

Reflections marine engineering



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I dismantled my power head by using the tutors Instructions and using the repair manuals, I cleaned my power head before I began the Inspection for damage or warp age, I have learned that I must clean the power head before inspecting so that I can have a more accurate inspection of the power head. I then checked the cylinder head for warp, the maximum allowed warp for my type of outboard was 0. Mm, the warp was 0, mm so that means the cylinder head failed the warp inspection so it must be resurfaced, from this task I have learned that I must follow manufacturers specifications when inspecting power heads and that measurements must be accurate. The cylinder block inspection was carried out by visually checking the cylinder sleeves for cracks and scores, this is to make sure there is no damage on the cylinder sleeves from the piston or piston rings. When I visually checked my sleeves I found a bit of wear in cylinder 1 and cracks in cylinder 2.

I have learned that it is important to inspect machined surfaces carefully. I had to check for volatility and taper, to do this I used a cylinder bore gauge and measured 6 different positions. I found the specifications for Max allowable taper and valley from the repair manual, after measuring my cylinder bores I found that it needed to be rebooked. If not it could affect its operation by not being flush with the piston which will create loss of power and efficiency.

I had to inspect and measure the piston ring clearance by using a feeler gauge to measure the clearance between the piston ring and groove land. The specifications for side clearance were 0. Mm and piston clearance was between 0. Mm and 0. Mm, both my piston rings were ok as they were within the specifications. Next I followed the manufacturer's service gullet when

Inspecting the bearings, needle rollers, wrist and pins, all of them were k. I then used a dial gauge to measure the run out of the crankshaft; the maximum run out for the crankshaft was 0. Mm the top Journal failed because it was 0. Mm and this would cause damage to the bores as it was not evenly circle. I measured the con-rod side clearance and con-rod axial play. The maximum clearance was 0. 45 for side clearance and 0. Mm for axial play, both were k. Reflection 2: fuel pump In fuel systems we dismantled a two stroke outboard motors fuel pump and identified all the components, this has taught me the basics about fuel pumps and how they operate.

Then we dismantled a mechanical fuel pump; we inspected the pumps operation on an engine and checked the outlet side of the fuel pump for its pressure and the inlet side of the fuel pump for pressure as well. This has taught me dismantled a carburetor and identified air and fuel circuits, we also checked the needle valve and seat for serviceability and determined a good and bad needle valve, bad needle valve would either give too much fuel or not enough into the carburetor which will effect performance or fuel efficiency negatively.

I also had to dismantle a four stroke carburetor, when dismantling it is important to remember to place all the components in the trays provided, this has taught me to be organized and to make things easier when mantling the carburetor, use the correct tools, this has taught me to dismantle effectively. Dismantle components in a logical order, this has taught me to understand what is being dismantled and to think proactively. Note the

position of all Jets, valves and external linkages which made things much easier when figuring out the operation and circuits.

When dismantled I had to name the components and check all the Jet and choke sizes, check the condition of the secondary Jet which was below average and would affect the performance of the carburetor. I carried out a close visual inspection of the float, needle and seat the condition which was okay. I checked the setting of the float level while taking into consideration that the gasket is removed, the float is positioned by its own weight, ND when checking clearance between the lip and needle valve adjustments are done by bending the seat lip and the float setting should be 1.1 Mm. These tasks have taught me a lot about fuel systems and how to dismantle/mantle them effectively. Reflection 3: cooling In the cooling system I have learned how to handle coolant and the hazards of hot metal parts of the system, hot water and steam scalds and burns, when the cooling system is hot and under pressure, injury from moving parts of the engine, corrosion and anti freeze splashes in the eyes, this has taught me to be very care full when irking with cooling systems.

We serviced a outboards cooling system, we named all the components and listed two of the most common faults which could occur, one of them is that when the water pump operates the wrong way the propellers turn the other way which cannot be fixed. We learned about heat exchangers, possible coolant leak areas, the flow of coolant and when the thermostat opens, coolant blockage, and how to flush the cooling system. This has taught me to problem solve a cooling system effectively and how to maintain a cooling system. Reflection 4: outboard transmission servicing.

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We serviced an outboard transmission which included taking note of outboard conditions and indicating on the service sheet of this condition for future reference, Checking for overheating and overcooking, oil/water contamination, pressure testing the system, housing distortion and corrosion, water pump inspection, gear and bearing inspection, gear selection, engagement area, steering place position, prop size, prop boss. The use of specialist tools to avoid damage to components was observed. We were given an exploded view of the gear-case and we had to rebuild it.

Before repairs can be carried out we must assess the overall condition of the unit after it has been dismantled, it is important to take pre-service inherent conditions that the customer may tell you into consideration. We pressure and vacuum tested the gear-case, checked the gear case housing, drive shaft housing, the pinions, ball placed in it, the bearing and thrust washers, lip seals and “ o” rings, the shift oil pump for gears, relief valve, pump housing, pump screen and all the threads and machined surfaces. We used a dial gauge to check the drive shafts run out, the bearing surfaces for pitting and splices for damage or twisting.

We learned to use a service tool sleeve to check the drive shaft. We checked the propeller shaft for Max prop shaft run out using a dial gauge, the bearing surfaces for pitting and splices for damage or twisting. On the stern-drives we dismantled marine out-drive following manufacturer’s instructions, identified and inspected all components, identified gear type and engagement, calculated gear ratio, set up gear adjustments and preloaded bearing requirements, checked operation of engagement, assemble out-drive allowing manufacturer’s instructions.

During these tasks I learned to practice safe workshop practices, the correct use and care of specialist equipment, follow manufacturer's service instructions, how to identify the type of engagement correctly, how to identify the type of gear set correctly, the dismantling and reassembling of the transmission. We aligned the propeller shaft by adding or taking away metal plates from four corners, when you think its aligned you take a feeler gauge and check the clearance to make sure its even all the way through, this has taught me how to align a propeller shaft.