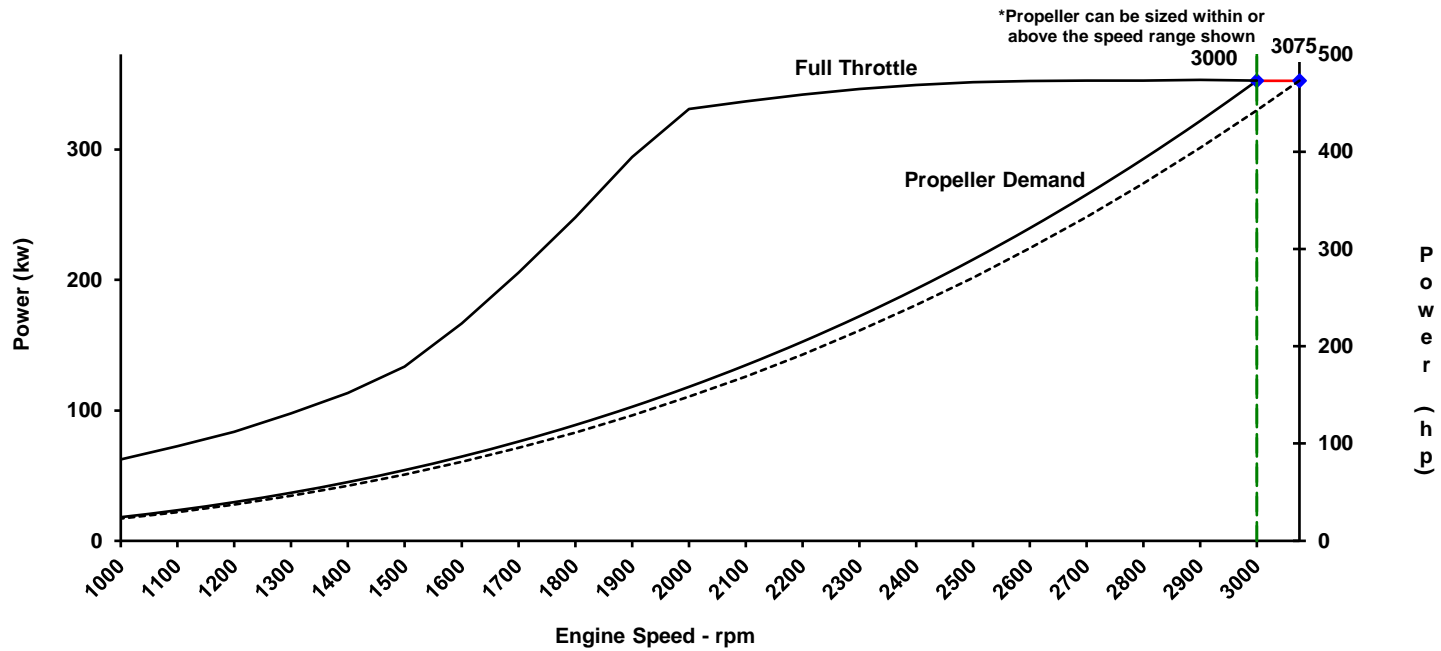
Rated Power: **353 kw [473 bhp, 480 mhp]**
 Rated Speed: **3000 rpm**
 Rating Type: **Intermittent Duty**
 Aspiration: **Turbocharged / Sea Water Aftercooled**

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



Speed	Full Throttle				Propeller Demand					
	Power		Torque		Power		Torque		Fuel Consumption	
rpm	kw	(hp)	N-m	(ft-lb)	kw	(hp)	N-m	(ft-lb)	L/hr	(gal/hr)
3075	353	(473)	1123	(808)						
3000	353	(473)	1123	(828)	353	(473.0)	1123	(828.1)	91.9	(24.3)
2900	353	(474)	1163	(858)	319	(427.3)	1049	(773.8)	81.5	(21.5)
2800	353	(473)	1203	(887)	287	(384.6)	978	(721.3)	72.2	(19.1)
2700	353	(473)	1247	(920)	257	(344.8)	909	(670.7)	64.0	(16.9)
2600	353	(473)	1295	(955)	230	(307.9)	843	(622.0)	57.4	(15.2)
2500	351	(471)	1342	(990)	204	(273.7)	780	(575.0)	51.6	(13.6)
2400	349	(468)	1390	(1025)	181	(242.2)	719	(530.0)	46.0	(12.1)
2300	346	(464)	1437	(1060)	159	(213.1)	660	(486.7)	40.2	(10.6)
2200	342	(459)	1485	(1095)	139	(186.5)	604	(445.3)	35.3	(9.3)
2100	337	(452)	1532	(1130)	121	(162.2)	550	(405.8)	31.1	(8.2)
2000	331	(444)	1580	(1165)	105	(140.1)	499	(368.0)	27.1	(7.2)
1900	294	(394)	1478	(1090)	90	(120.2)	450	(332.1)	23.2	(6.1)
1800	248	(332)	1315	(970)	76	(102.2)	404	(298.1)	19.7	(5.2)
1700	206	(276)	1155	(852)	64	(86.1)	361	(265.9)	16.6	(4.4)
1600	167	(224)	995	(734)	54	(71.8)	319	(235.5)	13.9	(3.7)
1500	134	(179)	850	(627)	44	(59.1)	281	(207.0)	11.5	(3.0)

