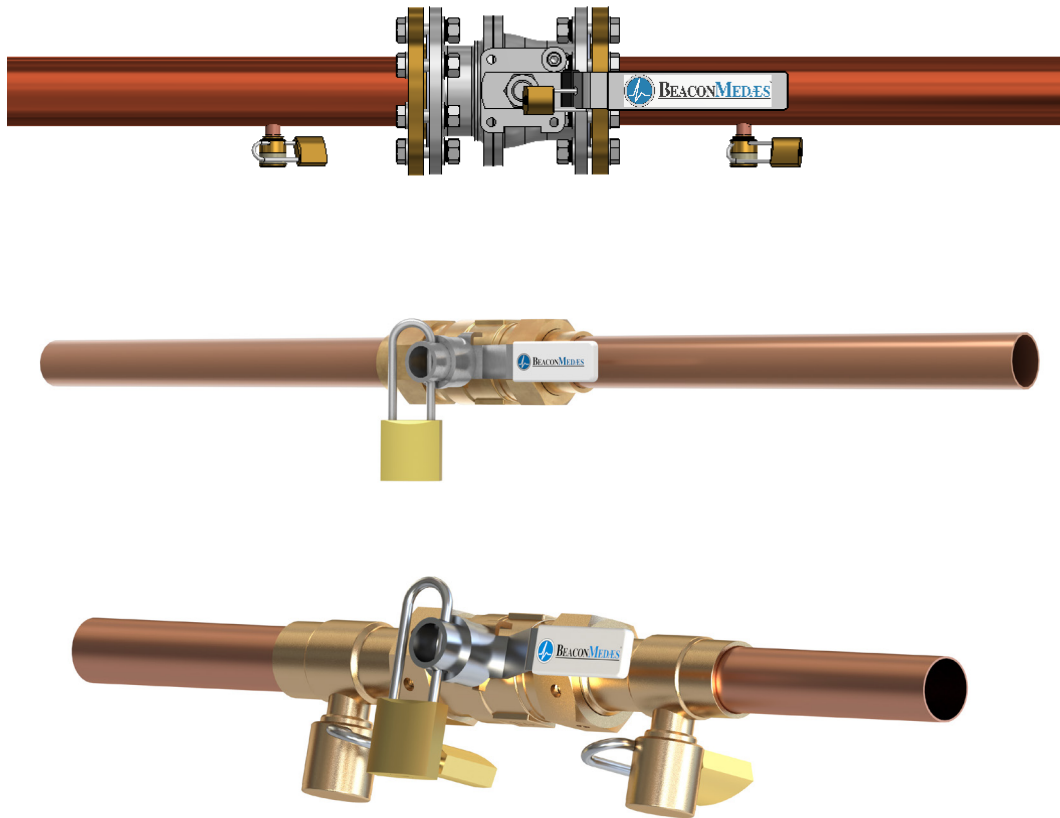


Installation, Operation and Maintenance Instructions



Line Ball Valve Assembly

HTM02-01/HTM 2022

Part number 4233500253

Revision 03

Jul 30, 2026

Installation, Operation and Maintenance Instructions

This unit is purchased from:

Date purchased:

Model number:

Serial number:

Option(s) included:

Any information, service or spare parts requests should include the serial number and be directed to:

BeaconMedaes
Greaves Close Markham Vale
Chesterfield S44 5FB UK

Telephone: +44 (0) 1246 474242
Email: gbn.info@beaconmedaes.com
Website Contacts: www.beaconmedaes.com

BeaconMedaes reserves the right to make changes and improvements to update products sold previously without notice or obligation.



BeaconMedaes Greaves Close Markham Vale
Chesterfield S44 5FB UK



Personnel must make themselves familiar with the contents of this manual and the function of the unit before installing, operating or maintaining.

