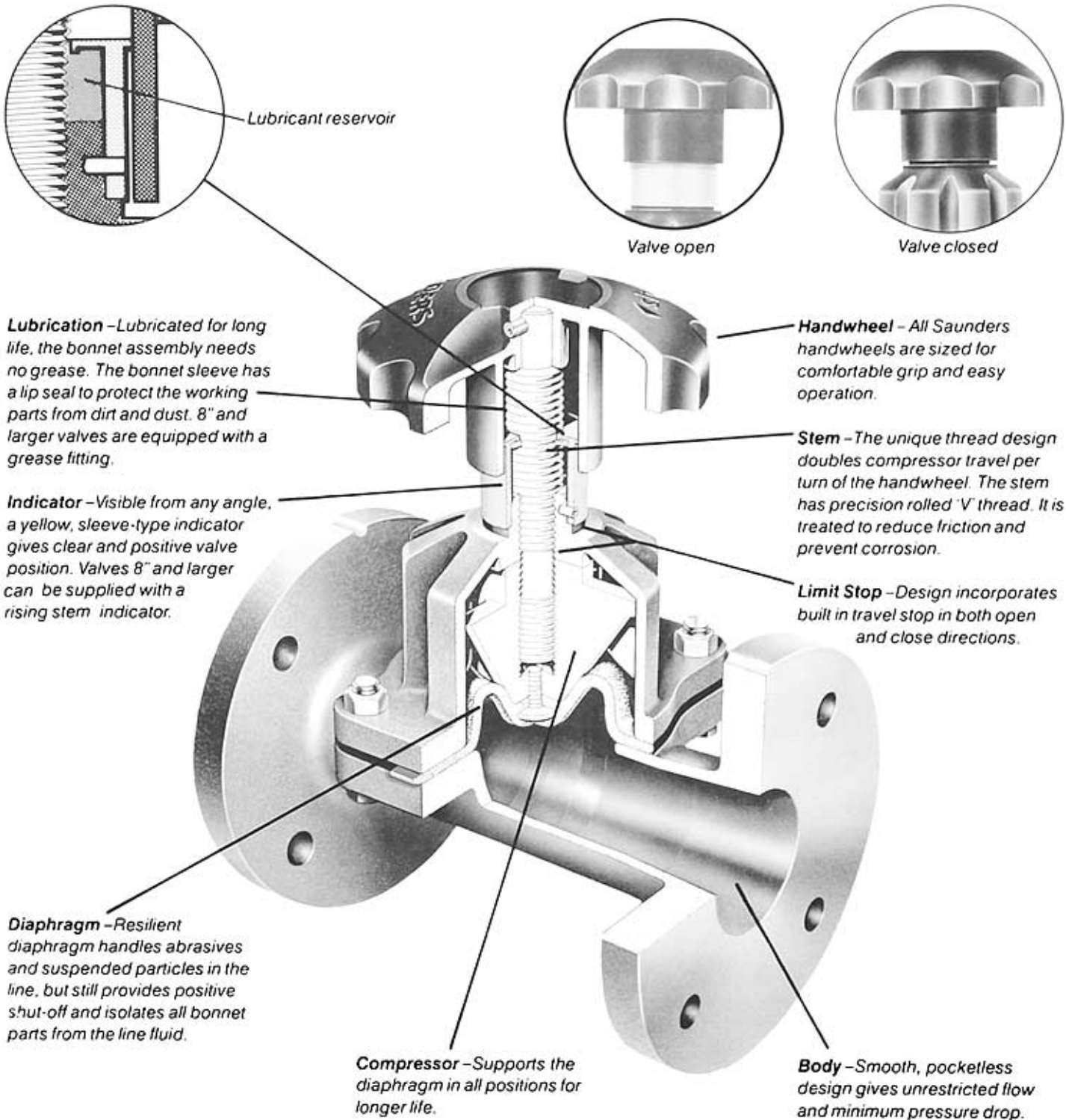


STRAIGHT THRU GENERAL INFORMATION

The Saunders Straight Thru Valve is available in a wide range of body and diaphragm materials for efficiently handling abrasive and corrosive slurries, thick coagulating fluids, and a wide variety of suspended solid materials. Saunders body linings often replace the need

