

Introduction

MZ series pressure switches have been designed for applications that require cost effective outdoor mounting, in aggressive environments. The tough polycarbonate cover, fitted on a stainless steel base, retained by SS screws offers excellent resistance to corrosion, and also allows a view of the internal scale and working of the pressure switch. The reliable microswitch offers narrow deadband, switching values, which have excellent repeatability. By using appropriate capsules and wetted parts, MZ series pressure switches can be used for thousands of applications.

APPLICATIONS

- Power Generation
- Burners and Furnaces
- Glass and Metal Industries
- Chemical Industries
- Steel Industry
- Hydraulic, Steam and Gas Turbines
- Boilers & Compressors
- Machine tools
- Water treatment
- Sugar and Paper Mills
- Fire protection
- Surgical gas, Breweries, Milk industries
- Tyre Industry

PRODUCT SPECIFICATIONS:

- Storage temperature : Atmospheric temperature
- Operating ambient temperature : - 20° C to + 60° C
- Media temperature : for rubber diaphragms 80° C max
- Can be offered for higher temperatures with other capsule combinations
- Setpoint repeatability : $\pm 1\%$ of FSR
- Enclosure : Tough Polycarbonate and SS to IP 66
- Switch output : SPDT / 2SPDT
- Process connection : $\frac{1}{4}$ " BSP standard,
- Approximate weight : 1 kg

FEATURES

- Robust
- Externally visible scale for viewing, alongwith internal working of the switch
- Enclosure protection : IP 66 standard
- Reliable accurate microswitches for long life switching
- Customized arrangements for switching values on request
- Easy safe wiring options
- Locking and sealing arrangement to avoid tampering of setpoints on field
- Accuracy +/- 1 % FSR
- Warranty : 2 years

*Accuracy changes with switch configuration

PROCESS SWITCHES

SPECIFIER'S GUIDE FOR

PRESSURE SWITCHES

PRESSURE DIFFERENCE SWITCHES

VACUUM SWITCHES

TEMPERATURE SWITCHES



CE



Using the section

This section helps you make a logical choice in selecting the best product for a particular application. It allows a user familiar with our product line to locate the exact page the product is listed on. For those not familiar with our products, a logical sequence is given to help the user pick the best product for their need.

By taking a few minutes to familiarise yourself with the catalogue organization, you will find it very easy to locate the product / information you need.

1. The contents page lists the broad outline in which the catalogue is organized, and will help the user familiar with products to select the page on which the product or other useful information is listed.

2. Need Product Selection help ?

Product selection help will start with the "Pictorial Index" on Page 177, where the products are broadly classified. A brief description of each product group , a typical photo of the product within the group and the page number on which it is listed are given.

If the user is not familiar with the products, a product selection guide is provided on pages 182 through 185, where photos for each product and important specifications are given to help determine and select the best product for the application.

By evaluating and comparing these parameters, a logical selection can be made. Turn to the page on which the product information for the selected product is listed, for :

Capsule Construction details

Physical sizes

Special features

Ranges, hysteresis, electrical ratings etc.

Ordering information

Some applications

The organisation of each of these pages is demonstrated on pages 178 and 179, of this section "How to use this catalogue".

In many cases, more than one product may work. For the most cost effective solution, compare prices and consider alternatives. Remember, the end cost includes initial product price, plus the installation, plus the service.

3. Need the terminology explained? (see page 330)

Turn to page 330 for the definitions and terminology. This will help you familiarize with the terms used throughout the catalogue.

4. Need information on Accessories? (see page 322)

Turn to page 322 for information on important accessories. These will give information on only important accessories, and information needed, when these are to be supplied with our products.

5. Need selection guidance? (see page 331)

A logical procedure on page 331 will help you to consider most of the important factors when selecting a pressure switch.

6. Need other products ? (see page 332)

Products other than those listed in this catalogue are referenced on these pages. Separate catalogues for these products are available.

Pictorial Index

PRESSURE SWITCHES

HIGH RANGE

HIGH RANGE



Page No. 186

HIGH PROOF HIGH RANGE



Page No. 190

LARGE BORE HIGH RANGE



Page No. 194

FLANGED



Page No. 198

HYDRAULIC RANGE*

HYDRAULIC RANGE



Page No. 202

HYDRAULIC DIAPHRAGM RANGE



Page No. 206

PRESSURE DIFFERENCE SWITCHES

HIGH RANGE



Page No. 210

HIGH RANGE DP



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VACUUM SWITCHES

HIGH RANGE



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TEMPERATURE SWITCHES



Page No. 222

*Hydraulic ranges are ranges typically from 2 bar to 600 bar, used in oil applications. However, these switches can be used for other media depending on wetted parts compatibility.

HOW TO USE this section

Due to the variety in product types and their salient features, catalogue page formats may vary. But generally the following format is adhered to.

Elements appearing on each page will be:

1. Product family / series - A product family / series will appear on the outside page corner, depending on the left / right hand page, and will be in large bold type.
2. Product section - will appear immediately following the product family / series at top of the page and will be in bold type.
3. Features - will appear next to product description & will enlist only the major attributes.
4. Pressure capsule details - will show the construction of the pressure capsule and all its internal parts. If the process / working medium is variable, the wetted parts will be mentioned in italics. If the wetted parts are unique, the material of construction (MOC) will be mentioned

alongside in brackets. Where the material of construction is not specified, it will vary and the options are to be selected by the user considering the compatibility of the process / working medium. Modifications can be made to suit any particular medium, if the answer for your needs is not in the standard MOC listed. Products for which process / working medium is predefined, pressure capsule details are not provided (e.g as in case of comparison test pump). Pressure capsule details of accessories are not given.

5. Installation drawing - will show the typical installation dimensions of products as they exist in their standard forms. The dimensions are mentioned in millimetres and also in inches to facilitate the user. The dimensions of accessories will have to be added to these to arrive at any particular general arrangement (GA) drawings. The dimensions are approximate and for precise dimensions, where mounting space is restricted, the user may contact the nearest sales office. Installation drawings of only fast moving accessories are given.

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1 ● **MZ HIGH RANGE PRESSURE SWITCHES**

3 ●

- Transparent tough polycarbonate cover for visibility
- Internal setscrew to avoid easy access to setpoint
- Large spring for ease of setpoint
- IP66 enclosure for excellent ingress protection
- Sealing facility to avoid tampering of working switch
- Separate terminal block for wiring
- Cable gland as standard accessory
- Non corroding exteriors for a long life of the switch
- SS316 & teflon as wetted parts to switch a wide variety of media

Approximate Weight : 0.550 Kg.

Some Applications :
Used in humid or slightly corrosive atmosphere like jet dyeing machines, etc.

Electrical Connection :
Fig. 2

Bulletin No. KA121024 **186**

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HIGH RANGE PRESSURE SWITCHES MZ

7 ●

4 ●

4 ●

5 ●

10 ●

Pressure Capsule Details

No. Description

1. Pressure Housing (SS316)
2. Diaphragm (Teflon)
3. Plunger
4. Steel Ring (SS316)
5. O-Ring (Teflon)
6. Disc

Note - wetted parts are mentioned in italics.

INSTALLATION DRAWING

Approx. Dimensions in mm/inches

Bulletin No. KA121024 **187**

HOW TO USE this section

6. Photos - will appear on the relevant top of the page for products. If there are mounting variations / styles, all the styles for standard products will appear for easy identification. Options, if included in the photograph, are for demonstration only, and are not a part of the standard equipment. For accessories, the photos are not given due to the sheer variety and range available.

7. Logo - will appear on right hand top of page to identify the manufacturer.

8. Characteristics - Range tables and their relevant data, e.g the range covered, the differentials and maximum working pressures will generally appear on the right hand page. Additional technical details will also be mentioned, wherever required, on the right hand side of the page.

9. Ordering guide - A guide as to how to order the particular series' variations will appear on right hand bottom of the page. Only the variations available within a particular product family / series will appear here. Any additional accessories or modifications required for the product need to be mentioned in text by the user.

10. Some applications - will appear at the bottom left of the page. This is for easy understanding of the specific use of the product.

11. Numerous combinations are possible when pressure switches are provided with accessories like chemical seals, snubbers, remote seals, pipe mounting brackets, combination of switches mounted in a panel etc. Users are requested to provide the details of accessories required in text / drawings, as separate identification codes are provided for pressure switches fitted and supplied with accessories.

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MZ HIGH RANGE PRESSURE SWITCHES

RANGE SELECTION TABLE

Range Code	Range bar (psi)	Differential* bar (psi)	Maximum Working Pressure bar (psi)
		Approximate Maximum for "A8" microswitch	
LP†	0.067 - 0.213 (0.97 - 3.09)	0.05 (0.72)	5 (72.52)
LP5	0.1 - 0.5 (1.45 - 7.25)	0.10 (1.45)	5 (72.52)
H01	0.1 - 1.0 (1.45 - 14.50)	0.10 (1.45)	12 (174.05)
H02	0.1 - 1.5 (1.45 - 21.76)	0.20 (2.90)	12 (174.05)
H03	0.2 - 2.6 (2.90 - 37.71)	0.20 (2.90)	12 (174.05)
H04	0.2 - 3.6 (2.90 - 52.21)	0.20 (2.90)	12 (174.05)
H07	0.5 - 7.0 (7.25 - 101.50)	0.40 (5.80)	12 (174.05)
H10	0.5 - 10.0 (7.25 - 145.04)	0.60 (8.70)	25 (362.6)
H15	1.0 - 15.0 (14.50 - 217.56)	0.60 (8.70)	25 (362.6)
H30	5.0 - 25.0 (72.52 - 362.6)	0.80 (11.60)	35 (507.63)

*Minimum differential increases with setpoint (Graphs available on request), results for neoprene diaphragm.
†Range not available in SS316 L diaphragm.

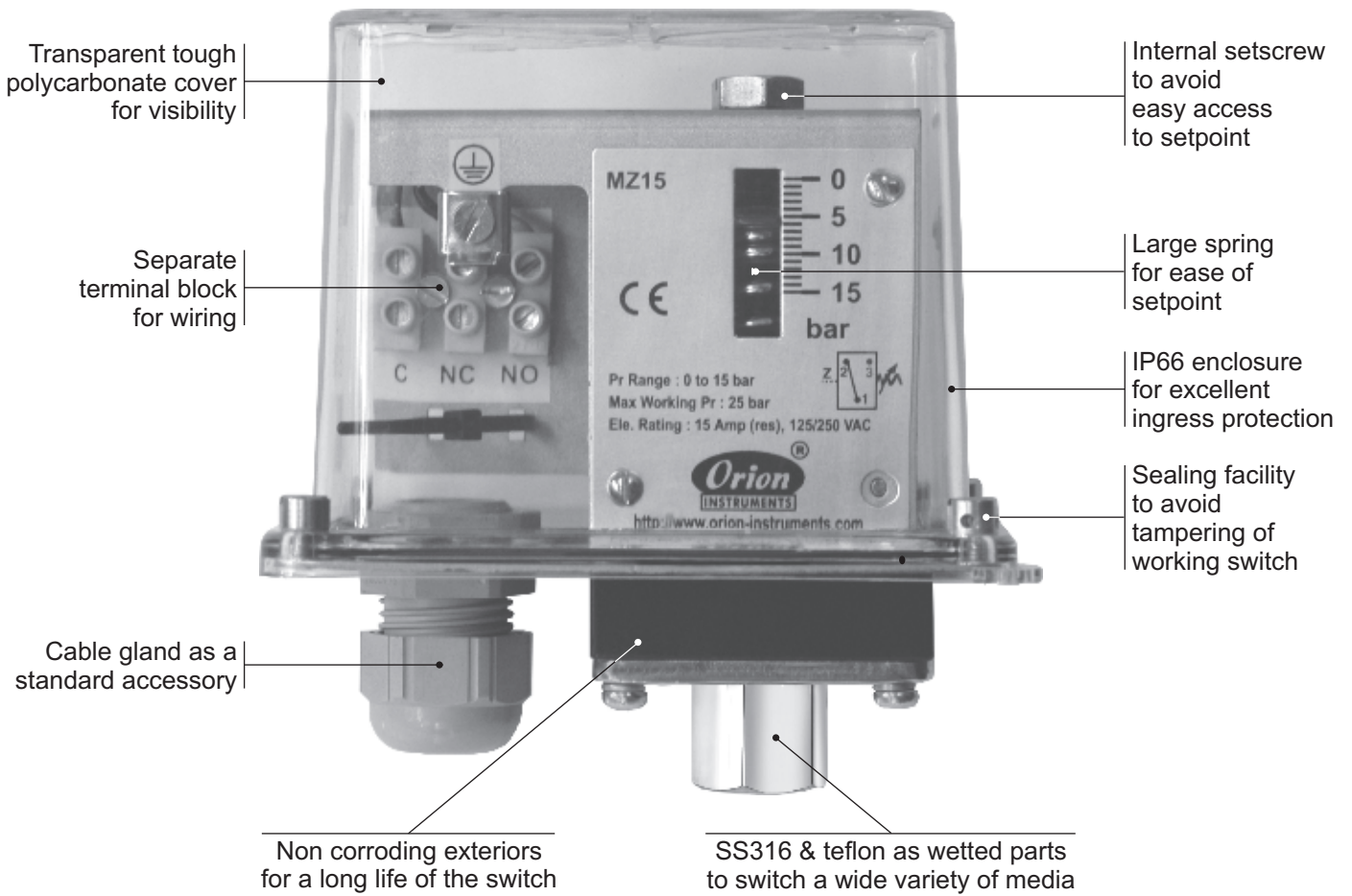
HIGH RANGE PRESSURE SWITCHES MZ

HOW TO ORDER PROCESS HIGH RANGE PRESSURE SWITCHES

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Material allocation	Model	Cable Entry Size	Switch Type	Microswitch (Values in bar)	Microswitch Type	Material Size	Diaphragm
<input type="checkbox"/> Reserved for special applications covered in catalogue. Will be supplied as per manufacturer's details only after supply details with customer.	MZ = stainless steel pressure switch with tough transparent enclosure to IP67 as per SS2147	3 = 1/4, 1/2, 3/4 cable gland	PF2 = pressure switch with scale in bar PF3 = pressure switch with scale in psi PA2 = pressure switch, differential with scale in bar PA3 = pressure switch, adjustable differential with scale in bar H01 - H15 = pressure switch, differential with option A9 in Group 6	LP = (0.067 - 0.213) LP5 = (0.1 - 0.5) H01 = (0.1 - 1.0) H02 = (0.1 - 1.5) H03 = (0.2 - 2.6) H04 = (0.2 - 3.6) H07 = (0.5 - 7.0) H10 = (0.5 - 10.0) H15 = (1.0 - 15.0) H30 = (5.0 - 25.0)	A8 = General purpose rated at 5 A, 250 VAC A9 = 2SPDT microswitches A9 = General purpose rated @ 5A, 250 VAC	S1 = SS316L 1/4 BSPF S2 = SS316L 1/2 NPTF S3 = SS 316L Monel	0 = Neoprene 1 = Teflon 2 = SS 316L 4 = Monel
							*Please refer note under SS316 pressure housing with 1/4" BSPF range below table.

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Switch Construction



The versatile construction of MZ series process pressure switches can be configured to suit applications, by selecting the following main subassemblies / components :

a) The enclosure

The tough polycarbonate cover, fitted on a stainless steel base, retained by SS screws offers excellent resistance to corrosion, and also allows a view of the internal scale and working of the pressure switch. The reliable snapaction microswitch offers narrow deadband, switching values, which have excellent repeatability. By using appropriate capsules and wetted parts, MZ series pressure switches can be used for thousands of applications.

A standard cable gland (PG13.5 or M20 x 1.5) is provided as a standard accessory.

b) The electrical element (s) :

Choice of electrical elements to suit end use are offered, like :

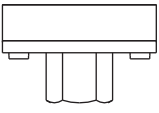
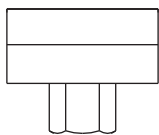
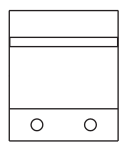
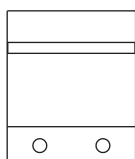
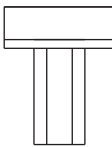
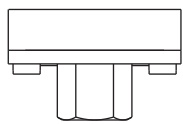
- A8 : General purpose applications
- A7 : 2SPDT switching elements
- A9 : General purpose applications

It is possible to have more options of electrical elements not published here, to suit individual end use.

The deadband (or hysteresis / on-off differential) of the switches will change with the change of the electrical element (s). The approximate values for each range (for standard microswitches offered) are published in this catalogue

c) The pressure capsule :

To suit the setpoints , the working media and the function of the switch in the application:

<p>High Range Pressure Switches (typically from 0.067 barg to 25 barg)</p> 	<p>High Proof High Range Pressure Switches (typically from 0.1 barg to 25 barg : Pmax = 70)</p> 	<p>High Range Pressure Difference Switches (typically from 0.1 barg to 25 barg)</p> 
<p>Vacuum Switches (typically from 760 mm Hg to atmospheric pressure)</p> 	<p>Hydraulic Range Pressure Switches (typically from 0.5 barg to 400 barg)</p> 	<p>OEM Switches (typically from 0.1 barg to 25 barg)</p> 

The pressure capsule can be modified to take high proof pressures [typically 100 bar for high pressure switches, or pressure difference switches (from high pressure side)].

Several accessories like chemical seals, pipe mounting brackets etc can be supplied with these switches to suit the media to be sensed. All of these are not listed, though most popular ones can be found on pages 322 through 328.

Please do get in touch with us for any of your applications, not addressed in this catalogue. We would be glad to offer you a solution.