Abbreviations			
Abbreviation	Full Description	Abbreviation	Full Description
HTM	Health Technical Memorandum	%	Percentage
BS	British Standard	Kg	Kilograms
BSP	British Standard Pipe	kPa	Kilo pascals
ISO	International Organisation for Standardization	PSI	Pounds per square inch
EN	European Standards	NRV	Non-return valve
ID	Identification	1 st	First
Med	Medical	2 nd	Second
°C	Degree Celsius	O ₂	Oxygen
ø	Diameter	N ₂ O	Nitrous oxide
OD	Outside Diameter	N ₂ O/O ₂	O ₂ /N ₂ O 50%/50% V/V
m	Meter	MA	Medical Air
mm	Millimetres	SA	Surgical Air
"	Inch	VAC	Medical Vacuum
Max	Maximum	CO ₂	Carbon Dioxide
Min	Minimum	N ₂	Medical Nitrogen

Issue Record

Document No	Revision No.	Details of Changes	Date
4233500253	03	IAR10655- Update released with respect to new Line ball valve project	01-Aug-2025

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Line Ball Valve Assembly - HTM02-01 and HTM 2022

1. General Information.

1.1 Safety, Storage and Handling Data

A notice to the user and/or patient that any serious incident that has occurred in relation to the device should be reported to the manufacturer and the competent authority of the Member State in which the user and/or patient is established.

CAUTION! If the “Line Ball Valve Assembly” is received with damaged packaging the product maybe compromised. Before putting into use check for any visible signs of damage to the product, with special attention to components that will be in contact with the medical gas with regard to ruptures or compromised cleanliness. Contact [beaconmeades] for guidance regarding repair or replacement if needed.

The following symbols apply to this product and are used in these instructions and on the product in question. The meanings of these symbols are as specified below: -

	Read instructions
	Ambient temperature range
	Ambient humidity range
	Ambient pressure range
	Date of manufacture

1.2 Environmental Conditions

Environmental Transport and Storage Conditions

All products are separately packaged.
Minimum storage temperature: 0°C
Maximum storage temperature: +40°C

Environmental Operating Conditions

Adverse environmental conditions and harsh abrasives or chemicals may cause damage to the unit.

Minimum working temperature: -20°C
Maximum working temperature: +60°C

Environmental Protection

Discard the unit and/or components in any standard refuse facility. The unit does not contain any hazardous substances.

1.3 Introduction

Description

The device shall operate in a manner that complies to both HTM 02-01 and ISO 7396-1 requirements. This device is defined within ISO 7396-1 as providing isolation to sections of the pipeline distribution system for maintenance, repair, planned future extensions and to facilitate periodic testing.

Intended Use

The device is intended to work in conjunction with other devices within the medical gas pipeline system (MGPS) to assist with maintaining continuity of the medical gas and vacuum supply throughout the hospital to local connection points for eventual introduction or removal of gas and fluids to or from the human body.

The device assists with the continuity of supply by preventing confusion of cross connection ensuring the correct gas type is supplied.

Intended patient population

The device is intended to be used in conjunction with other medical gas and vacuum pipeline equipment in hospitals and have no direct contact with patients. MGPS supply to medical equipment which can be used across any populations & all age groups

Intended user profile

Line Ball Valve Assembly is intended for use by appropriately qualified and trained clinical staff and technical personnel who have undergone relevant ‘HTM 02-01 Authorised Person’ (AP) training regarding the safe use of medical gas supply systems. The device should only be installed, commissioned, operated, and maintained by technicians who are suitably trained with medical gas systems, such as Competent or Authorised Persons as defined in UK Department of Health Technical Memorandum No. 02-01 (HTM 02-01)

Part B: Operational Management). The device is intended for use by appropriately qualified technical personnel only. This condition is emphasised in the IFUs.
Reference: HTM 02-01 Medical gas pipeline systems – Part B: Operational Management

Authorised Person (MGPS)

4.21 The Authorised Person (MGPS) is defined as that person designated by the Executive Manager to be responsible for the day-to-day management of the MGPS at a particular site or sites. This includes the issue of permits in accordance with the permit-to-work procedure. The principal responsibilities of the Authorised Person (MGPS) in respect of the permit-to-work procedure are set out in paragraph 6.91.
The Authorised Person (MGPS) also has specific duties with regard to VIE installations (see Appendix E).

