

CRANE FLUID SYSTEMS

BUTTERFLY VALVES: EXPORT ONLY

F648/F644/F658/F654/F678/F674/F646/F641/F656/F651/F676/F671
FA648/FA644/FA658/FA654/FA678/FA674 - PN16 & ANSI125

- These instructions relate only to Crane rubber lined butterfly valves, which are designed and manufactured to provide isolation, or can be used for regulation, of flow of suitable fluids.
- Design, manufacture and testing of these valves are subject to a Quality Assurance System and Procedures according to EN ISO 9001.
- These valves have been design for export only and are not suitable for use within the EU or UK.


CRANE FLUID SYSTEMS


FM311 ISO 9001

- Designed and manufactured under quality management systems in accordance with BS EN ISO 9001:2008

Every effort has been made to ensure that the information contained in this publication is accurate at the time of publishing. Crane FS assumes no responsibility or liability for typographical errors or omissions or for any misinterpretation of the information within the publication and reserves the right to change without notice.

CFS_BV_0819_1/2

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GENERAL INSTALLATION

Storage

- If valves are to be stored prior to installation, ensure that action is taken to protect valves:
- Store valves with discs at 5° from fully closed position.
- Protect against frost, contamination and corrosion.
- Cover valves to prevent ingress of dust and debris.
- Protect faces of valves as these are sealing faces and any damage may result in leaks.

GENERAL INSTALLATION (CONTINUED)

Preparation

- Before installation, ensure valve is suitable for service conditions e.g. pressure, temperature, service media.
- Ensure that pipe flanges are clean, to prevent damage to valve flanges/liners on installation.
- Check that internal pipe diameter has sufficient clearance for valve disc to be fully operated.
- Check that there are no restrictions to full operation of valve disc in pipework, i.e. internal welding of flanges.
- Check that the pipe flanges are parallel, and on same centreline, before installation.
- All welding and heat treating of flanges must be completed prior to installation of valves to prevent damage to liners from excessive heat.

HANDLING

Care should be taken when handling these valves. See valve data sheets for weights and dimensions. It is the responsibility of the installer to ensure that all lifting equipment is rated for the required lifting weight and is properly maintained and safe to use. When unloading, lifting, and positioning of these valves care must be taken to avoid damage to the faces, these are used as sealing faces on the pipe flanges.

The surfaces of valves in service may be subject to extreme temperatures; care should be taken when handling.

PIPE FLANGES

Flanged joints depend upon compressive deformation of the integral rubber sealing faces between the flange surfaces until metal to metal contact is achieved.

The bolting must be checked for correct size, length, material and that all connection flange bolt holes are utilized.

It is prohibited for these Butterfly Valves to add an additional gasket between the pipe flange and the valve body.

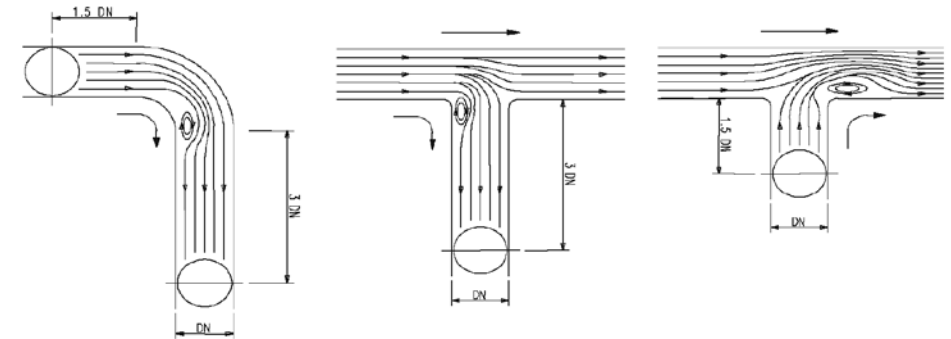
The Mating flange (both valve and pipework) must be checked for correct sealing face, surface finish, and condition. If either is found in a state which might cause leakage no attempt to assemble should be made until this has been resolved.

PIPE SUPPORTS

Pipe supports must be carefully aligned and all the correct distance between centres for the size and types of pipe.

VALVE LOCATION

- Valves should be located to ensure ease and safety of operation and access allowed for subsequent maintenance of the valve, especially where actuators are fitted. Where valves are lever operated, ensure there are no obstructions which may prevent full travel of the lever.
- It is also important to ensure that valves are not subject to turbulent flows, and recommendations are shown below:



END OF LINE SERVICE

In certain circumstances it may be necessary to use these valves on an End of Line service, in these instances ensure that the system operating pressures do not exceed the following:

- DN50 to DN300: 10 bar
- DN350 to DN600: 6 bar

Where valves are used for End of Line service the valve should be protected against unauthorised or unintentional operation to prevent personal injury or damage to equipment.

