

VALVES AND REGULATORS FOR HIGH & ULTRA HIGH PURITY GASES



TECHNOLOGY OVERVIEW	P.004	
- Selecting the right products	P.004	
PRODUCT RANGE OVERVIEW	P.006	
VALVES	P.008	
- Diaphragm - Valves	P.008	
• M4SI	P.008	
• M8SI	P.010	
· M8.1	P.012	
• M12	P.014	
• M20	P.016	
REGULATORS	P.018	
- RX1000	P.018	
- RX2200	P.020	
- RX2400	P.022	
- RX2500	P.024	
PORTING CONFIGURATION	P.026	
- Valves	P.026	
- Regulators	P.027	
ACCESSORIES	P.027	



SELECTING THE RIGHT PRODUCT

To choose the right valve or regulator for your application, and to get the best results, you should identify the following technical parameters:

TECHNICAL PARAMETER	EXAMPLES
Gas	Inert, flammable, oxidizing, corrosive, noble
Operating pressure	Bar or psig
Operating temperature	Range to be given in °C, °F or K
Flow	Volumic or mass flow
Actuation	Manual, pneumatic (normally open), pneumatic (normally closed)
End connection type	BWO, Face seal etc.
End connection size	In or mm
Surface finish	Ra 0.40 μm, Ra 0.25 μm or Ra 0.13 μm
Application	Photovoltaic, microelectronic, research, etc.
Atex requirement	Yes / No
Options	Limit switches, constant bleed, purge ports etc.

Each product page is designed to provide you the essential technical information at a glance :

		Max. Inlet pressure Scand HE-52	las± 200 bar (2900 psig) 3 bar (725 psig)	Burst pressure* 300% of oper	rating pressure Ge	rtified max. Holium <	1 x 10°mbaci/s
KEY FEATURES - 100% Functional & Helium Leak Test performed		Outlet pressure 2/4/2 (29/5	: 10 bar / 145 psig) /10 bar 8/102/145 psig)	Preof pressare* 150% of oper	rating pressure Ge	rtified max. Helium < across the seat leak	1 x 10° mbaci/s
 High-Flow (HE) version (Crol. 2) available Hastelloy" diaphragm Assembling, testing & packaging in clearnoors: Class ISO 4 Individual verbi number for full traceability 		Temperature range -20°C 1-4°T Riew capacity (Xr) -52 and High 1	10 +65°C to +149°E) lang: 0.09 Row: 0.2	Supply pressure Standard: 1.7 effect I* HF: 1.35 bar/	fbar / 100 bar Cen 100 bar	e (at max, pressure) rtified max, Helium inboard leak rate (at max, pressure)	1 x 10° mbaci/s
Electropolished surface roughness per SEMI F19 UHP Grade		CONSTRUCTION MATERIA	AL		SURFACE FINIS	н	* According to
Low internal volume 316L VAR* stainless steel double melt per SENI F20 option available Excellent performance at low source pressure			Parts	Material 55316L, WR	5 Ba 0.4 µm (15 µin	Y suite(10	y pin) Ra 0.13 pm EP (5
 Fluid specific seat material as standard options Additional multi-port options 		Wetted parts	Diaphragm Poppet Sorino	Hastellay* SS 316L SS 316L	RATED FLOW CA	IPACITY (Q _a *) / OUT	LET PRESSURE (P
\sim		Non-wetted parts	Spring Holder Bannet Handwbeel	SS 3168. Brass Aluminium	P2 (bar) 2 4 7	6,*(SLPM) 40 90 100	44*(51940) HI 80 200
DIMENSIONS		FLOW CURVES	IW CORVES RETOOD OF STANDA	Notine P1 = 50 her Bive line P1 = 25 her u	R	DW CLIFFES RIJBOO HE	Red late P1 = 50 h Base later P1 = 251
. 945.šnn (1.75) .		a		et autobalia article			
	92 June (0 841)		4 N Ruberslame, same			FLOW (SLOPE) / SCIM)	4
		Outlet Res Press	pulated Body Material	Surface Rinish Perti Configur	ng Inlet/Out radian Connectio	iet Optians	Version
		2 bar (29 ps) 4 bar (38 ps)	g) #2 553362 g) #4 1021*	Ra 0.4 µm 5 2 ports (15 µm) ¥ 2 ports V Ra 0.25 µm EP ¥ 3 ports	291 Metal face seal 14" - Female 394 Metal face seal 14" - Maie	47 Vespel Seat	V Standard (Cr 0.09) P High Flow (Cr 0.2)
OMERS (177) white a second	MG-BH Mounting holes	7 bar (102 pr 10 bar (145 min)	sig) #7 "On demand 10	Ra 0.13 µm EP # 4 ports (5 µm)* "On demand	496 Metal face seal N°-Internal* *Gauge porticion	Hasteday Poppet Ny Gauge(s)*	 Absolute Sub-atm* *Absolute sub- stressaberia sub- stressaberia sub-





DIAPHRAGM VALVES



	M4SI	P. 8
Technology	Diaphragm	
Max. Working Pressure	240 bar (3481 psig)	
Temperature Range	-40°C to +150°C (-40°F to 302°F)	
Flow Capacity (Cv)	0.2	
Material	Stainless steel 316L / VAR	



M8SI	P. 10
Diaphragm	
240 bar (3481 psig)	
-40°C to +150°C (-40°F to 302°F)	
0.5	
Stainless steel 316L / VAR	



M8.1	P. 12
Diaphragm	
240 bar (3481 psig)	
-40°C to +150°C (-40°F to 302°F)	
0.35	
Stainless steel 316L	





	M12	P. 14
Technology	Diaphragm	
Max. Working Pressure	15 bar (218 psig)	
Temperature Range	-40°C to +150°C (-40°F to 302°F)	
Flow Capacity (Cv)	1.75	
Material	Stainless steel 316L / VAR	

M20	P. 16
Diaphragm	
15 bar (218 psig)	
-40°C to +150°C (-40°F to 302°F)	
3.5	
Stainless steel 316L / VAR	



