

Heat Exchangers, Pressure Vessels, Fittings and CRN's???

Understanding heat exchangers can be somewhat complicated, understanding whether a heat exchanger requires a CRN can be more complicated. Providing a “definitive guide” to access whether any heat exchanger requires a CRN is impossible, however, general guidelines can be developed to assist designers and owners of heat exchangers to assess whether they may require a CRN. We are providing this document for information purposes only. Pressure Vessel Registration and Fitting Registration in Ontario are too complex to be covered in a document this brief and there are exemptions for certain applications to be considered as well. Please consider this document as general guidance, the regulating body for this legislation in Ontario is the TSSA. (each Province has its own different regulating body) Contact information for both the TSSA and CSA are listed at the end of this document.

What is a CRN? CRN stands for Canadian Registration Number and can be obtained for either a Registered Pressure Vessel or a Registered Fitting. A heat exchanger can be considered a Pressure Vessel (ASME), a Fitting or neither. The information below is derived from the CSA B51 Standard, which is Canada wide, but each Province has its own registration requirements.

It is recommended that the end user clearly understand the jurisdictional requirements before making the decision whether a heat exchanger is a pressure vessel, fitting or does not need to be registered. Manufacturing a heat exchanger with an ASME stamp if it is not required can add considerable cost to a project, so can delays in starting a process because one of the heat exchangers does not have a CRN.

Listed below are three flow charts to help determine the classification of a specific heat exchanger.

- 1) Every Province has a different assessment process to determine the classification. The heat exchanger must satisfy the regulations of the province in which it would be installed.
- 2) Each Province has applications where a heat exchanger may be exempt depending on the service in which it is installed. Sometimes these applications are unclear and difficult to interpret.
- 3) The classification of the heat exchanger is dependant on; the size, the fluids contained and design pressure and temperature.

