



 **RAPHAEL**

Product CATALOG

RAF-P

PLASTIC VALVES





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ABOUT IRRIGATION

Throughout ancient history, the strategic manipulation of water sources to deliver a regulated supply to crops has been a pivotal factor in the development of civilizations.

In the present day, irrigation is undergoing continual transformation through the incorporation of technology, remote sensing, and precision agriculture, serving as a critical component in worldwide food production and the sustainable management of water resources.

RAPHAEL actively contributes to and is an integral part of this ongoing evolution.

RAPHAEL Valves Industries (1975) Ltd, founded in 1949, is Israel's leading manufacturer of water control valves. RAPHAEL's research department constantly strives to introduce new and innovative products and solutions for water control systems, including water supply, fire protection and irrigation systems.

HIGH

PERFORMANCE

RESISTANT

AND

EASY TO USE

DOES NOT REQUIRE

MAINTENANCE

NO METAL PARTS

EFFECTIVE

PRESSURE REGULATION
SUPERVISION,
LEVEL AND FLOW

RAPHAEL'S ANSWER



RAPHAEL valves have a versatile range of functions, ranging from capturing water from surface water sources, groundwater or dedicated water storage systems to efficiently supplying water to sprinkler irrigation systems. Designed specifically for applications in expansive irrigation systems in southern regions, these valves must be rugged and easy to use, yet economical and easy to install.

RAPHAEL offers a wide selection of automatic control valves, which allow our customers to effectively monitor their irrigation systems by regulating pressure, level and flow. While these control valves can operate independently, they can also be controlled remotely. We offer a variety of solutions, all based on a smart concept: use a metal-free internal valve for maintenance-free operation and customize it with a pilot circuit to achieve the desired functionality.



CONTROL VALVES

RAF-P

RAF-P valves are recommended for use in irrigation and turf applications. Entirely manufactured from durable plastic materials, with state of the art patented diaphragm, the RAF-P valve offers the best corrosion resistance available in plastic technology with the stream lined, low friction hydraulic performance of the RAF model.

RAF-P valves operate with a patented reinforced diaphragm, which eliminated the need for a metal spring. The special elastic design enables gradual and precise opening and closing of the valve, ideal for regulation purposes.
By eliminating the metal spring, the RAF-P is virtually maintenance free.



MARKETS



Green house



Landscape



Open field Irrigation



Industrial



Mining

TECHNICAL DATA

Fluid: Potable or filtered water

Nominal Diameter (DN):
from 40 to 100mm (1.5" to 4")

Available connections: refer to the chart below

Nominal Pressure (PN): 10 bar

Medium Temperature: up to 70 °C

Body material: glass reinforced Nylon

ADVANTAGES

UNIQUE NON METAL WETTED PARTS VALVE

No corrosion risk.

MAINTENANCE FREE

simple and reliable,
only three part valve:
cover, no spring special
diaphragm and body

HIGH PERFORMANCE

Uniform pressure
distribution on
sealing area,
prevents diaphragm
deformation, smoothly
operates in wide range
of pressure and flow
and very low minimum
opening pressure-

CHARACTERISTICS-

└ **Cover** – The unique cover, solid rib construction is made of glass reinforced Nylon

└ **Diaphragm** – “No spring” patented diaphragm guarantees uniform pressure distribution on sealing area, prevents diaphragm deformation and ensures longer maintenance free operation

└ **Body** – “Bridge” type, straight flow, glass reinforced nylon

└ **Fasteners** – Self-retaining chrome plated steel nuts and hex stainless steel bolts enable easy access and keep it corrosion free

└ **Pilots, solenoids & accessories** – are made of polyethylene plastic and nylon

└ **Self-flushing finger filter**, installed in the water inlet of the valve: maintenance free

└ **Combination with other pilots or solenoids** is possible to meet all demands



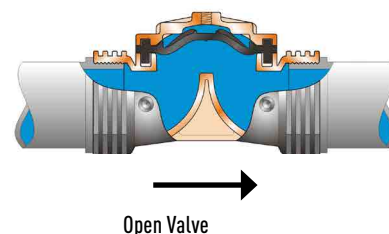
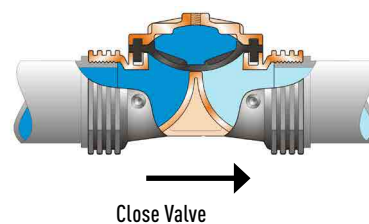
APPLICATION EXAMPLES

- └ **Manual command control RAF-P** valve is used for local operation in the field.
- └ **Hydraulic remote control RAF-P** valve is used where the valve is controlled by an irrigation controller and operated by hydraulic tubes.
- └ **Electric control RAF-P** is used where the opening and closing are controlled by an electrical command.
- └ **Pressure reducing RAF-P** is used to reduce and stabilize a higher inlet pressure to a steady lower and preset downstream pressure, regardless of flow or inlet pressure flocculation.
- └ **Pressure Sustaining RAF-P** is used for maintain a minimum preset inlet pressure.

FEATURES AND BENEFITS

Maintenance Free Valve by having no spring inside and a simple and reliable three parts valve: cover, patented diaphragm and body.

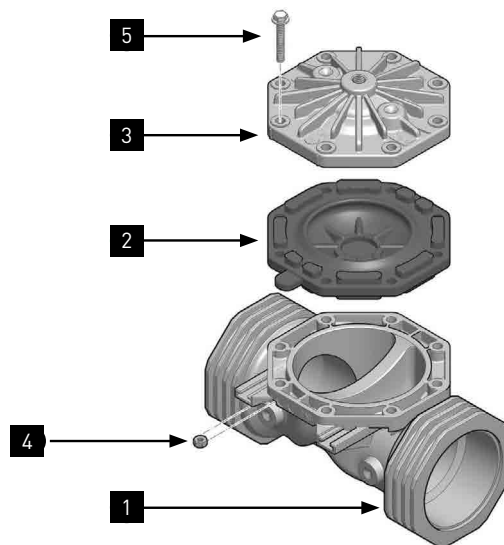
Stability and accurate regulation even at low flow rate based on the patented diaphragm integrated ribs to replace spring. This allows gradual opening and closing with no risk of noise, vibration or water hammer.



CONTROL VALVES

PART LIST OF MAIN VALVE STANDARD FEATURE:

Ref	Name	Material
1	Body	Glass reinforced nylon
2	Diaphragm	Natural rubber
3	Cover	Glass reinforced nylon
4	Nut	Chrome plated steel
5	Bolt	Stainless steel



		1 1/2	2	2 1/2	3	3" S	4
Available connections	Threaded	√	√	√	√	√	√
	Flanged				√	√	√
	Grooved				√		√
Minimum operating Pressure (Bar/PSI)*		1/14.5		0.7/10		0.5/7	
Maximum operating Pressure (Bar/PSI)*		10 / 145					
Maximum water temperature (C/F)		70 / 160					

* for lower operating pressure, please contact Raphael's team

UNVIERSAL FLANGE ADAPTOR



HYDRAULIC DATA

Nominal Diameter		Kv factor Fully opened Valve	Control Chamber Volume L
mm	inch		
40	1.5	55	0.1
50	2	60	0.1
65	2.5	75	0.2
80	3	75	0.2
80S	3S	175	0.3
100	4	175	0.7

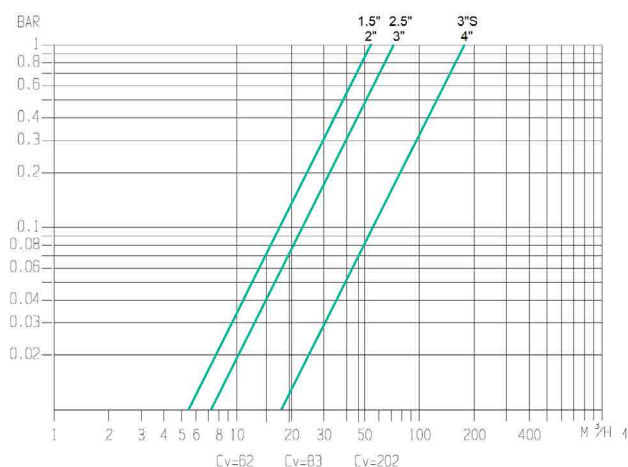
Kv=Valve flow coefficient

Q=Flow rate [m³/h]

