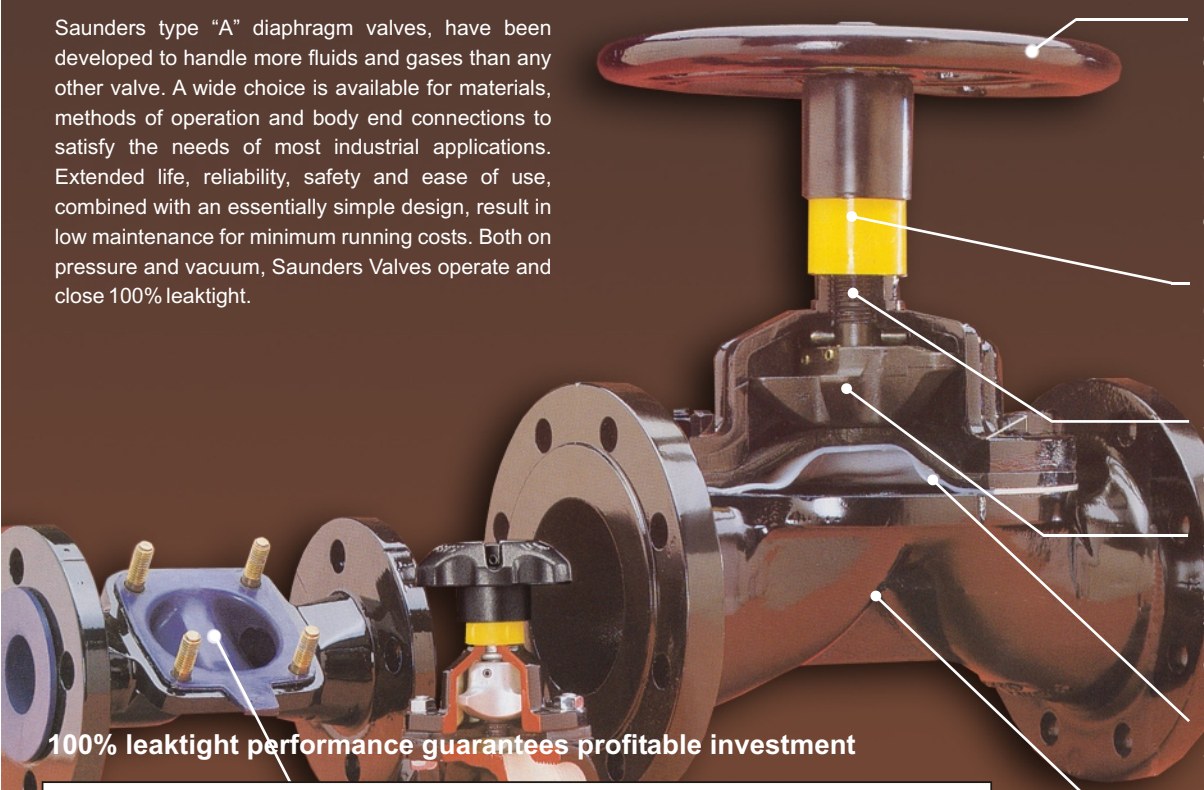
WEIR TYPE ‘A’ DIAPHRAGM VALVES

Saunders type "A" diaphragm valves, have been developed to handle more fluids and gases than any other valve. A wide choice is available for materials, methods of operation and body end connections to satisfy the needs of most industrial applications. Extended life, reliability, safety and ease of use, combined with an essentially simple design, result in low maintenance for minimum running costs. Both on pressure and vacuum, Saunders Valves operate and close 100% leaktight.



Handwheel-

Comfortable, easy, to use for fast operation. Saves time and effort

Other Methods of Operation -

Fast acting levers, pneumatic and electric actuators - versatility to match individual needs throughout the plant, without over investments. Ask for information on our Biman Pneumatic actuators.

Indication - (Std to Dn150) (Optional > D200)

Positive identification of valve position to save time and money.

Stem -

Designed to reduce friction for low operating torque

Sealing -

Operating mechanism (stem and compressor) isolated from service and atmosphere, avoids the need for exotic metals. Fully sealed option available for corrosive applications

Diaphragm -

Strong and resilient, giving positive shutoff. Designed to assist flow and completely isolate working parts from line fluids.