*** Cummins Full Throttle Requirements:**

- Engine achieves or exceeds rated rpm at full throttle under any steady operating condition
- 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. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%. 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.

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 load factor of 20-40 percent. Full power is limited to two out of every eight hours of operation. Reduced power operations must be at or below 80 percent load.

TECHNICAL DATA DEPT.

CHIEF ENGINEER

Propulsion Marine Engine Performance Data

Curve No. M-95035
DS: D31-MX-2
CPL: 4191
DATE: 7-Nov-18

General Engine Data

Engine Model	QSB 6.7 INT
Rating Type	Intermittent Duty
Rated Engine Power	353 [473]
Rated Engine Speed	3000
Rated Power Production Tolerance	±% 5
Rated Engine Torque	1123 [828]
Peak Engine Torque @ 2000 rpm.....	1580 [1165]
Brake Mean Effective Pressure	2109 [306]
Indicated Mean Effective Pressure.....	2109 [306]
Maximum Allowable Engine Speed	3085

Maximum Continuous Torque Capacity from Front of Crank Specifications

Maximum Torque Capacity from Front of Crank ²	N·m [lb·ft]	995 [734]
Compression Ratio		16.5:1
Piston Speed	m/sec [ft/min]	12.4 [2441]
Firing Order		1-5-3-6-2-4
Weight (Dry) - Engine With Heat Exchanger System - Average.....	kg [lb]	658 [1450]

Governor Settings

Default Droop Value.....	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
High Speed Governor Break Point.....	rpm	3075
Minimum Idle Speed Setting	rpm	600
Normal Idle Speed Variation	±rpm	10
High Idle Speed Range Minimum	rpm	3070
Maximum	rpm	3080

Noise and Vibration

Average Noise Level - Top	(Idle)..	dBA @ 1m	75
	(Rated)	dBA @ 1m	100
Average Noise Level - Right Side	(Idle)..	dBA @ 1m	75
	(Rated)	dBA @ 1m	100
Average Noise Level - Left Side	(Idle)..	dBA @ 1m	76
	(Rated)	dBA @ 1m	102
Average Noise Level - Front	(Idle)..	dBA @ 1m	76
	(Rated)	dBA @ 1m	101

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	l/hr [gal/hr]	61.7 [16.3]
Fuel Consumption at Rated Speed	l/hr [gal/hr]	91.8 [24.3]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	124.0 [32.7]
Approximate Fuel Return to Tank Temperature	°C [°F]	79.5 [175]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	2.3 [130]
Fuel Pressure - Pump Out/Rail . INSITE Reading	kPa [psi]	177099 [25,686]

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 INC.
COLUMBUS, INDIANA

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

<http://gce.cummins.com>

Propulsion Marine Engine Performance Data

Curve No. M-95035
DS: D31-MX-2
CPL: 4191
DATE: 7-Nov-18

Air System¹

Intake Manifold Pressure .....	.....kPa [in Hg]	241 [71]
Intake Air Flow .....	.....l/sec [cfm]	444 [940]
Heat Rejection to Ambient .....	.....kW [Btu/min]	27 [1558.9]

Exhaust System¹

Exhaust Gas Flow .....	.....l/sec [cfm]	919 [1,947]
Exhaust Gas Temperature (Turbine Out) .....	.....°C [°F]	425 [796]
Exhaust Gas Temperature (Manifold) .....	.....°C [°F]	677 [1,250]

Emissions (in accordance with ISO 8178 Cycle E3)

NO _x (Oxides of Nitrogen) .....	.....g/kw-hr [g/hp-hr]	4.86 [3.62]
HC (Hydrocarbons) .....	.....g/kw-hr [g/hp-hr]	0.15 [0.11]
CO (Carbon Monoxide) .....	.....g/kw-hr [g/hp-hr]	0.47 [0.35]
PM (Particulate Matter) .....	.....g/kw-hr [g/hp-hr]	0.05 [0.04]
CO ₂ (Carbon dioxide) .....	.....g/kw-hr [g/hp-hr]	663.00 [494.40]
CH ₄ (Methane) .....	.....g/kw-hr [g/hp-hr]	0.01 [0.00]

