

FLOAT SWITCHES FLOW SWITCHES FOR LIQUIDS PRESSURE SWITCHES



DOLOMIT FLOAT SWITCHES

The DOLOMIT float switches find application in liquid level control in tanks and wells; they require connection to pumps (or other electrical equipment). They can be used with drinking water and sewage as well as other liquids compatible with the components of the products.

FLOW SWITCHES FOR LIQUIDS

Flow switches interrupt an electrical control circuit when the water circulation fails in the circuit for some abnormal condition (e.g. stopping of motor-driven pumps). They are operated thanks to a blade-type electrical tripping device (stainless steel blade).

PRESSURE SWITCHES

The PRM pressure switch is with normally closed contacts; when the pressure of the system exceeds the set pressure, the contacts are opened thus interrupting the circuit.

The series PA pressure switch automatically controls operation of the motor-driven pump in accordance with the fixed set pressures.

APPLICATION

Float switch Series **IGD** finds application in liquid level control in tanks and wells; it requires connection to pumps (or other electrical equipment). The float switch can be used with drinking water and sewage as well as other liquids compatible with the components of the product. Float switch Series **IGD** is spray and dust proof thanks to a double sealing obtained by injection moulding using the same material of construction for the body (non toxic polypropylene).

Product reliability is ensured thanks to the sound experience of WATTS Cazzaniga in the sector as well as to the stringent testing programme to which both the process and product are submitted.

INSTALLATION AND ELECTRICAL CONNECTIONS

It is important to make sure that there are no objects impeding the float movement. If necessary, adjust the float arm by suitably positioning it with relative counterweight. It is good practice to position the float on the side opposite to liquid inlet.

Electrical connection:

The three-pole cable (cable colour: Blue - Brown - Black) allows float switch Series **IGD** to be used for emptying or filling depending on the electrical connections as described below:

- Emptying / Black - Brown connection / contact closes with float at top
- Filling / Black - Brown connection / contact closes with float at bottom.

OPERATION

Float switch Series **IGD** can be used either for filling or emptying tanks and wells.

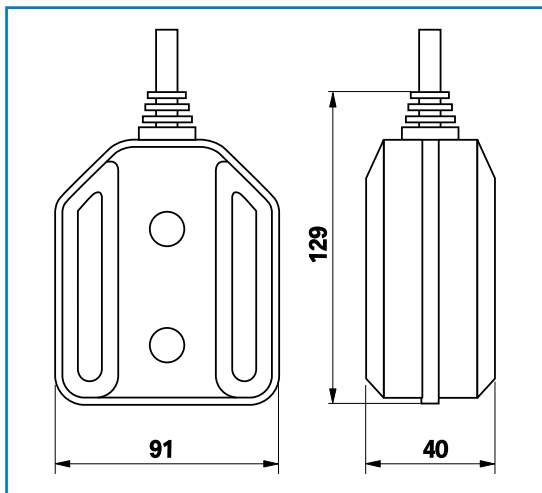
The important factor is the length of the rotating arm which determines the minimum and maximum liquid levels. For such purpose, the arm length can be shortened using the appropriate counterweight (CP/NSD).

Figures 1 and 2 illustrate the operation.

APPROVALS

CE mark in conformity with European Directives EEC 89/336, EEC 73/23.

Overall dimensions (mm)



IGD

DOLOMIT.

Float switch for liquid level control in tanks.

Part No. Cable L.

