

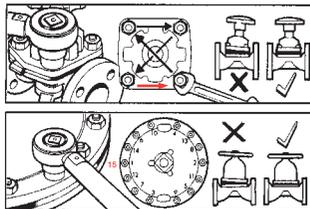
### Torque Application

This should be carried out at pre-installation or when maintenance is required, using a torque wrench set to the values in the table below. Nuts should be tightened in the correct sequence, as indicated below.

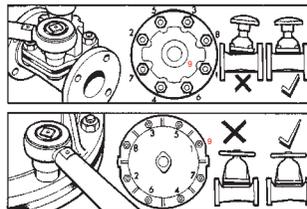
### Maximum Recommended Body/Bonnet Bolting Torques

Valve Size DN	Weir types		Valve Size DN	Straight Through types	
	lbf.ft	Nm		lbf.ft	Nm
8	2,2	3	15	5	6,6
10	3	4	20	5	6,6
15 / 20	5	6,6	25	11	15
25	6	8	32	11	15
32	8	11	40	12	16
40	13	17	50	24	33
50	24	33	65	30	40
65	35	47	80	44	60
80	49	67	100	39	53
100	39	53	125	39	53
125	44	60	150	79	107
150	79	107	200	96	130
200	96	130	250	107	145
250	107	145	300	122	165
300	122	165	350	122	165
350	122	165			
400	122	165			
450	122	165			
500	122	165			

Weir types



Straight Through types



### Crane Process Flow Technologies Ltd

Grange Road, Cwmbran, Gwent, U.K. NP44 3XX

Telephone: +44(0)1633 486 666 Fax: +44(0)1633 486 777

Every effort is made to ensure that this information is correct at time of going to press.

We reserve the right to amend or update specifications at any time.

Nothing in this publication forms part of any contract.



# Saunders Diaphragm Valves

## Key Safety Instructions for Storage, Installation, Operation and Maintenance

Note: For glass lined valves see instruction leaflet 35502

Installation

In Use

Maintenance

### STORAGE

To achieve a long shelf life, we recommend spare operating and line diaphragms (PTFE faced, natural, and synthetic rubber), are stored in bags on wooden shelves, away from direct sunlight and ozone (which can be formed by electrical equipment).

Leave diaphragms in Saunders pack until required. Do not place other articles on diaphragm, to avoid possibility of deformation.

All lined valves are supplied with protective end caps. Lined bodies supplied as spares will also be fitted with a protective cover across the weir face flange. Keep these protective caps and covers in position until valve/body is installed.

### Complete valves :

Where possible, store Weir type valves (A, AFP/HC4 and WFB types) in the open position and Straight Through type valves (K and KB types) in an almost closed position (retains line diaphragm in unstressed position)

Power actuated valves - release spring tension where appropriate.

Special Note : Seal valve ends with paper (especially if stored at ground level on flange face) to reduce the possibility of dirt/moisture ingress.

Check valve and body/lining for:

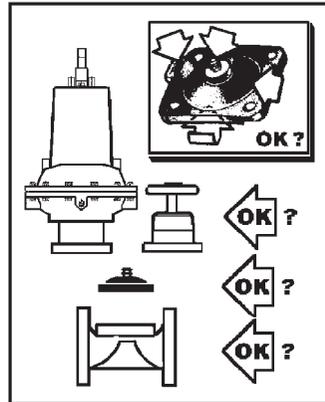
- correct material
- physical damage
- correct open/closed function
- cleanliness/ freedom from foreign matter
- diaphragm grade for service suitability (or check with Crane direct if in doubt)
- body/bonnet fastenings for tightness (see recommended bolting torques)

### INSTALLATION

Ensure that the valves are properly aligned and the connecting pipework adequately supported to prevent undue stress being imposed on them. Locating valves at points of large bending moments, mis-aligned pipework and close to bends or pumps should be avoided, for GMP a minimum of 6 x D is recommended.

Ensure that the intended service conditions are within the pressure/temperature rating of the valve as stated in our catalogue. Where there is an appropriate application standard or code of practice it is the responsibility of the purchaser to ensure that the requirements are complied with.

