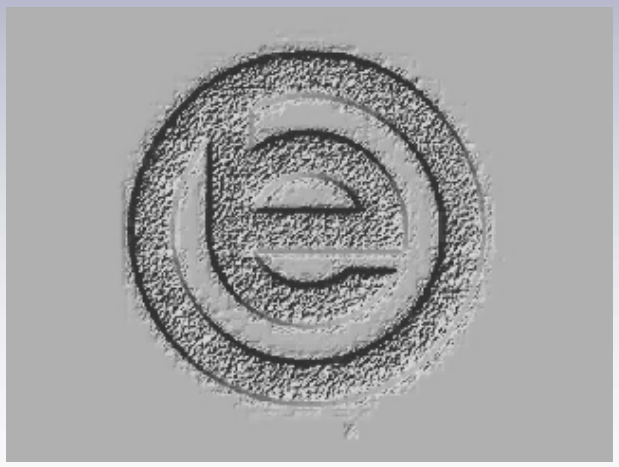
BLACKHALL cryogenics

Series 2005
Cryogenic Divertor Valve



BLACKHALL cryogenics

Divertor Valve

The Blackhall range of divertor valves have been designed to overcome the shortcomings of conventional ball / globe type divertors.

Designed for cryogenic service the valve incorporates the unique BLACKHALL pressure energised gland and sleeve. An effective seal is achieved at high and low pressures on gaseous and liquid services.

Cryogenically tested to 1000 switches the valve exhibits the highest seal integrity with a significant reduction in effort to operate the valve throughout its life.

BLACKHALL cryogenics

Design Features

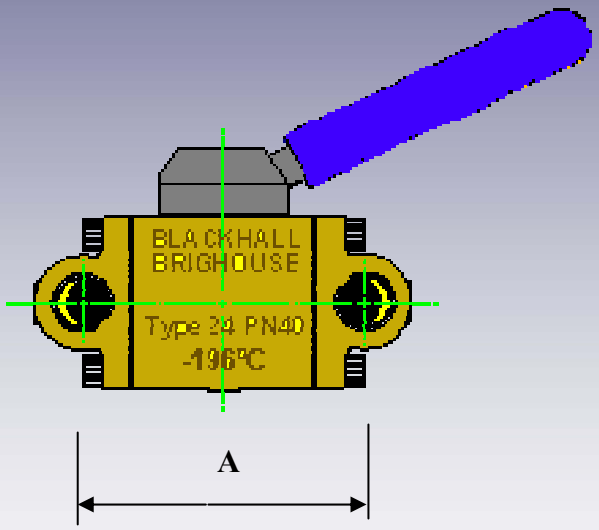
Blackhall divertor valves incorporate many features of great advantage to the cryogenic industry.

- Available in Bronze & Stainless Steel
- Type 24 / 60 / 160 CV options
- Modular lightweight Design
- Full bore design
- Flow modelled ports with high flow internals
- Low Torque
- Fully Rated to –196°C for Oxygen Service
- 50 Bar Pressure Rating
- High Sealing integrity and performance with proven long life
- Fail safe – flow throught operating cycle
- Enhanced safety – Sleeve fits in one orientation only
- Optional inlet and end connections
- Low Maintenance
- Cost Effective
- Tamper Proof

BLACKHALL cryogenics

Technical Specifications

Series 2005 Type 24 / 60 / 160



Series 2005 Type / Size		Connection Type	Centre to Centre
Type	**ins**	**Outlet**	**'A'**
24	1"	¾" Screwed	180
24	1 ½"	1" Screwed	180
60	2"	1 ½" Screwed	205
160	2 ½"	Class 150 Flanged	275
160	3"	Class 150 Flanged	275

BLACKHALL cryogenics

Technical Specifications

Series 2005 Types 24 / 60 / 160
Flow Coefficients

The Series 2005 divertor valve incorporates a large full bore design. A full flow throughout the 180 Degree stroke of the valve handle is achievable.

