PROCON ENGINEERS





Proven, Reliable, Leak Tight Pneumatic Diaphragm Valves PROCON ENGINEERS founded in 1973, by professionally experienced qualified technocrats entrepreneurs. Specialises in manufacturing Diaphragm valves for application involving slurries, suspended solids, viscous or corrosive substances and other hard to handle medium or where the tight closure (Bubble tight shut off) is a prime factor.

While primarily designed for on-off service, it will provide a proportional control action when furnished with a spring range or a positioner.

Valve Size ranges from 15 mm to 350 mm.

Material of construction of valves is cast iron, cast carbon steel, cast stainless steel and other allovs.

PROCON ENGINEERS Valves have been used in all types of industries such as petrochemicals, pharmaceuticals, power, refinery, fertilizer, steel, sugar, thermal, nuclear plants, food and beverages, mining, water treatment, waste and water treatment etc. not only in India, but also abroad. These valves have been internationally approved by various consultants, clients and by third party inspection agencies.

High quality standards are strictly maintained, each valve being checked for size, design pressure, proper selection of actuator by design calculations, MOC, finish etc and with in house painting.

PROCON ENGINEERS is in the process of ISO 9000 Certification.

Annual Capacity is 2000 Pneumatic & 4000 Manually operated Diaphragm Valves. Production facilities are located in Andheri, Mumbai, the heart of Industrial Activity.

On time delivery of high quality valves and after sales service is our motto for last 28 years.

Salient Features:

* Type of Pneumatic Valves: Diaphragm Actuator can be direct, reverse, or double acting in operation with spring or can be springless.

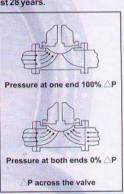
* Diaphragm Actuator Sizes : Effective area from 9 Sq. Inches to 300 Sq. Inches and in case of double diaphragm it can go upto 600 Sq. Inches to match any thrust load requirements.

* Cylinder Actuator Sizes : Equivalent size cylinder actuators, type single or double acting are also available. These are generally preferred where ever air supply pressure available is more. Double acting cylinder actuator is generally preferred when fail safe position calls for stay put operation in conjunction with air lock relay or for heavy duty operation.

* Operating Air Pressure: 50 to 57 psig for diaphragm actuator and 100 psig for cylinder actuator is standard. Springless type actuator can be supplied with 3 psig constant loading

*Control Valve closing time : approximate 8 to 10 Seconds.

Control Valve Opening time: approximate 20 to 24 Seconds. C V for Diaphragm Valves



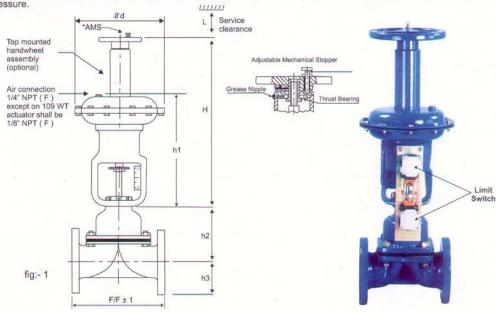
ВО	DY	TRAVEL	CV							
SIZ	ZE	y side that	Unlined or	Glass lined	Rubber lined					
MM	INCH		Teflon Diaphragm	Rubber Diaphragm	Teflon Diaphragm	Rubber Diaphragm				
15	1/2	1/4"	3	5	3	4				
20	3/4	5/16"	5	10	4	7				
25	1	3/8"	10	15	9	11				
40	1.1/2	3/4"	22	40	20	30				
50	2	15/16"/ 3/4"	32	55	30	50				
65	2.1/2	1.1/4" / 15/16'	55	85	50	75				
80	3	1 1/2" / 1.1/4"	75	120	70	95				
100	4	40mm / 1.1/2"	180	210	165	200				
125	5	50mm / 40mm	210	280	200	270				
150	6	70mm / 50mm	280	370	270	350				
200	8	80mm / 65mm	480	650	450	620				
250	10	3.1/2" / 70mm	690	900	650	850				
300	12	3.1/2" / 70mm	990	1300	950	1200				

1) In Column 2 smaller travel applicable for teflon diaphragms Note:

2) Actual Cv may vary within +/- 5% of above values

Direct acting actuator (Action - Air to close, Spring to open, DOPC) fig:-1

This actuator is designed to operate from a normally open position. Air pressure on the top side of the actuator diaphragm closes the valve and the spring opens the valve when the air is released from the actuator. (Air failure valve opens). Light springs are generally used in these valves in order to achieve tight shut off against relatively high fluid pressure.



