

# SERIES CEN | SWITCH OVER BOARD

- Diaphragm single stage
- Balanced-Valve Technology
- Purity up to 5.5 (6.0 without the ball valve)
- Inlet pressure: 200 bar (2900 psi) or 300 bar (4350 psi)
- Outlet pressure: 10/16/30/50 bar 145/232/435/725 psi
- Acetylene version: P1 = 25 bar (362.5 psi) P2 = 1 bar (14.5 psi)
- Propane version: P1 = 25 bar (362.5 psi) P2 = 4 bar (58 psi)

- ★ 2 duoblocs
- ★ 2 x 3 inlets/1 outlet
- ★ Inlet/outlet pressure gauges
- ★ 1 safety relief valve
- ★ 2 purge outlets
- ★ O<sub>2</sub> application compatible

Special requirements on request

## APPLICATIONS

- Suitable for the high flow supply of non-corrosive industrial gases when high flow are required like for plasma TIG and MIG cutting and welding applications.

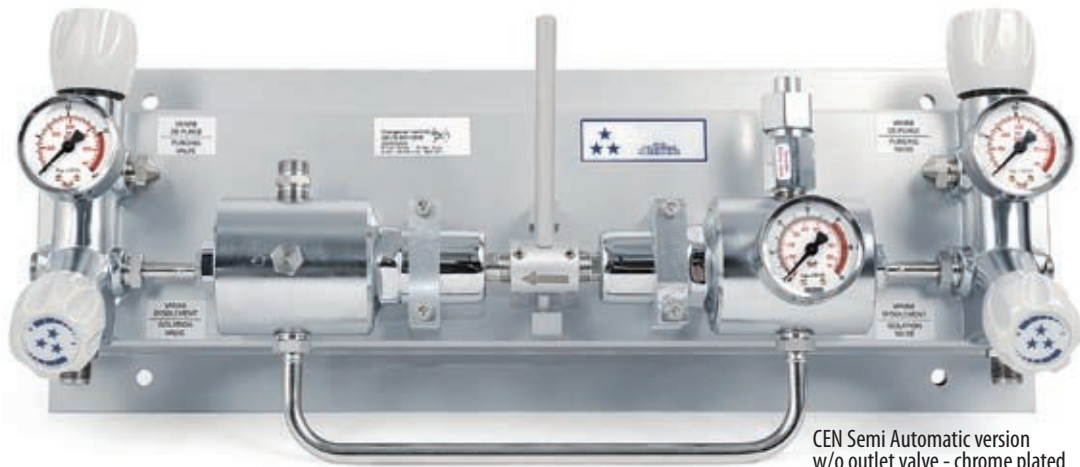
## KEY FEATURES

- Possible to connect 4 gas cylinders without any extension and a gas for purging operation (up to 6 cylinders without any extension - without using the purge line).
- No risk that a source flows into the other one.
- Exists also in an AUTOMATIC version (with 10 and 16 bar outlet pressure). This automatic switch over board does not need to be reset to allow reversal of the cycle.
- Ready to install with all components pre-mounted on a board.
- Best-of-class pressure stability with Balanced-Valve Technology: the effect of inlet pressure fluctuations on outlet pressure are minimized. Balanced-Valve Technology enables the delivery of a very stable outlet pressure and flow.

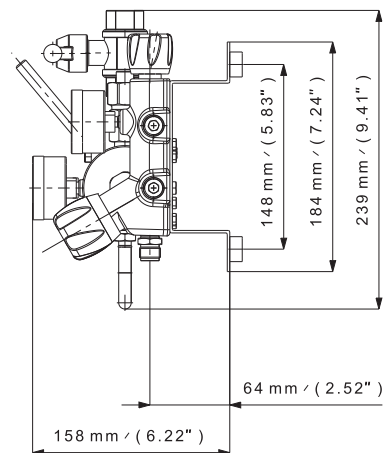
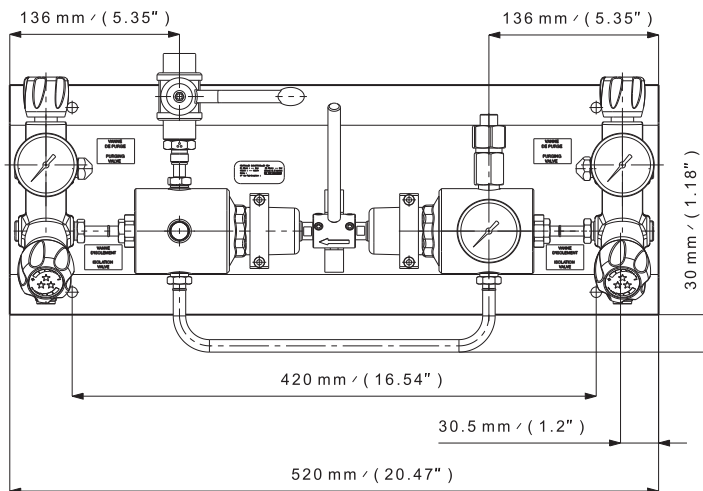
- Reduced seat effort increases life of the regulator and reduces the ownership cost.
- Non-whipping filter on bottom inlet improves safety of the operator during the cylinder replacement.
- Can be equipped with an outlet ¼ turn shut-off valve (Multi-turn valve with 30 bar or 50 bar version for oxygen use).
- Can also be equipped with a collection tube on the safety relief valve and purge outlet.
- Using contact gauges, the switch over board can also be equipped with an alarm box to indicate the source status.
- Special carbon dioxide CO<sub>2</sub> version available (inlet pressure 200 bar or 300 bar with maximal flow = 80m<sup>3</sup>/h)
- Special FDA compatible version available on demand
- Acetylene version available: P1 = 25 bar/P2 = 1 bar/Q = 6,5 Nm<sup>3</sup>/h
- Used with acetylene, this product must be installed with a flash back arrestor complying with the standard EN 730 located downstream.
- Propane version also available: P1 = 25 bar/P2 = 4 bar/Q = 10 Nm<sup>3</sup>/h



CEN Automatic version



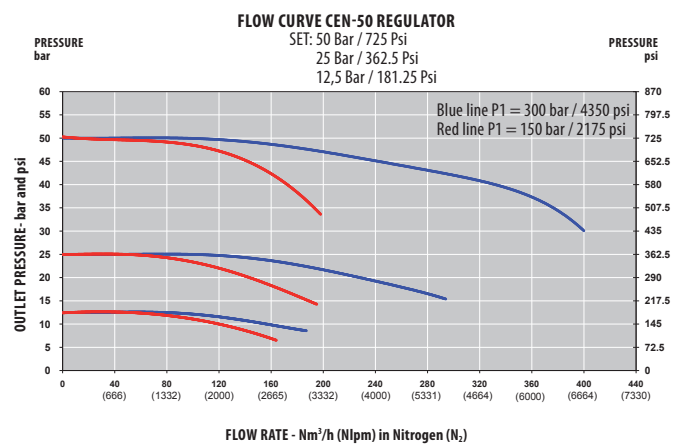
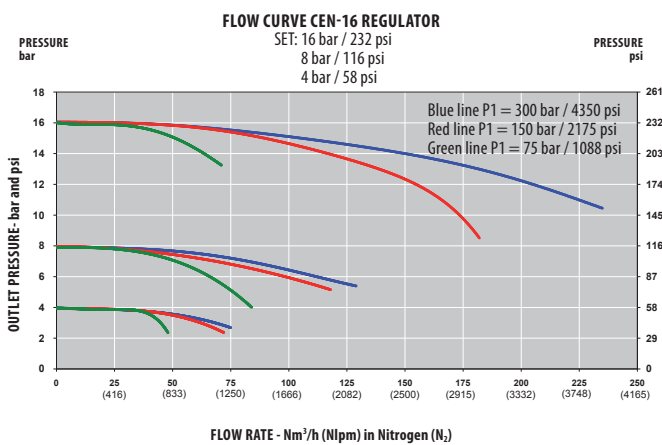
CEN Semi Automatic version w/o outlet valve - chrome plated