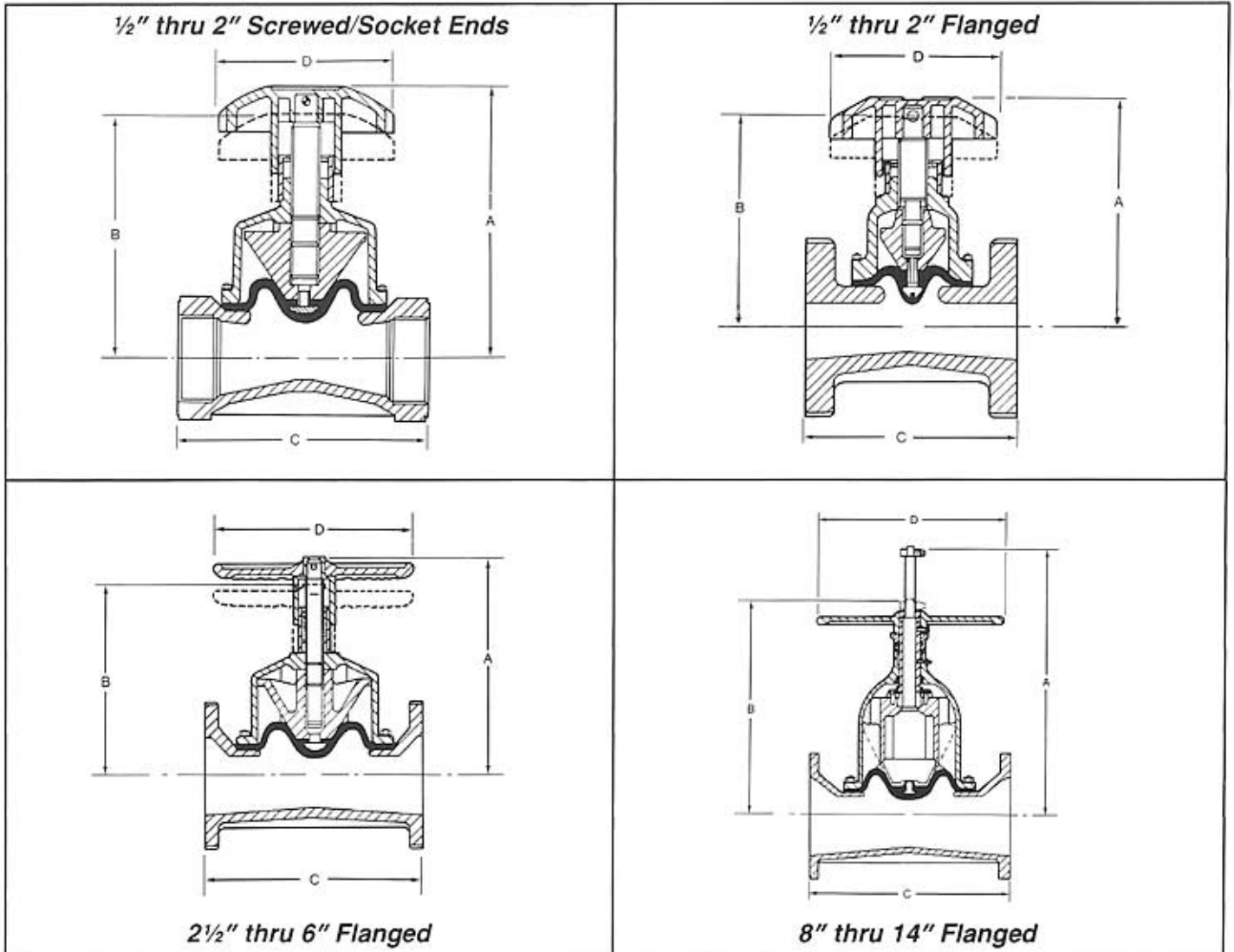
for more expensive valve body materials.

Saunders also offers a wide variety of Straight Thru bonnets designed to meet given applications. These are the sealed, padlocked, extended stem, sliding stem, and chainwheel operated.



STRAIGHT THRU DIMENSIONAL DATA

OVERALL DIMENSIONS

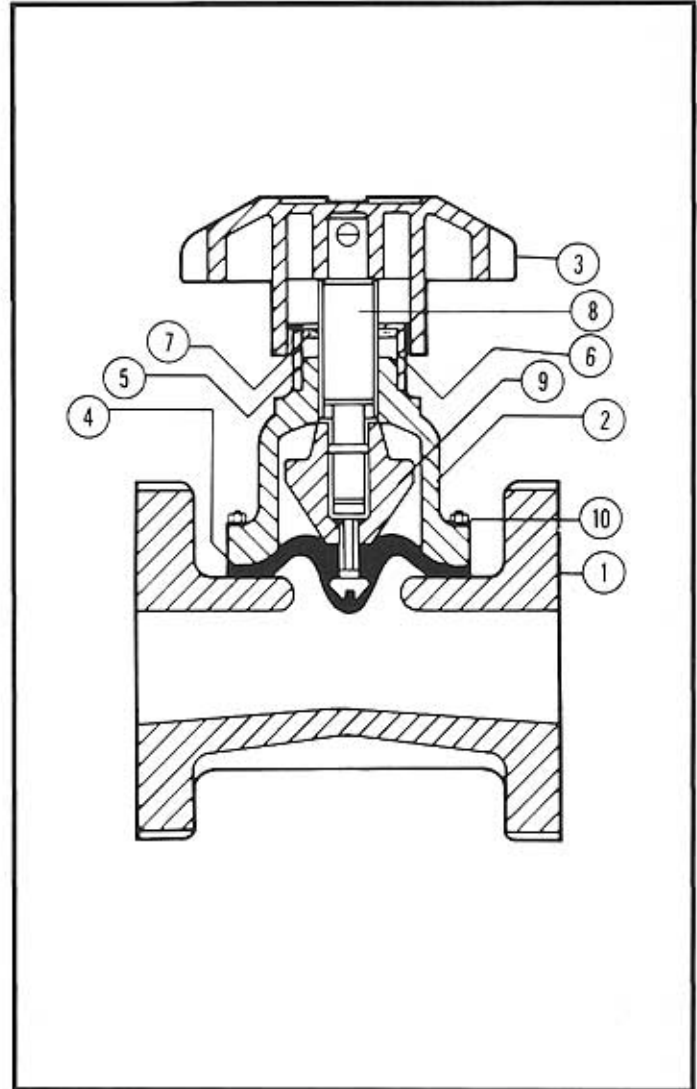
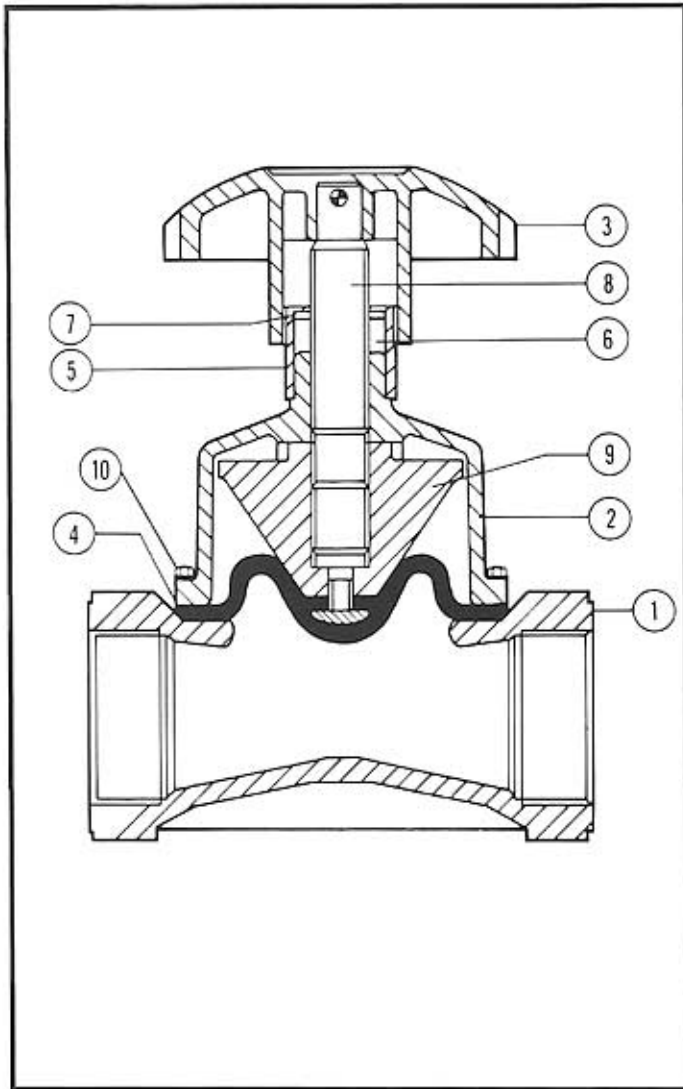