Note: 1. H= Height with top mounted handwheel

2. h1 = Height without top mounted handwheel.

3. *AMS = Adjustable mechanical opening stopper.

4. The overall dimensions will vary ± 50mm in all valve sizes.

5. Dimensions for h3 as per ANSI 125 flanges.

6. F/F = Face to Face

Dimensions of Double Acting Actuator (fig:- 1)

BODY	Y SIZE	ACTU	ATOR	Face to	o Face	h h	1	h2	h3	Н	1	₽ d	<u> </u>	L
MM	INCH	Standard	Senior	Unlined	Lined	Standard	Senior			Standard	Senior	Standard	Senior	
15	1/2	109WT	109WT	108	114	170	170	60	45	280	280	110	110	200
20	3/4	109WT	109WT	117	123	170	170	76	49	280	280	110	110	200
25	1	109WT	109WT	127	133	170	170	81	54	280	280	110	110	200
40	1.1/2	1018WT	1035WT	159	165	295	300	101	64	430	440	185	235	200
50	2	1018WT	1035WT	190	196	295	300	124	76	430	440	185	235	200
65	2.1/2	1035WT	1001WT	216	222	300	295	141	89	440	470	235	276	200
80	3	1001WT	1002WT	254	261	295	315	190	95	515	540	276	330	250
100	4	1002WT	1003WT	305	312	315	330	205	115	540	560	330	390	250
125	5	1002WT	1003WT	356	364	370	380	234	127	600	620	330	390	250
150	6	1004WT	1005WT	406	414	450	470	285	140	740	770	450	600	300
200	8	1005WT	A1-300WT	521	531	470	485	404	172	810	825	600	616	300
250	10	1005WT	A1-300WT	635	645	470	485	450	203	840	855	600	616	300
300	12	A1-300WT	-	749	759	485		605	242	890		616		350
350	14	A1-300WT	-	749	759	485	-	695	267	920	-	616	-	350

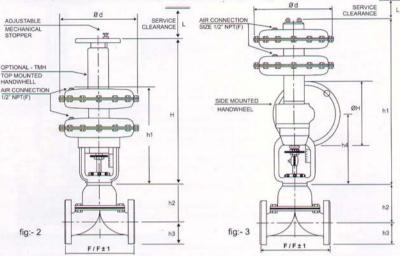
^{*} All table dimensions are in mm. Dimensions shown are for planning purposes and should not be used for manufacturing.

Double Diaphragm actuator (TMH) (Action - Air to close, spring to open, DOPC) fig:-2

Particularly used on larger valve sizes and where fluid pressure acts on both ends (i.e. 0%). Larger size Diaphragm Valves requires tremendous amount of thrust to close the valve. Actuator as large as 300 sq. In., effective area might not be adequate. Battery of two or three actuators are combined to achieve the desired thrust.

Double Diaphragm actuator (SMH) (Action - Air to close, spring to open, DOPC) fig:-3

Side mounted handwheel (SMH) can be supplied as separate unit integral with the actuator. SMH involving large thrust loads are provided with worm and worm gear reduction. SMH can be locked in open position or closed as desired. These valves can be easily operated and maintained by the operator standing on the ground.