0420202	2 m
0420203	3 m
0420205	5 m
0420210	10 m

TECHNICAL CHARACTERISTICS

Contact load rating	16 (4) A at 250 V~
Max. operating temperature	80°C
Storage temperature range	-20°C ÷ +80°C
Type of electrical duty	Light
Degree of protection	IP 67 (immersion proof)
Switching angle	-45° ÷ +48°
Electrical insulation class	II
Dimensions	91 x 129 x 40 mm
Weight	143 g
Volume	254 cm ³

DESIGN FEATURES

Body	Non toxic polypropylene
Cable	PVC - A05.VV-F / Neoprene - H07.RN-F (*)
Conductor size	1 mm ²

(*) cable 3 x 1 available with other lengths

EMPTYING

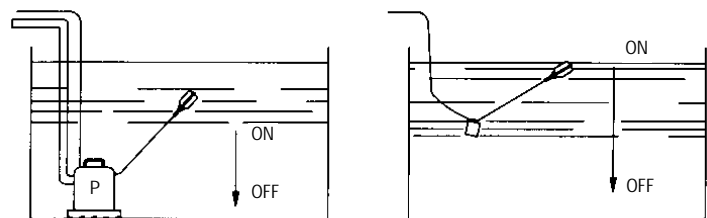


Fig. 1

FILLING

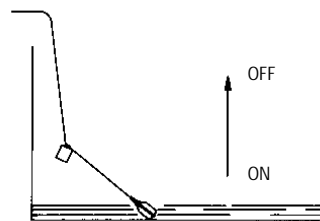


Fig. 2

APPLICATION

Float switch **Series IGM** finds application in liquid level control in tanks and wells; it requires connection to pumps (or other electrical equipment).

The float switch can be used with drinking water and sewage as well as other liquids compatible with the components of the products. Float switch **Series IGM** is spray- and dust proof thanks to a double sealing obtained by injection moulding using the same material of construction for the body (non toxic polypropylene).

The **IGM Series** has been especially designed with **very compact size**, although still retaining electrical and float characteristics such as to ensure perfect operation. Product reliability is ensured thanks to the sound experience of WATTS Cazzaniga in the sector as well as to the stringent testing programme to which both the process and product are submitted.

INSTALLATION AND ELECTRICAL CONNECTIONS

It is important to make sure that there are no objects impeding the float movement. If necessary, adjust the float arm by suitably positioning it with relative counterweight. It is good practice to position the float on the side opposite to liquid inlet.

Electrical connection:

The three-pole cable (cable colour: Blue - Brown - Black) allows float switch Series IGM to be used for emptying or filling depending on the electrical connections as described below:

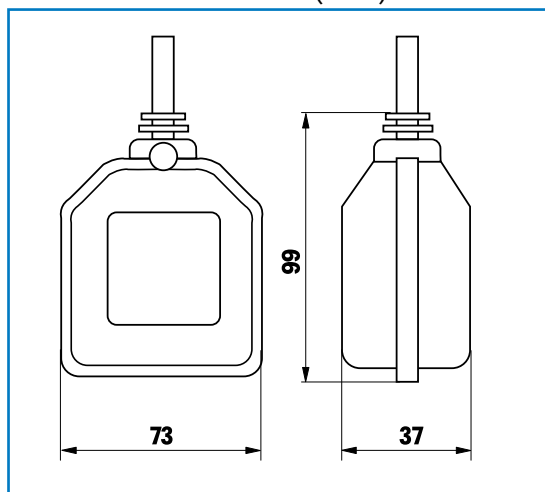
- Emptying / Black - Brown connection / contact closes with float at top
- Filling / Black - Brown connection / contact closes with float at bottom

OPERATION

Float switch **Series IGM** can be used either for filling or emptying tanks and wells.

The important factor is the length of the rotating arm which determines the minimum and maximum liquid levels. For such purpose, the arm length can be shortened using the appropriate counterweight (CP/NSD). Thanks to its compact size, the float switch is suitable for connection to pumps with cable lengths also shorter than 40 cm (the rotating arm can be shortened up to 10 cm) **Fig.1 and 2** illustrate the operation.

Overall dimensions (mm)



IGM

MICRO-IGM.
Compact float switch for liquid level control in tanks.

Part No. Cable L.