Body Type	Size	1/2	1	1 1/2	2	2 1/2	3	4	5	6	8	10	12	14
Screwed/Socket Ends														
A		4	5 ⁵ / ₁₆	5 ³ / ₄	7 ⁷ / ₁₆	—	—	—	—	—	—	—	—	—
B		3 ¹ / ₈	5 ¹ / ₁₆	4 ¹⁵ / ₁₆	6 ⁹ / ₁₆	—	—	—	—	—	—	—	—	—
C		2 ¹ / ₂	4 ¹ / ₄	5 ¹ / ₂	6 ¹ / ₂	—	—	—	—	—	—	—	—	—
Weight lbs.		2	5	6	11	—	—	—	—	—	—	—	—	—
Flanged Unlined														
A		4 ¹ / ₄	5 ³ / ₄	5 ³ / ₄	7 ¹ / ₈	10 ¹ / ₄	11 ⁵ / ₈	13 ⁷ / ₈	16 ³ / ₈	16 ⁵ / ₈	24	33 ¹ / ₄	25	29
B		4	5 ¹ / ₄	5 ¹ / ₄	6 ³ / ₈	8 ³ / ₈	10 ³ / ₈	12 ² / ₈	13 ³ / ₁₆	14 ² / ₈	19 ³ / ₁₆	26	25	29
C		4	5	6 ¹ / ₄	7 ¹ / ₂	8 ¹ / ₂	10	12 ¹ / ₂	14	16	20 ¹ / ₂	25	29 ¹ / ₂	36 ¹ / ₄
Weight lbs.		5	8	12	19	33	49	65	142	142	248	430	654	980
Flanged Rubber Lined														
A		—	5 ³ / ₄	5 ³ / ₄	7 ¹ / ₈	10 ¹ / ₄	11 ⁵ / ₈	13 ⁷ / ₈	16 ³ / ₈	16 ⁵ / ₈	24	33 ¹ / ₄	25	29
B		—	5 ¹ / ₄	5 ¹ / ₄	6 ³ / ₈	8 ³ / ₈	10 ³ / ₈	12 ² / ₈	13 ³ / ₁₆	14 ² / ₈	19 ³ / ₁₆	26	25	29
C		—	5 ¹ / ₄	6 ¹ / ₂	7 ³ / ₄	8 ³ / ₄	10 ¹ / ₄	12 ¹ / ₄	14 ¹ / ₄	16 ³ / ₈	20 ¹ / ₈	25 ³ / ₈	29 ⁷ / ₈	36 ⁵ / ₈
Weight lbs.		—	8	13	20	33	50	67	142	144	251	433	658	984
Flanged Glass/Plastic Lined														
A		4 ¹ / ₄	5 ³ / ₄	5 ³ / ₄	7 ¹ / ₈	10 ¹ / ₄	11 ⁵ / ₈	13 ⁷ / ₈	16 ³ / ₈	16 ⁵ / ₈	24	33 ¹ / ₄	—	—
B		4	5 ¹ / ₄	5 ¹ / ₄	6 ³ / ₈	8 ³ / ₈	10 ³ / ₈	12 ² / ₈	13 ³ / ₁₆	14 ² / ₈	19 ³ / ₁₆	26	—	—
C		4 ¹ / ₈	5 ¹ / ₈	6 ³ / ₈	7 ³ / ₈	8 ³ / ₈	10 ¹ / ₈	12 ² / ₈	14 ¹ / ₈	16 ¹ / ₈	20 ³ / ₈	25 ¹ / ₈	—	—
Weight lbs.		5	8	12	19	33	49	66	142	143	250	432	—	—
Handwheel Dimension														
D		3 ¹ / ₈	4	4	4 ³ / ₄	9 ⁷ / ₈	9 ⁷ / ₈	12 ² / ₈	12 ² / ₈	14 ¹ / ₂	19	23	27 ¹ / ₂	27 ¹ / ₂