TMH = Top mounted handwheel

SMH = Side mounted handwheel

- Note: 1. *AMS = Adjustable mechanical opening stopper.
 - 2. The overall dimensions will vary ± 50mm in all valve sizes.
 - 3. Dimensions for h3 as per ANSI 125 flanges...
 - 4. F/F = Face to Face

Dimensions of Double Diaphragm actuator (fig:- 2)

BOD	Y SIZE	ACTUATOR	Face to Face		h1	h2	h3	Н	.8'd	L
MM	INCH	211	Unlined	Lined						
200	8"	1005DD-WT	521	531	690	405	172	1010	600	350
200	8"	A1- 300DD - WT	521	531	705	405	172	1025	616	350
250	10"	1005DD - WT	635	645	690	450	203	1030	600	350
250	10"	A1-300DD -WT	635	645	705	450	203	1045	616	400
300	12"	A1-300DD - WT	749	759	705	605	242	1065	616	400
350	14"	A1-300DD - WT	749	759	735	695	267	1095	616	400

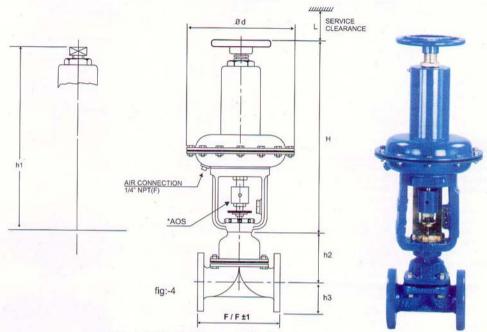
Dimensions of Double Diaphragm actuator (fig:- 3)

	Bridge and a second	201002-0-00-0-0								
Y SIZE	ACTUATOR	Face to	o Face	h1	h2	h3	h4	ЮH	.0° d	L
INCH		Unlined	Lined							
8"	1005DD-WH	521	531	1050	405	172	410	380	600	300
8"	A1-300DD - WH	521	531	1115	405	172	410	380	616	300
10"	1005DD - WH	635	645	1050	450	203	410	380	600	300
10"	A1-300DD -WH	635	645	1115	450	203	410	380	616	300
12°	A1-300DD - WH	749	759	1115	605	242	410	380	616	300
14"	A1-300DD - WH	749	759	1115	695	267	410	380	616	300
	8" 8" 10" 10" 12"	NCH 8" 1005DD-WH 8" A1-300DD - WH 10" 1005DD - WH 10" A1-300DD - WH 12" A1-300DD - WH	INCH Unlined 8" 1005DD-WH 521 8" A1-300DD - WH 521 10" 1005DD - WH 635 10" A1-300DD - WH 635 12" A1-300DD - WH 749	INCH Unlined Lined 8" 1005DD-WH 521 531 8" A1-300DD - WH 521 531 10" 1005DD - WH 635 645 10" A1-300DD - WH 635 645 12" A1-300DD - WH 749 759	INCH Unlined Lined 8" 1005DD-WH 521 531 1050 8" A1-300DD - WH 521 531 1115 10" 1005DD - WH 635 645 1050 10" A1-300DD - WH 635 645 1115 12" A1-300DD - WH 749 759 1115	INCH Unlined Lined 8" 1005DD-WH 521 531 1050 405 8" A1-300DD - WH 521 531 1115 405 10" 1005DD - WH 635 645 1050 450 10" A1-300DD - WH 635 645 1115 450 12" A1-300DD - WH 749 759 1115 605	INCH Unlined Lined 8" 1005DD-WH 521 531 1050 405 172 8" A1-300DD - WH 521 531 1115 405 172 10" 1005DD - WH 635 645 1050 450 203 10" A1-300DD - WH 635 645 1115 450 203 12" A1-300DD - WH 749 759 1115 605 242	INCH Unlined Lined 8" 1005DD-WH 521 531 1050 405 172 410 8" A1-300DD - WH 521 531 1115 405 172 410 10" 1005DD - WH 635 645 1050 450 203 410 10" A1-300DD - WH 635 645 1115 450 203 410 12" A1-300DD - WH 749 759 1115 605 242 410	INCH Unlined Lined 8" 1005DD-WH 521 531 1050 405 172 410 380 8" A1-300DD - WH 521 531 1115 405 172 410 380 10" 1005DD - WH 635 645 1050 450 203 410 380 10" A1-300DD - WH 635 645 1115 450 203 410 380 12" A1-300DD - WH 749 759 1115 605 242 410 380	INCH Unlined Lined 8" 1005DD-WH 521 531 1050 405 172 410 380 600 8" A1-300DD-WH 521 531 1115 405 172 410 380 616 10" 1005DD-WH 635 645 1050 450 203 410 380 600 10" A1-300DD-WH 635 645 1115 450 203 410 380 616 12" A1-300DD-WH 749 759 1115 605 242 410 380 616