Competent Person (MGPS)

4.40 The Competent Person (MGPS) is the person who carries out the installation and/or maintenance work on the MGPS. A list of his/her responsibilities and duties is set out in paragraph 6.92. The Competent Person (MGPS) should have received appropriate training and should be on a list of Competent Persons (MGPS). In the case of directly employed labour, this list should be held by the Authorised Person (MGPS); in the case of contracted labour, it should be held by the contractor's Authorised Person (MGPS) or project manager.

Indications

Line Ball Valve Assembly is used as part of MGPS where an uninterrupted supply of medical gas and vacuum is required. The medical device works in conjunction with other medical devices for the immediate and reliable delivery of medical gas and vacuum to terminal units used for introduction or removal of gas and body liquids in healthcare facilities. In all cases there are medical devices installed between this device and the patient that controls the pressure and flow of gas and vacuum to safe levels to and from the patient. This device therefore only delivers medical gas and vacuum within specification to the MGPS, not directly to the patient.

Contraindications

If the device sustains any damage or malfunctioning, the assembly or faulty part should be replaced completely. This ensures all damaged components are replaced.

Contraindications for use, warnings and precautions related to the safe use of the devices are detailed in the IFU supplied with the devices. These sections shall be read by the intended user before installing the device and starting to use it.

2. Description and Operation

The Medical Gas Line Ball Valves assemblies are intended for use as service shut-off valves within medical pipeline installations. The valves provide a means of isolating a section of the pipeline where zone service units are unnecessary. They should only be located in positions where unauthorised persons are unable to gain access. The valves are to be used by maintenance and operating staff only. With the inclusion of a locking kit, all valves are lockable in both the open and closed position. Sizes for 15 mm (line ball valve) and 22 mm to 108 mm nominal pipe sizes are available. The valve assemblies are designed to fully comply with HTM02-01 and HTM2022. The assemblies are provided with additional facilities to enable connection of an emergency supply, purge gas and sampling equipment.

Operation of the valve isolates the downstream zone and a physical barrier may be fitted if required to provide additional safety.

Unions fitted on both sides of the valve incorporate an identified gas specific NIST connector, complete with self-sealing check valve (except on vacuum) and lockable blanking nut, for connection of emergency supplies, purge gas and sampling equipment via a length of hose and connectors.

Upto and including 54 mm valves (Type V), the connections to each end of the valve are flat face union couplings, whilst any larger sizes are supplied with bolted flange connections (Type VF).

All Medical Gas Line Ball Valve assemblies comply with the essential requirements of the Medical Device Directive 93/42/EEC and have been CE marked accordingly under approval from our notified body. Copper stub pipes to BS EN 13348 H/H are used to connect to the pipeline.

Operating Instructions

The handles on all ball valve assemblies show that the valve is open when the length of the handle is parallel with the central axis of the pipeline. When the handle has been turned through 90° the valve is fully closed and the handle will be perpendicular to the axis of the pipeline.

