

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

Basic Engine Model QSB 6.7 **Engine Configuration** Curve Number: M-93960

CPL Code 22-Feb-19 3887

6.7 liter [408 in³] Displacement:

Fuel System:

107 mm Bore: [4.21 in] Stroke: 124 mm [4.88 in] Cylinders:

[247bhp, 250mhp] 184 kw Rated Power: 2600 rpm Rated Speed: Rating Type: **Heavy Duty**

D313011MX03

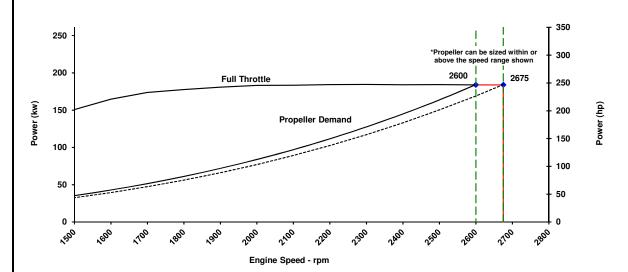
Aspiration: Turbocharged / Sea Water Aftercooled

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)

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



Cnood		Full T	hrottle				Propell	er Demand	d	
Speed	Po	wer	Toı	que	Po	wer	To	rque	Fuel Cor	nsumption
rpm	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)	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 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 humidy. 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

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.

There there

TECHNICAL DATA DEPT.

CHIEF ENGINEER

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	kW [hp]	184 [247]
Rated Engine Speed	rpm	2600
	±%	5
Rated Engine Torque	N·m [lb·ft]	676 [499]
Peak Engine Torque @ 1500 rpm	N·m [lb·ft]	983 [725]
Brake Mean Effective Pressure	kPa [psi]	1271 [184]
	kPa [psi]	1271 [184]
	rpm	2675
Maximum Continuous Torque Capacity from		
Maximum Torque Capacity from Front of Cranl	k²N·m [lb·ft]	677 [499]
Compression Ratio		16.5:1
	m/sec [ft/min]	10.7 [2115]
Firing Order		1-5-3-6-2-4
	kg [lb]	N.A. [N.A.]
	ystem - Averagekg [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	2675
Minimum Idle Speed Setting	rpm	550
Normal Idle Speed Variation	±rpm	10
High Idle Speed Range Minimum	rpm	2670
	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
7.11.01.03	(Rated)dBA @ 1m	102
Average Noise Level - Front	(Idle)dBA @ 1m	76
7.Vorago 140.00 20Vor 11011	(Rated)dBA @ 1m	101
Firel Cretem1	. ,	
Fuel System ¹	rd Toot Ovele	00 0 [0 7]
	rd Test Cycle	33.0 [8.7]
		46.9 [12.4]
		215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Tem		60.0 [140]
Approximate Fuel Flow Return to Tank		168.8 [44.6]
Approximate Fuel Return to Tank Temperature		62.8 [145]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	2.0 [112]

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

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.

DS: D31-MX-2 CPL: 3887 DATE: 22-Feb-19 Air System¹ Intake Manifold PressurekPa [in Hg] 112 [33] Intake Air Flowl/sec [cfm] 255 [540]kW [Btu/min] 14 [798] Heat Rejection to Ambient Exhaust System¹ Exhaust Gas Flowl/sec [cfm] 550 [1,165] 421 [790] 545 [1,012] Emissions (in accordance with ISO 8178 Cycle E3) NOx (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] CO₂ (Carbon dioxide)g/kw·hr [g/hp·hr] 701.00 [522.74] Emissions (in accordance with ISO 8178 Cycle E2) 4.48 [3.34] NOx (Oxides of Nitrogen)g/kw·hr [g/hp·hr] Cooling System¹ 103 [15] Pressure Cap RatingkPa [psi] 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:

gce.cummins.com

Curve No. M-93960



Displacement:

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

 Basic Engine Model
 Curve Number:

 QSB 6.7
 M-93858

 Engine Configuration
 CPL Code:
 Date:

 D313011MX03
 3887
 7-Nov-18

6.7 liter [408 in³] 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

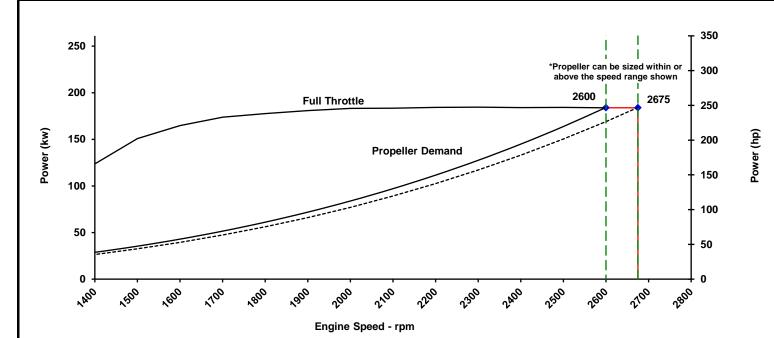
Cylinders: 6 Aspiration: Turbocharged / Sea Water Aftercooled
Fuel System: HPCR Bosch CRIN 3.0

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 T	hrottle			Propeller Demand						
Speed	Po	wer	Toı	rque	Po	wer	То	rque	Fuel Cor	nsumption		
rpm	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 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 humidy. 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.

There there

TECHNICAL DATA DEPT. CHIEF ENGINEER

ngine 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	kV	V [hp] 184 [247]
	N·m	
Peak Engine Torque @ 1600 rpm	N·m	[lb·ft] 983 [725]
	kPa	
	kPa	
		<u>.</u>
Maximum Continuous Torque Capacity from F		•
	N·m	[lb·ft] 677 [499]
· · · · ·		
•	m/sec [f	
•		
•	stem - Averagel	
Governor Settings	3	
•	Refer to MAB 2.04.00-03/23/2006 for Droop explar	nation 0%
•		
• ,		•
•		•
•		•
Maximum		rpm 2680
		•
Noise and Vibration	(1.11.)	O.4. 75
Average Noise Level - Top	(Idle)dBA (_
	(Rated)dBA (_
Average Noise Level - Right Side	(Idle)dBA (_
	(Rated)dBA (_
Average Noise Level - Left Side	(Idle)dBA (_
	(Rated)dBA (_
Average Noise Level - Front	(Idle)dBA (_
	(Rated)dBA (@ 1m 101
Fuel System ¹		
	d Test Cyclel/hr [g	gal/hr] 33.0 [8.7]
	d Test Cyclel/hr [c	
	l/hr [g	
·	l/hr [g	
	erature°	
	°(
	kW [Btu	
Maximum Float Rejoution to Dialit Fuol		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:

1gine Performance Data

CPL: 3887 DATE: 7-Nov-18 Air System¹ Intake Manifold PressurekPa [in Hg] 112 [33] 255 [540] 14 [798] Exhaust System¹ 550 [1,165] 421 [790] 545 [1,012] **Emissions (in accordance with ISO 8178 Cycle E3)** NOx (Oxides of Nitrogen)g/kw·hr [g/hp·hr] 4.53 [3.38] 0.20 [0.15] 0.63 [0.47] 0.08 [0.06] 701.00 [522.74] **Emissions (in accordance with ISO 8178 Cycle E5)** 4.70 [3.50] 0.13 [0.10] HC (Hydrocarbons)g/kw⋅hr [g/hp⋅hr] 0.91 [0.68] CO (Carbon Monoxide)g/kw-hr [g/hp-hr] 0.08 [0.06] PM (Particulate Matter)g/kw-hr [g/hp-hr] CO₂ (Carbon dioxide)g/kw·hr [g/hp·hr] 761.00 [567.48] Cooling System¹ 103 [15] 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 $\pm 5\%$
- 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

Curve No. M-93858

DS: D31-MX-2



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

QSB 6.7
Engine Configuration
D313011MX03

Curve Number:

M-93859

CPL Code: Date:

3887

7-Nov-18

Rated Power: 224 kw [301 bhp, 305 mhp]

Rated Speed: 2600 rpm
Rating Type: High Output

Aspiration: Turbocharged / Sea Water Aftercooled

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

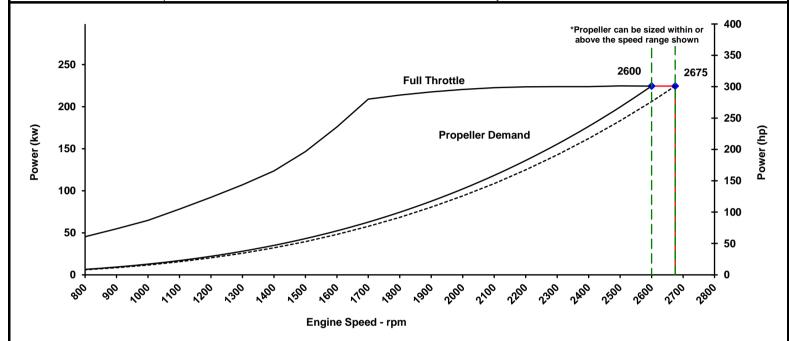
Cylinders: 6

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



Spood		Full Th	nrottle				Propell	<u>er Deman</u>	d	
Speed	Po	wer	Tor	que	Po	ower	То	rque	Fuel Co	nsumption
rpm	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 humidy. 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.

Theel & Herry

TECHNICAL DATA DEPT.

