Cummins Marine and Cummins MerCruiser Diesel

Marine Engine General Data Sheet

Type	Engine Model: QSL9		Data Sneet: DS-300 Date: 14-Aug-0	
Bore		•		
Stroke	• •			
Displacement				
Max. Allowable Bending Moment at Rear Face of Block				_
Max. Allowable Bending Moment at Rear Face of Block N-m (ft-lb) 1356 (1000) Max. Allowable Axial Thrust Load on Crankshaft N (lb) 4448 (1000) Min. Axial Clearance at Front Face of Crankshaft for Thermal Expansion mm (ln) 1.44 (0.057) Max. Allowable Radial Load on Crankshaft N (lb) 854 (192) At 90° N (lb) 854 (192) At 180° N (lb) 4891 (1900) At 180° N (lb) 854 (192) At 180° N (lb) 854 (192) Installation/Operating Angles - Engine Installation Angles Incline drive: Installation: Static Installed Engine Pitch Angle Min. 0° Engine Front Up From Horizontal Max. 12° Vee Drive: Installation: Static Installed Engine Pitch Max. 12° Vee Drive: Installation: Static Installed Engine Pitch Max. 12° 12° Engine Front Up From Horizontal Max. 12° 12° Engine Front Up From Horizontal Max. 12° 12° Engine Front Up From Horizontal Max. 18° 18° Engine Front Up From Horizontal Max. 18°	Displacement	liter [in*]	8.9 [5	42]
Max. Allowable Axial Thrust Load on Crankshaft N [Ib] 4448 [1000] Min. Axial Clearance at Front Face of Crankshaft mm [in] 1.44 [0.057] Max. Allowable Radial Load on Crankshaft N [ib] 354 [192] At 90° N [ib] 354 [192] At 180° N [ib] 4919 [1106] At 270° N [ib] 4919 [1106] At 270° N [ib] 854 [192] Installation/Operating Angles - Engine Installation Angles Include drive: Installation: Static Installed Engine Pitch Angle Min. 0° Engine Front Up From Horizontal Max. 12° Vee Drive: Installation: Static Installed Engine Pitch Engine Front Up From Horizontal Max. 12° Min. 2° Vee Drive: Installation: Static Installed Engine Pitch Min. 2° Engine Front Up From Horizontal Max. 12° All Drives: Static Installated Engine Roll Angle From Vertical "Right/Left" Wewed from Flywheel End of Engine Max. Left N/A Engine Front Up From Horizontal Max. 25° All Drives: Intermittent Operation - Engine Pitch Angle Max. 25° Engine Front Up Fr	ENGINE MOUNTING & ACCESSORY DRIVES			
Min. Axial Clearance at Front Face of Crankshaft for Thermal Expansion			_	-
Max. Allowable Radial Load on Crankshaft			-	-
At 90°. N [b] 2180 [490] At 180°. N [b] 4919 [1106] At 270°. N [b] 4919 [1106] At 270°. N [b] 4919 [1106] At 270°. N [b] 884 [192] Installation/Operating Angles - Engine Installation Angles In-Line drive: Installation: Static Installed Engine Pitch Angle Engine Front Up From Horizontal Min. 0° Engine Front Up From Horizontal Max. 12° Vee Drive: Installation: Static Installed Engine Pitch Engine Front Up From Horizontal Min. 2° Engine Front Up From Horizontal Max. 12° All Drives: Static Installed Engine Roll Angle From vertical "Right/Left" Viewed from Flywheel End of Engine Max. Right N/A From vertical "Right/Left" Viewed from Flywheel End of Engine Max. Left Engine Angles - Vessel Operating Steady-State Operation - Engine Pitch Angle Engine Front Up From Horizontal Max. 25° All Drives: Intermittent Operation - Engine Pitch Angle Engine Front Up From Horizontal Max. 25° All Drives: Intermittent Operation - Engine Pitch Angle From Vertical "Right/Left" viewed from Flywheel End of