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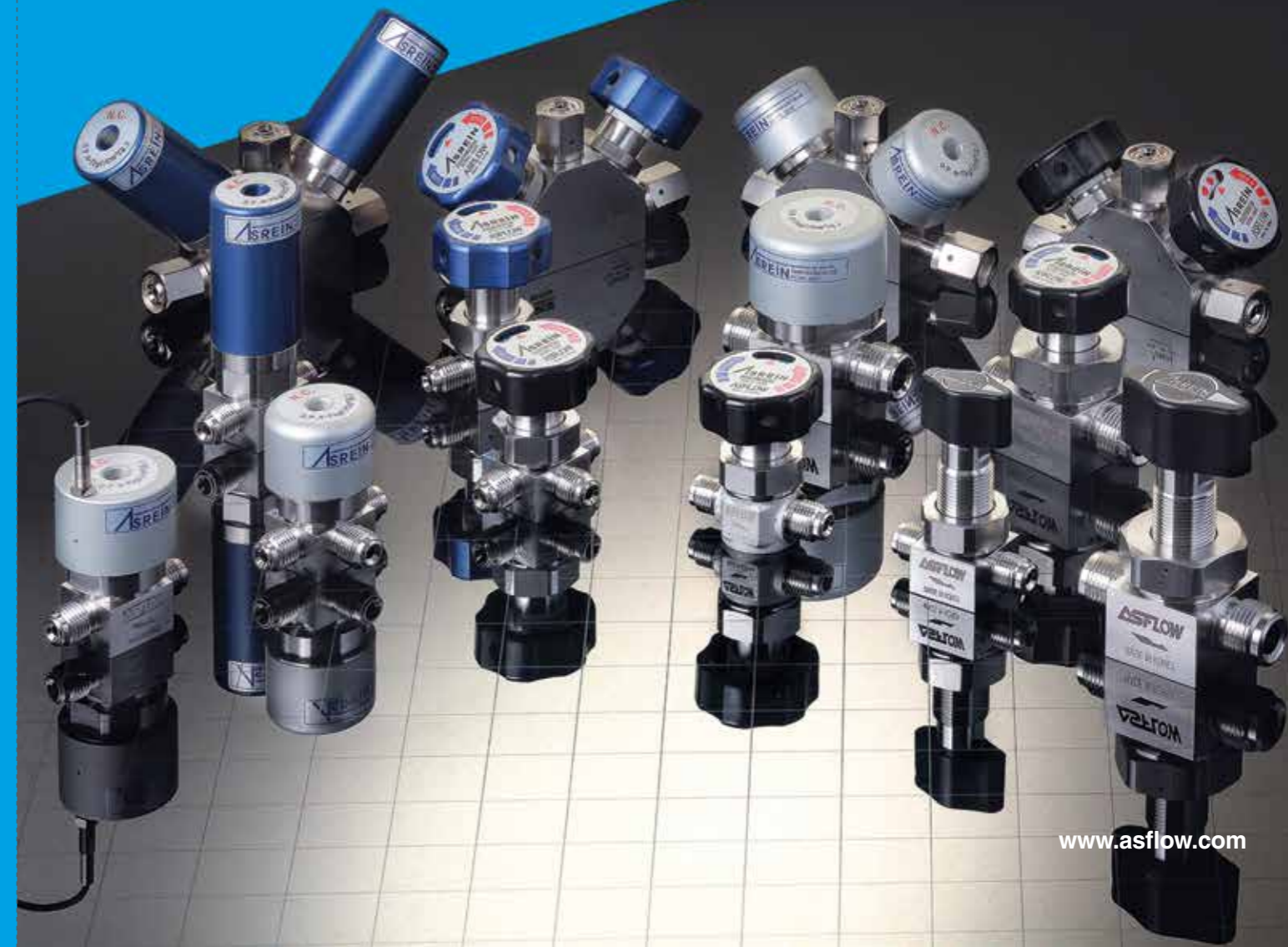
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AEROSPACE & SEMICONDUCTOR FLOW

ASFLOW VALVE SERIES



www.asflow.com

TECHNICAL DATA

Material

SM	Single Melt
DM	Double Melt
VM	VIM/VAR

Chemical Composition

Chemical Composition (Wt%)	C	Si	Mn	P	S	Ni	Cr	Mo	Cu	Al
SM(VOD)	≤ 0.03	≤ 0.75	≤ 0.80	≤ 0.040	≤ 0.005	12.0	16.0	2.0	≤ 0.50	-
DM(VAR)	≤ 0.01	≤ 0.3	≤ 0.4	≤ 0.03	≤ 0.003	14.5	16.5	2.2	≤ 0.25	≤ 0.01
VM(VIM+VAR)	≤ 0.010	≤ 0.200	≤ 0.050	≤ 0.020	≤ 0.003	14.5	16.5	2.2	≤ 0.20	≤ 0.01

(Standard spec : SEMI F20 - S≤0.01%)

Dimensional Specification

ASFLOW valves meet the end-to-end length and overall envelope.
(Standard spec : SEMA TECH 96063137-ENG)

Surface Roughness

EP	Ra ≤ 5unich	Ry ≤ 0.7 μm
BA	Ra ≤ 10unich	Ry ≤ 3.0 μm
AP	Ra ≤ 100unich	Ry ≤ 25 μm

He Leak Test

- All valves are 100% helium leak tested. Tests are performed using a helium leak detector machine with a sensitivity of 1x10⁻⁹ atm cc/sec
- Inboard Leak Integrity : ≤3x10⁻⁹ atm cc/sec (Standard spec : SEMI F1)
- Leak across the seat : ≤3x10⁻⁹ atm cc/sec (Standard spec : SEMASPEC 90120391B-STD)
* Held for at least 15 seconds.