## SPECIFICATIONS

<b>Female ports</b>	G 3/8 (inlet) - G 1/2 (outlet) or 3/8 NPT (inlet) - G 1/2 (outlet)	<b>Leak rate</b>	w/outlet valve: 1.10 <sup>-4</sup> mbar ℓ/s He w/o outlet valve: 1.10 <sup>-8</sup> mbar ℓ/s He	<b>Inlet pressure</b>	200 bar / 300 bar 2900 psi / 4350 psi AD and PR4: 25 bar / 362.5 psi
<b>Seat seal</b>	PCTFE	<b>Temperature range</b>	-20°C to + 60°C -4°F to + 140°F	<b>Outlet pressure</b>	10/16/30/50 bar 145/232/435/725 psi AD: 1 bar (14,5 psi) PR4: 4 bar (58 psi)
<b>O-ring</b>	EPDM - standard NBR FPM	<b>Gauges</b>	High and low pressure (M10 x 1 or G 1/4)	<b>Nominal Flow 200 bar version</b>	70/110/150/180 Nm <sup>3</sup> /h (N <sub>2</sub> )
<b>Diaphragm</b>	AISI 304 or Hastelloy®			<b>Nominal Flow 300 bar version</b>	50/70/100/130 Nm <sup>3</sup> /h (N <sub>2</sub> )
<b>Weight</b>	± 13,8 kg ± 27.0 lbs			<b>Nominal Flow AD and PR4</b>	AD: 6,5 Nm <sup>3</sup> /h PR4: 10 Nm <sup>3</sup> /h
				<b>Oxygen use</b>	OK with inlet pressure 200 and 300 bar

## FLOW CURVES



## PRODUCT CONFIGURATOR

	Inlet Pressure	Version type	Outlet Pressure	Body Material	End Connections	O-ring Material	Gauges	Outlet Valve	Configurations
<b>CEN</b>	<b>300</b>	<b>AUTO</b>	<b>16</b>	<b>L</b>	<b>G</b>	<b>EPDM</b>	<b>1</b>	<b>V</b>	<b>A</b>
	200 bar 2900 psi	200 Automatic	10 bar 145 psi	Raw Brass	In: G 3/8 Out: G 1/2 - Female	EPDM - standard	with gauges - standard	1 without outlet shut-off valve (standard)	NV Standard configuration
	300 bar 4350 psi	300 Semi-automatic	16 bar 232 psi	Chrome Plated Brass	In: NPT 3/8 Out: G 1/2 - Female	NBR	with HP inductive contact gauge	2 with outlet shut-off valve	V with connected purge
			30 bar 435 psi			FPM	with HP sliding contact gauge	3	
			30 OX bar (435 psi) oxygen use				with LP inductive contact gauge	4	
			50 bar 725 psi				with LP sliding contact gauge	5	
			50 OX bar (725 psi) oxygen use				with HP & LP sliding contact gauges	6	
			Acetylene special version (P2 = 1 bar)						AD
			Propane special version (P2 = 4 bar)						PR4

## SERIES TD 100 | SWITCH OVER BOARD

- Diaphragm single stage
- Purity up to 6.0
- Inlet pressure:  
200 bar (2900 psi)
- Outlet pressure:  
10/25/50 bar  
145/363/725 psi
- NH<sub>3</sub> version:  
P1 = 8 bar (116 psi)  
P2 = 3 bar (43.5 psi)

- ★ 2 duoblocs
- ★ 2 x 3 inlets/1 outlet
- ★ 2 inlets/1 outlet pressure gauges
- ★ 1 safety relief valve
- ★ 2 purge outlets
- ★ Semi-automatic and Manual Version available
- ★ Regulation done by 2 x S 220 regulators
- ★ Only in stainless steel

Special requirements on request

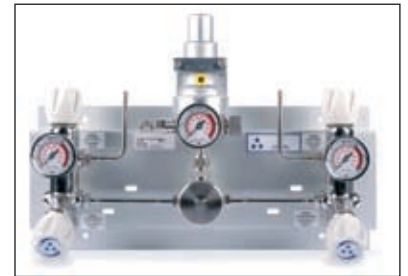
### APPLICATIONS

- Ideally suited for corrosive gases and high purity applications for low flow applications.
- Dedicated to the supply of gas to analyzers and to the creation of controlled atmosphere in laboratories, control units.

### KEY FEATURES

- Possible to manage 4 gas cylinders without any extension and a gas for purging operation (up to 6 cylinders without any extension - without using the purge line).
- No risk that a source flows into the other one.
- Exists in Manual and Semi-automatic versions.

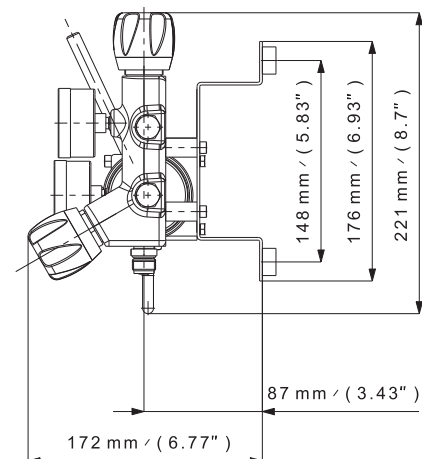
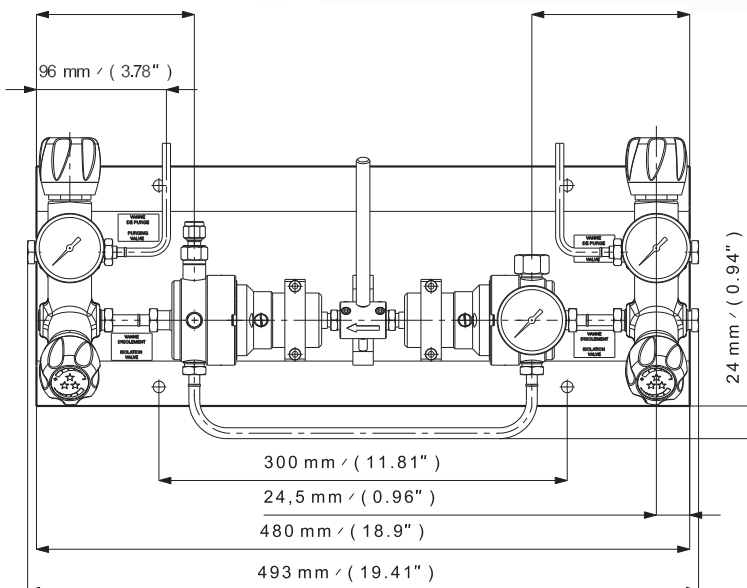
- Ready to install with all components are mounted on a board.
- Can be equipped with a collectable tube on the safety relief valve and purge outlet.
- Can also be equipped with an outlet shut-off valve.
- Using contact gauges, the switch over board can also be equipped with an alarm box to indicate the source status.
- NH<sub>3</sub> version available:  
P1 = 8 bar/P2 = 3 bar/Q = 5 Nm<sup>3</sup>/h.