CHIEF ENGINEER

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	kW [hp]	224 [301]
Rated Engine Speed	rpm	2600
Rated Power Production Tolerance	±%	5
Rated Engine Torque	N·m [lb·ft]	824 [608]
Peak Engine Torque @ 1700 rpm	N·m [lb·ft]	1174 [866]
Brake Mean Effective Pressure	kPa [psi]	1548 [225]
	rpm	2675
	² N·m [lb·ft]	824 [608]
Compression Ratio		16.5:1
Piston Speed	m/sec [ft/min]	10.7 [2115]
Firing Order		1-5-3-6-2-4
Weight (Dry) - Engine With Heat Exchanger Sys	stem - Averagekg [lb]	662 [1460]
Governor Settings	3	
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
	rpm	2670
Maximum	rpm	2680
Noise and Vibration		
Average Noise Level - Top	(Idle)dBA @ 1m	75
υ 3	(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
3	(Rated)dBA @ 1m	101
Fuel System ¹		
	d Test Cyclel/hr [gal/hr]	39.2 [10.4]
	d Test Cyclel/hr [gal/hr]	20.0 [5.3]
	l/hr [gal/hr]	55.7 [14.7]
·	l/hr [gal/hr]	215.8 [57.0]
• • • • • • • • • • • • • • • • • • • •	perature°C [°F]	60.0 [140]
	l/hr [gal/hr]	168.8 [44.6]
···	[°] C [°F]	65.6 [150]
···	kW [Btu/min]	2.2 [126]

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

- 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 host rejection may seawater the protect conditions.

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

COLUMBUS, INDIANA

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

CPL: 3887 DATE: 7-Nov-18 Air System¹ Intake Manifold PressurekPa [in Hq] 138 [41] 284 [602] 17 [946] Heat Rejection to AmbientkW [Btu/min] Exhaust System¹ 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] 0.48 [0.36] PM (Particulate Matter)g/kw·hr [g/hp·hr] 0.09 [0.07] 687.00 [512.30] **Emissions (in accordance with ISO 8178 Cycle E5)** 4.80 [3.58] 0.20 [0.15] HC (Hydrocarbons)g/kw·hr [g/hp·hr] 0.91 [0.68] CO (Carbon Monoxide)g/kw-hr [g/hp-hr] 0.08 [0.06] PM (Particulate Matter)g/kw-hr [g/hp-hr] CO₂ (Carbon dioxide)g/kw·hr [g/hp·hr] 738.00 [550.33] Cooling System¹ Sea Water Pump SpecificationsMAB 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] 83 [182] Standard Thermostat Operating Range (Full Open)°C [°F]

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

 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

Curve No. M-93859

DS: D31-MX-2



Charleston, SC 29405 Marine Performance Curves marine.cummins.com Basic Engine Model
QSB 6.7
Engine Configuration

D313011MX03

Curve Number: M-93961

CPL Code: Date: 3887 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

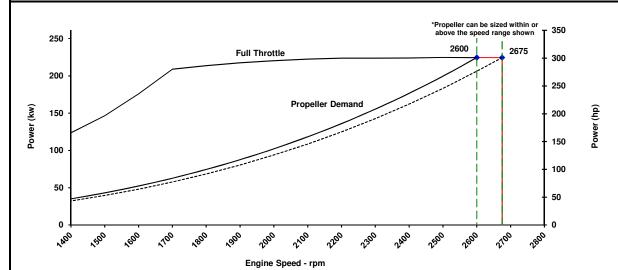
Aspiration: Turbocharged / Sea Water Aftercooled

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



Full Throttle Propeller Demand Speed Power Torque Power Torque **Fuel Consumption** N∙m (ft-lb) N∙m (ft-lb) L/hr (gal/hr) kw (hp) rpm (hp) 224 2675 (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)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)220 (296)1052 111 (148.2)528 (389.2)(7.3)2000 (776)27.7 1900 217 (292)1093 96 (129.1)484 (356.7)(806)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)(4.8)18.1 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)124 (166) 843 (622) 42 288 (212.3)1400 (56.6)10.6 (2.8)1300 107 (144)786 (580)35 (46.3)254 (187.1)8.8 (2.3)28 (37.3)(1.9)1200 92 (124)733 (541)221 (163.3)7.1 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)45 541 (399)9 (12.5)(82.0) (0.7)800 (61)111 2.8 700 38 (51) 521 (384)6 (8.7) 89 (65.3)2.1 (0.5)(42) 500 (369)(5.7)(50.3)

Cummins Full Throttle Requirements:

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

Rated Conditions: Ratings are based upon ISO 15550 reference conditions; air pressure of 100 kPa [29.612 in Hg], air temperature 25deg. C [77 deg. F] and 30% relative humidy. 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.

Thethe Her

TECHNICAL DATA DEPT.

CHIEF ENGINEER

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

General Engine Data		
		QSB 6.7
		Medium Continuous Duty
Rated Engine Power	kW [hp]	224 [301]
Rated Engine Speed	rpm	2600
	<u>±</u> %	5
Rated Engine Torque	N·m [lb·ft]	824 [608]
	N·m [lb·ft]	1174 [866]
Brake Mean Effective Pressure	kPa [psi]	1548 [225]
	kPa [psi]	1548 [225]
Maximum Allowable Engine Speed	rpm	2675
Maximum Continuous Torque Capacity fro	m Front of Crank Specifications	
Maximum Torque Capacity from Front of Cr	ank ² N·m [lb·ft]	824 [608]
Compression Ratio		16.5:1
Piston Speed	m/sec [ft/min]	10.7 [2115]
		1-5-3-6-2-4
	r System - Averagekg [lb]	663 [1462]
Governor Settings		
	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
5 1	rpm	2675
	rpm	550
Normal Idle Speed Variation	±rpm	10
High Idle Speed Range Minimum		2670
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 System ¹		
•	dard Test Cyclel/hr [gal/hr]	39.2 [10.4]
	l/hr [gal/hr]	55.6 [14.7]
		215.8 [57.0]
Maximum Allowable Fuel Supply to Pump T	emperature°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank		160.1 [42.3]
Approximate Fuel Return to Tank Temperat	ure	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

CUMMINS INC.

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

gce.cummins.com

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.

DS: D31-MX-2 CPL: 3887 DATE: 22-Feb-19 Air System¹ Intake Manifold PressurekPa [in Hg] 138 [41] Intake Air Flowl/sec [cfm] 284 [602] Heat Rejection to AmbientkW [Btu/min] 17 [946] Exhaust System¹ Exhaust Gas Flowl/sec [cfm] 599 [1,269] 436 [817] 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] CO₂ (Carbon dioxide)g/kw·hr [g/hp·hr] 687.00 [512.30] Emissions (in accordance with ISO 8178 Cycle E2) 4.94 [3.68] Cooling System¹ 103 [15] 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:

gce.cummins.com

Curve No. M-93961



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

Basic Engine Model
QSB 6.7
Engine Configuration
D313011MX03

Curve Number:
M-94133
CPL Code: Date

4191

Date: **7-Nov-18**

Displacement: 6.7 liter [408 in³] Rated Power: 261 kw [350 bhp, 355 mhp]

Bore: 107 mm [4.21 in] Rated Speed: 3000 rpm

Bore: 107 mm [4.21 in]
Stroke: 124 mm [4.88 in]

Rating Type: High Output

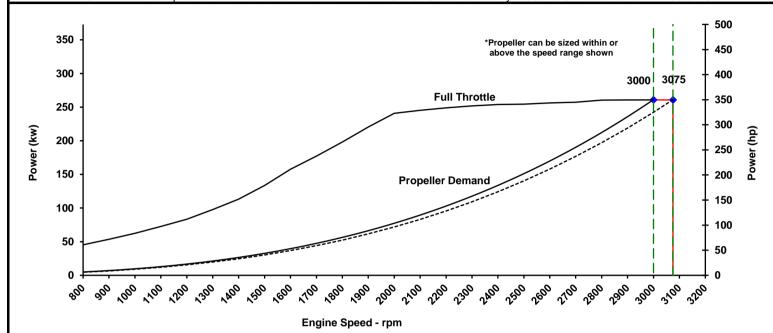
Fuel System: HPCR Bosch CRIN 3.0 Aspiration: Turbocharged / Sea Water Aftercooled Cylinders: 6

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 Th	rottle				Propell	er Deman	d	
Speed	Po	wer	Tor	que	Po	wer	То	rque	Fuel Cor	sumption
rpm	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 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 humidy. 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.

There the Heart

TECHNICAL DATA DEPT.

CHIEF ENGINEER

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	kW [hp]	261 [350]
Rated Engine Speed	rpm	3000
Rated Power Production Tolerance	±%	5
Rated Engine Torque	N·m [lb·ft]	831 [613]
Peak Engine Torque @ 2000 rpm	N·m [lb·ft]	1150 [848]
Brake Mean Effective Pressure	kPa [psi]	1560 [226]
Maximum Allowable Engine Speed	rpm	3075
Maximum Torque Capacity from Front of Crank	² N·m [lb·ft]	831 [613]
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 Sys	stem - Averagekg [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	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 System ¹		
•	d Test Cyclel/hr [gal/hr]	47.5 [12.5]
	d Test Cyclel/hr [gal/hr]	23.8 [6.3]
	/hr [gal/hr]	67.6 [17.9]
·	l/hr [gal/hr]	215.8 [57.0]
	perature [°] C [°F]	60.0 [140]
• • • • • • • • • • • • • • • • • • • •	l/hr [gal/hr]	148.2 [39.1]
·	[©] C [°F]	79.5 [175]
···	kW [Btu/min]	3.0 [171]

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

- Unless otherwise specified, all data is at rated power conditions and can vary ± 5%.
 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.
 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.
 Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.
 May not be at rated load and speed. Maximum heat rejection may occur at other than rated conditions.