Product Selection Guide



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Switch type	High range	High range high proof	Large Bore High Range
Repeatability (% FSR)	± 1	± 2	± 2
Range covered	0.067 bar to 25 bar	0.1 bar to 25 bar	0.1 bar to 25 bar
Enclosure Protection	IP 66		
Enclosure Material	Tough transparent polycarbonate		
sensing element Standard Optional	Diaphragm nylon reinforced neoprene diaphragm protected by Teflon SS 316L, Teflon, Monel SS 316L, Teflon SS 316L, Teflon, Monel		
Pressure housing Standard Optional	Monel	SS 316	Monel
Other Wetted Parts	Teflon, SS316		Teflon
Optional wetted parts through chem. seal	-		
Temp. of working medium	For non-metallic diaphragm: 80°C maximum. For metallic diaphragm: 150°C maximum For higher temperature, please use impulse tubing/chemical seals.		
Switching element	SPDT Snap action switch A8 : General purpose rated at 5A, 250 VAC, 0.2 A, 250 VDC resistive. For other switching elements please contact sales office		

WETTED PARTS

Accessories can be supplied with most of the switches. Please consult sales office.



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Flanged		Hydraulic		Hydraulic Diaphragm		Switch type
± 2		± 1		± 2		Repeatability (% FSR)
0.1 bar to 200 bar		5 bar to 400 bar		0.5 bar to 400 bar		Range covered
IP 66						Enclosure Protection
Tough transparent polycarbonate						Enclosure Material
Diaphragm nylon reinforced neoprene diaphragm Teflon, SS316L, Hastelloy C, Monel, Titanium, Tantalum		Piston SS		Diaphragm SS316 Monel		sensing element Standard Optional
Flange SS316L Hastelloy C276, Monel, Titanium, Tantalum		SS 316				Pressure housing Standard Optional
Teflon, SS 316		SS		SS316, Teflon		Other Wetted Parts
-		-		-		Optional wetted parts through chem. seal
For non-metallic diaphragm: 80°C maximum. For metallic diaphragm: 150°C maximum For higher temperature, please use impulse tubing/chemical seals.						Temp. of working medium
SPDT Snap action switch A8 : General purpose rated at 5A, 250 VAC, 0.2 A, 250 VDC resistive. For other switching elements please contact sales office						Switching element

WETTED PARTS

Product Selection Guide



Page No. 210



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Switch type	High range ?p	High Range DP	Vacuum
Repeatability (% FSR)	± 1	± 1	± 2
Range covered	0.1 bar to 3.6 bar	0.1 bar to 25 bar	760 mmHg to 100 mmHg
Enclosure Protection	IP 66		
Enclosure Material	Tough transparent polycarbonate		
sensing element Standard Optional	Diaphragm nylon reinforced neoprene diaphragm protected by Teflon Teflon		
Pressure housing Standard Optional	Aluminium SS 316	SS 316	Aluminium SS 316
Other Wetted Parts	Teflon, SS, SS 316	Teflon	Teflon, SS 316
Optional wetted parts through chem. seal			
Temp. of working medium	For non-metallic diaphragm: 80°C maximum. For metallic diaphragm: 150°C maximum For higher temperature, please use impulse tubing/chemical seals.		
Switching element	SPDT Snap action switch A8 : General purpose rated at 5A, 250 VAC, 0.2 A, 250 VDC resistive. For other switching elements please contact sales office		

Accessories can be supplied with most of the switches. Please consult sales office.

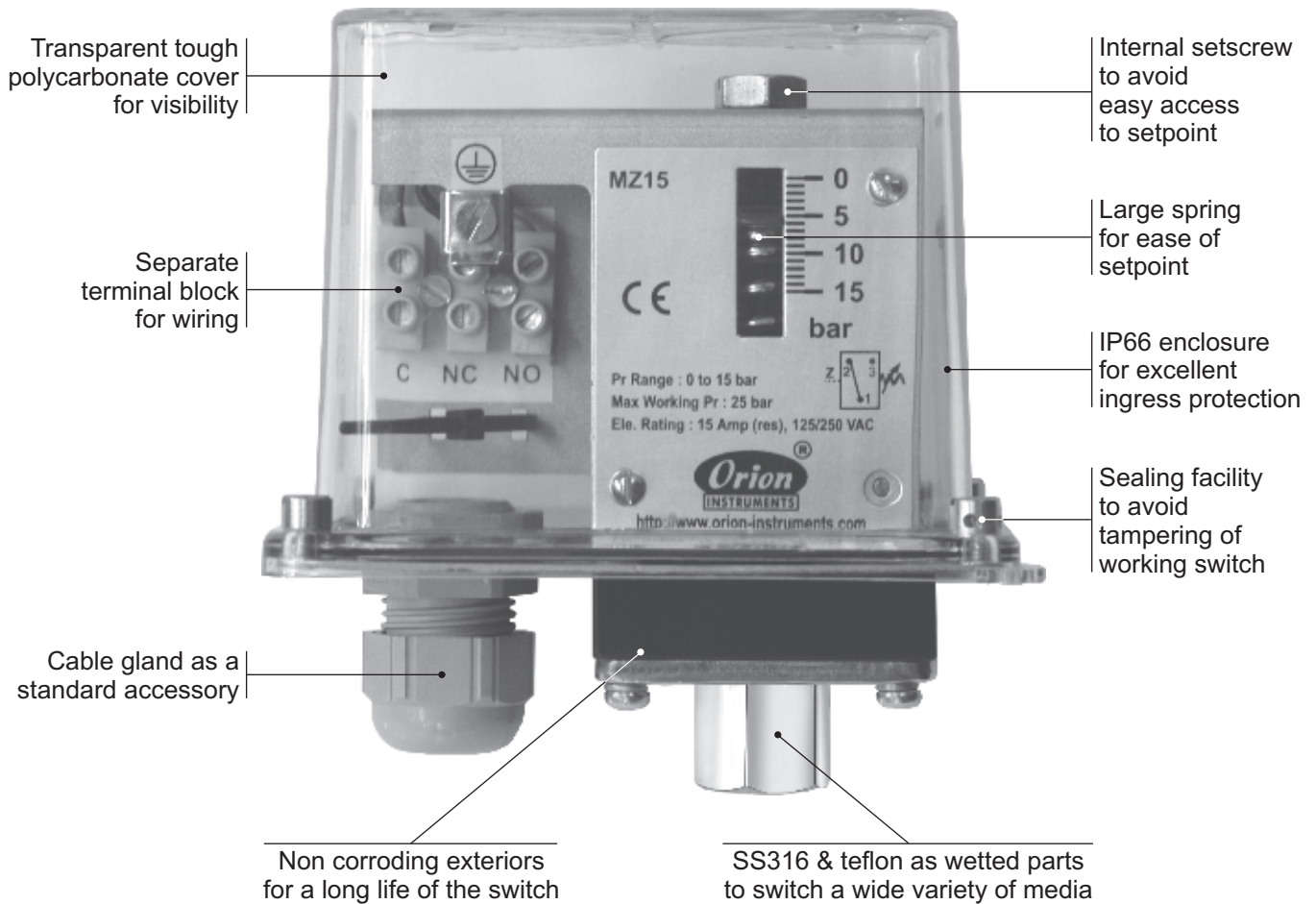


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Temperature	Switch type
± 1	Repeatability (% FSR)
25°C to 215°C	Range covered
IP 66	Enclosure Protection
Tough transparent polycarbonate	Enclosure Material
Bulb / Probe Brass	sensing element Standard Optional
	Pressure housing Standard Optional
	Other Wetted Parts
	Optional wetted parts through chem. seal
For non-metallic diaphragm: 80°C maximum. For metallic diaphragm: 150°C maximum For higher temperature, please use impulse tubing/chemical seals.	Temp. of working medium
SPDT Snap action switch A8 : General purpose rated at 5A, 250 VAC, 0.2 A, 250 VDC resistive. For other switching elements please contact sales office	Switching element

WETTED PARTS

MZ HIGH RANGE PRESSURE SWITCHES

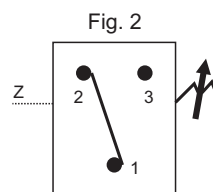


Approximate Weight : 0.550 Kg.

Some Applications :

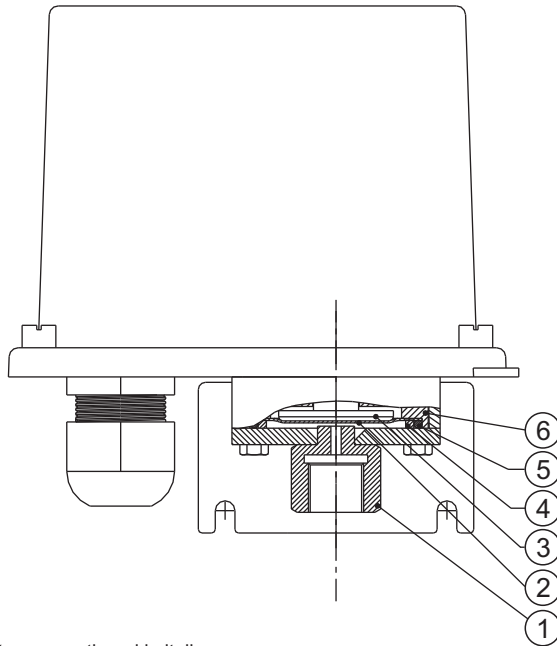
Used in humid or slightly corrosive atmosphere like jet dyeing machines, etc.

Electrical Connection :





PRESSURE CAPSULE DETAILS

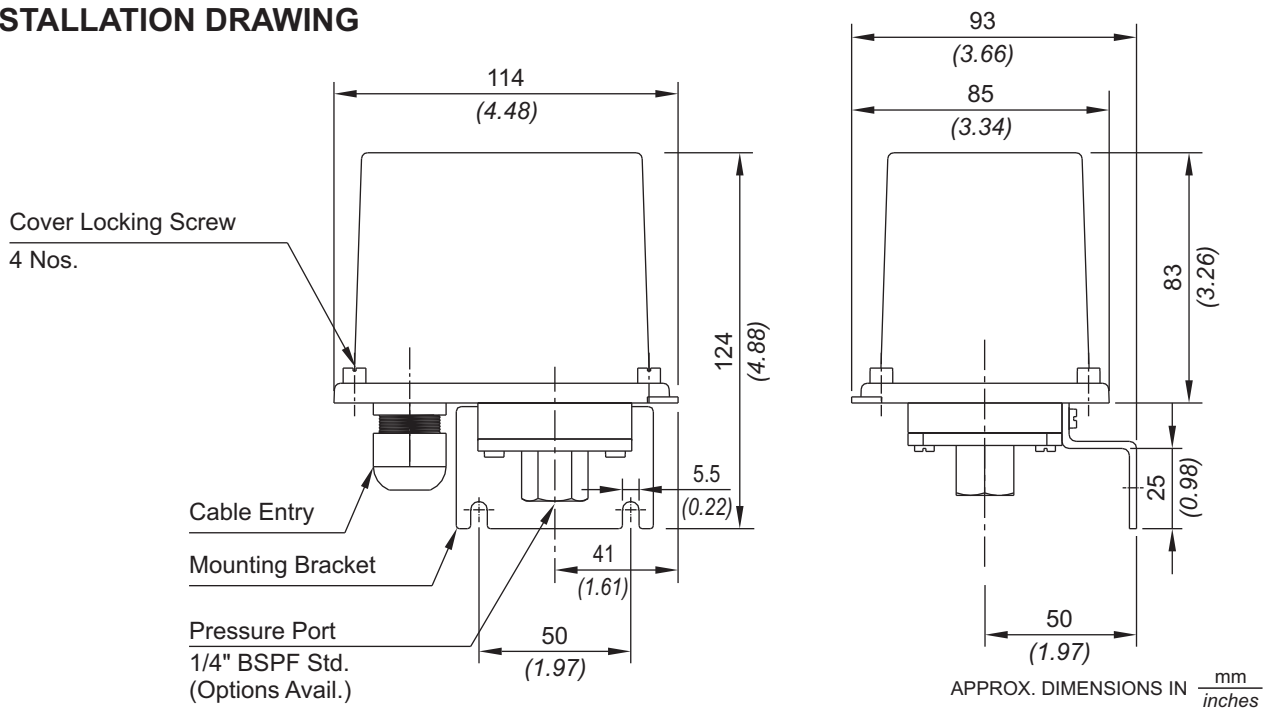


No. Description

1. *Pressure Housing (SS316)*
2. *Diaphragm (Teflon®)*
3. *Plunger*
4. *Steel Ring (SS316)*
5. *O-Ring (Teflon®)*
6. *Disc*

Note : *wetted parts* are mentioned in italics.

INSTALLATION DRAWING



MZ HIGH RANGE PRESSURE SWITCHES

RANGE SELECTION TABLE

Range Code	Range bar (psi)	Differential* bar (psi)	Maximum Working Pressure bar (psi)
		Approximate Maximum for "A8" microswitch	
LP†	0.067 - 0.213 (0.97 - 3.09)	0.05 (0.72)	5 (72.52)
LP5	0.1 - 0.5 (1.45 - 7.25)	0.10 (1.45)	5 (72.52)
H01	0.1 - 1.0 (1.45 - 14.50)	0.10 (1.45)	12 (174.05)
H02	0.1 - 1.5 (1.45 - 21.76)	0.20 (2.90)	12 (174.05)
H03	0.2 - 2.6 (2.90 - 37.71)	0.20 (2.90)	12 (174.05)
H04	0.2 - 3.6 (2.90 - 52.21)	0.20 (2.90)	12 (174.05)
H07	0.5 - 7.0 (7.25 - 101.50)	0.40 (5.80)	12 (174.05)
H10	0.5 - 10.0 (7.25 - 145.04)	0.60 (8.70)	25 (362.6)
H15	1.0 - 15.0 (14.50 - 217.56)	0.60 (8.70)	25 (362.6)
H30	5.0 - 25.0 (72.52 - 362.6)	0.80 (11.60)	35 (507.63)

*Minimum differential increases with setpoint (Graphs available on request), results for neoprene diaphragm.

†Range not available in SS316 L diaphragm.

HOW TO ORDER PROCESS HIGH RANGE PRESSURE SWITCHES

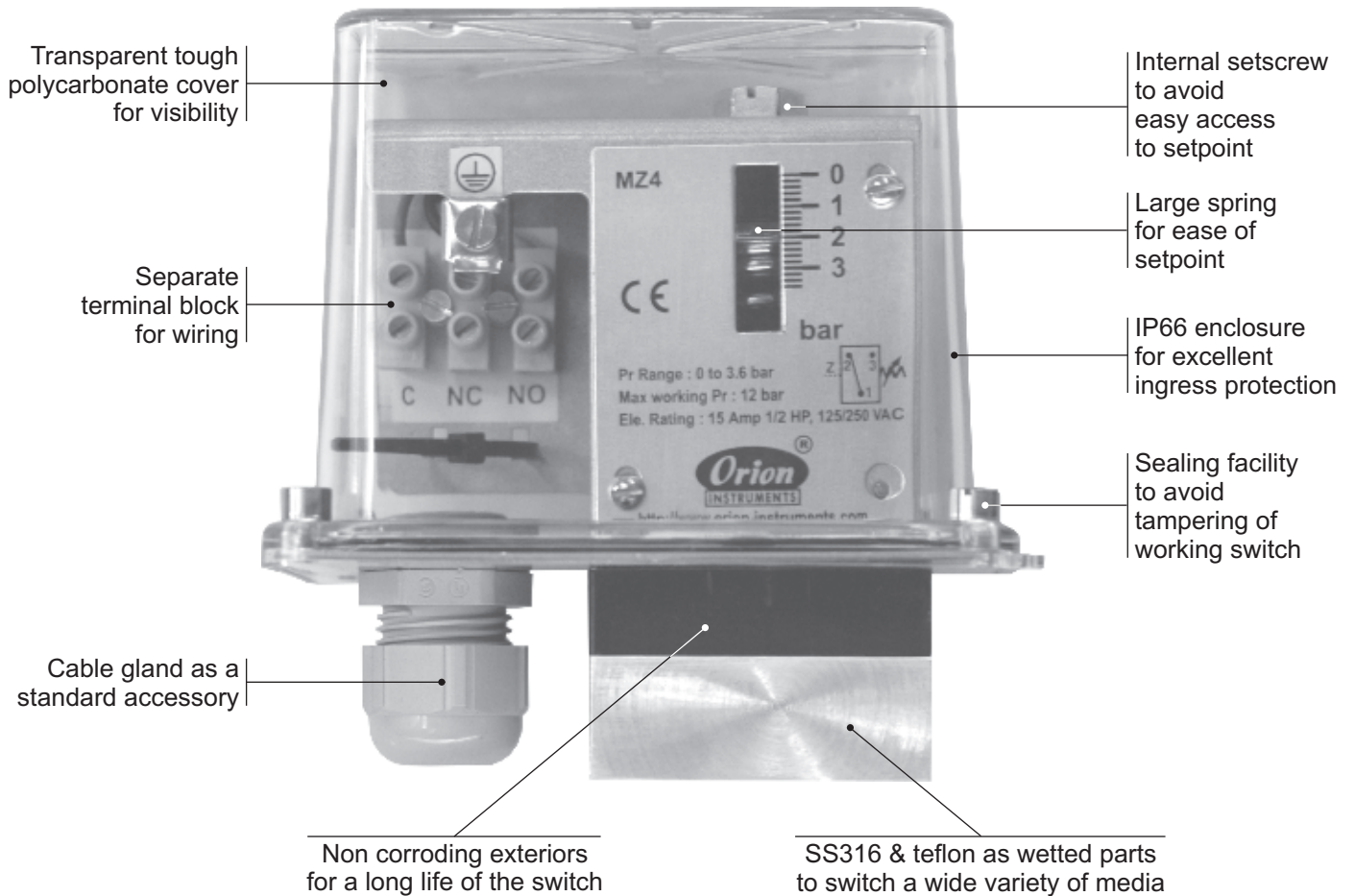
Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Non standard allocation	Model	Cable Entry Size	Switch Type	Range Code (values in bar)	Microswitch Type	Pressure Port Material / Size	Diaphragm
<input type="checkbox"/> Reserved for non-standard options not covered in catalogue. Will be given by manufacturer, only after agreement of supply details with customer.	MZ = Process pressure switch with tough transparent polycarbonate enclosure to IP66 as per IS2147	3 = M20 X 1.5 cable gland	PF2 = pressure switch, fixed differential with scale in bar PF3 = pressure switch, fixed differential with scale in psi * PA2 = pressure switch, adjustable differential with scale in bar * PA3 = pressure switch, adjustable differential with scale in psi *Available only with option A9 in Group 6	LP = (0.067 - 0.213) LP5 = (0.1 - 0.5) H01 = (0.1 - 1.0) H02 = (0.1 - 1.5) H03 = (0.2 - 2.6) H04 = (0.2 - 3.6) H07 = (0.5 - 7.0) H10 = (0.5 - 10.0) H15 = (1.0 - 15.0) H30 = (5.0 - 25.0)	A8 = General purpose microswitch rated at 5A; 250 VAC A7 = 2SPDT microswitches A9 = General purpose microswitch rated @ 5A, 250 VAC * Please refer note under Range Selection Table	S1 = SS316 / 1/4" BSP(F) S2 = SS316 / 1/4" NPT(F) Please refer page no. 226 & 227 for more pressure port options	0 = Neoprene 1 = Teflon 2 = SS 316L 4 = Monel

eg. A process pressure switch with fixed differential having 0.1 bar to 1 bar pressure range, with 5 Amp. microswitch, SS316 pressure housing with 1/4" BSP port size & neoprene diaphragm shall be specified by

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
<input type="checkbox"/>	MZ	3	PF2	H01	A8	S1	0

Please specify full model number to avoid ambiguity.