For Heat Exchangers Containing Water or Liquids Not More Hazardous than Water

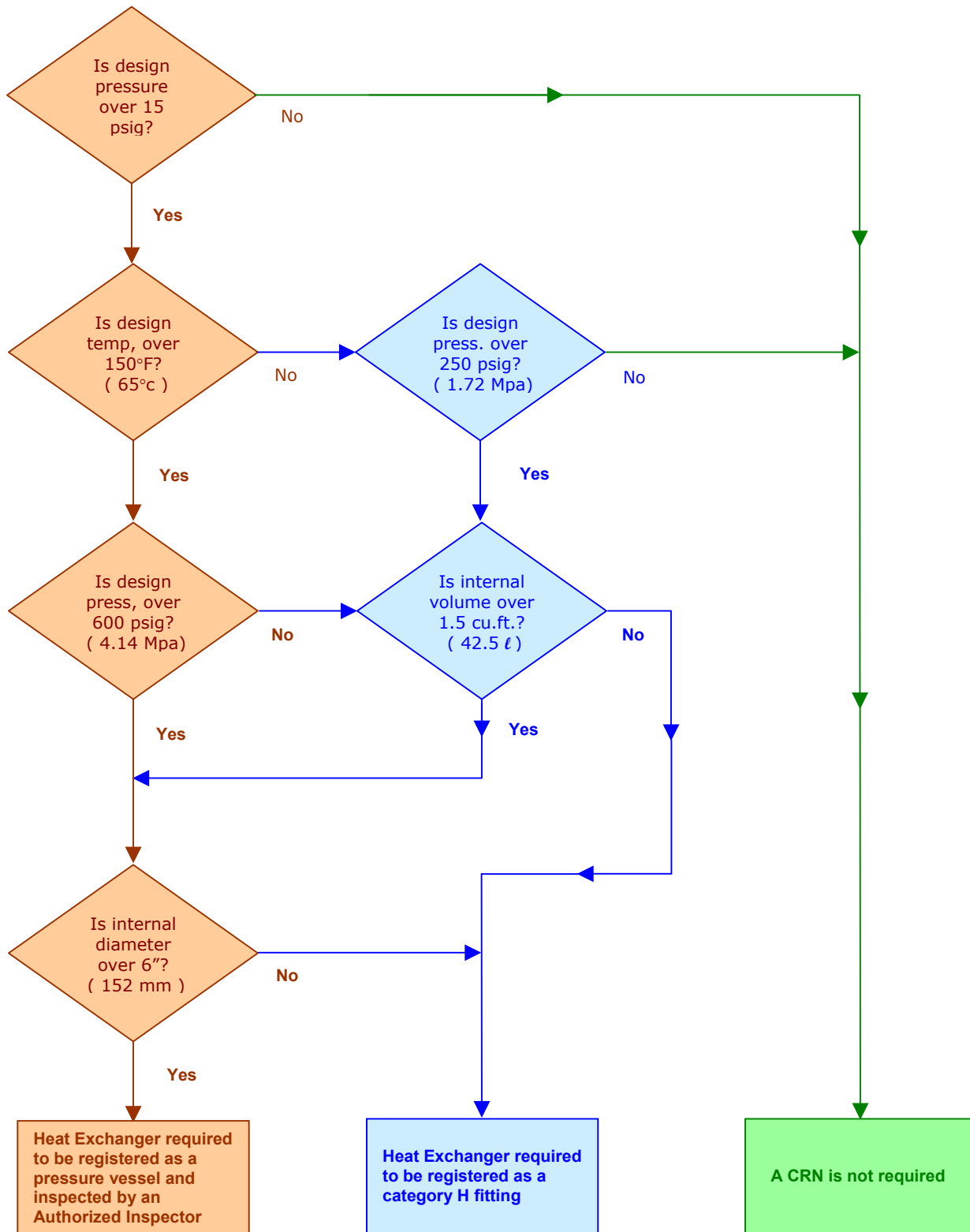


Figure 1

For Heat Exchangers Containing Nonlethal Gas, Vapour or Liquid
Not Covered by Figure 1