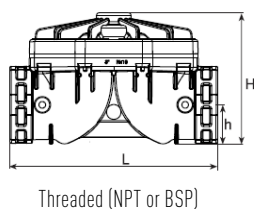
ΔP=Head loss across the valve [bar]

Cv= 1.16 Kv

$$Q = Kv \cdot \sqrt{\Delta P}$$

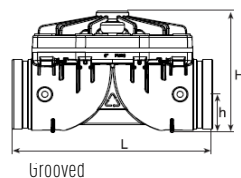


Pattern end Connection



DN		L	H	h	Weight	Min operating pressure
mm	inch	mm	mm	mm	Kg	bar
40	1.5	185	105	32	0.7	1
50	2	194	110	38	0.8	1
65	2.5	220	150	50	1.4	0.7
80	3	240	152	58	1.4	0.7
80S	3.5	314	190	67	4.6	0.5
100	4	320	190	67	4.6	0.5

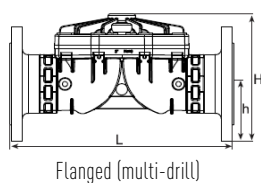
Pattern end Connection



DN		L	H	h	Weight	Min operating pressure
mm	inch	mm	mm	mm	Kg	bar
80	3	220	150	50	1.4	0.7
100	4	314	188	59	4.6	0.5

* Note: 2.5" (65 mm) Threaded is the model of 3" (80 mm) Grooved
3"S (80S mm) Threaded is the model of 4" (100 mm) Grooved

Pattern end Connection



DN		L	H	h	Weight	Min operating pressure
mm	inch	mm	mm	mm	Kg	bar
80	3	400	194	100	2.2	0.7
80S	3S	474	229	100	5.3	0.5
100	4	504	233	110	7.7	0.5

RAF-P PLASTIC CONTROL VALVES

RAF-P 01

Manual Plastic Control Valve 3-W Cock Valve

The **RAF-P 01** manual valve is a Normally Closed (N.C.) line pressure hydraulically actuated.

The 3-W selecting cock valve changes positions: The RAF-P 01 valve opens when 3-W selecting cock valve is turned to position "O".

The **RAF-P 01** shuts off when 3-W selecting cock valve is turned to position "C". The 3-W ball valve configuration together with Raphael's patented diaphragm enables smooth opening and surge free shut off.



MARKETS



Green house



Landscape



Open field Irrigation

TECHNICAL DATA

Fluid: raw water or filtered water

Nominal Diameter (DN):
from 40 to 100mm (1.5" to 4")

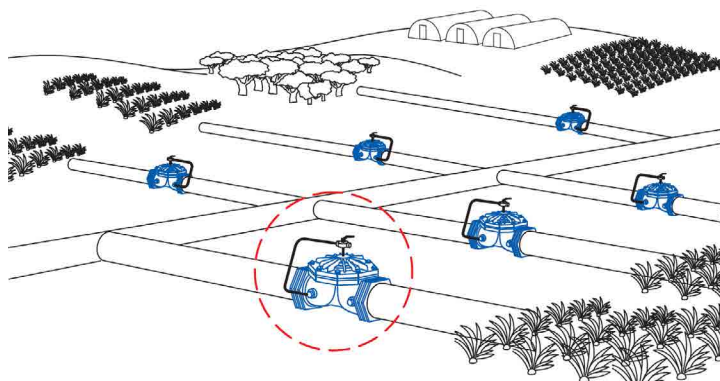
Available connections end:
Flanged, Threaded, grooved

Nominal Pressure (PN): 10 bar

Medium Temperature: up to 70 °C

Body material: glass reinforced nylon

Standard Controls: Manual control valve with Raphael's 3-W selecting cock valve.



TYPICAL APPLICATIONS

- Local operation of hydraulic valve by a manual command.
- Irrigation water distribution and field control connecting to irrigation controller

APPROVALS

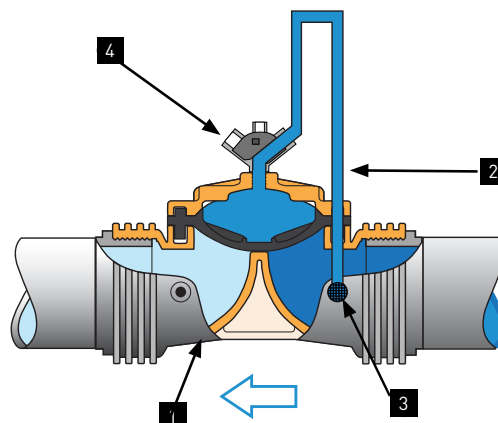
W/O

FEATURES

- Basic RAF-P valve
- Self-cleaning screen filter
- 3-W manual cock valve
- Polyethylene plastic tubing

OPTIONAL FEATURES:

- Pressure Check point
- Glycerin filled pressure gauges.



RAF-P 01 Manual Plastic Control Valve (N.C.)

Ref	Name
1	RAF-P plastic valve
2	Plastic Tubing
3	Self-cleaning screen filter
4	3W selecting cock valve

Nominal Diameter		Max. Flow Rate
mm	inch	m ³ /h
40	1.5	35
50	2	35
65	2.5	47
80	3	47
80S	3S	111
100	4	111

Nominal diameter only, for full dimensions please refer to engineering bulletin.

RAF-P PLASTIC CONTROL VALVES

RAF-P 0G

Hydraulic Remote Control 3-W hydraulic relay

The **RAF-P 0G** is a hydraulic valve operated by line pressure. The valve is a 3-W On/Off control valve that can be commanded from a remote location, by a hydraulic control relay - (Galit).

The **RAF-P 0G** can be configured to perform a Normally Open (N.O.) or Normally Close (N.C.) valve. The valve is fully open when the control chamber is disconnected from line pressure and vented into the atmosphere.

The 3-W Galit configuration with Raphael's patented diaphragm enables smooth and precise downstream pressure control.



MARKETS



Green house



Landscape



Open field Irrigation

TECHNICAL DATA

Fluid: potable or filtered water

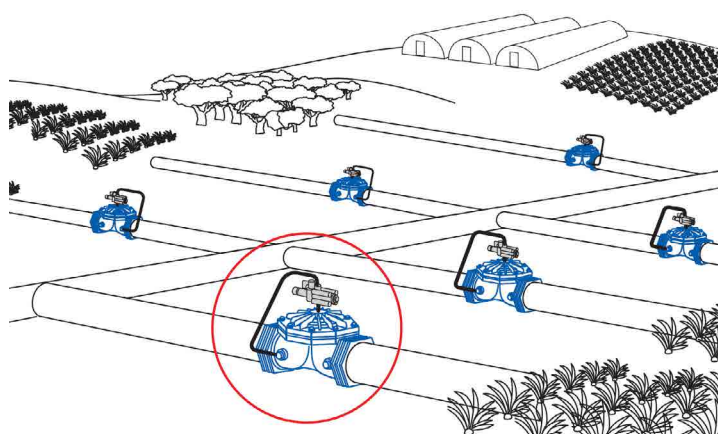
Nominal Diameter (DN):
from 40 to 100mm (1.5" to 4")

Available connections end:
Flanged, Threaded, grooved

Nominal Pressure (PN): 10 bar

Medium Temperature: up to 70 °C

Body material: glass reinforced nylon



TYPICAL APPLICATIONS

Use RAFP 0G in situations where the opening and closing control unit is installed in a central location and connected with the field valves by control tubing. This remote operation control is required for most irrigation devices and irrigations water distribution for field control. Hydraulic remote control valves are used in locations with lightning hazard that damages electric control valves with unprotected solenoid installations.

APPROVALS

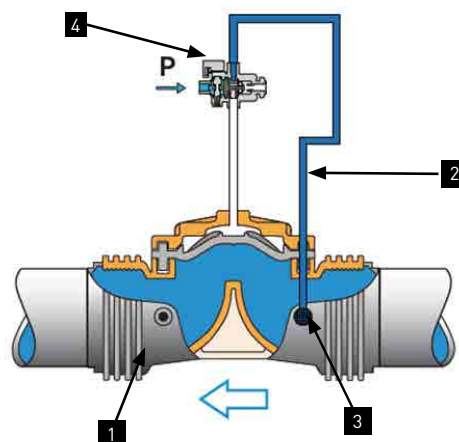
W/O

FEATURES

- Basic RAF-P valve
- Self-cleaning screen filter
- 3-W Hydraulic relay
- Polyethylene plastic tubing

OPTIONAL FEATURES:

- Pressure Check point
- Glycerin filled pressure gauge
- Normaly close/Normaly open relay
- Other 3W relay models



RAF-P 06 Manual Plastic Control Valve (N.C.)

