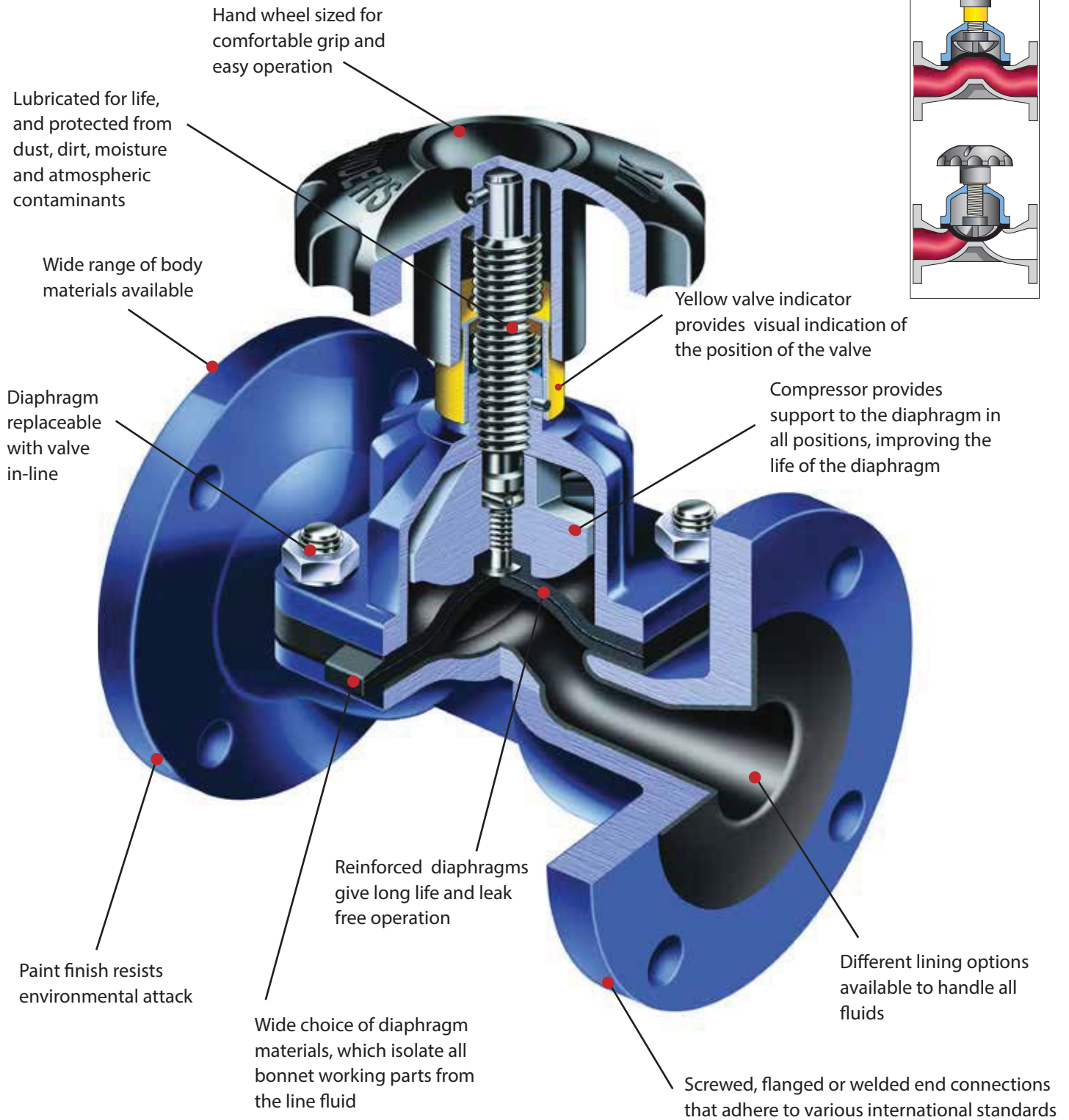


A TYPE FEATURES

Original Saunders® Design



**Saunders® A type Diaphragm Valve:
the valve of choice to handle highly corrosive media**

A TYPE BODY

Lined and Unlined Options

Our metal bodies provide simultaneous mechanical support for the lining and protection against Ultraviolet (UV) attack. The nominal bore thicknesses of Saunders® linings range from 1 to 5.5 mm, depending on lining material and valve size: glass 1 mm, rubber 2-4.5 mm and plastic 4-5.5 mm.