MZ HIGH PROOF HIGH RANGE PRESSURE SWITCHES

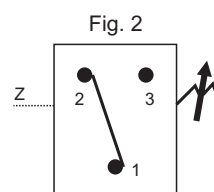


Approximate Weight : 0.900 Kg.

Some Applications :

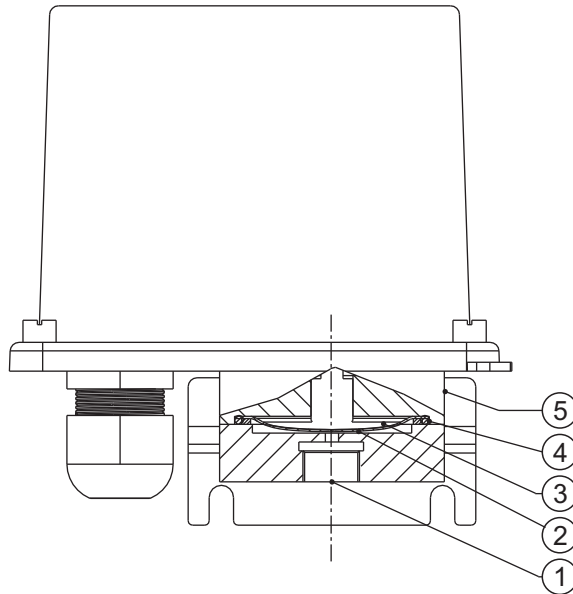
Used where low set point and high proof pressure is required like tyre moulding machines, etc.

Electrical Connection :





PRESSURE CAPSULE DETAILS

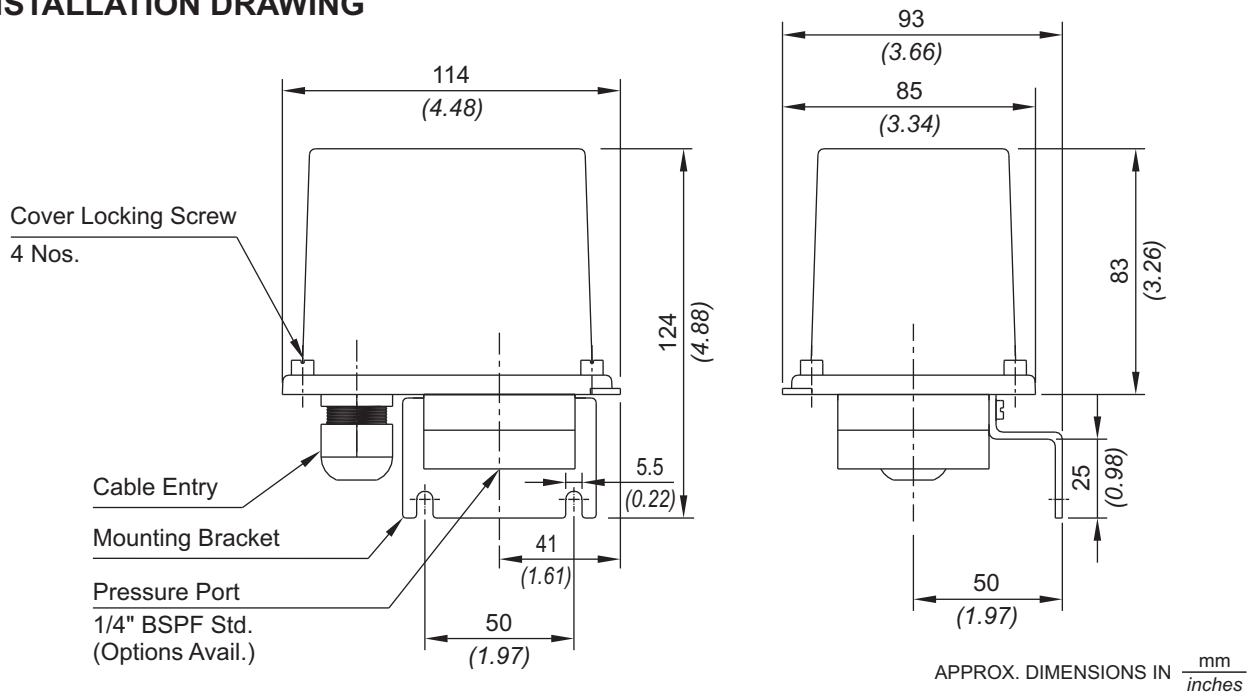


No. Description

1. Pressure Housing
2. Diaphragm
3. Plunger
4. O-Ring
5. Disc

Note : *wetted parts* are mentioned in italics.

INSTALLATION DRAWING



MZ HIGH PROOF HIGH RANGE PRESSURE SWITCHES

RANGE SELECTION TABLE

Range Code	Range bar (psi)	Differential* bar (psi)	Maximum Working Pressure bar (psi)
		Approximate Maximum for "A8" microswitch	
PP5	0.1 - 0.5 (1.45 - 7.25)	0.20 (2.90)	70 (1015.26)
P01	0.1 - 1.0 (1.45 - 14.50)	0.20 (2.90)	70 (1015.26)
P02	0.1 - 1.5 (1.45 - 21.76)	0.40 (5.80)	70 (1015.26)
P03	0.2 - 2.6 (2.90 - 37.71)	0.40 (5.80)	70 (1015.26)
P04	0.2 - 3.6 (2.90 - 52.21)	0.50 (7.25)	70 (1015.26)
P07	0.5 - 7.0 (7.25 - 101.53)	1.00 (14.50)	70 (1015.26)
P10	0.5 - 10.0 (7.25 - 145.04)	1.00 (14.50)	70 (1015.26)
P15	1.0 - 15.0 (14.50 - 217.56)	1.5 (21.76)	70 (1015.26)
P30	5.0 - 25.0 (72.52 - 362.6)	1.5 (21.76)	70 (1015.26)

*Minimum differential increases with setpoint (Graphs available on request), results for neoprene diaphragm.

HOW TO ORDER PROCESS HIGH PROOF HIGH RANGE PRESSURE SWITCHES

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Non standard allocation	Model	Cable Entry Size	Switch Type	Range Code (values in bar)	Microswitch Type	Pressure Port Material / Size	Diaphragm
<input type="checkbox"/> Reserved for non-standard options not covered in catalogue. Will be given by manufacturer, only after agreement of supply details with customer.	MZ = Process pressure switch with tough transparent polycarbonate enclosure to IP66 as per IS2147	3 = M20 X 1.5 cable gland	PF2 = pressure switch, fixed differential with scale PF3 = pressure switch, fixed differential with scale in psi PA2* = pressure switch, adjustable differential with scale in bar PA3* = pressure switch, adjustable differential with scale in psi *Available only with option A9 in Group 6	PP5 = (0.1 - 0.5) P01 = (0.1 - 1.0) P02 = (0.1 - 1.5) P03 = (0.2 - 2.6) P04 = (0.2 - 3.6) P07 = (0.5 - 7.0) P10 = (0.5 - 10.0) P15 = (1.0 - 15.0) P30 = (5.0 - 25.0)	A8 = General purpose microswitch rated at 5A; 250 VAC A7 = 2SPDT microswitches A9 = General purpose microswitch rated @ 5A, 250 VAC	S1 = SS316 / 1/4" BSP(F) S2 = SS316 / 1/4" NPT(F)	0 = Neoprene 1 = Teflon 2 = SS 316L
					* Please refer note under Range Selection Table	Please refer page no. 226 & 227 for more pressure port options	

eg. A process pressure switch with fixed differential having 0.1 bar to 1 bar pressure range, with 5 Amp. microswitch, SS316 pressure housing with 1/4" BSP port size & neoprene diaphragm shall be specified by

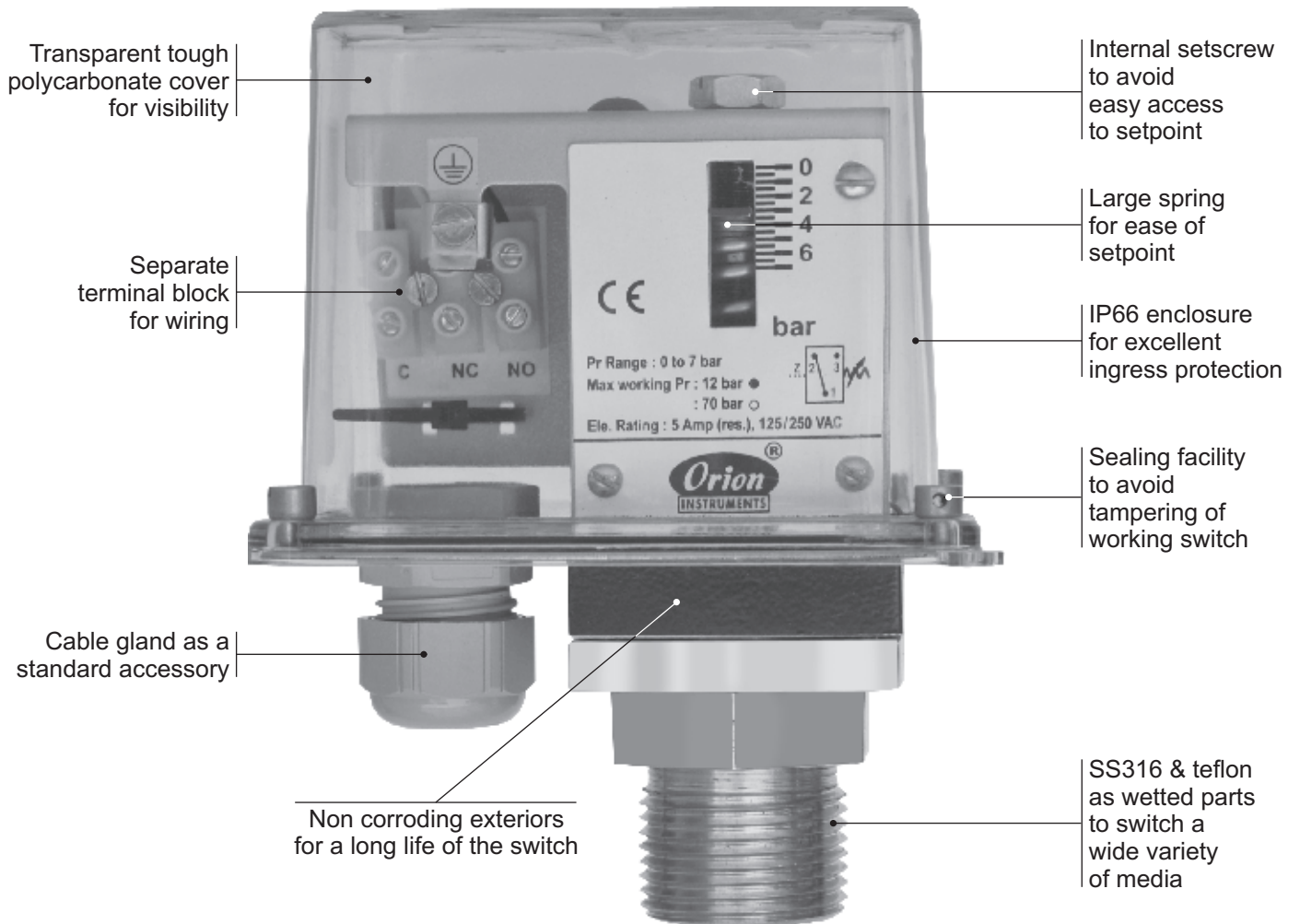
Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
<input type="checkbox"/>	MZ	3	PF2	P01	A8	S1	0

Please specify full model number to avoid ambiguity.

HIGH PROOF HIGH RANGE PRESSURE SWITCHES

MZ

MZ LARGE BORE HIGH RANGE PRESSURE SWITCHES

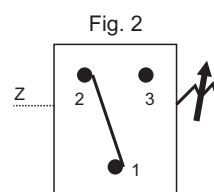


Approximate Weight : 0.900 Kg.

Some Applications :

Applications requiring a large bore, for slurries, sludges, etc.

Electrical Connection :

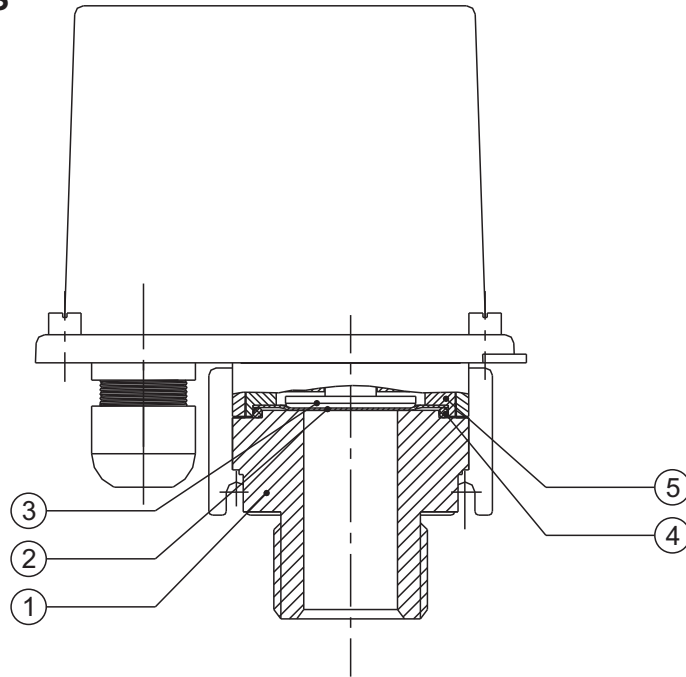




PRESSURE CAPSULE DETAILS

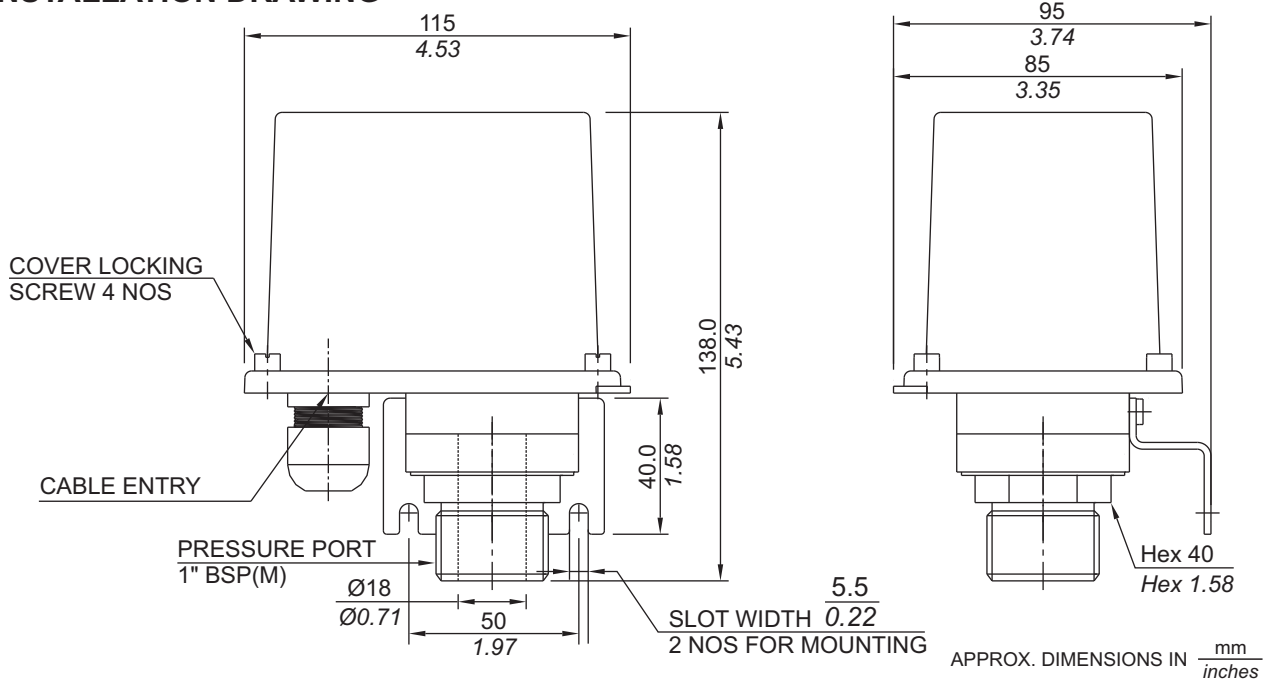
No. Description

1. Pressure Port (SS316)
2. Diaphragm (Teflon®)
3. Plunger
4. O-Ring (Teflon®)
5. Disc



Note : *wetted parts* are mentioned in italics.