Cooling System¹

Sea Water Pump Specifications .....	.....MAB 0.08.17-07/16/2001	
Pressure Cap Rating .....	.....kPa [psi]	103 [15]
Max. Coolant Outlet Pressure from the Engine.....	.....kPa [psi]	414 [60]
Max. Pressure Drop Across Any External Cooling System Circuit .....	.....kPa [psi]	34 [5]

Sea Water Aftercooled Engine (SWAC)

Coolant Flow to Engine Heat Exchanger .....	.....l/min [gal/min]	N/A [N.A.]
Standard Thermostat Operating Range (Start to Open) .....	.....°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open) .....	.....°C [°F]	83 [182]
Heat Rejection to Engine Coolant ³ .....	.....kW [Btu/min]	N/A [N.A.]

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 INC.
 COLUMBUS, INDIANA

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

<http://gce.cummins.com>



CUMMINS INC.
Columbus, IN 47201
Marine Performance Curves
marine.cummins.com

Basic Engine Model
QSB 6.7
Engine Configuration
D313011MX03

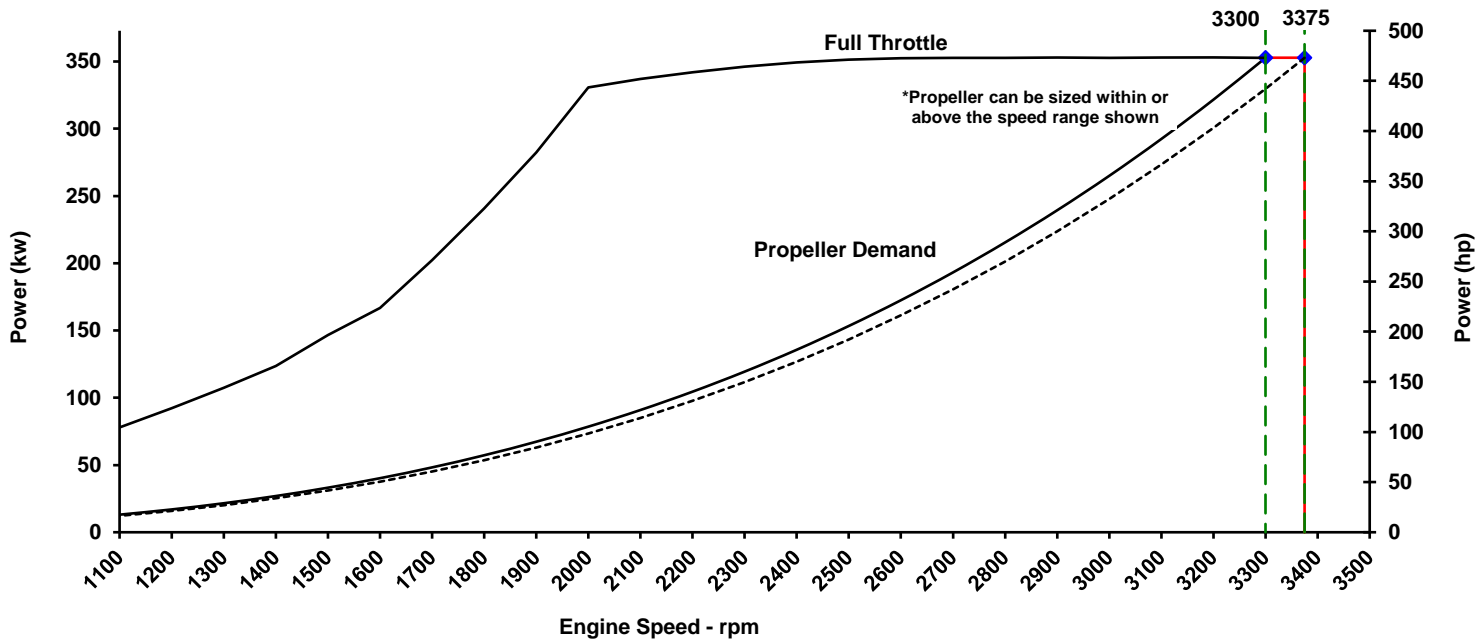
Curve Number:
M-94128
CPL Code:
4191
Date:
7-Nov-18

Displacement: **6.7 liter [408 in³]**
Bore: **107 mm [4.21 in]**
Stroke: **124 mm [4.88 in]**
Fuel System: **HPCR Bosch CRIN 3.0**
Cylinders: **6**

Rated Power: **353 kw [473 bhp, 480 mhp]**
Rated Speed: **3300 rpm**
Rating Type: **Light Duty**
Aspiration: **Turbocharged / Sea Water Aftercooled**