Ref	Name
1	RAF-P plastic valve
2	Plastic Tubing
3	Self-cleaning screen filter
4	3W Galit relay

Nominal Diameter		Max. Flow Rate
mm	inch	m3/h
40	1.5	35
50	2	35
65	2.5	47
80	3	47
80S	3S	111
100	4	111

Nominal diameter only, for full dimensions please refer to engineering bulletin.

RAF-P PLASTIC CONTROL VALVES

RAF-P 31P

Electric Plastic Control Valve (N.C.)

3-W Plastic Solenoid

The **RAF- P 31P** electric valve is a Normally Closed (N.C.) line pressure hydraulically actuated.

The 3-W solenoid valve changes positions:

The **RAF-P 31** valve opens when 3-W plastic solenoid valve is energized.

The **RAF- P 31P** shuts off when 3-W plastic solenoid valve is de-energized.

The 3-W electric solenoid valve configuration together with Raphael's patented diaphragm enables smooth opening and surge free shutoff.



MARKETS



Green house



Landscape



Open field Irrigation

TECHNICAL DATA

Fluid: potable or filtered water

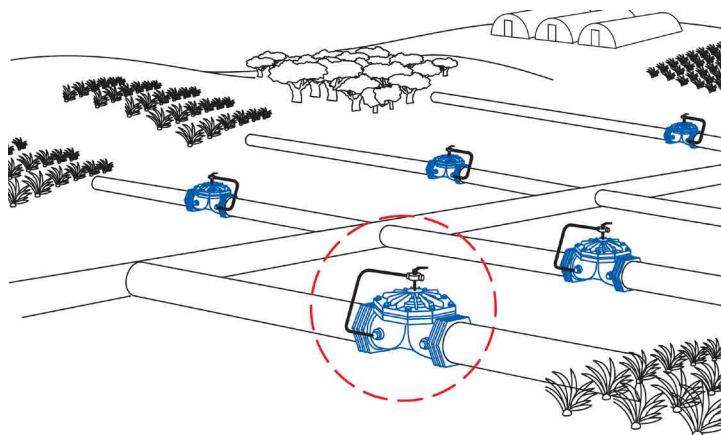
Nominal Diameter (DN):
from 40 to 100mm (1.5" to 4")

Available connections end:
Flanged, Threaded, grooved

Nominal Pressure (PN): 10 bar

Medium Temperature: up to 70 °C

Body material: glass reinforced nylon



TYPICAL APPLICATIONS

- Irrigation water distribution and field control
- Remote operation of valve by electric command

APPROVALS

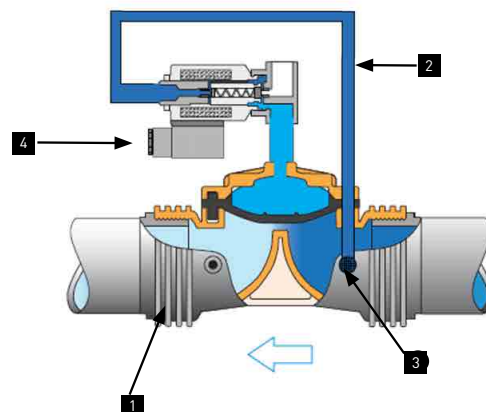
W/O

FEATURES

- Basic RAF-P valve
- Self-cleaning screen filter
- 3-W (N.O.) plastic solenoid 24VAC
- Polyethylene plastic tubing

OPTIONAL FEATURES:

- Pressure Check point
- Glycerin filled pressure gauge
- Normally closed (N.C.) solenoid (for N.O. valve)
- Power source - 110V, 220V (AC) & 9V, 12V, 24V (DC)
- DC latch solenoid



RAF-P 31P 3-W Electric Plastic Control Valve (N.C.)

Ref	Name
1	RAF-P plastic valve
2	Plastic Tubing
3	Self-cleaning screen filter
4	Solenoid (N.O.) 24V (AC)

Nominal Diameter		Max. Flow Rate
mm	inch	m ³ /h
40	1.5	35
50	2	35
65	2.5	47
80	3	47
80S	3S	111
100	4	111

Nominal diameter only, for full dimensions please refer to engineering bulletin.

RAF-P PLASTIC CONTROL VALVES

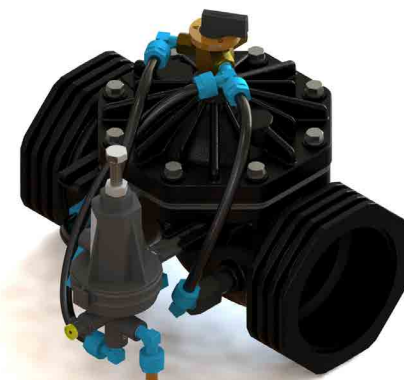
RAF-P 6R

Pressure Reducing Plastic Control Valve 3-W Plastic Pilot

The **RAF-P 6R** pressure reducing valve is a line pressure hydraulically actuated, 3-W plastic pilot.

The **RAF-P 6R** maintains a constant downstream pressure, as set on the 3-W plastic pilot, regardless of flow or upstream pressure changes.

The 3-W plastic pilot configuration together with Raphael's patented diaphragm enables smooth and precise downstream pressure control.



Setting Range: 0.6 to 6 bar

MARKETS



Green house



Landscape



Open field Irrigation

TECHNICAL DATA

Fluid: raw water or filtered water

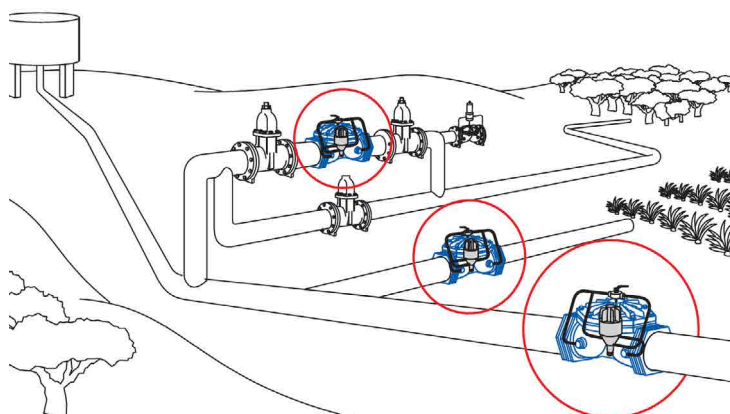
Nominal Diameter (DN):
from 40 to 100mm (1,5" to 4")

Available connections: Flanged,
Threaded, grooved

Nominal Pressure (PN): 10 bar

Medium Temperature: up to 70 °C

Body material: glass reinforced
nylon



TYPICAL APPLICATIONS

- Irrigation head control
- Pressure reducing field control
- Irrigation water distribution

ADJUSTMENTS

Turning the adjusting screw counter clockwise (-) pressure will decrease.

Turning the adjusting screw clockwise (+) pressure will increase.

APPROVALS

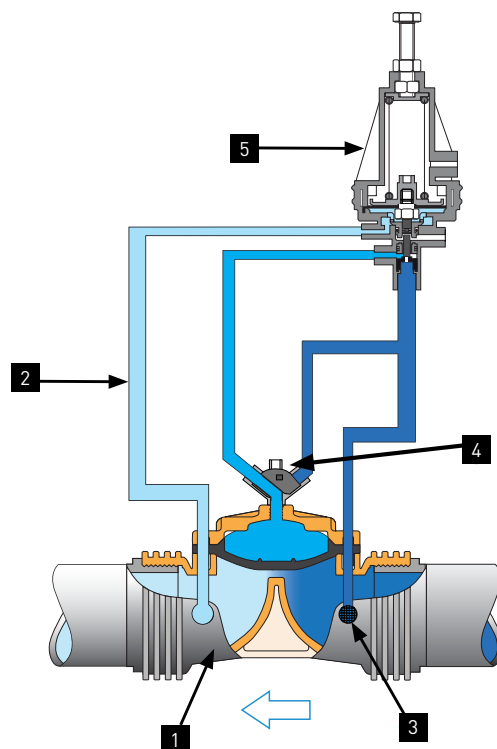
W/O

FEATURES

- Basic RAF-P valve
- Self-cleaning screen filter
- 3-W plastic pilot PMR
- 3-W cock valve
- Polyethylene plastic tubing
- Pressure check point

OPTIONAL FEATURES:

- Glycerin filled pressure gauge
- **PMSR** - multi purpose plastic pilot
- Shuttle T relay (for hydraulic command)
- Galit relay (for hydraulic command)



RAF-P 6R Pressure Reducing Plastic Control Valve

Nominal Diameter		Recommended Flow Rate [m³/h]	
mm	inch	Min.	Max.
40	1.5	3	35
50	2	3	35
65	2.5	7	47
80	3	7	47
80S	3S	10	111
100	4	10	111

Nominal diameter only, for full dimensions please refer to engineering bulletin.