All Dimensions - or - 1/8" All Dimensions given in inches

Subject to change without notice.

STRAIGHT THRU MATERIALS OF CONSTRUCTION



1/2" THRU 2" SCREWED/SOCKET ENDS

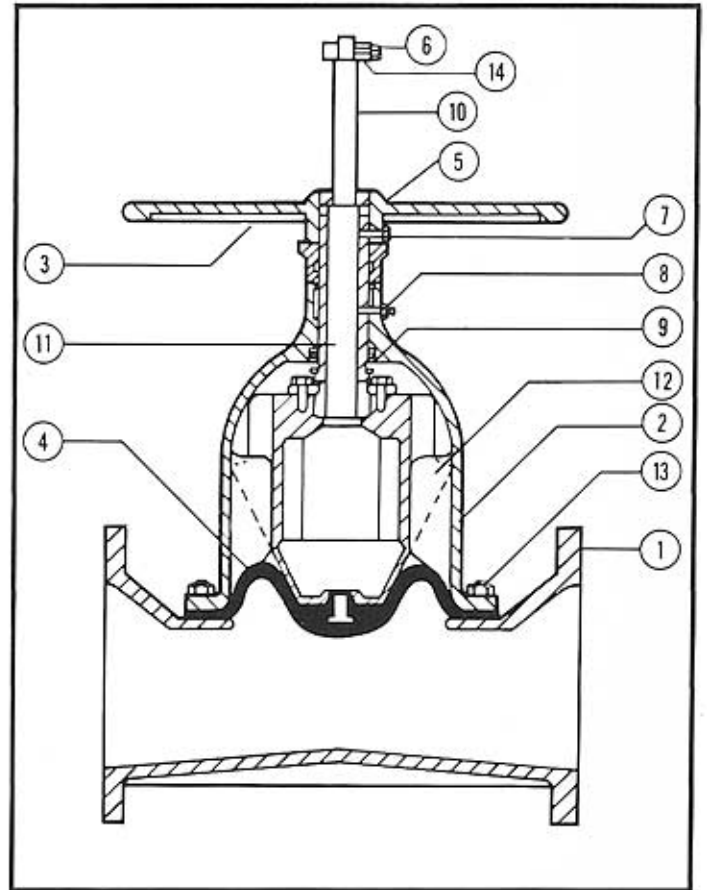
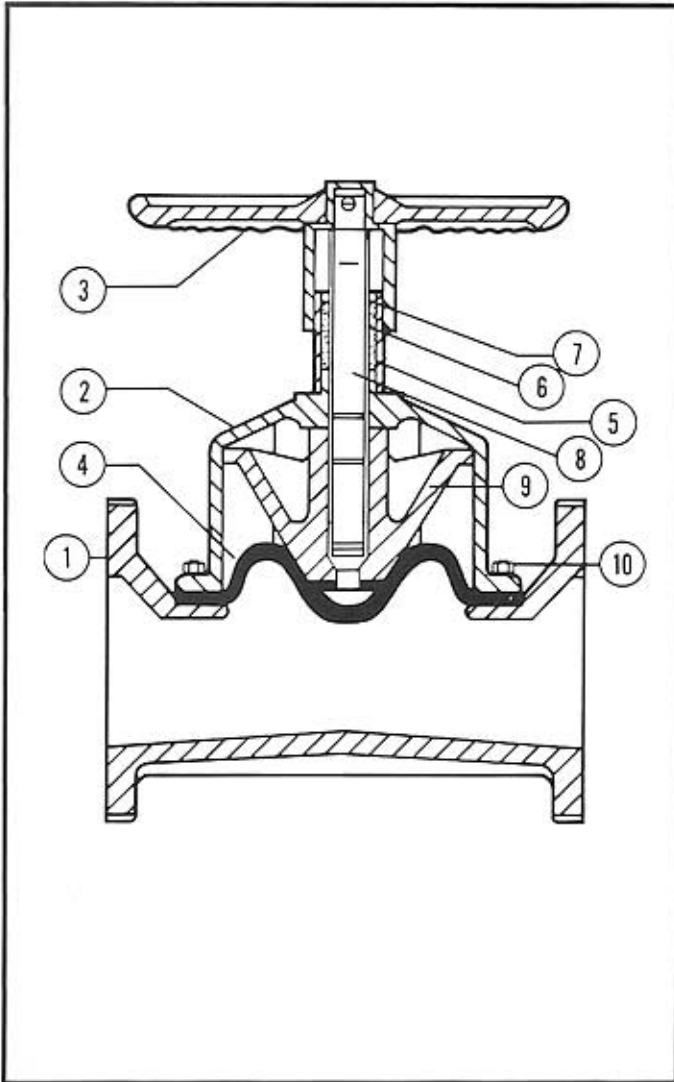
Item	Part	Material
1	Body	as Specified
2	Bonnet	Cast Iron
3	Handwheel	ABS Plastic or as Specified
4	Diaphragm	as Specified
5	Indicator Sleeve	Yellow Polypropylene
6	Reservoir	Lubricant (Cosmolube)
7	Retainer	Fiber Washer
8	Stem	Carbon Steel
9	Compressor	Cast Iron
10	Body/Bonnet Studs & Nuts	Carbon Steel