0424020	2 m
0424030	3 m
0424050	5 m
0424091	10 m

TECHNICAL CHARACTERISTICS

Contact load rating	16 (4) A at 250 V~
Max. operating temperature	80°C
Storage temperature range	-20°C ÷ +80°C
Type of electrical duty	Light
Degree of protection	IP 67 (immersion proof.)
Switching angle	-45° ÷ +45°
Electrical insulation class	II
Dimensions	73 x 99 x 37 mm
Weight	89 g
Volume	155 cm ³

DESIGN FEATURES

Body	Non toxic polypropylene
Cable	PVC - A05.VV-F / Neoprene - H07.RN-F (*)
Conductor size	1 mm ²
Conductor size	16 (4) A at 250V~ (**)

(*) cable 3 x 1 available with other lengths

(**) also available in the version with microswitch 20 (8) A at 250V~

EMPTYING

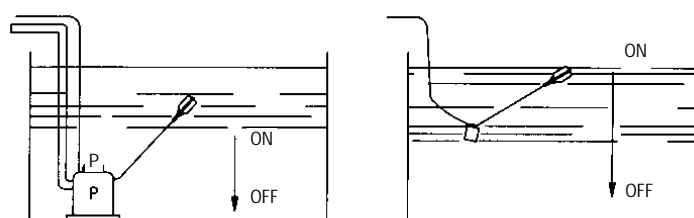


Fig. 1

FILLING

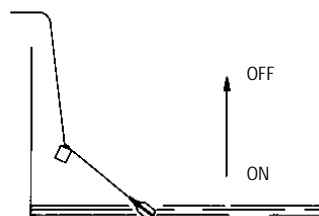


Fig. 2

APPROVALS

CE mark in conformity with European Directives EEC 89/336, EEC 73/23.

APPLICATION AND OPERATION

FLU is a flow switch which interrupts the electric control circuit of the burner when there is insufficient water circulation in the boiler circuit owing to some abnormal condition (e.g. stopping of the motor-driven pump). The **FLU** flow switch is operated thanks to an electrical blade-type tripping device (stainless steel blade) and can be installed on pipework from 1" to 8" in size.

INSTALLATION

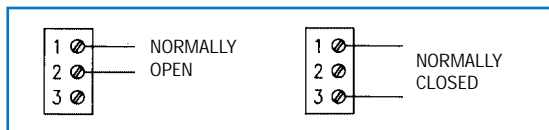
Mount so that the direction indicated by the arrow coincides with the flow.

For correct operation it is advisable:

- to mount on the return pipe
- to mount on horizontal pipe (mounting on vertical piping is possible after appropriate setting)
- to keep a certain distance from sources of turbulence (elbows, valves, etc.); recommended min. distance is equal to 5 times the pipe diameter
- to keep a minimum distance of 55 mm between the pipework and the lower base of the appliance.

ELECTRICAL CONNECTIONS

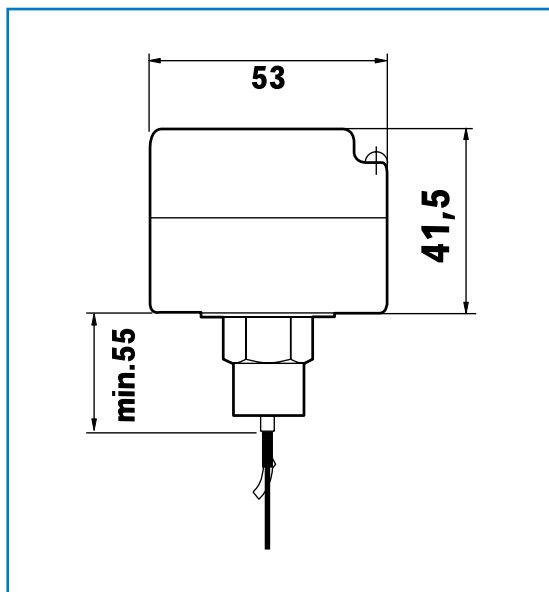
The 1-2 contact is normally open (closes when the flow rate setting is reached); contact 1-3 is normally closed (opens when the flow rate setting is reached). Earth connection is through relative screw located at the bottom on the microswitch support.