Ref	Name
1	RAF-P plastic valve
2	Plastic Tubing
3	Self-cleaning screen filter
4	3W selecting cock valve
5	3 Way PMR pilot

SPRING SELECTION

Setting range [Bar]	Color of spring
1-6 (standard)	Green
0,6-2,7	Red

RAF-P PLASTIC CONTROL VALVES

RAF-P 6R31

Electric ON/OFF Pressure Reducing Plastic Control Valve

3-W Plastic Pilot

The **RAF-P 6R31** is an electric On/Off valve, controlled by a 3-W plastic solenoid valve (N.O.).

When the solenoid is energized the valve opens and acts as a pressure reducing valve, maintains a constant downstream pressure, as set on the 3-W plastic pilot, regardless of flow or upstream pressure changes.

The 3-W plastic pilot configuration together with Raphael's patented diaphragm enables smooth and precise downstream pressure control.



Setting Range: 0.6 to 6 bar

MARKETS



Green house



Landscape



Open field Irrigation

TECHNICAL DATA

Fluid: raw water or filtered water

Nominal Diameter (DN):
from 40 to 100mm (1,5" to 4")

Available connections: Flanged,
Threaded, grooved

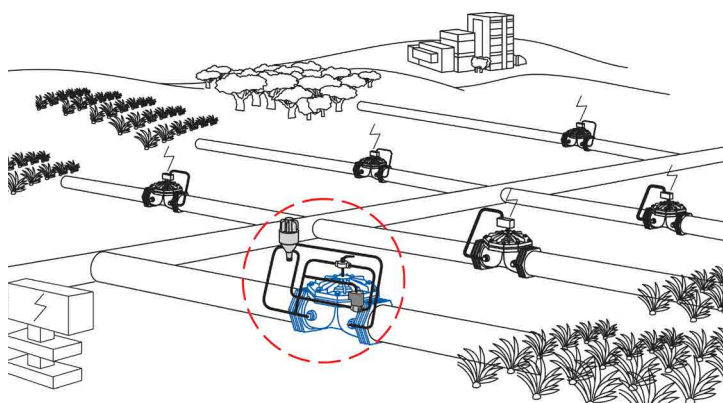
Nominal Pressure (PN): 10 bar

Medium Temperature: up to 70 °C

Body material: glass reinforced
nylon

APPROVALS

W/O



TYPICAL APPLICATIONS

- Irrigation head control
- Pressure reducing field control
- Irrigation water distribution

ADJUSTMENTS

Turning the adjusting screw counter clockwise (-) pressure will decrease.

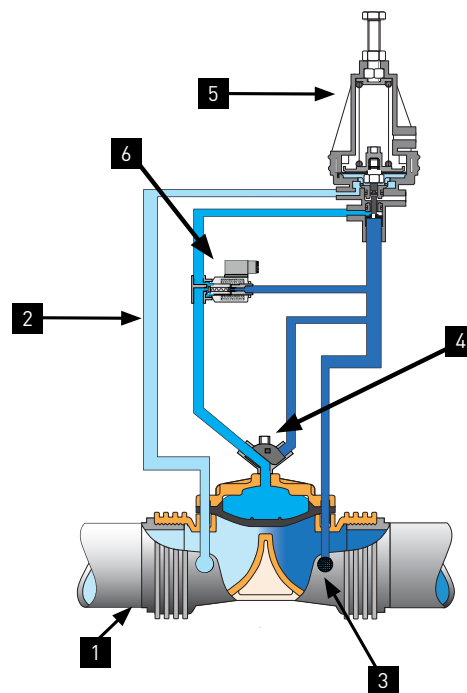
Turning the adjusting screw clockwise (+) pressure will increase.

FEATURES

- Basic RAF-P valve
- Self-cleaning screen filter
- 3-W plastic pilot PMR
- 3-W cock valve
- 3-W N.O. plastic solenoid 24 VAC
- Polyethylene plastic tubing
- Pressure check point

OPTIONAL FEATURES:

- Glycerin filled pressure gauge
- **PMSR** - multi purpose plastic pilot
- Solenoid power source - 110V, 220V (AC) & 9V, 12V, 24V (DC)
- DC latch solenoid



RAF-P 6R31 Pressure Reducing Plastic Control Valve

Nominal Diameter		Recommended Flow Rate [m³/h]	
mm	inch	Min.	Max.
40	1.5	3	35
50	2	3	35
65	2.5	7	47
80	3	7	47
80S	3S	10	111
100	4	10	111

Nominal diameter only, for full dimensions please refer to engineering bulletin.

Ref	Name
1	RAF-P plastic valve
2	Plastic Tubing
3	Self-cleaning screen filter
4	3W selecting cock valve
5	3 Way PMR Pilot
6	Plastic Solenoid 24VAC

SPRING SELECTION

Setting range [Bar]	Color of spring
1-6 (standard)	Green
0,6-2,7	Red

RAF-P PLASTIC CONTROL VALVES

RAF-P 8R

Pressure Sustaining/Relief Plastic Control Valve

3-W Plastic Pilot

The **RAF-P 8R** pressure sustaining control valve is line pressure hydraulically actuated, 3-W plastic pilot. The **RAF-P 8R** pressure sustaining control valve maintains a minimum upstream pressure, as set on the 3-W pressure sustaining plastic pilot, regardless of flow fluctuations. The **RAF-P 8R** will gradually open when upstream pressure exceed 3-W pilot set pressure. The 3-W pilot configuration together with Raphael's patented diaphragm enables smooth and precise upstream pressure control.

Setting Range: 0.8 to 7 bar



MARKETS



Green house



Landscape



Open field Irrigation

TECHNICAL DATA

Fluid: raw water or filtered water

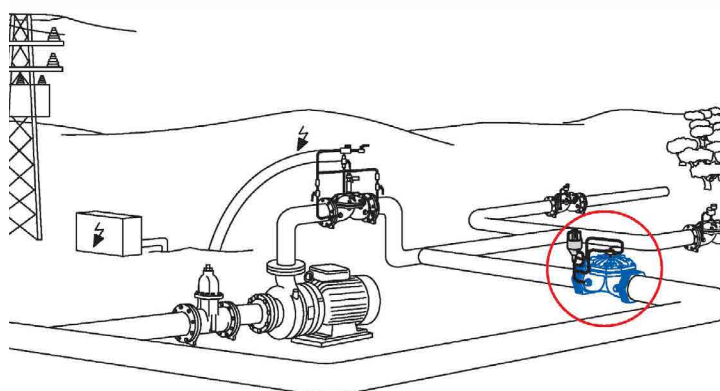
Nominal Diameter (DN): from 40 to 100mm (1,5" to 4")

Available connections: Flanged, Threaded, grooved

Nominal Pressure (PN): 10 bar

Medium Temperature: up to 70 °C

Body material: glass reinforced nylon



TYPICAL APPLICATIONS

- Pump over pressure discharge
- Priorisation of upstream zone
- Prevents from line emptying
- Automatic filter head control, maintain flushing pressure

ADJUSTMENTS

Turning the adjusting screw counter clockwise (-) pressure will decrease.

Turning the adjusting screw clockwise (+) pressure will increase.