TDI 103 Manual version



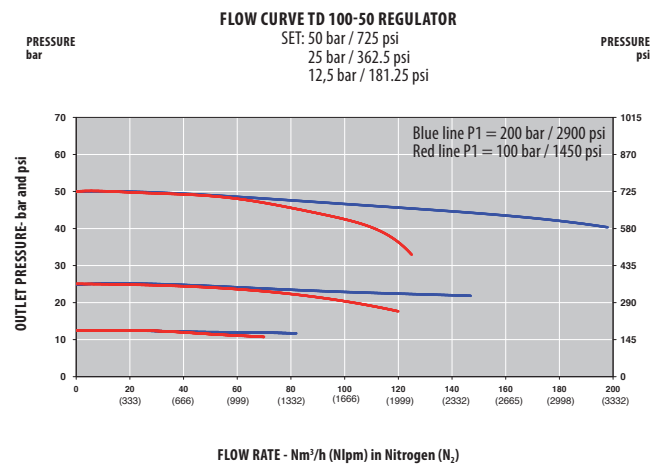
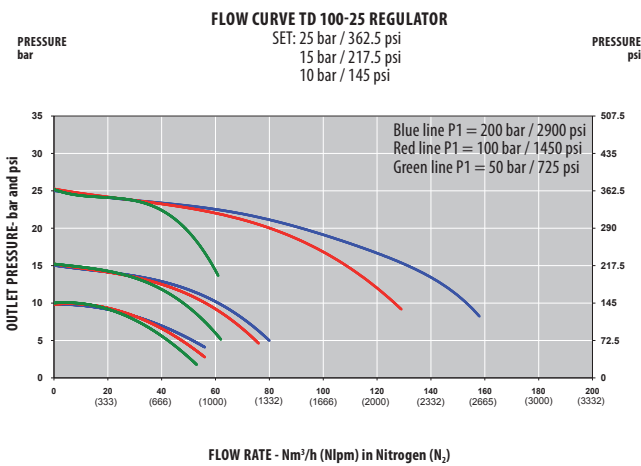
TDI 102 Semi-automatic version



## SPECIFICATIONS

<b>Female ports</b>	G 3/8 (inlet/outlet) or 1/4 NPT (inlet/outlet)	<b>Weight</b>	± 15,0 kg ± 33.0 lbs	<b>Inlet pressure</b>	200 bar (2900 psi) NH <sub>3</sub> : 8 bar (116 psi)
<b>Seat seal</b>	PCTFE	<b>Leak rate</b>	10 <sup>-8</sup> mbar ℓ/s He	<b>Outlet pressure</b>	10/25/50 bar 145/363/725 psi NH <sub>3</sub> : 3 bar (43.5 psi)
<b>O-ring</b>	EPDM - standard NBR FPM	<b>Temperature range</b>	-20°C to + 60°C -4°F to + 140°F	<b>Nominal Flow</b>	10/10/50 Nm <sup>3</sup> /h (N <sub>2</sub> ) NH <sub>3</sub> : 5 Nm <sup>3</sup> /h (NH <sub>3</sub> )
<b>Diaphragm</b>	Hastelloy®	<b>Gauges</b>	High and low pressure (M10 x 1 or 1/8 NPT)	<b>Oxygen use</b>	No

## FLOW CURVES



## PRODUCT CONFIGURATOR

Body Material	Version Type	Outlet Pressure	End Connections	O-ring Material	Gauges	Outlet Valve	Configuration
Stainless steel	<b>TDI</b> Semi-automatic	<b>102</b> 10 bar / 145 psi	<b>G</b> G 3/8 - Female	<b>EPDM</b> EPDM - standard	<b>1</b> with gauges - standard	<b>V</b> without outlet shut-off valve (standard)	<b>A</b> Standard configuration
	manual (10 bar version)	<b>103</b> 25 bar / 362.5 psi	<b>N</b> NPT 1/4 - Female	<b>NBR</b> NBR	<b>2</b> with HP inductive contact gauge	<b>V</b> with outlet shut-off valve	<b>CL</b> with connected purge and safety valve
		50 bar / 725 psi		<b>FPM</b> FPM	<b>3</b> with HP sliding contact gauge		
		Ammonia special version (P2 = 3 bar)			<b>4</b> with LP inductive contact gauge		
					<b>5</b> with LP sliding contact gauge		
					<b>6</b> with HP & LP sliding contact gauges		

# SERIES TD 102 UC | ULTRA HIGH PURITY SWITCH OVER BOARD

- Diaphragm single stage
- UHP applications
- Inlet pressure:  
200 bar (2900 psi)
- Outlet pressure:  
10 /25/50 bar  
145/363/725 psi

- ★ 2 straights duoblocs Ultra Clean
- ★ 2 x 2 inlets /1 outlet
- ★ 1 outlet face seal ¼ turn shut-off valve
- ★ 2 inlets/1 outlet pressure gauges
- ★ 2 purge outlets
- ★ 1 burst disc
- ★ Semi-automatic Version
- ★ Regulation done by  
2 x S 220 UHP regulators
- ★ Only in stainless steel

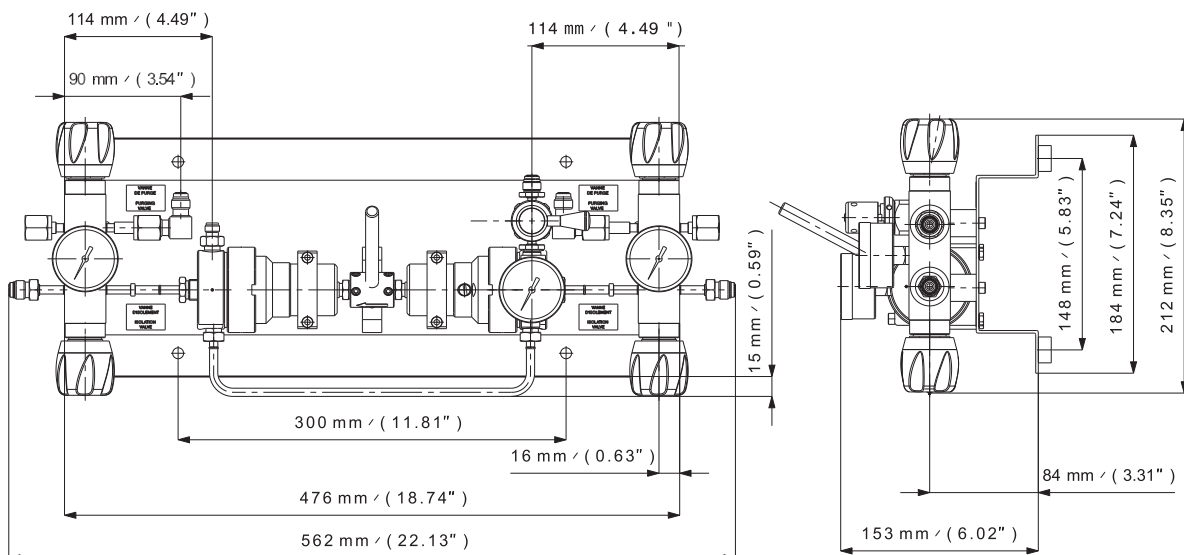
Special requirements on request

## APPLICATIONS

- This switch over board is ideally suited for pure and corrosive gases for ultra high purity applications
- Dedicated to the supply of gas to analyzers and to the creation of controlled atmosphere in laboratories, control units and semi conductor plants

## KEY FEATURES

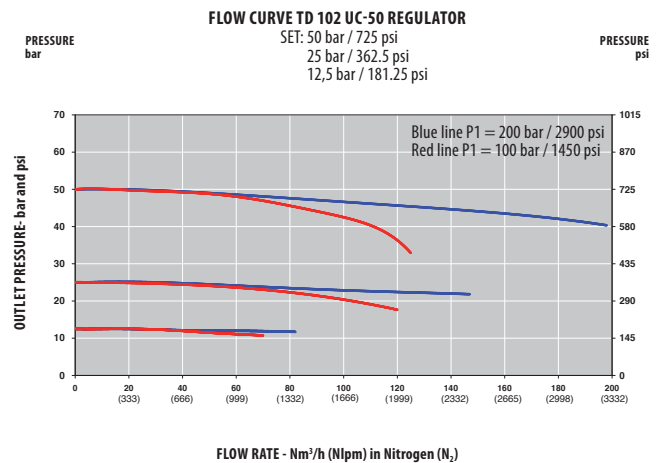
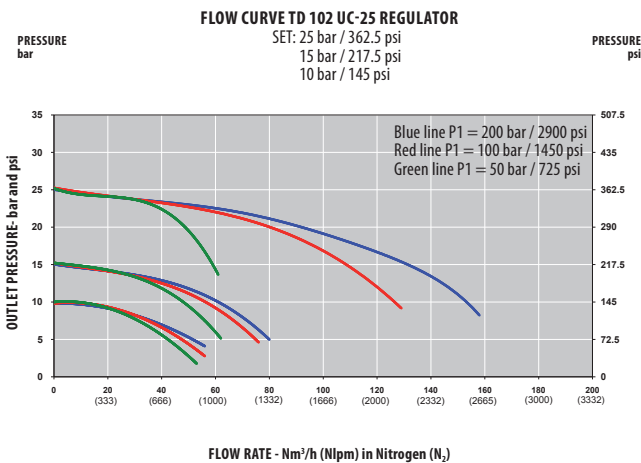
- Semi-automatic.
- Possible to manage 2 gas cylinders without any extension and a gas for purging operation.
- No risk that a source flows into the other one.
- Ready to install with all components pre-mounted on a board.
- Can be equipped with a collection tube on the safety relief valve and purge outlet.
- Using contact gauges, the switch over board can also be equipped with an alarm box to indicate the source status.