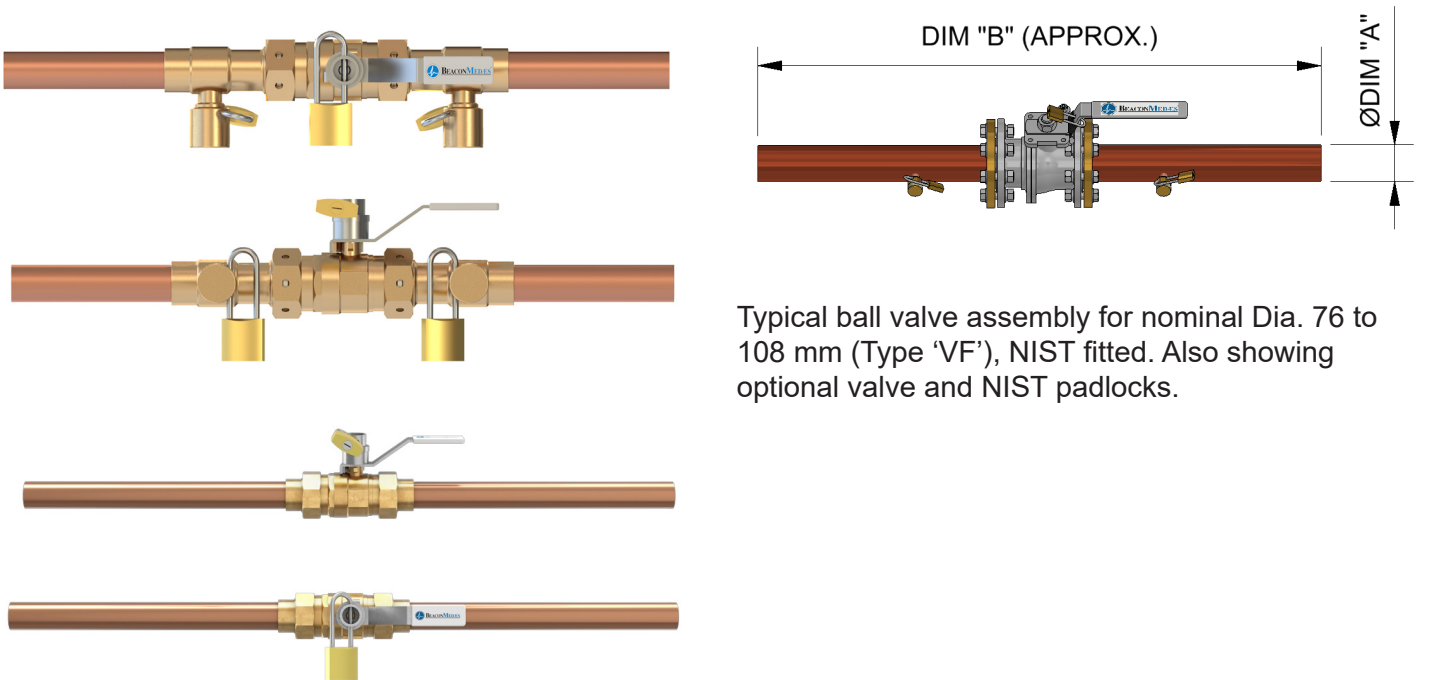
Always ensure that the valve is completely open or closed. The valves should be opened and closed slowly so that an abrupt increase/decrease in pressure is avoided.

The keys to padlocks used in the locking kits, blanking spades and 'O' rings/Seals should be kept in a secure place and authorised staff should be aware of their location. It is suggested that a numbering system is used for keys so that in an emergency the correct valve may be unlocked without delay.

Safety Information

**WARNING!**
DO NOT USE OIL OR GREASE ON ANY LINE BALL VALVE FOR ANY REASON! DOING SO COULD LEAD TO A FIRE OR EXPLOSION! Use only approved oxygen compatible lubricants

FIG. 1. TYPICAL VIEWS OF TYPE 'V' AND 'VF' LINE BALL VALVES AND NIST (SEE TABLE 1 FOR DIMENSION RANGE)



Line Ball Valve Assembly - HTM02-01 and HTM 2022

TABLE 1: Performance and Dimensions.

Nominal Dia DIM 'A' (mm)	Torque (Nm)	Working Pressure (bar)	DIM 'B' (mm)
15	30	55	577
22	40	50	574
28	44	40	687
35	56	40	705
42	60	35	868
54	98	27	872
76	74	16	800
108	116	16	810

3. Testing

All testing and commissioning should be completed in accordance with BS EN ISO 7396-1

Installation of a Medical Gas Line Ball Valve Assembly

The procedure to install either type of medical gas line ball valve assembly is as follows:

Valve. Select Installed Position.

Ensure that the selected installed position is in accordance with the installation contract.

Care must be taken during installation to ensure that the line ball valve assembly is fitted to the correct pipeline. The line ball valve assembly is gas specific and the correct medical gas type must be fitted to the respective distribution system.

The line ball valve assemblies have been designed to be easily installed without the need for disassembly. The position of operating handle and NIST connections may need adjustment to suit the installation, this can be achieved by slackening off the union nuts positioning as required and retightening.

Valves. Fit.