REGULATORS



	RX1000	P. 18
Technology	Diaphragm	
Inlet Pressure	Standard: 200 bar (2901 psig) HF: 50 bar (725 psig)	
Outlet Pressure	2/4/7/10 bar (29/58/102/145 psig)	
Temperature Range	-20°C to +65°C (-4°F to +149°F)	
Flow Capacity (Cv)	Standard: 0.09 HF: 0.2	
Material	Stainless steel 316L / VAR	
SLPM	Up to 500	



	RX2400	P. 22
Technology	Diaphragm	
Inlet Pressure	240 bar (3481 psig)	
Outlet Pressure	2/4/7/10 bar (29/58/102/145 psig)	
Temperature Range	-20°C to +65°C (-4°F to +149°F)	
Flow Capacity (Cv)	Standard: 0.09 HF: 0.2	
Material	Stainless steel 316L / VAR	
SLPM	Up to 300	



RX2200	P. 20
Diaphragm	
240 bar (3481 psig)	
3/8/10/15/25/50 bar (44/116/145/218/363/725 psig)	
-20°C to +65°C (-4°F to +149°F)	
0.2	
Stainless steel 316L / VAR	
Up to 3,000	



RX2500	P.24
Diaphragm	
Standard: 240 bar (3481 psig) HF: 50 bar (725 psig)	
5/8/10 bar (73/116/145 psig)	
-20°C to +65°C (-4°F to +149°F)	
Standard: 0.45 HF: 1.2	
Stainless steel 316L / VAR	
Up to 1,900	



M4SI | DIAPHRAGM VALVE

KEY FEATURES & BENEFITS

- 100% Helium Leak Test performed
- Assembling, testing & Packaging in cleanroom: Class ISO 4
- Reverse seat design for high life cycle
- Individual serial number for full traceability
- Electropolished surface roughness per SEMI F19 UHP Grade
- Fluid specific seat material as standard options
- Low internal volume
- Constant bleed option available
- 316L VAR[®] stainless steel double melt per SEMI F20 option available
- Additional Multi-port options
- 270° multiturn handwheel with open/close indicator





HANDWHEEL COLORS: Standard: Blue On demand: Red, black, yellow, green





Male (face seal)

Swivel

Female (face seal) Swivel

)

BW0 for micro-welding head

E

35,3(1.39")



Compression tube fittings

DIMENSIONS

M4SI - MULTI-TURN VALVE (HM, LM, MSF) WITH OPEN/CLOSE WINDOW



M4SI - PNEUMATIC VALVE MEDIUM PRESSURE (LPNC, LPNO)





M4SI - QUARTER-TURN VALVE (LQ, HQ)

Ø31,5(1.24")

70,6(2.78")



M4SI - PNEUMATIC VALVE LOW PRESSURE (BPNC, BPNO)

M4SI - PNEUMATIC VALVE HIGH PRESSURE (HPNC, HPNO)



M4SI - BOTTOM VIEW



Max. working pressure	See table below	Flow capacity (Cv)	0.2	Certified max. Helium outboard leak rate	\leq 1 x 10 ⁻⁹ mbar.l/s
		Nominal seat	4 mm (0.16")		
Pneumatic actuator opening pressure	5 to 7 bar (73 to 102 psig)*	diameter		Certified max. Helium across the seat leak	\leq 1 x 10 ⁻⁹ mbar.l/s
.,		Wetted volume	$< 1.2 \text{ cm}^{3}$	rate (at max. pressure)	
Temperature range	See table below			Certified max. Helium	< 1 x 10 ⁻⁹ mhar l/s
		Burst pressure	> 700 bar (10152 psig)	inboard leak rate (at max. pressure)	

 *4 - 7 bar available for BPNC and BPNO pneumatic actuator

CONSTRUCTION MATERIAL

	Parts	Material	
	Body	SS 316L,VAR	
Wetted parts	Seat	PCTFE, PVDF, VESPEL®	
	Diaphragm	Phynox [®]	
	Backup diaphragm	Phynox [®]	
Norman	Handwheel	Aluminium	
Non-wetted parts	Actuator Body	SS 316L or Aluminium	
	Others	Stainless Steel and Alloys	

SURFACE FINISH

S	V
Ra 0.4 µm (15 µin)	Ra 0.25 μm EP (10 μin)

TEMPERATURE RANGE

Seat (Actuation type)	Temperature Range
PCTFE / PVDF (manual & pneumatic*)	-40°C to +65°C (-40°F to +149°F)
Vespel® (manual & pneumatic*)	-40°C to +150°C (-40°F to +302°F)

*-20C° pneumatic versions

VALVE VERSION / MAX. WORKING PRESSURE

Valve	Max. working pressure
M4SI (LM) Multiturn handwheel ¹²	20 bar
M4SI (HM) Multiturn handwheel ¹²	240 bar
M4SI (LQ) Quarter turn handwheel ¹	20 bar
M4SI (HQ) Quarter turn handwheel ¹	240 bar
M4SI (BP*) Pneumatically actuated	10 bar
M4SI (LP*) Pneumatically actuated	20 bar
M4SI (HP*) Pneumatically actuated	240 bar

MANUAL ACTUATION

Parts for all valve grades				
Upper spindle	Brass			
Handle	Aluminium			
All others	Stainless Steel			

PNEUMATIC ACTUATION

Parts				
Actuator Body	Aluminium / Stainless Steel			
Piston	Brass / Aluminium / Stainless Steel			
0-ring	NBR			
All others	Stainless Steel			