## SPECIFICATIONS

<b>Female ports</b>	face seal ¼ (inlet/outlet)	<b>Weight</b>	± 15,0 kg ± 33.0 lbs	<b>Inlet pressure</b>	200 bar 2900 psi
<b>Surface finish</b>	< 0.4 µm Ra (15 µin Ra)	<b>Leak rate</b>	10 <sup>-9</sup> mbar ℓ/s He	<b>Outlet pressure</b>	10/25/50 bar 145/363/725 psi
<b>Seat seal</b>	PCTFE	<b>Temperature range</b>	-20°C to + 60°C -4°F to + 140°F	<b>Nominal Flow</b>	10/10/10 Nm <sup>3</sup> /h (N <sub>2</sub> )
<b>Diaphragm</b>	Hastelloy®	<b>Gauges</b>	High and low pressure (¼ face seal)	<b>Oxygen use</b>	No

## FLOW CURVES



## PRODUCT CONFIGURATOR

Body Material	102		UC	Outlet Pressure		Gauges	
	TDI			10	25	50	1
Stainless steel	TDI			10 bar 145 psi	10	with gauges - standard	1
				25 bar 362.5 psi	25	with HP inductive contact gauge	2
				50 bar 725 psi	50	with HP sliding contact gauge	3
						with LP inductive contact gauge	4
						with LP sliding contact gauge	5
						with HP & LP sliding contact gauges	6

## SERIES TD 200 | SWITCH OVER BOARD

- Diaphragm single stage
- Purity up to 6.0
- Inlet pressure:  
200 bar (2900 psi)  
or 300 bar (4350 psi)
- Outlet pressure:  
10 bar (145 psi)  
or 16 bar (232 psi)

- ★ 2 duoblocs
- ★ 2 x 3 inlets/1 outlet
- ★ 2 inlets/1 outlet pressure gauges
- ★ 1 safety relief valve
- ★ 2 purge outlets
- ★ Manual, semi-automatic and automatic version available.
- ★ Regulation done by 2 x SL / SI 215
- ★ O<sub>2</sub> application compatible (brass only 200 bar version)

Special requirements on request

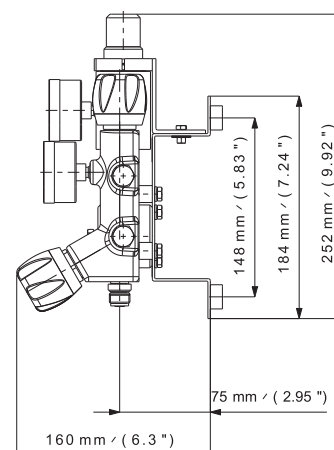
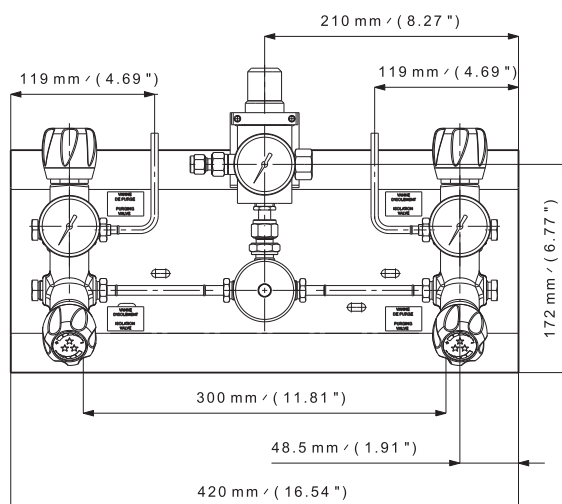
### APPLICATIONS

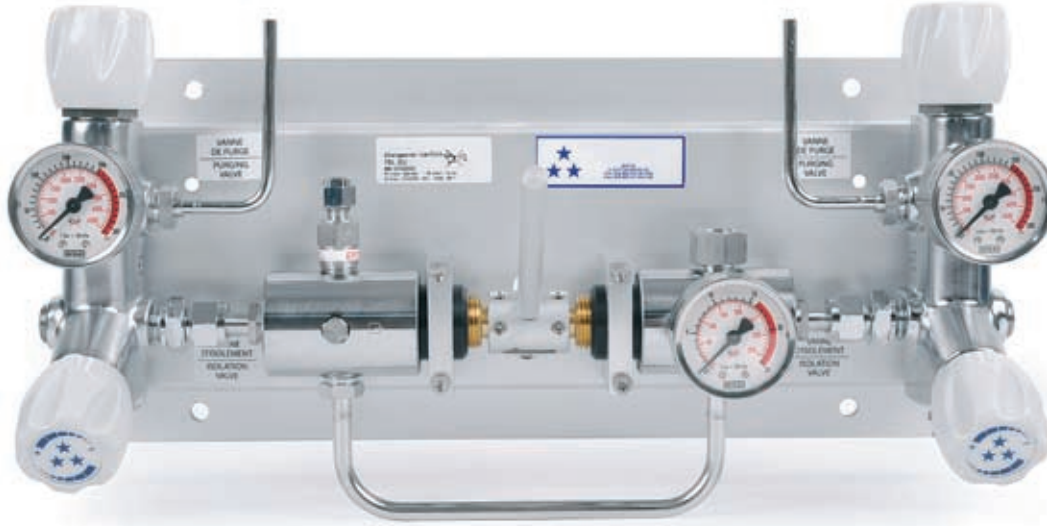
- Ideally suited to insure gas supply from many high-pressure sources of high purity non-corrosive gases with low flow
- Dedicated to the supply of gas to analyzers and to the creation of controlled atmosphere in laboratories, control units, and for petrochemical applications.

### KEY FEATURES

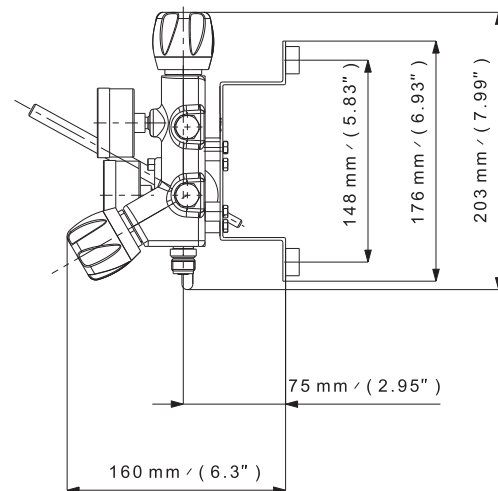
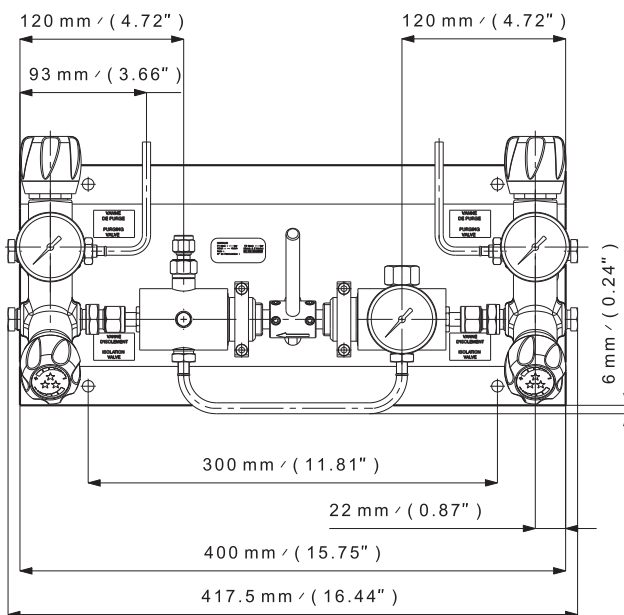
- Possible to manage 4 gas cylinders without any extension and a gas for purging operation (up to 6 cylinders without any extension - without using the purge line).
- No risk that a source flows into the other one.
- Exists in a MANUAL, SEMI-AUTOMATIC and AUTOMATIC version.
- The automatic switch over board does not need to be reset to allow reversal of the cycle.
- Ready to install due with all components pre-mounted on a board.
- Can be equipped with a collection tube on the safety relief valve and purge outlet.
- Can be equipped with an outlet shut-off valve.
- Using contact gauges, the switch over board can also be equipped with an alarm box to indicate the source status.

