Testing Glow Plugs

Quick Reference Guide

Get history, if possible, from owner/operator
Start by exploring the system: Locate the switch or button for the pre-heat, locate the relay, & inspect glow plugs/wiring

For this reference guide, we have two general categories, hopefully the owner's report will give us clues.
Scenario#1 The glow plugs have burned out [more than likely] these symptoms

- Engine has been getting harder to start, but does crank up.
- Was hard to start and now won't start
- Engine starts in warm weather, very difficult in the winter

Scenario#2 Electrical Problems

- Engine was starting just fine, cranks, but all of a sudden does not start
- This indicates electrical problem getting power to the glow plugs

Safety

- You'll be running the engine
- Watch for hazards
- PPE, ear & eye

Warning: [if the vessel has water-lift muffler]

- Don't flood the engine
- Excessive cranking while trouble-shooting will eventually hydro-lock the engine
- Remove the drain plug from water lift muffler until the engine is able to start

Gather all tools

- Tool bag, Socket set, Multi-meter, **with DC clamp feature for current**

Scenario#1 To start we need to check if the glow plugs are getting voltage.

- Figure out the system [electrically] Where is the momentary switch, & the relay
- Test the electrical system: switch, wire Relay by having someone activate the system while you are near relay
    - You should hear & feel the relay being activated
- Verify voltage at glow plugs
    - If no voltage at plugs, go to Scenario#2
- With circuit activated, check current at each plug
    - Note: They are normally 'daisy chained' so for a 4 cylinder engine the total might 24 amps
        - In-between each plug would be 6 amps, 12 amps, 18 amps, then 24 amps.
- Record the values
- This usually determines if there are bad plugs, if so, replace them all at this time

Scenario#2 Testing the electrical system

- Locate the switch, relay, & glow plugs
- At relay, identify where the relay gets source power from, test for voltage
    - If no voltage at relay input, sort that out, fix: Glow plugs probably now work
- Locate the switch input wire that activates the relay
    - Have someone activate the circuit and test for voltage
    - **If voltage present:** relay more than likely bad
    - Use a bypass circuit breaker to verify the relay is bad
    - If voltage not present: problem with switch or power to switch
    - Use a bypass circuit breaker to activate relay and verify relay operation

After you have made repairs, prepare to test the system: run the engine

- Sea-Valve open, Pre-flight check – inspection, oil, coolant, etc
- If you suspect someone has been cranking on the engine, and it has water-lift, remove the drain plug

Start the vessel

- As soon as it starts, replace the drain plug
    - You may want to shut it down for this
- Record / Document the completed work