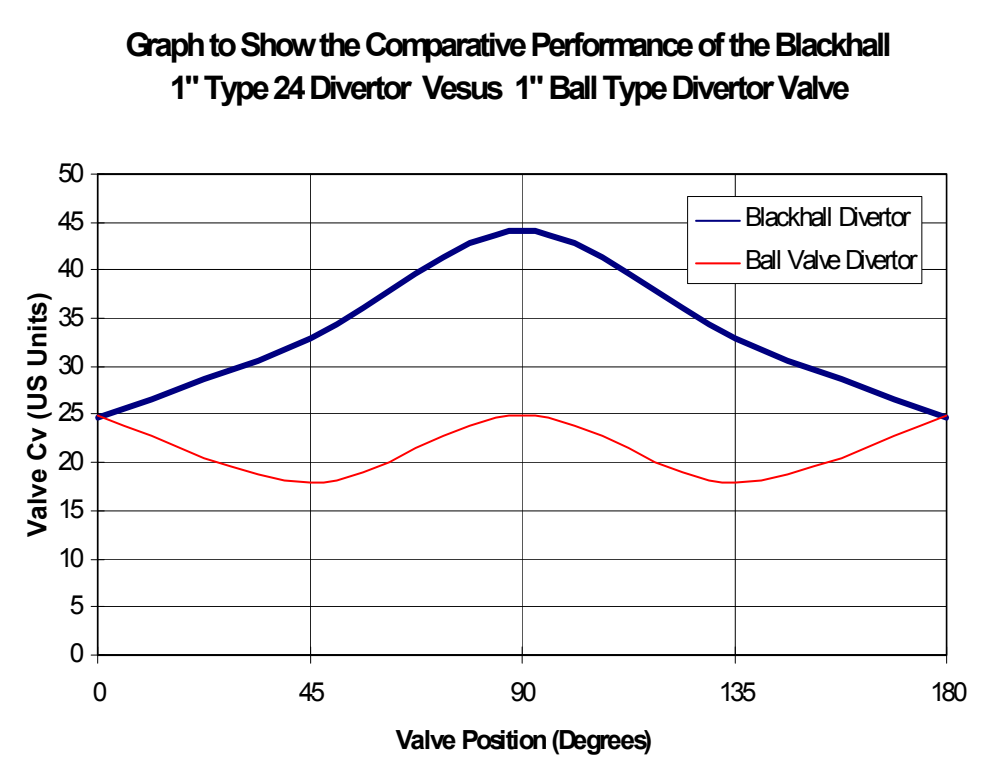
Flow coefficients are vastly improved versus conventional ball type divertors

Series and Type	Size	C v - US units (Conventional)	
		Max 2 Ports	Std. 1 Port
Series 2005 Type 24	1” x 3 / 4”	44 (25)	24 (18)
Series 2005 Type 24	11/2” x 1”	44	24
Series 2005 Type 60	2” x 1 1/2”	85 (58)	62 (42)
Series 2005 Type 160	2 1/2” x 2”	221 (175)	163 (126)
Series 2005 Type 160	3” x 2”	221	163

BLACKHALL cryogenics

Technical Specifications

Series 2005 Types 24 / 60 / 160
Flow Coefficients



Note :

The ball valve type divertor CV is dramatically reduced in the 45 and 135 degree positions.

A Ball valve divertor left inadvertently in the midway position during a filling operation poses a serious safety risk to plant and personnel.

The Blackhall Series 2005 divertor valve design ensures that the full CV is achieved and almost doubles in the valves midway position.