All specifications subject to change without notice

Special configuration on demand

**

¹FT (Panel Mounting) option available ²MSF LOTO option available

PRODUCT CONFIGURATOR

	Surface Finish		Actuation		Porting Configuration	Body Mater	ial	Seat Material		End Connection		Options	
M4SI	S		LM		2V1			К		A/B: B¼		FT	
	Ra 0.4 μm (15 μin)	S	Multi-Turn Handwheel (20bar)	LM	See page 26	SS 316L	-	PCTFE (Kel-F®)	K	Metal face seal ¼" - Female	V ¼ F	Panel Mounting ¹	FT
	Ra 0.25 μm EP (10 μin)	V	Multi-Turn Handwheel (240bar)	НМ		VAR*	A	PI (Vespel®)	V	Metal face seal ¼" - Male	V ¼ M	Electric limit switch*	CI
			Pneumatically actuated (10bar)	BP*		Monel*	М	PVDF	Р	BW0 1⁄4″	B 1⁄4	LOTO ²	MSF
			Pneumatically actuated (20bar)	LP*		Hastelloy®*	H			BW0 6 mm	B6	Constant bleed	FPT
			Pneumatically actuated (240bar)	HP*		*On demand		-		Compression tube fittings	RDB ¼	*On HP and LP actuators only	
			Quarter-Turn Handwheel (20bar)	LQ						Compression tube fittings	RDB 6		
			Quarter-Turn Handwheel (240 bar)	HQ									
			*Add NO for normally open										

or NC for normally closed



M8SI DIAPHRAGM VALVE

KEY FEATURES & BENEFITS

- 100% Helium Leak Test performed
- Assembling, testing & Packaging in cleanroom: Class ISO 4
- Reverse seat design for high life cycle
- Individual serial number for full traceability
- Electropolished surface roughness per SEMÍ F19 UHP Grade
- Fluid specific seat material as standard options
- Low internal volume
- 316L VAR® stainless steel double melt per SEMI F20 option available
- Additional Multi-port options
- 270° multiturn handwheel with open/close indicator





HANDWHEEL COLORS: Standard: Blue On demand: Red, black, yellow, green





Male (face seal) non-Swivel

BW0 for micro-welding head

35,3(1.39")



DIMENSIONS

M8SI - MULTI-TURN VALVE (HM, LM, MSF)



M8SI - QUARTER TURN VALVE (LQ, HQ)





M8SI - PNEUMATIC VALVE HIGH PRESSURE (HPNC, HPNO)



M8SI - BOTTOM VIEW



Dimensions are for reference only and are subject to change without notice

M8SI - PNEUMATIC VALVE (BPNC, BPNO)



Max. working pressure	See table below	Flow capacity (Cv)	0.5	Certified max. Helium outboard leak rate	\leq 1 x 10 ⁻⁹ mbar.l/s
Pneumatic actuator opening pressure	5 to 7 bar (73 to 102 psig)	Nominal seat diameter	8 mm (0.31")	Certified max. Helium across the seat leak	\leq 1 x 10 ⁻⁹ mbar.l/s
Temperature range	See table below	Wetted volume	< 1.6 cm ³	rate (at max. pressure) Certified max. Helium	< 1 v 10 ⁻⁹ mhar l/s
remperature range		Burst pressure	> 700 bar (10152 psig)	inboard leak rate (at max. pressure)	

CONSTRUCTION MATERIAL

	Parts	Material		
	Body	SS 316L, VAR		
Wetted parts	Seat	PCTFE, PVDF, VESPEL®		
	Diaphragm	Phynox®		
	Backup diaphragm	Phynox®		
Non-marked marke	Handwheel	Aluminium		
Non-wetted parts	Actuator Body	SS 316L or Aluminium		
	Others	Stainless Steel and Alloys		

VALVE VERSION / MAX. WORKING PRESSURE

Valve	Max. working pressure
M8SI (LM) Multiturn handwheel ¹²	20 bar
M8SI (HM) Multiturn handwheel ¹²	240 bar
M8SI (LQ) Quarter turn handwheel ¹	20 bar
M8SI (HQ) Quarter turn handwheel ¹	240 bar
M8SI (BP*) Pneumatically actuated	10 bar
M8SI (HP*) Pneumatically actuated	240 bar
¹ FT (Panel Mounting) option available	

²MSF LOTO option available

SURFACE FINISH

Ra 0.4 µm (15 µin)	Ra 0.25 μm EP (10 μin)

TEMPERATURE RANGE

S

Seat (Actuation type)	Temperature Range
PCTFE / PVDF (manual & pneumatic*)	-40°C to +65°C (-40°F to +149°F)
Vespel [®] (manual & pneumatic*)	-40°C to +150°C (-40°F to +302°F)
	*-20C° pneumatic versions

MANUAL ACTUATION

Parts for all valve grades Upper spindle Brass Handle Aluminium All others Stainless Steel

PNEUMATIC ACTUATION

Parts							
Actuator Body	Aluminium / Stainless Steel						
Piston	Brass / Aluminium / Stainless Steel						
0-ring	NBR						
All others	Stainless Steel						

v

All specifications subject to change without notice

PRODUCT CONFIGURATOR

	Surface Finish		Actuation		Porting Configuration	Body Material		Seat Material		End Connection		Options				
M8SI	S		BP*		2V1	2V1 I		K		A/B: B3/8		FT				
	Ra 0.4 μm (15 μin)	S	Multi-Turn Handwheel (20bar)	LM	See page 26	SS 316L	I	PCTFE (Kel-F®)	K	Metal face seal ¾″ - Female	V ℁F	Panel Mounting ¹	FT			
	Ra 0.25 μm EP (10 μin)	V	Multi-Turn Handwheel (240bar)	НМ		Hastelloy ^{®*}	H	PI (Vespel®)	۷	Metal face seal ¾" - Male non-Swiel	V 3% M	Electric limit switch*	CI			
		Pneumatically BP* actuated (10bar)			VAR*	A	PVDF	P	BW0 1/2"	B ½	LOTO ²	MSF				
			Quarter-Turn Handwheel (20bar)	LQ		*On demand				BWO ¾" mm	B ⅔	Constant bleed	FPT			
			Quarter-Turn Handwheel (240bar)	HQ	-				BWO 10 mm	B 10	*On HP and LP actuators only					
			Pneumatically actuated (240bar)	HP*	-					BWO 12 mm	B 12					
			*Add NO for normally open or NC for normally closed										Compression tube fittings	RDB38		
													Compression tube fittings	RDB½		
										Compression tube fittings	RDB 10					
	Special configura	ation	on demand							Compression tube fittings	RDB 12					