APPROVALS

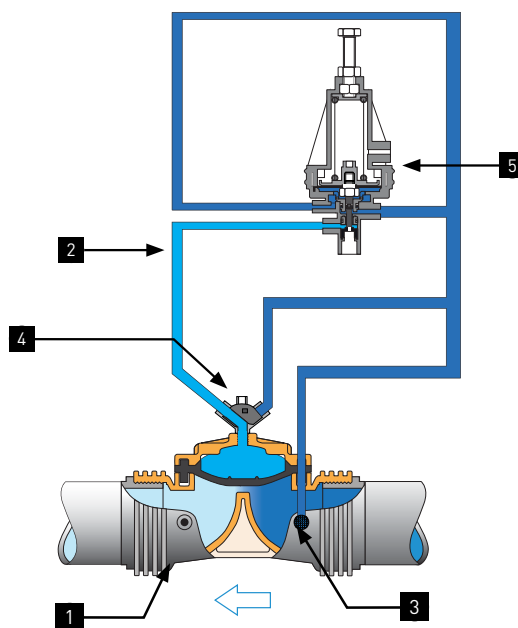
W/O

FEATURES

- Basic RAF-P valve
- Self-cleaning screen filter
- 3-W PMSR plastic pilot
- 3-W cock valve
- Polyethylene plastic tubing
- Pressure check point

OPTIONAL FEATURES:

- Glycerin filled pressure gauge
- Shuttle T relay (for hydraulic command)
- Galit relay (for hydraulic command)
- Solenoid (for electric command)



RAF-P 8R Pressure Sustaining Plastic Control Valve

Nominal Diameter		Max. Flow Rate
mm	inch	m3/h
40	1.5	35
50	2	35
65	2.5	47
80	3	47
80S	3S	111
100	4	111

Nominal diameter only, for full dimensions please refer to engineering bulletin.

Ref	Name
1	RAF-P plastic valve
2	Plastic Tubing
3	Self-cleaning screen filter
4	3W selecting cock valve
5	3 Way PMSR Pilot

SPRING SELECTION

Setting range [Bar]	Color of spring
1-7 (standard)	Green
0,8-3	Red

RAF-P PLASTIC CONTROL VALVES

RAF-P 8R31

Electric Pressure Sustaining Plastic Control Valve

3-W Plastic Pilot

The **RAF-P 8R31** is a Normally Closed (N.C.) pressure sustaining valve.

The **RAF-P 8R31** is an electric On/Off valve, controlled by a 3-W plastic solenoid valve. When the solenoid is energized and the pressure exceeds a minimum preset pressure, the valve will gradually open and sustains an upstream pressure regardless of flow changes. The 3-W plastic pilot can be preset to a desirable minimum upstream pressure. The 3-W plastic pilot and plastic solenoid together with Raphael's patented diaphragm enables smooth and precise control.



MARKETS



Green house



Landscape



Open field Irrigation

TECHNICAL DATA

Fluid: raw water or filtered water

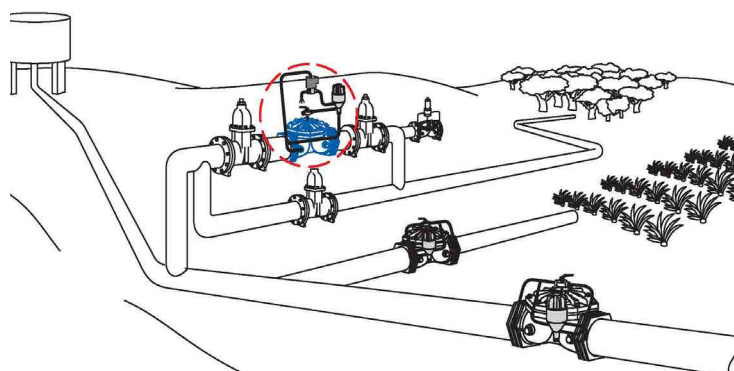
Nominal Diameter (DN): from 40 to 100mm (1,5" to 4")

Available connections: Flanged, Threaded, grooved

Nominal Pressure (PN): 10 bar

Medium Temperature: up to 70 °C

Body material: glass reinforced nylon



TYPICAL APPLICATIONS

- Pumping station: Pump over pressure discharge
- Irrigation water distribution: Priorisation of upstream zone
- Irrigation water distribution: Prevents from line emptying
- Automatic filter head control, maintain flushing pressure

ADJUSTMENTS

Turning the adjusting screw counter clockwise (-) pressure will decrease.

Turning the adjusting screw clockwise (+) pressure will increase.

APPROVALS

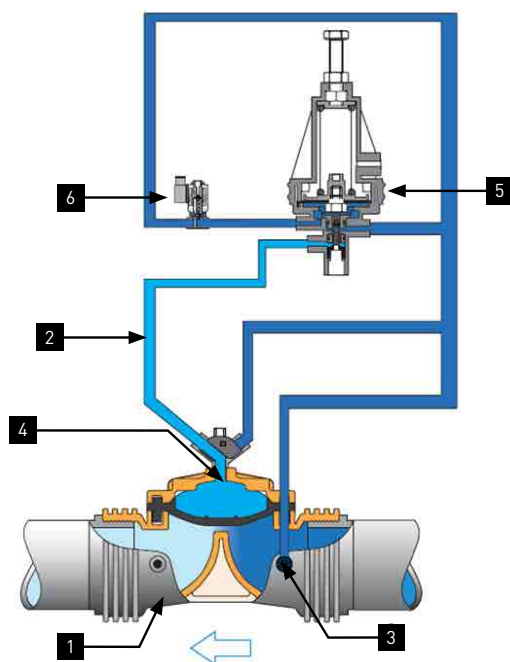
W/O

FEATURES

- Basic RAF-P valve
- Self-cleaning screen filter
- 3-W PMSR plastic pilot
- 3-W cock valve
- 3-W N.O. plastic solenoid 24 VAC
- Polyethylene plastic tubing
- Pressure check point

OPTIONAL FEATURES:

- Glycerin filled pressure gauge
- Solenoid power source - 110V, 220V (AC) & 9V, 12V, 24V (DC)
- DC latch solenoid



RAF-P 8R31 Pressure Sustaining Plastic Control Valve

Nominal Diameter		Max. Flow Rate
mm	inch	m3/h
40	1.5	35
50	2	35
65	2.5	47
80	3	47
80S	3S	111
100	4	111

Nominal diameter only, for full dimensions please refer to engineering bulletin.

Ref	Name
1	RAF-P plastic valve
2	Plastic Tubing
3	Self-cleaning screen filter
4	3W selecting cock valve
5	3 Way PMSR Pilot
6	3 Way N.O. solenoid

SPRING SELECTION

Setting range [Bar]	Color of spring
1-7 (standard)	Green
0,8-3	Red

RAF-P PLASTIC CONTROL VALVES

RAF-P 68R

Pressure Reducing & Sustaining Plastic Control Valve 3-W Plastic Pilot

The **RAF-P 68R** pressure reducing & sustaining valve is line pressure hydraulically actuated, 3-W plastic pilots operated.

The **RAF-P 68R** maintains a minimum upstream pressure, as set on the 3-W pressure sustaining plastic pilot and a maximum downstream pressure as set on the 3-W pressure reducing plastic pilot.

The minimum upstream and the maximum downstream pressure are maintained regardless of flow changes.

The 3-W pilot configuration together with Raphael's patented diaphragm enables smooth and precise pressure control.



MARKETS



Green house



Landscape



Open field Irrigation

TECHNICAL DATA

Fluid: raw water or filtered water

Nominal Diameter (DN): from 40 to 100mm (1,5" to 4")

Available connections: Flanged, Threaded, grooved

Nominal Pressure (PN): 10 bar

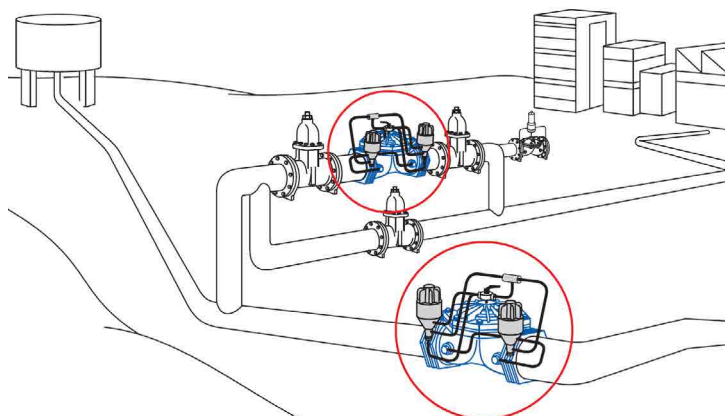
Medium Temperature: up to 70 °C

Body material: glass reinforced nylon

Pilot circuit protected by a self-flushing finger filter, installed in the water inlet of the valve: maintenance free.

APPROVALS

W/O



TYPICAL APPLICATIONS

- Irrigation water distribution: Priorisation of upstream zone and protection on downstream zone
- Irrigation water distribution: Prevents from line emptying
- Automatic filter head control, maintain flushing pressure and protects the irrigation system

ADJUSTMENTS

Minimum upstream pressure adjustment up to 7 bars.