APPROVALS

Conformity with Body R of I.S.P.E.S.L. regulations
CE mark in conformity with European Directives EEC 89/336, EEC 73/23.

Overall dimensions (mm)



FLU

Flow switch for liquids, for piping from 1" to 8".

Part No. Size Protection

0401125	1"	IP64
0401126	1"	IP67

ADJUSTMENT OF FLOW RATE SETTING

Setting of **FLU** is by means of relative screw; fully tighten the screw to obtain minimum flow rate setting, fully loosen the screw to have maximum flow rate setting. The following table gives the values for limiting flow rate settings in m³/h in relation to the pipe diameter. The **FLU** flow switch is supplied with the setting screw fully tightened (minimum setting).

Pipe diameter inches	Blade length mm	Flow rate with minimum setting (screw fully tightened) m ³ /h		Flow rate with maximum setting (screw fully loosened) m ³ /h	
		close	open	close	open
1"	34	0,9	0,4	2,0	1,5
1" 1/4	34	1,2	0,6	2,6	1,9
1" 1/2	57	1,6	0,9	3,3	2,6
2"	57	3,2	2,3	7,1	5,1
2" 1/2	88	4,2	3,5	8,0	7,0
3"	88	6,3	5,7	12,0	10,5
4"	88	13,5	12,0	28,0	26,0
4"	167	8,0	7,1	20,0	18,0
5"	88	27,0	23,0	60,0	58,0
5"	167	12,1	9,0	30,0	28,0
6"	88	43,0	36,0	91,0	37,0
6"	167	17,2	12,0	35,0	32,0
8"	88	85,0	73,0	176,0	170,0
8"	167	42,0	36,0	90,0	85,0

For applications in heating systems subject to I.S.P.E.S.L. approval in accordance with the requirements of Body R, where a safety action is requested (switching off of the motor-driven pump under an abnormal condition), it is advisable to leave the setting at minimum, bearing in mind that the device acts on the burner when the flow rate drops below the value given in the bold-face column.

DESIGN FEATURES

Casing and cover	Die-cast aluminium
Bellows	Phosphor bronze
Blade	Stainless steel (*)
Fitting	Brass, 1" M

(*) Blade length varies according to the pipe diameter (see table)

TECHNICAL CHARACTERISTICS

Contact load rating	6 (2) A at 250 V - at 50 Hz
Max. fluid pressure	10 bar
Max. fluid temperature	110°C
Max. room temperature	60°C
Degree of protection	IP 64 for Art. 0401125 IP67 for Art. 0401126

(*) also available in the version with microswitch 20 (8) A at 250 V -.

APPLICATION AND OPERATION

The **FS25 series** refers to a flow switch which interrupts the electric control circuit of the burner when there is insufficient water circulation in the boiler circuit owing to some abnormal condition (e.g. stopping of the motor-driven pump). The **FS25 series** flow switch is operated thanks to an electrical blade-type tripping device (stainless steel blade) and can be installed on pipework from 1" to 6" in size.

INSTALLATION

Mount so that the direction indicated by the arrow coincides with the flow.
For correct operation it is advisable:

- to mount on the return pipe
- to mount on horizontal pipe (mounting on vertical piping is possible after appropriate setting)
- to keep a certain distance from sources of turbulence (elbows, valves, etc.); recommended min. distance is equal to 5 times the pipe diameter
- to keep a minimum distance of 55 mm between the pipework and the lower base of the appliance.

APPROVALS

UL/CSA approval.
CE mark in conformity with European Directives EEC 89/336, EEC 73/23.

