Installation, Operation and Maintenance Instructions

402-056

Pressure Vessels including hot water storage, hydro pneumatic, blow-off, pressure and cushion tanks.

SUPERSEDES: NEW

EFFECTIVE: February 1, 1996

See instruction sheet 402-057 for details for vessels with heating or cooling elements.

GENERAL

All pressure vessels fabricated by Taco Inc. are designed in accordance with the ASME Code for Unfired Pressure Vessels, Sect. VIII, Div. 1

Before shipment all pressure vessels are code tested and accepted by a commissioned inspector.

INSTALLATION

All vessels are shipped with connections capped or covered to prevent entry of foreign matter in transit and installation and have at least one coat rust preventive paint applied externally unless otherwise specified (non-ferrous vessels are not painted.) When received, the vessel should be checked against the drawing provided as to size and capacity, pressure rating, number and location of connections and accessories included such as relief valve, thermometer, temperature regulator, gauge glass, steam trap, vacuum breaker, etc. Any shipping damage, shortage of accessories or other deviation should be reported immediately.

Do not drag or handle vessels using connections, legs, manhole yokes or other projections as these may be damaged sufficiently to distort and weaken welds. All tanks should be set plumb in both horizontal and vertical planes to facilitate piping and ensure drainage in the case of tanks fitted with heating or cooling elements. The supporting structure should be sufficiently strong with ample safety factor to carry the flooded weight of the vessel with all accessories.

Where provided by Taco Inc. or the contractor, supporting saddles for horizontal vessels should be located as shown on the drawing or a distance 20% to 25% from each end of the vessel. The supporting legs for vertical vessels should be installed so that each is in full contact with the foundation structure to evenly distribute vessel weight.

All piping should be installed full size, to vessel connections, with isolating valves as required, and should not be forced to meet vessel connections or tightened too much. Accessories and controls should be installed in accordance with instructions and best practice, in particular, pressure-temperature relief devices.

The interior of all tanks are vacuum cleaned prior to shipment but before placing in service all accumulated weld slag, pipe, dope, etc., should be carefully removed. In the case of cement lined vessels, the lining should be inspected for any damage or hairline cracks which may have occurred during shipment or installation and such damage should be reported immediately.

Where vessels are to be installed, care should be taken not to cover name plates, inspection plates, etc., to provide for identification and proof of design.

Vessels should be installed so that all external surfaces can be examined, especially in corrosive atmospheres, unless the vessel can be readily moved. All manholes, handholes, or other inspection openings should be accessible for internal examination as required.

OPERATION

The operation of vessels is controlled, for the most part by external sources such as pumps, regulating valves and other system control devices. Unless the vessel is protected by a suitable relief valve set at the proper pressure (and/or temperature) we cannot be responsible for leaks or failures developing in service. In addition, the vessel should be operated at temperatures within the design allowance which can be checked with the use of thermometers of suitable range. In all cases, rapid temperature and/or pressure fluctuations should be avoided. Do not operate vessel above design pressure, temperature, or relief valve settings.

Where provided, drain connections should be piped with shut-off valve and periodically, the vessel should be drained and all sludge, scale, etc., washed out, or if corrosion or freezing conditions are possible during system shut-down. (Exceptions are the CA, CAX, CX & PAX tanks; refer to bladder tank instruction sheet)

Other than hydro pneumatic tanks, cushion tanks and air receivers, air entrainment in vessels may prove harmful to system operation and means should be provided to relieve it.

A vacuum breaker should be used to protect the lining of copper lined tanks when drained.

MAINTENANCE

A regular inspection schedule should be adopted and carried out by competent personnel to examine the interior of the vessel for corrosion and its cause, extent and possible arrest, minimum metal thicknesses, maximum metal temperatures, calculation of reduction in allowable working pressure and hydrostatic test. Also, defects such as cracks, laminations and distortion of shell, heads or connections should be noted and repaired if possible, after consultation with and acceptance by a commissioned authorized inspector who shall be involved at all stages of any repairs or alterations.

In addition, the operation of all safety devices – relief valves, thermometers, pressure guages, etc., should be checked and verified. Never open a vessel until system pressure is off and vessel has been isolated and drained.

Vessels which have phenolic, bitumastic, asphaltum or other internal coatings should be examined for attack of the lining. Any areas showing breakdown should be cleaned to parent metal and the lining restored, if possible, in accordance with the manufacturer's instructions. The appearance of hair line cracks in cement lined tanks is not normally serious as such cracks tend to be self-sealing. Any such cracks should be noted and examined preferably by a representative of Taco Inc. to advise if repair is required.

The results of the inspection should be reported to the engineer, manager, etc., responsible for making necessary repairs, alterations, etc.

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