Particles

for particles ≥ 0.1 μm, contribution ≤ 20 Particles/ft³
for particles ≥ 0.02 μm, contribution ≤ 75 Particles/ft³
(Standard spec : SEMASPEC 90120390-STD)

Moisture Test

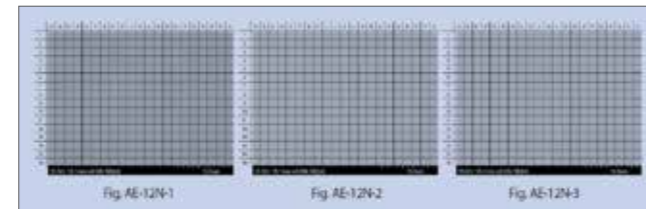
Test procedures per SEMI F58 For low surface area component (valve, regulator), time to recover to baseline from a 200 ppb spike (SEMI F58) is 1 hour.
(Standard spec : SEMI F58)

Reliability

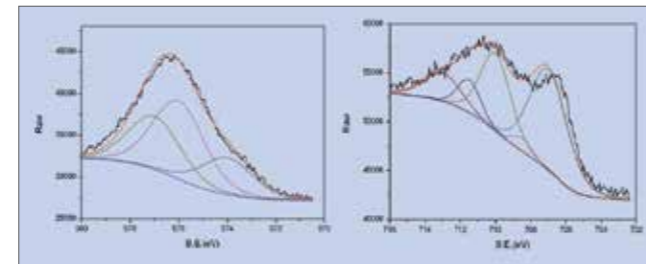
- More than 3 million cycles for pneumatic valves.
- More than 100,000 cycles for manual valves.
(Standard spec : SEMASPEC 90120395-STD, SEMASPEC 91060573-STD)

Electropolished Surfaces-Surface Finish

- Surface Defects : maximum 25 for any one location, with maximum average of 15.
(Standard spec : SEMASPEC 90120401-STD)



- Surface Chromium Enhancement Ratio :



- Cr to Fe ratio ≥ 2:1
- CrO to FeO ratio ≥ 3:1
(Standard spec : SEMASPEC 90120403-STD)
- The valves meet the oxide layer depth and surface contamination as the depth of the oxide layer ≥ 20 after substration of the carbon layer.

- The carbon layer is layer ≤ 10.
- The Maximum Surface Contamination is according to:

Element	Atomic percentage
Carbon	30.0
Sulfur	1.0
Phosphorus	2.0
Silicon	1.5
Nitrogen	2.0

(This test is in accordance with SEMASPEC 91060573-STD)

Cleaning

All parts are free of emulsion composition and residues involved in the machining process, and ASREIN Valves are assembled, inspected, tested and packaged in a Class 10 Clean room.

Packging

Standard packed in a double bad and the inner bag contains ultra pure nitrogen.

DIAPHRAGM VALVE SERIES

STRAIGHT TYPE



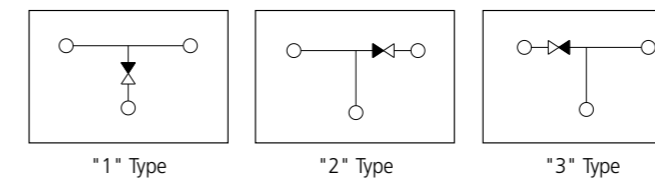
BRANCH TYPE



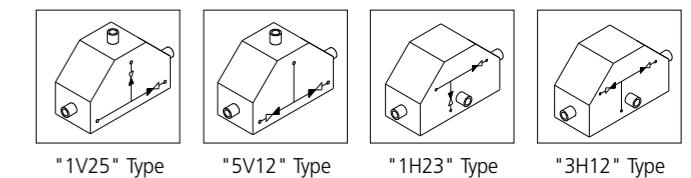
BLOCK TYPE



BRANCH TYPE FLOW



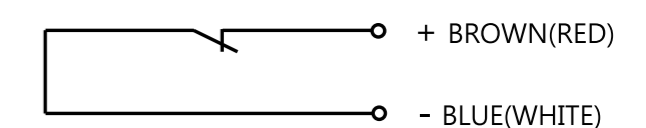
BLOCK TYPE FLOW



Surface Roughness

EP	Ra ≤ 5unich	Ry ≤ 0.7 μm
BA	Ra ≤ 10unich	Ry ≤ 3.0 μm
AP	Ra ≤ 100unich	Ry ≤ 25 μm

Switch Circuit Diagram



Specifications

Switch Specification	
Working Voltage	DC + 5V ~ +24V
Working Current	20mA
Operation Type	NC
Wire Length	3m