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



Speed	Full Throttle				Propeller Demand					
	Power		Torque		Power		Torque		Fuel Consumption	
	rpm	kw	(hp)	N·m	(ft·lb)	kw	(hp)	N·m	(ft·lb)	L/hr
3375	353	(473)	998	(736)	353	(473.0)	1021	(752.8)	96.2	(25.4)
3300	353	(473)	1021	(753)	325	(435.3)	969	(714.4)	86.6	(22.9)
3200	353	(473)	1053	(777)	325	(435.3)	969	(714.4)	86.6	(22.9)
3100	353	(473)	1087	(802)	298	(399.5)	918	(676.9)	78.7	(20.8)
3000	353	(473)	1123	(828)	273	(365.7)	868	(640.2)	71.2	(18.8)
2900	353	(473)	1162	(857)	249	(333.7)	819	(604.3)	64.6	(17.1)
2800	353	(473)	1203	(887)	226	(303.5)	772	(569.3)	58.4	(15.4)
2600	353	(473)	1295	(955)	185	(248.5)	681	(501.9)	47.9	(12.7)
2400	349	(468)	1390	(1025)	149	(200.2)	594	(438.1)	38.4	(10.1)
2200	342	(459)	1485	(1095)	118	(158.3)	512	(377.8)	31.1	(8.2)
2000	331	(444)	1580	(1165)	91	(122.4)	436	(321.3)	24.4	(6.4)
1800	241	(323)	1277	(942)	69	(92.1)	364	(268.6)	18.3	(4.8)
1600	167	(224)	995	(734)	50	(67.0)	298	(219.9)	13.4	(3.5)
1400	124	(166)	843	(622)	35	(46.7)	238	(175.2)	9.7	(2.6)
1200	92	(124)	733	(541)	23	(30.8)	183	(134.8)	6.9	(1.8)
1000	65	(87)	620	(457)	14	(18.8)	134	(98.9)	4.8	(1.3)
800	45	(61)	541	(399)	8	(10.3)	92	(67.7)	3.5	(0.9)
600	31	(42)	500	(369)	4	(4.7)	56	(41.5)	2.2	(0.6)

*** Cummins Full Throttle Requirements:**

- Engine achieves or exceeds rated rpm at full throttle under any steady operating condition
- 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. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%. 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.

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].

Light Duty (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.

Propulsion Marine Engine Performance Data

Curve No. M-94128
DS: D31-MX-2
CPL: 4191
DATE: 7-Nov-18

General Engine Data

Engine Model	QSB 6.7
Rating Type	Light Duty
Rated Engine Power	353 [473]
Rated Engine Speed	3300
Rated Power Production Tolerance	±5
Rated Engine Torque	1021 [753]
Peak Engine Torque @ 2000 rpm.....	1580 [1165]
Brake Mean Effective Pressure	1917 [278]
Maximum Allowable Engine Speed	3375
Maximum Torque Capacity from Front of Crank ²	1021 [753]
Compression Ratio	16.5:1
Piston Speed	13.6 [2685]
Firing Order	1-5-3-6-2-4
Weight (Dry) - Engine With Heat Exchanger System - Average.....	658 [1450]

Governor Settings

Default Droop Value.....	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
High Speed Governor Break Point.....	rpm	3375
Minimum Idle Speed Setting	rpm	550
Normal Idle Speed Variation	±rpm	10
High Idle Speed Range Minimum	rpm	3370
Maximum	rpm	3380

Noise and Vibration

Average Noise Level - Top	(Idle)..	dBA @ 1m	75
	(Rated)	dBA @ 1m	100
Average Noise Level - Right Side	(Idle)..	dBA @ 1m	75
	(Rated)	dBA @ 1m	100
Average Noise Level - Left Side	(Idle)..	dBA @ 1m	76
	(Rated)	dBA @ 1m	102
Average Noise Level - Front	(Idle)..	dBA @ 1m	76
	(Rated)	dBA @ 1m	101

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	l/hr [gal/hr]	64.1 [16.9]
Fuel Consumption at Rated Speed	l/hr [gal/hr]	96.2 [25.4]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	119.5 [31.6]
Approximate Fuel Return to Tank Temperature	°C [°F]	79.5 [175]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	2.4 [138]

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, INDIANA

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

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

Propulsion Marine Engine Performance Data

Curve No. M-94128
DS: D31-MX-2
CPL: 4191
DATE: 7-Nov-18

Air System¹

Intake Manifold Pressure	kPa [in Hg]	246 [73]
Intake Air Flow	l/sec [cfm]	475 [1007]
Heat Rejection to Ambient	kW [Btu/min]	29 [1630]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	1038 [2,200]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	455 [850]
Exhaust Gas Temperature (Manifold)	°C [°F]	649 [1,200]

Emissions (in accordance with ISO 8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	4.99 [3.72]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.15 [0.11]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.63 [0.47]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.10 [0.07]
CO ₂ (Carbon dioxide)	g/kw-hr [g/hp-hr]	695.00 [518.26]