For pressure setting by pilot please refer to Raphael's IOM data sheet.

FEATURES

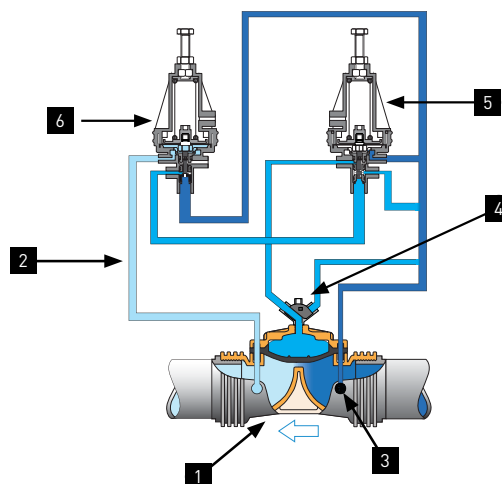
- Basic RAF-P valve
- Self-cleaning screen filter
- 3-W **PMSR** plastic pilot (configured as sustaining)
- 3-W **PMR** plastic pilot (configured as reducing)
- 3-W cock valve
- Polyethylene plastic tubing
- 2 Pressure check point

OPTIONAL FEATURES:

- Glycerin filled pressure gauge
- Plastic solenoid
- Shuttle T relay (for hydraulic command)
- Galit relay (for hydraulic command)
- Solenoid (for electric command)

Nominal Diameter		Recommended Flow Rate [m ³ /h]	
mm	inch	Min.	Max.
40	1.5	3	35
50	2	3	35
65	2.5	7	47
80	3	7	47
80S	3S	10	111
100	4	10	111

Nominal diameter only, for full dimensions please refer to engineering bulletin.



RAF-P 68R Pressure Reducing & Sustaining Plastic Control Valve

Ref	Name
1	RAF-P plastic valve
2	Plastic Tubing
3	Self-cleaning screen filter
4	3W selecting cock valve
5	3 Way Sustaining PMSR Pilot
6	3 Way Reducing PMR Pilot

SPRING SELECTION

PMR Reducing Pilot

Setting range [Bar]	Color of spring
1-6 (standard)	Green
0,6-2.7	Red

SPRING SELECTION

PMSR Sustaining Pilot

Setting range [Bar]	Color of spring
1-7 (standard)	Green
0,8-3	Red

RAF-P PLASTIC CONTROL VALVES

RAF-P 7R

Flow Rate Plastic Control Valve 3-W Plastic Pilot

The **RAF-P 7R** flow rate control valve is line pressure hydraulically actuated, 3-W plastic pilot. Normally the valve is partly open to allow constant flow rate. The head loss across the orifice is proportional to the flow rate.

The **RAF-P 7R** maintains a maximum preset flow rate, as set on the 3-W flow rate pilot, and a calibrated orifice, regardless of pressure changes.

The 3-W pilot configuration together with Raphael's patented diaphragm enables smooth and precise flow rate control.



MARKETS



Green house



Landscape



Open field Irrigation

TECHNICAL DATA

Fluid: raw water or filtered water

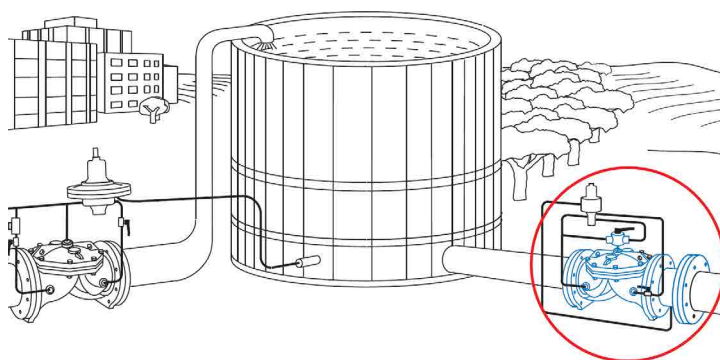
Nominal Diameter (DN):
from 40 to 100mm (1,5" to 4")

Available connection end:
Flanged, Threaded, grooved

Nominal Pressure (PN): 10 bar

Medium Temperature: up to 70 °C

Body Material: glass reinforced nylon



TYPICAL APPLICATIONS

- Water supply system
- Elimination of excessive pumping in pumping station
- Limit the water demand in network distribution
- Irrigation water distribution and field control

APPROVALS

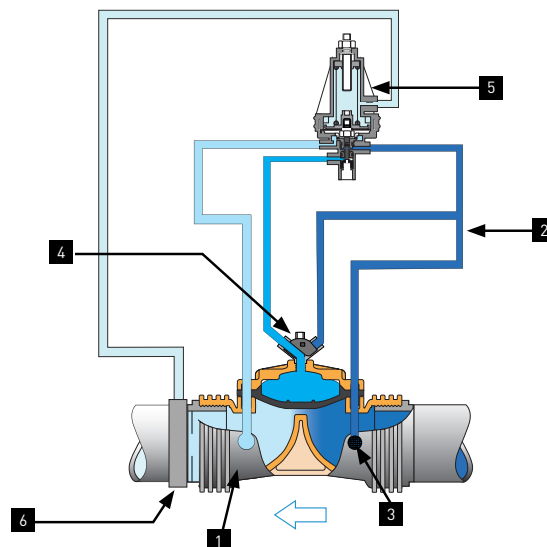
W/O

FEATURES

- Basic RAF-P valve
- Self-cleaning screen filter
- 3-W flow plastic pilot PMF
- Polyethylene plastic tubing
- 3-W selecting cock valve
- Orifice plate

OPTIONAL FEATURES:

- 3-W solenoid
- Galit hydraulic relay
- Pressure sustaining or pressure reducing pilot



RAF-P 7R Flow Rate Plastic Control Valve

Nominal Diameter		Max. Flow Rate
mm	inch	m ³ /h
40	1.5	35
50	2	35
65	2.5	47
80	3	47
80S	3S	111
100	4	111

Ref	Name
1	RAF-P plastic valve
2	Plastic Tubing
3	Self-cleaning screen filter
4	3W selecting cock valve
5	3 Way Flow Pilot PMF
6	Orifice plate

Nominal diameter only, for full dimensions please refer to engineering bulletin.





PILOTS & ACCESSORIES



PLASTIC PILOT PC

3 WAY PRESSURE AND FLOW PILOT CONTROL

Valve size: 1"-4"

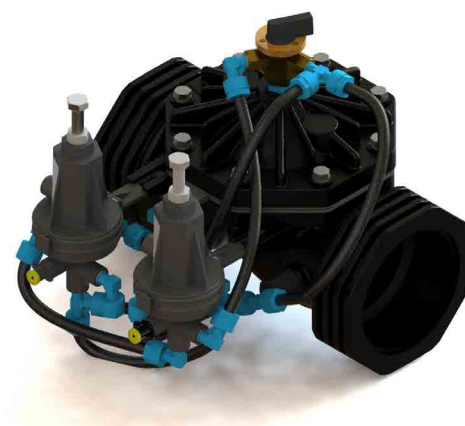
The pressure and flow plastic pilot is a 3-way pressure pilot available in 3 different versions:

PMR - pressure pilot to control valve as pressure reducing or pressure sustaining valve

PMF - performance pilot for pressure reducing control

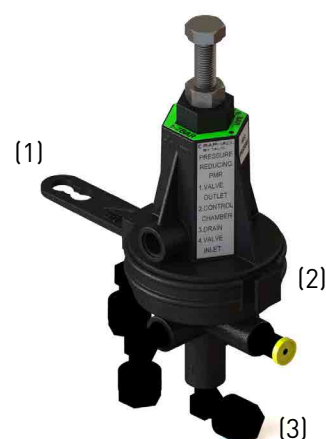
PMW - control pilot

- * The Plastic Pilot is specially design for irrigation application.
- * Two pilots can be combined together on a single valve to form a bi functional valve operation.
- * The pressure-regulating model is available in normal pressure or low-pressure configurations.
- * The Plastic Pilot 's body is made of high quality reinforced plastic.
- * The screw located on top of the valve does the calibration of the pilot.



The pilot can be fix on the valve in 2 different orientation to allow an easy connection of the different version.
This modification is done by moving the fixing part (1) to the groove (2).
This modification could ease the access of some of the connections.

Additional port (3) - allow optional assembling of Pressure check point.