### PRE-INSTALLATION



 **ATEX II 2GD c T3-T6 Temperature Classification**

The temperature classification of a valve is dependent on the process fluid passing through the valve. This must be established in consultation between the manufacturer/authorised distributor and end user, and must not exceed the maximum temperature rating of the valve.

**WARNING**

- Some circumstances may result in electrostatic charge generation/accumulation on internal surfaces and potential ignition of explosive mixtures (particularly, Zone 0 and Zone 1 atmospheres) – please refer to CENELEC report R044-001. Safety of machinery – Guidance and recommendations for the avoidance of hazards due to static electricity.
- Replace springs in actuated valves after 1 million operations.
- Clean plastic parts only with a damp cloth.

### SAFETY

- PRIOR TO ANY MAINTENANCE ON THE VALVE PLEASE REFER TO APPLICABLE COSHH REGULATIONS OR HEALTH AND SAFETY DATA RELATING TO THE LINE MEDIA BEING HANDLED.
- NOT SUITABLE FOR UNSTABLE GASES.
- DO NOT EXCEED THE MAXIMUM PRESSURE AND TEMPERATURE LIMITS.
- PRESSURE SURGES NOT TO EXCEED 10% OF MAXIMUM ALLOWABLE PRESSURE.
- VALVES ARE NOT DESIGNED FOR: TRAFFIC, WIND, EARTHQUAKE LOADING.
- VALVES ARE NOT FIRESAFE.

Centralise the diaphragm as follows :

- Fit diaphragm to bonnet in its natural position *i.e. Weir types – open, Straight through types – closed.*
- Mount bonnet onto body and tighten bolts finger tight.
- Fully close the valve and tighten to 3/4 of final torque value in the sequence shown overleaf.
- Open valve to allow the diaphragm to regain its natural moulded position *i.e. Weir types – fully open, Straight through types – 2 turns from fully closed.*
- Fasten to recommended torque in the correct sequence (see overleaf).

Before commissioning, the system must be thoroughly flushed through to remove all traces of foreign matter such as rust, pipescale, beads of welding metal etc., which could cause damage to the valve seating faces. Before putting the valve into service, ensure that the bonnet nuts of all valves are correctly adjusted to provide seal to atmosphere (see torque application overleaf). During the first 24 hours in service further adjust the bonnet nuts to follow up any relaxation of the diaphragm.

### USE

The mechanical efficiency of the handwheel, spindle threads and other bonnet components of Saunders valves is such that normal manual effort is sufficient to give leaktight closure against the recommended working pressures.

**Never use a wrench or pipe lever on the handwheel for closure.**

Maximum recommended working pressures are based on the assumption that the operator will have reasonable access to the valve. Where difficulties are experienced it may be possible to fit a gear-unit on larger valves (Contact Crane). If the valve will not operate in either the open or closed positions, isolate, drain system and service. Follow Saunders guide to speeds of operation, for power actuators. Valve opening load is concen-

trated on the diaphragm stud which can be loosened by a heavy, instantaneous opening or closing load. For this reason Crane do not recommend the use of self-fitted direct solenoid operators. Do not overclose the valve. Excessive closure forces can reduce diaphragm life. Valves DN200 and above can be provided with grease nipples for spindle, spindle nut, and bonnet neck bearing lubrication. Lubricate these valves in the open position. Rising handwheel indicator bonnets have a grease reservoir packed for long life. Lubricate spindle and spindle nut of other non-rising handwheel designs during diaphragm change.

Information on recommended greases is available from Crane.

Chainwheel operated valves are not offered by Crane. Any device of this construction used on a Saunders product must comply with the appropriate safety design standards and is the responsibility of the user.

### INSPECTION / SERVICE / MAINTENANCE

Valves should be periodically inspected for corrosion, wear, damage and leakage. This may be performed in line by removal of the bonnet assembly and diaphragm, when cleaning and replacement of the diaphragm and any damaged part, other than the body, may also be carried out.

Full inspection/service/maintenance, including replacement of the body, must be carried out with the valve removed from the line.

Consult the appropriate Saunders Technical Data Sheets for detailed service instructions and identification of replacement parts.

Before dismantling the valve in line or removing the valve from the system, ensure that the valve is isolated, drained/vented of line fluid and is safe to work on. Check that adjacent drain/vent valves are open and not discharging.