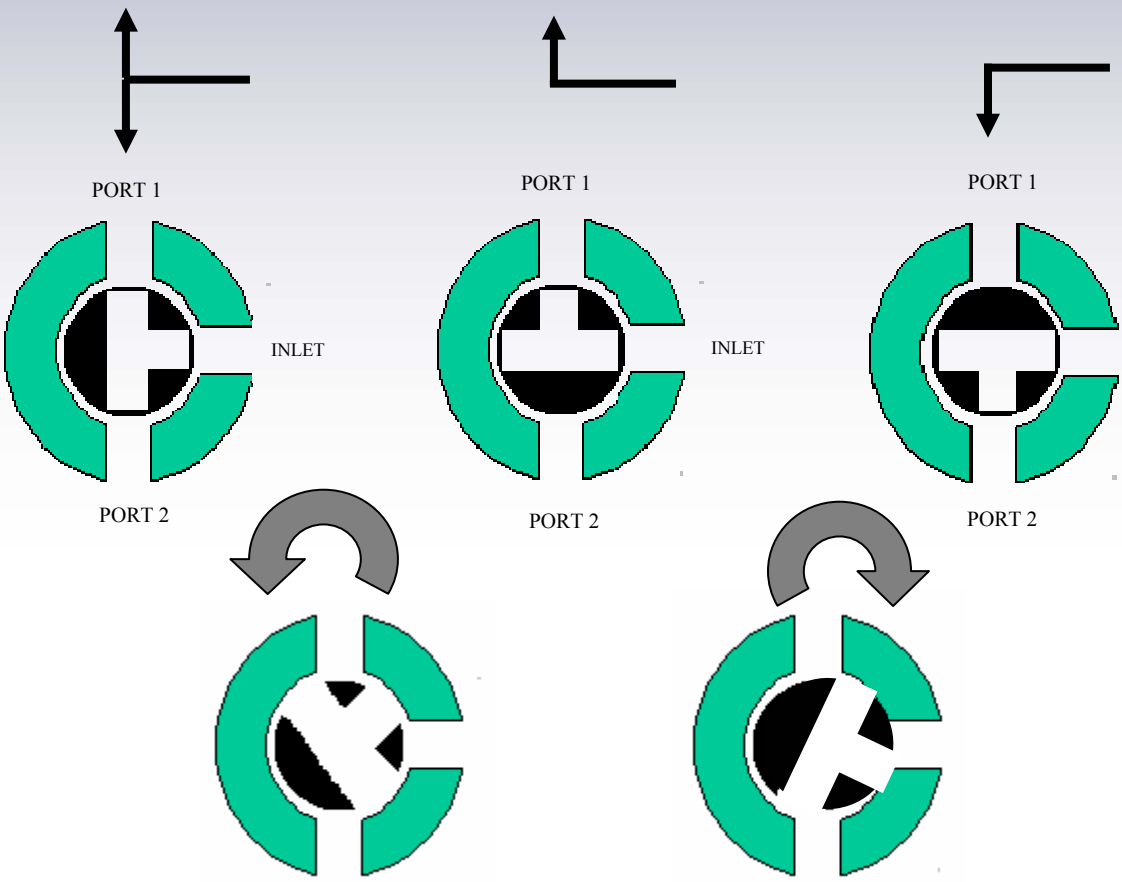
A BREAKTHROUGH IN ENHANCING DIVERTOR VALVE SAFETY

