

FOR THERMOSIPHON HEATERS



✓ RETURN PORT

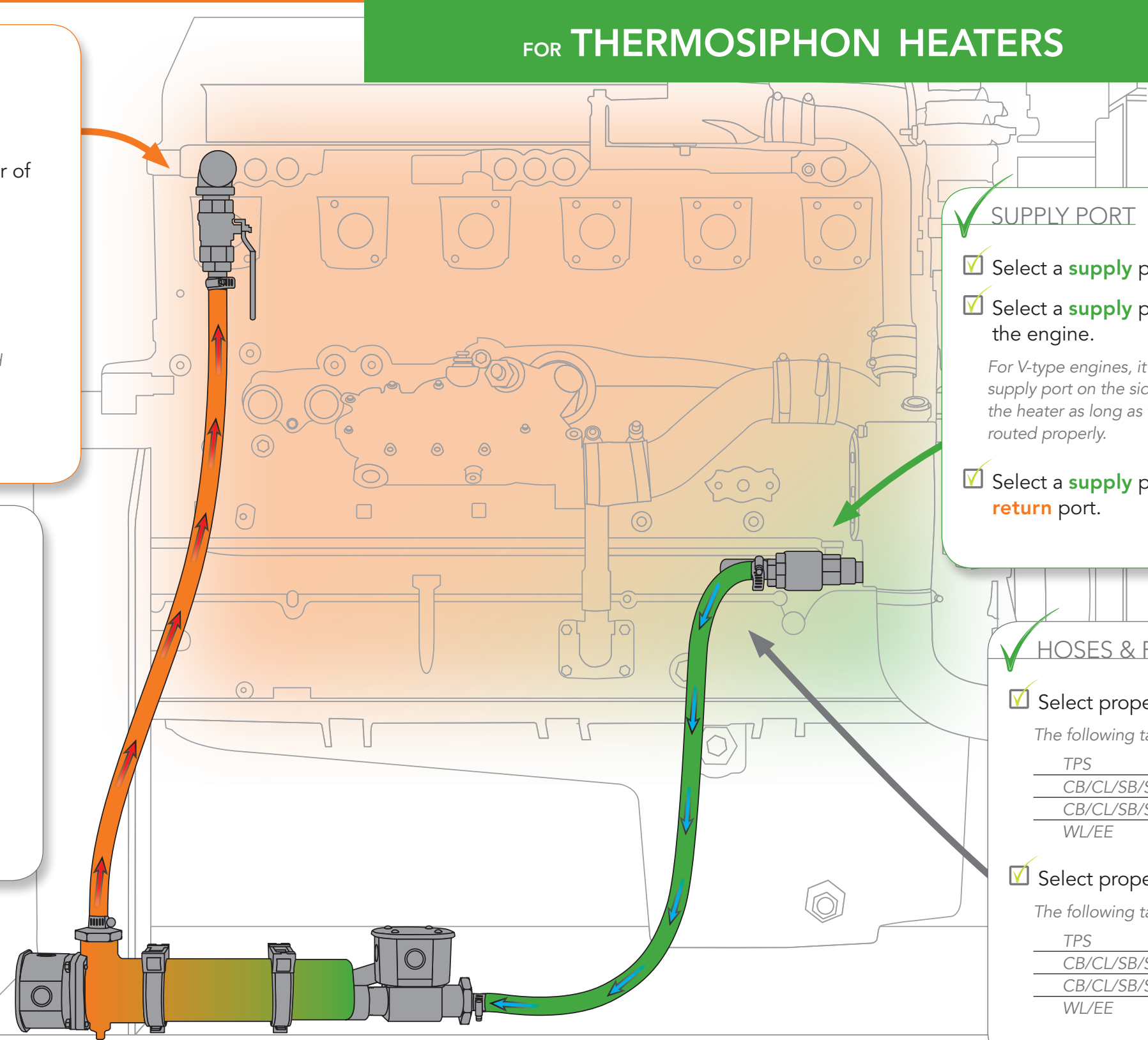
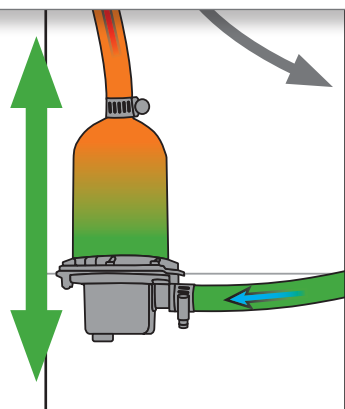
- ✓ Select a **return** port high on the engine.
- ✓ Select a **return** port toward the rear of the engine.
- ✓ Select a **return** port away from the engine thermostat.
- ✓ Select a **return** port away from the remote thermostat.

