

# RANGER TUGS

## Bow and Stern Thruster Maintenance and User Guide

**SIDE-POWER**  
Thruster Systems

### General Precautions

- DO NOT run the thruster when the boat is out of the water unless necessary.
- If you do test the thruster operation with the boat out of the water, make sure the tunnel is clear of obstructions or body parts and do not run it for more than 1 second. Allow the props to come to a complete stop before changing direction.
- The thruster motor should not get wet or remain in a humid environment. Standard thruster motors should be in a dry, well ventilated environment. Ignition protected motors used in many stern thruster applications are splash and humidity proof but should not be submerged.
- Special attention should be made when hauling the boat on a trailer; pump as much water out of the boat prior to hauling on a trailer. If the bilge cannot be pumped dry enough to prevent the stern thruster motor from being submerged when the boat is on an angle, then run the bilge pump as the boat is slowly being hauled.
- Once hauled, remove the hull drain plug to ensure all bilge water is allowed to drain from the boat.
- The bow and stern thrusters each have their own battery switch. When the boat is not in use, the thruster battery switches should be shut off.



### Preseason Maintenance

#### Anti-fouling (for boats kept in salt water)

- The thruster tunnel, props, and gearleg should be anti-foul painted.
- The props in particular should be clean. Even a very small amount of growth on the props will reduce performance dramatically. The props cannot be cleaned and painted effectively when installed; they should be removed from the gearleg for cleaning and painting.
- The prop shafts, the prop shaft seals, and the zincs should remain clean and free of paint.
- Please consult your local dealer for paint and application recommendations.

#### Prop Shaft

- Remove the prop and grease the prop shaft with marine grade grease.

#### Zinc Anodes

- Replace the zinc anodes yearly or when they are half gone.

#### Check Battery Cable Connections

- All battery cable connections must be clean and tight. Note: Use caution when checking and tightening the cable connections on the motor; the jam nut behind the cable lug must be held in place when tightening the outer nut.

#### Check Battery Capacity

- Old or weak batteries will not provide correct voltage to the thruster causing poor performance. The operating voltage at the battery when the boat is in the water should be between 10.5V and 11.5V. Please contact your dealer if you have low operating volts.

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### Usage Recommendations and Operating Safety Features

#### Control Panel

- The dual joystick control panel is turned on by depressing both "ON" buttons simultaneously.
- The control panel will shut off automatically after approximately 6 minutes from the time of the last thruster activation, or the control panel can be shut off by depressing the "OFF" button.
- There is a one second delay built in to the system for sudden direction changes to allow the props to slow before the opposite direction is engaged. This is to avoid shock loading the gearleg and to reduce solenoid contact wear. However, the one second delay is not enough time for the props to come to a complete stop. It is a compromise between safety and solenoid wear; a delay of longer than one second could be inconvenient in a tight situation.
- It is therefore recommended when changing thruster direction to pause in the middle position with the joystick for a couple of seconds before continuing to move the joystick over to the opposite direction. This will allow enough time for the props to come to a complete stop.
- Note: Continued immediate direction changes can cause solenoid contact wear over time.

#### Thruster Motor

- The thruster is designed to run for three minutes continuously or a 10% duty cycle. This means the motor can be run for approximately 6 minutes per hour. If the thruster motor is run longer than its duty cycle parameters, a thermo-switch mounted inside the motor body will open the solenoid negative circuit and the motor will stop running before damage to the motor occurs. After the motor has cooled down, the thermo-switch will re-set and the motor will once again be operational.

#### Low Voltage

- If the thruster starts running at low voltage, damage can occur to the motor solenoid contacts. To minimize this damage, the patented Side-Power IPC system will recognize the low voltage condition and automatically shut the thruster motor off for 4 seconds. If the operator continues to give a run command, the IPC system will then re-engage the motor for a half second every 4 seconds. It will do this 3 times and then will not allow a run command for another 30 seconds.
- When running the thruster, if it stops and then starts again, pulsing every three seconds, do not use it more than necessary until the batteries have been charged fully. If the problem persists after a full battery charge, have a qualified marine technician diagnose and correct the cause of low operating voltage.

#### Solenoid Lock-In

- On a very rare occasion, any high amp solenoid contactors can weld together and become stuck. We refer to this as a solenoid "lock-in" or thruster "run-on". This can potentially create a stressful or dangerous situation.
- The patented Side-Power IPC system will recognize the lock-in and will automatically shut the thruster down by activating both the motor solenoids. It will then deactivate the solenoids for half a second every 10 seconds which will cause the motor to pulse, but not with enough force to have an appreciable effect on the boat.
- After running the thruster, if you hear it pulsing half a second every 10 seconds, the thruster battery switch should be shut off as soon as possible. Have the thruster solenoid pack replaced by a qualified marine technician before attempting to use the thruster again.

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