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	110 [16]
Max. Coolant Outlet Pressure from the Engine.....	kPa [psi]	414 [60]
Sea Water Aftercooled Engine (SWAC)		
Standard Thermostat Operating Range (Start to Open)	°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open)	°C [°F]	83 [182]

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, INDIANA

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

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



CUMMINS INC.
 Columbus, IN 47201
 Marine Performance Curves
marine.cummins.com

Basic Engine Model
QSB 6.7
 Engine Configuration
D313011MX03

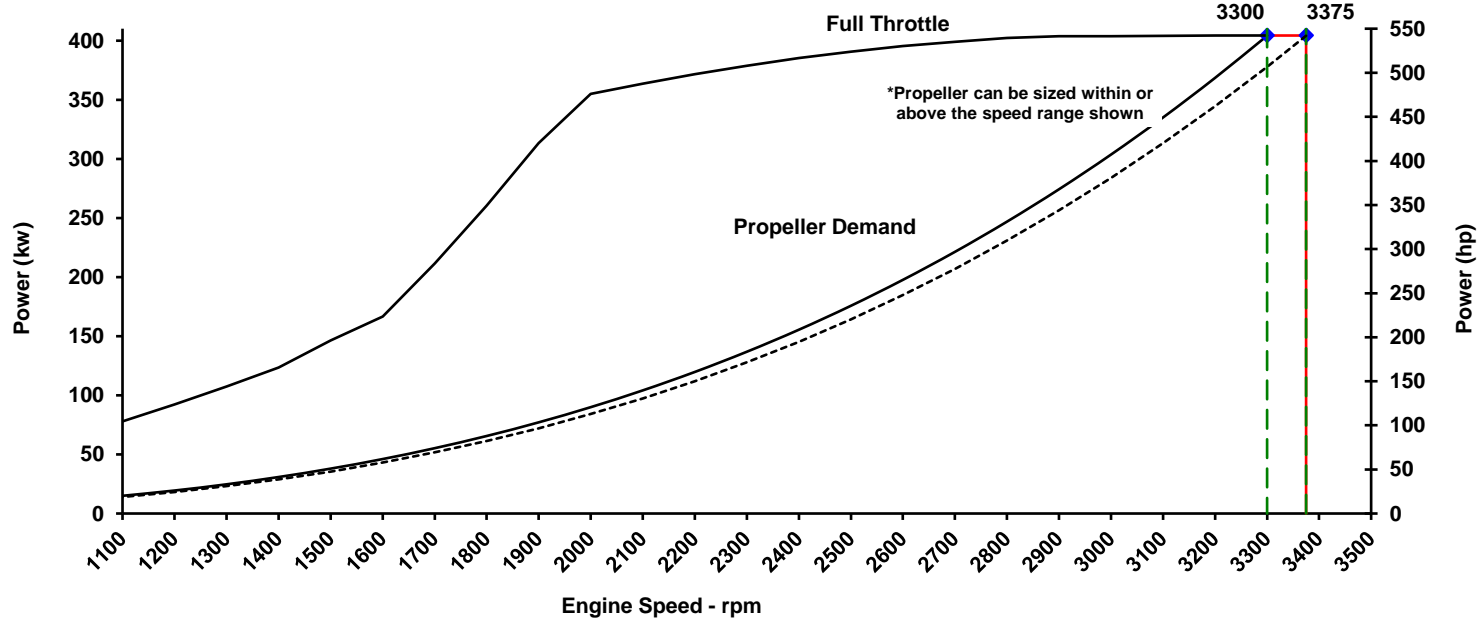
Curve Number:
M-94126
 CPL Code:
4191
 Date:
7-Nov-18

Displacement: **6.7 liter [408 in³]**
 Bore: **107 mm [4.21 in]**
 Stroke: **124 mm [4.88 in]**
 Fuel System: **HPCR Bosch CRIN 3.0**
 Cylinders: **6**

Rated Power: **404 kw [542 bhp, 550 mhp]**
 Rated Speed: **3300 rpm**
 Rating Type: **Light Duty**
 Aspiration: **Turbocharged / Sea Water Aftercooled**

