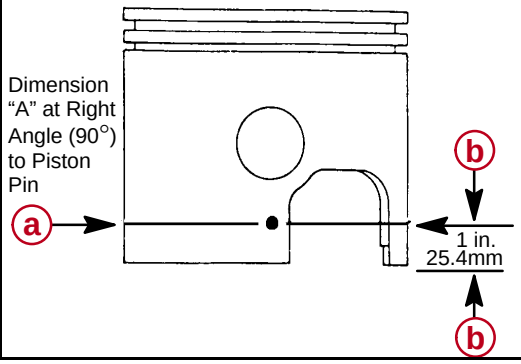
MERCURY Racing service bulletin

PERFORMANCE OUTBOARDS No. 2001-04

☐ WARRANTY INFORMATION ☑ SERVICE INFORMATION

300X Pro Max Specifications (Serial Numbers 0T235084 & Up)

Model 300X Pro Max 3.0L		
HORSEPOWER (KW)	**Model 300X** **Full Throttle RPM Range** **Idle RPM (In Gear)** **RPM Limiter** **Peak rpm During Break in**	300 (224 kw) 6200 - 6800 800 - 850 7100 5800
OUTBOARD WEIGHT	**– 25 in. (63cm) Long Shaft** **– 20 in. (51cm) Std. Shaft**	500 (227 kg) 465 (211 kg)
CYLINDER BLOCK	**Type** **Displacement**	Two Cycle V-6 185 cu. in. (3044 cc) 60° Vee
STROKE	**Length**	3.00 in. (76.2 mm)
CYLINDER BORE	**Diameter (Std)** **Taper/Out of Round/Wear Maximum** **Bore Type**	3.625 in. (92.075 mm) 0.003 in. (0.076 mm) Cast Iron
CRANKSHAFT	**Maximum Runout**	0.006 in. (0.152 mm)
PISTON	**Piston Type** **Diameter Standard**	Cast-Aluminum 3.6210 in. ± .0005 in. (91.973 mm ± 0.0127 mm)
PISTON DIAMETER		**Using a micrometer, measure dimension "A" at location shown. Dimension "A" should be 3.6210 in. ± .0005 for a STANDARD size piston (new) Dimension "A" will be 0.001 – 0.0015 less if coating is worn off piston (used)**

Model 300X Pro Max 3.0L		
COMPRESSION	**Using a fully charged battery, throttle shutters wide open and cylinder block warm**	110-115 psi (758-793 kPa) Variance between cylinders should not exceed 15 psi (103 kPa)
COMPRESSION RATIO		6.2:1
CYLINDER HEAD CHAMBER VOLUME		61 cc
REEDS	**Type/Material**	5 pedal, single stage carbon fiber
ENGINE COOLING	**Thermostat Controlled Thermostat Opening Temperature**	120 °F (49 °C)
FUEL INJECTION	**Injectors** **– Quantity** **– Injectors are Crank Angle Driven by ECM** **– #1 Cylinder** **– #3 Cylinder** **– #5 Cylinder** **– #2 Cylinder** **– #4 Cylinder** **– #6 Cylinder** **Fuel Line Pressure @ Schrader Valve in Fuel Rail** **High Pressure Electric Fuel Pump Amperage Draw** **Fuel Injector Ohm Resistance**	 6 BRN/PNK + RED/BLU Leads ORG/PNK + RED/BLU Leads BLU/PNK + RED/BLU Leads RED/PNK + RED/BLU Leads YEL/PNK + RED/BLU Leads PPL/PNK + RED/BLU Leads 39 ± 2 psi (268.9 ± 13.8 kPa) 6 - 9 Amperes 2.05 ± .1 Ω
FUEL SYSTEM	**Fuel System Type** **Recommended Gasoline** **Gasoline/Oil Ratio (ECM Controlled)** **– @ Idle** **– @ WOT** **Fuel Pressure – Crankcase Pump** **– @ Idle** **– @ WOT**	Gasoline With Oil Injection Unleaded 92 Octane Minimum 250:1 40:1 2 psi (13.8 kPa) 8 psi (55.2 kPa)
OIL INJECTION	**Recommended Oil** **Engine Oil Tank Capacity** **In Boat Oil Tank Capacity** **Testing Oil Pump**	Quicksilver/Mercury TC-W3 Premium Plus 2 Cycle Outboard Oil 1.5 US qt (1.42 L) 3 US gal (11.4 L) Activate Auto Prime. Pump Should Discharge 134 cc of Oil

