



PRESSURE

GAUGE | ACCESSORIES | SWITCH

Pressure measurement is the analysis of an applied force by a fluid (liquid or gas) on a surface. Pressure is typically measured in units of force per unit of surface area. Many techniques have been developed for the measurement of pressure and vacuum. Instruments used to measure and display pressure in an integral unit are called pressure meters or pressure gauges or vacuum gauges.

A pressure switch is a form of switch that closes an electrical contact when a certain set fluid pressure has been reached on its input. The switch may be designed to make contact either on pressure rise or on pressure fall. Pressure switches are widely used in industry to automatically supervise and control systems that use pressurized fluids.

PRESSURE GAUGE & RECORDER

UTILITY, SEMI SS, FULLY SS

VALVES
MALAYSIA

Tel: 03-5569 6556 (3 Lines) Fax: 03-5569 8557
+ 6012 422 3782 | Email: sales@valvesmalaysia.com.my
www.valvesmalaysia.com.my



Utility Type



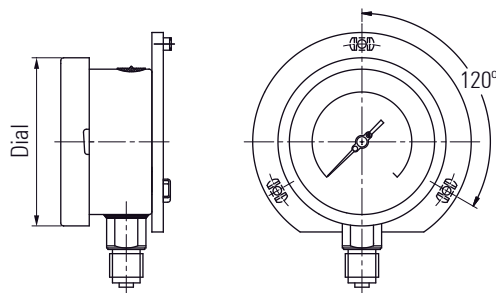
Semi Stainless Steel Type



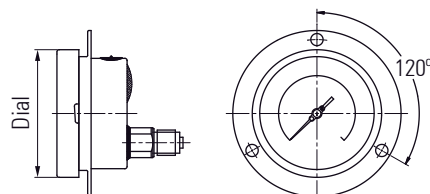
Fully Stainless Steel Type



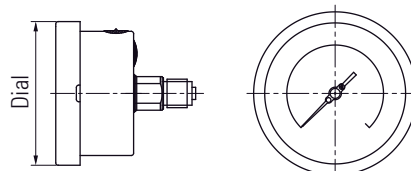
Pressure Recorder



Type 1 / Type 2



Type 3



Type 4

APPLICATION

Suitable for corrosive, food & beverage, pharmaceutical, cryogenics, pumps, diesel engines & refrigerating plants, chemical & petrochemical industries, conventional & nuclear power plants, environments & gaseous or liquid media that will not obstruct the pressure system, hydro-cleaning machines, presses, engine compressors, turbines.

SPECIFICATION - TECHNICAL DATA

Dial Size (mm)	40	50	63	100	160	200	250	300
Measuring Ranges*	0 ... 1.6 Bar to 0 ... 0.25 Bar	-1 ... 0 Bar to 0 ... 1000 Bar	-1 ... 0 Bar to 0 ... 1000 Bar	-1 ... 0 Bar to 0 ... 1600 Bar	-1 ... 0 Bar to 0 ... 1600 Bar	-1 ... 0 Bar to 0 ... 1600 Bar	-1 ... 0 Bar to 0 ... 1600 Bar	-1 ... 0 Bar to 0 ... 1600 Bar
Accuracy (according to EN 837-1)	Class 1.6 to Class 1							
Wetted Parts Material	Bronze / Brass / Stainless Steel 1.4404 (316L) / Stainless Steel or Monel 400							
Measuring Element	Bourdon Tube							
Case Material	Black Painted Steel / Stainless Steel (304) / Stainless Steel (316)							
Process Connection	G 1/8 / G 1/4 / G 3/8 / G 1/2 / 1/8 NPT / 1/4 NPT / 3/8 NPT / 1/2 NPT							
Protection Rating	IP 65 - IP 67							
Approval	ATEX II2GDc-IM2c / Lloyd's Register							
Additional Information	With damping fluid / For oxygen application / Zero adjustment / With baffel wall							

* Note : Other pressure units are available on request

SPECIFICATION - TECHNICAL DATA (PRESSURE RECORDER)

Case	Cast aluminium, Corrosion resistant backed black enamel case / MS /SS
Dimension	14" x 17" x 5"
Weight	24 lbs approximately and plus element weight
Pens	Disposable recording fiber tip recording pen
Mounting	Flush or Face
Connection	Bottom standard
Chart	10" Circular
Accuracy	1% of span range
Chart Drive	Standard 8 days manual or electrical 110 or 220 V 50 cycles rotation 24 hours
Ink	Red or blue
Recording	Single pen or double pen
System	Mercury in steel for temperature recorder & Bottom system for pressure recorder
Threads	1/2" or 3/4" or 1" or other threads
Capillary	PVC / Copper / Other metal on request
Parts	All parts in list made as per international standard in stainless steel, brass and spring steel

*Specification given are subject to changed without further notice.