^{*} All table dimensions are in mm. Dimensions shown are for planning purposes and should not be used for manufacturing.

Reverse acting actuator (Action - Air to open, spring to close, DOPO) fig:-4

This actuator is designed to operate from a normally closed position, air pressure on the bottom side of the actuator diaphragm opens the valve, this air pressure will lift and hold the diaphragm valve in a partially or fully open position until the air is released and the spring action closes the valve. (Air failure valve closes). Heavy duty springs are generally used in these valves for initial spring tension to achieve tight shut off pressures.



Note: 1. H= Height with top mounted handwheel

2. h1 = Height without top mounted handwheel.

3. *AOS = Adjustable opening stopper.

4. The overall dimensions will vary ± 50mm in all valve sizes.

5. Dimensions for h3 as per ANSI 125 flanges.

6. F/F = Face to Face

Dimensions of Reverse acting actuator (fig :- 4)

BOD	SIZE	ACTUATOR		OR Face to Face h1		h2 h3		Н		Ød		L		
MM	INCH	Standard	Senior	Unlined	Lined	Standard	Senior			Standard	Senior	Standard	Senior	
15	1/2	1018 RWT	1018 RWT	108	114	430	430	70	45	470	470	185	185	200
20	3/4	1018 RWT	1018 RWT	117	123	430	430	86	49	470	470	185	185	200
25	1	1018 RWT	1018 RWT	127	133	430	430	96	54	470	470	185	185	200
40	1.1/2	1018 RWT	1035 RWT	159	165	430	450	101	64	470	490	185	235	200
50	2	1035 RWT	1001 RWT	190	196	450	500	124	76	490	540	235	276	200
65	2.1/2	1035 RWT	1001 RWT	216	222	450	500	141	89	490	540	235	276	250
80	3	1001 RWT	1002 RWT	254	261	530	620	190	96	580	670	276	330	250
100	4	1002 RWT	1003 RWT	305	312	620	690	205	115	670	740	330	390	300
125	5	1002 RWT	1003 RWT	356	364	680	715	234	127	730	770	330	390	300
150	6	1004 RWT	1005 RWT	406	414	910	1000	285	140	990	1080	450	600	300
200	8	1005 RWT	A2-300RWT	521	531	1010	1020	404	172	1120	1130	600	616	350
250	10	A2-300RWT	-	635	645	1150		450	203	1300		616		350

^{*} All table dimensions are in mm. Dimensions shown are for planning purposes and should not be used for manufacturing.

Double Diaphragm actuator (Action - Air to open, Spring to close, DOPO) fig:- 5

Particularly used where fluid pressure acts at both ends (i.e 0%). The larger size Diaphragm Valves requires tremendous amount of thrust to close the valve. Actuator as large as 300 sq. In. effective area might not be adequate. Battery of two or three actuators are combined to achieve the desired thrust.

Dimensions of Double Diaphragm actuator, DOPO (fig:-5)

BODY SIZE		ACTUATOR	Face to Face		h1	h2	h3	Н	Ø d	L
MM	INCH		Unlined	Lined						
200	8"	1005DD-RWT	521	531	1180	405	172	1290	600	500
200	8"	A2-300DD-RWT	521	531	1190	405	172	1300	616	500
250	10"	1005DD-RWT	635	645	1200	450	203	1320	600	500
250	10"	A2-300DD-RWT	635	645	1215	450	203	1335	616	500
300	12"	A2-300DD-RWT	749	759	1250	605	242	1360	616	500
350	14"	A2-300DD-RWT	749	759	1270	695	267	1380	616	500

Double acting Diaphragm valve, (D/A) fig:- 6

The air chamber in this double acting actuator are usually controlled by a single 4-way solenoid operated valve which admits air into one chamber while exhaust air from the other side of chamber, either opening or closing the valve depending on the air connections.