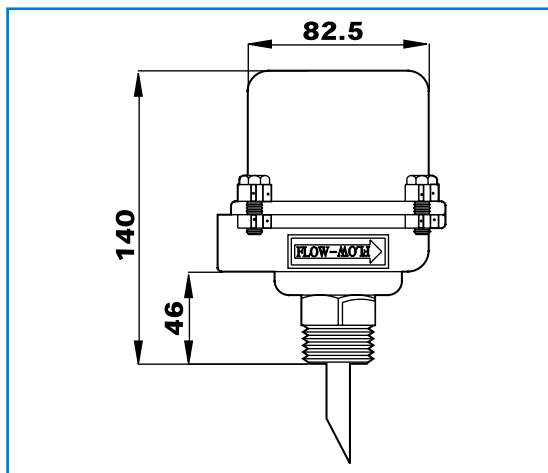
DESIGN FEATURES

Casing and cover	Die-cast aluminium
Blade	Stainless steel
Bellows	Phosphor bronze
Fitting	Brass, 1" M
Cable entry fitting	1/2" NPTF

TECHNICAL CHARACTERISTICS

Contact load rating	20 (8) A at 250 V ~
Max. fluid pressure	10 bar
Max. fluid temperature	140°C
Degree of protection	IP 55

Overall dimensions (mm)



FS25

Flow switch for liquids, for piping from 1" to 6". Can be used in moist environments.

Part No. Size Protection

1505825 1" IP55

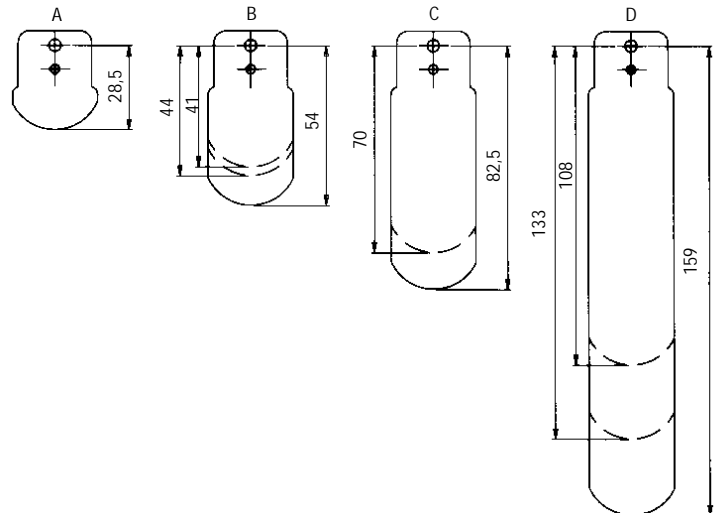
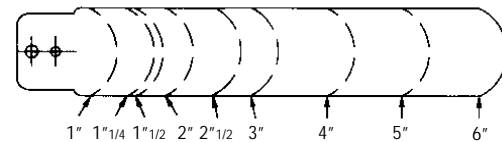
ADJUSTMENT OF FLOW RATE SETTING

The following table gives, for the various pipe diameters, the relative blade lengths to be adopted and relative min. and max. load capacities for reversing the contact. The values given refer to horizontal installations.

Tube diameter (inches)	Blade length mm	Blade combination	Flow rate with minimum setting (screw fully tightened) m ³ /h		Flow rate with minimum setting (screw fully loosened) m ³ /h	
			contact close	contact re-open	contact close	contact re-open
1"	28,5	A	1,2	0,5	2,6	1,9
1" 1/4	41	A + B*	1,8	0,8	4,0	3,3
1" 1/2	44	A + B*	2,3	1,2	4,0	3,4
2"	54	A + B	3,0	1,8	7,8	6,6
2" 1/2	70	A + B + C*	4,8	2,3	12,2	10,8
3"	82,5	A + B + C	6,8	2,7	11,8	10,5
4"	108	D*	8,9	4,3	16,7	14,5
5"	133	D*	13,2	6,6	26,1	20,9
6"	159	D	17,9	9,0	37,7	27,9

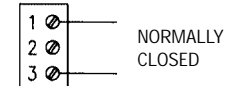
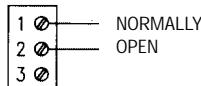
B* - C* - D* = cut blades

The drawings shows the traces to be followed for cutting the blades in order to obtain lengths suitable for the various pipes.