Material

Valve parts Name	Material
Valve Body	SUS316L (Single Melt / Double Melt)
Seat	PCTFE
Actuator Cap	Aluminum
Handle	ABS
Diaphragm	Co-Ni Alloy

Specifications

Size	1/4"	3/8" , 1/2"	3/4"
Cv Value	0.3	0.7	0.7
Maximum Working Pressure	1MPa		
Orifice Size	4mm	7mm	7mm
Actuator Operating Pressure	0.4 ~ 0.7MPa		
Maximum Working Temp.	-10°C ~ 80°C		
Atmospheric Temp.	-10°C ~ 60°C		
Across the Seat He Leak Test Rates	≤ 1x10 ⁻⁹ atm cc/sec		
Inbord He Leak Test Rates	≤ 1x10 ⁻⁹ atm cc/sec		
Particle Inspection (EP only) Pressure: 60~80psi N2 Gas (Particles ≥ 0.1 μm)	No Count		
Cycle Durability Test	Manual Type	100,000 Cycle	
	Pneumatic Type	3,000,000 Cycle	

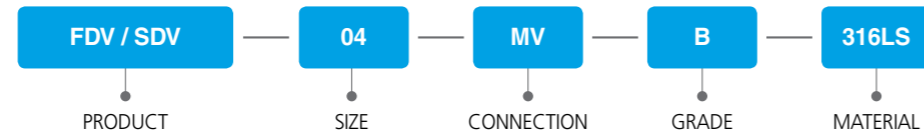
STRAIGHT TYPE MANUAL DIAPHRAGM VALVES



PRODUCT : FDV - Manual Diaphragm Valve (Forged Body)
SDV - Manual Diaphragm Valve (Square Body)

SIZE	CONNECTION	GRADE	MATERIAL
04 1/4"	MV Male	B BA	316LS SUS316L Single melt
06 3/8"	FV Female	E EP	316LD SUS316L Double melt
08 1/2"	LOK Lok		304 SUS304
12 3/4"	BW Butt Weld		

Ordering Number



Product Dimension (mm)

Model	Connection	Size	A	B	C	D	E	F	G	H
	Male	1/4"	57	28	65	11	45	17	-	-
		3/8"	77	38	79	16	45	28	-	-
		1/2"	77	38	79	16	45	28	-	-
		3/4"	122	38	85	22	45	28	-	-
	Female	1/4"	78	28	65	11	45	17	-	-
		3/8"	104.6	38	79	16	45	28	-	-
		1/2"	104.6	38	79	16	45	28	-	-
		3/4"	122	38	85	22	45	28	-	-
	Lok	1/4"	55	28	65	11	45	17	-	-
		3/8"	70	38	79	16	45	28	-	-
		1/2"	70	38	79	16	45	28	-	-
		3/4"	84	38	85	22	45	28	-	-
	Butt Weld	1/4"	54	28	65	11	45	17	-	-
		3/8"	69	38	79	16	45	28	-	-
		1/2"	69	38	79	16	45	28	-	-
		3/4"	150	38	85	22	45	28	-	-

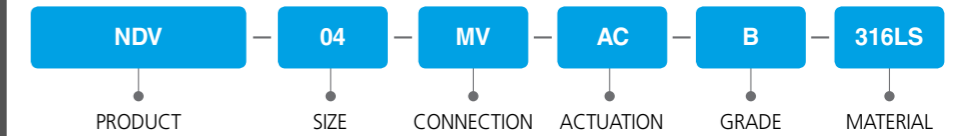
STRAIGHT TYPE PNEUMATIC DIAPHRAGM VALVES



PRODUCT : NDV - Pneumatic Diaphragm Valve

SIZE	CONNECTION	ACTUATION	GRADE	MATERIAL
04 1/4"	MV Male	AC Normal Close	B BA	316LS SUS316L Single melt
06 3/8"	FV Female	AO Normal Open	E EP	316LD SUS316L Double melt
08 1/2"	LOK Lok			304 SUS304
12 3/4"	BW Butt Weld			

Ordering Number



Product Dimension (mm)

Model	Connection	Size	A	B	C	D	E	F	G	H
	Male	1/4"	57	28	60	11	39.6	25.4	28	-
		3/8"	77	38	76	16	52	28	38	-
		1/2"	77	38	76	16	52	28	38	-
		3/4"	122	38	90	22	52	28	38	-
	Female	1/4"	70.6	28	60	11	39.6	25.4	28	-
		3/8"	83	38	76	16	52	28	38	-
		1/2"	83	38	76	16	52	28	38	-
		3/4"	122	38	90	22	52	28	38	-
	Lok	1/4"	55	28	60	11	39.6	25.4	28	-
		3/8"	70	38	76	16	52	28	38	-
		1/2"	70	38	76	16	52	28	38	-
		3/4"	84	38	90	22	52	28	38	-
	Butt Weld	1/4"	54	28	60	11	39.6	25.4	28	-
		3/8"	69	38	76	16	52	28	38	-
		1/2"	69	38	76	16	52	28	38	-
		3/4"	150	38	90	22	52	28	38	-