Unlined Bodies

Material	Connection	Standard	Material Grade*	Size	Temperature
Cast Iron	Flanged	BS EN1561	GJL-250	½"-20" DN15-DN500	14°F to 347°F -10°C to 175°C
	Screwed	BS EN1563	GJS-450-10	¼"-2" DN8-DN50	14°F to 347°F -10°C to 175°C
Flanged	GJS-400-18 ¹		½"-14" D15-DN350		
Cast Steel	Flanged	ASTM A216	WCB	½"-10" DN15-DN250	-22°F to 347°F -30°C to 175°C
Gunmetal	Screwed	BS EN1982	CC491K-GS	¼"-3" DN8-DN80	-22°F to 347°F -30°C to 175°C
	Flanged		CC492K-GS	½"-8" DN15-DN200	
Stainless Steel	Screwed	BS EN10283	1.4408 ²	¼"-3" DN8-DN80	-22°F to 347°F -30°C to 175°C
	Flanged			½"-8" DN15-DN200	

¹ For some sizes GJS-400-18-LT grade is available with a low temperature limit of -20°C (-4°F)

² Replaces the standard BS3100 316C16

* Please contact Saunders® for information on comparable/equivalent material grades.

Lined Options - Flanged Bodies Only

Lining	Body Material	Size	Temperature
PFA	SG Iron	½"-8" DN15-DN200	14°F to 347°F -10°C to 175°C
ETFE	SG Iron	½"-6" DN15-DN150	14°F to 302°F -10°C to 150°C
PVDF	SG Iron	¾"-6" DN20-DN150	14°F to 257°F -10°C to 125°C
PP	SG Iron	¾"-6" DN20-DN150	14°F to 185°F -10°C to 85°C

Glass	Body Material	Size	Temperature
	Cast Iron	½"-8" DN15-DN200	14°F to 347°F -10°C to 175°C

Butyl (Isobutylene Isoprene)	Cast Iron	¾"-20" DN20-DN500	14°F to 230°F -10°C to 110°C
	SG Iron		-22°F to 230°F -30°C to 110°C
Neoprene (Polychloroprene)	Cast Iron	¾"-20" DN20-DN500	14°F to 221°F -10°C to 105°C
	SG Iron		-22°F to 221°F -30°C to 105°C
	Cast Steel		-30°C to 105°C
HRL (Hard Natural Rubber)	Cast Iron	¾"-20" DN20-DN500	14°F to 185°F -10°C to 85°C
	SG Iron		-22°F to 185°F -30°C to 85°C
	Cast Steel		-30°C to 85°C

Standard material grade fasteners:

Stainless steel fasteners - All stainless steel, plastic lined and glass lined valves

Aluminium Bronze fasteners - Gunmetal flanged valves

Carbon Steel fasteners - All remaining valves.

Special material grade fasteners available upon request

Plastic Lining



PFA *Perfluoroalkoxy* – Excellent suitability for concentrated strong acids at high temperature, aromatics, aliphatic and chlorinated solvents. (White)



ETFE *Ethylene Tetrafluoroethylene* – Suitable for strong acids, salts in water, solvents at medium temperature. ETFE has the highest abrasion resistance of all the fluorocarbon linings. (Red)



PP *Polypropylene* – Economic solution for mineral acids, salts in water, de-ionised water and effluent treatment chemicals. (Light grey)



PVDF *Polyvinylidene Fluoride* – Suitable for mineral acids, salts in water, water and effluent treatment, additionally it is the best solution for wet chlorine gas or chlorine in water. (Black)

Glass Lining



Used in many different applications, including strong acids. Very high corrosion and abrasion resistance within a wide range of temperature. *Note that glass is not suitable for applications where thermal cycling occurs.* (Blue)

Corrosion & Chemical Resistance



Rubber Lining



HRL *Hard Natural Rubber (Ebonite)* – Used for salts in water, diluted acids, de-ionised water, plating solutions and potable water. HRL has better chemical resistance than SRL. (Black)

Butyl *Isobutylene Isoprene* – Great for corrosive & abrasive slurries, and acidic slurries. Additional applications are salts in water, dilute acids and alkalis, and lime. (Black)

Neoprene *Polychloroprene* – Perfect solution for a combination of abrasive slurries containing hydrocarbons, sludge oils and also sea water. (Black)

The temperature ranges above are given for general reference purposes only. Service conditions, such as media being handled and concentration of solids, will determine the highest possible working temperature. Additionally, the performance of the valve will also depend on the diaphragm material.

