

RAF GENERAL PURPOSE HYDRAULIC VALVES

Technical Information

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RAF Valves are used for general water supply and irrigation. The RAF valves are made of only three parts, each one is made of durable materials. The inner flow passages are streamlined and coated with low-friction materials. This provides quiet flow in both directions, low head-loss and minimal wear.

Technical Specifications

- Body and Cover: Cast Iron with Rilsan (Nylon 11) coating. Epoxy or enamel coating are available by request.
- Bolts, Nuts and Washers: Zinc plated Steel.
- Diaphragm: Natural Rubber reinforced with Nylon Fabric.

Working Pressure: Up to 16 bars.

Temperature Rating: -10°C to 80°C.

SPECIALLY DESIGNED



Cross section of RAF valve
RAF valves operate with a patented reinforced diaphragm, which eliminates the need for a retaining metal spring.

The special elastic design enables gradual and precise opening or closing of the valve.

By eliminating a metal spring, the RAF is virtually maintenance free.

Recommended Working Conditions Range

Nom. Dia.		Inlet Pressure, Bar		*Kv factor Fully opened Valve		Control Chamber Volume	
mm	inch	Min.	Max.	RAF	RAF -A	Liter	Gallon
40	1.5	0.8	16	40	—	0.06	0.016
50	2	0.7	16	70	62	0.08	0.021
65	2.5	0.7	16	100	90	0.16	0.042
80-50-80	3-2-3	0.7	16	72	62	0.08	0.021
80-65-80	3-2.5-3	0.7	16	130	100	0.16	0.042
80	3	0.6	16	170	155	0.3	0.079
100-80-100	4-3-4	0.6	16	170	155	0.3	0.079
100	4	0.4	16	290	200	0.7	0.185
125-100-125	5-4-5	0.4	16	290	200	0.7	0.185
150-100-150	6-4-6	0.4	16	300	220	0.7	0.185
150	6	0.4	16	490	470	1.5	0.396
200	8	0.4	16	790	—	3.5	0.924
250	10	0.3	16	1400	—	7.6	2.006
300	12	0.3	16	1800	—	7.6	2.006

$$Q = K_v \sqrt{\Delta P}$$

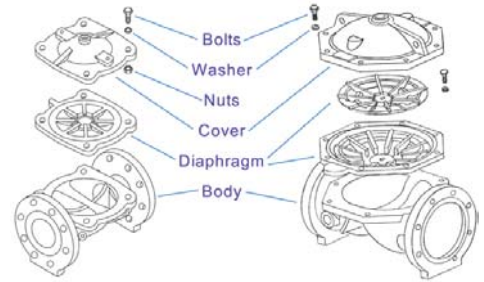
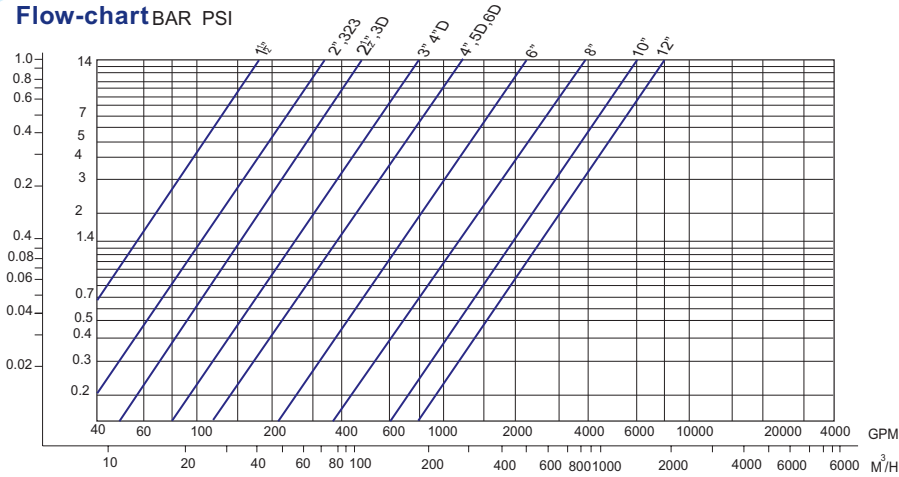
Q = Flow rate, m³/h