Unlike spring opposed diaphragm actuator where major part of the stem thrust is absorbed by the spring, full thrust depending on the air supply pressure is available as net thrust for operating the valve.

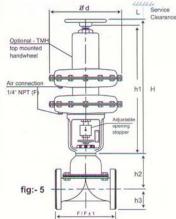
The fail-safe operation for double acting actuator can be stay put by using

airlock.

Double acting actuator can be operated by conventional 3-way solenoid valve by providing a constant air pressure loading on the other side of the air

Dimensions of Double acting Diaphragm, (fig:-6)

BODY	Size	ACTUATOR	Face	to Face	h2	h3	Н	Æd	L
MM	Inch		Unlined	Lined					
25	1	1018D/A	127	133	80	54	326	185	100
40	1 1/2	1018D/A	159	165	105	64	326	185	100
50	2	1018D/A	190	196	125	76	326	185	100
65	2 1/2	1035D/A	216	222	150	89	351	235	180
80	3	1001D/A	254	261	190	95	355	276	150
100	4	1002D/A	305	312	205	115	375	330	200
125	5	1003D/A	356	364	234	127	405	330	200
150	6	1004D/A	406	414	280	140	535	450	250
200	8	1005D/A	521	531	390	173	590	600	250
250	10	300D/A	635	645	460	203	620	616	300





Cylinder operated Diaphragm Valve: (fig:-7)

Cylinder actuators are either single or double acting type and are generally used where ever air supply pressure available is more. Double acting cylinder is generally preferred when fail safe position calls for stay put operation with air lock relay or for heavy duty operation.



Diaphragm Actuator for Throttling Application: (fig:-8)

The actuator can be equipped with Valve Positioner and actuator spring with standard spring range to achieve positioner accuracy.





Various types of lining for Weir type Diaphragm Valves

Ebonite-Hard rubber lining:

Natural rubber Ebonite, Sulphur cured. Highly suitable for inorganic bases, salts, hydrochloric acid, metal plating solutions, photographic developers, water chlorinated moist chlorine.

Halar Lining: (Ethylene chlorotrifluoroethylene)
Resists many industrial chemicals and additionally protects the exposed parts of valve bodies to cut-out painting. Excellent resistance to mineral and oxidising acids, inorganic basis, salts.

Glass Lining: 3.

Purity, smooth flow (specially on viscous fluids) with great strength and resistance to chemical attack. Excellent for strong mineral acids, halogens.

PVDF (Polyvinylidenefluoride):

PVDF is high molecular weight polymer of vinylidene fluoride. It is mechanically strong, thermally stable and resistant to most inorganic acids and bases - for high performance without exotic material costs.

PFA lining (Perfluoro Alkoxy):

High performance fluorocarbon lining is resistant to heat and stress cracking and its moisture absorption is negligible. Combines strength and abrasion resistance for long service. PFA has good mechanical and physical properties at high temperatures. It is capable of resisting strong acid attack and can operate at 200°C.

Polyproplene lining (PP):

PP is a general purpose lining with particular applications for water treatment, effluent lines, especially hot effluent from dyestuffs, chemical processing etc. This material has an ultra high heat stable copolymer.

Other types of rubber lining available:

We can offer Natural, Nitrile (Buna-N), Hyplon, Butyl, FRP, Lead, Teflon (Halar, ECTFE, FEP, PFA), Food grade lining, EPDM-calcium, magnesium & Silica free etc. Types of rubber lining.

Type of body diaphragms:

We can offer Natural Neoprene, Hyplon, Butyl, EPDM, PTFE with Neo, Butyl, EPDM pad, Viton, Nitrile Buna-N, Food grade etc. type of body diaphragms.