PMR PLASTIC PILOT

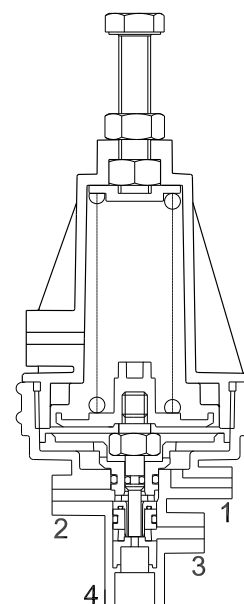
3 WAY PRESSURE REDUCING PILOT

High performance pilot for pressure reducing control

Valve size: 1"-4"

Equipped with four connections:

1. Sensor connection - Connected to valve outlet.
2. Command connection - Connected to valve control chamber.
3. Drain - open to the atmosphere
4. Pressure connection - Connected to valve inlet.



PRM 2-W Pressure Reducing Mode

PRESSURE REDUCING VALVE

Maintains a constant downstream pressure, as set on the 3-W plastic pilot, regardless of flow or upstream pressure changes.

Adjusting

Turning the adjusting screw counter clockwise (-) pressure will decrease.
Turning the adjusting screw clockwise (+) pressure will increase.

Spring selection pressure sustaining pilot

Setting range [Bar]	Color of spring
1 - 6 (standard)	Green
0.6 - 2.7	Red

TECHNICAL DATA	
Pressure rating	10 bar (150 psi)
Pressure adjustment range	0.3-7.5 bar (5-100 psi)
Maximum temperature	50°C (120°F)
Port Connections	1/8" BSP X 8 mm



PLASTIC PILOT PC

PMSR PLASTIC PILOT

3-WAY Universal pilot to control valve as pressure reducing or pressure sustaining valve

PRESSURE SUSTAINING MODE

Valve size: 1"-4"

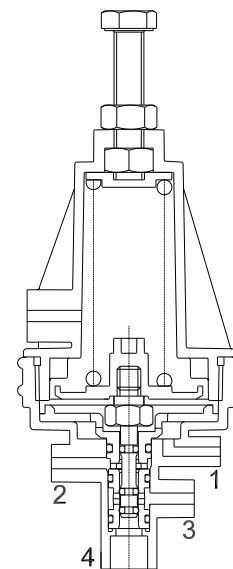
Equipped with four connections:

1. Sensor connection - Connected to valve inlet.
2. Pressure connection- Connected to valve inlet.
3. Command connection - Connected to valve control chamber.
4. Drain - open to the atmosphere

PRESSURE SUSTAINING VALVE

Maintains a minimum upstream pressure, as set on the 3-W pressure sustaining plastic pilot, regardless of flow changes.

Setting range [Bar]	Color of spring
1 - 7 (standard)	Green
0.8 - 3	Red



PMSR 3-W Pressure Sustaining Mode

PMSR - 3-W Pressure Reducing Mode

PRESSURE REDUCING MODE

Valve size: 1"-4"

Equipped with four connections:

1. Sensor connection - Connected to valve outlet.
2. Drain - open to the atmosphere
3. Command connection - Connected to valve control chamber.
4. Pressure connection- Connected to valve inlet.

PRESSURE REDUCING VALVE

Maintains a constant downstream pressure, as set on the 3-W plastic pilot, regardless of flow or upstream pressure changes.

Setting range [Bar]	Color of spring
1 - 6 (standard)	Green
0.6 - 2.7	Red

Adjusting for Sustaining or Reducing Mode

Turning the adjusting screw counter clockwise (-) pressure will decrease.

Turning the adjusting screw clockwise (+) pressure will increase.

TECHNICAL DATA	
Pressure rating	10 bar (150 psi)
Pressure adjustment range	0.3-7.5 bar (5-100 psi)
Maximum temperature	50°C (120°F)
Port Connections	1/8" BSP X 8 mm



PMF PLASTIC PILOT

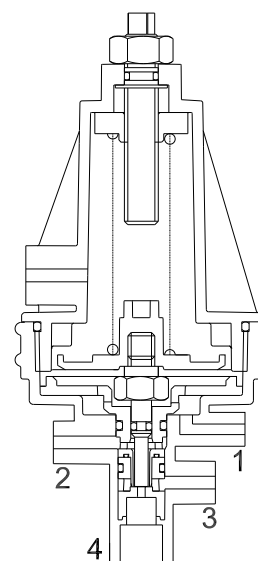
3-WAY FLOW CONTROL PILOT

Flow control pilot

Valve size: 1"-4"

Equipped with four connections:

1. Connected to the valve downstream
2. Connected to the valve upstream
3. Connected to the valve control chamber
4. Drain, open to the atmosphere
5. Connected to calibrated orifice



PMF 3-W Flow Control Mode

Adjusting

Turning the adjusting screw clockwise (+) flow will increase

Turning the adjusting screw counter clockwise (-) flow will decrease

TECHNICAL DATA

Pressure rating	10 bar (150 psi)
Maximum temperature	50°C (120°F)
Port Connections	1/8" BSP X 8 mm



ACCESSORIES

PLASTIC SOLENOID

3 WAY WP-8

Valve size: 1" - 6D"

Raphael plastic solenoid valves are mounted on PN-10 valves.

The Raphael plastic solenoid valve has an electric coil responding to different currents and includes manual override.

Plastic solenoid valve bases are available with or without flange connection.

Applications:

Raphael plastic solenoid is specially designed for irrigation control valves.

General Information

Pressure Rating: PN-8

Max Pressure: 10 Kg/cm²

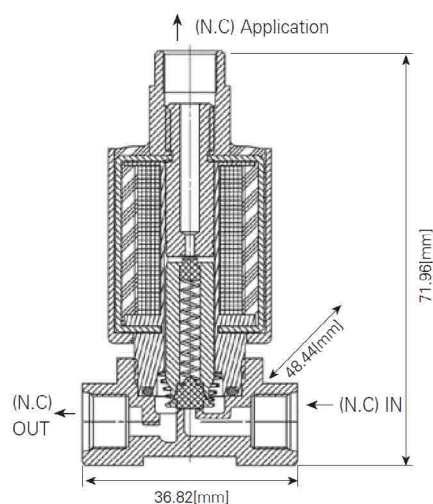
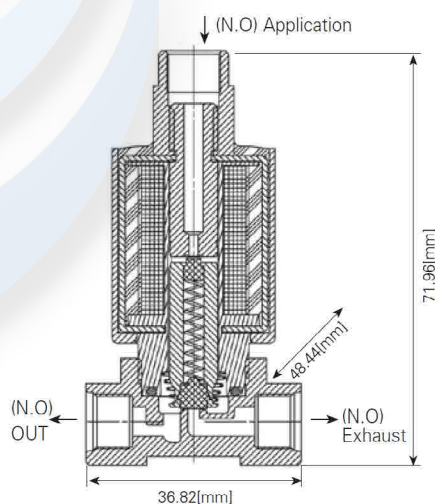
Max Temperature: 80 °C

Weight: 0.103 Kg

Power Source: 110V, 220V (AC) & 9V, 12V, 24V (DC)



Function	Pressure (bar/psi)		
	AC	DC	
3-W-N.C.	11/156	9/127	11/156
3-W-N.O.	12/170	12/170	12/170



ACCESSORIES

Technical Data

Function	2 Way, 3 Way, NC, NO
Ports size	1/8" and 1/4" BSP & NPT
Orifice size	See table
Pressure range	See table
Temperature range	Fluid: 5°C to 50°C Ambient: -10°C to 50°C
Materials in contact with media	Manual override: Reinforced Nylon Main Valve: Brass or Reinforced Nylon Solenoid Operator: Stainless Steel AISI 300 & 400 series Seals: EPDM
Coil voltage	Voltage and power consumption - see table
Standard protection class	IP66

* Available with brass adaptor upon request

Max. Pressure (bar) table

Function	Orifice (mm)	AC	DC	DC Latch
2W NC	up to 2.0	12	12	12
3W NC	1	16	12	16
	1.2	11	9	11
	1.6	6	5	6
3W NO	1.0	16	16	16
	1.2	12	12	12
	1.6	8	8	8

Voltage & Current table

Solenoid	Voltage		Inrush (A)	Holding (A)
2W 50 Hz	V	+10%	0.3	0.19
2W 60 Hz			0.2	0.14
3W 50/60 Hz		n-20%	0.125	0.125
DC			4.5 W	