ELECTRICAL CONNECTIONS

The 1-2 contact is normally open (closes when the flow rate setting is reached); contact 1-3 is normally closed (opens when the flow rate setting is reached). Earth connection is through relative screw located at the bottom on the microswitch support.



APPLICATION AND OPERATION

Pressure switch **Series PRM** is a switch with normally closed contact; when the pressure of the system exceeds the set pressure, the contacts are opened, thus interrupting the circuit. Closing of the contacts (resetting of the pressure switch) should be performed manually by pressing the reset button.



PRM

Pressure switch with manual setting for heating systems.

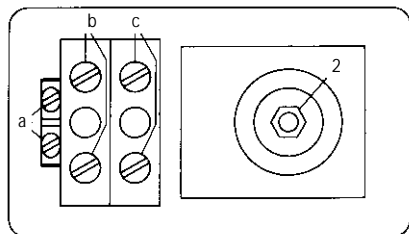
Part No.	Size	bar
0402101	1/4" F	3

ADJUSTMENT OF SET PRESSURE

To adjust the cut-off pressure, turn adjusting nut (2). The set value can be read on relative scale (1). To reactivate the system after making the adjustment, wait for the pressure to drop at least 0.4 bar below set pressure, then press the reset button at the bottom of the pressure switch.

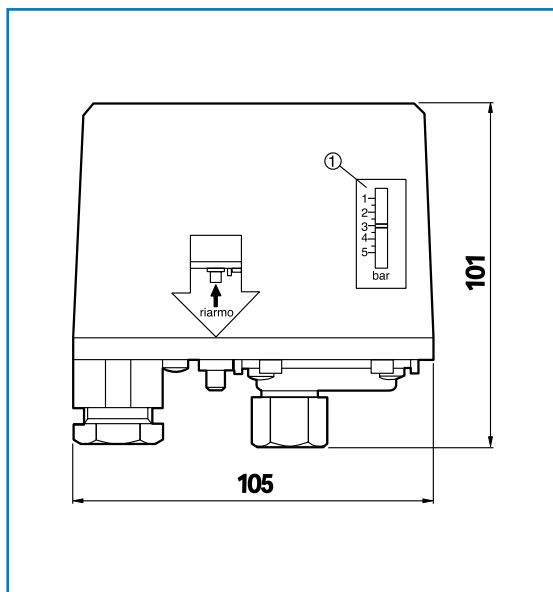
ELECTRICAL CONNECTIONS

Contact (b) - (c) is normally closed (it opens when the set pressure is reached). Connection to earth is via terminal (a). View of the terminal board from above after removing the cover:



- (a) earth terminals
- (b) line terminals
- (c) motor terminals

Overall dimensions (mm)



DESIGN FEATURES

Connection	1/4" F
Inner cable gland diameter	11.5 mm max. (for cables H07RN-F-3X1)
Lever mechanism	galvanized steel
Electrical contacts	brass faced with Ag-CdO
Diaphragm	NBR rubber with fabric core
Cover	high impact ABS

TECHNICAL CHARACTERISTICS

Contact load rating	16 (10) A at 250 V ~
Rated voltage	250 V ~
Pressure setting range	1 ÷ 5 bar
Factory setting	3 bar
Max. fluid temperature	90 °C
Degree of protection	IP 40

APPROVALS

Approved in conformity with Body R (June 1982 edition) issued by I.S.P.E.S.L.
CE mark in conformity with European Directives EEC 89/336, EEC 73/23.