INSTALLATION DRAWING



MZ LARGE BORE HIGH RANGE PRESSURE SWITCHES

RANGE SELECTION TABLE

Range Code	Range bar (psi)	Differential* bar (psi)	Maximum Working Pressure bar (psi)
		Approximate Maximum for "A8" microswitch	
H01	0.1 - 1.0 (1.45 - 14.50)	0.10 (1.43)	12 (171.43)
H02	0.1 - 1.5 (1.45 - 21.76)	0.20 (2.86)	12 (171.43)
H03	0.2 - 2.6 (2.90 - 37.71)	0.20 (2.86)	12 (171.43)
H04	0.2 - 3.6 (2.90 - 52.21)	0.20 (2.86)	12 (171.43)
H07	0.5 - 7.0 (7.25 - 101.50)	0.40 (5.72)	12 (171.43)
H10	0.5 - 10.0 (7.14 - 142.86)	0.60 (8.58)	25 (357.14)
H15	1.0 - 15.0 (14.29 - 214.29)	0.60 (8.58)	25 (357.14)
H30	5.0 - 25.0 (71.43 - 357.14)	0.80 (11.44)	35 (500.00)

*Minimum differential increases with setpoint (Graphs available on request), results for neoprene diaphragm.



Note: Welded diaphragm also available as shown

HOW TO ORDER PROCESS LARGE BORE HIGH RANGE PRESSURE SWITCHES

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Non standard allocation	Model	Cable Entry Size	Switch Type	Range Code (values in bar)	Microswitch Type	Pressure Port Material / Size	Diaphragm
<input type="checkbox"/> Reserved for non-standard options not covered in catalogue. Will be given by manufacturer, only after agreement of supply details with customer.	MZ = Process pressure switch with tough transparent polycarbonate enclosure to IP66 as per IS2147	3 = M20 X 1.5 cable gland	PF2 = pressure switch, fixed differential with scale in bar PF3 = pressure switch, fixed differential with scale in psi *PA2 = pressure switch, adjustable differential with scale in bar *PA3 = pressure switch, adjustable differential with scale in psi <small>*Available only with option A9 in Group 6</small>	H01 = (0.1 - 1.0) H02 = (0.1 - 1.5) H03 = (0.2 - 2.6) H04 = (0.2 - 3.6) H07 = (0.5 - 7.0) H10 = (0.5 - 10.0) H15 = (1.0 - 15.0) H30 = (5.0 - 25.0)	A8 = General purpose microswitch rated at 5 A; 250 VAC A7 = 2SPDT microswitches A9 = General purpose microswitch rated @ 5A, 250 VAC <small>* Please refer note under Range Selection Table</small>	S3 = SS316 / 1" BSP(M) N3 = Monel / 1" BSP(M) <small>Please refer page no. 226 & 227 for more pressure port options</small>	0 = Neoprene 1 = Teflon 2 = SS 316L 4 = Monel

eg. A process pressure switch with fixed differential having 0.1 bar to 1 bar pressure range, with 5Amp. microswitch, SS316 pressure housing with 1" BSPM port size & neoprene diaphragm shall be specified by

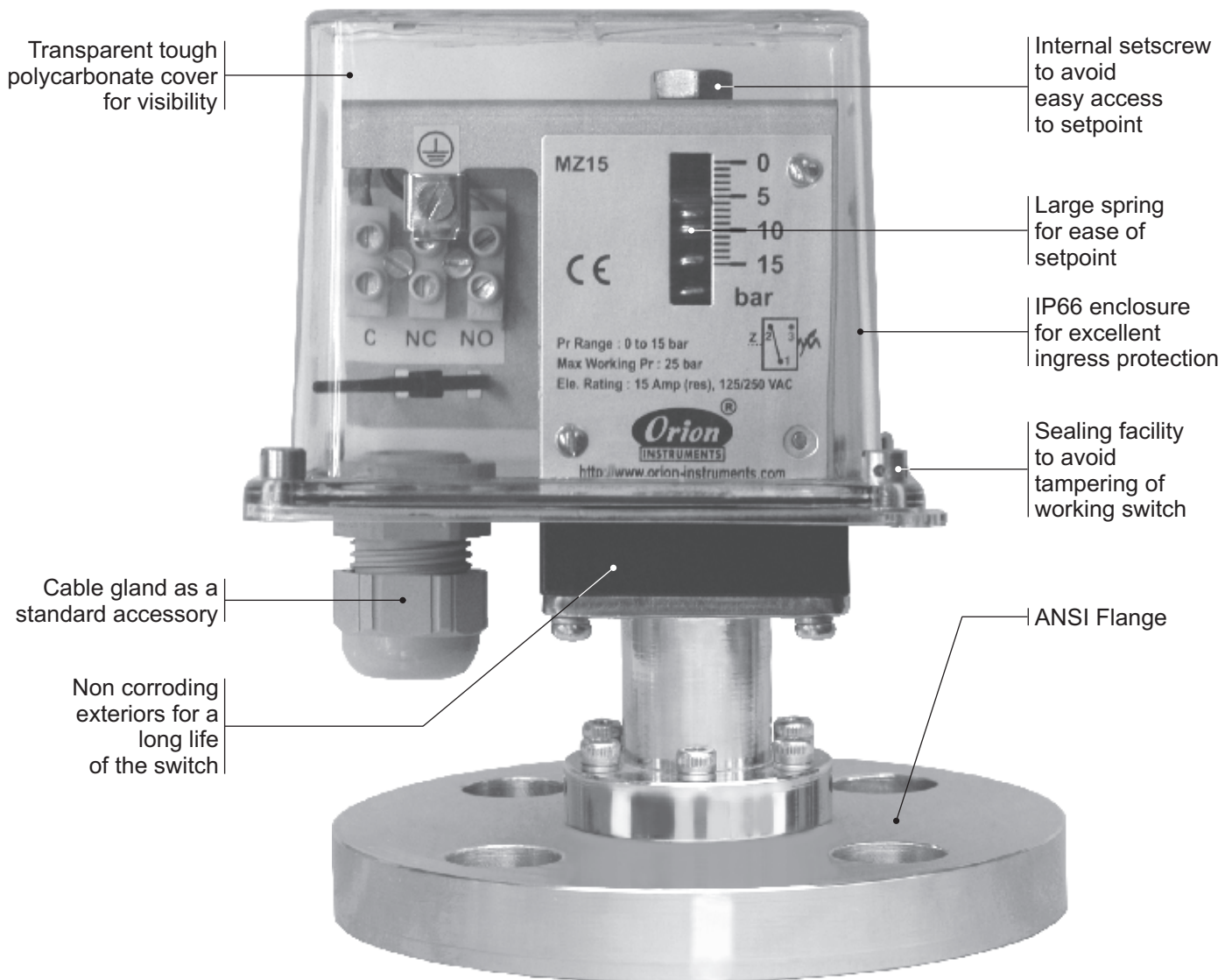
Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
<input type="checkbox"/>	MZ	3	PF2	H01	A8	S3	0

Please specify full model number to avoid ambiguity.

LARGE BORE HIGH RANGE PRESSURE SWITCHES

MZ

MZ FLANGED PRESSURE SWITCHES

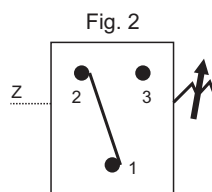


Approximate Weight : 0.900 Kg.

Some Applications :

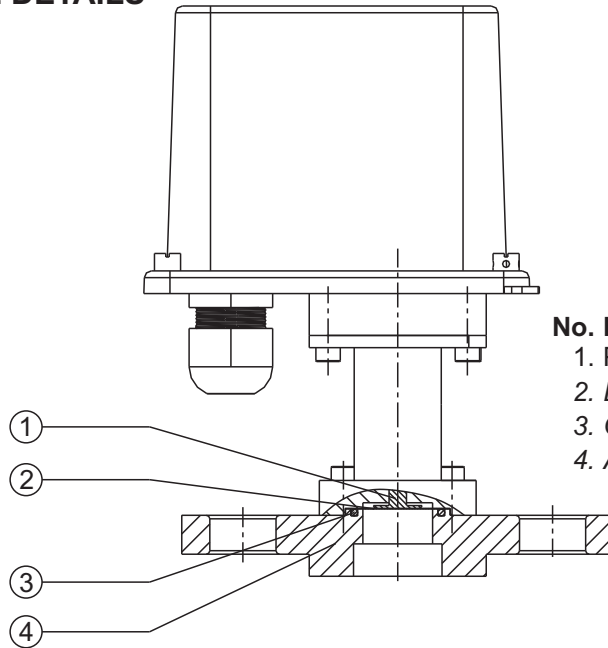
In non-hazardous areas for slurry, colloidal solutions, corrosive & non-corrosive working media (unclean working media), etc.

Electrical Connection :





PRESSURE CAPSULE DETAILS

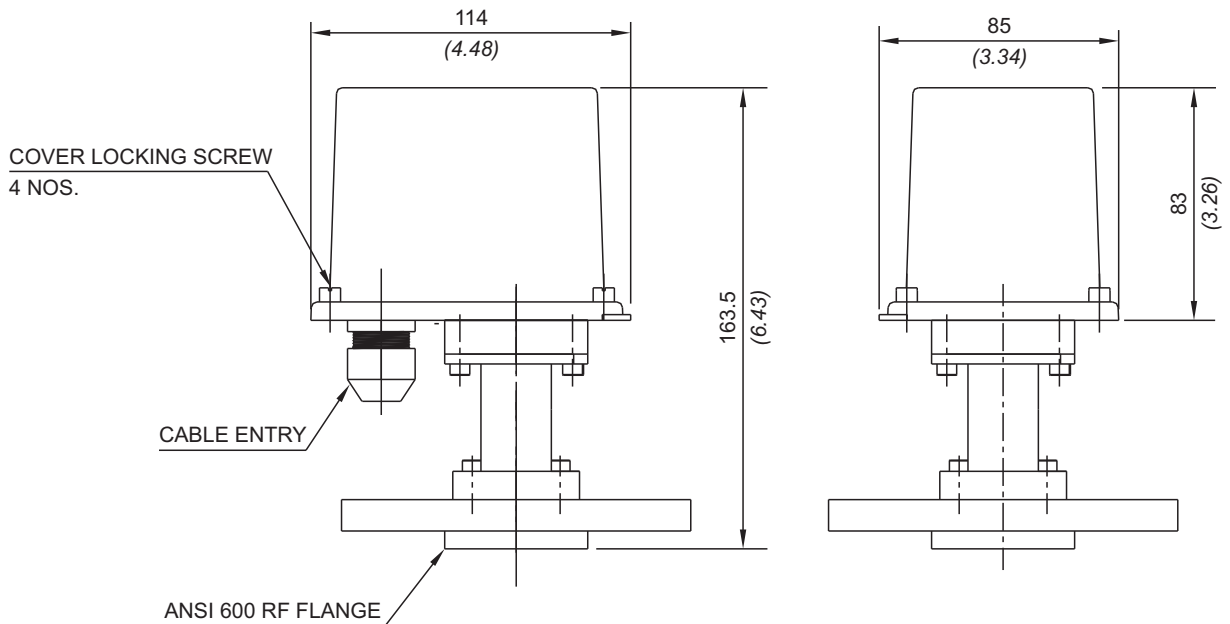


No. Description

1. Plunger
2. Diaphragm (*Teflon*)[®]
3. O-Ring (*Teflon*)[®]
4. ANSI 600 Flange (SS316)

Note : *wetted parts* are mentioned in italics.

INSTALLATION DRAWING



APPROX. DIMENSIONS IN $\frac{\text{mm}}{\text{inches}}$

MZ FLANGED PRESSURE SWITCHES

RANGE SELECTION TABLE

Range Code	Range bar (psi)	Differential* bar (psi)	Maximum Working Pressure bar (psi)
		Approximate Maximum for "A8" microswitch	
H01	0.1 - 1.0 (1.45 - 14.50)	0.10 (1.45)	As per the class of flange Please consult Sales Office in case you need clarification on availability of maximum working pressure for a particular range.
H02	0.1 - 1.5 (1.45 - 21.76)	0.12 (1.74)	
H03	0.2 - 2.6 (2.90 - 37.71)	0.17 (2.46)	
H04	0.2 - 3.6 (2.90 - 52.21)	0.20 (2.90)	
H07	0.5 - 7.0 (7.25 - 101.50)	0.40 (5.80)	
H10	0.5 - 10.0 (7.25 - 145.04)	0.40 (5.80)	
H15	1.0 - 15.0 (14.50 - 217.71)	0.80 (11.60)	
H30	5.0 - 25.0 (72.52 - 362.6)	0.80 (11.60)	
H4T	5 - 40 (72.52 - 580.15)	5 (72.52)	
H1H	10 - 100 (145.04 - 1450.38)	12 (174.05)	
H2H	7 - 200 (101.52 - 2900.76)	24 (348.09)	

* Minimum differential increases with setpoint (Graphs available on request)

* Differentials of microswitches A2 through A9 will vary. Differentials for A7 are typically twice that for A1 microswitch. Please indicate specifically the differential value in enquiry/order, when it is critical in your application.

FLANGE CODE TABLE (Please refer page no. 228 & 229 for more options)

	SS316L		Hastelloy C276		Monel		Titanium		Tantalum	
	RF*	FF*	RF*	FF*	RF*	FF*	RF*	FF*	RF*	FF*
150 #										
1" NB	AC	BS	DI	EY	GO	IE	JU	LK	NA	OQ
2" NB	AF	BV	DL	FB	GR	IH	JX	LN	ND	OT
300#										
1" NB	AI	BY	DO	FE	GU	IK	KA	LQ	NG	OW
2" NB	AL	CB	DR	FH	GX	IN	KD	LT	NJ	OZ
2500#										
1" NB	BM	DC	ES	GI	HY	JO	LE	MU	OK	QA
2" NB	BP	DF	EV	GL	IB	JR	LH	MX	ON	QD

RANGE AVAILABILITY AS PER BORE SIZES

	H01 to H04	H07	H10	H15	H30	H2T to H2H
1" NB	NA	Yes	Yes	Yes	Yes	Yes
2" NB	Yes	Yes	Yes	Yes	Yes	Yes

*RF = Raised Face
*FF = Flat Face

HOW TO ORDER PROCESS FLANGED PRESSURE SWITCHES

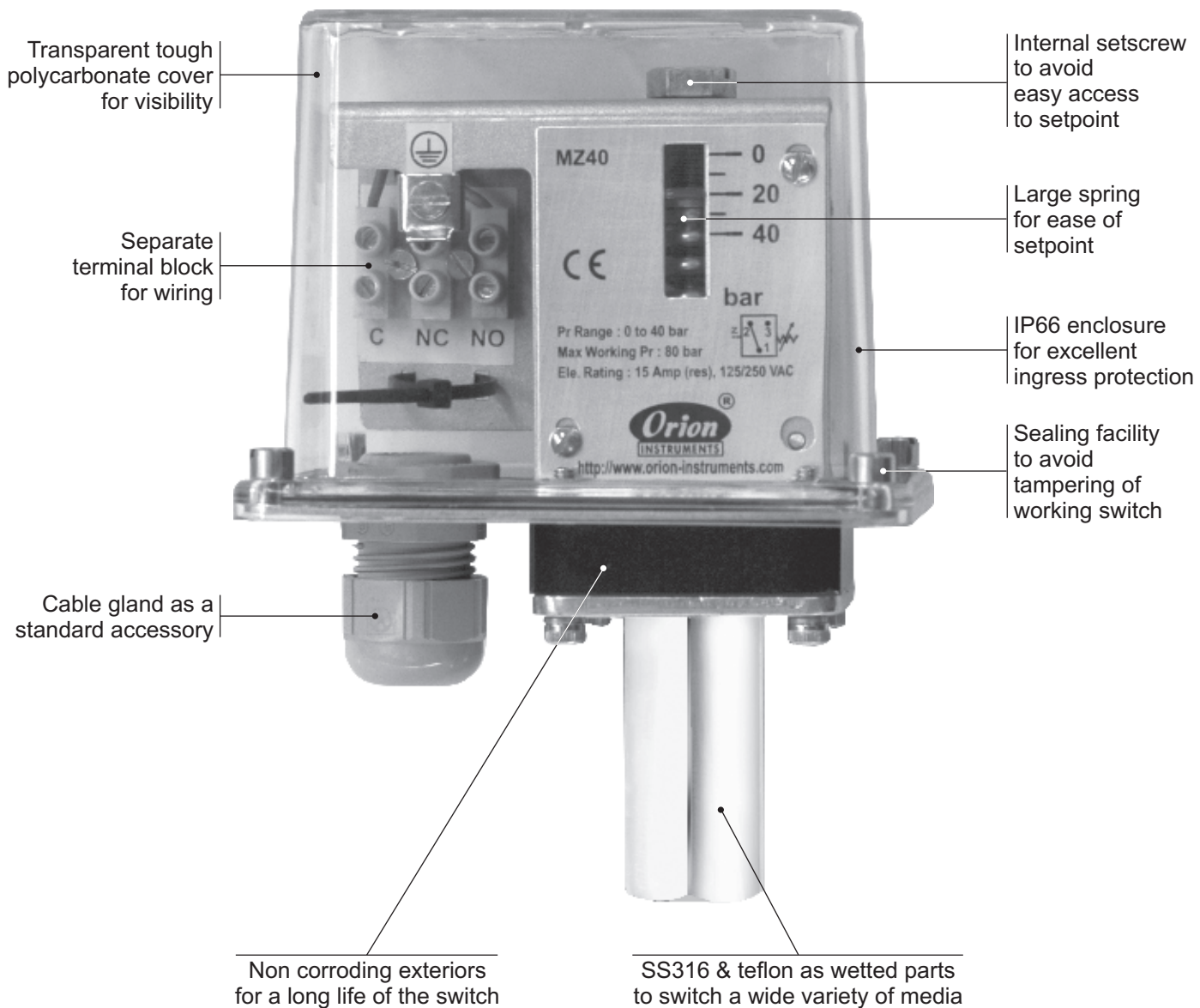
Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Non standard allocation	Model	Cable Entry Size	Switch Type ANSI flanged	Range Code (values in bar)	Microswitch Type	Flange Size and Material	Diaphragm
<input type="checkbox"/> Reserved for non-standard options not covered in catalogue. Will be given by manufacturer, only after agreement of supply details with customer.	MZ = Process pressure switch with tough transparent polycarbonate enclosure to IP66 as per IS2147	3 = M20 X 1.5 threads for aluminum housing	AF2 = pressure switch, fixed differential with scale in bar AF3 = pressure switch, fixed differential with scale in psi * AA2 = pressure switch, adjustable differential with scale in bar * AA3 = pressure switch, fixed differential with scale in psi *Available with A9 (in group 6) only	H01 = 0.1 - 1.0 H02 = 0.1 - 1.5 H03 = 0.2 - 2.6 H04 = 0.2 - 3.6 H07 = 0.5 - 7.0 H10 = 0.5 - 10.0 H15 = 1.0 - 15.0 H30 = 5.0 - 25.0 H4T = 5 - 40 H1H = 10 - 100 H2H = 7 - 200	A8 = General purpose microswitch rated at 5A; 250 VAC A7 = 2SPDT microswitches A9 = General purpose microswitch rated @ 5A, 250 VAC * Please refer note under Range Selection Table	Please select as per Flange Code Table For other classes and sizes please refer page no. 228 & 229	0 = Neoprene 1 = Teflon 2 = SS316L 3 = Hastelloy C 4 = Monel 400 5 = Titanium 6 = Tantalum

eg. A high range Industrial/ANSI flanged pressure switch with 1/2" NPT cable entry with fixed differential without scale, having 0.1 bar to 1 bar pressure range, with 15Amp. microswitch, and 2" 150# RF SS316L flange & SS316L diaphragm shall be specified by

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
<input type="checkbox"/>	MD	1	AF1	H01	A1	AF	2

Please specify full model number to avoid ambiguity.