Model 300X Pro Max 3.0L		
ENGINE GUARDIAN SYSTEM	**Situations Which Cause Guardian System to Reduce Available Engine Power**	**Percent of Engine Power Available**
	During Engine Break-in	75%
	Low Oil in Engine Oil Tank	95%
	Critical Low Oil in Engine Oil Tank	10%
	Loss of Oil from Oil Pump	10%
	Low Block Water Pressure and/or High Engine Temperature	From 95% down to 10%
	Faulty Sensor (horn, block psi, coolant temp.)	95%
	Battery Voltage Out of Limits	100% between 12-16v Degrades power below 12v down to 50% @ 11v. & no power @ 10v Degrades power above 16v down to 50% @ 17v & no power @ 18v.
STARTING SYSTEM	**Electric Start – All Models** **Starter Draw (Under Load)** **Starter Draw (No Load)** **Minimum Brush Length** **Battery Rating**	 170 Amperes 60 Amperes 0.25 in. (65.4 mm) 1000 (Minimum) Marine Cranking Amps 800 (Minimum) Cold Cranking Amps 105 Amp Hours
IGNITION SYSTEM	**Firing Order** **Ignition Type** **Spark Plug Type** **Spark Plug Gap** **Maximum Timing** **Idle Timing** **Throttle Position Sensor** **@ Idle** **@ W.O.T** **Crank Position Sensor Air Gap**	1-2-3-4-5-6 Digital Inductive Champion QL77PP - P/N 33-881815 0.025 in. (0.63 mm) Not Adjustable; Controlled by ECM Not Adjustable; Controlled by ECM 0.4 - 1.3 VDC 4.0 - 4.7 VDC Not Adjustable

Model 300X Pro Max 3.0L		
CHARGING SYSTEM	**Alternator Type**	Delco Remy 12V, 50 amp., neg. grd.
	Alternator Output (Regulated)	See Chart Following
	Brush Length	Std Exposed Length: 0.413 in. (10.5 mm) Min. Exposed Length: 0.059 in. (1.5 mm)
	Voltage Output	13.5 to 15.1 Volts
	Regulator Current Draw	0.15 mA (Ign. Switch Off) 30.0 mA (Ign. Switch On)

Alternator Current Output

Alternator output test should be performed with the battery loaded at 12.5 volts. Amperage output can vary by 10% due to heat buildup.

Engine RPM	Amperage Output @ Alternator
650	28
1000	41
1500-5000	50

RECOMMENDED GEAR CASE OIL	**All Model Gear Cases**	Mercury/Quicksilver Hi-Performance Gear Lube
GEAR HOUSING FLEET MASTER	**Gear Ratio** **300X 3.0L EFI**	1.75:1 12/21 Teeth
	Gearcase Capacity (Approximate)	28.0 fl oz (828 ml)
	Pinion Height	0.025 in. (0.635 mm)
	Forward Gear Backlash **– 1.75:1**	. 0.020 in. - 0.025 in. (0.508 mm - 0.635 mm)
	Reverse Gear Backlash **– Standard & Counter Rotation**	0.030 in. - 0.060 in. (0.76 mm - 1.52 mm)
	Water Pressure @ RPM	1-1/2 – 4-1/2 psi @ Idle 10 - 12 psi Minimum @ 5000 rpm
GEAR HOUSING TORQUE MASTER	**Gear Ratio** **300X 3.0L EFI**	1.62:1 13/21 Teeth 1.75:1 12/21 Teeth
	Gearcase Capacity (Approximate)	28.0 fl oz (828 ml)
	Pinion Height	0.025 in. (0.635 mm)
	Forward Gear Backlash **– 1.75:1/1.62:1**	. 0.020 in. - 0.025 in. (0.508 mm - 0.635 mm)
	Reverse Gear Backlash **– Standard Rotation**	0.030 in. - 0.060 in. (0.76mm - 1.52mm)
	Water Pressure @ RPM	1-1/2 – 4-1/2 psi @ Idle 10 - 12 psi Minimum @ 5000 rpm