1/2" THRU 2" FLANGED

Item	Part	Material
1	Body	as Specified
2	Bonnet	Cast Iron
3	Handwheel	ABS Plastic or as Specified
4	Diaphragm	as Specified
5	Indicator Sleeve	Yellow Polypropylene
6	Reservoir	Lubricant (Cosmolube)
7	Retainer	Fiber Washer
8	Stem	Carbon Steel
9	Compressor	Cast Iron
10	Body/Bonnet Studs & Nuts	Carbon Steel

Subject to change without notice.

STRAIGHT THRU MATERIALS OF CONSTRUCTION



2 1/2" THRU 6" FLANGED

Item	Part	Material
1	Body	as Specified
2	Bonnet	Cast Iron
3	Handwheel	Carbon Steel
4	Diaphragm	as Specified
5	Indicator Sleeve	Yellow Polypropylene
6	Reservoir	Lubricant (Cosmolube)
7	Retainer	Fiber Washer
8	Stem	Carbon Steel
9	Compressor	Cast Iron
10	Body/Bonnet Studs & Nuts	Carbon Steel

8" THRU 14" FLANGED

Item	Part	Material
1	Body	as Specified
2	Bonnet	Cast Iron
3	Handwheel	Cast Iron
4	Diaphragm	as Specified
5	Handwheel Cap	Carbon Steel
6	Closure Stop Screw	Carbon Steel
7	Handwheel Screw	Carbon Steel
8	Grease Nipple	Carbon Steel
9	Thrust Race	Carbon Steel
10	Indicator Stem	Brass
11	Stem	Carbon Steel
12	Compressor	Cast Iron
13	Body/Bonnet Studs & Nuts	Carbon Steel
14	Closure Stop	Carbon Steel

Subject to change without notice.

STRAIGHT THRU BODY, LININGS AND DIAPHRAGM MATERIALS

DIAPHRAGM MATERIALS

Grade	Material	Size	Temperature
KA	Natural Rubber	1/2" to 14"	-40°F to 195°F
KB	Butyl Rubber	1/2" to 14"	-20°F to 195°F
KC	Nitrile Rubber	1/2" to 12"	10°F to 195°F
KD (300)	Butyl Rubber (Hi Temp)	1/2" to 12"	0°F to 212°F
KE	Ethylene Propylene	1/2" to 12"	-40°F to 225°F
KHT	Neoprene	1/2" to 14"	- 5°F to 195°F
KQ	Natural/Synthetic Rubber	1/2" to 14"	-40°F to 195°F
KU (237)	Hypalon	1/2" to 14"	0°F to 195°F
KV (226)	Viton	1/2" to 10"	40°F to 250°F
KW	White Natural Rubber	1/2" to 5"	-30°F to 195°F
KW1 (215)	White Butyl	1/2" to 6"	- 5°F to 195°F

All diaphragms are reinforced to handle industrial vacuum.

Saunders Standard Diaphragms are fully interchangeable with many competitive diaphragm valves. For full details of the Interchangeability Specification please contact your local distributor.



Straight Thru Diaphragm

BODY MATERIALS AND LININGS

Material	Screwed	Flanged
Cast Iron Unlined	1/2" - 2"	1/2" - 14"
Bronze	1/2" - 2"	1" - 6"
Stainless Steel ASTM A296 CF8M	1/2" - 2"	1" - 6"