Engine Max. Right 45° From Vertical "Right/Left" viewed from Flywheel End of Engine Max. Left All Drives: Intermittent Operation - Engine Pitch Angle Engine Front Up From Horizontal Max. 25° All Drives: Intermittent Operation - Engine Pitch Angle Engine Front Up From Horizontal Max. 35° FUEL SYSTEM Maximum Allowable Restriction to Fuel Pump Clean Filter Promatory Republication - Engine Pitch Angle Engine Front Up From Horizontal Max. 35° FUEL SYSTEM Maximum Allowable Restriction to Fuel Pump Republication - Republi	Max. Allowable Radial Load on Crankshaft		1.44 [0	.057]
At 180°	At 0°	N [lb]	854 [1	92]
At 270° N [ib] 854 [192]	At 90°	N [lb]	2180 [4	90]
At 270° N 854	At 180°	N [lb]	4919 [1	106]
Installation/Operating Angles - Engine Installation Angles In-Line drive: Installation: Static Installed Engine Pitch Angle Engine Front Up From Horizontal Max. 12° Vee Drive: Installation: Static Installed Engine Pitch Engine Front Up From Horizontal Max. 12° Vee Drive: Installation: Static Installed Engine Pitch Engine Front Up From Horizontal Max. 12° All Drives: Static Installed Engine Roll Angle From vertical "Right/Left" Viewed from Flywheel End of Engine Max. Right N/A From vertical "Right/Left" Viewed from Flywheel End of Engine Max. Left N/A Engine Angles - Vessel Operating Steady-State Operation - Engine Pitch Angle Engine Front Up From Horizontal Max. 25° All Drives: Intermittent Operation - Eng. Roll Angle From Vertical "Right/Left" viewed from Flywheel End of Engine Max. 25° All Drives: Intermittent Operation - Eng. Roll Angle From Vertical "Right/Left" viewed from Flywheel End of Engine Max. Right 45° From Vertical "Right/Left" viewed from Flywheel End of Engine Max. Left 45° All Drives: Intermittent Operation - Engine Pitch Angle Engine Front Up From Horizontal Max. 35° FUEL SYSTEM Maximum Allowable Restriction to Fuel Pump Clean Filter Repaired Restriction to Fuel Pump Maximum Allowable Return Line Pressure Repaired Repa	At 270°			
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All Drives: Intermittent Operation - Engine Pitch Angle Engine Front Up From Horizontal Engine Front Up From Horizontal Engine Front Up From Horizontal Max. 35° FUEL SYSTEM Maximum Allowable Restriction to Fuel Pump Clean Filter Rea [in Hg] Maximum Allowable Return Line Pressure Rea [in Hg] Maximum Allowable Return Line Pressure Rea [in Hg] Maximum Static Pressure at Fuel Pump Maximum Height of Fuel In Tank Above Fuel Pump Maximum Height of Fuel In Tank Above Fuel Pump Maximum Allowable Back Pressure Rea [in Hg] Maximum Allowable Back Pressure Maximum Allowable Back Pressure Rea [in Hg] Maximum Bending Moment at Turbine Outlet Mounting Flange N-m [ft-lb] Maximum Incremental Direct Load at Turbine Outlet Mounting Flange Rea [in Hg] Maximum Incremental Direct Load at Turbine Outlet Mounting Flange Rea [in Hg] Maximum Incremental Direct Load at Turbine Outlet Mounting Flange Rea [in Hg] Maximum Incremental Direct Load at Turbine Outlet Mounting Flange Rea [in Hg] Maximum Incremental Direct Load at Turbine Outlet Mounting Flange Rea [in Hg] Maximum Incremental Direct Load at Turbine Outlet Mounting Flange Rea [in Hg] Maximum Incremental Direct Load at Turbine Outlet Mounting Flange Rea [in