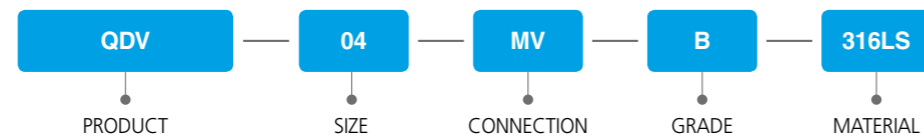
STRAIGHT TYPE QUARTER-TURN DIAPHRAGM VALVES



PRODUCT : QDV - Quarter-Turn Diaphragm Valve

SIZE	CONNECTION	GRADE	MATERIAL
04 1/4"	MV Male	B BA	316LS SUS316L Single melt
06 3/8"	FV Female	E EP	316LD SUS316L Double melt
08 1/2"	LOK Lok		304 SUS304
12 3/4"	BW Butt Weld		

Ordering Number



Product Dimension (mm)

Model	Connection	Size	A	B	C	D	E	F	G	H
	Male	1/4"	57	28	80	11	37	25.4	28	-
		3/8"	77	38	100	16	52	28	38	-
		1/2"	77	38	100	16	52	28	38	-
		3/4"	122	38	110	22	52	28	38	-
	Female	1/4"	70.6	28	80	11	37	25.4	28	-
		3/8"	83	38	100	16	52	28	38	-
		1/2"	83	38	100	16	52	28	38	-
		3/4"	122	38	110	22	52	28	38	-
	Lok	1/4"	55	28	80	11	37	25.4	28	-
		3/8"	70	38	100	16	52	28	38	-
		1/2"	70	38	100	16	52	28	38	-
		3/4"	84	38	110	22	52	28	38	-
	Butt Weld	1/4"	54	28	80	11	37	25.4	28	-
		3/8"	69	38	100	16	52	28	38	-
		1/2"	69	38	100	16	52	28	38	-
		3/4"	150	38	110	22	52	28	38	-

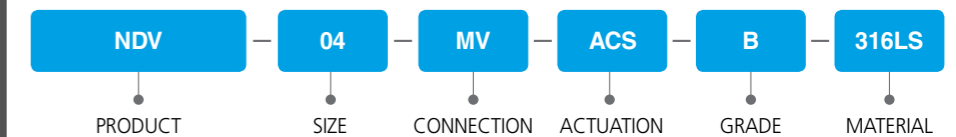
STRAIGHT TYPE SWITCH DIAPHRAGM VALVES



PRODUCT : NDV - Pneumatic Diaphragm Valve

SIZE	CONNECTION	ACTUATION	GRADE	MATERIAL
04 1/4"	MV Male	ACS Normal Close Switch Type	B BA	316LS SUS316L Single melt
	FV Female		E EP	316LD SUS316L Double melt
	LOK Lok			304 SUS304
	BW Butt Weld			

Ordering Number



Product Dimension (mm)

Model	Connection	Size	A	B	C	D	E	F	G	H
	Male	1/4"	57	28	60	11	42	25.4	28	-
		3/8"	77	38	76	16	52	28	38	-
		1/2"	77	38	76	16	52	28	38	-
		3/4"	122	38	90	22	52	28	38	-
	Female	1/4"	70.6	28	60	11	42	25.4	28	-
		3/8"	83	38	76	16	52	28	38	-
		1/2"	83	38	76	16	52	28	38	-
		3/4"	122	38	90	22	52	28	38	-
	Lok	1/4"	55	28	60	11	42	25.4	28	-
		3/8"	70	38	76	16	52	28	38	-
		1/2"	70	38	76	16	52	28	38	-
		3/4"	84	38	90	22	52	28	38	-
	Butt Weld	1/4"	54	28	60	11	42	25.4	28	-
		3/8"	69	38	76	16	52	28	38	-
		1/2"	69	38	76	16	52	28	38	-
		3/4"	150	38	90	22	52	28	38	-

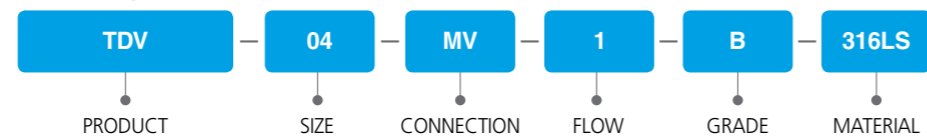
BRANCH TYPE MANUAL DIAPHRAGM VALVES



PRODUCT : TDV - Manual Diaphragm Valve (Branch Type)

SIZE	CONNECTION	FLOW	GRADE	MATERIAL
04 1/4"	MV Male	1	B BA	316LS SUS316L Single melt
06 3/8"	FV Female	2	E EP	316LD SUS316L Double melt
08 1/2"	LOK Lok	3		304 SUS304
12 3/4"	BW Butt Weld			

Ordering Number



Product Dimension (mm)

Model	Connection	Size	A	B	C	D	E	F	G	H
	Male	1/4"	57	28	63	11	45	25.4	28	28.5
		3/8"	77	38	76	16	45	28	38	38.5
		1/2"	77	38	76	16	45	28	38	38.5
		3/4"	122	38	82	22	45	28	38	61
	Female	1/4"	70.6	28	63	11	45	25.4	28	35.3
		3/8"	83	38	76	16	45	28	38	41.5
		1/2"	83	38	76	16	45	28	38	41.5
		3/4"	122	38	82	22	45	28	38	61
	Lok	1/4"	55	28	63	11	45	25.4	28	27.5
		3/8"	70	38	76	16	45	28	38	35
		1/2"	70	38	76	16	45	28	38	35
		3/4"	84	38	82	22	45	28	38	42
	Butt Weld	1/4"	54	28	63	11	45	25.4	28	27
		3/8"	69	38	76	16	45	28	38	34.5
		1/2"	69	38	76	16	45	28	38	34.5
		3/4"	150	38	82	22	45	28	38	75

