

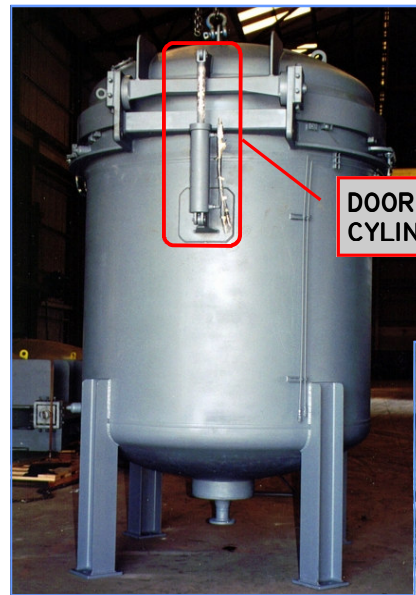


## **S**UBJECT: HYDRAULICALLY OPERATED VPI PROCESS TANK DOOR SAFETY— COUNTERBALANCE VALVE

**O**ver 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.

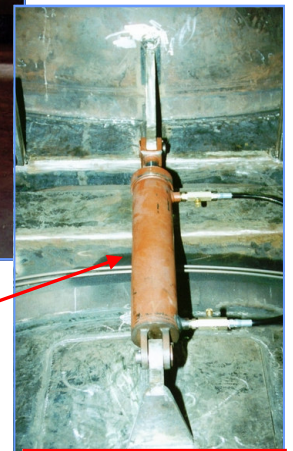
**T**he hydraulic cylinders that are used to swing open the doors of the VPI tanks should be fitted with a “counterbalance” valve. This device is used to prevent the door from “free falling” in the event of a failure in the hydraulic system. Although hydraulic components are quite reliable and a failure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

**T**he 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.

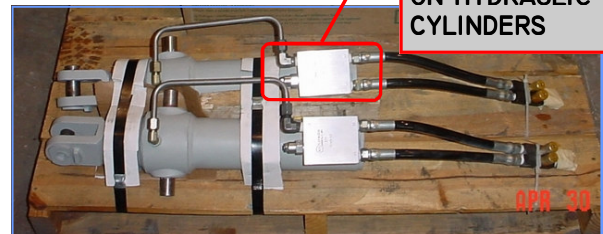


**DOOR HYDRAULIC  
CYLINDER**

**HYDRAULIC CYLINDER  
WITHOUT COUNTER-  
BALANCE VALVE**



**COUNTERBALANCE  
VALVE INSTALLED  
ON HYDRAULIC  
CYLINDERS**



Depending on how the system was designed, there may be other devices in the hydraulic circuit that provide the same level of protection.

**I**t 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.