### MANUAL VERSION





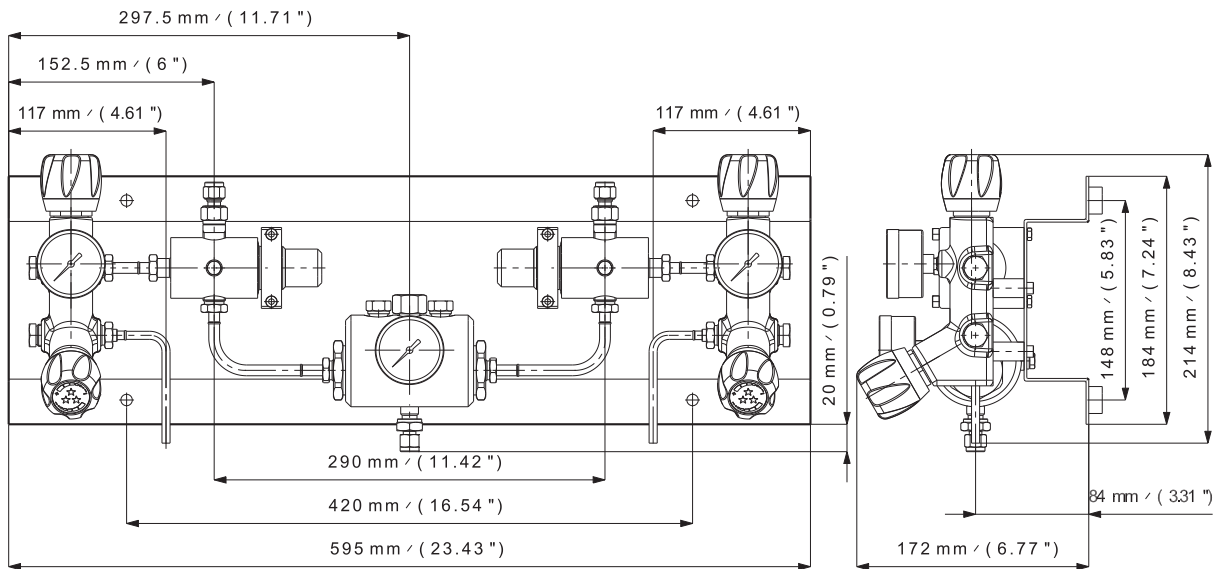
3 inlet ports





**SERIES TD 200 | SWITCH OVER BOARD (cont'd)**

**AUTOMATIC VERSION**

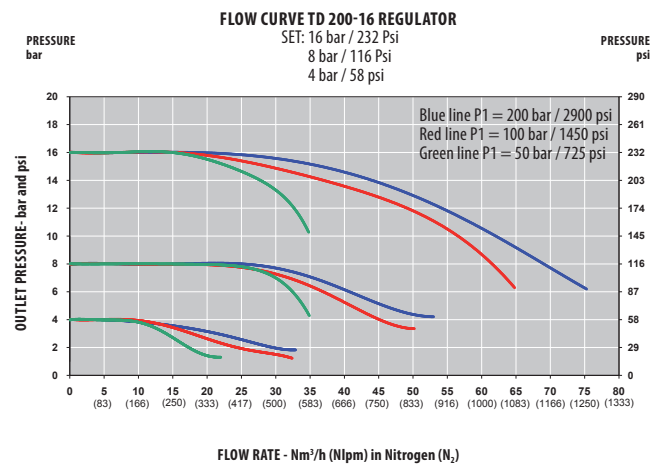
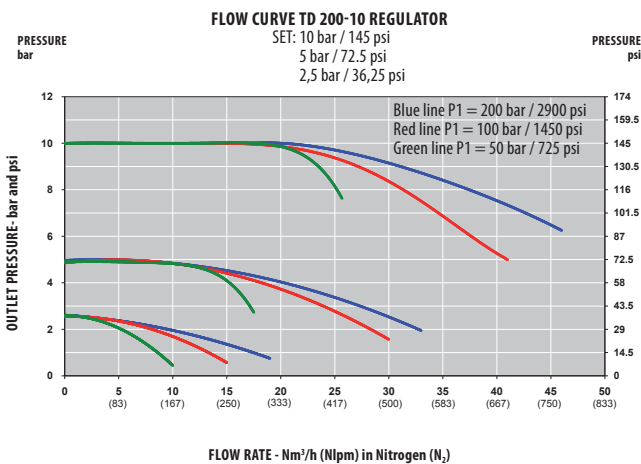


## SPECIFICATIONS

<b>Female ports</b>	G 3/8 (inlet/outlet) or 1/4 NPT (inlet/outlet)	<b>Weight</b>	± 13 kg ± 29.0 lbs	<b>Inlet pressure</b>	200 bar / 300* bar 2900 psi / 4350 psi
<b>Seat seal</b>	PCTFE	<b>Leak rate</b>	10 <sup>-8</sup> mbar ℓ/s He	<b>Outlet pressure</b>	10/16 bar 145/232 psi
<b>O-ring</b>	EPDM - standard NBR FPM	<b>Temperature range</b>	-20°C to + 60°C -4°F to + 140°F	<b>Nominal Flow</b>	10/10 Nm <sup>3</sup> /h (N <sub>2</sub> )
<b>Diaphragm</b>	AISI 304 Hastelloy®	<b>Gauges</b>	High and low pressure (M10 x 1 or 1/8 NPT)	<b>Oxygen use</b>	Brass only with inlet pressure 200 bar

\*Only in chrome plated version

## FLOW CURVES



## PRODUCT CONFIGURATOR

TD	Body Material	Inlet Pressure and Version Type	Outlet Pressure	End Connections	O-ring Material	Gauges	Outlet Valve	Configuration
	L	202	10	G	EPDM	1	NV	A
	L	200 bar (2900 psi) automatic - 10 bar version	201	G 3/8 - Female	EPDM - standard	with gauges - standard	without outlet shut-off valve (standard)	Standard configuration
	I	202	16	N	NBR	2	V	CL
	I	200 bar (2900 psi) semi-automatic	202	NPT 1/4 - Female	NBR	with HP inductive contact gauges	with outlet shut-off valve	with connected purge and safety valve
	I	203			FPM	3		
	I	200 bar (2900 psi) manual - 10 bar version				with HP sliding contact gauges		
	I	302				4		
	I	300 bar (4350 psi) semi-automatic				with LP inductive contact gauge		
	I					5		
	I					with LP sliding contact gauge		
	I					6		
	I					with HP & LP sliding contact gauges		

## SERIES TD 500 | SWITCH OVER BOARD

- Diaphragm single stage
- Balanced-Valve Technology
- Purity up to 6.0
- Inlet pressure: 200 bar (2900 psi)
- Outlet pressure: 10/25/50 bar 145/363/725 psi