ALL RIGHTS OF CHANGE RESERVED

M8.1 | DIAPHRAGM VALVE

KEY FEATURES & BENEFITS

- 100% Helium Leak Test performed
- Metal seat option available
- Assembling, testing & Packaging in cleanroom: Class ISO 4
- Replaceable seat

35,3(1.39")

O

F

- Individual serial number for full traceability - Electropolished surface roughness per SEMI F19
- UHP Grade



- Fluid specific seat material as standard options
- 270° multiturn handwheel with open/close indicator

O

O



Female (face seal) Swivel Male (face seal) non-Swivel

(÷

35,3(1.39")

BWO for micro-welding head

35,3(1.39")

O

Ć

Compression tube fittings

ØD

DIMENSIONS

M8.1- PNEUMATIC VALVE LOW PRESSURE (LPNC, LPNO)

M8.1 - PNEUMATIC VALVE HIGH PRESSURE (HPNC, HPNO)

M8.1 QUARTER -TURN VALVE (QT)



M8.1 MULTI-TURN VALVE (MT) WITH OPEN/CLOSE WINDOW





M8.1 - BOTTOM VIEW





Max. working pressure	See table below	Flow capacity (Cv)	0.35	Certified max. Helium outboard leak rate	\leq 1 x 10 ⁻⁹ mbar.l/s
Pneumatic actuator opening pressure	5 to 7 bar (73 to 102 psig)	Nominal seat diameter	8 mm (0,32")	Certified max. Helium across the seat leak	\leq 1 x 10 ⁻⁹ mbar.l/s
		Wetted volume	< 1.2 cm ³	rate (at max. pressure)	
Temperature range	See table below	Burst pressure	> 700 bar (10152 psig)	Certified max. Helium inboard leak rate (at max. pressure)	\leq 1 x 10 ⁻⁹ mbar.l/s

CONSTRUCTION MATERIAL

	Parts	Material			
	Body	SS 316L			
Wetted parts	Seat	PCTFE, PVDF, VESPEL®			
	Diaphragm	Hastelloy®			
	Backup diaphragm	Phynox®			
N	Handwheel	Aluminium			
Non-wetted parts	Actuator Body	SS 316L or Aluminium			
	Others	Stainless Steel and Alloys			

SURFACE FINISH

S	V	U
Ra 0.4 µm (15 µin)	Ra 0.25 µm EP (10 µin)	Ra 0.13 µm EP (5 µin)

TEMPERATURE RANGE

Seat (Actuation type)	Temperature Range
PCTFE / PVDF (manual & pneumatic*)	-40°C to +65°C (-40°F to +149°F)
Vespel [®] (manual & pneumatic*)	-40°C to +150°C (-40°F to +302°F)

*-20C° pneumatic versions

VALVE VERSION / MAX. WORKING PRESSURE

Valve	Max. working pressure
M8.1 (MT) Multiturn handwheel ¹	240 bar
M8.1 (QT) Quarter turn handwheel ¹	240 bar
M8.1 (LP*) Pneumatically actuated	17 bar
M8.1 (HP*) Pneumatically actuated	240 bar
M8.1 (HP*) Pneumatically actuated (seat material : metal)	50 bar

¹FT (Panel Mounting) option available

PRODUCT CONFIGURATOR

Parts for all valve grades Upper spindle Brass

MANUAL ACTUATION

Handle	Aluminum
All others	Stainless Steel or Alloys

PNEUMATIC ACTUATION

Parts								
Actuator Body	Stainless Steel / Aluminium							
Piston	Brass / Aluminium / Stainless Steel							
0-ring	NBR							
All others	Stainless Steel or Alloys							

All specifications subject to change without notice

	Surface Finish		Actuation		Porting Configuration	Body Material		Seat Material		End Connection		Options			
M8.1	S		МТ		MT		2V1	I		K		A/B: B3/8		FT	
	Ra 0.4μm (15 μin)	S	Quarter-Turn Handwheel (240 bar)	QT	See page 26	SS 316L	I	PCTFE (Kel-F®)	K	Metal face seal ¾ - Female	V ¾ F	Panel mounting ¹	FT		
	Ra 0.25μm EP (10 μin)	V	Multi-Turn Handwheel (240 bar)	MT		Hastelloy®*	H	PI (Vespel®)	V	Metal face seal 3/8 - Male	V 3/8 M	Electric limit switch*	CI		
	Ra 0.13 μm EP (5 μin)*	U	Pneumatically actuated (17 bar)	LP*		*On demand		PVDF	P	BWO ¾" - Standard	B ¾	*On HP and LP actuators only			
	On demand Pneumatically actuated (240 bar)					Metal	М	BWO 1⁄2″	B ½						
	*Add NO for normally or NC for normally cl		*Add NO for normally open or NC for normally closed					*On demand		BWO 12 mm	B 12				
										Compression tube fittings	RDB%				
										Compression tube fittings	RDB½				
										Compression tube fittings	RDB 10				
										Compression tube fittings	RDB 12				

Special configuration on demand



M12 DIAPHRAGM VALVE

KEY FEATURES & BENEFITS

- 100% Helium Leak Test performed
- Available in sizes 1/2" to 3/4" to support a wide range of connections
- Assembling, testing & Packaging in cleanroom: Class ISO 4
- Individual serial number for full traceability
- Electropolished surface roughness per SEMI F19 UHP Grade
- 316L VAR® stainless steel double melt per SEMI F20 option available
- Excellent purgeability due to optional purge ports
- Fluid specific seat material as standard options
- Replaceable seat





Female (face seal) Swivel

for micro-welding head



DIMENSIONS

M12 - PNEUMATIC VALVE (PP2NC, PP2NO)



M12-BOTTOM VIEW



M12 - MULTI-TURN VALVE (MT)





Max. working pressure	See table below	Flow capacity (Cv)	1.75	Certified max. Helium outboard leak rate	\leq 1 x 10 ⁻⁹ mbar.l/s
Pneumatic actuator	5 to 7 bar (73 to 102 psig)	Nominal seat diameter	12 mm (0,47")	Certified max. Helium	\leq 1 x 10 ⁻⁹ mbar.l/s
opening pressure		Wetted volume	< 7 cm ³	rate (at max. pressure)	
Temperature range	See tabel below			Certified max. Helium	\leq 1 x 10 ⁻⁹ mbar.l/s
		Burst pressure	> 700 bar (10152 psig)	inboard leak rate (at max. pressure)	

