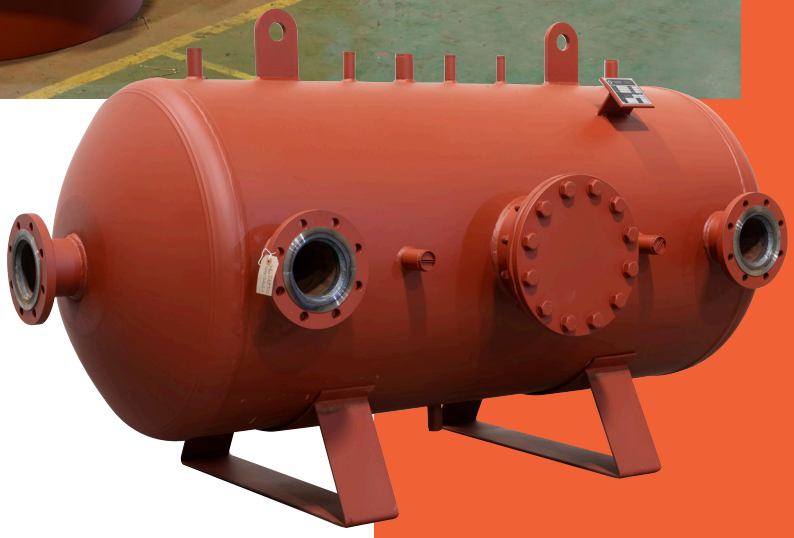
Ormandy Rycroft

Heating & Cooling Solutions



# Buffer Vessel

## Installation, Operating & Maintenance Manual

# VERY IMPORTANT - PLEASE READ CAREFULLY

# 1. Installation

## Lifting

Lifting eyes are provided on the top of large vessels and those fitted with 'M' type lagging. This form of insulation is not suitable for lifting by straps, which can crush the outer casing.

Avoid the use of chains, particularly with light gauge copper vessels or where screwed connections may be damaged by links.

When transporting or lifting vessels, keep them in the upright position.

## Foundations

Vessels should be mounted on prepared foundations, which are level. Even a slight tilt can trap air in the vessel.

It is also important that the vessels stand firmly on the ground, to prevent movement when maintenance is undertaken.

Horizontal vessels are normally supported by loose cradles, which need to be positioned clear of the drain connection and leave access to any flanges for tightening bolts.

## Pipework

Check for compatibility of materials between pipework and vessel. In particular, avoid a combination of copper and galvanised mild steel. Make sure pipework flanges are square with those on the vessel and correctly spaced before bolting up. Ensure that the weight of the pipework is taken by external supports and not by the vessel.

Allowance should be made for expansion of the pipes, either by suitable bends or flexible joints. Tighten the bolts in a diametrically opposite sequence and not consecutively round each flange.

## Screwed Connections

Screwed connections may be sealed with hemp and paste, or PTFE tape, providing the male thread is tapered. However, parallel threads, such as are found on primary connections to double tube heaters,require a back nut and joint ring.

Use **TWO** spanners when joining screwed connections to avoid undue torque on the vessel fittings.

## Relief Valve

It is recommended that a short length of pipe is fitted to the discharge side of any relief valve or bursting disc to deflect the fluid in a safe direction. A long pipe may restrict the discharge, raise the blow off pressure and prevent an operator from detecting a weeping valve.

## Cold Feed

The pipe carrying the cold feed make up should be at least equal in size to the secondary flow and a check should be made to see that there are no unnecessary restrictions on the supply side.

## Secondary Vent

Most vessels have their secondary outlet situated at the top of the cylinder, which prevents air collecting in the top of the shell.

However, it is necessary to provide an atmospheric vent at the high point in the system.

If the system is pressurised and an automatic air vent is fitted, adequate provision must be made for air to enter when the system is drained down.

## Liquid Expansion

Changes in volume with temperature must not be overlooked. The system pressure will rise dramatically if there is nowhere for the water to expand. It is not advisable to use the relief valve as a means of releasing excess water.

Open systems use the atmospheric vent as an expansion pipe with discharge back into the make up tank. Closed systems require a separate expansion vessel, partially filled with air or nitrogen to accommodate volume changes.

# 1. Installation Continued

## Expansion Vessel

Specific O&M instructions are enclosed with the product on despatch. Only qualified and licensed personnel may install, operate and service this equipment. Note;certain Expansion Vessels incorporate a threaded top connection, provided to allow for the installation of a 3 way connection on which a pressure gauge and relief valve may be installed.

When supplied as a loose item, the Expansion Vessels are despatched with a plastic cap to prevent dust particles entering the membrane during transit/storage.

In instances where no gauge or relief valve is to be fitted to the threaded connection, it is the responsibility of the installer to fit a suitable brass cap.

## Fitting

Before filling the secondary system with water, check the drain valve is closed and all air vents are open. Don't fill the circuit too quickly, or pockets of air may become trapped.

Subsequent release of these air bubbles can cause violent shock waves which may exceed the working pressure of the vessel.

## Anti-Vacuum Valve

Copper lined steel vessels must be protected from the risk of partial vacuum in the cylinder by fitting an anti vacuum valve.

Light gauge copper cylinders also risk damage, since they can only withstand internal pressure and not external pressure. A partial vacuum may be caused by improper drain down procedures, excessive draw off at low level or an inadequate vent system. Water hammer or sudden release of pressure can also induce negative pressures.

# 2. Operation

## Initial running

Clean out any strainers after preliminary running. Tighten bolts all round, after the first heat up and again at regular intervals. Compare the working pressures with the data on the nameplate.

# 3. Maintenance

## Inspection

Where possible, a detailed examination of the vessel after six months can give a good indication of the future maintenance requirements. If the internals are clean and there is no sign of corrosion it can be safely assumed an annual inspection will be suffcient for future service.

If a manhole or end cover is fitted, a great deal can be learnt by removing this. If any rust or sludge is visible, remove and/or flush out the vessel.

## Refitting Gaskets

Use fresh joints for re-assembly and clean all faces thoroughly. With copper vessels the joint face may be distorted during strip down. If so, refit the cover plate without joints and pull up the bolts, using the inspection cover to flatten the copper face.

Remove the cover plate and slip the joint ring over the cover plate before refitting. Pull up the bolts diametrically opposite one another and not round in a circle.

## Relief Valve

The relief valve can be tested on the vessel by raising the working pressure to the set pressure or transfer to a test line.

If the valve does not reseat properly there is a possibility that foreign matter is trapped under the seat.

A further discharge, using the easing lever, may dislodge the of-fending particle or it may be necessary to strip and clean the valve.

## Anodes

There are isolated cases of copper cylinders being attacked by aggressive water.

However, such areas are generally well known to the installers and an aluminium rod can be fitted to a new plant to produce a protective film over the copper.

It is not necessary to replace the rod once the film has been formed. Sacrificial Magnesium anodes may be fitted to galvanised steel shells to protect the zinc coating.

When these dissolve they should be replaced and it is advisable to monitor their life to ensure the continuity of protection.

# 5. Spares

## Recommendations

It is advisable to carry a minimal amount of essential spare parts in order to recover vessel use in the event of failure. (Shell fitting and inspection cver gasket).

When ordering spare parts, always quote the reference number printed on the nameplate. This will save time and ensure supply of the correct items.

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