- ★ 2 duoblocs
- ★ 2 x 3 inlets/1 outlet
- ★ Inlet/outlet pressure gauges
- ★ 1 safety relief valve
- ★ 2 purge outlets
- ★ O<sub>2</sub> application compatible (brass only 200 bar version)
- ★ Manual, semi-automatic and automatic version available

Special requirements on request

### APPLICATIONS

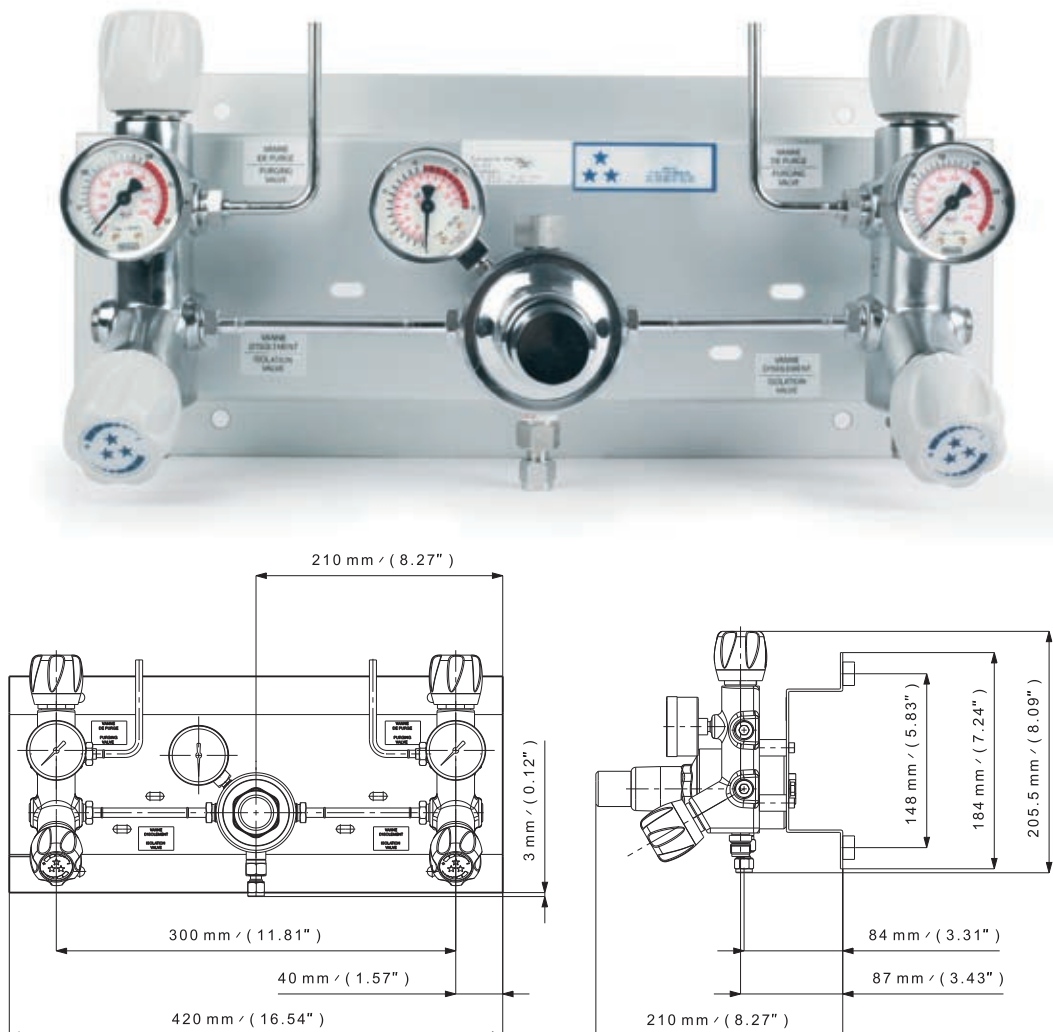
- Ideally suited to insure gas supply from many high-pressure sources of high purity non-corrosive gases with high flow
- Dedicated to supply of gas to analyzers and to create a controlled atmosphere in laboratories, control units, and for petrochemical applications.

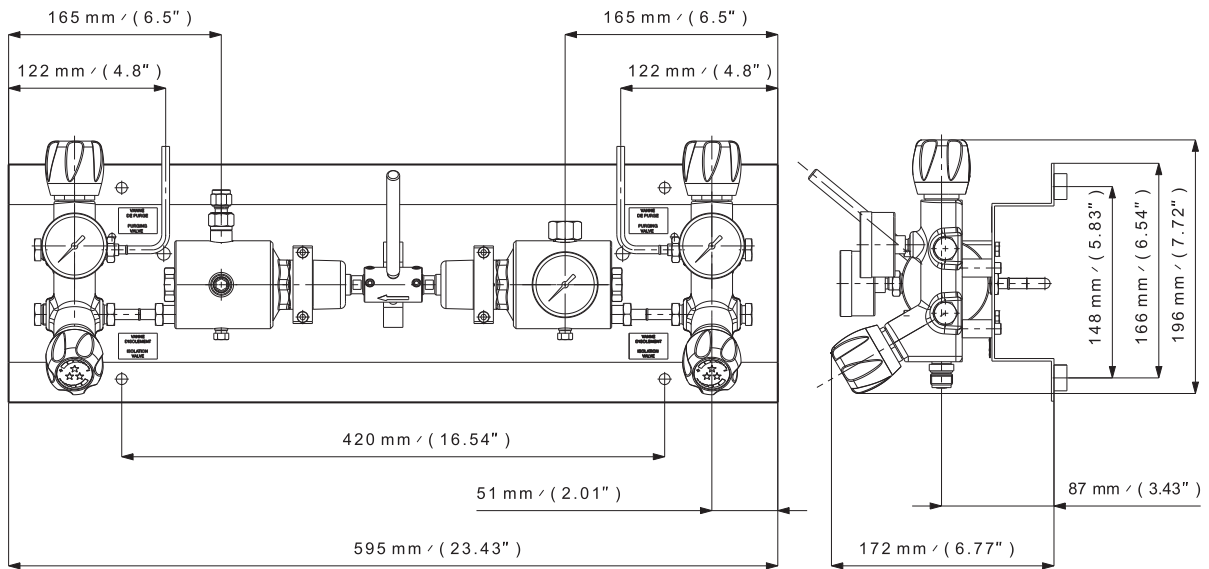
### KEY FEATURES

- Possible to manage 4 gas cylinders without any extension and a gas for purging operation (up to 6 cylinders without any extension - without using the purge line).
- No risk that a source flows into the other one.
- Ready to install with all components pre-mounted on a board.
- Exists in an MANUAL, SEMI-AUTOMATIC and AUTOMATIC version.

- The automatic switch over board does not need to be reset to allow reversal of the cycle.
- Best-in-class pressure stability with Balanced-Valve Technology: the effect of inlet pressure fluctuations on outlet pressure are minimized. The Balanced-Valve Technology enables the delivery of a very stable outlet pressure and flow.
- The BV Technology reduces the efforts on the seat to increase life of the regulator and reduce the ownership cost.
- Can be equipped with a collection tube on the safety relief valve and purge outlet.
- Can be equipped with an outlet shut-off valve.
- Using contact gauges, the switch over board can also be equipped with an alarm box to indicate the source status.