PRESSURE GAUGE

SAFETY / CONTACT / DIFFERENTIAL / DIAPHRAGM / CAPSULE / ABSOLUTE



SPECIFICATION - TECHNICAL DATA

Gauge Type	Safety	With Contact	Differential	Diaphragm	Capsule	Absolute
General Data	<ul style="list-style-type: none"> For corrosive gases and liquids With or without damping fluid With or without dashpot Solid front 	<ul style="list-style-type: none"> Local indication of pressure 1 or 2 setpoints for regulation or alarm setting Output signal: 4 ... 20mA 	<ul style="list-style-type: none"> Very low differential pressure range Static pressure up to 250 mBar Safety valve on high pressure side For corrosive process fluids and atmospheres Low differential pressure Static pressure up to 400 Bar 	<ul style="list-style-type: none"> Welded with blow-out disc, back For gaseous and liquid, aggressive, high and low viscosity media High overpressure safety 	<ul style="list-style-type: none"> Low pressure measurements High overpressure protection Suitable for corrosive gases 	<ul style="list-style-type: none"> Absolute pressure measurements for corrosive process fluids and atmospheres
Industries	Oil & gas / Chemical water / Waste water energy	Food & beverage, Laboratory & medical, Oil & gas / Chemical water / Waste water energy, Transport & logistics, Machinery	Laboratory & medical, Oil & gas / Chemical water / Waste water energy	Laboratory & medical, Oil & gas / Chemical water / Waste water energy	Laboratory & medical, Oil & gas / Chemical machinery	Laboratory & medical, Oil & gas / Chemical water / Waste water energy
Nominal Size (mm)	100 / 160	100 / 160	100 / 150	63 / 100 / 160	63 / 100 / 160	63 / 100 / 150
Measuring Ranges	-1 ... 0 Bar to 0 ... 1600 Bar	0 ... 600 mBar -1 ... 0 Bar to 0 ... 1600 Bar	0 ... 10 mBar to 0 ... 250 mBar 0 ... 0.1 Bar to 0 ... 25 Bar	0 ... 60 mBar to 0 ... 1600 Bar	0 ... 10 mBar to 0 ... 600 mBar	0 ... 0.1 Bar to 0 ... 16 Bar abs
Static Pressure	-	-	Max. 400 Bar	-	-	-
Accuracy	Class 1 (Acc. to EN 837-1) Grade 2 (Acc. to ASME B40.100)	Class 1 (Acc. to EN 837-1) Class 1.6 (Acc. to EN 837-3) for output signal: ±0.5%	± 1% (Dry version) ± 1.6% (With damping fluid)	Class 1 (Acc. to EN 837-1)	Class 1.6 (Acc. to EN 837-3)	± 2%
Overpressure	-	-	-	-	-	Max. 25 Bar
Wetted Parts Material	• SS 1.4404 (316L) • Monel 400	• SS 1.4404 (316L)	• SS 316L • Monel • Hestelloy C276	• SS 1.4435 (316L)	• Bronze / Brass • SS / FKM	• SS 1.4404 (316L) • Bronze / Brass
Measuring Element	• Bourdon tube	• Bourdon tube • Diaphragm* • Piezoresistive sensor	• Bourdon tube • Bellow • Differential cell	• Diaphragm*	• Capsule	• Bellow
Contact Type	-	Mechanical sliding contact, magnetic spring contact or inductive contact	Mechanical sliding contact	-	-	Mechanical sliding contact
Case Material	• SS 304 • SS 316 • Polypropylene / Phenolic	• SS 304 • SS 316	• SS 304 • SS 316	• SS 304 • SS 316	• SS 304 • SS 316	• SS 304 • SS 316
Process Connection	G 1/4 / G 1/2 / 1/4 NPT / 1/2 NPT	G 1/4 / G 1/2 / 1/4 NPT / 1/2 NPT / Flanges DIN & ANSI**	2 x G 1/2 / 2 x 1/2 NPT	G 1/2 / 1/2 NPT / Flanges DIN & ANSI / Clamp / Varient	G 1/4 / G 1/2 / 1/4 NPT / 1/2 NPT	G 1/4 / G 1/2 / 1/4 NPT / 1/2 NPT
Protection Rating	IP 67	IP 65	IP 65 / 66	IP 65	IP 33 / IP 44 / IP 65	IP 65
Approval	• ATEX II2GDc-IM2c • Lloyd's Register	• ATEX II2G Ex ia T4	• ATEX II2GDc-IM2c	• ATEX II2GDc-IM2c	• ATEX II2GDc-IM2c	• ATEX II2GDc-IM2c
Additional Information	Option: • For oxygen application • With damping fluid • With dashpot	Option: • PTFE coating • With damping fluid	Option: • With damping fluid • With baffle fluid	Option: • PTFE coating • With damping fluid	• Zero adjustment, integrated, overpressure protection valve for short time overload of 20 x span Option: • With baffle wall	Option: • With damping fluid • Zero adjustment