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



Speed	Full Throttle				Propeller Demand					
	Power		Torque		Power		Torque		Fuel Consumption	
	kw	(hp)	N·m	(ft·lb)	kw	(hp)	N·m	(ft·lb)	L/hr	(gal/hr)
3375	404	(542)	1144	(844)						
3300	404	(542)	1170	(863)	404	(542.0)	1170	(862.6)	110.3	(29.1)
3200	404	(542)	1207	(890)	372	(498.8)	1110	(818.6)	98.4	(26.0)
3100	404	(542)	1245	(918)	341	(457.8)	1052	(775.6)	89.8	(23.7)
3000	404	(542)	1285	(948)	312	(419.0)	995	(733.6)	80.6	(21.3)
2900	404	(542)	1330	(981)	285	(382.4)	939	(692.5)	71.9	(19.0)
2800	402	(540)	1372	(1012)	259	(347.8)	885	(652.4)	65.4	(17.3)
2600	395	(530)	1452	(1071)	212	(284.7)	780	(575.2)	54.6	(14.4)
2400	385	(517)	1533	(1131)	171	(229.4)	681	(502.0)	43.8	(11.6)
2200	372	(498)	1613	(1190)	135	(181.4)	587	(433.0)	34.6	(9.1)
2000	355	(476)	1695	(1250)	105	(140.2)	499	(368.2)	27.4	(7.2)
1800	260	(349)	1382	(1019)	79	(105.5)	417	(307.8)	20.5	(5.4)
1600	167	(224)	995	(734)	57	(76.8)	342	(252.0)	15.1	(4.0)
1400	124	(166)	843	(622)	40	(53.5)	272	(200.8)	10.8	(2.9)
1200	92	(124)	733	(541)	26	(35.3)	209	(154.5)	7.6	(2.0)
1000	65	(87)	620	(457)	16	(21.6)	154	(113.3)	5.1	(1.3)
800	45	(61)	541	(399)	9	(11.8)	105	(77.6)	5.0	(1.3)
600	31	(42)	500	(369)	4	(5.4)	64	(47.6)	2.2	(0.6)

*** Cummins Full Throttle Requirements:**

- Engine achieves or exceeds rated rpm at full throttle under any steady operating condition
- 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. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%. 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.

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].

Light Duty (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.

Propulsion Marine Engine Performance Data

Curve No. M-94126
 DS: D31-MX-2
 CPL: 4191
 DATE: 7-Nov-18

General Engine Data

Engine Model	QSB 6.7	
Rating Type	Light Duty	
Rated Engine Speed	rpm	3300
Rated Power Production Tolerance	±%	5
Rated Engine Torque	N·m [lb·ft]	1170 [863]
Peak Engine Torque @ 2000 rpm.....	N·m [lb·ft]	1695 [1250]
Brake Mean Effective Pressure	kPa [psi]	2197 [319]
Maximum Allowable Engine Speed	rpm	3375
Maximum Torque Capacity from Front of Crank ²	N·m [lb·ft]	0 [0]
Compression Ratio		16.5:1
Piston Speed	m/sec [ft/min]	13.6 [2685]
Firing Order		1-5-3-6-2-4
Weight (Dry) - Engine With Heat Exchanger System - Average.....	kg [lb]	658 [1450]

Governor Settings

Default Droop Value.....	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
High Speed Governor Break Point.....	rpm	3375
Minimum Idle Speed Setting	rpm	550
Normal Idle Speed Variation	±rpm	10
High Idle Speed Range Minimum	rpm	3370
High Idle Speed Range Maximum	rpm	3380

Noise and Vibration

Average Noise Level - Top	(Idle).....	dBA @ 1m	75
	(Rated)	dBA @ 1m	100
Average Noise Level - Right Side	(Idle).....	dBA @ 1m	75
	(Rated)	dBA @ 1m	102
	(Rated)	dBA @ 1m	101
Average Noise Level - Front	(Idle).....	dBA @ 1m	76
	(Rated)	dBA @ 1m	103

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	l/hr [gal/hr]	72.6 [19.2]
Fuel Consumption at Rated Speed	l/hr [gal/hr]	110.2 [29.1]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	105.6 [27.9]
Approximate Fuel Return to Tank Temperature	°C [°F]	79.5 [175]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	2.1 [122]

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, INDIANA

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

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

Propulsion Marine Engine Performance Data

Curve No. M-94126
 DS: D31-MX-2
 CPL: 4191
 DATE: 7-Nov-18

Air System¹

Intake Manifold Pressure	kPa [in Hg]	251 [74]
Intake Air Flow	l/sec [cfm]	511 [1082]
Heat Rejection to Ambient	kW [Btu/min]	33 [1873]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	1156 [2,450]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	522 [970]
Exhaust Gas Temperature (Manifold)	°C [°F]	699 [1,290]

Emissions (in accordance with ISO 8178 Cycle E3)

NO _x (Oxides of Nitrogen)	g/kw·hr [g/hp·hr]	5.00 [3.73]
HC (Hydrocarbons)	g/kw·hr [g/hp·hr]	0.11 [0.08]
CO (Carbon Monoxide)	g/kw·hr [g/hp·hr]	0.45 [0.34]
PM (Particulate Matter)	g/kw·hr [g/hp·hr]	0.07 [0.06]
CO ₂ (Carbon dioxide)	g/kw·hr [g/hp·hr]	707.49 [527.58]
CH ₄ (Methane)	g/kw·hr [g/hp·hr]	0.00 [0.00]