CONSTRUCTION MATERIAL

	Parts	Material		
	Body	SS 316L, VAR		
Wetted parts	Seat	PCTFE, PVDF, VESPEL®		
	Diaphragm	Phynox®		
	Backup diaphragm	Phynox®		
New weeks downed	Handwheel	Aluminium		
Non-wetted parts	Actuator Body	Aluminium		
	Others	Stainless Steel and Alloys		

VALVE VERSION / MAX. WORKING PRESSURE

Valve	Max. working pressure
M12 (MT) Multiturn handwheel	15 bar
M12 (PP2*) Pneumatically actuated	15 bar

SURFACE FINISH

S	V	U
Ra 0.4 µm (15 µin)	Ra 0.25 μm EP (10 μin)	Ra 0.13 µm EP (5 µin)

TEMPERATURE RANGE

Seat (Actuation type)	Temperature Range
PCTFE / PVDF (manual & pneumatic*)	-40°C to +65°C (-40°F to +149°F)
Vespel [®] (manual & pneumatic*)	-40°C to +150°C (-40°F to +302°F)
	*-20C° pneumatic versions

MANUAL ACTUATION

Parts for all ve grades Upper spindle Brass Handle Aluminum All others Stainless Steel or Alloys

PNEUMATIC ACTUATION

Parts						
Actuator Body	Aluminium					
Piston	Brass / Aluminium / Stainless Steel					
0-ring	NBR					
All others	Stainless Steel or Alloys					

All specifications subject to change without notice

PRODUCT CONFIGURATOR

	Surface Fin	ish	Actuation		Porting Configuration		Body Materi	al	Seat Materi	al	End Connection	1	Options	
M12	S		MT		2V1		I		K		A/B: B½		CI	
	Ra 0.4 µm (15 µin Ra)	S	Multi-Turn Handwheel (15 bar)	MT	2 ports in line	2V1	SS 316 L	I	PCTFE (Kel-F®)	K	Metal face seal ½" - Female	V ½ F	Electric Limit Switch*	CI
	Ra 0.25 μm EP (10 μin)	V	Pneumatically actuated (15 bar)	PP2*	2 Ports in line, upstream purge port - left side	2VPEG	Hastelloy [®] *	H	PI (Vespel®)	V	Metal face seal ½" - Male	V½M	*Only for pneumat actuators	tic
	Ra 0.13 μm EP (5 μin)*	U	*Add NO for normally open or NC for normally closed		2 Ports in line, downstream purge port - left side	2VPSG	*On demand		PVDF	P	Metal face seal ¾" - Female	V¾F		
	*On demand				2 Ports in line, 2 purge ports upstream/Downstream - left side	2V1P2					Metal face seal ¾" - Male	V¾M		
					2 ports in line, full passage, downstream branch	3VT					BW0 1⁄2″	B ½		
					2 ports in line, full passage, downstream branch, downstream purge port	3VTPS					BWO 1⁄4″	B ¼		
											Compression tube fittings	RDB12		
											Compression tube fittings	RDB¾		
											Compression tube fittings	RDB18		



Special configuration on demand

M20 | DIAPHRAGM VALVE

KEY FEATURES

- 100% Helium Leak Test performed
- Available in sizes 3/4" to 1" to support a wide range of connections
- Assembling, testing & Packaging in cleanroom: Class ISO 4
- Individual serial number for full traceability
- Electropolished surface roughness per SEMI F19 UHP Grade
- 316L VAR $^{\!\otimes}$ stainless steel double melt per SEMI F20 option available
- Excellent purgeability due to optional purge ports
- Fluid specific seat material as standard options
- Replaceable seat





DIMENSIONS

M20 - PNEUMATIC VALVE (PP2NC, PP2NO)



M20-BOTTOM VIEW



M20 - MULTI-TURN VALVE (MT)





Max. working pressure	See table below	Flow capacity (Cv)	3.5	Certified max. Helium outboard leak rate	\leq 1 x 10 ⁻⁹ mbar.l/s
		Nominal seat	20 mm (0 79")		
Pneumatic actuator opening pressure	5 to 7 bar (73 to 102 psig)	diameter	20 mm (0.79)	Certified max. Helium across the seat leak	\leq 1 x 10 ⁻⁹ mbar.l/s
		Wetted volume	> 700 bar (10152 psig)	rate (at max. pressure)	
Temperature range	See table below			Certified max. Helium	< 1 x 10 ⁻⁹ mhar l/s
		Burst pressure	\leq 1 x 10 ⁻⁹ mbar.l/s	inboard leak rate (at max. pressure)	

CONSTRUCTION MATERIAL

	Parts	Material		
	Body	SS 316L, VAR		
Wetted parts	Seat	PCTFE, PVDF, VESPEL®		
	Diaphragm	Phynox®		
	Backup diaphragm	Phynox®		
Non-marked marke	Handwheel	Aluminium		
Non-wetted parts	Actuator Body	Aluminium		
	Others	Stainless Steel and Alloys		

SURFACE FINISH

S	V	U
Ra 0.4 µm (15 µin)	Ra 0.25 µm EP (10 µin)	Ra 0.13 µm EP (5 µin)

TEMPERATURE RANGE

Seat (Actuation type)	Temperature Range
PCTFE / PVDF (manual & pneumatic)	-20°C to +65°C (-4°F to +149°F)
Vespel [®] (manual & pneumatic)	-20°C to +150°C (-4°F to +302°F)

VALVE VERSION / MAX. WORKING PRESSURE

Valve	Max. working pressure
M20 (MT) Multiturn handwheel	15 bar
M20 (PP2*) Pneumatically actuated	15 bar