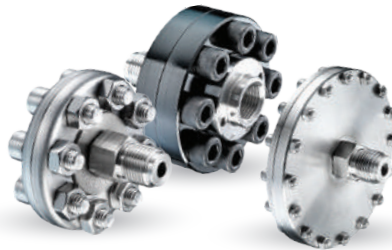
* Refer to Diaphragm seal, ** For Diaphragm seal

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PRESSURE GAUGE DIAPHRAGM SEAL



PP / PVDF Type



Low to High Pressure Type



Flanged Type



Robust & Compact Type



Flush Mounted Type

SPECIFICATION - TECHNICAL DATA

Diaphragm Seal Type	PP / PVDF	Robust & Compact	Flush Mounted	Low to High Pressure
General Data	<ul style="list-style-type: none"> Suitable for very aggressive media No metallic part in contact with media 	<ul style="list-style-type: none"> Applicable for corrosive media 	<ul style="list-style-type: none"> Cleaning ring optional Coating optional 	<ul style="list-style-type: none"> For low pressure to very high pressure Cleaning ring optional Suitable for corrosive media High temperature range
Industries	Oil & gas / Chemical water / Waste water energy, Transport & logistics, Machinery	Oil & gas / Chemical water / Waste water energy, Transport & logistics, Machinery	Oil & gas / Chemical water / Waste water energy, Transport & logistics	Oil & gas / Chemical water / Waste water energy, Machinery
Process Connection	G 1/2	G 1/4 / G 1/2 / 1/4 NPT / 1/2 NPT	G 1/2 / G 3/4 / G 1 / G 1-1/2 / G 2 / 1/2 NPT / 3/4 NPT / 1 NPT / 1-1/2 NPT / 2 NPT / EN 1759-1 / EN 1092-1 / ASME B16.5	G 1/4 / G 1/2 / 1/4 NPT / 1/2 NPT
Normal Size	-	-	-	-
Body Material	PP / PVDF	Stainless steel	-	Stainless steel, Uranus B6, Hastelloy B, Hastelloy C, Tantalum, Monel, PVC, PVDF, PPH, PTFE
Flange Material	-	-	Stainless Steel	-
Diaphragm Material	EPDM / PTFE lining	Stainless steel	Stainless steel, Uranus B6, Hastelloy B, Hastelloy C, Tantalum	Stainless steel, Uranus B6, Hastelloy B, Hastelloy C, Tantalum, Monel
Measuring Ranges	0 ... 2.5 Bar to 0 ... 10 Bar	0 ... 1 Bar to 0 ... 250 Bar	0 ... 25 mBar to 0 ... 400 Bar	0 ... 160 Bar to 0 ... 1000 Bar 0 ... 160 mBar
Nominal Size	-	-	DN 50 ... 100 2" ... 4"	-
Pressure Rating	-	-	PN 10 ... 100 Class 150 ... 2500	-
Approval	-	-	NACE MR0103, MR0175	-
Additional Information	-	-	-	-

