

# ENGINEERING SPECIFICATIONS

## CRN APPROVED

When indicated for Canadian Registration Number requirements for pressure vessels, pressure piping systems or boiler systems in Canada or surrounding territories, use TCH reducing assemblies, seismic V and U connectors and straight assemblies.

When indicated, use flexible thermal seismic V and U connectors of the size, type and end fittings noted. V and U connectors allow movement along the 6 planes of the X, Y and Z axis. V and U connectors can be constructed to accommodate up to 10" of movement on all planes. Movements are primarily in lateral directions, minimizing weld attachment stress. V and U connectors must be installed in the neutral length listed on the manufacturer's diagrams, unless otherwise directed by the engineer.

V and U connectors will be positioned and supported per the manufacturer's installation instructions. V connectors use two 45 degree elbows and one 90 degree elbow for a total of 180 degrees in pipe change. The U connectors consist of two flexible sections of hose and braid, two 90 degree elbows and a 180 degree return equaling a 360 degree pipe change.

In expansion compensation situations, the V and U connector can be installed pre-compressed or pre-extended, only if the full range of motion will be encountered in only one direction. Larger connectors are supplied with shipping bars attached. These bars are tack welded on to maintain the proper designed length. The shipping bars need to be removed from the V or U after installation. For steam applications, a drain port and plug are to be specified and factory installed into the bottom of the 90 or 180 degree elbow to allow condensate to be drained. An alternative position for steam service is with the 90 or 180 degree elbow pointing upward. Installing the V or U connector in this way will allow natural drainage into the surrounding piping.

Anchors are required on either side of the V or U connector to react to the spring forces of the connector. Pressure thrust loads are not a consideration because the V or U connector will not impose pressure thrust onto the system. Anchors should be of sufficient strength to withstand the spring forces of the loops and the frictional forces of the pipe sliding through any pipe alignment guides.

Flexible V and U connectors are rated for a minimum of 150 PSIG working pressure in all sizes. Flange, weld, threaded, or copper tube end fittings are provided to match connecting pipe. V and U connectors are rated for up to 10 inches of motion, as indicated on project drawings.

Custom movements are available, contact TCH for assistance. At least one pipe alignment guide must be used within four pipe diameters on each side of the V and U connector.

Flexible thermal seismic V and U connectors will be TCH Model, SV-CRN for V Connectors, and SL-CRN for U Connectors. Flexible straight connectors will be TCH Model, TCHS-CRN (SS or CS Straight Connectors), RCFF-CRN (Reducing Connectors), TCHB-CRN (Bronze Connectors). Standard straight connectors up to 12 inch I.D. and open OAL.