DIAPHRAGM VALVES TYPE A DIAPHRAGM

A Type Diaphragm

Diaphragm	Composition	Size	Temperature
425	EPM (Ethylene Propylene)	All Sizes	-40°F to 226°F -40°C to 130°C
300	Butyl (Isobutylene Isoprene)	All Sizes	-40°F to 226°F -40°C to 130°C
237	CSM (Chlorosulfonated Polyethylene)	All Sizes	14°F to 212°F -10°C to 100°C
XA	EPDM (Ethylene Propylene Diene)	All Sizes	-40°F to 266°F -40°C to 130°C
HT	Neoprene (Polychloroprene)	All Sizes	-22°F to 212°F -30°C to 100°C
226	FKM (Fluoroelastomer)	All Sizes	23°F to 302°F -5°C to 150°C
C	Nitrile (Butadiene Acrylonitrile)	All Sizes	-4°F to 212°F -20°C to 100°C
Q	Natural Rubber	All Sizes	-58°F to 212°F -50°C to 100°C

214/300	PTFE/Butyl	¼"-10" DN8-DN250	-4°F to 302°F -20°C to 150°C
214/425	PTFE/EPM	¼"-10" DN8-DN250	-4°F to 320°F -20°C to 160°C
214/226	PTFE/FKM	¼"-10" DN8-DN250	23°F to 347°F -5°C to 175°C
214S/425	TFM/EPM	¼"-6" DN8-DN150	-4°F to 320°F -20°C to 160°C
214K/425	PTFE/PVDF/EPM	½"-6" DN15-DN150	-4°F to 212°F -20°C to 100°C

Diaphragm Identification

In the range of PTFE diaphragms, Saunders offers both moulded open and closed options for your convenience. The 214S is available as moulded closed and was designed specifically to reduce polymeric creep, therefore increasing the sealing properties and life of the diaphragm.



PTFE Diaphragm

214/300 - Used in strong acids and alkalis, and salts in water at high temperature. Sulfuric acid is a good example with temperatures up to 110°C (230°F) and concentrations up to 96 %.

214/425 - Typical applications are strong acids, alkalis and salts in water at high temperature. Constant steam is also another important application.

214/226 - Strong acid, diluted chlorine, bromine solutions at low concentration.

214S/425 - Strong acids, alkalis and salts in water at high temperature. Constant steam applications where the valve is mainly closed (diaphragm is moulded closed).

214K/425 - Three layer diaphragm with PTFE/PVDF/425, the best option for chlorine, bromine gas and chlorinated solutions.

425 - Salts in water, acids and alkalis, ozone, water, intermittent steam. Great solution for food and beverages applications. FDA and USP approved¹.

300 - Chemicals, diluted acids and alkalis, drinking water. Additional abrasive applications like phosphoric acid in low concentrations. FDA, USP and WRAS approved¹.

237 - The best solution for sodium hypochlorite. Great with strong acids and low concentration chlorine gas. It is also oil resistant.

XA - Specifically designed for both abrasive and corrosive applications such as phosphoric acid, metal treatment, mining applications.

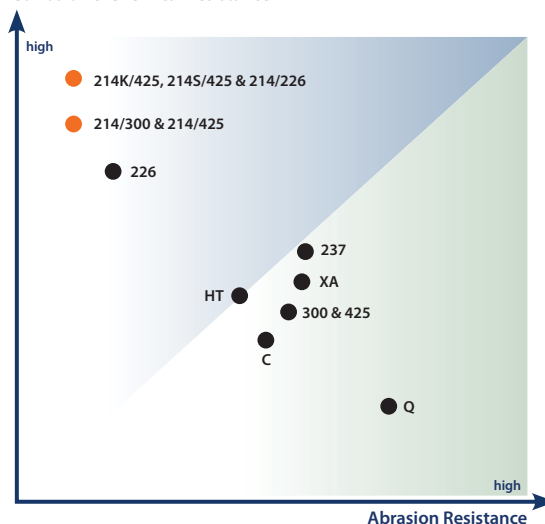
HT - Suitable for abrasive slurries containing hydrocarbons.

226 - Great solution for hydrogen at high temperature, concentrated acids, aromatic solvents, low concentrated chlorine solutions, ozone, unleaded petroleum.