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Process Transmitter Type



Tongue Type



Hygienic Type

SPECIFICATION - TECHNICAL DATA

Diaphragm Seal Type	Flanged	Process Transmitter	Tongue	Hygienic
General Data	<ul style="list-style-type: none"> Many process connection standards available Cleaning ring optional Coating optional 	<ul style="list-style-type: none"> Pressure, level and flow measurement Max. 400°C Low static pressure to high static pressure 	<ul style="list-style-type: none"> Longitudinal starshaped seal Applicable for corrosive media Compact diaphragm seal 	<ul style="list-style-type: none"> Clamp connection SMS 1145 (with union nut) SMS 1145 (threaded socket) Varivent Clamp with extended membrane for flush mounting in tanks or pipes Clamp with extended membrane for flush mounting DIN 11851 (with union nut) DIN 11851 (threaded socket) In line seals for hygienic applications DIN 32676, ISO 2852, SMS 1146, DIN 11851
Industries	Oil & gas / Chemical water / Waste water energy, Transport & logistics	Oil & gas / Chemical energy	Oil & gas / Chemical water / Waste water energy, Machinery	Food & beverage, Laboratory & medical, Water / Waste water, Machinery
Process Connection	EN 1759-1 / EN 1092-1 / ASME B16.5	EN 1759-1 / ASME B16.5	G 3/4 DIN 3852 / G 1/2 DIN 3852 / Union nut G 3/4 or G1	-
Normal Size	-	-	-	DN 25, 38, 51, 1", 1-1/2", 2"
Body Material	Stainless steel, Uranus B6, Hastelloy B, Hastelloy C, Monel, PVC, PVDF, PPH, PTFE	-	Stainless steel	Stainless steel 1.4435 (316L)
Body Material	-	Stainless Steel	-	-
Diaphragm Material	Stainless steel, Uranus B6, Hastelloy B, Hastelloy C, Tantalum Monel	Stainless steel, Hastelloy C	Stainless steel	Stainless steel 1.4435 (316L), Hastelloy C
Measuring Ranges	0 ... 160 mBar to 0 ... 420 Bar	0 ... 10 mBar to 0 ... 420 Bar	0 ... 2.5 Bar to 0 ... 1000 Bar	0 ... 1 Bar to 0 ... 40 Bar
Nominal Size	DN 10 ... 65 3/8" ... 2-1/2"	DN 15 ... 50 1/2" ... 2"	-	-
Pressure Rating	PN 10 ... 420 Class 150 ... 2500	Class 150 ... 2500	-	-
Approval	-	NACE MR0103, MR0175	-	3-A
Additional Information	-	-	-	<ul style="list-style-type: none"> Ra < 0.8µm Option electropolished Ra < 0.4µm

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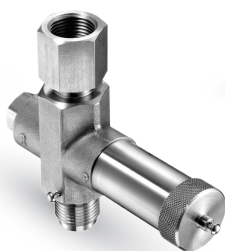
PRESSURE GAUGE ACCESSORIES



Cooling Tower Type



Siphon Type



Pulsation Dampener Type



Pressure Limiter Type



Shut Off Valves Type



Capillary Type

SPECIFICATION - TECHNICAL DATA

Accessories	Shut Off Valves	Pressure Limiter Overload Protector (Gauge Saver)	Pulsation Dampener	Siphon	Capillary
General Data	<ul style="list-style-type: none"> Separation of gauge or transmitter from the process 	<ul style="list-style-type: none"> Protection of pressure gauges and transmitters from overpressure 	<ul style="list-style-type: none"> Protection of pressure gauges and transmitters from overpressure 	<ul style="list-style-type: none"> Protects gauge from high fluid temperatures Recommended for steam 	<ul style="list-style-type: none"> Reduces medium temperature Separates the instrument from heat sources Reduces pulsations
Industries	Oil & gas / Chemical water / Waste water energy, Transport & logistics, Machinery	Oil & gas / Chemical water / Waste water energy, Transport & logistics, Machinery	Oil & gas / Chemical water / Waste water energy, Transport & logistics, Machinery	Oil & gas / Chemical water / Waste water energy	Oil & gas / Chemical water / Waste water energy
Process Temperature	-20 ... +250°C	Max. +150°C	Max. +250°C	Max. +400°C	Max. +400°C (Depending on process pressure)
Max. Pressure	400 Bar	700 Bar	Max. 600 Bar	Max. +400 Bar	Max. +400 Bar (Depending on process temperature)
Materials	Brass, Steel, Stainless steel, PTFE	Stainless steel, Viton	Brass, Steel, Stainless steel	Steel, Stainless steel	Stainless steel
Set Points	-	-1 ... 400 Bar	-	-	-

*Specification given are subject to changed without further notice.