ΔP = Head loss across the valve, bars

Cv = 1.16Kv

PRESSURE-LOSS CHART FOR VALVES TYPE RAF IN LINE

Flow-chart BAR PSI

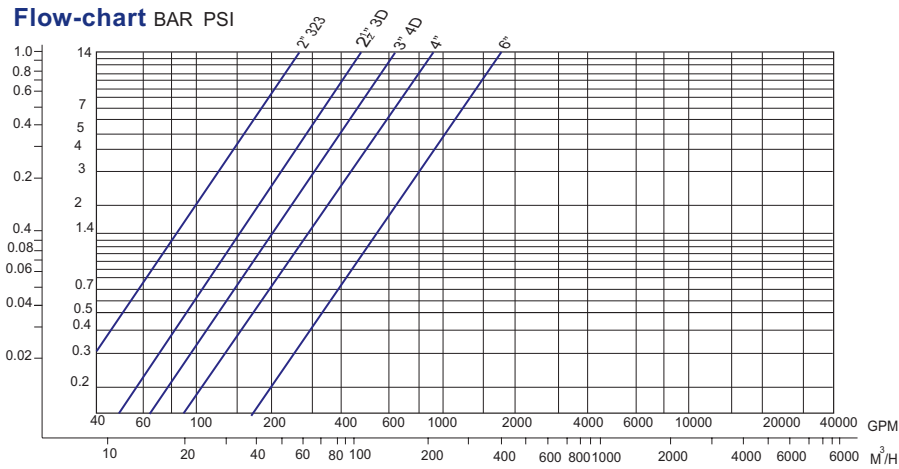


11/2" - 6"

8" - 12"

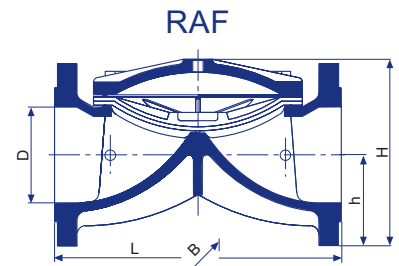
PRESSURE-LOSS CHART FOR VALVES TYPE RAF A

Flow-chart BAR PSI

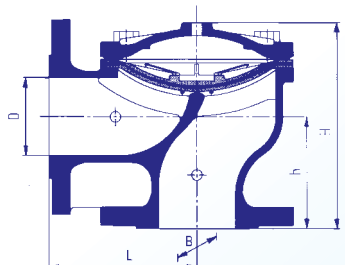


	Nom. Dia.		L	H	B	h	Weight kg.	Connections
	mm	inch						
RAF In Line	40	1 1/2	159	80	96	29	1.8	Thread / Grooved
	50	2	190	100	125	38	3.9	Thread / Grooved
	50	2	190	159	165	76	7.9	Flange
	65	2 1/2	216	110	125	46	5.0	Thread / Grooved
	65	2 1/2	216	173	185	80	10.1	Flange
	80-50-80	3-2-3	230	125	125	50	5.0	Thread / Grooved
	80-50-80	3-2-3	230	175	200	100	11.0	Flange
	80-65-80	3-2 1/2-3	244	127	138	50	5.4	Thread / Grooved
	80-65-80	3-2 1/2-3	216	192	200	92	11.4	Flange
	80	3	290	138	200	50	10.4	Thread / Grooved
	80	3	283	200	200	100	17.5	Flange
	100-80-100	4-3-4	283	222	222	111	20.1	Flange
	100	4	346	220	230	60	16.5	Thread / Grooved
	100	4	305	220	230	99	25.5	Flange
	125-100-125	5-4-5	305	243	250	120	29.5	Flange
150-100-150	6-4-6	325	285	285	143	35.8	Flange	
150	6	406	295	300	142	49.5	Flange	
200	8	470	383	354	160	71.0	Flange	
250	10	635	430	464	197	109.0	Flange	
300	12	749	474	480	234	140.0	Flange	
RAFA Angle	50	2	90	150	125	81	4.2	Thread / Grooved
	50	2	112	159	165	77	8.1	Flange
	65	2 1/2	117	160	125	83	7.0	Thread / Grooved
	65	2 1/2	122	160	185	83	11.0	Flange
	80-50-80	3-2-3	110	146	125	72	4.9	Thread / Grooved
	80-50-80	3-2-3	140	200	200	100	12.0	Flange
	80-65-80	3-2 1/2-3	130	170	140	86	6.2	Thread / Grooved
	80-65-80	3-2 1/2-3	130	215	200	115	12.4	Flange
	80	3	148	205	200	107	12.0	Thread / Grooved
	80	3	154	210	200	115	19.0	Flange
	100-80-100	4-3-4	155	225	220	110	21.0	Flange
	100	4	150	227	230	118	15.9	Thread / Grooved
	100	4	177	230	230	113	26.5	Flange
	150	6	218	315	300	148	48.7	Flange

Dimensions of RAF & RAF-A



RAF (Inline)