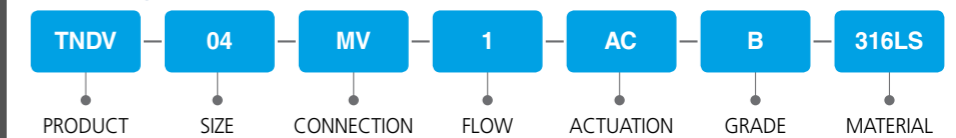
BRANCH TYPE PNEUMATIC DIAPHRAGM VALVES



PRODUCT : TNDV - Pneumatic Diaphragm Valve (Branch Type)

SIZE	CONNECTION	FLOW	ACTUATION	GRADE	MATERIAL
04 1/4"	MV Male	1	AC Normal Close	B BA	316LS SUS316L Single melt
06 3/8"	FV Female	2	AO Normal Open	E EP	316LD SUS316L Double melt
08 1/2"	LOK Lok	3			304 SUS304
12 3/4"	BW Butt Weld				

Ordering Number



Product Dimension (mm)

Model	Connection	Size	A	B	C	D	E	F	G	H
	Male	1/4"	57	28	60	11	39.6	25.4	28	28.5
		3/8"	77	38	76	16	52	28	38	38.5
		1/2"	77	38	76	16	52	28	38	38.5
		3/4"	122	38	90	22	52	28	38	61
	Female	1/4"	70.6	28	60	11	39.6	25.4	28	35.3
		3/8"	83	38	76	16	52	28	38	41.5
		1/2"	83	38	76	16	52	28	38	41.5
		3/4"	122	38	90	22	52	28	38	61
	Lok	1/4"	55	28	60	11	39.6	25.4	28	27.5
		3/8"	70	38	76	16	52	28	38	35
		1/2"	70	38	76	16	52	28	38	35
		3/4"	84	38	90	22	52	28	38	42
	Butt Weld	1/4"	54	28	60	11	39.6	25.4	28	27
		3/8"	69	38	76	16	52	28	38	34.5
		1/2"	69	38	76	16	52	28	38	34.5
		3/4"	150	38	90	22	52	28	38	75

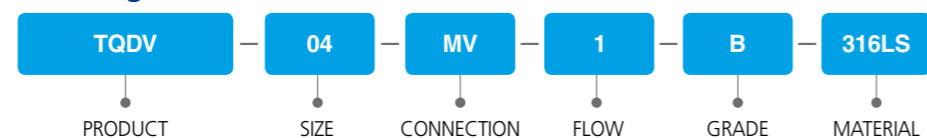
BRANCH TYPE QUARTER-TURN DIAPHRAGM VALVES



PRODUCT : TQDV - Quarter-Turn Diaphragm Valve (Branch Type)

SIZE	CONNECTION	FLOW	GRADE	MATERIAL
04 1/4"	MV Male	1	B BA	316LS SUS316L Single melt
06 3/8"	FV Female	2	E EP	316LD SUS316L Double melt
08 1/2"	LOK Lok	3		304 SUS304
12 3/4"	BW Butt Weld			

Ordering Number



Product Dimension (mm)

Model	Connection	Size	A	B	C	D	E	F	G	H
	Male	1/4"	57	28	80	11	37	25.4	28	28.5
		3/8"	77	38	100	16	52	28	38	38.5
		1/2"	77	38	100	16	52	28	38	38.5
		3/4"	122	38	110	22	52	28	38	61
	Female	1/4"	70.6	28	80	11	37	25.4	28	35.3
		3/8"	83	38	100	16	52	28	38	41.5
		1/2"	83	38	100	16	52	28	38	41.5
		3/4"	122	38	110	22	52	28	38	61
	Lok	1/4"	55	28	80	11	37	25.4	28	27.5
		3/8"	70	38	100	16	52	28	38	35
		1/2"	70	38	100	16	52	28	38	35
		3/4"	84	38	110	22	52	28	38	42
	Butt Weld	1/4"	54	28	80	11	37	25.4	28	27
		3/8"	69	38	100	16	52	28	38	34.5
		1/2"	69	38	100	16	52	28	38	34.5
		3/4"	150	38	110	22	52	28	38	75

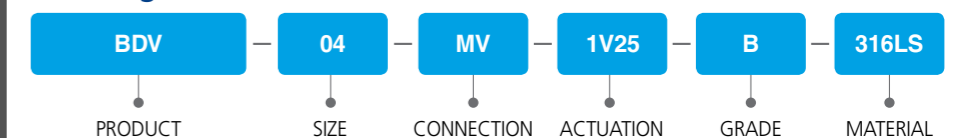
BLOCK TYPE MANUAL DIAPHRAGM VALVES



PRODUCT : BDV - Manual Diaphragm Valve (Block Type)