Flushing Ring Type



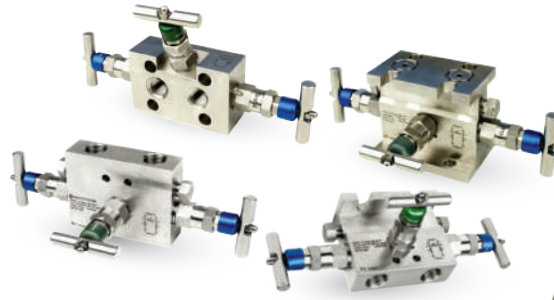
Instrument Valves



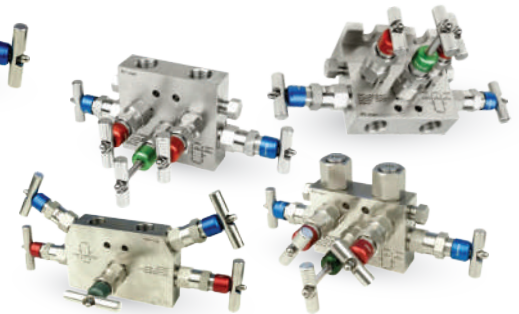
Two Valve Manifolds



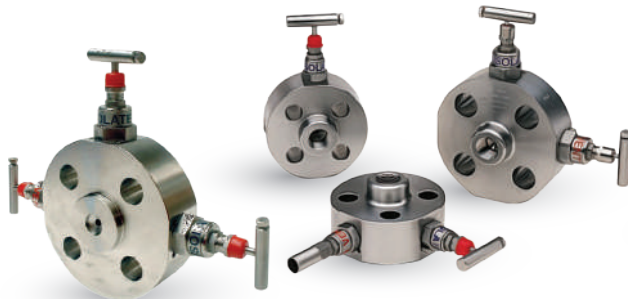
Pulsation Dampener Type
(Snubber)



Three Valve Manifolds



Five Valve Manifolds



Monoflange DBB



Instrument DBB

SPECIFICATION - TECHNICAL DATA

Accessories	Cooling Tower	Instrument Valve	Flushing Ring	2/3/5 Way Manifold	Double Block & Bleed Valve
General Data	<ul style="list-style-type: none"> Protect pressure Instruments, gauges, switches and transmitters directly coming in contact with high temperature process fluids or vapours filled with condensation fluids. Reduce process pulsation, act as heat dispenser and generate cooling effect to save instrument from working at dangerous temperature. 	<ul style="list-style-type: none"> Wide variety of instrument valves like 2 way, 3 way, multiport, single block bleed. 	<ul style="list-style-type: none"> Designed to be sandwiched between the process flange & the diaphragm seal. Material collected in front of diaphragm can be flushed out through the flushing ports. 	<ul style="list-style-type: none"> Manifold 2, 3 or 5 ways 	<ul style="list-style-type: none"> Instruments Monoflange
Industries	Oil & gas / Chemical water / Waste water energy	Oil & gas / Chemical water / Waste water energy	Oil & gas / Chemical water / Waste water energy	Oil & gas / Chemical water / Waste water energy	Oil & gas / Chemical water / Waste water energy
Process Temperature	Max. +400°C (Depending on process pressure)	Max. +400°C (Depending on process pressure)	Max. +400°C (Depending on process pressure)	Max. +200°C	Max. +400°C (Depending on process pressure)
Max. Pressure	Max. +400 Bar (Depending on process temperature)	Max. +400 Bar (Depending on process temperature)	Max. +400 Bar (Depending on process temperature)	420 Bar	Max. +400 Bar (Depending on process temperature)
Materials	Stainless steel	Stainless steel	Carbon steel, Titanium, Hastelloy C, Monel, AISI 316 SS (standard)	Stainless steel, PTFE	Carbon steel, Titanium, Hastelloy C, Monel, AISI 316 SS (standard)
Set Points	-	-	-	-	-

