HOTSTART

INSTALLATION BEST PRACTICES

FOR HOTflow™ HEATERS

RETURN PORT

- ☑ 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 **supply** port.

SUPPLY PORT

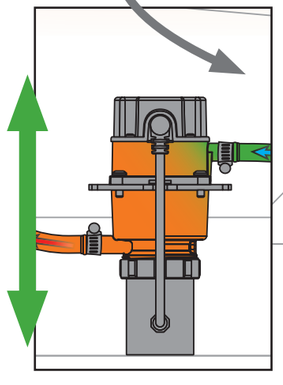
- ☑ Select a **supply** port toward the front of the engine.

  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.

HEATER MOUNTING

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



HOSES & PORTS

- ☑ Select proper port fittings.

  The following table shows the minimum port size fittings:

CTM	*1000–2500 watts*	*3/8 inch NPT*
CSM	*3000–12000 watts*	*3/4 inch NPT*

- ☑ Select proper hose inner diameter sizes.

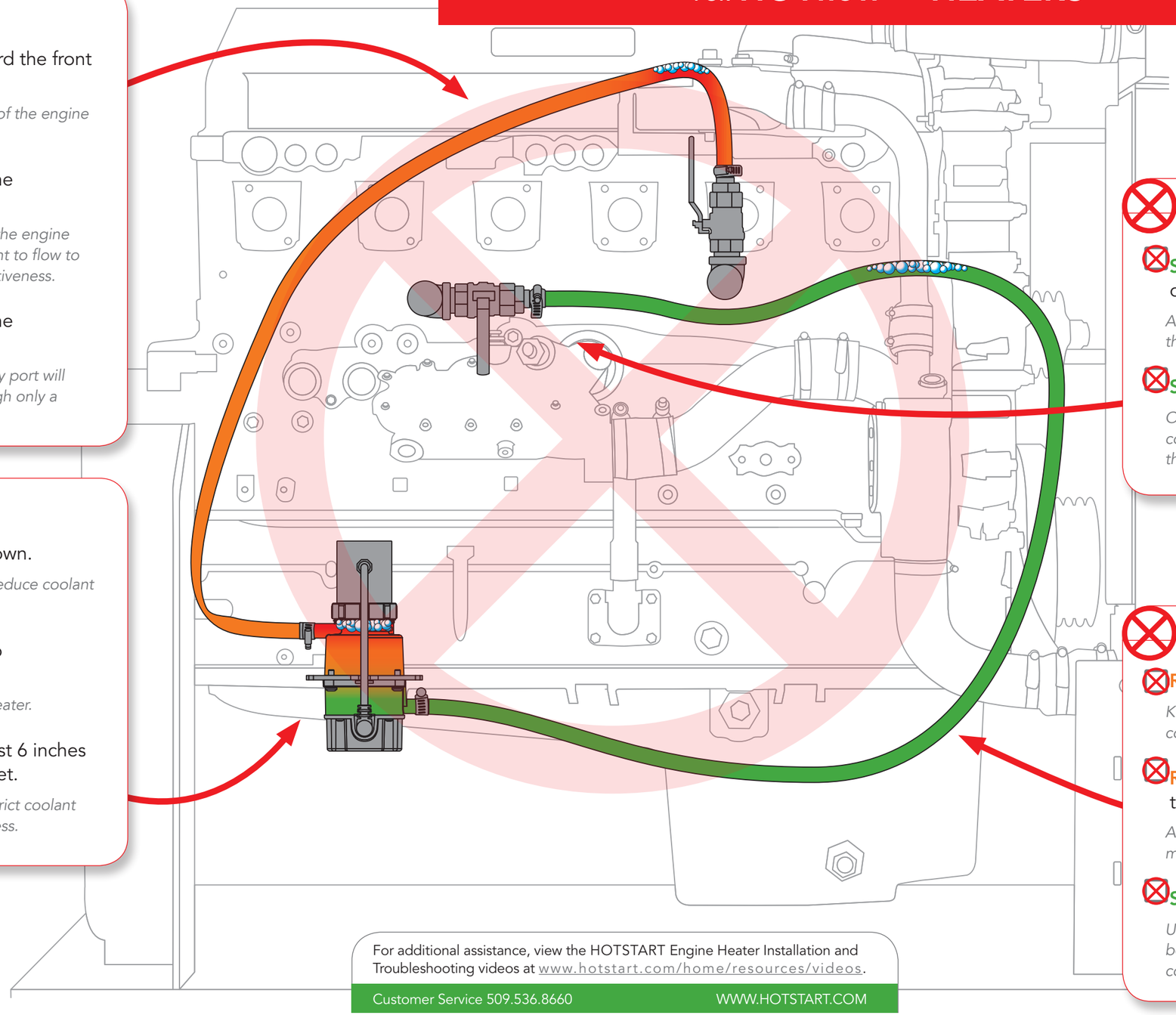
  The following table shows the minimum hose inner diameters:

CTM	*1000–2500 watts*	*5/8 inch*
CSM	*3000–12000 watts*	*1 inch*

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

INSTALLATION PROBLEMS & HAZARDS

FOR HOTflow™ 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 upside down.

  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 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 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.

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