Hg] Maximum Incremental Direct Load at Turbine Outlet Mounting Flange Rea [in Hg] Maximum Incremental Direct Load at Turbine Outlet Mounting Flange Rea [in Hg] Maximum Incremental Direct Load at Turbine Outlet Mounting Flange Rea [in Hg] Maximum Incremental Direct Load at Turbine Outlet Mounting Flange Rea [in Hg] Maximum Incremental Direct Load at Turbine Outlet Mounting Flange Rea [in Hg] Maximum Incremental Direct Load at Turbine Outlet Mounting Flange Rea [in Hg] Maximum Incremental Direct Load at Turbine Outlet Mounting Flange Rea [in Hg] Maximum Incremental Direct Load at Turbine Outlet Mounting Flange Rea [in Hg] Maximum Incremental Direct Load at Turbine Outlet Mounting Flange Rea [in Hg] Maximum Incremental Direct Load at Turbine Outlet Mounting Flange Rea [in Hg] Maximum Incremental Direct Load at Turbine Outlet Mount				
Engine Front Up From Horizontal Min. -25°		Max. Left	45°	
FUEL SYSTEM Maximum Allowable Restriction to Fuel Pump Clean Filter	All Drives: Intermittent Operation - Engine Pitch Angle			
FUEL SYSTEM Maximum Allowable Restriction to Fuel Pump Clean Filter	Engine Front Up From Horizontal	Min.	-25°	
Maximum Allowable Restriction to Fuel Pump Clean Filter	Engine Front Up From Horizontal	Max.	35°	
Clean Filter	FUEL SYSTEM			
Dirty Filter kPa [in Hg] 14 [4.0] Maximum Allowable Return Line Pressure kPa [in Hg] 34 [10] Maximum Static Pressure at Fuel Pump kPa [in Hg] 34 [10] Maximum Height of Fuel In Tank Above Fuel Pump m [ft] 4.12 [13.5] EXHAUST SYSTEM KPa [in Hg] 10 [3] Maximum Allowable Back Pressure kPa [in Hg] 10 [3] Maximum Bending Moment at Turbine Outlet Mounting Flange N·m [ft·lb] 19 [14] Maximum Incremental Direct Load at Turbine Outlet Mounting Flange kg [lb] 9 [20] AIR INDUCTION SYSTEM mm H ₂ O [in H ₂ O] 381 [15] Dirty Filter mm H ₂ O [in H ₂ O] 635 [25] Maximum Air Cleaner Inlet Temperature Rise Over Ambient °C [°F] 17 [30]	·		0.10	-1
Maximum Allowable Return Line Pressure				
Maximum Static Pressure at Fuel Pump				-
Maximum Height of Fuel In Tank Above Fuel Pump			-	0]
EXHAUST SYSTEM Maximum Allowable Back Pressure	Maximum Static Pressure at Fuel Pump	kPa [in Hg]	34 [1	0]
Maximum Allowable Back Pressure	Maximum Height of Fuel In Tank Above Fuel Pump	m [ft]	4.12 [1	3.5]
Maximum Bending Moment at Turbine Outlet Mounting Flange	EXHAUST SYSTEM			
Maximum Bending Moment at Turbine Outlet Mounting Flange	Maximum Allowable Back Pressure	kPa [in Hg]	10 [3]
Maximum Incremental Direct Load at Turbine Outlet Mounting Flange kg [lb] 9 [20] AIR INDUCTION SYSTEM Max. Allowable Intake Restriction - Turbocharged Clean Filter mm H ₂ O [in H ₂ O] 381 [15] Dirty Filter mm H ₂ O [in H ₂ O] 635 [25] Maximum Air Cleaner Inlet Temperature Rise Over Ambient °C [°F] 17 [30]	Maximum Bending Moment at Turbine Outlet Mounting Flange	N·m [ft·lb]	_	=
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$\begin{array}{cccccccccccccccccccccccccccccccccccc$	AIR INDUCTION SYSTEM			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$				
Dirty Filter		mm H ₂ O [in H ₂ O]	381 [1	51
Maximum Air Cleaner Inlet Temperature Rise Over Ambient				
TBD= To Be Determined N/A = Not Applicable N.A. = Not Available			_	-
	TBD= To Be Determined N/A = Not Applicable		N.,	A. = Not Available