Model 300X Pro Max 3.0L		
GEAR HOUSING SPORT MASTER	**Gear Ratio** **300X 3.0L EFI**	 1.62:1 13/21 Teeth 1.75:1 12/21 Teeth
	Gearcase Capacity (Approximate)	28.0 fl oz (828 ml)
	Pinion Height	0.025 in. (0.635 mm)
	Forward Gear Backlash **– 1.75:1/1.62:1** **– Standard & Counter Rotation**	 0.020 in. - 0.025 in. (0.508 mm - 0.635 mm)
	Reverse Gear Backlash **– Standard & Counter Rotation**	 0.030 in. - 0.060 in. (0.76 mm - 1.52 mm)
	Water Pressure @ RPM	1-1/2 - 4-1/2 psi @ Idle 10 - 12 psi Minimum @ 5000 rpm
MID SECTION	**Transom Height**	Standard = 20” (508 mm) Long = 25” (635 mm)
	Full Trim / Tilt Range (Standard)	71°
	Power Trim (Tilt Range)	19°
	Full Trim / Tilt Range (Offshore)	72°
	Maximum amount of acceptable leak down in 24 hrs.	1 in. (25.4 mm)
	Steering Pivot Range	Offshore & Standard 60°
	Tilt Pin Adjustment Positions	4
	Allowable Transom Thickness	2-3/8 in. (6.03 cm)

Powerhead Torque and Lube Specifications

QTY	DESCRIPTION	TORQUE			LUBRICANTS
		lb-in.	lb-ft	Nm	
1	**Flywheel Locknut**		125	170	
4	**Lower End Cap Bolts**	85		9.5	
6	**Spark Plugs**		20	27	
60	**Reed Attaching Screws**	25		2.8	
12	**Reed Block Mounting Bolts**	1st - Snug tight 2nd - Torque: 45 lb-in. (5 Nm) 3rd - Torque: 90 lb-in. (10 Nm)			#271 Loctite
3	**Fuel Rail Mounting Bolts**		33	44.5	
12	**Air Plenum/Reed Block Assembly Plate Screws**	175		19.8	#271 Loctite
7	**Vapor Separator Cover Screws**	30		3.5	

continued on next page

Powerhead Torque and Lube Specifications (Cont.)

QTY	DESCRIPTION	TORQUE			LUBRICANTS
		lb-in.	lb-ft	Nm	
8	**Crankcase Cover Bolts (M10X80)**	30 lb-ft (40.5 Nm) then tighten additional 90°			*Light Oil
14	**Crankcase Cover Bolts (M8X35)**		21	28.5	
40	**Cylinder Head Bolts**	20 lb-ft (27 Nm) then tighten additional 90°			*Light Oil
12	**Piston Rod Bolts**	1st - Torque: 15 lb-in. (1.6 Nm) 2nd - Torque: 20 lb-ft (27 Nm) Turn bolts additional 90° after 2nd Torque			*Light Oil
10	**Powerhead to Mid-Section Nuts (Using tool 91-840912)**	1st - Snug tight in sequence 2nd - Torque all locknuts in sequence to 25 lb-ft (34 Nm) 3rd** - Torque locknuts 1 thru 8 to 40 lb-ft (54 Nm) in sequence. Leave nuts 9 & 10 at 25 lb-ft (34 Nm)			

*Place oil on underside of bolt head only (not on threads).

**See Mercury Racing Service Bulletin 2001-02 for special procedures when using different powerhead to mid-section gaskets.