COLUMBUS, INDIANA

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

CPL: 4191 DATE: 7-Nov-18 Air System¹ Intake Manifold PressurekPa [in Hg] 196 [58] 403 [853] Heat Rejection to AmbientkW [Btu/min] 20 [1159] Exhaust System¹ 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] 0.40 [0.30] PM (Particulate Matter)g/kw·hr [g/hp·hr] 0.005 [0.00] 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] 0.20 [0.15] HC (Hydrocarbons)g/kw·hr [g/hp·hr] 0.52 [0.39] CO (Carbon Monoxide)g/kw·hr [g/hp·hr] 0.05 [0.03] PM (Particulate Matter)g/kw·hr [g/hp·hr] CO₂ (Carbon dioxide)g/kw·hr [g/hp·hr] 688.00 [513.04] Cooling System¹ Sea Water Pump SpecificationsMAB 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 \pm 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.
- Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.
 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/

Curve No. M-94133

DS: D31-MX-2



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

Basic Engine Model Curve Number: **QSB 6.7** M-94375 **Engine Configuration** CPL Code: Date: D313011MX03 4191 7-Nov-18

Displacement: 6.7 liter [408 in³] Bore: 107 mm [4.21 in] Stroke: 124 mm [4.88 in]

Rated Speed:

Rated Power:

2800 rpm Rating Type: Intermittent Duty

Cylinders: 6 Fuel System: HPCR Bosch CRIN 3.0 Aspiration: **Turbocharged / Sea Water Aftercooled**

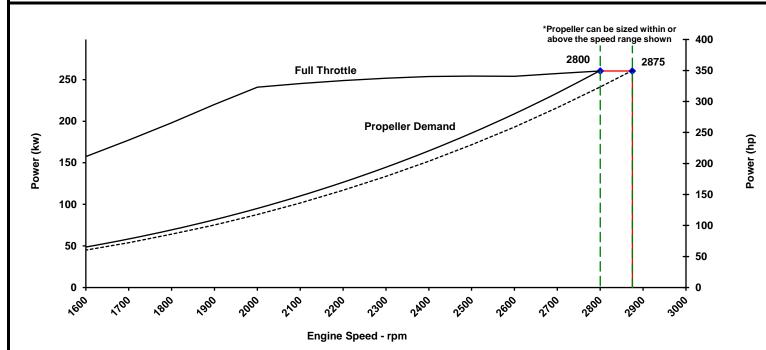
261 kw [350bhp, 355mhp]

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 T	hrottle				Propelle	er Demand		
Speed	Po	wer	Tor	que	Po	ower	То	rque	Fuel Cor	nsumption
rpm	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 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 humidy. 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.

> Thele Hery CHIEF ENGINEER

TECHNICAL DATA DEPT.

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	kW [hp]	261 [350]
Rated Engine Speed	rpm	2800
Rated Power Production Tolerance	±%	5
Rated Engine Torque	N·m [lb·ft]	890 [657]
Peak Engine Torque @ 2000 rpm	N·m [lb·ft]	1150 [848]
Brake Mean Effective Pressure	kPa [psi]	1672 [242]
	kPa [psi]	1972 [286]
	rpm	2875
Maximum Continuous Torque Capacity from	Front of Crank Specifications	
	k²N·m [lb·ft]	888 [655]
		16.5:1
	m/sec [ft/min]	11.6 [2278]
Firing Order		1-5-3-6-2-4
	ystem - Averagekg [lb]	658 [1450]
Governor Settings	, , , , ,	
	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
•	rpm	2875
•	rpm	550
	±rpm	5
	rpm	2870
	rpm	2880
		2000
Noise and Vibration	(111)	7-
Average Noise Level - Top	(Idle)dBA @ 1m	75
A N. 1 D. 1. C. 1	(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 System ¹		
	rd Test Cyclel/hr [gal/hr]	47.7 [12.6]
·	l/hr [gal/hr]	68.1 [18.0]
·	l/hr [gal/hr]	215.8 [57.0]
	nperature°C [°F]	60.0 [140]
	l/hr [gal/hr]	147.6 [39.0]
		79.5 [175]
	kW [Btu/min]	3.0 [170]
Maximum rieat rejection to Diam ruel		3.0 [170]

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

- 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:

DS: D31-MX-1 CPL: 4191 DATE: 7-Nov-18 Air System¹ Intake Manifold PressurekPa [in Hg] 183 [54] 363 [770] Heat Rejection to AmbientkW [Btu/min] 20 [1159] Exhaust System¹ Exhaust Gas Flowl/sec [cfm] 721 [1,527] Exhaust Gas Temperature (Turbine Out)°C [°F] 391 [736] 563 [1,045] Exhaust Gas Temperature (Manifold)°C [°F] Emissions (in accordance with ISO 8178 Cycle E3) 4.84 [3.61] 0.16 [0.12] HC (Hydrocarbons)g/kw·hr [g/hp·hr] 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] CO₂ (Carbon dioxide)g/kw·hr [g/hp·hr] 496.00 [369.87] Cooling System¹ Pressure Cap RatingkPa [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 \pm 5%.
- 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.
 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

Curve No. M-94375



Columbus, IN 47201 Marine Performance Curves marine.cummins.com Basic Engine Model
QSB6.7 380HO
Engine Configuration

D313011MX03

High Output

Curve Number:
M-94131
CPL Code: Date

4191

Date: **7-Nov-18**

Displacement: **6.7 liter** [408 in³] Rated Power: **280 kw** [375 bhp, 380 mhp]

Bore: **107 mm** [4.21 in] Rated Speed: **3000 rpm**

 Bore:
 107 mm
 [4.21 in]
 Rated Speed:

 Stroke:
 124 mm
 [4.88 in]
 Rating Type:

Fuel System: HPCR Bosch CRIN 3.0 Aspiration: Turbocharged / Sea Water Aftercooled

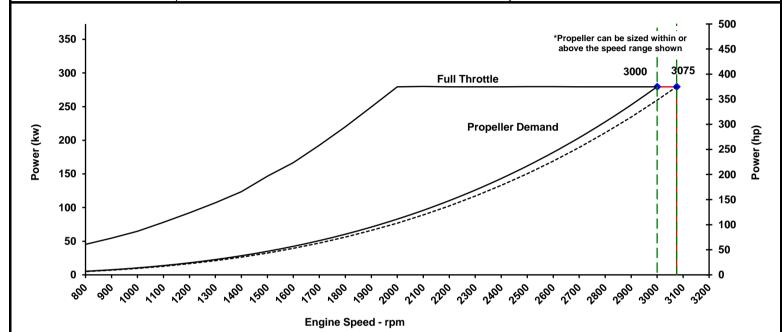
Cylinders: 6

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 Th	rottle				Propelle	er Deman	d	
Speed	Po	wer	Tor	que	Po	wer	То	rque	Fuel Cor	sumption
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)
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	279	(375)	1334	(984)	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
- 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 humidy. 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.

Thethe Hery

TECHNICAL DATA DEPT.