Secure the assembly to the supporting structure to ensure that the line valve assembly is adequately supported as shown in figures 1 & 2. Ensure that the valve operating handle is securely fitted and exercise the valve fully open and fully closed. Leave the valve in the fully open position.

Distribution system. Connect.

Connect to the distribution system using pipeline connectors (as required) and the jointing technique in the installation contract. With HTM02-01 and BS EN ISO 7396-1 applications, the copper stub pipes are joined using the

fluxless brazing technique with a Nitrogen purge used as an inert gas shield.

Pipeline commissioning procedure. Carry out.

Medical gas line ball valves are commissioned as part of the pipeline commissioning procedure.

IN THE EVENT THAT BALL VALVE ASSEMBLIES NEED TO BE SHORTENED PRIOR TO INSTALLATION PLEASE READ THE FOLLOWING INSTRUCTIONS

Valve assemblies. Disconnect copper stub pipes.

Disconnect both flanged sub-assemblies and remove complete with the through gaskets from Type VF valve assemblies. Disconnect both stub pipes and remove complete with the through gaskets/'O' rings on Type V valve assemblies.

Copper stub pipes. Braze to connecting pipework.

Reduce the length of stub pipes as required. Braze the copper stub pipes into a suitable length of unsecured connecting pipeline (sufficient length to ensure that heat transference to the final joints will not affect the installed valve). Use pipeline connectors and the jointing technique as per the installation contract.

Type V valve assemblies. Fit

Fit the valve assembly complete with the through gaskets and 'O' Rings using two spanners to tighten the union nuts to the valve. Ensure the through gasket and 'O' rings are positioned correctly. Ensure that the valve assembly is adequately supported as shown in fig.2. Ensure that the valve operating handle is securely fitted and exercise the valve fully open and fully closed. Leave the valve in the fully open position.

Type VF valve assemblies. Fit.

Ensure that the copper stub pipes are adequately supported accordance with fig.3. Position the type VF valve between the copper stub pipes with Viton askets and through gaskets in place and the flange securing holes aligned.

Ensure that the Viton gaskets are correctly located and do not enter the gas stream. Support the weight of the valve in accordance with fig.3. Using the stainless steel bolts, nuts and spring washers provided, bolt the assemblies together. Tighten all bolts evenly. Ensure that the valve operating handle is securely fitted and exercise the valve fully open and fully closed. Leave the valve in the fully open position.