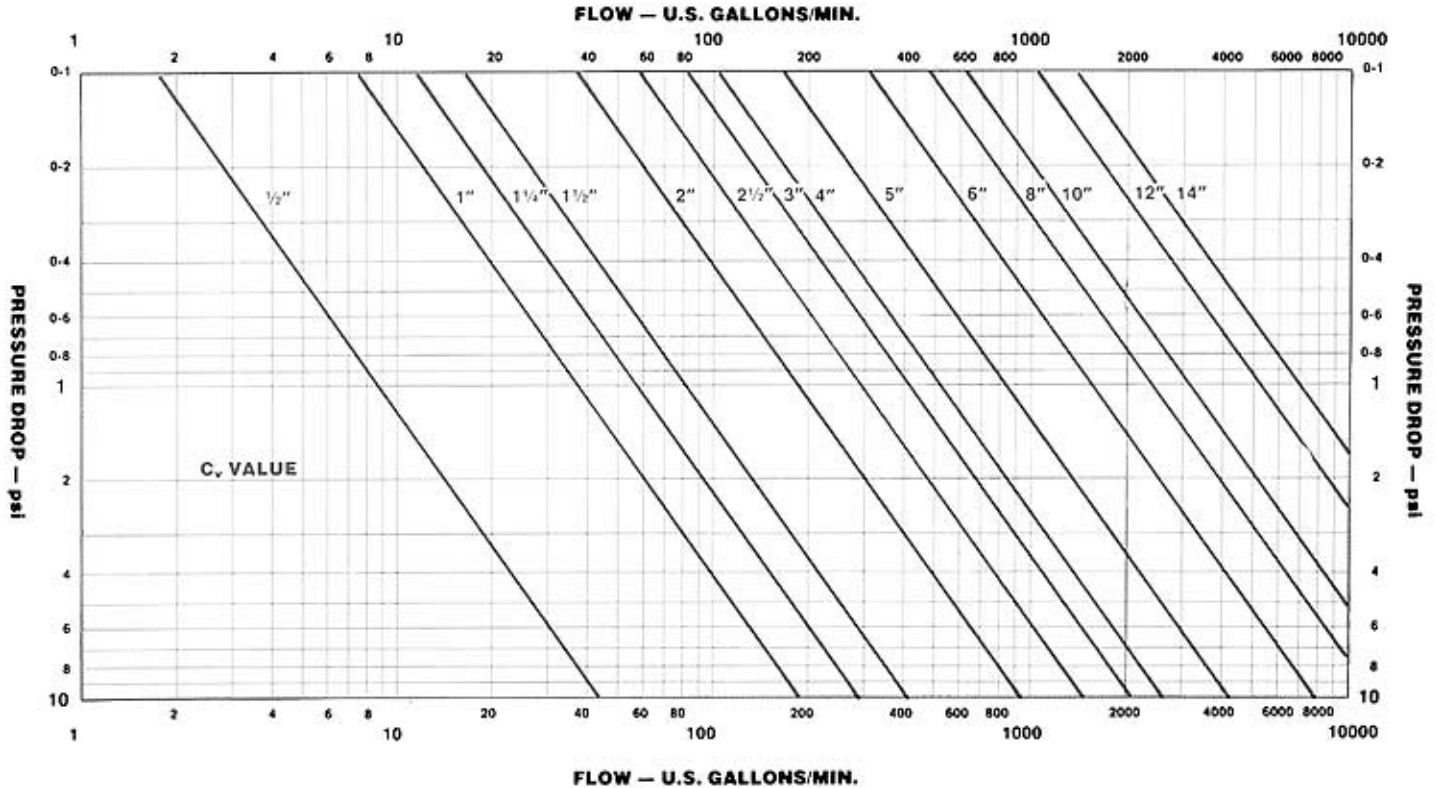
All screwed and flanged end connections conform to U.S. standards (API NPT and ANSI 125 & 150). Valves with other national and international standards can be supplied.

Material	Screwed	Flanged
Cast Iron Lined With:		
Hard Rubber	—	1" - 14"
Soft Rubber	—	1" - 14"
Butyl Rubber	—	1" - 14"
Neoprene	—	1" - 14"
Hypalon	—	1" - 14"
Halar	—	1/2" - 14"
Glass	—	1/2" - 10"
ETFE	—	1" - 14"
Polypropylene	—	1" - 14"

STRAIGHT THRU PERFORMANCE DATA

FLOW COEFFICIENT — C_v — OF STRAIGHT THRU DIAPHRAGM VALVE

By definition the valve flow coefficient C_v is "the number of gallons per minute of water which will pass through a given flow restriction with a pressure drop of 1 psi".



This graph applies to water and to unlined valves. **Liquid Flow Formula** $Q = C_v \sqrt{\frac{\Delta P}{G}}$

Where Q = Flow (US gallons/minute) ΔP = Pressure drop.
 C_v = Flow coefficient from graph. G = Specific Gravity

Gas Flow Formula $Q = 1360 C_v \sqrt{\frac{\Delta P}{GT} \frac{P_1 + P_2}{2}}$

$\Delta P = (P_1 - P_2)$ Pressure Drop — psi.
 C_v = Flow in GPM (water) at 1 psi Pressure Drop.
 Q = Volumetric Flow (SCFH).

G = Specific Gravity of Gas (Air @ 14.7 and 60°F = 1.0)
 T = Absolute Temperature of Flowing Medium (°F + 460).

P_1 = Inlet pressure — psia.
 P_2 = Outlet pressure — psia.

Screwed End Metal				
% Open	1/2"	1"	1 1/2"	2"
10	1.4	3	9.4	14.8
20	2.8	6	18.7	30
30	4.3	9.3	28.9	46
40	5.8	12.5	39	62
50	7	15	47	74
60	8.2	17.5	55	86
70	9	19.3	60	95
80	9.9	21.3	66	105
90	10.9	23.3	73	114
100	11.7	25	78	123

Flanged End—Unlined													
% Open	1/2"	1"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"	14"
10	1	4.5	9	15	29	40	71	111	202	310	482	727	1236
20	2.1	9.1	18	31	57	79	141	222	403	619	965	1454	2472
30	3.2	14	28	47	88	122	216	342	622	955	1487	2242	3811
40	4.3	18.9	38	64	119	165	294	462	840	1290	2010	3030	5150
50	5.2	22.7	45	77	143	198	353	554	1008	1548	2412	3636	6180
60	6	26.5	52	90	167	231	412	647	1176	1806	2814	4242	7210
70	6.6	29.1	58	99	183	254	453	711	1294	1987	3095	4666	7931
80	7.3	32.1	64	109	202	281	500	785	1428	2193	3417	5151	8755
90	8	35.1	70	119	221	307	547	859	1562	2399	3739	5636	9579
100	8.6	37.8	75	128	238	330	588	924	1680	2580	4020	6060	10300