CHIEF ENGINEER

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

Case Case	General Engine Data		
Rated Engine Power	Engine Model		QSB6.7 380HO
Rated Power Production Tolerance	Rating Type		High Output
Rated Power Production Tolerance	Rated Engine Power	kW [hp]	280 [375]
Rated Engine Torque	Rated Engine Speed	rpm	3000
Peak Engine Torque @ 2000 rpm	Rated Power Production Tolerance	±%	5
Brake Mean Effective Pressure	Rated Engine Torque	N·m [lb·ft]	890 [657]
Indicated Mean Effective Pressure. RPa [psi] Maximum Allowable Engine Speed rpm 3075 Maximum Continuous Torque Capacity from Front of Crank Specifications Maximum Torque Capacity from Front of Crank Specifications Maximum Torque Capacity from Front of Crank Specifications 16.5:1 15.5:1	Peak Engine Torque @ 2000 rpm	N·m [lb·ft]	1335 [985]
Maximum Allowable Engine Speed rpm 3075 Maximum Continuous Torque Capacity from Front of Crank Specifications Maximum Torque Capacity from Front of Crank² N-m [lb-ft] 891 [657] Compression Ratio 16.5:1 16.5:1 112.4 [2441] 16.5:1 112.4 [2441] 16.5:1 112.4 [2441] 16.5:1 19 (2441) 16.5:1 12.4 [2441] 16.5:1 12.4 [2441] 16.5:1 16.5:1 16.5:1 16.5:1 17 (2441) 16.5:1 16.5:1 16.5:1 16.5:1 16.5:1 17 (2441) 16.5:1 <td>Brake Mean Effective Pressure</td> <td>kPa [psi]</td> <td>1672 [242]</td>	Brake Mean Effective Pressure	kPa [psi]	1672 [242]
Maximum Continuous Torque Capacity from Front of Crank Specifications Maximum Torque Capacity from Front of Crank? 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 pm 3075 Minimum Idle Speed Setting pm 550 Normal Idle Speed Variation ±rpm 10 High Idle Speed Range Minimum pm 3070 Maximum pm 3080 Noise and Vibration pm 3080 Average Noise Level - Top (Idle) dBA @ 1m 75 Rated) dBA @ 1m 100 Average Noise Level - Right Side (Idle) dBA @ 1m 100 Average Noise Level - Left Side (Idle) dBA @ 1m 10 <t< td=""><td>Indicated Mean Effective Pressure</td><td>kPa [psi]</td><td>1672 [242]</td></t<>	Indicated Mean Effective Pressure	kPa [psi]	1672 [242]
Maximum Continuous Torque Capacity from Front of Crank Specifications Maximum Torque Capacity from Front of Crank? 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 pm 3075 Minimum Idle Speed Setting pm 550 Normal Idle Speed Variation ±rpm 10 High Idle Speed Range Minimum pm 3070 Maximum pm 3080 Noise and Vibration pm 3080 Average Noise Level - Top (Idle) dBA @ 1m 75 Rated) dBA @ 1m 100 Average Noise Level - Right Side (Idle) dBA @ 1m 100 Average Noise Level - Left Side (Idle) dBA @ 1m 10 <t< td=""><td></td><td> -</td><td></td></t<>		 -	
Compression Ratio			
Piston Speed m/sec [ff/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 100 Average Noise Level - Right Side (Idle) dBA @ 1m 100 Average Noise Level - Fist Side (Idle) dBA @ 1m 100 Average Noise Level - Left Side (Idle) dBA @ 1m 102 Average Noise Level - Front (Idle) dBA @ 1m 102 Average Noise Level - Front (Idle) dBA @ 1m 102 Average Noise Level - Front (Idle	Maximum Torque Capacity from Front of Cr	ank²N·m [lb·ft]	891 [657]
Piston Speed m/sec [ff/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 100 Average Noise Level - Right Side (Idle) dBA @ 1m 100 Average Noise Level - Fist Side (Idle) dBA @ 1m 100 Average Noise Level - Left Side (Idle) dBA @ 1m 102 Average Noise Level - Front (Idle) dBA @ 1m 102 Average Noise Level - Front (Idle) dBA @ 1m 102 Average Noise Level - Front (Idle	Compression Ratio		16.5:1
Governor Settings			12.4 [2441]
Governor Settings	·		
Default Droop Value			662 [1460]
High Speed Governor Break Point	Governor Settings		
Minimum Idle Speed Setting	Default Droop Value	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
Normal Idle Speed Variation	High Speed Governor Break Point	rpm	3075
High Idle Speed Range Minimum Maximum 3070 3080	Minimum Idle Speed Setting	rpm	550
Noise and Vibration Average Noise Level - Top (Idle) dBA @ 1m 75 Average Noise Level - Right Side (Idle) 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 76 (Rated) dBA @ 1m 101 Fuel System¹ Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle I/hr [gal/hr] 50.4 [13.3] Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle I/hr [gal/hr] 25.5 [6.7] Fuel Consumption at Rated Speed I/hr [gal/hr] 73.9 [19.5] Approximate Fuel Flow to Pump I/hr [gal/hr] 215.8 [57.0] Maximum Allowable Fuel Supply to Pump Temperature (D2 Fuel) "°C [°F] 70.1 [158]	Normal Idle Speed Variation	±rpm	10
Noise and Vibration Average Noise Level - Top (Idle)	High Idle Speed Range Minimum	rpm	3070
Average Noise Level - Top (Idle)	Maximum	rpm	3080
(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]	Noise and Vibration		
(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]	Average Noise Level - Top	(Idle)dBA @ 1m	75
Average Noise Level - Right Side (Idle)		(Rated)dBA @ 1m	100
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]	Average Noise Level - Right Side		75
Average Noise Level - Left Side (Idle)		· ,	100
(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 I/hr [gal/hr] 50.4 [13.3] Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle I/hr [gal/hr] 25.5 [6.7] Fuel Consumption at Rated Speed I/hr [gal/hr] 73.9 [19.5] Approximate Fuel Flow to Pump I/hr [gal/hr] 215.8 [57.0] Maximum Allowable Fuel Supply to Pump Temperature (D2 Fuel) °C [°F] 70.1 [158]	Average Noise Level - Left Side	· · · · · · · · · · · · · · · · · · ·	76
Average Noise Level - Front (Idle) dBA @ 1m 76 (Rated) dBA @ 1m 101 Fuel System¹ Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle I/hr [gal/hr] 50.4 [13.3] Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle I/hr [gal/hr] 25.5 [6.7] Fuel Consumption at Rated Speed I/hr [gal/hr] 73.9 [19.5] Approximate Fuel Flow to Pump I/hr [gal/hr] 215.8 [57.0] Maximum Allowable Fuel Supply to Pump Temperature (D2 Fuel) °C [°F] 70.1 [158]	•	` '	102
Fuel System¹ Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	Average Noise Level - Front		76
Avg. Fuel Consumption - ISO 8178 E3 Standard Test CycleI/hr [gal/hr]50.4 [13.3]Avg. Fuel Consumption - ISO 8178 E5 Standard Test CycleI/hr [gal/hr]25.5 [6.7]Fuel Consumption at Rated SpeedI/hr [gal/hr]73.9 [19.5]Approximate Fuel Flow to PumpI/hr [gal/hr]215.8 [57.0]Maximum Allowable Fuel Supply to Pump Temperature (D2 Fuel)°C [°F]70.1 [158]	S	· , ,	101
Avg. Fuel Consumption - ISO 8178 E3 Standard Test CycleI/hr [gal/hr]50.4 [13.3]Avg. Fuel Consumption - ISO 8178 E5 Standard Test CycleI/hr [gal/hr]25.5 [6.7]Fuel Consumption at Rated SpeedI/hr [gal/hr]73.9 [19.5]Approximate Fuel Flow to PumpI/hr [gal/hr]215.8 [57.0]Maximum Allowable Fuel Supply to Pump Temperature (D2 Fuel)°C [°F]70.1 [158]	Fuel System ¹		
Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle		dard Test Cyclel/hr [gal/hr]	50.4 [13.3]
Fuel Consumption at Rated Speed//hr [gal/hr]73.9 [19.5]Approximate Fuel Flow to Pump//hr [gal/hr]215.8 [57.0]Maximum Allowable Fuel Supply to Pump Temperature (D2 Fuel)°C [°F]70.1 [158]			•
Approximate Fuel Flow to Pump			
Maximum Allowable Fuel Supply to Pump Temperature (D2 Fuel)°C [°F] 70.1 [158]	·		
Approximate Fuel Flow Return to Tank		• • • • • • • • • • • • • • • • • • • •	141.9 [37.5]
Approximate Fuel Return to Tank Temperature	·		
Maximum Heat Rejection to Drain Fuel			

N.A. = Not Available N/A = Not Applicable

- Unless otherwise specified, all data is at rated power conditions and can vary ± 5%.
 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.
 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.
 Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.
 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:

DS: D31-MX-2 CPL: 4191 DATE: 7-Nov-18 Air System¹ Intake Manifold PressurekPa [in Hg] 223 [66] 432 [915] Heat Rejection to AmbientkW [Btu/min] 22 [1255] Exhaust System¹ 805 [1,705] 350 [662] Exhaust Gas Temperature (Turbine Out)°C [°F] Exhaust Gas Temperature (Manifold)°C [°F] 536 [996] **Emissions (in accordance with ISO 8178 Cycle E3)** 4.77 [3.55] NOx (Oxides of Nitrogen)g/kw·hr [g/hp·hr] 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] 688.75 [513.60] CO₂ (Carbon dioxide)g/kw·hr [g/hp·hr] 0.006 [0.00] CH₄ (Methane)g/kw·hr [g/hp·hr] **Emissions (in accordance with ISO 8178 Cycle E5)** 4.91 [3.66] 0.13 [0.10] HC (Hydrocarbons)g/kw·hr [g/hp·hr] 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] 701.80 [523.33] CO₂ (Carbon dioxide)g/kw·hr [g/hp·hr] 0.006 [0.00] CH₄ (Methane)g/kw·hr [g/hp·hr] Cooling System¹ Sea Water Pump SpecificationsMAB 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]

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

Standard Thermostat Operating Range (Full Open)°C [°F]

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/

82 [180]

Curve No. M-94131

 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. 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.



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

Basic Engine Model QSB6.7 380ID **Engine Configuration**

D313011MX03

Rated Power:

Curve Number: M-94132

CPL Code: Date: 7-Nov-18 4191

Displacement: 6.7 liter [408 in³]

Bore: 107 mm [4.21 in] Stroke: 124 mm [4.88 in]

3000 rpm Rated Speed: Rating Type: Intermittent Duty

Fuel System: **HPCR Bosch CRIN 3.0** Aspiration: Turbocharged / Sea Water Aftercooled

280 kw [375 bhp, 380 mhp]

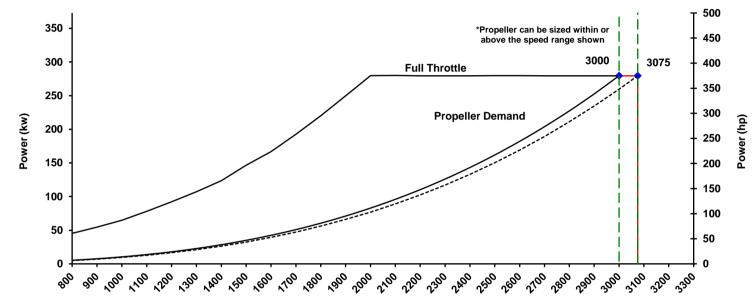
Cylinders:

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



Engine Speed - rpm

Spood		Full Th	rottle		Propeller Demand						
Speed	Po	wer	Tor	que	Po	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 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 humidy. 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.

CHIEF ENGINEER

There & Her

TECHNICAL DATA DEPT.

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		2. 3	1672 [242]
Maximum Allowable Engine Speed		£1 3	3075
Maximum Torque Capacity from Front of Ci		•	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 Exchange			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		·	3075
Minimum Idle Speed Setting		•	550
Normal Idle Speed Variation		•	10
High Idle Speed Range Minimum			3070
		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 System ¹			
Avg. Fuel Consumption - ISO 8178 E3 Star	_	10 1	50.4 [13.3]
Fuel Consumption at Rated Speed			73.9 [19.5]
Approximate Fuel Flow to Pump			215.8 [57.0]
Maximum Allowable Fuel Supply to Pump T			70.1 [158]
Approximate Fuel Flow Return to Tank			141.9 [37.5]
Approximate Fuel Return to Tank Tempera			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

- Unless otherwise specified, all data is at rated power conditions and can vary ± 5%.
 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.
 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.
 Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.
 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:

DS: D31-MX-2 CPL: 4191 DATE: 7-Nov-18 Air System¹ Intake Manifold PressurekPa [in Hg] 223 [66] 432 [915] Heat Rejection to AmbientkW [Btu/min] 22 [1255] Exhaust System¹ 805 [1,705] 350 [662] Exhaust Gas Temperature (Turbine Out)°C [°F] I Exhaust Gas Temperature (Manifold)°C [°F] I 536 [996] **Emissions (in accordance with ISO 8178 Cycle E3)** 4.77 [3.55] NOx (Oxides of Nitrogen)g/kw·hr [g/hp·hr] 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] 688.75 [513.60] CO₂ (Carbon dioxide)g/kw·hr [g/hp·hr] Cooling System¹ 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]

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

- 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.
- System. Consult installation Direction Booket for Limitations.
 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.
 Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.
 May not be at rated load and speed. Maximum heat rejection may occur at other than rated conditions.