Lining Hardness:

Hard Rubber (Ebonite) 95°±5 Shore A Soft Rubber 65° ± 5 Shore A

ubber Lining thickness:

Contraction of the Contraction o								
Body size	Thickness							
15 to 65	3 mm							
80 to 100	3.5 mm							
125 to 150	4 mm							
200 to 350	5 mm							

Standards:

- Diaphragms Valves conform to BS:5156 (Series 's')
- Castings standardized to IS 210 grade FG 200 (FG 260 available on request)
- Flanges Size 15-80: Connecting dimensions and Thickness to BS 10 Table F (BS:5156)
- Flanges Size 100-350: Connecting dimensions and Thickness to ANSI B 16. 1 Class 125 lbs (BS:5156)
- Flanges Size 15-350: Connecting dimensions and Thickness to BS 4504, PN-10/PN-16-(DIN: 3202-F1)
- Standard screwed ends: Size 6-100 to have BS:21 (Parallel or taper - threads) Or ANSI / ASME B1.20.1 (NPT) threads.
- Socket weld ends & Buttweld ends: Size 6-100 as per ANSI B 16.11 & ANSIB 16.25 suitable for schedule 40 / 40S respectively

1. Ebonite rubber lined



2. Halar Lined:



3. Glass Lined



4. PVDF Lined



5. Perfluoro Alkoxy (PFA) Lined



6. Polyproplene Lined



Approved by Consultants:

Bhabha Atomic Research Centre Bharat Heavy Electrical Ltd.

BSES Ltd.

Development Consultants Ltd.

Dalal Consultants & Engineers Pvt. Ltd.

FACT Engg. & Design Org. (FEDO)

IBI Chematur (Engg. & Consult.) Ltd.

Jacob H & G Consultants Ltd. Kaverner Powergas India Ltd.

M.N. Dastur & Company Ltd.

National Thermal Power Corp. Ltd. Nuclear Power Corporation of India Ltd.

Oil & Natural Gas Corp. Ltd.

Projects and Development India Ltd.

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Century Rayon CESC Ltd.

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GACI GIPCI

Guirat State Fertilizer & Chemicals Ltd. Gas Authority of India Ltd. (GAIL)

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Kerala Chemicals & Proteins Ltd.

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NALCO Narmada Chematur Petrochemicals Ltd.

National Fertilizers Ltd. Nagarjuna Fertilizers & Chemicals Ltd.

National Thermal Power Corp. Ltd. Oswal Chemicals & Fertilizers Ltd. Project & Development India Ltd.

Rashtriya Chemicals & Fertilizer Ltd. (RCF) Reliance Industries Ltd.

Sree Rayalseema Alkali & Allied Chem. Steel Authority of India Ltd.

Tata Chemicals Ltd.

Tata Iron & Steel Co. Ltd.

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* UHDE India Ltd.

* VA Tech. Wabag Ltd. * WBPDC Ltd.

Phone: 022-850 1599/850 4436. Fax: 0091 - 22 - 8501699

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Andheri (E), Mumbai - 400 059, INDIA.

Email: procon@vsnl.com

Third party inspection

Our valves have been approved by following third party. Bureau Veritas Industrial Services (India) Pvt. Ltd.

Certification Engineers International Ltd. Det Norske Veritas (DNV)

Lloyds Register of Industrial Services Nuclear Power Corporation of India Ltd.

SGS India Pvt. Ltd. Partial list of satisfied International Customers

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SPIC-SMO South Textiles Lanka Pvt. Ltd.

Thai Baroda Industries Ltd.

Tyco Flow Control Pacific Pty Ltd.

PROCON ENGINEERS maintains a policy of continuous development and reserves the right to amend the information given herein without notice.

To the best of our knowledge the information contained in this publication is accurate.



is the trademark of PROCON ENGINEERS.

Manufactured By:



PROCON ENGINEERS

Also marketed By:

R.K. CONTROL INSTRUMENTS PVT. LTD.

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Simon-Carves India Ltd.

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Enmass India Ltd.

MECON Ltd.

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