MANUAL ACTUATION

Parts for all valve grades Upper spindle Brass

PNEUMATIC ACTUATION

Parts for all valve grades		Parts		
oer spindle	Brass	Actuator Body	Stainless Steel / Aluminium	
Handle	Aluminum	Piston	Brass / Aluminium / Stainless Steel	
All others	Alloys	0-ring	NBR	
	-	All others	Stainless Steel or Alloys	

All specifications subject to change without notice

PRODUCT CONFIGURATOR

	Surface Finish	h	Actuation		Porting Configuration	Porting Configuration Body Ma			Seat Materia	al	End Connectio	Options		
M20	S		MT		2V1		I		K		A/B: B3/4		FP	
	Ra 0.4 μm (15 μin Ra)	S	Multi-Turn Handwheel (15 bar)	MT	2 ports in line	2V1	SS 316L	I	PCTFE (Kel-F®)	K	Metal face seal ¾" - Female	V ¾ F	Back Mounting	FP
	Ra 0.25 μm EP (10 μin)	V	Pneumatically actuated (15 bar)	PP2*	2 Ports in line, upstream purge port - left side	2VPEG	Hastelloy®*	H	PI (Vespel®)	V	Metal face seal ¾" - Male	V¾ M	Electric Limit Switch*	CI
	Ra 0.13 μm EP (5 μin)*	U	*Add NO for normally open or NC for normally closed		2 Ports in line, downstream purge port - left side	2VPSG	*On demand		PVDF	Р	BWO ¾" (Butt Orbital Weld)	B 3⁄4	*Only for pneumat actuators	tic
	*On demand				2 Ports in line, 2 purge ports up-/downstream-left side	2V1P2					BWO 1" (Butt Orbital Weld)	B 1		
											Metal face seal 1"- Male	V1M		
											Metal face seal 1'' - Female	V1F		
											Compression tube fittings	RDB¾		
											Compression tube fittings	RDB1"		

Special configuration on demand

* ROTAREX

*Add NO for normally open or NC for normally closed

RX1000 | DIAPHRAGM PRESSURE REGULATOR

KEY FEATURES

- 100% Functional & Helium Leak Test performed
- High-Flow (HF) version (Cv:0.2) available
- Hastelloy® diaphragm
- Assembling, testing & packaging in cleanroom: Class ISO 4
- Individual serial number for full traceability
- Electropolished surface roughness
- per SEMI F19 UHP Grade
- Low internal volume
- 316L VAR® stainless steel double melt per SEMI F20 option available
- Excellent performance at low source pressure
- Fluid specific seat material as standard options
- Additional multi-port options



DIMENSIONS







4V6





Max. inlet pressure	Standard: 200 bar (2900 psig) HF: 50 bar (725 psig) (PVDF: 10 bar / 145 psig)	Burst pressure*	300% of operating pressure	Certified max. Helium outboard leak rate	\leq 1 x 10 ⁻⁹ mbar.l/s	
Outlet pressure Temperature range	2/4/7/10 bar (29/58/102/145 psig) -20°C to +65°C	Proof pressure*	150% of operating pressure	Certified max. Helium across the seat leak rate (at max. pressure)	\leq 1 x 10 ⁻⁷ mbar.l/s	
Flow capacity (Cv)	(-4°F to +149°F) Standard: 0.09 High Flow: 0.2	Supply pressure effect I*	Standard: 0.7 bar / 100 bar HF: 1.35 bar / 100 bar	Certified max. Helium inboard leak rate (at max. pressure)	\leq 1 x 10 ⁻⁹ mbar.l/s	

* According to CGA-E4

CONSTRUCTION MATERIAL

SURFACE FINISH

S	V	U
Ra 0.4 µm (15 µin)	Ra 0.25 μm EP (10 μin)	Ra 0.13 μm EP (5 μin)

RATED FLOW CAPACITY (Q_R^*) / OUTLET PRESSURE (P2)

P2 (bar)	Q _R *(SLPM)	Q _R *(SLPM) HF
2	40	80
4	90	200
7	160	350
10	220	500

* According to CGA-E4

All specifications subject to change without notice

Parts Material Body SS 316L, VAR PCTFE (PVDF, VESPEL® optional) Seat Diaphragm Hastelloy® Wetted parts Poppet SS 316L Spring SS 316L Spring Holder SS 316L Bonnet Brass Non-wetted parts Handwheel Aluminium Others Stainless Steel and Alloys

FLOW CURVES



PRODUCT CONFIGURATOR

	Outlet Regulat Pressure	ed	Body Materia	I	Surface Finish	Surface Finish		Porting Configuration			Options		Version	
RX 10	02		-		V		2V1		4M4M		V		HF	
	2 bar (29 psig)	02	SS 316L	-	Ra 0.4 μm (15 μin)	S	2 ports	2V1	Metal face seal ¼" - Female	4F	Vespel Seat	V	Standard (Cv 0.09)	
	4 bar (58 psig)	04	VAR*	V	Ra 0.25 μm EP (10 μin)	V	3 ports	3V4	Metal face seal ¼" - Male	4M	PVDF Seat	Р	High Flow (Cv 0.2)	HF
	7 bar (102 psig)	07	*On demand		Ra 0.13 μm EP (5 μin)*	U	4 ports	4V6	Metal face seal ¼" - Internal*	4FI	Hastelloy Poppet	HP	Absolute Sub-atm*	VAC
	10 bar (145 psig)	10			*On demand				*Gauge port(s) only		Gauge(s)*	PG	*Absolute sub- atmospheric option	n
											*Gauge(s) requires 4Fl connection(s)		-	
											Special conf	figur	ation on demar	ıd



20 REGULATORS

RX2200 DIAPHRAGM PRESSURE REGULATOR / MEDIUM FLOW & HIGH FLOW

KEY FEATURES

- 100% Functional & Helium Leak Test performed
- Hastelloy® diaphragm
- Internally spring- and threadless for highest UHP requirements
- Assembling, testing & Packaging in cleanroom: Class ISO 4
- Individual serial number for full traceability
- Corrosion resistant internal option available: Hastelloy® poppet
- Electropolished surface roughness per SEMI F19 UHP Grade
- Coating option of wetted areas is availabe
- 316L VAR[®] stainless steel double melt per SEMI F20 option available
- Fluid specific seat material as standard options
- Additional multi-port options