Flanged End—Rubber Lined												
% Open	1"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	14"	
10	3.7	7.9	12.8	23	32	58	86	151	264	410	586	1194
20	7.3	15.8	26	47	63	115	173	302	527	821	1172	2388
30	11.3	24.4	40	72	98	178	266	466	813	1265	1807	3681
40	15.3	33	53	97	132	240	360	630	1098	1710	2442	4975
50	18.4	40	64	117	158	288	432	756	1318	2052	2930	5970
60	21.4	46	75	136	185	336	504	882	1537	2394	3419	6965
70	23.6	51	82	150	203	370	554	970	1691	2633	3761	7661
80	26	56	91	166	224	408	612	1071	1867	2907	4151	8457
90	28.4	61	99	181	246	446	670	1172	2042	3181	4542	9253
100	30.6	66	107	195	264	480	720	1260	2196	3420	4884	9950

Flanged End—Glass/Plastic Lined											
% Open	1/2"	1"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"
10	1.1	4.7	9.5	16.6	30	41	74	115	216	327	516
20	2.2	9.4	18.9	33	61	82	148	230	432	653	1031
30	3.3	14.4	29.2	51	94	127	229	355	666	1008	1590
40	4.5	19.5	40	69	127	171	309	480	900	1362	2148
50	5.4	23.4	47	83	152	205	371	576	1080	1634	2578
60	6.3	27.3	55	97	178	239	433	672	1260	1907	3007
70	6.9	30	61	106	196	263	476	739	1386	2097	3308
80	7.7	33	67	117	216	291	525	816	1530	2315	3652
90	8.4	36	73	128	236	318	575	893	1674	2533	3995
100	9	39	79	138	254	342	618	960	1800	2724	4296

STRAIGHT THRU PERFORMANCE DATA

OPERATING LIMITS

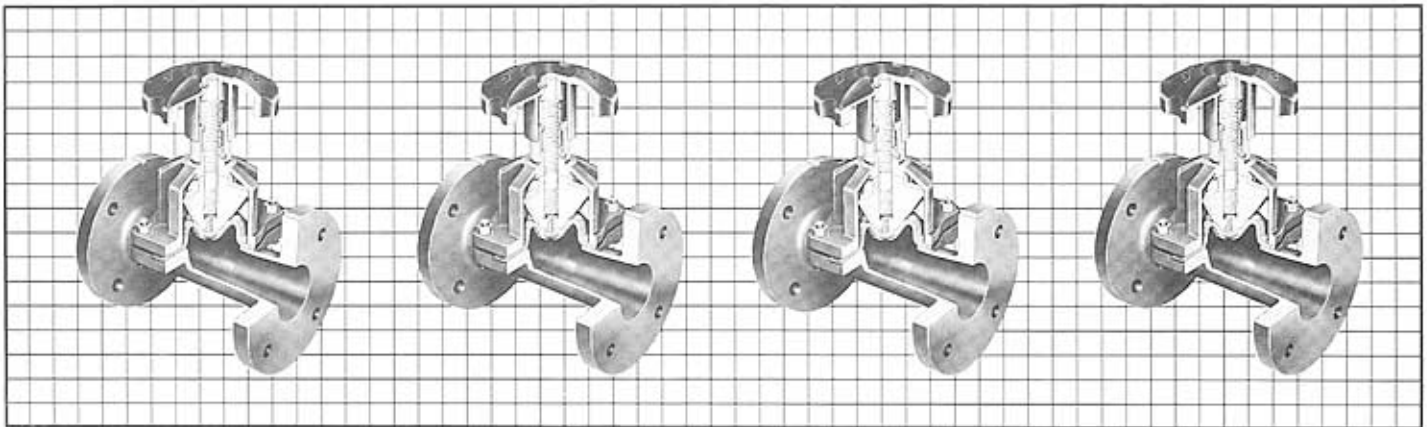
1. The table below shows the maximum permissible working pressure, within a temperature range of -50°F and +120°F, for the entire size range of Saunders Straight Thru Diaphragm Valves.
2. For operating temperatures above 120°F, the permissible working pressure decreases as shown by the chart on the facing page. To find the maximum working pressure at the higher temperatures, select the pressure from the table below for the desired size and valve material. Then, find the corresponding

pressure line on the chart and plot that line until it intersects with the anticipated temperature. From the point of intersection, proceed horizontally to the edge of the chart and read the allowable working pressure at the anticipated temperature.

3. Refer to the diaphragm temperature limitation bar graphs to determine if the anticipated temperature is within the recommended operating range of the desired diaphragm and body material.