Diaphragm Materials-

Natural and synthetic rubbers, nitrile, butyl, viton, hypalon and ptfe faced. All give maximum processing security and, where required, food industry standards of hygiene. Special diaphragms are produced for fire fighting, tank cleaning and washdeck services to comply with international standards

Weir -

Weir design reduces diaphragm travel for extended service and fine control.

Body End Connections -

Screwed, flanged and weld end connections suit UK, European, USA specifications to avoid planning problems.

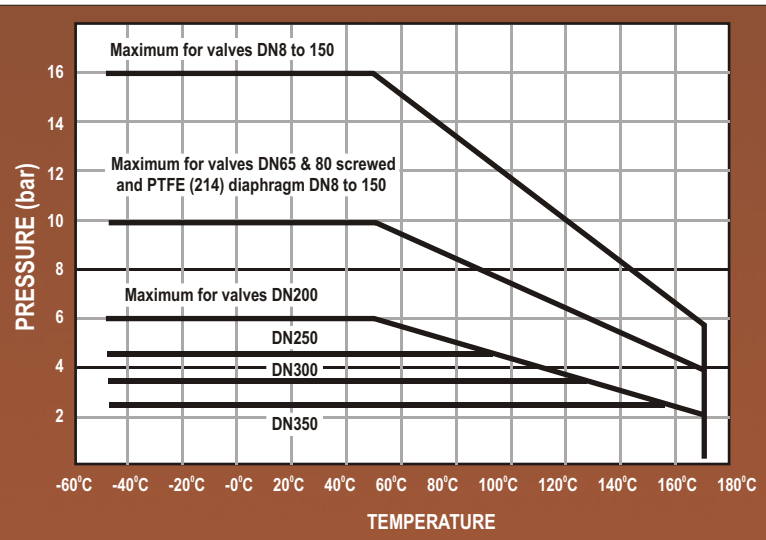
Linings -

For purity, abrasion and corrosion resistance, smooth flow-without exotic metal costs.

100% leaktight performance guarantees profitable investment

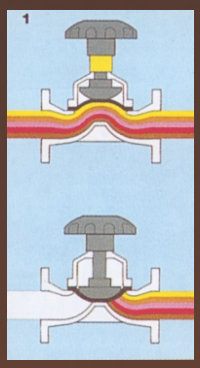
GUIDE TO BODY (LININGS) APPLICATIONS		RANGE AVAILABILITY	
BODY / LINING	TYPICAL APPLICATIONS	SIZE	TEMP °C
Cast Iron Ductile Iron (SG)	Strength, low cost non corrosives	DN15 - DN350	-20° to 175°
A R Bronze / Gunmetal Stainless Steel	Long life in hostile, corrosive water applications Purity of service, protect protection	DN20 - DN150	-30° to 175°
Rubbers - Soft (SRL/AAL) - Hard (Ebonite) (HRL) - Butyl (BL) - Neoprene (NL)	Economic handling of corrosive & abrasive media Abrasive duties Acid, chlorinated water, moist chlorine Mineral acids, & slurries Abrasive duties where hydrocarbons are present	DN15 - DN350	-10° to 85° -10° to 85° -10° to 110° -10° to 105°
Polypropylene PP	Chemical & abrasion resistance in water treatment and effluent handling	DN20 - DN150	-10° to 85°
Polytetrafluoroethylene PTFE	High temp mineral acids, aromatic, aliphatic and chlorinated solvents	DN125 - DN250	-10° to 175°
Ethylene Tetrafluoroethylene ETFE	High abrasion resistance, chemically resistant to strong acids & bases	DN20 - DN150	-10° to 150°
Perfluoroalkoxy PFA	High temperature strong acid resisting applications	DN20 - DN350	-20° to 175°
Halar™ ECTFE	Excellent resistance to mineral and oxidising acids inorganic bases, salts	DN20 - DN350	-10° to 150°
Borosilicate Glass	Excellent for strong acids, halogens	DN20 - DN200	-10° to 175°
Rilsan™	Potable water applications	DN20 - DN350	-20° to 80°
Fusion Bonded Epoxy FBE	Potable water applications	DN25 - DN350	-20° to 80°

VALVE BODY TEMPERATURE / PRESSURE RELATIONSHIP



Graph applies to whole valve performance (manual bonnets). For actuated valves refer to appropriate performance graphs. Temperature bands for diaphragms are shown as a guide only. Many aspects of service conditions will determine the highest working temperature. For example 325 diaphragms have given excellent performance, under certain conditions up to 150°C.