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PRESSURE SWITCH



General Duty Pressure Switch



Single Control

Dual Control

Heavy Duty Pressure Switch



Differential Pressure Switch



Process & Industrial Application



Flame & Explosion Proof Application



APPLICATION

Suitable for air compressors, water pumps, booster pumps, fire-fighting equipment, oil supply equipment, high-pressure cleaning apparatus

FEATURES

General Duty Pressure Switch

- Adjustable pressure range
- Narrow adjustable differential depending on model
- Range & differential pointer in units Bar & Psig
- Range & differential individually lockable by wire seal
- High rated SPDT contacts for all versions
- Shatter resistant contacts
- Heavy duty, finger-proof terminal blocks
- Captive terminal and cover screws
- Dual pressostats with two independent SPTD switches
- Manual toggle for system checkout & override
- Standard pressure connection :
7/16" -20 UNF for 1/4" SAE male flare connection
- Low pressure and high pressure versions available with TÜV approval acc. to EN 12263 to meet requirements of DIN 8901 and EN 378
- Automatic and manual reset versions
- Some versions with convertible auto/manual reset
- Locking plate and mounting screws included

Heavy Duty Pressure Switch

- Large space for cable mounting
- Easy to adjust
- Separate screw for upper and lower switching-point setting
- Accurate scale
- Transparent, UV-resistant cover
- Protection class : IP 65
- Worldwide approvals
- High repeatability of set switch-points

Differential Pressure Switch

- Immediate reset (no cooling down period)
- Precise timing
- Adjustable time delay from 20 to 150 sec (ZU types)
- Separate output signals for operation and alarm
- Suitable for supply voltage 24 to 240 VAC / DC
- Pressure connection :
Flare 7/16" -20 UNF, 1/4" SAE male

SPECIFICATION - GENERAL DUTY PRESSURE SWITCH

Type	Upper Switch Point Adjustable from ... to (Bar)	Differential Pressure Adjustable from ... to (Bar)	Minimum Lower Switch Point (Bar)	Maximum Pressure (Bar)
PS1 - A2R	-0.8 ... 1.5	0.2 ... 1	-1	12
PS1 - A1R	-0.75 ... 3	0.25 ... 2	-0.9	16
PS1 - A3R	-0.5 ... 7	0.5 ... 5	-0.9	25
PS1 - A8R	-0.5 ... 8	0.5 ... 5	-0.9	12
PS1 - A6R	4 ... 12	0.5 ... 7	0.1	16
PS1 - A4R	1 ... 20	1 ... 10	0.3	23
PS1 - A5R	6 ... 31	2 ... 15	3	36
PS1 - A3C*	-0.5 ... 7	0.5 ... 5	-0.9	25
PS1 - A5C*	6 ... 31	2 ... 15	3	36

Note : * Material : Stainless steel bellows

SPECIFICATION - HEAVY DUTY PRESSURE SWITCH

Type	Upper Switch Point Adjustable from ... to (Bar)	Lower Switch Point Adjustable from ... to (Bar)	Smallest Differential at Lower ... Higher End of Range		Max. Operating Pressure (Bar)
FF 4-2 DAH	0.11 ... 2	0.04 ... 1.89	0.07	0.11	20
FF 4-4 DAH	0.22 ... 4	0.07 ... 3.75	0.15	0.25	24
FF 4-8 DAH	0.5 ... 8	0.2 ... 7.5	0.3	0.5	30
FF 4-16 DAH	1 ... 16	0.4 ... 15	0.6	1	36
FF 4-32 DAH	2 ... 32	0.8 ... 30	1.2	2	52
FF 4-60 PAH	8 ... 60	4 ... 52	4	8	100
FF 4-120 PAH	16 ... 120	8 ... 104	8	16	200
FF 4-250 PAH	30 ... 250	14 ... 226	12	24	400

SPECIFICATION - DIFFERENTIAL PRESSURE SWITCH

Differential Pressure Controls Type	Time Delay		Cut Out		Max. Differential Pressure (Bar)	Max. Proof Pressure (Bar)
	Adjustable (Sec.)	Factory Setting (Sec.)	Adjusting Range Δp (Bar)	Factory Setting (Bar)		
FD 113	-	-	0.3 ... 4.5	0.7	-0.8 ... 12	25
FD 113 ZU	20 ... 150	120				
FD 113 ZU (A22-057) Copeland™ Brand Products	-	115 fix	-	0.63 fix		

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