APPLICATION AND OPERATION

The pressure switch automatically controls operation of the motor-driven pump according to given set pressures. When the minimum set pressure is reached, the contacts are closed, therefore the motor is started. Reaching of the max. set pressure determines, instead, the opening of the contacts, hence the motor is stopped.



PA5

Pressure switch for pumps and autoclaves with adjustment range from 1 to 5 bar.

Part No.	Size	Power
0402202	1/4"	250V single phase
0402105	1/4"	500V three phase

ADJUSTMENT OF SET PRESSURE

Fully loosen differential adjusting nut (1). Turn range adjusting nut (2) until obtaining the required closing valve for the contacts. Tighten differential adjusting nut (1) until the required cut-off pressure is obtained.



PA12

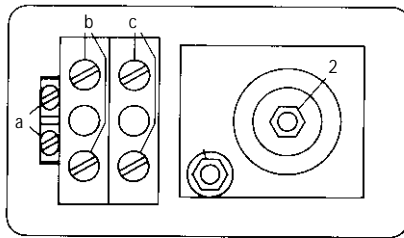
Pressure switch for pumps and autoclaves with adjustment range from 2 to 12 bar.

Part No.	Size	Power
0402206	1/4"	250V single phase
0402205	1/4"	500V three phase

ELECTRICAL CONNECTIONS

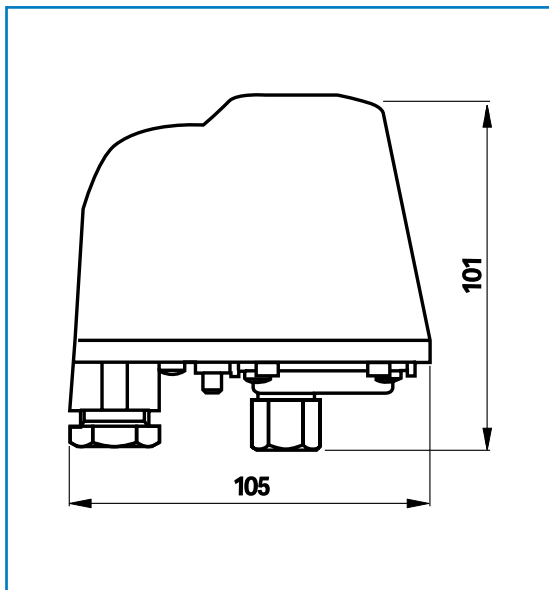
Contact (b) - (c) is normally closed (it opens when the set pressure is reached). Connection to earth is via terminal (a).

View of the terminal board from above after removing the cover:



- (a) earth terminals
- (b) line terminals
- (c) motor terminals

Overall dimensions (mm)



DESIGN FEATURES

Connection	1/4" F
Inner cable gland diameter	11.5 mm max. (for cables H07RN-F-3X1)
Lever mechanism	galvanized steel
Electrical contacts	brass faced with Ag-CdO
Diaphragm	NBR rubber with fabric core
Cover	high impact ABS

TECHNICAL CHARACTERISTICS

Model	PA5	PA12
Contact load rating	16(10)A a 250 V ~	16(10)A a 250 V ~
Pressure setting range	1 ÷ 5 bar	2 ÷ 12 bar
Minimum differential	0,5 bar	1,5 bar
Maximum differential	2,5 bar	4 bar
Factory setting (closing)	1,4 bar	5 bar
Factory setting (opening)	2,8 bar	7 bar
Max. fluid temperature	90°C	90°C
Degree of protection	IP 44	IP 44

APPROVALS

Product PA5, 250 V:

- conforms with European Standard EN 61058-1
- is approved by VDE, SETI, SEMKO, DEMKO, NEMKO, CSA.

Product PA12, 250 V:

- is NEMKO approved

CE mark in conformity with European Directives EEC 89/336, EEC 73/23.

The descriptions and photographs contained in this product specification sheet are supplied by way of information only and are not binding.
WATTS CAZZANIGA reserves the right to carry out any technical and design improvements to its products without prior notice.



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