BLACKHALL cryogenics

Technical Specifications

Series 2005 Types 24 / 60 / 160 Design Features

CONVENTIONAL BALL TYPE DIVERTORS



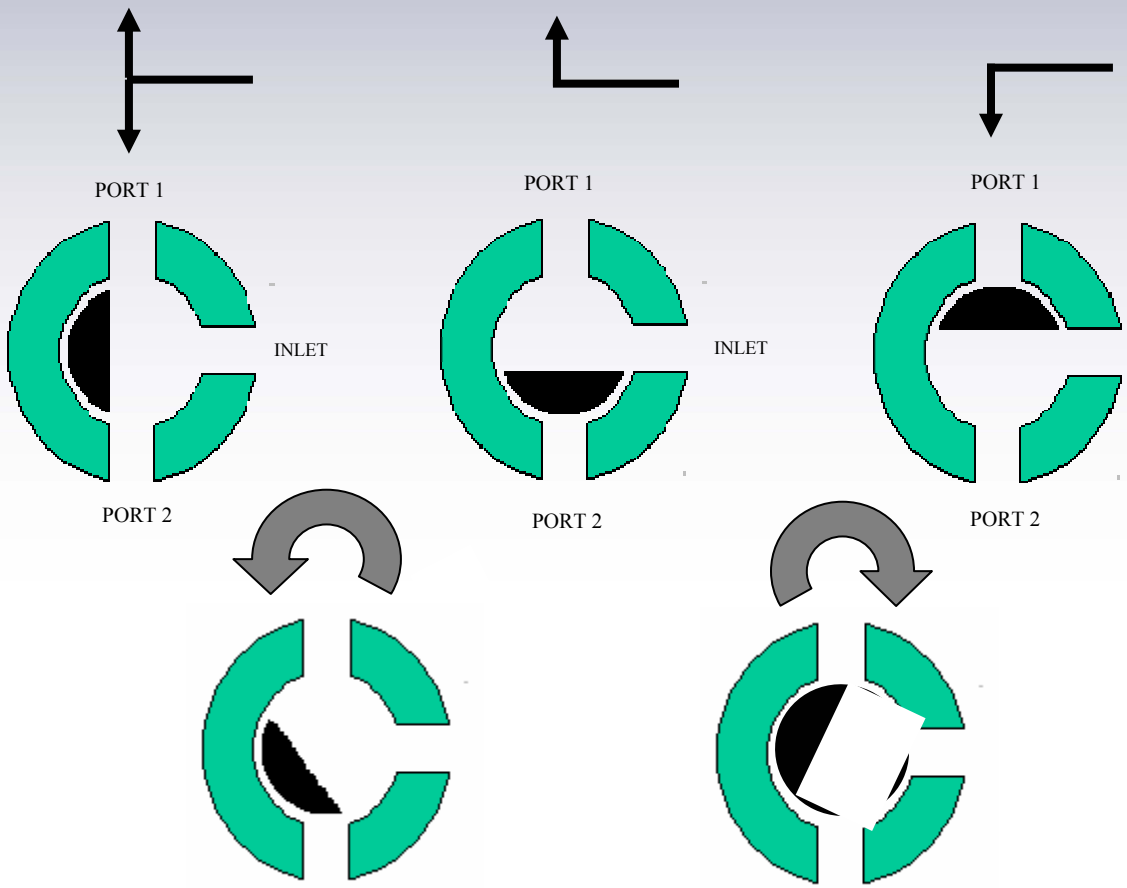
IN THE MID POSITION THE CV VALUE OF BALL TYPE VALVES DECREASES DURING SWITCHING .

BLACKHALL cryogenics

Technical Specifications

Series 2005 Types 24 / 60 / 160
Design Features

BLACKHALL TYPE DIVERTORS



IN THE MID POSITION THE CV VALUE INCREASES DURING THE SWITCHING PROCESS.

BLACKHALL cryogenics

Technical Specifications

Series 2005 Types 24 / 60 / 160
Design Features

Rationalised Range

Valve range rationalised - Three basic sizes cover the entire range of divertors

Visibility in CV and easy valve selection

The range is identifiable by its unique type number which equates to the valves CV. The end user has total visibility of the valves CV.

Tested under cryogenic conditions

Tested under cryogenic conditions, zero seat leakage after 1000 cycles.

Low Torque

Less than 10 lb ft Torque to operate at 580 psi differential pressure.

Enhanced Capacity During Switching

The unique Series 2005 design increases flow capacity during the switching operation
in comparison to decreasing capacity as exhibited in other divertor valves i.e. ball type valves.

BLACKHALL cryogenics

DIVERTOR VALVE

Series 2005 Type 24 / 60 / 160

PORT SEAL - TROUBLE SHOOTING

Seal Configuration
A cylindrical plug incorporates a single pressure energized seal. When rotated to the required port, positive isolation is achieved.

The following tests will remedy or determine the cause of a port leakage.

Operation
The Blackhall Divertor is a ' Low Torque' design unlike the high torque required for ball type divertor valve. Operate the lever through full 180°, this movement should be smooth and free from gauling. Should the plug operation feel coarse this could be the result of trapped debris between valve seal and bore.

Action : (Cycle 10 times to clear and recheck smoothness of operation.)

Port Sealing
Isolate the first safety tree (take note of the 'T' orientation machined on the top of the spindle, indicating the plug orientation.), fully open the vent valve. Once the chamber is depressurized, determine the integrity of the seal.

Repeat this procedure on the opposite safety tree for comparison.

If leakage present

Action : (Cycle 10 times to clear and recheck leakage.)

Results

Equal leakage = Seal damage or wear.

Actions :
Contact Blackhall - Replace plug and soft seal assembly, quoting valve serial Number.

Unequal leakage = Likely damage to the valve port.

Actions :
Contact Blackhall – For replacement or service exchange valve.