Standard Thermostat Operating Range (Full Open)°C [°F]

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/

82 [180]

Curve No. M-94132



Columbus, IN 47201 Marine Performance Curves marine.cummins.com Basic Engine Model
QSB 6.7
Engine Configuration

D313011MX03

Curve Number: M-94129

CPL Code: 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:
 High Output

Fuel System: HPCR Bosch CRIN 3.0 Aspiration: Turbocharged / Sea Water Aftercooled

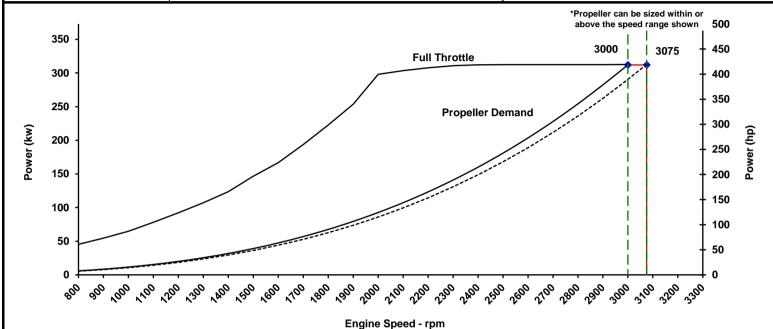
Cylinders: 6

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										
Speed	Po	ower	Tor	Torque		Power		rque	Fuel Consumption	
rpm	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	(8.0)
600	31	(42)	500	(369)	4	(5.4)	65	(47.6)	3.1	(8.0)

* 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 humidy. 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.

There to the the

TECHNICAL DATA DEPT.

Chief Engineer

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

Engine Model	General Engine Data			
Rated Engine Power 312 [419] Rated Engine Speed				QSB 6.7
Rated Engine Speed pm 3000 Rated Power Production Tolerance ±% 5 Rated Engine Torque N m [lb-ft] 995 [734] Peak Engine Torque @ 2000 rpm. N m [lb-ft] 1424 [1050] Brake Mean Effective Pressure	Rating Type			High Output
Rated Engine Speed pm 3000 Rated Power Production Tolerance ±% 5 Rated Engine Torque N m [lb-ft] 995 [734] Peak Engine Torque @ 2000 rpm. N m [lb-ft] 1424 [1050] Brake Mean Effective Pressure	Rated Engine Power			312 [419]
Rated Engine Torque			rpm	3000
Peak Engine Torque @ 2000 rpm. N-m b-ft 1424 1056 1426 1056 1426 1056 1426 1056 1426 1056 1426 1056 1426 1056 1426 1056 1426 1056 1426 1246 12	Rated Power Production Tolerance	······································	±%	5
Peak Engine Torque @ 2000 rpm. .N·m [b-ft] .1424 [1050] Brake Mean Effective Pressure	Rated Engine Torque		.N·m [lb·ft]	995 [734]
Maximum Allowable Engine Speed	Peak Engine Torque @ 2000 rpm		.N·m [lb·ft]	
Maximum Allowable Engine Speed	• • •			•
Maximum Torque Capacity from Front of Crank²				
Compression Ratio				995 [734]
Piston Speed	, , ,			
Firing Order Weight (Dry) - Engine With Heat Exchanger System - Average kg [lb] 662 [1460]	Piston Speed	m/s	sec [ft/min]	12.4 [2441]
Weight (Dry) - Engine With Heat Exchanger System - Average	Firing Order			
Default Droop Value	•			662 [1460]
Default Droop Value		•	01.1	
High Speed Governor Break Point	_	Refer to MAB 2.04.00-03/23/2006 for Droop e	xplanation	0%
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 76 (Rated) .dBA @ 1m 102 Average Noise Level - Front (Idle) .dBA @ 1m 76 (Rated) .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 at Rated Speed .l/hr [gal/hr] 27.8 [7.3] Fuel Consumption at Rated Speed .l/hr [gal/hr] 8	·	·	•	3075
Normal Idle Speed Variation				550
High Idle Speed Range Minimum maximum				10
Noise and Vibration Average Noise Level - Top (Idle) dBA @ 1m 75 Average Noise Level - Right Side (Idle) 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 102 Average Noise Level - Front (Idle) dBA @ 1m 102 Fuel System¹ (Rated) dBA @ 1m 101 Fuel System¹ Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle I/hr [gal/hr] 55.0 [14.5] Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle I/hr [gal/hr] 27.8 [7.3] Fuel Consumption at Rated Speed I/hr [gal/hr] 81.1 [21.4] Approximate Fuel Flow to Pump I/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 I/hr [gal/hr] 134.7 [35.6]	•		•	3070
Average Noise Level - Top (Idle)			•	3080
Average Noise Level - Top (Idle)	Noise and Vibration		·	
Average Noise Level - Right Side (Idle) dBA @ 1m 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 76 (BBA @ 1m		(Idle)	∃RA @ 1m	75
Average Noise Level - Right Side (Idle)	Average reside Level Top	` ,	•	
(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 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]	Average Noise Level - Right Side	,	_	
Average Noise Level - Left Side (Idle)	Average Noise Level - Right Side	` ,	•	_
Rated	Average Noise Level - Left Side	,	•	
Average Noise Level - Front (Idle)	Average Noise Level - Left Side	` '	_	-
Fuel System¹ Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle I/hr [gal/hr] 55.0 [14.5] Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle I/hr [gal/hr] 27.8 [7.3] Fuel Consumption at Rated Speed I/hr [gal/hr] 81.1 [21.4] Approximate Fuel Flow to Pump I/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 I/hr [gal/hr] 134.7 [35.6]	Average Noise Level - Front		_	_
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]	Average Noise Level - I Tolli		~ .	_
Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle		(Nateu)	IDA (W IIII	101
Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle	Fuel System ¹			
Fuel Consumption at Rated Speed	Avg. Fuel Consumption - ISO 8178 E3 Standard	d Test Cyclel	/hr [gal/hr]	55.0 [14.5]
Approximate Fuel Flow to Pump	Avg. Fuel Consumption - ISO 8178 E5 Standard	d Test Cyclel	/hr [gal/hr]	27.8 [7.3]
Maximum Allowable Fuel Supply to Pump Temperature	Fuel Consumption at Rated Speed		/hr [gal/hr]	81.1 [21.4]
Approximate Fuel Flow Return to Tank	Approximate Fuel Flow to Pump		/hr [gal/hr]	215.8 [57.0]
	Maximum Allowable Fuel Supply to Pump Temp	perature	°C [°F]	60.0 [140]
Approximate Fuel Return to Tank Temperature°C [°F] 79.5 [175]	Approximate Fuel Flow Return to Tank		/hr [gal/hr]	134.7 [35.6]
	Approximate Fuel Return to Tank Temperature		°C [°F]	79.5 [175]
Maximum Heat Rejection to Drain FuelkW [Btu/min] 2.7 [155]	Maximum Heat Rejection to Drain Fuel	kW	/ [Btu/min]	2.7 [155]

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

- Unless otherwise specified, all data is at rated power conditions and can vary ± 5%.
 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.
 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.
 Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.
 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:

CPL: 4191 DATE: 7-Nov-18 Air System¹ Intake Manifold PressurekPa [in Hg] 237 [70] 442 [936] Heat Rejection to AmbientkW [Btu/min] 25 [1396] Exhaust System¹ 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] 0.35 [0.26] PM (Particulate Matter)g/kw·hr [g/hp·hr] 0.09 [0.07] CO₂ (Carbon dioxide)g/kw·hr [g/hp·hr] 677.00 [504.84] **Emissions (in accordance with ISO 8178 Cycle E5)** 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] 682.00 [508.57] Cooling System¹ Sea Water Pump SpecificationsMAB 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. 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/

Curve No. M-94129

DS: D31-MX-2



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

Basic Engine Model **QSB 6.7 Engine Configuration**

Rated Power:

D313011MX03

Curve Number: M-94130

CPL Code

312 kw [419 bhp, 425 mhp]

7-Nov-18

6.7 liter [408 in³] Displacement:

107 mm [4.21 in] Bore: 124 mm [4.88 in] Stroke: Fuel System: **HPCR Bosch CRIN 3.0**

3000 rpm Rated Speed: Intermittent Duty Rating Type:

Cylinders:

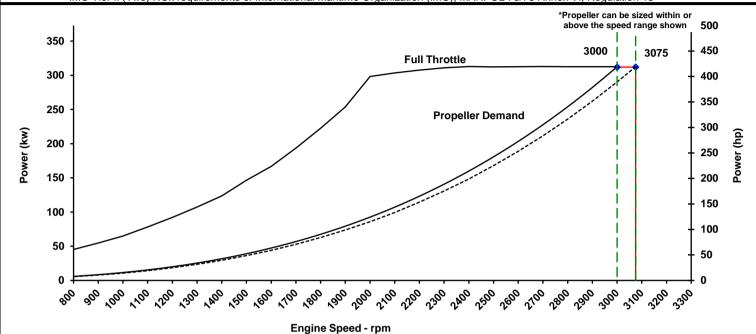
Aspiration: **Turbocharged / Sea Water Aftercooled**

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 Th	nrottle		Propeller Demand						
Speed	Po	wer	Tor	que	Po	wer	То	rque	Fuel Consumption		
rpm	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	(419.0)	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 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 humidy. 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.

> Hell & Her CHIEF ENGINEER

TECHNICAL DATA DEPT.