Rilsan™ is the registered trademark of ATO Chemical Products UK. Halar ™ is the registered trademark of Ausimont UK Limited

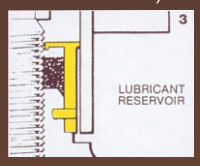


1.
Valve Flow -

Pocketless design for contamination free performance and smooth flow characteristics

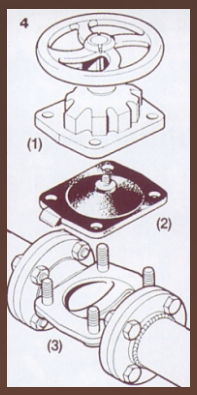
2.
Valve usable in any position -

For greater planning flexibility and ease of access. In the horizontal plane at 15° angle (flanges can be drilled to suit) the valve is self-draining.



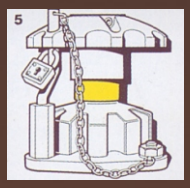
3.
Lubrication -

Bonnet assembly lubricated for long life. The indicator lip seal stops the ingress of dust, dirt and atmosphere.



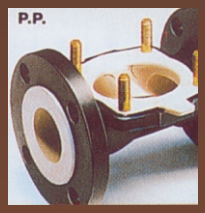
4.
Maintenance -

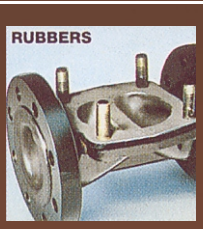
Three part design (bonnet (1), diaphragm (2), body (3) means the diaphragm is replaced with the body in the pipeline, no gasket costs or pipeline disturbance problems are involved.



5.
Bonnet options -

Padlocking to prevent expensive interference.Microswitch model for valve position indication systems. Sealed to handle toxic or corrosive fluids with even greater safety





Body Linings and Coatings:

Base materials cast Grey and SG iron.

Polypropylene:

Combines strength and abrasion resistance for long service on chemical processing, water treatment and effluents.

Rubbers:

(Hard, soft, butyl, neoprene);
Corrosives and abrasives handled with low initial outlay. Popularity of rubber linings results in exceptional availability

EFTE:

High abrasion resistance for tough services especially in fine chemicals, pharmaceuticals and petrochemicals.

Halar Coating:

Resists many industrial chemicals and additionally protects the exposed parts of value bodies - to cut out painting.

Borosilicate Glass Coating:

Purity, smooth flow (especially on viscous fluids) with great strength and resistance to chemical attack

Body materials:

Cast iron and SG iron for strength and low cost on non-corrosive duties. Acid resisting bronze and gunmetal long life in hostile, corrosive water applications. Stainless steel-purity for services where profits depend on product protection. Solid hard rubber and polypropylene minimum weight combined with strength

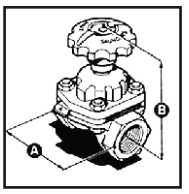
Guide to Diaphragm Applications:		Range availability	
GRADE	**TYPICAL APPLICATIONS**	**Size**	**Temp. °C**
B **B(V)**	Acid and alkalis. Up to 85% sulphuric acid at ambient temperatures. Hydrochloric hydrofluoric phosphoric acids, caustic alkalis and many esters. Sea water, very low vapour and gas permeability. Inert gases and many industrial gases.	DN8 TO DN350 DN25 TO DN350	-40° to 100°
Q **Q (V)**	Abrasives, water purification brewing, inorganic salts, mineral acids.	DN8 TO DN350 DN100 TO DN350	-50° to 100°
214/325	Highest chemical resistance to all fluids except alkali metals although permeable to some, especially chlorine. Alternative backing diaphragms available to deal with this and other applications. Note: 214 grade has a bayonet fitting in all sizes except DN 8 and DN 10	DN8 TO DN250	-20° to 160°
214/226	Requiring a corresponding slotted compressor		-5° to 175°
226	Paraffinic and aromatic hydrocarbons, acids, particularly concentrated sulphuric and chlorine applications. Not recommended for ammonia and its derivatives or for polar solvents, e.g. acetone.	DN8 TO DN350	-5° to 150°
237	Good acid and ozone resistance certain chlorine services	DN8 TO DN350	-10° to 100°
300 **300 (V)**	For hot water services applications involving steam sterilisations, therefore, ideally suited for brewing and pharmaceutical applications. For services involving continuous high temperature / pressure combinations consult our technical department.	DN8 TO DN350 DN100 TO DN350	-40° to 130°

In larger sizes than 80mm weir type diaphragms are specially reinforced for vacuum duties and are identified by a su8ffix (V) e.g. Q (V). All (V) diaphragms have ferrous studs and are specified for applications requiring all iron and steel construction e.g. Ammonia, acetylene. B (V) diaphragms are available in sizes Dn25 and larger to complete a full range of diaphragms with ferrous studs.