### MANUAL VERSION



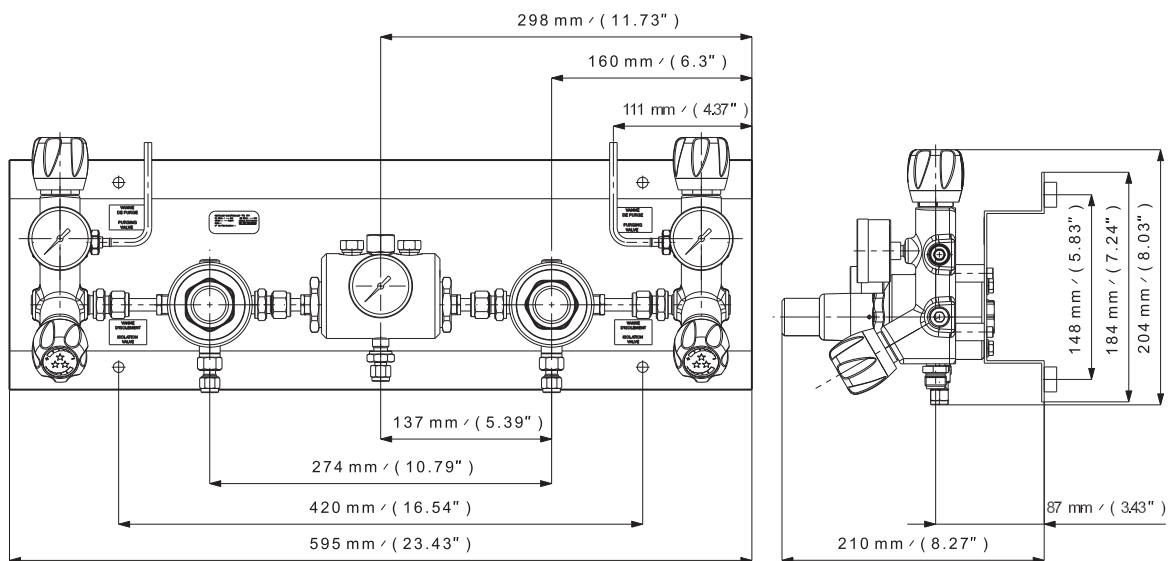


**SERIES TD 500 | SWITCH OVER BOARD (cont'd)**

**AUTOMATIC VERSION**



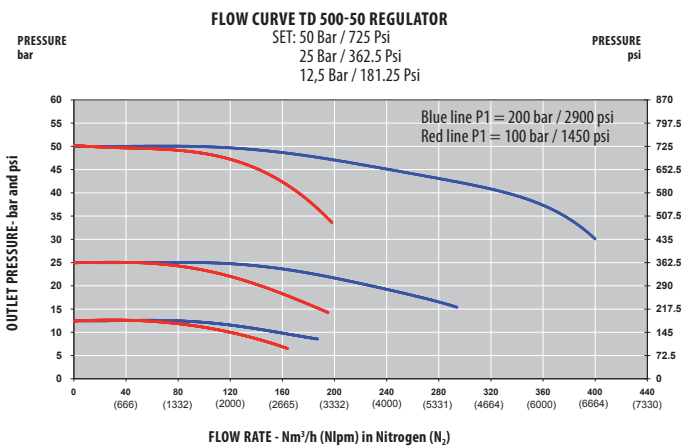
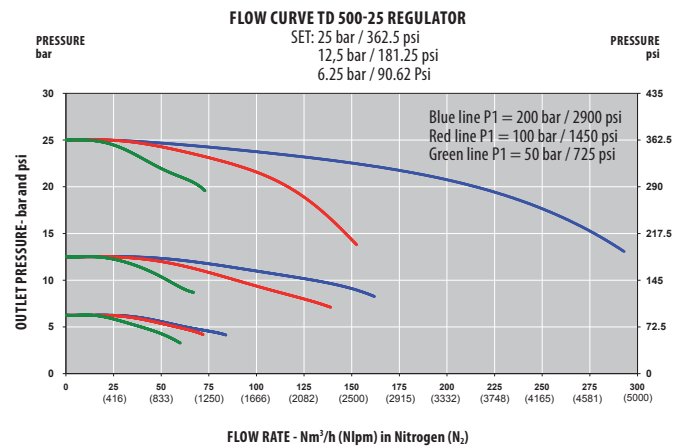
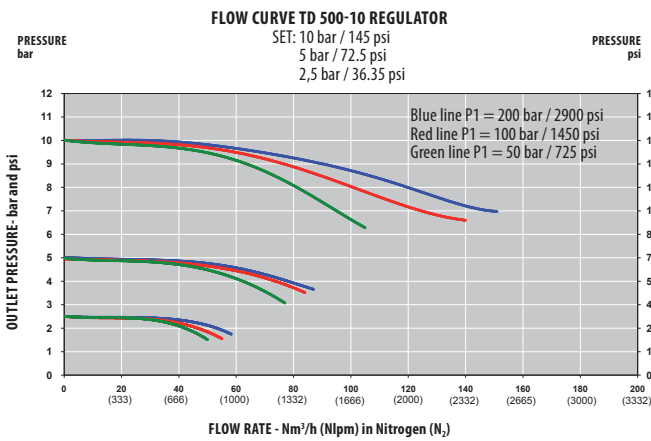
3 inlet ports



## SPECIFICATIONS

<b>Female ports</b>	G 3/8 (inlet/outlet) or 1/4 NPT (inlet/outlet)	<b>Weight</b>	± 13 kg ± 29.0 lbs	<b>Inlet pressure</b>	200 bar 2900 psi
<b>Seat seal</b>	PCTFE	<b>Leak rate</b>	10 <sup>-8</sup> mbar ℓ/s He	<b>Outlet pressure</b>	10/25/50 bar 145/363/725 psi
<b>O-ring</b>	EPDM - standard NBR FPM	<b>Temperature range</b>	-20°C to +60°C -4°F to +140°F	<b>Nominal Flow</b>	50/50/100 Nm <sup>3</sup> /h (N <sub>2</sub> )
<b>Diaphragm</b>	AISI 304 Hastelloy®	<b>Gauges</b>	High and low pressure (M10 x 1 or 1/8 NPT)	<b>Oxygen use</b>	Brass only with inlet pressure 200 bar

## FLOW CURVES



## PRODUCT CONFIGURATOR

TD	Body Material	Inlet Pressure and Version Type	Outlet Pressure	End Connections	O-ring Material	Gauges	Outlet Valve	Configuration
	L	502	10	G	EPDM	1	NV	A
	L	200 bar (2900 psi) automatic - 10 bar version	10 bar / 145 psi	G 3/8 - Female	EPDM - standard	with gauges - standard	without outlet shut-off valve (standard)	Standard configuration
	I	502	25	N	NBR	2	V	CL
	I	200 bar (2900 psi) semi-automatic	25 bar / 362.5 psi	NPT 1/4 - Female	NBR	with HP inductive contact gauges	with outlet shut-off valve	with connected purge and safety valve
		503	50		FPM	3		
		200 bar (2900 psi) manual - 10 bar version	50 bar / 725 psi		FPM	with HP sliding contact gauges		
						4		
						5		
						6		

## SERIES TD 502 COMPACT | SWITCH OVER BOARD

- Diaphragm dual stage
- Balanced-Valve Technology
- Purity up to 5.0
- Inlet Pressure:  
300 bar (4350 psi)
- Outlet Pressure:  
8/15/40 bar  
(116/218/580 psi)
- Acetylene version (AD - C<sub>2</sub>H<sub>2</sub>):  
P1 = 20 bar (290 psi)  
P2 = 0,8 bar (12 psi)

- ★ 2 x 1 inlet/1 outlet
- ★ Inlet/outlet pressure gauges
- ★ 1 safety relief valve
- ★ O<sub>2</sub> application compatible
- ★ Semi-automatic
- ★ 2 stages
- ★ 2 x SL 800 regulators  
(1<sup>st</sup> stage) + 1 x DC 50  
regulator (2<sup>nd</sup> stage)
- ★ Regulators with Balanced-  
Valve Technology
- ★ High flow

Special requirements on request

### APPLICATIONS

- Ideally suited to insure gas supply from many high-pressure sources of high purity non-corrosive gases with high flow
- Designed for applications which need a high flow rate and a very stable and constant outlet pressure.