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	kW [hp]	312 [419]
Rated Engine Speed	rpm	3000
Rated Power Production Tolerance	±%	5
Rated Engine Torque	N·m [lb·ft]	995 [734]
Peak Engine Torque @ 2000 rpm	N·m [lb·ft]	1424 [1050]
Brake Mean Effective Pressure	kPa [psi]	1868 [271]
Maximum Allowable Engine Speed	rpm	3075
Maximum Torque Capacity from Front of Cra	ınk²N·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 - Averagekg [lb]	662 [1460]
Governor Settings		
	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
•	rpm	3075
• •	rpm	550
•	±rpm	10
•	rpm	3070
	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 System ¹		
	lard Test Cyclel/hr [gal/hr]	55.0 [14.5]
·		82.2 [21.7]
	l/hr [gal/hr]	215.8 [57.0]
	emperature°C [°F]	60.0 [140]
• •		133.6 [35.3]
· · · · · · · · · · · · · · · · · · ·	re°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

- Unless otherwise specified, all data is at rated power conditions and can very ± 5%.
 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.
 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.
 Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.
 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:

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

		DATE: 7 NOT 10
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 System ¹		
Exhaust Gas Flow	l/sec [cfm]	897 [1,900]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	399 [750]
Exhaust Gas Temperature (Manifold)		588 [1,090]
Emissions (in accordance with ISO 8178 Cycle E3)		
NOx (Oxides of Nitrogen)ç	g/kw·hr [g/hp·hr]	4.90 [3.65]
HC (Hydrocarbons)ç	g/kw·hr [g/hp·hr]	0.12 [0.09]
CO (Carbon Monoxide)		0.35 [0.26]
PM (Particulate Matter)ç	g/kw-hr [g/hp-hr]	0.09 [0.07]
CO ₂ (Carbon dioxide)g		677.00 [504.84]
Cooling System ¹		
Sea Water Pump SpecificationsMAB 0.08	8.17-07/16/2001	
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	110 [16]
Max. Coolant Outlet Pressure from the Engine		414 [60]
Sea Water Aftercooled Engine (SWAC)		
Standard Thermostat Operating Range (Start to Open)	°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open)		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:



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

Basic Engine Model Curve Number: **QSB 6.7 Engine Configuration**

353 kw

3300 rpm

D313011MX03

M-94127 CPL Code

[473 bhp, 480 mhp]

4191

Date: 7-Nov-18

Displacement: 6.7 liter [408 in³]

[4.21 in] Bore: 107 mm Stroke: 124 mm [4.88 in] Fuel System: **HPCR Bosch CRIN 3.0**

Rating Type: **High Output** Turbocharged / Sea Water Aftercooled Aspiration:

Cylinders:

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

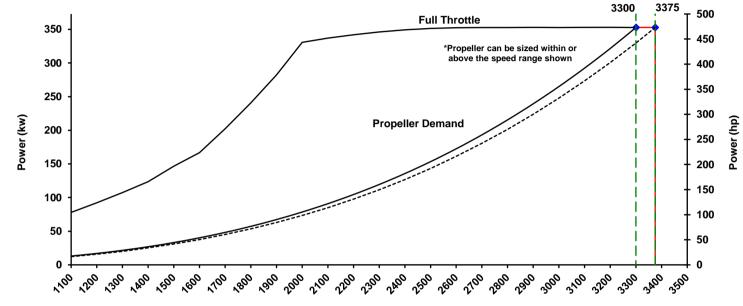
EPA Tier 3 - Model year requirements of the EPA marine regulation (40CFR1042)

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

Rated

Rated



Engine Speed - rpm

Speed	Full Throttle				Propeller Demand					
Speeu	Po	wer	Toı	que	Po	wer	Torque		Fuel Consumption	
rpm	kw	(hp)	N⋅m	(ft-lb)	kw	(hp)	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 humidy. 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.

> Thell & Her Chief Engineer

TECHNICAL DATA DEPT.

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

Engine Model	General Engine Data		
Rated Engine Power	Engine Model		QSB 6.7
Rated Engine Speed .rpm 3300 Rated Power Production Tolerance ±% 5 Rated Engine Torque .Nm [lb ft] 1021 [753] Peak Engine Torque @ 2000 rpm .Nm [lb ft] 1021 [753] Brake Mean Effective Pressure .Nm [lb ft] 1580 [1165] Brake Mean Effective Pressure .Nm [lb ft] 1021 [753] Maximum Torque Capacity from Front of Crank² .Nm [lb ft] 1021 [753] Maximum Torque Capacity from Front of Crank² .Nm [lb ft] 1021 [753] Compression Ratio .m/sec [ft/min] 13.6 [2885] Firing Order .m/sec [ft/min] 13.6 [2885] Firing Order .m/sec [ft/min] 13.6 [2885] Firing Order .mg [ft/min] 658 [1450] Governor Settings Default Droop Value .mg [ft/min] 33.7 [288] Default Droop Value .mg [ft/min] 3375 Minimum Idle Speed Setting .pm 3370 3376 Minimum Idle Speed Setting .pm 550 100 Normal Idle Speed Variation .pm 3370 10 10	Rating Type		High Output
Rated Power Production Tolerance ±% 5	Rated Engine Power	kW [hp]	353 [473]
Rated Engine Torque N-m 1021 753 Peak Engine Torque @ 2000 rpm. N-m 1580 [1165] Brake Mean Effective Pressure kPa psi 1917 278 Maximum Allowable Engine Speed	Rated Engine Speed	rpm	3300
Peak Engine Torque @ 2000 rpm. .N·m [lb-ft] 1580 [1165] Brake Mean Effective Pressure .kPa [psi] 1917 [278] Maximum Allowable Engine Speed .rpm 3375 Maximum Torque Capacity from Front of Crank² .N·m [lb-ft] 1021 [753] Compression Ratio .n/sec [ft/min] 13.6 [2685] Firing Order .m/sec [ft/min] 13.6 [2685] 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 .trpm 10 High Idle Speed Range Minimum .rpm 3370 Maximum .rpm 3370 Moise and Vibration .gated) .dBA @ 1m 75 Average Noise Level - Top (Idle) .dBA @ 1m 75 Average Noise Level - Right Side (Idle) .dBA @ 1m 76	Rated Power Production Toleranc	e±%	5
Brake Mean Effective Pressure	Rated Engine Torque	N·m [lb·ft]	1021 [753]
Maximum Allowable Engine Speed rpm 3375 Maximum Torque Capacity from Front of Crank² N·m [lb·ft] 1021 [753] Compression Ratio 16.5:1 Piston Speed m/sec [ft/min] 13.6 [2685] Firing Order kg [lb] 658 [1450] 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 Maximum rpm 3370 Maximum rpm 3370 Noise and Vibration Average Noise Level - Top (Idle) dBA @ 1m 75 Average Noise Level - Right Side (Idle) dBA @ 1m 100 Average Noise Level - Left Side (Idle) dBA @ 1m 76 Average Noise Level - Front (Idle) dBA @ 1m	Peak Engine Torque @ 2000 rpm	N·m [lb·ft]	1580 [1165]
Maximum Torque Capacity from Front of Crank² N-m [lb-ft] 1021 [753]	Brake Mean Effective Pressure	kPa [psi]	1917 [278]
Maximum Torque Capacity from Front of Crank² N-m [lb-ft] 1021 [753]	Maximum Allowable Engine Speed	drpm	3375
Compression Ratio			1021 [753]
Firing Order 1-5-3-6-2-4 Weight (Dry) - Engine With Heat Exchanger System - Average kg [lb] 658 [1450]	Compression Ratio		
Governor Settings	Piston Speed	m/sec [ft/min]	13.6 [2685]
Covernor Settings	Firing Order		1-5-3-6-2-4
Default Droop Value	<u> </u>		658 [1450]
Default Droop Value	Governor Settings		
High Speed Governor Break Point		Refer to MAR 2.04.00-03/23/2006 for Droop explanation	0%
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 76 (Rated) dBA @ 1m 102 Average Noise Level - Front (Idle) dBA @ 1m 76 (Rated) dBA @ 1m 102 Average Noise Level - Front (Idle) dBA @ 1m 76 (Rated) dBA @ 1m 76 (Rated) dBA @ 1m 76	·	· · ·	
Normal Idle Speed Variation	- .	·	
High Idle Speed Range Minimum	·	·	
Noise and Vibration Average Noise Level - Top (Idle) dBA @ 1m 75 Average Noise Level - Right Side (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 76 (Rated) dBA @ 1m 76 (Rated) dBA @ 1m 102 Average Noise Level - Front (Idle) dBA @ 1m 102 Average Noise Level - Front (Idle) dBA @ 1m 102 Average Noise Level - Front (Idle) dBA @ 1m 102 Average Noise Level - Front (Idle) dBA @ 1m 102 Average Noise Level - Front (Idle) dBA @ 1m 102 Average Noise Level - Front (Idle) dBA @ 1m 102	•	•	
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)	5 1 5	•	
Average Noise Level - Top (Idle)		μηιι	3300
Rated			
Average Noise Level - Right Side (Idle)	Average Noise Level - Top	(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]		` '	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 76 (Rated) dBA @ 1m 101 Fuel System¹ Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle /hr [gal/hr] 64.1 [16.9] Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle /hr [gal/hr] 32.3 [8.5] Fuel Consumption at Rated Speed /hr [gal/hr] 96.2 [25.4] Approximate Fuel Flow to Pump /hr [gal/hr] 215.8 [57.0] Maximum Allowable Fuel Supply to Pump Temperature °C [°F] 60.0 [140] Approximate Fuel Return to Tank /hr [gal/hr] 119.5 [31.6] Approximate Fuel Return to Tank Temperature °C [°F] 79.5 [175]	Average Noise Level - Right Side	(Idle)dBA @ 1m	75
Rated		(Rated)dBA @ 1m	100
Average Noise Level - Front (Idle) dBA @ 1m 76 (Rated) dBA @ 1m 101 Fuel System¹ Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle I/hr [gal/hr] 64.1 [16.9] Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle I/hr [gal/hr] 32.3 [8.5] Fuel Consumption at Rated Speed I/hr [gal/hr] 96.2 [25.4] Approximate Fuel Flow to Pump I/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 I/hr [gal/hr] 119.5 [31.6] Approximate Fuel Return to Tank Temperature °C [°F] 79.5 [175]	Average Noise Level - Left Side	(Idle)dBA @ 1m	76
Fuel System¹ Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle		(Rated)dBA @ 1m	102
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]	Average Noise Level - Front	(Idle)dBA @ 1m	76
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]	•	(Rated)dBA @ 1m	101
Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle I/hr [gal/hr] 64.1 [16.9] Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle I/hr [gal/hr] 32.3 [8.5] Fuel Consumption at Rated Speed I/hr [gal/hr] 96.2 [25.4] Approximate Fuel Flow to Pump I/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 I/hr [gal/hr] 119.5 [31.6] Approximate Fuel Return to Tank Temperature °C [°F] 79.5 [175]	Fuel System ¹		
Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle		8 E3 Standard Test Cyclel/hr [gal/hr]	64.1 [16.9]
Fuel Consumption at Rated Speed	•	•	
Approximate Fuel Flow to Pump	•	•	
Maximum Allowable Fuel Supply to Pump Temperature°C [°F]60.0 [140]Approximate Fuel Flow Return to Tank	·		
Approximate Fuel Flow Return to Tank	• • •		
Approximate Fuel Return to Tank Temperature°C [°F] 79.5 [175]		· · · · ·	
	• •		
Maximum Heat Rejection to Drain Fuel	• •	FuelkW [Btu/min]	2.4 [138]