If an optional remote thermostat is installed

- ✓ Select a **return** port away from the **supply** port.

✓ HEATER MOUNTING

- ✓ Mount the heater in the proper orientation.
- ✓ Mount the heater to a vibration-isolated surface.
- ✓ Mount the heater directly below the **return** port.
- ✓ Mount the heater at least 6 inches (15 cm) below the lowest point of the water jacket.



✓ SUPPLY PORT

- ✓ Select a **supply** port low on the engine.
- ✓ Select a **supply** port toward the front of the engine.

For V-type engines, it is acceptable to select a supply port on the side of the engine opposite the heater as long as the supply hose is routed properly.

- ✓ Select a **supply** port away from the **return** port.

✓ HOSES & PORTS

- ✓ Select proper port fittings.

The following table shows the minimum port size fittings:

TPS	500–2000 watts	3/8 inch NPT
CB/CL/SB/SL	500–3000 watts	1/2 inch NPT
CB/CL/SB/SL	3750–5000 watts	3/4 inch NPT
WL/EE	1500–5000 watts	3/4 inch NPT

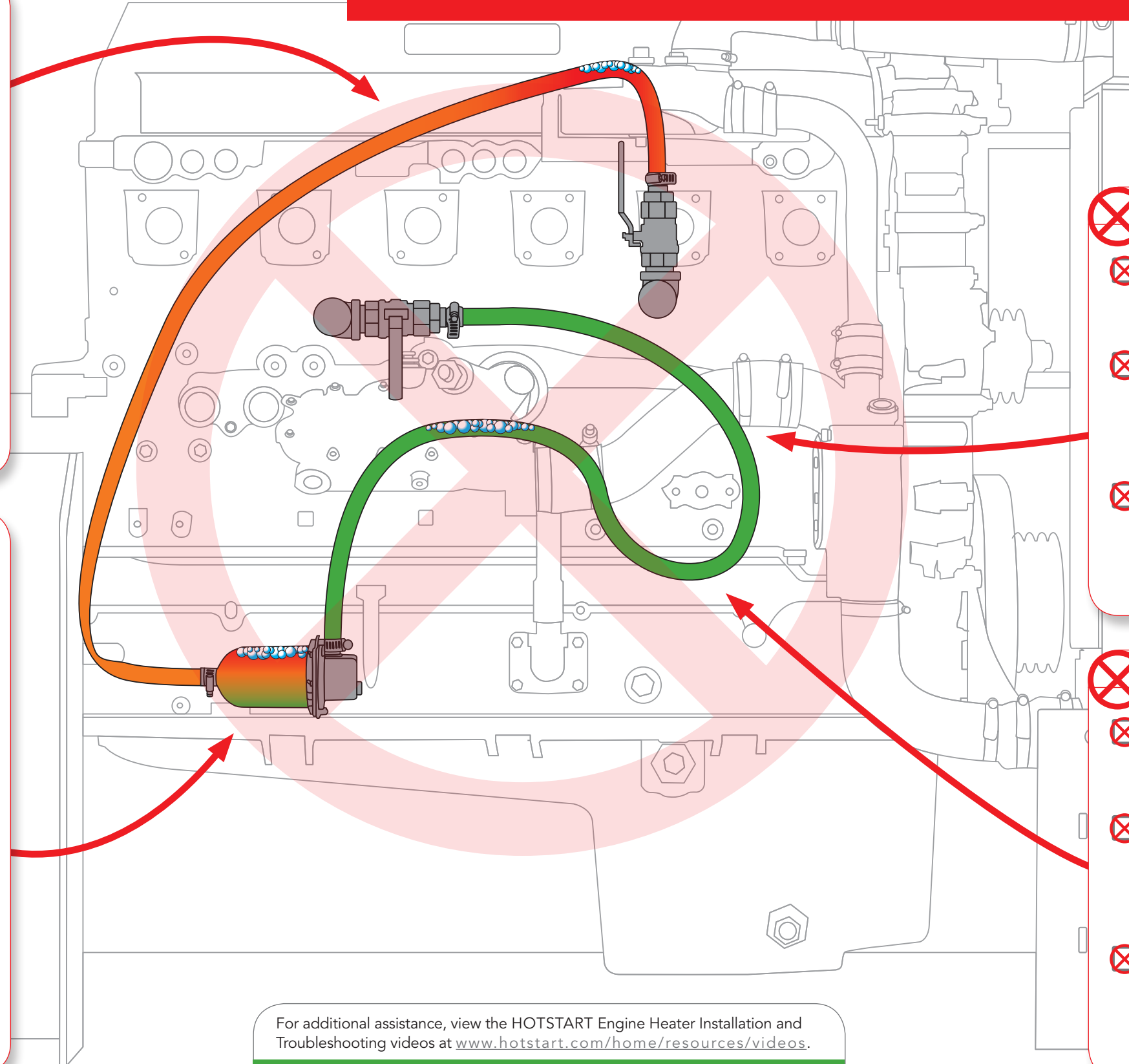
- ✓ Select proper hose inner diameter sizes.