MZ HYDRAULIC RANGE PRESSURE SWITCHES

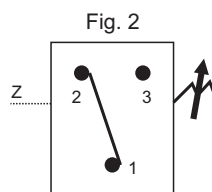


Approximate Weight : 0.680 Kg.

Some Applications :

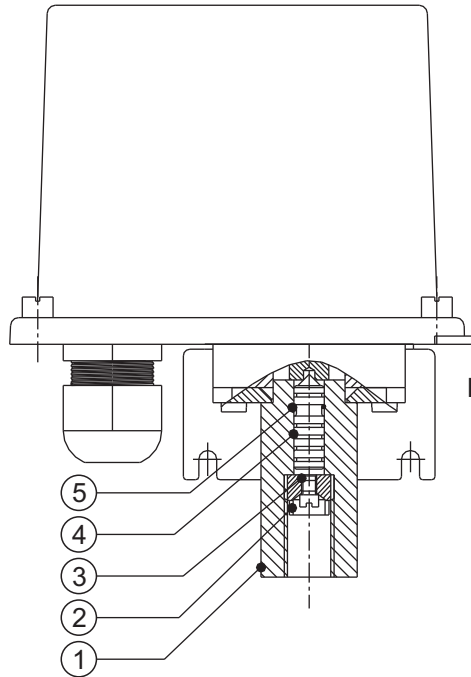
Used where pressure surges and fluctuations may be present like oil hydraulic systems, etc.

Electrical Connection :





PRESSURE CAPSULE DETAILS

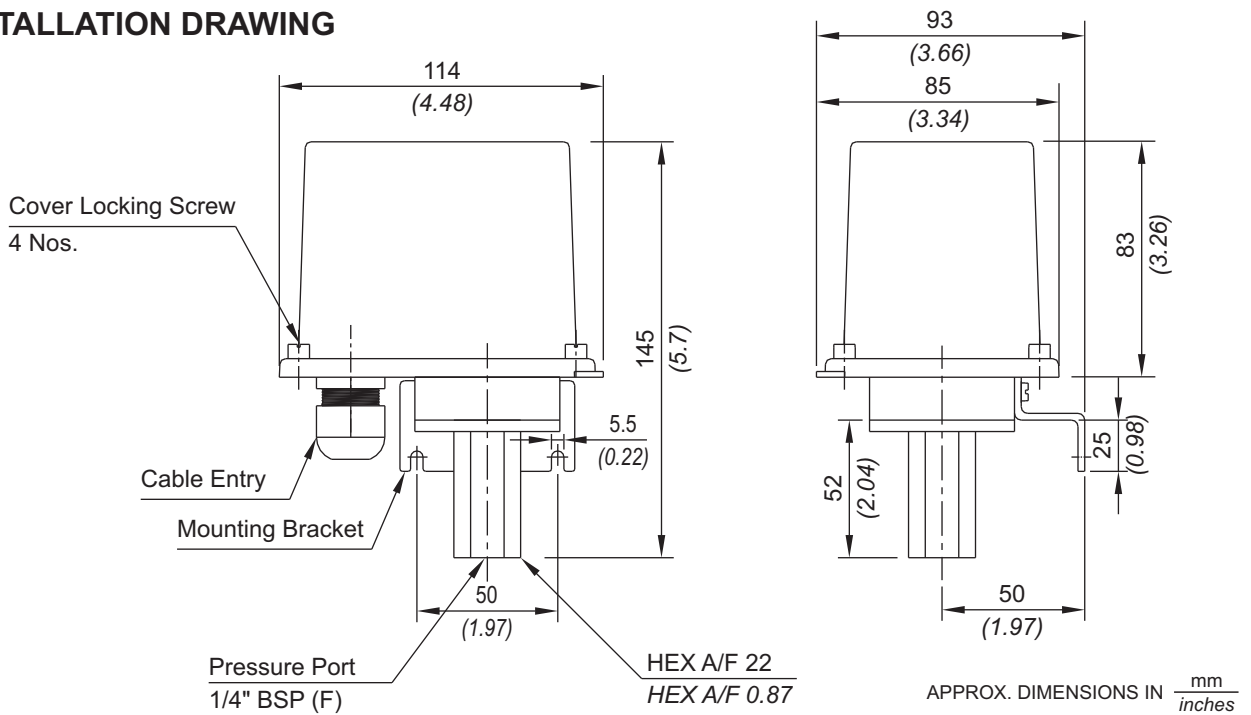


No. Description

1. Pressure housing (SS)
2. Surge Arrestor (SS)
3. Surge Reducer (SS)
4. Piston (SS)
5. O-Ring (Viton®)

Note : *wetted parts* are mentioned in italics.

INSTALLATION DRAWING



MZ HYDRAULIC RANGE PRESSURE SWITCHES

RANGE SELECTION TABLE

Range Code	Range bar (psi)	Differential* bar (psi)	Maximum Working Pressure bar (psi)
		Approximate Maximum for "A8" microswitch	
040	5 - 40 (72.52 - 580.15)	5 (72.52)	80 (1160.31)
100	10 - 100 (145.04 - 1450.38)	12 (174.05)	120 (1740.45)
200	7 - 200 (101.63 - 2900.75)	24 (348.09)	200 (2900.75)
350	35 - 350 (101.53 - 2900.75)	24 (348.09)	500 (7251.89)
400	100 - 400 (1450.38 - 5801.51)	30 (435.11)	400 (5801.59)

*Minimum differential increases with setpoint (Graphs available on request)

HOW TO ORDER PROCESS HYDRAULIC RANGE PRESSURE SWITCHES

HYDRAULIC RANGE PRESSURE SWITCHES

MZ

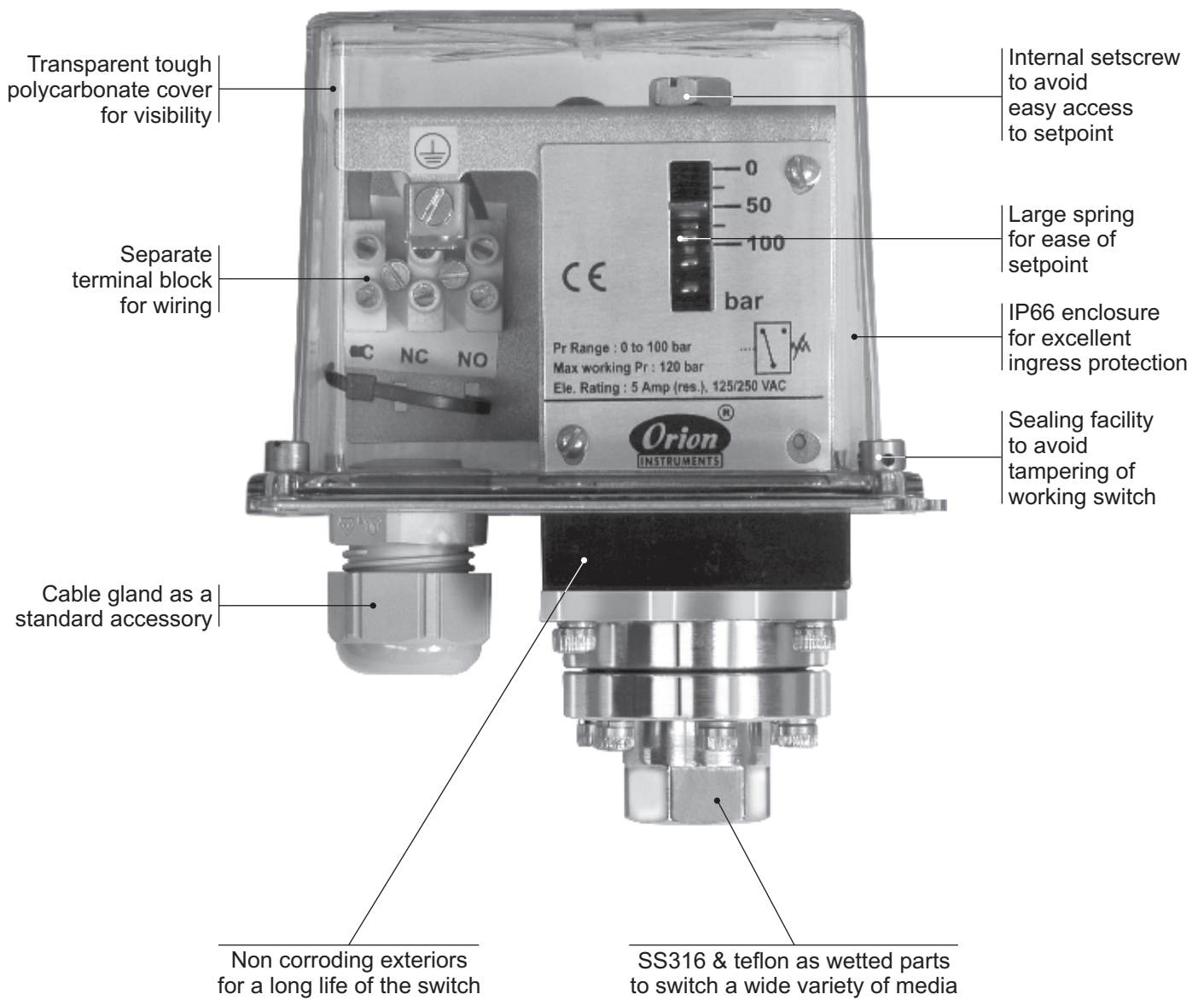
Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Non standard allocation	Model	Cable Entry Size and Material of Enclosure	Switch Type	Range Code (values in bar)	Microswitch Type	Pressure Port Material / Size	Piston
<input type="checkbox"/> Reserved for non-standard options not covered in catalogue. Will be given by manufacturer, only after agreement of supply details with customer.	MZ = Process pressure switch with tough transparent polycarbonate enclosure to IP66 as per IS2147	3 = M20 X 1.5 cable gland	PF2 = pressure switch, fixed differential with scale in bar PF3 = pressure switch, fixed differential with scale in psi *PA2 = pressure switch, adjustable differential with scale in bar *PA3 = pressure switch, adjustable differential with scale in psi <small>*Available only with option A9 in Group 6</small>	040 = (5 - 40) 100 = (10 - 100) 200 = (7 - 200) 350 = (35 - 350) 400 = (100 - 400)	A8 = General purpose microswitch rated at 5 A; 250 VAC A7 = 2SPDT microswitches A9 = General purpose microswitch rated @ 5A, 250 VAC	S1 = SS316 / 1/4" BSP(F) S2 = SS316 / 1/4" NPT(F)	2 = SS
					<small>* Please refer note under Range Selection Table</small>	<small>Please refer page no. 226 & 227 for more pressure port options</small>	

eg. A process pressure switch with fixed differential having 5 bar to 40 bar pressure range, with 5 Amp. microswitch, SS316 pressure housing with 1/4" BSP port size & neoprene diaphragm shall be specified by

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
<input type="checkbox"/>	MZ	3	PF2	040	A8	S1	0

Please specify full model number to avoid ambiguity.

MZ HYDRAULIC DIAPHRAGM PRESSURE SWITCHES

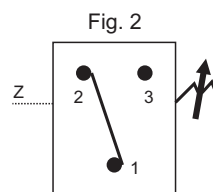


Approximate Weight : 0.680 Kg.

Some Applications :

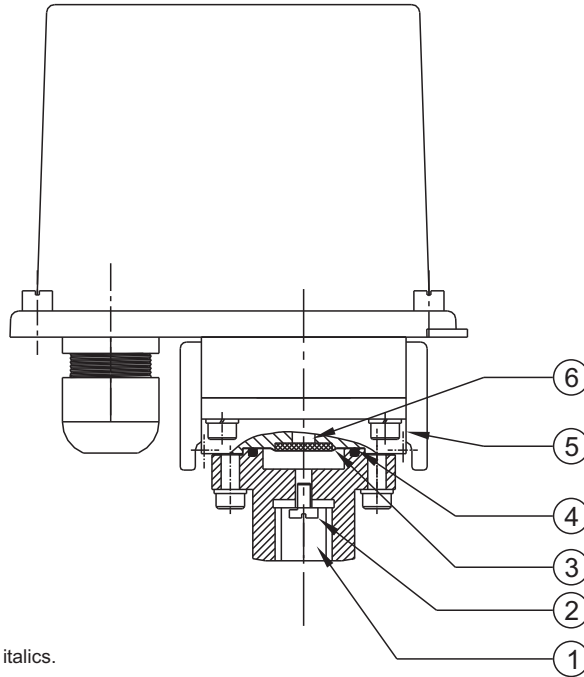
High Pressure applications requiring diaphragm as sensing element like water treatment plants, etc.

Electrical Connection :





PRESSURE CAPSULE DETAILS

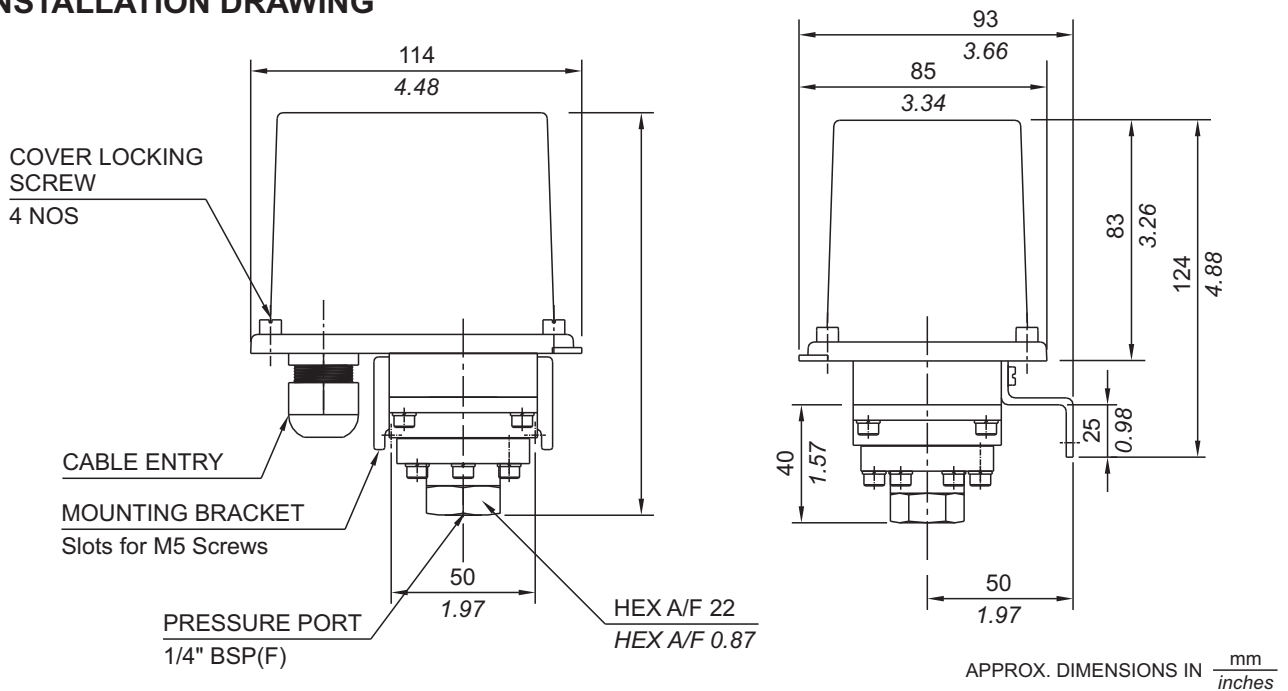


No. Description

1. Pressure Housing
2. Surge Reducer
3. Diaphragm
4. O-Ring
5. Disc
6. Plunger

Note : *wetted parts* are mentioned in italics.

INSTALLATION DRAWING



RANGE SELECTION TABLE

Range Code	Range bar (psi)	Differential* bar (psi)	Maximum Working Pressure bar (psi)
		Approximate Maximum for "A8" microswitch	
H1T	0.5 - 10 (7.25 - 145.04)	0.5 (7.25)	150 (2175.51)
H2T	2 - 20 (29.00 - 290.07)	2 (29.00)	200 (2900.76)
H4T	5 - 40 (72.52 - 580.15)	5 (72.52)	200 (2900.76)
H1H	10 - 100 (146.04 - 1450.38)	12 (174.05)	200 (2900.76)
H2H	7 - 200 (101.52 - 2900.76)	24 (348.09)	400 (5801.52)
H4H	40 - 400 (580.15 - 5801.52)	70 (1015.27)	500 (7251.88)

* Minimum differential increases with setpoint (Graphs available on request)

* Differentials of microswitches A2 through A9 will vary. Differentials for A7 are typically twice that for A1 microswitch. Please indicate specifically the differential value in enquiry/order, when it is critical in your application.