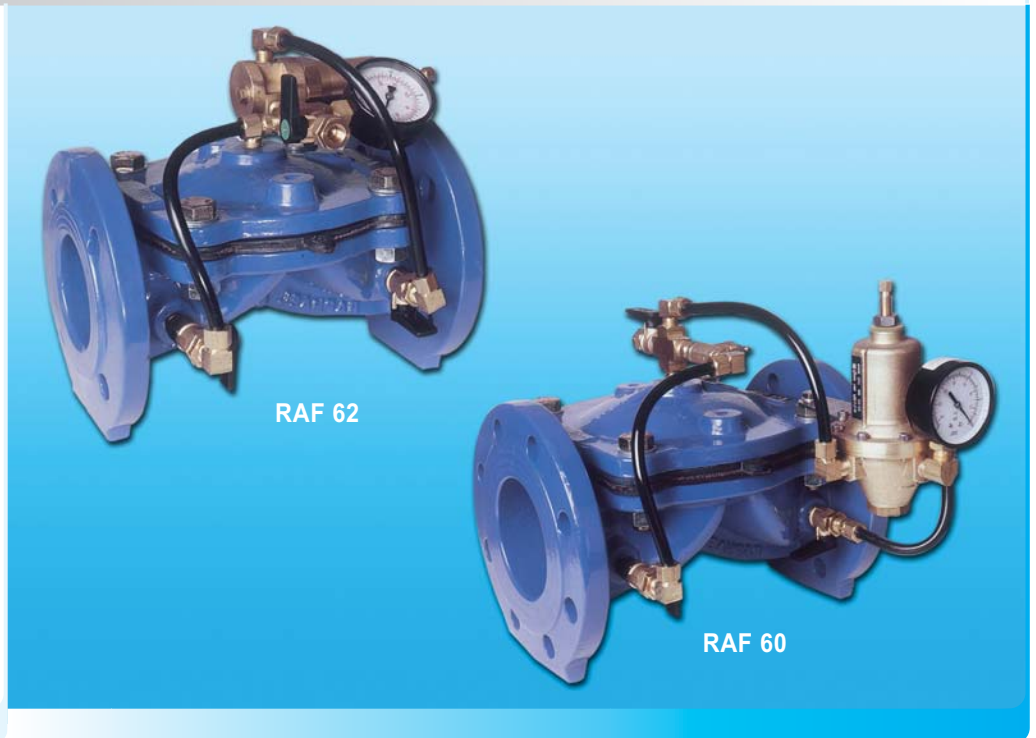
RAF-A (Angle)

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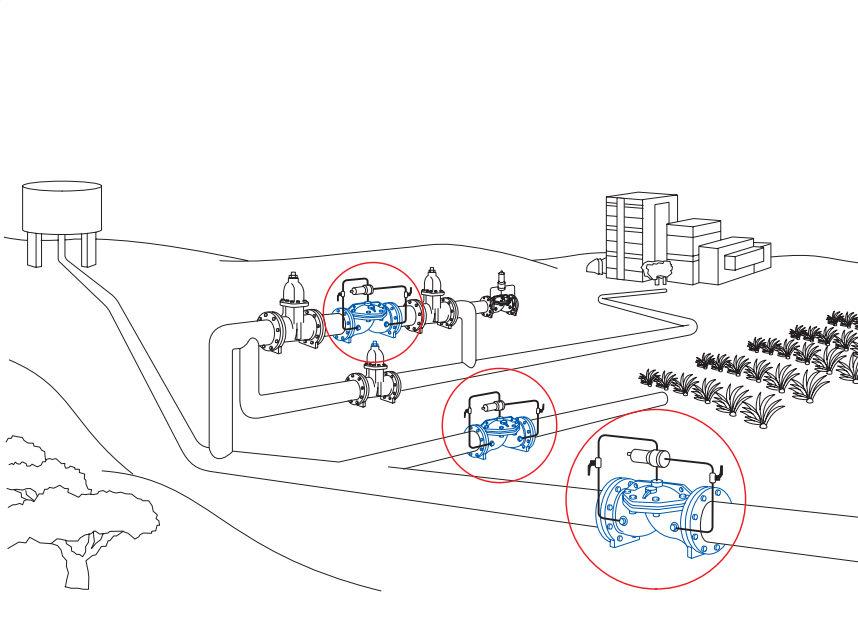
RAF 60/62 Two Way Pressure Reducing Control Valve

Description

RAF 60 and **RAF 62** are piloted hydraulic valves activated by line pressure. The pilot valve has a spring-loaded membrane, which is sensitive to downstream pressure. The pilot's spring is preset to a desirable reduced pressure. The pilot valve maintains a constant downstream pressure by gradually opening and closing of the main valve. The pressure is maintained constant regardless of changes in the flow rate.



Typical Application



Use **RAF 60/62** for general water supply systems with medium pressure rating. The 2-way pilot configuration together with Raphael's patented diaphragm enables smooth and precise pressure control.