DIMENSIONS









CONSTRUCTION MATERIAL

Max. inlet pressure	240 bar (3481 psig)	Flow capacity (Cv)	0.2	Certified max. Helium outboard leak rate	\leq 1 x 10 ⁻⁹ mbar.l/s
		Rurst pressure*	300% of operating pressure		
Outlet pressure	3/8/10/15/25/50 bar	buistpressure	50070 of operating pressure	Certified max. Helium	\leq 1 x 10 ⁻⁷ mbar.l/s
	(44/110/145/218/505/725 psig)	Proof pressure*	150% of operating pressure	rate (at max. pressure)	
Temperature range	-20°C to +65°C			Certified max Helium	$< 1 \times 10^{-9} \text{mbar l/s}$
i inperature runge	(-4°F to +149°F)	Supply pressure effect I*	1.35 bar / 100 bar	inboard leak rate (at max. pressure)	

* According to CGA-E4

SURFACE FINISH

S	V	U
Ra 0.4 µm (15 µin)	Ra 0.25 μm EP (10 μin)	Ra 0.13 μm EP (5 μin)

RATED FLOW CAPACITY (Q_R^*) / OUTLET PRESSURE (P2)

P2 (bar)	Q _R *(SLPM)
3	280
8	580
10	680
15	970
25	1,550
50	3 000

* According to CGA-E4

All specifications subject to change without notice



FLOW CURVES



PRODUCT CONFIGURATOR

	Outlet Regulated Pressure	ł	Body Material		Surface Finish		Porting Configuration		Inlet / Outlet Connections		Options	
RX 22	03		V		-		3V4		4F4FI4F		PG	
	3 bar (44 psig)	03	SS 316L	-	Ra 0.4 μm (15 μin)	S	2 ports	2V1	Metal face seal ¼" - Male	4M	Hastelloy Poppet	HP
	8 bar (116 psig)	08	VAR	V	Ra 0.25 μm EP (10 μin)	V	3 ports	3V4	Metal face seal ¼" - Female	4F	Gauge(s)*	PG
	10 bar (145 psig)	10			Ra 0.13 μm EP (5 μin)*	U	4 ports	4V6	Metal face seal 3/8" - Female	6F	*Gauge(s) requires 4Fl connection(s)	
	15 bar (218 psig)	15			*On demand				Metal face seal 3/8" - Male	6M		
	25 bar (363 psig)	25							Metal face seal ¼" - Internal*	4FI		
	50 bar (725 psig)	50							*Gauge port(s) only			
									•			

ROTAREX

 \star

★

22 REGULATORS

RX2400 DIAPHRAGM PRESSURE REGULATOR / MEDIUM FLOW

KEY FEATURES

- 100% Functional & Helium Leak Test performed
- Hastelloy® diaphragm
- Internally springless
- High-Flow (HF) version (Cv:0.2) available
- Assembling, testing & Packaging in cleanroom: Class ISO 4
- Individual serial number for full traceability
- Corrosion resistant internal option available: Hastelloy® poppet
- Electropolished surface roughness per SEMI F19 UHP Grade
- Low internal volume
- Coating option of wetted areas is availabe
- 316L VAR[®] stainless steel double melt per SEMI F20 option available
- Fluid specific seat material as standard options
- Additional multi-port options



DIMENSIONS





Max. inlet pressure	240 bar (3481 psig) (PVDF: 10 bar / 145 psig) 2/4/7/10 bar	Burst pressure*	300% of operating pressure	Certified max. Helium outboard leak rate (at max. pressure)	≤ 1 x 10 ^{.9} mbar.l/s
Temperature range	(29/58/102/145 psig) -20°C to +65°C	Proof pressure*	150% of operating pressure	Certified max. Helium across the seat leak rate (at max. pressure)	\leq 1 x 10 ⁻⁷ mbar.l/s
Flow capacity (Cv)	(-4°F to +149°F) Standard: 0.09 High Flow: 0.2	Supply pressure effect l*	Standard: 0.3 bar / 100 bar HF: 0.7 bar / 100 bar	Certified max. Helium inboard leak rate (at max. pressure)	\leq 1 x 10 ⁻⁹ mbar.l/s

Material

SS 316L, VAR PCTFE (PVDF, VESPEL® optional)

> Hastelloy® SS 316L, Hastelloy®

> > Brass

Aluminium

Stainless Steel and Others

CONSTRUCTION MATERIAL

Wetted parts

Non-wetted parts

Parts Body

Seat

Diaphragm

Poppet

Bonnet

Handwheel

Others

SURFACE FINISH

S	V	U
Ra 0.4 um (15 uin)	Ra 0.25 um FP (10 uin)	Ra 0.13 um FP (5 uin)

RATED FLOW CAPACITY (Q_R^*) / OUTLET PRESSURE (P2)

P2 (bar)	Q _R *(SLPM)	Q _R *(SLPM) HF
2	60	80
4	100	110
7	170	190
10	250	_

* According to CGA-E4

* According to CGA-E4

All specifications subject to change without notice

FLOW CURVES



PRODUCT CONFIGURATOR

	Outlet Regula Pressure	ted	Body Materia	al	Surface Finis	h	Porting Configuratio	n	Inlet / Outle Connections	t ;	Options		Version			
RX 24	02		-	-		- V			2V1		4M4M		V		HF	
	2 bar (29 psig)	02	SS 316L	-	Ra 0.4 μm (15 μin)	S	2 ports	2V1	Metal face seal ¼" - Male	4M	Vespel Seat	V	Standard (Cv 0.09)			
	4 bar (58 psig)	04	VAR	V	Ra 0.25 μm EP (10 μin)	۷	3 ports	3V4	Metal face seal ¼" - Female	4F	PVDF Seat	Р	High Flow (Cv 0.2)	HF		
	7 bar (102 psig)	07			Ra 0.13 μm EP (5 μin)*	U	4 ports	4V6	Metal face seal ¼"- Internal*	4FI	Hastelloy Poppet	HP				
	10 bar (145 psig)	10			*On demand				*Gauge port(s) onl	у	Gauge(s)*	PG				
											Coating**	SC				
	Special configu	ratio	n on demand)							*Gauge(s) requires 4FI connection(s) **Contact Rotarex					