Both valve faces must be compressed to ensure correct sealing is achieved, not doing so will void the valves warranty and ultimately lead to the valves failure. Two types of blanking flange are recommended:

- Blind/Blanking Flange – A solid flange to block off a section of pipe and provides correct valve sealing.
- Backing Flange – A flange with hole to allow for system drainage and provides correct valve sealing.

Semi-Lugged valves cannot be used on end of line service; fully lugged valves must be used.

OPERATION

- Butterfly Valves are quarter turn for full operation - the valves are closed by turning clockwise, and opened by turning anti-clockwise.
- Check that valves operate fully prior to commissioning and that there are no obstructions to the full travel of the disc. The disc enters the pipeline by the amount shown in the drawing when the valve is in the fully open position.
- Ensure there are no obstructions upstream or down stream of the valve to prevent correct operation.
- On actuated valves, the end stops and torque limiters will have been adjusted and set prior to despatch from factory.

Gearbox

An enclosed worm gear reduction operator (gearbox) is mounted on the valve body with the gear quadrant intimately connected with the valve shaft. The full open and full closed position travel stops are set at the factory and require no further adjustment.

Note: if the gearbox is fitted with a padlock and locking ring, the padlock will require removal prior to operation.

Valve closure is by clockwise rotation of the handwheel until the travel stop restriction is felt. No excessive force is required to effect tight shut off and under no circumstances should a wrench or wheelkey be used.

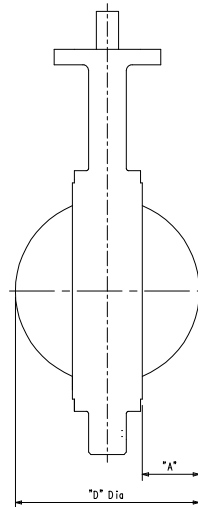
Counter clockwise rotation of the handwheel will open the valve until the full open travel stop or to the intermediate regulated travel stop (memory stop) if fitted on the double regulating version.

A non-adjustable pointer indicates the actual valve disk position against a fixed scale.

The memory stop (double regulating versions only) device is fitted at the factory so that the valve may be operated over its full travel prior to commissioning without the need for adjustment.

Protrusion of disc into Pipeline (Fully open Position)

NOM SIZE		"D"	"A"
DN	NPS		
50	2	53	5
65	2 1/2	65	10
80	3	79	17
100	4	104	26
125	5	123	34
150	6	156	50
200	8	203	71
250	10	251	91
300	12	302	112
350	14	334	128
400	16	390	144
450	18	441	163
500	20	490	181
600	24	593	219



OPERATION

Lever

Care must be taken when operating the valve by the lever as high rates of flow induce a hydrodynamic torque on the disk which may cause it to move position rapidly, either more open or slamming shut, depending on its initial position. The sudden movement on the lever can cause injury and if closing, water hammer on liquid service may result in system damage.

Valve closing is by clockwise motion of the lever. Squeeze the trigger to disengage the lever from the fully open (or regulated) notch position, the lever can be rotated to the closed position notch, release the trigger to secure.

No excessive force is required to effect tight shut off and under no circumstance should additional wrenches be used.

Squeeze the trigger to disengage, rotate the lever counter clockwise will open the valve from the closed notch to the fully open (or regulated) notch, release the trigger to secure.

MAINTENANCE

These butterfly valves are maintenance free. The valve should be at zero pressure and ambient temperature prior to any maintenance inspection.

Maintenance Engineers & Operators are reminded to use correct fitting tools and equipment. A full risk assessment and methodology statement must be compiled prior to any maintenance.

The risk assessment must take into account the possibility of the limits of use being exceeded whereby a potential hazard could result.

A maintenance programme should therefore include checks on the development of unforeseen conditions, which could lead to failure.

PRESSURE/TEMPERATURE RATINGS

Crane export butterfly valves have been designed with the following pressure/temperature ratings. These butterfly valves have been designed for use with fluids or gases which are defined as nontoxic, innocuous, non-corrosive, non-flammable, and free of contamination under normal pressure conditions.