Voltage & Power Consumption

	AC (W)	DC (W)
	50 HZ	
V	2	4.5
12	•	•
24	•	•
110	•	
	2W only	

* Available options

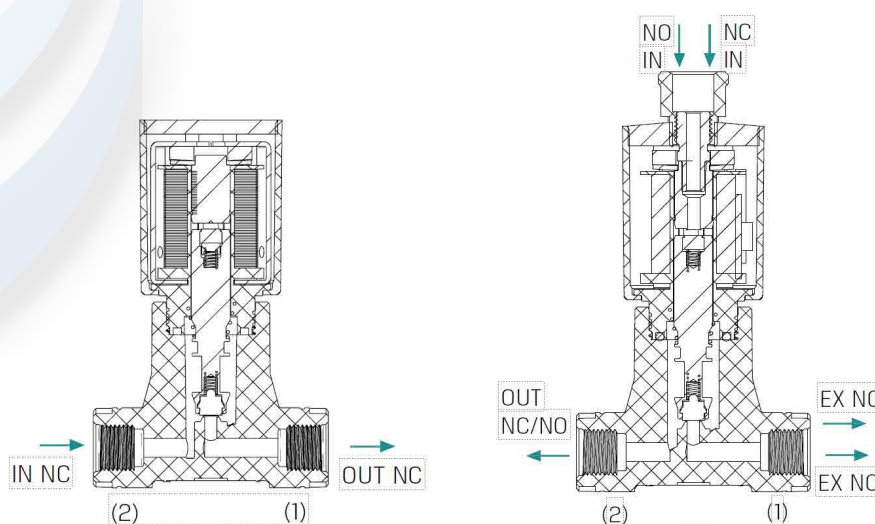
ACCESSORIES

SOLENOID VALVES LATCH 2 WAY, 3 WAY, NC, NO

Technical Data

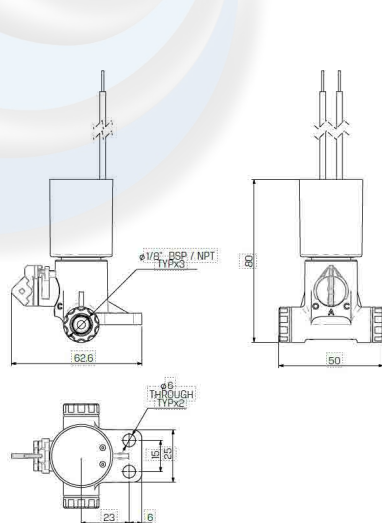
Function	2 Way, 3 Way, NC, NO
Ports size	1/8" BSP & NPT
Orifice size	2.6 mm
Pressure range	NC (2 Way, 3 Way): 8 bar NO (3 Way): 10 bar
Temperature range	Fluid: 5°C to 50°C (no freezing) Ambient: 10°C to 50°C
Materials in contact with media	Manual override: Plastic Main Valve: UV Stabilized, Reinforced Nylon 6 30% GF Solenoid Operator: Stainless Steel AISI 300 & 400 series Seals: NBR
Mounting	2 x Ø6 mm holes
Manual override	3 positions (Open/Auto/Close)
Media	Air, water
Coil voltage	Latch
Switching time	40-60 msec
Electric connection	22AWG cable
Standard protection class	IP66

* Can only be operated with supplied coil

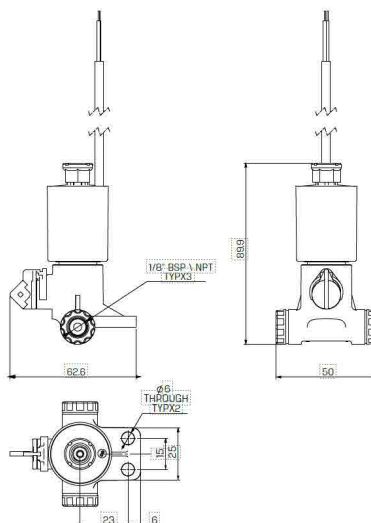


ACCESSORIES

Dimensions

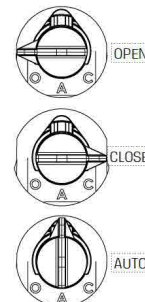


2W



3W

Manual Override Operation



To manually open the valve : turn selector switch to OPEN

NO : To change from OPEN to AUTO: turn the selector switch to AUTO

NC : To change from OPEN to AUTO: turn the selector switch to CLOSE, and then to AUTO

Coil resistance vs input voltage range

Resistance (Ω)	Suitable input voltage range (V)
1	8-12
4	12-18

ACCESSORIES

GALIT (HYDRAULIC RELAY) 3 WAY PLASTIC SOLENOID N.C./N.O.

Valve size: 1" - 6D"

The hydraulic relay Galit is equipped with 4 hydraulic connections and a manual operator.

It converts an external hydraulic command that controls the valve. It also enables manual control of the valve.

The Galit is suitable for remote opening and closing of hydraulic valves and can be configured as (N.O.) or (N.C.).

General Information

Pressure Rating: PN-10

Min. Pressure: 5 bar

Sensitivity: 0.3 bar

Max Temperature: 90 °C

Weight: 0.64 kg

Spring options for Topographic compensation:

Relay type	Unit	Yellow	Green	White	Red
N.C.	m	5-10	10-14	14-17	17-22
N.O.	m	5-10	10-15	15-20	20-25

* standard Galit comes without spring



ACCESSORIES

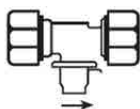
ACCESSORIES

S.V. - SHUTTLE VALVE



General Description

The shuttle valve is a 3-W hydraulic device, used to alternatively forward hydraulic command to the valve's control chamber, from two different pressure supply devices. When the higher pressure is conveyed into the central connection from one end, the other end will be shut.



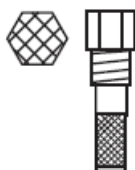
Applications

The shuttle valves are specifically designed for operating where 2 different hydraulic commands are present in a 3-W control system. Either remote operating and/or pilots control will alternatively operate by using the shuttle valves.

FI - FINGER FILTER



The finger filter is a self flushing screen filter installed in the water inlet of the valve's control system. It is used to prevent impurities from entering the control system and disturbing its operation by restricting, or even clogging water passages. Raphael's finger filters are designed to be maintenance free, screwed into the valves body sampling water from the main pipe. The finger filter will provide a safe water source into the control loop.



Applications

The finger filter is ideally designed for operation with RAF-P hydraulic control valve for irrigation applications as a main filter for the control system applications.

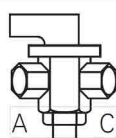
Use the FI Finger filter in any control system to prevent eventual malfunction due to impurities, installing it in the water intake to the control loop.

SY - 3-W COCK VALVE



The SY 3-W cock valve is a 3 port spherical valve, mounted on the valve's control chamber and used to change water passage between control chamber and 3 other optional ports. The SY valve is equipped with 4 connections:

1. Common port connected to the valve's chamber.
2. « 0 »- to connect the chamber to the open air to manually open the valve.
3. « C »-to connect the chamber to the pressure supply to manually close the valve.
4. « A »-to connect the valve to the control system for an automatic control.



Applications

Use the **SY 3-W** cock valve with every RAF-P valve application where override option is necessary, enabling local opening and closing of the valve, regardless of the automatic control function command.

Important Notes

When the **SY 3-W** cock valve is used to manually open and close the main valve, the automatic function is eliminated. When the automatic function of the valve is eliminated, the valve will not function as a modulating valve, but as an On/Off valve.



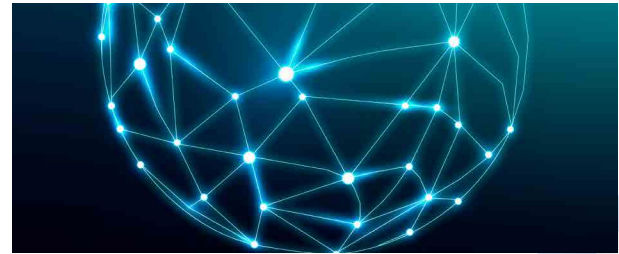
FIRE PROTECTION



IRRIGATION



WATERWORKS



SMART SOLUTIONS

RAPHAEL VALVES INDUSTRIES (1975) LTD, founded in 1949, is the first Israeli manufacturer of water control valves. RAPHAEL's research department constantly strives to introduce new and innovative products and solutions for water control systems including water works, fire-protection, irrigation systems and other fields.

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 **RAPHAEL**