FIG. 2. TYPICAL INSTALLATIONS OF TYPE 'V' LINE BALL VALVES

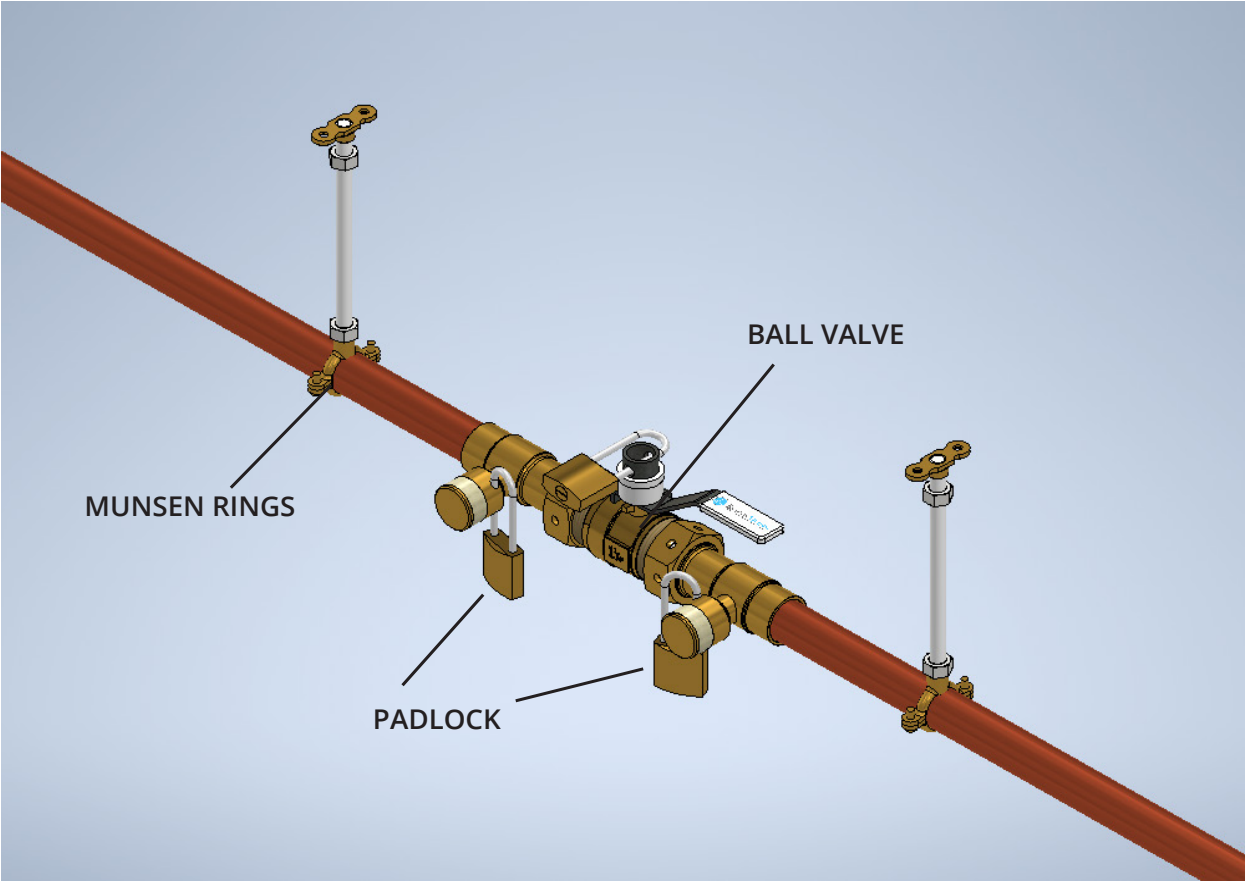
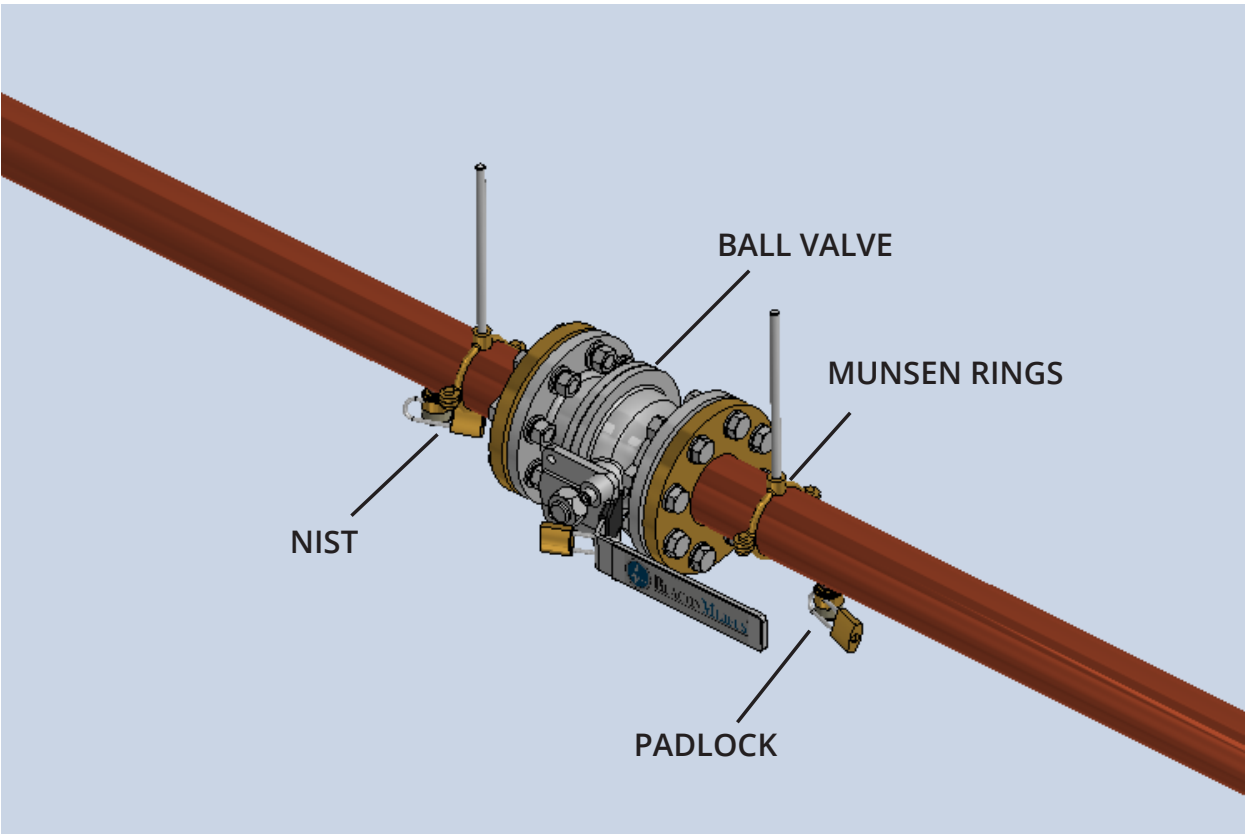