CUMMINS ENGINE COMPANY, INC COLUMBUS, INDIANA

Engine Model: QSL9

DS-3005

Data Sheet:

Cummins Marine and Cummins MerCruiser Diesel

Marine Engine General Data Sheet

Marine Engine General Data Sheet			
Engine Model: QSL9	Data	a Sheet:	DS-3005
		Date:	14-Aug-08
LUDDIGATION OVOTEN			
LUBRICATION SYSTEM Oil Consumation Rate (Valuate Research of Final Consumation Rate)	0/	0.00	
Oil Consumption Rate (Volume Percent of Fuel Consumption Rate)	%	0.08	
Oil Pressure at Normal Operating Temperature	laDe (neil	NI A	
Idle Speed - Minimum in Filter Head Upstream of Filter	kPa [psi]	N.A.	
Idle Speed - Minimum in Main Oil Gallery	kPa [psi]	179 [26]	
Rated Speed - Measured in Filter Head Upstream of Filter (Low)	kPa [psi]	N.A.	
Rated Speed - Measured in Filter Head Upstream of Filter (High)	kPa [psi]	N.A.	
Rated Speed - Measured in Main Oil Gallery (Low)	kPa [psi]	386 [56]	
Rated Speed - Measured in Main Oil Gallery (High)	kPa [psi]	490 [71]	1
Max. Allowable Oil Temperature (Sump)	°C [°F]	121 [250	J
Oil Pan Capacity (Shallow) OP 9467	10 c o f o o 13	47.0 [4.5]	
Low	liter [gal]	17.0 [4.5]	
High	liter [gal]	20.8 [5.5]	
Oil Pan Capacity (Deep) OP 9397		400 = 0	
Low	liter [gal]	18.9 [5.0]	
High	liter [gal]	22.7 [6.0]	
Total System Capacity (Max. Sump + Filter)	liter [gal]	25.4 [6.7]	
By-Pass Oil Filter Capacity	liter [gal]	2.6 [0.7]	
COOLING SYSTEM			
Coolant Capacity			
Engine Only	liter [gal]	24.6 [6.5]	
Engine Including Heat Exchanger and Integral	liter [gal]	29.3 [7.7	_
Min. Coolant Makeup Capacity	liter [gal]	1.4 [0.38	3]
Max. Pressure Drop Across Any External Cooling System Circuit	kPa [psi]	34 [5]	
Max. Allowable Block Coolant System Pressure	kPa [psi]	483 [70]	
Max. Coolant Head From Crankshaft Centerline With 15 psi Pressure Cap	m [ft]	2 [5]	
Max. Coolant Temperature at Engine Outlet	°C [°F]	96 [205	
Min. Block Coolant Temperature (Warm Engine)	°C [°F]	71 [160]
Min. Allowable Coolant Expansion Space% of Syste	m Capacity	6	
Maximum Sea Water Pressure	kPa [psi]	103 [15]	
Maximum Sea Water Pressure Drop Across Heat Exchanger	kPa [psi]	34 [5]	
Maximum Sea Water Inlet Restriction	kPa [in Hg]	-17 [-5]	
ELECTRICAL AND STARTER SYSTEM			
Electrical		<u>12V</u>	<u>24V</u>
Min. Recommended Battery Capacity			
Cold Cranking Amperes Rating (CCA)		1250	625
Marine Cranking Amperes Rating (MCA)		1563	781
Reserve Capacity (Discharging 25 Amps @ 80°F)	minutes	360	180
Min. Allowable System Voltage (@ Battery While Running)	Volts	12	24
Max. Allowable System Voltage (@ Battery While Running)	Volts	15.5	31.0
Max. Allowable Voltage Drop of Starting Circuit (While Cranking)	Volts	1.0	2.0
Min. Engine Cranking Torque	ft∙lb	N.A.	N.A.
Min. Break-away Engine Cranking Torque	ft-lb	N.A.	N.A.
Min. Engine Cranking Speed	rpm	150	150
Max. Engine (Running) Current Draw	Amps	N.A.	N.A.
Min. Ambient Temperature for Cold Start (No Aids)	°C [°F]	-12 [10]	-12 [10]
Air Starter			
Regulated Pressure for Air Starter System	kPa [psi]	N/A	N/A
Min. Air-Flow for Air Starter System	l/sec [cfm]	N/A	N/A
Min. Recommended Tank Volume	liter [gal]	N/A	N/A

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

CUMMINS ENGINE COMPANY, INC COLUMBUS, INDIANA