

# Design Change Notification

**Date:** September 7, 2016

**Document #:** DCN-104-Valve Change on MicroBulk Storage Systems

**Subject:** Effective October 17, 2016 certain models of the Perma-Cyl<sup>®</sup> MicroBulk Storage System will be changing from a short stem cryogenic ½ inch Worcester ball valve to an extended stem (6 inch) cryogenic Habonim ball valve. Models effected are those with external pressure build vaporizers that have the A 401 style regulator located at the bottom of the tank (see photos on next page).

**Background:** This particular ball valve is located on the liquid side of the pressure building coil and is subject to a lot of ice buildup. An extended stem cryogenic ball valve is better suited for this application and will be much easier to access and to operate in conditions of extreme ice buildup. In addition, through numerous cycle tests, both in the lab and in the field, Chart has found the performance of this valve to be superior to the Worcester series valve. A cut sheet of this valve is attached. The Habonim ball valve will replace the Worcester currently used on the 07, 09 and ZX plumbing options that utilize the bottom liquid withdraw on the external pressure building circuit. Until further evaluation, the Worcester short stem cryogenic valve will still be used as part of the fill isolation valve kits and the liquid withdrawal valve in the 04 option kit (liquid use).

**Products Affected:** All Perma-Cyl models that are plumbed with a 07, 09 and ZX plumbing option.

**Description:** Both the ½ inch Worcester valve and the new ½ in extended stem Habonim valve with rebuild kits will be available for purchase from Chart Parts for the replacement or repair of valves on older tanks.

Worcester valve:  
PN 1712202- VALVE BALL BRS 1/2FPT

½ in. Worcester valve repair kit  
Part No: 14317973

½ in. Habonim valve: P/N 21070662  
VALVE BALL SS 1/2"NPT W/6"EXT

½ in. Habonim valve repair kit  
Part No: 21077704

**Photos:**



**Contact:** If you have questions or concerns relative to this action, please contact your Chart Customer Service Representative at (800) 400-4683. Thank you for depending on Chart to provide high product quality and service.

### Introduction

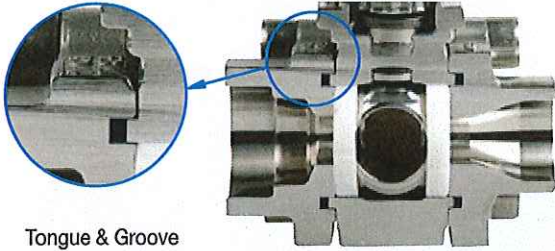
In light of the increasing demand for alternative sources of clean energy, Habonim's Cryogenic Ball Valve Division is certain to ensure Habonim's position in the forefront of the dynamic energy market. Under extremely low temperatures and in the harshest of environments, Habonim products consistently exhibit high flow capacity, tight shutoff, energy efficiency and long service-free life.

The result is a product unmatched in reliability, stability and most importantly, safety, for use in air separation plants, LNG storage, distribution and transportation, aerospace, petrochemical and medical industries.

## Safety is Our Guide

Habonim's meticulous engineering approach and long experience in the valve industry has resulted in a unique cryogenic valve design.

As standard, the Habonim cryogenic valve design is fire-safe ready and suitable for hazardous and non-hazardous environments.



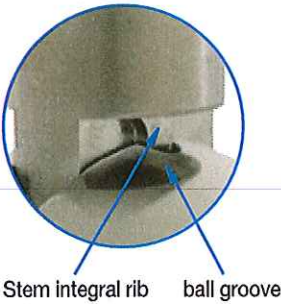
Tongue & Groove

## Cryogenic valve body and interlocked end connector

The Tongue & Groove design is used in all fire-safe valves and is now also implemented in the cryogenic valve series. This unique labyrinth design provides zero leakage to the atmosphere; it is intended to allow full compression of the expanded graphite body seal and accurate alignment of the body and ends.

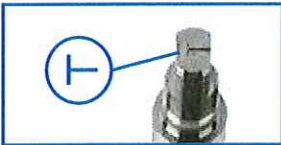
## Determining Orientation

An integral rib machined off one of the stem flats, and a ball design with a matching groove in the direction of the relief hole.



Stem integral rib ball groove

## Stem direction

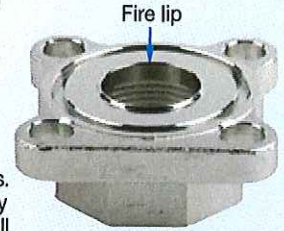


"T" mark on stem showing the relief hole direction

## Fire Safe design

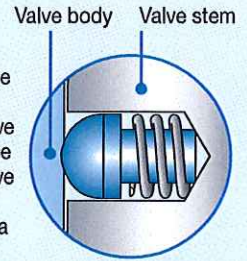
The Anti static Fire-safe Cryogenic (FC) series, are designed and tested to the requirements of API 607 5<sup>th</sup> edition and ISO 10497-Fire type-testing.

The valves contain soft seat rings. In the event of fire, a secondary fire lip on the end connector will come in contact with the ball and prevent leakage through the valve port. The fire-safe stem incorporates a machined fire lip, which prevent leakage once the thrust seal is burned off. As a rule all FC valves are fitted with expanded graphite body seals and stem packing.



## Anti-Static

It is essential that all valve parts be electrically connected to overcome the electrical charge of a non-grounded apparatus. The Habonim cryogenic valve design guarantees electrical resistance of less than 10 ohms between the valve body and stem. This is achieved by permanent electrical continuity using a spring loaded stainless steel 304 ball assembled in the valve stem, maintaining contact with the valve body.



## Minimum thermal expansion

Solid construction with double the number of body bolts threaded to more than half their length, results in a reduction in linear thermal expansion of the bolts and a dramatic decrease in the likelihood of leakage from the body. In addition, spring washers are used to compensate for thermal contractions of valve parts during operation.



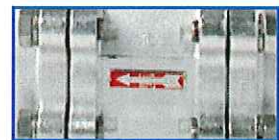
## Relief hole

Complying with cryogenic standards, the Habonim cryogenic ball valve is designed with no trapped cavities, meaning total elimination of pressure build up due to thermal expansion.

## Flow direction indicators



On extended bonnet top



On valve body