FIG. 3. TYPICAL INSTALLATIONS OF TYPE 'VF' LINE BALL VALVES



4. Maintenance

BeaconMedaes Line Valves are designed to operate with the minimum of maintenance, however regular minor maintenance operations are recommended to prove the system integrity.

Maintenance operations are carried out in accordance with the planned preventative maintenance contract purchased by the customer.

Maintenance engineers must fully understand the Line Valve assembly and must be conversant with the information contained in this manual.

Service and maintenance is limited to the replacement of worn or damaged components.

WARNINGS!
USE SUB-STANDARD OR INAPPROPRIATE PARTS AND MATERIALS MAY DAMAGE THE LINE VALVE AND INVALIDATE THE WARRANTY. ONLY USE GENUINE BeaconMedaes SPARE PARTS.
OBTAIN A WORK PERMIT BEFORE COMMENCING ANY WORK ON MEDICAL GAS EQUIPMENT.

Actions	Commissioning	◆	◆	◆	◆	◆	◆
	Weekly		◆	◆			
	Monthly				◆		
	Quarterly						◆
	Annually						◆
	Inspection, Checks and Tests						
Visually inspect the unit for damage		◆					
Check security of the lock		◆	◆				
Check valve is locked		◆	◆				
Check that the valve operates freely		◆		◆			
VCheck all joints for leaks		◆				◆	
Complete Commissioning Procedure		◆				◆	

Table 2 Inspection and Maintenance Schedule

Tools and equipment

No special tools are required, however all common hand tools used must be clean, completely free of oil

and grease and checked for serviceability before commencing maintenance procedures. All necessary spare parts must be obtained before commencing work.

Routine Inspection, Checks and Maintenance

Minimum requirements for routine inspections, checks and maintenance are given in Table 2 and must be observed in full to ensure continued safe operation of the system.

Cleaning

The use of abrasive or solvent based cleaning solutions is not recommended.

Cleaning external surfaces - use a damp cloth only. Mild soap solution may be used but detergent/surfactant solutions are not recommended.

Repair

In order to replace certain line valves within the distribution system, it may be necessary to isolate equipment or even interrupt the gas supply to the whole system. This depends on the location in the system of the line valve that requires attention.

If the valve to be replaced is in a section of the pipeline where it may be isolated without interrupting the supply to the rest of the hospital system, then it should be isolated using suitable spades in accordance with HTM 02-01 (via Area Valve Service Units).

If the valve is in a section of pipeline where individual isolation is impossible, then the gas supply to the hospital system will have to be temporarily interrupted while the valve is replaced. All work carried out should be completed on a 'Permit to Work' system basis.

Fault Diagnosis

These mechanisms are extremely robust and if a unit fails to operate, it is probably mechanically damaged and should be renewed.