HOW TO ORDER PROCESS HYDRAULIC DIAPHRAGM PRESSURE SWITCHES

HYDRAULIC DIAPHRAGM PRESSURE SWITCHES

MZ

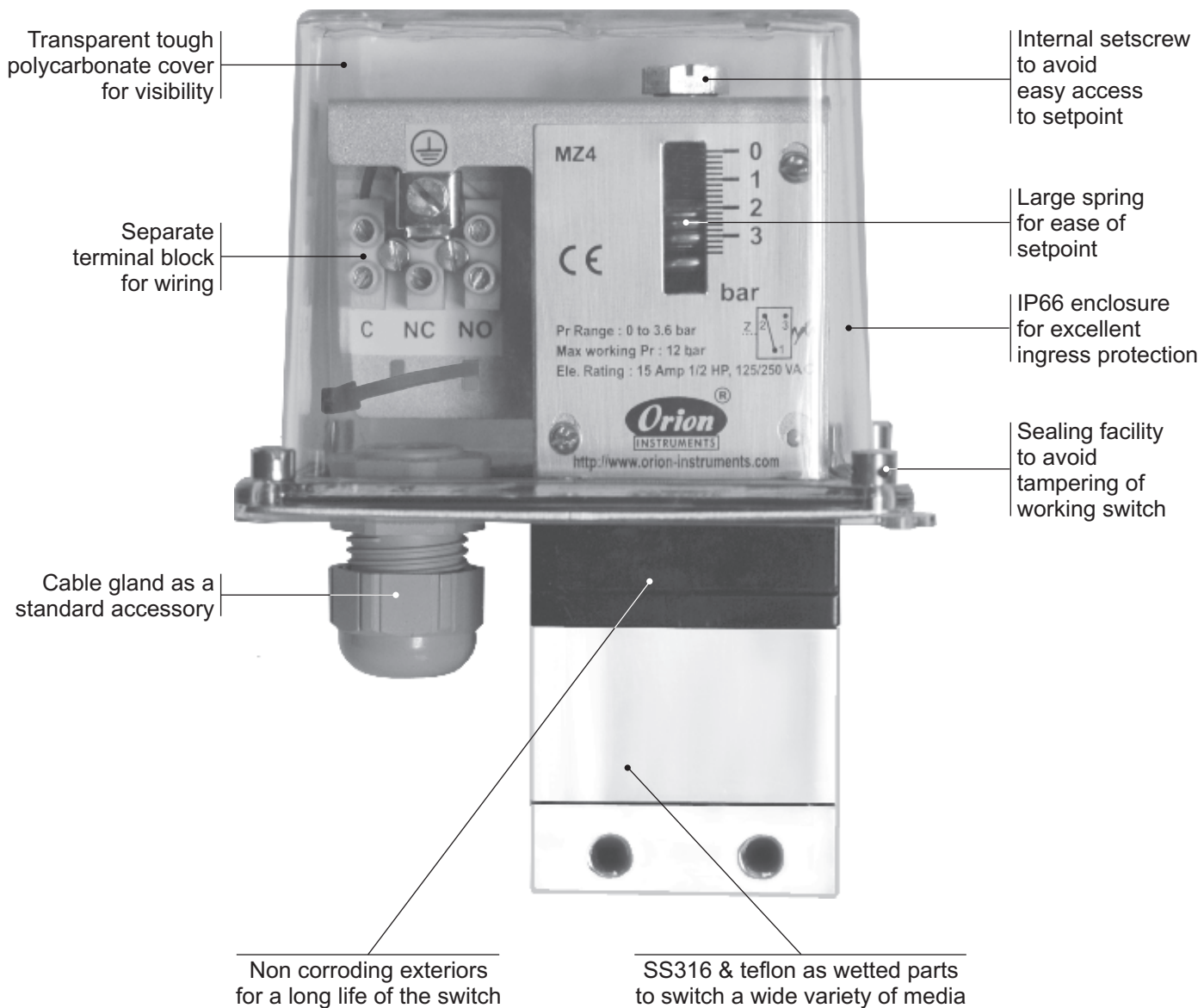
Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Non standard allocation	Model	Cable Entry Size and Material of Enclosure	Switch Type	Range Code (values in bar)	Microswitch Type	Pressure Port Material / Size	Diaphragm
<input type="checkbox"/> Reserved for non-standard options not covered in catalogue. Will be given by manufacturer, only after agreement of supply details with customer.	MZ = Process pressure switch with tough transparent polycarbonate enclosure to IP66 as per IS2147	3 = M20 X 1.5 cable gland	PF2 = pressure switch, fixed differential with scale in bar PF3 = pressure switch, fixed differential with scale in psi *PA2 = pressure switch, adjustable differential with scale in bar *PA3 = pressure switch, adjustable differential with scale in psi <small>*Available only with option A9 in Group 6</small>	H1T = (0.5 - 10) H2T = (2 - 20) H4T = (5 - 40) H1H = (10 - 100) H2H = (7 - 200) H4H = (40 - 400)	A8 = General purpose microswitch rated at 5A; 250 VAC A7 = 2SPDT microswitches A9 = General purpose microswitch rated @ 5A, 250 VAC	S1 = SS316 / 1/4" BSP(F) S2 = SS316 / 1/4" NPT(F) 2 = SS316 4 = Monel	

eg. A process pressure switch with fixed differential having 5 bar to 40 bar pressure range, with 5 Amp. microswitch, SS316 pressure housing with 1/4" BSP port size & neoprene diaphragm shall be specified by

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
<input type="checkbox"/>	MZ	3	PF2	040	A8	S1	0

Please specify full model number to avoid ambiguity.

MZ HIGH RANGE PRESSURE DIFFERENCE SWITCHES

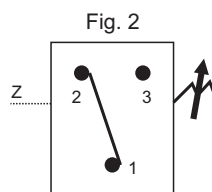


Approximate Weight : 1.400 Kg.

Some Applications :

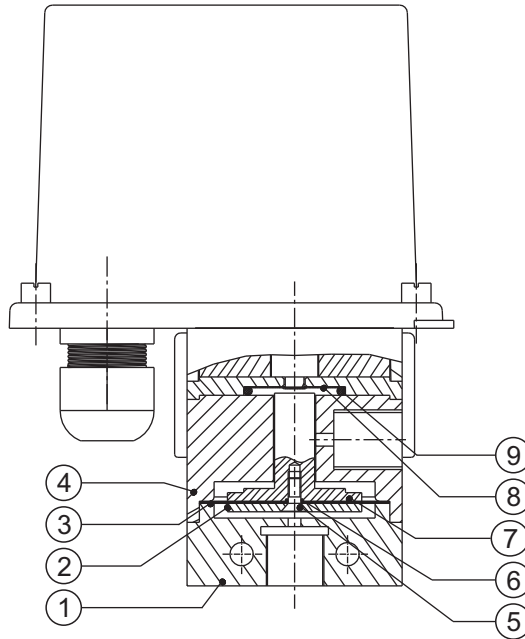
In non-hazardous areas for filters, strainers, cooling systems, etc.

Electrical Connection :





PRESSURE CAPSULE DETAILS

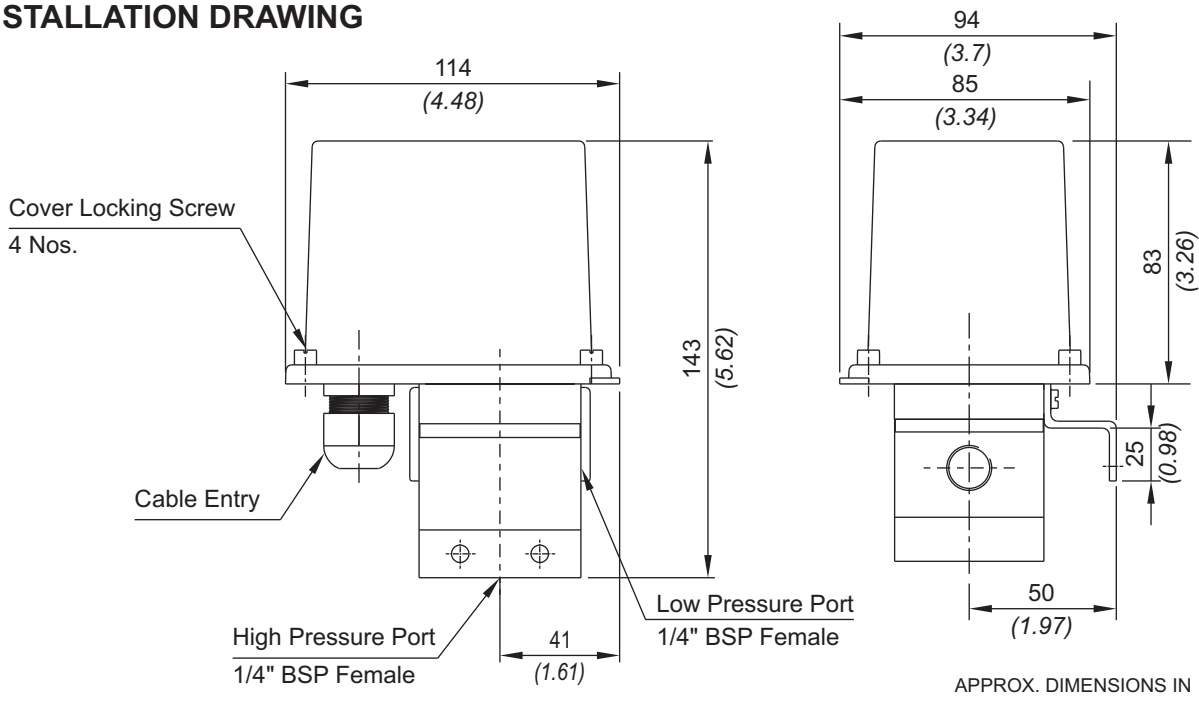


No. Description

1. Pressure Housing
2. HP Plunger (SS316)
3. Diaphragm
4. Disc
5. CSK Screw (SS)
6. 'O' ring (Teflon)
7. LP Plunger (SS316)
8. Sealing Diaphragm (Teflon)
9. Sealing O-Ring (Teflon)

Note : *wetted parts* are mentioned in italics.

INSTALLATION DRAWING



MZ HIGH RANGE PRESSURE DIFFERENCE SWITCHES

RANGE SELECTION TABLE

Range Code	Range bar (psi)	Differential* bar (psi)	Maximum Working Pressure bar (psi)
		Approximate Maximum for "A8" microswitch	
H01	0.1 - 1.0 (1.45 - 14.50)	0.12 (1.74)	12 (174.05)
H02	0.1 - 1.5 (1.45 - 21.76)	0.20 (2.90)	12 (174.05)
H03	0.2 - 2.6 (2.90 - 37.71)	0.20 (2.90)	12 (174.05)
H04	0.2 - 3.6 (2.90 - 52.21)	0.30 (4.35)	12 (174.05)

*Minimum differential increases with setpoint (Graphs available on request)

HIGH RANGE PRESSURE DIFFERENCE SWITCHES



HOW TO ORDER PROCESS HIGH RANGE PRESSURE DIFFERENCE SWITCHES

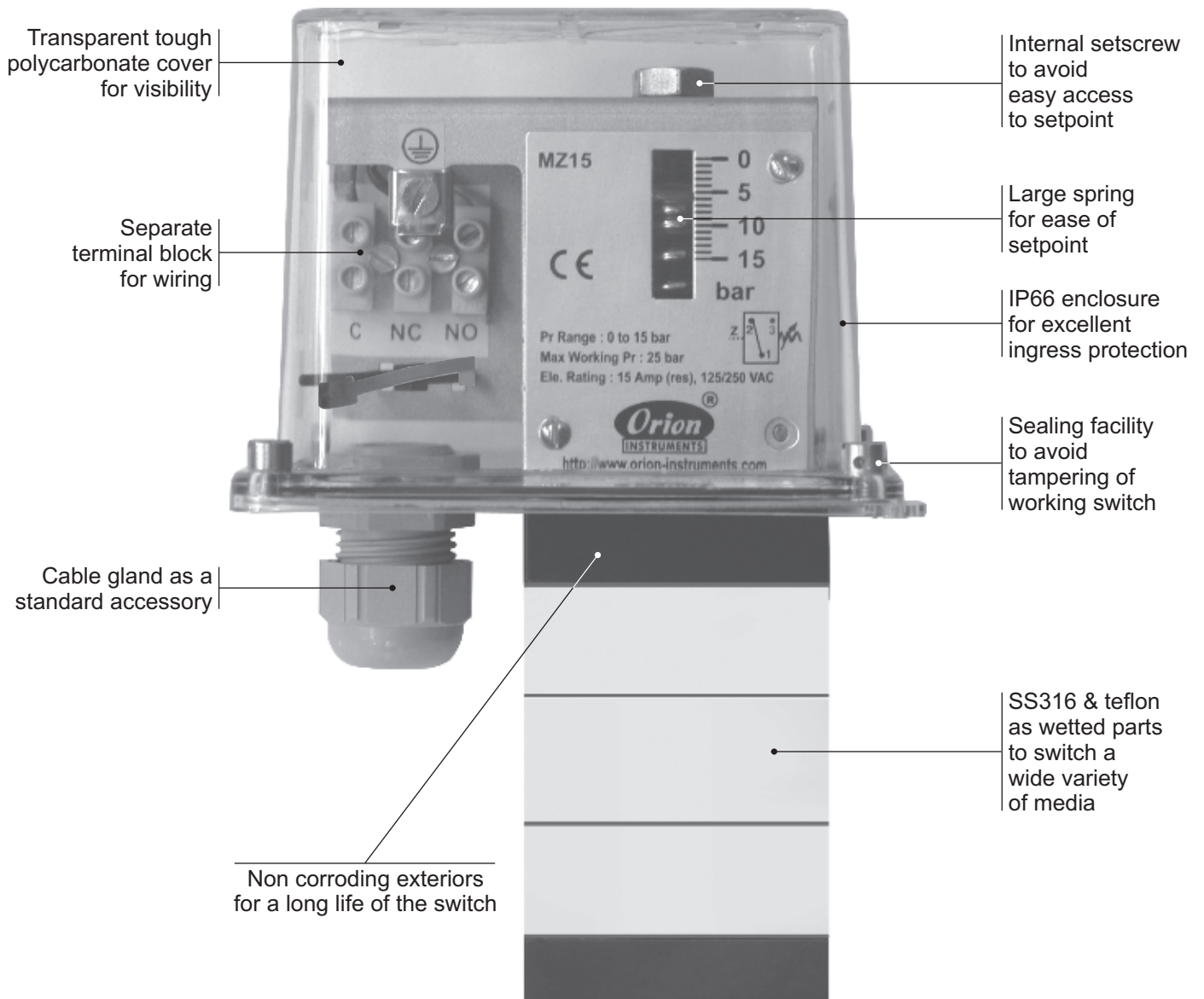
Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Non standard allocation	Model	Cable Entry Size	Switch Type	Range Code (values in bar)	Microswitch Type	Pressure Port Material / Size	Diaphragm
<input type="checkbox"/> Reserved for non-standard options not covered in catalogue. Will be given by manufacturer, only after agreement of supply details with customer.	MZ = Process pressure switch with tough transparent polycarbonate enclosure to IP66 as per IS2147	3 = M20 X 1.5 cable gland	DF2 = pressure difference switch, fixed differential with scale in bar DF3 = pressure difference switch, fixed differential with scale in psi *DA2 = pressure difference switch, adjustable differential with scale in bar *DA3 = pressure difference switch, adjustable differential with scale in psi * Available only with option A9 in Group 6	H01 = (0.1 - 1.0) H02 = (0.1 - 1.5) H03 = (0.2 - 2.6) H04 = (0.2 - 3.6)	A8 = General purpose microswitch rated at 5 A; 250 VAC A7 = 2SPDT microswitches A9 = General purpose microswitch rated @ 5A, 250 VAC	A1 = Aluminium / ¼" BSP(F) A2 = Aluminium / ¼" NPT(F) S1 = SS316 / ¼" BSP(F) S2 = SS316 / ¼" NPT(F)	0 = Neoprene 1 = Teflon

eg. A process pressure difference switch with fixed differential having 0.1 bar to 1 bar pressure range, with 5 Amp. microswitch, SS316 pressure housing with ¼" BSP port size & neoprene diaphragm shall be specified by

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
<input type="checkbox"/>	MZ	3	DF2	H01	A8	S1	0

Please specify full model number to avoid ambiguity.

MZ HIGH RANGE DP

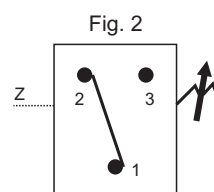


Approximate Weight : 1.800 Kg.

Some Applications :

Applications requiring high static/system pressure but low pressure difference.

Electrical Connection :



MZ HIGH RANGE DP

RANGE SELECTION TABLE

Range Code	Range bar (psi)	Differential* bar (psi)	Maximum Working Pressure bar (psi)
		Approximate Maximum for "A8" microswitch	
D01	0.1 - 1.0 (1.45 - 14.50)	0.12 (0.30)	70 (1000.00)
D02	0.1 - 1.5 (1.45 - 21.76)	0.20 (1.14)	70 (1000.00)
D03	0.2 - 2.6 (2.90 - 37.71)	0.20 (1.14)	70 (1000.00)
D04	0.2 - 3.6 (2.90 - 52.21)	0.30 (1.43)	70 (1000.00)
D07	0.5 - 7.0 (7.25 - 101.50)	0.40 (5.72)	70 (1000.00)
D10	0.5 - 10.0 (7.14 - 142.86)	0.50 (7.14)	70 (1000.00)
D15	1.0 - 15.0 (14.29 - 214.29)	0.50 (7.14)	70 (1000.00)
D30	5.0 - 25.0 (71.43 - 357.14)	0.80 (11.44)	70 (1000.00)

*Minimum differential increases with setpoint (Graphs available on request)

*** Note :**

Microswitches A2 through A9 can be supplied in some ranges and differentials will vary with microswitch used. Please contact sales office for details. Please check availability of adjustable differential with sales office.