C - Lubricating oil, cutting oils, paraffin, animal and vegetable oils, aviation kerosene at low temperatures. Cv is ideal for vacuum applications, where oils are present, e.g. (compressed air, acetylene gas, LPG).

Q - Salts in water, diluted acids and alkalis, and abrasive applications.

Corrosion & Chemical Resistance



¹ FDA - Food and Drug Administration

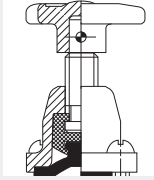
USP - United States Pharmacopeia

WRAS - Water Regulations Advisory Scheme

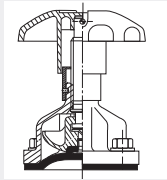
All rubber diaphragms have threaded brass fittings, except vacuum diaphragm (Cv, 300v, 425v), which have steel fittings. PTFE diaphragms have a stainless steel bayonet fitting.

A TYPE - TOP WORKS

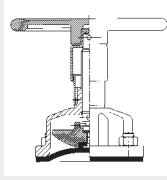
Standard Range



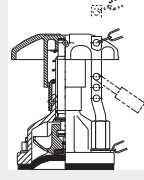
Rising handwheel (2 bolt)
DN8 - DN10
1/4" - 3/8"



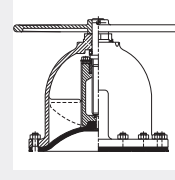
Cast iron bonnet with rising plastic handwheel
DN15 - DN50
1/2" - 2"



Cast iron bonnet with rising metal handwheel
DN15 - DN150
1/2" - 6"



Rising handwheel with indicator (simple padlocking)
DN15 - DN150
1/2" - 6"

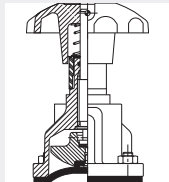


Standard non-rising handwheel without indicator
DN200 - DN350
8" - 14"

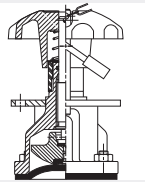


Non-rising handwheel with indicator
DN200 - DN350
8" - 14"

High Performance

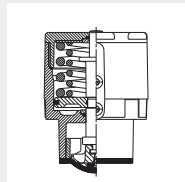


Fluoroelastomer sealed with padlocking
DN15 - DN150
1/2" - 6"

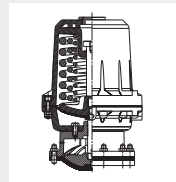


Fluoroelastomer sealed bonnet
DN15 - DN150
1/2" - 6"

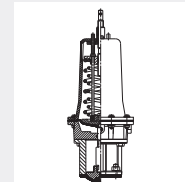
Saunders® Actuation



EC actuators (spring close/spring open/double acting)
DN8 - DN50
1/4" - 2"



ECX actuators (spring close/spring open/double acting)
DN65 - DN150
2 1/2" - 6"



ESM/ES actuators (spring close/spring open/double acting)
DN15 - DN250
1/2" - 10"

Note: Designs may vary across size range

For more details of actuation see pages 17-20

Manual Valves Working Pressure & Temperature

Maximum manual working pressures for Saunders® A Type Diaphragm valves. For actuated valves, please refer to the appropriate datasheets

Bonnet pressure limits

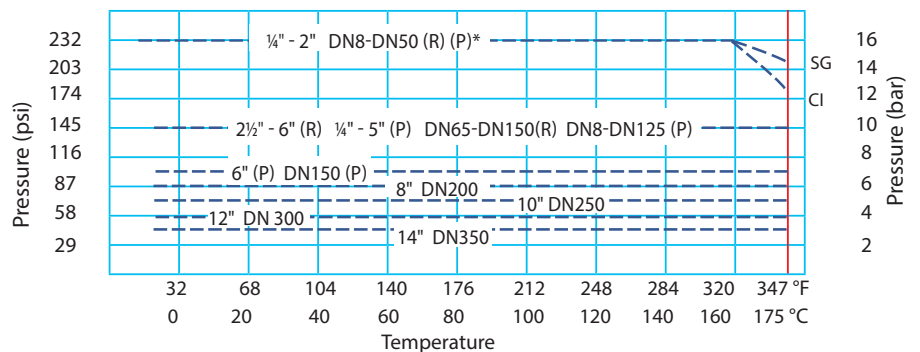
Diaphragm	Pressure (bar/psi)					
	Rubber		PTFE			
Handwheel	Rising	Non-Rising	Rising	Non-Rising		
Size (DN/in)						
8	1/4"	16	232	10	145	
10	3/8"	16	232	10	145	
15	1/2"	16	232	10	145	
20	3/4"	16	232	10	145	
25	1"	16	232	10	145	
32	1 1/4"	16	232	10	145	
40	1 1/2"	16	232	10	145	
50	2"	16	232	10	145	
65	2 1/2"	10	145	10	145	
80	3"	10	145	10	145	
100	4"	10	145	10	145	
125	5"	10	145	10	145	
150	6"	10	145	7	102	
200	8"		6	87	6	87
250	10"		5	73	5	71
300	12"		4	58		
350	14"		3.5	51		