Gas leaks should be assessed and O-rings and seals renewed as required.

NOTE: Failure through misuse or abuse is usually not repairable, and is not covered by the manufacturer's warranty.

5. Recommended Spares

For all Service Spares enquiries, contact the BeaconMedaes Spares Department, giving as much of the following information as possible:

- Product Part Number:
- Lot / Batch Number:
- Approximate date of purchase:

This information can be found on the batch label which is affixed to the Line Ball Valve.

Line Ball Valve Assembly - HTM02-01 and HTM 2022

15 mm 4233402028		
Part number	Description	QTY
	Service Kit	
0663212906	O RING SEAL BS REF: 0121-16	2
0663212904	O' RING SEAL	2
4233401858	15mm THROUGH GASKET	2
4233401857	15mm BLANK GASKET	2
4233401826	EXTERNAL CHECK VALVE	2
Nist nut kit 4233402027		
4233401832	NIST NUT	2
0663212903	O' RING	2

22 mm 4233402029		
Part number	Description	QTY
	Service Kit	
0663212902	O RING SEAL	2
0663212904	O' RING SEAL	2
4233401854	22 mm THROUGH GASKET	2
4233401855	22 mm BLANK GASKET	2
4233401826	EXTERNAL CHECK VALVE	2
Nist nut kit 4233402027		
4233401832	NIST NUT	2
0663212903	O' RING	2

28 mm 4233402030		
Part number	Description	QTY
	Service Kit	
0663212896	O RING SEAL	2
0663212904	O' RING SEAL	2
4233401856	28 mm THROUGH GASKET	2
4233401853	28 mm BLANK GASKET	2
4233401826	EXTERNAL CHECK VALVE	2
Nist nut kit 4233402027		
4233401832	NIST NUT	2
0663212903	O' RING	2

35 mm 4233402031		
Part number	Description	QTY
	Service Kit	
0663212899	O RING SEAL	2
0663212904	O' RING SEAL	2
4233401860	35 mm THROUGH GASKET	2
4233401859	35 mm BLANK GASKET	2
4233401826	EXTERNAL CHECK VALVE	2
Nist nut kit 4233402027		
4233401832	NIST NUT	2
0663212903	O' RING	2

42 mm 4233402032		
Part number	Description	QTY
	Service Kit	
0663212897	O RING SEAL	2
0663212904	O RING SEAL	2
4233401862	42 mm THROUGH GASKET	2
4233401861	42 mm BLANK GASKET	2
4233401826	EXTERNAL CHECK VALVE	2
Nist nut kit 4233402027		
4233401832	NIST NUT	2
0663212903	O' RING	2

54 mm 4233402033		
Part number	Description	QTY
	Service Kit	
0663212898	O RING SEAL	2
0663212904	O RING SEAL	2
4233401864	54 mm THROUGH GASKET	2
4233401863	54 mm BLANK GASKET	2
4233401826	EXTERNAL CHECK VALVE	2
Nist nut kit 4233402027		
4233401832	NIST NUT	2
0663212903	O' RING	2

76 mm 4233402034		
Part number	Description	QTY
	Service Kit	
4233401921	76mm VITON JOINT RING	2
0663212904	O' RING SEAL	2
4233401922	76 mm BLANK GASKET	2
4233401826	EXTERNAL CHECK VALVE	2
Nist nut kit 4233402027		
4233401832	NIST NUT	2
0663212903	O' RING	2

108 mm 4233402035		
Part number	Description	QTY
	Service Kit	
4233401923	108 mm VITON JOINT RING	2
0663212904	O' RING SEAL	2
4233401924	108 mm BLANK GASKET	2
4233401826	EXTERNAL CHECK VALVE	2
Nist nut kit 4233402027		
4233401832	NIST NUT	2
0663212903	O' RING	2



www.beaconmedaes.com



European Authorized Representative
Atlas Copco Airpower N.V.
Boomsesteenweg 957, 2610 Wilrijk



BeaconMedaes Greaves Close Markham Vale
Chesterfield S44 5FB UK