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

- Unless otherwise specified, all data is at rated power conditions and can vary ± 5%.
 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.
 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.
 Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.
 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:

CPL: 4191 DATE: 7-Nov-18 Air System¹ Intake Manifold PressurekPa [in Hg] 246 [73] 475 [1007] Heat Rejection to AmbientkW [Btu/min] 29 [1630] Exhaust System¹ Exhaust Gas Flowl/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] 695.00 [518.26] CO₂ (Carbon dioxide)g/kw·hr [g/hp·hr] _I **Emissions (in accordance with ISO 8178 Cycle E5)** 5.02 [3.74] 0.17 [0.13] HC (Hydrocarbons)g/kw·hr [g/hp·hr] 0.65 [0.48] CO (Carbon Monoxide)g/kw·hr [g/hp·hr] PM (Particulate Matter)g/kw·hr [g/hp·hr] 0.11 [0.08] 695.00 [518.26] CO₂ (Carbon dioxide)g/kw·hr [g/hp·hr] Cooling System¹ Sea Water Pump SpecificationsMAB 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 \pm 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.
- Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.
 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/

Curve No. M-94127

DS: D31-MX-2

Curnmins

CUMMINS INC.

Charleston, SC 29405 Marine Performance Curves marine.cummins.com Basic Engine Model
QSB 6.7 INT
Engine Configuration

D313011MX03

Rated Power:

Curve Number:
M-95035
CPL Code: Date

[473 bhp, 480 mhp]

95035 Date: 7-Nov-18

Displacement: 6.7 liter [408 in³]

Bore: 107 mm [4.21 in]

Stroke: 124 mm [4.88 in]

Rated Speed: 3000 rpm
Rating Type: Intermittent Duty

353 kw

Cylinders: 6
Fuel System: Cummins High Pressure Common Rail

Aspiration: Turbocharged / Sea Water Aftercooled

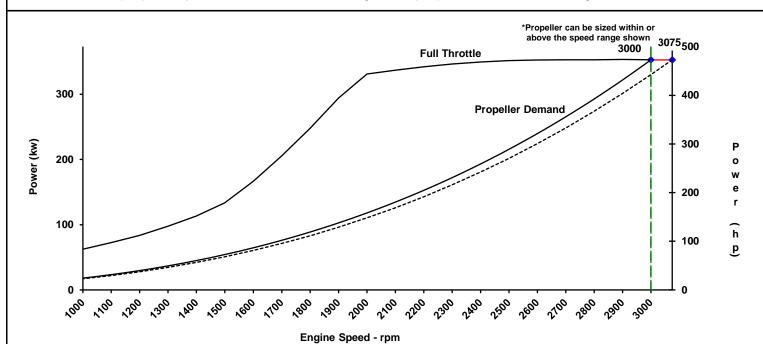
4191

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



Cnood	Full Throttle Propeller Demand									
Speed	Po	wer	Toı	que	Po	wer	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 humidy. 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

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

General Engine Data		
Engine Model		QSB 6.7 INT
O 71		Intermittent Duty
	kW [hp]	353 [473]
Rated Engine Speed	rpm	3000
Rated Power Production Tolerance	±%	5
Rated Engine Torque	N·m [lb·ft]	1123 [828]
Peak Engine Torque @ 2000 rpm	N·m [lb·ft]	1580 [1165]
Brake Mean Effective Pressure	kPa [psi]	2109 [306]
Indicated Mean Effective Pressure	kPa [psi]	2109 [306]
Maximum Allowable Engine Speed	rpm	3085
Maximum Continuous Torque Capacity from	Front of Crank Specifications	
Maximum Torque Capacity from Front of Crar	nk 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 S	System - Averagekg [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
J	(Rated)dBA @ 1m	100
Average Noise Level - Right Side	(Idle)dBA @ 1m	75
3	(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
- 10	()	
Fuel System¹	17 . (O .)	04 7 [40 0]
	ard Test Cycle/hr [gal/hr]	61.7 [16.3]
Fuel Consumption at Rated Speed	/hr [gal/hr]	
		215.8 [57.0]
	mperature°C [°F]	60.0 [140]
• •		124.0 [32.7]
	°C [°F]	79.5 [175]
	kW [Btu/min]	2.3 [130]
Fuel Pressure - Pump Out/Rail . INSITE Read	dingkPa [psi]	177099 [25,686]

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

- 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

CPL: 4191 DATE: 7-Nov-18 Air System¹ Intake Manifold PressurekPa [in Hg] 241 [71] Intake Air Flow 444 [940]l/sec [cfm] 27 [1558.9] Heat Rejection to AmbientkW [Btu/min] Exhaust System¹ 919 [1,947] 425 [796] 677 [1,250] **Emissions (in accordance with ISO 8178 Cycle E3)** NOx (Oxides of Nitrogen)g/kw·hr [g/hp·hr] 4.86 [3.62] 0.15 [0.11] HC (Hydrocarbons)g/kw·hr [g/hp·hr] 0.47 [0.35] 0.05 [0.04] 663.00 [494.40] CO₂ (Carbon dioxide) ______g/kw·hr [g/hp·hr] CH4 (Methane)g/kw·hr [g/hp·hr] 0.01 [0.00] Cooling System¹ Pressure Cap RatingkPa [psi] 103 [15] Max. Coolant Outlet Pressure from the Engine.....kPa [psi] 414 [60] Max. Pressure Drop Across Any External Cooling System CircuitkPa [psi] 34 [5] Sea Water Aftercooled Engine (SWAC) 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 Coolant³kW [Btu/min] N/A [N.A.]

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

- 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.

 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

Curve No. M-95035

DS: D31-MX-2



Columbus, IN 47201 Marine Performance Curves marine.cummins.com Basic Engine Model
QSB 6.7
Engine Configuration

D313011MX03

Curve Number:
M-94128
CPL Code: Date

[473 bhp, 480 mhp]

4191

Date: **7-Nov-18**

Displacement: 6.7 liter [408 in³]

Bore: **107 mm [4.21 in]** Stroke: **124 mm [4.88 in]**

Rated Speed: **3300 rpm**Rating Type: **Light Duty**

Rated Power: 353 kw

Fuel System: **HPCR Bosch CRIN 3.0**

Aspiration: Turbocharged / Sea Water Aftercooled

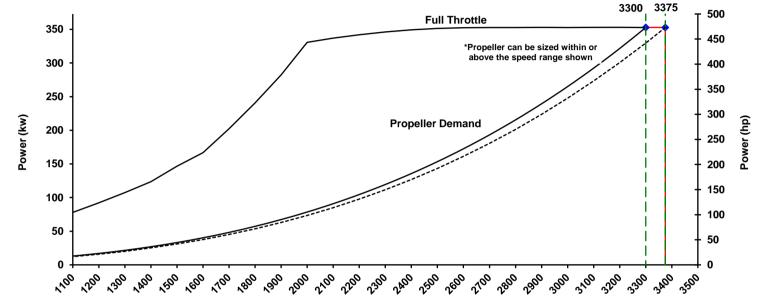
Cylinders: 6

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



Engine Speed - rpm

Speed	Full Throttle Propeller Demand									
Speeu	Power		Toı	rque	Po	wer	Torque		Fuel Cor	nsumption
rpm	kw	(hp)	N⋅m	(ft-lb)	kw	(hp)	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 humidy. 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.

TECHNICAL DATA DEPT.

The Hold Hard

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		kW [hp]	353 [473]
Rated Engine Speed		rpm	3300
Rated Power Production Tolerance	·····	±%	5
Rated Engine Torque		N·m [lb·ft]	1021 [753]
Peak Engine Torque @ 2000 rpm			1580 [1165]
Brake Mean Effective Pressure		kPa [psi]	1917 [278]
Maximum Allowable Engine Speed		rpm	3375
Maximum Torque Capacity from Front of Crank ²		N·m [lb·ft]	1021 [753]
Compression Ratio			16.5:1
Piston Speed	m/s	ec [ft/min]	13.6 [2685]
Firing Order			
ŭ			1-5-3-6-2-4
Weight (Dry) - Engine With Heat Exchanger Sys	stem - Average	kg [lb]	658 [1450]
Governor Settings	ŭ	011	
Default Droop Value	Refer to MAB 2.04.00-03/23/2006 for Droop ex	kplanation	0%
High Speed Governor Break Point	•	•	3375
Minimum Idle Speed Setting		•	550
Normal Idle Speed Variation			10
			3370
		•	3380
Noise and Vibration		·	
Noise and Vibration	(1-11-)	IDA @ 4	75
Average Noise Level - Top	(Idle)d	~	75 400
Average Naise Level Dight Cide	(Rated)d		100
Average Noise Level - Right Side	(Idle)d	•	75
A serve Nicke Level Left O' le	(Rated)d	•	100
Average Noise Level - Left Side	(Idle)d	_	76
	(Rated)d	•	102
Average Noise Level - Front	(Idle)d	_	76
	(Rated)d	BA @ 1m	101
Fuel System ¹			
Avg. Fuel Consumption - ISO 8178 E3 Standard	Test Cycle	/hr [gal/hr]	64.1 [16.9]
Fuel Consumption at Rated Speed			96.2 [25.4]
Approximate Fuel Flow to Pump			215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Temp			60.0 [140]
Approximate Fuel Flow Return to Tank			119.5 [31.6]
Approximate Fuel Return to Tank Temperature			79.5 [175]
Maximum Heat Rejection to Drain Fuel			2.4 [138]
			= . [.00]

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

- Unless otherwise specified, all data is at rated power conditions and can vary ± 5%.
 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.
 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.
 Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.
 May not be at rated load and speed. Maximum heat rejection may occur at other than rated conditions.

