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| Station | Task |
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| PROPULSION | |

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# 1630 ACE - Jet Pump

## TASK OBJECTIVE

The objective of this station is to be familiar with some propulsion preventive checks and adjustments that provide better runnability and can avoid future failures.

**INTRODUCTION**

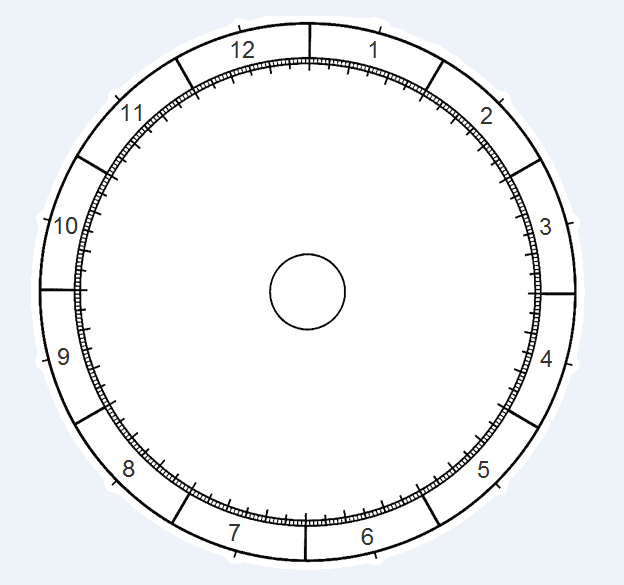
As the impeller begins to turn (with the rotation of the engine) it will move a volume of water into the impeller housing and through the venturi. The water accelerates as it is forced through the smaller cross section of the venturi. This creates thrust or forward propulsion. The volume of water that is drawn into and expelled by the pump is always equal. While the venturi section of the pump is neither technically impressive nor complicated in appearance, its simple shape and diameter are crucial to pump performance. A small increase of the venturi outlet diameter will reduce watercraft top speed but improve acceleration at lower speeds. Conversely, a small decrease in the venturi outlet diameter will reduce low speed acceleration while improving top speed. After exiting the venturi, the water passes through a steering nozzle where it can be directed right or left to turn the watercraft.

The jet pump has been totally redesigned to match the new 1630 ACE engine power and torque.

It now has a four-blade stainless steel impeller and a 10-vane stainless steel stator to allow the engine to perform at its best under any circumstance. It provides high torque, for out of the hole power, pulling skiers and wake-boarders, and to hold constant speed. Inside, the pump features an automotive type bearing and a new impeller shaft. This bearing uses grease for lubrication, so there isn't any smelly pump oil to deal with.

# Procedures

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| 1. Disconnect ball joint from jet pump nozzle arm |
| 1. Remove ball joint and jam nut from cable |
| 1. Use iBR override function to moves iBR gate to down position |
| 1. Remove iBR gate assembly & remove the guard |
| 1. Remove 2 L- plate retaining nuts & remove 4 iBR gate support bracket nuts |
| 1. Check the siphon tubes inside the venture (be careful to the o-ring) |
| 1. What happens if they are broken?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 1. Remove impeller cover |
| 1. Install the pressure cap (529036172) |
| 1. Perform pump pressure test as per shop manual. |
| 1. What is the test pressure? |
| 1. How much time must it hold the pressure? |
| 1. In the mean time check the condition of the ride plate anode |
| 1. What is the service limit? |
| 1. Is it correct? YES NO |
| 1. Check the continuity between the anode and the ride plate |
| 1. Is the continuity good? YES NO |
| 1. What happens is there is no continuity? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 1. **Note: On units with aluminum jet pump there is another anode that should be checked the same way** |
| 1. Is the jet pump holding the pressure? YES NO |
| 1. What is the most possible cause of the leak? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 1. Remove the jet pump |
| 1. Pay attention to the o-rings on the pump support |
| 1. What can happen if the calibrated washer is missing, incorrect size or not installed correctly? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 1. Check the impeller/wear ring clearance at the center of each blade |
| 1. What is the clearance? |
| 1. Is this within specification? YES NO |
| 1. Remove the drive shaft using the tool 529036026 |
| 1. Check the condition of the rubber stopper at the end of the drive shaft |
| 1. If it is crushed, what does it means? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 1. Remove the carbon ring with the drive shaft boot |
| 1. Inspect the carbon ring carefully: |
| 1. Are there scratches? YES NO |
| 1. Is the wear equal on the friction surface? YES NO |
| 1. If no, what does it mean? |
| 1. Is the inner diameter round or oval? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 1. What does it means if it is oval?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 1. Check the engine alignment |
| 1. Is it aligned? YES NO |
| 1. If no, indicate where the tool is contacting. |



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| 1. Install the removed parts |
| 1. Check the pressure of the carbon ring against the support ring and ensure there is no gap between them. |

**Instructor sign off-- Go \_\_\_\_\_\_\_\_\_\_**