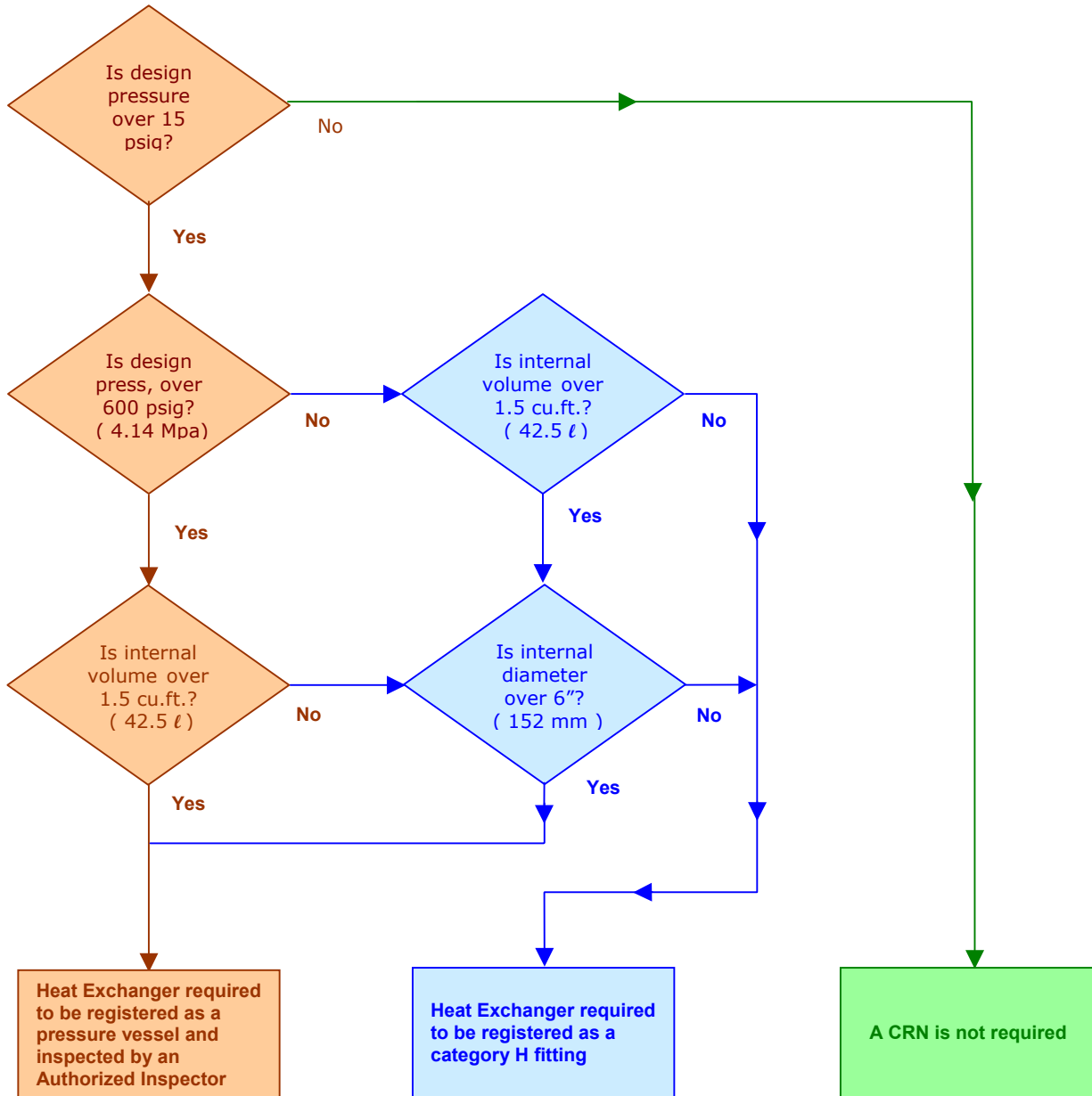


Figure 2

For Heat Exchangers Containing Lethal Substances

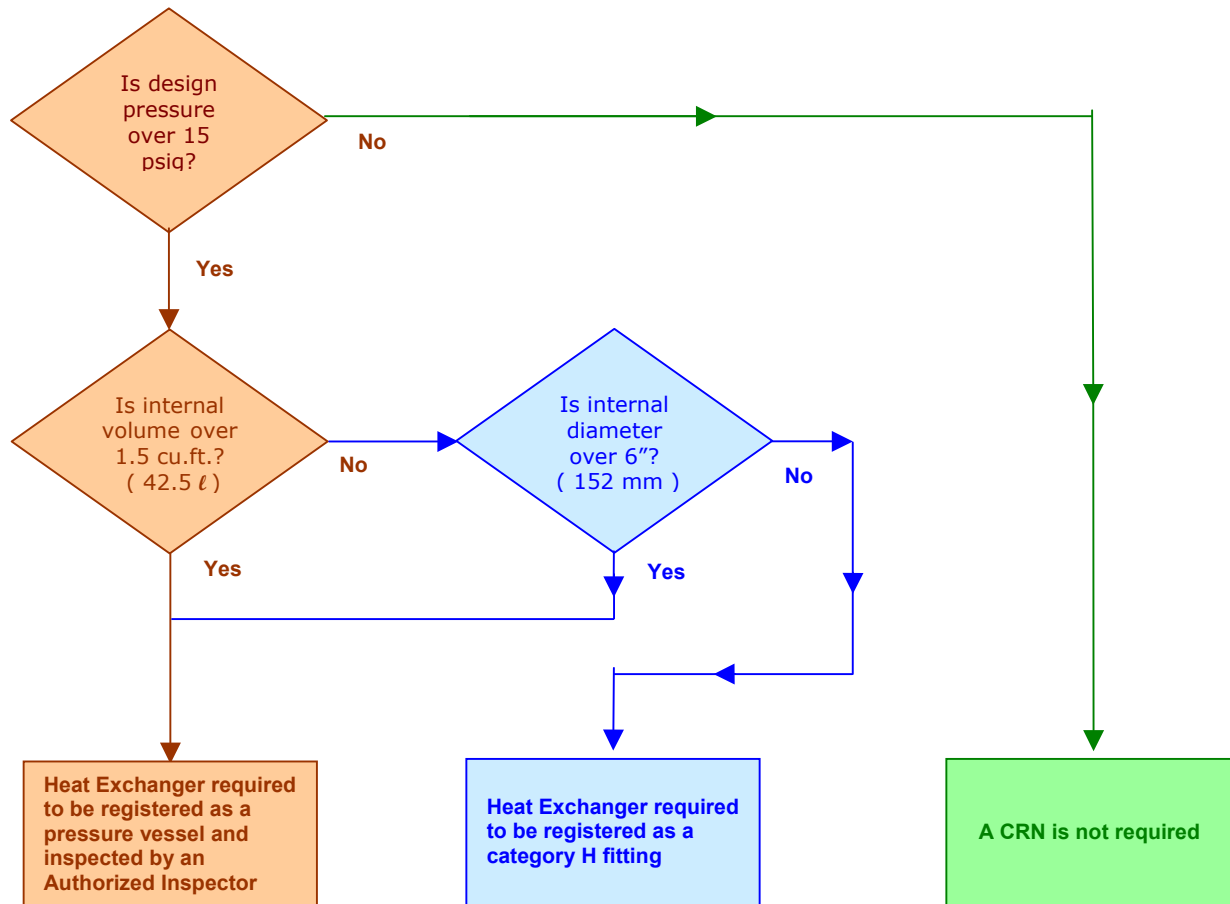


Figure 3

More information:

[Canadian Standard Association – CSA B51](#)

[Technical Standards & Safety Authority of Ontario – TSSA](#)

[Ontario Boiler & Pressure Vessel Regulation](#)

[Alberta Boilers Safety Association](#)

[American Society of Mechanical Engineers - ASME](#)