SIZE	CONNECTION	FLOW	GRADE	MATERIAL
04 1/4"	MV Male	1V25	B BA	316LS SUS316L Single melt
	FV Female	5V12	E EP	316LD SUS316L Double melt
		1H23		304 SUS304
		3H12		

Ordering Number



Product Dimension (mm)

Model	Connection	Size	A	B	C	D	E	F	G	H	I				
	Male	1/4"	128.7	64	70	11	118	64.3	28	15	40				
			Female	1/4"	107.6	64	70	11	118	53.8	28	15	40		
					Male	1/4"	128.7	64	70	11	118	46.3	28	15	40
							Female	1/4"	107.6	64	70	11	118	35.8	28

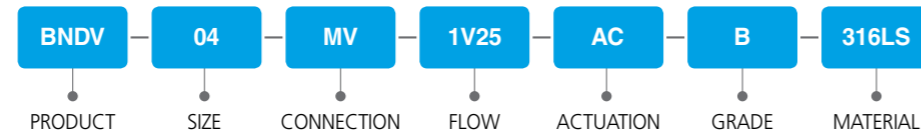
BLOCK TYPE PNEUMATIC DIAPHRAGM VALVES



PRODUCT : BNDV - Pneumatic Diaphragm Valve (Block Type)

SIZE	CONNECTION	FLOW	ACTUATION	GRADE	MATERIAL
04 1/4"	MV Male	1V25	AC Normal Close	B BA	316LS SUS316L Single melt
	FV Female	5V12	AO Normal Open	E EP	316LD SUS316L Double melt
		1H23			304 SUS304
		3H12			

Ordering Number



Product Dimension (mm)

Model	Connection	Size	A	B	C	D	E	F	G	H	I
	Male	1/4"	128.7	64	71	11	120	64.3	28	15	40
	Female	1/4"	107.6	64	71	11	120	53.8	28	15	40
	Male	1/4"	128.7	64	71	11	120	46.3	28	15	40
	Female	1/4"	107.6	64	71	11	120	35.8	28	15	40

CHECK VALVES



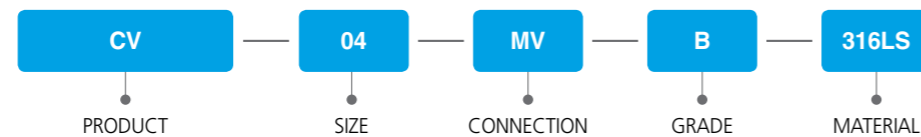
PRODUCT : CV - Check Valve

CONNECTION	GRADE	MATERIAL
04 1/4" MV Male	B BA	316LS SUS316L Single melt
06 3/8" FV Female	E EP	316LD SUS316L Double melt
08 1/2" LOK Lok		

Material

Valve Parts Name	Material
Inlet/Outlet Body	SUS316L (Single Melt / Double Melt)
Gasket	SUS316
Seat O-Ring	ISOLAST™ J9650
Poppet	SUS316L
Spring	SUS316 WPA

Ordering Number



Product Dimension (mm)

Model	Connection	Size	A	B	C
	Male	1/4"	19	53.65	25.4
		1/2"	27	69	32
	Female	1/4"	19	70	25.4
		1/2"	27	79	32
	Lok	1/4"	19	46	25.4
		3/8"	27	55.9	32
		1/2"	27	57.8	32

Surface Roughness

EP	Ra ≤ 5μinch	Ry ≤ 0.7μm
BA	Ra ≤ 10μinch	Ry ≤ 3.0μm

Specifications

Size	1/4"	1/2"
Cv Value	0.35	1.1
Maximum Operating Pressure	16.2 MPa	
Cracking Pressure	2.26 kPa	
Back Pressure Seal	29.4 kPa	
Maximum Working Temp.	-10°C ~ 80°C	
Atmospheric Temp.	-10°C ~ 60°C	
Inbord He Leak Test Rates	≤1X10 ⁹ atm cc/sec	

High Purity Gas

Regulator Series

Economical / High Reliability



AR100 Series



AR200 Series

Specifications

Operating Conditions

Maximum rated inlet pressure	3500 psig (240barg) 600 psig (40barg)
Outlet pressure ranges	0-30 psig (2barg) 0-60 psig (4barg), 0-100 psig (7barg) 0-150 psig (10.4barg) 0-250 psig (17barg)
Operating temperature	-15°F to 176°F (-20°C to 80°C)
Certified inboard leak rate	1 x 10 ⁻⁹ atm cc/sec He
Flow capacity (Cv)	1/4" = 0.06(3500psig) 0.2(600psig) 1/2" = 0.5
Design proof pressure	150% of Maximum rated pressure

Material of Construction

Body	316L Stainless Steel
Seat	PCTFE, optional Vespel®
Diaphragm	Hastelloy C-22®
Poppet	316L Stainless Steel
Poppet Spring	316L Stainless Steel
Hand wheel	ABS Plastic (3500 psig – White) (600 psig – Black)

Internal Surface Finish(Ra)

BA Grade	≤ 10 m inch
EP Grade	≤ 5 m inch

Weight (without gauges)