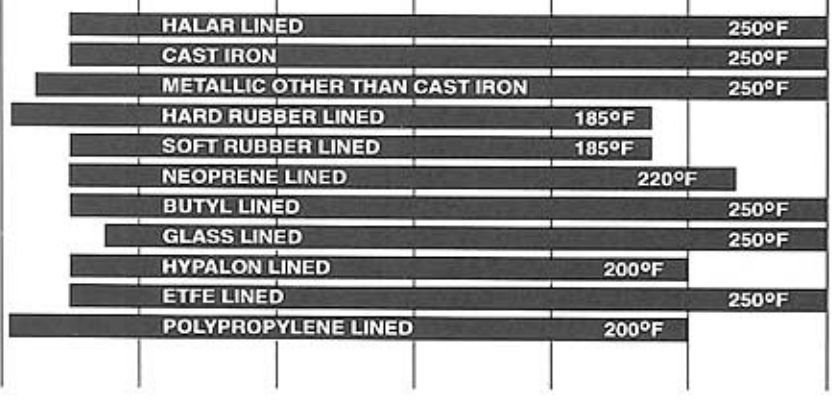
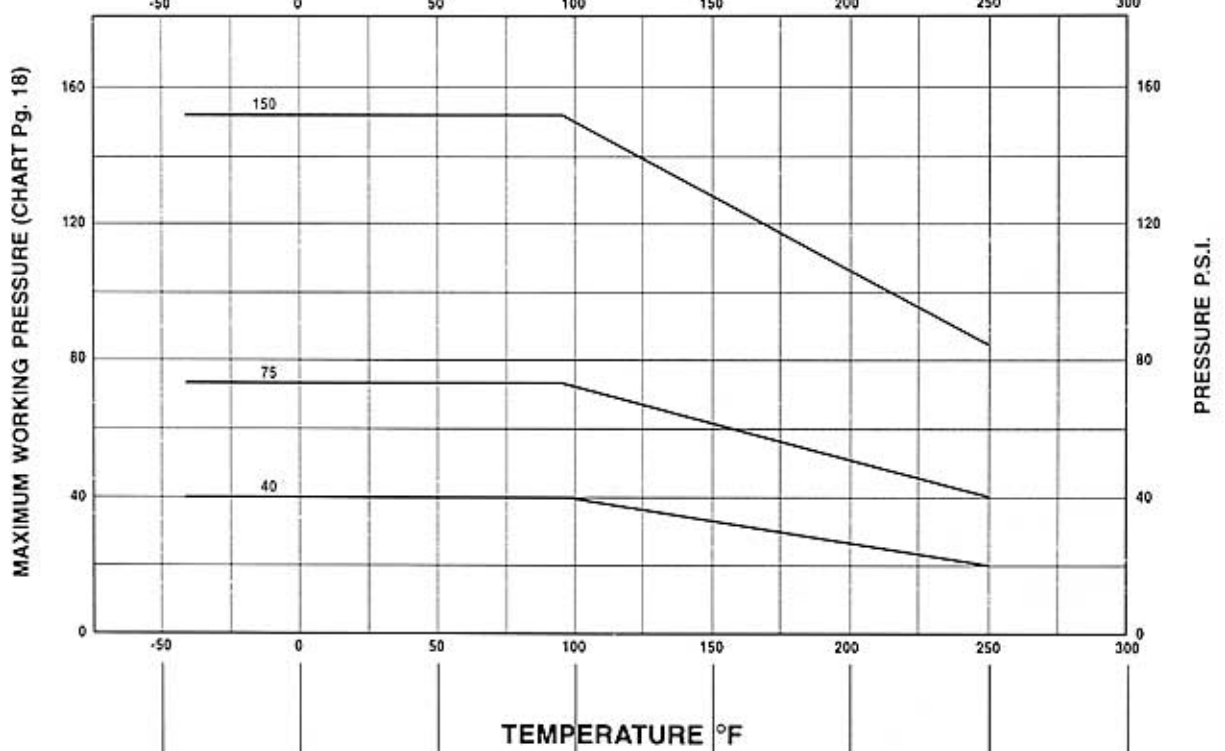
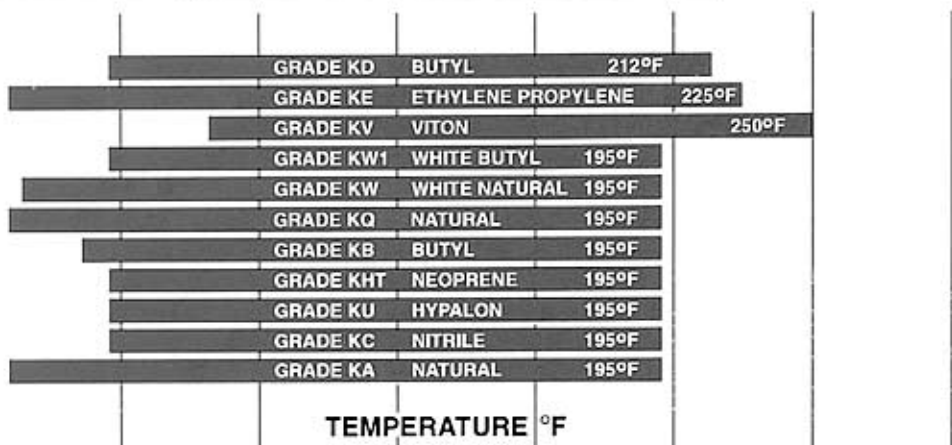
VALVE MAXIMUM WORKING PRESSURE, psi
(at temperatures up to 120°F)

Body Material	Valve Size/Maximum Pressure										
	½"	1"	1½"	2"	3"	4"	6"	8"	10"	12"	14"
All Metallic	150	150	150	150	150	150	75	75	75	75	40
Glass and Plastic Lined	150	150	150	150	150	150	75	75	75	75	40
Rubber Lined	—	150	150	150	150	150	75	75	75	75	40
Plastic Lined	—	150	150	150	150	150	75	75	75	75	40



STRAIGHT THRU PERFORMANCE DATA

DIAPHRAGM TEMPERATURE LIMITATIONS



BODY TEMPERATURE LIMITATIONS