FLOW CURVES RX2400 HF (NITROGEN)

RX2500 | DIAPHRAGM PRESSURE REGULATOR / HIGH FLOW

KEY FEATURES

- 100% Functional & Helium Leak Test performed
- Hastelloy® diaphragm
- Internally springless
- Assembling, testing & Packaging in cleanroom: Class ISO 4
- Individual serial number for full traceability
- Corrosion resistant internal option available: Hastelloy[®] poppet
- Electropolished surface roughness per SEMI F19 UHP Grade
- 316L VAR $^{\circ}$ stainless steel double melt per SEMI F20 option available
- High-Flow (HF) version (Cv:1.2) up to 1150 SLPM availble
- Fluid specific seat material as standard options
- Additional multi-port options



DIMENSIONS





Max. inlet pressure	Standard: 240 bar (3481 psig) HF: 50 bar (725 psig) (PVDE: 10 bar / 145 psig)	Flow capacity (Cv)	Standard: 0.45 High Flow: 1.2	Certified max. Helium outboard leak rate	\leq 1 x 10 ⁻⁹ mbar.l/s
		Burst pressure**	300% of operating pressure	(at max. pressure)	
Outlet pressure	5/8/10 bar* (73/116/145 psig)		1 51	Certified max. Helium	\leq 1 x 10 ⁻⁷ mbar.l/s
		Proof pressure**	150% of operating pressure	across the seat leak rate (at max. pressure)	
Temperature range	-20° C to $+60^{\circ}$ C			Certified max. Helium	< 1 x 10 ⁻⁹ mhar l/s
	(-4°F to +140°F)	Supply pressure effect I**	Standard: 1.5 bar / 100 bar HF: 6 bar / 100 bar	inboard leak rate (at max. pressure)	

* full outlet pressure not achievable at all inlet pressures ** According to CGA-E4

CONSTRUCTION MATERIAL

	Parts	Material
	Body	SS 316L, VAR
Wattad wavte	Seat	PCTFE (PVDF, VESPEL®, PTFE Ni optional)
welled parts	Diaphragm	Hastelloy®
	Poppet	SS 316L, Hastelloy®
	Bonnet	Chrome Plated Brass
Non-wetted parts	Handwheel	Aluminium
	Others	Stainless Steel and Others

SURFACE FINISH

		•
Ra 0.4 um (15 uin)	Ra 0.25 um EP (10 uin)	Ra 0.13 um EP (5 uin)

RATED FLOW CAPACITY (Q_R*) / OUTLET PRESSURE (P2)

P2 (bar)	Q _R *(SLPM)	Q _R *(SLPM) HF
5	650	950
8	1,100	-
10	-	1,900

* According to CGA-E4 All specifications subject to change without notice

FLOW CURVES



PRODUCT CONFIGURATOR

		Outlet Regulat Pressure	ed	Body Materia	1	Surface Finish)	Porting Configuration	n	Inlet / Outlet Connections	t	Options		Version	
RX	25	05		-	-		V		2V1			V		HF	
		5 bar (73 psig)	05	SS 316L	-	Ra 0.4 μm (15 μin)	S	2 ports	2V1	Metal face seal 1⁄2" - Male	8M	Vespel Seat	V	Standard (Cv 0.45)	
		8 bar (116 psig)	08	VAR	V	Ra 0.25 μm EP (10 μin)	V	3 ports	3V4	Metal face seal 1⁄2" - Female	8F	PDVF Seat	Р	High Flow (Cv 1.2)	HF
		10 bar (145 psig)	10			Ra 0.13 μm EP (5 μin)*	U	4 ports	4V6	Metal face seal ¼" - Male	4M	Hastelloy Poppet	HP		
				-		*On demand				Metal face seal ¼" - Female	4F	Gauge(s)*	PG		
										Metal face seal ¼"- Internal*	4FI	PTFE Nickel loaded**	TE		
	Sp	ecial configurat	ion (on demand						*Gauge port(s) only		*Gauge(s) requires 4Fl connection(s) **Contact Rotarex			



VALVES



REGULATORS

Standard configurations:

B (Outlet)

2V1



TOP VIEW











Other configurations: on demand

PRESSURE GAUGES (BAR / PSI)





TO COMPLETE THE RANGE

In addition to valves and regulators for ultra-high purity gases, Rotarex can propose for your activity a full range of products.

From source to process you can find a full range of precise equipment for your gas supply system and manipulation.

For more information concerning one or more of those products please contact us directly.

UHP FITTINGS





Kontakt os endelig for råd og vejledning. Tlf.: +45 7384 1230 E-mail: info@pgflowteknik.dk



28

ALL RIGHTS OF CHANGE RESERVED

29



A FULL LINE OF GAS CONTROL SOLUTIONS



COMPLETE SOLUTIONS FROM SOURCE TO PROCESS.

ROTAREX is helping engineers worldwide to get better gas results: from ultra high purity production and medical care facilities to industrial and LPG applications, as well as alternative energy vehicles, fire suppression, diving, aerospace, cryogenics, laboratory, petro-chemical and welding. ROTAREX applies over 90 years of know-how and experience to custom design, develop and manufacture the high performance valves, regulators and fittings to suit your needs, all in one hand. Discover the difference ROTAREX can make in your world.

CYLINDER VALVES

EQUIPMENT

FIRETEC

ETEC AUTOMOTIVE

LPG/SRG

MEDITEC







WORLDWIDE HEADQUARTERS

ROTAREX S.A. 24, rue de Diekirch, L-7440 Lintgen Luxembourg Tel.: +352 32 78 32-1 Fax: +352 32 78 32-854 E-mail: info@rotarex.com



FLOWTEKNIK SCANDINAVIA APS



© 2018 - ROTAREX S.A. ROTAREX Equipment™ ROTAREX S.A. E00015_CAT_EN_A4_V40