1/4" = 0.9kg / 1/2" = 1.6kg

Features

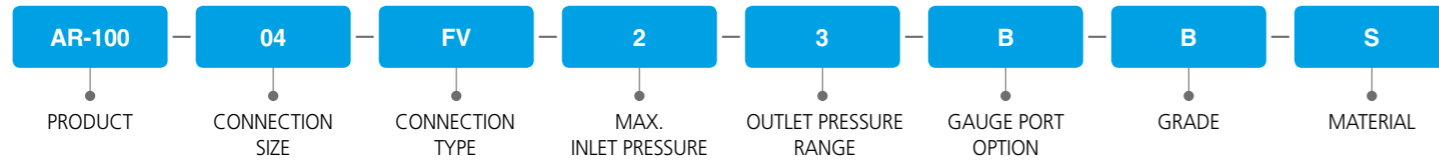
- Asflow's Regulator features excellent stability of set pressure with accuracy & sensibility to be applied for pressure reduction or sustenance in Special high purity gas line, Bulk gas, Equipment and Gas cabinets of semiconductor manufacturing.
- Inner surface that gas flows is treated to get 5Ra or 10Ra.
- Metal to metal diaphragm to body seal assures high leak integrity.
- Minimal particle generation and entrapment.
- 100% Helium leak Tested.
- All stage of assembled, in-spected, tested and packaged in a Class 10 Clean room.

Recommendation

Asflow's regulator is designed for maximum safety. In order to achieve precise control and durability, utilization within 70% of Max. working pressure is ideal.

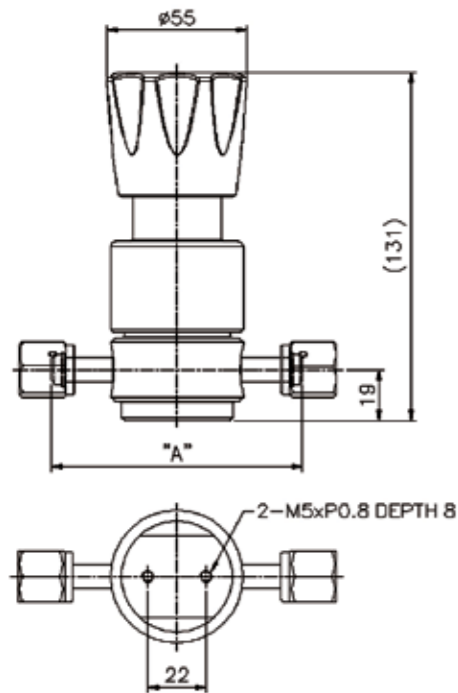
AR100 Series

Ordering Number



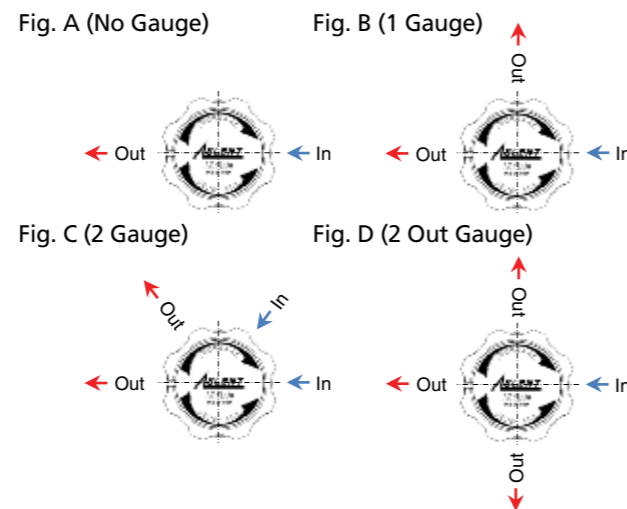
Product	AR100 Series	Gauge Port Option	A No Gauge Port (Fig. A)
Connection Size	04 – 1/4"		B 1/4" Internal Seal (Fig. B)
Connection Type	MV – Male type FV – Female type LOK – Lok type BW – Butt weld type NP – Female NPT Thread		C 1/4" Internal Seal (Fig. C)
Max. Inlet Pressure	1 – 3500 psig 2 – 600 psig		D 1/4" Internal Seal (Fig. D)
Outlet Pressure Range	0 – 1 ~ 30 psig 1 – 1 ~ 60 psig 2 – 1 ~ 100 psig 3 – 1 ~ 150 psig 4 – 1 ~ 250 psig	Grade	E 1/4" Male (Fig. B)
			F 1/4" Male (Fig. C)
			G 1/4" Male (Fig. D)
Material			H 1/4" Female (Fig. B)
			I 1/4" Female (Fig. C)
			J 1/4" Female (Fig. D)
			K 1/4" Female NPT (Fig. B)
			L 1/4" Female NPT (Fig. C)
			M 1/4" Female NPT (Fig. D)
			B BA (10 Ra μ m)
			E EP (5 Ra μ m)
			S STS 316L Single Melt
			D STS 316L Double Melt