Recommended Flow

Nominal Diameter		Flow Rate .m ³ /h	
mm	Inch	Min.	Max.
40	1.5	1	25
50	2	1	45
65	2.5	3	60
80-50-80	3-2-3	1	50
80-65-80	3-2.5-3	3	70
80	3	5	90
100-80-100	4-3-4	5	90
100	4	15	150
125-100-125	5-4-5	15	150
150-100-150	6-4-6	15	150
150	6	15	320
200	8	40	550
250	10	80	950
300	12	100	1200

Distributed by:

RAF 62 - General Application two-way Pressure reducing valve and metal pilot with a built-in needle valve. Pressure setup up to 16 bars. Diameters 1½" to 4" (DN40 to DN100).

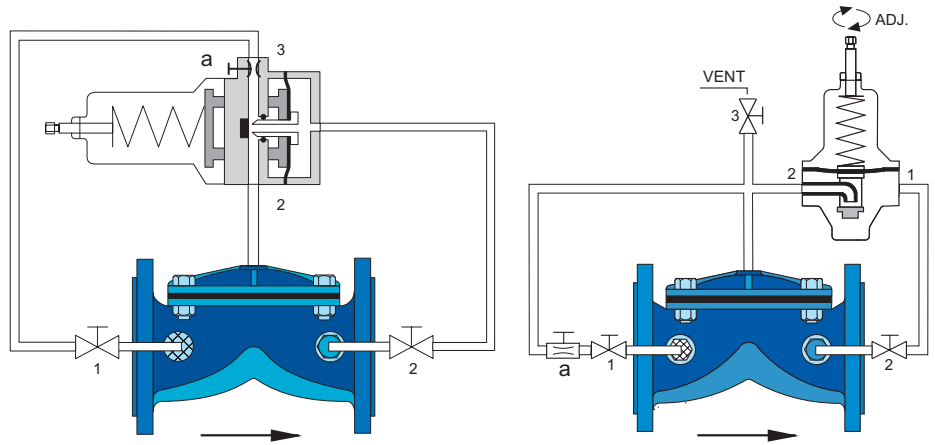
RAF 60 - General Application two-way Pressure reducing valve with a high precision, quick response metal pilot. Pressure setup up to 16 bars.

RAF 60/62 control mode

RAF Pressure Reducing Valve is activated by line pressure and controlled by a pilot valve. The pilot includes a spring-loaded membrane, which is exposed to the downstream (controlled) pressure. The displacement of the membrane due to downstream fluctuations defines the flow inside the pilot. When the downstream pressure is lower than desired, the RAF valve is automatically directed to open. In the opposite case it is automatically directed to close. When line pressure is inserted into the control chamber of the RAF valve (above its diaphragm) the valve closes. When the control chamber drains the RAF valve opens due to the line pressure from below its diaphragm. In two-way configurations, the control chamber drains downstream, enabling faster

and gradual opening without water spill.

Automatic: When downstream



RAF 62- Two Way Metal Pilot

RAF 60- Two Way Metal Pilot

and gradual opening without water spill.

Automatic: When downstream pressure is lower than that of the pilot spring (pre-adjusted set point), the RAF's control chamber drains downstream and the RAF valve is opened. When the downstream pressure rises above the preset spring load, the pilot's membrane is forced upwards closing the pilot's water passage. The RAF 60 then closes reducing downstream pressure.

Manual: To open the **RAF 60** and **RAF62**, close cocks **1** and **2** and open the Vent. To close the valves, open

Manual: To open the **RAF 60** and **RAF62**, close cocks **1** and **2** and open the Vent. To close the valves, open cock **1** and close cock **2** and Vent (**3**).

Adjustment

Use needle valve **a** to control the RAF 60 and RAF62 operational speed. Adjust the sustained pressure by the adjusting screw. See table of available springs below.

Standard RAF 60:

Basic RAF valve Rilsan Coated
Self-cleaning screen filter
2 Way pilot P-161
Brass needle valve
Reinforced plastic tubing
Pressure check point

Standard RAF 62:

Basic RAF valve Rilsan Coated
Self-cleaning screen filter
2 way pilot w/built in needle valve P-162
Reinforced plastic tubing
Pressure check point

Special Features:

Enamel coating
Large capacity external filter
Stainless steel pilot
Stainless steel needle valve
Copper or stainless steel tubing
Glycerinated 60mm pressure gauge

Spring Selection (bar)

RAF60

Green Standard 2-10	Blue 0.5-4	red 0.5-6	Yellow 2-16
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RAF62

Green Standard 2-12	red 0.5-8	Yellow 2-16
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Please Specify:

- Minimum & maximum flow rates.
- Normal line pressure.