HOW TO ORDER PROCESS HIGH RANGE DP SWITCHES

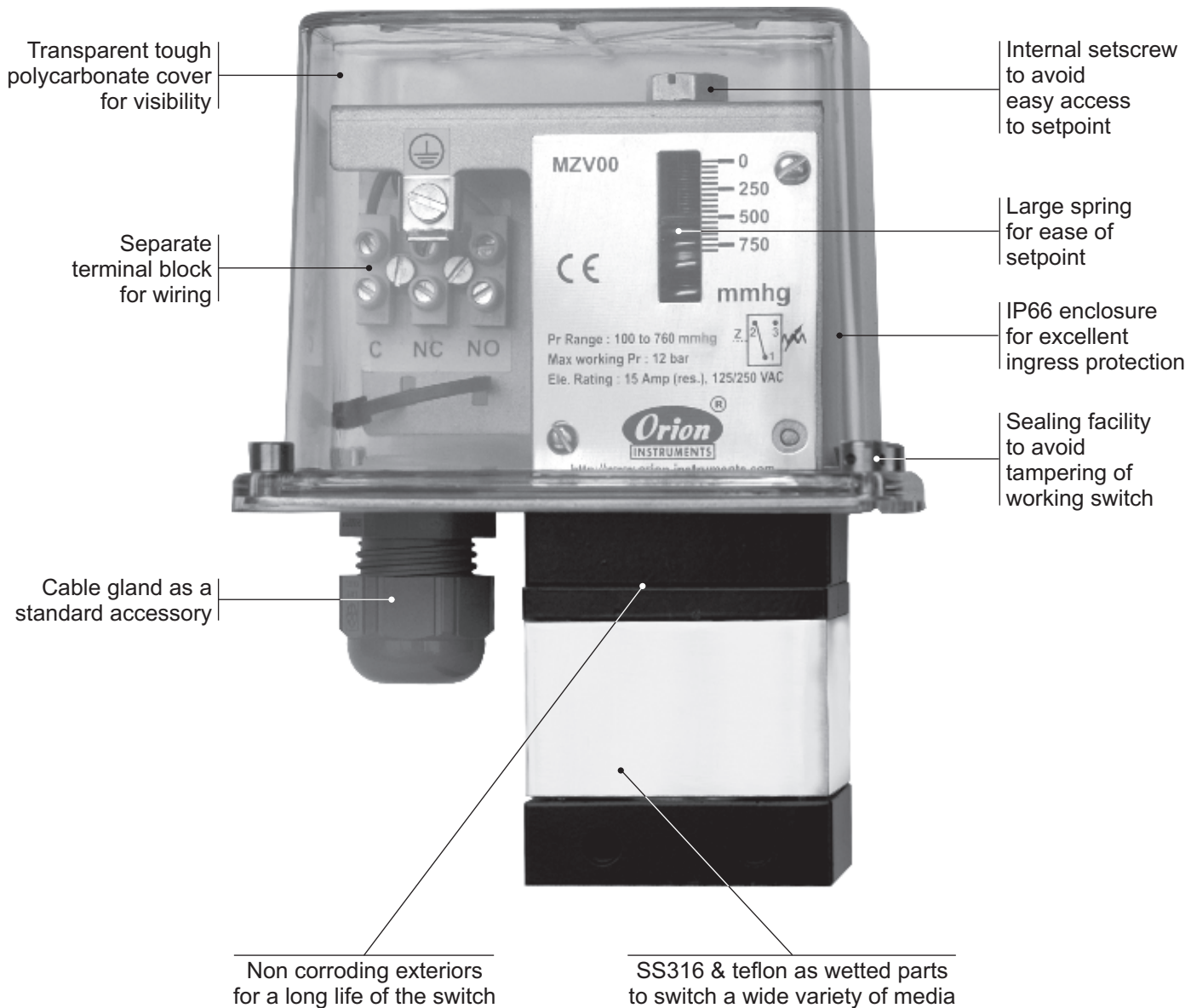
Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Non standard allocation	Model	Cable Entry Size	Switch Type	Range Code (values in bar)	Microswitch Type	Pressure Port Material / Size	Diaphragm
<input type="checkbox"/> Reserved for non-standard options not covered in catalogue. Will be given by manufacturer, only after agreement of supply details with customer.	MZ = Process pressure switch with tough transparent polycarbonate enclosure to IP66 as per IS2147	3 = M20 X 1.5 cable gland	DF2 = pressure difference switch, fixed differential with scale in bar DF3 = pressure difference switch, fixed differential with scale in psi *DA2 = pressure difference switch, adjustable differential with scale in bar *DA3 = pressure difference switch, adjustable differential with scale in psi <small>* Available only with option A9 in Group 6</small>	D01 = (0.1 - 1.0) D02 = (0.1 - 1.5) D03 = (0.2 - 2.6) D04 = (0.2 - 3.6) D07 = (0.5 - 7.0) D10 = (0.5 - 10.0) D15 = (1.0 - 15.0) D30 = (5.0 - 25.0)	A8 = General purpose microswitch rated at 5 A; 250 VAC A7 = 2SPDT microswitches A9 = General purpose microswitch rated @ 5A, 250 VAC <small>* Please refer note under Range Selection Table</small>	S1 = SS316 / 1/4" BSP(F) S2 = SS316 / 1/4" NPT(F) N1 = Monel / 1/4" BSP(F) N2 = Monel / 1/4" NPT(F)	0 = Neoprene 1 = Teflon 2 = SS316L 4 = Monel

eg. A process pressure difference switch with fixed differential having 0.1 bar to 1 bar pressure range, with 5 Amp. microswitch, SS316 pressure housing with 1/4" BSP port size & neoprene diaphragm shall be specified by

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
<input type="checkbox"/>	MZ	3	DF2	D01	A8	S1	0

Please specify full model number to avoid ambiguity.

MZ VACUUM SWITCHES

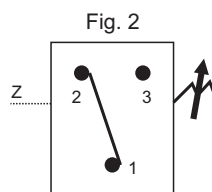


Approximate Weight : 1.160 Kg.

Some Applications :

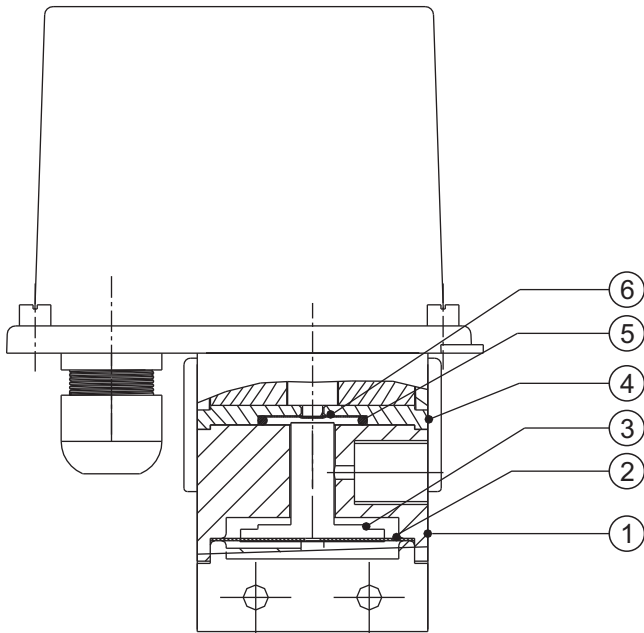
Used in filters, vacuum pumps, blower systems, etc.

Electrical Connection :





PRESSURE CAPSULE DETAILS

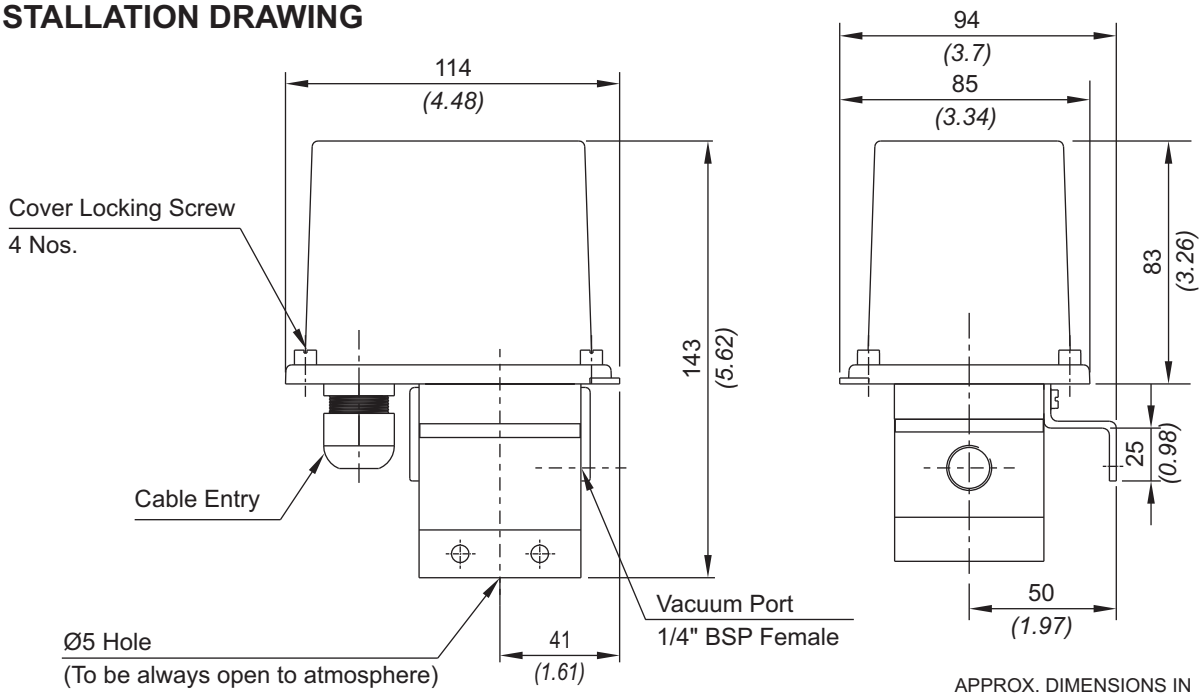


No. Description

1. Disc
2. Diaphragm
3. Plunger (SS316)
4. Junction Plate
5. Sealing 'O' Ring (Teflon®)
6. Sealing diaphragms (Teflon®)

Note : *wetted parts* are mentioned in italics.

INSTALLATION DRAWING



APPROX. DIMENSIONS IN $\frac{\text{mm}}{\text{inches}}$

MZ VACUUM SWITCHES

RANGE SELECTION TABLE

Range Code	Range mm Hg ("Hg)	Differential* mm Hg ("Hg)	Maximum Working Pressure bar (psi)
		Approximate Maximum for "A8" microswitch	
V00	† 760 - 100 (29.92 - 3.94)	50 (1.97)	12 (174.05)

*Minimum differential increases with setpoint (Graphs available on request)

† Typical values achieved at sea level, total vacuum that can be achieved varies mainly with altitude.

HOW TO ORDER PROCESS VACUUM SWITCHES

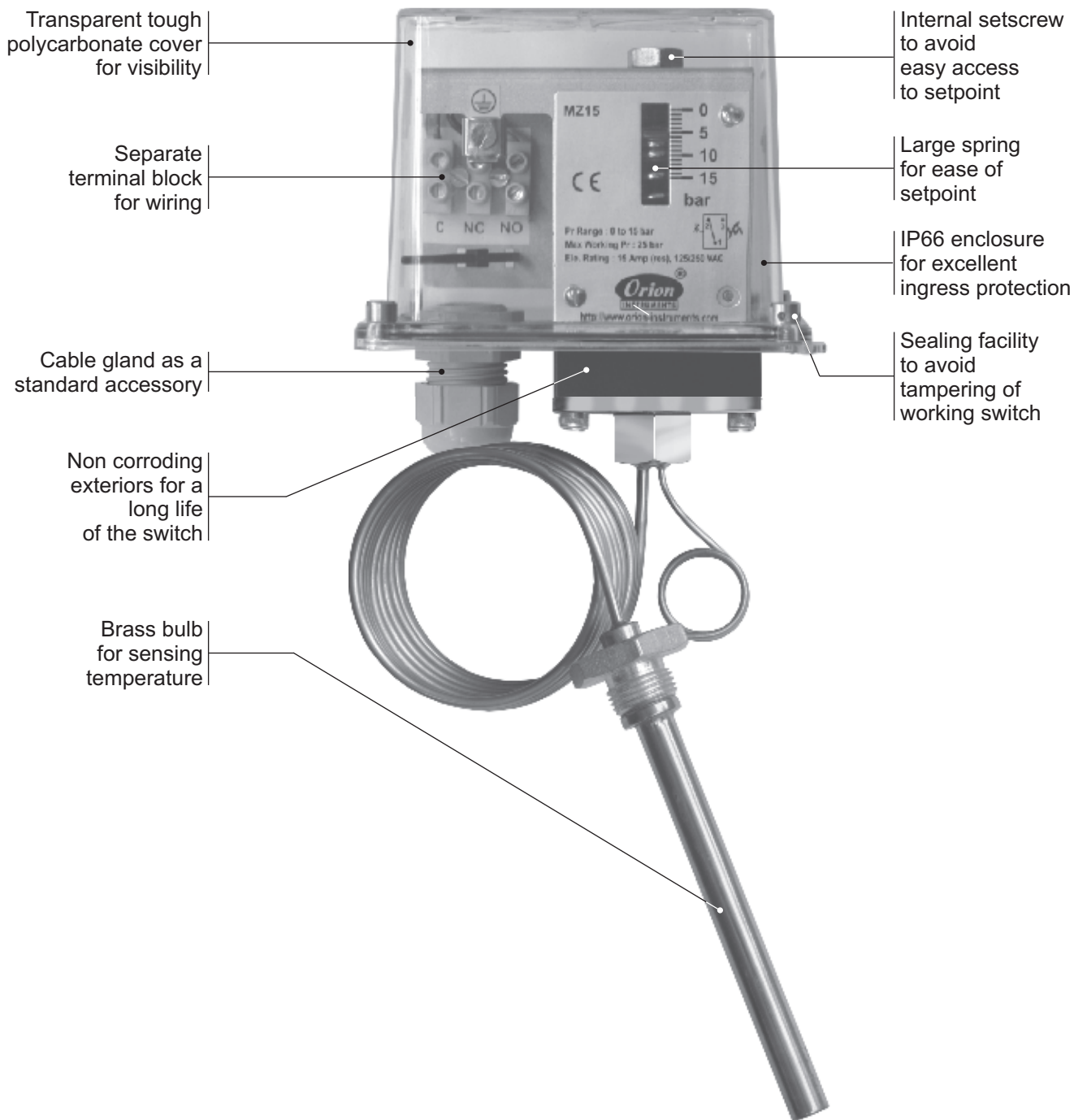
Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Non standard allocation	Model	Cable Entry Size	Switch Type	Range Code (values in mmHg)	Microswitch Type	Pressure Port Material / Size	Diaphragm
<input type="checkbox"/> Reserved for non-standard options not covered in catalogue. Will be given by manufacturer, only after agreement of supply details with customer.	MZ = Process pressure switch with tough transparent polycarbonate enclosure to IP66 as per IS2147	3 = M20 X 1.5 cable gland	VF2 = vacuum switch, fixed differential with scale in mmHg VF3 = vacuum switch, fixed differential with scale in "Hg *VA2 = vacuum switch, adjustable differential with scale in mmHg *VA3 = vacuum switch, adjustable differential with scale in "Hg *Available only with option A9 in Group 6	V00 = († 760 - 100)	A8 = General purpose microswitch rated at 5 A; 250 VAC A7 = 2SPDT microswitches A9 = General purpose microswitch rated @ 5A, 250 VAC	A1 = Aluminium / ¼" BSP(F) A2 = Aluminium / ¼" NPT(F) S1 = SS316 / ¼" BSP(F) S2 = SS316 / ¼" NPT(F)	0 = Neoprene 1 = Teflon

eg. A process vacuum switch with fixed differential having 760 mmHg vac to 100 mmHg vac vacuum range, with 5 Amp. microswitch, SS316 pressure housing with ¼" BSP port size & neoprene diaphragm shall be specified by

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
<input type="checkbox"/>	MZ	3	VF2	V00	A8	S1	0

Please specify full model number to avoid ambiguity.

MZ TEMPERATURE SWITCHES



Transparent tough polycarbonate cover for visibility

Separate terminal block for wiring

Cable gland as a standard accessory

Non corroding exteriors for a long life of the switch

Brass bulb for sensing temperature

Internal setscrew to avoid easy access to setpoint

Large spring for ease of setpoint

IP66 enclosure for excellent ingress protection

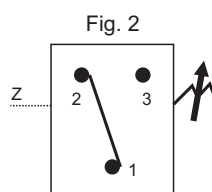
Sealing facility to avoid tampering of working switch

Approximate Weight : 0.700 Kg.