Dimensional Drawing

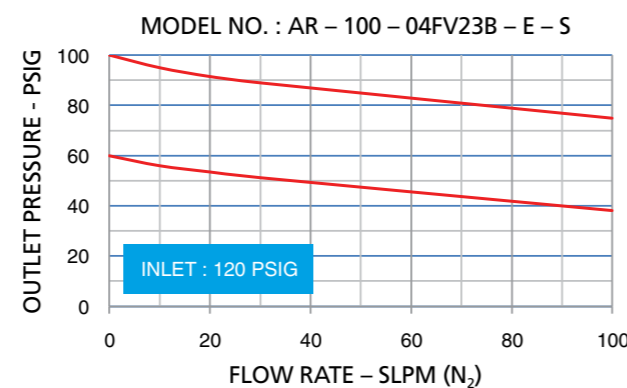


Dimension (mm)	
Size	1/4"
Connection	MV FV LOK BW NP
"A"(± 0.5)	94 94 95 76 50

Porting Configurations

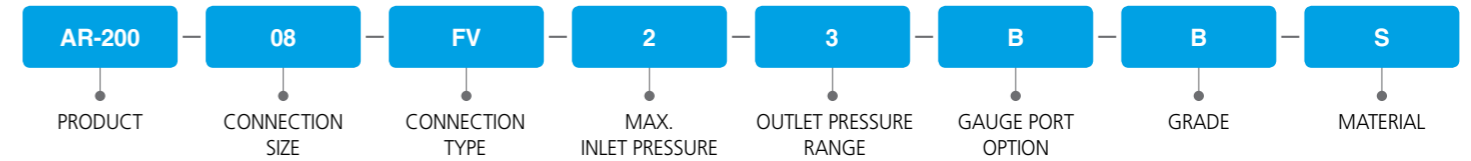


Flow Curves



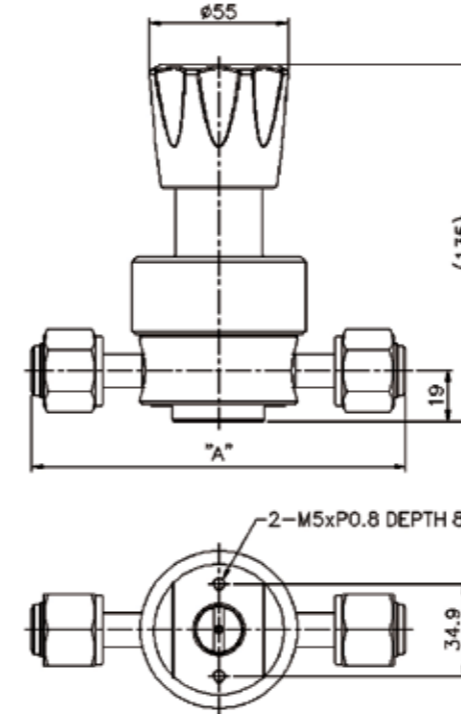
AR200 Series

Ordering Number



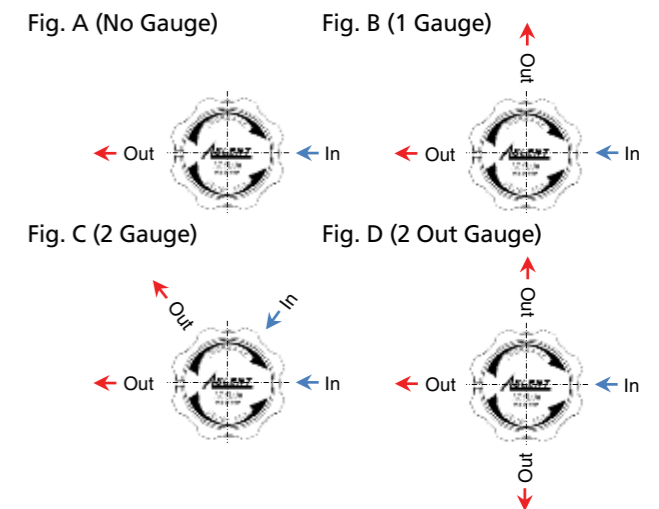
Product	AR200 Series	Gauge Port Option	A No Gauge Port (Fig. A)
Connection Size	06 – 3/8" 08 – 1/2"		B 1/4" Internal Seal (Fig. B)
Connection Type	MV – Male type FV – Female type LOK – Lok type BW – Butt weld type NP – Female NPT Thread		C 1/4" Internal Seal (Fig. C)
Max. Inlet Pressure	1 – 3500 psig 2 – 1000 psig 3 – 600 psig		D 1/4" Internal Seal (Fig. D)
Outlet Pressure Range	0 – 1 ~ 30 psig 1 – 1 ~ 60 psig 2 – 1 ~ 100 psig 3 – 1 ~ 150 psig	Grade	E 1/4" Male (Fig. B)
			F 1/4" Male (Fig. C)
			G 1/4" Male (Fig. D)
Material			H 1/4" Female (Fig. B)
			I 1/4" Female (Fig. C)
			J 1/4" Female (Fig. D)
			K 1/4" Female NPT (Fig. B)
			L 1/4" Female NPT (Fig. C)
			M 1/4" Female NPT (Fig. D)
			B BA (10 Ra μ m)
			E EP (5 Ra μ m)
			S STS 316L Single Melt
			D STS 316L Double Melt

Dimensional Drawing



Dimension (mm)	
Size	1/2"
Connection	MV FV LOK BW NP
"A"(± 0.5)	142 142 116.4 94 60

Porting Configurations



Flow Curves