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	103 [15]
Max. Coolant Outlet Pressure from the Engine.....	kPa [psi]	414 [60]
Sea Water Aftercooled Engine (SWAC)		
Standard Thermostat Operating Range (Start to Open)	°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open)	°C [°F]	83 [182]

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, INDIANA

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

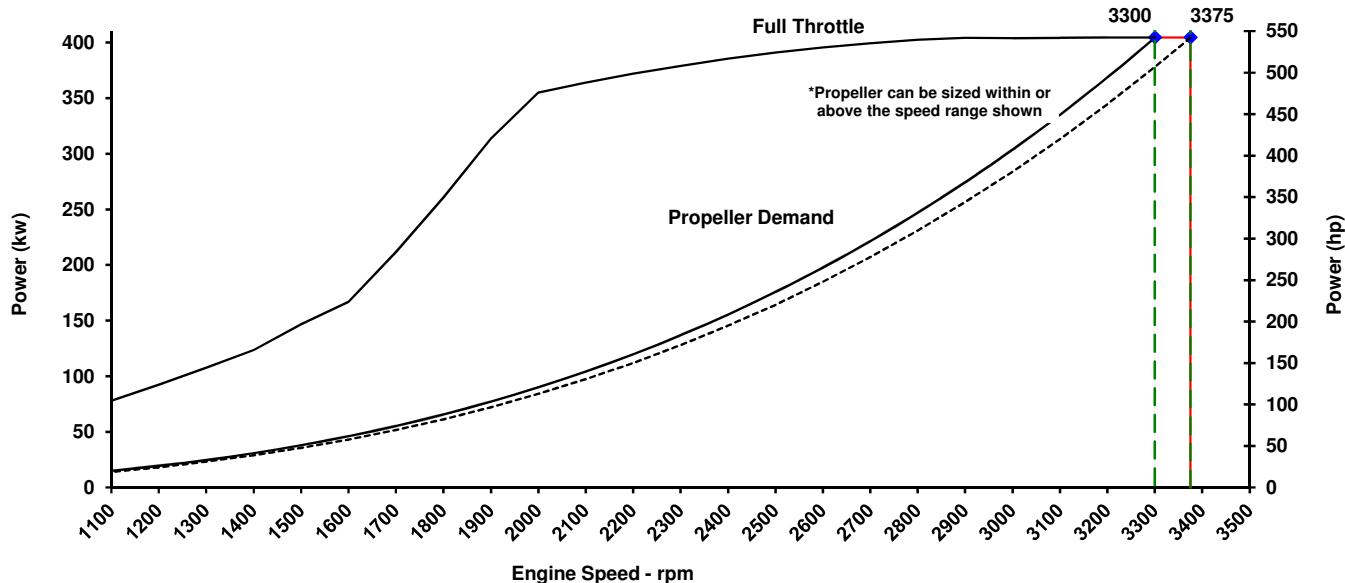
<http://marine.cummins.com/>

	CUMMINS INC. Columbus, IN 47201 Marine Performance Curves gce.cummins.com	Basic Engine Model	Curve Number:	
		QSB 6.7 Engine Configuration D313011MX03	M-94125 CPL Code: 4191	Date: 1-May-19

Displacement: **6.7 liter [408 in³]**
 Bore: **107 mm [4.21 in]**
 Stroke: **124 mm [4.88 in]**
 Fuel System: **HPCR Bosch CRIN 3.0**
 Cylinders: **6**

Rated Power: **404 kw [542 bhp, 550 mhp]**
 Rated Speed: **3300 rpm**
 Rating Type: **High Output**
 Aspiration: **Turbocharged / Sea Water Aftercooled**