### KEY FEATURES

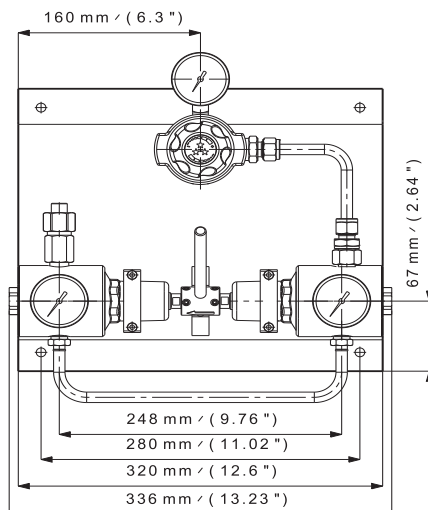
- No risk that a source flows into the other one.
- Ready to install with all components pre-mounted on a board.
- Best-in-class pressure stability with Balanced-Valve Technology: the effect of inlet pressure fluctuations on outlet pressure are minimized. Balanced-Valve

Technology enables the delivery of a very stable outlet pressure and flow.

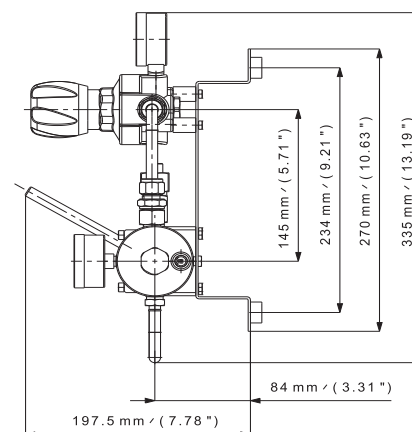
- Reduces the efforts on the seat to increase life of the regulator and reduces the ownership cost.
- Can be equipped with an outlet shut-off valve.
- Adjustable version available (handwheel on the 2<sup>nd</sup> stage DC 50 regulator).
- Using contact gauges, the switch over board can also be equipped with an alarm box to indicate the source status.
- Acetylene version available:  
P1 = 20 bar / P2 = 0,8 bar / Q = 10 Nm<sup>3</sup>/h
- For use with acetylene this product must be installed with a flash back arrestor complying with the standard EN 730 located downstream.



Version without handwheel on the DC50 (STD version)



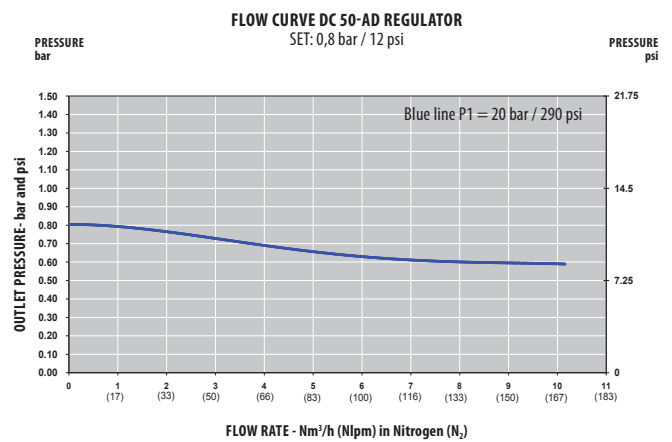
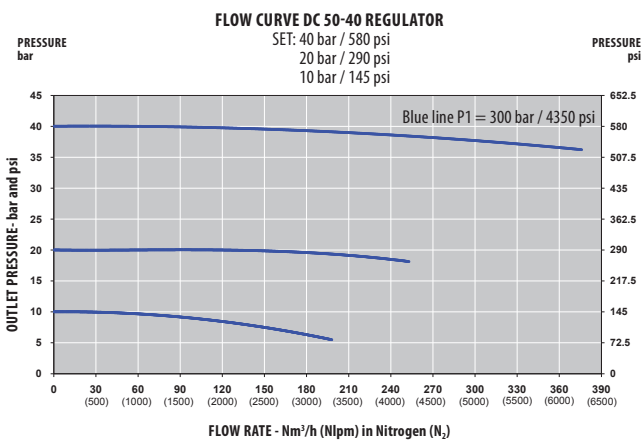
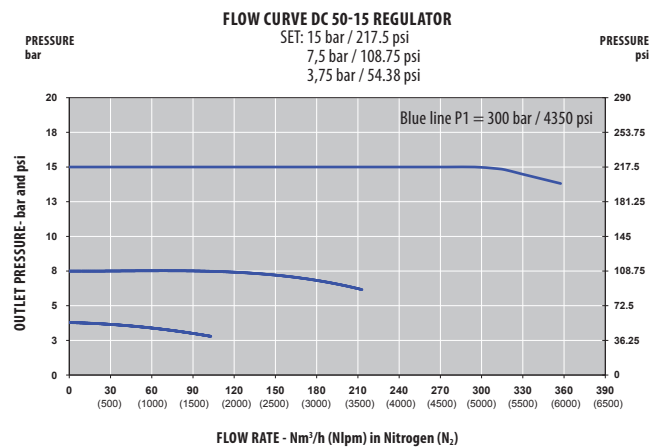
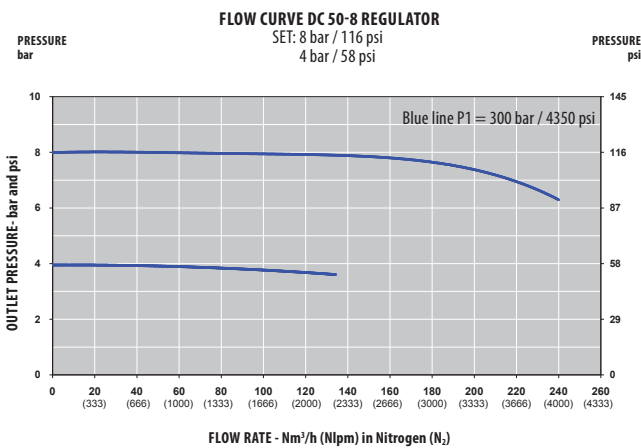
Version with handwheel on the DC50 (HW version)



## SPECIFICATIONS

<b>Female ports</b>	G 3/8 (inlet) - G 1/2 (outlet) or 1/4 NPT (inlet) - 1/2 NPT (outlet)	<b>Weight</b>	± 13 kg ± 29.0 lbs	<b>Inlet pressure</b>	300 bar (4350 psi) AD: 20 bar (290 psi)
<b>Seat seal</b>	PCTFE/EPDM	<b>Leak rate</b>	10 <sup>-3</sup> mbar ℓ/s He	<b>Outlet pressure</b>	8/15/40 bar - 0,8 bar (AD) 116/218/580 psi - 12 psi (AD)
<b>O-ring</b>	EPDM - standard NBR FPM	<b>Temperature range</b>	-20°C to + 60°C -4°F to + 140°F	<b>Nominal Flow</b>	150/300/300 Nm <sup>3</sup> /h (N <sub>2</sub> ) AD: 10 Nm <sup>3</sup> /h (C <sub>2</sub> H <sub>2</sub> )
<b>Diaphragm</b>	Hastelloy® EPDM (DC50 2 <sup>nd</sup> stage)	<b>Gauges</b>	High and low pressure 1 <sup>st</sup> stage: M10 x 1 or 1/8 NPT 2 <sup>nd</sup> stage: G 1/4 or 1/8 NPT	<b>Oxygen use</b>	OK

## FLOW CURVES



## PRODUCT CONFIGURATOR

Body Material		Outlet Pressure	End Connections	O-ring Material	Gauges	Second Stage Regulations	Adjustable Outlet Pressure
TD	L	502 COMPACT	8	G	1	DC	STD
Chrome Plated Brass	L	8 bar 116 psi	In: G 3/8 - Female Out: G 1/2 - Female	EPDM - standard	with gauges - standard	with DC50	Without handwheel on the DC 50
		15 bar 218 psi	In: NPT 1/4 Out: NPT 1/2 - Female	NBR	with HP inductive contact gauges	without DC 50	With handwheel on the DC 50
		40 bar 580 psi		FPM	with HP sliding contact gauges		
		Acetylene special version (P2 = 0,8 bar)			with LP inductive contact gauge		
					with LP sliding contact gauge		
					with HP & LP sliding contact gauges		