Note: For temperature rating, please refer to adjacent graphs.

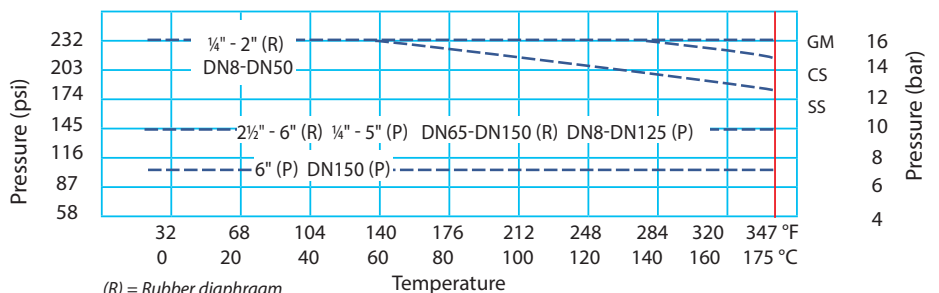
All Saunders® valves are pressure tested in accordance with standard BS EN 12266-1.

- Shell test: 1.5 times maximum rated working pressure
- Seat test: 1.1 times maximum rated working pressure

A Type Body Temperature/Pressure Relationship Cast Iron and SG Iron



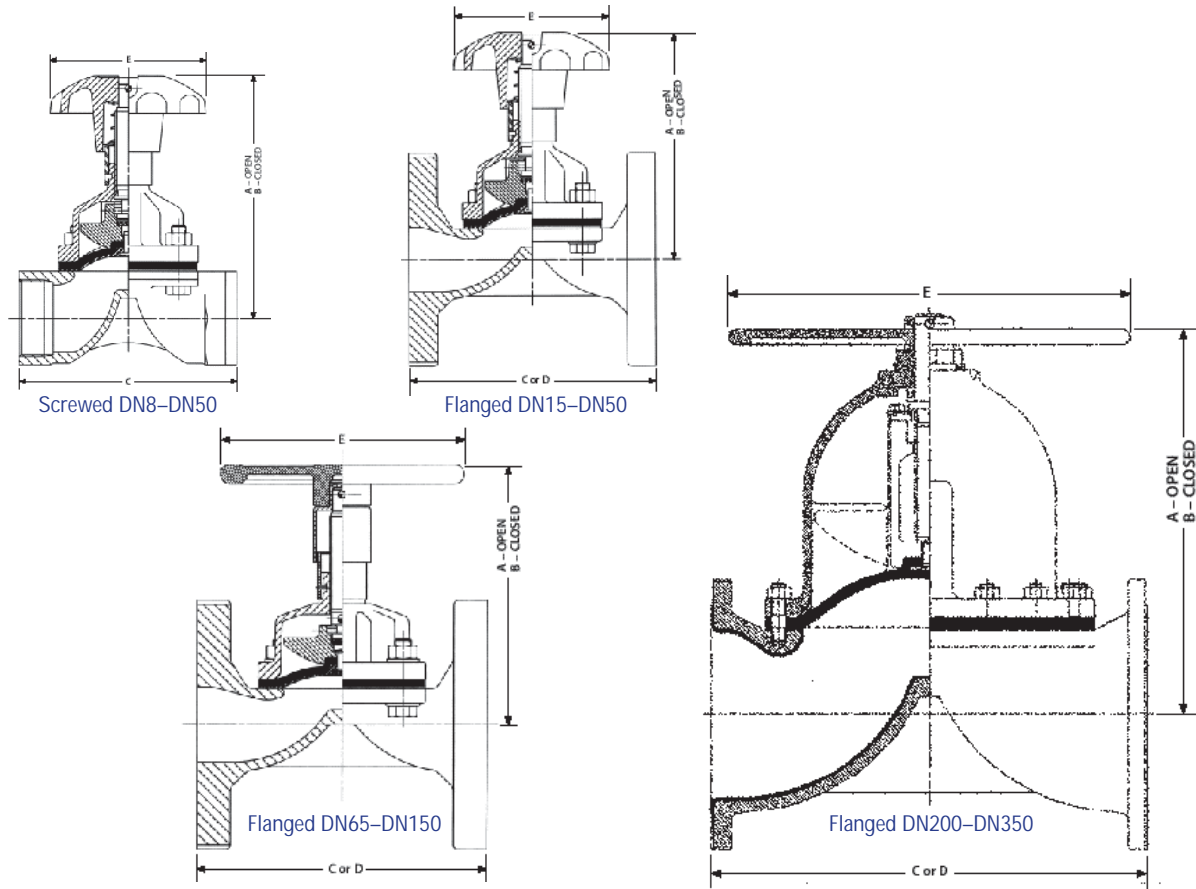
Carbon Steel, Stainless Steel & Gunmetal