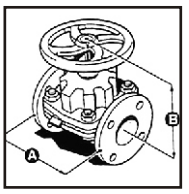
Key to grade letters / materials

B - Butyl
Q - Natural Rubber
214/226 - PTFE / Fluororubber
214/325 - PTFE/EP Rubber
226 - Fluororubber
300 - Butyl
237 - Hypalon*

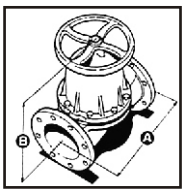
Saunders weir type “A” diaphragm valve basic details



Screwed end with indicator
DN 8 - DN80



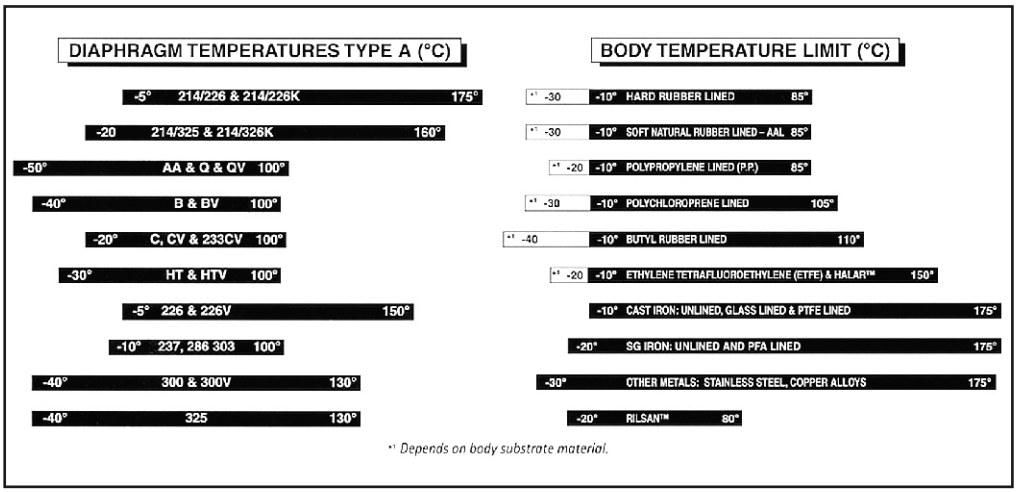
With position indication
DN 15 - DN150



Without indication
DN 8 - DN80

VALVE	SCREWED ENDS				FLANGED PIPE CONNECTIONS					
Size	A(mm)		B (Max)	Nominal	A (mm)			B (max)	Nominal Mass	
(DN)	C1, SG, MI	SS,GM, ARB	All Materials	Mass kg	BS 5156 Unlined	Lined	Coated	All Materials	Unlined kg	Lined kg
8	48	48	59	140g	–	–	-	–	–	–
10	48	48	68	410g	–	–	–	–		–
15	64	64	91	570g	108	114	110	100	2,2	–
20	83	83	94	890g	117	123	119	100	2,5	–
25	108	95	115	1,4	127	133	129	110	3,6	–
32	121	114	152	2,3	146	152	148	150	4,5	–
40	140	133	164	3,3	159	165	161	160	6,2	6,6
50	165	152	187	8,3	190	196	192	180	9,4	10
65	203	191	224	9,4	216	222	218	214	13	14
80	254	241	233	15,8	254	260	256	220	20	22
100	–	–	–		305	311	307	300	35	37
125*	–	–	–		356	361	358	375	50	53
150	–	–	–		406	412	408	430	65	70
200	–	–	–		521	527	523	507	145	156
250	–	–	–		635	641	637	588	230	240
300	–	–	–		749	755	751	683	360	366
350	–	–	–		749	755	751	893	450	476

• Non preferred size

Valves sizes DN200 - 350 feature bonnet assembly design for ease of operation and low cost.
At present stage of manufacture a non-rising handwheel unit is standard.
Dimensions shown are for planning purposes and should not be used for manufacturing.

Standards Applicable:
BS 5156 Diaphragm valves
BS 4504 Flange dimensions
ISO R7 thread connections