COLUMBUS, INDIANA

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

DS: D31-MX-2 CPL: 4191 DATE: 7-Nov-18 Air System¹ Intake Manifold PressurekPa [in Hg] 246 [73] 475 [1007] Heat Rejection to AmbientkW [Btu/min] 29 [1630] Exhaust System¹ 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] 0.63 [0.47] PM (Particulate Matter)g/kw·hr [g/hp·hr] 0.10 [0.07] CO₂ (Carbon dioxide)g/kw·hr [g/hp·hr] 695.00 [518.26] Cooling System¹ 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. 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/

Curve No. M-94128



Columbus, IN 47201 Marine Performance Curves marine.cummins.com Basic Engine Model
QSB 6.7
Engine Configuration

D313011MX03

Curve Number:
M-94126
CPL Code: Date

4191

404 kw [542 bhp, 550 mhp]

Date: **7-Nov-18**

Displacement: 6.7 liter [408 in³]

Bore: **107 mm** [4.21 in] Stroke: **124 mm** [4.88 in]

Rated Speed: 3300 rpm
Rating Type: Light Duty

Rated Power:

Fuel System: **HPCR Bosch CRIN 3.0**

Aspiration: Turbocharged / Sea Water Aftercooled

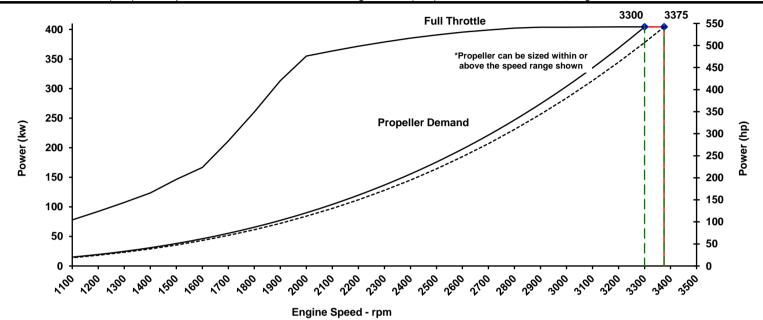
Cylinders:

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 Th	rottle		Propeller Demand					
Speed	Power		Torque		Power		Torque		Fuel Consumption	
rpm	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 humidy. 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.

Chief Engineer

TECHNICAL DATA DEPT.

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
	±%	5
	N·m [lb·ft]	1170 [863]
Peak Engine Torque @ 2000 rpm	N·m [lb·ft]	1695 [1250]
	kPa [psi]	2197 [319]
Maximum Allowable Engine Speed	rpm	3375
	N·m [lb·ft]	0 [0]
		16.5:1
	m/sec [ft/min]	13.6 [2685]
•		1-5-3-6-2-4
· · · · · · · · · · · · · · · · · · ·	m - Averagekg [lb]	658 [1450]
Governor Settings		
	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
•	rpm	3375
• •	rpm	550
·	±rpm	10
	rpm	3370
	rpm	3380
Noise and Vibration		0000
	(Idla) dDA @ 1m	75
Average Noise Level - Top	(Idle)dBA @ 1m	75 100
Average Naise Level Dight Cide	(Rated)	100
Average Noise Level - Right Side	(Idle)dBA @ 1m	75 402
-	(Rated)dBA @ 1m	102
	(Rated)dBA @ 1m	101
Average Noise Level - Front	(Idle)dBA @ 1m	76
	(Rated)dBA @ 1m	103
Fuel System ¹		
	est Cyclel/hr [gal/hr]	72.6 [19.2]
	l/hr [gal/hr]	110.2 [29.1]
·	l/hr [gal/hr]	215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Temper	ature°C [°F]	60.0 [140]
	l/hr [gal/hr]	105.6 [27.9]
	°C [°F]	79.5 [175]
· ·	kW [Btu/min]	2.1 [122]
maximum ricat regocion to brain radi		[]

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

- Unless otherwise specified, all data is at rated power conditions and can vary ± 5%.
 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.
 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.
 Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.
 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:

CPL: 4191 DATE: 7-Nov-18 Air System¹ Intake Manifold PressurekPa [in Hg] 251 [74] 511 [1082] Heat Rejection to AmbientkW [Btu/min] 33 [1873] Exhaust System¹ 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)** NOx (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] 0.45 [0.34] PM (Particulate Matter)g/kw·hr [g/hp·hr] 0.07 [0.06] CO₂ (Carbon dioxide)g/kw·hr [g/hp·hr] 707.49 [527.58] CH4 (Methane)g/kw·hr [g/hp·hr] 0.00 [0.00] Cooling System¹ Sea Water Pump SpecificationsMAB 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%.
- 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.

- Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.
 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/

Curve No. M-94126

DS: D31-MX-2



Columbus, IN 47201 Marine Performance Curves gce.cummins.com Basic Engine Model
QSB 6.7
Engine Configuration
D313011MX03

Curve Number:

M-94125

CPL Code: Date:

4191 1-May-19

Displacement: 6.7 liter [408 in³] Rated Power: 404 kw [542 bhp, 550 mhp]

 Bore:
 107 mm
 [4.21 in]
 Rated Speed:
 3300 rpm

 Stroke:
 124 mm
 [4.88 in]
 Rating Type:
 High Output

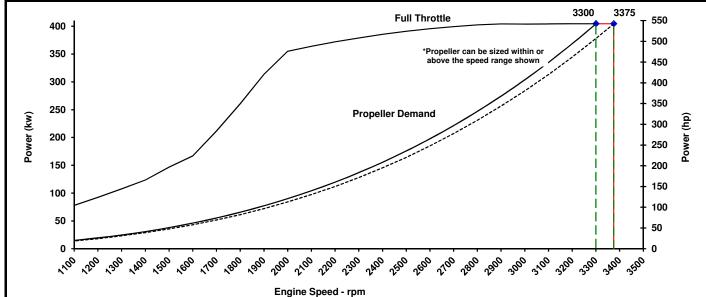
Fuel System: HPCR Bosch CRIN 3.0 Aspiration: Turbocharged / Sea Water Aftercooled Cylinders: 6

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 Th		Propeller Demand						
Speed	Power		Torque		Power		Torque		Fuel Consumption	
rpm	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 humidy. 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.

Chief Engineer

TECHNICAL DATA DEPT.

gce.cummins.com

General Engine Data Engine Model	out
	out
Rating Type High Outs	
	12]
Rated Engine PowerkW [hp] 404 [54	
Rated Engine Speedrpm 3300	
Rated Power Production Tolerance	
Rated Engine TorqueN·m [lb·ft] 1170 [86	63]
Peak Engine Torque @ 2000 rpm	250]
Brake Mean Effective PressurekPa [psi] 2197 [31	19]
Maximum Allowable Engine Speedrpm 3375	
Maximum Torque Capacity from Front of Crank ²	
Compression Ratio	
Piston Speed	85]
Firing Order	2-4
Weight (Dry) - Engine With Heat Exchanger System - Averagekg [lb] 658 [14	150]
Governor Settings	
Default Droop ValueRefer to MAB 2.04.00-03/23/2006 for Droop explanation 0%	
High Speed Governor Break Pointrpm 3375	
Minimum Idle Speed Settingrpm 550	
Normal Idle Speed Variation	
High Idle Speed Range Minimumrpm 3370	
Maximumrpm 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 System ¹	
Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	9.2]
Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle	6]
Fuel Consumption at Rated Speed	
Approximate Fuel Flow to Pump	
Maximum Allowable Fuel Supply to Pump Temperature	10]
Approximate Fuel Flow Return to Tank	7.9]
Approximate Fuel Return to Tank Temperature	75]
Maximum Heat Rejection to Drain Fuel	

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

Curve No. M-94125

DS: D31-MX-2

gce.cummins.com	Curve No. M-94125 DS: D31-MX-2 CPL: 4191 DATE: 1-May-19
Air System¹ Intake Manifold Pressure	251 [74] 511 [1082] 33 [1873]
Exhaust System¹ I/sec [cfm] Exhaust Gas Flow Standard Flow Exhaust Gas Temperature (Turbine Out) ℃ [°F] Exhaust Gas Temperature (Manifold) ℃ [°F]	1156 [2,450] 522 [970] 699 [1,290]
Emissions (in accordance with ISO 8178 Cycle E3) NOx (Oxides of Nitrogen)	5.00 [3.73] 0.11 [0.08] 0.45 [0.34] 0.07 [0.06] 707.49 [527.58]
Emissions (in accordance with ISO 8178 Cycle E5)	4.88 [3.64] 0.15 [0.11] 0.48 [0.36] 0.06 [0.05] 700.52 [522.38]
Cooling System¹ Sea Water Pump Specifications	103 [15] 414 [60] 71 [160] 83 [182]

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

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

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.