Body Style / Fig. No.	Flange Specification	Liner Material / Temperature Limits
F646L Lever, Semi-Lugged - Ductile Iron Disc F656L Lever, Semi-Lugged - Stainless Disc F676L Lever, Semi-Lugged - Aluminium Bronze Disc F646G Gearbox, Semi-Lugged - Ductile Iron Disc F656G Gearbox, Semi-Lugged - Stainless Disc F676G Gearbox, Semi-Lugged - Aluminium Bronze Disc	BS EN 1092-2 PN16 & ANSI B16.1 Class 125	EPDM -10 to 120°C
F648L Lever, Fully Lugged - Ductile Iron Disc F658L Lever, Fully Lugged - Stainless Disc F678L Lever, Fully-Lugged - Aluminium Bronze Disc F648G Gearbox, Fully Lugged - Ductile Iron Disc F658G Gearbox, Fully Lugged - Stainless Disc F678G Gearbox, Fully-Lugged - Aluminium Bronze Disc	BS EN 1092-2 PN16	EPDM -10 to 120°C
FA648L Lever, Fully Lugged - Ductile Iron Disc FA658L Lever, Fully Lugged - Stainless Disc FA678L Lever, Fully-Lugged - Aluminium Bronze Disc FA648G Gearbox, Fully Lugged - Ductile Iron Disc FA658G Gearbox, Fully Lugged - Stainless Disc FA678G Gearbox, Fully-Lugged - Aluminium Bronze Disc	ANSI B16.1 Class 125	EPDM -10 to 120°C
F641L Lever, Semi-Lugged - Ductile Iron Disc F651L Lever, Semi-Lugged - Stainless Disc F671L Lever, Semi-Lugged - Aluminium Bronze Disc F641G Gearbox, Semi-Lugged - Ductile Iron Disc F651G Gearbox, Semi-Lugged - Stainless Disc F671G Gearbox, Semi-Lugged - Aluminium Bronze Disc	BS EN 1092-2 PN16 & ANSI B16.1 Class 125	Nitrile -10 to 82°C
F644L Lever, Fully Lugged - Ductile Iron Disc F654L, Fully Lugged - Stainless Disc F674L Lever, Fully-Lugged - Aluminium Bronze Disc F644G Gearbox, Fully Lugged - Ductile Iron Disc F654G Gearbox, Fully Lugged - Stainless Disc F674G Gearbox, Fully-Lugged - Aluminium Bronze Disc	BS EN 1092-2 PN16	Nitrile -10 to 82°C
FA644L Lever, Fully Lugged - Ductile Iron Disc FA654L Lever, Fully Lugged - Stainless Disc FA674L Lever, Fully-Lugged - Aluminium Bronze Disc FA644G Gearbox, Fully Lugged - Ductile Iron Disc FA654G Gearbox, Fully Lugged - Stainless Disc FA674G Gearbox, Fully-Lugged - Aluminium Bronze Disc	ANSI B16.1 Class 125	Nitrile -10 to 82°C

OTHER CONSIDERATIONS

Crane (and its related brands) manufacture hardware (valves, couplings, etc) for the Building Services industry and Utilities industries (including Gas and Water industries) however, we are not system designers or operators.

The use of chemicals for system dosing must be determined by the user as all aspects of system variables (biocides, inhibitors, system medium, raw water condition (where used), existing micro-biological processes within the system, temperature, mechanical configuration, etc) must be established and considered, and the effect of the chemicals used (including compounds arising from chemical combinations) must also be established in order to accurately determine compatibility.

Crane cannot make recommendations regarding chemical compatibility for the system, as a result of the above variables, which includes all components, substances and materials. Any comments from Crane regarding chemical compatibility shall relate solely to the Crane product and does not constitute a recommendation on compatibility for the wider system, resultant chemical compounds, components, substances or materials, in whole or in part.

LIMITS OF USE

Valves must be installed into a well-designed system and it is recommended that the system be inspected in accordance with the appropriate national and regional legislation.

Valves must be installed by trained personnel only.

Service temperature and pressure indicated on the identification plate or body marking should not be exceeded.

The installation should be designed to provide adequate means of draining and venting to avoid harmful effects such as water hammer, vacuum collapse, corrosion and uncontrolled chemical reactions and to permit cleaning, inspection and maintenance in the correct manner.

Valves are not designed to operate under high shock loadings. Where pressure increases occur due to shock loading (water hammer), they should be added to the working pressure to obtain the total pressure acting on the valve. The total must not exceed the pressure rating of the valve. A pressure surge, or shock, is usually caused by the rapid closure of a check valve or quarter turn valve resulting in a sudden reduction in flow rate.

It is the responsibility of the installer to ensure that the valves do not exceed the allowable limits of pressure. However, the equipment is designed to withstand a momentary pressure surge of up to 10% above the maximum working pressure.

The product has not been designed to include corrosion, erosion or abrasion allowances. Any queries regarding service applications should be addressed to the Crane Fluid Systems - Technical Sales Department.

The valves have been designed for loadings, appropriate to its intended use and other reasonably foreseeable operating conditions. Loadings caused by traffic, wind and earthquake have not been taken into account.

The piping system shall be designed to reduce the risk of fatigue due to vibration of pipes.

Maximum operating pressure reduces as service temperature increases. Pressure and temperature limitations are shown by the valve body marking or on the identification plate.

Crane valves have not been designed as fire safe valves.