Some Applications :

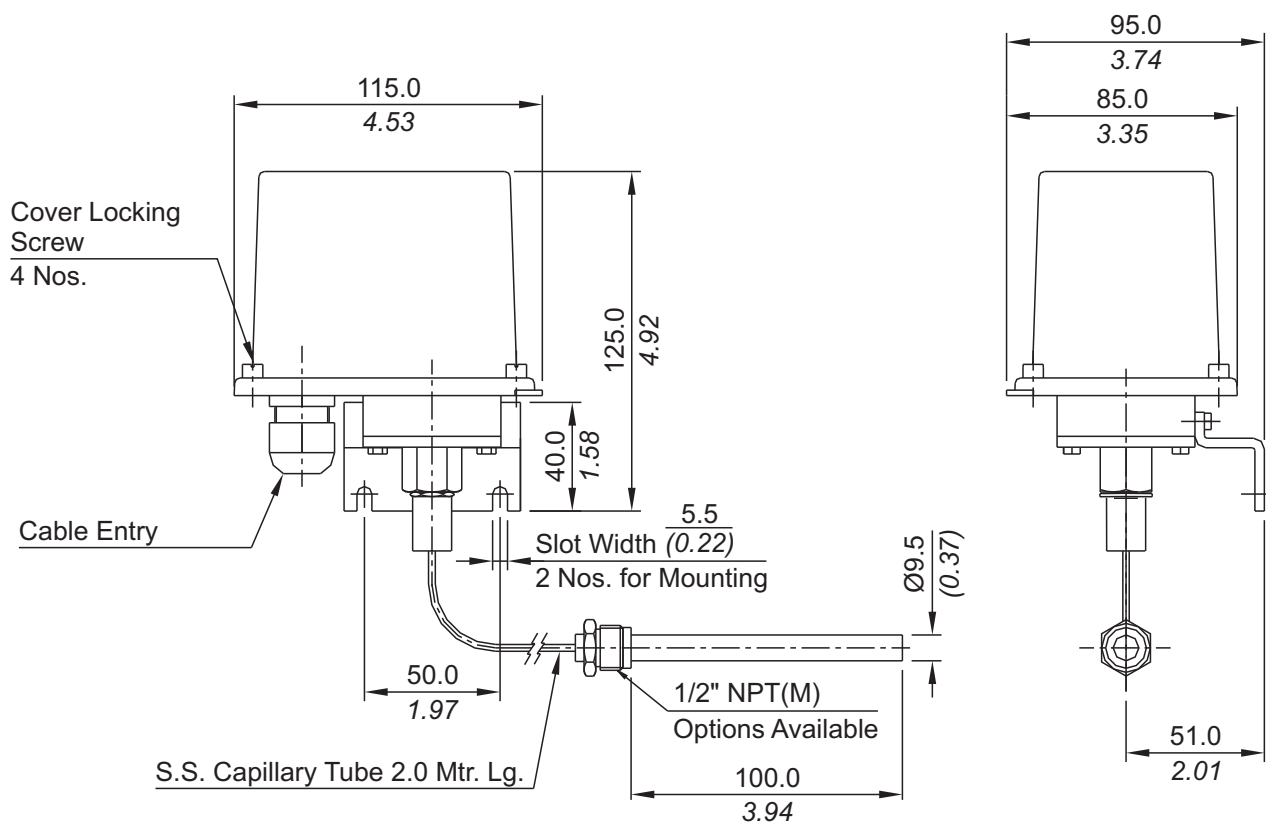
To detect limiting temperature levels in non-hazardous areas.

Electrical Connection :





INSTALLATION DRAWING



APPROX. DIMENSIONS IN $\frac{\text{mm}}{\text{inches}}$

MZ TEMPERATURE SWITCHES

RANGE SELECTION TABLE

Range Code	Range °C (°F)	Differential* °C (°F)	Maximum Working Temperature °C (°F)
		Approximate Maximum for "A1" microswitch	
T1H	25 - 90 (77 - 194)	15 (59)	150 (302)
T2H	70 - 150 (158 - 302)	20 (68)	200 (392)
T3H	120 - 215 (248 - 419)	30 (86)	300 (572)

* Approximate differential at midrange for A1 microswitch. Differentials increase with setpoint. Differentials vary with microswitch combinations. Please consult sales office for details

HOW TO ORDER PROCESS TEMPERATURE SWITCHES

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Non standard allocation	Gas Group Classification	Cable Entry Size	Switch Type	Range Code (values in Deg. Cen.)	Microswitch Type	Temp. Bulb Material / Size	Capillary Material / Size
<input type="checkbox"/> Reserved for Non-standard Options not covered in Catalogue. Will Be given by Manufacturer, Only after Agreement of Supply details With customer.	MZ = Process temperature switch with tough transparent polycarbonate Enclosure to IP66 as per IS2147	3 = M20 X 1.5 threads	TF1 = Temperature Switch fixed differential without scale TF2 = Temperature Switch fixed differential with scale in °C	T1H = 25 - 90 T2H = 70 - 150 T3H = 120 - 215	A1 = General purpose microswitch rated at 15 A; 250 VAC A7 = 2SPDT switching elements A8 = General purpose microswitch rated at 5A; 250 VAC A9 = General purpose microswitch rated at 5A; 250 VAC	B1 = Brass / Dia. 9.5 mm, 123 mm length, with 3/8" BSP (M) thermowell connection B2 = Brass / Dia. 9.5 mm, 123 mm length, with 3/8" NPT (M) thermowell connection B3 = Brass / Dia. 9.5 mm, 123 mm length, with 1/2" NPT (M) thermowell connection	2 = SS316 / 2.0 meter

E.g. A Process Temperature switch, with M20x1.5 cable entry as 1 SPDT, fixed differential with scale, having 25°C to 90°C temperature range, with 15 Amp. microswitch, with Brass 9.5 mm diameter bulb, having length 123 mm with 3/8" BSP(M), with 2.0 meter SS316 capillary length shall be specified by

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
<input type="checkbox"/>	MZ	3	TF2	T1H	A1	B1	2

Please specify full model number to avoid ambiguity.

PRESSURE PORT OPTIONS

Material		Stainless Steel (SS)			Hastelloy C				
Pressure Port Code		S3	S4	S5	H1	H2	H3	H4	H5
Size	Page No.	1" BSP(M)	1/2" NPT(F)	1/2" NPT(M)	1/4" BSP(F)	1/4" NPT(F)	1" BSP(M)	1/2" NPT(F)	1/2" NPT(M)
Flameproof Switches									
FC High Pressure Range	25	✓	✓	✓	✓	✓	✓	✓	✓
FC High Proof High Range	29	✗	✓	✓	✓	✓	✗	✓	✓
FC Low Pressure Range	37	✗	✗	✗	✗	✗	✗	✗	✗
FC Hydraulic Range	41	✗	✗	✗	✓	✓	✗	✗	✗
FC High Range Pressure Difference	49	✗	✗	✗	✓	✓	✗	✗	✗
FC High Proof High Range PD	53	✗	✗	✗	✓	✓	✗	✗	✗
FC High Range DP	57	✗	✗	✗	✗	✗	✗	✗	✗
FC Low Range Pressure Difference	61	✗	✗	✗	✗	✗	✗	✗	✗
FC Low ΔP High Proof	65	✗	✗	✗	✗	✗	✗	✗	✗
FC Vacuum Range	69	✗	✗	✗	✓	✓	✗	✗	✗
FC Compound Range	73	✗	✗	✗	✓	✓	✗	✗	✗
Industrial Switches									
MD High Range	99	✓	✓	✓	✓	✓	✓	✓	✓
MD High Proof High Range	103	✗	✓	✓	✓	✓	✗	✓	✓
MD Low Range	123	✗	✗	✗	✗	✗	✗	✗	✗
MD Hydraulic Range	127	✗	✗	✗	✗	✗	✗	✗	✗
MD Hydraulic Diaphragm	131	✗	✗	✗	✓	✓	✗	✗	✗
DS Dual High Range	135	✗	✗	✗	✓	✓	✗	✗	✗
MD High Range Pressure Difference	139	✗	✗	✗	✓	✓	✗	✗	✗
MD High Proof High Range PD	143	✗	✗	✗	✓	✓	✗	✗	✗
MD High Range DP	147	✗	✗	✗	✓	✓	✗	✗	✗
MD Low Range Pressure Difference	153	✗	✗	✗	✗	✗	✗	✗	✗
MD Low ΔP High Proof	157	✗	✗	✗	✗	✗	✗	✗	✗
MD Vacuum Range	161	✗	✗	✗	✗	✗	✗	✗	✗
MD High Range Compound	165	✗	✗	✗	✗	✗	✗	✗	✗
MD Low Range Compound	169	✗	✗	✗	✗	✗	✗	✗	✗
Process Switches									
MZ High Range	189	✓	✓	✓	✓	✓	✗	✓	✓
MZ High Proof High Range	193	✗	✓	✓	✓	✓	✗	✓	✓
MZ Hydraulic Range	205	✗	✗	✗	✓	✓	✗	✗	✗
MZ Hydraulic Diaphragm	209	✗	✗	✗	✓	✓	✗	✗	✗
MZ High Range Pressure Difference	213	✗	✗	✗	✓	✓	✗	✗	✗
MZ High Range DP	217	✗	✗	✗	✓	✓	✗	✗	✗
MZ Vacuum Range	221	✗	✗	✗	✓	✓	✗	✗	✗

✓ - Available ✗ - Not Available

Material		Monel				
Pressure Port Code		N1	N2	N3	N4	N5
Size	Page No.	1/4" BSP(F)	1/4" NPT(F)	1" BSP(M)	1/2" NPT(F)	1/2" NPT(M)
Flameproof Switches						
FC High Pressure Range	25	✓	✓	✓	✓	✓
FC High Proof High Range	29	✓	✓	✗	✓	✓
FC Low Pressure Range	37	✗	✗	✗	✗	✗
FC Hydraulic Range	41	✓	✓	✗	✗	✗
FC High Range Pressure Difference	49	✓	✓	✗	✗	✗
FC High Proof High Range Pressure Difference	53	✓	✓	✗	✗	✗
FC High Range DP	57	✓	✓	✗	✗	✗
FC Low Range Pressure Difference	61	✗	✗	✗	✗	✗
FC Low ΔP High Proof	65	✗	✗	✗	✗	✗
FC Vacuum Range	69	✓	✓	✗	✗	✗
FC Compound Range	73	✓	✓	✗	✗	✗
Industrial Switches						
MD High Range	99	✓	✓	✓	✓	✓
MD High Proof High Range	103	✓	✓	✗	✓	✓
MD Low Range	123	✗	✗	✗	✗	✗
MD Hydraulic Range	127	✗	✗	✗	✗	✗
MD Hydraulic Diaphragm	131	✓	✓	✗	✗	✗
DS Dual High Range	135	✓	✓	✗	✗	✗
MD High Range Pressure Difference	139	✓	✓	✗	✗	✗
MD High Proof High Range Pressure Difference	143	✓	✓	✗	✗	✗
MD High Range DP	147	✓	✓	✗	✗	✗
MD Low Range Pressure Difference	153	✗	✗	✗	✗	✗
MD Low ΔP High Proof	157	✗	✗	✗	✗	✗
MD Vacuum Range	161	✓	✓	✗	✗	✗
MD High Range Compound	165	✓	✓	✗	✗	✗
MD Low Range Compound	169	✗	✗	✗	✗	✗
Process Switches						
MZ High Range	189	✓	✓	✗	✓	✓
MZ High Proof High Range	193	✓	✓	✗	✓	✓
MZ Hydraulic Range	205	✓	✓	✗	✗	✗
MZ Hydraulic Diaphragm	209	✓	✓	✗	✗	✗
MZ High Range Pressure Difference	213	✓	✓	✗	✗	✗
MZ High Range DP	217	✓	✓	✗	✗	✗
MZ Vacuum Range	221	✓	✓	✗	✗	✗

✓ - Available ✗ - Not Available

FLANGE CODE TABLE

Flanges conform to ANSI B16.5; maximum pressure is limited by flange rating

Class	Stainless Steel		Hastelloy		Alloy 400		Titanium		Tantalum	
	316 L		C276		Monel					
150#	Raised	Flat	Raised	Flat	Raised	Flat	Raised	Flat	Raised	Flat
1/2"	AA	BQ	DG	EW	GM	IC	JS	LI	MY	OO
3/4"	AB	BR	DH	EX	GN	ID	JT	LJ	MZ	OP
1"	AC	BS	DI	EY	GO	IE	JU	LK	NA	OQ
1 1/4"	AD	BT	DJ	EZ	GP	IF	JV	LL	NB	OR
1 1/2"	AE	BU	DK	FA	GQ	IG	JW	LM	NC	OS
2"	AF	BV	DL	FB	GR	IH	JX	LN	ND	OT
300#	Raised	Flat	Raised	Flat	Raised	Flat	Raised	Flat	Raised	Flat
1/2"	AG	BW	DM	FC	GS	II	JY	LO	NE	OU
3/4"	AH	BX	DN	FD	GT	IJ	JZ	LP	NF	OV
1"	AI	BY	DO	FE	GU	IK	KA	LQ	NG	OW
1 1/4"	AJ	BZ	DP	FF	GV	IL	KB	LR	NH	OX
1 1/2"	AK	CA	DQ	FG	GW	IM	KC	LS	NI	OY
2"	AL	CB	DR	FH	GX	IN	KD	LT	NJ	OZ
400#	Raised	Flat	Raised	Flat	Raised	Flat	Raised	Flat	Raised	Flat
1/2"	AM	CC	DS	FI	GY	IO	KE	LU	NK	PA
3/4"	AN	CD	DT	FJ	GZ	IP	KF	LV	NL	PB
1"	AO	CE	DU	FK	HA	IQ	KG	LW	NM	PC
1 1/4"	AP	CF	DV	FL	HB	IR	KH	LX	NN	PD
1 1/2"	AQ	CG	DW	FM	HC	IS	KI	LY	NO	PE
2"	AR	CH	DX	FN	HD	IT	KJ	LZ	NP	PF
600#	Raised	Flat	Raised	Flat	Raised	Flat	Raised	Flat	Raised	Flat
1/2"	AS	CI	DY	FO	HE	IU	KK	MA	NQ	PG
3/4"	AT	CJ	DZ	FP	HF	IV	KL	MB	NR	PH
1"	AU	CK	EA	FQ	HG	IW	KM	MC	NS	PI
1 1/4"	AV	CL	EB	FR	HH	IX	KN	MD	NT	PJ
1 1/2"	AW	CM	EC	FS	HI	IY	KO	ME	NU	PK
2"	AX	CN	ED	FT	HJ	IZ	KP	MF	NV	PL
900#	Raised	Flat	Raised	Flat	Raised	Flat	Raised	Flat	Raised	Flat
1/2"	AY	CO	EE	FU	HK	JA	KQ	MG	NW	PM
3/4"	AZ	CP	EF	FV	HL	JB	KR	MH	NX	PN
1"	BA	CQ	EG	FW	HM	JC	KS	MI	NY	PO
1 1/4"	BB	CR	EH	FX	HN	JD	KT	MJ	NZ	PP
1 1/2"	BC	CS	EI	FY	HO	JE	KU	MK	OA	PQ
2"	BD	CT	EJ	FZ	HP	JF	KV	ML	OB	PR

FLANGE CODE TABLE

Flanges conform to ANSI B16.5; maximum pressure is limited by flange rating

Class	Stainless Steel		Hastelloy		Alloy 400		Titanium		Tantalum	
	316 L		C276		Monel					
1500#	Raised	Flat	Raised	Flat	Raised	Flat	Raised	Flat	Raised	Flat
1/2"	BE	CU	EK	GA	HQ	JG	KW	MM	OC	PS
3/4"	BF	CV	EL	GB	HR	JH	KX	MN	OD	PT
1"	BG	CW	EM	GC	HS	JI	KY	MO	OE	PU
1 1/4"	BH	CX	EN	GD	HT	JJ	KZ	MP	OF	PV
1 1/2"	BI	CY	EO	GE	HU	JK	LA	MQ	OG	PW
2"	BJ	CZ	EP	GF	HV	JL	LB	MR	OH	PX
2500#	Raised	Flat	Raised	Flat	Raised	Flat	Raised	Flat	Raised	Flat
1/2"	BK	DA	EQ	GG	HW	JM	LC	MS	OI	PY
3/4"	BL	DB	ER	GH	HX	JN	LD	MT	OJ	PZ
1"	BM	DC	ES	GI	HY	JO	LE	MU	OK	QA
1 1/4"	BN	DD	ET	GJ	HZ	JP	LF	MV	OL	QB
1 1/2"	BO	DE	EU	GK	IA	JQ	LG	MW	OM	QC
2"	BP	DF	EV	GL	IB	JR	LH	MX	ON	QD

RANGE AVAILABILITY AS PER BORE SIZES

	H01 to H04	H07	H10	H15	H30	H2T to H2H
1" NB	NA	Yes	Yes	Yes	Yes	Yes
2" NB	Yes	Yes	Yes	Yes	Yes	Yes

MICROSWITCH OPTIONS

Following table lists standard microswitches and their electrical ratings that can be supplied with most FC and MD models. Some can be supplied on MZ models too. Please get in touch with sales office for feasibility of options on each model. Please write to us on electrical rating options you need, but are not mentioned below.

Code	General Description	AC Rating			DC Rating		
		Current		Voltage	Current		Voltage
		Resistive (A)	Inductive (A)	VAC	Resistive (A)	Inductive (A)	VDC
A1	General Purpose Microswitch	15	NA	125/250/480	NA	NA	NA
A2	Hermetically Sealed for Corrosive Environments	4	2	115	4	2	28
A3	Gold Plated Contacts for Low Voltage Applications	1	NA	125	NA	NA	NA
A4	DPDT Configuration	10	NA	125/250	0.3/0.15	NA	125/250
A5	For High DC Ratings	NA	NA	NA	10/3	7.5/2	125/250
A6	Elements with Adjustable Deadband	15	NA	115/250	1	NA	24
A7	2SPDT Switching Elements	5	NA	250	5	3	28
A8	General Purpose Microswitch	5	NA	250	5	3	28
A9	General Purpose Microswitch	5	NA	125/250	NA	NA	NA
B2	2SPDT Hermetically Sealed Microswitches	4	2	115	4	2	28
B3	2SPDT Gold Plated Contacts for Low Voltage Applications	1	NA	125	1	0.5	30
B4	2SPDT Hermetically Sealed Microswitches	NA	NA	NA	1	0.25	28
B5	1SPDT Hermetically Sealed Gold Plated Contacts	NA	NA	NA	1	0.25	28
B6	2SPDT Hermetically Sealed Gold Plated Contacts	NA	NA	NA	1	0.25	28
B7	2SPDT Switching Elements	15	NA	125/250	NA	NA	NA
B9	2SPDT Switching Elements for Adjustable	5	NA	125/250	NA	NA	NA