



## **S**UBJECT: HYDRAULICALLY OPERATED VPI PROCESS TANK DOOR SAFETY—COUNTERBALANCE VALVE

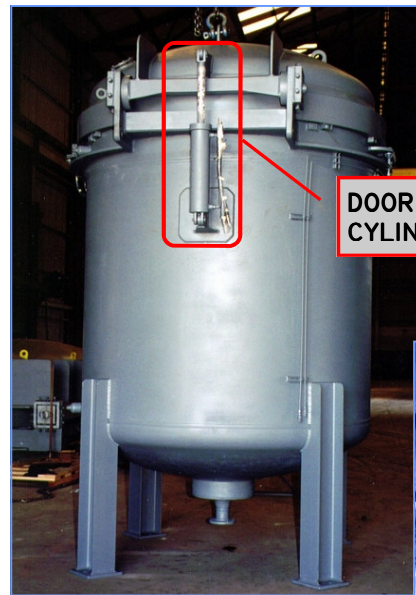
Over the years, various means have been developed to obtain access to the interior of VPI process vessels. In common use today are doors that are hydraulically actuated that use a rotating ring to lock or unlock the door and a hydraulic cylinder to open the door into a vertical position. Needless to say these doors can be of considerable weight and the potential for unwanted closure due to a hydraulic system malfunction is too important to take for granted.

The hydraulic cylinders that are used to swing open the doors of the VPI tanks should be fitted with a “counterbalance” valve. This device is used to prevent the door from “free falling” in the event of a failure in the hydraulic system. Although hydraulic components are quite reliable and a failure of this type is quite remote, it is highly recommended that this component be incorporated in the VPI door mechanism.

The accompanying photographs are provided to help locate and identify if a VPI tank has been fitted with a counterbalance valve. The actual shape of counterbalance valves vary somewhat depending on the manufacturer, however, it should be obvious if one is *not* present. Depending on how the system was designed, there may be other devices in the hydraulic circuit that provide the same level of protection.

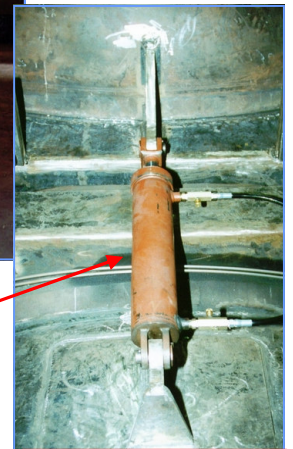
It is recommended that the VPI equipment owner contact the original manufacturer of the VPI process tank and verify that a counterbalance valve was originally installed and that *it is still present and functioning correctly.*

If it is *not* present a counterbalance valve should be promptly installed. It is recommended that the counterbalance valve be engineered to each VPI tanks particular configuration, weight, etc. Please contact your engineering liaison for details that are required to properly size the unit.

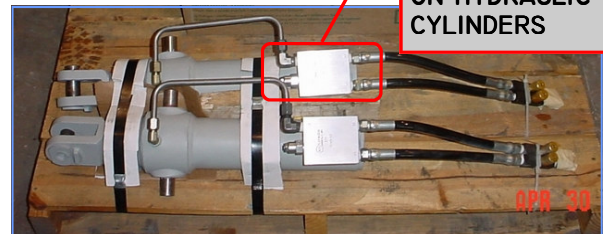


DOOR HYDRAULIC CYLINDER

HYDRAULIC CYLINDER *WITHOUT* COUNTERBALANCE VALVE



COUNTERBALANCE VALVE INSTALLED ON HYDRAULIC CYLINDERS



A “kit” can be provided that consists of a factory set counterbalance valve, tube and tube fittings for installation on an existing, non-counterbalance valve, fitted VPI tank. The cost is quite moderate and the security it brings is quite high.