(R) = Rubber diaphragm
(P) = PTFE diaphragm
* 2145 Moulded closed version only.

Saunders A Type Diaphragm Valves

Dimensions and Weights



Valve Diameter (DN)

		8	10	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350	
Screwed	A	54	67	90	94	119	154	164	188	-	-	-	-	-	-	-	-	-	-
	B	52	61	84	88	108	142	148	164	-	-	-	-	-	-	-	-	-	-
	C	49	49	63.5	83	111	125	145	168	-	-	-	-	-	-	-	-	-	-
	Weight	0.11	0.15	0.45	0.90	1.13	1.80	2.70	5.00	-	-	-	-	-	-	-	-	-	-
Flanged	A	-	-	100	91	108	143	157	175	226	243	308	388	442	495	581	679	660	-
	B	-	-	93	85	98	131	141	152	194	208	262	322	367	-	-	-	-	-
	C	-	-	108	117	127	146	159	190	216	254	305	356	406	521	635	749	749	-
	D	-	-	130	150	160	180	200	230	290	310	350	400	480	600	730	850	980	-
	Weight	-	-	1.80	1.80	2.70	4.00	4.90	7.70	14.0	19.0	31.7	48.0	62.1	152	270	360	506	-
Flanged Rubber Lined	A	-	-	-	97	111	146	160	177	229	246	311	391	445	498	585	683	664	-
	B	-	-	-	91	101	134	144	154	197	212	265	325	370	-	-	-	-	-
	C	-	-	-	121	131	150	163	194	220	258	309	362	412	527	641	755	755	-
	D	-	-	-	150	160	180	200	230	290	310	350	400	480	600	730	850	980	-
	Weight	-	-	-	2.70	3.10	4.50	5.40	8.20	15.0	20.4	33.1	49.2	63.0	154	273	365	512	-
Flanged Glass Lined	A	-	-	101	92	109	144	158	176	227	244	309	389	443	496	582	-	-	-
	B	-	-	94	86	99	132	142	153	195	210	263	323	368	-	-	-	-	-
	C	-	-	110	119	129	148	161	192	218	256	307	358	408	523	637	-	-	-
	D	-	-	130	150	160	180	200	230	290	310	350	400	480	600	730	-	-	-
	Weight	-	-	1.80	1.80	3.10	4.50	5.40	8.20	14.5	19.5	32.2	48.5	62.6	153	272	-	-	-
Flanged Plastic Lined	A	-	-	-	97	112	-	162	176	-	246	314	-	450	-	-	-	-	-
	B	-	-	-	91	102	-	145	155	-	211	267	-	374	-	-	-	-	-
	C	-	-	-	123	133	-	165	196	-	260	311	-	412	-	-	-	-	-
	D	-	-	-	150	160	-	200	230	-	310	350	-	480	-	-	-	-	-
	Weight	-	-	-	2.70	3.10	-	5.40	8.20	-	20.4	33.1	-	63.0	-	-	-	-	-
	E	38	50	62	62	80	120	120	120	170	230	280	280	368	482	584	699	699	-

Weights in kg. **C** valve length = EN 558-1 Series 7 (ex BS 5156). **D** valve length = EN 558-1 Series 1 (ex DIN 3202 Series F1).