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 (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				Propeller Demand				
	Power		Torque		Power		Torque		Fuel Consumption
	kw	(hp)	N·m	(ft·lb)	kw	(hp)	N·m	(ft·lb)	L/hr (gal/hr)
3375	404	(542)	1144	(844)					
3300	404	(542)	1170	(863)	404	(542.0)	1170	(862.6)	110.3 (29.1)
3200	404	(542)	1207	(890)	372	(498.8)	1110	(818.6)	98.4 (26.0)
3100	404	(542)	1245	(918)	341	(457.8)	1052	(775.6)	89.8 (23.7)
3000	404	(542)	1285	(948)	312	(419.0)	995	(733.6)	80.6 (21.3)
2900	404	(542)	1330	(981)	285	(382.4)	939	(692.5)	71.9 (19.0)
2800	402	(540)	1372	(1012)	259	(347.8)	885	(652.4)	65.4 (17.3)
2600	395	(530)	1452	(1071)	212	(284.7)	780	(575.2)	54.6 (14.4)
2400	385	(517)	1533	(1131)	171	(229.4)	681	(502.0)	43.8 (11.6)
2200	372	(498)	1613	(1190)	135	(181.4)	587	(433.0)	34.6 (9.1)
2000	355	(476)	1695	(1250)	105	(140.2)	499	(368.2)	27.4 (7.2)
1800	260	(349)	1382	(1019)	79	(105.5)	417	(307.8)	20.5 (5.4)
1600	167	(224)	995	(734)	57	(76.8)	342	(252.0)	15.1 (4.0)
1400	124	(166)	843	(622)	40	(53.5)	272	(200.8)	10.8 (2.9)
1200	92	(124)	733	(541)	26	(35.3)	209	(154.5)	7.6 (2.0)
1000	65	(87)	620	(457)	16	(21.6)	154	(113.3)	5.1 (1.3)
800	45	(61)	541	(399)	9	(11.8)	105	(77.6)	5.0 (1.3)
600	31	(42)	500	(369)	4	(5.4)	64	(47.6)	2.2 (0.6)

- * Cummins Full Throttle Requirements:**
- Engine achieves or exceeds rated rpm at full throttle under any steady operating condition
 - 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. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%. 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.

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.

Robert A. ...
Chief Engineer

Propulsion Marine Engine Performance Data

gce.cummins.com

Curve No. M-94125
DS: D31-MX-2
CPL: 4191
DATE: 1-May-19

General Engine Data

Engine Model	QSB 6.7
Rating Type	High Output
Rated Engine Power	404 [542]
Rated Engine Speed	3300
Rated Power Production Tolerance	5
Rated Engine Torque	1170 [863]
Peak Engine Torque @ 2000 rpm.....	1695 [1250]
Brake Mean Effective Pressure	2197 [319]
Maximum Allowable Engine Speed	3375
Maximum Torque Capacity from Front of Crank ²	0 [0]
Compression Ratio	16.5:1
Piston Speed	13.6 [2685]
Firing Order	1-5-3-6-2-4
Weight (Dry) - Engine With Heat Exchanger System - Average.....	658 [1450]

Governor Settings

Default Droop Value.....	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
High Speed Governor Break Point.....	rpm	3375
Minimum Idle Speed Setting	rpm	550
Normal Idle Speed Variation	±rpm	10
High Idle Speed Range Minimum	rpm	3370
High Idle Speed Range Maximum	rpm	3380

Noise and Vibration

Average Noise Level - Top	(Idle)..	dBa @ 1m	75
	(Rated)	dBa @ 1m	100
Average Noise Level - Right Side	(Idle)..	dBa @ 1m	75
	(Rated)	dBa @ 1m	102
Average Noise Level - Left Side	(Idle)..	dBa @ 1m	76
	(Rated)	dBa @ 1m	101
Average Noise Level - Front	(Idle)..	dBa @ 1m	76
	(Rated)	dBa @ 1m	103

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	l/hr [gal/hr]	72.6 [19.2]
Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle	l/hr [gal/hr]	36.4 [9.6]
Fuel Consumption at Rated Speed	l/hr [gal/hr]	110.2 [29.1]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	105.6 [27.9]
Approximate Fuel Return to Tank Temperature	°C [°F]	79.5 [175]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	2.1 [122]

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, INDIANA

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

gce.cummins.com

Propulsion Marine Engine Performance Data

gce.cummins.com

Curve No. M-94125
DS: D31-MX-2
CPL: 4191
DATE: 1-May-19

Air System¹

Intake Manifold Pressure	kPa [in Hg]	251 [74]
Intake Air Flow	l/sec [cfm]	511 [1082]
Heat Rejection to Ambient	kW [Btu/min]	33 [1873]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	1156 [2,450]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	522 [970]
Exhaust Gas Temperature (Manifold)	°C [°F]	699 [1,290]

Emissions (in accordance with ISO 8178 Cycle E3)

NO _x (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	5.00 [3.73]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.11 [0.08]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.45 [0.34]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.07 [0.06]
CO ₂ (Carbon dioxide)	g/kw-hr [g/hp-hr]	707.49 [527.58]

Emissions (in accordance with ISO 8178 Cycle E5)

NO _x (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	4.88 [3.64]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.15 [0.11]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.48 [0.36]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.06 [0.05]
CO ₂ (Carbon dioxide)	g/kw-hr [g/hp-hr]	700.52 [522.38]

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	103 [15]
Max. Coolant Outlet Pressure from the Engine.....	kPa [psi]	414 [60]

Sea Water Aftercooled Engine (SWAC)

Standard Thermostat Operating Range (Start to Open)	°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open)	°C [°F]	83 [182]

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, INDIANA

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

gce.cummins.com