The following table shows the minimum inner diameter hoses:




TPS	500–2000 watts	5/8 inch
CB/CL/SB/SL	500–3000 watts	3/4 inch
CB/CL/SB/SL	3750–5000 watts	1 inch
WL/EE	1500–5000 watts	1 inch

For additional assistance, view the HOTSTART Engine Heater Installation and Troubleshooting videos at www.hotstart.com/home/resources/videos.





FOR THERMOSIPHON HEATERS






RETURN PORT

-  **Return** port is installed toward the front of the engine.
A return port too close to the front of the engine will reduce heating effectiveness.
-  **Return** port is too close to the engine thermostat.
A return port installed too close to the engine thermostat can cause heated coolant to flow to the radiator, reducing heating effectiveness.
-  **Return** port is too close to the **supply** port.
A return port too close to the supply port will cause heated coolant to flow through only a small portion of the engine.




HEATER MOUNTING

-  Heater is mounted sideways.
An incorrectly oriented heater will reduce coolant flow and heating effectiveness.
-  Heater is mounted directly to the engine.
Engine vibration will damage the heater.
-  Heater is not mounted directly below the **return** port.
An incorrectly positioned heater will not allow the return hose to continuously rise to the engine.
-  Heater is not mounted at least 6 inches (15 cm) below the water jacket.
A heater mounted too high will restrict coolant flow and reduce heating effectiveness.

SUPPLY PORT

-  **Supply** port is too high on the engine.
A supply port mounted too high will reduce heating efficiency.
-  **Supply** port is installed toward the rear of the engine.
A supply port mounted too close to the rear of the engine will reduce heating effectiveness.
-  **Supply** port isolation valve is closed.
Operating the heater without the presence of coolant will cause overheating and damage the heater.

HOSES & PORTS

-  **Return** hose is kinked or damaged.
Kinked or damaged hoses will reduce coolant flow.
-  **Return** hose does not continuously rise to the port.
A return hose that does not continuously rise may create high points, restricting coolant flow.
-  **Supply** hose is unnecessarily long.
Unnecessarily long hoses may create dips and bends, collecting air bubbles and restricting coolant flow.

For additional assistance, view the HOTSTART Engine Heater Installation and Troubleshooting videos at www.hotstart.com/home/resources/videos.